CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35
DIST	COUNTY		SHEET NO.
CRP	SAN PATRICIO		1

INDEX OF SHEETS

SEE SHEET 2

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT NO. F 2021(879)

SH 35 AT OAK LANE
SAN PATRICIO COUNTY

NET LENGTH OF ROADWAY= 5,417.17 FT.= 1.026 MI.
NET LENGTH OF BRIDGE = 869.00 FT.= 0.165 MI.
NET LENGTH OF PROJECT= 6,286.17 FT.= 1.191 MI.
BRIDGE AT NBML OVER OAK LANE= 869.00 FT.= 0.165 MI.
BRIDGE AT SBML OVER OAK LANE= 840.00 FT.= 0.159 MI.

LIMITS: SH 35 FROM 0.4 (MI) NORTHEAST OF OAK LANE TO 0.4 (MI) SOUTHWEST OF OAK LANE

FOR THE CONSTRUCTION OF INTERCHANGE AT OAK LANE
CONSISTING OF: GRADING, BASE, SURFACING, AND STRUCTURES

DESIGN SPEED = 60 MPH

4R DESIGN GUIDELINES
NO RAS REVIEW REQUIRED
URBAN MINOR ARTERIAL

A.D.T. (2019)= 21,009
A.D.T. (2039)= 25,211

CONSTRUCTION SPEED ZONE REQUESTED

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS COMPLETED & ACCEPTED: _____

FINAL CONTRACT COST: $ _____

CONTRACTOR : _____

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH BC (1)- 14 THRU BC (12)- 14 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

BEGIN INCIDENTAL
CSJ: 0180-06-067
STA: 60+30.00

BEGIN PROJECT
END INCIDENTAL
CSJ: 0180-06-067
STA: 76+94.43
REF MRK: 674+0.086

END PROJECT
CSJ: 0180-06-067
STA: 139+80.60
REF MRK: 674+1.246

VICINITY MAP
SCALE: 1"=2,000'

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

STATE OF TEXAS
CHIA-PIN HSU
90999
LICENSED PROFESSIONAL ENGINEER
06-02-2021

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

Texas Department of Transportation

APPROVED FOR LETTING: 6/3/2021

DocuSigned by:
Valerie Glass
303F64E8A9B4450...
DISTRICT ENGINEER

RECOMMENDED FOR LETTING: 6/3/2021

DocuSigned by:
Paula Sales-Evans, P.E.
DISTRICT DIRECTOR OF TRANSPORTATION
PLANNING AND DEVELOPMENT

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, MAY 2012)

DATE: 6/2/2021 4:29:30 PM
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359	$	RIP(1)-19
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363	$$	D&OM(1)-20
364	$$	D&OM(2)-20
365	$$	D&OM(3)-20
366	$$	D&OM(4)-20
367	$$	D&OM(5)-20
368	$$	D&OM(6)-20
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370	$$	PM(1)-20
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372	$$	PM(3)-20
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376	$$	FPM(3)-12
377	$$	FPM(5)-19
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383	$$	SMD(BR-2)-14
384	$$	SMD(BR-3)-14
385	$$	SMD(2-1)-08
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387	$$	SMD(2-3)-08
388	$$	SMD(TY G)-08
389	$$	SMD(8W1)-08
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STATE OF TEXAS
ALDO I. LOPEZ
126723
LICENSED
PROFESSIONAL ENGINEER

Aldo Lopez 5/18/2021

IEA
TBPELS F-10161
THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "@" HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
DOUGLAS BURNETT JR.
140757
LICENSED
PROFESSIONAL ENGINEER

WSP USA Inc
TBPELS F-02263
THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "$" HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER

5/18/2021

LTRA
TBPELS F-782
THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "$$" HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

WSP USA Inc
TBPELS F-02263 5/19/2021
THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "*" HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
YEONTAE JEONG
110001
LICENSED
PROFESSIONAL ENGINEER

WSP USA Inc
TBPELS F-02263
THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "#" HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED
PROFESSIONAL ENGINEER

5/18/2021

IEA
TBPELS F-10161
THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "##" HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

REV	DESCRIPTION	DATE	INIT

Tung M. Nguyen, P.E.

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

WSP USA Inc
TBPELS F-02263
THE STANDARD SHEETS SPECIFICALLY IDENTIFIED WITH A "**" HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

Yeontae Jeong 5/19/21

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

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FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	2

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SCALE: 500.0000 ft / in.

0' 250' 500'(H)

SCALE IN FEET

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PROJECT LAYOUT

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	3

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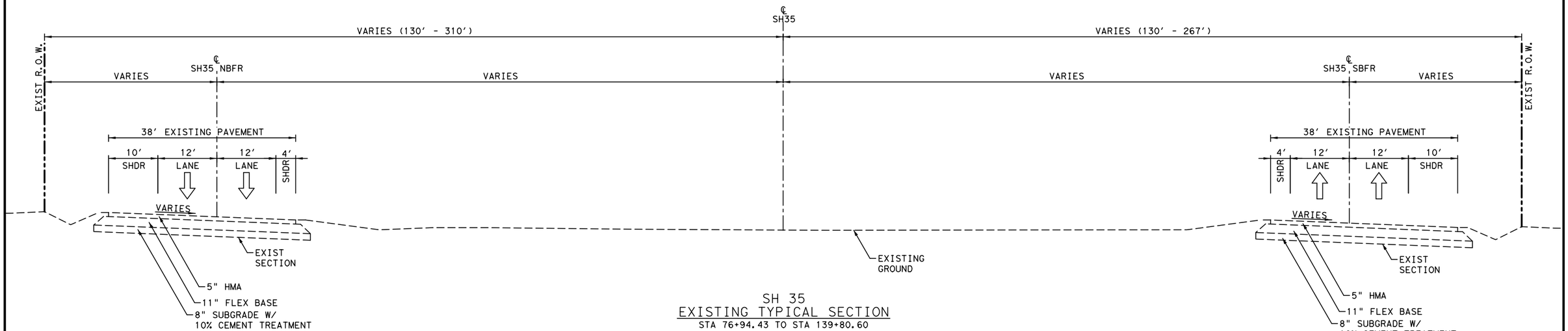
EXISTING TYPICAL SECTION LEGEND

- EXISTING GROUND
- EXISTING TRAVEL LANE



SH 35
EXISTING TYPICAL SECTION
STA 76+94.43 TO STA 139+80.60

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TYPICAL SECTIONS - EXISTING

N.T.S.

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	4

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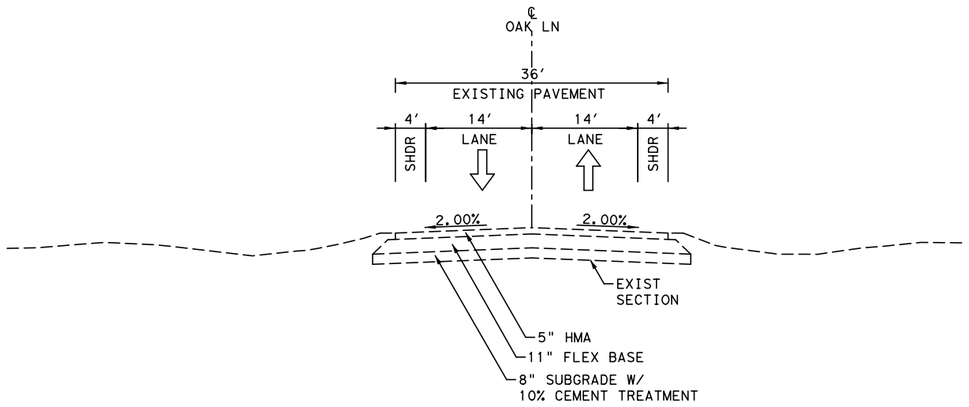
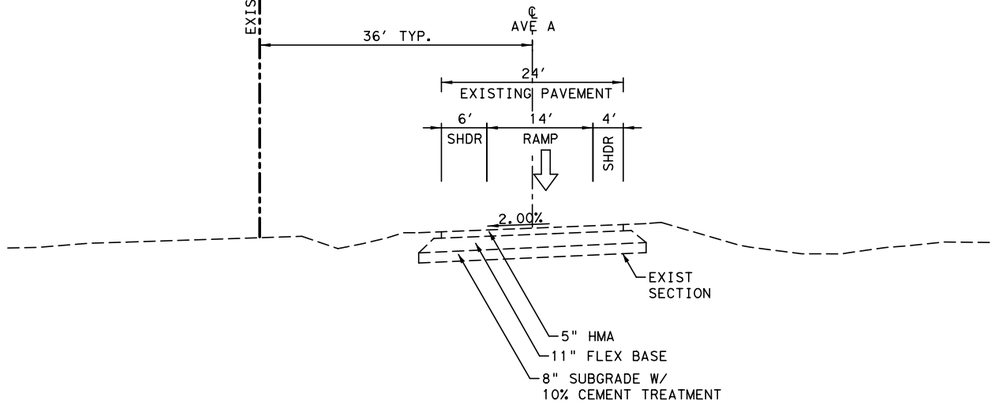
SCALE: 20.0000 ft / in.

EXISTING TYPICAL SECTION LEGEND

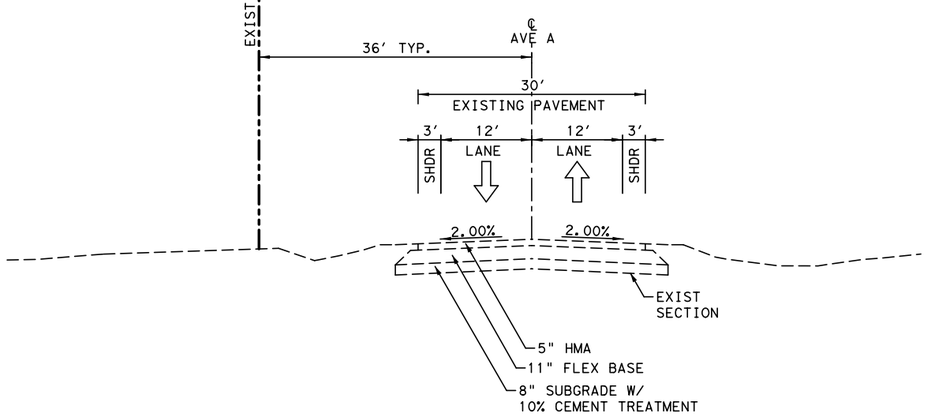
- EXISTING GROUND
- EXISTING TRAVEL LANE



OAK LANE
EXISTING TYPICAL SECTION
STA 14+88.15 TO STA 17+96.62



NORTH AVENUE A
EXISTING TYPICAL SECTION
STA 5+80.00 TO STA 11+62.86



NORTH AVENUE A
EXISTING TYPICAL SECTION
STA 11+62.86 TO STA 15+46.55

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TYPICAL SECTIONS - EXISTING

N.T.S. SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	5

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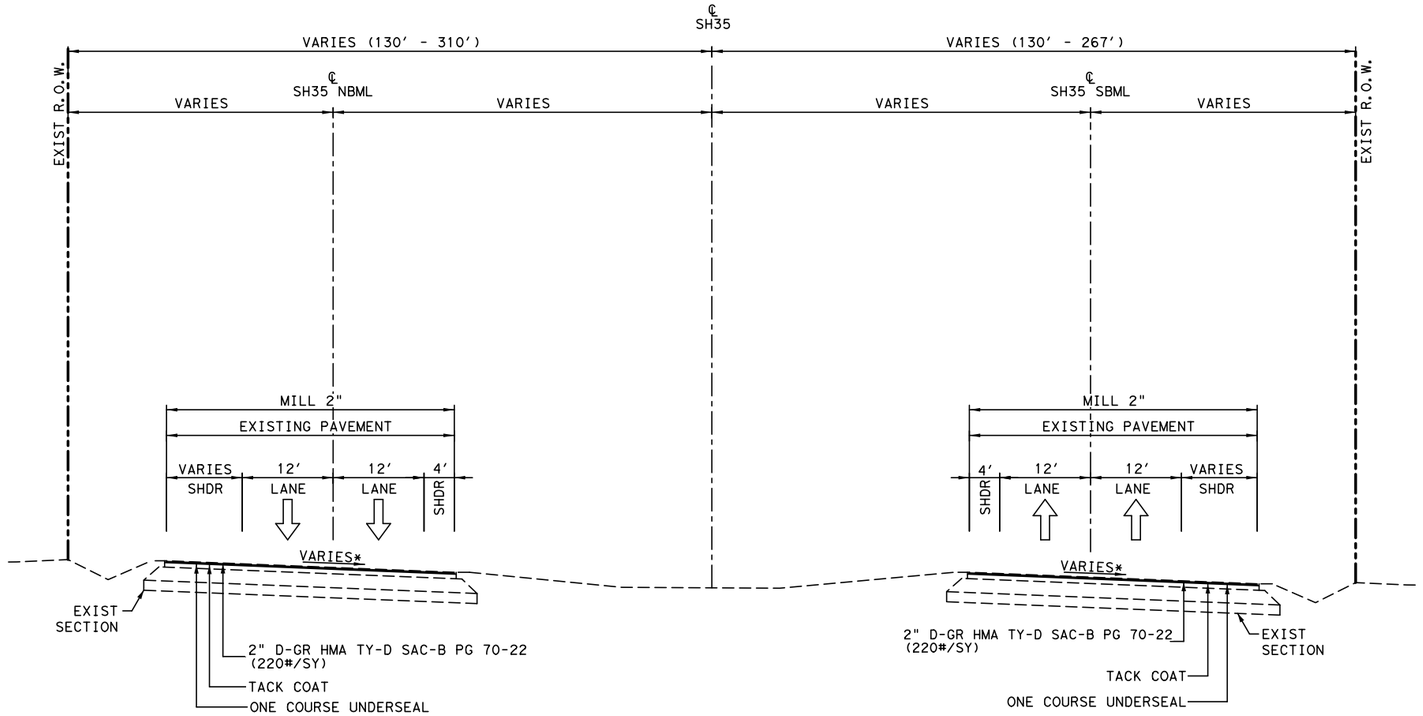

PROPOSED TYPICAL SECTION LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- PROPOSED TRAVEL LANE
- EXISTING TRAVEL LANE

NOTE:

* MATCH EXISTING CROSS SLOPE

SH 35
PROPOSED TYPICAL SECTION

℄ SH35 NBML	ROADWAY WIDTH
STA 77+45.00 TO STA 84+45.00	34′-44.62′
STA 136+03.92 TO STA 140+50.21	49′-61′

℄ SH35 SBML	ROADWAY WIDTH
STA 77+45.00 TO STA 86+99.50	38′
STA 137+19.40 TO STA 138+97.21	57′-75′

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TYPICAL SECTIONS - PROPOSED

N.T.S. SHEET 1 OF 5

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	6

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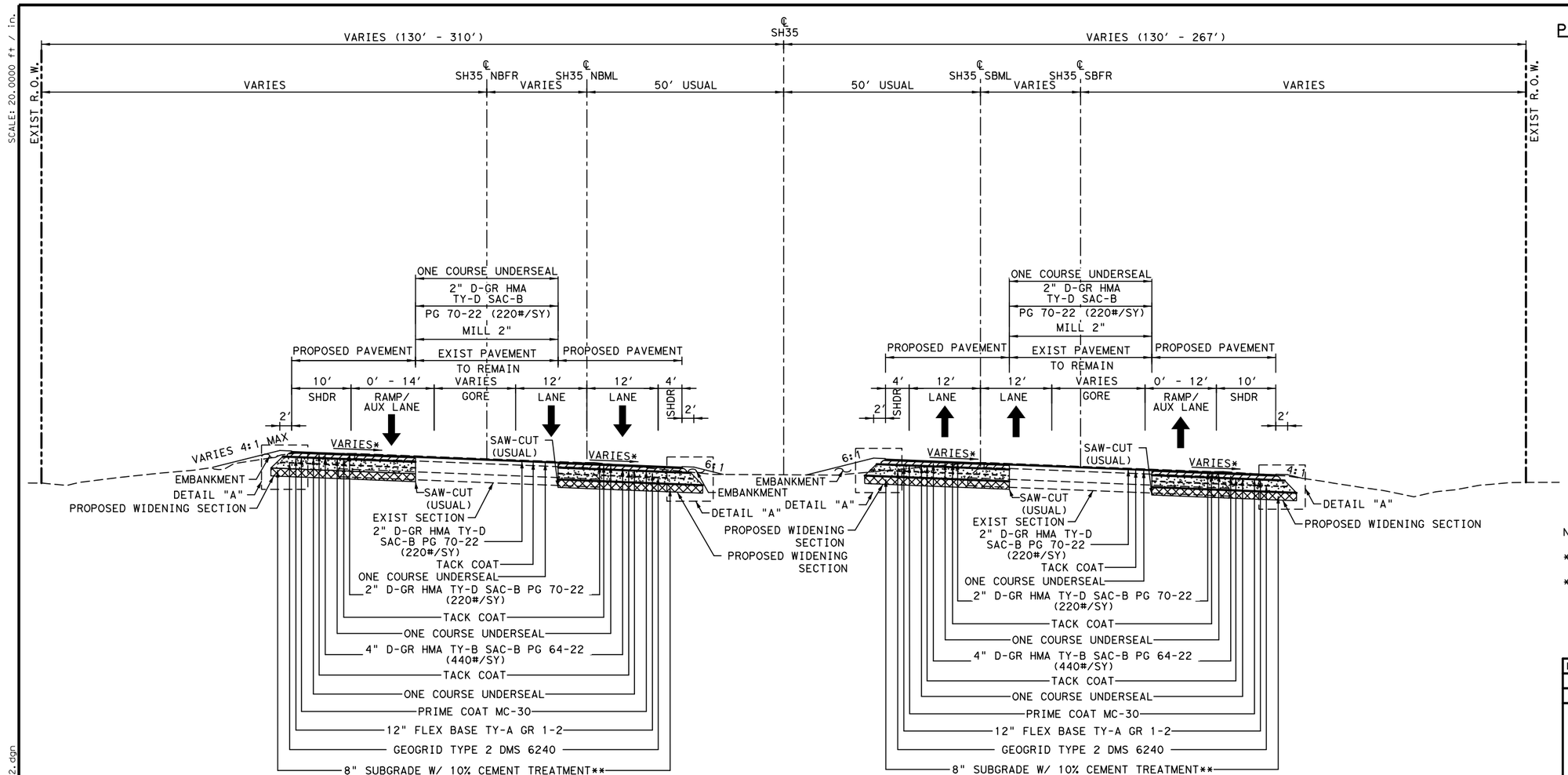


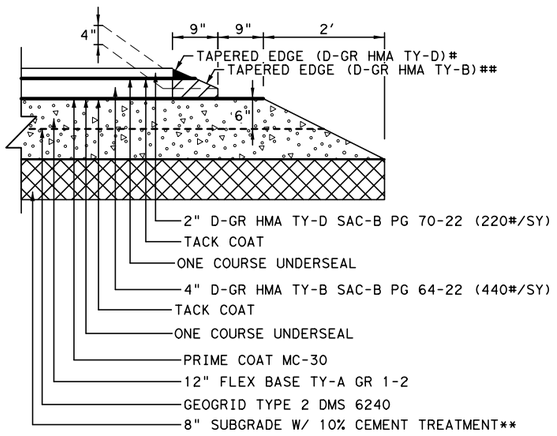
PROPOSED TYPICAL SECTION LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- PROPOSED TRAVEL LANE
- EXISTING TRAVEL LANE

NOTE:

* MATCH EXISTING CROSS SLOPE

** CONTRACTOR SHALL ADJUST THE CEMENT CONTENT TO ACHIEVE MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 150 PSI PER ITEM 275 AND TEX120-E.



TAPERED EDGE QUANTITIES
\# D-GR HMA TY-D SAC B PG 70-22 (EST.@ 0.23 TONS/STA. PER EDGE)
\## D-GR HMA TY-B SAC B PG 64-22 (EST.@ 1.60 TONS/STA. PER EDGE)

DETAIL "A"

SH 35
PROPOSED TYPICAL SECTION

WIDENING	SAW-CUT	℄ SH35 NBML	ROADWAY WIDTH	SAW-CUT	WIDENING
10.60'-13.10'	℄ SH35 NBFR 18' LT	STA 84+45.00 TO STA 87+99.00	44.60'-47.10'	N/A	0'
17.50'-2.50'	℄ SH35 NBFR 19' LT	STA 119+61.40 TO STA 122+00.80	74.00'-56.00'	℄ SH35 NBFR 12' RT	24.80'-22.70'
0'	N/A	STA 122+00.80 TO STA 126+23.51	56.00'-52.00'	℄ SH35 NBFR 12' RT	22.00'-18.00'
17.00'	℄ SH35 NBML 19' LT	STA 126+23.51 TO STA 135+33.52	52.00'-49.00'	℄ SH35 NBFR 12' RT	18.00'-6.00'
13.60'	℄ SH35 NBML 19' LT	STA 135+33.52 TO STA 136+03.92	49.00'	N/A	0'

WIDENING	SAW-CUT	℄ SH35 SBML	ROADWAY WIDTH	SAW-CUT	WIDENING
6.00'-46.20'	℄ SH35 SBFR 12' LT	STA 86+99.50 TO STA 92+64.37	49.00'	N/A	0'
45.70'-15.50'	℄ SH35 SBFR 12' LT	STA 119+11.72 TO STA 124+08.82	80.00'-52.00'	N/A	0'
15.50'-6.00'	℄ SH35 SBFR 12' LT	STA 124+08.82 TO STA 127+96.04	52.00'-50.00'	℄ SH35 SBFR 12' RT	12.00'-22.80'
0'	N/A	STA 127+96.04 TO STA 137+19.40	50.00'	℄ SH35 SBFR 12' RT	23.80'-6.00'

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TYPICAL SECTIONS - PROPOSED

N.T.S.

SHEET 2 OF 5

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	7

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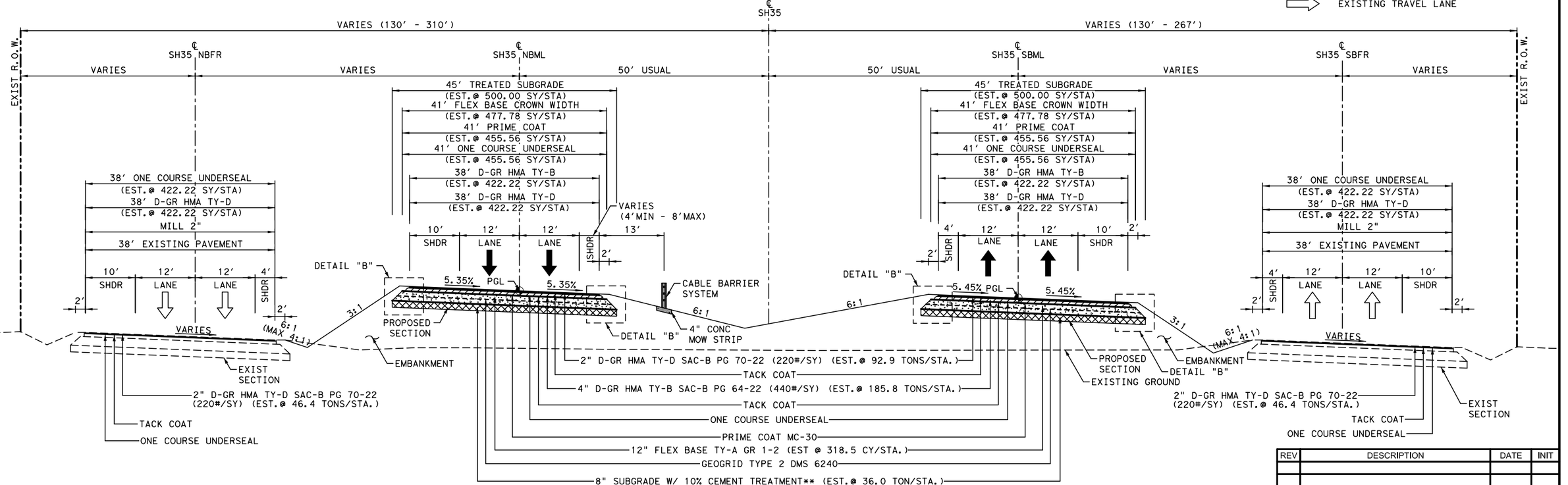
PROPOSED TYPICAL SECTION LEGEND

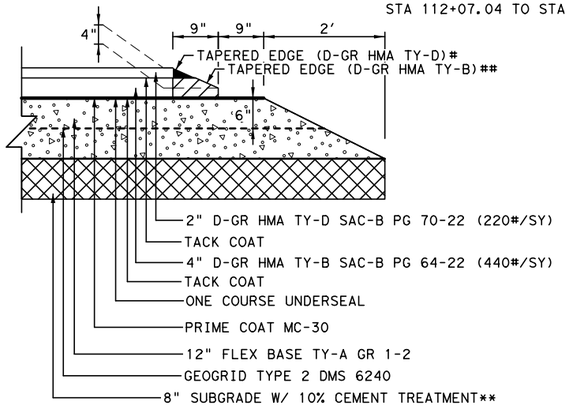
- EXISTING GROUND
- PROPOSED GROUND
- PROPOSED TRAVEL LANE
- EXISTING TRAVEL LANE



SH 35
PROPOSED TYPICAL SECTION

℄ SH35 NBFR		ROADWAY WIDTH
STA 96+79.90 TO STA 99+15.80		22′-38′
STA 99+15.80 TO STA 106+42.78		38′
STA 106+42.78 TO STA 109+43.15	INTERSECTION	VARIES
STA 109+43.15 TO STA 110+68.61		50′
STA 110+68.61 TO STA 112+07.04		50′-38′
STA 112+07.04 TO STA 114+69.60		38′

℄ SH35 SBFR		ROADWAY WIDTH
STA 92+61.98 TO STA 101+95.45		38′
STA 101+95.45 TO STA 103+64.15		38′-50′
STA 103+64.15 TO STA 104+87.41		50′
STA 104+87.41 TO STA 107+61.41	INTERSECTION	VARIES
STA 107+61.41 TO STA 118+26.87		38′



TAPERED EDGE QUANTITIES
\# D-GR HMA TY-D SAC-B PG 70-22 (EST.@ 0.23 TONS/STA. PER EDGE)
\## D-GR HMA TY-B SAC-B PG 64-22 (EST.@ 1.60 TONS/STA. PER EDGE)

DETAIL "B"

℄ SH35 NBML		ROADWAY WIDTH
STA 87+99.00 TO STA 92+86.67		47.11′-62.10′
STA 92+86.67 TO STA 100+03.00		38′
STA 100+03.00 TO STA 102+03.00		38′-42′
STA 102+03.00 TO STA 102+23.00	BRIDGE APPROACH	42′
STA 102+23.00 TO STA 110+92.00	BRIDGE	42′
STA 110+92.00 TO STA 111+12.00	BRIDGE APPROACH	42′
STA 111+12.00 TO STA 114+15.00		42′
STA 114+15.00 TO STA 116+15.00		42′-38′
STA 116+15.00 TO STA 119+61.34		38′

℄ SH35 SBML		ROADWAY WIDTH
STA 92+64.37 TO STA 101+61.50		38′
STA 101+61.50 TO STA 101+81.50	BRIDGE APPROACH	38′
STA 101+81.50 TO STA 110+21.50	BRIDGE	38′
STA 110+21.50 TO STA 110+41.50	BRIDGE APPROACH	38′
STA 110+41.50 TO STA 119+11.71		38′

NOTE:

** CONTRACTOR SHALL ADJUST THE CEMENT CONTENT TO ACHIEVE MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 150 PSI PER ITEM 275 AND TEX120-E.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TYPICAL SECTIONS - PROPOSED

N.T.S. SHEET 3 OF 5

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	8

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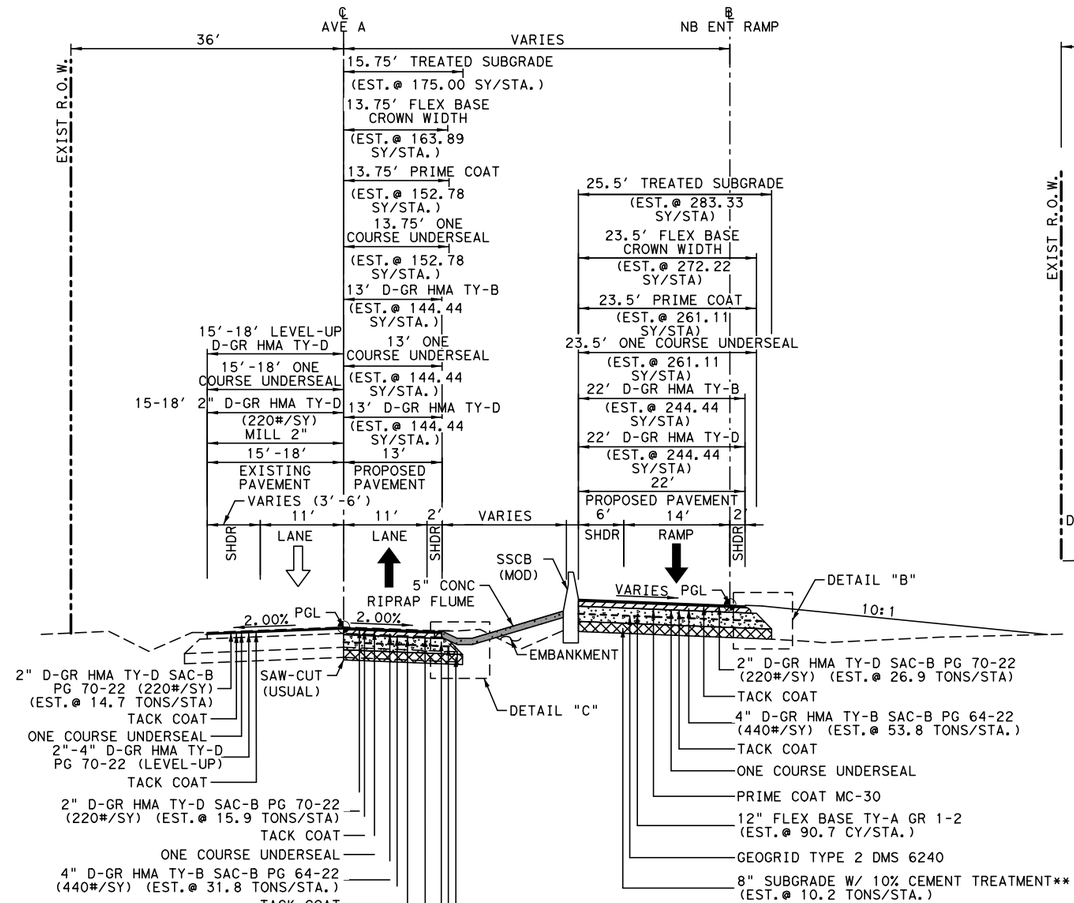
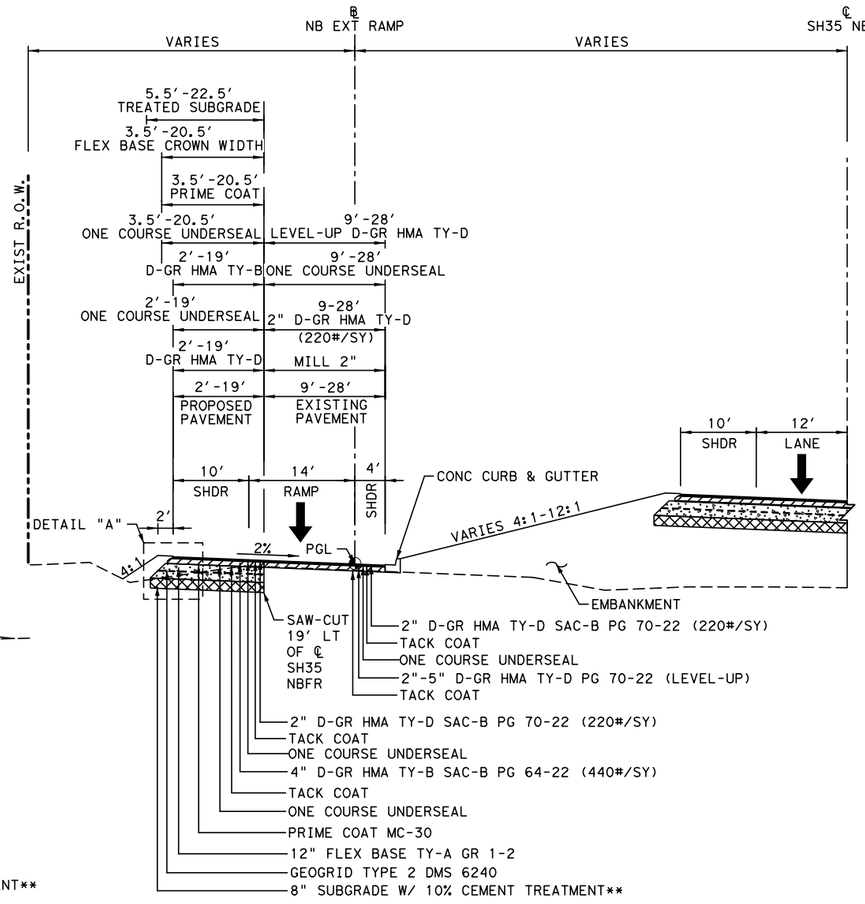


SH 35 & NORTH AVENUE A PROPOSED TYPICAL SECTION

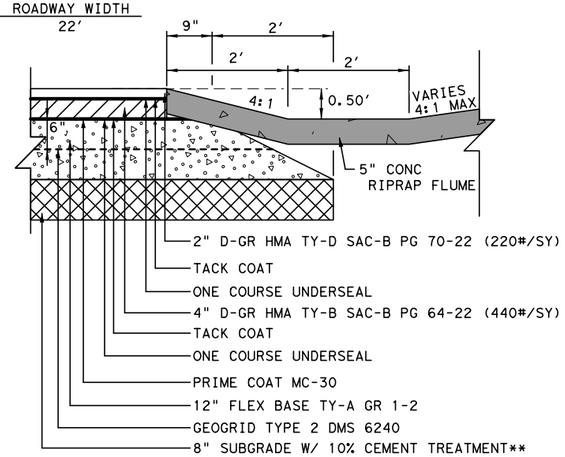
℄ AVE A	ROADWAY WIDTH	WIDENING
STA 5+78.00 TO STA 15+46.55	28′-32′	13′

℄ NB ENT RAMP	ROADWAY WIDTH
STA 13+88.54 TO STA 17+80.00	22′



SH 35 PROPOSED TYPICAL SECTION

℄ NB EXT RAMP	ROADWAY WIDTH
STA 11+69.58 TO STA 17+73.64	26′



DETAIL "C"

PROPOSED TYPICAL SECTION LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- PROPOSED TRAVEL LANE
- EXISTING TRAVEL LANE

NOTE:

** CONTRACTOR SHALL ADJUST THE CEMENT CONTENT TO achieve MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 150 PSI PER ITEM 275 AND TEX120-E.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TYPICAL SECTIONS - PROPOSED

N.T.S. SHEET 4 OF 5

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	9

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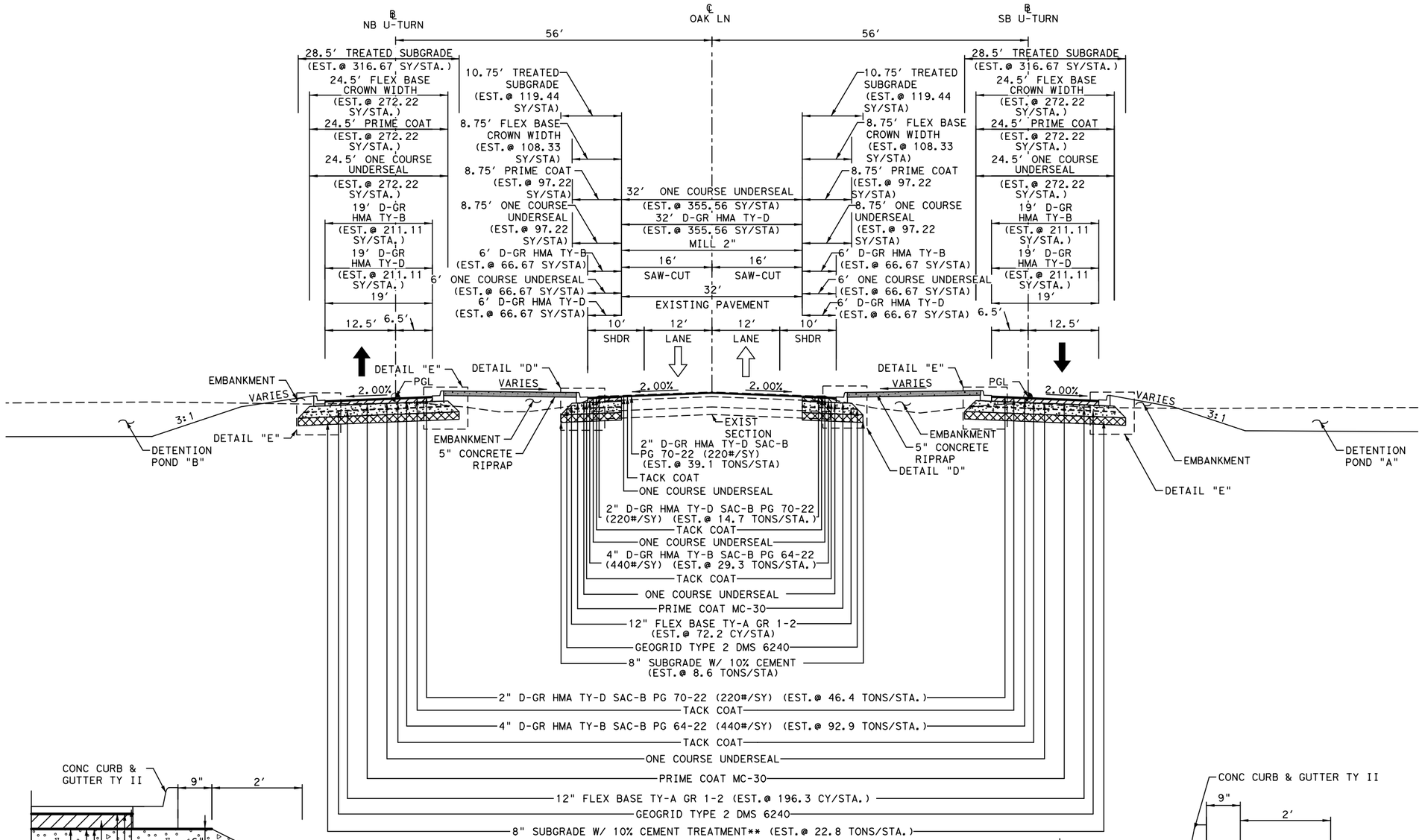
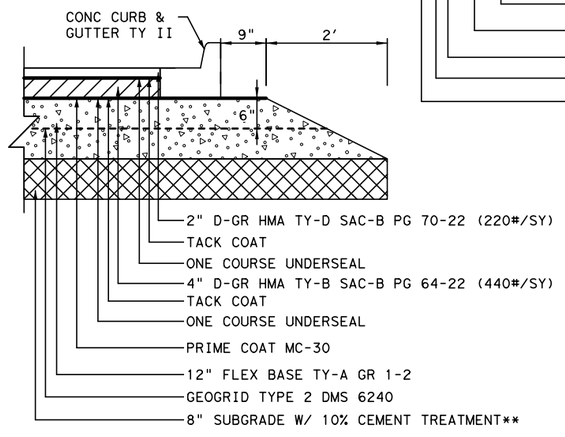


OAK LANE
PROPOSED TYPICAL SECTION

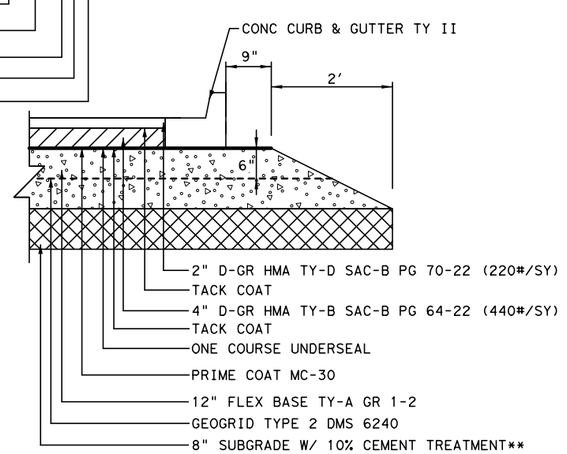
WIDENING	℄ OAK LN	ROADWAY WIDTH	WIDENING
6′	STA 14+96.51 TO STA 18+00.50	44′	6′

℄ NB U-TURN	ROADWAY WIDTH
STA 10+55.00 TO STA 14+16.00	19′

℄ SB U-TURN	ROADWAY WIDTH
STA 10+55.00 TO STA 14+21.00	19′



DETAIL "D"



DETAIL "E"

PROPOSED TYPICAL SECTION LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- PROPOSED TRAVEL LANE
- EXISTING TRAVEL LANE

NOTE:

** CONTRACTOR SHALL ADJUST THE CEMENT CONTENT TO achieve MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 150 PSI PER ITEM 275 AND TEX120-E.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TYPICAL SECTIONS - PROPOSED

N.T.S.

SHEET 5 OF 5

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	10

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GENERAL NOTES:

Find, for your information and convenience, tools such as forms, software, materials, and various other information provided by the Department at https://www.txdot.gov/business.html. Please note that these tools are updated periodically and your attention is directed to the latest edition.

In the event of a called evacuation, emergencies, impending adverse weather or as directed, do not perform any work without written authorization. The District reserves the right to suspend all work in support of evacuations or emergencies occurring from other parts of the state. Any work performed, other than work directed by the Department, is unauthorized work in accordance with Item 5.

Sweep, clean and remove any construction waste, surplus materials or debris from the roadway and right of way at the end of each day unless otherwise approved. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Asphalt application season will be established in accordance with Item 316.4.4 Adverse Weather Conditions or as directed by the Engineer.

Cut existing pavement using a saw or other approved method to ensure a neat transverse and/or longitudinal line to assure a smooth tie-in with new pavement. Cut to a minimum depth of the final lift thickness. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Promptly pick up and properly dispose of paper and other materials used for pavement joints.

Stencil the National Bridge Inventory (NBI) number on each bridge and bridge class culvert. Use 3" letters or numbers. Use stain and color as approved. Paint will not be permitted. Locate the NBI number on the outside beam immediately adjacent to the abutment on the downstream end, on the outside headwall upper right-hand corner, or as directed. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

All pavement markings shall be in accordance with the latest edition of Texas MUTCD.

Contractor questions on this project are to be addressed to the following individual(s):

Robert Isassi, P.E.	Robert.Isassi@txdot.gov
Eric Martinez, P.E.	Eric.Martinez@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:

County: San Patricio **Control:** 0180-06-067

Highway: SH 35

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, CCSJ/Project Name.

ITEM 2 – Instructions to Bidders

It is recommended that prospective bidders examine the specified work locations with the Engineer to view the nature of the work, the need for close coordination with the various utilities, traffic control considerations, and other factors influencing the prosecution of the work.

ITEM 5 – Control of the Work

Field verify all dimensions and notify Engineer prior to initiating any work.

Verify the locations of utilities, underground or overhead, shown within the limits of the right-of-way. Adhere to OSHA Standards when working within the vicinity of overhead power lines. Coordinate with the utility companies and notify the Engineer of any possible conflicts. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

The 811 call services for a utility location does not include TxDOT facilities. Provide notification to the District Traffic Signal Shop by email at CRP_Utility_Locate@txdot.gov or call 361-739-6044 when planning, drilling, or excavating in areas where existing TxDOT underground utilities exist. Visual evidence of TxDOT underground utilities in the area include illumination poles, ground boxes, flashing beacons, traffic signals, etc. This notification must be provided 48 hours in advance of performing the work, but no earlier than 72 business hours before the work will commence. Drilled shaft locations or excavation areas must be staked prior to the notification so that the underground utilities can be located in relationship to the proposed work.

Notify the Engineer immediately of utility conflicts in accordance with Item 5.6. Refer to Item 4.5 for consideration of differing site conditions.

The responsibility for the construction surveying on this contract will be in accordance with Item 5.9.1, "Method A".

This project was developed using 3D design software and tools. A proposed 3D model of the project in Extensible Markup Language (XML) and 3d PDF format is available upon request. These models are specifically intended to aid the contractor in preparing bids and in the use of automated machine guidance equipment for the project construction. If discrepancies are found, numerical dimensions in the cross-sections and plan sheets govern over the 3D model.

Where 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 6 – Control of Materials

Inspection at Precast Concrete Fabrication Plants is as follows: TxDOT's Materials and Pavements Section will inspect any precast units at commercial fabrication yards and staging areas. The Area Engineer will inspect all other precast units.

For Department-furnished material, contact the Engineer or his designated representative to request material a minimum of one workday prior to pick up. Load material with contract personnel. Materials are to be stored in a safe location outside TXDOT property or right-of-way, unless otherwise approved. Use material furnished by the Department only on the project(s) intended. Return any unused material as soon as possible.

ITEM 7 – Legal Relations and Responsibilities

The work performed for Item 7.2.4, "Public Safety and Convenience" will not be measured or paid for directly, but will be subsidiary to pertinent Items.

When working at street, farm-to-market, state highway, and county road intersections, schedule work to minimize intersection closures. During nonworking hours, all public road intersections will be open to the traveling public.

The total disturbed area for this project is 26.26 acres. The disturbed area in this project, all project locations in the Contract, and Contractor project specific locations (PSLs), within 1 mile of the project limits, for the Contract will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain any required authorization from the TCEQ for any Contractor PSLs for construction support activities on or off ROW. When the total area disturbed for all projects in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer.

Establish uniform perennial vegetative coverage with a density of at least 70% of the native background vegetative cover to achieve final stabilization.

County: San Patricio **Control:** 0180-06-067

Highway: SH 35

Comply with the Texas Aggregate Quarry and Pit Safety Act for waste areas or material source areas resulting from this project.

No significant traffic generator events identified.

Submit charge summary and invoices for Law Enforcement Personnel using the Department forms.

Patrol vehicles must be clearly marked to correspond with the officer's agency and equipped with appropriate lights to identify them as law enforcement. For patrol vehicles not owned by a law enforcement agency, markings will be retroreflective and legible from 100 ft. from both sides and the rear of the vehicle. Lights will be high intensity and visible from all angles.
No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site.

If the Contractor has a field office, provide an office location for a supervisory officer when event requires a supervising officer. This work is subsidiary.

A maximum combined rate of $70 per hour for the law enforcement personnel and the patrol vehicle will be allowed. Any scheduling fee is subsidiary per Standard Specification 502.4.2.

Cancel law enforcement personnel when the event is canceled. Cancellation, minimums or "show up" fees will not be paid when cancellation is made 12 hours prior to beginning of the event. Failure to cancel within 12 hours will not be cause for payment for cancellation, minimums, or "show up" time. Payment of actual "show up" time to the event site due to cancellation will be on a case by case basis at a maximum of 2 hours per officer.

Alterations to the cancellation and maximum rate must be approved by the Engineer or pre-determined by official policy of the officers governing authority.

ITEM 8 – Prosecution and Progress

Prepare the progress schedule using the Critical Path Method (CPM). Submit (2) two 11" x 17" hard copies and an electronic file of the original or updated progress schedule. Submit the original progress schedule seven (7) days before the Preconstruction Conference.

Submit an updated progress schedule as directed to show proposed major changes, changes affecting compliance with the contract requirements, or changes affecting the critical path/controlling item of work.

Working days will be computed and charge in accordance with Article 8.3.1.4, "Standard Workweek".

Work above traffic is not allowed.

Lane closures are not permitted Monday through Friday between 6:00 AM and 8:00 PM unless approved.

Any lane closed or obstructed beyond the period permitted will be assessed a lane rental charge. The following lane rental charges will apply:

- Weekdays = $310 /hr/lane/direction
- Weekends = $220 /hr/lane/direction

In accordance with special provision 000-658, additional liquidated damages will be assessed in the amount of $4,100 per working day.

Nighttime work is allowable.

Notify the Engineer at least 48 hours in advance of weekend or nighttime work.

ITEM 9 – Measurement and Payment

Monthly progress payments will be made for items of work completed by the 28th day of each month. Any work completed after the 28th will be included for payment in the subsequent monthly progress estimate.

Submit signed request for compensation of material-on-hand (MOH), including any requests from subcontractors, suppliers, or fabricators for MOH, at least two (2) working days prior to the end of the month on the Department's approved forms.

ITEM 100 Preparing Right of Way

Coordinate all right of way preparation activities with the project's Storm Water Pollution Prevention Plan (SWP3) and Environmental Permit Issues, and Commitments Sheet (EPIC) or as approved.

Prune trees and shrubs as directed. Use accepted pruning practices in accordance with Item 192 and as defined by the National Arborist Association. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

ITEM 110 Excavation

For earth cuts, manipulate and compact subgrade in accordance with Item 132.3.4.2, "Compaction Methods, Density Control".

County: San Patricio **Control:** 0180-06-067

Highway: SH 35

ITEM 132 Embankment

Use embankment material with a plasticity index (PI) ranging from 8 to 25. Blend or treat approved materials to achieve the desired PI and pulverize the material so that 100% passes the 3 inch sieve. Retest materials as borrow sources change or when the material changes significantly. Notify the Engineer of the proposed material sources and of changes to material sources. The Engineer may sample and test project materials at any time before compaction throughout the duration of the project to assure specification compliance. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Obtain approval to incorporate existing salvaged asphaltic surface and flexible base materials in the surface layer. If approved, incorporate existing materials no larger than 2 inches in the surface layer. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

The estimated quantities for embankments adjacent to culverts and bridges were calculated using the average-end-area method.

ITEM 164 Seeding for Erosion Control

Restore and seed areas not shown in the plans disturbed by the Contractor's operations. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Notify the Engineer of the unavailability of any seed mix. Make changes to the seed mix as approved.

Use a tacking agent of 50% SS-1 and 50% water and apply the agent at a rate of 0.10 gal/sy or as directed. A biodegradable tacking agent may be used in lieu of the SS-1 tacking agent in accordance with the manufacturer's recommendations when approved. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

ITEM 166 Fertilizer

Furnish and apply slow-release nitrogen fertilizer with a rate of 60 pounds of nitrogen per acre.

ITEM 168 Vegetative Watering

Distribute water to only those areas shown in the plans or as directed. Excessive overspray will not be permitted.

Water all areas of the project to be seeded or sodded every two (2) days for 90 days or as directed. Apply water in a manner to ensure adequate moisture but not to erode the soil in-place. During periods of adequate moisture, mechanical watering may not be required as approved.

Upon final stabilization, the Engineer may require to continue watering as specified for a period not to exceed 30 days.

The Basis of Estimate below establishes the approximate quantity of water required to complete the 90-day watering cycle:

Rate	Water (Gal/Acre/Day)	Area (Acre)	Total Gallons (Min)
0.25 inch/week	1961	1	88,245

ITEM 247 Flexible Base

For Table 1, "Material Requirements" a minimum plasticity index (PI) of 4 is required for Ty A Gr 1-2 Flex Base.

When requested, stake with blue tops, at 100-foot intervals, the lines and grade shown in the plans. Ride quality IRI values will be calculated by the average of both wheel paths.

ITEM 275 Cement Treatment (Road-Mixed)

The Engineer will designate a target cement content and optimum moisture content necessary to produce a stabilized mixture that meets the strength requirements and moisture susceptibility requirements shown in Table 1. The Contractor shall furnish the Engineer with representative samples of the materials to be used in production of the cement treated subgrade.

Table 1
Requirements for Cement Treatment

Description	Test	Minimum
7-Day Unconfined Compressive Strength	Tex-120-E, Part I	150 psi
Retained Strength after Moisture Conditioning	Tex-120-E, Part I (10-day Capillary Soak)	80% of 7-Day Unconfined Compressive Strength

Microcracking will be required in accordance with Item 275.4.7.

County: San Patricio **Control:** 0180-06-067

Highway: SH 35

ITEM 302 Aggregates for Surface Treatments

Provide aggregates with a minimum surface aggregate classification (SAC) of "B" unless otherwise shown. The SAC for sources on the Department's Aggregate Quality Monitoring Program (AQMP) is listed in the Department's Bituminous Rated Source Quality Catalogue (BRSQC). SAC requirements apply to aggregates used on all final roadway surfaces, including shoulders.

For precoated aggregate Type PB crushed gravel will not be used.

ITEM 310 Prime Coat

Use MC-30 at a rate of 0.20 gallons per square yard or as directed.

ITEM 316 Seal Coat

Do not place surface treatment on exposed concrete structures unless directed.

Furnish a distributor equipped with a working hand hose.

Material rates shown are for estimating purposes only. Adjust actual rates based on the material used, the existing condition and type of roadway surface, and as approved.

When using asphalt emulsion, a minimum 24-hour curing period is required before placing any subsequent asphalt courses.

Remove vegetation and blade pavement edges prior to surfacing operations. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Broom and clean sealed sections of roadway and all adjacent paved surfaces, including the gutter line, of any surplus aggregate before opening to traffic or as directed.

A vacuum sweeper will be required for this project. This shall be considered subsidiary to Item 316.

ITEM 320 Equipment for Asphalt Concrete Pavement

Provide the type of windrow pick-up equipment for approval prior to beginning paving operations.

Use of motor grader will not be permitted unless approved.

ITEM 351 Flexible Pavement Structure Repair

Use of motor grader will not be permitted unless approved.

Saw cut and remove the full depth of pavement repair at all transverse joints.

ITEM 354 Planing and Texturing Pavement

Reclaimable asphalt material (RAP) may be retained only if incorporated into the project. Incorporate the RAP into the pavement mix design, into the backfill for pavement edges, into temporary structures, or as approved. Any excess RAP will be stockpiled at a designated location within 5 miles of the project to be determined by the Engineer.

ITEM 400 Excavation and Backfill for Structures

Compact each layer to meet the density and consolidation of the adjacent undisturbed material.

Use cement-stabilized backfill for culvert and storm drains located beneath the pavement structure.

ITEM 409 Prestressed Concrete Piling

Pile cutoff will be paid according to the standard specifications regardless of the cutoff length.

ITEM 420 Concrete Substructures

Set a Department-furnished brass disk on all bridge abutments and culvert headwalls as directed. The work performed will not be measured or paid directly, but will be subsidiary to pertinent Items.

Bent concrete will be a plans quantity item.

Place longitudinal construction joints at the lane line for bridge approach slabs. These construction joints will be subsidiary to Item 420.

ITEM 421 Hydraulic Cement Concrete

Provide strength-testing equipment in accordance with the Contract controlling test(s).

Furnish curing facilities adequately sized for this project as approved.

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Furnish test molds for cylindrical concrete specimens measuring four (4") inches in diameter by eight (8") inches in length.

ITEM 422 Concrete Superstructures

Power-wash the surface of the precast panels before placement of concrete deck concrete to the satisfaction of the Engineer.

ITEM 427 Surface Finishes for Concrete

Provide a rub finish for Surface Area II unless otherwise directed.

ITEM 432 Riprap

Saw cut the existing riprap to ensure a neat transverse and/or longitudinal line to assure a smooth tie-in with new riprap. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Use Cap Option C for the joint between the face of the abutment and riprap as shown on the standard sheet “Concrete Riprap (CRR)".

Use intermediate toewalls as shown on the standard sheet “Concrete Riprap (CRR)".

Reinforce concrete riprap with flat sheets of welded wire fabric or with No. 3 reinforcing bars spaced at a maximum of 12 inch in each direction.

Weep holes shall be required unless otherwise directed by engineer. Upper level weep holes as shown on the standard sheet “Concrete Riprap (CRR)" shall be required.

ITEM 438 Cleaning and Sealing Joints

Provide for approval a method of cleaning and sealing joints to prevent any materials from falling through the joint when working over water or traffic. The method used and work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Saw cut of asphalt concrete pavement and concrete approach slabs shall be subsidiary regardless of the depth.

ITEM 464 Reinforced Concrete Pipe

The work performed for concrete collars will not be measured or paid for directly, but will be subsidiary to pertinent Items.

ITEM 465 Junction Boxes, Manholes, and Inlets

The work performed for concrete collars will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Shape and route floor inverts passing through the manhole or inlet with Class "B" concrete. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Inlet extensions will require 6”x 6” support posts from top of inlet to gutter.

ITEM 467 Safety End Treatment

The flowline of the safety end treatment shall match the flowline of the culvert.

Reinforce concrete riprap with 4 x 4 – W2.9 x W2.9 welded wire fabric or with No. 3 reinforcing bars spaced at a maximum of 12 inch in each direction.

The work performed for concrete collars will not be measured or paid for directly, but will be subsidiary to pertinent Items.

All safety end treatments shall include riprap to the dimensions shown on PSET-RR. This riprap shall be subsidiary to Item 467.

ITEM 496 Removing Structures

Contractor shall provide a demolition plan to engineer for approval.

The structure(s) to be removed have surface coatings which may contain hazardous materials. Provide for the safety and health of employees and abide by all OSHA Standards and Regulations.

Coordinate and identify the locations where the structure(s) will be cut at least 30 days prior to the demolition of the structure(s). If the surface coatings contain hazardous materials, the Department will arrange by separate Contract for the removal of a 4 inch wide strip around bearing attachments, at the anchor bolts, and as approved. Provide traffic control for the paint removal operations. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

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Notify the Engineer no later than 30 calendar days prior to the demolition of the structure(s) for coordination with the Texas Department of State Health Services.

Provide for approval a method of removal to prevent any materials from falling into water or traffic. The method used and work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Disassemble, deliver and neatly stack salvageable materials at the TxDOT Rockport Maintenance Office. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

ITEM 500 Mobilization

"Materials on Hand" payments are not considered when determining partial payments.

ITEM 502 Barricades, Signs, and Traffic Handling

Furnish additional barricades, signs, and traffic handling as directed. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Traffic control for daytime lane closures shall be in accordance with applicable standards. Traffic control shall include temporary rumble strips in accordance with WZ (RS)-16.

When advanced warning flashing arrow panels are specified, furnish one (1) standby unit in good condition at the job site for immediate use.

Attach stop/slow paddle to a staff with a minimum length of 6 feet to the bottom of the sign.

The use of a pilot vehicle in conjunction with flaggers will be permitted. If used, provide positive and unrestricted communication between the driver of the pilot vehicle and the flaggers. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Contractors attention is directed to a construction speed zone, signage is subsidiary to Item 502. The Contractor shall verify that the construction speed zone has been passed by minute order or ordinance before the signs are fabricated or erected

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

All items marked as optional on all traffic control standards shall be required unless otherwise approved by an Engineer.

Trail vehicle shall be required on all mobile traffic control operations.

ITEM 504 Field Office and Laboratory

Apply for and secure permits necessary for the buildings, and pay all utility meter deposits and service bills. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Provide 2 sets of keys for all facilities, which include but are not limited to the field office and/or laboratory.

Maintain all mechanical, electrical and plumbing facilities at all times.

Provide one (1) Type C Structure (Field Office). This field office shall be for TxDOT use only and shall be a separate structure from the Contractor's facilities.

Furnish and install adequate equipment, outlets, lighting, air conditioning, heating and ventilation as approved. Arrange and install outlets as directed with no less than one (1) outlet per wall. Portable toilets will not be allowed. Provide 2 standard size office desk, 4 office chair (Two chairs per desk, default is 2 desks and 4 chairs. For larger projects, consult Area Engineer.), 1 conference table, 2 bookcases, and 2 locking filing cabinets as approved. Provide solar screens, blinds, or shades. Provide 1 phone line and 1 phone. A cell phone will not be allowed unless approved.

Provide high speed internet connectivity, a paper copier / scanner/ printer / facsimile.

Provide one (1) Type D Structure (Asphalt Mix Control Laboratory). This laboratory shall be for TxDOT use only and shall be a separate structure from the Contractor's facilities.

Secure all exterior openings with bars.

Provide hot water or a hot water dispenser capable of generating one (1) gallon of water at 140 degrees Fahrenheit with acceptable water pressure.

Provide Safety Equipment as follows:
(1) ONE EYE WASH STATION
(2) ONE FIRST AID KIT

Provide doors with a minimum width of 36 inches and 80 inches in height. Secure all exterior openings with bars.

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Asphalt content will be measured by Ignition Method.

ITEM 506 Temporary Erosion, Sedimentation, and Environmental Controls

Designate in writing a Contractor Responsible Person Environmental (CRPE) for implementing, maintaining, and reviewing environmental requirements.

ITEM 512 Portable Traffic Barrier

Contractor will not be allowed to mix match between the two types of barriers unless approved by the Engineer.

Disassemble, deliver, and neatly stack portable traffic barrier at a location within 15 aerial miles of the project location. Exact location will be provided by the Engineer. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent bid items.

The Contractor will retain ownership of precast concrete barrier at the end of the project, unless as directed by the Engineer.

ITEM 514 Permanent Concrete Traffic Barrier

Align expansion joints with bridge decks and retaining wall coping joints.

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

Construct an expansion joint at a depth equal to the depth of the curb, gutter, and combined curb and gutter every 40 feet. Construct a tooled joint every 10 feet. When sidewalks are constructed next to curb or curb and gutter, place sidewalk expansion joints at the same location as the curb and gutter expansion joints.

ITEM 530 Intersections, Driveways, and Turnouts

If conditions warrant, driveway locations, widths, or lengths may be adjusted as directed.

ITEM 560 Mailbox Assemblies

Coordinate with the local United States Postal Service to mark the location of the temporary mailboxes. Permanent mailbox locations may be adjusted as directed.

ITEM 585 Ride Quality for Pavement Surfaces

Use Surface Test Type B and Pay Adjustment Schedule 1 to evaluate ride quality of the travel lanes in accordance with Item 585, "Ride Quality for Pavement Surfaces."

ITEM 610 Roadway Illumination Assemblies

Fabricate steel roadway illumination poles in accordance with the latest version of the Roadway Illumination Standards. Poles fabricated according to the latest version of the standards require no shop drawings. Alternate designs to the latest version of the standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically.

ITEM 618 Conduit

Seal all conduits terminating in ground boxes and pole foundations with a sealant made of polyurethane or equivalent that will cure in the presence of moisture. Ensure sealant is suitable for sealing ends with electrical conductor extending past the ends of the conduit. Inject the sealant a minimum of 3 inches and a maximum of 5 inches into the conduit.

Provide rigid metal conduit (RMC) elbows for all underground conduit bends of 45 degrees or more, including bends into ground boxes. Provide a polyvinyl chloride conduit (PVC) elbow in lieu of a RMC elbow for conduit 1 inch or larger. Ensure the elbow is the same schedule rating as the conduit to which it is connected.

Bond the RMC to the grounding conductor with grounding type bushings when the RMC is exposed or extends into the ground box.

Provide a flat, high tensile strength polyester fiber pull tape in each conduit to pull conductors.

Provide wide sweep conduit elbows.

Jacking of conduit will not be permitted.

All conduit runs under existing pavement or existing driveways shall be bored. Where boring is required, it shall be placed at a minimum depth of 3.5 feet from proposed grade.

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Use Schedule 80, for all High-Density Polyethylene Conduit.

ITEM 620 Electrical Conductors

Grounding conductors that share the same conduit, junction box, ground box, or structure shall be bonded together at every accessible point in accordance with the current National Electrical Code and TxDOT requirements. Provide cable with green color insulation.

Insure all grounding conductors size 8AWG and larger are stranded, except for the grounding electrode conductor that terminates at meter Enclosure, which will be a solid conductor.

ITEM 624 Ground Boxes

Aggregate fill shall consist of ¾ inch up to 2 inch course aggregate. Ensure aggregate is in place prior to setting box and conduits shall be capped.

ITEM 628 Electrical Services

Provide a meter box for all electrical services.

ITEM 636 Signs

All sign wraps are subsidiary to Item 636.

Field verify vertical clearance as directed by the online Texas Department of Transportation manual, “Sign Guidelines and Applications Manual” chapter 6 section 3. The Engineer’s approval will be required prior to fabrication.

Furnish new sign supports when replacing overhead signs. This will be subsidiary to pertinent items.

The Contractor will retain ownership of any old signs, unless as directed by the Engineer.

ITEM 644 Small Roadside Sign Assemblies

Use crash worthy supports as shown on the BC sheets, the CWZTCD, or as directed for signs relocated using temporary supports. The work performed will not be measured or paid for directly, but will be subsidiary to pertinent Items.

All slip bases and hardware including but not limited to nuts, bolts, screws and washers will be galvanized. All sign and housing components will be galvanized. Slip bases shall be clamp-style.

The Contractor will retain ownership of any old assemblies, unless as directed by the Engineer.

ITEM 666 Retroreflectorized Pavement Markings

Establish and mark the location of existing standard pavement markings including but not limited to edge lines, transitions, passing and no passing zones, gore areas, etc.

Place pavement markings no later than 14 calendar days after the placement of the surface. When inclement weather prohibits placement of the markings, the 14-day period may be extended until weather permits proper application.

ITEM 677 Eliminating Existing Pavement Markings and Markers

Eliminate all conflicting pavement markings as work progresses or as directed.

Removal method must be approved by the Engineer.

No Surface Treatment Method on concrete surfaces.

When using Surface Treatment Method for asphaltic pavements, use a PB Grade 5 aggregate at an application rate of 1 cy/130 sy and asphalt AC-10, CRS-2 or HFRS-2 at an application rate of 0.39 Gal/sy.

ITEM 3076 Dense-Graded Hot-Mix Asphalt

SAC requirements apply to aggregates used on all surfaces.

Construct longitudinal joints with a joint maker providing a maximum one (1) inch vertical edge (1/2 inch desirable) with an adjacent 6:1 taper. Backfill edges within the same day.

The Engineer reserves the right to test all sources even if the source is listed in the Bituminous Source Rated Quality Catalog

Provide the testing lab samples to calibrate the ignition oven no later than five (5) working days prior to mix design verification.

Place HMA utilizing an automatic, dual, longitudinal-grade control system and automatic transverse-grade control system as specified under Item 320, unless otherwise approved by the Engineer.

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Contractor shall temporarily cover all inlets during the milling and paving operations. Inlets shall be uncovered when milling and paving operations are complete. This shall be subsidiary to Item 3076 and not paid for directly.

ITEM 6001 Portable Changeable Message Sign

Furnish the portable changeable message signs displaying the correct message at least seven (7) days prior to beginning work or as directed.

The Contractor's Responsible Person (CRP) will maintain full control of messages at all times.

The Engineer will provide the sign message text to use at each sign.

A minimum of 2 PCMS will be required. However, additional units may be necessary depending on the work in progress.

Standby time will not be measured or paid for directly, but will be subsidiary to pertinent Items.

Portable changeable message signs may be moved and message changed at any time as deemed necessary by the Engineer. This will be considered subsidiary to Item 6001.

ITEM 6185 Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)

A minimum of 2 TMAs will be required. However, additional units may be necessary depending on the work in progress.

Provide manufacturer’s curb weight or certified scales weight ticket to the Engineer for approval.

TMAs paid by the each shall be available for the duration of the project. Relocation of TMAs will be as directed by the Engineer, and will be considered subsidiary to this Item.

ITEM 6435 Installation of Traffic Management Equipment

The cellular modems are to be furnished by the department and installed by the Contractor. The Contractor shall coordinate with the Corpus Christi District Traffic Signal Shop Supervisor, Mr. Carlos Carrillo, to pick these modems up from TxDOT at 1701 South Padre Island Dr., Corpus Christi, TX 78416.

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SPECIFICATION DATA

UNIT WEIGHT ESTIMATES

ITEM 247 – FL BS (CMP IN PLC) (TY A GR 1-2) (FNAL POS) ---------- 136 LBS/CF
ITEM 275 – CEMENT TREAT (SUBGRADE) (8”) ---------- 110 LBS/CF
ITEM 3076 – 2” D-GR HMA TY-D SAC-B PG70-22 ---------- 220 LBS/SY
ITEM 3076 – 4” D-GR HMA TY-B SAC-B PG64-22 ---------- 440 LBS/SY

TACK COAT

ITEM 3076 – TACK COAT ---------- 0.1 GAL/SY

COMPACTION REQUIREMENTS

PLASTICITY INDEX ---------- 25 MAX
PLASTICITY INDEX---------- 8 MIN
DENSITY ---------- AS SHOWN ON TABLE 2 OF ITEM 132
LIFTS ---------- ALL

COMPACTION REQUIREMENTS FOR BASE COURSE

ITEM 247—FL BS (CMP IN PLC) (TY A GR 1-2) (FNAL POS)
DENSITY---------- 100% MIN
LIFTS ---------- ALL

PRIME COAT

ASPHALT, TYPE ---------- MC-30
AVERAGE ASPHALT RATE (GAL/SY) ---------- 0.20

UNDERSEAL

ASPHALT TYPE ---------- ASPH (AC-10, CRS-2, OR HFRS-2)
ASPHALT RATE (GAL/SY) ---------- 0.31 – 0.39
AVERAGE ASPHALT RATE (GAL/SY) ---------- 0.35
AGGREGATE RATE (CY/SY) ---------- 1/110
AGGREGATE TYPE ---------- PB
AGGREGATE GRADE---------- 4 or 4S SAC B

UNDERSEAL (OVERLAY)

ASPHALT TYPE ---------- ASPH (AC-15P, CRS-2P, OR HFRS-2P)
ASPHALT RATE (GAL/SY) ---------- 0.31 – 0.39
AVERAGE ASPHALT RATE (GAL/SY) ---------- 0.35
AGGREGATE RATE (CY/SY) ---------- 1/110
AGGREGATE TYPE ---------- PB
AGGREGATE GRADE ---------- 4 or 4S SAC B

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QUANTITY SHEET

CONTROLLING PROJECT ID 0180-06-067 **DISTRICT** Corpus Christi **COUNTY** San Patricio
HIGHWAY SH 35

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0180-06-067**			
		PROJECT ID		**A00077609**			
		COUNTY		**San Patricio**			
		HIGHWAY		**SH 35**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6002	PREPARING ROW	STA	80.000		80.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	1,135.000		1,135.000	
	105-6008	REMOVING STAB BASE AND ASPH PAV (6")	SY	18,415.000		18,415.000	
	110-6001	EXCAVATION (ROADWAY)	CY	40,201.000		40,201.000	
	132-6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	153,040.000		153,040.000	
	164-6033	DRILL SEEDING (PERM) (RURAL) (SANDY)	SY	131,778.000		131,778.000	
	164-6041	DRILL SEEDING (TEMP) (WARM)	SY	131,778.000		131,778.000	
	166-6001	FERTILIZER	AC	54.460		54.460	
	168-6001	VEGETATIVE WATERING	MG	4,805.240		4,805.240	
	169-6002	SOIL RETENTION BLANKETS (CL 1) (TY B)	SY	14,079.000		14,079.000	
	247-6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CY	14,839.000		14,839.000	
	275-6001	CEMENT	TON	1,553.000		1,553.000	
	275-6010	CEMENT TREAT (SUBGRADE) (8")	SY	47,068.000		47,068.000	
	310-6009	PRIME COAT (MC-30)	GAL	8,372.000		8,372.000	
	316-6001	ASPH (MULTI OPTION)	GAL	42,102.000		42,102.000	
	316-6427	AGGR(TY-PB GR-4S OR TY-PB GR-4)(SAC-B)	CY	981.000		981.000	
	351-6002	FLEXIBLE PAVEMENT STRUCTURE REPAIR(6")	SY	2,000.000		2,000.000	
	354-6021	PLANE ASPH CONC PAV(0" TO 2")	SY	48,560.000		48,560.000	
	400-6005	CEM STABIL BKFL	CY	539.000		539.000	
	402-6001	TRENCH EXCAVATION PROTECTION	LF	631.000		631.000	
	409-6002	PRESTR CONC PIL (18 IN SQ)	LF	7,980.000		7,980.000	
	409-6003	PRESTR CONC PIL (20 IN SQ)	LF	1,872.000		1,872.000	
	416-6005	DRILL SHAFT (42 IN)	LF	40.000		40.000	
	416-6018	DRILL SHAFT (SIGN MTS) (24 IN)	LF	142.000		142.000	
	416-6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	224.000		224.000	
	420-6013	CL C CONC (ABUT)	CY	119.500		119.500	
	420-6029	CL C CONC (CAP)	CY	252.000		252.000	
	420-6037	CL C CONC (COLUMN)	CY	270.900		270.900	
	420-6043	CL C CONC (FOOTING)	CY	268.800		268.800	
	420-6066	CL C CONC (RAIL FOUNDATION)	CY	135.000		135.000	
	420-6144	CLASS S CONC UTILITY PROTECTION PADDING	CY	14.000		14.000	
	422-6001	REINF CONC SLAB	SF	71,814.000		71,814.000	
	422-6015	APPROACH SLAB	CY	128.400		128.400	
	425-6039	PRESTR CONC GIRDER (TX54)	LF	8,238.790		8,238.790	
	432-6001	RIPRAP (CONC)(4 IN)	CY	9.000		9.000	
	432-6002	RIPRAP (CONC)(5 IN)	CY	174.000		174.000	
	432-6006	RIPRAP (CONC)(CL B)	CY	16.000		16.000	

QUANTITY SHEET

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		CONTROL SECTION JOB		**0180-06-067**			
		PROJECT ID		**A00077609**			
		COUNTY		**San Patricio**			
		HIGHWAY		**SH 35**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	432-6008	RIPRAP (CONC)(CL B)(RR8&RR9)	CY	357.000		357.000	
	432-6031	RIPRAP (STONE PROTECTION)(12 IN)	CY	14.000		14.000	
	432-6044	RIPRAP (CONC)(FLUME)	CY	126.000		126.000	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	146.000		146.000	
	450-6023	RAIL (TY SSTR)	LF	4,409.900		4,409.900	
	454-6018	SEALED EXPANSION JOINT (4 IN) (SEJ - M)	LF	336.000		336.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF	699.000		699.000	
	464-6007	RC PIPE (CL III)(30 IN)	LF	1,024.000		1,024.000	
	464-6017	RC PIPE (CL IV)(18 IN)	LF	330.000		330.000	
	464-6018	RC PIPE (CL IV)(24 IN)	LF	547.000		547.000	
	465-6014	INLET (COMPL)(PCO)(3FT)(LEFT)	EA	3.000		3.000	
	465-6071	INLET (COMPL)(PSL)(RC)(4FTX4FT)	EA	1.000		1.000	
	465-6074	INLET (COMPL)(PSL)(RC)(5FTX5FT)	EA	2.000		2.000	
	465-6126	INLET (COMPL)(PSL)(FG)(3FTX3FT-3FTX3FT)	EA	2.000		2.000	
	465-6128	INLET (COMPL)(PSL)(FG)(4FTX4FT-4FTX4FT)	EA	1.000		1.000	
	465-6158	INLET(COMPL)(PAZD)(FG)(3FTX3FT-3FTX3FT)	EA	2.000		2.000	
	467-6363	SET (TY II) (18 IN) (RCP) (6: 1) (P)	EA	16.000		16.000	
	467-6388	SET (TY II) (24 IN) (RCP) (3: 1) (C)	EA	1.000		1.000	
	467-6422	SET (TY II) (30 IN) (RCP) (6: 1) (C)	EA	1.000		1.000	
	467-6423	SET (TY II) (30 IN) (RCP) (6: 1) (P)	EA	1.000		1.000	
	480-6001	CLEAN EXIST CULVERTS	EA	21.000		21.000	
	496-6004	REMOV STR (SET)	EA	14.000		14.000	
	496-6007	REMOV STR (PIPE)	LF	445.000		445.000	
	500-6001	MOBILIZATION	LS	100.00%		100.00%	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	24.000		24.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	1,064.000		1,064.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	1,064.000		1,064.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	4,012.000		4,012.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	4,012.000		4,012.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	678.000		678.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	678.000		678.000	
	508-6001	CONSTRUCTING DETOURS	SY	2,406.000		2,406.000	
	512-6001	PORT CTB (FUR & INST)(SGL SLOPE)(TY 1)	LF	5,640.000		5,640.000	
	512-6025	PORT CTB (MOVE)(SGL SLP)(TY 1)	LF	12,180.000		12,180.000	
	512-6049	PORT CTB (REMOVE)(SGL SLP)(TY 1)	LF	5,640.000		5,640.000	
	514-6648	PERM CTB (SGL SLOPE)(SPLIT)(MOD)	LF	998.000		998.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF	1,498.000		1,498.000	

QUANTITY SHEET

CONTROLLING PROJECT ID 0180-06-067 **DISTRICT** Corpus Christi **COUNTY** San Patricio
HIGHWAY SH 35

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0180-06-067**			
		PROJECT ID		**A00077609**			
		COUNTY		**San Patricio**			
		HIGHWAY		**SH 35**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	530-6002	INTERSECTIONS (ACP)	SY	133.000		133.000	
	530-6004	DRIVEWAYS (CONC)	SY	1,047.000		1,047.000	
	530-6005	DRIVEWAYS (ACP)	SY	478.000		478.000	
	533-6001	RUMBLE STRIPS (SHOULDER)	LF	13,882.000		13,882.000	
	536-6002	CONC MEDIAN	SY	1,977.000		1,977.000	
	543-6004	CABLE BARRIER SYSTEM (TL-4) (20 '-0")	LF	750.000		750.000	
	543-6006	CABLE BARRIER SYSTEM (TL-4) (10'-0")	LF	3,142.000		3,142.000	
	543-6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	4.000		4.000	
	545-6003	CRASH CUSH ATTEN (MOVE & RESET)	EA	11.000		11.000	
	545-6005	CRASH CUSH ATTEN (REMOVE)	EA	8.000		8.000	
	545-6007	CRASH CUSH ATTEN (INSTL)(L)(N)(TL3)	EA	5.000		5.000	
	545-6019	CRASH CUSH ATTEN (INSTL)(S)(N)(TL3)	EA	8.000		8.000	
	560-6011	MAILBOX INSTALL-S (TWW-POST) TY 4	EA	4.000		4.000	
	610-6009	REMOVE RD IL ASM (TRANS-BASE)	EA	4.000		4.000	
	610-6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	4.000		4.000	
	610-6106	IN RD IL (U/P) (TY 2) (150W EQ) LED	EA	2.000		2.000	
	610-6190	IN RD IL (TY SP) 38S-8 (250W EQ) LED	EA	2.000		2.000	
	610-6214	IN RD IL (TY SA) 40T-8 (250W EQ) LED	EA	28.000		28.000	
	618-6046	CONDT (PVC) (SCH 80) (2")	LF	5,095.000		5,095.000	
	618-6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	1,700.000		1,700.000	
	618-6064	CONDT (RM) (1")	LF	265.000		265.000	
	620-6006	ELEC CONDR (NO.10) INSULATED	LF	1,050.000		1,050.000	
	620-6008	ELEC CONDR (NO.8) INSULATED	LF	22,080.000		22,080.000	
	624-6002	GROUND BOX TY A (122311)W/APRON	EA	23.000		23.000	
	628-6051	ELC SRV TY A 240/480 060(SS)SS(E)GC(O)	EA	3.000		3.000	
	628-6150	ELC SRV TY D 120/240 060(NS)SS(N)GC(U)	EA	2.000		2.000	
	636-6002	ALUMINUM SIGNS (TY G)	SF	1,259.000		1,259.000	
	644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	19.000		19.000	
	644-6028	IN SM RD SN SUP&AM TYS80(1)SA(P-BM)	EA	20.000		20.000	
	644-6030	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA	49.000		49.000	
	644-6031	IN SM RD SN SUP&AM TYS80(1)SA(T-2EXT)	EA	2.000		2.000	
	644-6033	IN SM RD SN SUP&AM TYS80(1)SA(U)	EA	6.000		6.000	
	644-6050	IN SM RD SN SUP&AM TYS80(2)SA(P)	EA	2.000		2.000	
	644-6064	IN BRIDGE MNT CLEARANCE SGN ASSM(TY N)	EA	4.000		4.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	68.000		68.000	
	647-6001	INSTALL LRSS (STRUCT STEEL)	LB	6,590.000		6,590.000	
	647-6002	RELOCATE LRSA	EA	1.000		1.000	

QUANTITY SHEET

CONTROLLING PROJECT ID 0180-06-067 **DISTRICT** Corpus Christi **COUNTY** San Patricio
HIGHWAY SH 35

			CONTROL SECTION JOB		**0180-06-067**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00077609**		
			COUNTY		**San Patricio**		
			HIGHWAY		**SH 35**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	647-6003	REMOVE LRSA	EA	2.000		2.000	
	658-6013	INSTL DEL ASSM (D-SW)SZ (BRF)CTB	EA	30.000		30.000	
	658-6026	INSTL DEL ASSM (D-SY)SZ (BRF)CTB	EA	22.000		22.000	
	658-6061	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2	EA	3.000		3.000	
	658-6078	INSTL OM ASSM (OM-4)(TWT)WAS	EA	6.000		6.000	
	658-6080	INSTL DEL ASSM (D-SW)SZ 1(WFLX)GND	EA	57.000		57.000	
	658-6092	INSTL DEL ASSM (D-DW)SZ 1(WFLX)GND	EA	37.000		37.000	
	658-6095	INSTL DEL ASSM (D-DY)SZ 1(YFLX)GND	EA	4.000		4.000	
	658-6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	EA	7.000		7.000	
	662-6001	WK ZN PAV MRK NON-REMOV (W)4"(BRK)	LF	2,383.000		2,383.000	
	662-6004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)	LF	11,408.000		11,408.000	
	662-6010	WK ZN PAV MRK NON-REMOV (W)8"(DOT)	LF	322.000		322.000	
	662-6012	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	LF	5,027.000		5,027.000	
	662-6016	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF	250.000		250.000	
	662-6034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)	LF	11,296.000		11,296.000	
	662-6060	WK ZN PAV MRK REMOV (W)4"(BRK)	LF	4,638.000		4,638.000	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	27,224.000		27,224.000	
	662-6071	WK ZN PAV MRK REMOV (W)8"(SLD)	LF	2,644.000		2,644.000	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	22,845.000		22,845.000	
	666-6005	REFL PAV MRK TY I (W)4"(DOT)(090MIL)	LF	38.000		38.000	
	666-6035	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	5,648.000		5,648.000	
	666-6041	REFL PAV MRK TY I (W)12"(SLD)(090MIL)	LF	2,192.000		2,192.000	
	666-6295	RE PROF PM TYI (BLK)4"(SHADOW)(090MIL)	LF	880.000		880.000	
	666-6299	RE PM W/RET REQ TY I (W)4"(BRK)(090MIL)	LF	4,868.000		4,868.000	
	666-6302	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)	LF	25,481.000		25,481.000	
	666-6311	RE PM W/RET REQ TY I (Y)4"(BRK)(090MIL)	LF	230.000		230.000	
	666-6314	RE PM W/RET REQ TY I (Y)4"(SLD)(090MIL)	LF	23,055.000		23,055.000	
	666-6349	REFL PAV MRK TY I (W)12"(DOT)(090MIL)	LF	469.000		469.000	
	668-6076	PREFAB PAV MRK TY C (W) (24") (SLD)	LF	132.000		132.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	22.000		22.000	
	668-6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA	2.000		2.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	22.000		22.000	
	668-6091	PREFAB PAV MRK TY C (W) (18")(YLD TRI)	EA	26.000		26.000	
	668-6092	PREFAB PAV MRK TY C (W) (36")(YLD TRI)	EA	44.000		44.000	
	672-6008	REFL PAV MRKR TY I-R	EA	56.000		56.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	16.000		16.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA	715.000		715.000	

QUANTITY SHEET

CONTROLLING PROJECT ID 0180-06-067 **DISTRICT** Corpus Christi **COUNTY** San Patricio
HIGHWAY SH 35

							TOTAL EST.	TOTAL FINAL
			CONTROL SECTION JOB		**0180-06-067**			
			PROJECT ID		**A00077609**			
			COUNTY		**San Patricio**			
			HIGHWAY		**SH 35**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL		
	677-6001	ELIM EXT PAV MRK & MRKS (4")		LF	43,028.000		43,028.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")		LF	2,644.000		2,644.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")		LF	250.000		250.000	
	3076-6002	D-GR HMA TY-B SAC-B PG64-22		TON	8,922.000		8,922.000	
	3076-6042	D-GR HMA TY-D SAC-B PG70-22		TON	9,712.000		9,712.000	
	3076-6043	D-GR HMA TY-D PG70-22 (LEVEL-UP)		TON	464.000		464.000	
	3076-6066	TACK COAT		GAL	13,933.000		13,933.000	
	5001-6002	GEOGRID BASE REINFORCEMENT (TY II)		SY	44,529.000		44,529.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN		EA	3.000		3.000	
	6010-6002	CCTV FIELD EQUIPMENT (DIGITAL)		EA	2.000		2.000	
	6010-6004	CCTV MOUNT (POLE)		EA	2.000		2.000	
	6064-6039	ITS POLE (50 FT)(130 MPH)		EA	2.000		2.000	
	6064-6080	ITS POLE MNT CAB (TY 2)(CONF 1)		EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)		DAY	80.000		80.000	
	6185-6005	TMA (MOBILE OPERATION)		DAY	75.000		75.000	
	6227-6002	SOLAR POWERED LED ROADSIDE SIGN		EA	8.000		8.000	
	6435-6002	INSTALLATION OF CELLULAR MODEM		EA	2.000		2.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)		LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)		LS	1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)		LS	1.000		1.000	

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

LOCATION	351 6002	508 6001	512 6001	512 6025	512 6049	545 6003	545 6005	545 6019	662 6001	662 6004	662 6010	662 6012	662 6016	662 6034	662 6060	662 6063	662 6071	662 6095	677 6001	677 6003	677 6007	6001 6002	6185 6002	6185 6005
	FLEXIBLE PAVEMENT STRUCTURE REPAIR (6")	CONSTRUCTING DETOURS	PORT CTB (FUR & INST) (SGL SLOPE) (TY 1)	PORT CTB (MOVE) (SGL SLP) (TY 1)	PORT CTB (REMOVE) (SGL SLP) (TY 1)	CRASH CUSH ATTEN (MOVE & RESET)	CRASH CUSH ATTEN (REMOVE)	CRASH CUSH ATTEN (INSTL) (S) (N) (TL3)	WK ZN PAV MRK NON-REMOV (W) 4" (BRK)	WK ZN PAV MRK NON-REMOV (W) 4" (SLD)	WK ZN PAV MRK NON-REMOV (W) 8" (DOT)	WK ZN PAV MRK NON-REMOV (W) 8" (SLD)	WK ZN PAV MRK NON-REMOV (W) 24" (SLD)	WK ZN PAV MRK NON-REMOV (Y) 4" (SLD)	WK ZN PAV MRK REMOV (W) 4" (BRK)	WK ZN PAV MRK REMOV (W) 4" (SLD)	WK ZN PAV MRK REMOV (W) 8" (SLD)	WK ZN PAV MRK REMOV (Y) 4" (SLD)	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (8")	ELIM EXT PAV MRK & MRKS (24")	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	SY	SY	LF	LF	LF	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	DAY	DAY
PHASE 1																								
SHEET 1 OF 8 (CROSSOVER)			79					1							126	505		505	1136					
SHEET 2 OF 8 (CROSSOVER)			1275												416	1665		1665	3746					
SHEET 3 OF 8 (CROSSOVER)			388				2	2							244	975		975	2194					
SHEET 4 OF 8 (CROSSOVER)		647	1023												163	623	205	652	1643	205				
SHEET 5 OF 8		176	355				1	1																
SHEET 6 OF 8			810				1	1							33	370	133	255	791	133				
SHEET 7 OF 8			210					2							246	880	68	859	2053	68				
SHEET 8 OF 8			390					1							151	680	411	604	1846	411				
TOTALS - PHASE 1		**823**	**4530**				**4**	**8**							**1379**	**5698**	**817**	**5515**	**13409**	**817**			**10**	**15**
PHASE 1-STAGE 1																								
SHEET 1 OF 6				60		1									116	465		465	1046					
SHEET 2 OF 6				420											182	729		729	1640					
SHEET 3 OF 6																213		161	374					
SHEET 4 OF 6				960		1										2302		1151	3453					
SHEET 5 OF 6				1230											149	1275	250	560	2234	250				
SHEET 6 OF 6				1260											120	439	98	462	1394	98				
TOTALS - PHASE 1-STAGE 1				**3930**		**2**									**567**	**5423**	**348**	**3528**	**10141**	**348**			**10**	**15**
PHASE 2																								
SHEET 1 OF 8			110			1									80	320		320	720					
SHEET 2 OF 8		719	1000	840											486	2065		2065	4202					
SHEET 3 OF 8		864		660		1									504	2015		2014	4528					
SHEET 4 OF 8															455	2177		1825	3611					
SHEET 5 OF 8				1210		1									300	1399		1303	1846					
SHEET 6 OF 8				1580					32					126	277	878		1394						
SHEET 7 OF 8				240		1			250	319		259		998		679	261		888	261				
SHEET 8 OF 8									50	200				200					450					
TOTALS - PHASE 2		**1583**	**1110**	**4530**		**4**			**332**	**519**		**259**		**1324**	**2102**	**9533**	**261**	**8921**	**16245**	**261**			**30**	**15**
PHASE 3																								
SHEET 1 OF 7									130	355				506					271					
SHEET 2 OF 7				1440					350	1096		419		1409		1769		791	308					
SHEET 3 OF 7				1200		2	1		180	955		133		964		1681		814						
SHEET 4 OF 7									140	592			98	121	50	405		820			98			
SHEET 5 OF 7					1200				110	842		549		849	100	703	554	695		554				
SHEET 6 OF 7				420	1080	1	1		210	874	148	390		861	250	1022		1012						
SHEET 7 OF 7				300		1	1			668		686			190	990	664	749	1580	664				
TOTALS - PHASE 3				**3360**	**2280**	**4**	**3**		**1120**	**5382**	**148**	**2177**	**98**	**4710**	**590**	**6570**	**1218**	**4881**	**2159**	**1218**	**98**		**20**	**15**
PHASE 4																								
SHEET 1 OF 7									50	355				204					1074					
SHEET 2 OF 7				360	1080	1	1		140	699		100		388										
SHEET 3 OF 7					1200					661				655										
SHEET 4 OF 7									211	1492		429	152	1631							152			
SHEET 5 OF 7									100	701		797		695										
SHEET 6 OF 7					420				260	922	174	323		1013										
SHEET 7 OF 7					300				170	677		942		676										
TOTALS - PHASE 4				**360**	**3000**	**1**	**1**		**931**	**5507**	**174**	**2591**	**152**	**5262**					**1074**		**152**	**3**	**10**	**15**
FINAL CONSTRUCTION PHASE					**360**																			
PROJECT TOTALS	**2000***	**2406**	**5640**	**12180**	**5640**	**11**	**8**	**8**	**2383**	**11408**	**322**	**5027**	**250**	**11296**	**4638**	**27224**	**2644**	**22845**	**43028**	**2644**	**250**	**3**	**80**	**75**

NOTES:

* REMOVAL TO OCCUR AT THE END OF THE PHASE/STAGE

** MOVE TO TEMPORARY STORAGE AREA

LOCATION TO BE DETERMINED IN THE FIELD BY THE ENGINEER

REV		DATE	INIT

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

SUMMARY OF TRAFFIC CONTROL

N.T.S. SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	13

SCALE: 100.0000 ft / in.
DATE: 6/2/2021 TIME: 5:26:27 AM
FILE: SH35_016_111-SUM_TCP.dgn
PATH: \\wsppw04icso1\TCS_pdf_work_dir\130013\181898_11\SH35_016_111-SUM - TCP.dgn

SCALE: 100.0000 ft / in.

SUMMARY OF ROADWAY ITEMS

LOCATION	100 6002	247 6041	275 6001	275 6010	310 6009	316 6001	316 6427	354 6021	402 6001	420 6066	420 6144	432 6002	432 6044	432 6045	450 6023	514 6648
	PREPARING ROW	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS)	CEMENT	CEMENT TREAT (SUBGRADE) (8")	PRIME COAT (MC-30)	ASPH (MULTI OPTION)	AGGR(TY-PB GR-4S OR TY-PB GR-4)(SAC-B)	PLANE ASPH CONC PAV(0" TO 2")	TRENCH EXCAVATION PROTECTION	CL C CONC (RAIL FOUNDATION)	CLASS S CONC UTILITY PROTECTION PADDING	RIPRAP (CONC)(5 IN)	RIPRAP (CONC)(FLUME)	RIPRAP (MOW STRIP)(4 IN)	RAIL (TY SSTR)	PERM CTB (SGL SLOPE)(SPLIT)(MOD)
	STA	CY	TON	SY	GAL	GAL	CY	SY	LF	CY	CY	CY	CY	CY	LF	LF
NBML SHEET 1 OF 6	12	934	94	2859	544	1244	29		20					36		654
NBML SHEET 2 OF 6	10	1665	172	5209	935	1824	43					7		35		86
NBML SHEET 3 OF 6	10	137	14	411	82	160	4			33					216	
NBML SHEET 4 OF 6	11	1689	174	5277	951	2568	60	716		37		10		31	244	
NBML SHEET 5 OF 6	10	1152	120	3643	636	2362	55							37		
NBML SHEET 6 OF 6	7	289	31	926	155	567	13							7		
SBML SHEET 1 OF 6		372	39	1171	206	769	18									
SBML SHEET 2 OF 6		1496	153	4649	850	1775	41			65		7			437	
SBML SHEET 3 OF 6		252	26	792	141	274	6									
SBML SHEET 4 OF 6		1625	167	5075	915	2309	54					9				
SBML SHEET 5 OF 6		1050	109	3303	583	2178	51									
SBML SHEET 6 OF 6		261	27	828	142	526	12									
NBFR ENRMP SHEET 1 OF 1		368	38	1164	204	397	9									258
NBFR EXRMP SHEET 1 OF 1		337	36	1079	182	1056	25	1057								
AVE A SHEET 1 OF 2		402	41	1231	216	1016	24	952			14		64			
AVE A SHEET 2 OF 2		196	21	626	106	592	14	595					42			
NB U-TURN SHEET 1 OF 1		648	69	2084	347	861	20						10			
SB U-TURN SHEET 1 OF 1		631	67	2034	336	827	19						10			
OVERLAY SHEET 1 OF 7						1174	27	3010								
OVERLAY SHEET 2 OF 7						2684	63	6882								
OVERLAY SHEET 3 OF 7						2445	57	6269								
OVERLAY SHEET 4 OF 7						4169	97	10690								
OVERLAY SHEET 5 OF 7						2189	51	5612								
OVERLAY SHEET 6 OF 7						2414	56	6189								
OVERLAY SHEET 7 OF 7						2570	60	6588								
CROSSOVER SHEET 1 OF 2	10	909	109	3306	578	2151	50									
CROSSOVER SHEET 2 OF 2	10	189	23	692	121	447	10									
CROSSOVER SBML SHEET 1		237	23	711	142	554	13									
PROJECT TOTALS	**80**	**14839**	**1553**	**47068**	**8372**	**42102**	**981**	**48560**	**20**	**135**	**14**	**33**	**126**	**146**	**897**	**998**

REV		DATE	INIT

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

SUMMARY OF ROADWAY

N.T.S.

SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	14

DATE: 6/2/2021 TIME: 4:25:36 AM
FILE: SH35_016_131-SUM-RDWY.dgn
PATH: \\wspdpw04\cso1\ICS_pdf_work_dir\130008\181898_13\SH35_016_131-SUM-RDWY.dgn

SCALE: 100.0000 ft / in.

SUMMARY OF ROADWAY ITEMS (CONT.)

LOCATION	529 6008	536 6002	543 6004	543 6006	543 6020	545 6007	3076 6002	3076 6042	3076 6043	3076 6066	5001 6002
	CONC CURB & GUTTER (TY II)	CONC MEDIAN	CABLE BARRIER SYSTEM (TL-4) (20 '-0")	CABLE BARRIER SYSTEM (TL-4) (10'-0")	CABLE BARRIER TERMINAL SECTION (TL-4)	CRASH CUSH ATTEN (INSTL)(L)(N) (TL3)	D-GR HMA TY-B SAC-B PG64-22	D-GR HMA TY-D SAC-B PG70-22	D-GR HMA TY-D PG70-22 (LEVEL-UP)	TACK COAT	GEOGRID BASE REINFORCEMENT (TY II)
	LF	SY	LF	LF	EA	EA	TON	TON	TON	GAL	SY
NBML SHEET 1 OF 6			750	199	1		594	294		537	2803
NBML SHEET 2 OF 6				940	1		1013	495		911	4997
NBML SHEET 3 OF 6							90	45		82	411
NBML SHEET 4 OF 6				830	1	2	1030	583	119	1529	5069
NBML SHEET 5 OF 6				991			685	333		614	3458
NBML SHEET 6 OF 6				182	1		166	80		148	866
SBML SHEET 1 OF 6							223	108		200	1116
SBML SHEET 2 OF 6						2	923	453		832	4490
SBML SHEET 3 OF 6							152	74		137	757
SBML SHEET 4 OF 6							991	485		892	4875
SBML SHEET 5 OF 6							630	307		566	3150
SBML SHEET 6 OF 6							153	74		137	782
NBFR ENRMP SHEET 1 OF 1						1	219	107		197	1106
NBFR EXRMP SHEET 1 OF 1	592						185	207	175	474	1012
AVE A SHEET 1 OF 2							205	207	105	470	1206
AVE A SHEET 2 OF 2							102	116	65	258	588
NB U-TURN SHEET 1 OF 1	452	988					327	164		307	1944
SB U-TURN SHEET 1 OF 1	454	989					316	158		297	1894
OVERLAY SHEET 1 OF 7								331		301	
OVERLAY SHEET 2 OF 7								757		688	
OVERLAY SHEET 3 OF 7								690		627	
OVERLAY SHEET 4 OF 7								1176		1069	
OVERLAY SHEET 5 OF 7								617		561	
OVERLAY SHEET 6 OF 7								681		619	
OVERLAY SHEET 7 OF 7								725		659	
CROSSOVER SHEET 1 OF 2							624	303		559	2727
CROSSOVER SHEET 2 OF 2							130	63		116	567
CROSSOVER SBML SHEET 1							164	79		146	711
PROJECT TOTALS	**1498**	**1977**	**750**	**3142**	**4**	**5**	**8922**	**9712**	**464**	**13933**	**44529**

SUMMARY OF REMOVAL ITEMS

LOCATION	104 6017	105 6008
	REMOVING CONC (DRIVEWAYS)	REMOVING STAB BASE AND ASPH PAV (6")
	SY	SY
SHEET 1 OF 7		563
SHEET 2 OF 7	122	5738
SHEET 3 OF 7		3047
SHEET 4 OF 7		770
SHEET 5 OF 7	583	2221
SHEET 6 OF 7	418	4052
SHEET 7 OF 7		936
CROSSOVER SHEET 1 OF 2	13	937
CROSSOVER SHEET 2 OF 2		152
PROJECT TOTALS	**1135**	**18415**

REV		DATE	INIT

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

SUMMARY OF ROADWAY

N.T.S.

SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	15

DATE: 6/2/2021 TIME: 6:00:46 PM
FILE: SH35_016_132-SUM-ROWY.dgn
PATH: \\wsppw041cs01\ICS_pdf_work_dir\130107\181898_30\SH35_016_132-SUM-ROWY.dgn

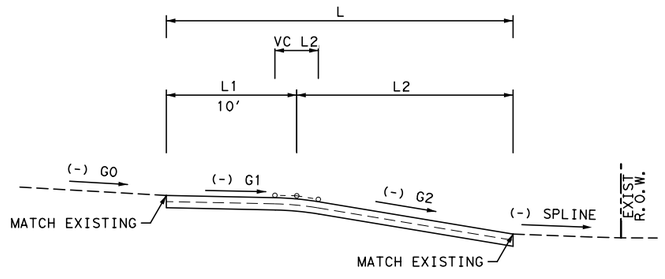
SCALE: 100.0000 ft / in.

SUMMARY OF INTERSECTIONS AND DRIVEWAYS

LOCATION/DRIVEWAY ID	ITEM NO.														560	530	530	530	*	*
	DESC CODE														6011	6002	6004	6005	*	*
	CL SH35		EXIST DRWY TYPE	DRIVEWAY											MAILBOX INSTALL-S (TWW-POST) TY 4 APPLICATION	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	DRIVEWAYS (SURF TREAT)	INTERSECTIONS (SURF TREAT)
				COMMERCIAL OR RESIDENTIAL	THROAT WIDTH "W"	PROP LENGTH "L"	"R1"	"R2"	PVMT X-SLOPE "GO"	"G1"	"G2"	"VC L2"	"L2"	SPLINE						
	STATION	(LT/RT)			FT	FT	FT	FT	%	%	%	FT	FT	%	EA	SY	SY	SY	SY	SY
RESENDEZ RD/1S	64+83.57	RT	CONCRETE	COMMERCIAL	N/A	27	25	N/A	N/A	N/A	N/A	N/A	N/A	N/A			26		26	
DWY 1N	82+13.44	LT	CONCRETE	RESIDENTIAL	20	56	20	20	-2.61%	-0.71%	-1.78%	2	46	-0.42%			144		144	
N AVE A/2N	86+34.86	LT	N/A	RESIDENTIAL	19	11	21	9	N/A	N/A	N/A	N/A	N/A	N/A			28		28	
SOUTHERN OAKS DR/2S	86+50.66	RT	CONCRETE	COMMERCIAL	N/A	32	30	N/A	N/A	N/A	N/A	N/A	N/A	N/A			35		35	
DWY 3S	97+23.26	RT	ASPHALT	RESIDENTIAL	20	49	25	25	-6.59%	-3.00%	-2.51%	3	39	-2.54%	1			140	140	
DWY 4S	98+63.35	RT	ASPHALT	COMMERCIAL	20	47	25	25	-6.02%	-2.02%	-2.40%	2	37	-0.08%	1			136	136	
DWY 5S	104+74.63	RT	ASPHALT	RESIDENTIAL	14	40	15	15	-4.29%	-2.00%	-2.00%	N/A	30	-3.07%	1			74	74	
DWY 3N	116+08.36	LT	CONCRETE	COMMERCIAL	34	62	35	100	2.00%	-1.00%	-2.53%	5	52	0.53%			443		443	
DWY 6S	127+49.44	RT	GRAVEL/DIRT	RESIDENTIAL	14	36	15	15	-6.48%	-2.50%	-0.46%	18	26	0.93%				67	67	
DWY 4N	128+36.39	LT	CONCRETE	COMMERCIAL	28	26	25	25	6.36%	2.50%	-5.91%	18	16	-6.73%			110		110	
DWY 5N	129+55.83	LT	CONCRETE	COMMERCIAL	40	52	25	25	6.80%	3.00%	-5.55%	18	42	-3.50%			260		260	
DWY 7S	131+90.78	RT	GRAVEL	RESIDENTIAL	14	33	15	15	-4.66%	-1.00%	2.29%	3	23	-0.28%	1			62	62	
DENIPAT LN/ 8S	133+48.60	RT	ASPHALT	N/A	35	40	15	15	-4.95%	-1.00%	1.93%	18	30	0.13%		133				133
CSJ 0180-06-067 INTERSECTIONS AND DRIVEWAY TOTALS															4	133	1047	478	1525	133

NOTE:

* FOR CONTRACTOR'S INFORMATION ONLY. SUBSIDIARY TO ITEM 530.



TYPICAL DRIVEWAY DETAIL
(N.T.S.)

REV		DATE	INIT

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

SUMMARY OF INTERSECTIONS AND DRIVEWAYS

N.T.S. SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	16

DATE:6/2/2021 TIME:4:25:54 AM
FILE:SH35_016_141-SUM-INTDY.dgn
PATH:\\wspdw04ics01\ICS_pdf_work_dir\130008\181898.28\SH35_016_141-SUM-INTDY.dgn

SCALE: 100.0000 ft / in.

SUMMARY OF EARTHWORK ITEMS				
BASELINE	STATION QUANTITIES			
		110 6001		132 6006
℄ SH35	EXCAVATION END AREA	EXCAVATION (ROADWAY)	EMBANKMENT END AREA	EMBANKMENT (FINAL) (DENS CONT) (TY C)
STATION	SF	CY	SF	CY
60+32.57	27	16	3	2
60+38.57	9	4	3	1
61+00.00	37	52	5	9
62+00.00	50	162	18	42
63+00.00	47	179	11	54
64+00.00	43	167	17	53
64+65.57	127	207	27	54
65+00.00	45	110	31	37
66+00.00	25	130	4	66
67+00.00	25	92	3	12
68+00.00	21	84	6	17
69+00.00	22	80	6	23
70+00.00	20	78	8	26
71+00.00	21	76	7	28
72+00.00	19	75	11	34
73+00.00	32	94	2	24
73+09.63	60	16	0	0
74+00.00	46	177	0	0
75+00.00	60	197	1	3
76+00.00	51	206	1	4
76+94.43	76	222	4	9
77+00.00	77	16	6	1
78+00.00	100	328	4	19
79+00.00	101	372	4	14
80+00.00	119	408	1	9
81+00.00	127	457	1	3
82+00.00	131	478	0	2
82+05.65	134	28	10	1
83+00.00	135	470	2	20
84+00.00	137	503	1	7
84+45.00	164	251	1	2
85+00.00	140	309	1	2
85+77.98	135	396	2	4
86+00.00	184	130	4	3
86+37.65	279	323	17	15
86+79.42	216	383	0	13
87+00.00	156	142	1	0
88+00.00	250	752	3	6
89+00.00	220	871	20	41
90+00.00	183	747	58	144
91+00.00	133	585	116	323
92+00.00	77	390	194	575
93+00.00	52	239	345	997
94+00.00	51	191	575	1,704
95+00.00	55	197	893	2,720
96+00.00	55	204	1,369	4,188
97+00.00	1	104	1,943	6,133
98+00.00	5	11	2,621	8,452
99+00.00	7	* 21	3,331	11,022
100+00.00	37	* 80	4,018	13,610
101+00.00	49	*159	4,624	16,004
101+82.91	56	*161	4,999	14,775
102+00.00	60	* 37	4,391	**2,972
102+02.43	61	* 5	3,636	** 361
102+41.13	209	*194	1	**2,607
102+51.13	295	* 93	1	1
102+57.13	658	*106	1	0

SUMMARY OF EARTHWORK ITEMS				
BASELINE	STATION QUANTITIES			
		110 6001		132 6006
℄ SH35	EXCAVATION END AREA	EXCAVATION (ROADWAY)	EMBANKMENT END AREA	EMBANKMENT (FINAL) (DENS CONT) (TY C)
STATION	SF	CY	SF	CY
103+00.00	692	*1,072	2	3
104+00.00	760	*2,689	1	6
105+00.00	910	*3,093	4	10
106+00.00	812	*3,189	31	65
106+05.76	727	* 164	57	9
106+11.76	288	* 113	88	16
107+00.00	0	* 470	0	144
107+75.79	354	* 497	61	86
108+00.00	958	* 588	29	41
109+00.00	992	*3,611	0	54
110+00.00	980	*3,653	0	0
110+09.14	570	* 262	0	0
110+19.14	264	154	2	0
110+56.82	8	190	2,871	**2,005
110+72.41	5	4	4,018	**1,989
111+00.00	0	3	3,954	4,073
112+00.00	0	0	3,395	13,610
113+00.00	1	2	2,841	11,549
113+31.06	4	3	2,620	3,141
114+00.00	16	25	2,118	6,048
115+00.00	15	57	1,475	6,653
116+00.00	14	54	918	4,433
117+00.00	10	45	593	2,798
118+00.00	16	50	420	1,875
119+00.00	41	106	333	1,394
120+00.00	55	176	202	990
121+00.00	78	246	117	590
121+14.43	61	37	110	61
121+46.95	68	78	89	120
122+00.00	64	129	60	147
123+00.00	81	268	40	186
124+00.00	194	510	1	77
124+68.11	181	473	1	3
125+00.00	133	185	40	24
125+62.59	135	311	46	100
126+00.00	120	177	57	72
127+00.00	128	460	52	203
128+00.00	116	453	44	179
128+62.07	120	272	30	86
129+00.00	113	164	32	44
130+00.00	110	413	35	124
131+00.00	116	418	47	153
132+00.00	86	374	63	205
133+00.00	114	371	81	268
134+00.00	103	402	77	294
134+57.31	88	203	13	96
135+00.00	78	131	13	20
135+18.96	60	48	12	9
135+27.42	78	22	13	4
136+00.00	57	181	14	36
137+00.00	52	201	9	42
137+95.87	12	112	0	15
138+00.00	0	1	0	0
℄ SH35 TOTALS	-	39,475	-	151,398

* DETENTION POND EXCAVATION
** HEADER BANK EMBANKMENT

SUMMARY OF EARTHWORK ITEMS				
BASELINE	STATION QUANTITIES			
		110 6001		132 6006
℄ OAK LN	EXCAVATION END AREA	EXCAVATION (ROADWAY)	EMBANKMENT END AREA	EMBANKMENT (FINAL) (DENS CONT) (TY C)
STATION	SF	CY	SF	CY
14+00	0	0	0	0
15+00	44	81	132	244
16+00	89	245	58	352
17+00	29	217	106	305
18+00	35	118	147	469
19+00	0	64	0	272
℄ OAK LN TOTALS	-	725	-	1,642

SUMMARY OF EARTHWORK ITEMS		
	110 6001	132 6006
BASELINE	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)
	CY	CY
℄ SH35 TOTALS	39,475	151,398
℄ OAK LN TOTALS	725	1,642
PROJECT TOTALS	40,201	153,040

NOTES:

1. ℄ SH35 TOTALS AND PROJECT TOTALS INCLUDE QUANTITIES FOR FILL REQUIRED UNDER HEADER BANKS.
2. ℄ SH35 TOTALS AND PROJECT TOTALS INCLUDE QUANTITIES FOR DETENTION POND EXCAVATION.

REV		DATE	INIT

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

SUMMARY OF EARTHWORK

N.T.S. SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	17

DATE: 6/2/2021 TIME: 4:25:37 AM
FILE: SH35_0016_151-SUM-EW.dgn
PATH: \\spdw04\cso1\TCS_pdf_work_dir\130008\181898.14\SH35_0016_151-SUM-EW.dgn

SCALE: 100.0000 ft / in.

SUMMARY OF DRAINAGE ITEMS

CSJ: 0180-06-067 LOCATION	*	400 6005	402 6001	432 6002	432 6031	464 6005	464 6007	464 6017	464 6018	465 6071	465 6074	465 6014	465 6126	465 6128	465 6158	467 6388	467 6363	467 6422	467 6423	480 6001	496 6004	496 6007
	STRUCT EXCAV (PIPE)	CEM STABIL BKFL	TRENCH EXCAVATION PROTECTION	RIPRAP (CONC) (5 IN)	RIPRAP (STONE PROTECTION) (12 IN)	RC PIPE (CL III) (24 IN)	RC PIPE (CL III) (30 IN)	RC PIPE (CL IV) (18 IN)	RC PIPE (CL IV) (24 IN)	INLET (COMPL) (PSL) (RC) (4FTX4FT)	INLET (COMPL) (PSL) (RC) (5FTX5FT)	INLET (COMPL) (PCO) (3FT) (LEFT)	INLET (COMPL) (PSL) (FG) (3FTX3FT-3FTX3FT)	INLET (COMPL) (PSL) (FG) (4FTX4FT-4FTX4FT)	INLET (COMPL) (PAZD) (FG) (3FTX3FT-3FTX3FT)	SET (TY II) (24 IN) (RCP) (3: 1) (C)	SET (TY II) (18 IN) (RCP) (6: 1) (P)	SET (TY II) (30 IN) (RCP) (6: 1) (C)	SET (TY II) (30 IN) (RCP) (6: 1) (P)	CLEAN EXIST CULVERTS	REMOV STR (SET)	REMOV STR (PIPE)
	CY	CY	LF	CY	CY	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	LF
DRAINAGE PLAN AND PROFILE 1 of 5	14	10						92									2			4**	2	94
DRAINAGE PLAN AND PROFILE 2 of 5	292	49		72		365	667	72			2		1		2		4		1	3	4	71
DRAINAGE PLAN AND PROFILE 3 of 5	121			66	14			40	473				1			1	2			4	2	93
DRAINAGE PLAN AND PROFILE 4 of 5	838	59	611	3		334	357		74	1		3		1				1		6		
DRAINAGE PLAN AND PROFILE 5 of 5	32							126									8			4	6	187
PROJECT TOTALS	**1297**	**118**	**611**	**141**	**14**	**699**	**1024**	**330**	**547**	**1**	**2**	**3**	**2**	**1**	**2**	**1**	**16**	**1**	**1**	**21**	**14**	**445**

*FOR CONTRACTOR'S INFORMATION PURPOSE ONLY. SUBSIDIARY TO PERTINENT BID ITEMS.
**INCLUDING MEDIAN CULVERT AT STA 73+20

REV		DATE	INIT

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

SUMMARY OF DRAINAGE

N.T.S.

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	18

DATE: 6/2/2021 TIME: 4:25: 40 AM
FILE: SH35_016_161-SUM-DR.dgn
PATH: \\wspdw04ics01\ICS_pdf_work_dir\130008\181898_19\SH35_016_161-SUM-DR.dgn

SCALE: 100.0000 ft / in.

SUMMARY OF ILLUMINATION ITEMS

LOCATION	416 6029	432 6006	610 6009	610 6104	610 6106	610 6190	610 6214	618 6046	618 6047	618 6064	620 6008	624 6002	628 6051
	DRILL SHAFT (RDWY ILL POLE) (30 IN)	RIPRAP (CONC) (CL B)	REMOVE RD IL ASM (TRANS-BASE)	IN RD IL (U/P) (TY 1) (150W EQ) LED	IN RD IL (U/P) (TY 2) (150W EQ) LED	IN RD IL (TY SP) 38S-8 (250W EQ) LED	IN RD IL (TY SA) 40T-8 (250W EQ) LED	CONDT (PVC) (SCH 80) (2")	CONDT (PVC) (SCH 80) (2") (BORE)	CONDT (RM) (1")	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311) W/A PRON	ELC SRV TY A 240/480 060(SS)SS(E)G C(O)
	LF	CY	EA	EA	EA	EA	EA	LF	LF	LF	LF	EA	EA
SHEET 1 OF 7	8	1	1				1	105			315	1	1
SHEET 2 OF 7	40	2	1			2	5	1285	205		4470	2	
SHEET 3 OF 7													
SHEET 4 OF 7	80	4	2				10	1505	535		8070	10	1
SHEET 5 OF 7													
SHEET 6 OF 7	88	4					11	1605	540		6435	3	1
SHEET 7 OF 7	8	1					1	180			540		
U/P DETAILS SHEET 1 OF 1				4	2			60		265	975		
PROJECT TOTALS	**224**	**12**	**4**	**4**	**2**	**2**	**28**	**4740**	**1280**	**265**	**20805**	**16**	**3**

REV		DATE	INIT

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

SUMMARY OF ILLUMINATION

N.T.S.

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	19

DATE: 6/2/2021 TIME: 4:25:43 AM
FILE: SH35_016_211-SUM-TRF-ILUM.dgn
PATH: \\wspdw04fcs01fcs.pdf_work_dir\130008\181898.22\SH35_016_211-SUM-TRF-ILUM.dgn

SCALE: 100.0000 ft / in.

INCIDENTAL CONSTRUCTION SUMMARY OF SIGNING ITEMS				
LOCATION	644 6027	644 6028	644 6030	644 6076
	IN SM RD SN SUP&AM TYS80(1)SA(P)	IN SM RD SN SUP&AM TYS80(1)SA(P-BM)	IN SM RD SN SUP&AM TYS80(1)SA(T)	REMOVE SM RD SN SUP&AM
	EA	EA	EA	EA
SHEET 1 OF 9	2	3	7	4
SHEET 2 OF 9	2	3	6	9
PROJECT TOTALS	4	6	13	13

SUMMARY OF SIGNING ITEMS															
LOCATION	416 6018	432 6001	636 6002	644 6027	644 6028	644 6030	644 6031	644 6033	644 6050	644 6064	644 6076	647 6001	647 6002	647 6003	6227 6002
	DRILL SHAFT (SIGN MTS) (24 IN)	RIPRAP (CONC) (4 IN)	ALUMINUM SIGNS (TY G)	IN SM RD SN SUP&AM TYS80(1)SA(P)	IN SM RD SN SUP&AM TYS80(1)SA(P-BM)	IN SM RD SN SUP&AM TYS80(1)SA(T)	IN SM RD SN SUP&AM TYS80(1)SA (T-2 EXT)	IN SM RD SN SUP&AM TYS80(1)SA(U)	IN SM RD SN SUP&AM TYS80(2)SA(P)	IN BRIDGE MNT CLEARANCE SGN ASSM (TY N)	REMOVE SM RD SN SUP&AM	INSTALL LRSS (STRUCT STEEL)	RELOCATE LRSA	REMOVE LRSA	SOLAR POWERED LED ROADSIDE SIGN
	LF	CY	SF	EA	EA	EA	EA	EA	EA	EA	EA	LB	EA	EA	EA
SHEET 1 OF 9															
SHEET 2 OF 9						1					1				
SHEET 3 OF 9	52	3	517		1	6					13	2667		1	
SHEET 4 PF 9	24	2	225	2		4		1			6	1256		1	
SHEET 5 OF 9				9	10	12	2	4	2	4	14				8
SHEET 6 OF 9	28	2	282	2	1	3		1			6	1521			
SHEET 7 OF 9				1	2	4					8				
SHEET 8 OF 9	38	2	235			4					6	1146	1		
SHEET 9 OF 9				1		2					1				
PROJECT TOTALS	142	9	1259	15	14	36	2	6	2	4	55	6590	1	2	8

REV		DATE	INIT

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SUMMARY OF SIGNING

N.T.S.

SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	20

DATE: 6/2/2021 TIME: 4:25:47 AM
FILE: SH35_016_221-SUM-TRF-SGN-01.dgn
PATH: \\wsppw041cs01\TCS_pdf_work_dir\130008\181898_23\SH35_016_221-SUM-TRF-SGN-01.dgn

SCALE: 100.0000 ft / in.

LARGE SIGN RELOCATION (FOR CONTRACTOR'S INFORMATION ONLY)			
PLAN SHEET NO.	APPROXIMATE STATION		SIGN TEXT
8	134+57	RT	FM 1069
			INGLESIDE
			ARROW (45° RIGHT)

SEE SUMMARY SHEETS AND SIGNING LAYOUT SHEETS FOR MORE DETAILS

NOTE:
THE TABLES BELOW ARE FOR CONTRACTOR'S INFORMATION ONLY.
EXISTING SIGN REMOVAL AND RELOCATION WILL BE PAID FOR UNDER
ITEM 644-6076 "REMOVE SM RD SN SUP&AM"
ITEM 647-6002 "RELOCATE LRSA" AND
ITEM 647-6003 "REMOVE LRSA".
SEE SUMMARY OF SIGNING ITEMS FOR QUANTITIES.

INCIDENTAL CONSTRUCTION SIGN REMOVAL (FOR CONTRACTOR'S INFORMATION ONLY)			
PLAN SHEET NO.	APPROXIMATE STATION		SIGN TEXT
1	64+70	LT	LEFT LANE FOR PASSING ONLY
	65+09	RT	ONE WAY <IN RIGHT ARROW> STOP
	65+38	RT	STOP FOR SCHOOL BUS LOADING OR UNLOADING
	68+05	LT	SPEED LIMIT 75
2	71+57	RT	DO NOT ENTER
	72+30	LT	NORTH 35 TEXAS
	72+35	RT	SOUTH 35 TEXAS
	72+92	RT	ONE WAY <IN LEFT ARROW> YIELD
	73+16	LT	ONE WAY <IN RIGHT ARROW> (B to B) ONE WAY <IN LEFT ARROW> (B to B) STOP DIVIDED HIGHWAY
	73+24	RT	ONE WAY <IN LETT ARROW>
	73+69	LT	ONE WAY <IN LEFT ARROW> (B to B) ONE WAY <IN RIGHT ARROW> (B to B) YIELD
	73+98	LT	ENTERING ARANSAS COUNTY
	74+01	RT	SAN PATRICIO COUNTY LINE

SIGN REMOVAL (FOR CONTRACTOR'S INFORMATION ONLY)			
PLAN SHEET NO.	APPROXIMATE STATION		SIGN TEXT
2	80+01	LT	SCHOOL BUS STOP AHEAD
3	85+90	RT	DO NOT ENTER
	85+90	LT	DO NOT ENTER
	86+15	LT	ONE WAY <IN LEFT ARROW> (B to B) ONE WAY <IN RIGHT ARROW> (B to B) YIELD
	86+60	RT	ONE WAY <IN RIGHT ARROW> (B to B) ONE WAY <IN LEFT ARROW> (B to B) STOP
	86+60	LT	ONE WAY <IN LEFT ARROW>
	86+90	LT	ONE WAY <IN LEFT ARROW> YIELD
	87+50	RT	(W1-2R) CURVE
	87+50	LT	(W1-2R) CURVE
	87+50	LT	(W4-1R) MERGE RIGHT
	87+75	LT	DO NOT ENTER
	87+75	LT	DO NOT ENTER
	89+06	LT	WRONG WAY
	89+06	LT	WRONG WAY
4	92+25	LT	(W6-3) TWO-WAY ARROWS
	93+30	RT	EXIT <45° RIGH ARROW>
	96+45	RT	ROAD MAY FLOOD
	96+45	LT	ROAD MAY FLOOD
	97+60	LT	SPEED LIMIT 40
	101+05	LT	SPEED LIMIT 65

SIGN REMOVAL (FOR CONTRACTOR'S INFORMATION ONLY)(CONT'D)			
PLAN SHEET NO.	APPROXIMATE STATION		SIGN TEXT
5	103+20	RT	CO RD 1838 ------>
	104+60	RT	WRONG WAY
	104+60	LT	WRONG WAY
	106+05	RT	DO NOT ENTER
	106+05	LT	DO NOT ENTER
	106+65	LT	ONE WAY <IN LEFT ARROW> (B to B) ONE WAY <IN RIGHT ARROW> (B to B) STOP DIVIDED HIGHWAY
	107+25	RT	ONE WAY <IN LEFT ARROW> (B to B) ONE WAY <IN RIGHT ARROW> (B to B) STOP DIVIDED HIGHWAY
	107+25	LT	ONE WAY <IN LEFT ARROW> ONE WAY <IN RIGHT ARROW> STOP
	107+58	RT	DO NOT ENTER
	107+58	LT	DO NOT ENTER
	108+72	RT	WRONG WAY
	108+72	LT	WRONG WAY
	110+40	LT	CO RD 114 <------
	110+70	LT	ONE WAY <IN RIGHT ARROW>
6	112+05	RT	SPEED LIMIT 65
	116+05	LT	STOP
	116+05	LT	ONE WAY <IN RIGHT ARROW>
	116+34	RT	LEFT LANE FOR PASSING ONLY
	118+00	LT	EXIT <45° RIGHT ARROW>
	121+45	RT	CO RD 4755 <---->
7	123+95	RT	ONE WAY <IN LEFT ARROW> ONE WAY <IN RIGHT ARROW> YIELD
	124+12	LT	ONE WAY <IN LEFT ARROW> (B to B) ONE WAY <IN RIGHT ARROW> (B to B) STOP DIVIDED HIGHWAY
	124+53	RT	ONE WAY <IN LEFT ARROW> (B to B) ONE WAY <IN RIGHT ARROW> (B to B) STOP DIVIDED HIGHWAY
	124+74	LT	ONE WAY <IN LEFT ARROW> (B to B) ONE WAY <IN RIGHT ARROW> (B to B) YIELD
	125+01	LT	DO NOT ENTER
	125+01	LT	DO NOT ENTER
	122+66	LT	WRONG WAY
	127+53	LT	CO RD 4755 <---->
8	133+54	RT	ONE WAY <IN RIGHT ARROW>
	133+73	RT	ONE WAY <IN RIGHT ARROW> STOP
	137+33	LT	NORTH 35 TEXAS
	139+18	LT	(W1-2L) CURVE 65 MPH
	139+18	RT	(W1-2L) CURVE 65 MPH
	143+30	LT	(W4-1R) MERGE RIGHT
9	0+50	RT	NO TRUCKS

LARGE SIGN REMOVAL (FOR CONTRACTOR'S INFORMATION ONLY)			
PLAN SHEET NO.	APPROXIMATE STATION		SIGN TEXT
3	90+30	RT	ARANSAS PASS NEXT LEFT
4	101+66	RT	TO TEXAS 35 BUSINESS
			<------ PORT ARANSAS

REV		DATE	INIT

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SUMMARY OF SIGNING

N.T.S. SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	21

DATE: 6/2/2021 TIME: 4:25:56 AM
FILE: SH35_016_222-SUM-TRF-SGN-02.dgn
PATH: \\wspdw041cso1\ICS_pdf_work_dir\130008\181898.31\SH35_016_222-SUM-TRF-SGN-02.dgn

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN (INCIDENTAL CONSTRUCTION)	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED: P = "Plain", T = "T", U = "U"	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
1	I1	R5-1a	WRONG WAY	42"X30"	X		S80	1	SA	T		
	I2	R5-1a	WRONG WAY	42"X30"	X		S80	1	SA	T		
	I3	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	I4	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	I5	R6-1L R6-1R R1-2	ONE WAY <IN LEFT ARROW> ONE WAY <IN RIGHT ARROW> YIELD	36"X12" 36"X12" 48"X48"X48"	X X X		S80	1	SA	P	BM	
	I6	R6-1L R6-1R R1-1 R6-3	ONE WAY <IN LEFT ARROW> ONE WAY <IN RIGHT ARROW> STOP DIVIDED HIGHWAY	36"X12" 36"X12" 36"X36" 36"X30"	X X X X		S80	1	SA	P	BM	
	I7	S3-1	SCHOOL BUS STOP AHEAD	36"X36"	X		S80	1	SA	T		
	I8	R4-2aT	LEFT LANE FOR PASSING ONLY	24"X36"	X		S80	1	SA	P		
	I9	R6-1L	ONE WAY <IN LEFT ARROW>	54"X18"	X		S80	1	SA	T		
	I10	R6-1L R1-2	ONE WAY <IN LEFT ARROW> YIELD	36"X12" 48"X48"X48"	X X		S80	1	SA	P	BM	
	I11	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	I12	R2-1	SPEED LIMIT 75	30"X36"	X		S80	1	SA	P		
2	I13	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	I14	M3-3 M1-6T	SOUTH 35 TEXAS	24"X12" 24"X24"	X X		S80	1	SA	P		
	I15	R6-1L R1-2	ONE WAY <IN LEFT ARROW> YIELD	36"X12" 48"X48"X48"	X X		S80	1	SA	P	BM	
	I16	R6-1L	ONE WAY <IN LEFT ARROW>	54"X18"	X		S80	1	SA	T		
	I17	I-2dT	SAN PATRICIO COUNTY LINE	90"X24"	X		S80	1	SA	T		
	I18	M3-1 M1-6T EM-1aT	NORTH 35 TEXAS EVACUATION ROUTE	24"X12" 24"X24" 24"X24"	X X X		S80	1	SA	P		
	I19	R6-1L R6-1R R1-1 R6-3	ONE WAY <IN LEFT ARROW> ONE WAY <IN RIGHT ARROW> STOP DIVIDED HIGHWAY	36"X12" 36"X12" 36"X36" 36"X30"	X X X X		S80	1	SA	P	BM	
	I20	R6-1L R6-1R R1-2	ONE WAY <IN LEFT ARROW> ONE WAY <IN RIGHT ARROW> YIELD	36"X12" 36"X12" 48"X48"X48"	X X X		S80	1	SA	P	BM	
	I21	I-2dT	ARANSAS COUNTY LINE	66"X24"	X		S80	1	SA	T		
	I22	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	I23	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		

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

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Texas Department of Transportation | Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS
(INCIDENTAL CONSTRUCTION)

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
4-16	DIST	COUNTY		SHEET NO.
8-16	CRP	SAN PAT.		22

DATE: 4/22/2021 12:21:27 PM
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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED: P = "Plain", T = "T", U = "U"	1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
2	1	S3-1	SCHOOL BUS STOP AHEAD	36"X36"	X		S80	1	SA	T		
3	2	W1-2R W13-1P	CURVE 65 MPH	36"X36" 24"X24"	X X		S80	1	SA	T		
	3	W1-2R W13-1P	CURVE 65 MPH	36"X36" 24"X24"	X X		S80	1	SA	T		
	4	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	5	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	6	R6-1R R1-1	ONE WAY <IN RIGHT ARROW> STOP	36"X12" 36"X36"	X X		S80	1	SA	P	BM	
	7	R6-1R	ONE WAY <IN RIGHT ARROW>	54"X18"	X		S80	1	SA	T		
	8	W14-1	DEAD END	36"X36"	X		S80	1	SA	T		
4	8A	E5-1	EXIT <45° RIGHT ARROW>	72"X60"	X		S80	1	SA	U		
	9	W3-1	STOP AHEAD	36"X36"	X		S80	1	SA	T		
	10	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	48"X48"	X		S80	1	SA	T		
	11	R2-1	SPEED LIMIT 40	30"X36"	X		S80	1	SA	P		
	12	W6-3	TWO WAY <ARROW UP><ARROW DOWN>	36"X36"	X		S80	1	SA	T		
	13	W4-1R	MERGE	48"X48"	X		S80	1	SA	T		
	14	R2-1	SPEED LIMIT 45	30"X36"	X		S80	1	SA	P		
5	15	M3-1 M1-6T EM-1aT	NORTH 35 TEXAS HURRICANE EVACUATION ROUTE	24"X12" 24"X24" 24"X24"	X X X		S80	1	SA	P		
	16	M3-1 M1-6T M5-3T	NORTH 35 TEXAS <U-TURN ARROW>	24"X12" 24"X24" 21"X15"	X X X		S80	1	SA	P		
	17	D1-2	<ARROW LEFT> ALLEN SAMUELS WAY OAK LN <ARROW RIGHT>	30"X144"	X		S80	1	SA	T	2EXT	
	18	R3-8LSK		48"X30"	X		S80	1	SA	U		
	19	R3-8LSK		48"X30"	X		S80	1	SA	U		
	20	W9-2TL	LANE ENDS MERGE LEFT	36"X36"	X		S80	1	SA	T		
	21	R5-1a	WRONG WAY	42"X30"	X		S80	1	SA	T		
	22	R5-1a	WRONG WAY	42"X30"	X		S80	1	SA	T		
	23	R1-1 R1-3P	STOP (W/LED LIGHTS) ALL WAY	36"X36" 30"X12"	X X		S80	1	SA	P	BM	
	24	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	25	R1-1 R1-3P	STOP (W/LED LIGHTS) ALL WAY	36"X36" 30"X12"	X X		S80	1	SA	P	BM	
	26	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	27	M3-3 M1-6T M6-1	SOUTH 35 TEXAS <ARROW LEFT>	24"X12" 24"X24" 21"X15"	X X X		S80	1	SA	P		

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

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Texas Department of Transportation — Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
4-16 8-16	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		23

DATE: 5/11/2021 9:46:26 PM
FILE: \\wsppw04ics01\ICS_pdf_work_dir\126144\182770_16\SH35_016_224-SUM-SSGN.dgn

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	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
5	28	R6-1L R1-1 R1-3P	ONE WAY <IN LEFT ARROW> STOP (W/LED LIGHTS) ALL WAY	36"X12" 36"X36" 30"X12"	X X X		S80	1	SA	P	BM	
	29	D13-1TL W12-2a	TURNAROUND <ARROW LEFT> CLEARANCE (XX FT X IN)	66"X24" 66"X12"	X X		S80	2	SA	P		
	30	R1-2	YIELD	48"X48"X48"	X		S80	1	SA	P	BM	
	31	R6-1L R6-1R R1-1 R1-3P	ONE WAY <IN LEFT ARROW> ONE WAY <IN RIGHT ARROW> (BACK TO BACK) STOP (W/LED LIGHTS) ALL WAY	36"X12" 36"X12" 36"X36" 30"X12"	X X X X		S80	1	SA	P	BM	
	32	R6-1L R6-1R R1-1 R1-3P	ONE WAY <IN LEFT ARROW> ONE WAY <IN RIGHT ARROW> (BACK TO BACK) STOP (W/LED LIGHTS) ALL WAY	36"X12" 36"X12" 36"X36" 30"X12"	X X X X		S80	1	SA	P	BM	
	33	R1-2	YIELD	48"X48"X48"	X		S80	1	SA	P	BM	
	34	W12-2a	BRIDGE CLEARANCE SIGN	84"X24"	X							TY N
	35	W12-2a	BRIDGE CLEARANCE SIGN	84"X24"	X							TY N
	36	W12-2a	BRIDGE CLEARANCE SIGN	84"X24"	X							TY N
	37	W12-2a	BRIDGE CLEARANCE SIGN	84"X24"	X							TY N
	38	D13-1TL W12-2a	TURNAROUND <ARROW LEFT> CLEARANCE (XX FT X IN)	66"X24" 66"X12"	X X		S80	2	SA	P		
	39	R6-1L R1-1 R1-3P	ONE WAY <IN LEFT ARROW> STOP (W/LED LIGHTS) ALL WAY	36"X12" 36"X36" 30"X12"	X X X		S80	1	SA	P	BM	
	40	M3-1 M1-6T M6-1 EM-1aT	NORTH 35 TEXAS <ARROW LEFT> EVACUATION ROUTE	24"X12" 24"X24" 21"X15" 24"X24"	X X X X		S80	1	SA	P		
	41	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	42	R1-1 R1-3P	STOP (W/LED LIGHTS) ALL WAY	36"X36" 30"X12"	X X		S82	1	SA	P	BM	
	43	R5-1	DO NOT ENTER	36"X36"	X		S80	1	SA	T		
	44	R1-1 R1-3P	STOP (W/LED LIGHTS) ALL WAY	36"X36" 30"X12"	X X		S81	1	SA	P	BM	
	45	R5-1a	WRONG WAY	42"X30"	X		S80	1	SA	T		
	46	R5-1a	WRONG WAY	42"X30"	X		S80	1	SA	T		
	47	W9-2TL	LANE ENDS MERGE LEFT	36"X36"	X		S80	1	SA	T		
	48	R3-8LSK		48"X30"	X		S80	1	SA	U		
	49	R3-8LSK		48"X30"	X		S80	1	SA	U		
	50	D1-2	<ARROW LEFT> OAK LN ALLEN SAMUELS WAY <ARROW RIGHT>	30"X144"	X		S80	1	SA	T	2EXT	
	51	M3-1 M1-6T M5-3T	NORTH 35 TEXAS <U-TURN ARROW>	24"X12" 24"X24" 21"X15"	X X X		S80	1	SA	P		
	52	R6-1R	ONE WAY <IN RIGHT ARROW>	54"X18"	X		S80	1	SA	T		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
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SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
4-16	DIST	COUNTY		SHEET NO.
8-16	CRP	SAN PAT.		24

DATE: 4/29/2021 3:17:42 AM
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SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED: P = "Plain", T = "T", U = "U"	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
	52	R6-1R	ONE WAY <IN RIGHT ARROW>	54"X18"	X		S80	1	SA	T		
	53	W4-3R	MERGE	48"X48"	X		S80	1	SA	T		
6	54	R2-1	SPEED LIMIT 45	30"X36"	X		S80	1	SA	P		
	55	W3-1	STOP AHEAD	36"X36"	X		S80	1	SA	T		
	56	R6-1R	ONE WAY <IN RIGHT ARROW>	54"X18"	X		S80	1	SA	T		
	57	R6-1R R1-1	ONE WAY <IN RIGHT ARROW> STOP	36"X12" 36"X36"	X X		S80	1	SA	P	BM	
	58	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	48"X48"	X		S80	1	SA	T		
	58A	E5-1	EXIT <45° RIGHT ARROW>	72"X60"	X		S80	1	SA	U		
	59	D20-1TR	CO RD 4755 <ARROW RIGHT>	24"X24"	X		S80	1	SA	P		
7	60	R6-1R R1-1	ONE WAY <IN RIGHT ARROW> STOP	36"X12" 36"X36"	X X		S80	1	SA	P	BM	
	61	R6-1R	ONE WAY <IN RIGHT ARROW>	54"X18"	X		S80	1	SA	T		
	62	R6-1R R1-1	ONE WAY <IN RIGHT ARROW> STOP	36"X12" 36"X36"	X X		S80	1	SA	P	BM	
	63	R6-1R	ONE WAY <IN RIGHT ARROW>	54"X18"	X		S80	1	SA	T		
	64	D20-1TR	CO RD 4755 <ARROW RIGHT>	24"X24"	X		S80	1	SA	P		
	65	R6-1R	ONE WAY <IN RIGHT ARROW>	54"X18"	X		S80	1	SA	T		
	66	R6-1R	ONE WAY <IN RIGHT ARROW>	54"X18"	X		S80	1	SA	T		
8	67	R6-1R	ONE WAY <IN RIGHT ARROW>	54"X18"	X		S80	1	SA	T		
	68	W1-2L W13-1P	CURVE 65 MPH	36"X36" 24"X24"	X X		S80	1	SA	T		
	69	W1-2L W13-1P	CURVE 65 MPH	36"X36" 24"X24"	X X		S80	1	SA	T		
	70	W4-3R	MERGE <ARROW UP> <ARROW CURVE>	48"X48"	X		S80	1	SA	T		
9	71	M4-5 M1-6T M6-1 EM-1aT	TO 35 TEXAS <ARROW LEFT> EVACUATION ROUTE	24"X12" 24"X24" 21"X15" 24"X24"	X X X X		S80	1	SA	P		
	72	W14-2	NO OUTLET	36"X36"	X		S80	1	SA	T		
	73	W14-2	NO OUTLET	36"X36"	X		S80	1	SA	T		

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

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

Texas Department of Transportation — Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
4-16 8-16	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		25

18

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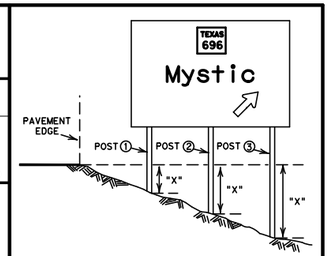
SUMMARY OF LARGE SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN BACK-GROUND COLOR	SIGN TEXT	SIGN DIMENSIONS	PLAQUES, & OTHER ATTACHMENTS		BACKGROUND SUBSTRATE (SQ FT)		TYPE OF MOUNT	"X" DIMENSION ◒			GALVANIZED STRUCTURAL STEEL					DRILLED SHAFT			
					DIRECT APPLY	ALUMINUM (TYPE A) ✳	GROUND MOUNT (TYPE G)	OVERHEAD (TYPE O)		post ①	post ②	post ③	SIZE	LINEAR FEET post ①	post ②	post ③	TOTAL WEIGHT LBS.	NON-REINF 12"ϕ	LINEAR FEET REINFORCED 24"ϕ	30"ϕ	36"ϕ
3	1	GREEN	Oak Ln Allen Samuels Way Aransas Pass EXIT 1 MILE	23.5′ X 10.0′			235		231	1.6	3.0	4.4	W8X18	18.6	20.0	21.4	1146		24		
3	2	GREEN	Oak Ln Allen Samuels Way Aransas Pass ↗	23.5′ X 12.0′			282		231	1.6	3.0	4.4	W8X21	20.6	22.0	23.4	1521		28		
4	4	GREEN	TO TEXAS 35 BUSINESS Aransas Pass Port Aransas ←	18.0′ X 12.5′	9		225		231	1.5	2.6	3.6	W8X18	21.0	22.1	23.1	1256		24		
6	6	GREEN	Oak Ln Allen Samuels Way Aransas Pass ↗	23.5′ X 12.0′			282		231	1.6	3.0	4.4	W8X21	20.6	22.0	23.4	1521		28		
8	7	GREEN	Oak Ln Allen Samuels Way Aransas Pass EXIT 1 MILE	23.5′ X 10.0′			235		231	1.6	3.0	4.4	W8X18	18.6	20.0	21.4	1146		24		
8	R1	GREEN	THIS SIGN TO BE RELOCATED ONLY FM 1069 Ingleside ↗ QUANTITIES SHOWN ARE FOR CONTRACTOR'S INFORMATION ONLY, WITH THE EXCEPTION OF DRILLED SHAFTS.	12.5′ X 10.0′			125		221	1.4		2.7	W6X15	18.4		19.7	608		14		
			SIGN R1 QUANTITIES SHOWN FOR TYPE OF MOUNT, "X" DIMENSIONS AND STRUCURAL STEEL ARE ASSUMED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING IN THE FIELD PRIOR TO RELOCATING SIGN, UNLESS OTHERWISE DIRECTED.																		
			PAGE TOTALS				1259										6590		142		



◒ The "X" dimension is the elevation difference at the post between the ground and the edge of pavement or top of curb.

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.

The post lengths listed here are approximations, The corrected post lengths will be furnished by the Contractor after the stud posts are placed.

Tower heights shall be verified with the Engineer before fabrication.

✳ This column is for aluminum Type A and not direct apply. Direct apply is subsidiary to the sign.

SIGN TYPE

SIGN TYPE 1 3 0
- 1: Wind Design Zone
- 3: No. of Posts
- 0: Series No. (0 Aluminum/Fiberglass, 1 Aluminum, 2 Fiberglass)

See sheet SMD(8W1)

SUMMARY OF LARGE SIGNS

SOLS

DN.: TxDOT	REVISIONS	
CK.: TxDOT	11-93	1-04
DW.: TxDOT	8-95	9-08
CK.: TxDOT	5-01	

CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35
DIST	COUNTY		SHEET NO.
CRP	SAN PAT.		26

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INCIDENTAL CONSTRUCTION

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	658 6095	658 6099	666 6035	666 6299	666 6302	666 6314	668 6077	668 6085	668 6092	672 6010
	INSTL DEL ASSM (D-DY) SZ 1 (YFLX) GND	INSTL OM ASSM (OM-2Z) (WFLX) GND	REFL PAV MRK TY I (W) 8" (SLD) (090MIL)	RE PM W/RET REQ TY I (W) 4" (BRK) (090MIL)	RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)	PREFAB PAV MRK TY C (W) (ARROW)	PREFAB PAV MRK TY C (W) (WORD)	PREFAB PAV MRK TY C (W) (36") (YLD TRI)	REFL PAV MRKR TY II-C-R
	EA	EA	LF	LF	LF	LF	EA	EA	EA	EA
SHEET 1 OF 9				140	575	575				8
SHEET 2 OF 9	2	2	970	540	2125	2097	6	6	22	76
SHEET 3 OF 9	2	2	680	380	1030	1395	5	5	22	51
PROJECT TOTALS	**4**	**4**	**1650**	**1060**	**3730**	**4067**	**11**	**11**	**44**	**135**

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	⚹ 533 6001	658 6013	658 6026	658 6061	658 6078	658 6080	658 6092	658 6099	666 6005	666 6035	666 6041	666 6295	666 6299	666 6302
	RUMBLE STRIPS (SHOULDER)	INSTL DEL ASSM (D-SW) SZ (BRF) CTB	INSTL DEL ASSM (D-SY) SZ (BRF) CTB	INSTL DEL ASSM (D-SW) SZ 1 (BRF) GF2	INSTL OM ASSM (OM-4) (TWT) WAS	INSTL DEL ASSM (D-SW) SZ 1 (WFLX) GND	INSTL DEL ASSM (D-DW) SZ 1 (WFLX) GND	INSTL OM ASSM (OM-2Z) (WFLX) GND	REFL PAV MRK TY I (W) 4" (DOT) (090MIL)	REFL PAV MRK TY I (W) 8" (SLD) (090MIL)	REFL PAV MRK TY I (W) 12" (SLD) (090MIL)	RE PROF PM TY I (BLK) 4" (SHADOW) (090MIL)	RE PM W/RET REQ TY I (W) 4" (BRK) (090MIL)	RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
	LF	EA	EA	EA	EA	EA	EA	EA	LF	LF	LF	LF	LF	LF
SHEET 3 OF 9	710					1	1						178	812
SHEET 4 OF 9	2200	6			6	1	10		38	1082	415		560	3266
SHEET 5 OF 9	3567	4	2	2		18	1	2		303	140		670	5384
SHEET 6 OF 9	290	19	19	1		6				523		880	854	4824
SHEET 7 OF 9	3771	1	1			17	9	1		1170	385		572	3682
SHEET 8 OF 9	1998					7	10				440		505	1901
SHEET 9 OF 9	1346					7	6			920	812		469	1882
PROJECT TOTALS	**13882**	**30**	**22**	**3**	**6**	**57**	**37**	**3**	**38**	**3998**	**2192**	**880**	**3808**	**21751**

⚹ USE OPTION 2 FOR OUTSIDE SHOULDERS AND OPTION 3 FOR INSIDE SHOULDERS AS SHOWN ON RS(1) STANDARD, UNLESS OTHERWISE DIRECTED. USE 8" WIDTH FOR BOTH OPTIONS UNLESS OTHERWISE DIRECTED.

SUMMARY OF PAVEMENT MARKING ITEMS (CONT'D)

LOCATION	666 6311	666 6314	666 6349	668 6076	668 6077	668 6078	668 6085	668 6091	672 6008	672 6009	672 6010
	RE PM W/RET REQ TY I (Y) 4" (BRK) (090MIL)	RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)	REFL PAV MRK TY I (W) 12" (DOT) (090MIL)	PREFAB PAV MRK TY C (W) (24") (SLD)	PREFAB PAV MRK TY C (W) (ARROW)	PREFAB PAV MRK TY C (W) (DBL ARROW)	PREFAB PAV MRK TY C (W) (WORD)	PREFAB PAV MRK TY C (W) (18") (YLD TRI)	REFL PAV MRKR TY I-R	REFL PAV MRKR TY II-A-A	REFL PAV MRKR TY II-C-R
	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA
SHEET 3 OF 9		812									9
SHEET 4 OF 9	140	2201			2		2		14	6	104
SHEET 5 OF 9	90	3863							14	6	52
SHEET 6 OF 9		4549		132	4	2	4	26		4	56
SHEET 7 OF 9		3680							28		103
SHEET 8 OF 9		2000	396		5		5				120
SHEET 9 OF 9		1883	73								136
PROJECT TOTALS	**230**	**18988**	**469**	**132**	**11**	**2**	**11**	**26**	**56**	**16**	**580**

REV		DATE	INIT

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SUMMARY OF PAVEMENT MARKINGS

N.T.S. SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	27

SCALE: 100.0000 ft / in.

SUMMARY OF ITS ITEMS

LOCATION	416 6005	432 6006	618 6046	618 6047	620 6006	620 6008	624 6002	628 6150	6010 6002	6010 6004	6064 6039	6064 6080	*6435 6002
	DRILL SHAFT (42 IN)	RIPRAP (CONC) (CL B)	CONDT (PVC) (SCH 80) (2")	CONDT (PVC) (SCH 80) (2") (BORE)	ELEC CONDR (NO. 10) INSULATED	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311) W/APRON	ELC SRV TY D 120/240 060 (NS) SS (N) GC (U)	CCTV FIELD EQUIPMENT (DIGITAL)	CCTV MOUNT (POLE)	ITS POLE (50 FT) (130 MPH)	ITS POLE MNT CAB (TY 2) (CONF 1)	INSTALLATION OF CELLULAR MODEM
	LF	CY	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA
SHEET 1 OF 7													
SHEET 2 OF 7													
SHEET 3 OF 7	20	2	50	300	1050		4	1	1	1	1	1	1
SHEET 4 OF 7													
SHEET 5 OF 7													
SHEET 6 OF 7	20	2	305	120		1275	3	1	1	1	1	1	1
SHEET 7 OF 7													
PROJECT TOTALS	**40**	**4**	**355**	**420**	**1050**	**1275**	**7**	**2**	**2**	**2**	**2**	**2**	**2**

*** ITEM IS STATE FURNISHED**

REV		DATE	INIT

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

SUMMARY OF ITS

N.T.S.

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	28

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SCALE: 100.0000 ft / in.

SUMMARY OF SW3P ITEMS

SHEET NO.	164 6033 DRILL SEEDING (PERM) (RURAL) (SANDY)	164 6041 DRILL SEEDING (TEMP) (WARM)	166 6001 FERTILIZER	168 6001 VEGETATIVE WATERING	169 6002 SOIL RETENTION BLANKETS (CL 1) (TY B)	506 6020 CONSTRUCTION EXITS (INSTALL) (TY 1)	506 6024 CONSTRUCTION EXITS (REMOVE)	506 6038 TEMP SEDMT CONT FENCE (INSTALL)	506 6039 TEMP SEDMT CONT FENCE (REMOVE)	506 6041 BIODEG EROSN CONT LOGS (INSTL) (12")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)
	SY	SY	AC	MG	SY	SY	SY	LF	LF	LF	LF
SW3P SHEET 1 OF 8	8034	8034	3.32	292.97				89	89	125	125
SW3P SHEET 2 OF 8	9874	9874	4.08	360.05				76	76		
SW3P SHEET 3 OF 8	17221	17221	7.12	627.95		152	152	639	639		
SW3P SHEET 4 OF 8	22975	22975	9.49	837.77	7489	152	152	1071	1071	126	126
SW3P SHEET 5 OF 8	30656	30656	12.67	1117.85	3594	304	304	528	528	132	132
SW3P SHEET 6 OF 8	18800	18800	7.77	685.54	2996			38	38	120	120
SW3P SHEET 7 OF 8	16502	16502	6.82	601.74		152	152	1035	1035		
SW3P SHEET 8 OF 8	7716	7716	3.19	281.37		304	304	536	536	175	175
PROJ TOTALS	**131778**	**131778**	**54.46**	**4805.24**	**14079**	**1064**	**1064**	**4012**	**4012**	**678**	**678**

REV		DATE	INIT

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

SUMMARY OF SW3P

N.T.S.

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	29

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SCALE: 100.0000 ft / in.

GENERAL NOTES FOR SEQUENCE OF CONSTRUCTION

1. TO ALERT THE PUBLIC OF POSSIBLE LANE CLOSURES, CHANGEABLE MESSAGE BOARDS SHALL BE PLACED AT THE PROJECT LIMITS SEVEN(7) DAYS IN ADVANCE OF BEGINNING WORK.
2. CHANGEABLE MESSAGE SIGNS SHALL BE PLACED AS NEEDED TO ALERT TRAFFIC OF LANE CLOSURES. MESSAGES SHALL BE APPROVED BY THE ENGINEER.
3. ALL SIGNS, BARRICADES AND PAVEMENT MARKINGS SHALL CONFORM WITH THE "BC" STANDARD SHEETS, TCP SHEETS AND THE LATEST EDITION OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (T.M.U.T.C.D.).
4. FOR SPACING OF SIGNS AND BARRICADES SEE "BC" AND "TCP" STANDARD SHEETS OR AS DIRECTED BY THE ENGINEER.
5. BARRICADES, SIGNS, CHANNELIZING DEVICES, AND OTHER TRAFFIC HANDLING DEVICES MAY BE ADJUSTED OR SHIFTED TO FIT FIELD CONDITIONS.
6. ADEQUATE SIGNS AND BARRICADES SHALL BE INSTALLED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO OPENING ANY SECTION TO TRAFFIC. THE ENGINEER MAY DIRECT CONTRACTOR TO FURNISH ADDITIONAL SIGNS, BARRICADES AND CHANNELIZING DEVICES AS REQUIRED TO MAINTAIN TRAFFIC AND MOTORIST SAFETY DURING CONSTRUCTION. ANY SUCH ADDITIONAL SIGNS AND BARRICADES, ETC. SHALL BE CONSIDERED AS PART OF PAY ITEM 502 "BARRICADES, SIGNS, AND TRAFFIC HANDLING".
7. ALL SIGNS SHALL BE NEW OR FRESHLY PAINTED AND KEPT CLEAN FOR THE DURATION OF THE PROJECT.
8. ALL BEGINNING AND ENDING BARRICADES AND SIGNS ARE TO REM IAN IN PLACE FOR THE DURATION OF THE PROJECT.
9. CW20-1D & G20-2 SIGNS WILL BE REQUIRED AT ALL PUBLIC ROADS AND INTERSECTIONS WITHIN LIMITS. G20-2 SIGNS MAY BE MOUNTED ON BACK OF CW20-1D, SEE BC(2)-14.
10. THE CONTRACTOR WILL BE RESPONSIBLE FOR MARKING THE LOCATION OF ALL TRAFFIC CONTROL STRIPING AND PERMANENT STRIPING AS DIRECTED BY THE ENGINEER.
11. WORK ZONE PAVEMENT MARKINGS AND FINAL PAVEMENT MARKINGS SHALL BE PLACED UNDER TRAFFIC. REFER TO TCP(3-2)-13 AND TCP(3-3)-14 STANDARD SHEETS.
12. THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE TRAFFIC CONTROL PLAN/OR AN ALTERNATIVE SEQUENCE OF CONSTRUCTION IN ADVANCE AND IN WRITING AND SUBJECT TO THE APPROVAL OF THE ENGINEER. REFER TO ITEM 502.2 "CONSTRUCTION".
13. SHORT TERM FLEXIBLE REFLECTIVE ROADWAY TABS SHALL BE USED TO DELINEATE THE CENTERLINE AND TURNING LANES FOR A MAXIMUM OF 14 DAYS. PERMANENT STRIPING SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE STANDARDS. THE CONTRACTOR SHOULD BE AWARE, DEPENDING ON THE SEQUENCE OF CONSTRUCTION, THE STRIPING CREW MAY HAVE SEVERAL MOVE-INS. ALL SHORT TERM FLEXIBLE REFLECTIVE ROADWAY TABS SHALL BE REPLACED AS NEEDED WITHIN THAT 14 DAY PERIOD AT THE CONTRACTOR'S EXPENSE.
14. THE CONTRACTOR SHALL MAINTAIN ADEQUATE LIGHTING DURING CONSTRUCTION. A LIGHTING PLAN MUST BE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION. LIGHTING NEEDED TO PERFORM WORK SHALL NOT BE PAID FOR DIRECTLY AND SHOULD BE CONSIDERED SUBSIDIARY TO ITEM 502.
15. SAW CUTS SHALL BE USED AT LONGITUDINAL AND TRAVERSE JOINTS FOR PAVEMENT WIDENING, ROADWAY OBLITERATING AND CULVERT EXTENSIONS.

UNEVEN LANES

1. ANY VERTICAL OR NEAR VERTICAL LONGITUDINAL FACE EXCEEDING ONE INCH IN HEIGHT IN THE PAVEMENT SURFACE OPEN TO TRAFFIC AT THE END OF THE WORK DAY SHALL BE SLOPED A MINIMUM OF 3:1. TRAVERSE FACES THAT ARE PRESENT AT THE END OF THE WORK DAY SHALL BE TAPERED IN A MANNER ACCEPTABLE TO THE ENGINEER.
2. SIGNING FOR UNEVEN LANES (CW8-AA) SHALL BE INSTALLED IN ADVANCE OF THE CONDITION AND REPEATED EVERY 1 MILE. SIGNS INSTALLED ALONG THE UNEVEN LANE CONDITION SHOULD BE SUPPLEMENTED WITH THE "NEXT XX MILES" MILES SIGN (CW7-3aP) OR ADVISORY SPEED SIGN (CW13-1P). SEE WZ(UL)-13 FOR ADDITIONAL DETAILS.
3. UNEVEN LANE SIGNS (CW8-11) SHALL BE ERECTED ON BOTH ENDS OF THE AREA WHERE THERE IS A DIFFERENCE IN ELEVATION BETWEEN ADJACENT LANES GREATER THAN ONE INCH.

PAVEMENT DROP-OFF

1. MAXIMUM ELEVATION DROP-OFF ON PAVEMENT EDGE SHALL NOT EXCEED ONE INCH WHEN TRAFFIC IS ALLOWED ADJACENT TO THE DROP-OFF. THE SLOPE MUST BE COMPACTED MATERIAL CAPABLE OF SUPPORTING VEHICLES. THIS WORK WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.
2. SIGNING FOR PAVEMENT DROP-OFF (CW8-9a) SHOULD BE INSTALLED IN ADVANCE OF THE CONDITION AND REPEATED EVERY 1 MILE. SIGNS INSTALLED ALONG THE PAVEMENT EDGE SHOULD BE SUPPLEMENTED WITH THE "NEXT XX MILES" SIGN (CW7-3aP) OR ADVISORY SPEED SIGN (CW13-1P).

SUGGESTED SEQUENCE OF CONSTRUCTION

INITIAL STEPS APPLICABLE TO ALL PHASES

1. ELIMINATE CONFLICTING EXISTING PAVEMENT MARKINGS. WATER BASED PAVEMENT MARKINGS SHALL BE USED TO RESTRIPE ROADWAY AS SHOWN IN TCP SHEETS AND IN ACCORDANCE WITH ALL APPLICABLE STANDARD SHEETS.
2. THE PERMANENT 2" MILLING AND ONE COURSE UNDERSEAL WORK ADJACENT TO PERMANENT WIDENING SHOULD BE DONE PRIOR TO INSTALLING TEMPORARY STRIPING AND PCTB FOR THAT PHASE. THIS WORK SHOULD BE DONE AT THE LOWEST TRAFFIC HOURS USING TCP STANDARDS AS APPROVED BY THE ENGINEER.
3. PLACE CHANNELIZING DEVICES AS SHOWN ON TCP SHEETS AND IN ACCORDANCE WITH ALL APPLICABLE STANDARD SHEETS. INSTALL CRASH CUSHION ATTENUATOR AND PORTABLE CONCRETE TRAFFIC BARRIER.

PHASE 1

1. PLACE ADVANCE WARNING SIGNS AND BARRICADES THROUGHOUT THE PROJECT LIMITS AS SHOWN IN BC(2)-14 AND THE WORK ZONE STANDARD SHEETS.
2. PLACE EROSION CONTROL DEVICES AS SHOWN ON SW3P SHEETS AND IN ACCORDANCE WITH ALL APPLICABLE STANDARD SHEETS.
3. PERFORM CONSTRUCTION FOR AREAS IN PHASE 1 AS SHOWN IN TCP SHEETS. BEGIN CONSTRUCTION OF THE CROSSOVER & WIDENING AT RESENDEZ RD, RIGHT TURN WIDENING AT SOUTHERN OAKS DR, NORTHBOUND EXIT RAMP, WIDENING OF SOUTHBOUND MAIN LANES, AND TEMPORARY PAVEMENT ON NORTHBOUND MAIN LANES.
4. THE SURFACE 2" OF TY D HMA & TACK COAT SHOULD NOT BE PLACED AT THE RIGHT TURN WIDENING AT SOUTHERN OAKS DR, NORTHBOUND EXIT RAMP, & WIDENING OF SOUTHBOUND MAIN LANES UNTIL THE FINAL CONSTRUCTION MILL & OVERLAY PHASE SO THAT THE FULL ROADWAY WIDTH OF TY D HMA CAN BE PLACED.

PHASE 1 STAGE 1

1. MILL 2" OF THE EXISTING NORTHBOUND EXIT RAMP AND LEVEL-UP TO THE THE GRADE, CROSS SLOPE, AND LIMIT SHOWN ON THE PLAN & PROFILE SHEETS. USE TCP(1-5) TO PERFORM THE MILL, LEVEL-UP, & ONE COURSE UNDERSEAL.
2. REMOVE FINAL PORTION OF EXISTING NORTHBOUND SH 35, AT EXIT RAMP, AS SHOWN ON PHASE 1 STAGE 1 PLANS.
3. PERFORM CONSTRUCTION FOR REMAINING SECTION OF NORTHBOUND EXIT RAMP; CONSTRUCTION OF THE RIGHT TURN WIDENING AT RESENDEZ RD.
4. THE SURFACE 2" OF TY D HMA AND TACK COAT SHOULD NOT BE PLACED AT THE NORTHBOUND EXIT RAMP UNTIL THE FINAL CONSTRUCTION MILL & OVERLAY PHASE SO THAT THE FULL ROADWAY WIDTH TY D HMA CAN BE PLACED.

PHASE 2

1. PLACE ADVANCE WARNING SIGNS AND BARRICADES THROUGHOUT THE PROJECT LIMITS AS SHOWN IN THE TRAFFIC CONTROL PLAN SHEETS PHASE 2, THE BARRICADE AND CONSTRUCTION STANDARD SHEETS AND THE WORK ZONE STANDARD SHEETS.
2. PERFORM PERMANENT 2" MILL AND ONE COURSE UNDERSEAL TO THE LIMIT SHOWN ON IN THE TRAFFIC CONTROL SHEETS.
3. BEGIN CONSTRUCTION OF NORTHBOUND AND SOUTHBOUND MAINLANES; CONSTRUCT NORTHBOUND MAINLANES INSIDE TEMPORARY PAVEMENT.
4. FOLLOW THE LIMITS SHOWN ON THE TRAFFIC CONTROL PLAN SHEETS FOR THE PLACEMENT OF PERMANENT SURFACE 2" TY D HMA AND TACK COAT.
5. HANG BEAMS, PLACE CONCRETE DECK AT NIGHT. SEE GENERAL NOTES FOR CLOSURE TIMES ON OAK LANE. DURING THIS OPERATION OR AS DETERMINED BY THE ENGINEER, REFERENCE DETOUR LAYOUT SHEET.
6. BEGIN OBLITERATING CROSSOVERS AS SHOWN IN TCP PLANS, AFTER SHORT TERM DETOUR IS NOT NEEDED.

PHASE 3

1. PERFORM PERMANENT 2" MILL AND ONE COURSE UNDERSEAL TO THE LIMIT SHOWN ON IN THE TRAFFIC CONTROL SHEETS.
2. SWITCH TRAFFIC TO NEWLY CONSTRUCTED MAINLANES.
3. USE DETOUR TO AVENUE A FOR ENTRANCE TO NORTHBOUND SH 35. REFERENCE DETOUR LAYOUT SHEET.
4. CONSTRUCT REMAINING PORTION OF NORTHBOUND MAINLANES GORE AND WIDENING. CONSTRUCT NORTHBOUND ENTRANCE RAMP. BEGIN CONSTRUCTION OF NORTHBOUND AND SOUTHBOUND U-TURNS.
5. CONSTRUCT SOUTH END OF NORTHBOUND WIDENING AS SHOWN ON TCP PLANS.
6. THE SURFACE 2" TY D HMA AND TACK COAT SHOULD NOT BE PLACED UNTIL THE FINAL CONSTRUCTION MILL & OVERLAY PHASE.

PHASE 4

1. OBLITERATE TEMPORARY PAVEMENT USED IN PREVIOUS PHASE. OBLITERATE REMAINING AREAS AS NOTED IN TCP PLANS.
2. CONSTRUCT AVENUE A; THE SURFACE 2" TY D HMA AND TACK COAT SHOULD BE PLACED OVER THE FULL WIDTH OF THE ROADWAY OVER THE TY D LEVEL-UP AND ONE COURSE UNDERSEAL.

FINAL CONSTRUCTION

1. BEGIN MILLING EXISTING PAVEMENT AS SHOWN IN MILL AND OVERLAY PLAN IN AREAS NOT DONE IN PREVIOUS PHASES.
2. APPLY SEAL COAT OVER ROADWAY IN AREAS NOT DONE IN PREVIOUS PHASES.
3. APPLY TACK COAT OVER MILLED ROADWAY AND ADJACENT PERMANENT WIDENED PAVEMENT.
4. BEGIN OVERLAY WITH TY D HMA AS SHOWN IN MILL AND OVERLAY PLAN & ROADWAY PLAN SHEETS.
5. APPLY PERMANENT STRIPING OF ENTIRE PROJECT AS SHOWN ON PAVEMENT MARKING LAYOUT SHEETS.
6. ESTABLISH PERMANENT VEGETATION.
7. FINAL CLEAN UP AND PUNCH LIST.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

SEQUENCE OF CONSTRUCTION

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	30

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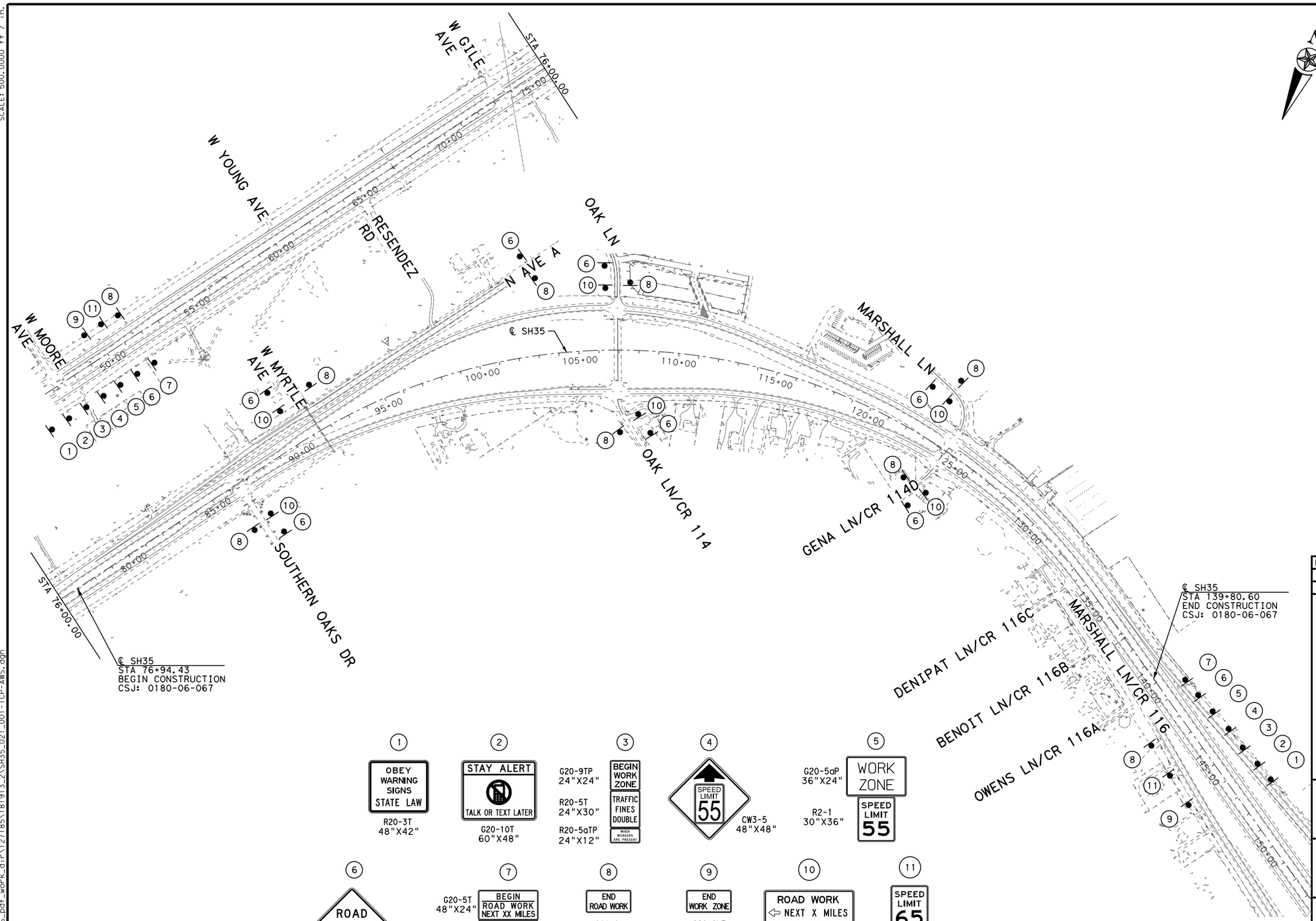

0′ 250′ 500′(H)

SCALE IN FEET

AWS LEGEND

CONSTRUCTION SIGN

NOTES:

1. ALL ADVANCED WARNING SIGNS SHALL REMAIN IN ALL PHASES.
2. ALL SIGNS SHALL BE PLACED AND SPACED IN ACCORDANCE WITH THE TEXAS MUTCD AND APPLICABLE BC AND TCP STANDARDS.
3. ADJUST THE LOCATION OF ADVANCED WARNING SIGNS IN EACH PHASE WITH APPROVAL OF THE ENGINEER.
4. ADVANCED WARNING SIGNS FOR LANE CLOSURES AND SHOULDER WORK WILL BE PLACED IN ACCORDANCE WITH THE TEXAS MUTCD AND APPLICABLE BC AND TCP STANDARDS.
5. THE CONTRACTOR SHALL VERIFY THAT THE CONSTRUCTION SPEED ZONE HAS BEEN PASSED BY MINUTE ORDER OR ORDINANCE BEFORE THE SIGNS ARE FABRICATED OR ERECTED.

REV	DESCRIPTION	DATE	INIT

1 OBEY WARNING SIGNS STATE LAW — R20-3T 48"X42"

2 STAY ALERT / TALK OR TEXT LATER — G20-10T 60"X48"

3 G20-9TP 24"X24" BEGIN WORK ZONE; R20-5T 24"X30" TRAFFIC FINES DOUBLE; R20-5aTP 24"X12" WHEN WORKERS ARE PRESENT

4 SPEED LIMIT 55 — CW3-5 48"X48"

5 G20-5aP 36"X24" WORK ZONE; R2-1 30"X36" SPEED LIMIT 55

6 ROAD WORK AHEAD — CW20-1D 48"X48"

7 G20-5T 48"X24" BEGIN ROAD WORK NEXT XX MILES; G20-6T 48"X30" NAME ADDRESS CITY STATE CONTRACTOR

8 END ROAD WORK — G20-2 36"X18"

9 END WORK ZONE — G20-2bT 36"X18"

10 ROAD WORK ⇦ NEXT X MILES NEXT X MILES ⇨ — G20-1aT 72"X36"

11 SPEED LIMIT 65 — R2-1 30"X36"

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

05/18/2021

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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ADVANCED WARNING SIGNS

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	31

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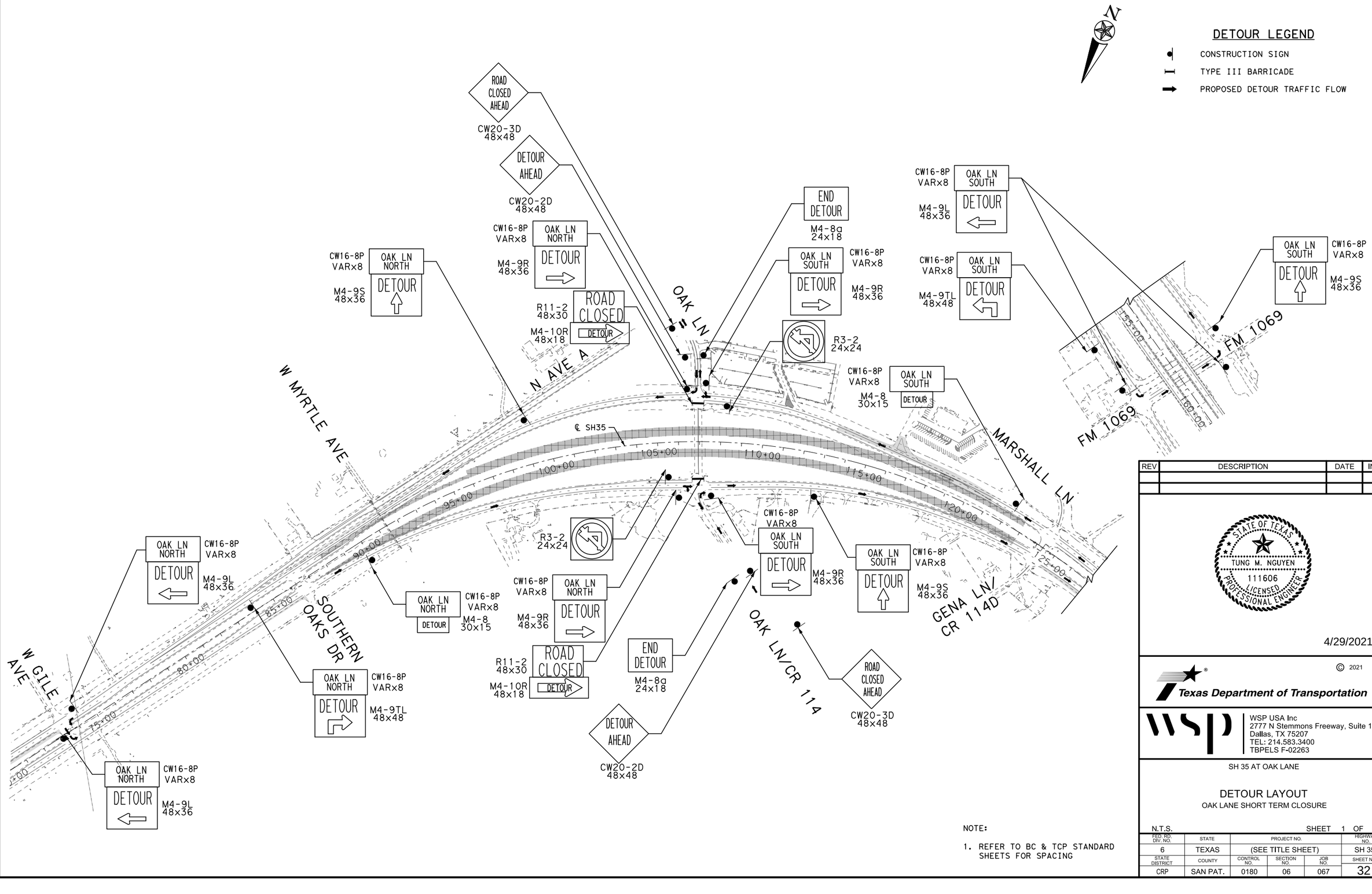
SCALE: 416.6667 ft / in.

DETOUR LEGEND

- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PROPOSED DETOUR TRAFFIC FLOW



NOTE:

1. REFER TO BC & TCP STANDARD SHEETS FOR SPACING

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/29/2021

Texas Department of Transportation

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TBPELS F-02263

SH 35 AT OAK LANE

DETOUR LAYOUT

OAK LANE SHORT TERM CLOSURE

N.T.S.

SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	32

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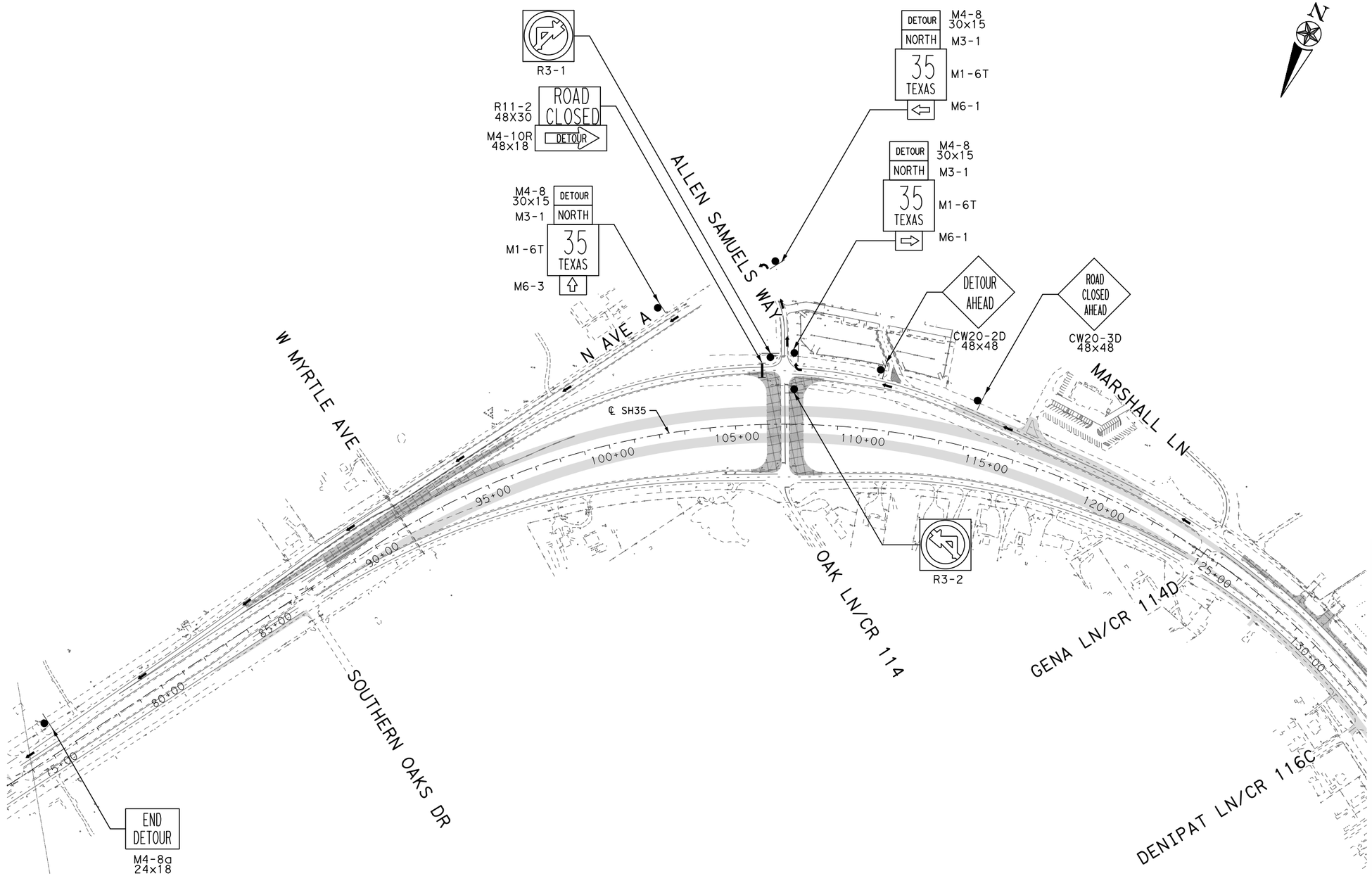

N

DETOUR LEGEND

- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PROPOSED DETOUR TRAFFIC FLOW

NOTE:

1. REFER TO BC & TCP STANDARD SHEETS FOR SPACING

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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SH 35 AT OAK LANE

DETOUR LAYOUT

NORTHBOUND FRONTAGE ROAD CLOSURE

N.T.S. SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	33

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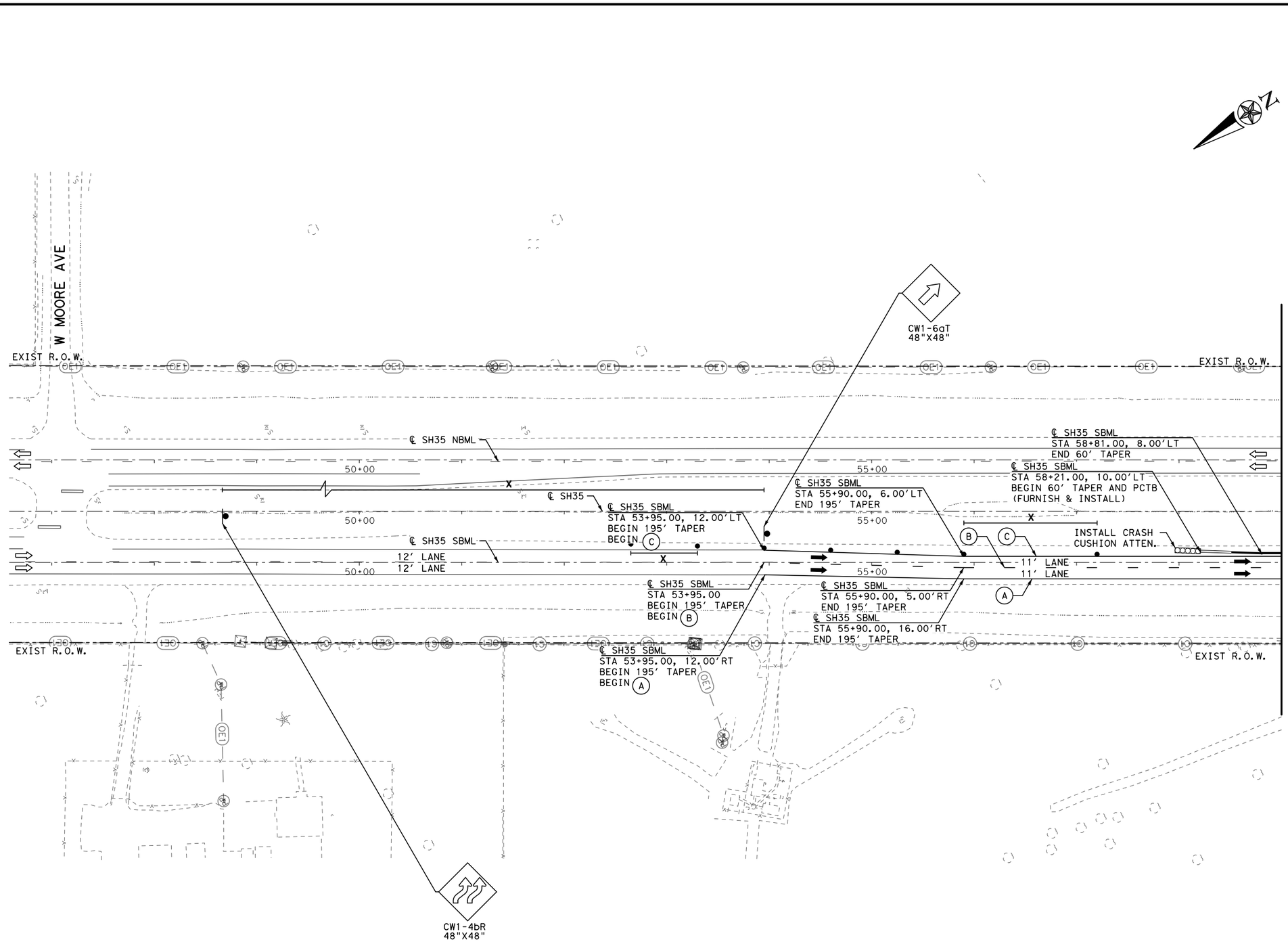

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1
BEGIN TO SH35 STA 59+00

SHEET 1 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	34

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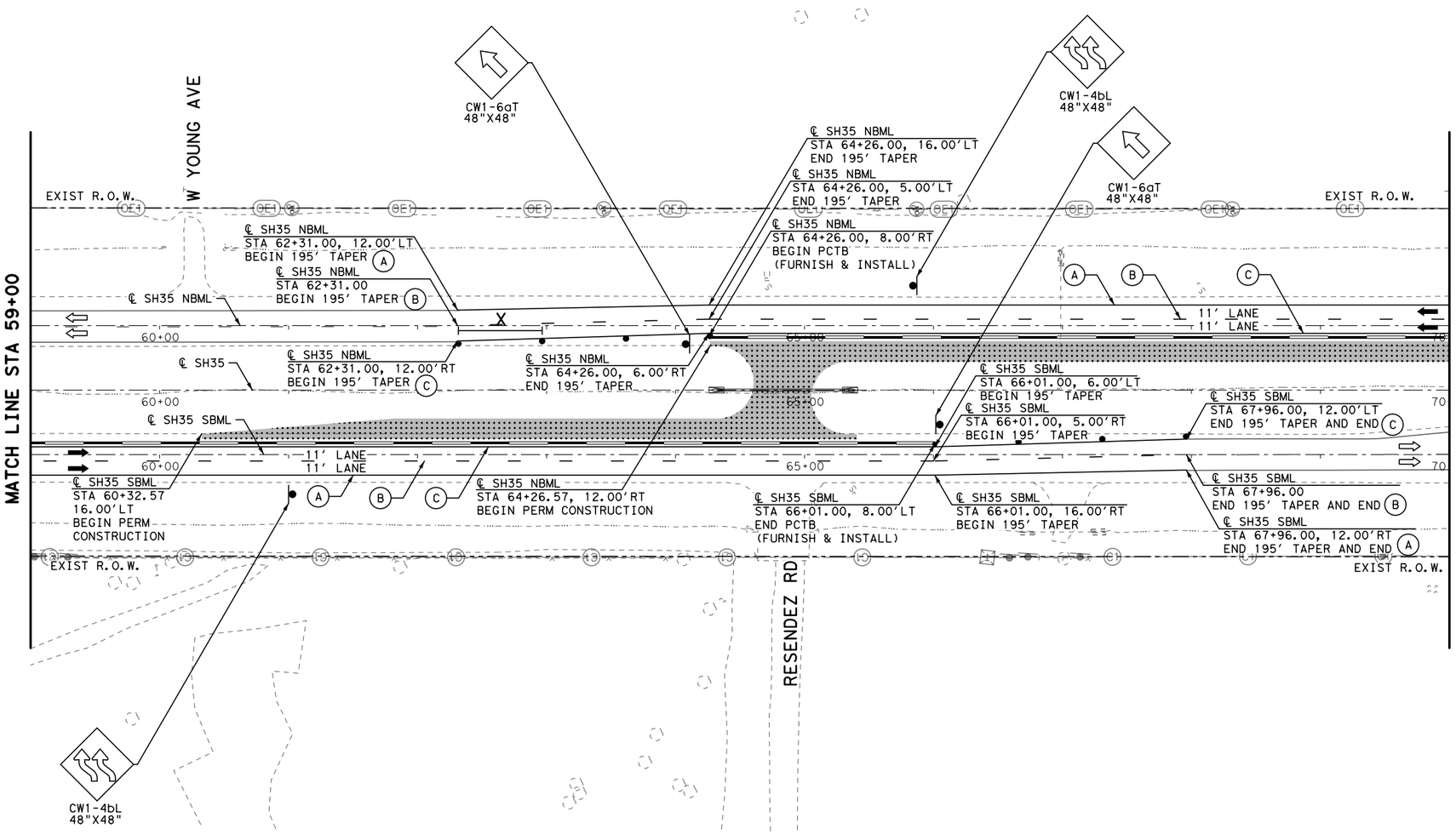

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
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- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
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- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1
STA 59+00 TO STA 70+00

SHEET 2 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	35

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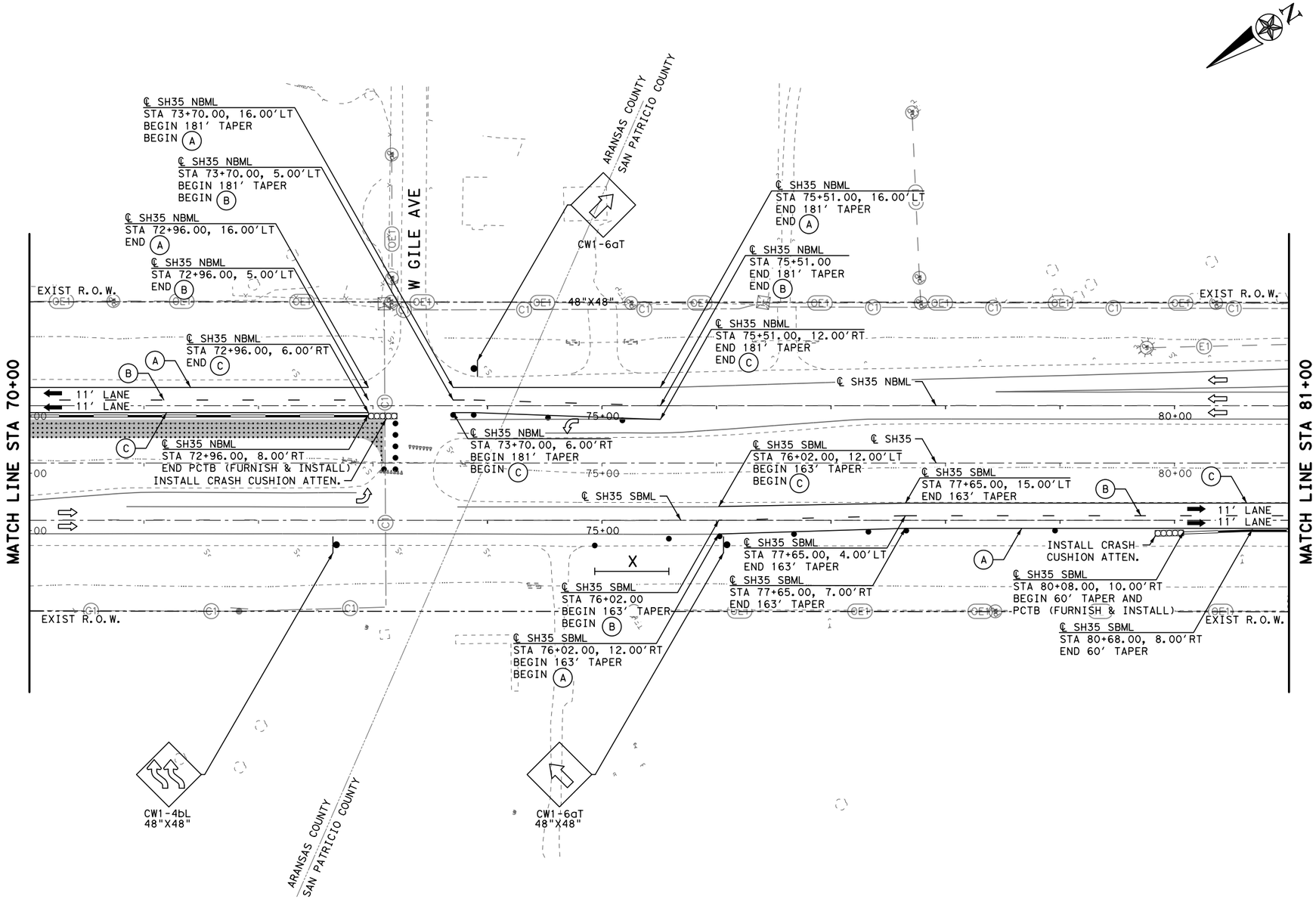

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1
STA 70+00 TO STA 81+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	36

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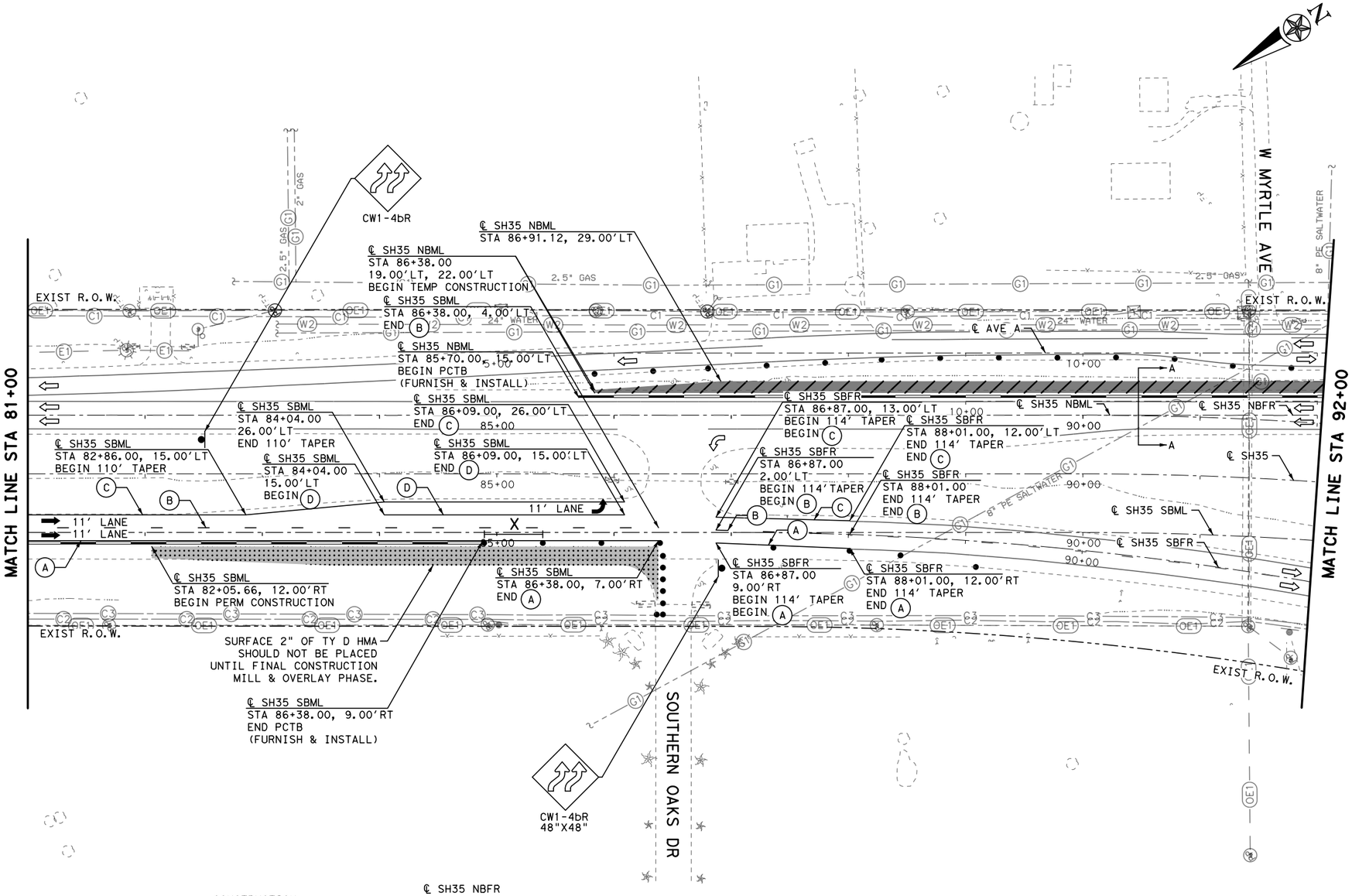
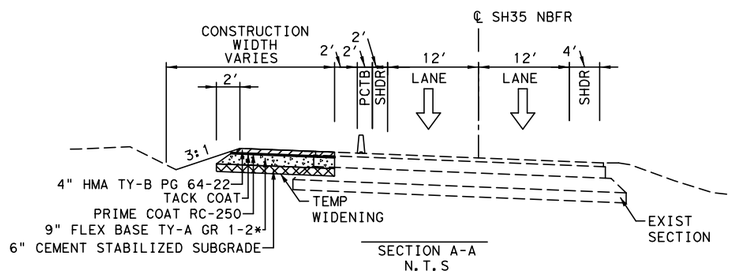
SCALE IN FEET





SECTION A-A
N.T.S

NOTE:
* WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY USE 4" HMA TY-B IN PLACE OF THE 9" FLEX BASE. PRIME COAT AND TACK COAT ARE STILL REQUIRED UNDER THE HMA TY-B.

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
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- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

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TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1
STA 81+00 TO STA 92+00

SHEET 4 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	37

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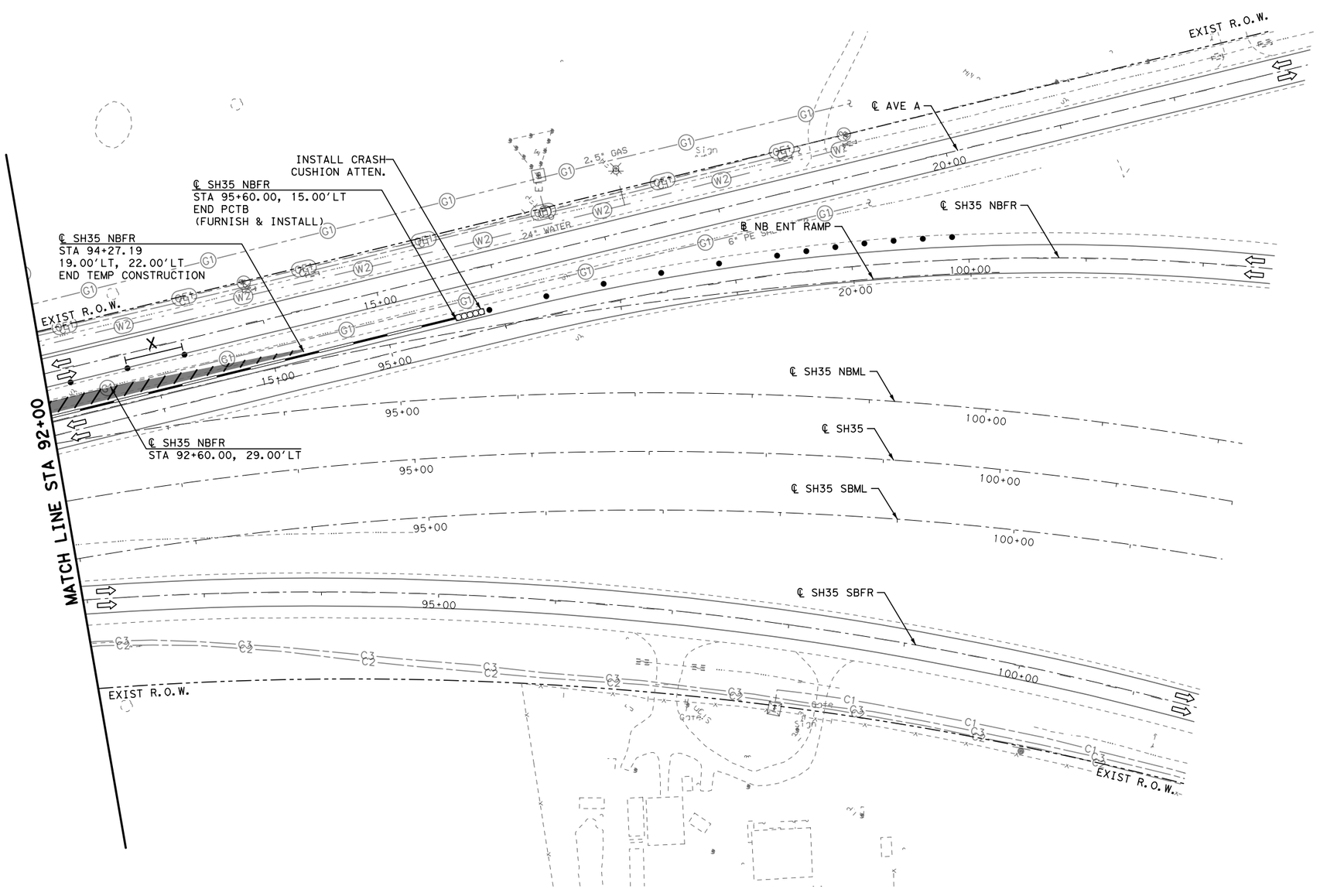

0′ 50′ 100′(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
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- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1
STA 92+00 TO STA 102+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	38

SCALE: 100.0000 ft / in.

0′ 50′ 100′(H)

SCALE IN FEET

N

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- x REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

EXIST R.O.W.

℄ SH35 NBFR
STA 114+50.00, 15.00′LT
BEGIN PCTB
(FURNISH & INSTALL)

℄ SH35 NBFR
STA 114+69.58, 21.25′LT
BEGIN PERM CONSTRUCTION

℄ NB EXT RAMP

℄ SH35 NBFR

SURFACE 2" OF TY D HMA SHOULD NOT BE PLACED UNTIL FINAL CONSTRUCTION MILL & OVERLAY PHASE.

℄ SH35 NBFR
STA 116+90.00, 15.00′LT
END PCTB
(FURNISH & INSTALL)

INSTALL CRASH CUSHION ATTEN.

℄ SH35 NBML

℄ SH35

℄ SH35 SBML

℄ SH35 SBFR

℄ SH35 NBFR
STA 119+15.00, 15.00′LT
BEGIN PCTB
(FURNISH & INSTALL)

℄ SH35 SBFR
STA 119+03.57
14.20′LT
BEGIN 120′ TAPER
BEGIN (C)

℄ SH35 SBFR
STA 119+03.57
BEGIN 120′ TAPER
BEGIN (A)

℄ SH35 SBFR
STA 119+03.57, 12.00′RT
BEGIN 120′ TAPER
BEGIN (A)

℄ SH35 NBFR
STA 123+14.27, 21.50′LT
END PERM CONSTRUCTION

℄ SH35 NBFR
STA 124+25.00, 15.00′LT
BEGIN 60′ TAPER

℄ SH35 SBFR
STA 120+23.57, 25.00′LT
END 120′ TAPER

℄ SH35 SBFR
STA 120+23.57, 14.00′LT
BEGIN (D)

℄ SH35 SBFR
STA 120+23.57, 3.00′LT
END 120′ TAPER
END (A) BEGIN (B)

℄ SH35 SBFR
STA 120+23.57, 8.00′RT
END 120′ TAPER

MARSHALL LN

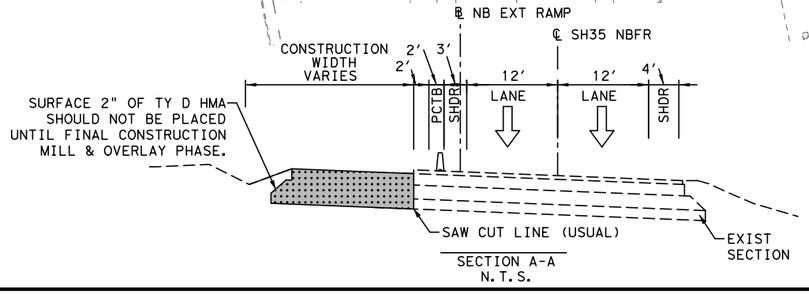
MATCH LINE STA 123+00

11′ LANE
11′ LANE
11′ LANE

115+00 120+00

EXIST R.O.W.

SECTION A-A
N.T.S.



REV | DESCRIPTION | DATE | INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN PHASE 1

SH35 STA 112+00 TO SH35 STA 123+00

SHEET 6 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	39

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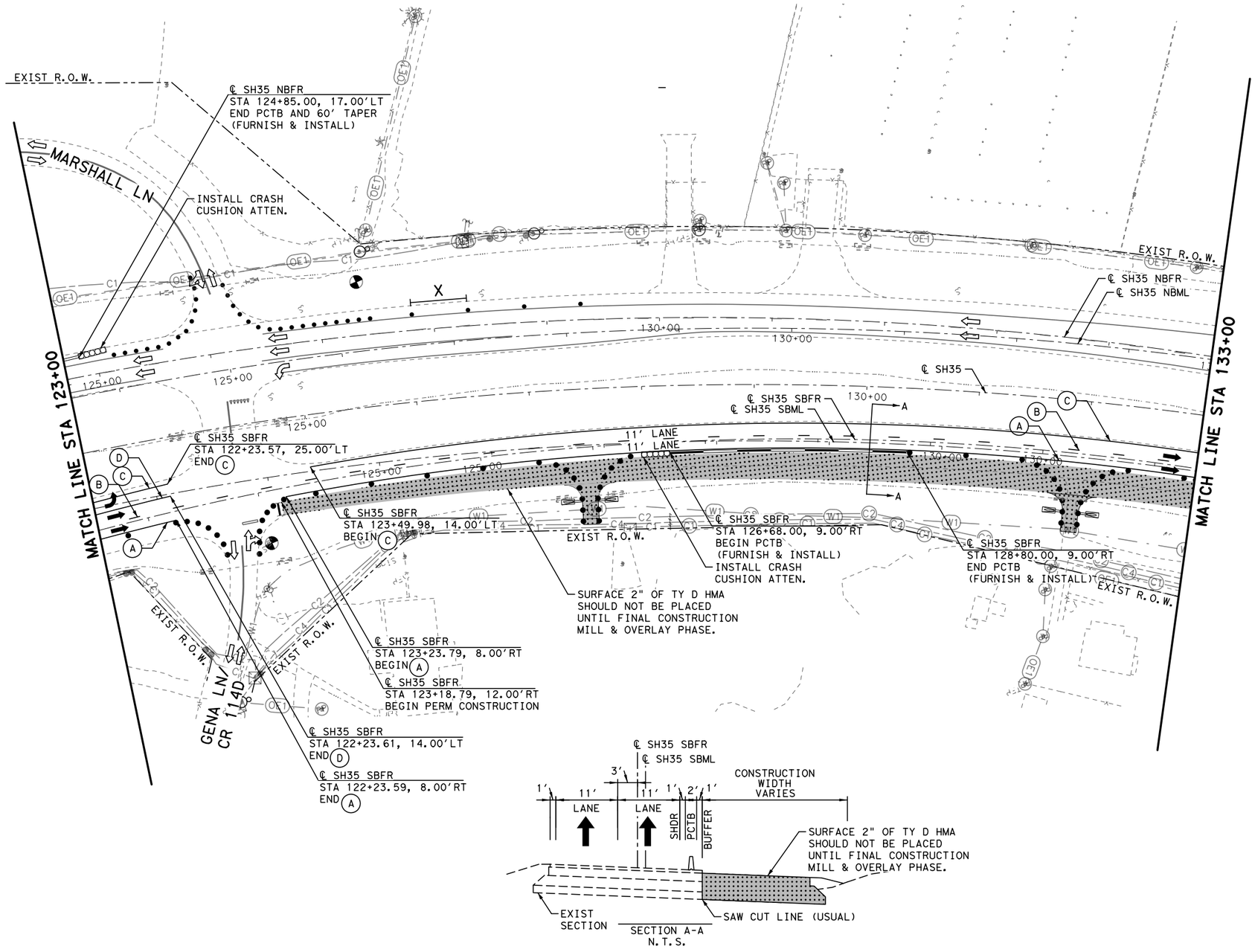

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

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2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
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TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN PHASE 1

SH35 STA 123+00 TO SH35 STA 133+00

SHEET 7 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	40

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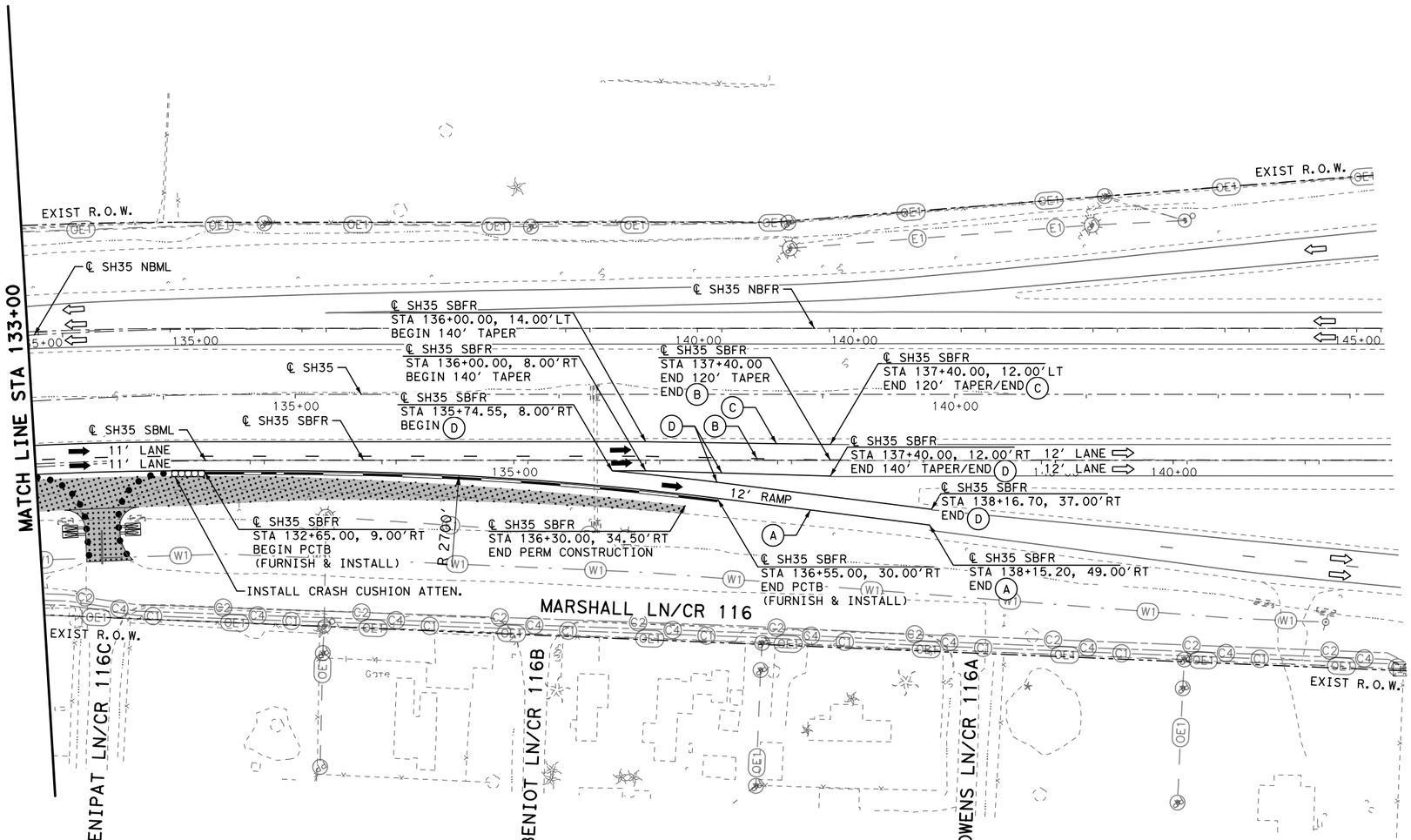

N

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
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4/28/2021

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2777 N Stemmons Freeway, Suite 1600
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TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1
SH35 STA 133+00 TO END

SHEET 8 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	41

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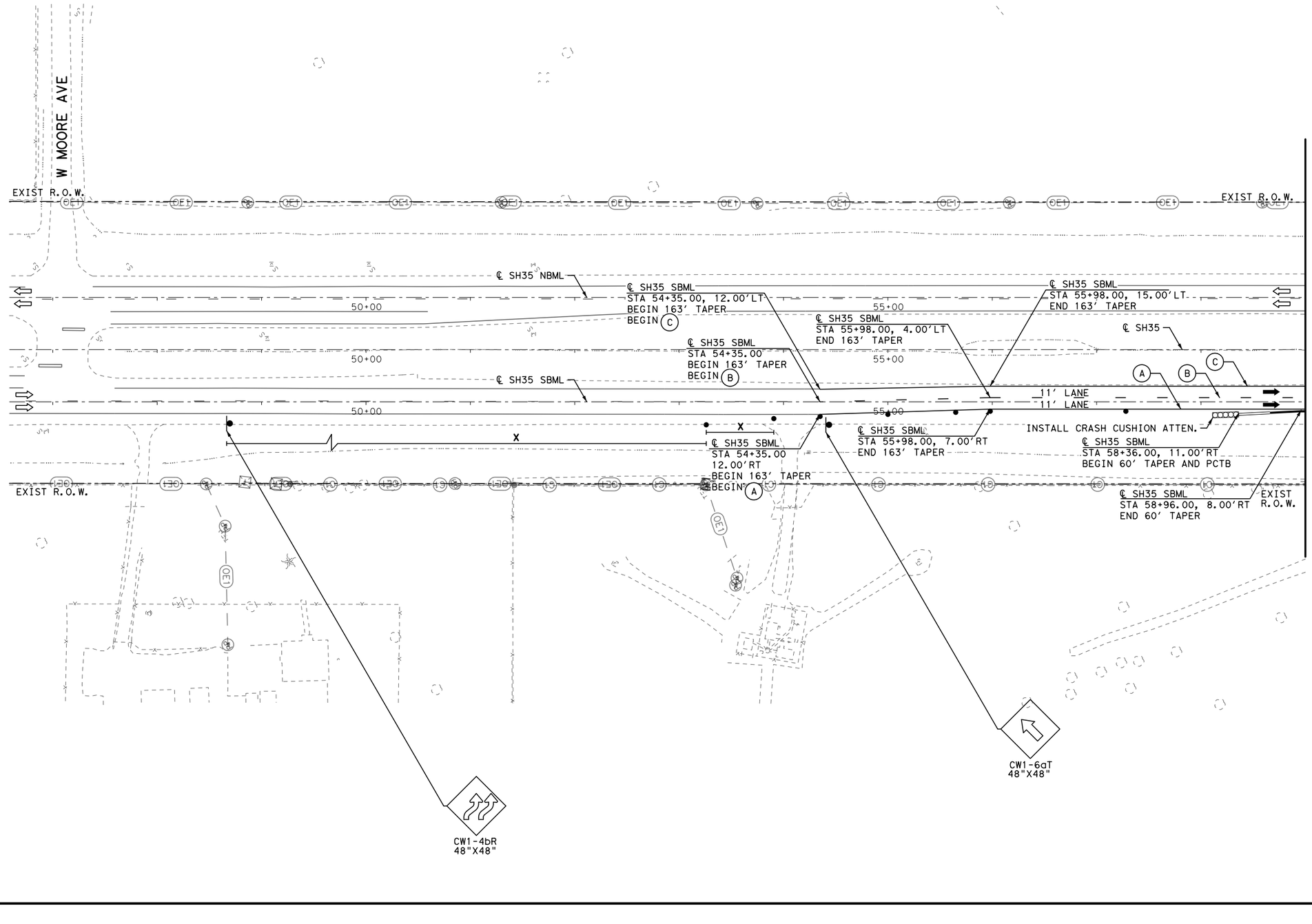

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
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- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

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2777 N Stemmons Freeway, Suite 1600
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TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1 - STAGE 1
BEGIN TO SH35 STA 59+00

SHEET 1 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	42

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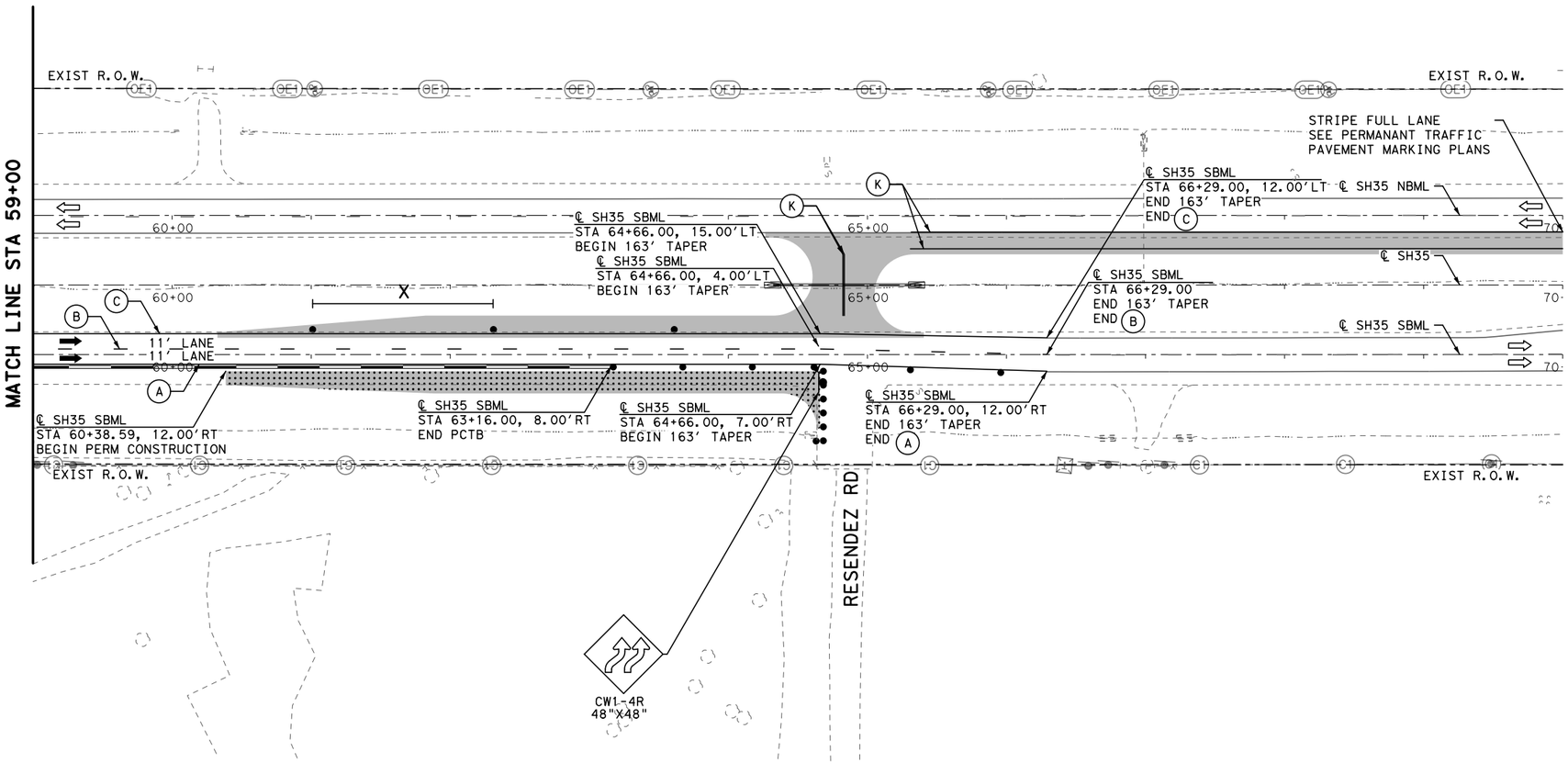
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEM "K".



0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
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- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
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- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1 - STAGE 1
STA 59+00 TO STA 70+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	43

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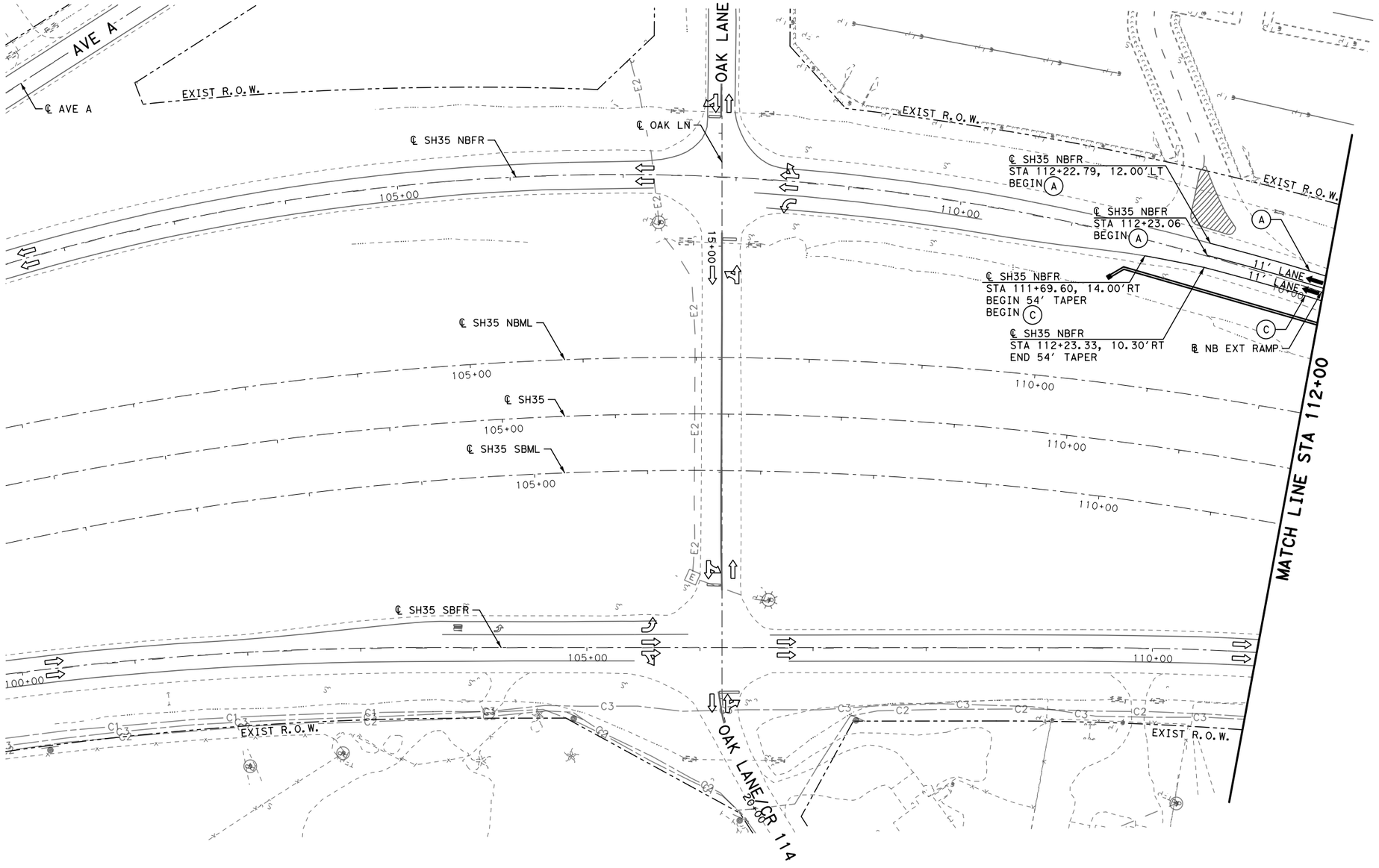

0′ 50′ 100′(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
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- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
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- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1 - STAGE 1

BEGIN TO SH35 STA 112+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	44

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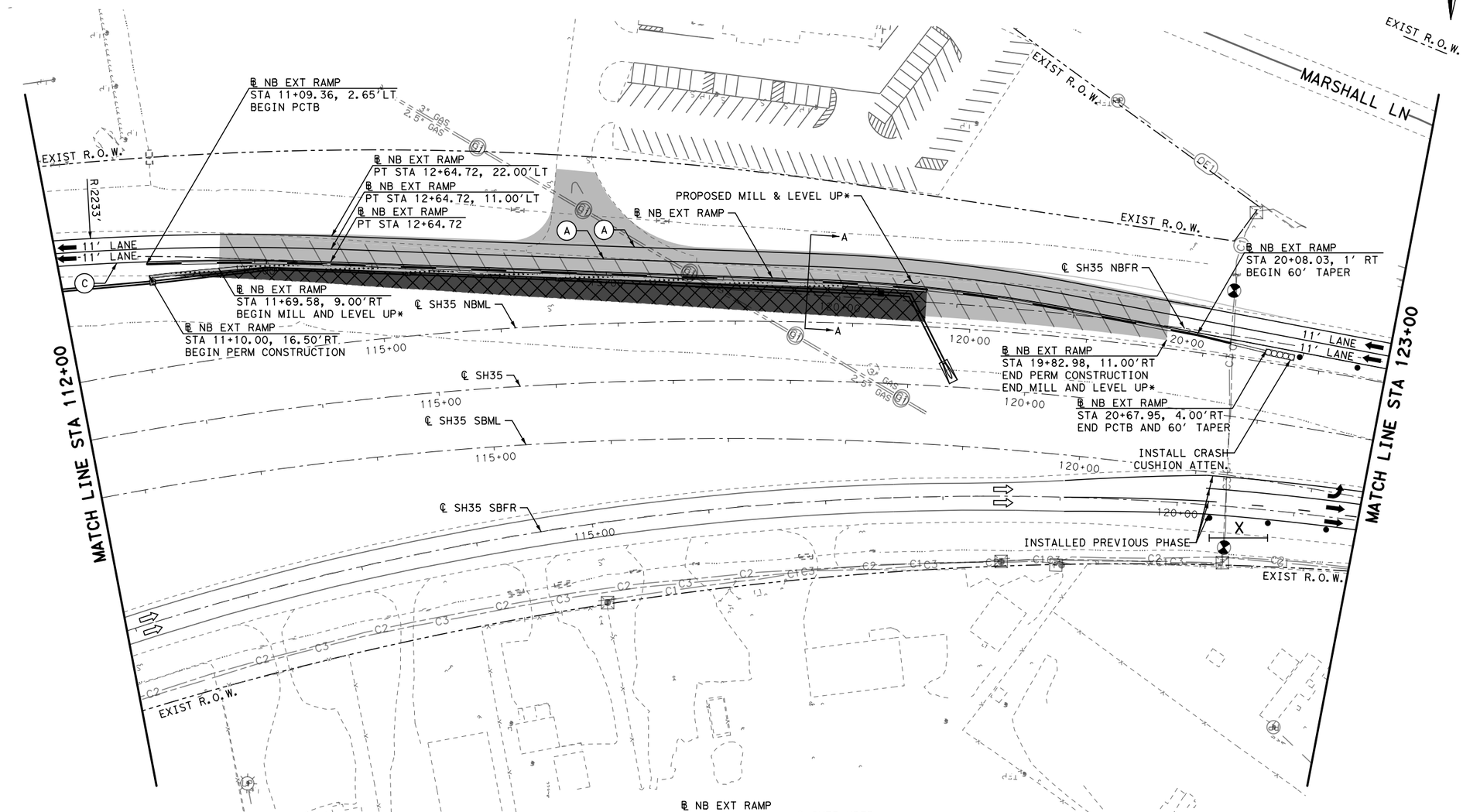
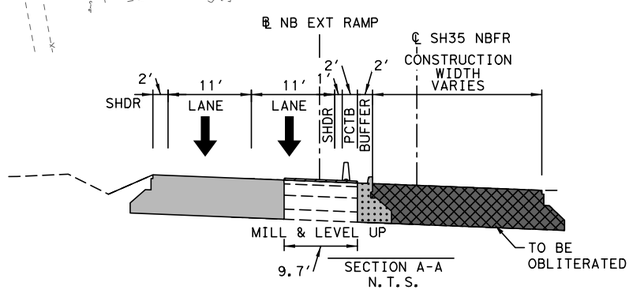
SCALE: 100.0000 ft / in.

NOTE:

* PRIOR TO INSTALLING PCTB AND WORKZONE PAV MRK FOR THIS STAGE, USE TCP(1-5) STANDARD TO MILL 2" OF THE EXISTING PAVEMENT AND LEVEL-UP WITH HMA TY-D TO THE GRADE, CROSS SLOPE, AND LIMIT SHOWN ON THE PLAN & PROFILE SHEETS. PLACE ONE COURSE UNDERSEAL. THIS WORK SHOULD BE DONE AT THE LOWEST TRAFFIC HOURS AS APPROVED BY THE ENGINEER.





0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
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REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
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TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1 - STAGE 1

SH35 STA 112+00 TO SH35 STA 123+00

SHEET 4 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	45

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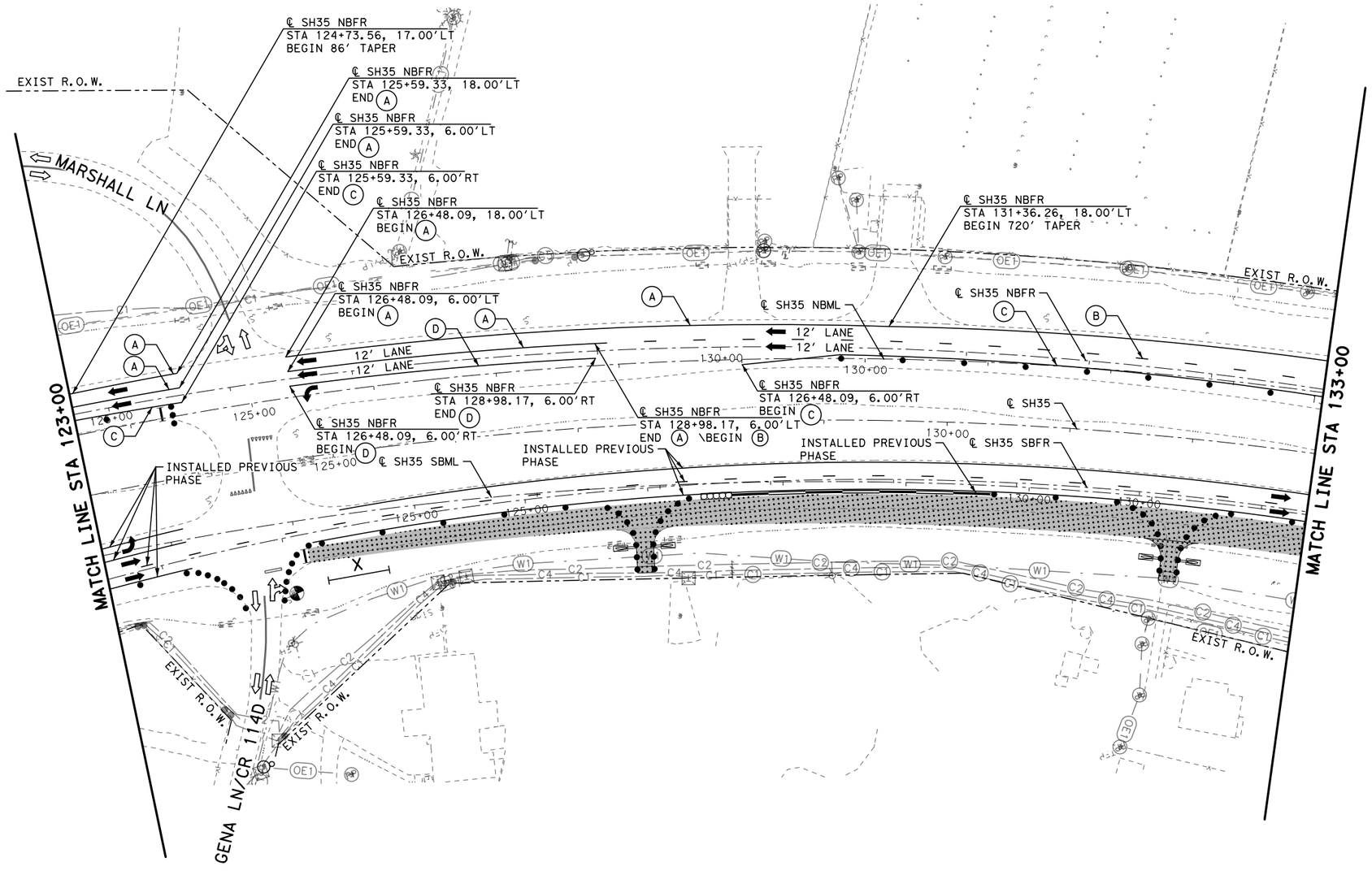

N

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
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REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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4/28/2021

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TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1 - STAGE 1

SH35 STA 123+00 TO SH35 STA 133+00

SHEET 5 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	46

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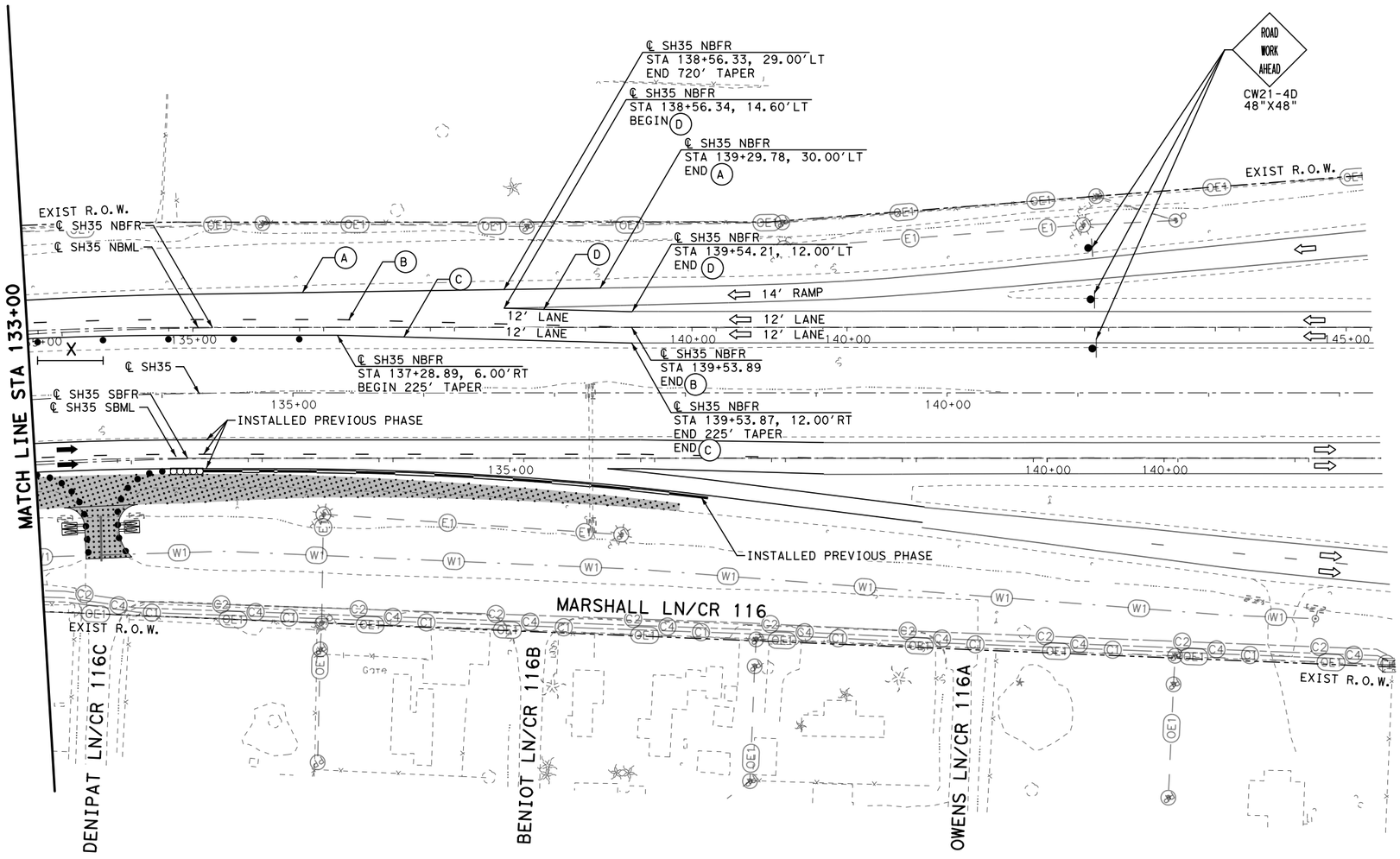

N

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 1 - STAGE 1
SH35 STA 133+00 TO END

SHEET 6 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	47

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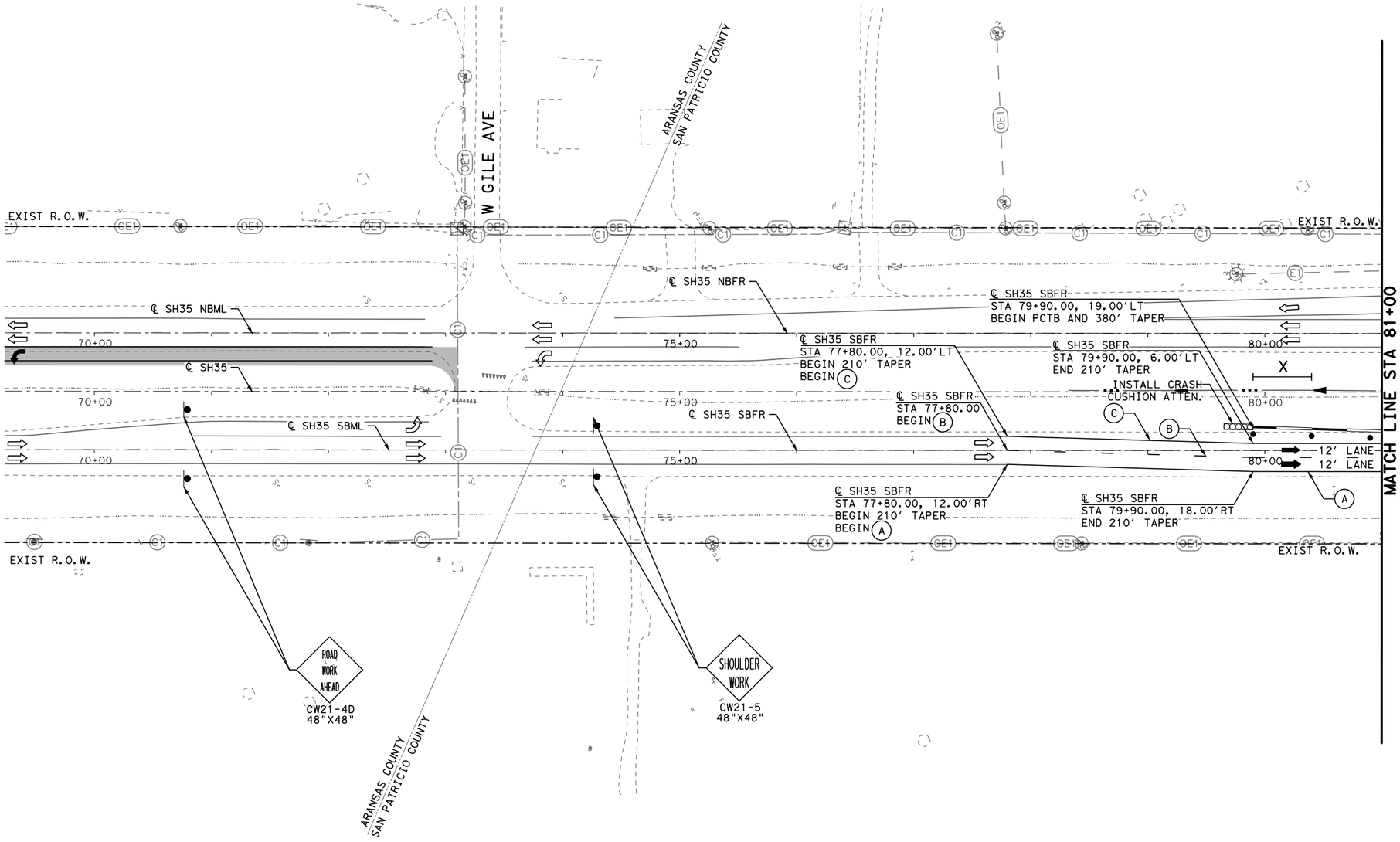

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
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- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
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- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 2

BEGIN TO SH35 STA 81+00

SHEET 1 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	48

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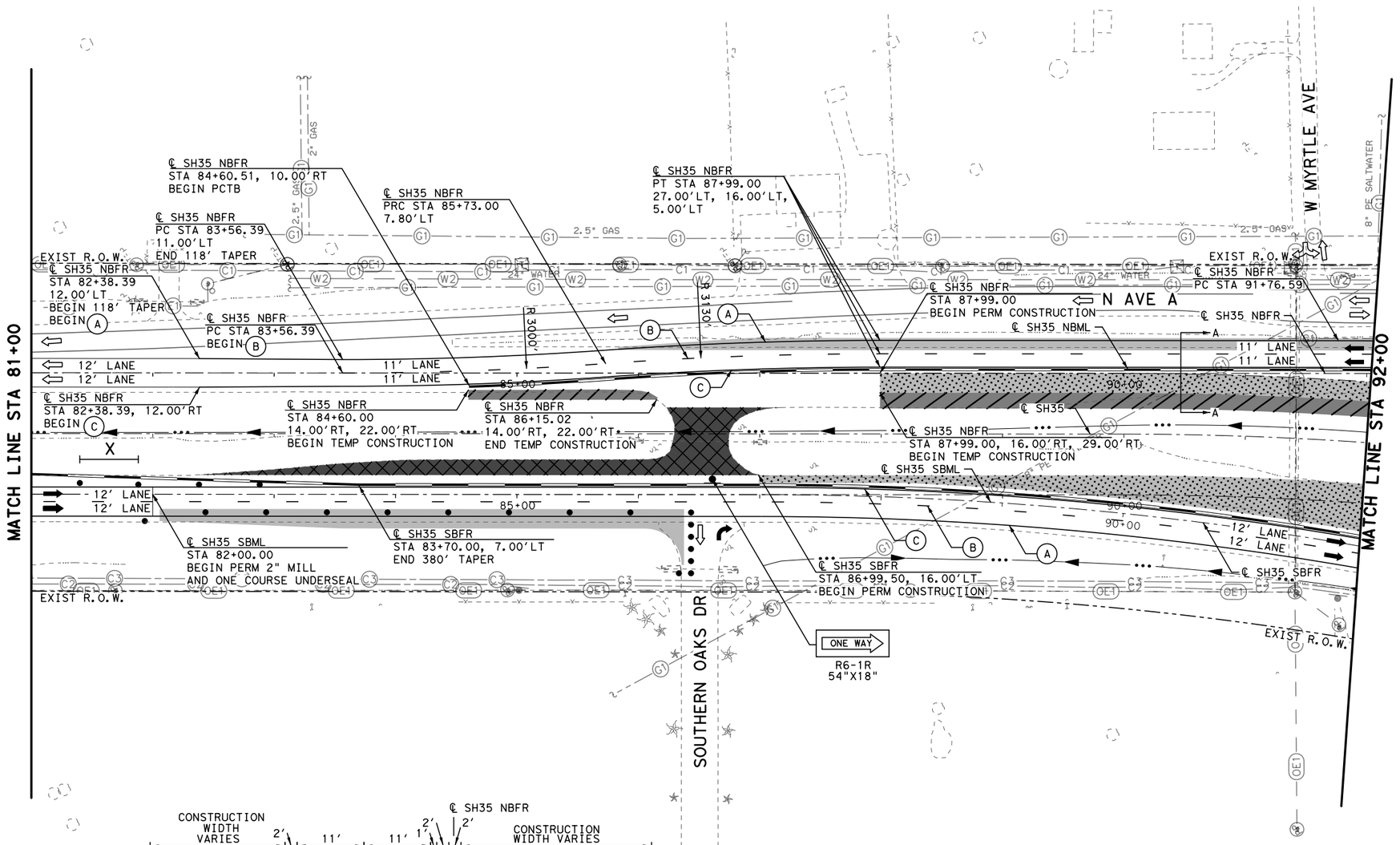

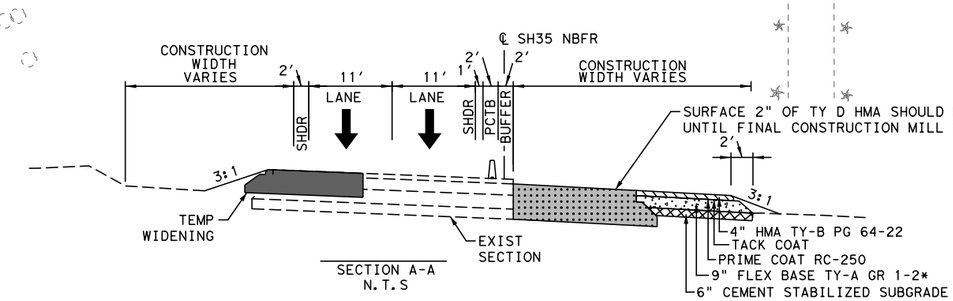

SECTION A-A
N.T.S

NOTE:
* WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY USE 4" HMA TY-B IN PLACE OF THE 9" FLEX BASE. PRIME COAT AND TACK COAT ARE STILL REQUIRED UNDER THE HMA TY-B.

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- x REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 2

SH35 STA 81+00 TO SH35 STA 92+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	49

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SCALE: 100.0000 ft / in.

**℄ SH35 NBML
TEMP DITCH GRADING
FROM STA 93+35.00, 10.00'LT
TO STA 95+00.00, 24.40'LT
THIS WORK IS SUBSIDIARY
TO TCP & DRAINAGE ITEMS.

INSTALL CRASH CUSHION ATTEN.

℄ SH35 NBFR
STA 96+60.05, 7.50'RT
END PCTB AND
BEGIN 60' TAPER

℄ SH35 NBFR
PC STA 96+13.81, 7.50'LT

℄ SH35 NBFR
STA 96+00.05, 4.50'RT
BEGIN 60' TAPER

TEMP DITCH GRADING**

℄ SH35 NBFR
PRC STA 93+41.37
12.00'LT

℄ SH35 NBFR
PT STA 94+99.30, 7.50'LT

EXIST R.O.W.

R 3130

R 3000

N AVE A

℄ AVE A

EXIST R.O.W.

2.5" GAS

24" WATER

6" PE SALTWATER

℄ SH35 NBFR

11' LANE
11' LANE

100+00

95+00

℄ SH35 NBML
STA 96+00.00

℄ SH35 NBML
STA 100+52.00
BEGIN SURFACE
2" TY D HMA

℄ SH35 NBML
PI STA 96+00.00, 29.00'RT

℄ SH35
℄ SH35 NBML
STA 99+25.94, 16'RT, 22.00'RT
END TEMP CONSTRUCTION

℄ SH35 NBML
PI STA 97+65.69, 22.00'RT

℄ SH35 SBML
STA 92+64.37
BEGIN SURFACE 2" TY D HMA

℄ SH35 SBML

℄ SH35 SBFR
STA 94+01.15, 9.00'LT
END PCTB

12' LANE
12' LANE

℄ SH35 SBML
STA 92+64.00
END PERM 2" MILL
AND ONE COURSE UNDERSEAL

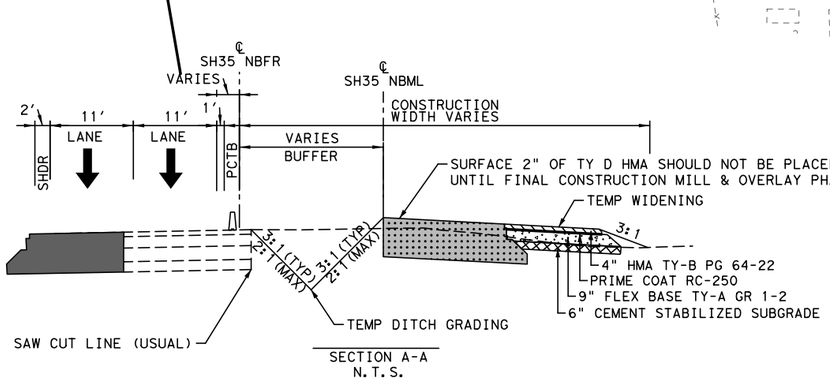
℄ SH35 SBFR

12' LANE
12' LANE

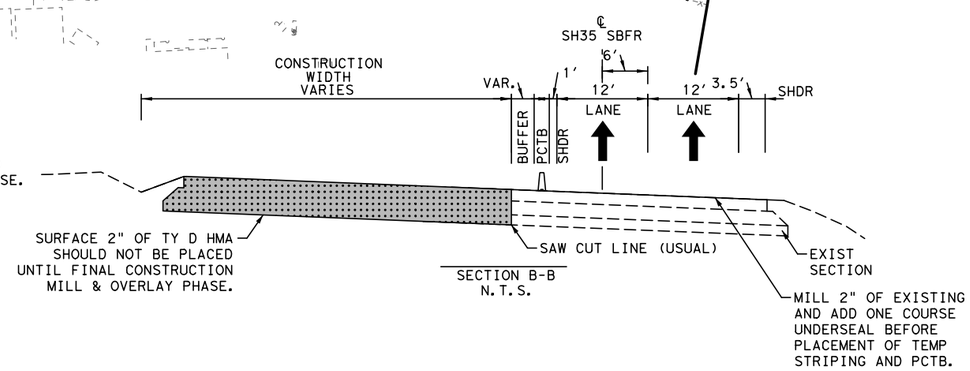
EXIST R.O.W.

MATCH LINE STA 92+00

MATCH LINE STA 102+00



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
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- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 2

SH 35 STA 92+00 TO SH 35 STA 102+00

SHEET 3 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	50

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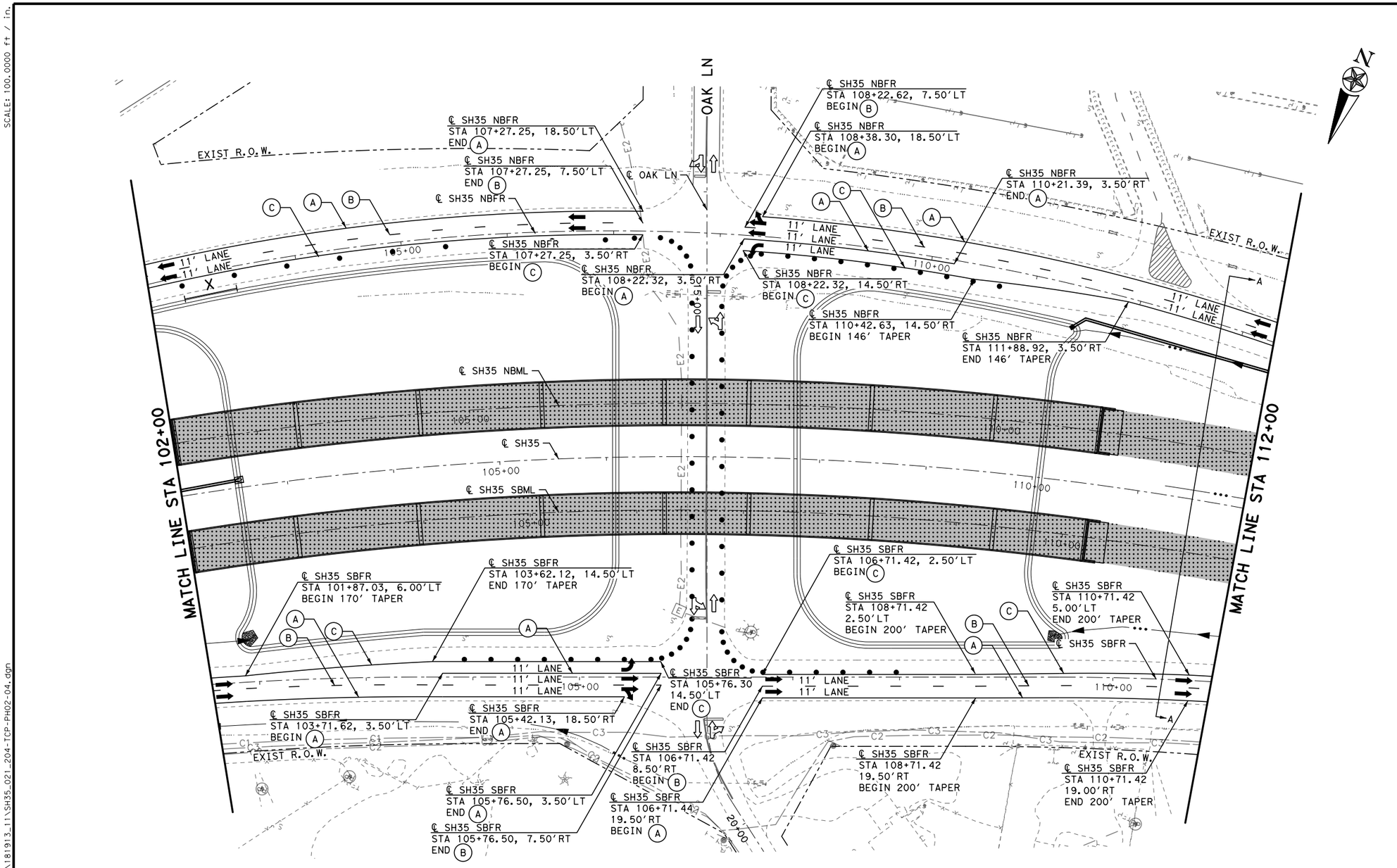

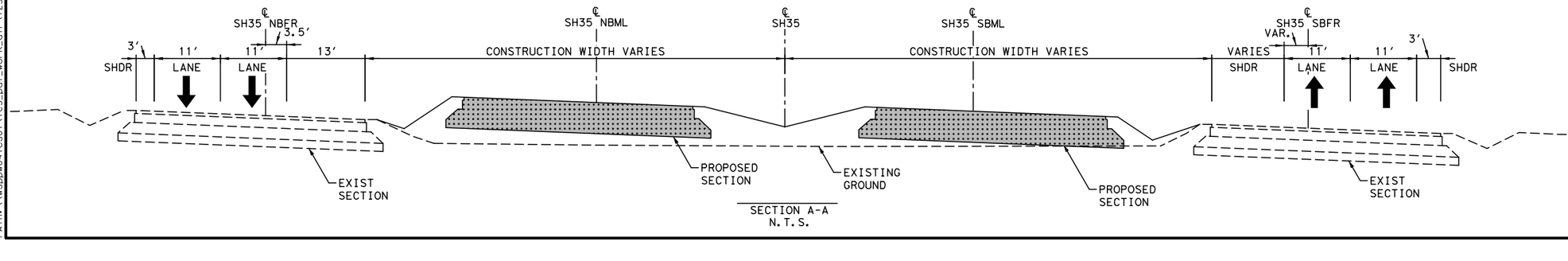

SECTION A-A
N.T.S.

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
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- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 2

SH35 STA 102+00 TO SH35 STA 112+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	51

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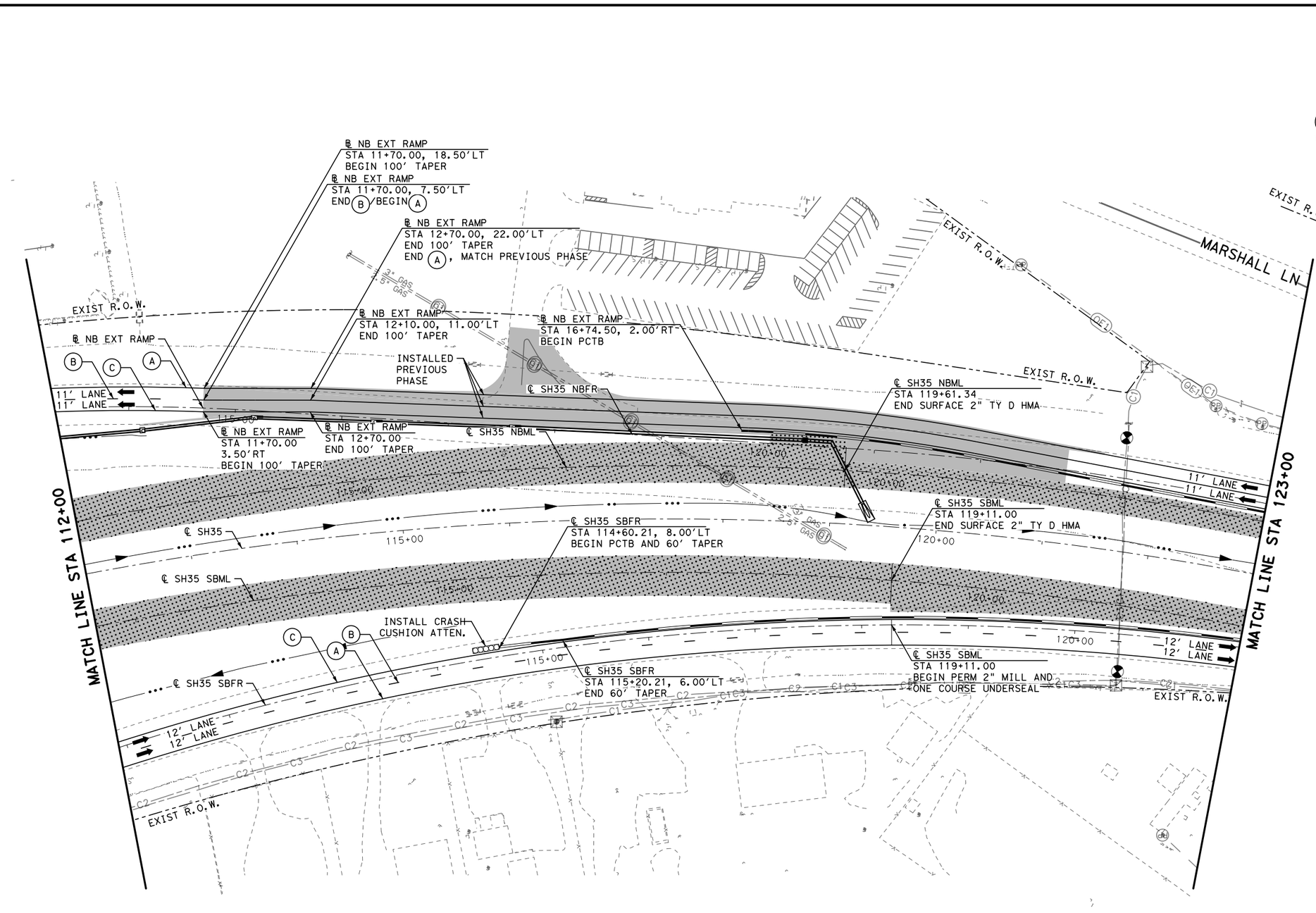

0' 50' 100'(H)

SCALE IN FEET

N

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
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- FLASHING ARROW PANEL
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- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
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- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
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- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 2

SH35 STA 112+00 TO SH35 STA 123+00

SHEET 5 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	52

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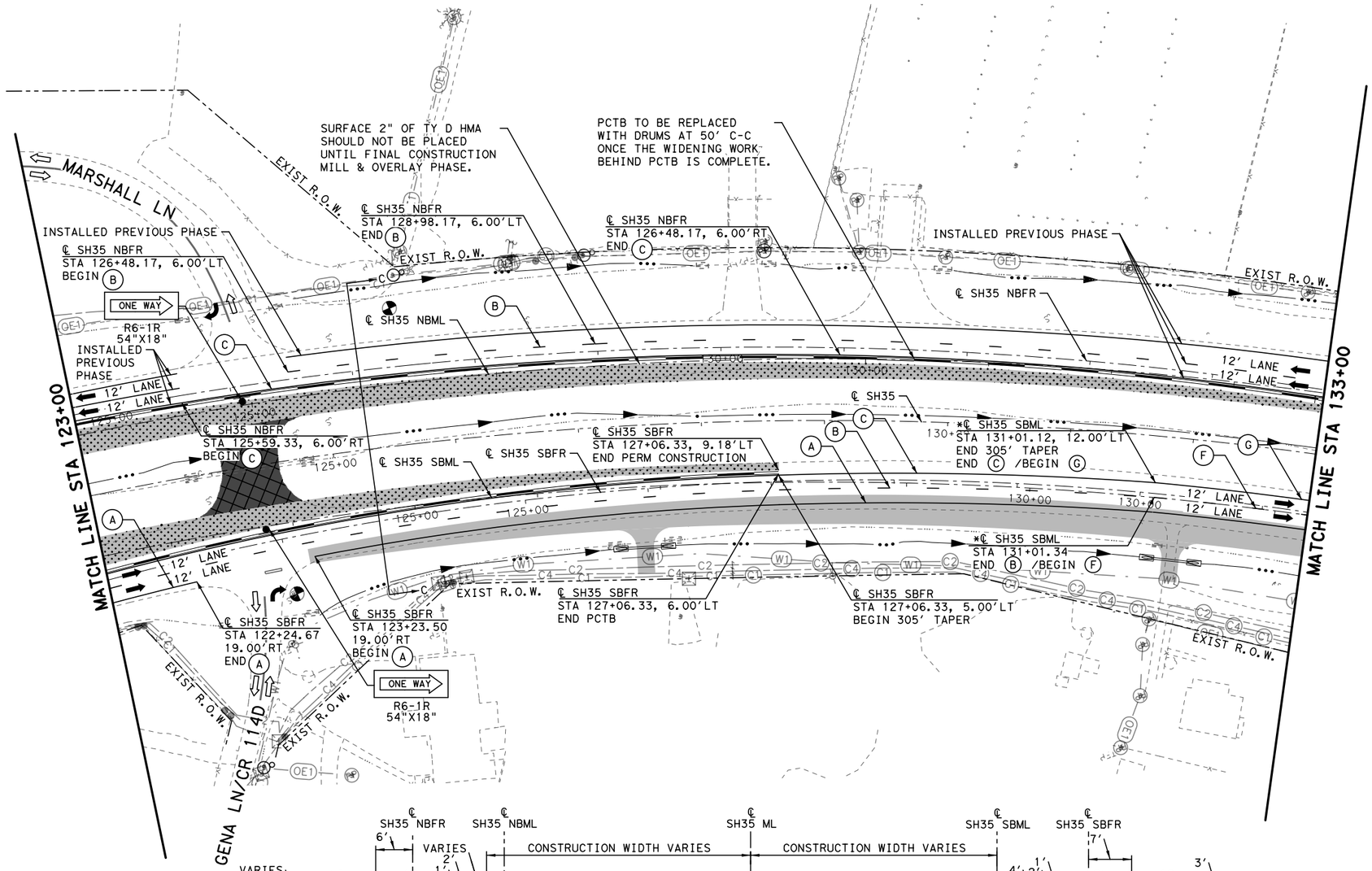
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K"

* 2. STRIPING SHIFT TO SAME LOCATION AS PERMANENT STRIPING. THIS IS RELATIVE TO ℄ SH35 NBML.



SECTION C-C
N.T.S.

N

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
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- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN PHASE 2

SH35 STA 123+00 TO SH35 STA 133+00

SHEET 6 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	53

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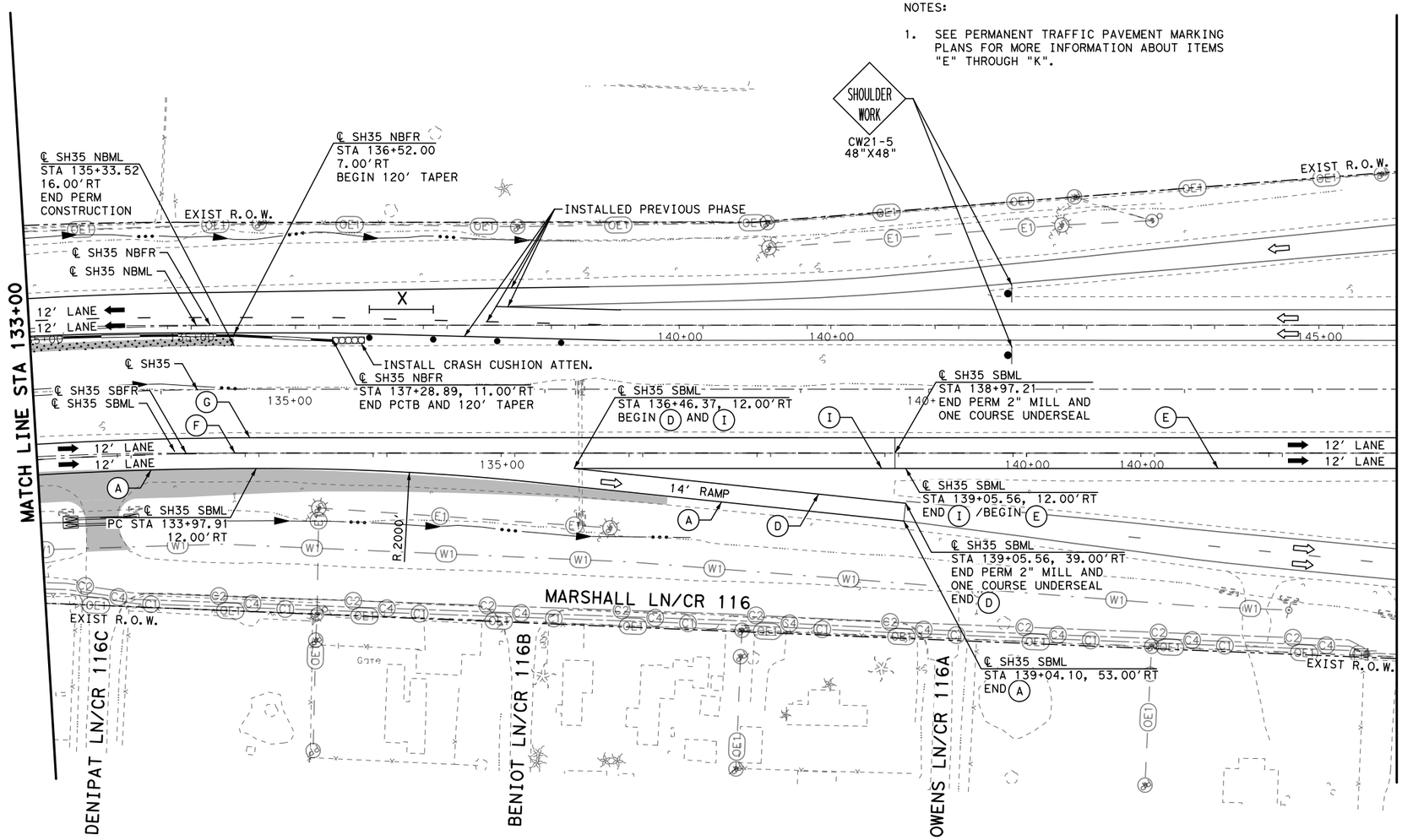
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".



0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 2

SH35 STA 133+00 TO SH35 STA 143+00

SHEET 7 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	54

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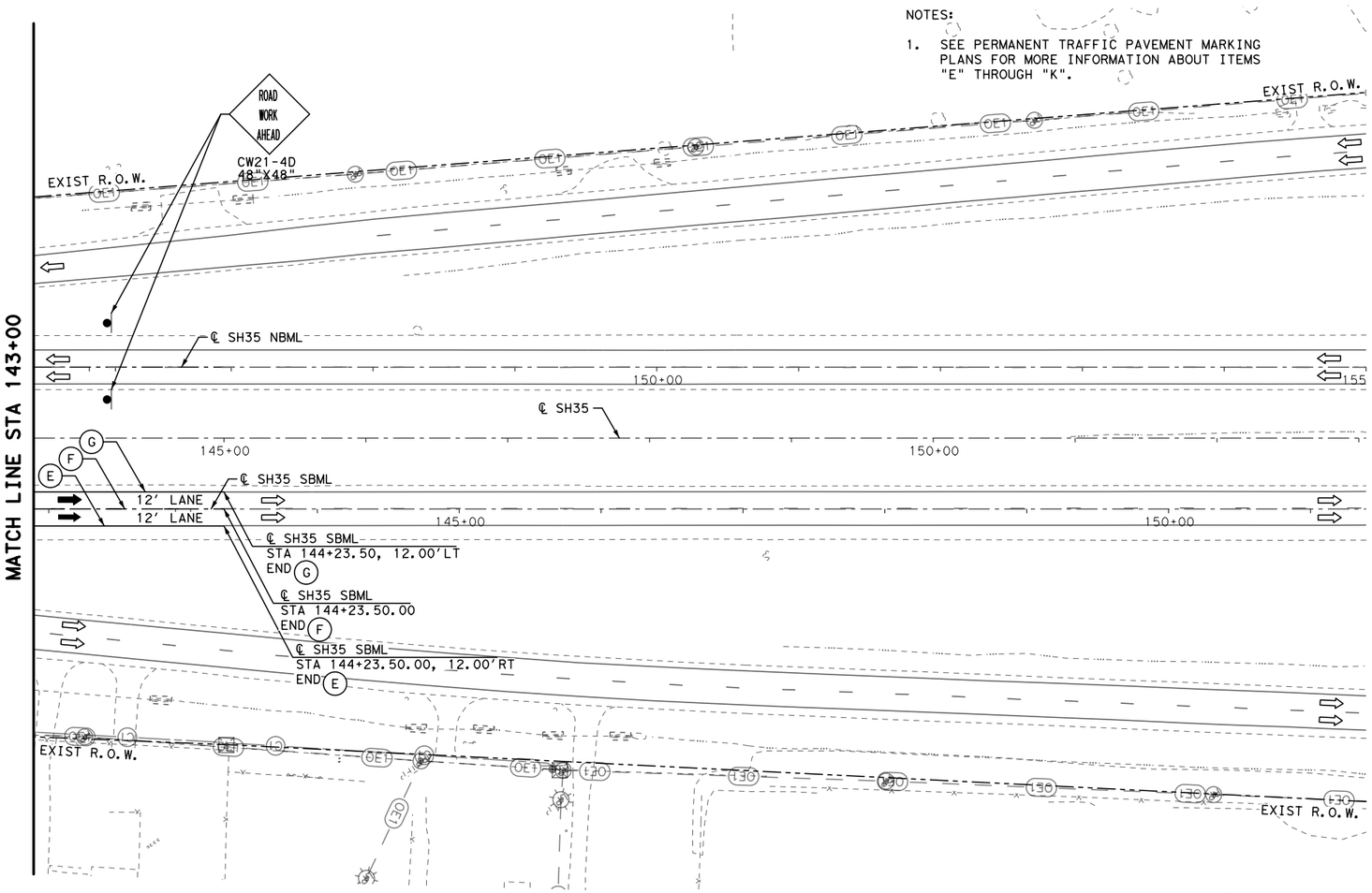

N

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 2

SH35 STA 143+00 TO END

SHEET 8 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	55

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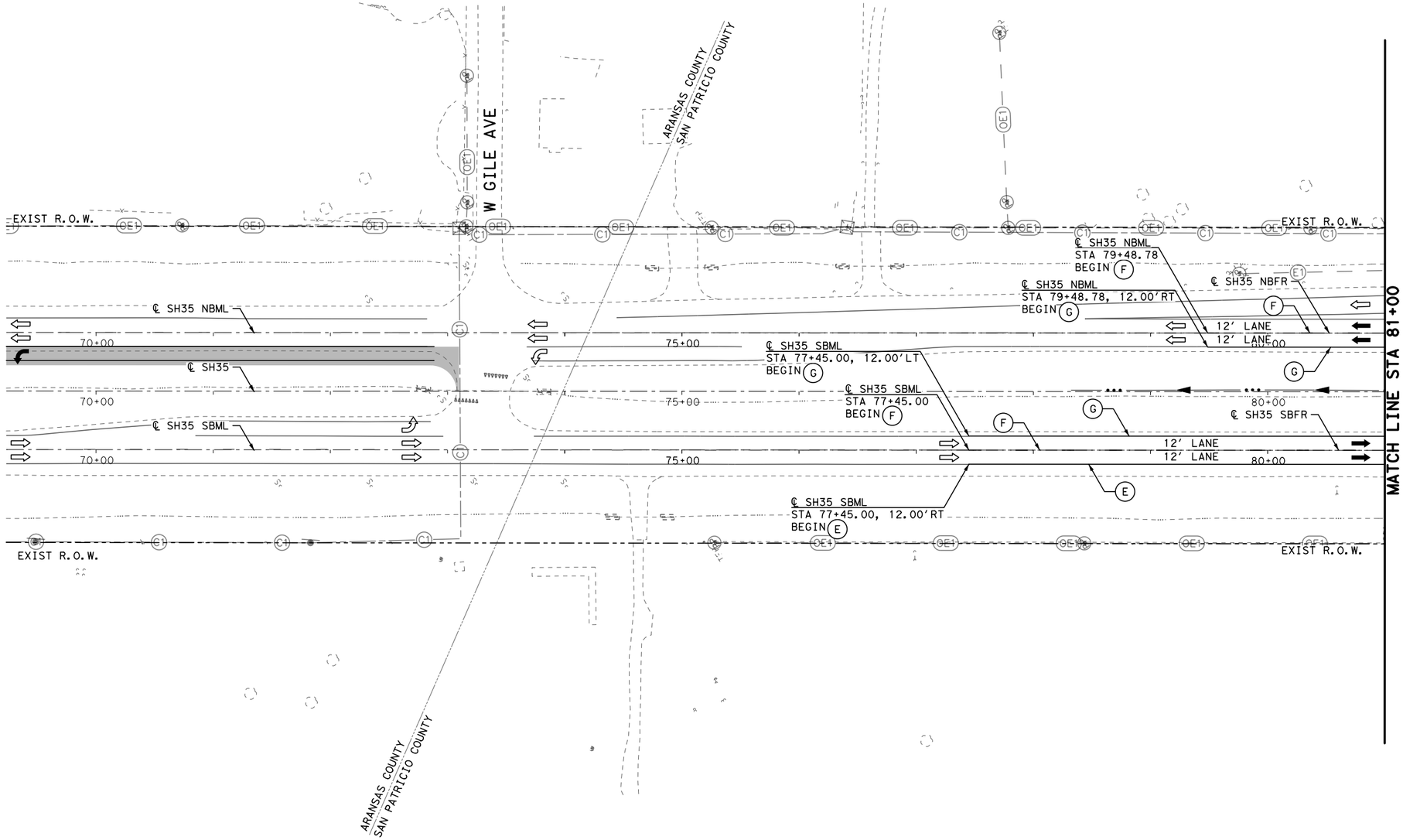
NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".



0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 3
BEGIN TO SH35 STA 81+00

SHEET 1 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	56

DATE: 4/28/2021 TIME: 2:58:08 PM
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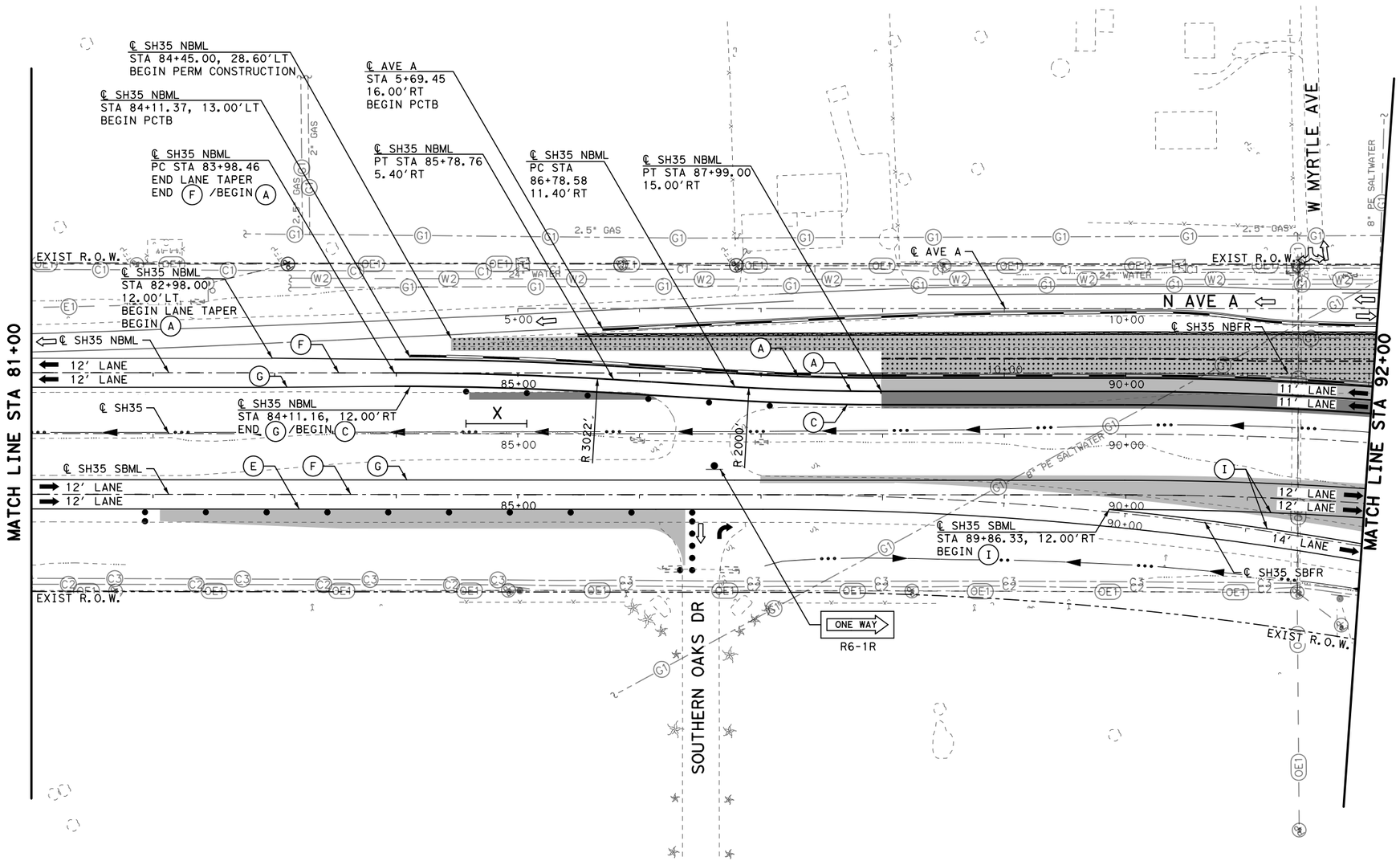
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".



0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 3

SH35 STA 81+00 TO SH35 STA 92+00

SHEET 2 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	57

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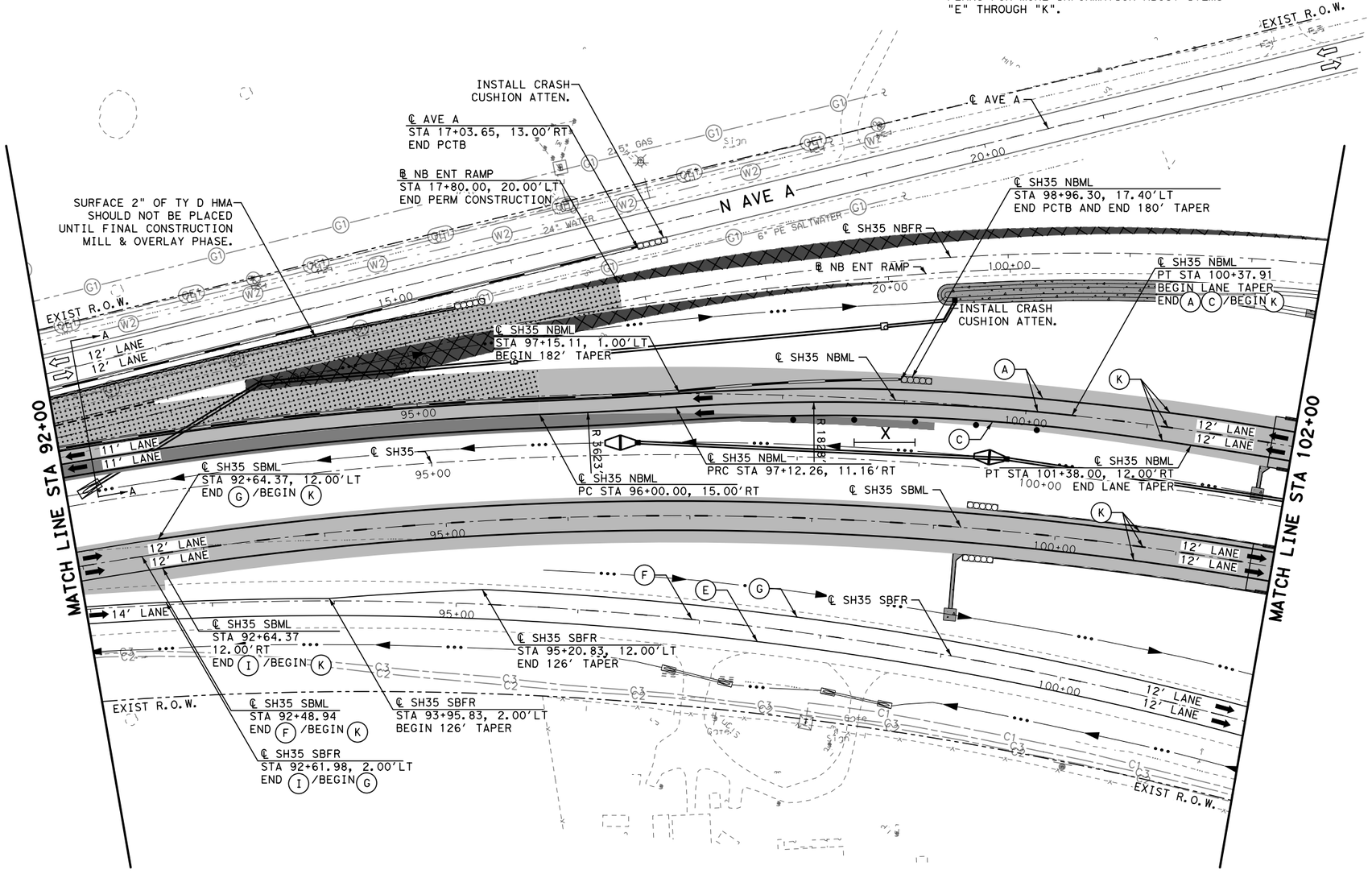
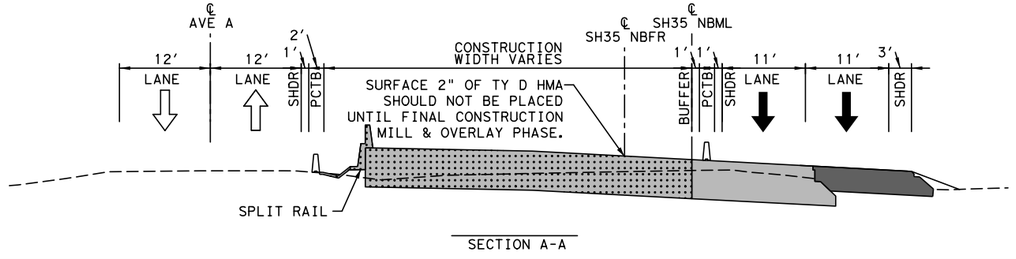
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".





SECTION A-A

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- x REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 3

SH35 STA 92+00 TO SH35 STA 102+00

SHEET 3 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	58

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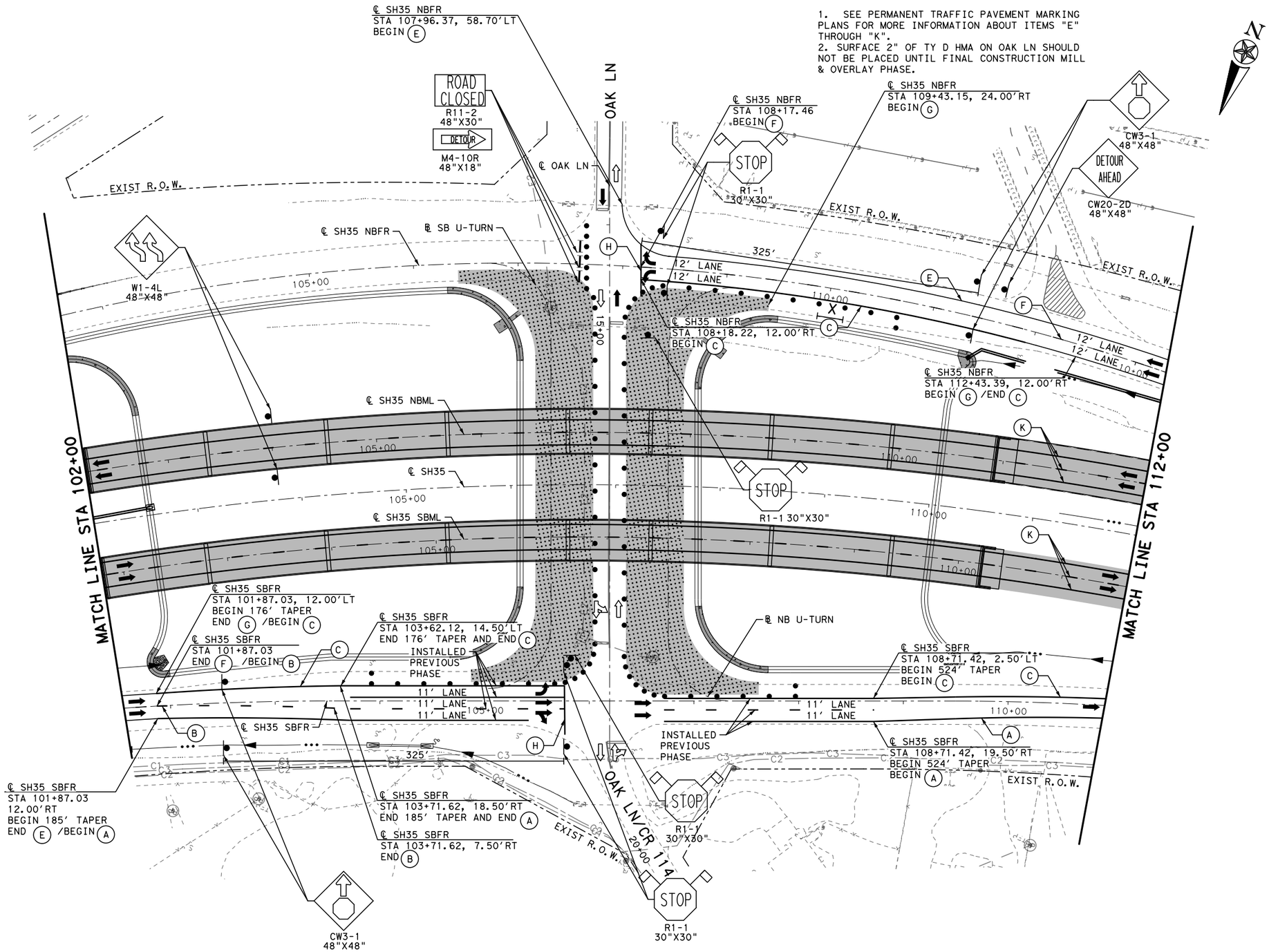
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".
2. SURFACE 2" OF TY D HMA ON OAK LN SHOULD NOT BE PLACED UNTIL FINAL CONSTRUCTION MILL & OVERLAY PHASE.



0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 3

SH35 STA 102+00 TO SH35 STA 112+00

SHEET 4 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	59

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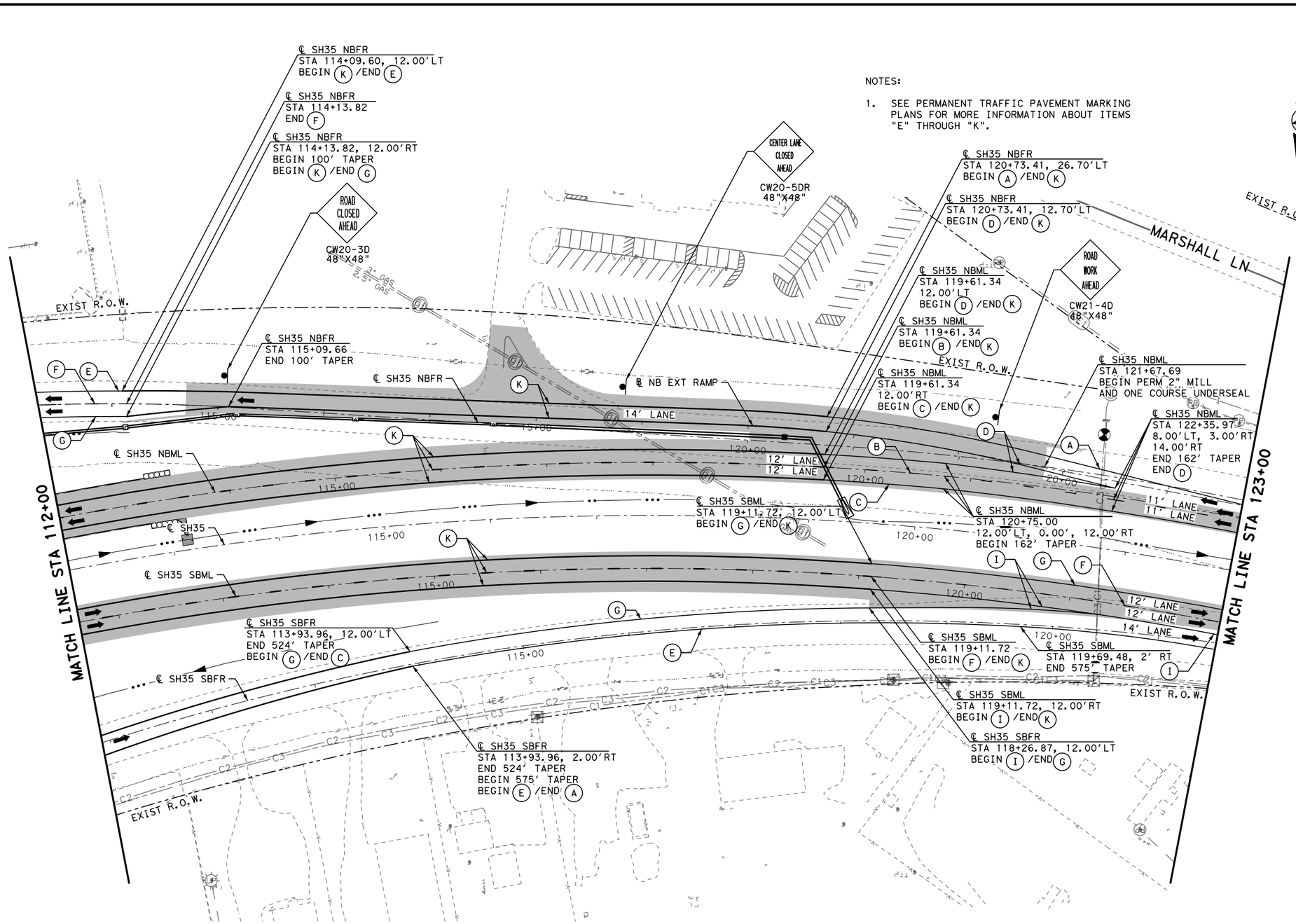

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- • CHANNELIZING DEVICES
- x REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 3

SH35 STA 112+00 TO SH35 STA 123+00

SHEET 5 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	60

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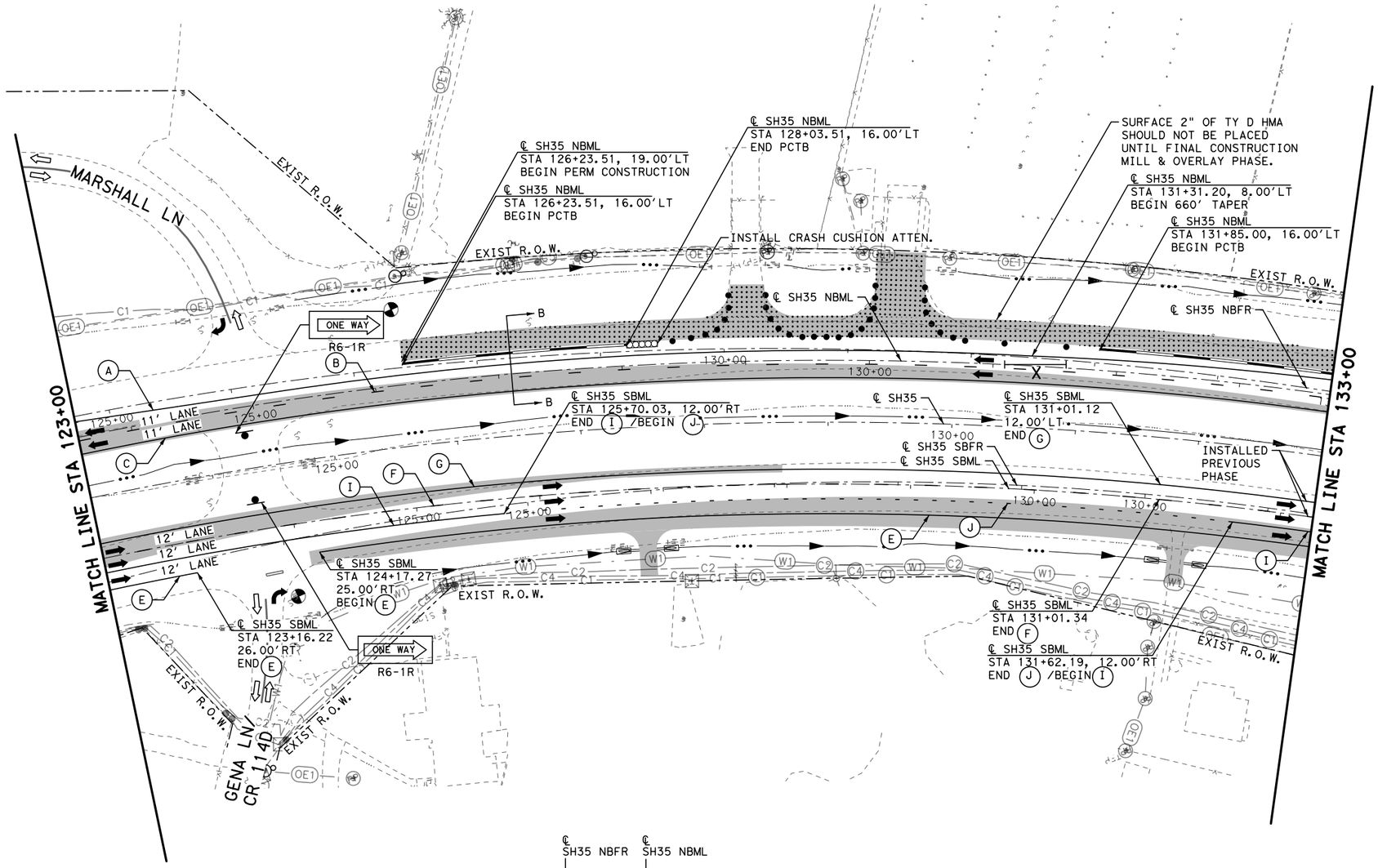
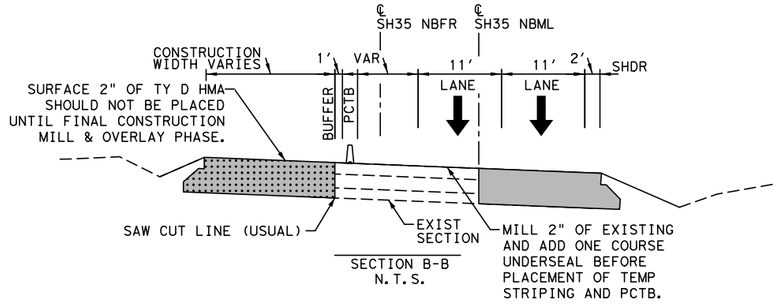
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".





SECTION B-B
N.T.S.

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 3

SH35 STA 123+00 TO SH35 STA 133+00

SHEET 6 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	61

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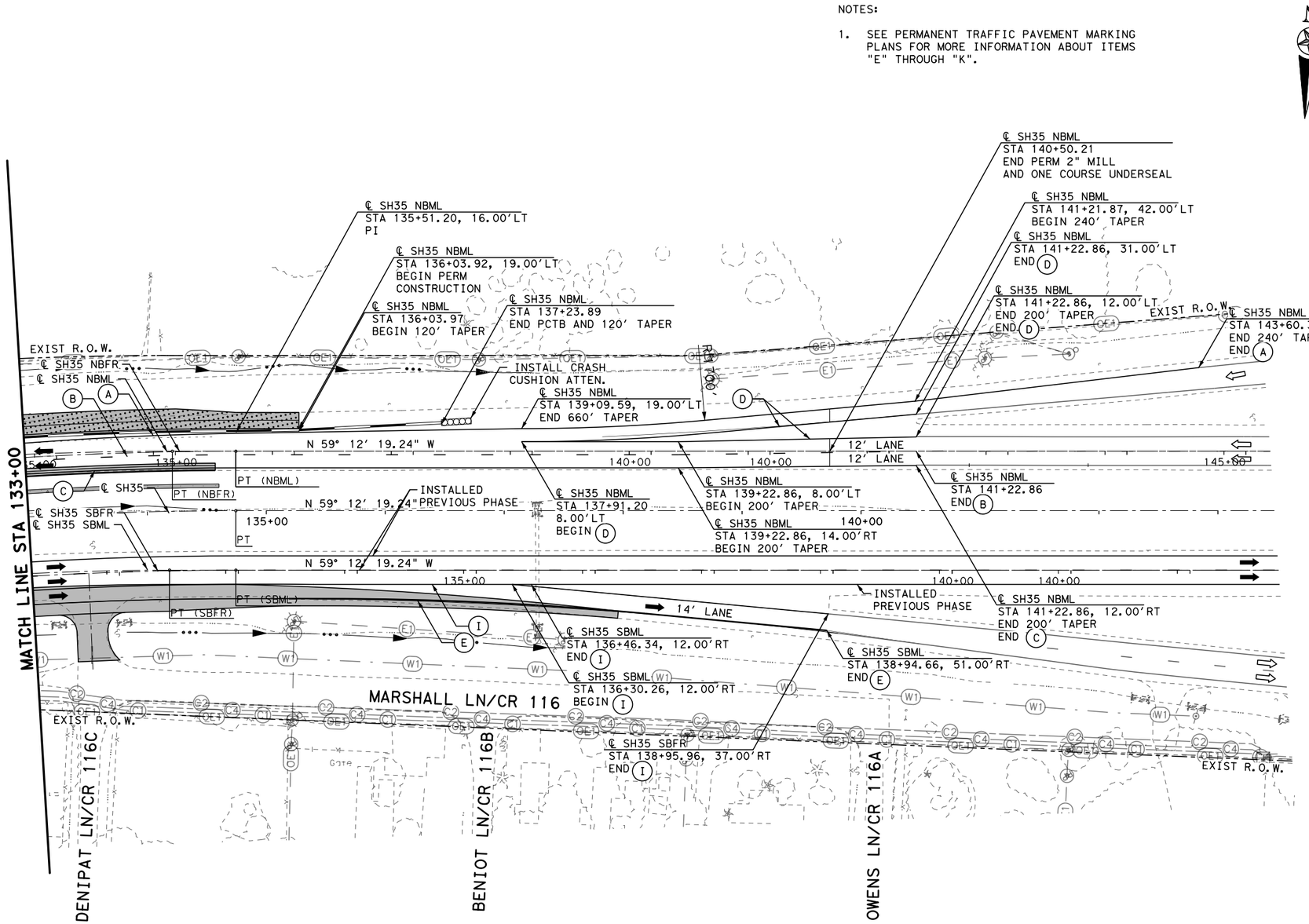
SCALE: 100.0000 ft / in.

0′ 50′ 100′(H)

SCALE IN FEET

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".



N

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 3
SH 35 STA 133+00 TO END

SHEET 7 OF 7

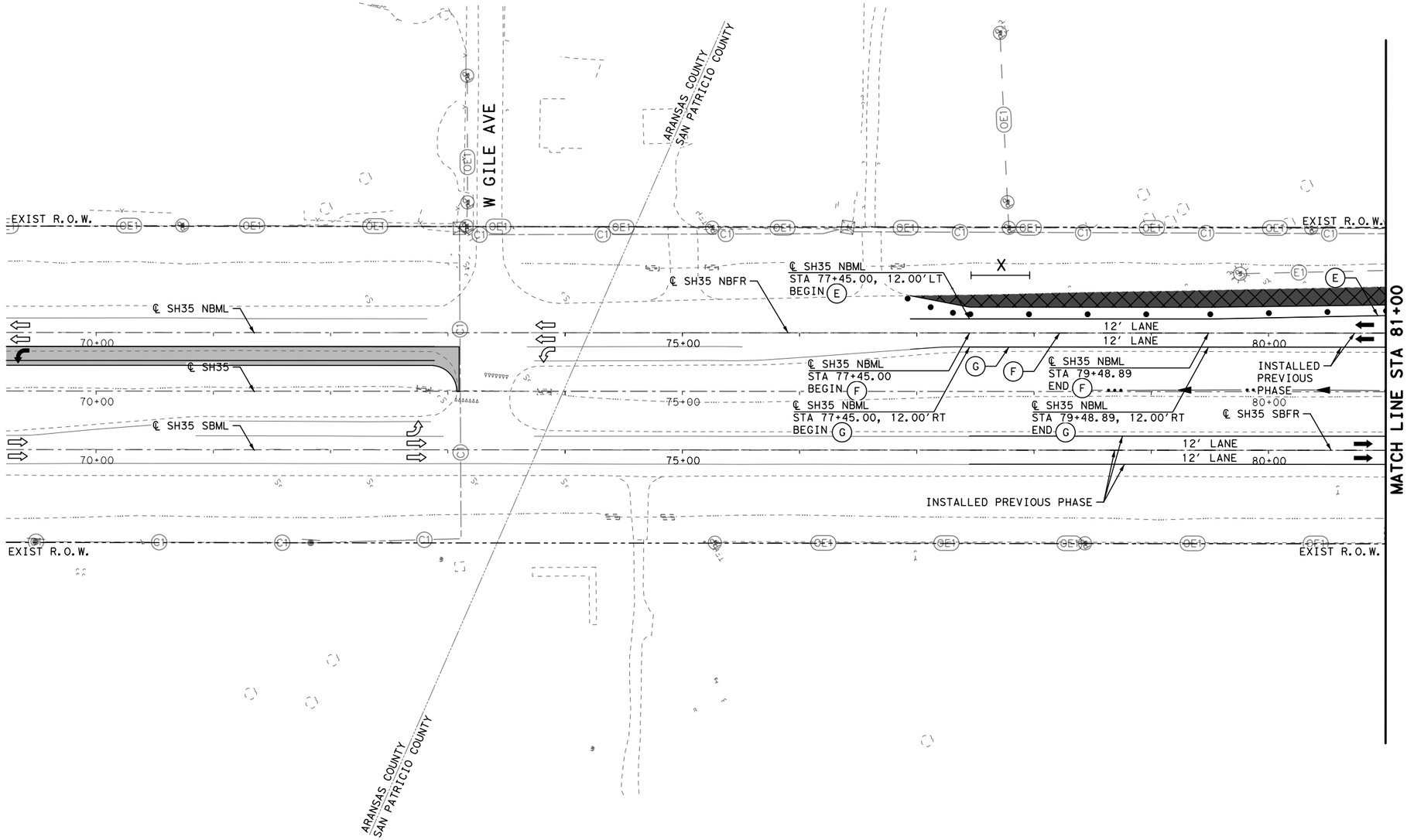
FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	62

DATE: 4/28/2021 TIME: 2:59:00 PM
FILE: SH35_021_307-TCP-PH03-07.dgn
PATH: \\wsppw041cs01\ICS_pdf_work_dir\123429\18913_30\SH35_021_307-TCP-PH03-07.dgn

SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".



0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
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- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
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- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 4
BEGIN TO SH35 STA 81+00

SHEET 1 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	63

DATE: 4/28/2021 TIME: 2:58:02 PM
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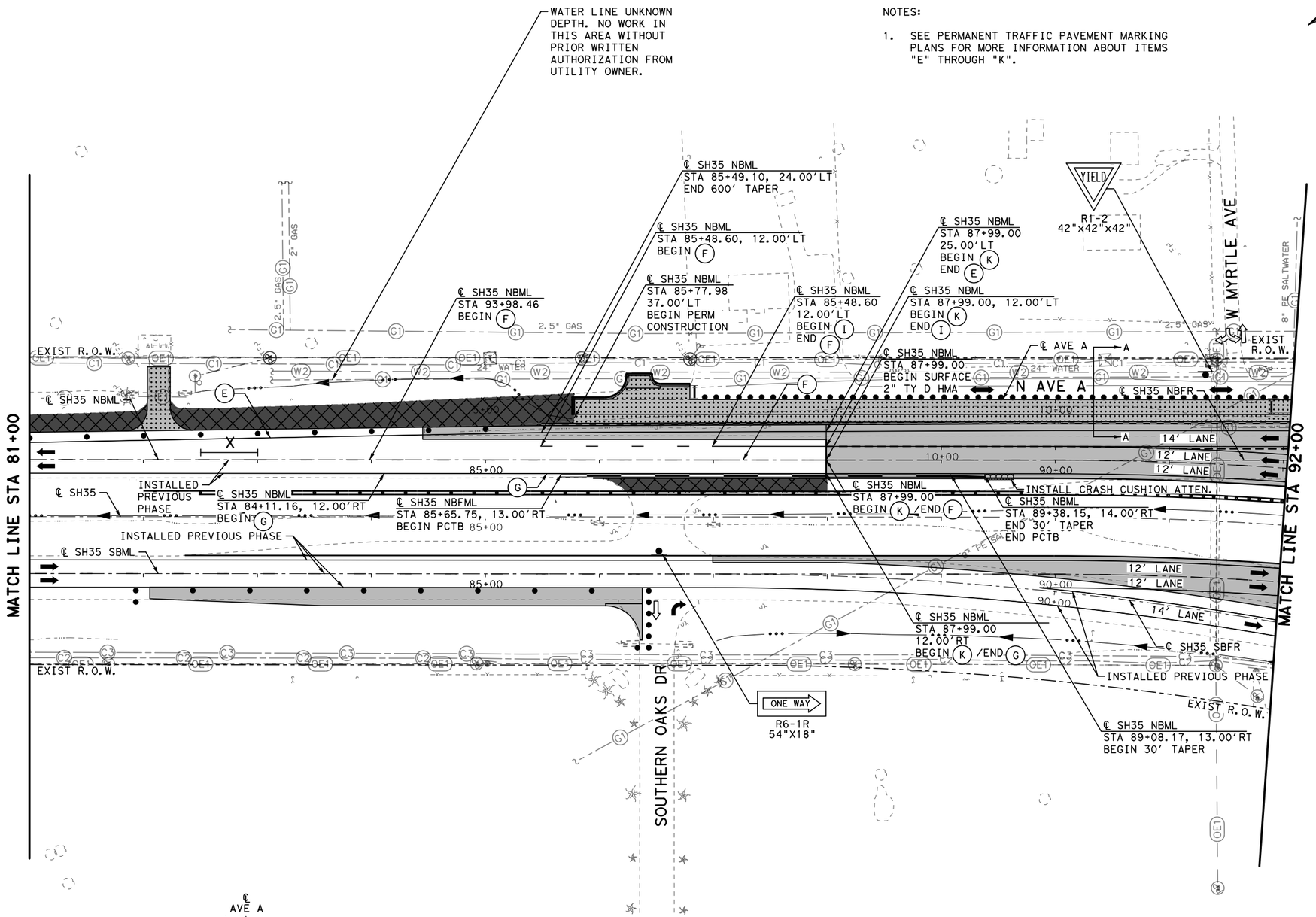
PATH: \\wspdw04tcs01\TCS_pdf_work_dir\123429\181913.63\SH35_021_401-TCP-PH04-01.dgn

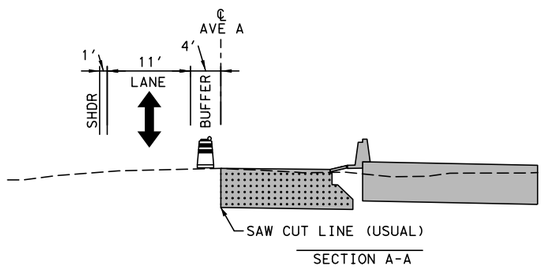
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".

WATER LINE UNKNOWN DEPTH. NO WORK IN THIS AREA WITHOUT PRIOR WRITTEN AUTHORIZATION FROM UTILITY OWNER.





SECTION A-A

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- x REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

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2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
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TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 4

SH35 STA 81+00 TO SH35 STA 92+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	64

DATE: 4/28/2021 TIME: 2:59:43 PM
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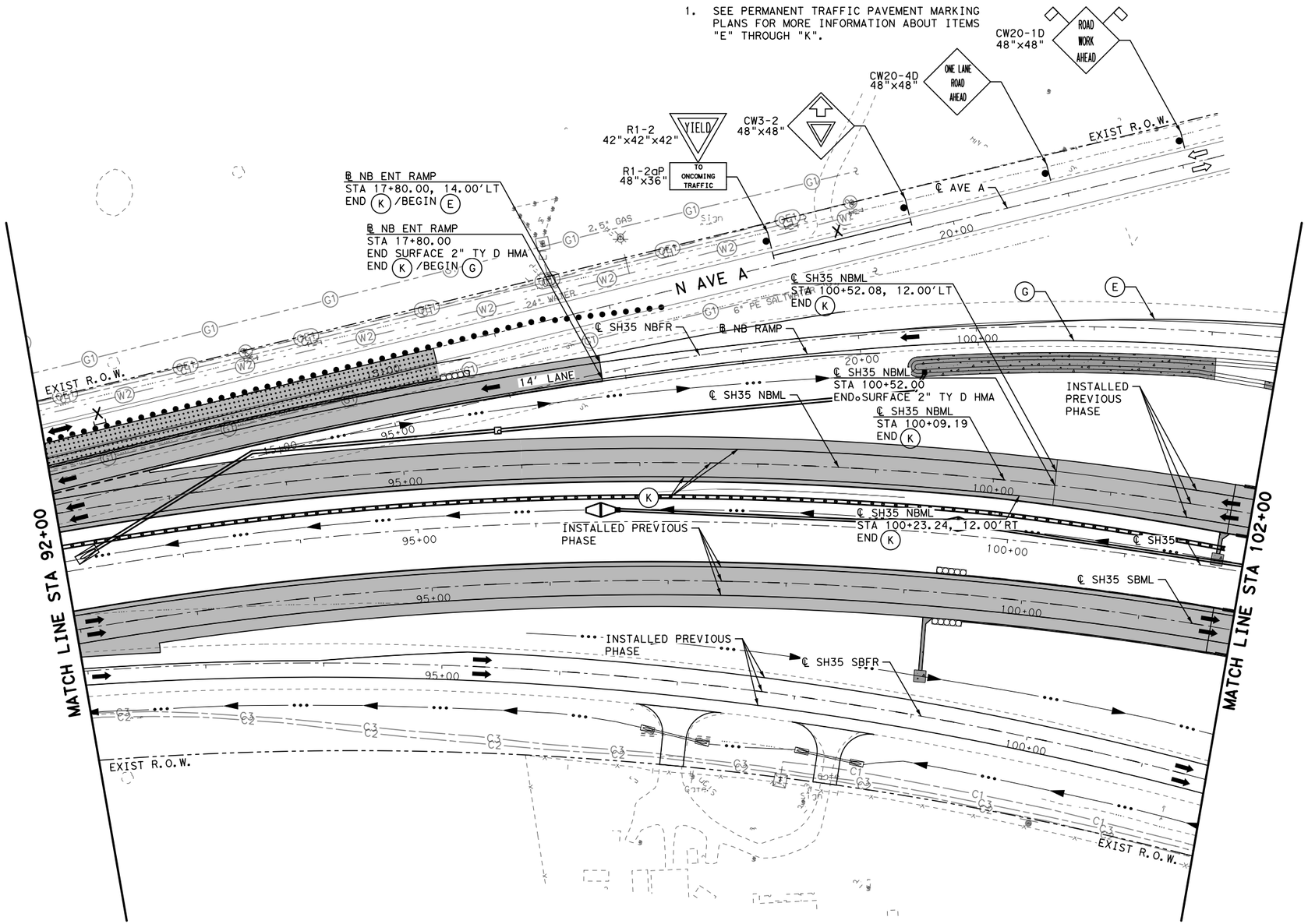
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".



0′ 50′ 100′(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- X REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 4

SH35 STA 92+00 TO SH35 STA 102+00

SHEET 3 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	65

DATE: 4/28/2021 TIME: 2:58:55 PM
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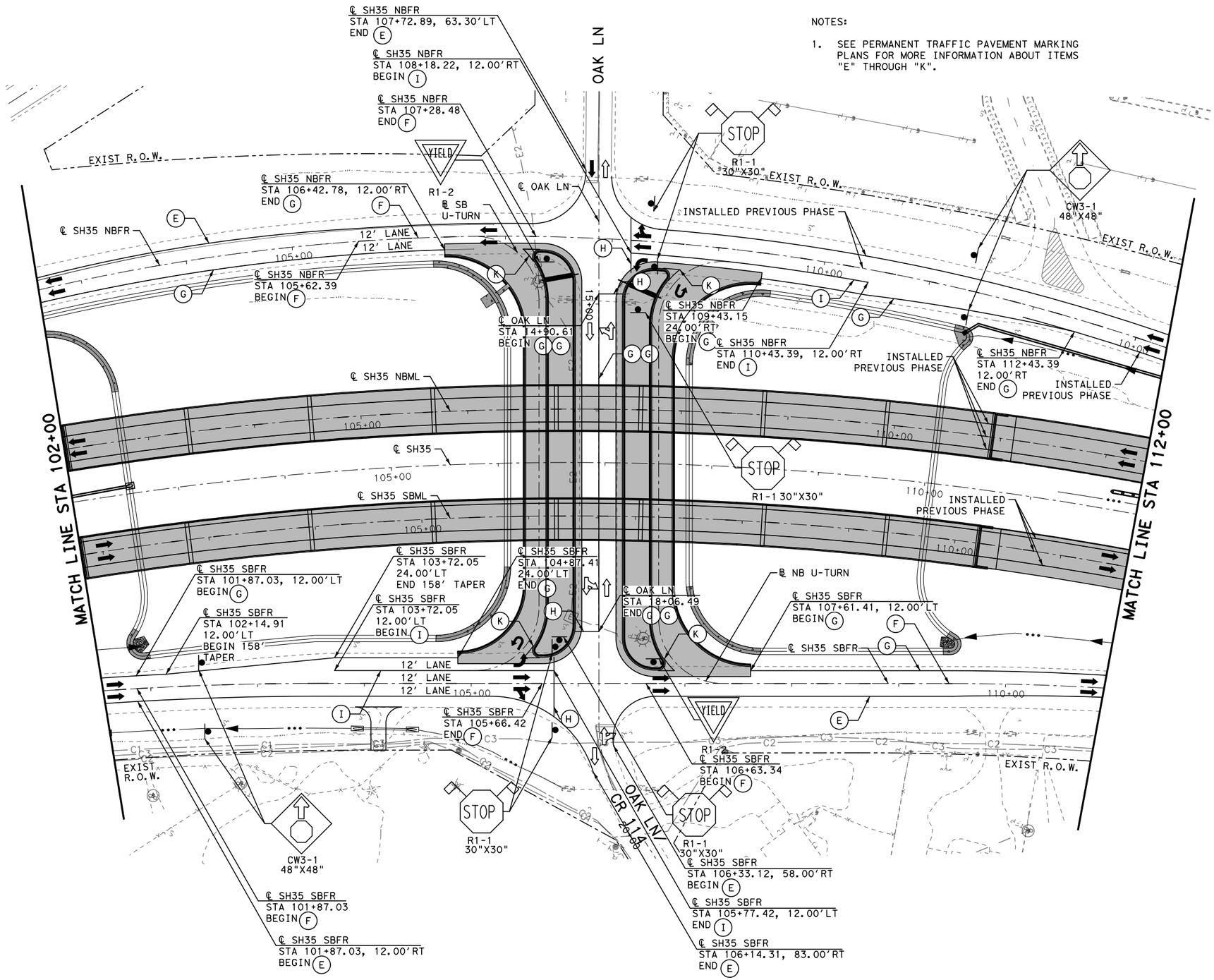

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- x REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 4

SH35 STA 102+00 TO SH35 STA 112+00

SHEET 4 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	66

DATE:4/28/2021 TIME:2:58:10 PM
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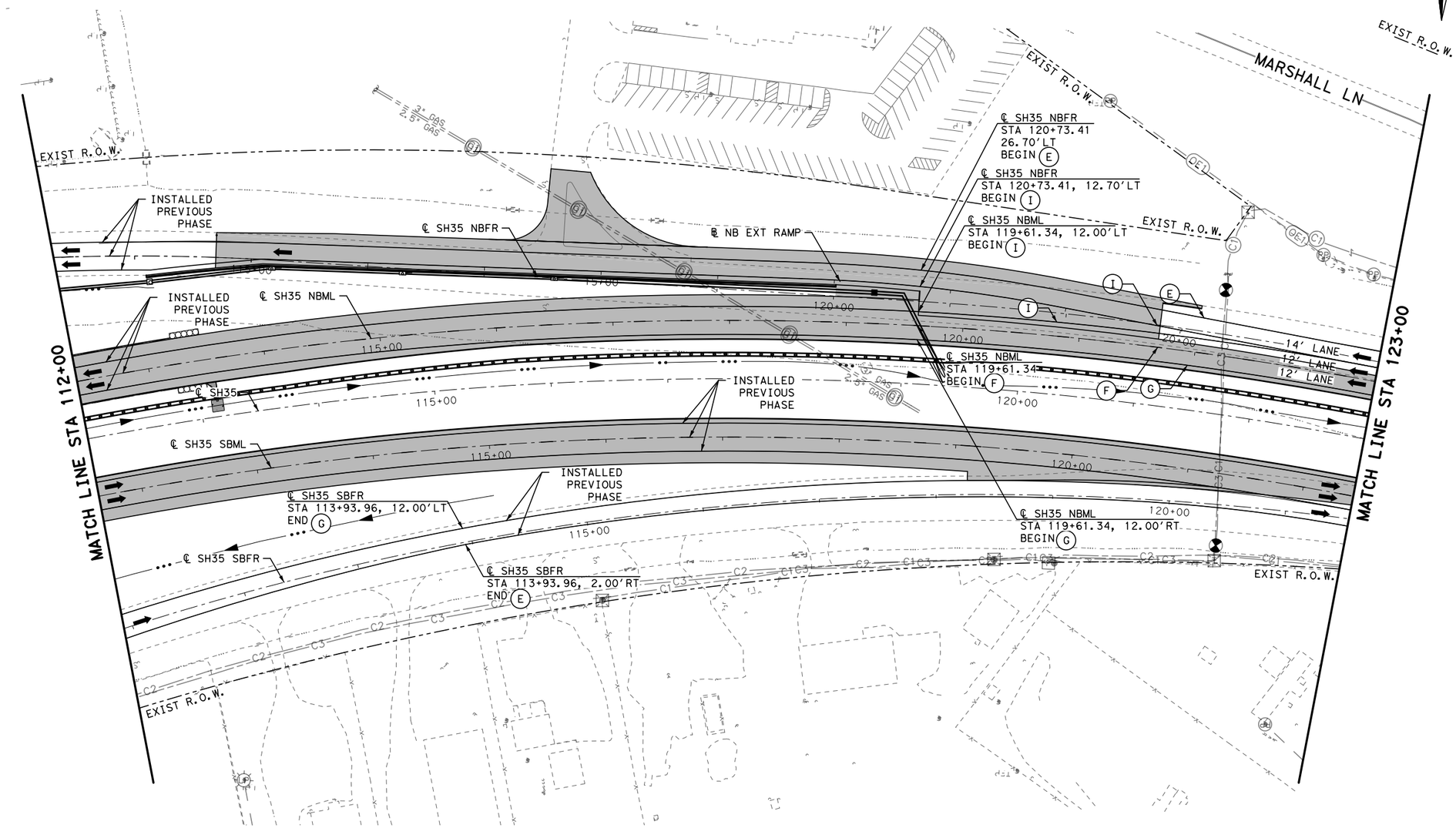
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".



0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
- (B) WRK ZN PAV MRK REMOV (W)(4")(BRK)
- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 4

SH35 STA 112+00 TO SH35 STA 123+00

SHEET 5 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	67

DATE: 4/28/2021 TIME: 2:58:04 PM
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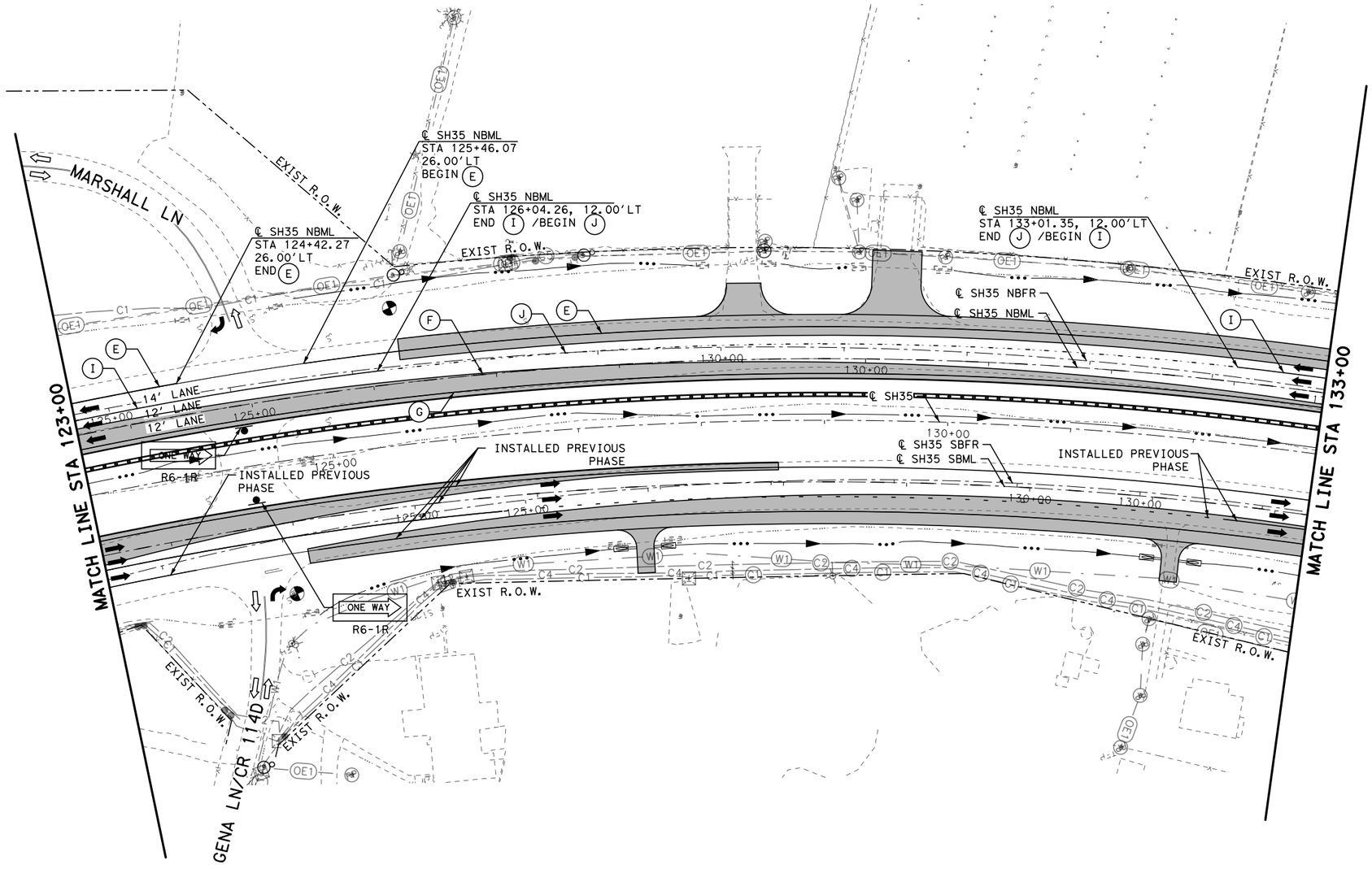
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".



N

0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
- CRASH CUSHION ATTENUATOR
- FLASHING ARROW PANEL
- (A) WRK ZN PAV MRK REMOV (W)(4")(SLD)
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- (C) WRK ZN PAV MRK REMOV (Y)(4")(SLD)
- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
- (F) WRK ZN PAV MRK NON-REMOV (W)(4")(BRK)
- (G) WRK ZN PAV MRK NON-REMOV (Y)(4")(SLD)
- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 4

SH35 STA 123+00 TO SH35 STA 133+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	68

DATE: 4/28/2021 TIME: 2:58:23 PM
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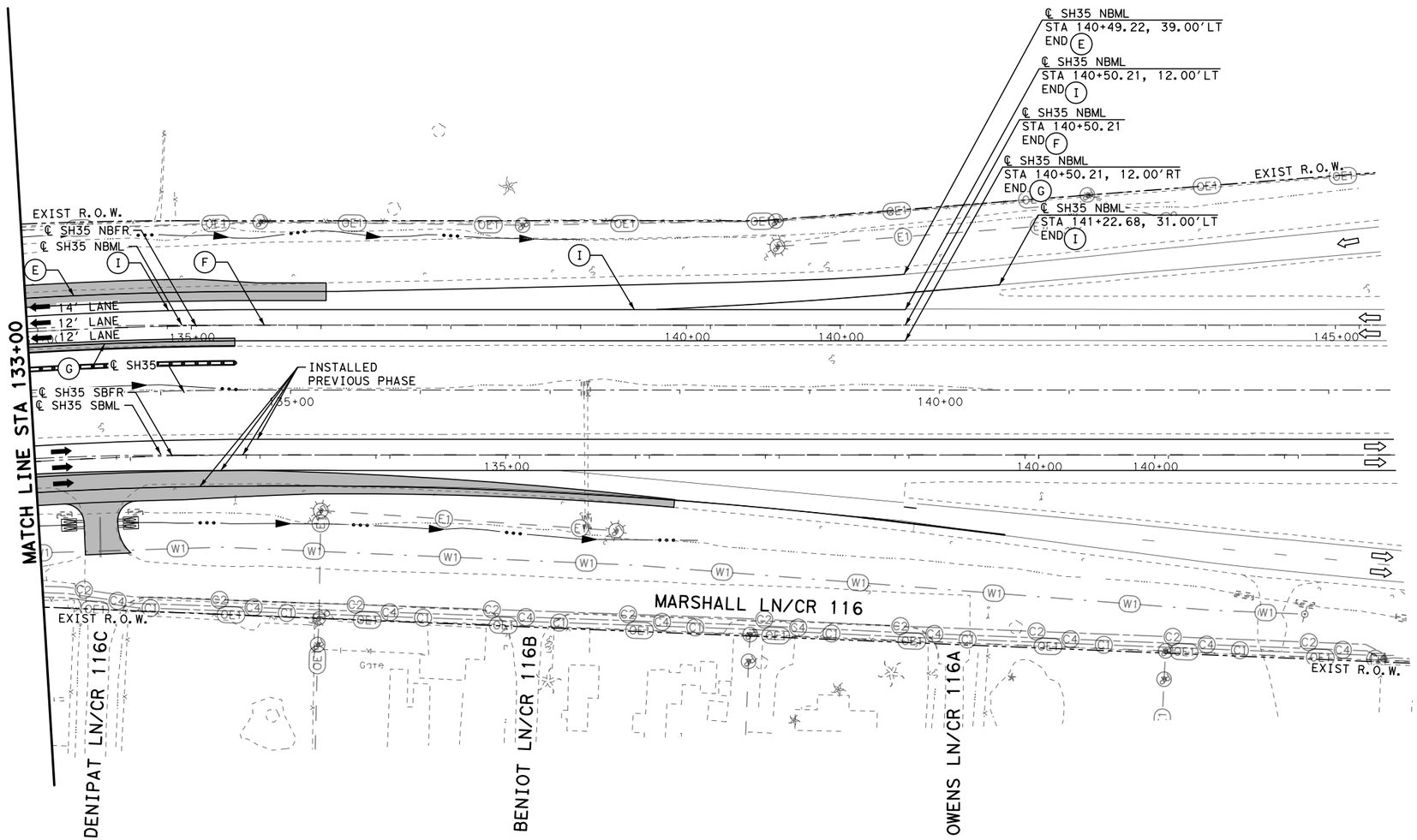
SCALE: 100.0000 ft / in.

NOTES:

1. SEE PERMANENT TRAFFIC PAVEMENT MARKING PLANS FOR MORE INFORMATION ABOUT ITEMS "E" THROUGH "K".



0' 50' 100'(H)

SCALE IN FEET

- PERM CONSTRUCTION THIS PHASE
- TEMP CONSTRUCTION THIS PHASE
- AREA TO BE OBLITERATED
- LEVEL UP
- CONSTRUCTED IN PREVIOUS PHASES
- TEMP CONSTRUCTION PREVIOUS PHASE
- EXISTING TRAFFIC FLOW THIS PHASE
- PROPOSED TRAFFIC FLOW THIS PHASE
- CHANNELIZING DEVICES
- REFER TO BC & TCP STANDARD SHEETS FOR SPACING
- CONSTRUCTION SIGN
- TYPE III BARRICADE
- PORTABLE CONCRETE TRAFFIC BARRIER (PCTB)
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- (D) WRK ZN PAV MRK REMOV (W)(8")(SLD)
- (E) WRK ZN PAV MRK NON-REMOV (W)(4")(SLD)
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- (H) WRK ZN PAV MRK NON-REMOV (W)(24")(SLD)
- (I) WRK ZN PAV MRK NON-REMOV (W)(8")(SLD)
- (J) WRK ZN PAV MRK NON-REMOV (W)(8")(DOT)
- (K) PERMANENT PAV MRK

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TRAFFIC CONTROL PLAN
PHASE 4
SH35 STA 133+00 TO END

SHEET 7 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	69

DATE: 4/28/2021 TIME: 2:58:01 PM
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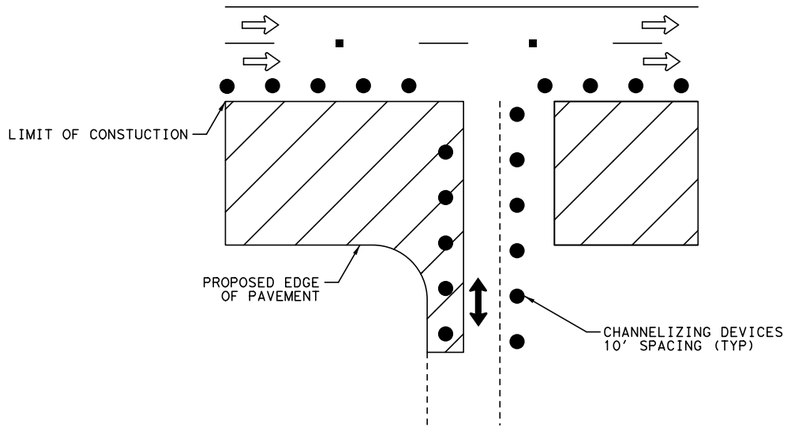
SCALE: 100.0000 ft / in.

TCP DRIVEWAY PHASING LEGEND

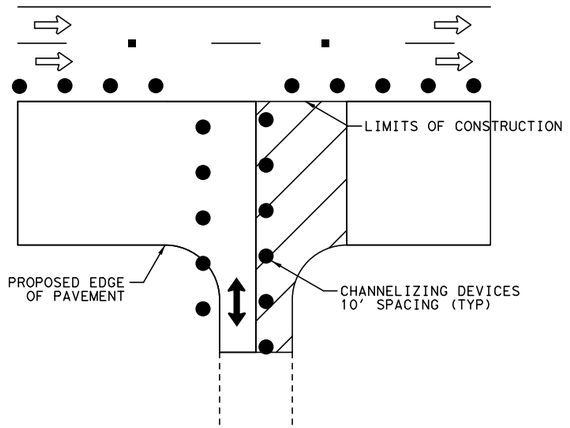
WORKZONE

EXISTING TRAFFIC FLOW

PROPOSED TRAFFIC FLOW



(N.T.S.)



(N.T.S.)

NOTES:

1. IF NECESSARY TO MAINTAIN ACCESS, CONTRACTOR SHALL PHASE CONSTRUCT CROSS STREET ENTRANCES AS SHOWN.
2. REFER TO TCP STANDARD(S) FOR TRAFFIC CONTROL SET UP, TAPER LENGTHS AND SPACING FOR SIGNS.
3. THE CONTRACTOR WILL USE THIS DETAIL IN CONJUCTION WITH STANDARD BC (2)-14 FOR ADVANCE WARNING SIGNS AND DELINIATION DEVICES AND TCP(2-8)-18 FOR CORRECT PLACEMENT OF SIGNS AND CHANNELIZING DEVICES.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
TUNG M. NGUYEN
111606
LICENSED
PROFESSIONAL ENGINEER

4/28/2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

TCP DRIVEWAY PHASING

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	70

DATE: 4/23/2021 TIME: 1:16:43 PM
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PATH: \\wspw041cs01\ICS_pdf_work_dir\12219\181913_84\SH35_021_501-TCP-DWY-01.dgn

LOC NO.	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT				CRASH CUSHION								
															MOVE/RESET		L	L	R	R	S
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT	AVAILABLE SITE LENGTH	INSTALL	REMOVE	MOVE/RESET	FROM LOC. #	N	W	N	W	N
1	PHASE 1	1 OF 8	TEMPORARY BARRIER SBML	58+21.00	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"		1								X
2	PHASE 1	3 OF 8	TEMPORARY BARRIER NBML	72+96.00	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"		1	1*							X
3	PHASE 1	3 OF 8	TEMPORARY BARRIER SBML	80+08.00	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"		1	1*							X
4	PHASE 1	5 OF 8	TEMPORARY BARRIER NBFR	95+60.00	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"		1	1*							X
5	PHASE 1	6 OF 8	TEMPORARY BARRIER NBFR	116+90.00	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"		1	1*							X
6	PHASE 1	7 OF 8	TEMPORARY BARRIER NBFR	124+85.00	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"		1								X
7	PHASE 1	7 OF 8	TEMPORARY BARRIER SBFR	126+68.00	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"		1								X
8	PHASE 1	8 OF 8	TEMPORARY BARRIER SBFR	132+65.00	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"		1								X
9	PHASE 1 STAGE 1	1 OF 6	TEMPORARY BARRIER SBML	58+36.00	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"				1	1					X
10	PHASE 1 STAGE 1	4 OF 6	TEMPORARY BARRIER NB EXT RAMP	20+67.95	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"				1	6					X
11	PHASE 2	1 OF 8	TEMPORARY BARRIER SBML	79+90.00	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"				1	9					X
12	PHASE 2	3 OF 8	TEMPORARY BARRIER NBFR	96+60.05	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"				1	10					X
13	PHASE 2	5 OF 8	TEMPORARY BARRIER SBFR	114+60.21	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"				1	7					X
14	PHASE 2	7 OF 8	TEMPORARY BARRIER NBFR	137+28.89	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"				1	8					X
15	PHASE 3	3 OF 7	TEMPORARY BARRIER AVE A	17+03.65	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"			1*	1	12					X
16	PHASE 3	3 OF 7	TEMPORARY BARRIER NBML	98+96.30	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"				1	11					X
17	PHASE 3	6 OF 7	TEMPORARY BARRIER NBML	128+03.51	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"			1*	1	13					X
18	PHASE 3	7 OF 7	TEMPORARY BARRIER NBML	137+23.89	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"			1*	1	14					X
19	PHASE 4	2 OF 7	TEMPORARY BARRIER NBML	89+38.15	TL-3	UNI	SEE STD	SEE STD	PRECAST CONCRETE TRAFFIC BARRIER	24"	42"			1*	1	16					X
20	PHASE 2	TCP 3 OF 8 SBML 2 OF 8	PERMANENT BARRIER SBML	99+51.00	TL-3	UNI	SEE STD	SEE STD	SSTR	14.5"	36"		1				X				
21	PHASE 2	TCP 3 OF 8 SBML 2 OF 8	PERMANENT BARRIER SBML	99+51.00	TL-3	UNI	SEE STD	SEE STD	SSTR	14.5"	36"		1				X				
22	PHASE 2	TCP 5 OF 8 NBML 4 OF 8	PERMANENT BARRIER NBML	113+22.00	TL-3	UNI	SEE STD	SEE STD	SSTR	14.5"	36"		1				X				
23	PHASE 2	TCP 5 OF 8 NBML 4 OF 8	PERMANENT BARRIER NBML	113+22.00	TL-3	UNI	SEE STD	SEE STD	SSTR	14.5"	36"		1				X				
24	PHASE 3	3 OF 7	PERMANENT BARRIER NB RAMP	16+45.00	TL-3	UNI	SEE STD	SEE STD	SSCB (MOD)	24"	42"		1				X				
												TOTALS	13	8	11						

LEGEND:
L=LOW MAINTENANCE
R=REUSABLE
S=SACRIFICIAL
N=NARROW
W=WIDE

NOTE:

* REMOVAL TO OCCUR AT THE END OF PHASE/STAGE

FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.
http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/rdwylse.htm

CRASH CUSHION SUMMARY SHEET

FILE: ccss.dgn	DN:TxDOT	CK: TMN	CK: CPH
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY	
	CRP	SAN PAT.	
	FEDERAL AID PROJECT		SHEET NO.
	(SEE TITLE SHEET)		71

4/27/2021
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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. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

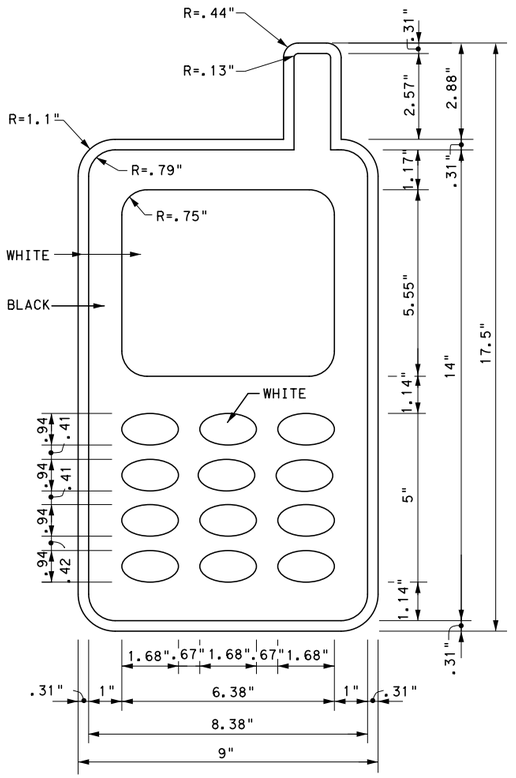
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

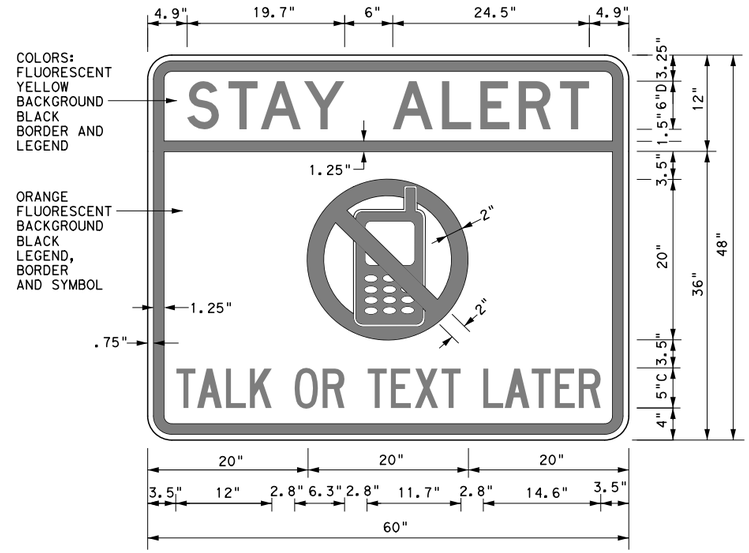
12. The Engineer has the final decision on the location of all traffic control devices.

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 APPAREL 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.





3.0" Radius, 1.25" Border, 0.75" Indent, Black on Yellow;
[STAY ALERT] Font: D
3.0" Radius, 1.25" Border, 0.75" Indent, Black on Orange;
[TALK OR TEXT LATER] Font: C specified length;

SIGN DETAIL (G20-10T)

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

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 Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
4-03 5-10 8-14	DIST	COUNTY		SHEET NO.
9-07 7-13	CRP	SAN PAT.		72

DATE: 8/18/2020 4:40:51 PM
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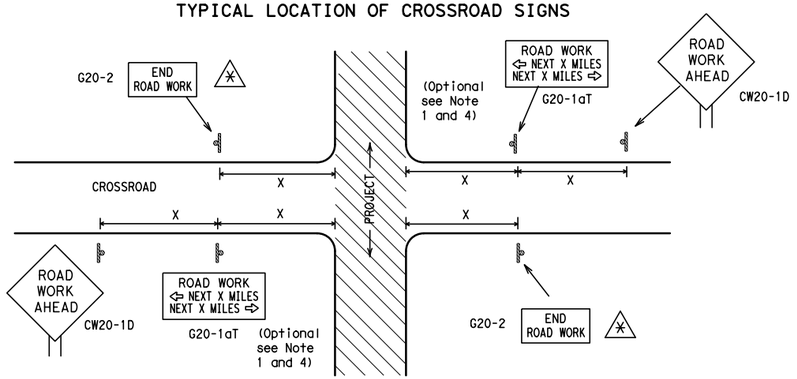
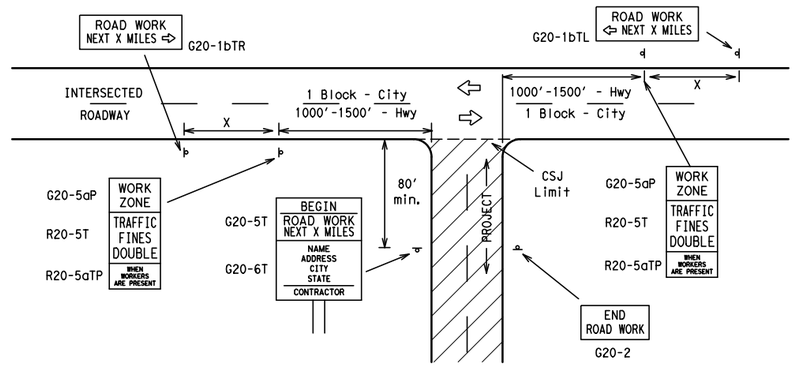
TYPICAL LOCATION OF CROSSROAD SIGNS



(*) 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. 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]

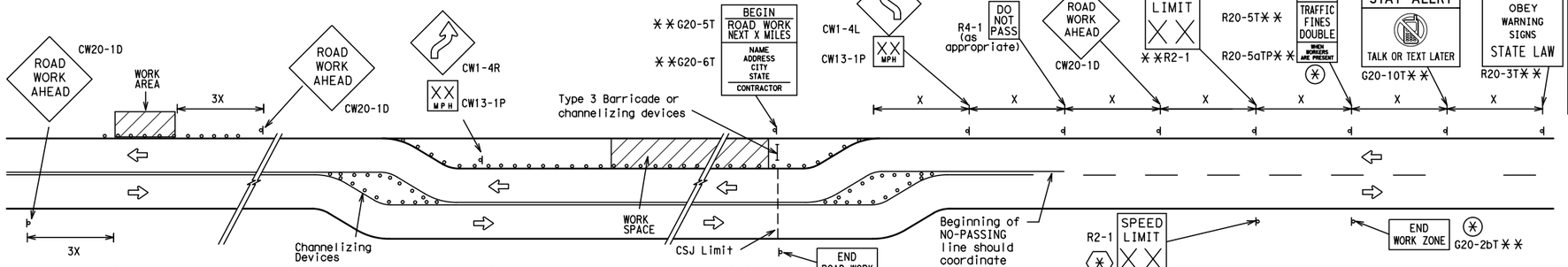
(*) For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

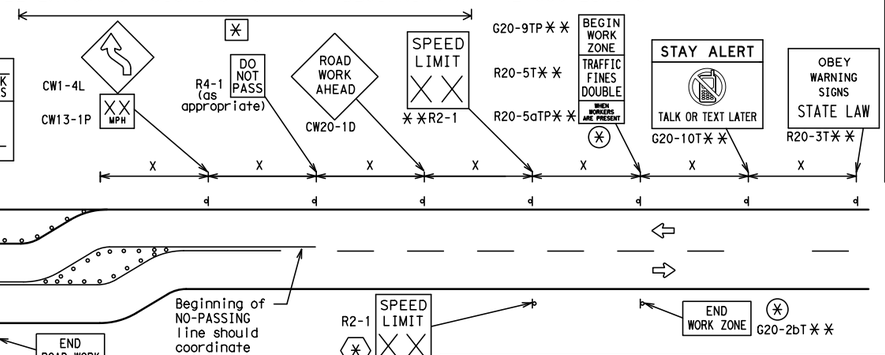
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

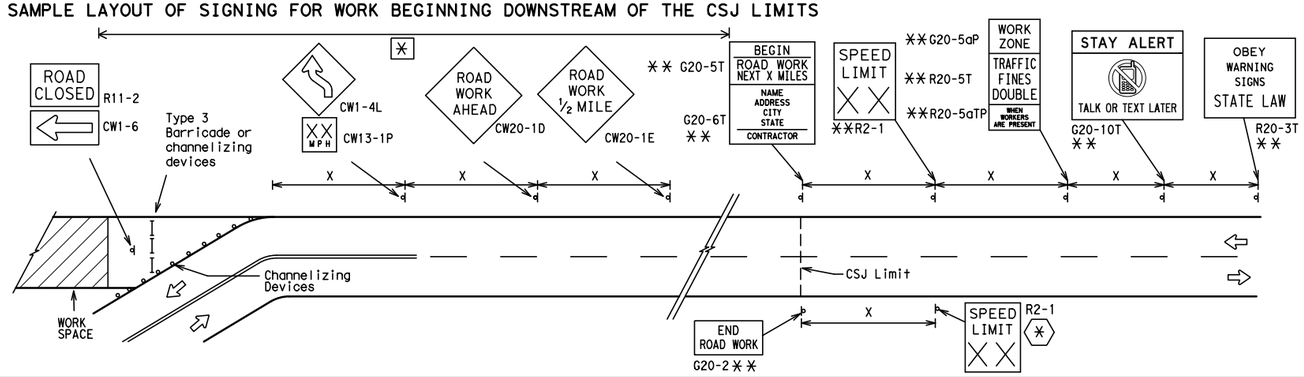


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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.

* * Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

[*] 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 Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	CRP	SAN PAT.		73

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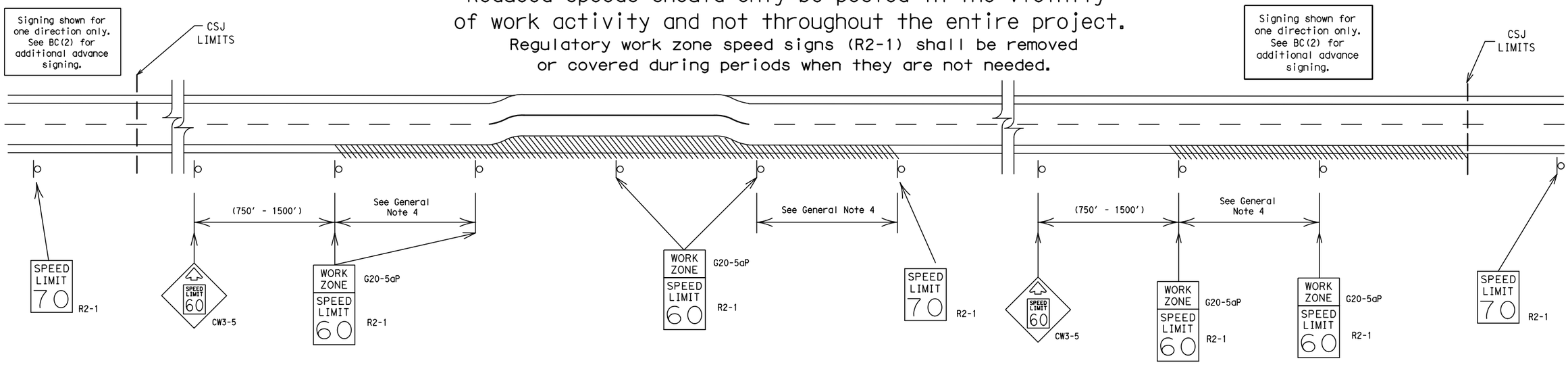
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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 travelled 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 Operations Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		74

DATE: 8/18/2020 4:41:53 PM
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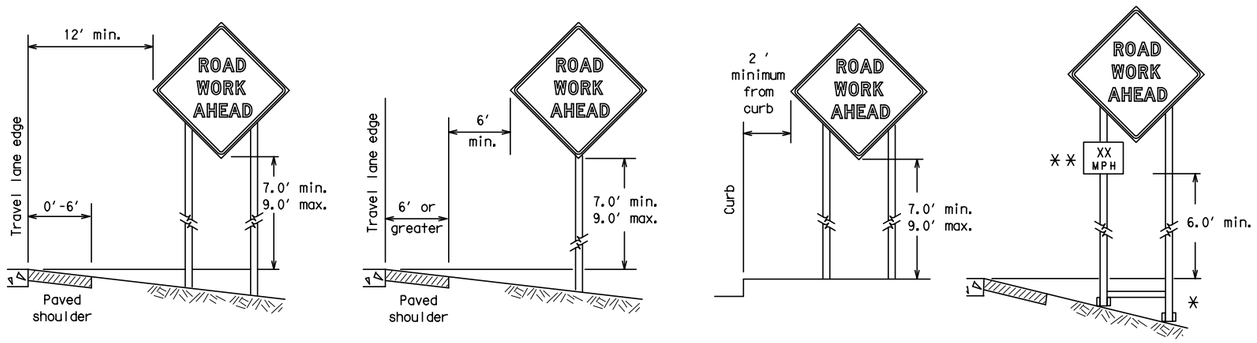
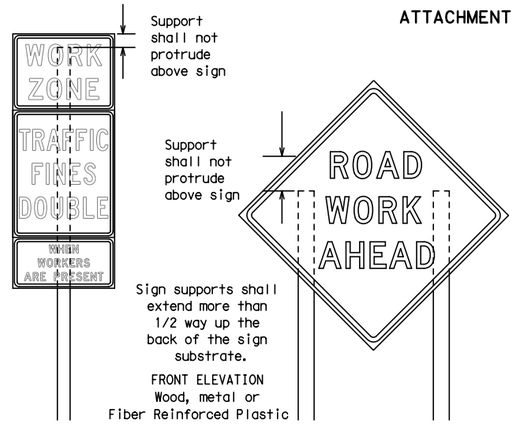
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



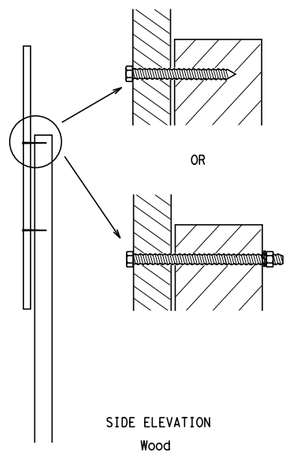
⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ 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



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.

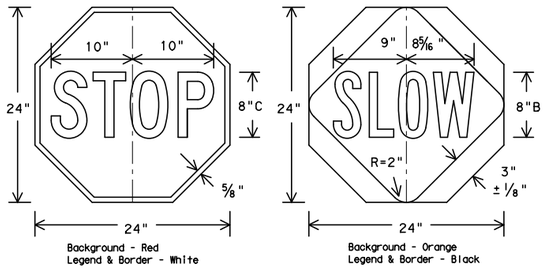


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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.

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" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectorized.
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.



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, 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.
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 sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards 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). 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 Operations Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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	CRP	SAN PAT.		75

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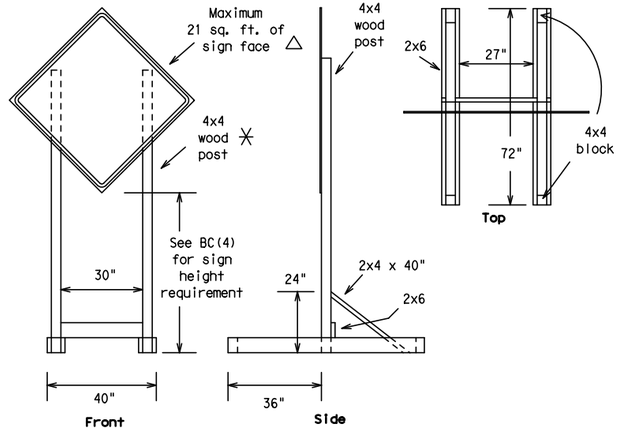
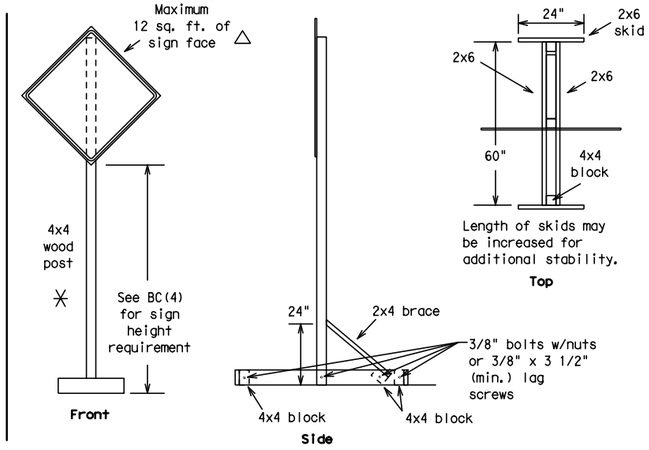
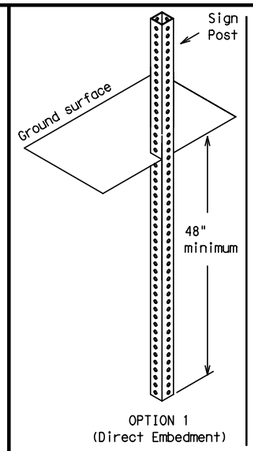
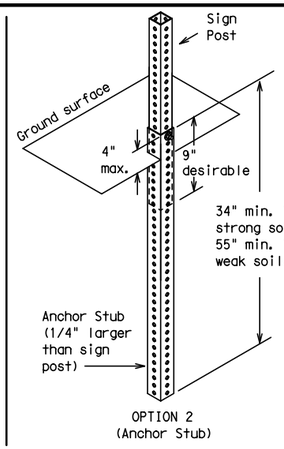


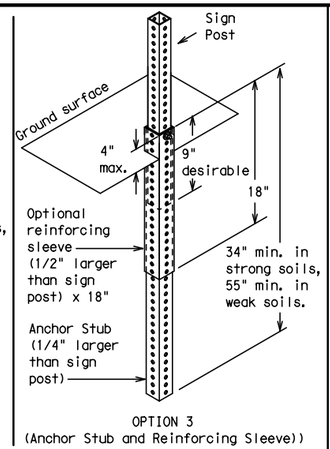


SKID MOUNTED WOOD SIGN SUPPORTS

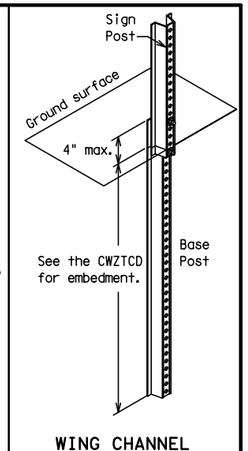
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □







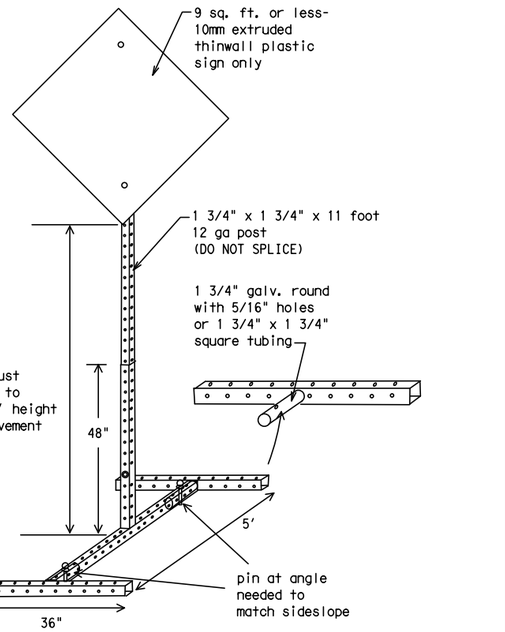
PERFORATED SQUARE METAL TUBING

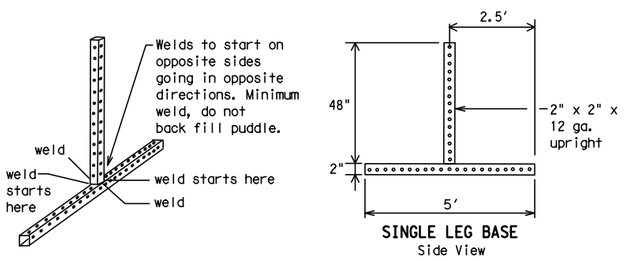


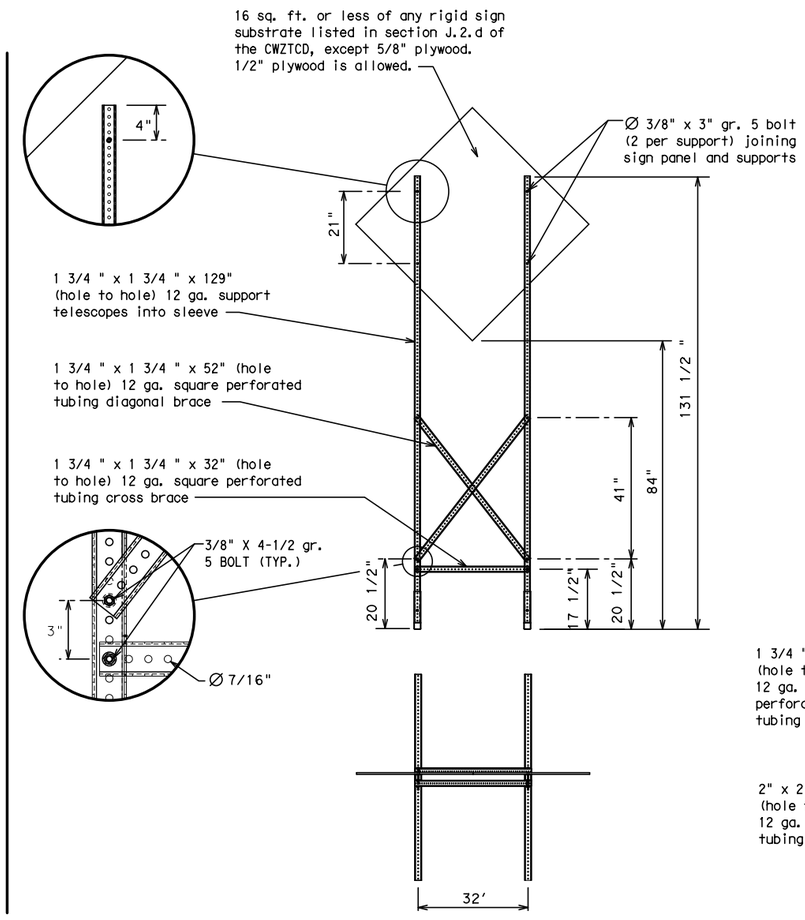
WING CHANNEL
Lap-splice/base bolted anchor

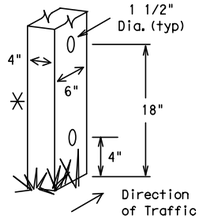
GROUND MOUNTED SIGN SUPPORTS

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.



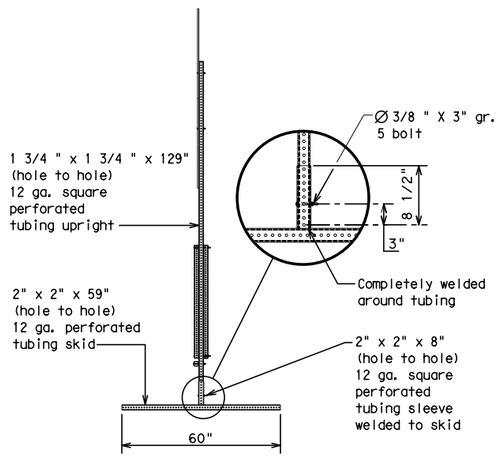






Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

WOOD POST SYSTEM FOR GROUND 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 Operations Division Standard

SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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7-13	CRP	SAN PAT.		76

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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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	CRP	SAN PAT.		77

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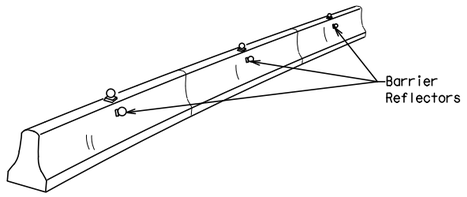
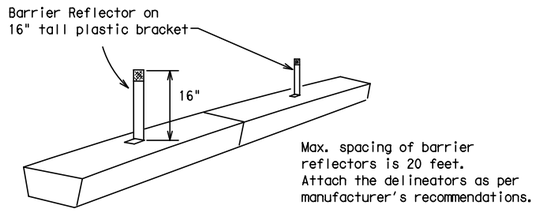
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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

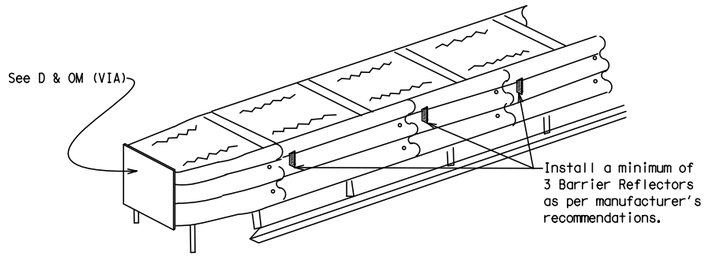


CONCRETE TRAFFIC BARRIER (CTB)

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.



LOW PROFILE CONCRETE BARRIER (LPCB)

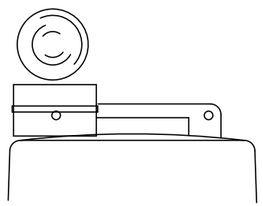


DELINEATION OF END TREATMENTS

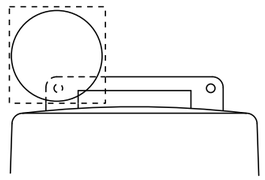
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{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

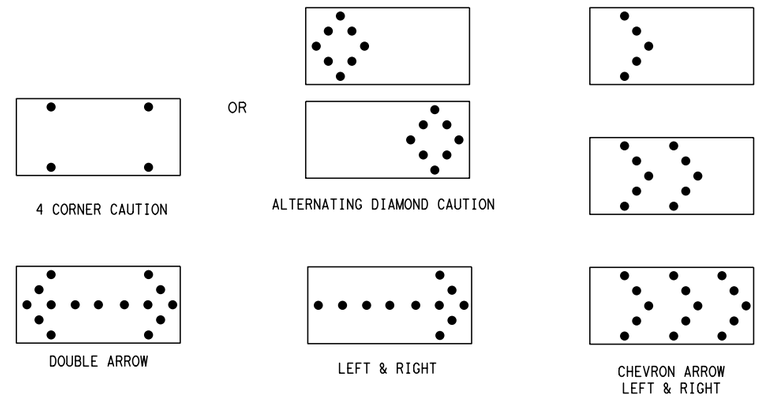
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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 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 National Cooperative Highway Research Report No. 350 (NCHRP 350) or 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 Operations Division Standard

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

BC(7)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	CRP	SAN PAT.		78

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

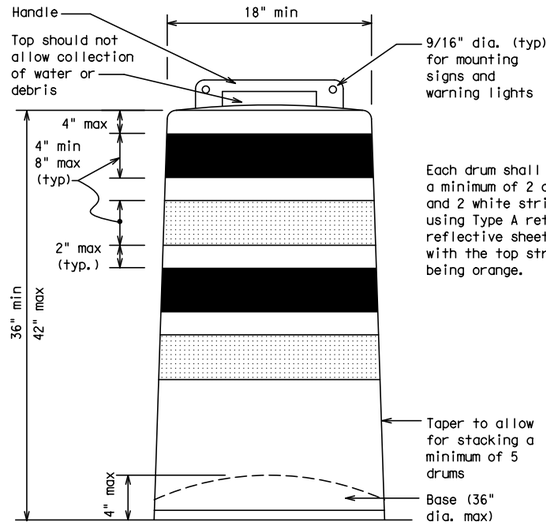
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

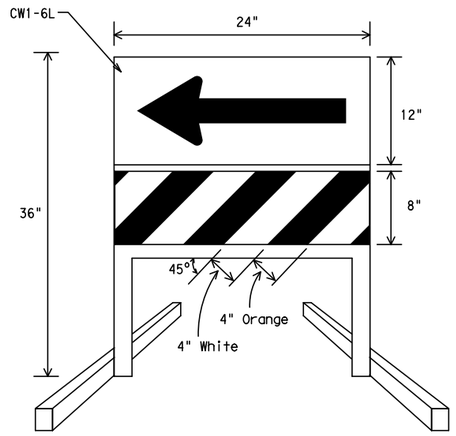
RETROREFLECTIVE SHEETING

1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A 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.

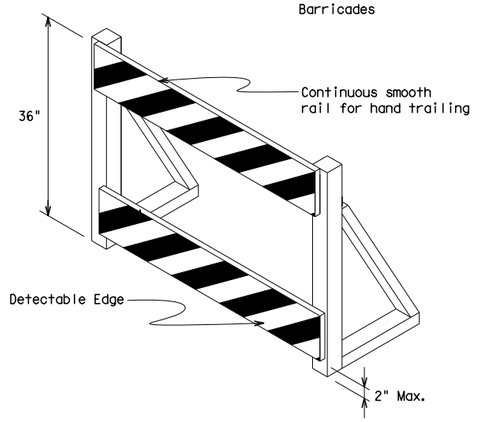




DIRECTION INDICATOR BARRICADE

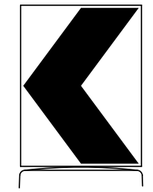
1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type B_{FL} or Type C_{FL} Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades

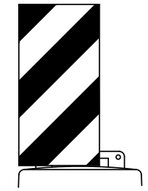


DETECTABLE PEDESTRIAN BARRICADES

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.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
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 for Buildings and Facilities (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 may 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 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 Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	CRP	SAN PAT.		79

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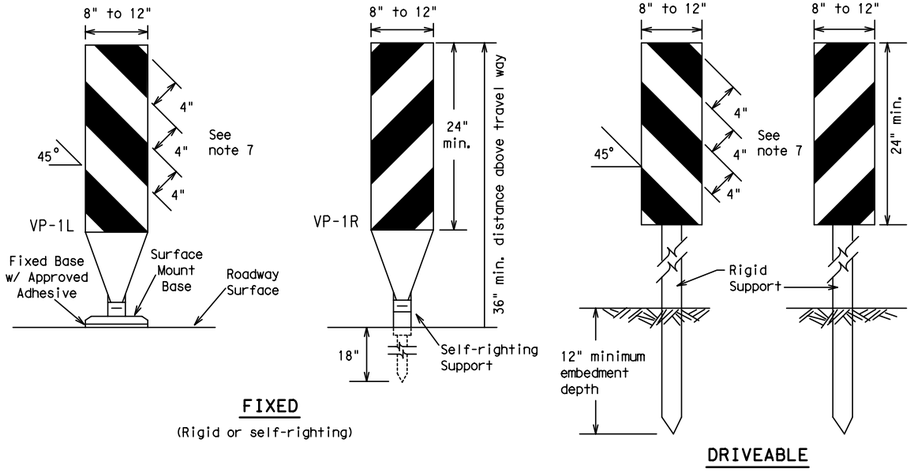
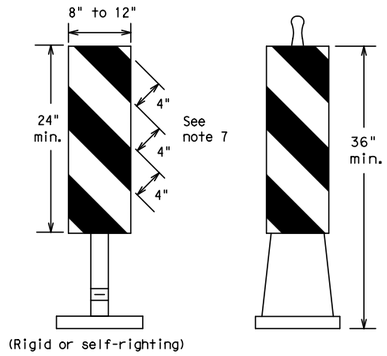


FIXED
(Rigid or self-righting)

DRIVEABLE

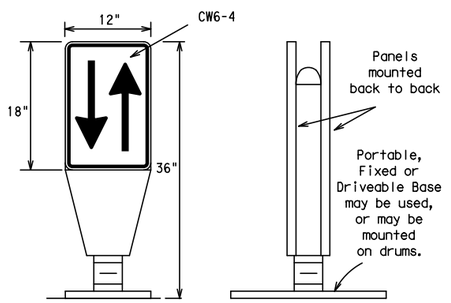


(Rigid or self-righting)

PORTABLE

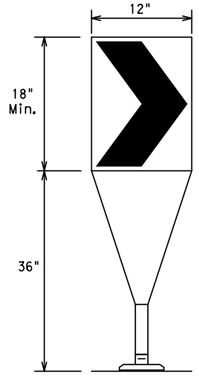
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of 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 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)



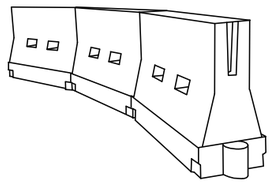
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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) placed 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 NCHRP 350 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 Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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7-13	CRP	SAN PAT.		80

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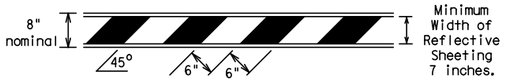
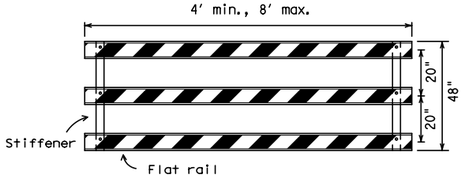
TYPE 3 BARRICADES

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 conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



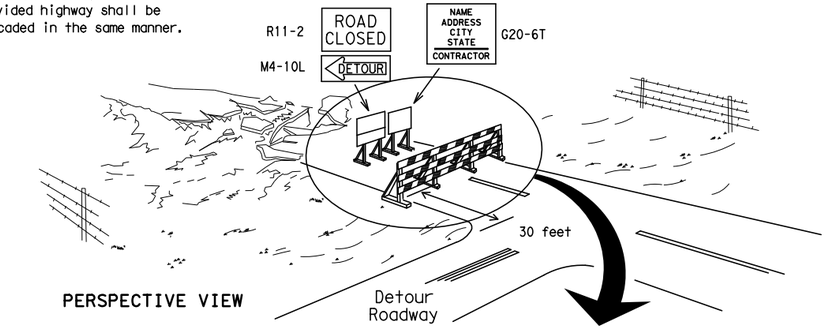
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

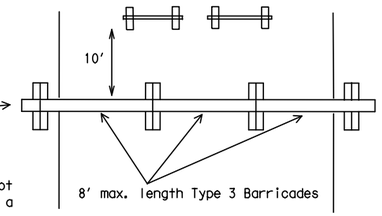
Each roadway of a divided highway shall be barricaded in the same manner.



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.

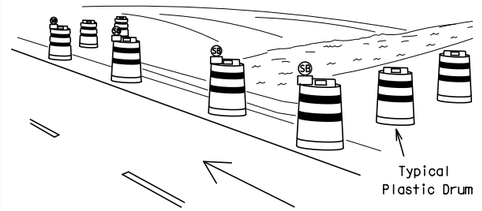
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

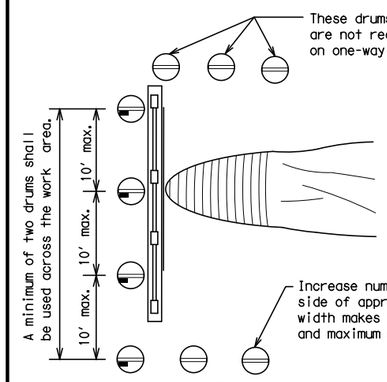
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

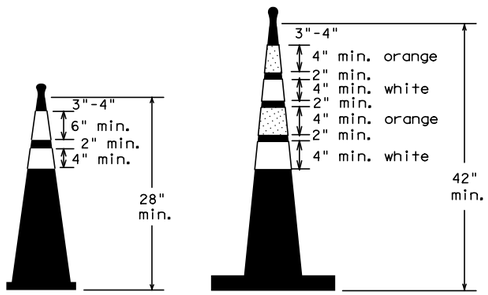
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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

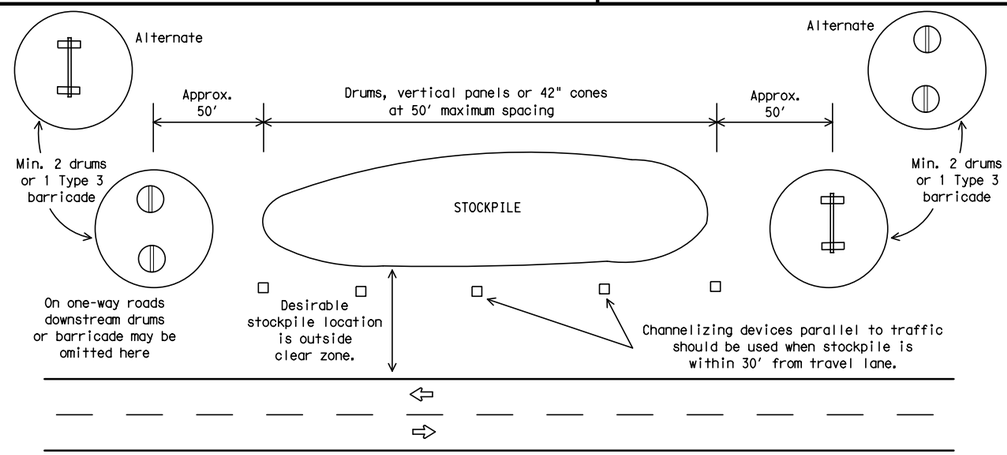
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

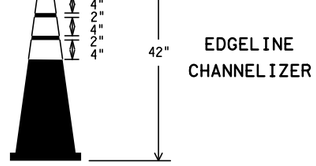
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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 used at night 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.
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

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

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BC(10)-14

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

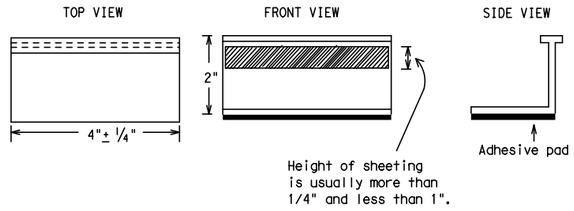
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

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BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-14

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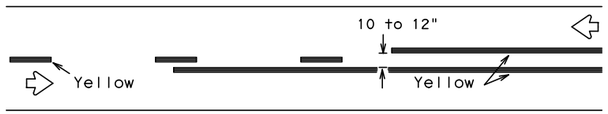
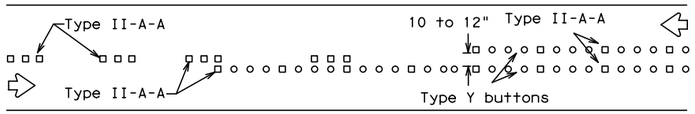
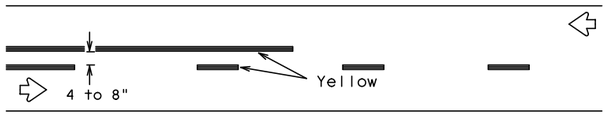
PAVEMENT MARKING PATTERNS



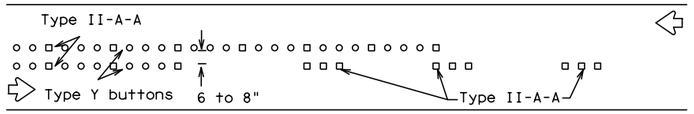
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



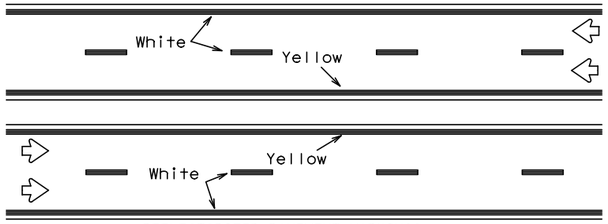
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



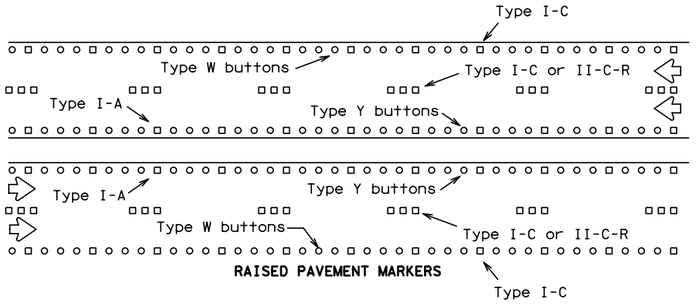
RAISED PAVEMENT MARKERS - PATTERN B

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



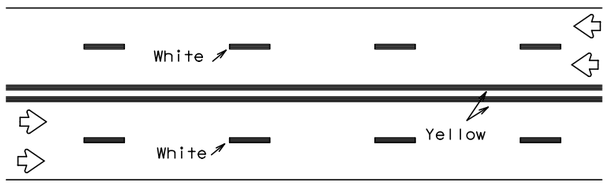
REFLECTORIZED PAVEMENT MARKINGS



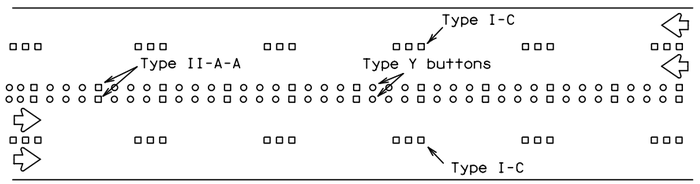
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



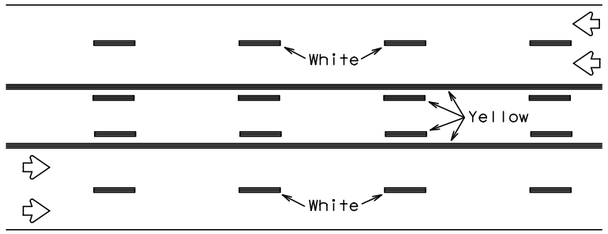
REFLECTORIZED PAVEMENT MARKINGS



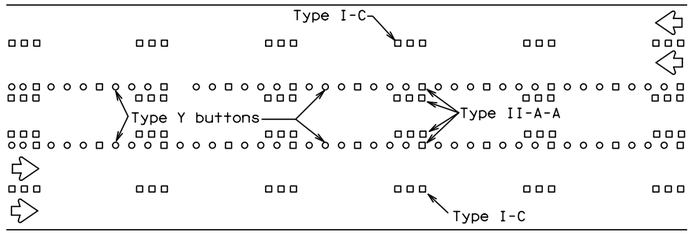
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

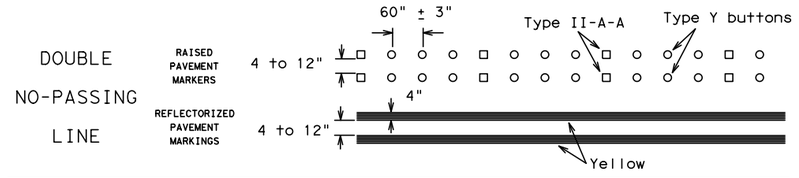
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

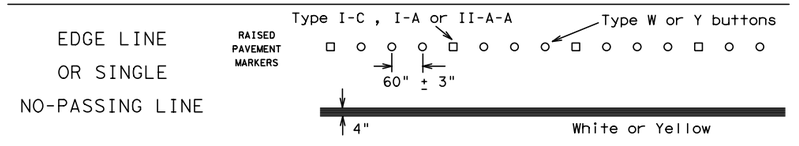
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

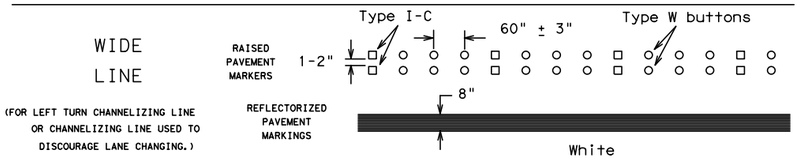


EDGE LINE OR SINGLE NO-PASSING LINE



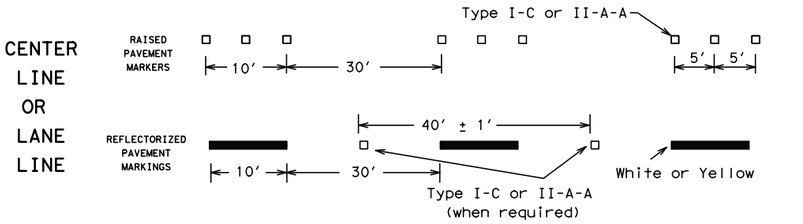
WIDE LINE

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

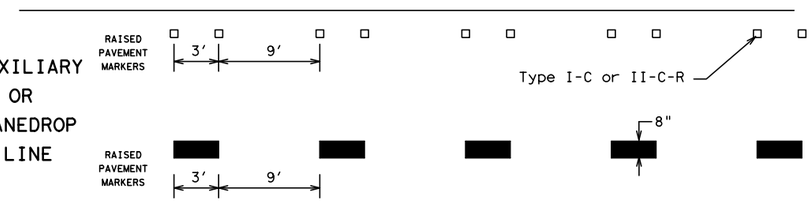


BROKEN LINES

CENTER LINE OR LANE LINE

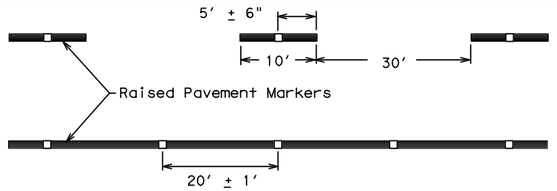


AUXILIARY OR LANEDROP LINE



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 Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
1-97 9-07	DIST	COUNTY		SHEET NO.
2-98 7-13	CRP	SAN PAT.		83
11-02 8-14				

106

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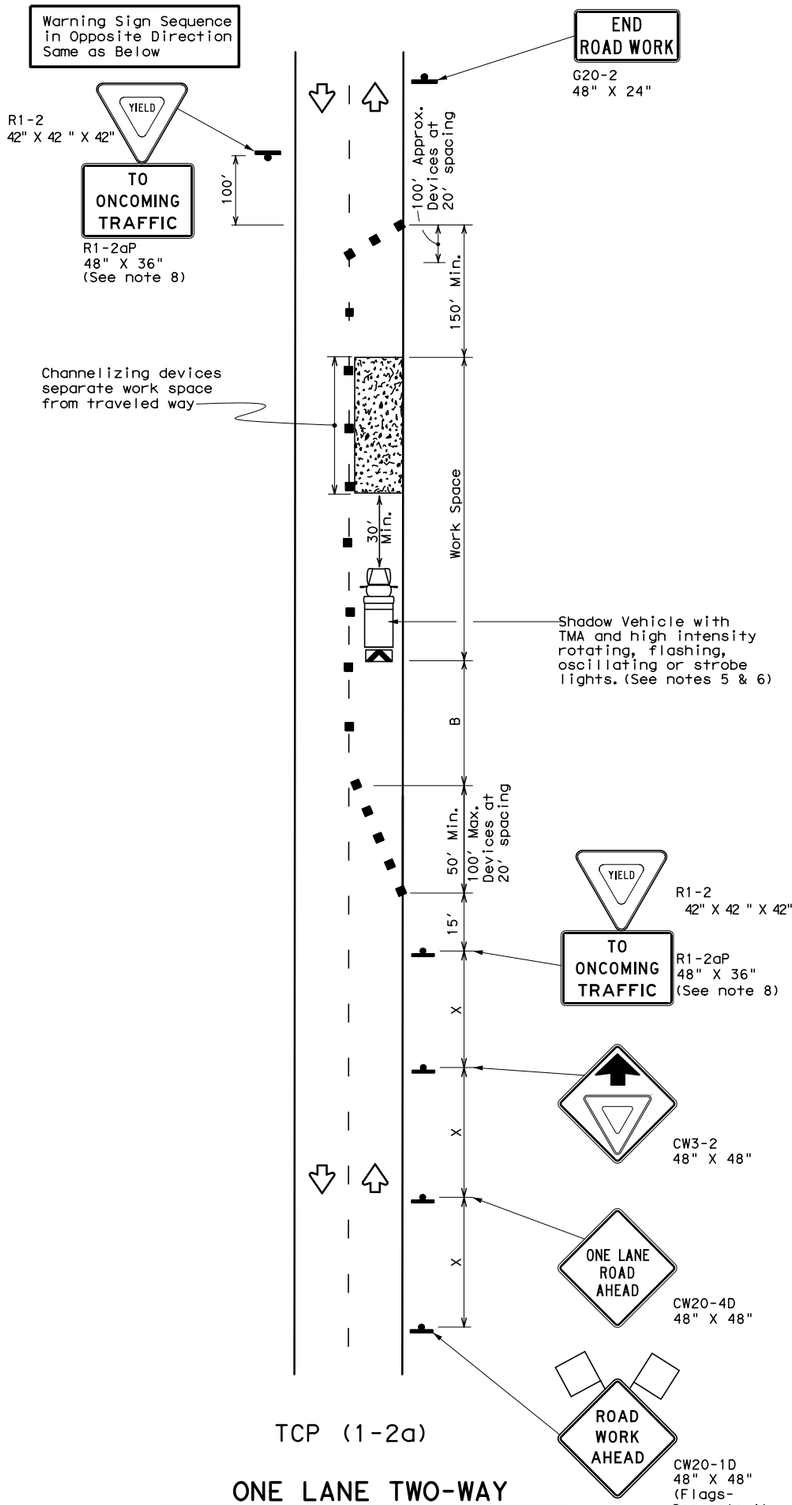
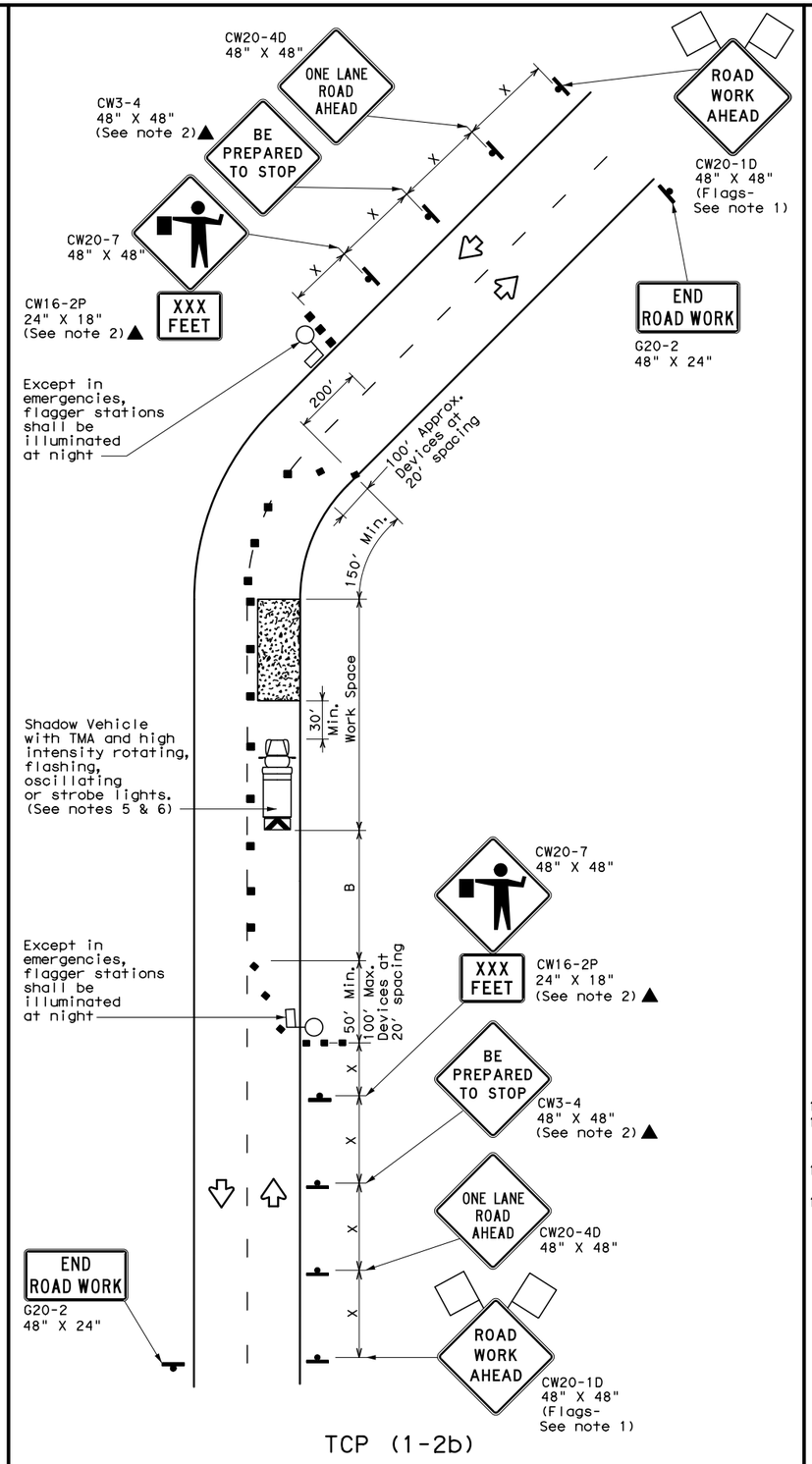


TCP (1-2a)

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
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4-90 4-98	DIST	COUNTY		SHEET NO.
2-94 2-12	CRP	SAN PAT.		84
1-97 2-18				

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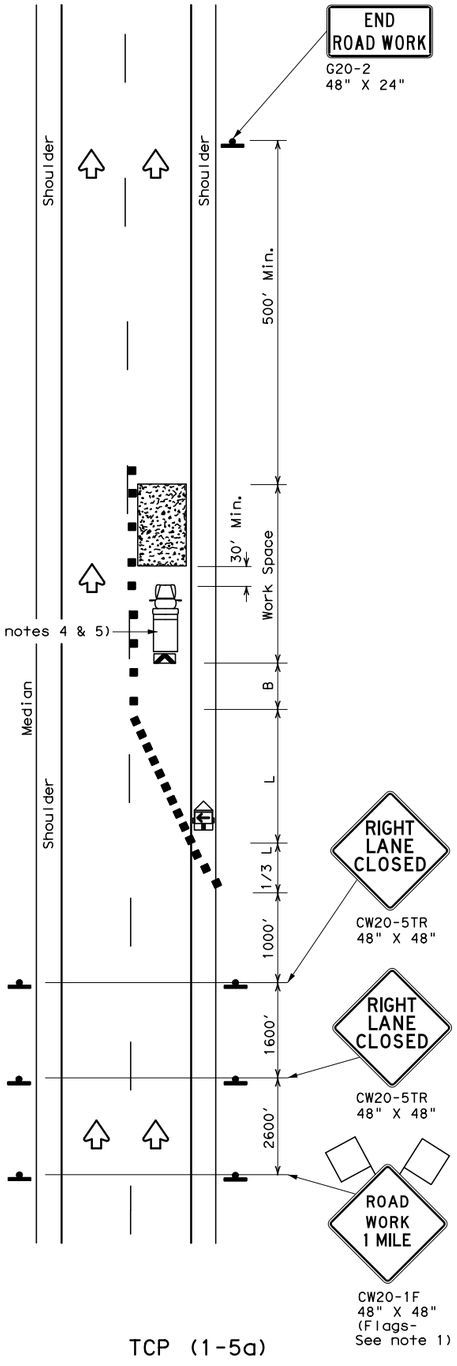
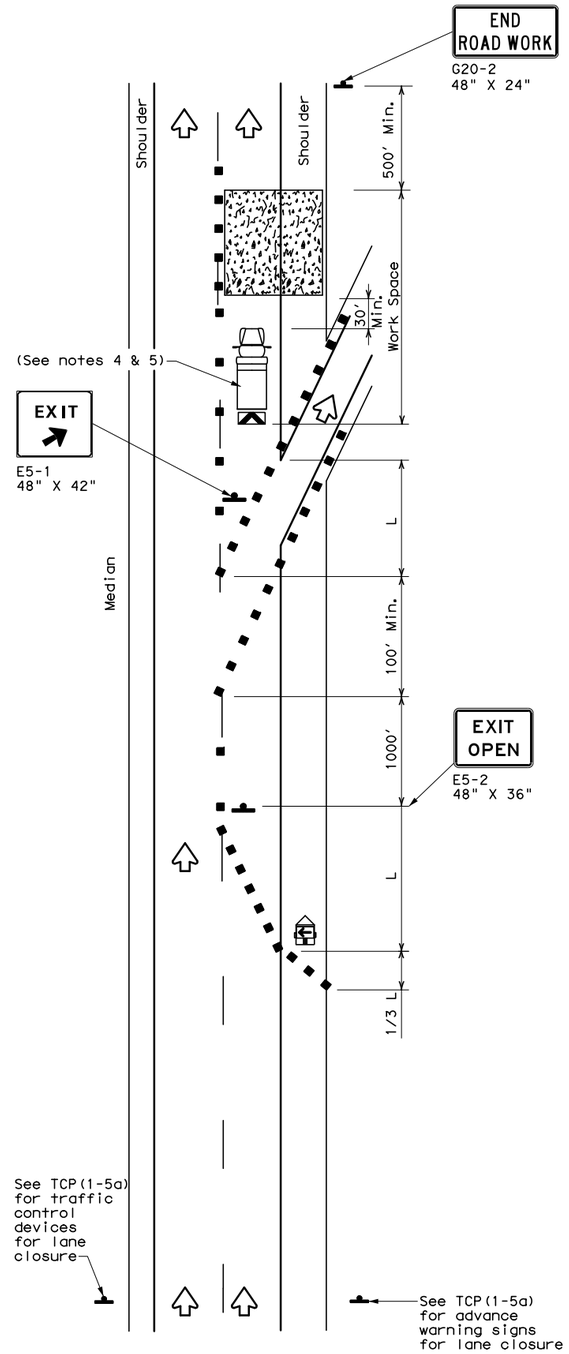


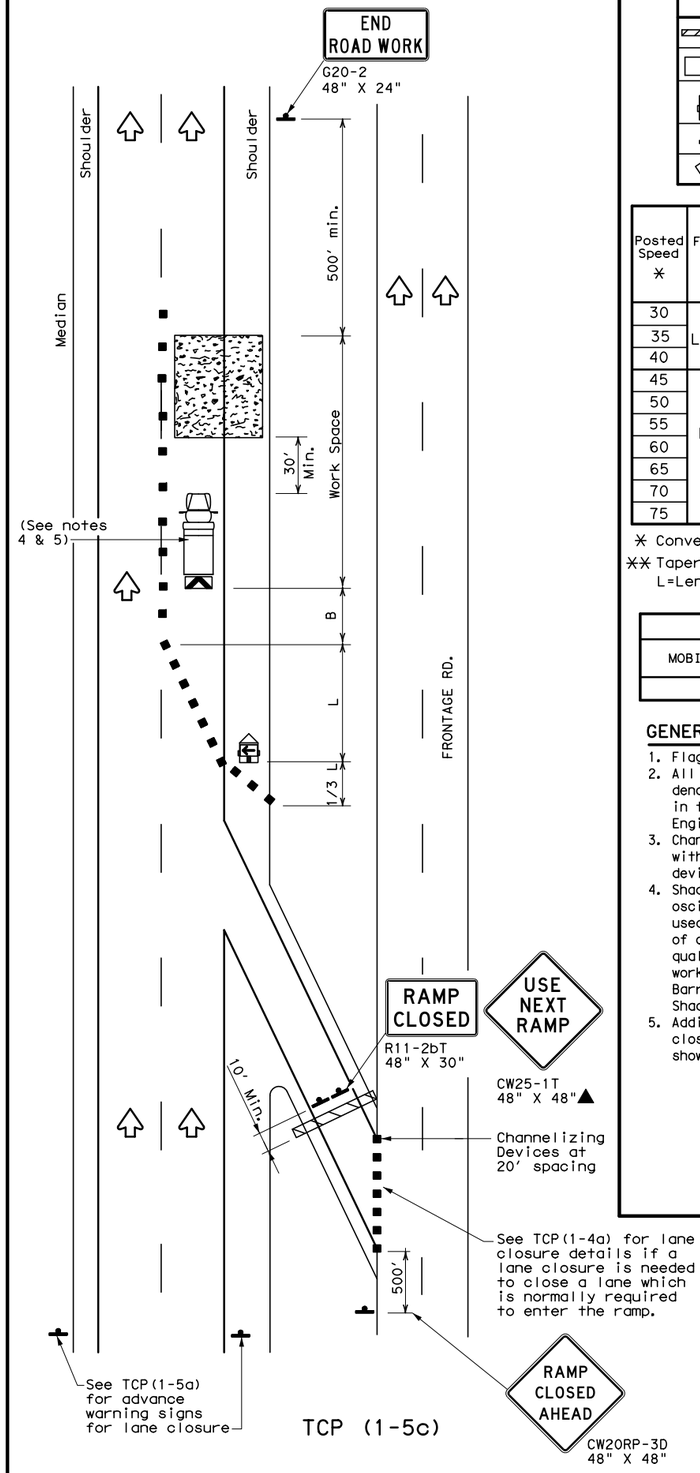
TCP (1-5a)

ONE LANE CLOSURE



TCP (1-5b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (1-5c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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. Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
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 in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES FOR DIVIDED HIGHWAYS

TCP(1-5)-18

FILE: tcp1-5-18.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
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	CRP	SAN PAT.		85

DATE: 8/18/2020 4:41:45 PM
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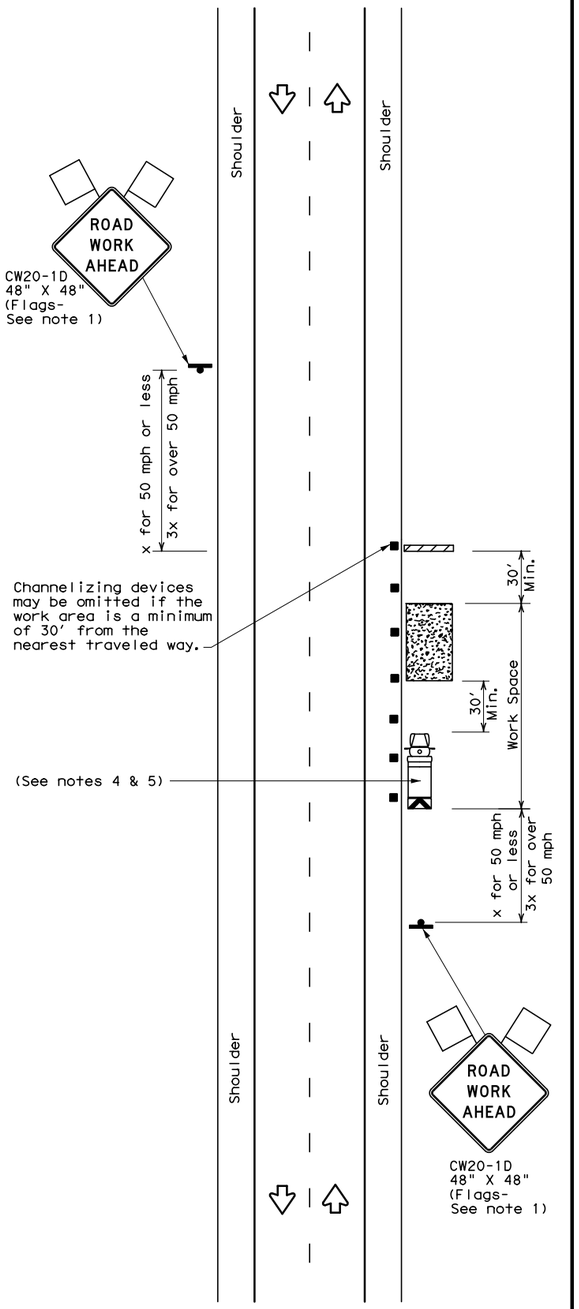
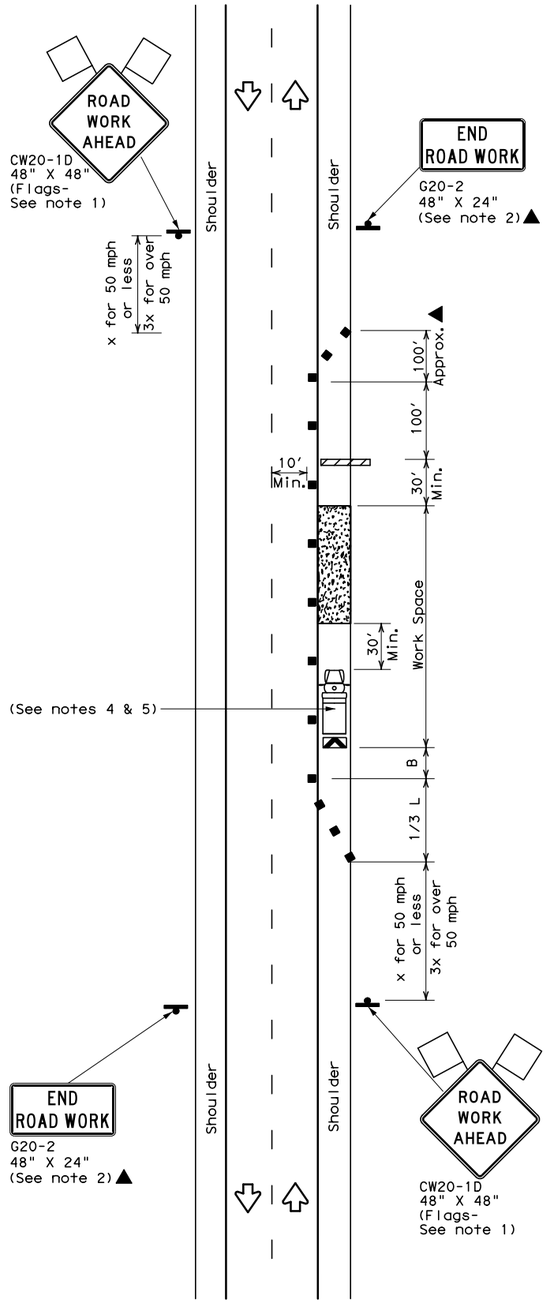


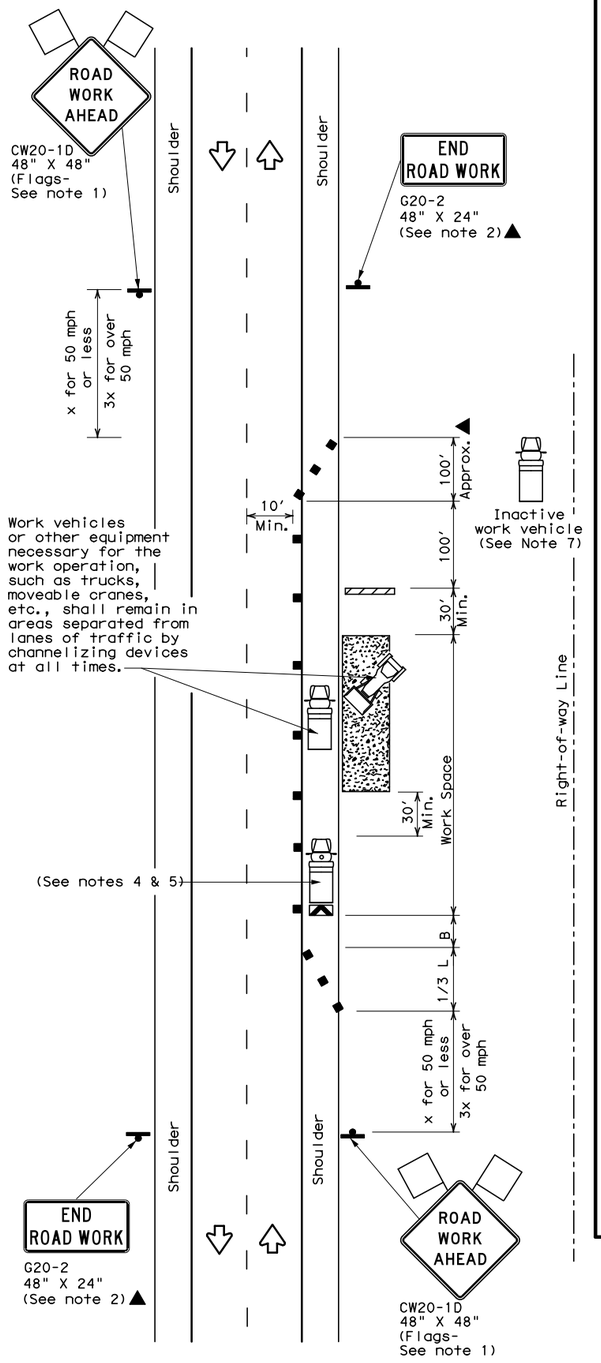
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

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1-97 2-18				

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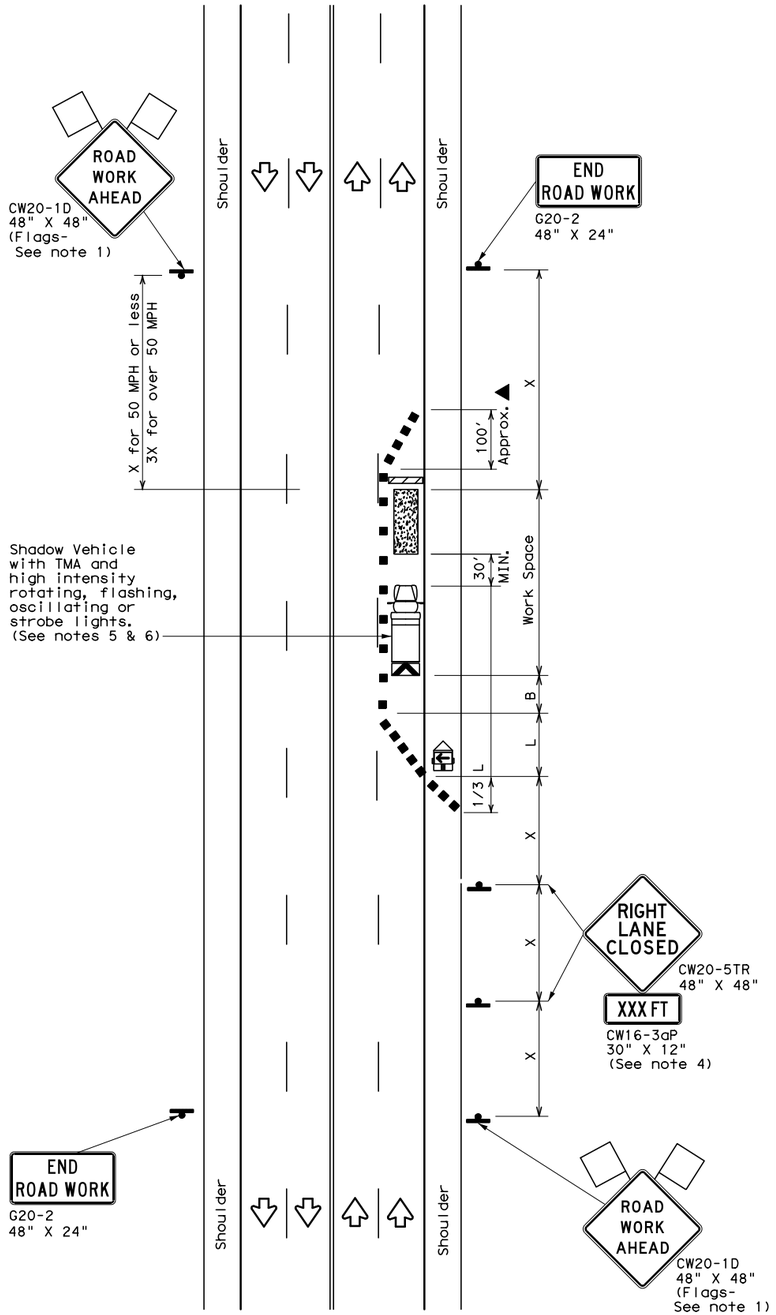
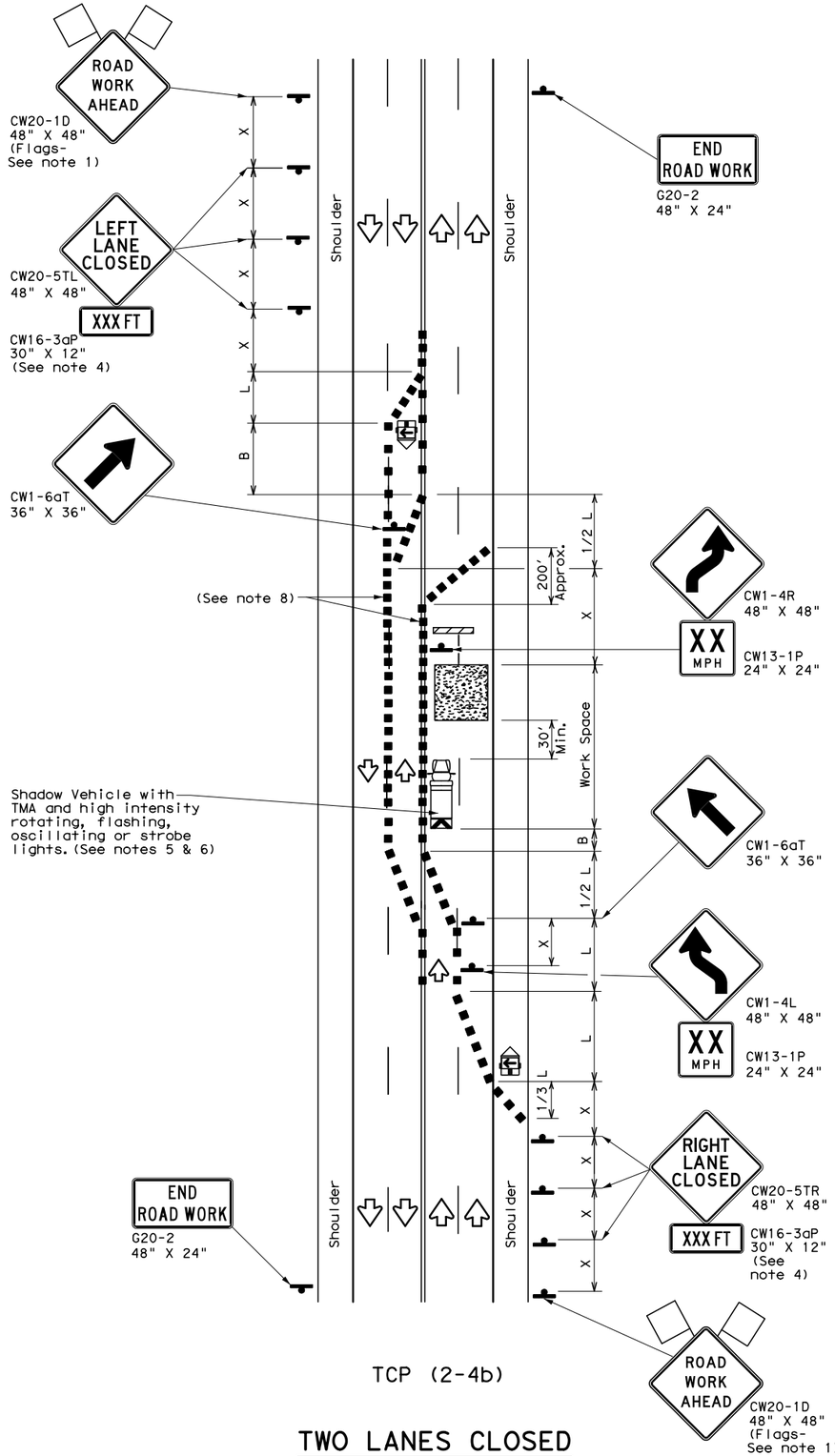


TCP (2-4a)

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

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8-95 3-03	DIST	COUNTY		SHEET NO.
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4-98 2-18				

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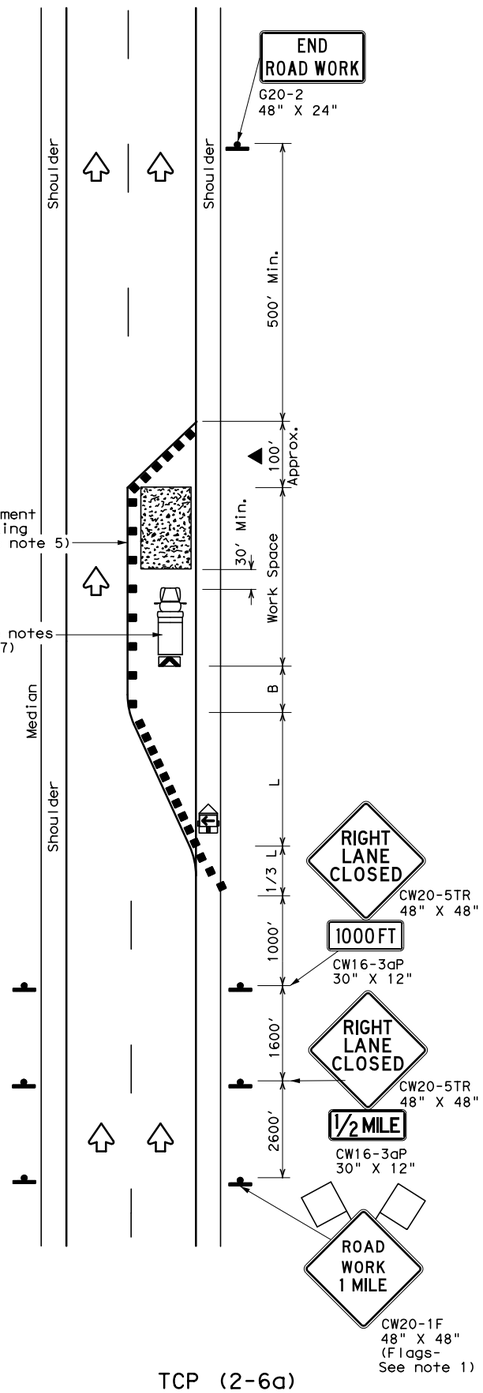
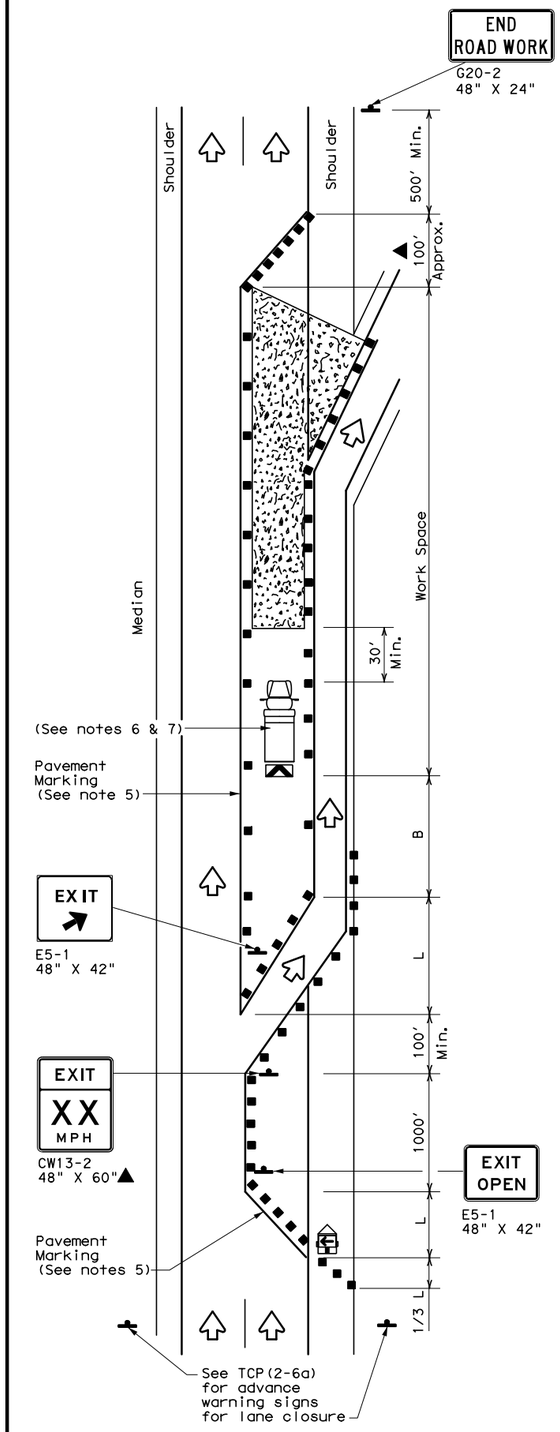


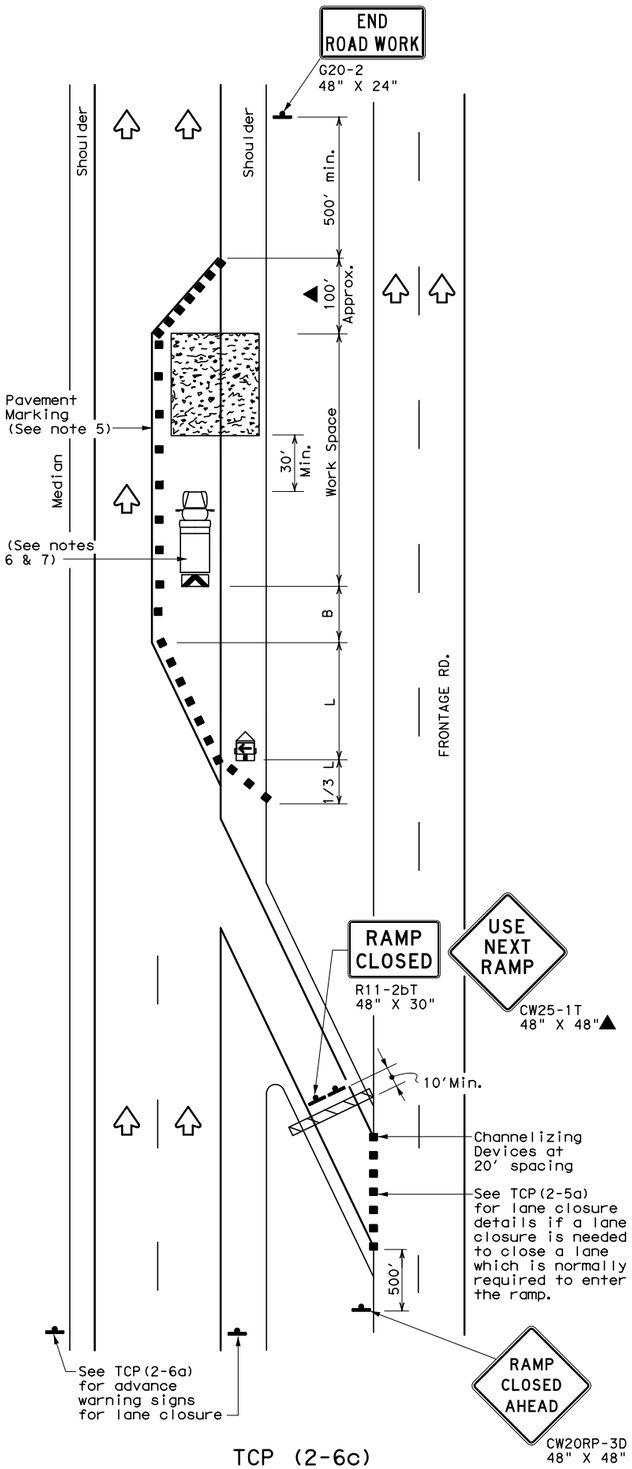
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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. Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
4. Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on everyother channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
5. The placement of pavement markings may be omitted on Intermediate-term stationary work zones with the approval of the Engineer.
6. Shadow Vehicle with TMA and high intensity rotating, flashing,oscillating or strobe lights. 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.
7. 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.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	CRP	SAN PAT.		88
1-97 2-18				

DATE: 8/30/2020 5:52:47 PM
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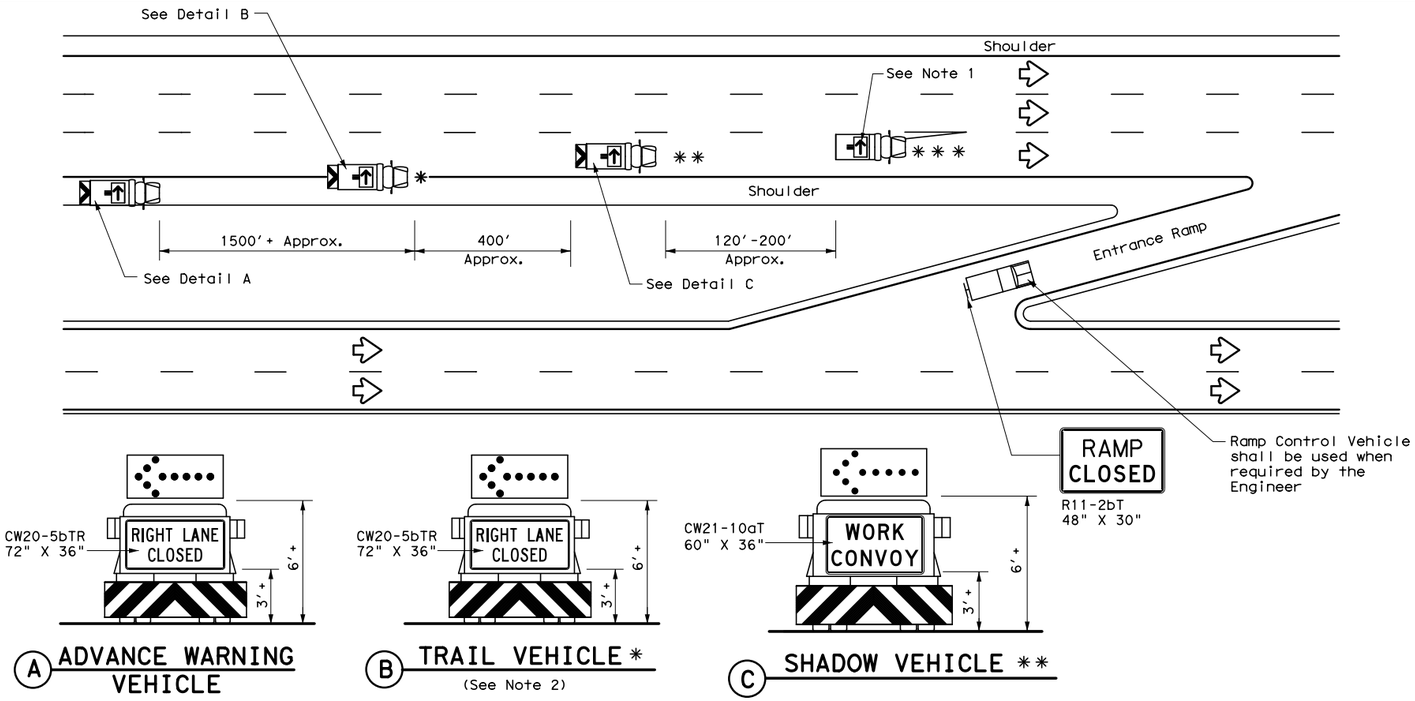
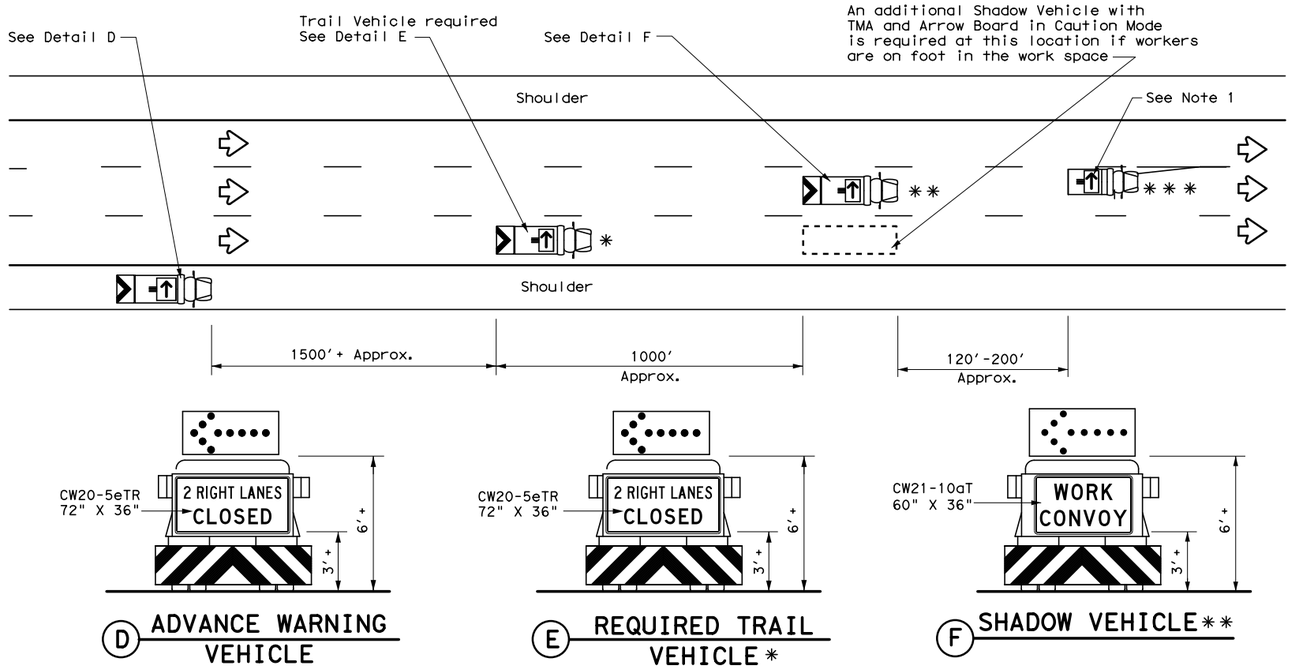


RIGHT LANE CLOSURE ON DIVIDED HIGHWAY - TCP(3-2a)



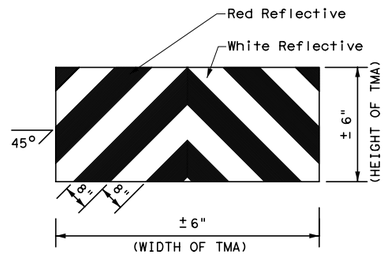
INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)

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. ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
2. For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
3. 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.
4. The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
5. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
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 may vary according to terrain, work activity and other factors.
9. Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
10. The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a 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, must 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. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
12. The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
13. Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
14. The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.



STRIPING FOR TMA

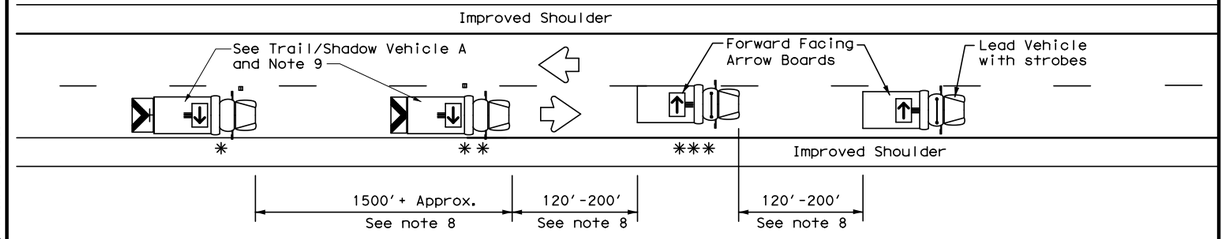
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

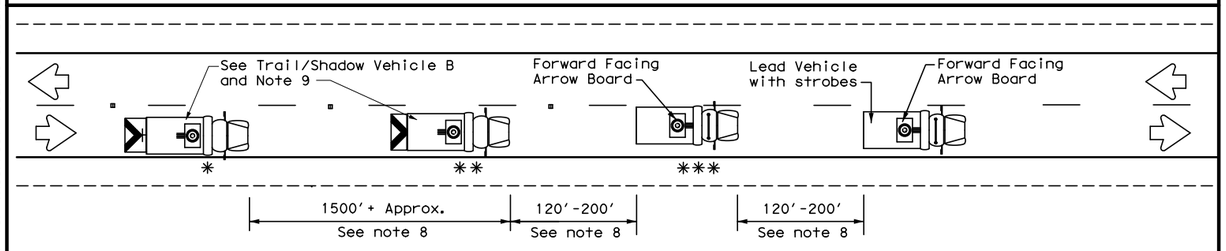
TCP(3-2)-13

FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		89



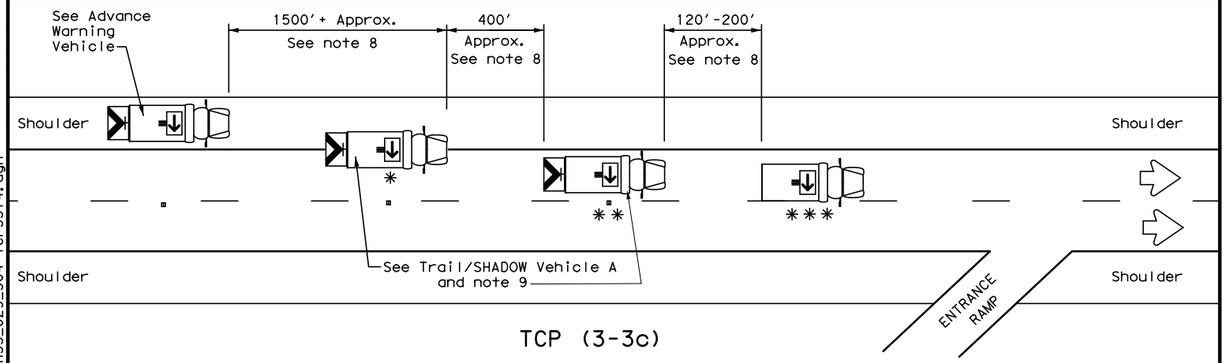
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS (WORK ON TRAVEL LANE)



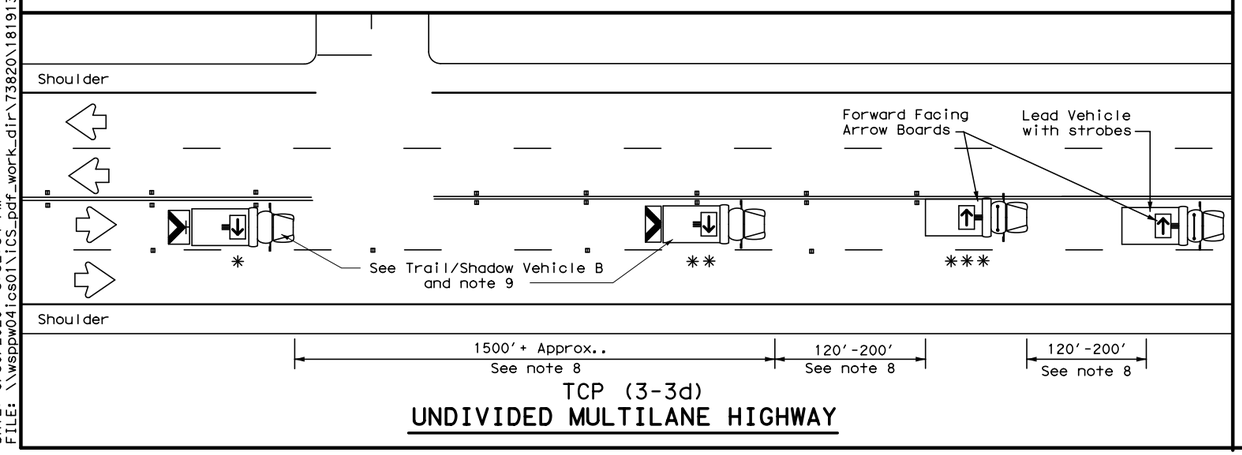
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS (WORK ON TRAVEL LANE)



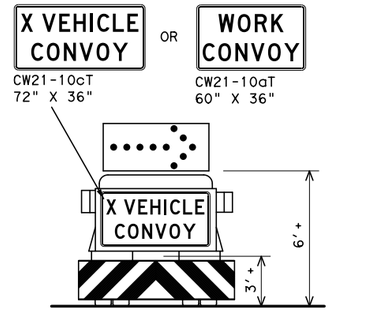
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



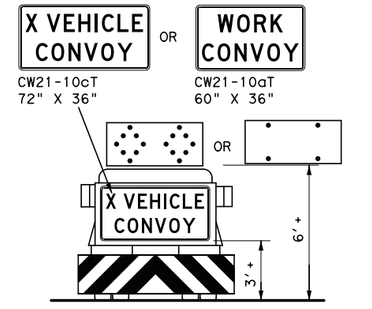
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



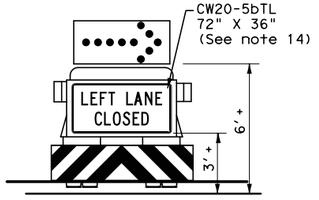
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

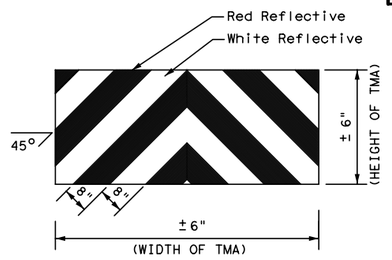


TRAIL/SHADOW VEHICLE B

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

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	CRP	SAN PAT.		90
1-97 7-14				

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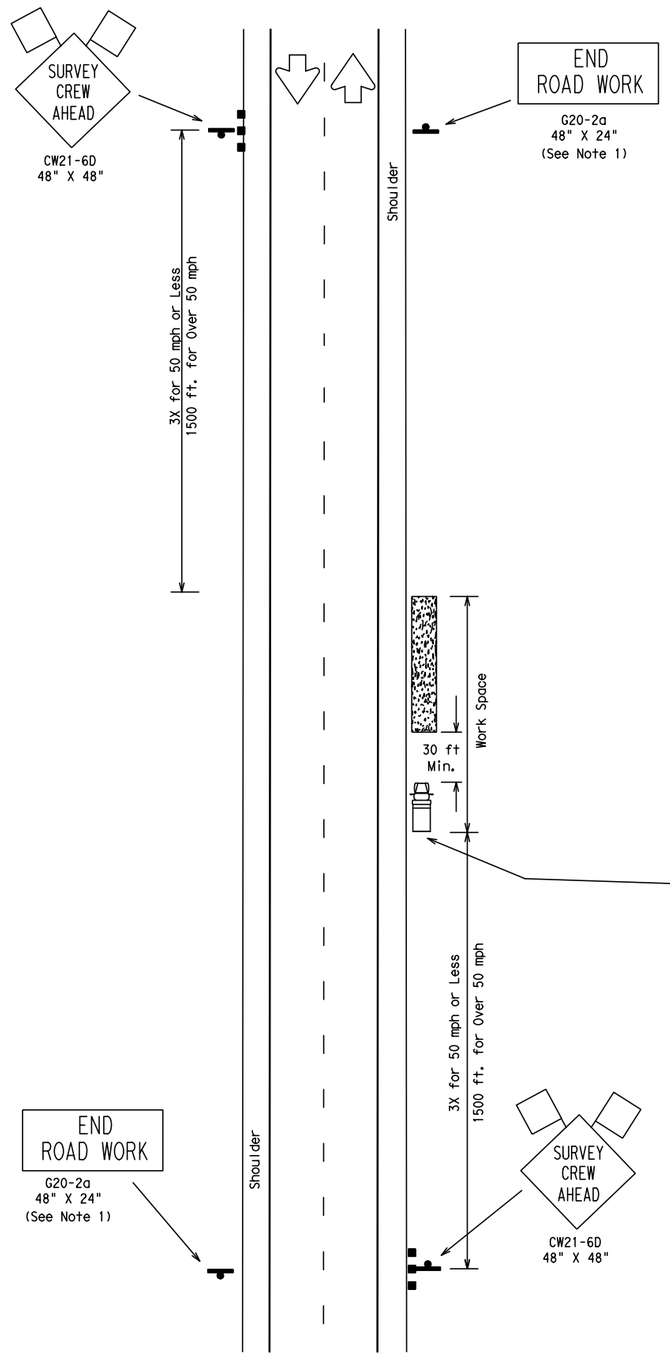
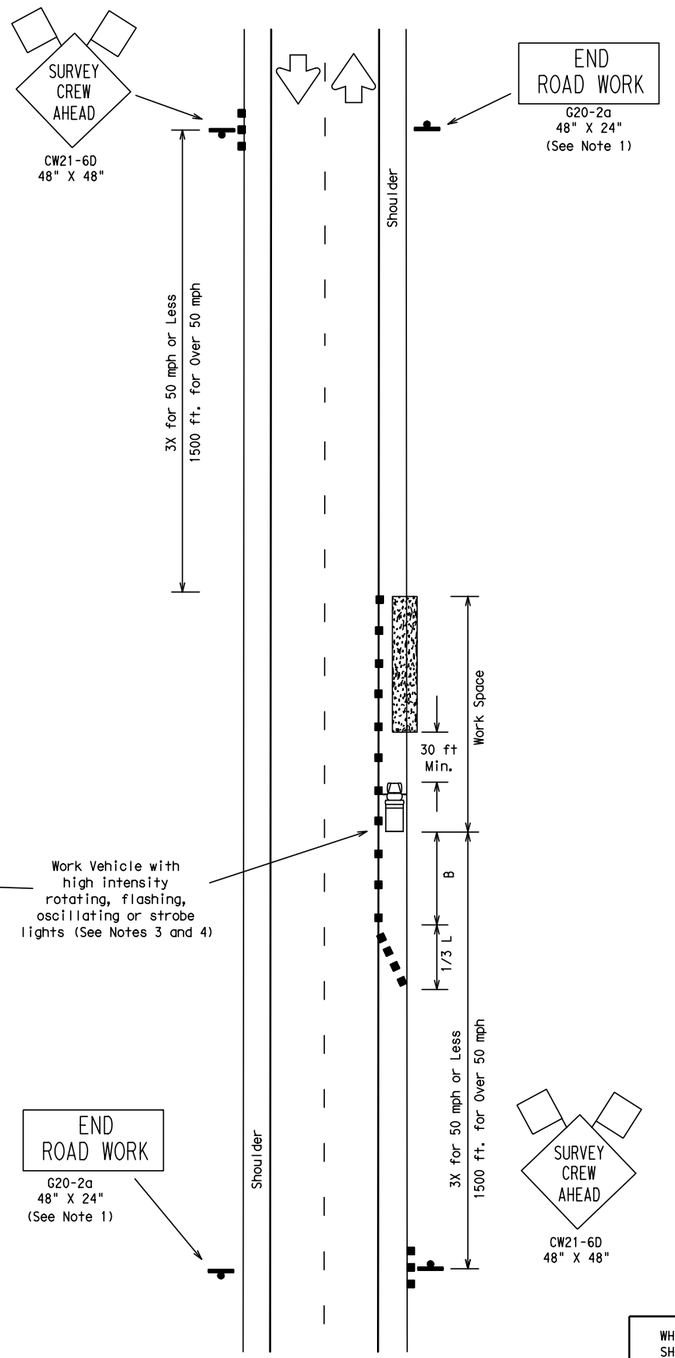


TCP (S-1a)
WORK OFF SHOULDER
OR PAVED SURFACE



TCP (S-1b)
WORK ON SHOULDER

Posted Speed ✳	Formula	Minimum Desirable Taper Lengths ✳✳ 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150′	165′	180′	30′	60′-75′	120′	90′
35		205′	225′	245′	35′	70′-90′	160′	120′
40		265′	295′	320′	40′	80′-100′	240′	155′
45	L=WS	450′	495′	540′	45′	90′-110′	320′	195′
50		500′	550′	600′	50′	100′-125′	400′	240′
55		550′	605′	660′	55′	110′-140′	500′	295′
60		600′	660′	720′	60′	120′-150′	600′	350′
65		650′	715′	780′	65′	130′-165′	700′	410′
70		700′	770′	840′	70′	140′-175′	800′	475′
75		750′	825′	900′	75′	150′-185′	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
	✓	✓		

DEFINITIONS:
SHORT DURATION - work that occupies a location up to 1 hour.
SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

GENERAL NOTES:

1. The G20-2a "END ROAD WORK" sign may be placed on the back of the CW21-6D "SURVEY CREW AHEAD" sign or may be omitted for short duration (less than 1 hour) work.
2. Channelizing devices on the shoulder taper and tangent section may be omitted for short duration (less than 1 hour) work.
3. If line-of-sight requirements for surveying operations will preclude the placement of the Work Vehicle to protect workers, the channelizing devices mentioned in Note 2 are required.
1. 4. A Shadow Vehicle with a Truck Mounted Attenuator and flashing warning lights/arrow panel in caution mode may be used in lieu of the Work Vehicle to protect the work space.
5. The CW20-1D "ROAD WORK AHEAD" sign may be substituted for the CW21-6D "SURVEY CREW AHEAD" sign.
6. This plan may also be used for shoulder work or off shoulder work for multilane undivided roadways.
7. The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads is desirable, but is not required when working less than 15 minutes in area of the side road, as determined by the Engineer.

TCP(S-1a)

8. Cones may be placed at edge of pavement adjacent to the work space to enhance safety.

WHENEVER POSSIBLE, SURVEY PARTIES SHOULD AVOID, BY THE USE OF OFFSET LINES, ANY UNNECCESSARY PERIODS OF TIME ON THE ROAD SURFACE.

8-18-08 Revision
1 Corrected misspelling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN FOR SURVEYING OPERATIONS

TCP(S-1)-08A

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
8-08

CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35
DIST	COUNTY		SHEET NO.
CRP	SAN PAT.		91

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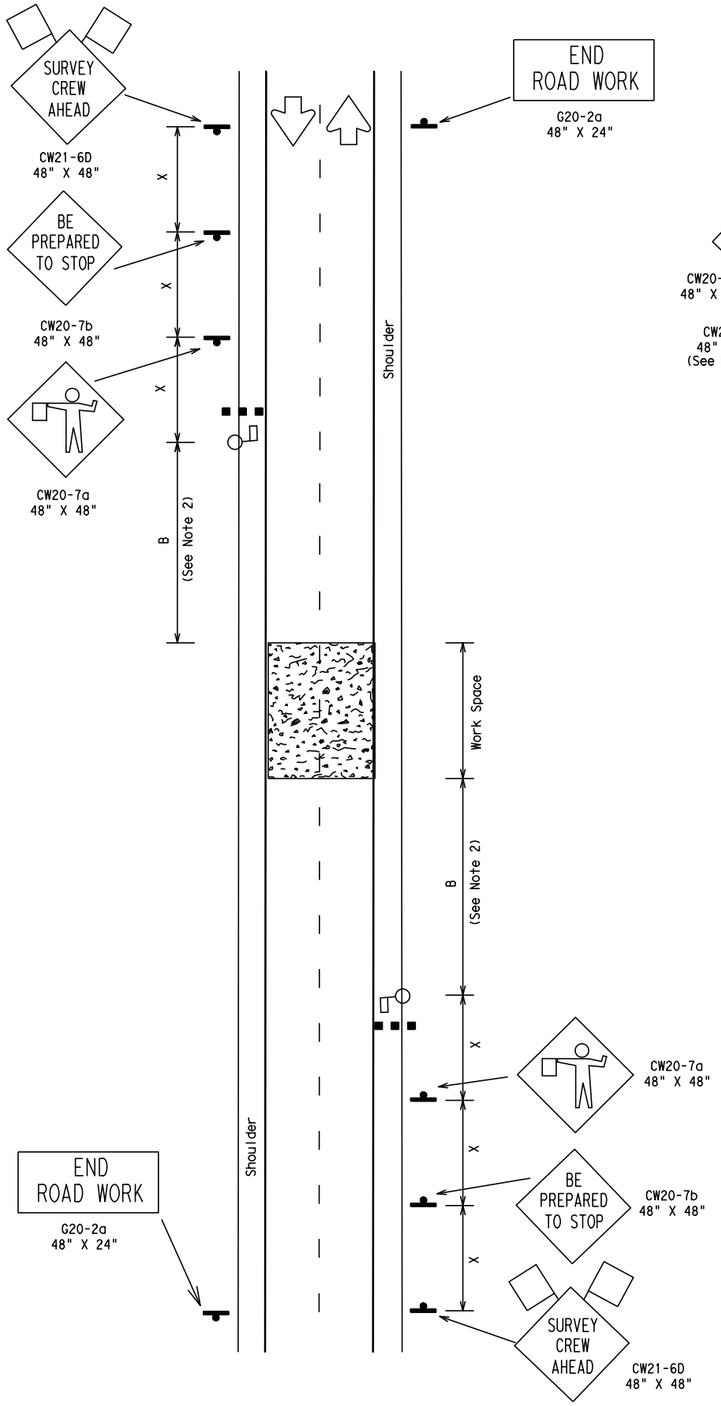
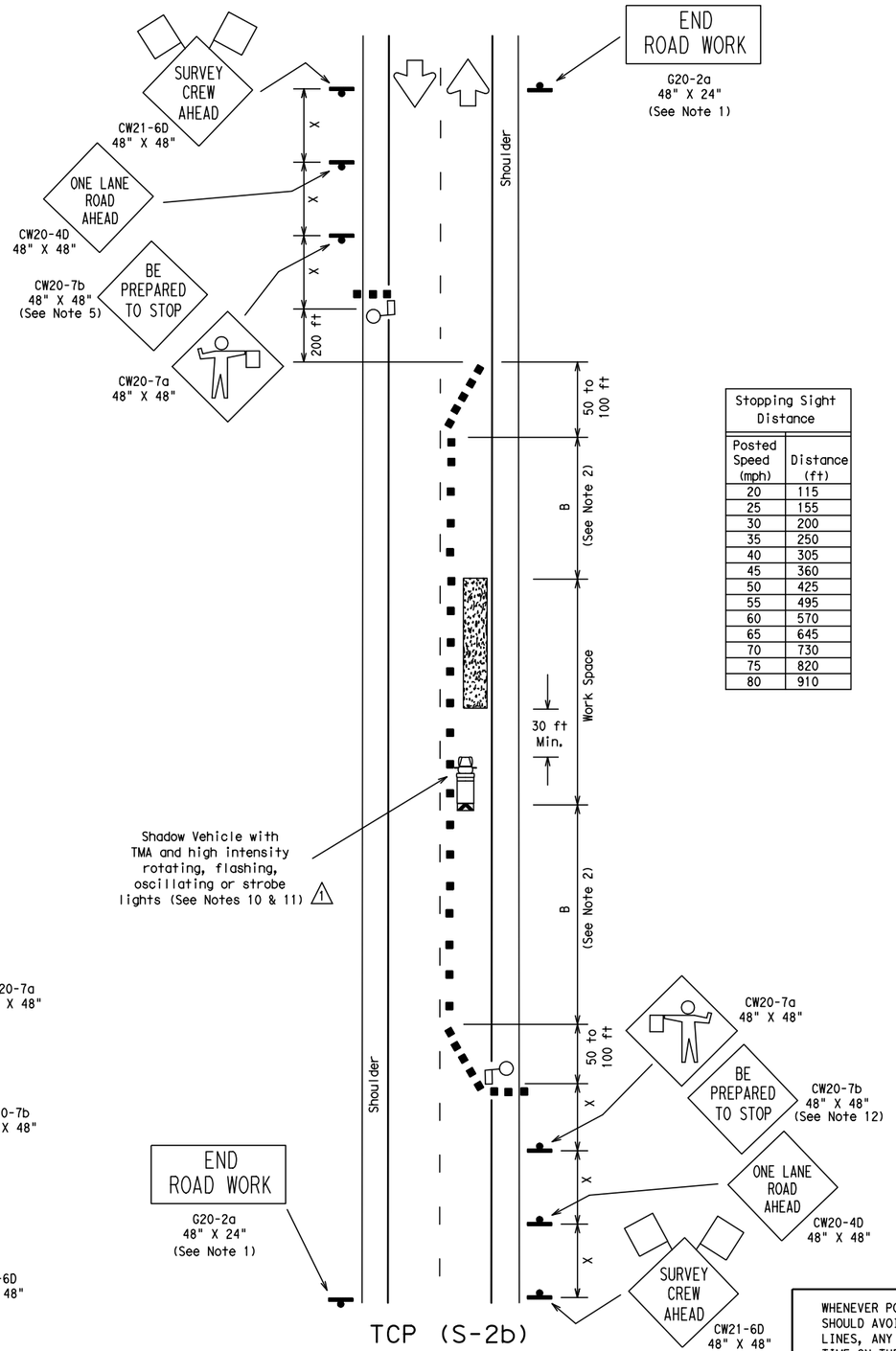


TCP (S-2a)
ROAD CLOSED FOR LESS THAN 20 MINUTES -
OFF PEAK TRAFFIC HOURS
WITH OR WITHOUT SHOULDERS



TCP (S-2b)
WORK IN ROADWAY
OFF PEAK TRAFFIC HOURS
WITH OR WITHOUT SHOULDERS

Stopping Sight Distance	
Posted Speed (mph)	Distance (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

Posted Speed ✳	Formula	Minimum Desirable Taper Lengths ✳✳ 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150′	165′	180′	30′	60′-75′	120′	90′
35		205′	225′	245′	35′	70′-90′	160′	120′
40		265′	295′	320′	40′	80′-100′	240′	155′
45	L=WS	450′	495′	540′	45′	90′-110′	320′	195′
50		500′	550′	600′	50′	100′-125′	400′	240′
55		550′	605′	660′	55′	110′-140′	500′	295′
60		600′	660′	720′	60′	120′-150′	600′	350′
65		650′	715′	780′	65′	130′-165′	700′	410′
70		700′	770′	840′	70′	140′-175′	800′	475′
75		750′	825′	900′	75′	150′-185′	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
	✓	✓		

DEFINITIONS:
SHORT DURATION - work that occupies a location up to 1 hour.
SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

GENERAL NOTES:
1. The G20-2a "END ROAD WORK" sign may be placed on the back of the CW21-6D "SURVEY CREW AHEAD" sign or may be omitted for short duration (less than 1 hour) work.
2. Adequate Stopping Sight Distance (see Stopping Sight Distance table) should be maintained from approaching traffic to the flagger or a queue of stopped vehicles. The Buffer Space "B" should be extended around curves or other obstacles, when necessary, to have adequate Stopping Sight Distance to the flagger station.
3. Flaggers should use two-way radios or other means of communication while flagging.
4. The length of the work space should be based on the ability of the flaggers to communicate.
5. CW20-1D "ROAD WORK AHEAD" signs may be substituted for CW21-6D "SURVEY CREW AHEAD" signs.
6. The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads is desirable, but is not required when working less than 15 minutes in area of the side road, as determined by the Engineer.

TCP(S-2a)

7. Road closures shall be less than 20 minutes. Closures less than 5 minutes are desirable.
8. Sign spacing should be increased if traffic repeatedly queues past the CW20-7b "BE PREPARED TO STOP" sign.
9. The surveying instrument should not be located on the paved surface.

TCP (S-2B)

10. For short duration work the Shadow Vehicle with a TMA may be replaced by another Work Vehicle with high intensity rotating, flashing or strobe lights.
11. Shadow Vehicles with a TMA are desirable when workers or equipment are in the work space. When approved by the engineer, Type III barricades or other channelizing devices may be substituted for the Shadow Vehicle.
12. The CW20-7b "BE PREPARED TO STOP" sign is optional. When used, it should be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign.

WHENEVER POSSIBLE, SURVEY PARTIES SHOULD AVOID, BY THE USE OF OFFSET LINES, ANY UNNECCESSARY PERIODS OF TIME ON THE ROAD SURFACE.

8-18-08 Revision
1 Corrected referrence to notes.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN FOR SURVEYING OPERATIONS

TCP(S-2)-08A

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
8-08

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CRP	SAN PAT.		92

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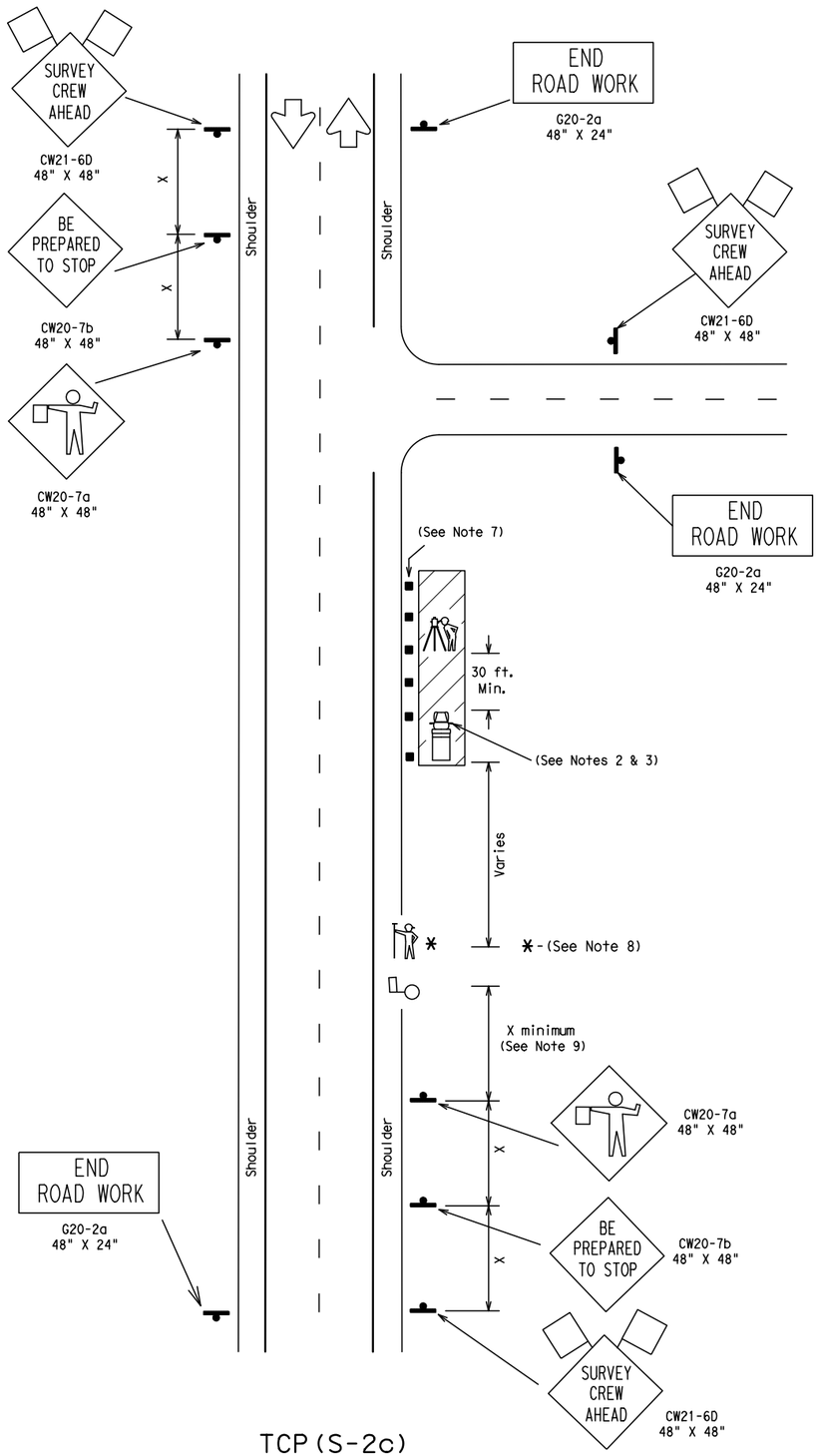

TCP(S-2c)

Stopping Sight Distance	
Posted Speed (mph)	Distance (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

Posted Speed ⁎	Formula	Minimum Desirable Taper Lengths ⁎⁎ 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150′	165′	180′	30′	60′-75′	120′	90′
35		205′	225′	245′	35′	70′-90′	160′	120′
40		265′	295′	320′	40′	80′-100′	240′	155′
45	L=WS	450′	495′	540′	45′	90′-110′	320′	195′
50		500′	550′	600′	50′	100′-125′	400′	240′
55		550′	605′	660′	55′	110′-140′	500′	295′
60		600′	660′	720′	60′	120′-150′	600′	350′
65		650′	715′	780′	65′	130′-165′	700′	410′
70		700′	770′	840′	70′	140′-175′	800′	475′
75		750′	825′	900′	75′	150′-185′	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
	✓	✓		

DEFINITIONS:

MOBILE - work that moves continously or intermittently (stopping up to approximately 15 minutes).

SHORT DURATION - work that occupies a location up to 1 hour.

SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

GENERAL NOTES:

1. The G20-2a "END ROAD WORK" sign may be placed on the back of the CW21-6D "SURVEY CREW AHEAD" sign or may be omitted for short duration (less than 1 hour) work.
2. Work Vehicle with high intensity rotating, flashing, oscillating or strobe lights should be used to protect work space.
3. When approved by the engineer, Type III barricades or other channelizing devices may be substituted for the Heavy Work Vehicle.
4. CW20-1D "ROAD WORK AHEAD" signs may be substituted for CW21-6D "SURVEY CREW AHEAD" SIGNS.
5. The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads may be omitted when approved by the Engineer.
6. The Surveying Instrument shall not be located on the paved surface.
7. Cones at edge of pavement adjacent to instrument person may be omitted when approved by the Engineer.
8. Rodman may only enter roadway when accompanied by flagger and as traffic allows.
9. The distance between the advance warning signs and the work should not exceed a two mile maximum.
10. Flaggers and Survey Crew should use two-way radios or other means of communication.
11. Survey Crew and Flaggers shall wear high-visibility apparel meeting the ANSI 107-2007 standard performance for Class 2 or Class 3 risk exposure.
12. Additional traffic control devices may be required to address local site conditions.
13. Stopping Sight Distance shall be maintained from approaching traffic to the flagger. See "Stopping Sight Distance" table.

SURVEY PARTIES SHOULD AVOID ANY UNNECCESSARY PERIODS OF TIME ON THE ROAD SURFACE.

This TCP is to cover two lane rural type roadways as determined by the Engineer. All other type roadways will be covered by other established Survey TCP's.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN FOR SURVEYING OPERATIONS

TCP(S-2c)-10

REVISIONS

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35

DIST	COUNTY	SHEET NO.
CRP	SAN PAT.	93

212A

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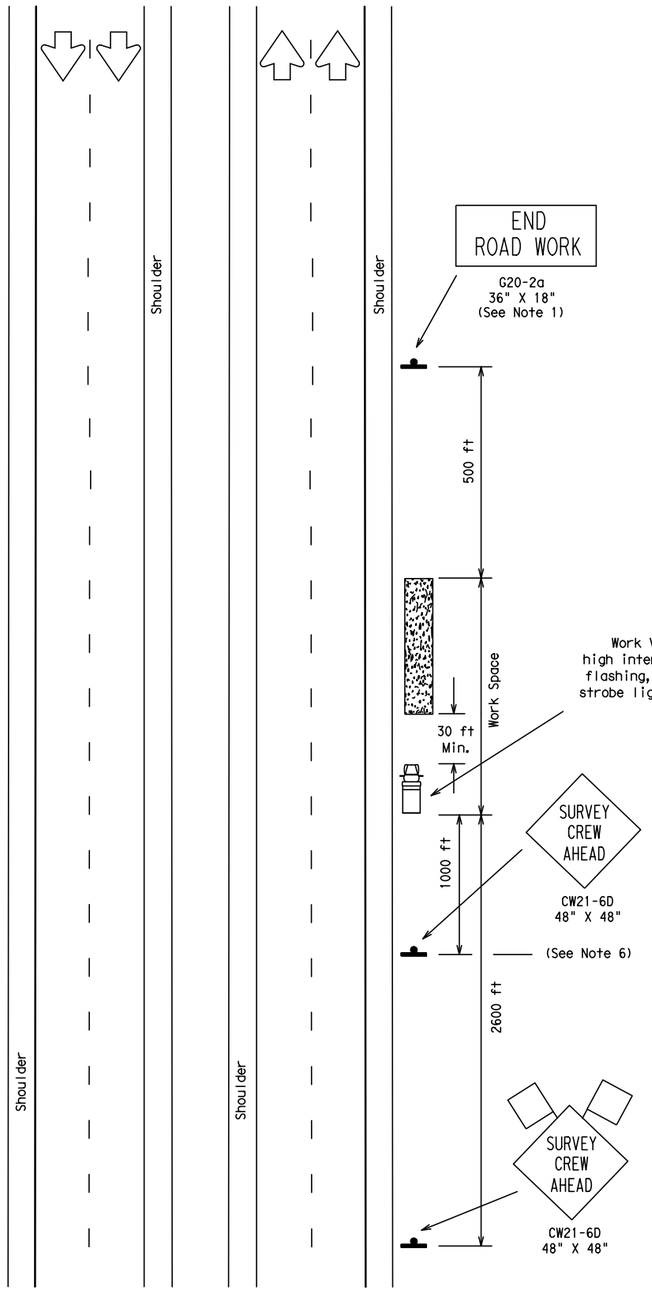
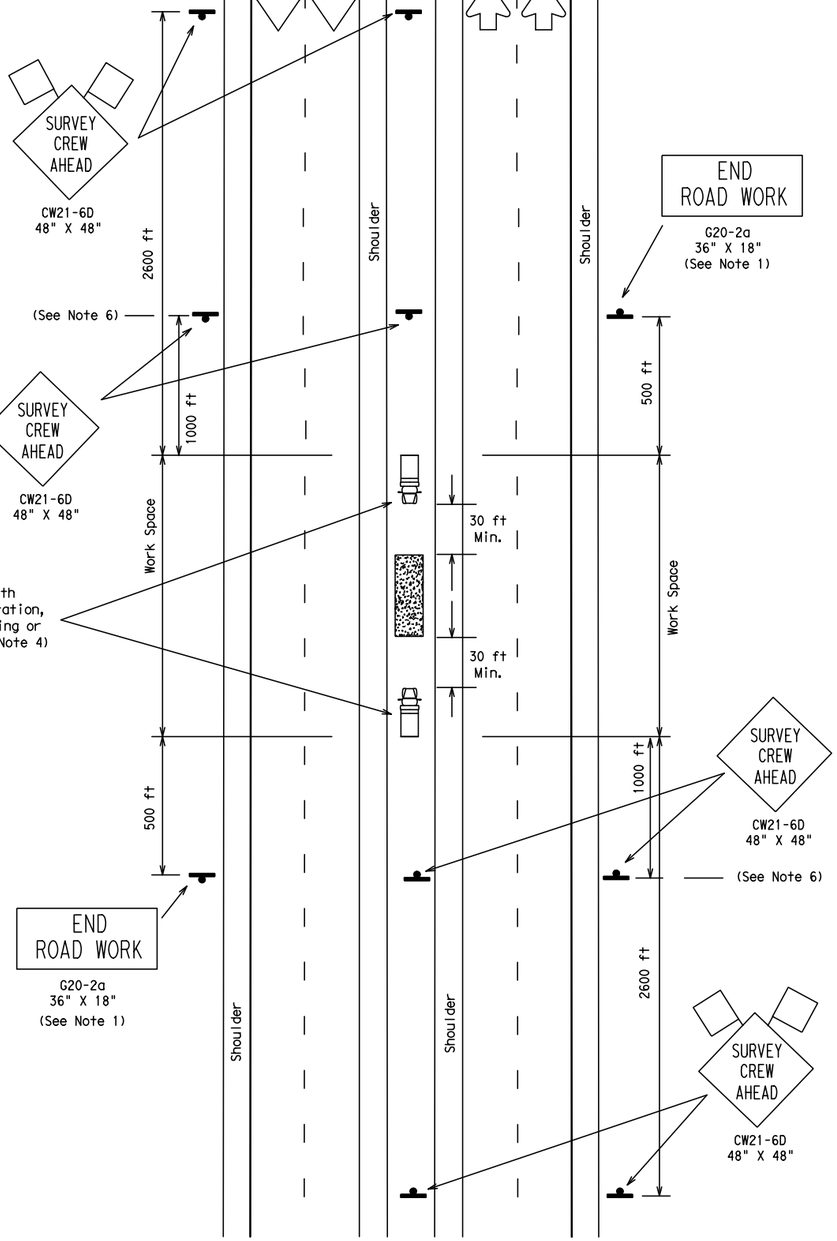


TCP (S-4a)
WORK OFF RIGHT SHOULDER
OF DIVIDED ROADWAYS



TCP (S-4b)
WORK IN MEDIAN
OF DIVIDED ROADWAYS

Posted Speed ✳	Formula	Minimum Desirable Taper Lengths ✳✳ 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150′	165′	180′	30′	60′-75′	120′	90′
35		205′	225′	245′	35′	70′-90′	160′	120′
40		265′	295′	320′	40′	80′-100′	240′	155′
45	L=WS	450′	495′	540′	45′	90′-110′	320′	195′
50		500′	550′	600′	50′	100′-125′	400′	240′
55		550′	605′	660′	55′	110′-140′	500′	295′
60		600′	660′	720′	60′	120′-150′	600′	350′
65		650′	715′	780′	65′	130′-165′	700′	410′
70		700′	770′	840′	70′	140′-175′	800′	475′
75		750′	825′	900′	75′	150′-185′	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
	✓	✓		

DEFINITIONS:
SHORT DURATION - work that occupies a location up to 1 hour.
SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

GENERAL NOTES:

1. The G20-2a "END ROAD WORK" sign may be omitted for short duration (less than 1 hour) work.
2. When median work is protected on one side by existing median barriers, signing and protection vehicle may be omitted for the protected direction only.
3. CW20-1D "ROAD WORK AHEAD" signs may be substituted for "SURVEY CREW AHEAD" signs.
1. 4. A Shadow Vehicle with a TMA and flashing warning lights/arrow panel in caution mode may be used in lieu of the Work Vehicle to protect the work space.
5. The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads is desirable, but is not required when working less than 15 minutes in area of the side road, as determined by the Engineer.
6. The CW21-6D "SURVEY CREW AHEAD" sign placed at 1000′ ahead of the work space is optional, at the discretion of the Engineer. The signs shown at 2600′ from the work space are required.
7. Cones may be placed at edge of pavement adjacent to the work space to enhance safety.

WHENEVER POSSIBLE, SURVEY PARTIES SHOULD AVOID, BY THE USE OF OFFSET LINES, ANY UNNECCESSARY PERIODS OF TIME ON THE ROAD SURFACE.

8-18-08 Revision
1 Corrected misspelling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN FOR SURVEYING OPERATIONS

TCP(S-4)-08A

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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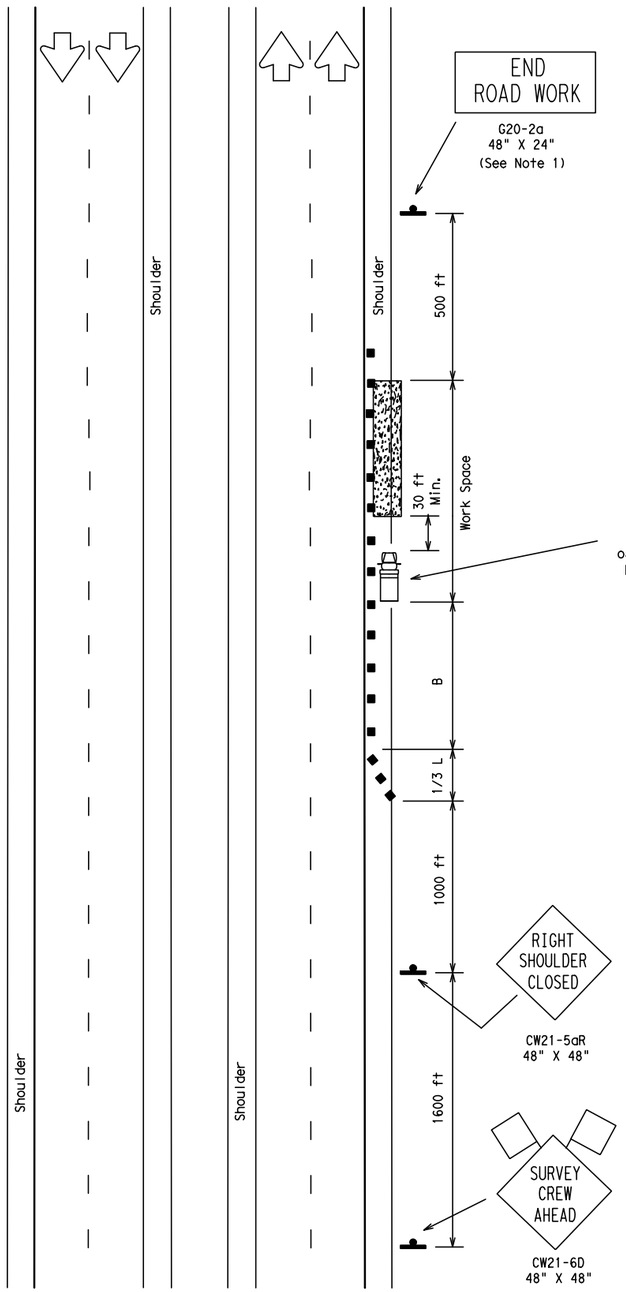
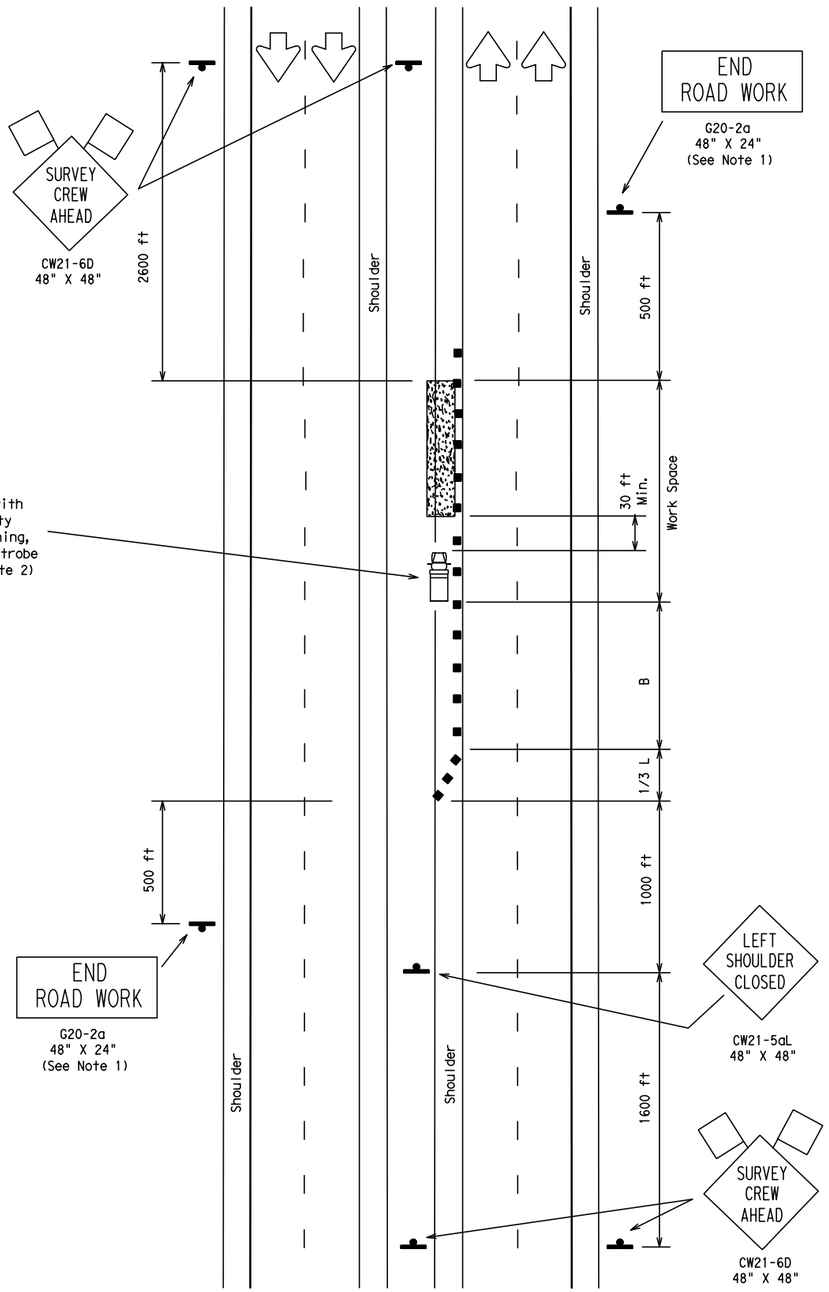
	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		94



TCP (S-5a)
WORK ON RIGHT SHOULDER
OF DIVIDED ROADWAYS



TCP (S-5b)
WORK ON MEDIAN SHOULDER
OF DIVIDED ROADWAYS

WHENEVER POSSIBLE, SURVEY PARTIES SHOULD AVOID, BY THE USE OF OFFSET LINES, ANY UNNECCESSARY PERIODS OF TIME ON THE ROAD SURFACE.

Posted Speed ✳	Formula	Minimum Desirable Taper Lengths ✳✳ 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150′	165′	180′	30′	60′-75′	120′	90′
35		205′	225′	245′	35′	70′-90′	160′	120′
40		265′	295′	320′	40′	80′-100′	240′	155′
45	L=WS	450′	495′	540′	45′	90′-110′	320′	195′
50		500′	550′	600′	50′	100′-125′	400′	240′
55		550′	605′	660′	55′	110′-140′	500′	295′
60		600′	660′	720′	60′	120′-150′	600′	350′
65		650′	715′	780′	65′	130′-165′	700′	410′
70		700′	770′	840′	70′	140′-175′	800′	475′
75		750′	825′	900′	75′	150′-185′	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
	✓	✓		

DEFINITIONS:
SHORT DURATION - work that occupies a location up to 1 hour.
SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

GENERAL NOTES:

1. The G20-2a "END ROAD WORK" sign may be omitted for short duration (less than 1 hour) work.
2. For short duration work, the Shadow Vehicle with TMA may be replaced by another Work Vehicle with high intensity rotating, flashing or strobe lights.
3. Shadow Vehicles with a TMA are desirable when workers or equipment are in the work space. When approved by the engineer, Type III barricades or other channelizing devices may be substituted for the Shadow Vehicle.
4. If shoulders are not present, the 1/3L shoulder taper is to be omitted and four channelizing devices shall be placed in front of the arrow panel, perpendicular to traffic.
5. CW20-1D "ROAD WORK AHEAD" signs may be substituted for CW21-6D "SURVEY CREW AHEAD" signs.
6. The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads is desirable, but is not required when working less than 15 minutes in area of the side road, as determined by the Engineer.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN FOR SURVEYING OPERATIONS

TCP(S-5)-08

REVISIONS

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

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CRP	SAN PAT.		95

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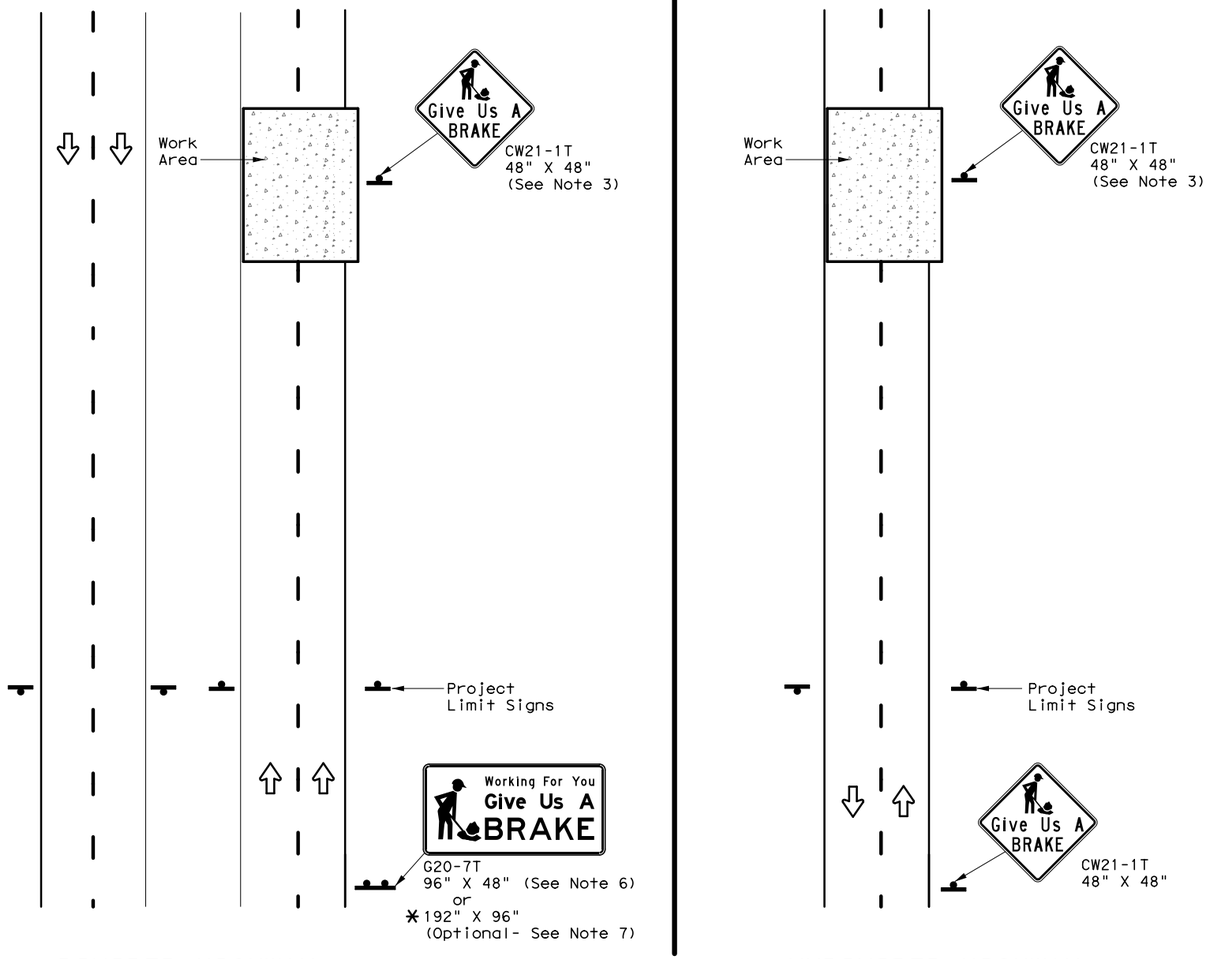

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

* 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	0180	06	067	SH 35
6-96 5-98 7-13	DIST	COUNTY		SHEET NO.
8-96 3-03	CRP	SAN PAT.		96

116

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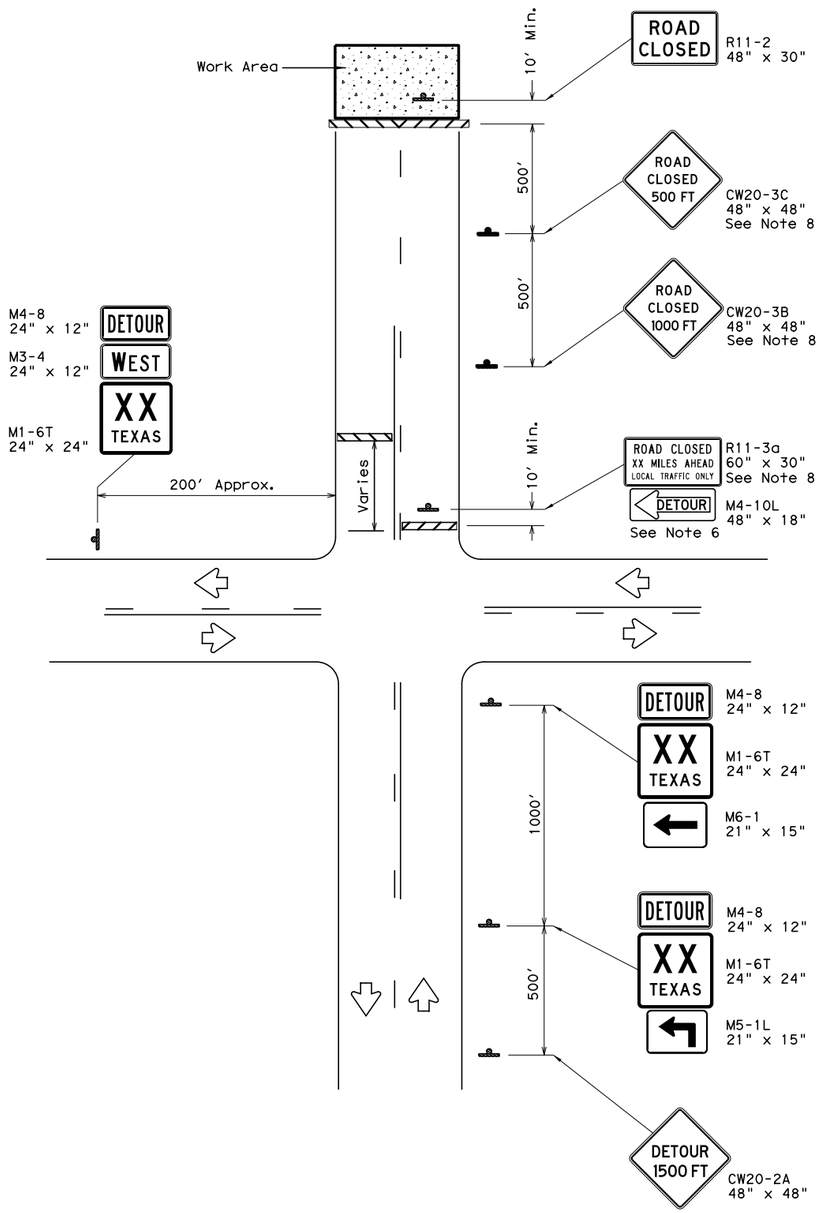
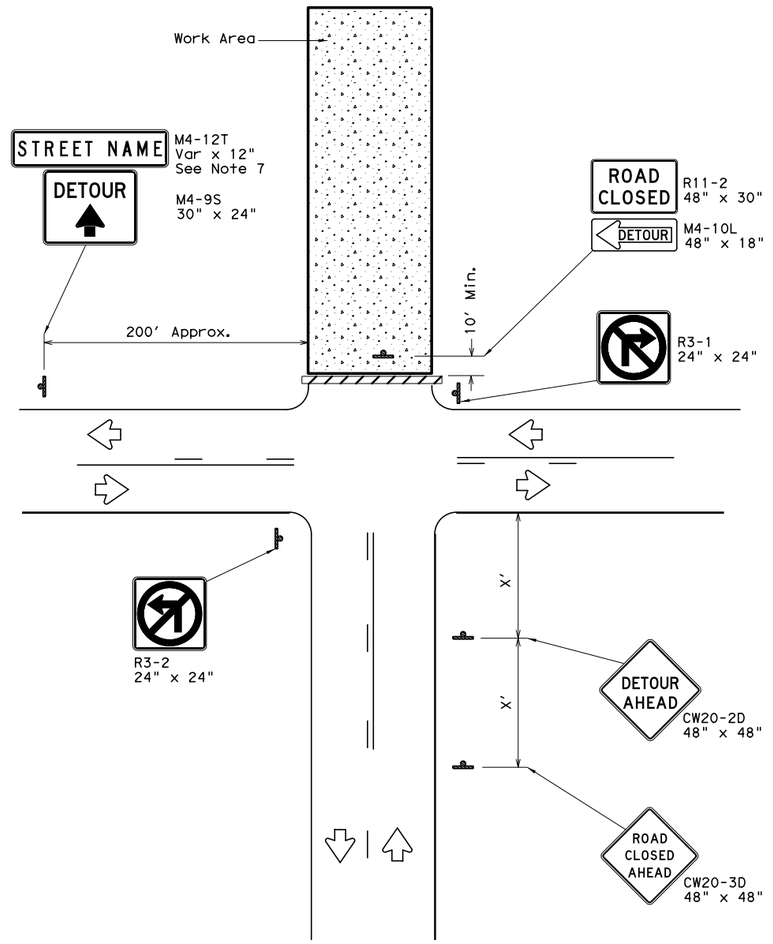


ROAD CLOSURE BEYOND THE INTERSECTION

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

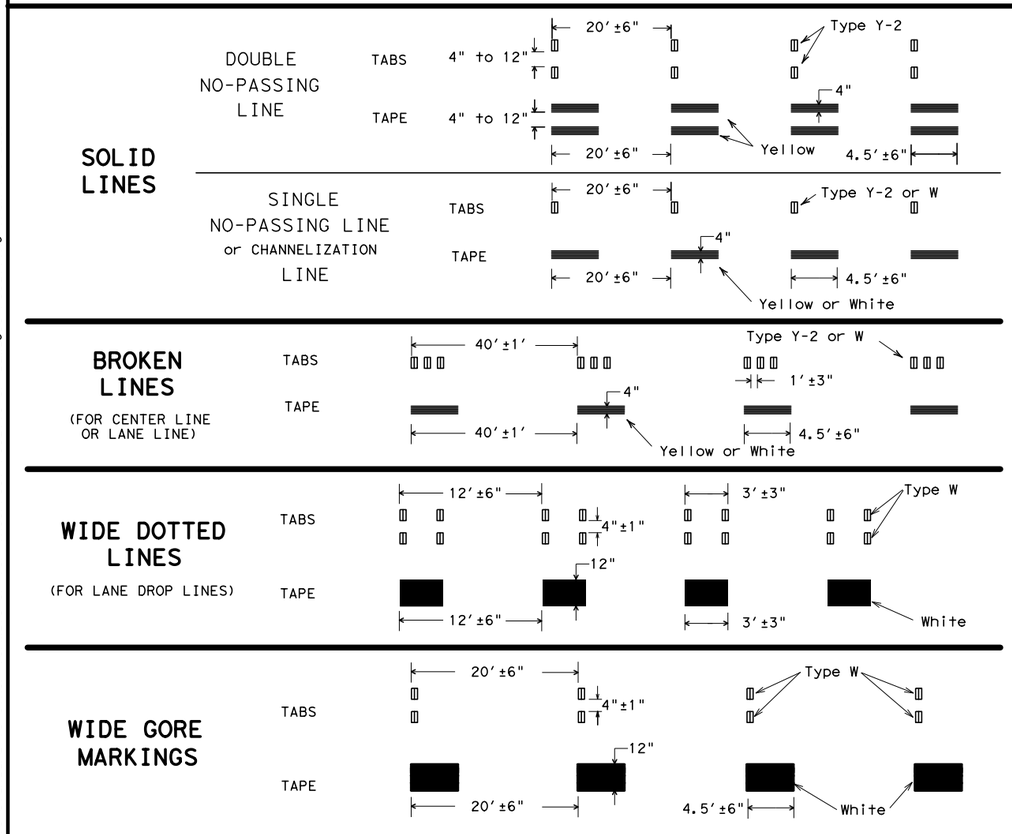
Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

FILE: wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03	CRP	SAN PAT.		97

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



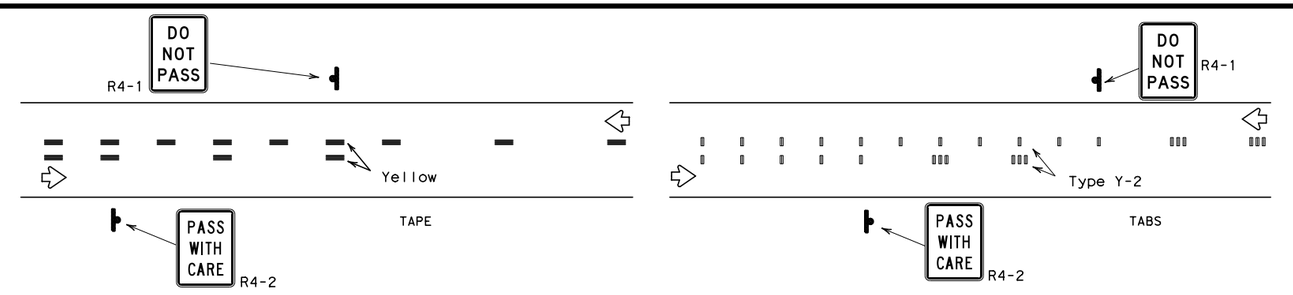
NOTES:

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.

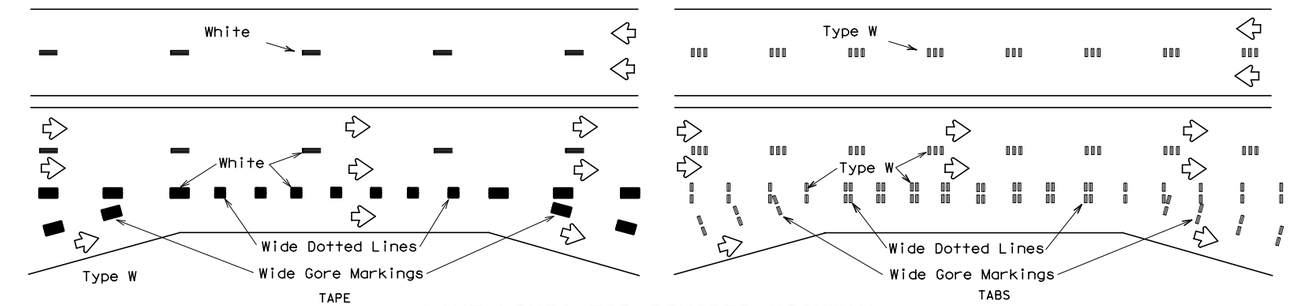
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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.

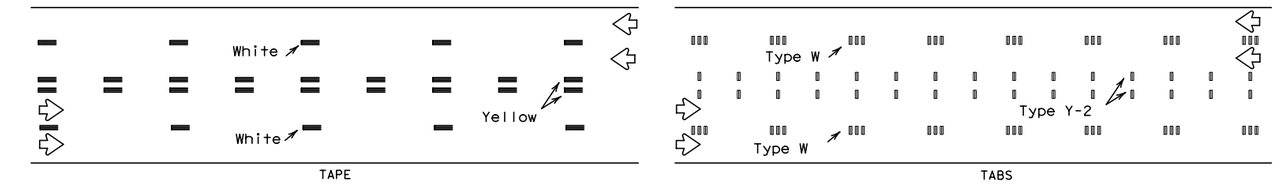
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



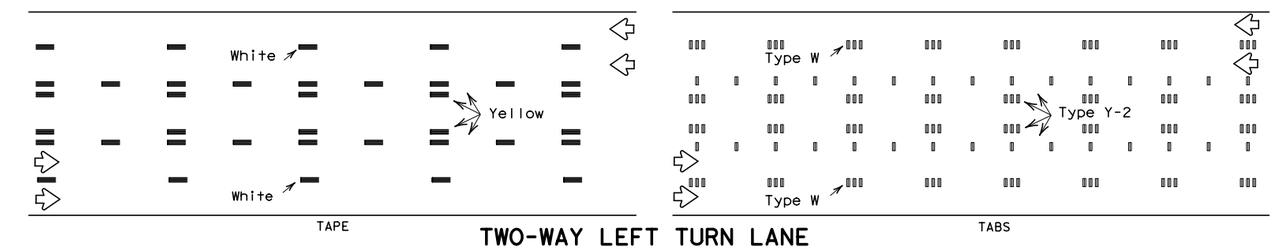
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



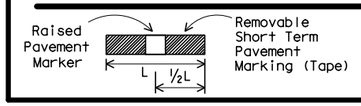
LANE LINES FOR DIVIDED HIGHWAY



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

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REVISIONS		0180	06	067	SH 35
1-97		DIST	COUNTY		SHEET NO.
3-03		CRP	SAN PAT.		98
7-13					

111

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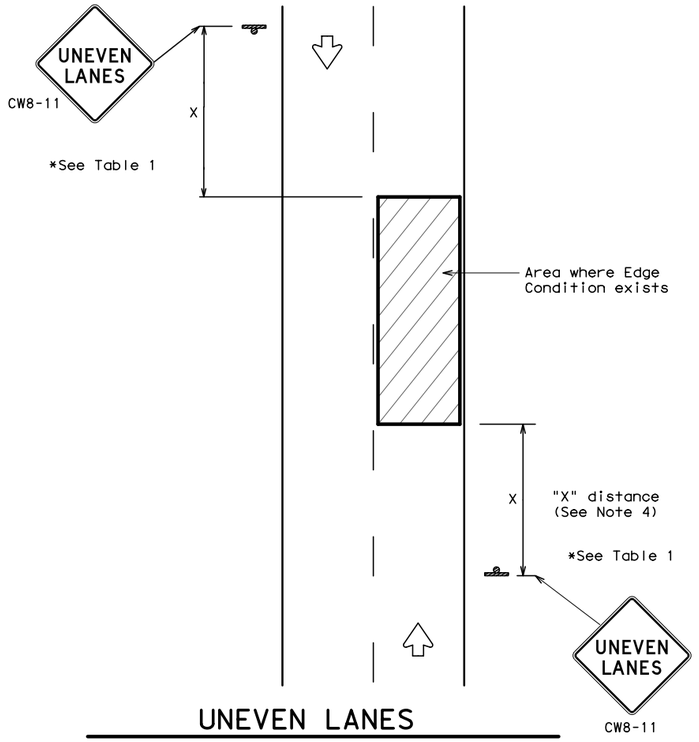
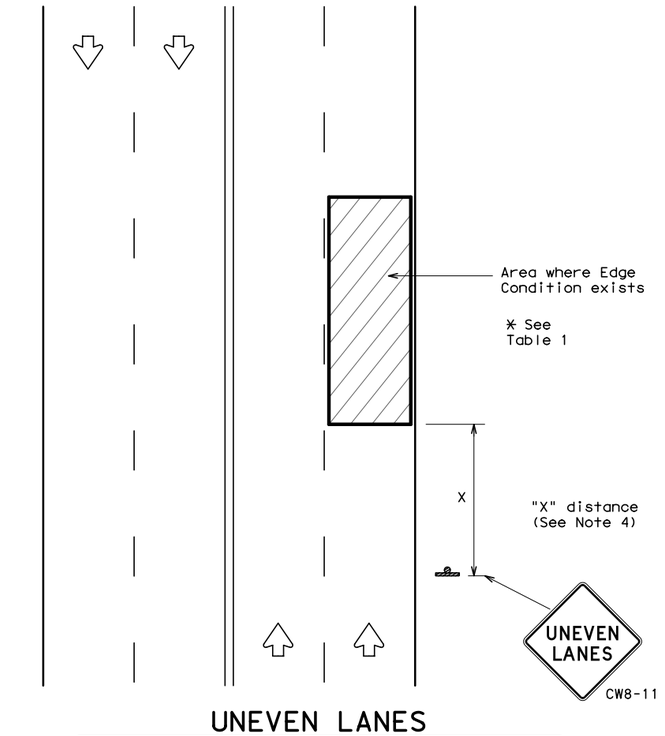
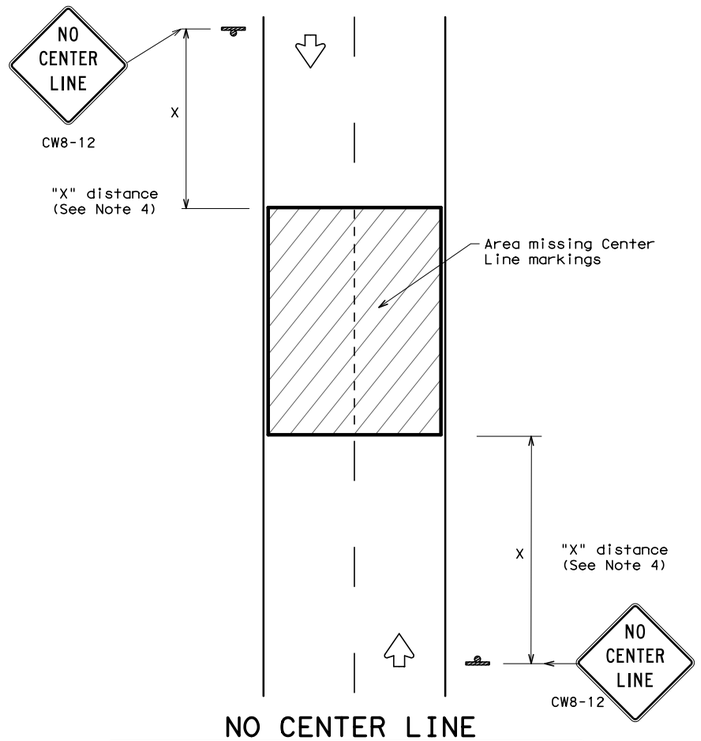


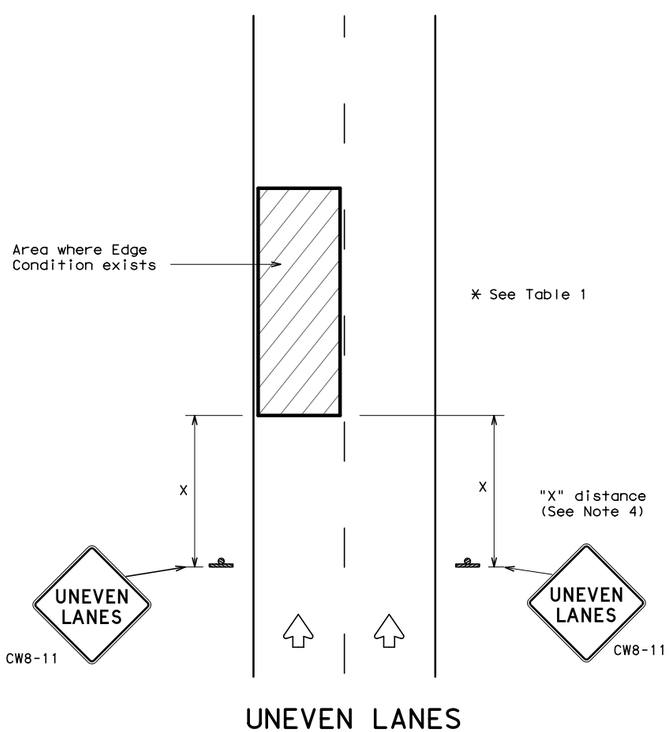
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

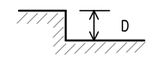
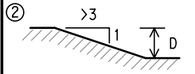
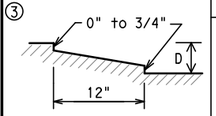
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

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

TABLE 1

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

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

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

Texas Department of Transportation

Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
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8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
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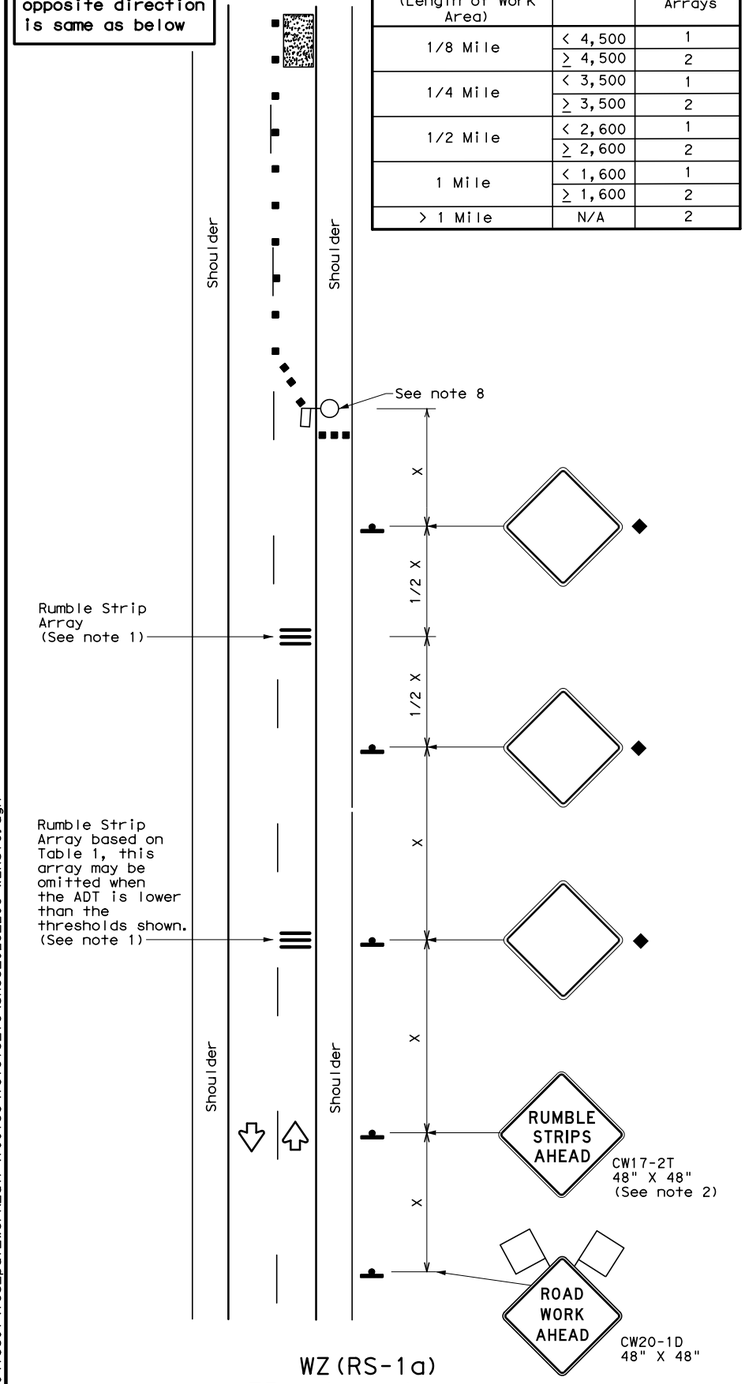
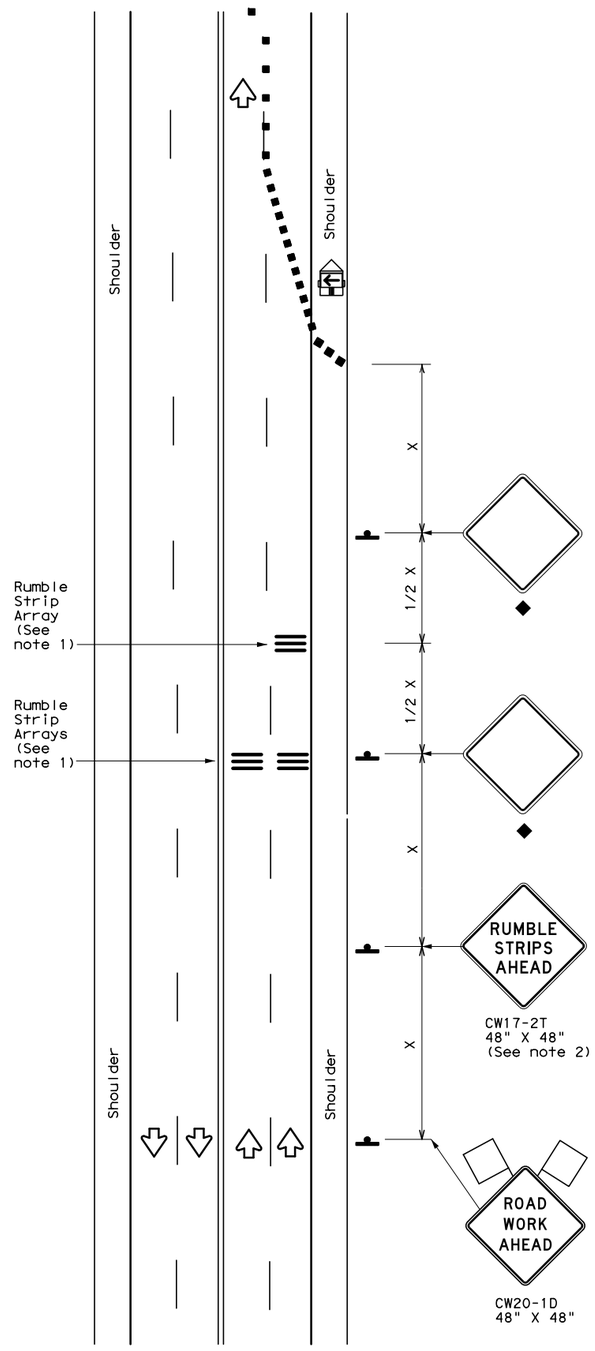
Warning sign and rumble strip sequence in opposite direction is same as below

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-1a)
75 mph or Less

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



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
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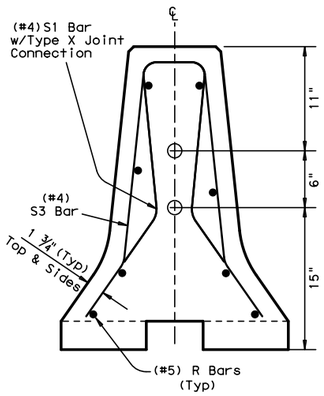
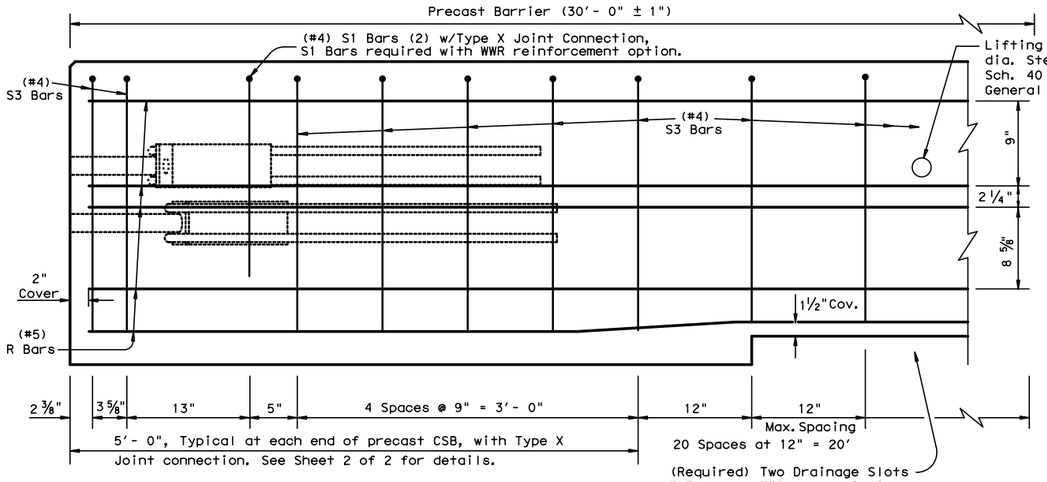


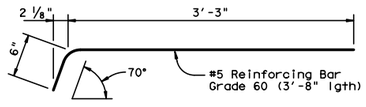
End View Precast Barrier

See sheet 2 of 3 for Joint connection Type X



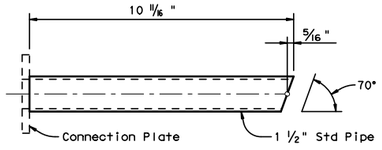
Reinforcement for Precast (CSB) Concrete Safety Barrier (Type 1)

Showing reinforcement for Joint Type X



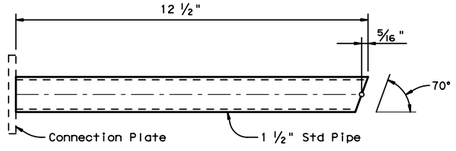
DEFORMED BAR ANCHOR DETAILS

Two (2) Bars required per assembly.
Eight (8) required per Joint.



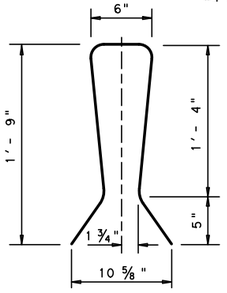
UPPER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Upper Assembly.
Two (2) required per Joint.



LOWER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Lower Assembly.
Two (2) required per Joint.

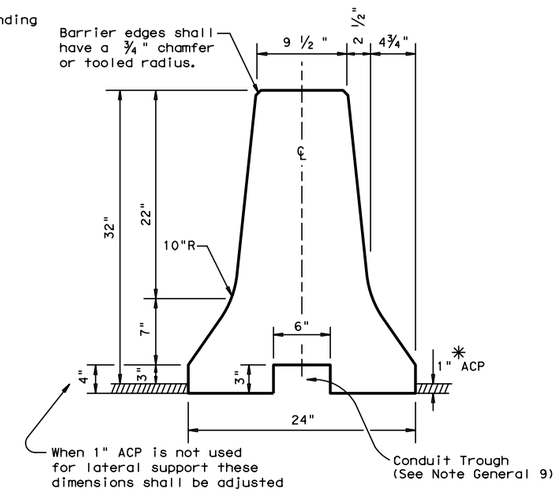


S3 Bar

#4 Bar

S1 Bar

#4 Bar (2)
(Joint Type X)

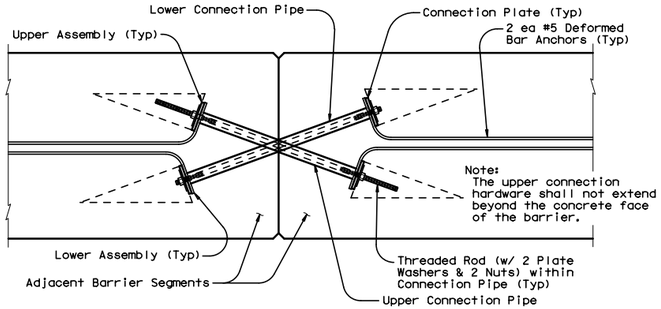


Concrete Safety Barrier

✳ When 1" ACP is "not" used as lateral support for permanent barrier placement. A permissible method of attaining the equivalent lateral support may be used, See CSB(6) sheet.

GENERAL NOTES

1. Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
3. Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
4. All precast barrier edges shall have a ¾" chamfer or tooled radius.
5. All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
6. All steel assemblies for joint shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."
7. Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
8. Surface finishing and grouting (where required) shall be two parts sand one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items involved.
9. Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.



TYPE X JOINT INSTALLATION DETAIL

Barrier reinforcing and Type X Joint Leave-Out dimensions not shown for clarity.

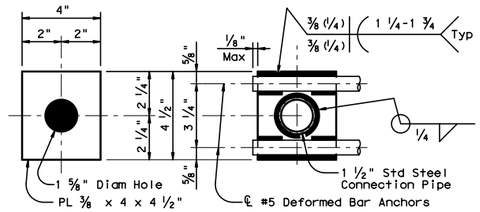
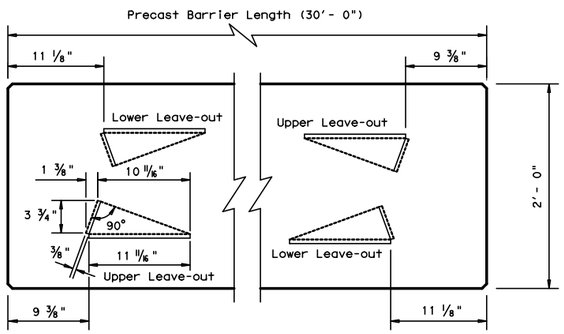


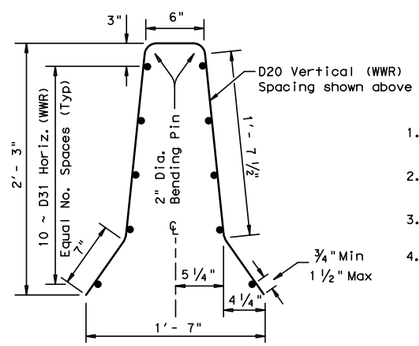
PLATE DIMENSIONS WELDING DETAILS

CONNECTION PLATE DETAILS

One (1) Plate required per assembly.
Four (4) required per Joint. All steel fittings for joint Type X shall be galvanized after fabrication in accordance with Item 445.



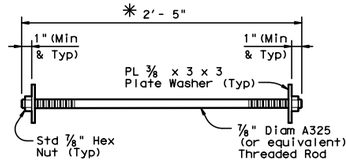
BARRIER PLAN AT END JOINTS



Welded Wire Reinforcement (WWR) Option for Bars R and S3

(WWR) General Notes

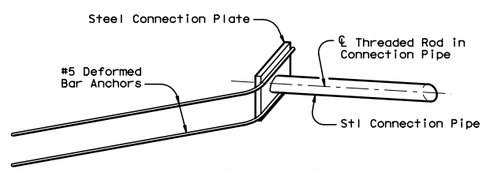
1. Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
2. Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
3. All reinforcement shall comply with Item 440, "Reinforcing Steel."
4. Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".



CONNECTION BOLT OR THREADED ROD DETAIL

Two (2) Threaded Rods (Or Equivalent Hex Hd. Bolts)
(w/ Two (2) PL ⅜ x 3 x 3 Plate Washers & Two (2) Std Hex Nuts) required per Joint.

✳ The connection hardware shall not extend beyond the concrete face of the barrier. Hex head bolts may be provided. The proper length of all hardware should be verified.



ISOMETRIC OF TYPICAL WELDED ASSEMBLY

Four (4) [2 Upper & 2 Lower] Assemblies required per Joint.

Weight of one Precast 30 ft. (CSB) segment = Approx. 6.5 Tons or 440 lbs per ft.

Texas Department of Transportation — Design Division Standard

CONCRETE SAFETY BARRIER (F-SHAPE)

PRECAST BARRIER (TYPE 1)

CSB(1)-10

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©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
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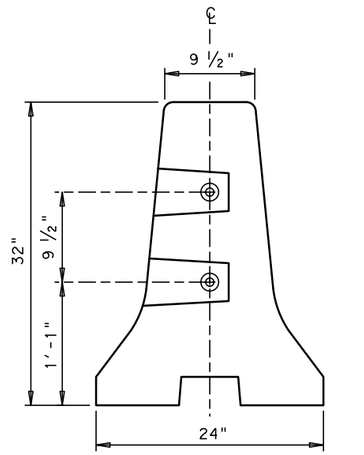
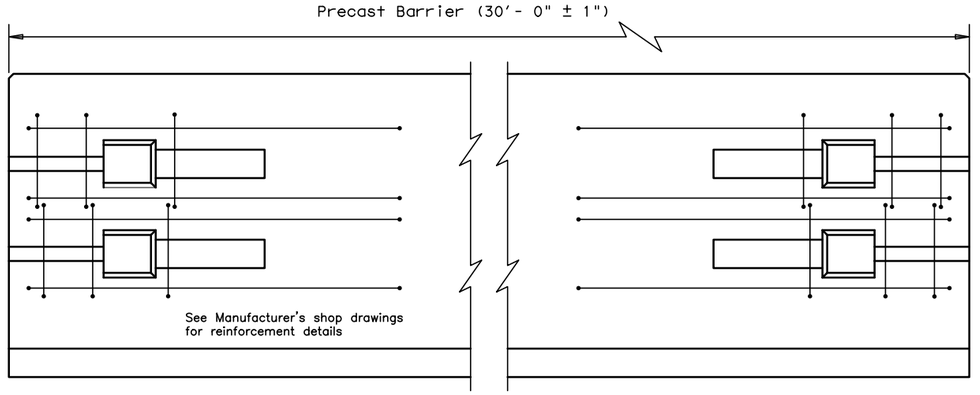
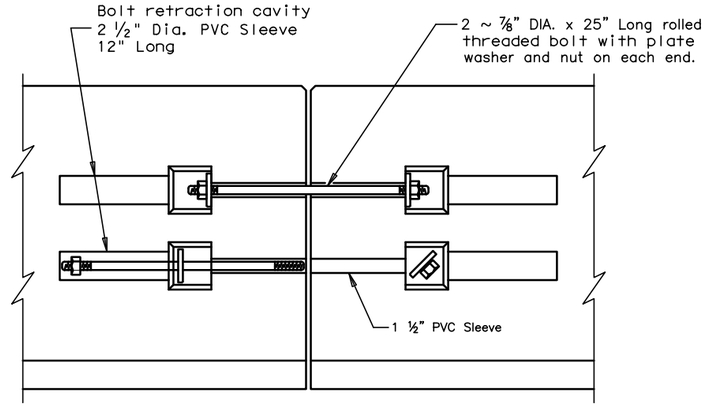


END VIEW (CSB) QUICK-BOLT
QUICK-BOLT POCKET LOCATIONS

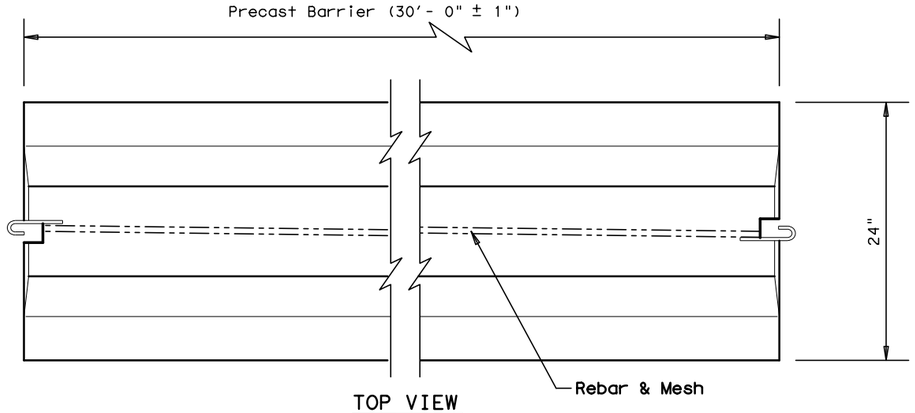


ELEVATION (CSB) QUICK-BOLT
See Manufacturer's shop drawing for additional details

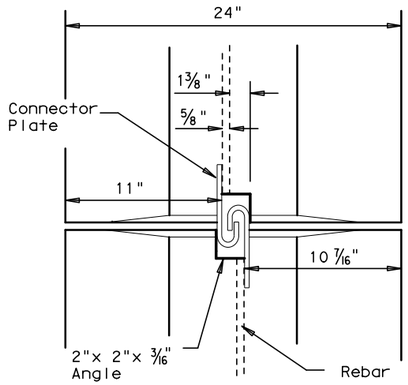


ELEVATION VIEW SHOWING JOINT CONNECTION
"QUICK-BOLT"

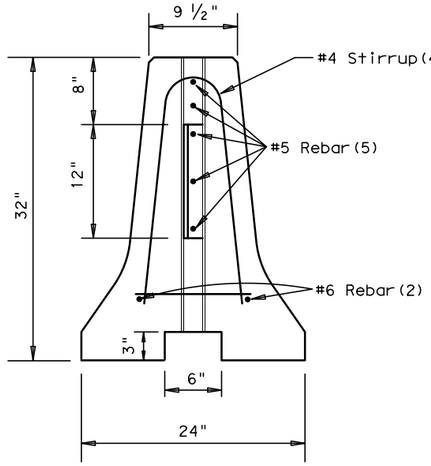
Joint Connection (Type Q)



TOP VIEW
PRECAST (CSB) WITH J-J HOOKS
See Manufacturer's shop drawing for additional details



VIEW FROM ABOVE
J-J HOOK CONNECTION



END VIEW
J-J HOOK CONNECTION

Joint Connection (Type J)

Proprietary Joint Connections (CSB)

Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are:

J-J Hooks by Easi-Set Industries, (800)547-4045
Quick-Bolt by Bexar Concrete, (210)497-3773

If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.

Texas Department of Transportation
Design Division Standard

CONCRETE SAFETY BARRIER (F-SHAPE)

PRECAST BARRIER
(TYPE 1)

CSB(1)-10

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©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
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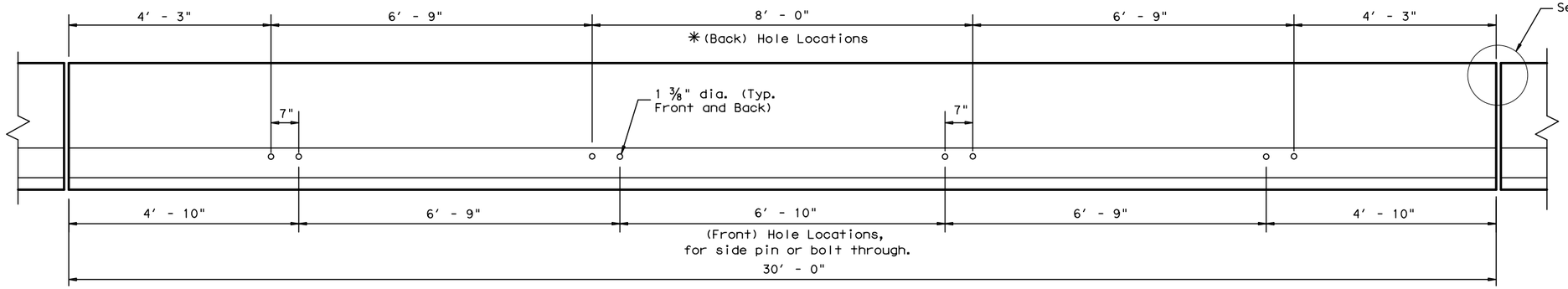
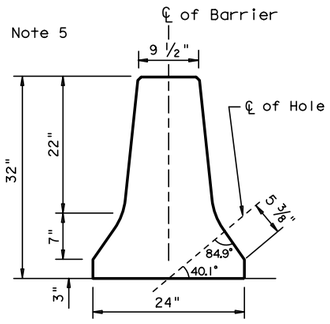
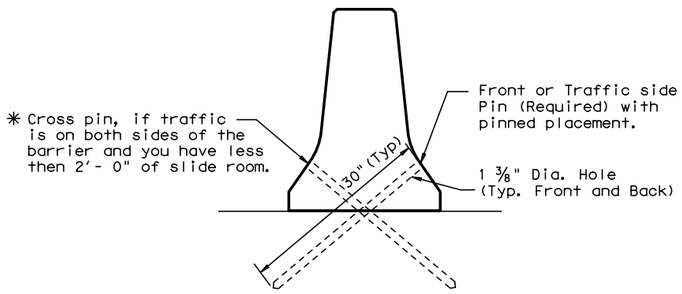


DETAIL 1

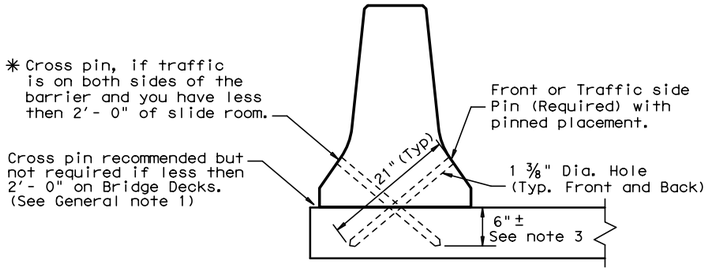


HOLE LOCATION DETAIL



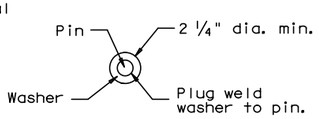
DETAIL 2

Placement on (ACP)
Asphalt Concete Pavement
or Treated Base Material
(30" Pin required)

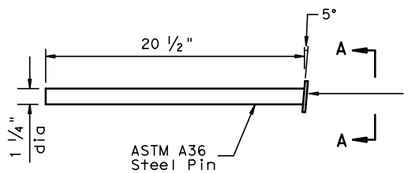


DETAIL 3

Bridge Deck or CRCP
(21" pin required)



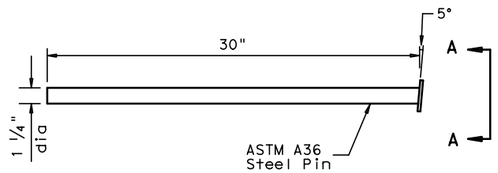
VIEW A-A



Steel washer welded to pin at 5° angle so that the washer is flush to the barrier surface. (See View A-A)

(21") PIN DETAIL

See Detail 3

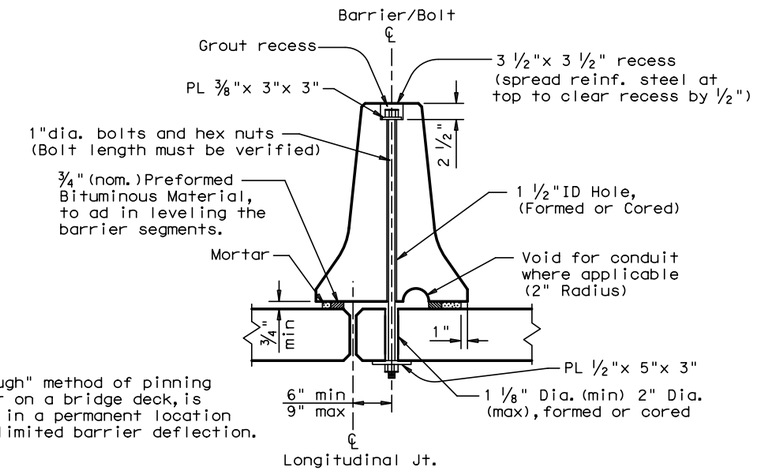


(30") PIN DETAIL

See Detail 2

CORE DRILLING EXISTING BARRIER

Core drilling existing concrete barrier is permitted. Holes shall be drilled with coring or masonry drilling type equipment. Percussion (star) drilling shall not be used. A special drill bit (to cut through existing reinforcing) will likely be required. Spalls in the concrete exceeding ½" shall be patched.



Note:
The "Bolt Through" method of pinning precast barrier on a bridge deck, is primarily used in a permanent location that requires limited barrier deflection.

PRECAST CSB (BOLT THROUGH) PLACEMENT OVER LONGITUDINAL EXPANSION JOINT

For bolt through locations, use the (Front) hole locations shown on Detail 1.

GENERAL NOTES

1. These details provide a method of laterally restraining precast concrete barrier to limit deflections under normally expected passenger vehicle impacts. These details are intended for use in work zones, primarily on bridge decks, or pavement where temporary barrier must be placed less then 2 ft. from the longitudinal edge of the deck or dropoff and parallel to the direction of travel. Other applications of these details are acceptable as directed by the Engineer.
2. Each precast concrete barrier section shall have a minimum of four or total of eight 1 ⅜" ID, holes formed or cored through the barrier. The center lines of the holes are shown in the hole location detail. If rebar is encountered, the entry point may be shifted 2" plus or minus longitudinally along the barrier. The eight holes are spaced along the length of the barrier as shown in Detail 1.
3. The drilling of the travel surface is accomplished by placing the pre-drilled barrier section on the travel surface in the desired position. Then the hole is drilled with the bit passing though the hole in the barrier. The bit is to be inserted into the hole in the barrier so that the travel surface is drilled to a point which is slightly more than the pin length.
4. Note that steel washers have been welded to the top of the steel pins to aid in the removal of the pins, when the barrier is removed.
5. See CSB(1) standard sheets for reinforcement requirements and joint connection types.
6. The forming or coring of holes in the barrier, drilling of holes in bridge deck or pavement, fabrication and materials for the 1 ¼" pins, installation of pins, and any repair to the barrier shall be considered as subsidiary to the barrier bid items.
7. The barrier and travel surface will be repaired as directed by the Engineer in accordance with Item 429, "Concrete Structure Repair."
8. Provide galvanized bolts, nuts, and plate washers. All steel pins shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."
9. Weight of barrier is approx. 440 lbs per foot.

Texas Department of Transportation

Design Division Standard

CONCRETE SAFETY BARRIER (F-SHAPE)

PRECAST BARRIER
(TYPE 1)
PINNED PLACEMENT

CSB(7)-10

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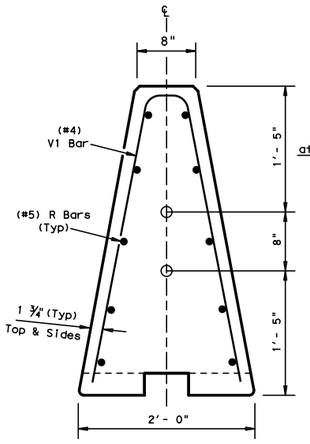
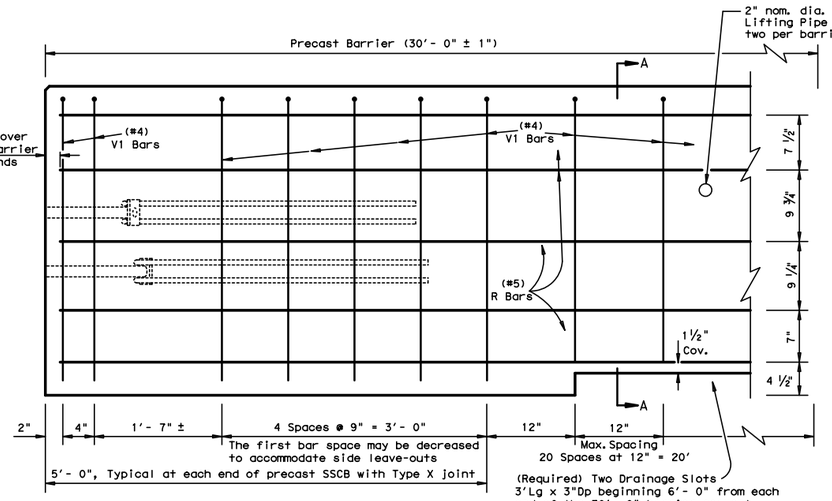


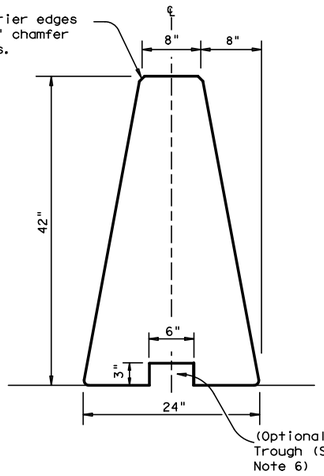
End View Precast Barrier

Pipe locations for Joint Type X connection



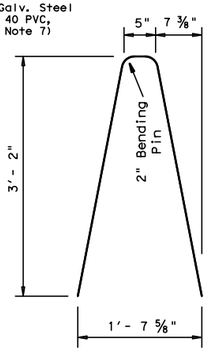
Reinforcement for Precast (SSCB) Single Slope Concrete Barrier (Type 1)

Showing reinforcement for Joint Connection (Type X)



Single Slope Concrete Traffic Barrier

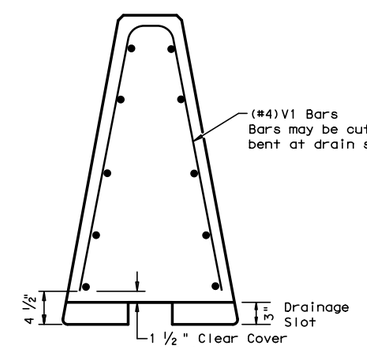
Precast SSCB barrier may be connected to cast-in-place SSBC. The joint connection "Types" may be used in the cast-in-place barrier, to match the precast barrier connection.



V1 Bar

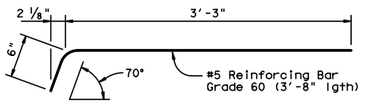
#4 Rebar

Note:
V1 Bars above the drainage slots may bent to accomadate 1 ½" clear cover as directed by the Engineer.



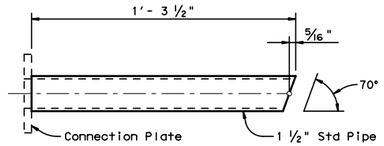
Section A-A

Steel Placement at (Required) Drainage Slots



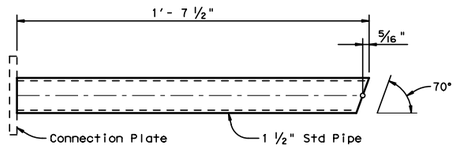
DEFORMED BAR ANCHOR DETAILS

Two (2) Bars required per assembly.
Eight (8) required per Joint.



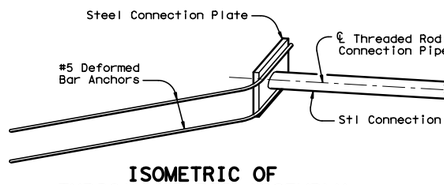
UPPER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Upper Assembly.
Two (2) required per Joint.



LOWER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Lower Assembly.
Two (2) required per Joint.

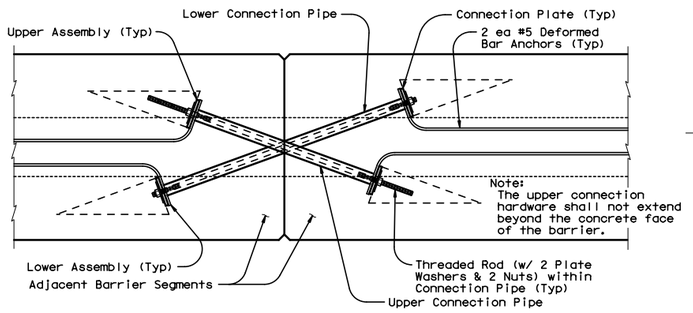


ISOMETRIC OF TYPICAL WELDED ASSEMBLY

Four (4) [2 Upper & 2 Lower] Assemblies required per Joint.

General Notes

1. Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
3. Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
4. All precast barrier edges shall have a ¾" chamfer or a tooled radius.
5. All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
6. Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.
7. Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
8. Surface finishing and grouting (where required) shall be two parts sand one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items.
9. All steel assemblies shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."



TYPE X JOINT INSTALLATION DETAIL

Barrier reinforcing and Type X Joint Leave-Out dimensions not shown for clarity.

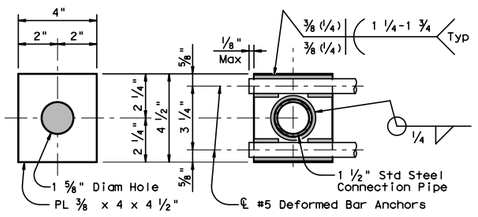
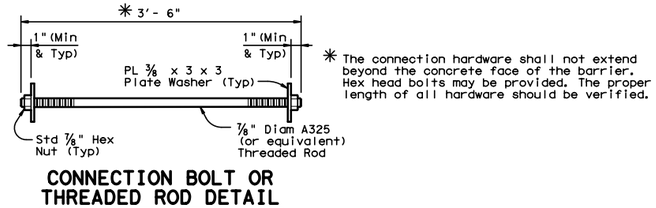


PLATE DIMENSIONS — WELDING DETAILS

CONNECTION PLATE DETAILS

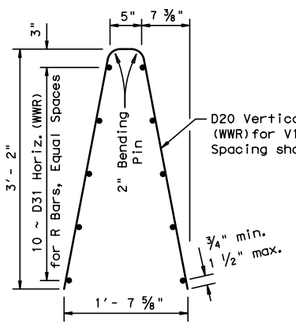
One (1) Plate required per assembly.
Four (4) required per Joint. All steel fittings for joint Type X shall be galvanized after fabrication in accordance with Item 445.



CONNECTION BOLT OR THREADED ROD DETAIL

Two (2) Threaded Rods (Or Equivalent Hex Hd. Bolts)
(w/ Two (2) PL ⅜ x 3 x 3 Plate Washers & Two (2) Std Hex Nuts) required per Joint.

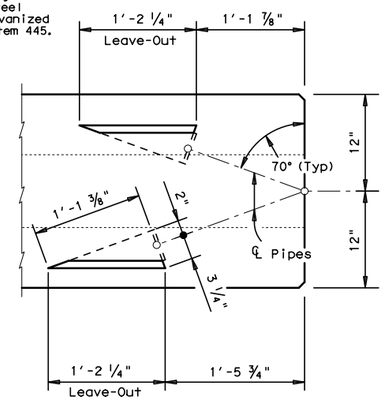
Weight of one precast 30 ft. (SSCB) segment = Approx. 10.5 Tons or 717 lbs per ft.



Welded Wire Reinforcement (WWR) Option for Bars R and V1

(WWR) General Notes

1. Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
2. Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
3. All reinforcement shall comply with Item 440, "Reinforcing Steel."
4. Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".



BARRIER PLAN AT JOINT

SHEET 1 OF 2

Texas Department of Transportation — Design Division Standard

SINGLE SLOPE CONCRETE BARRIER

PRECAST BARRIER (TYPE 1)

SSCB(2)-10

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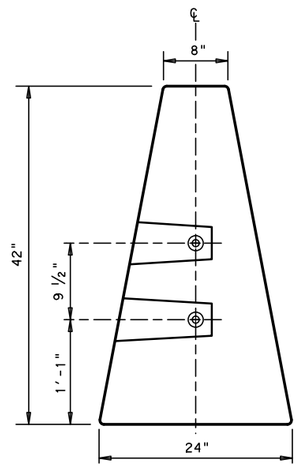
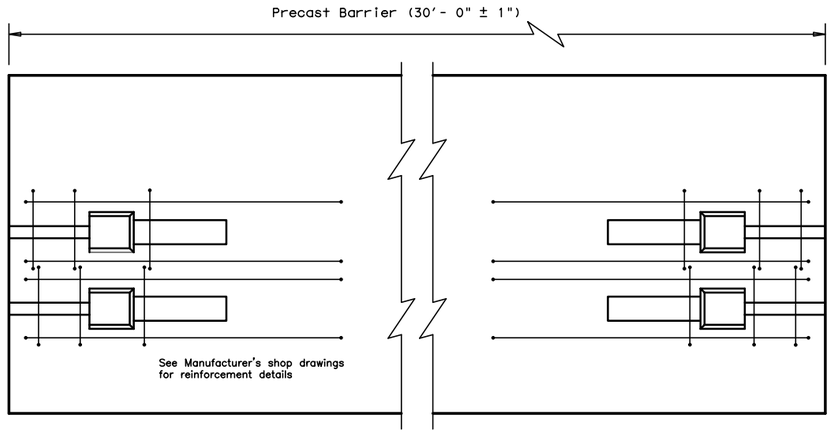
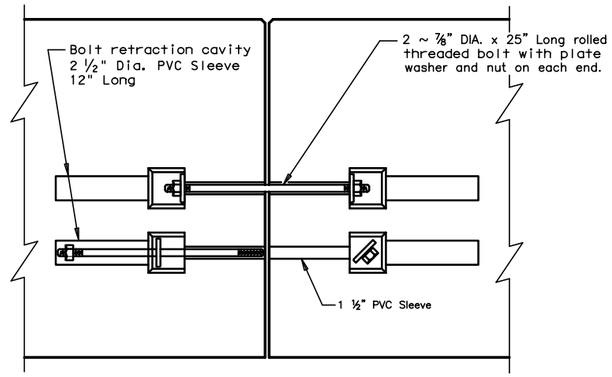


END VIEW
"QUICK-BOLT" POCKET LOCATIONS



ELEVATION VIEW
"QUICK-BOLT" (SSCB)
See Manufacturer's shop drawing for additional details



ELEVATION VIEW SHOWING JOINT CONNECTION
"QUICK-BOLT"

Joint Connection (Type Q)

TOP VIEW
PRECAST (SSCB) WITH J-J HOOKS
See Manufacturer's shop drawing for additional details

VIEW FROM ABOVE
J-J HOOK CONNECTION

END VIEW

Proprietary Joint Connections (SSCB)

Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are:

J-J Hooks by Easi-Set Industries, (800)547-4045
Quick-Bolt by Bexar Concrete, (210)497-3773

If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.

SECTION A-A
Showing (Type R) Rebar Grid

ELEVATION
V1 Bars (See Sheet 1)

TOP VIEW
JOINT CONNECTION
Typical at both ends of barrier segment

(#4) V2 BARS
6 ~ two piece bars per barrier segment

WELDED REBAR GRID

Joint Connection (Type R)

SHEET 2 OF 2

Texas Department of Transportation — Design Division Standard

SINGLE SLOPE CONCRETE BARRIER

PRECAST BARRIER
(TYPE 1)

SSCB(2)-10

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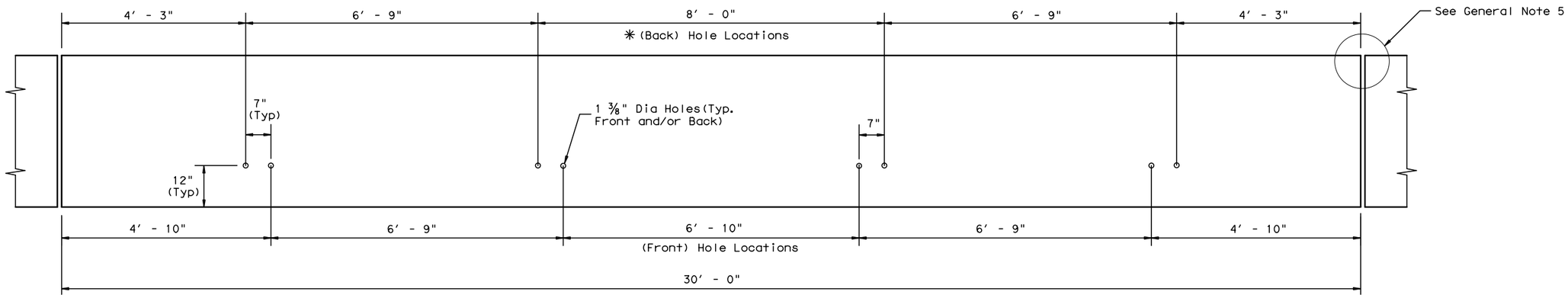
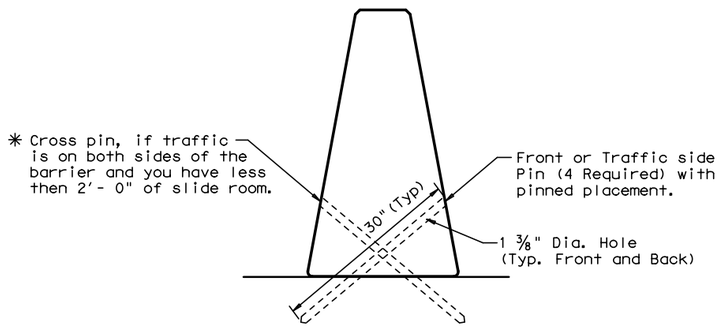


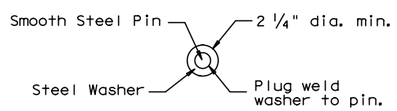
DETAIL 1

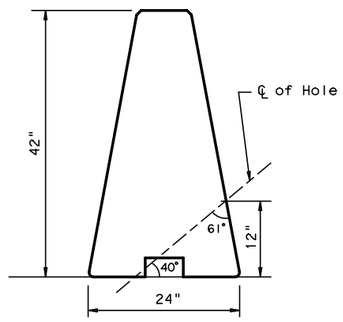
Precast SSCB(42")
Showing hole locations



DETAIL 2

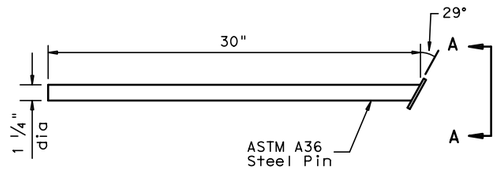
Placement on (ACP)
Asphalt Conc. Pavement
or Treated Base Material
(30" Pin required)



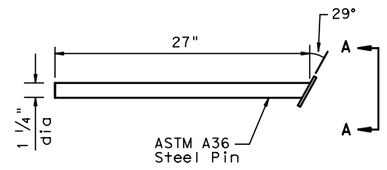


HOLE LOCATION DETAIL

VIEW A-A



(30") PIN DETAIL
See Detail 2

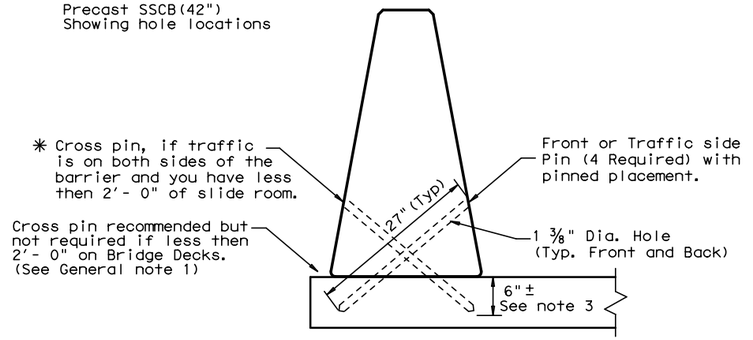


(27") PIN DETAIL
See Detail 3

Note:
Steel washer welded to pin at 29° angle so that the washer is flush with barrier surface. (See View A-A)

DETAIL 3

Bridge Deck or CRCP
(27" Pin required).



CORE DRILLING EXISTING BARRIER

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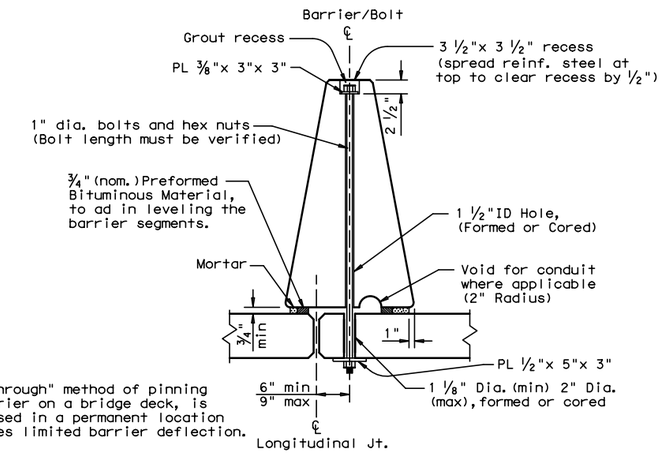

Note:
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PRECAST SSCB (BOLT THROUGH) PLACEMENT OVER LONGITUDINAL EXPANSION JOINT

For bolt through locations, use the (Front) hole locations shown on Detail 1.

GENERAL NOTES

1. These details provide a method of laterally restraining precast concrete barrier to limit deflections under normally expected passenger vehicle impacts. These details are intended for use in work zones, primarily on bridge decks, or pavement where temporary barrier must be placed less then 2 ft. from the longitudinal edge of the deck or dropoff and parallel to the direction of travel. Other applications of these details are acceptable as directed by the Engineer.
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3. The drilling of the travel surface is accomplished by placing the pre-drilled barrier section on the travel surface in the desired position. Then the hole is drilled with the bit passing though the hole in the barrier. The bit is to be inserted into the hole in the barrier so that the travel surface is drilled to a point which is slightly more than the pin length.
4. Note that steel washers have been welded to the top of the steel pins to aid in the removal of the pins, when the barrier is removed.
5. See SSCB(2) standard sheet for reinforcement requirements and joint connection types.
6. The forming or coring of holes in the barrier, drilling of holes in bridge deck or pavement, fabrication and materials for the 1 ¼in. pins, installation of pins, and any repair to the barrier shall be considered as subsidiary to the barrier bid items.
7. The barrier and travel surface will be repaired as directed by the Engineer in accordance with Item 429, "Concrete Structure Repair."
8. All steel pins shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."
9. Weight of barrier is approx. 700 lbs per foot.

Texas Department of Transportation

Design Division Standard

SINGLE SLOPE CONCRETE BARRIER

PRECAST BARRIER
(TYPE 1)
PINNED PLACEMENT

SSCB(5)-10

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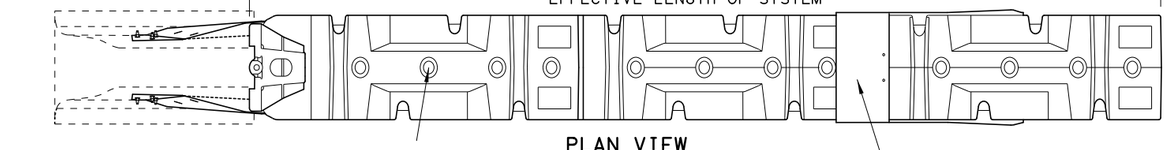
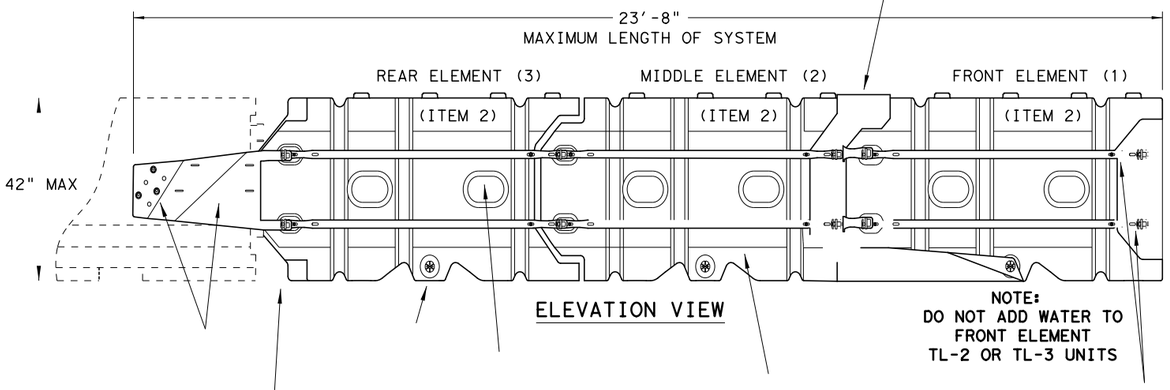
SYSTEM SHOWN - ABSORB-M TL-3



PLAN VIEW

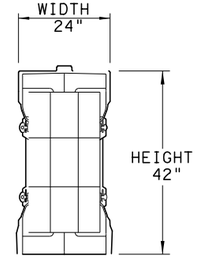
TRAFFIC FLOW



ELEVATION VIEW

NOTE:
DO NOT ADD WATER TO
FRONT ELEMENT
TL-2 OR TL-3 UNITS

TRAFFIC FLOW



SECTION A-A

TEST LEVEL	NUMBER OF ELEMENTS	EFFECTIVE LENGTH	MAXIMUM LENGTH
TL-2	2	14'- 7 3/4"	17'- 4"
TL-3	3	20'- 11 3/4"	23'- 8"

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING THE INSTALLATION AND TECHNICAL GUIDANCE, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800. 180 RIVER ROAD, RIO VISTA, CA 94571
2. THE ABSORB-M SYSTEM IS ONLY APPROVED FOR USE IN (TEMPORARY WORK ZONE) LOCATIONS.
3. THE ABSORB-M IS A WATER FILLED NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO A FOUNDATION AND CAN BE INSTALLED ON TOP OF CONCRETE, ASPHALT, OR ANY SURFACE CAPABLE OF BEARING THE WEIGHT OF THE SYSTEM.
4. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
5. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
6. THE ABSORB-M SHOULD BE LOCATED APPROXIMATELY PARALLEL WITH THE BARRIER.
7. THE USE OF THE ABSORB-M IS RESTRICTED TO A BARRIER HEIGHT OF UP TO 42 INCHES.
8. DO NOT ADD WATER TO FRONT ELEMENT (TL-2 OR TL-3 UNIT).

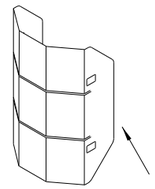
BILL OF MATERIALS (BOM) ABSORB-M TL-3 & TL-2 SYSTEMS			QTY	QTY
ITEM #	PART NUMBER	PART DESCRIPTION	TL-2 SYSTEM	TL-3 SYSTEM
1	BSI-1809036-00	TRANSITION-(GALV)	1	1
2	BSI-1808002-00	PRE-ASSEMBLED ABSORBING (ELEMENTS)	2	3
3	BSI-4004598	FILL CAPS	8	12
4	BSI-4004599	DRAIN PLUGS	2	3
5	BSI-1809053-00	TENSION STRAP-(GALV)	8	12
6	BSI-2001998	C-SCR FH 3/8-16 X 1 1/2 GR5 PLT	8	12
7	BSI-2001999	C-SCR FH 3/8-16 X 1 GR5 PLT	8	12
8	BSI-1809035-00	MIDNOSE-(GALV)	1	1
9	BSI-1808014-00	NOSE PLATE	1	1
10	BSI-1809037-00	TRANSITION STRAP (LEFT-HAND)-(GALV)	1	1
11	BSI-1809038-00	TRANSITION STRAP (RIGHT-HAND)-(GALV)	1	1
12	BSI-1808005-00	PIN ASSEMBLY	8	10
13	BSI-2002001	ANC MECH 5/8-11X5 (GALV)	6	6
14	ABSORB-M	INSTALLATION AND INSTRUCTIONS MANUAL	1	1

* COMPONENTS PRE-ASSEMBLED WITH ELEMENT ASSEMBLY

DELINEATION DECAL PLACEMENT GUIDE

TRAFFIC FLOW LEFT-SIDE BARRIER | TRAFFIC FLOW BOTH-SIDE BARRIER | TRAFFIC FLOW RIGHT-SIDE BARRIER

** APPLY DECAL



NOSE PLATE

** NOTE: (PROVIDED BY OTHERS)
ENGINEER OR CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER FOR THE CORRECT DECAL PER TRAFFIC FLOW, LEFT, RIGHT OR BOTH-SIDES.

NOTE:
APPLY A HIGH REFLECTIVE DECAL TO THE NOSE PLATE. DELINEATION DECAL ORIENTATION IS SHOWN ON THE CONSTRUCTION PLAN SET AND SHALL BE IN ACCORDANCE WITH THE TEXAS MUTCD FOR (TRAFFIC CONTROL DEVICES). DECALs ARE AVAILABLE FOR TRAFFIC FLOW ON THE LEFT-SIDE, BOTH -SIDES AND RIGHT-SIDE.

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE ABSORB-M, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

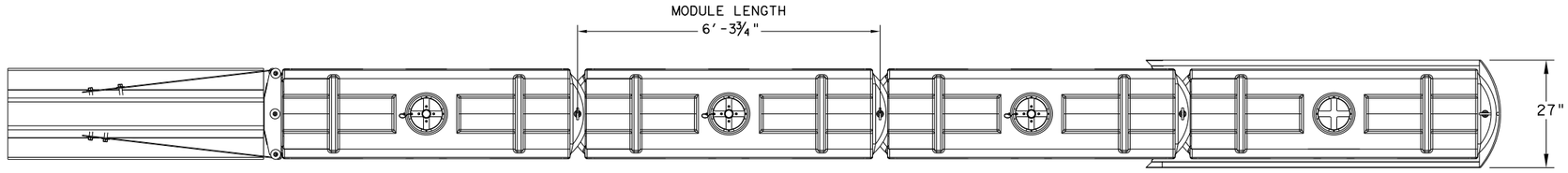
SACRIFICIAL

Texas Department of Transportation — Design Division Standard

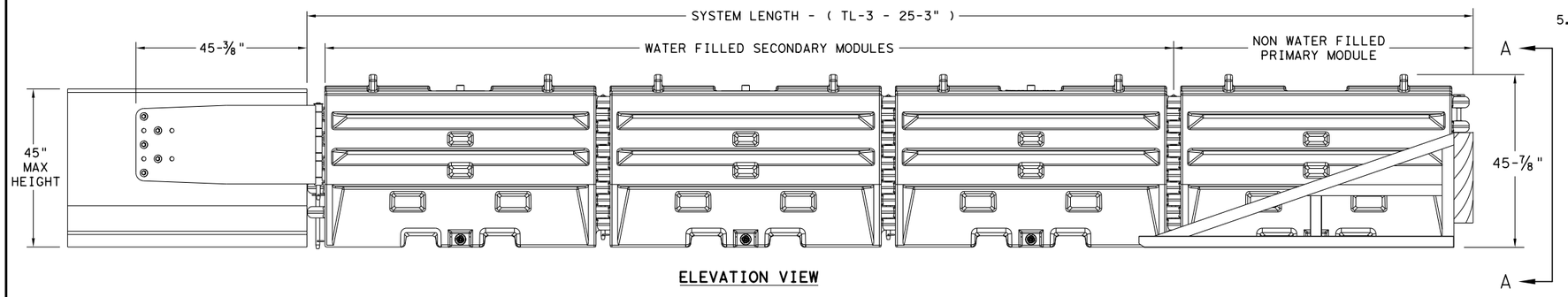
LINDSAY TRANSPORTATION SOLUTIONS
CRASH CUSHION
(MASH TL-3 & TL-2)
TEMPORARY - WORK ZONE
ABSORB(M)-19

FILE: absorbm19	DN: TxDOT	CK: KM	DW: VP	CK:
© TxDOT: JULY 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		107

DATE: 8/18/2020
FILE: \\wsppw041cs01\ICS_pdf_work_dir\7131\181913_51\SH35_029_401-SLED19.dgn



PLAN VIEW



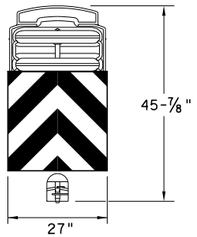
ELEVATION VIEW

GENERAL NOTES

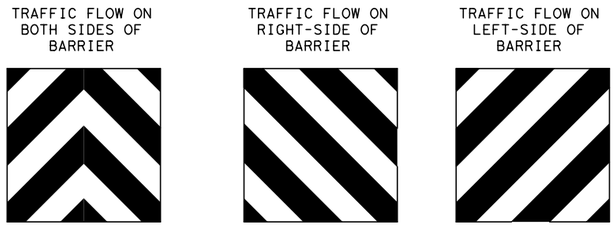
1. REFER TO THE INSTALLATION MANUAL FOR SPECIFIC SYSTEM ASSEMBLY AND MODULE ORIENTATION. FOR ADDITIONAL INFORMATION, CONTACT TRAFFIX, INC. AT (949) 361-5663.
2. THE SLED SYSTEM IS A MASH APPROVED TEST LEVEL 3 (TL-3) CRASH CUSHION APPROVED FOR USE IN TEMPORARY WORK ZONES. THE SLED SYSTEM IS A NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO THE GROUND AND CAN BE INSTALLED ON CONCRETE, ASPHALT, GRAVEL OR COMPACTED SOIL.
3. MAXIMUM PERMISSIBLE CROSS SLOPE IS 8° (DEGREES) (14%).
4. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
5. THE SLED SYSTEM CAN BE ATTACHED TO:

- CONCRETE BARRIER, TEMPORARY OR PERMANENT, 45" MAXIMUM HEIGHT
- STEEL BARRIER
- PLASTIC BARRIER
- CONCRETE BRIDGE ABUTMENTS
- W-BEAM GUARD RAIL
- THRIE BEAM GUARD RAIL

TEST LEVEL	NUMBER OF SECONDARY MODULES	SYSTEM LENGTH
TL-3	3	25′ 3"

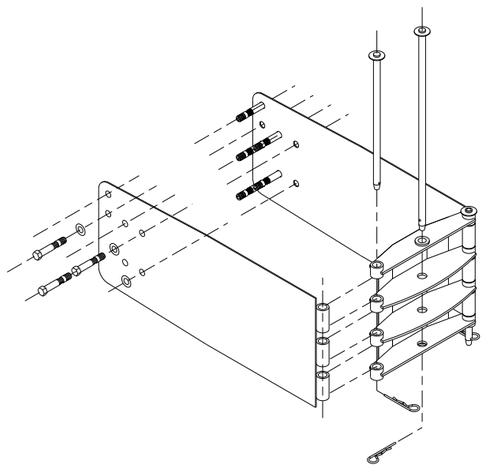


SECTION A-A



NOSE SHEETING PANEL DELINEATION

NOTE:
SEE INSTALLATION MANUAL FOR CUSTOMIZED DELINEATION NOSE SHEETING FOR DECAL PLACEMENT.



SLED TRANSITION COMPONENTS FOR ATTACHMENT TO CMB

NOTE:
SEE MANUFACTURER'S INSTALLATION MANUAL FOR FURTHER DETAILS.

TRANSITION OPTIONS
SLED TRANSITION TO CONCRETE TRAFFIC BARRIER (TEMPORARY OR PERMANENT)
SLED TRANSITION TO STEEL TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO PLASTIC TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO W-BEAM OR THRIE BEAM GUARD RAIL (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO CONCRETE BRIDGE ABUTMENT

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SLED, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

SACRIFICIAL

BILL OF MATERIAL

PART NUMBER	DESCRIPTION	QTY: TL-3
45131	TRANSITION FRAME, GALVANIZED	1
45150	TRANSITION PANEL, GALVANIZED	2
45147-CP	TRANSITION SHORT DROP PIN W/ KEEPER PIN, GALVANIZED	2
45148-CP	TRANSITION LONG DROP PIN W/ KEEPER PIN, GALVANIZED	1
45050	ANCHOR BOLTS	9
12060	WASHER, 3/4" ID X 2" OD	9
45044-Y	SLED YELLOW WATER FILLED MODULE	3
45044-YH	SLED YELLOW "NO FILL" MODULE	1
45044-S	CIS (CONTAINMENT IMPACT SLED), GALVANIZED	1
45043-CP	T-PIN W/ KEEPER PIN	4
18009-B-I	FILL CAP W/ "DRIVE BY" FLOAT INDICATOR	3
45033-RC-B	DRAIN PLUG	3
45032-DPT	DRAIN PLUG REMOVAL TOOL	1

Texas Department of Transportation

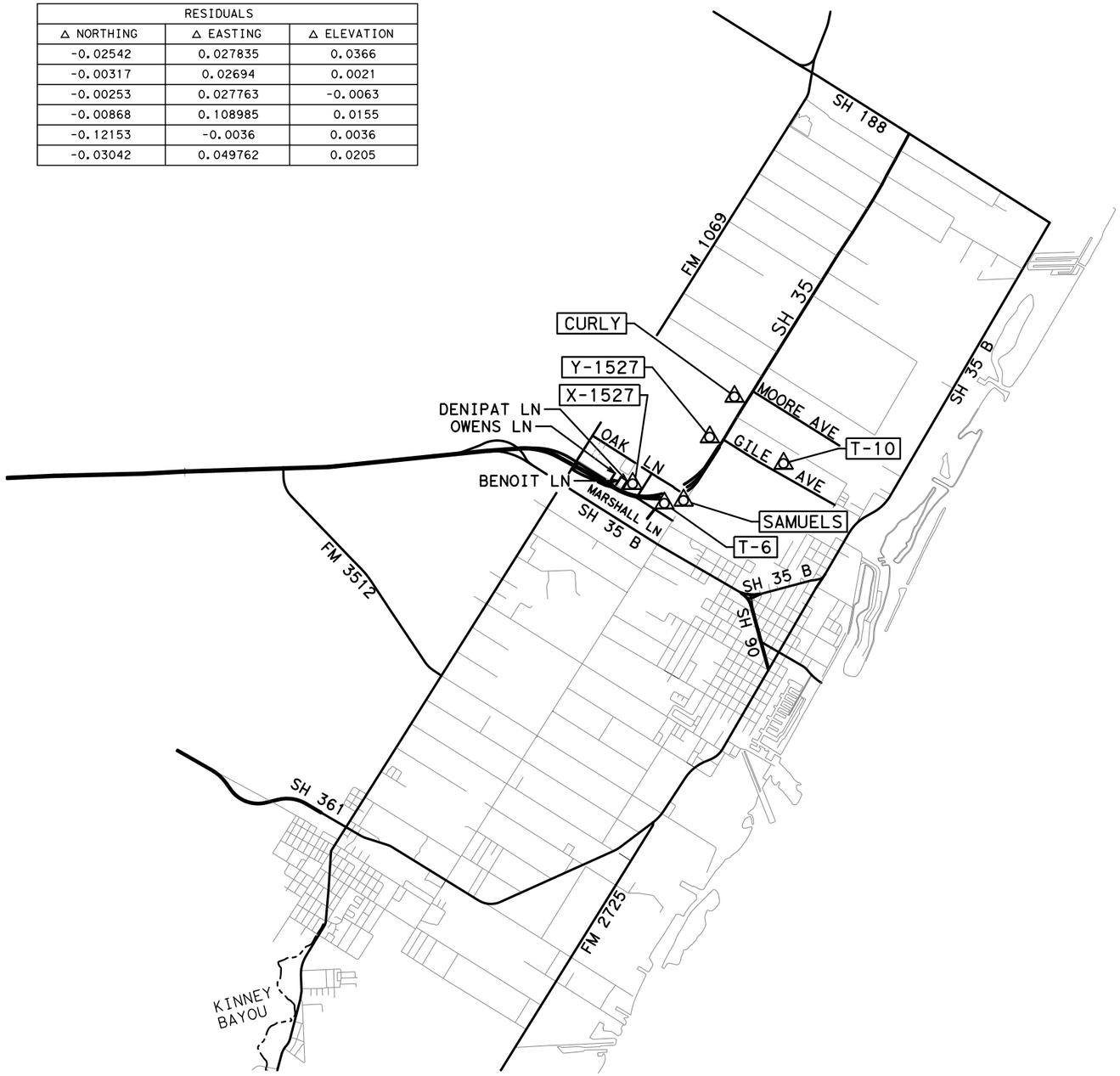
Design Division Standard

SLED
CRASH CUSHION
TL-3 MASH COMPLIANT
(TEMPORARY, WORK ZONE)
SLED-19

FILE: sled19.dgn	DN: TxDOT	CK: KM	DW: VP	CK:
© TxDOT: DECEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		108

CONTROL POINT	PROVIDED SURFACE COORDINATES		OBSERVED SURFACE COORDINATES		PROVIDED GRID COORDINATES		LATITUDE	LONGITUDE	PROVIDED ELEVATION	DESCRIPTION
	NORTHING	EASTING	NORTHING	EASTING	NORTHING	EASTING				
T-6	17,225,497.135	1,415,796.363	17,225,497.160	1,415,796.335	17,226,013.920	1,415,838.838	27°55'16.59725"	97°09'48.89750"	24.849	RECOVERED PK NAIL
SAMUELS	17,225,688.787	1,417,059.482	17,225,688.790	1,417,059.455	17,226,205.573	1,417,101.995	27°55'18.36211"	97°09'34.79493"	24.408	RECOVERED TxDOT BRASS DISK
T-10	17,228,200.947	1,419,731.977	17,228,200.950	1,419,731.949	17,228,717.809	1,419,774.570	27°55'42.95346"	97°09'04.70546"	21.626	RECOVERED PK NAIL
CURLY	17,230,605.761	1,420,057.910	17,230,605.770	1,420,057.801	17,231,122.695	1,420,100.513	27°56'06.72929"	97°09'00.78533"	25.638	RECOVERED TxDOT BRASS DISK
Y-1527	17,227,667.578	1,418,310.814	17,227,667.700	1,418,310.818	17,228,184.420	1,418,353.365	27°55'37.82260"	97°09'20.61140"	23.719	RECOVERED NGS BRASS DISK
X-1527	17,226,397.200	1,414,332.163	17,226,397.230	1,414,332.113	17,226,914.007	1,414,374.594	27°55'25.66217"	97°10'05.11294"	17.477	RECOVERED NGS BRASS DISK

RESIDUALS		
Δ NORTHING	Δ EASTING	Δ ELEVATION
-0.02542	0.027835	0.0366
-0.00317	0.02694	0.0021
-0.00253	0.027763	-0.0063
-0.00868	0.108985	0.0155
-0.12153	-0.0036	0.0036
-0.03042	0.049762	0.0205



N

NOT TO SCALE

NOTES:

1. ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS SOUTH ZONE (4205), NORTH AMERICAN DATUM OF 1983(NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 0.99997
2. HORIZONTAL AND VERTICAL CONTROL VALUES FOR THIS WAS PROVIDED AND CONFIRMED BY MULTIPLE OBSERVATIONS DERIVED BY UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (TXRP ROCKPORT)
3. UNIT OF MEASURE IS U.S. SURVEY FOOT
4. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (TXRP ROCKPORT)
5. FIELD SURVEYS WERE PERFORMED DURING NOVEMBER 2019

THE CONTROL POINTS SHOWN HEREIN WERE DETERMINED BY A SURVEY ON THE GROUND UNDER MY SUPERVISION.

STATE OF TEXAS
REGISTERED
CHRISTOPHER R. FREEMAN
5701
PROFESSIONAL
LAND SURVEYOR

04-29-2021

CHRISTOPHER R. FREEMAN - R.P.L.S. NO. 5701

Texas Department of Transportation

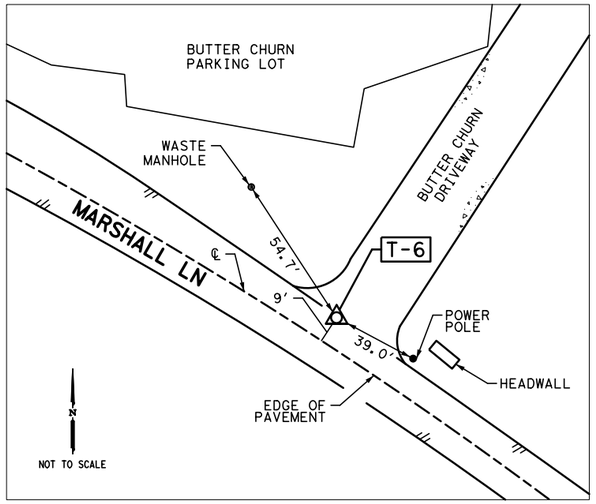
LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SURVEY CONTROL LAYOUT

SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	109

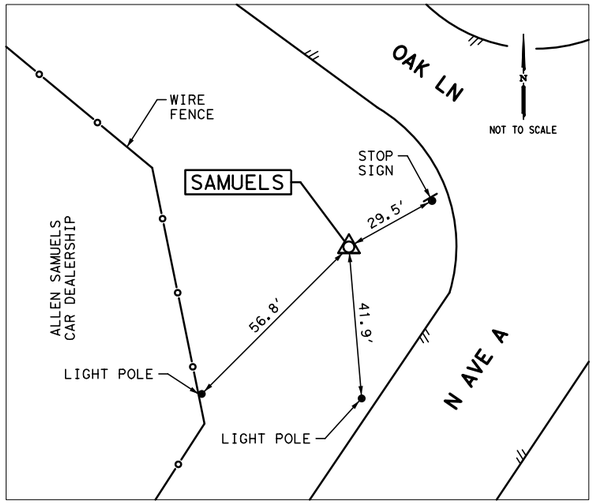


CONTROL POINT: T-6

CP# T-6 IS A PK NAIL, LOCATED ON THE NORTH SIDE OF MARSHALL LN, +/- 937.7' SOUTHEAST OF THE INTERSECTION OF SH 35 NORTH AND MARSHALL LN

LATITUDE: 27°55'16.59725"
LONGITUDE: 97°09'48.89750"

SURFACE COORDINATES:		GRID COORDINATES:	
NORTHING:	17,225,497.135	NORTHING:	17,226,013.920
EASTING:	1,415,796.363	EASTING:	1,415,838.838
ELEVATION:	24.849	ELEVATION:	24.849

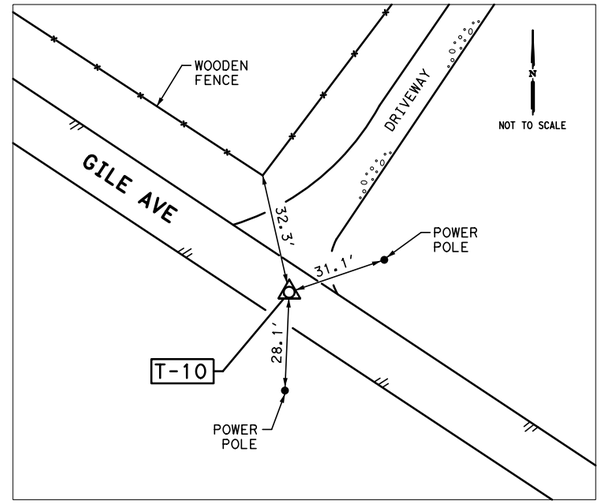


CONTROL POINT: SAMUELS

CP# SAMUELS IS A 3-1/4 TxDOT BRASS DISK SET IN CONCRETE, LOCATED ON THE WEST SIDE OF OAK LN, +/- 382.8' SOUTH OF THE INTERSECTION OF SH 35 NORTH AND OAK LN

LATITUDE: 27°55'18.36211"
LONGITUDE: 97°09'34.79493"

SURFACE COORDINATES:		GRID COORDINATES:	
NORTHING:	17,225,688.787	NORTHING:	17,226,205.570
EASTING:	1,417,059.482	EASTING:	1,417,101.995
ELEVATION:	24.408	ELEVATION:	24.408



CONTROL POINT: T-10

CP# T-10 IS A PK NAIL, LOCATED ON THE NORTH SIDE OF GILE AVE, +/- 862.3' SOUTHEAST OF THE INTERSECTION OF SH 35 NORTH AND GILE AVE

LATITUDE: 27°55'42.95346"
LONGITUDE: 97°09'04.70546"

SURFACE COORDINATES:		GRID COORDINATES:	
NORTHING:	17,228,200.947	NORTHING:	17,228,717.810
EASTING:	1,419,731.977	EASTING:	1,419,774.570
ELEVATION:	21.626	ELEVATION:	21.626

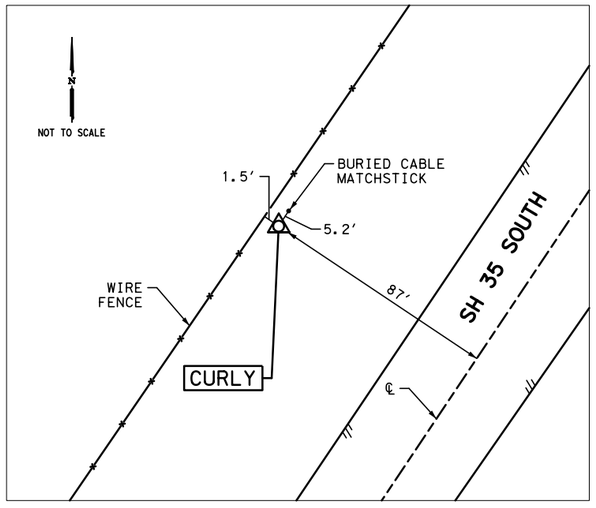
NOTES:

1. ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS SOUTH ZONE (4205), NORTH AMERICAN DATUM OF 1983(NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 0.99997
2. HORIZONTAL AND VERTICAL CONTROL VALUES FOR THIS WAS PROVIDED AND CONFIRMED BY MULTIPLE OBSERVATIONS DERIVED BY UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (TXRP ROCKPORT)
3. UNIT OF MEASURE IS U.S. SURVEY FOOT
4. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (TXRP ROCKPORT)
5. FIELD SURVEYS WERE PERFORMED DURING NOVEMBER 2019

THE CONTROL POINTS SHOWN HEREIN WERE DETERMINED BY A SURVEY ON THE GROUND UNDER MY SUPERVISION.

04-29-2021

CHRISTOPHER R. FREEMAN - R.P.L.S. NO. 5701

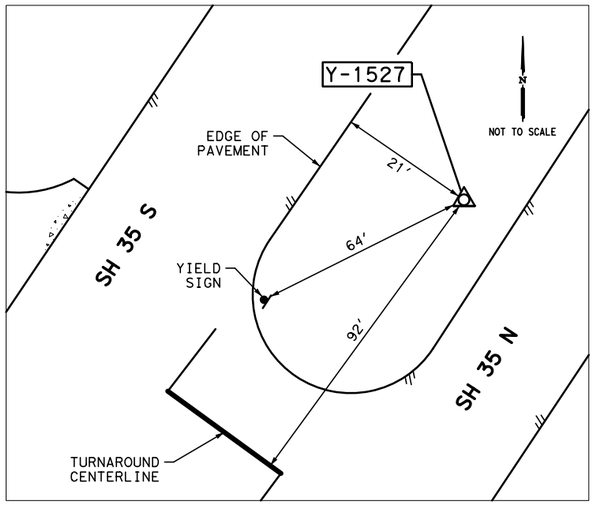


CONTROL POINT: CURLY

CP# CURLY IS A 3-1/4" TxDOT BRASS DISK SET IN CONCRETE, LOCATED ON THE WEST SIDE OF SH 35 SOUTH, +/- 437.1' SOUTHWEST OF THE INTERSECTION OF SH 35 SOUTH AND MOORE AVE

LATITUDE: 27°56'06.72929"
LONGITUDE: 97°09'00.78533"

SURFACE COORDINATES:		GRID COORDINATES:	
NORTHING:	17,230,605.761	NORTHING:	17,231,122.700
EASTING:	1,420,057.910	EASTING:	1,420,100.513
ELEVATION:	25.638	ELEVATION:	25.638

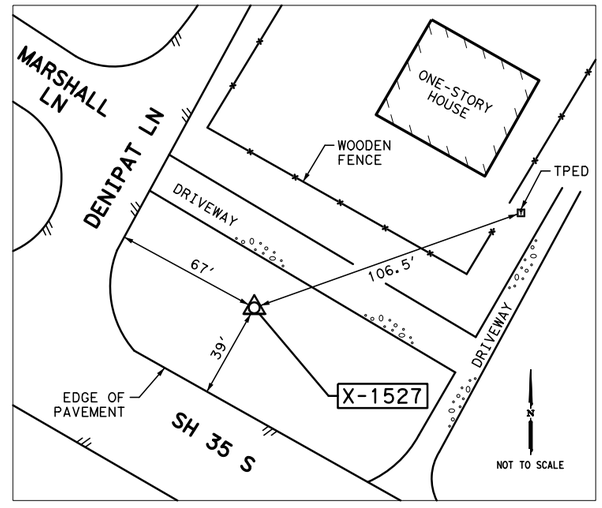


CONTROL POINT: Y-1527

CP# Y-1527 IS A NGS BRASS DISK, LOCATED IN THE MEDIANOF SH 35, +/- 1,223.8' SOUTHWEST OF THE INTERSECTION OF SH 35 SOUTH AND GILE AVE

LATITUDE: 27°55'37.82260"
LONGITUDE: 97°09'20.61140"

SURFACE COORDINATES:		GRID COORDINATES:	
NORTHING:	17,227,667.578	NORTHING:	17,228,184.420
EASTING:	1,418,310.814	EASTING:	1,418,353.365
ELEVATION:	23.719	ELEVATION:	23.719



CONTROL POINT: X-1527

CP# X-1527 IS A NGS BRASS DISK, LOCATED ON THE NORTHEAST SIDE OF SH 35, +/- 57.5'' NORTHEAST OF THE INTERSECTION OF SH 35 SOUTH AND DENIPAT LN

LATITUDE: 27°55'25.66217"
LONGITUDE: 97°10'05.11294"

SURFACE COORDINATES:		GRID COORDINATES:	
NORTHING:	17,226,397.200	NORTHING:	17,226,914.010
EASTING:	1,414,332.163	EASTING:	1,414,374.594
ELEVATION:	17.477	ELEVATION:	17.477

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SURVEY CONTROL LAYOUT

SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	110

SCALE: 100.0000 ft / in.

ALIGNMENT: CL SH35 (SH35)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH
	POT	45+00.00	S 33° 07′ 51.15" W	17,231,076.3064	1,420,519.3206			
	CC			17,228,907.3190	1,415,610.8566			
	PC	89+99.10		17,227,308.6506	1,418,060.3227			
SH35-1	PI	118+07.20		17,224,957.0785	1,416,525.5459	87° 39′ 49.61" RT	2,808.101′	4,475.313′
	PT	134+74.41		17,226,394.7215	1,414,113.3656			
	POT	165+49.04	N 59° 12′ 19.24" W	17,227,968.8135	1,411,472.2415			

ALIGNMENT: CL SH35 NBML (SH35_NBML)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH
	POT	45+00.00	S 33° 07′ 51.15" W	17,231,048.9787	1,420,561.1918			
	CC			17,228,907.3190	1,415,610.8566			
	PC	89+99.10		17,227,281.3229	1,418,102.1939			
SH35_NBML-1	PI	118+55.20		17,224,889.5530	1,416,541.1816	87° 39′ 49.61" RT	2,856.103′	4,551.814′
	PT	135+50.91		17,226,351.7712	1,414,087.7674			
	POT	145+75.50	N 59° 12′ 19.24" W	17,226,876.8334	1,413,206.7805			

ALIGNMENT: CL SH35 NBFR (SH35_NBFR)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH
	POT	74+00.00	S 33° 07′ 51.15" W	17,228,620.4482	1,418,976.1873			
	CC			17,227,805.0002	1,416,175.1154			
	PC	96+13.81		17,226,766.5490	1,417,766.2216			
SH35_NBFR-1	PI	106+56.86		17,225,893.0729	1,417,196.1388	57° 31′ 52.65" RT	1,043.051′	1,907.810′
	PT	115+21.62		17,225,905.1271	1,416,153.1577			
	CC			17,228,841.3266	1,415,633.6863			
	PC	120+74.99		17,225,911.5223	1,415,599.8251			
SH35_NBFR-2	PI	128+63.71		17,225,920.6373	1,414,811.1547	30° 07′ 56.96" RT	788.723′	1,540.920′
	PT	136+15.91		17,226,324.4341	1,414,133.6355			
	POT	155+67.67	N 59° 12′ 19.24" W	17,227,323.6600	1,412,457.0629			

ALIGNMENT: BL NB U-TURN (NB_U-TURN)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH
	CC		N 24° 11′ 28.01" W	17,226,063.7580	1,416,731.5859			
	PC	10+00.00		17,226,006.6056	1,416,749.8508			
NB_U-TURN-1	PI	10+67.19		17,226,027.0582	1,416,813.8488	96° 28′ 05.32" LT	67.187′	101.021′
	PT	11+01.02		17,226,088.3449	1,416,786.3169			
	CC			17,226,314.4687	1,416,618.9587			
	PC	13+75.87		17,226,339.0556	1,416,673.6898			
NB_U-TURN-2	PI	14+35.85		17,226,393,7746	1,416,649.1083	89° 59′ 14.44" LT	59.987′	94.235′
	PT	14+70.10		17,226,369.2052	1,416,594.3839			

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

HORIZONTAL ALIGNMENT DATA

N.T.S.

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	111

DATE:4/27/2021 TIME:5:38:25 PM
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SCALE: 100.0000 ft / in.

ALIGNMENT: CL SH35 SBML (SH35_SBML)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH
	POT	45+00.00	S 33° 07′ 51.15" W	17,231,103.6341	1,420,477.4494			
	CC			17,228,907.3190	1,415,610.8566			
	PC	89+99.10		17,227,335.9783	1,418,018.4515			
SH35_SBML-1	PI	117+59.20		17,225,024.6040	1,416,509.9102	87° 39′ 49.61" RT	2,760.099′	4,398.812′
	PT	133+97.91		17,226,437.6719	1,414,138.9637			
	POT	144+23.50	N 59° 12′ 19.24" W	17,226,962.7341	1,413,257.9768			

ALIGNMENT: CL SH35 SBFR (SH35_SBFR)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH
	POT	74+00.00	S 33° 07′ 51.15" W	17,228,675.1035	1,418,892.4449			
	CC			17,229,170.1017	1,415,752.5109			
	PC	87+01.62		17,227,585.0972	1,418,181.0415			
SH35_SBFR-1	PI	95+52.13		17,226,872.8589	1,417,716.1921	32° 41′ 26.40" RT	850.511′	1,654.623′
	PT	103+56.24		17,226,524.5066	1,416,940.2931			
	CC			17,228,470.7454	1,415,415.5690			
	PC	109+50.07		17,226,281.2874	1,416,398.5611			
SH35_SBFR-2	PI	121+98.71		17,225,769.8672	1,415,259.4543	54° 58′ 23.21" RT	1,248.645′	2,302.708′
	PT	132+52.78		17,226,409.1270	1,414,186.8584			
	POT	152+06.89	N 59° 12′ 19.24" W	17,227,409.5607	1,412,508.2592			

ALIGNMENT: BL SB U-TURN (SB_U-TURN)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH
	CC		S 24° 11′ 28.01" E	17,226,398.5451	1,416,835.5237			
	PC	10+00.00		17,226,453.2816	1,416,810.9489			
SB_U-TURN-1	PI	10+60.01		17,226,428.7013	1,416,756.2004	90° 00′ 45.56" LT	60.013′	94.261′
	PT	10+94.26		17,226,373.9582	1,416,780.7927			
	CC			17,226,137.4356	1,416,952.8223			
	PC	13+80.51		17,226,112.8487	1,416,898.0913			
SB_U-TURN-2	PI	14+41.36		17,226,057.3365	1,416,923.0291	90° 48′ 43.04" LT	60.856′	95.098′
	PT	14+75.61		17,226,083.0584	1,416,978.1823			

ALIGNMENT: CL AVE A (AVE_A)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH
	POT	5+00.00	S 33° 07′ 04.54" W	17,227,670.3419	1,418,419.3415			
	POT	31+50.00		17,225,450.8402	1,416,971.4767			

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

HORIZONTAL ALIGNMENT DATA

N.T.S.

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	112

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SCALE: 100.0000 ft / in.

ALIGNMENT: CL OAK LN (OAK_LN)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH	RADIUS
	POT	10+00.00	N 55° 55′ 40.67" W	17,225,703.2361	1,417,136.1241				
	CC			17,226,016.0863	1,417,209.0500				
	PC	11+14.86		17,225,767.5861	1,417,040.9796				
OAK_LN-1	PI	12+00.14	N 24° 11′ 28.01" W	17,225,815.3621	1,416,970.3405	31° 44′ 12.67" RT	85.279′	166.174′	300.000′
	PT	12+81.04		17,225,893.1518	1,416,935.3949				
	CC			17,226,388.5459	1,416,548.4078				
	PC	18+91.51		17,226,450.0131	1,416,685.2353				
OAK_LN-2	PI	19+35.31		17,226,489.9698	1,416,667.2855	32° 33′ 28.56" LT	43.803′	85.236′	150.000′
	PT	19+76.74		17,226,513.9874	1,416,630.6538				
	POT	22+21.03	N 56° 44′ 56.57" W	17,226,647.9320	1,416,426.3619				

ALIGNMENT: BL NB ENT RAMP (NB_ENT_RAMP)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH	RADIUS
	POT	10+00.00	S 33° 07′ 51.15" W	17,227,357.7530	1,418,166.4065				
	CC			17,229,075.0698	1,414,778.1662				
	PC	14+13.73		17,227,011.2846	1,417,940.2804				
NB_ENT_RAMP-1	PI	17+15.73		17,226,758.3829	1,417,775.2216	9° 08′ 43.49" RT	301.999′	602.716′	3,776.000′
	PT	20+16.45		17,226,534.9306	1,417,572.0647				
	CC			17,227,805.0002	1,416,175.1154				
	PC	20+16.45		17,226,534.9306	1,417,572.0647				
NB_ENT_RAMP-2	PI	20+70.46		17,226,494.9625	1,417,535.7266	3° 16′ 39.68" RT	54.018′	108.006′	1,888.000′
	PT	21+24.45		17,226,457.1373	1,417,497.1629				

ALIGNMENT: BL NB EXT RAMP (NB_EXT_RAMP)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH	RADIUS
	CC		S 89° 05′ 34.66" W	17,227,805.0002	1,416,175.1154				
	PC	10+00.00		17,225,915.4814	1,416,374.4108				
NB_EXT_RAMP-1	PI	10+84.85		17,225,906.5815	1,416,290.0304	5° 06′ 50.12" RT	84.848′	169.584′	1,900.000′
	PT	11+69.58		17,225,905.2383	1,416,205.1927				
	CC			17,227,296.9679	1,415,671.7281				
	PC	16+80.95		17,225,897.1433	1,415,693.8903				
NB_EXT_RAMP-2	PI	17+88.01		17,225,895.4485	1,415,586.8416	8° 44′ 46.07" LT	107.062′	213.708′	1,400.000′
	PT	18+94.66		17,225,910.0509	1,415,480.7799				
	POT	21+74.60	N 82° 09′ 39.26" W	17,225,948.2324	1,415,203.4551				

ALIGNMENT: BL SSCB MOD (SSCB_MOD)

DESCRIPTION		STATION	BEARING	NORTHING	EASTING	DEFLECTION	TANGENT	LENGTH	RADIUS
	CC		N 33° 07′ 51.14" E	17,229,075.0698	1,414,778.1662				
	PC	10+00.00	N 32° 52′ 34.42" E	17,226,808.3540	1,417,825.5918				
SSCB_MOD-1	PI	11+16.42		17,226,901.7671	1,417,895.0737	3° 30′ 41.36" LT	116.421′	232.768′	3,798.000′
	PT	12+32.77		17,226,999.2605	1,417,958.7038				

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

HORIZONTAL ALIGNMENT DATA

N.T.S.

SHEET 3 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	113

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SCALE: 100.0000 ft / in.

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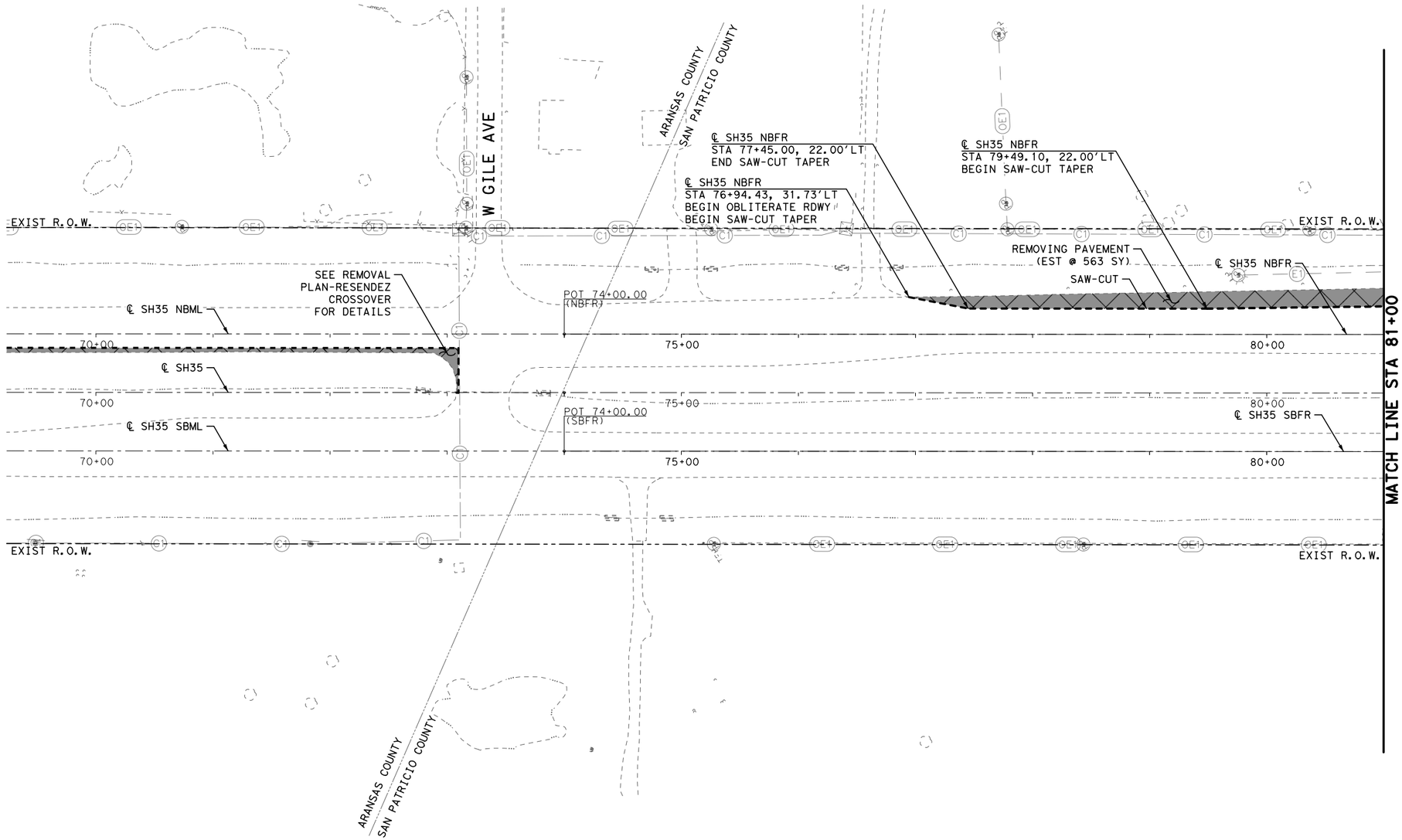
SCALE IN FEET

REMOVAL LEGEND

REMOVING STAB BASE AND ASHP PAV

REMOVING CONC (DRIVEWAYS)



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

REMOVAL PLAN

PROJECT BEGIN TO STA 81+00

SHEET 1 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	114

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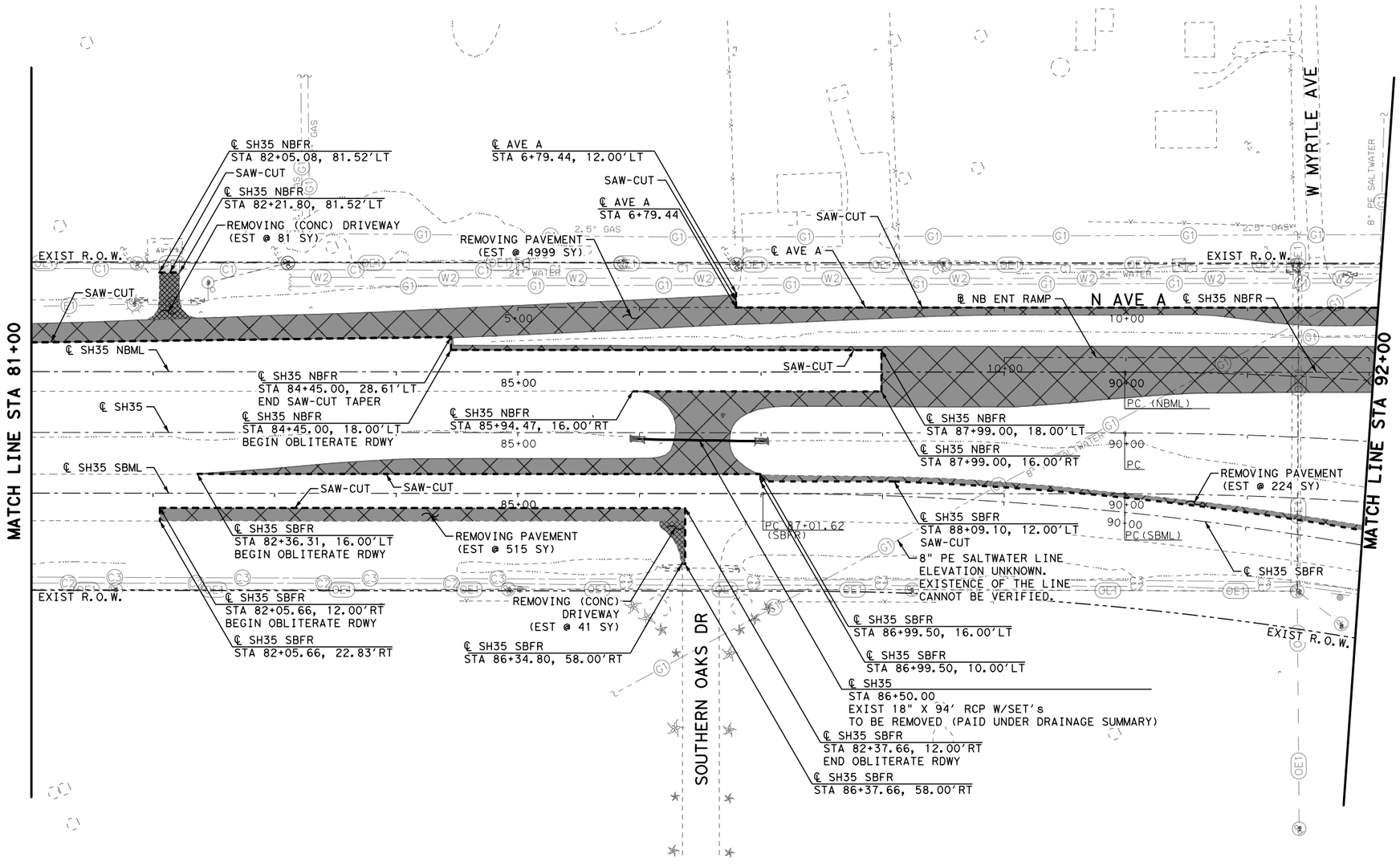
SCALE IN FEET

REMOVAL LEGEND

REMOVING STAB BASE AND ASHP PAV

REMOVING CONC (DRIVEWAYS)



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

REMOVAL PLAN

STA 81+00 TO STA 92+00

SHEET 2 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	115

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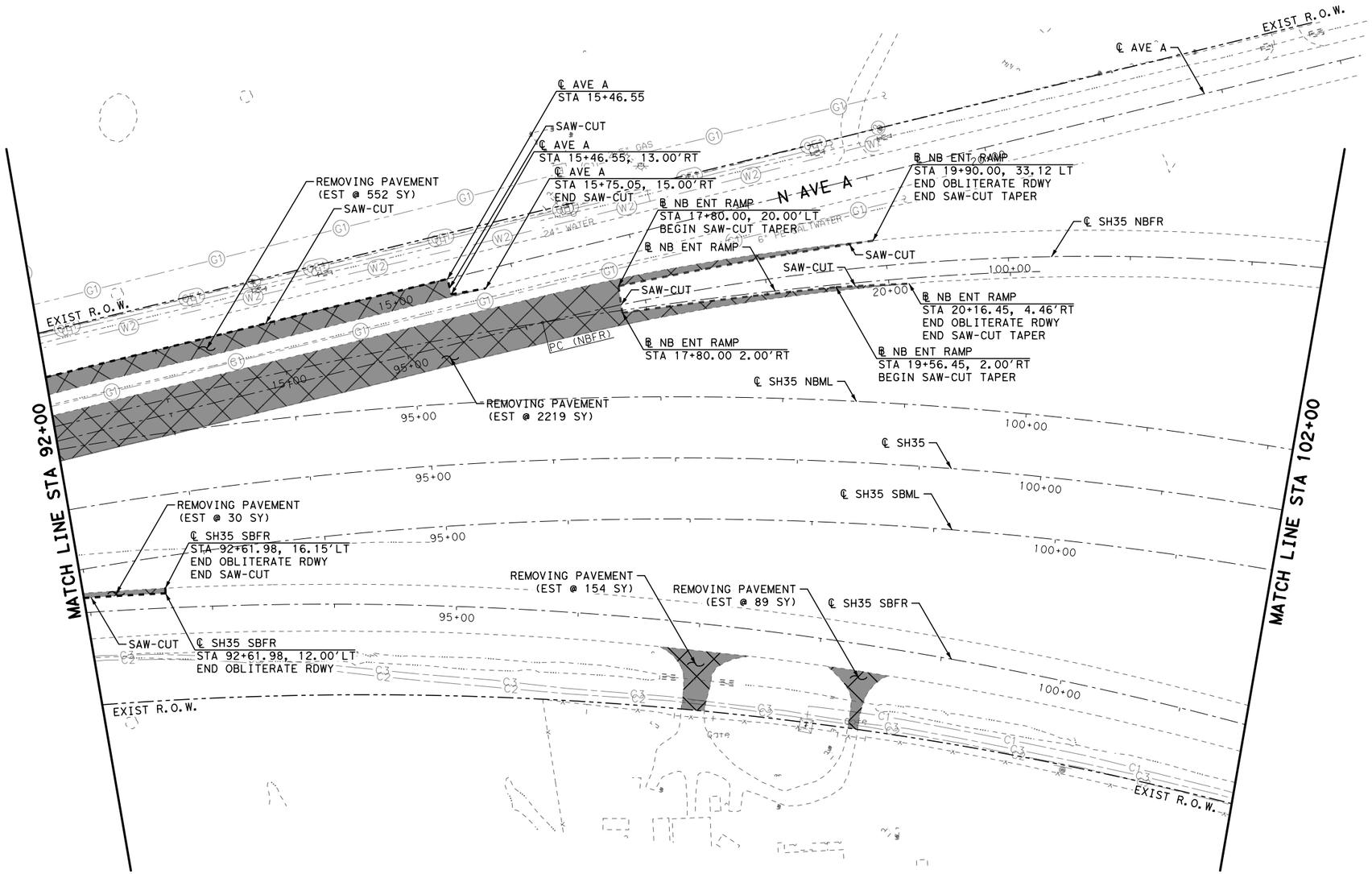

0' 50' 100'(H)

SCALE IN FEET

REMOVAL LEGEND

REMOVING STAB BASE AND ASHP PAV

REMOVING CONC (DRIVEWAYS)

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

REMOVAL PLAN

STA 92+00 TO STA 102+00

SHEET 3 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	116

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SCALE: 100.0000 ft / in.

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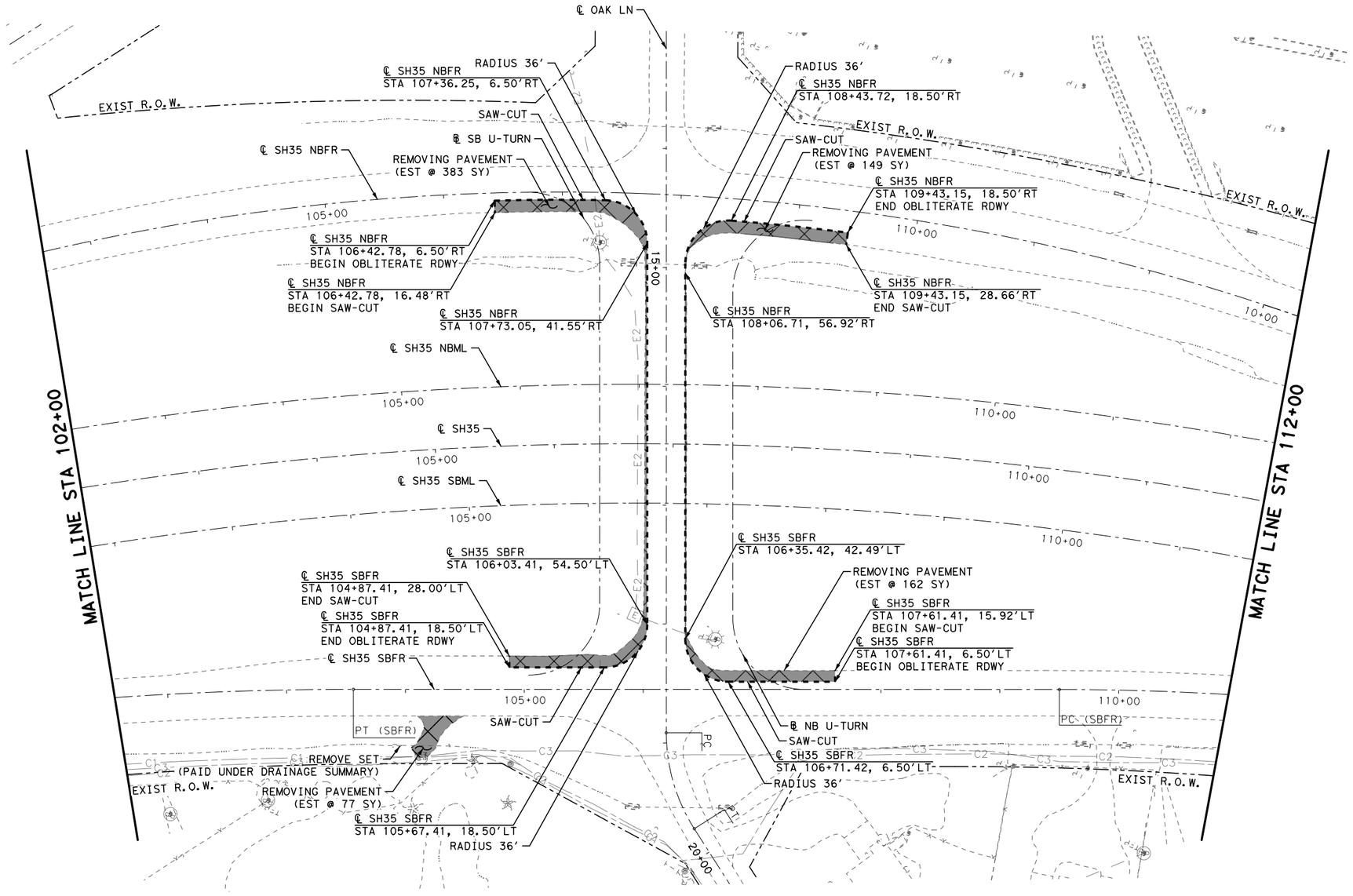
SCALE IN FEET

N

REMOVAL LEGEND

REMOVING STAB BASE AND ASHP PAV

REMOVING CONC (DRIVEWAYS)



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

REMOVAL PLAN

STA 102+00 TO STA 112+00

SHEET 4 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	117

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SCALE: 100.0000 ft / in.

0′ 50′ 100′(H)

SCALE IN FEET

REMOVAL LEGEND

- REMOVING STAB BASE AND ASHP PAV
- REMOVING CONC (DRIVEWAYS)

N

MATCH LINE STA 112+00

MATCH LINE STA 123+00

EXIST R.O.W.

℄ SH35 NBFR
BEGIN SAW-CUT
STA 114+69.58, 19.00′LT, 21.25′LT

℄ NB EXT RAMP
STA 12+10.00, 4.00′RT
END SAW-CUT TAPER

REMOVING PAVEMENT
(EST @ 216 SY)

SAW-CUT

SAW-CUT

℄ NB EXT RAMP
STA 11+10.00, 16.50′RT
BEGIN OBLITERATE RDWY
BEGIN SAW-CUT TAPER

℄ SH35 NBML

℄ SH35

℄ SH35 SBML

℄ SH35 SBFR

℄ SH35 NBFR
STA 117+30.96, 20.50′LT

℄ SH35 NBFR
STA 117+51.47, 93.40′LT

℄ SH35 NBFR
STA 117+30.60, 25.40′LT
SAW-CUT

℄ SH35 NBFR
STA 117+85.52, 92.44′LT

REMOVING CONC (DRIVEWAY)
(EST @ 584 SY)

℄ SH35 NBFR
STA 118+76.05, 26.12′LT

℄ SH35 NBFR
STA 118+76.13, 21.58′LT

REMOVING PAVEMENT
(EST @ 1552 SY)

℄ NB EXT RAMP
STA 17+73.77, 4.00′RT

℄ SH35 NBFR
STA 120+73.52, 12.00′RT

2.5" AND 3" GAS LINES
ELEVATION UNKNOWN.
EXISTENCE OF THE LINES
CANNOT BE VERIFIED.

℄ SH35 SBFR
BEGIN SAW-CUT
STA 118+26.87, 15.70′LT

℄ SH35 SBFR
STA 118+26.87, 12.00′LT
BEGIN OBLITERATE RDWY

SAW-CUT
SEE TCP PHASE 1
FOR DETAILS

EXIST R.O.W.

℄ SH35 NBFR
STA 123+14.27
19.00′LT, 21.54′LT
END OBLITERATE RDWY
END SAW-CUT

℄ NB EXT RAMP
℄ SH35 NBFR

SAW-CUT

REMOVING PAVEMENT
(EST @ 455 SY)

SAW-CUT

EXIST R.O.W.

EXIST R.O.W.

115+00 120+00

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
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2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

REMOVAL PLAN
STA 112+00 TO STA 123+00

SHEET 5 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	118

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SCALE: 100.0000 ft / in.

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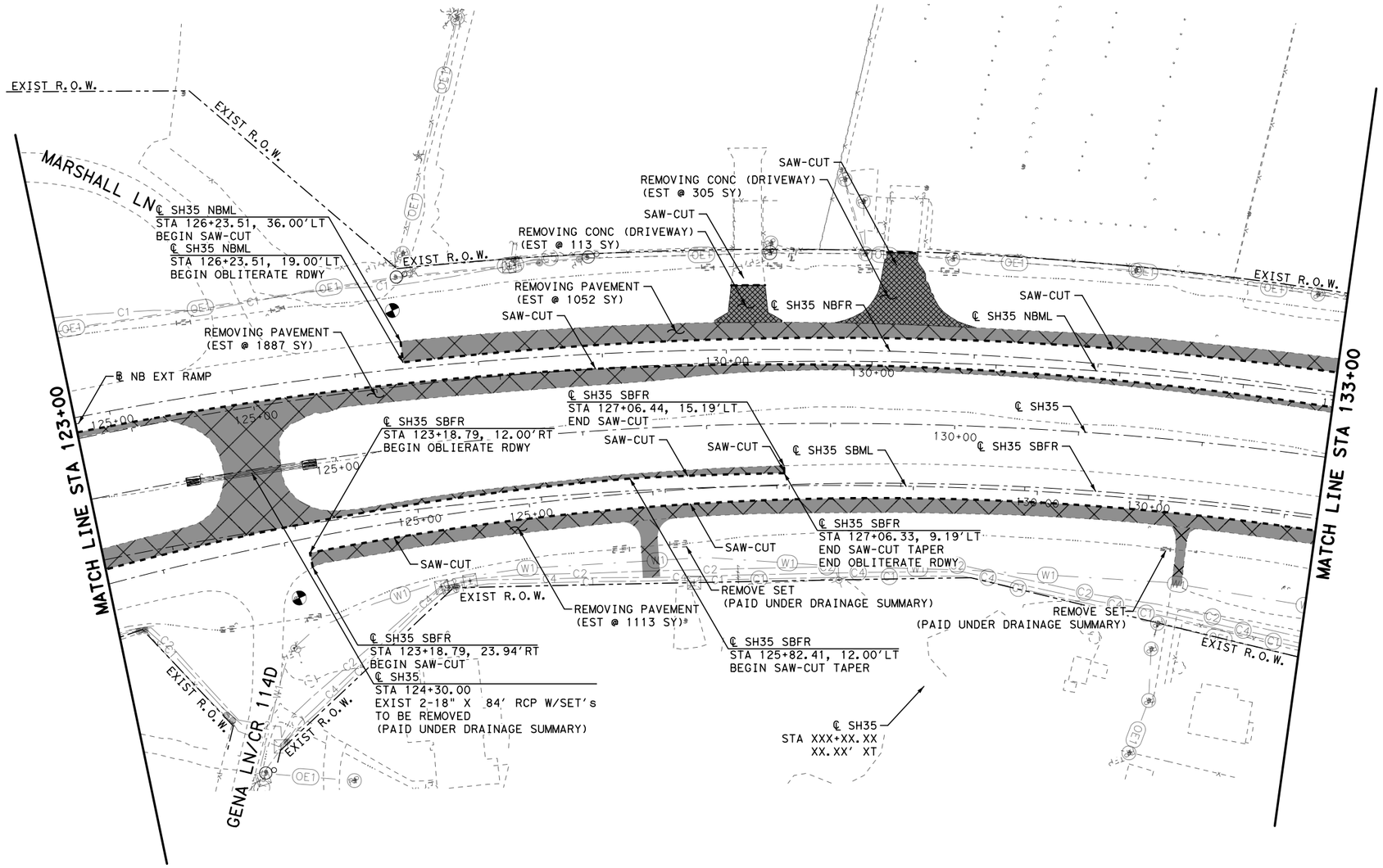
SCALE IN FEET

REMOVAL LEGEND

REMOVING STAB BASE AND ASHP PAV

REMOVING CONC (DRIVEWAYS)



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

REMOVAL PLAN

STA 123+00 TO STA 133+00

SHEET 6 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	119

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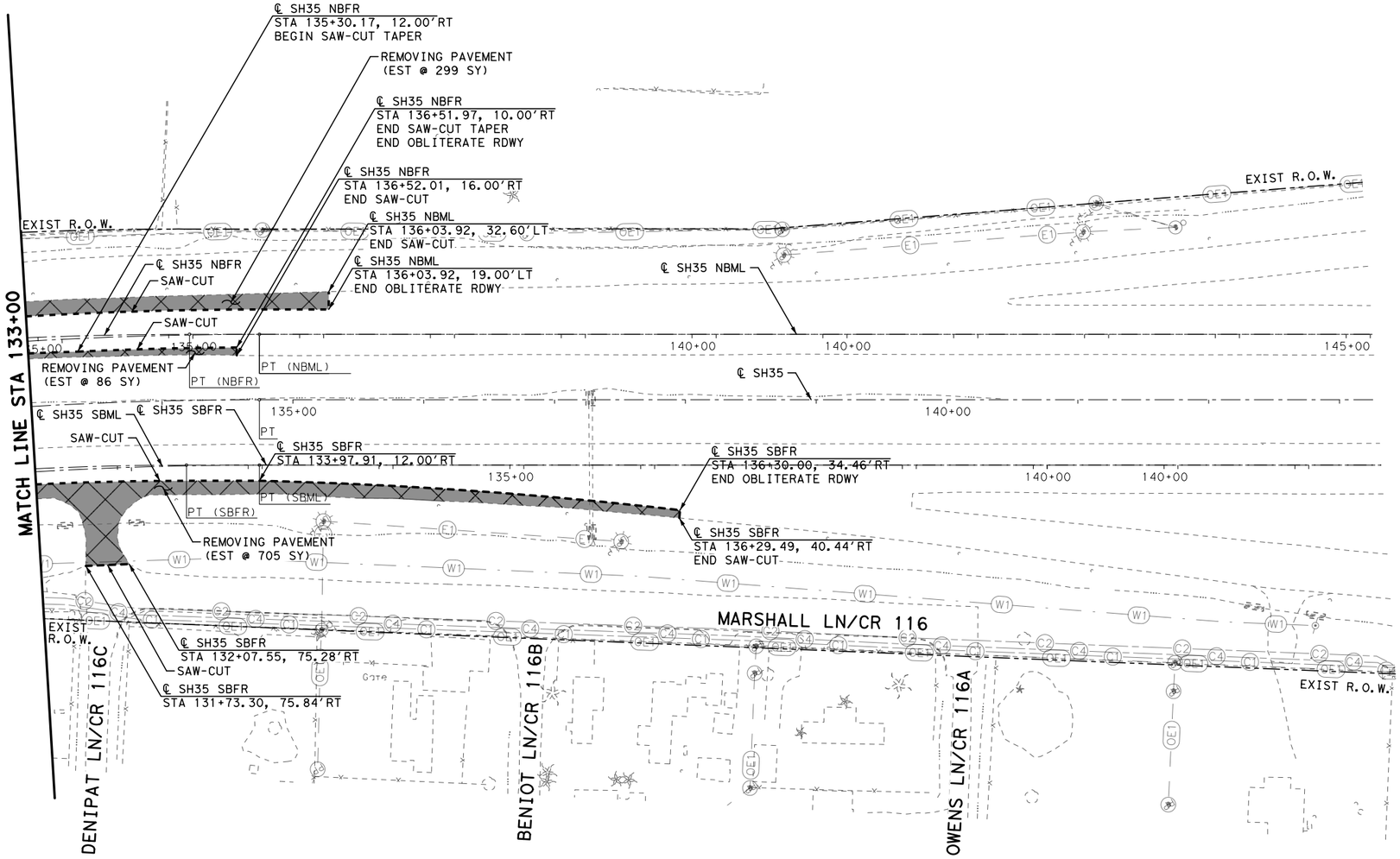

0' 50' 100'(H)

SCALE IN FEET

REMOVAL LEGEND

REMOVING STAB BASE AND ASHP PAV

REMOVING CONC (DRIVEWAYS)

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

REMOVAL PLAN

STA 133+00 TO PROJECT END

SHEET 7 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	120

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SCALE: 100.0000 ft / in.

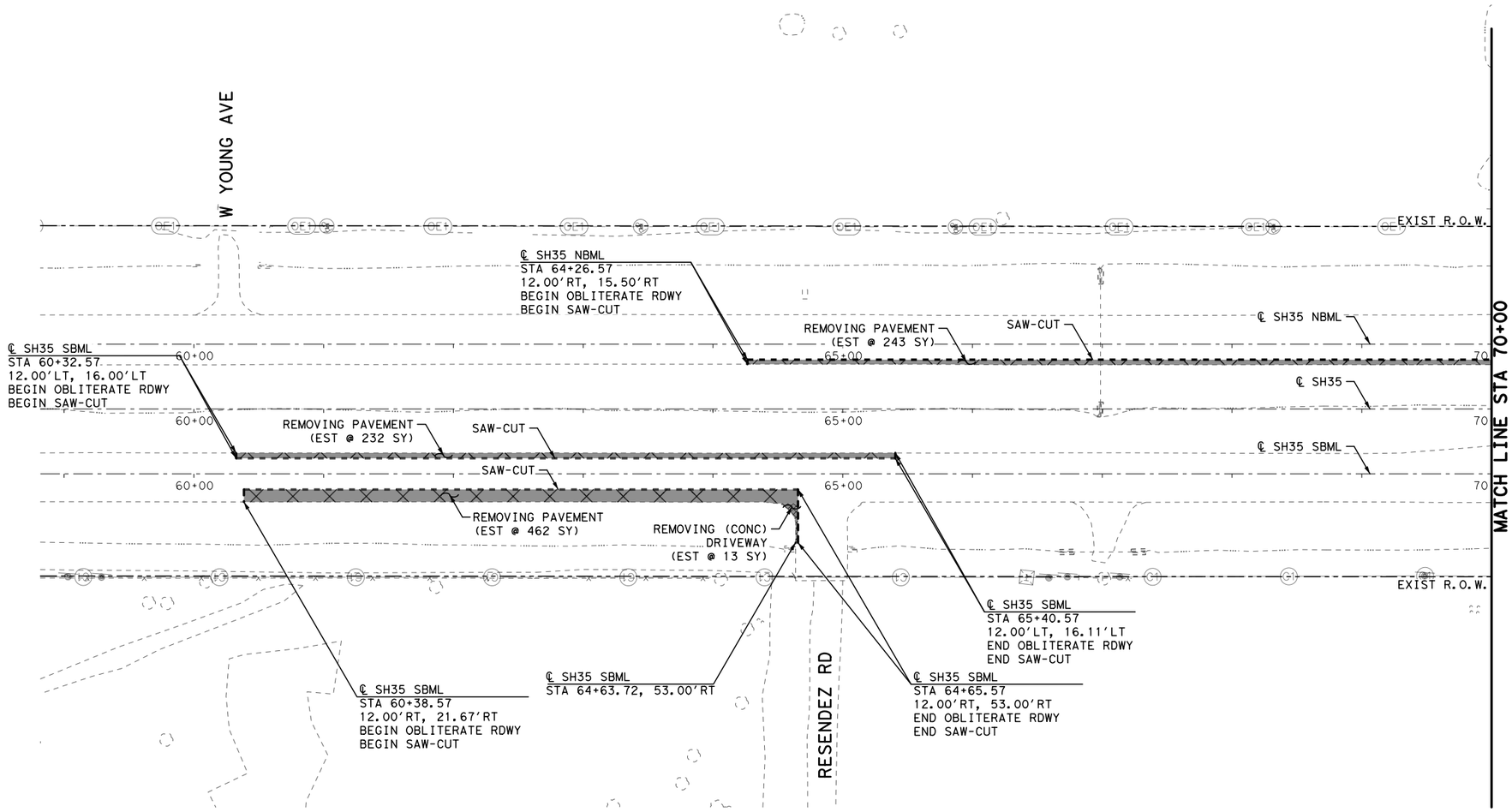
0′ 50′ 100′(H)

SCALE IN FEET

REMOVAL LEGEND

REMOVING STAB BASE AND ASHP PAV

REMOVING CONC (DRIVEWAYS)



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
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LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

REMOVAL PLAN

RESENDEZ CROSSOVER

PROJECT BEGIN TO STA 70+00

SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	121

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SCALE: 100.0000 ft / in.

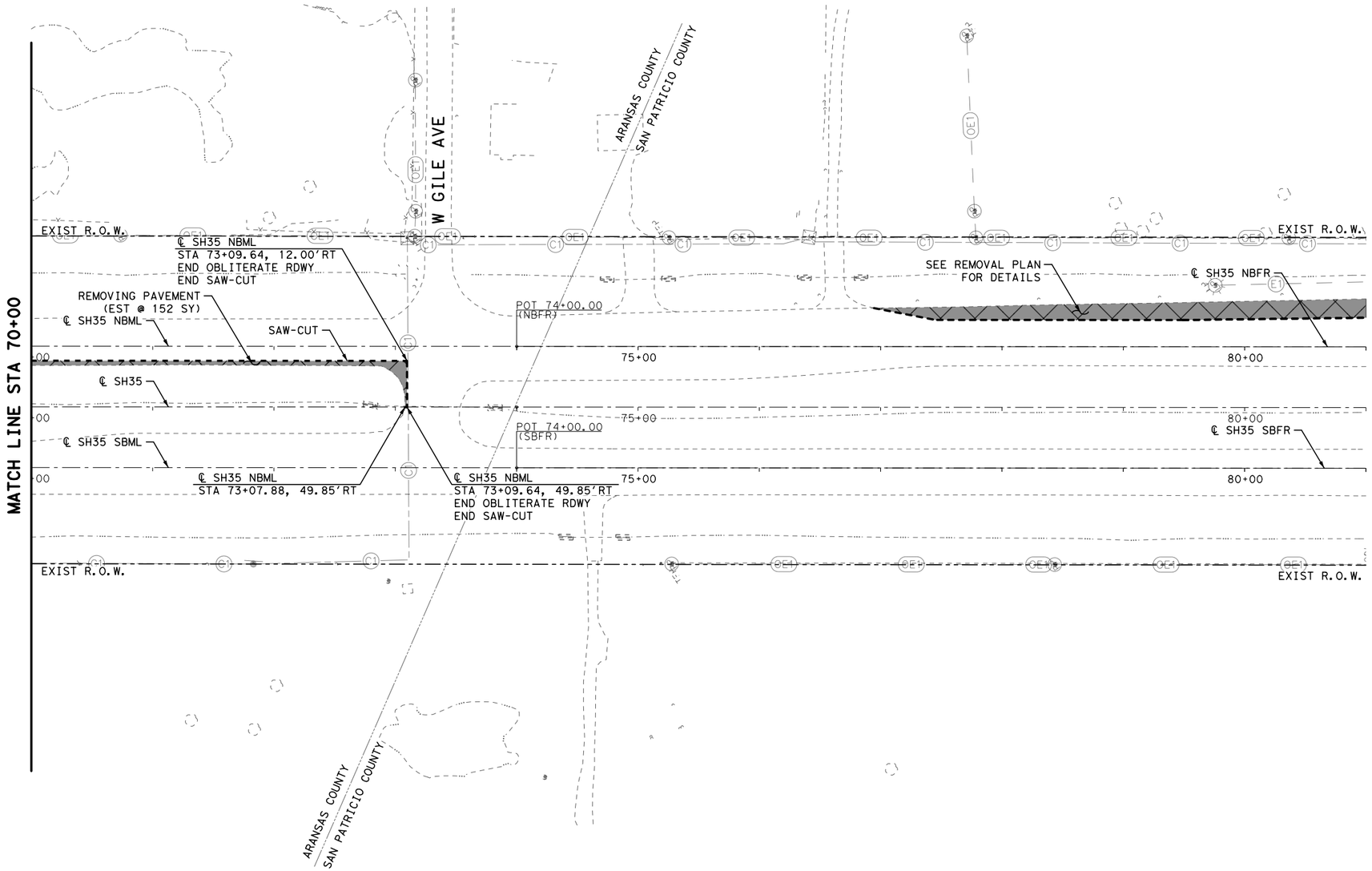
0' 50' 100'(H)

SCALE IN FEET

REMOVAL LEGEND

REMOVING STAB BASE AND ASHP PAV

REMOVING CONC (DRIVEWAYS)



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

REMOVAL PLAN

RESENDEZ CROSSOVER

STA 70+00 TO END

SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	122

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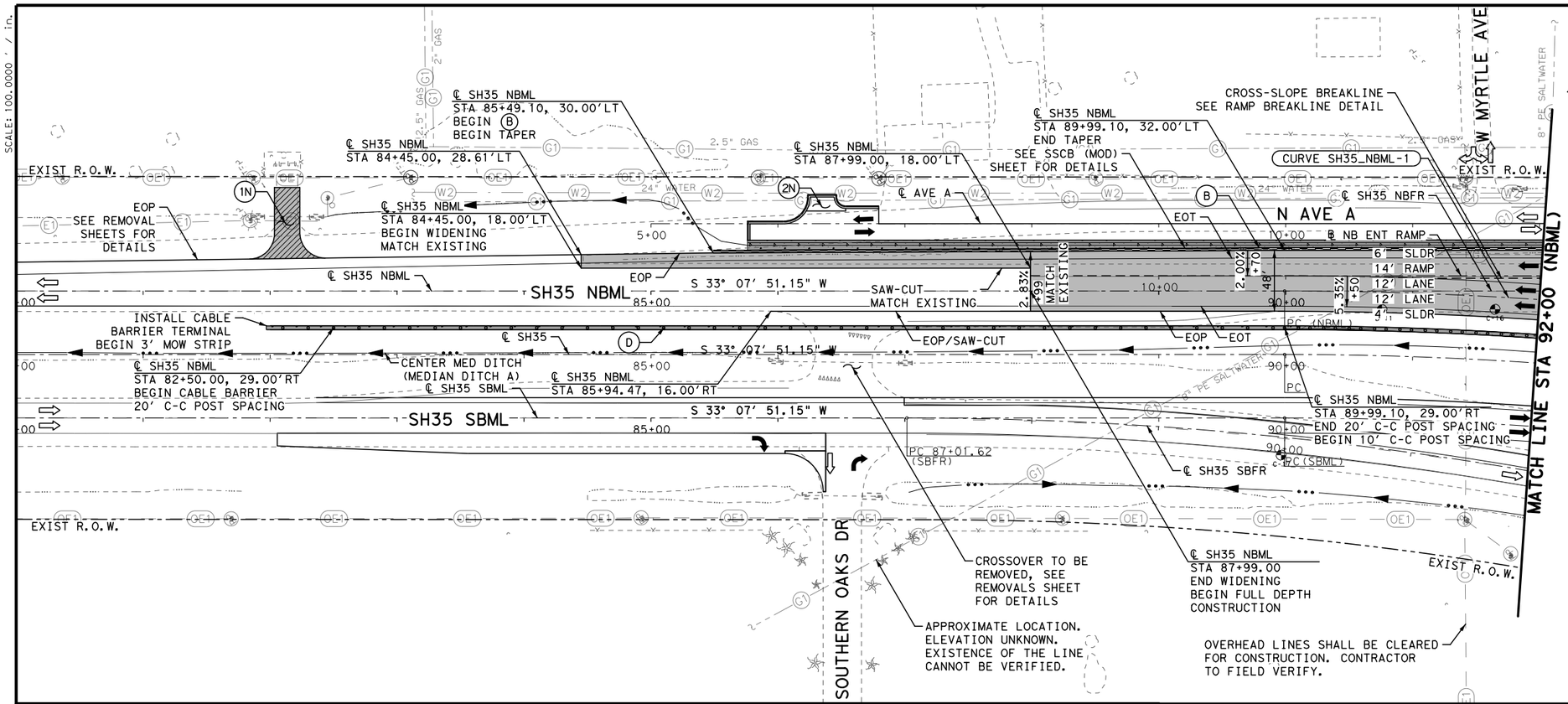


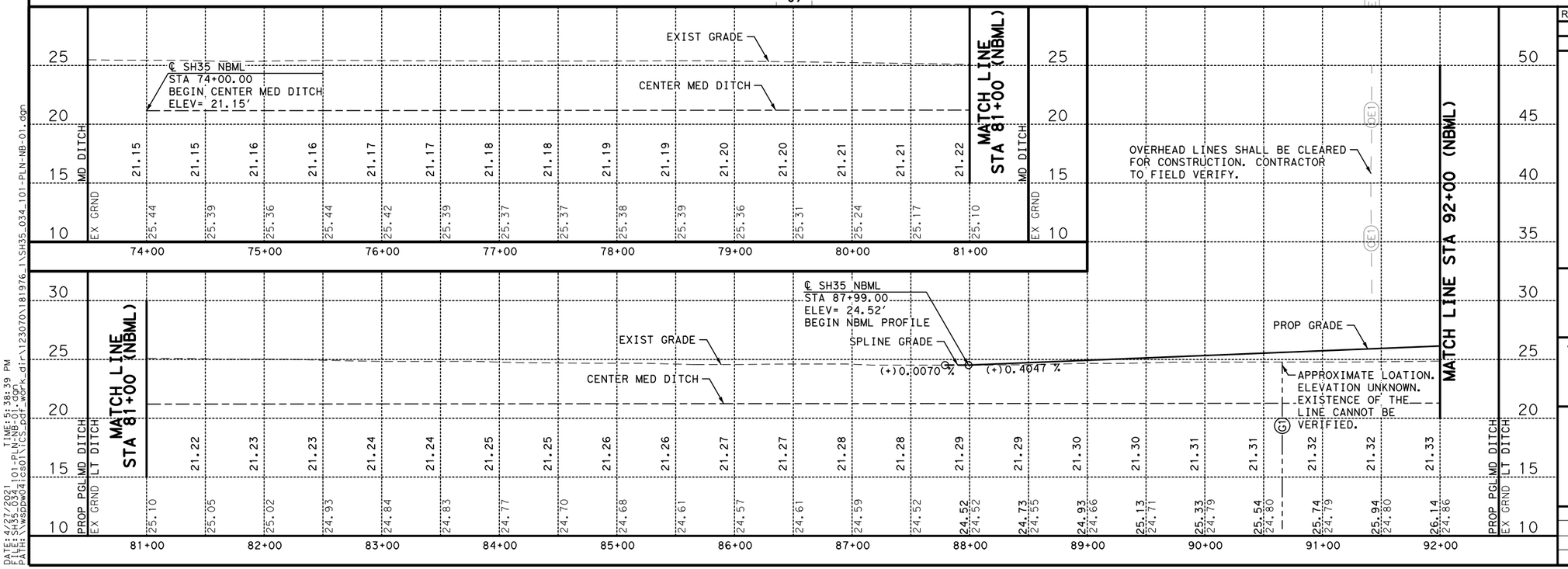
0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE NORTHBOUND MAINLANES

PROJECT BEGIN TO STA 92+00 (NBML)

SHEET 1 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	123

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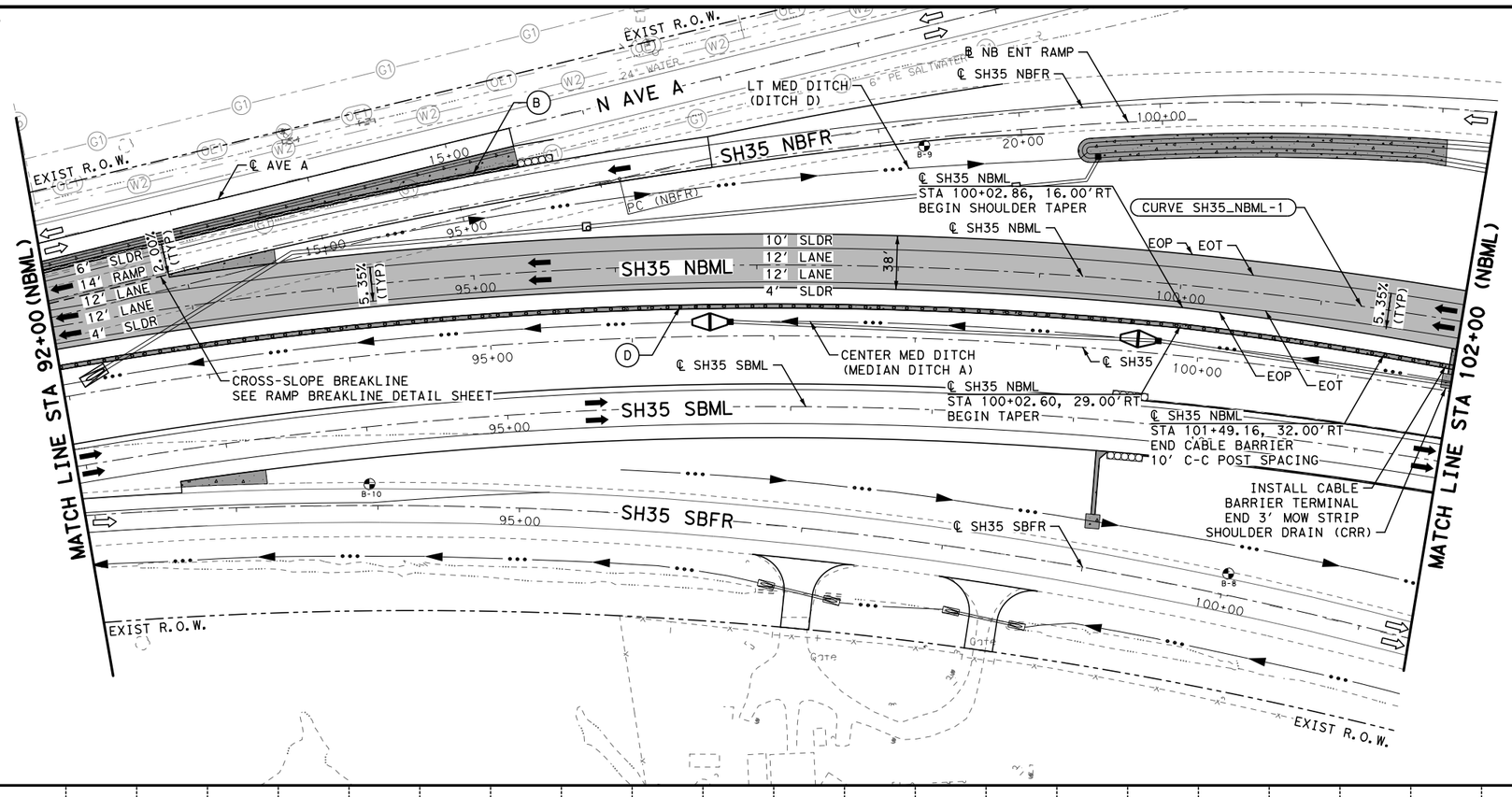

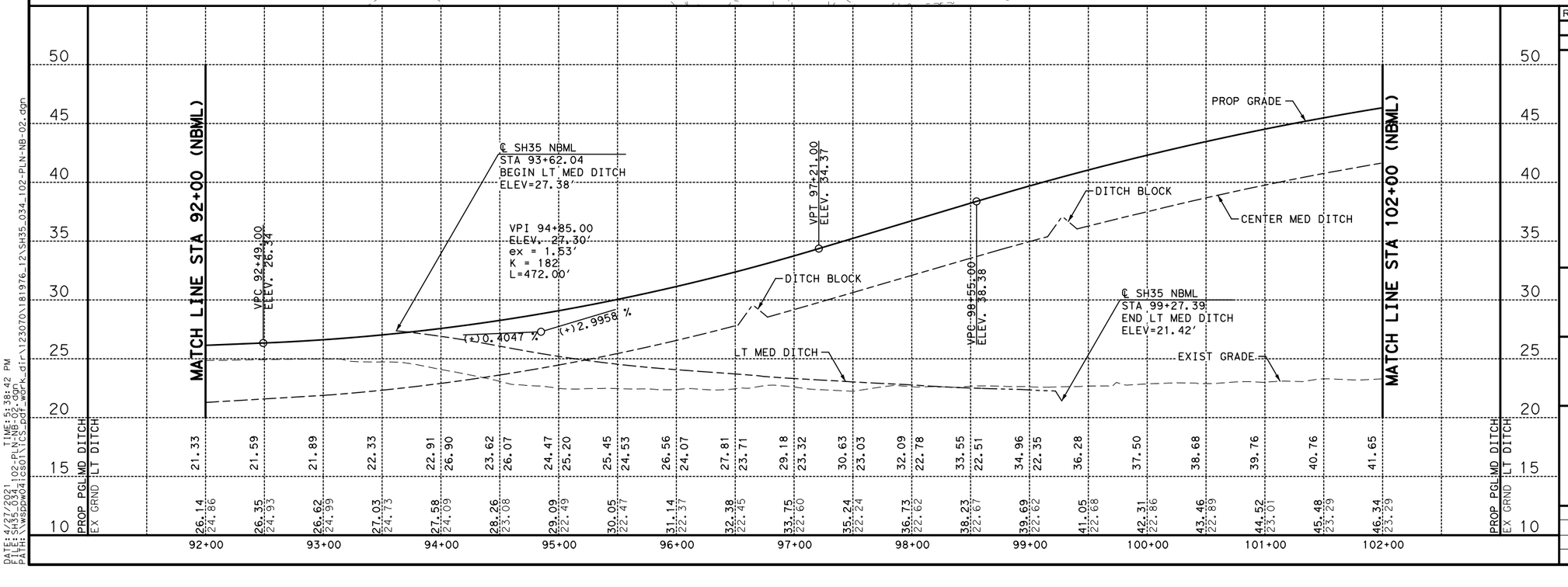

0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE
NORTHBOUND MAINLANES

STA 92+00 (NBML) TO STA 102+00 (NBML)

SHEET 2 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	124

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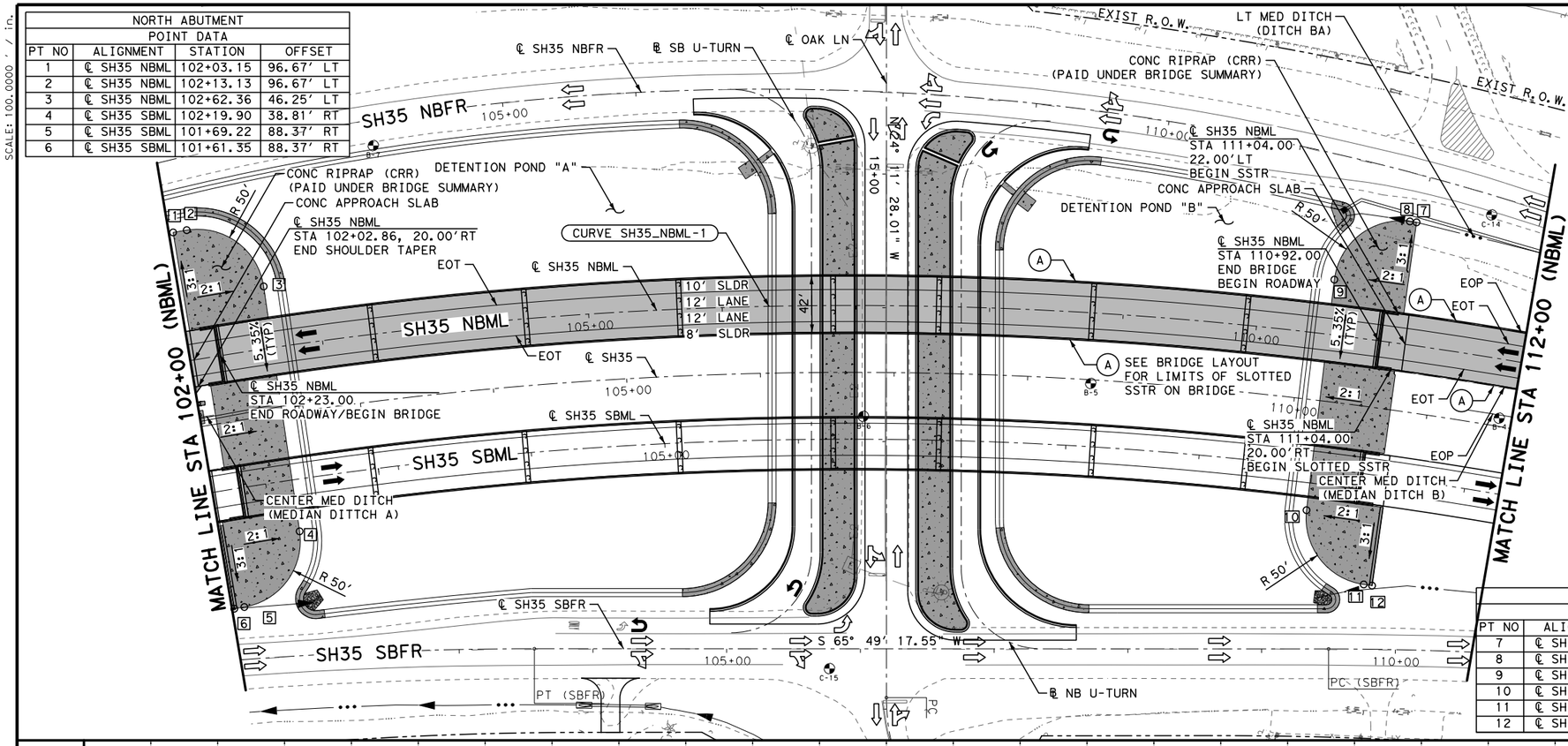
SCALE: 100.0000 ' / in.

NORTH ABUTMENT POINT DATA			
PT NO	ALIGNMENT	STATION	OFFSET
1	℄ SH35 NBML	102+03.15	96.67' LT
2	℄ SH35 NBML	102+13.13	96.67' LT
3	℄ SH35 NBML	102+62.36	46.25' LT
4	℄ SH35 SBML	102+19.90	38.81' RT
5	℄ SH35 SBML	101+69.22	88.37' RT
6	℄ SH35 SBML	101+61.35	88.37' RT



0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

N

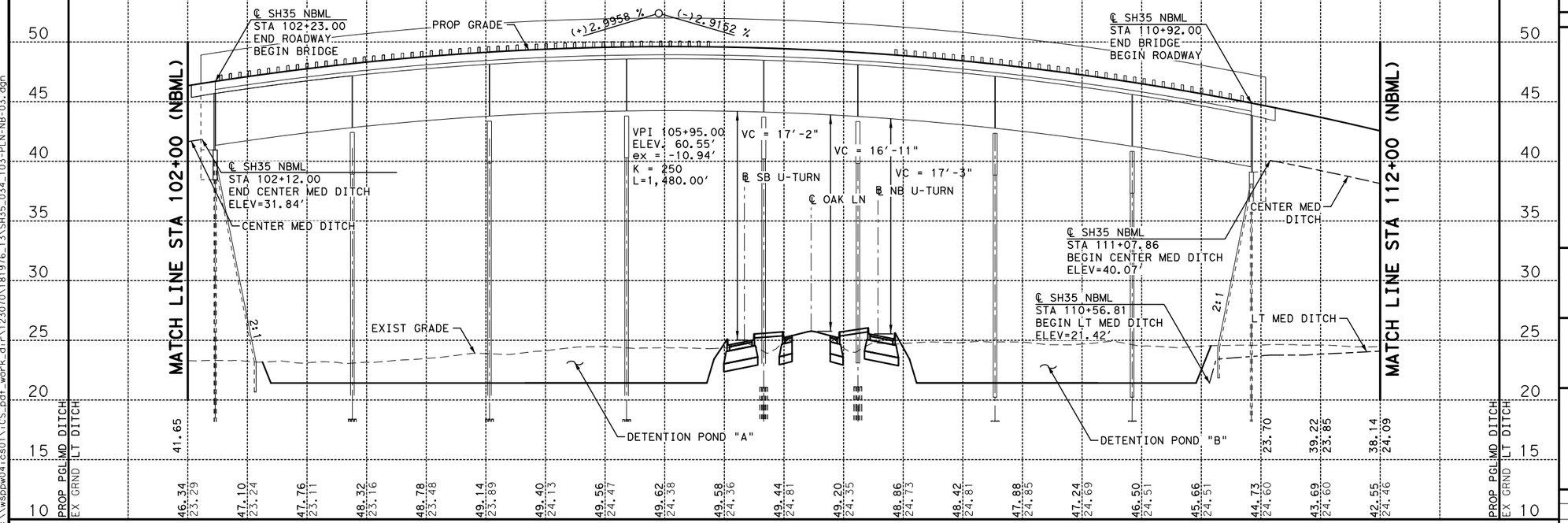
ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

SOUTH ABUTMENT POINT DATA			
PT NO	ALIGNMENT	STATION	OFFSET
7	℄ SH35 NBML	111+07.86	91.51' LT
8	℄ SH35 NBML	111+02.99	91.51' LT
9	℄ SH35 NBML	110+53.67	41.10' LT
10	℄ SH35 SBML	109+84.61	32.51' RT
11	℄ SH35 SBML	110+35.18	82.07' RT
12	℄ SH35 SBML	110+41.65	82.07' RT

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE NORTHBOUND MAINLANES

STA 102+00 (NBML) TO STA 112+00 (NBML)

SHEET 3 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	125

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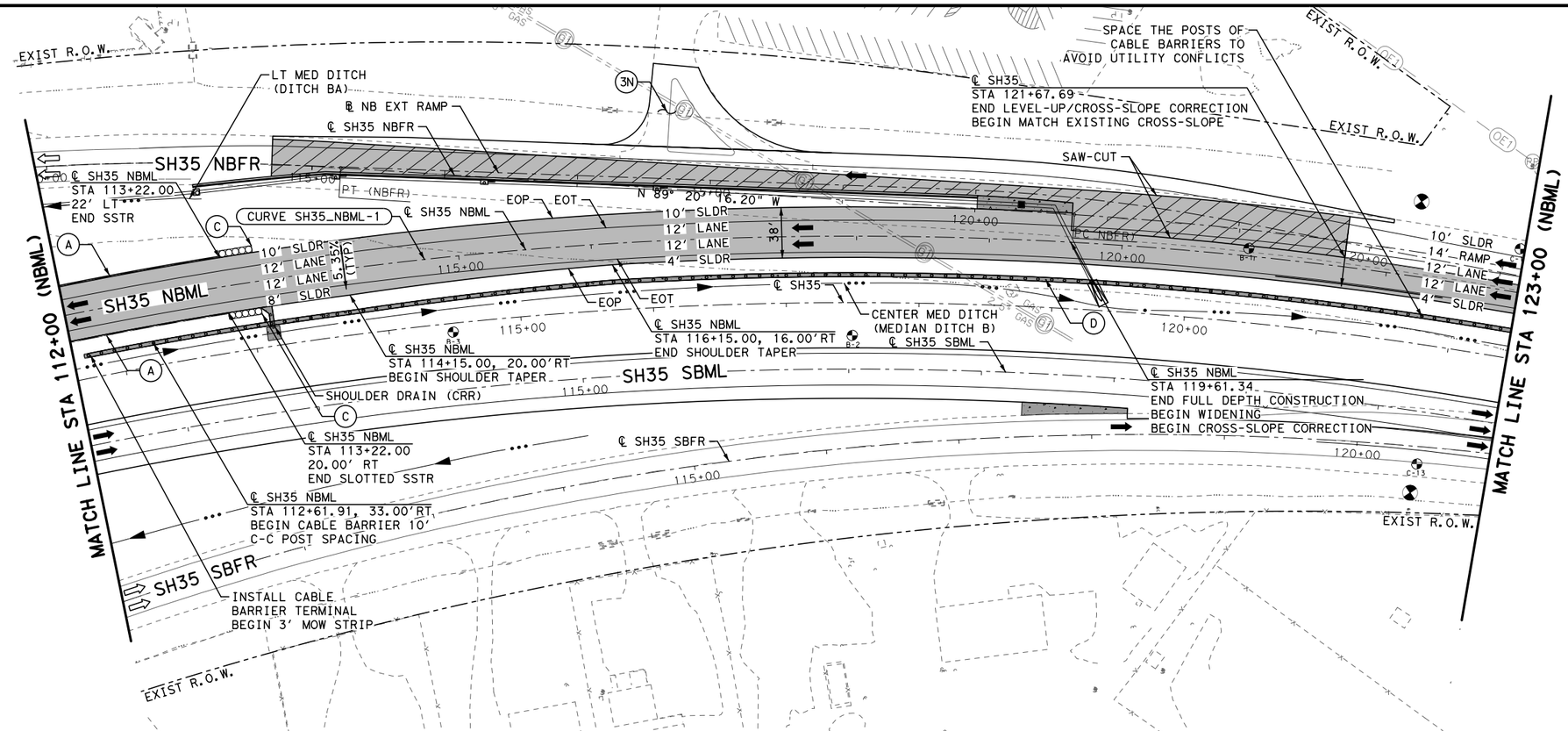
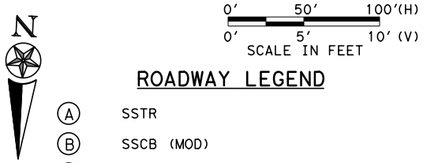


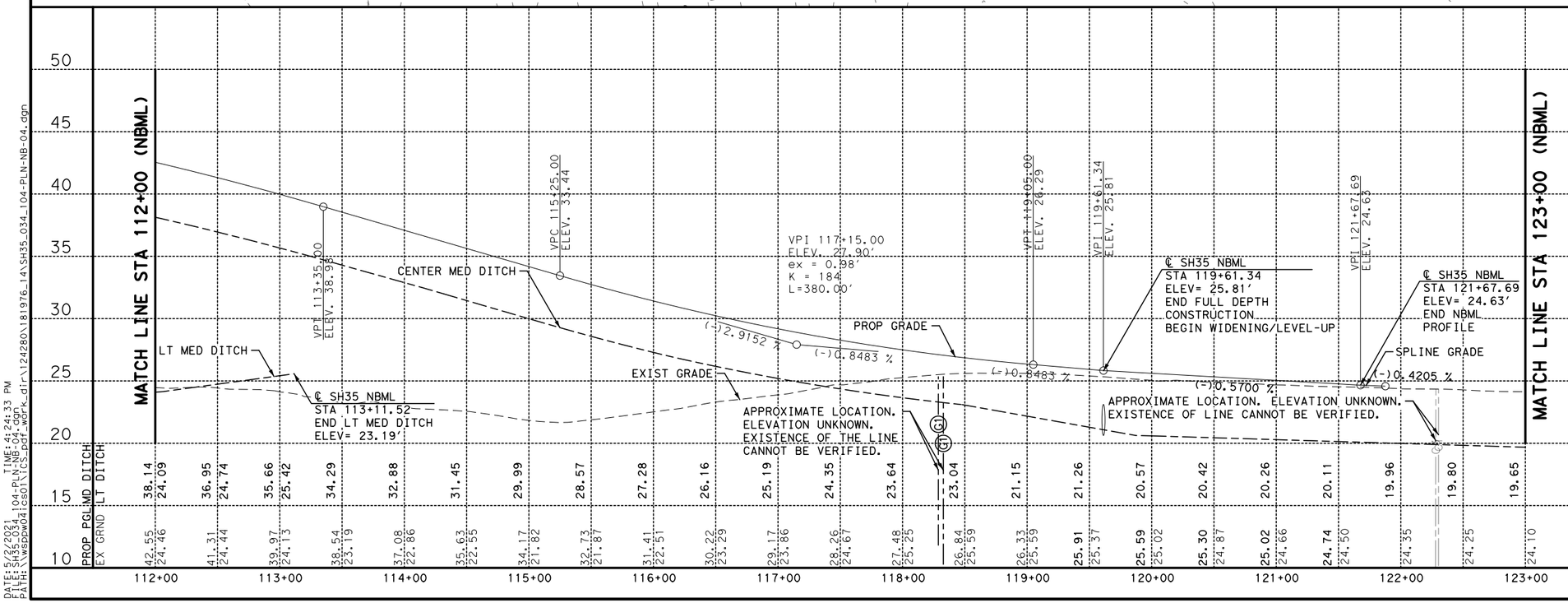


ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

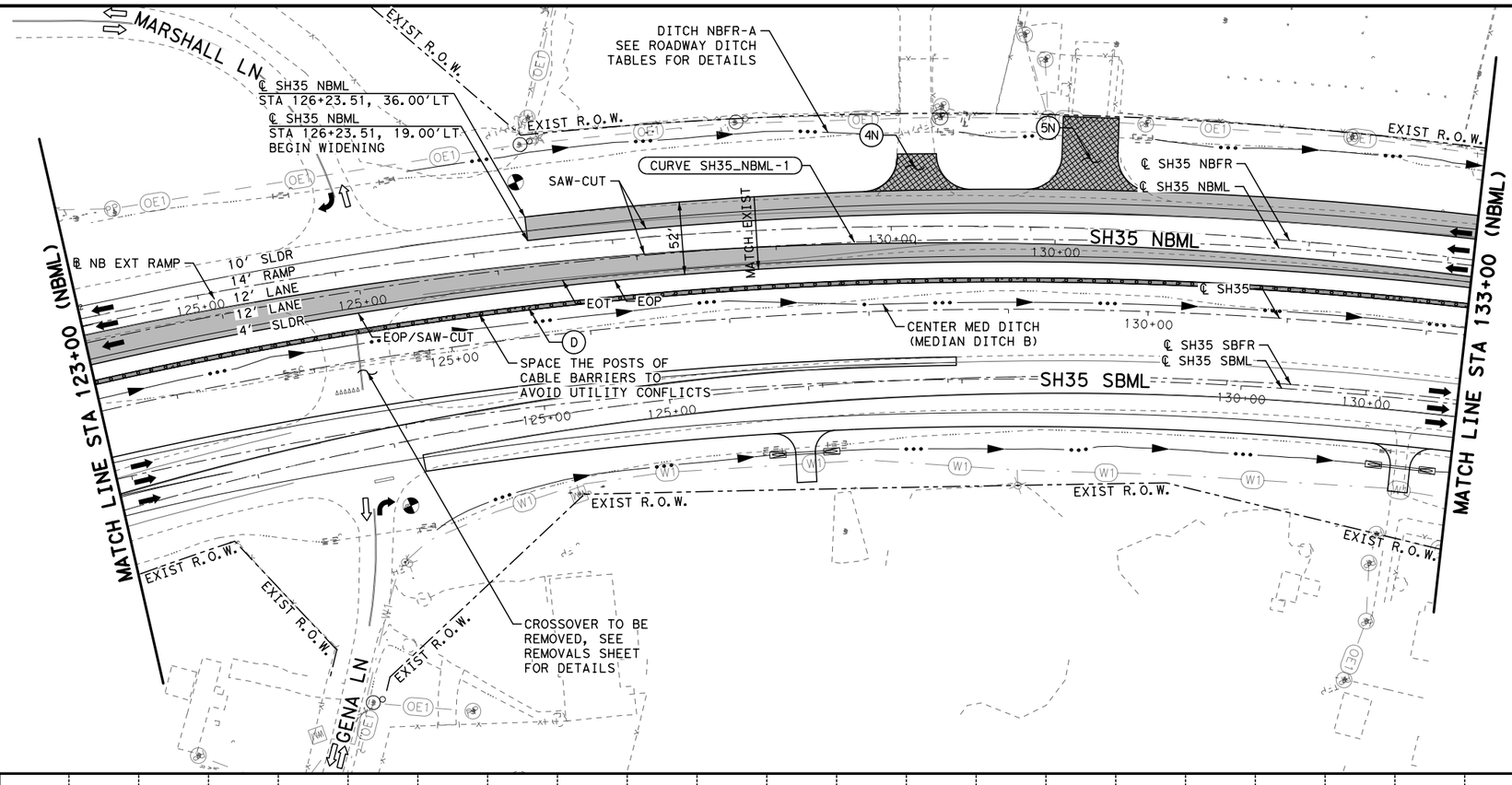
WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE
NORTHBOUND MAINLANES
STA 112+00 (NBML) TO STA 123+00 (NBML)

SHEET 4 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	126



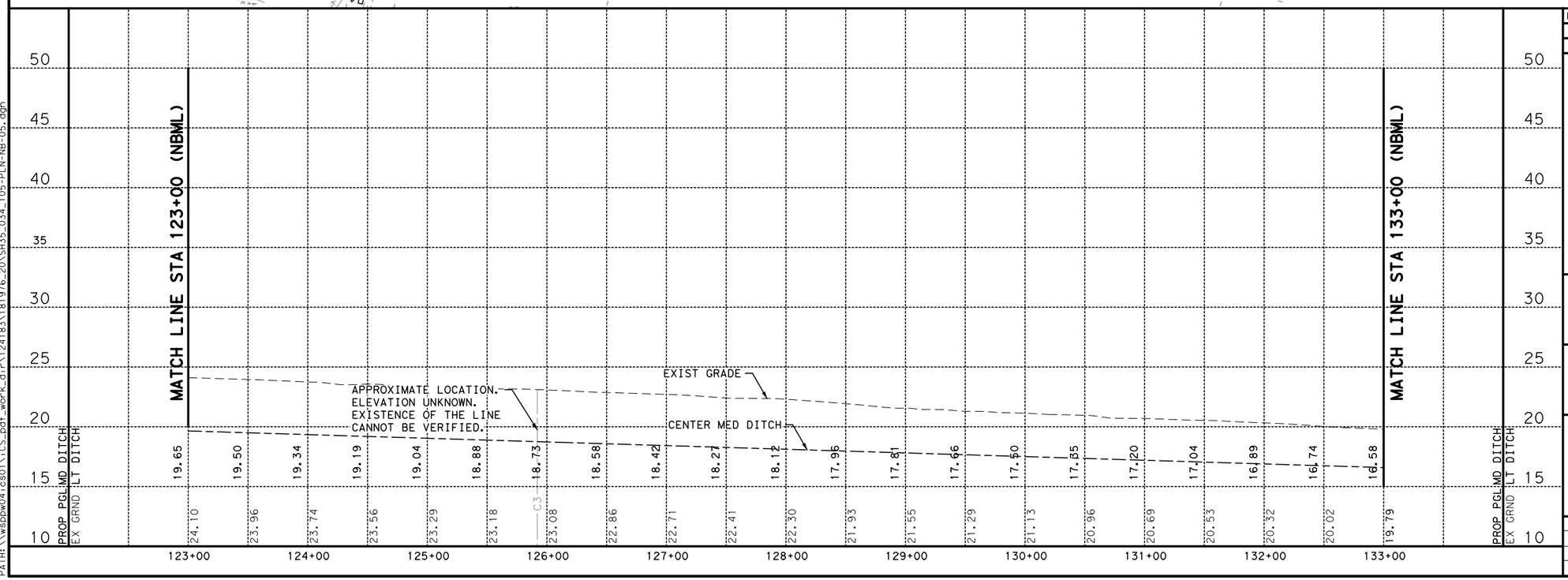
0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE
NORTHBOUND MAINLANES
STA 123+00 (NBML) TO STA 133+00 (NBML)

SHEET 5 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	127

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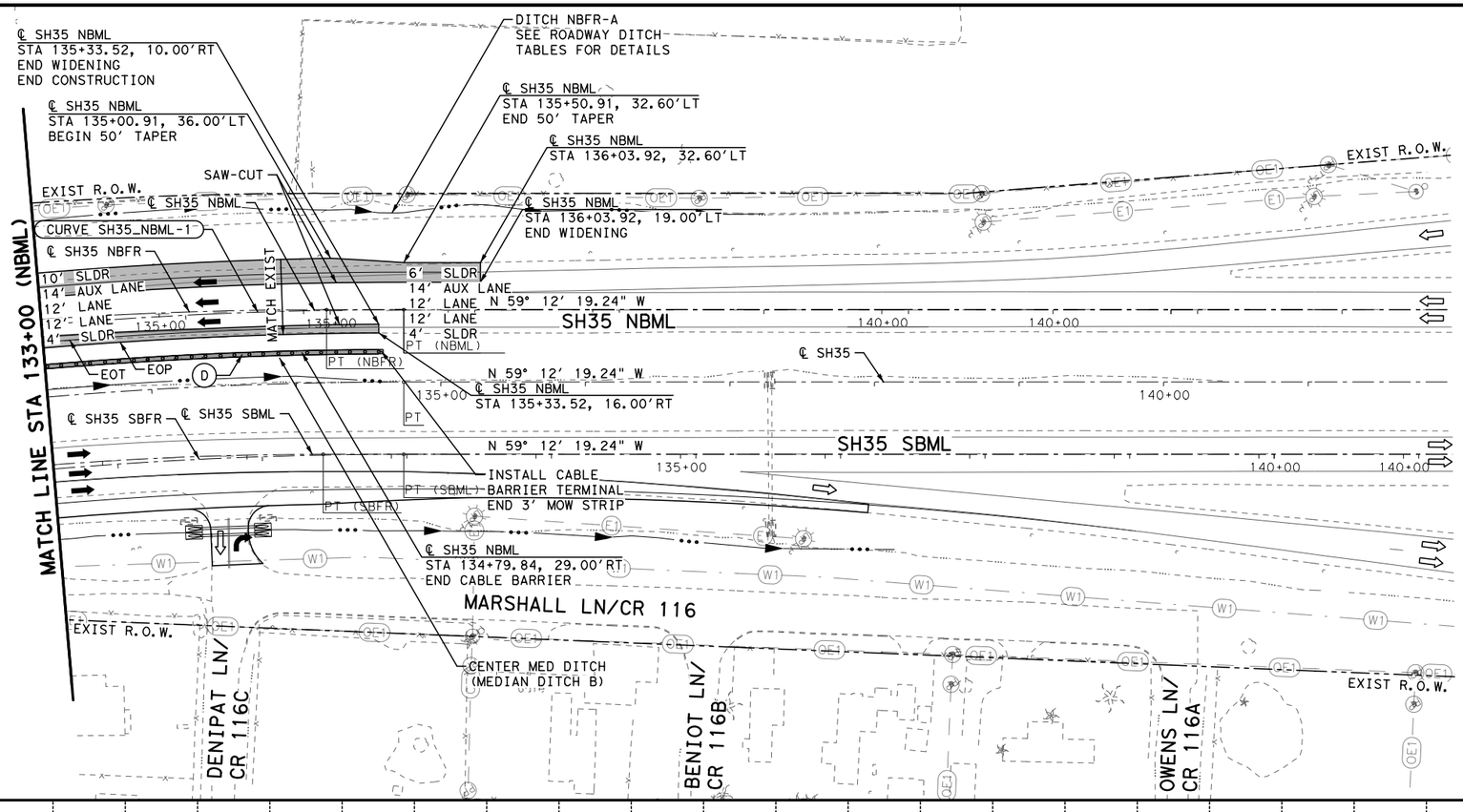

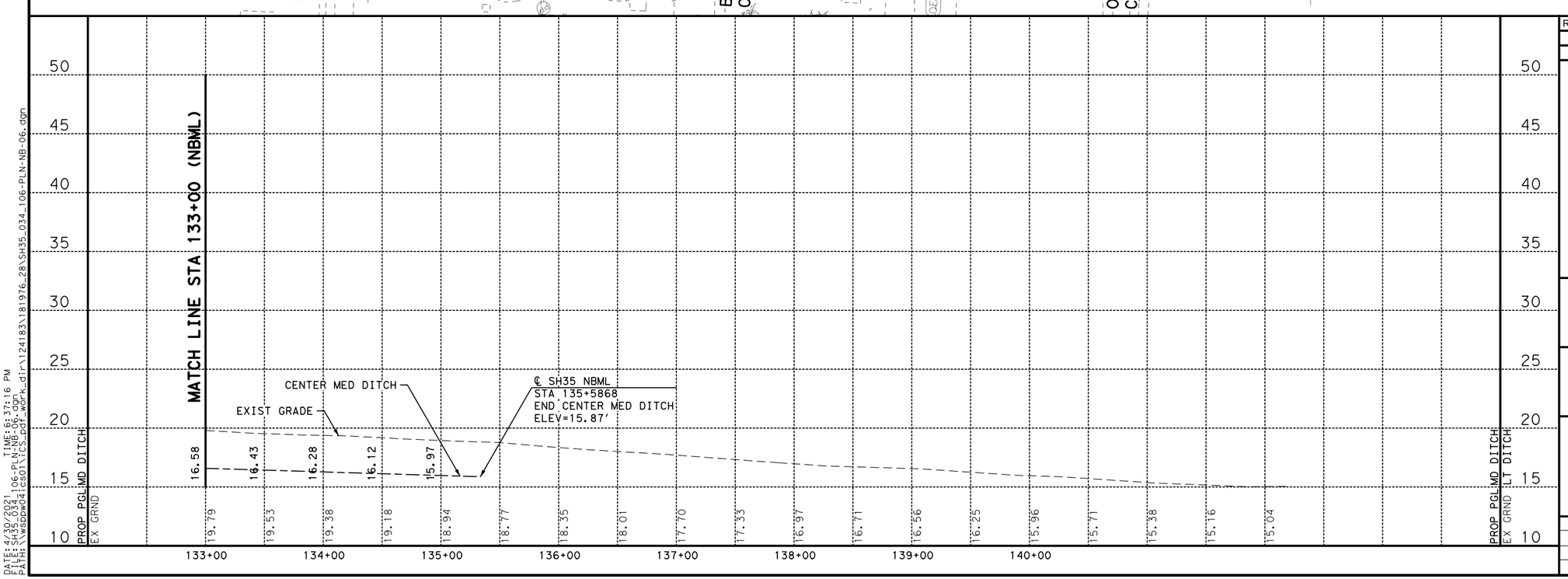

REV	DESCRIPTION	DATE	INIT

KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE NORTHBOUND MAINLANES

STA 133+00 (NBML) TO PROJECT END

SHEET 6 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	128

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SCALE: 100.00 ' / in.

EXIST R.O.W.

℄ SH35 NBML

SH35 NBML

℄ SH35

℄ SH35 SBML
STA 82+36.31, 16' LT

℄ SH35 SBML
STA 82+05.66, 12.00'RT
BEGIN WIDENING
MATCH EXISTING
CROSS-SLOPE

℄ SH35 SBML
STA 82+05.66, 22.00'RT
EXIST
R.O.W. BEGIN 150' TAPER

SH35 SBML

℄ SH35 SBML
STA 83+55.66, 28.00'RT
END 150' TAPER

4' SLDR
12' LANE
12' LANE
12' LANE
4' SLDR

MATCH EXIST

S 33° 07' 51.15" W

EOP/SAW-CUT

SAW-CUT

℄ SH35 SBML
PC STA 86+05.66, 28.00'RT

R 30'

2S

PC 87+01.62
(SBRR)

℄ SH35 SBML
PT STA 86+35.66, 58.00'RT

℄ SH35 SBML
STA 86+99.50, 10.00'LT
BEGIN WIDENING
MATCH EXISTING CROSS-SLOPE

℄ SH35 SBML
STA 86+37.66, 12.00'RT
END WIDENING

℄ SH35 SBML
STA 86+37.66, 58.00'RT

℄ SH35 SBFR

APPROXIMATE LOCATION.
ELEVATION UNKNOWN.
EXISTENCE OF THE LINE
CANNOT BE VERIFIED.

DITCH SBFR-A
SEE ROADWAY DITCH
TABLES FOR DETAILS

CROSSOVER TO BE
REMOVED, SEE
REMOVALS SHEET
FOR DETAILS

SOUTHERN OAKS DR

W MYRTLE AVE

EXIST R.O.W.

℄ AVE A

N AVE A

℄ SH35 NBFR

PC (NBML)

CURVE SH35_SBML-1

PC

EOT

EOP

10' SLDR
14' RAMP
12' LANE
12' LANE
4' SLDR

MATCH EXIST

PC (SBML)

EXIST R.O.W.

MATCH LINE STA 92+00 (SBML)

8" PE SALTWATER

2.5" GAS

24" WATER

2" GAS

4' 12' LANE 12' LANE 12' LANE 4'
SHDR SHDR

1.62%
1.37%
6:1
6:1
4:1

SECTION A-A

0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.

OVERHEAD LINES SHALL BE CLEARED FOR CONSTRUCTION. CONTRACTOR TO FIELD VERIFY.

EXIST GRADE

SPLINE GRADE

(+)0.2989 %

(+)0.7465 %

APPROXIMATE LOCATION.
ELEVATION UNKNOWN.
EXISTENCE OF THE LINE
CANNOT BE VERIFIED.

MATCH LINE STA 92+00 (SBML)

	81+00	82+00	83+00	84+00	85+00	86+00	87+00	88+00	89+00	90+00	91+00	92+00
PROP PGL		24.86	24.83	24.80	24.75	24.75	24.76	24.78	24.78	24.79	24.80	24.80
EX GRND		24.86	24.83	24.80	24.75	24.75	24.76	24.78	24.78	24.79	24.80	24.80

	81+00	82+00	83+00	84+00	85+00	86+00	87+00	88+00	89+00	90+00	91+00	92+00
PROP PGL		24.81	24.83	24.87	24.92	25.06	25.35	25.59	25.79	25.57	25.12	24.49	23.86
EX GRND		24.81	24.83	24.87	24.92	25.06	25.35	25.59	25.79	25.57	25.12	24.49	23.86

50 45 40 35 30 25 20 15 10

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE
SOUTHBOUND MAINLANES

PROJECT BEGIN TO STA 92+00 (SBML)

SHEET 1 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	129

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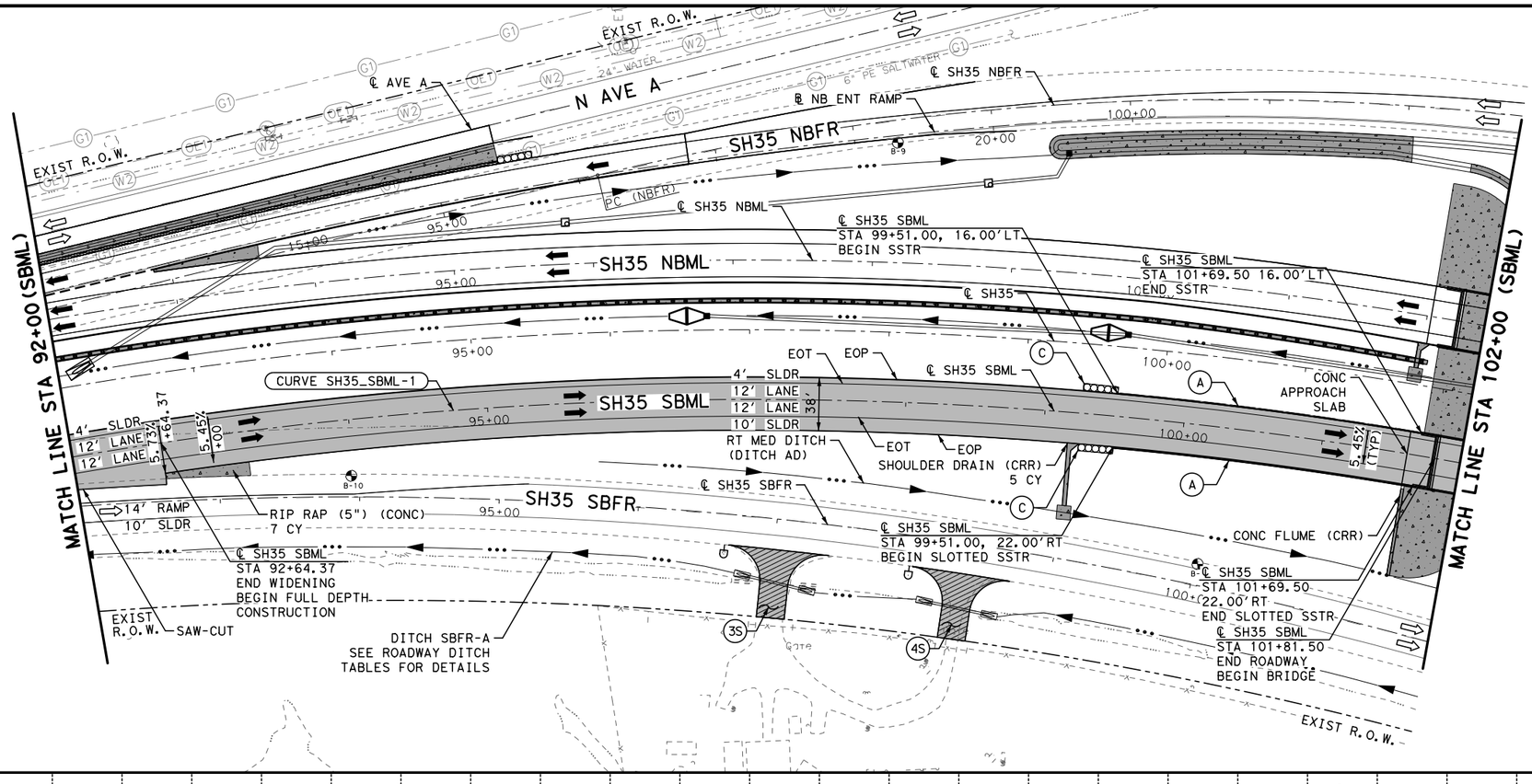

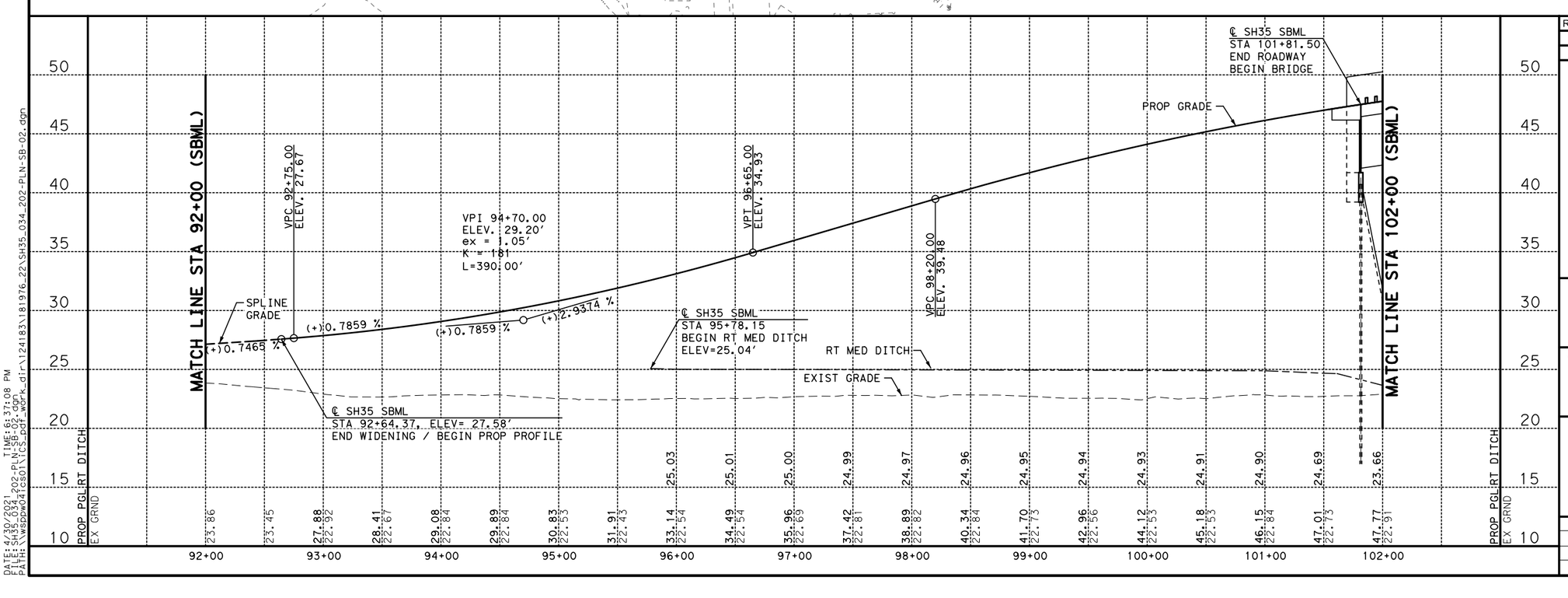

0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE SOUTHBOUND MAINLANES

STA 92+00 (SBML) TO STA 102+00 (SBML)

SHEET 2 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	130

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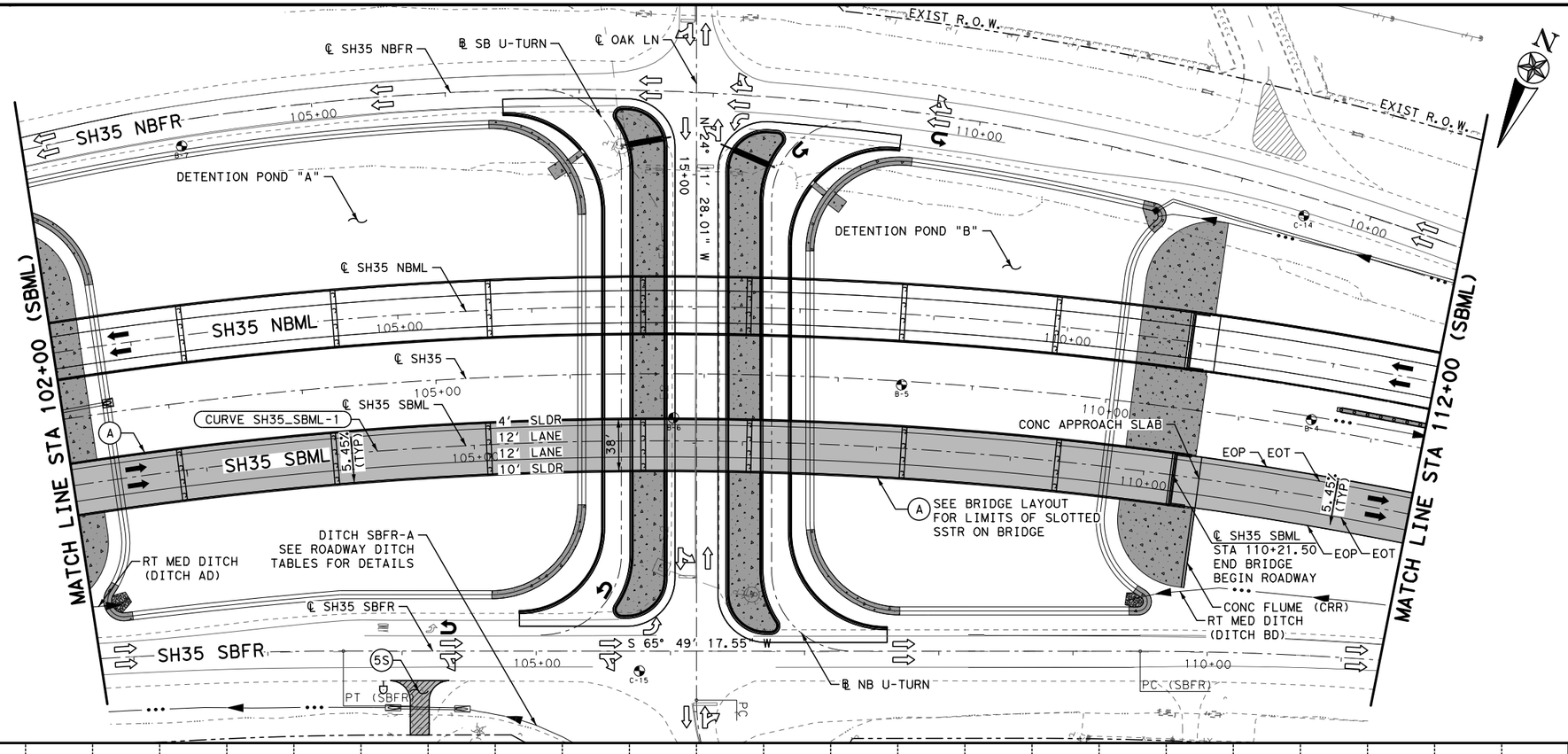


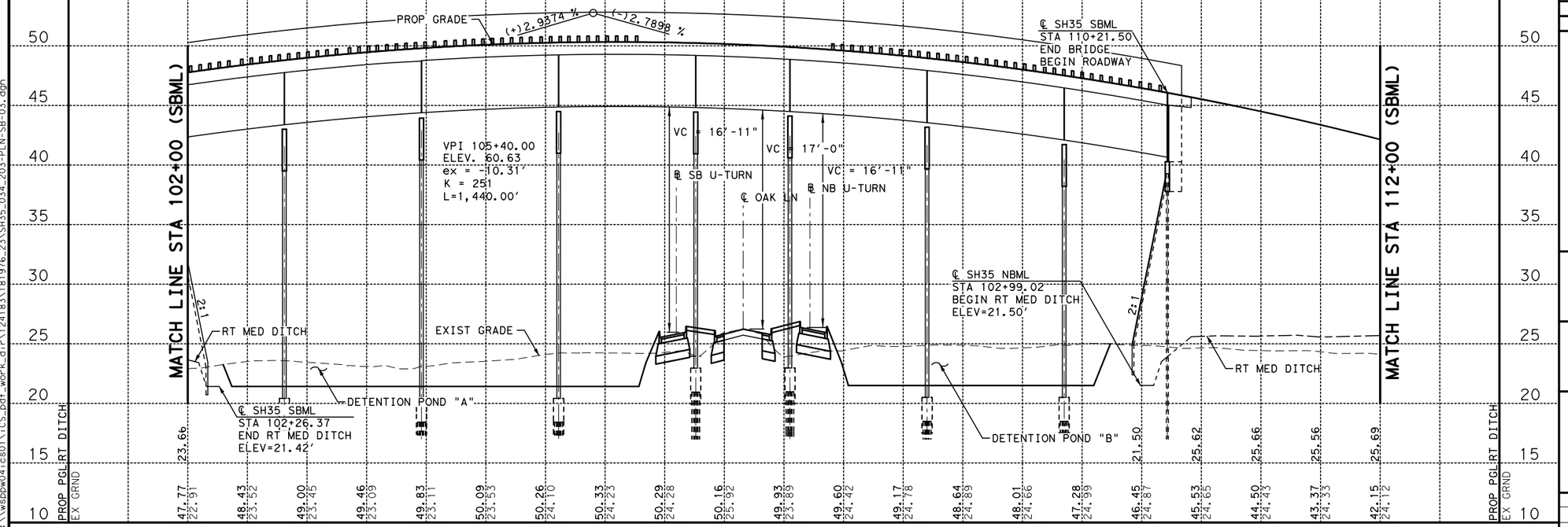
0′ 50′ 100′(H)
0′ 5′ 10′ (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE SOUTHBOUND MAINLANES

STA 102+00 (SBML) TO STA 112+00 (SBML)

SHEET 3 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	131

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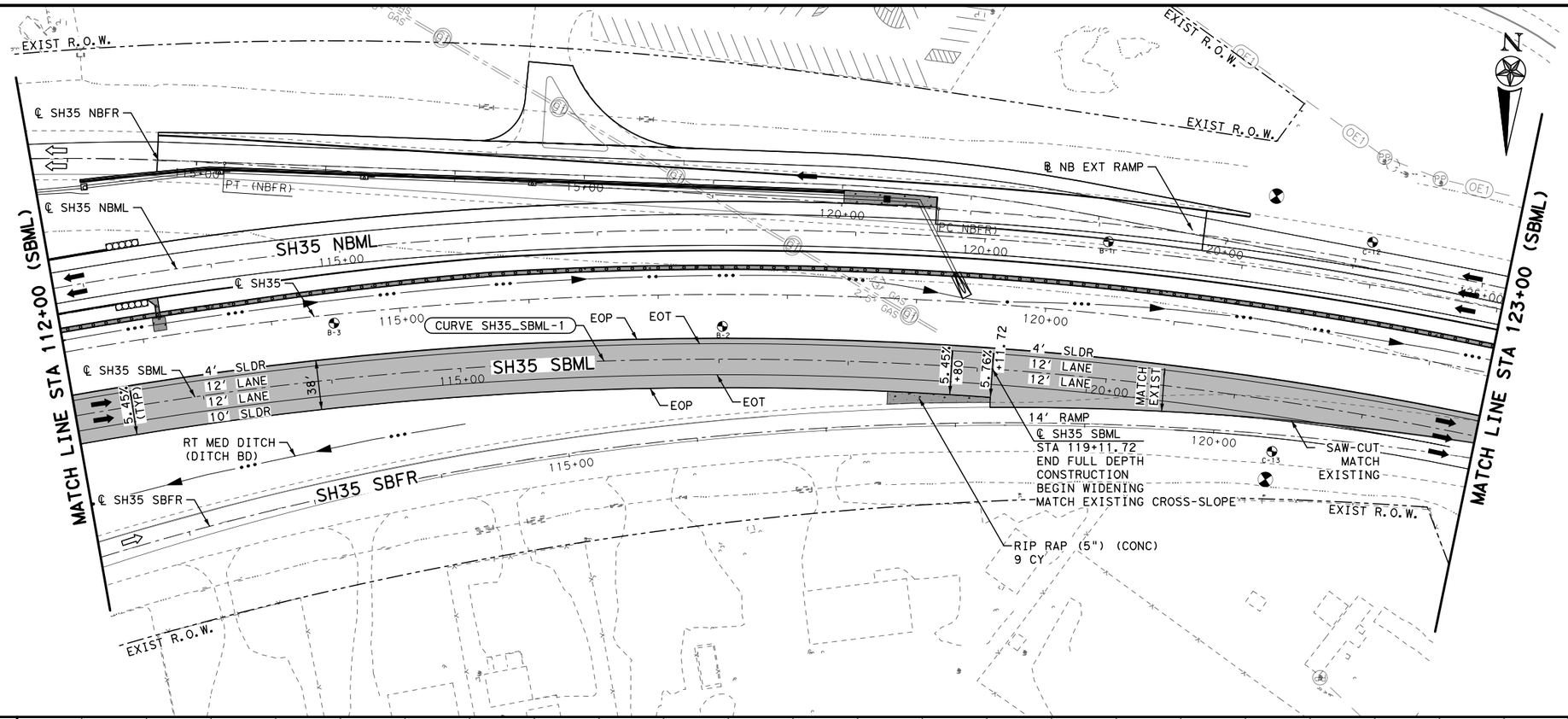


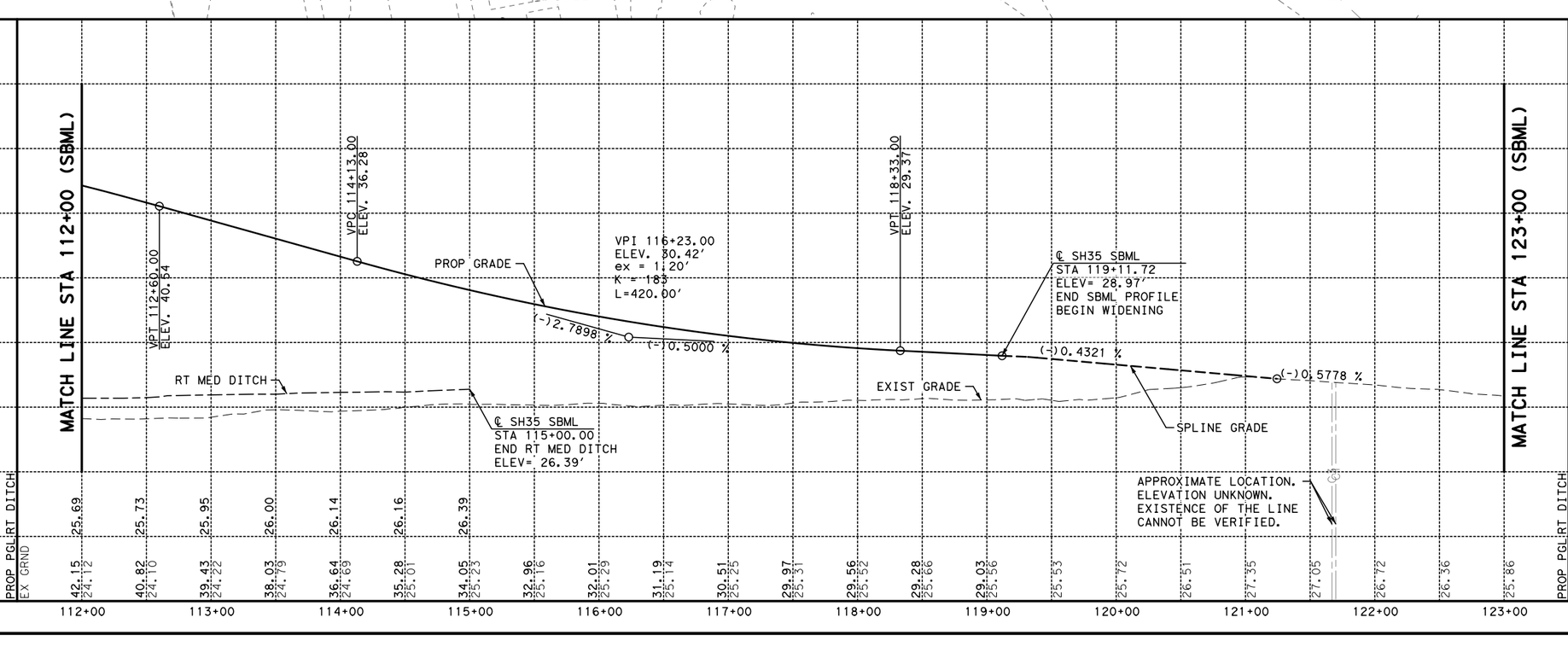
0′ 50′ 100′(H)
0′ 5′ 10′ (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE SOUTHBOUND MAINLANES

STA 112+00 (SBML) TO STA 123+00 (SBML)

SHEET 4 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	132

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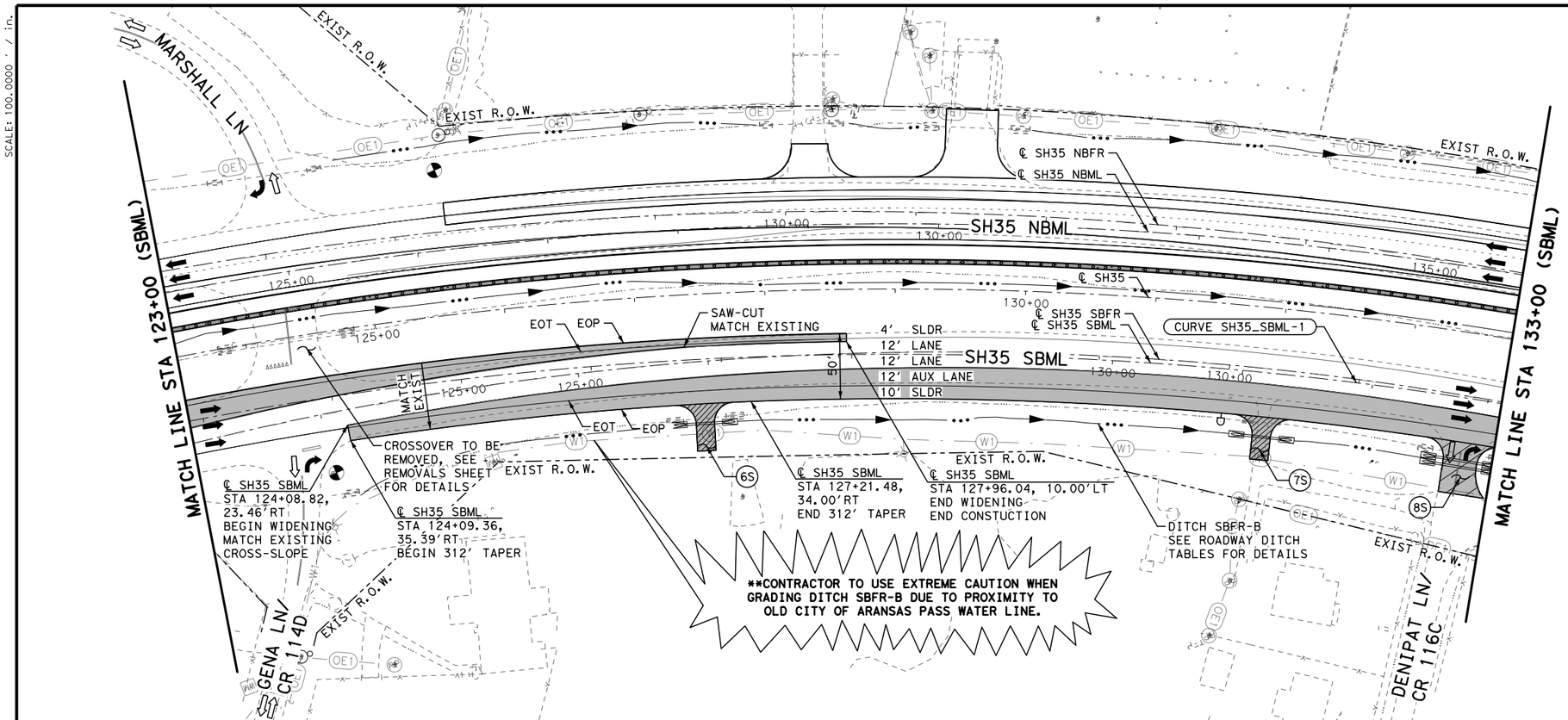


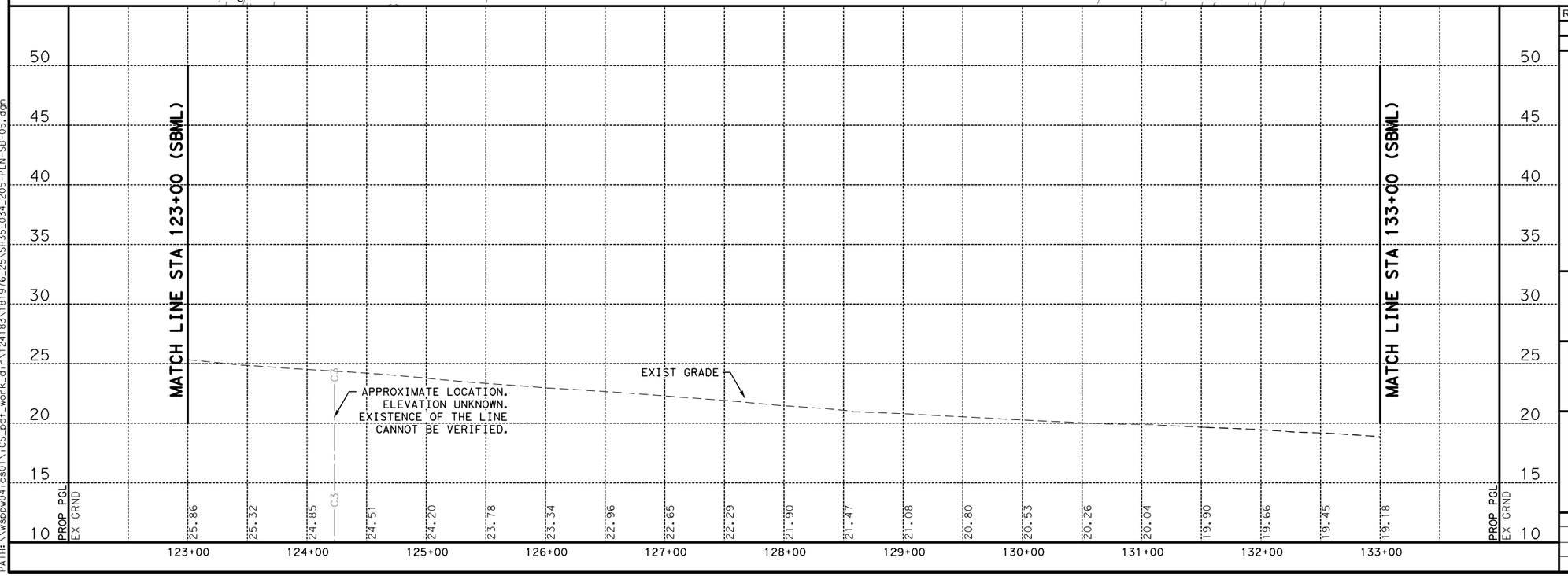
0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE SOUTHBOUND MAINLANES

STA 123+00 (SBML) TO STA 133+00 (SBML)

SHEET 5 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	133

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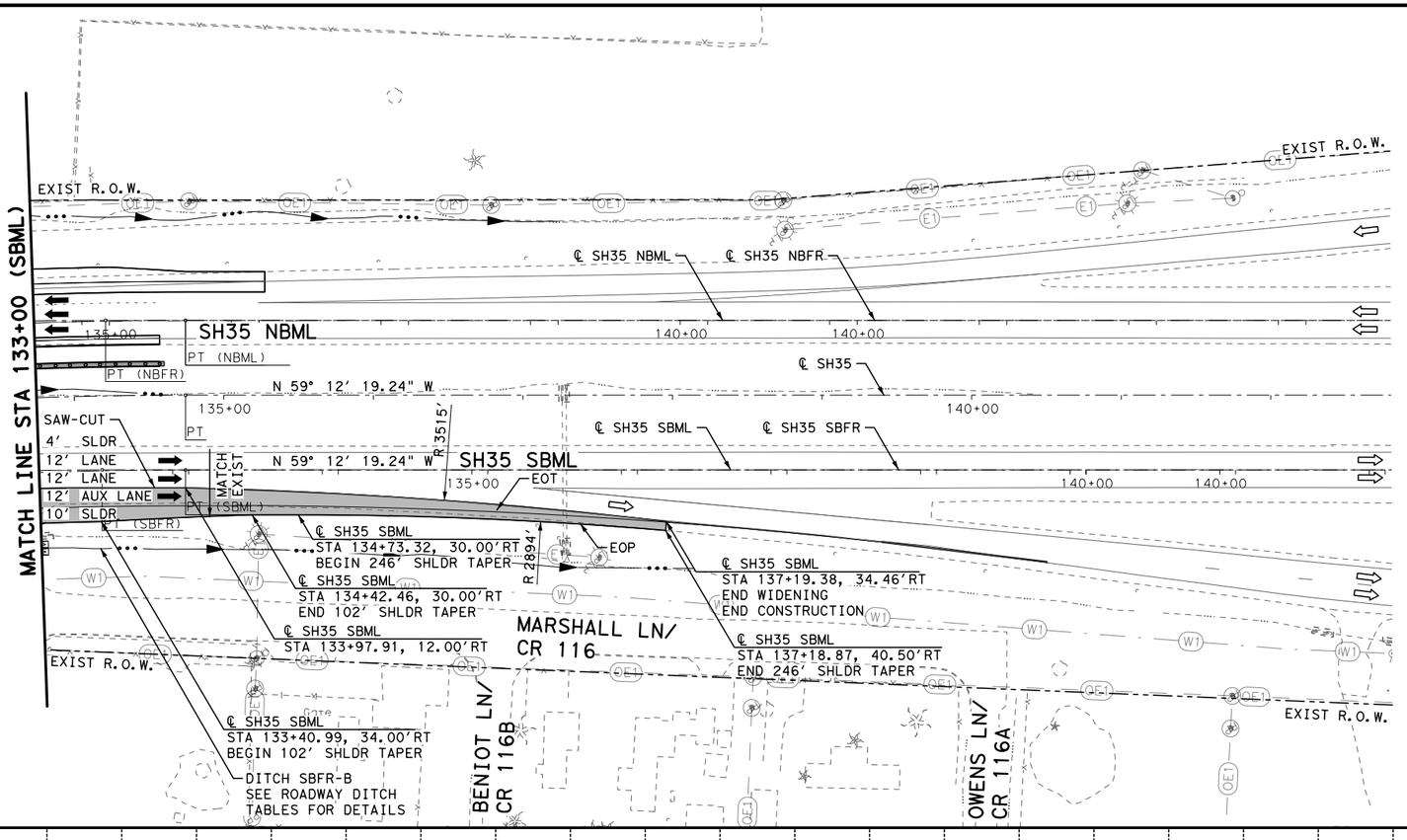

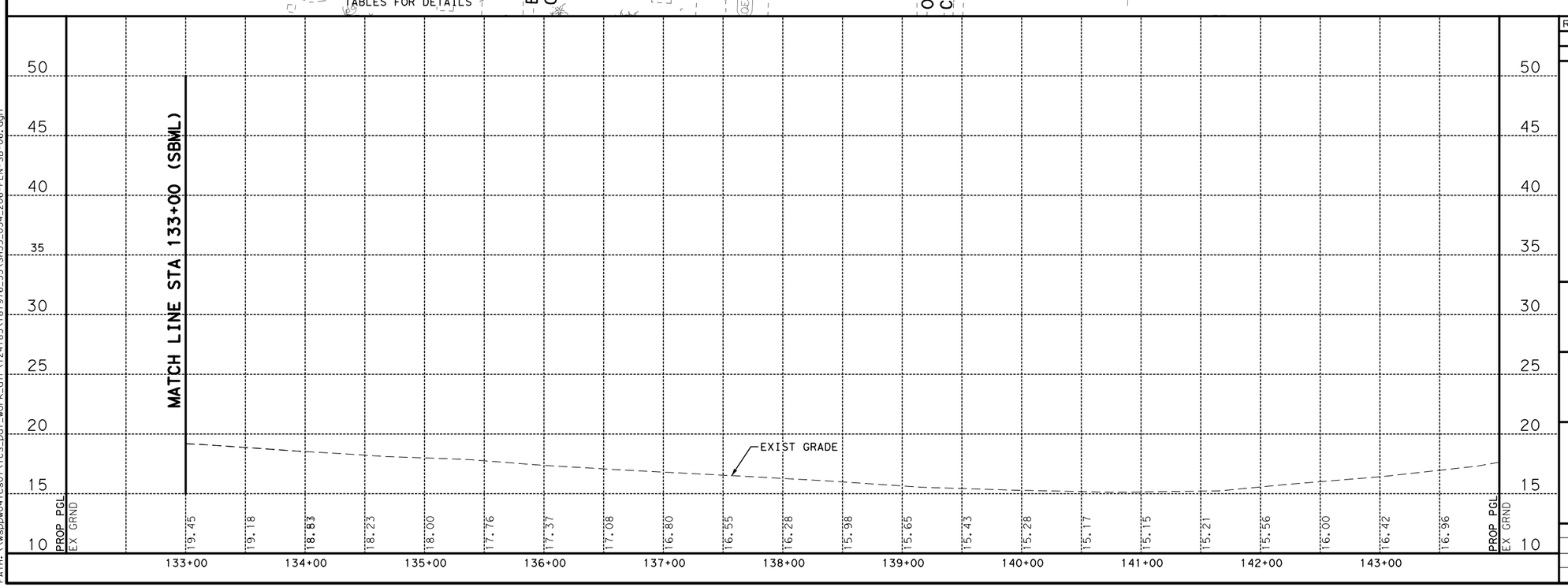

0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE
SOUTHBOUND MAINLANES
STA 133+00 (SBML) TO PROJECT END

SHEET 6 OF 6

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	134

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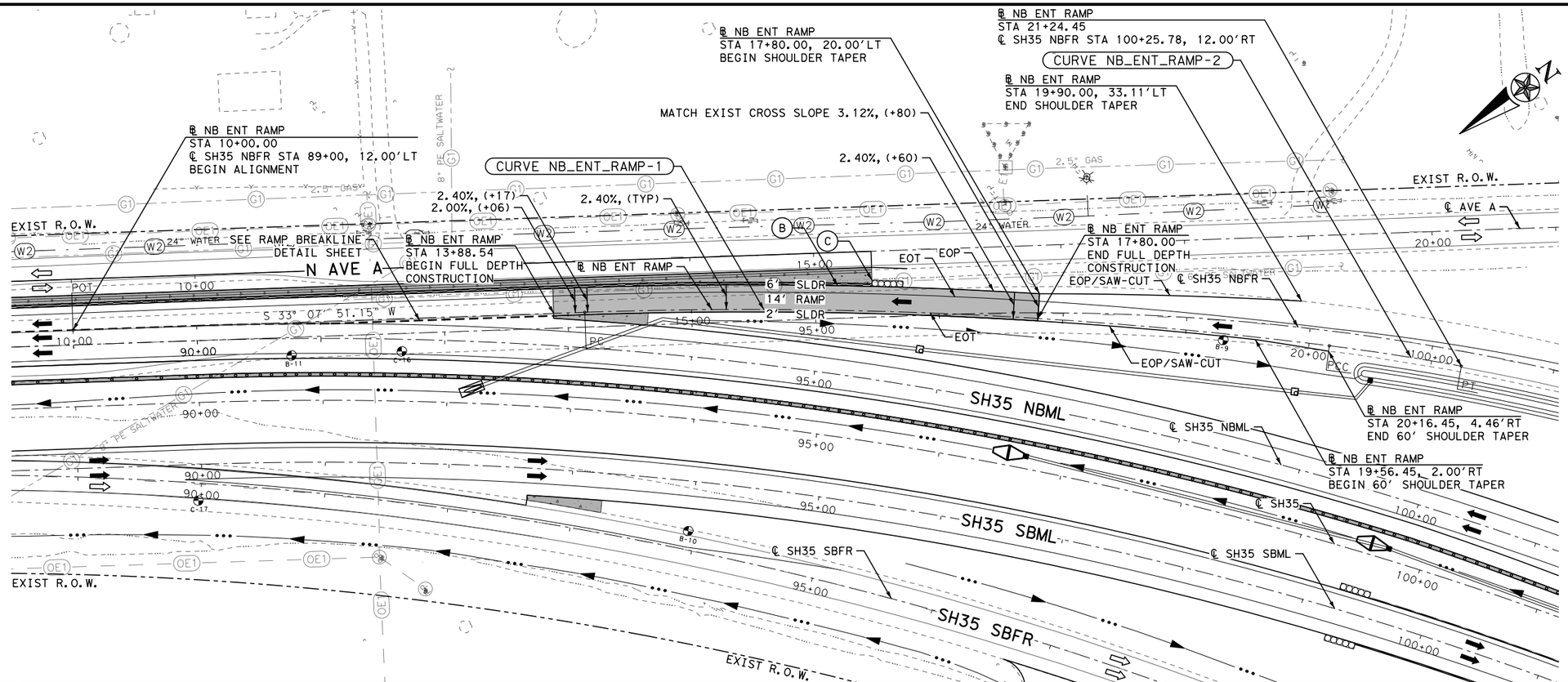
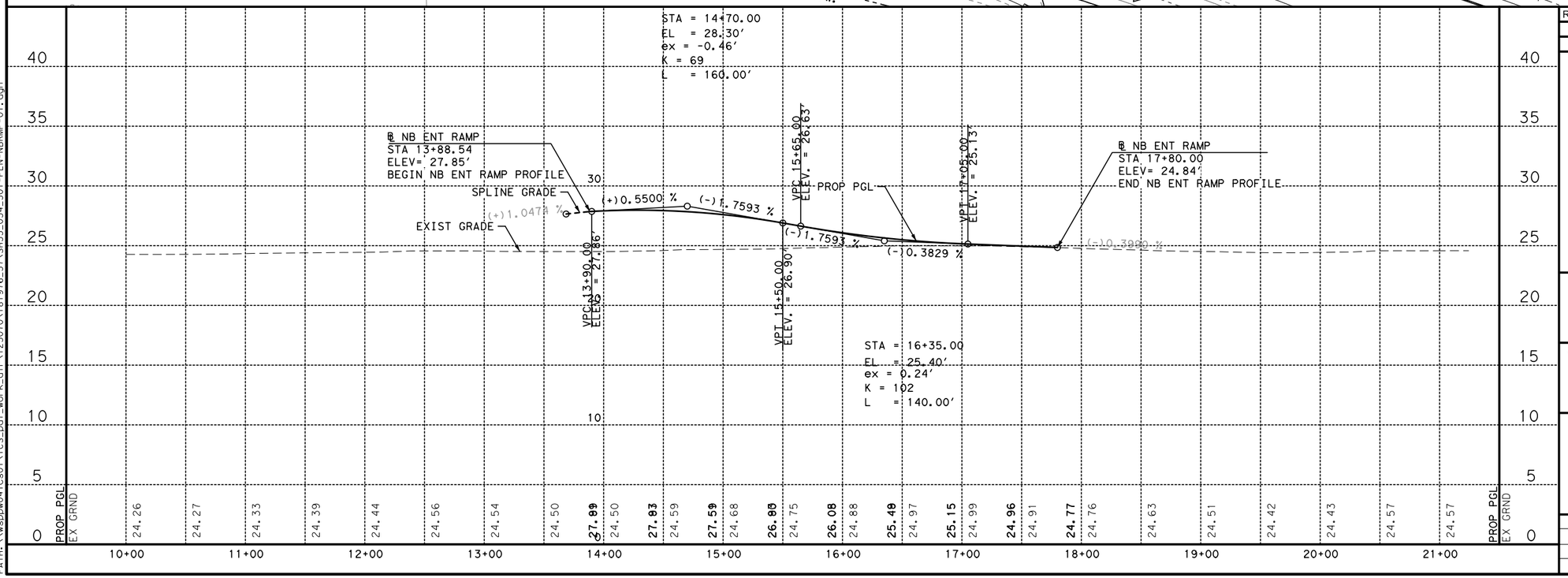


ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE NORTHBOUND ENTRANCE RAMP

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	135

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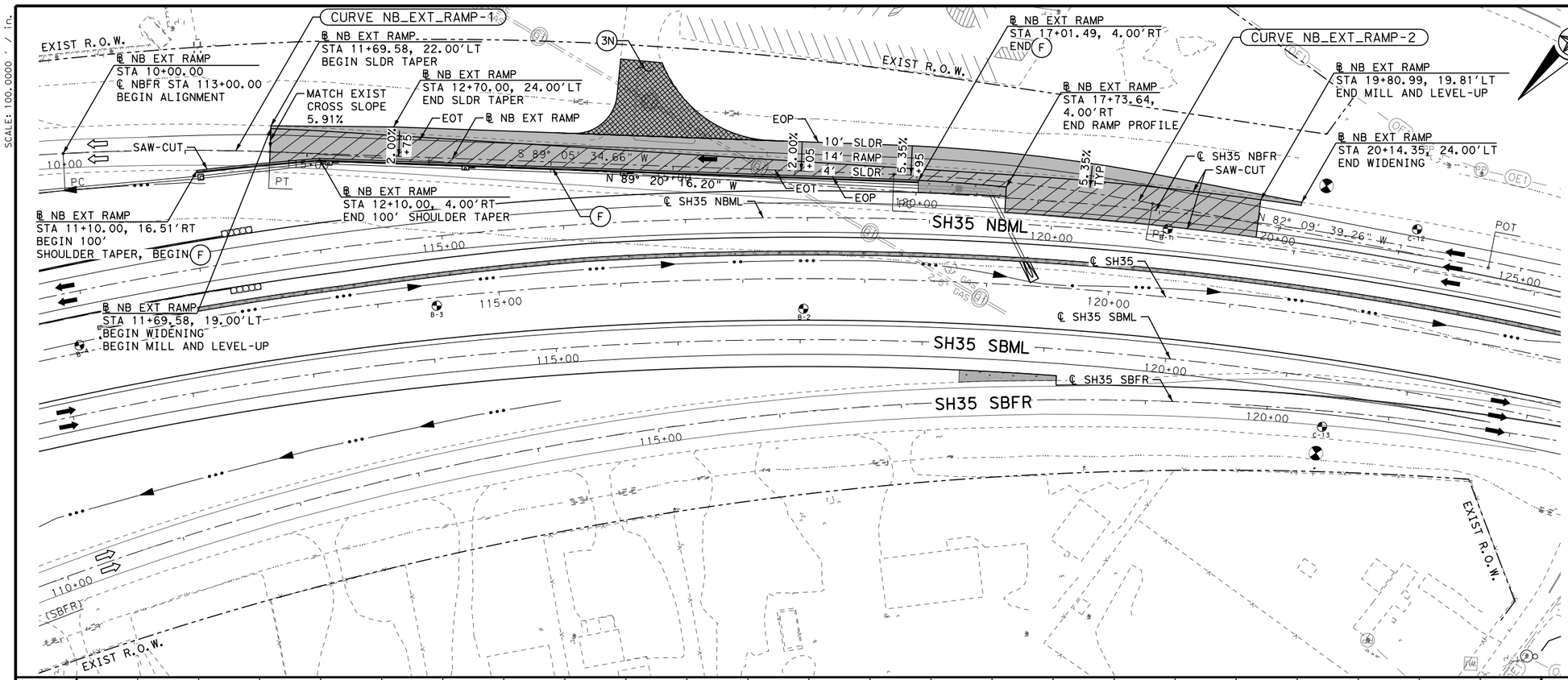


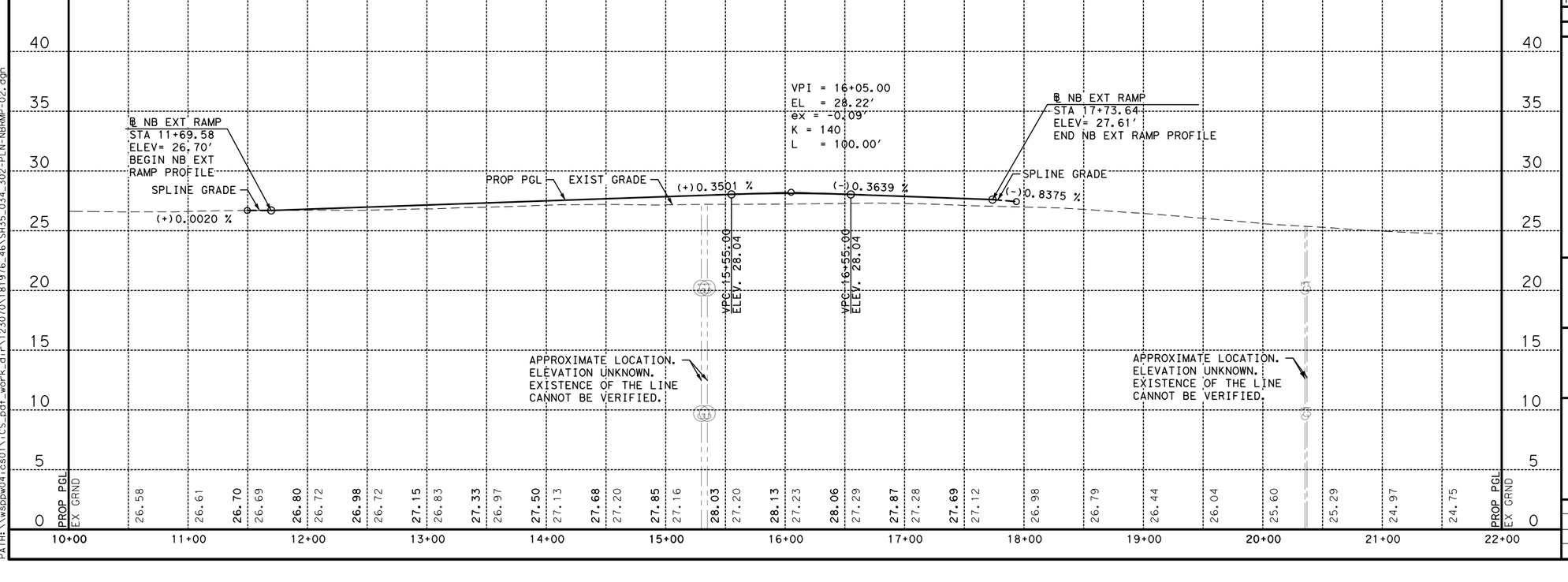
0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE NORTHBOUND EXIT RAMP

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	136

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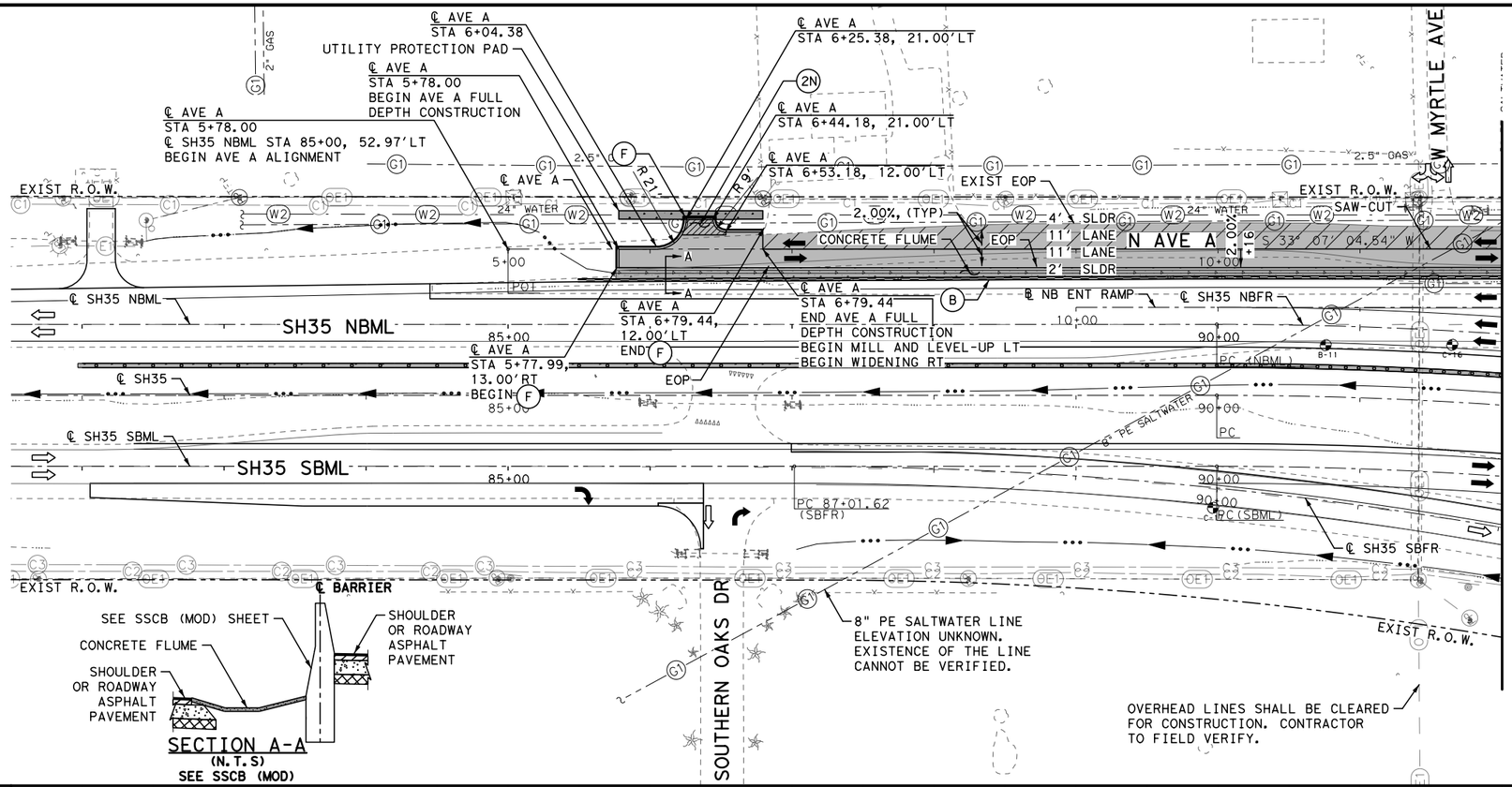
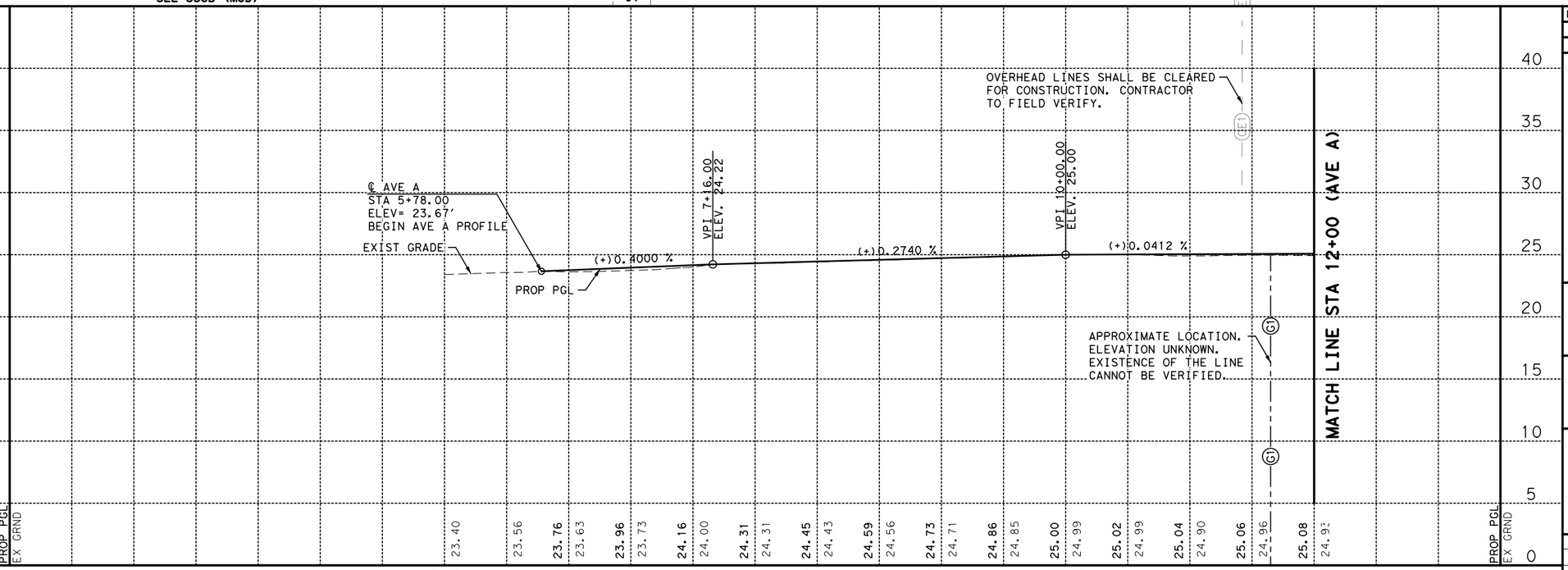


NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.
3. ALL CALLOUTS ARE TO EOP UNLESS NOTED OTHERWISE.
4. THE CONTRACTOR SHALL COORDINATE WITH THE SAN PATRICIO MUNICIPAL WATER DISTRICT (SPMWD) PRIOR TO CONSTRUCTING THE CONCRETE CAP.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

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WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE
AVENUE A
STA 5+00 (AVE A) TO STA 12+00 (AVE A)

SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	137

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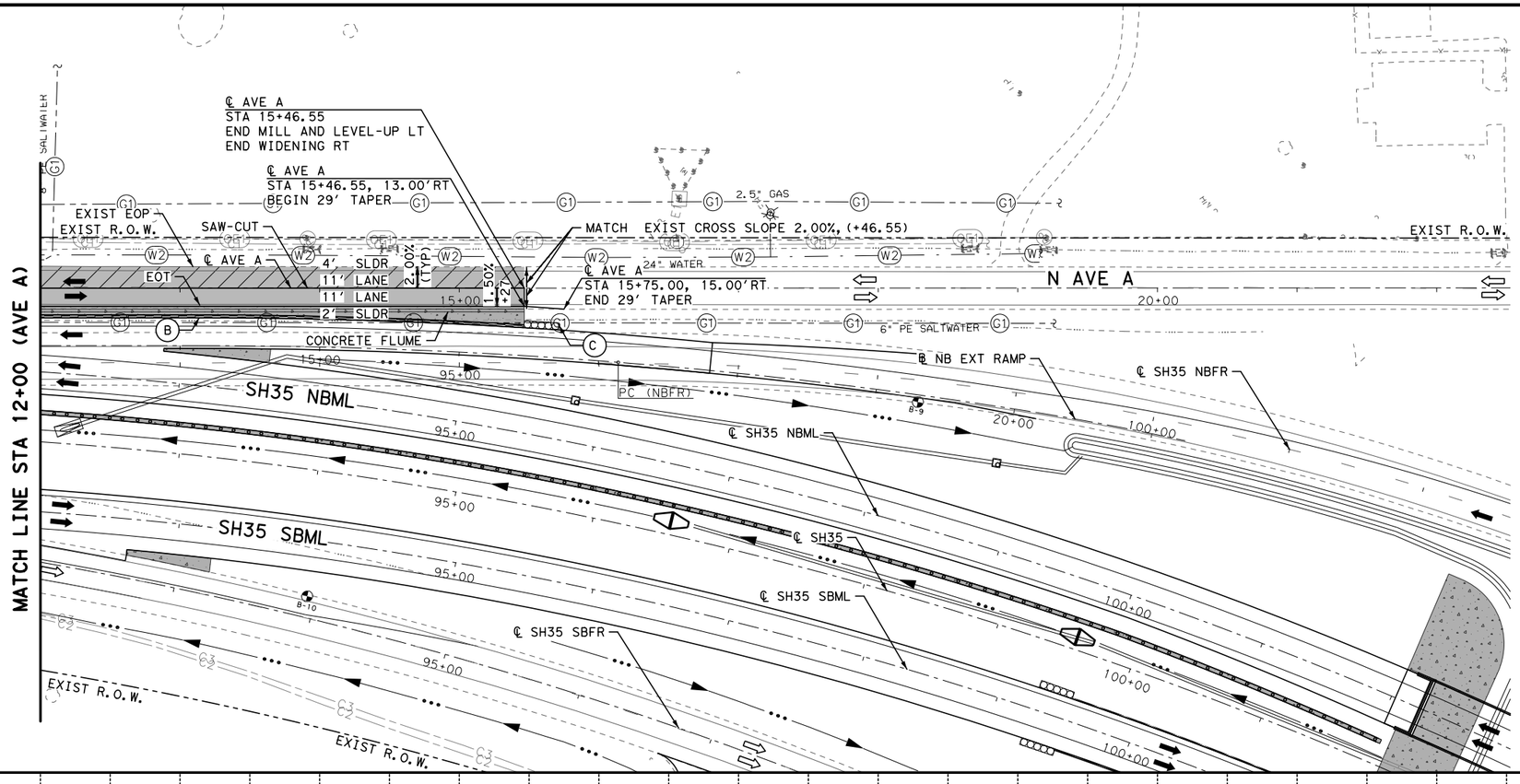


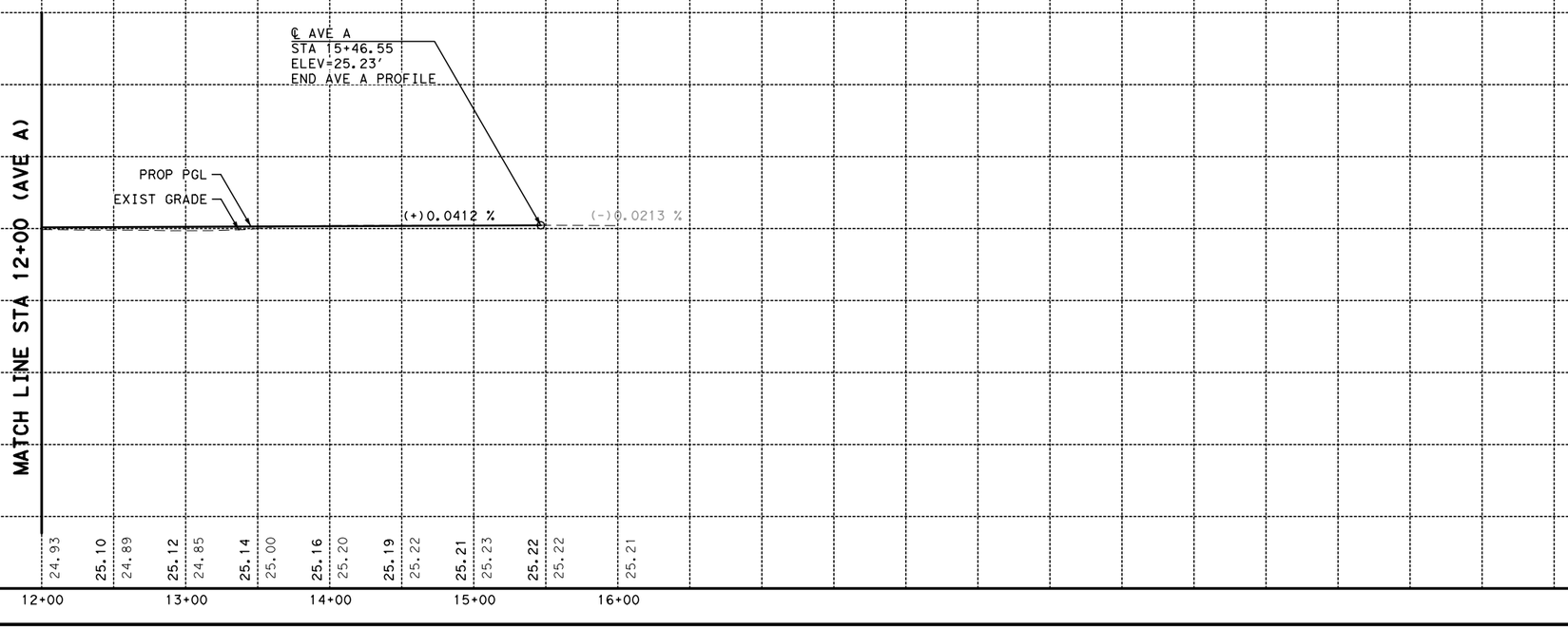
0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE
AVENUE A
STA 12+00 (AVE A) TO STA 16+00 (AVE A)

SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	138

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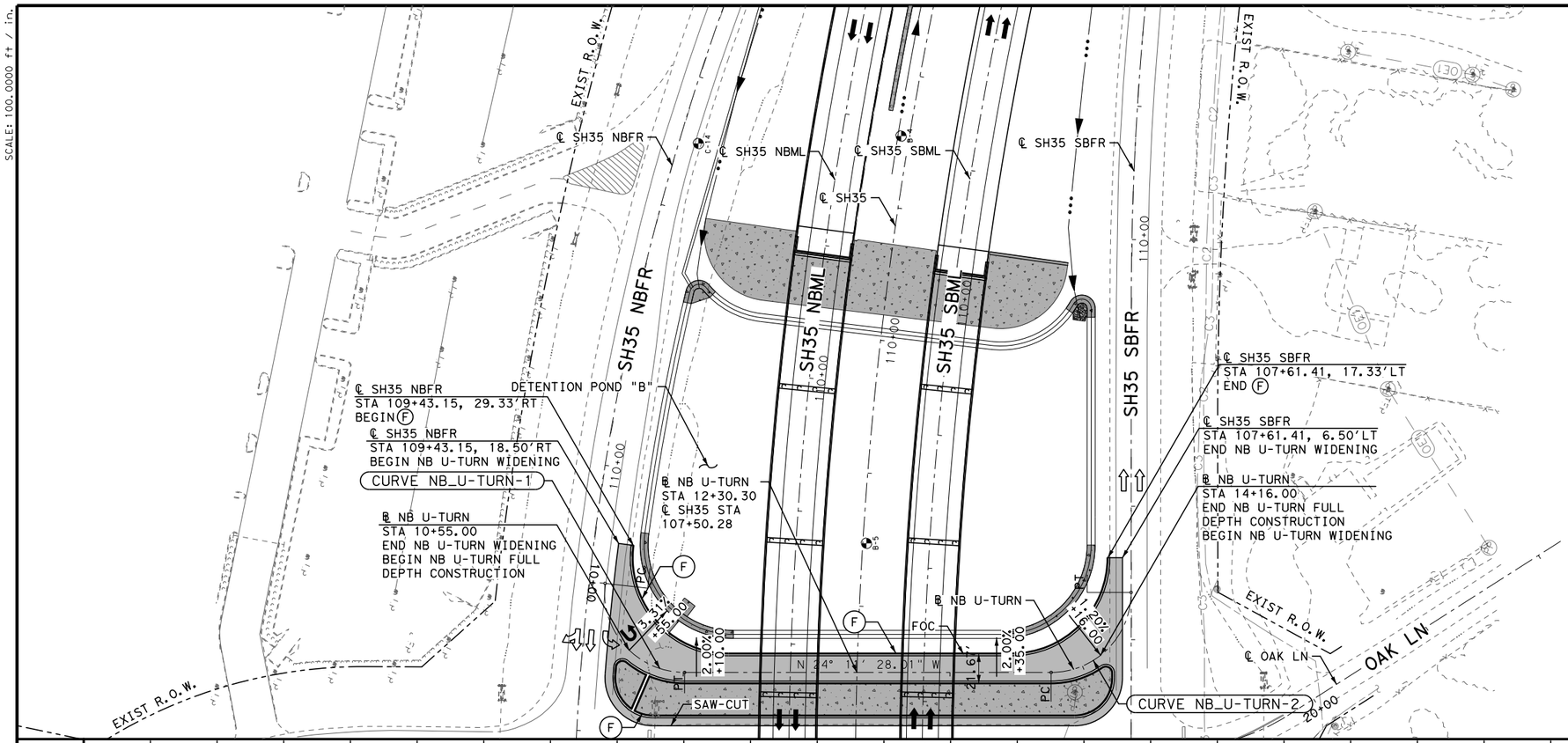


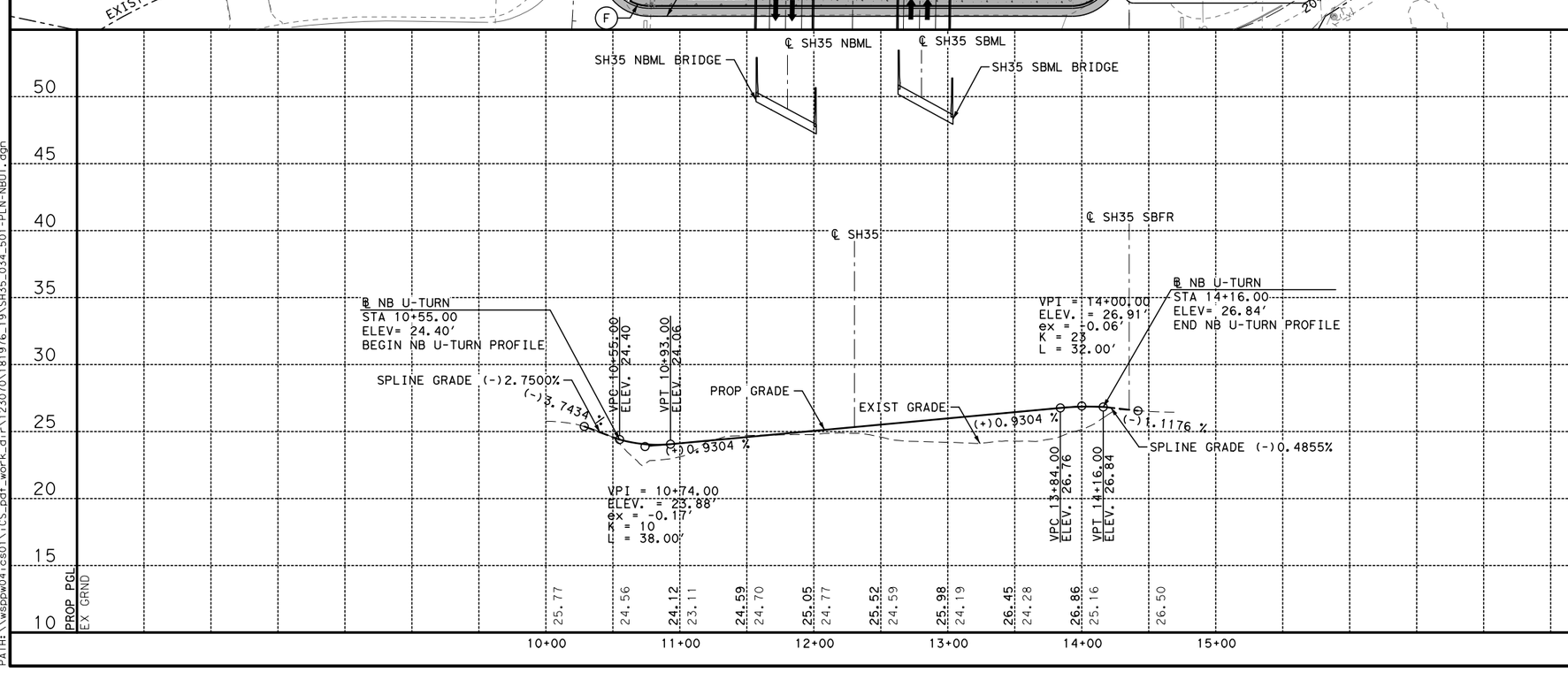
0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PLAN AND PROFILE NORTHBOUND U-TURN

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	139

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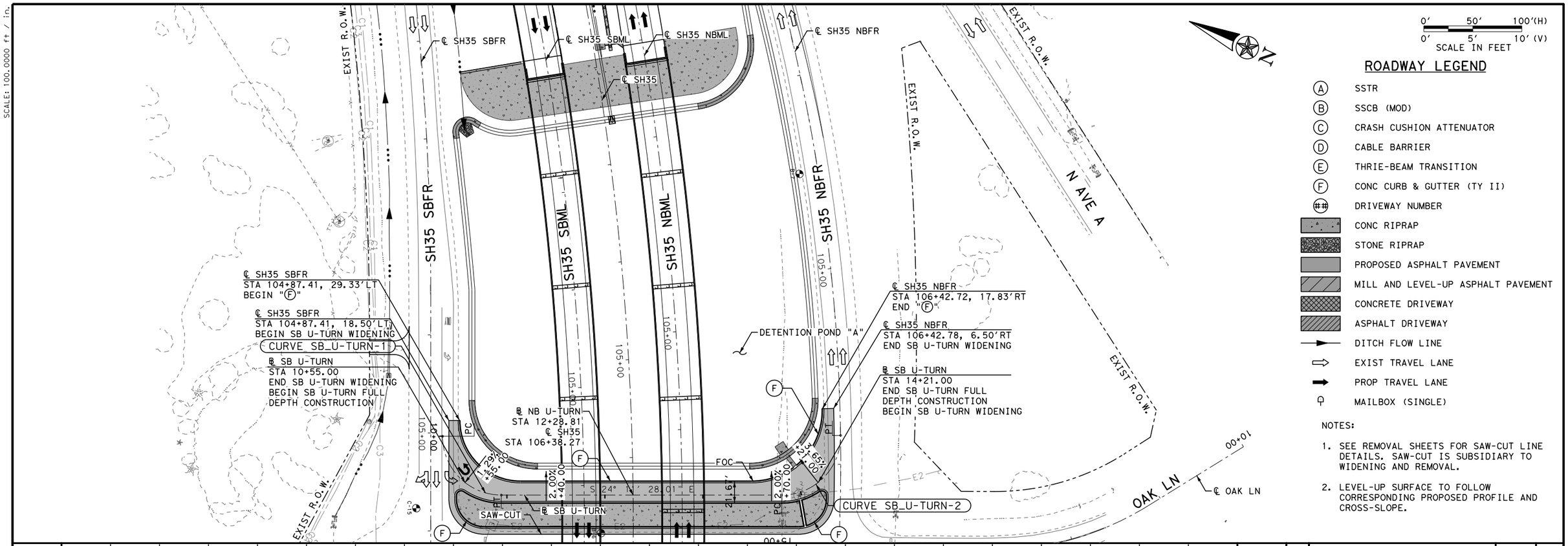


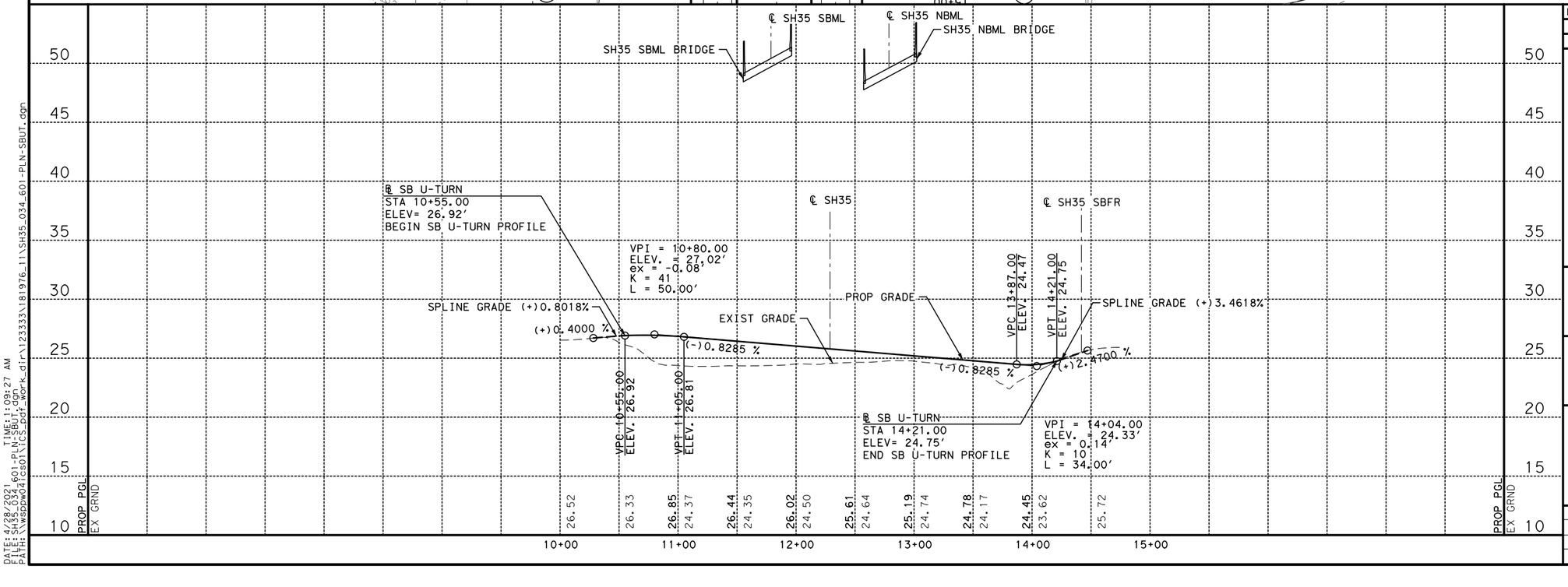
0′ 50′ 100′(H)
0′ 5′ 10′ (V)
SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

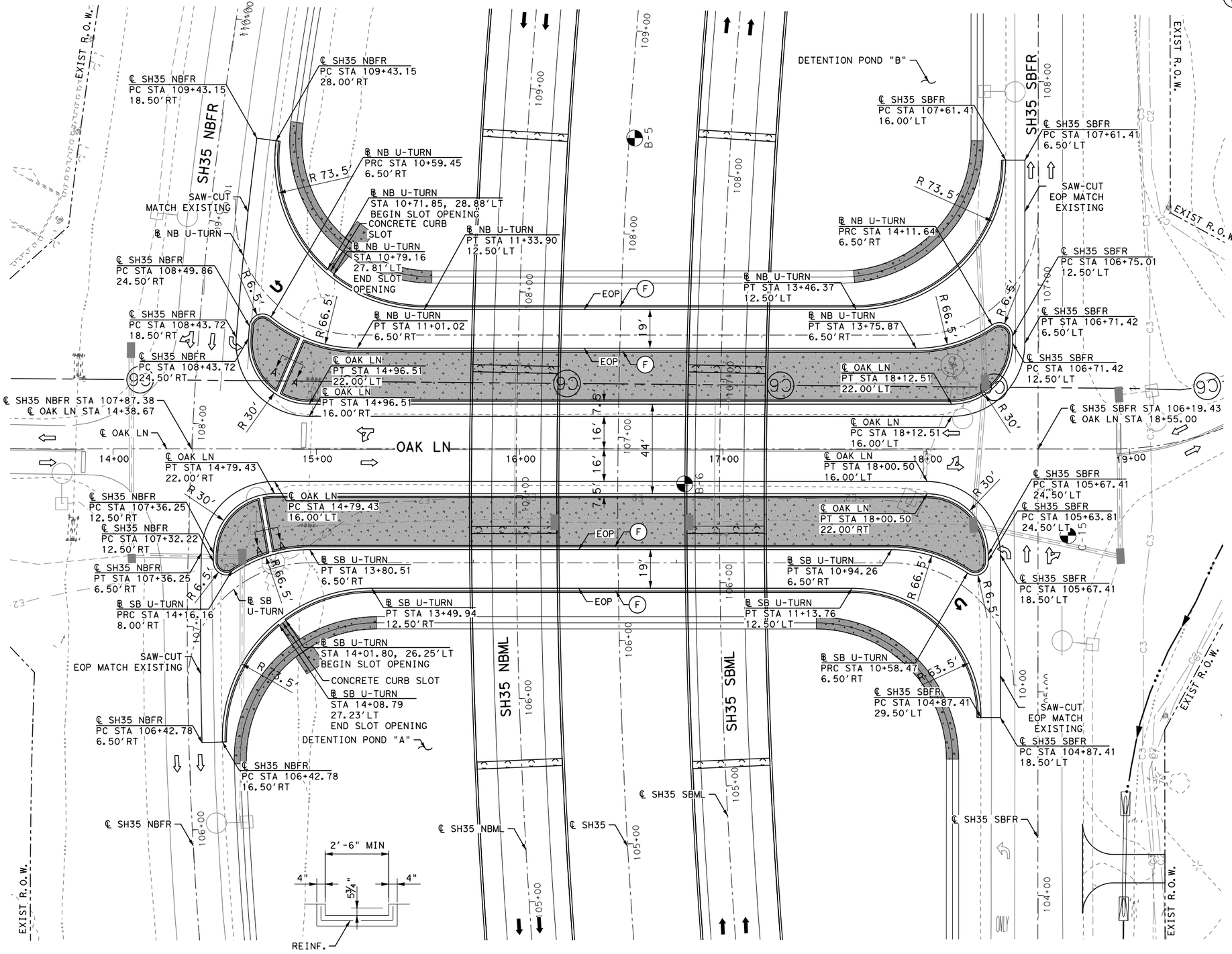
SH 35 AT OAK LANE

PLAN AND PROFILE SOUTHBOUND U-TURN

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	140

SCALE: 50.0000 ft / in.



0′ 25′ 50′(H)

SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. ALL DIMENSION CALLOUTS ARE TO EOP UNLESS STATED OTHERWISE.
3. SEE DETENTION POND LAYOUT SHEETS FOR GRADING DETAILS.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

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2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

INTERSECTION LAYOUT

OAK LANE

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	141

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SCALE: 50.0000 ' / in.

0' 25' 50'(H)

SCALE IN FEET

ROADWAY LEGEND

- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

℄ NB ENT RAMP
STA 10+00.00
℄ SH35 NBFR STA 89+00, 12.00'LT
BEGIN ALIGNMENT

℄ NBML
STA 87+99.00
MATCH EXIST CROSS-SLOPE
BEGIN LINEAR SUPERELEVATION
TRANSITION

℄ SH35 NBML
STA 89+69.92
END LINEAR SUPERELEVATION
TRANSITION
BEGIN 2.00% CROSS-SLOPE

℄ NB ENT RAMP
STA 14+17.00
END LINEAR SUPERELEVATION
TRANSITION
BEGIN 2.40% CROSS-SLOPE

EXIST R.O.W.

℄ NBML
STA 87+99.00, 12.00' LT
BEGIN CROSS-SLOPE BREAKLINE

℄ NB ENT RAMP
STA 14+06.00
BEGIN LINEAR SUPERELEVATION
TRANSITION, 2.00%

℄ NB ENT RAMP
STA 13+88.54, 2.00'RT
END CROSS-SLOPE BREAKLINE

EXIST R.O.W.

℄ AVE A

N AVE A

2.40%, (TYP)

10+00

6' SLDR
14' RAMP
12' LANE
12' LANE
4' SLDR

2.83%

24
26
25

88+00
89+00
90+00
91+00

CROSS-SLOPE BREAKLINE

EOT

28
27
26
25

℄ SH35 NBFR
℄ SH35 NBML

92+00
93+00
94+00

5.35%

6' SLDR
14' RAMP
2' SLDR
℄ NB ENT RAMP

EOP

SH35 NBML

EOT
EOP

℄ NBML
STA 91+07.97
℄ NB ENT RAMP
STA 12+08.39

℄ NBML
STA 87+99.00
MATCH EXIST CROSS-SLOPE
BEGIN LINEAR SUPERELEVATION
TRANSITION

℄ NBML
STA 90+50.00
END LINEAR SUPERELEVATION
TRANSITION
BEGIN 5.35% CROSS-SLOPE

℄ SH35

℄ SH35 SBML

SH35 SBML

℄ SH35 SBFR

SH35 SBFR

EXIST R.O.W.

EXIST R.O.W.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

RAMP BREAKLINE DETAIL
OAK LANE

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	142

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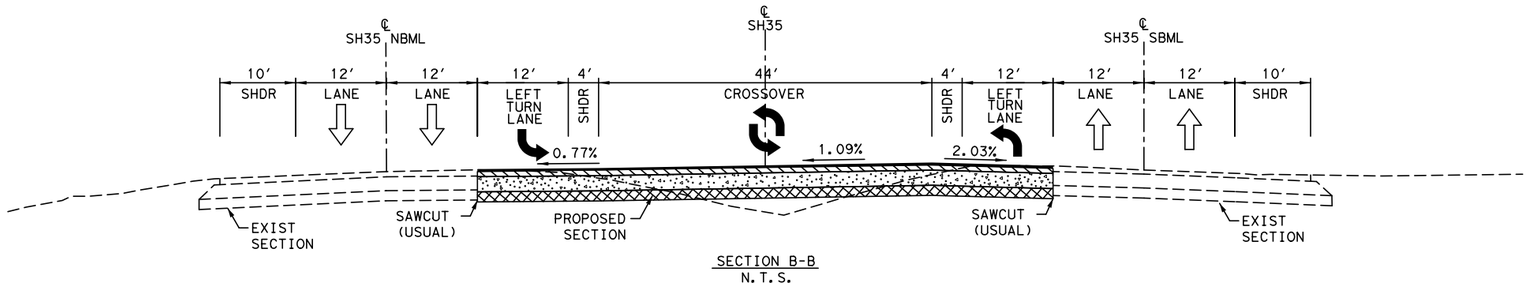
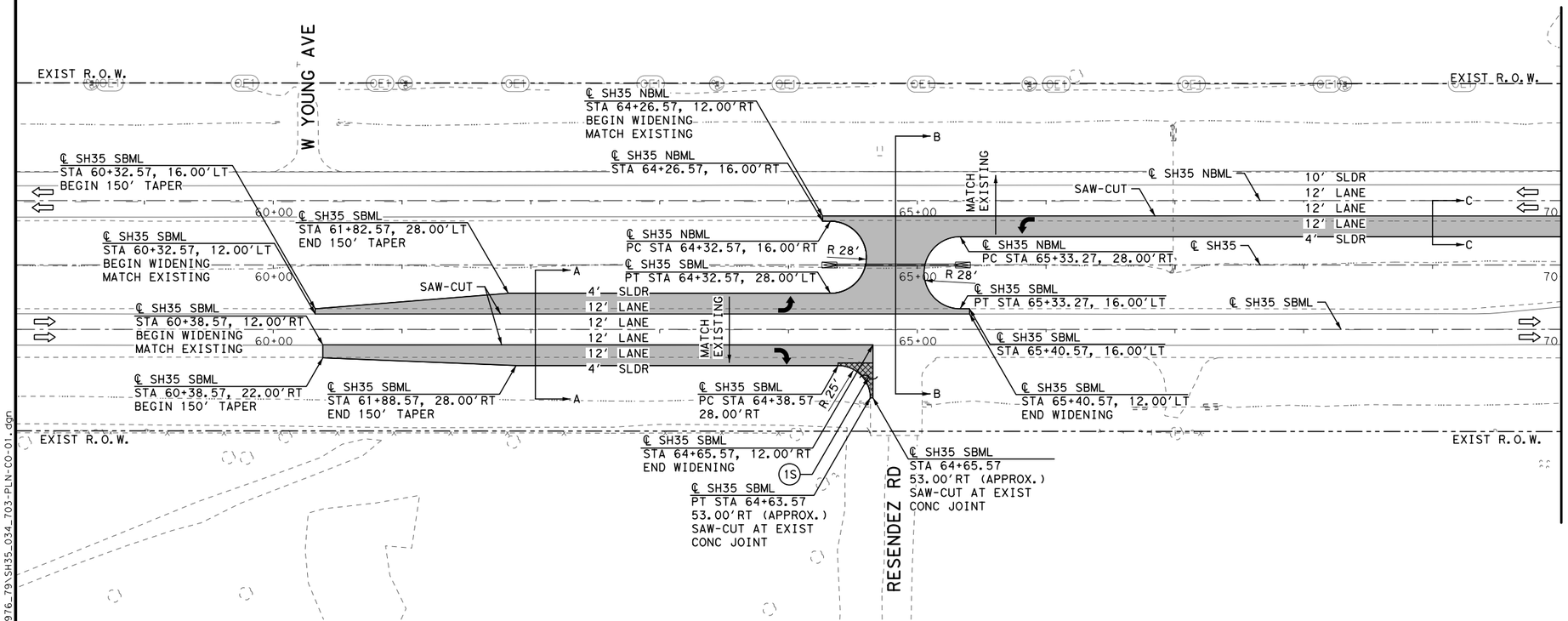
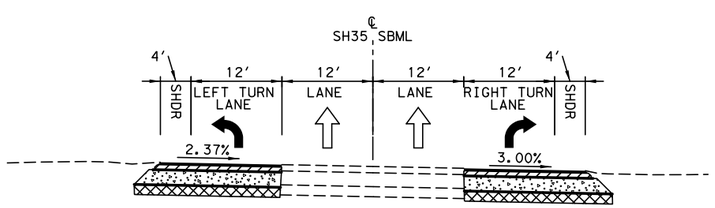


SECTION B-B
N. T. S.





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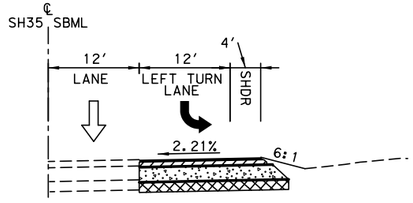
N. T. S.



SECTION C-C
N. T. S.

0′ 50′ 100′(H)

SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
- CONCRETE DRIVEWAY
- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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139952
LICENSED PROFESSIONAL ENGINEER

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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ROADWAY PLAN
RESENDEZ CROSSOVER
PROJECT BEGIN TO STA 70+00

SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	143

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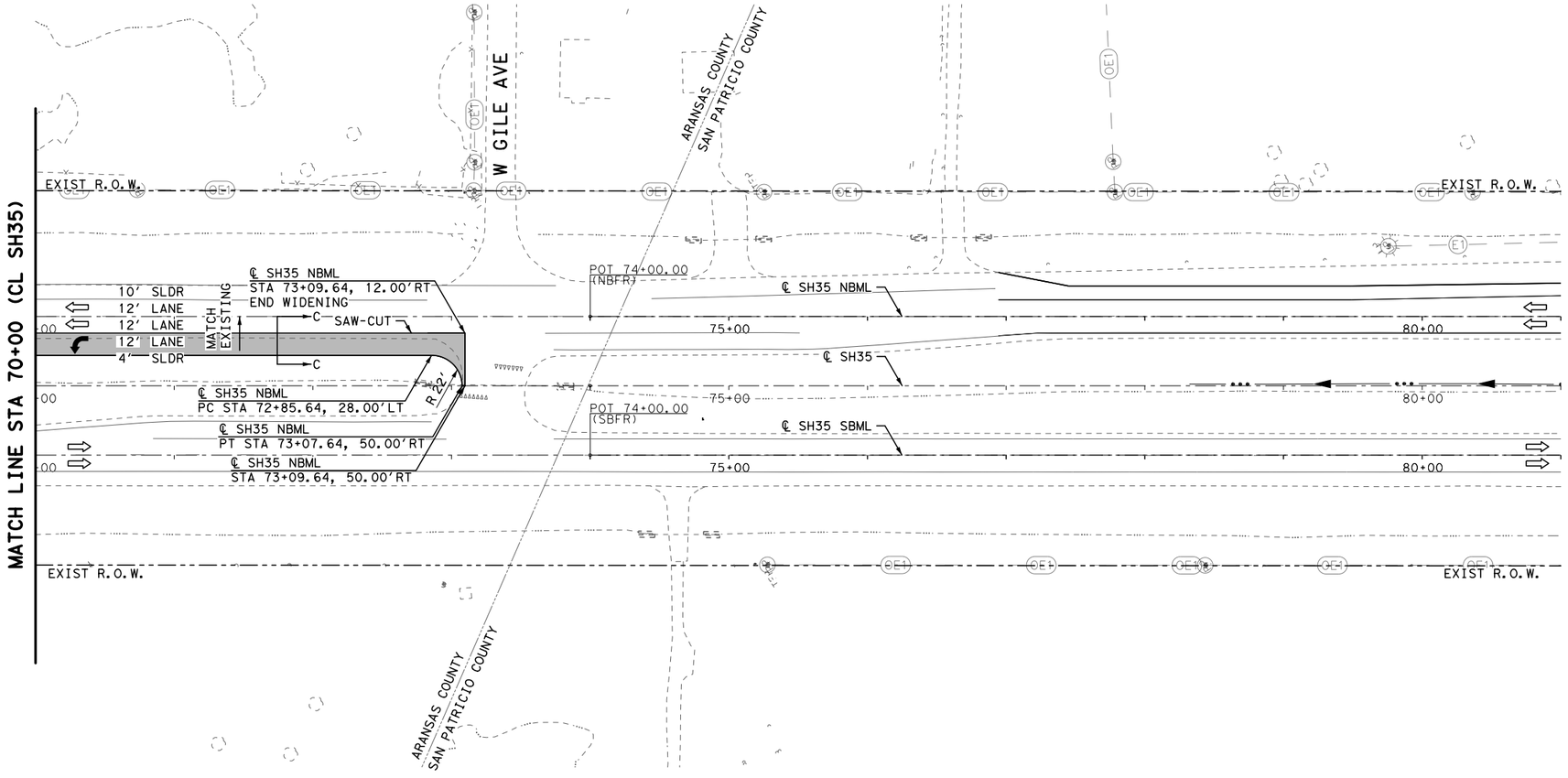

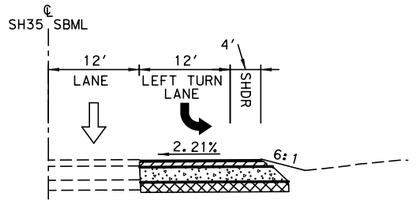

SECTION C-C
N.T.S.

0' 50' 100'(H)

SCALE IN FEET

ROADWAY LEGEND

- (A) SSTR
- (B) SSCB (MOD)
- (C) CRASH CUSHION ATTENUATOR
- (D) CABLE BARRIER
- (E) THRIE-BEAM TRANSITION
- (F) CONC CURB & GUTTER (TY II)
- (##) DRIVEWAY NUMBER
- CONC RIPRAP
- STONE RIPRAP
- PROPOSED ASPHALT PAVEMENT
- MILL AND LEVEL-UP ASPHALT PAVEMENT
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- ASPHALT DRIVEWAY
- DITCH FLOW LINE
- EXIST TRAVEL LANE
- PROP TRAVEL LANE
- MAILBOX (SINGLE)

NOTES:

1. SEE REMOVAL SHEETS FOR SAW-CUT LINE DETAILS. SAW-CUT IS SUBSIDIARY TO WIDENING AND REMOVAL.
2. LEVEL-UP SURFACE TO FOLLOW CORRESPONDING PROPOSED PROFILE AND CROSS-SLOPE.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ROADWAY PLAN
RESENDEZ CROSSOVER
STA 70+00 TO END

SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	144

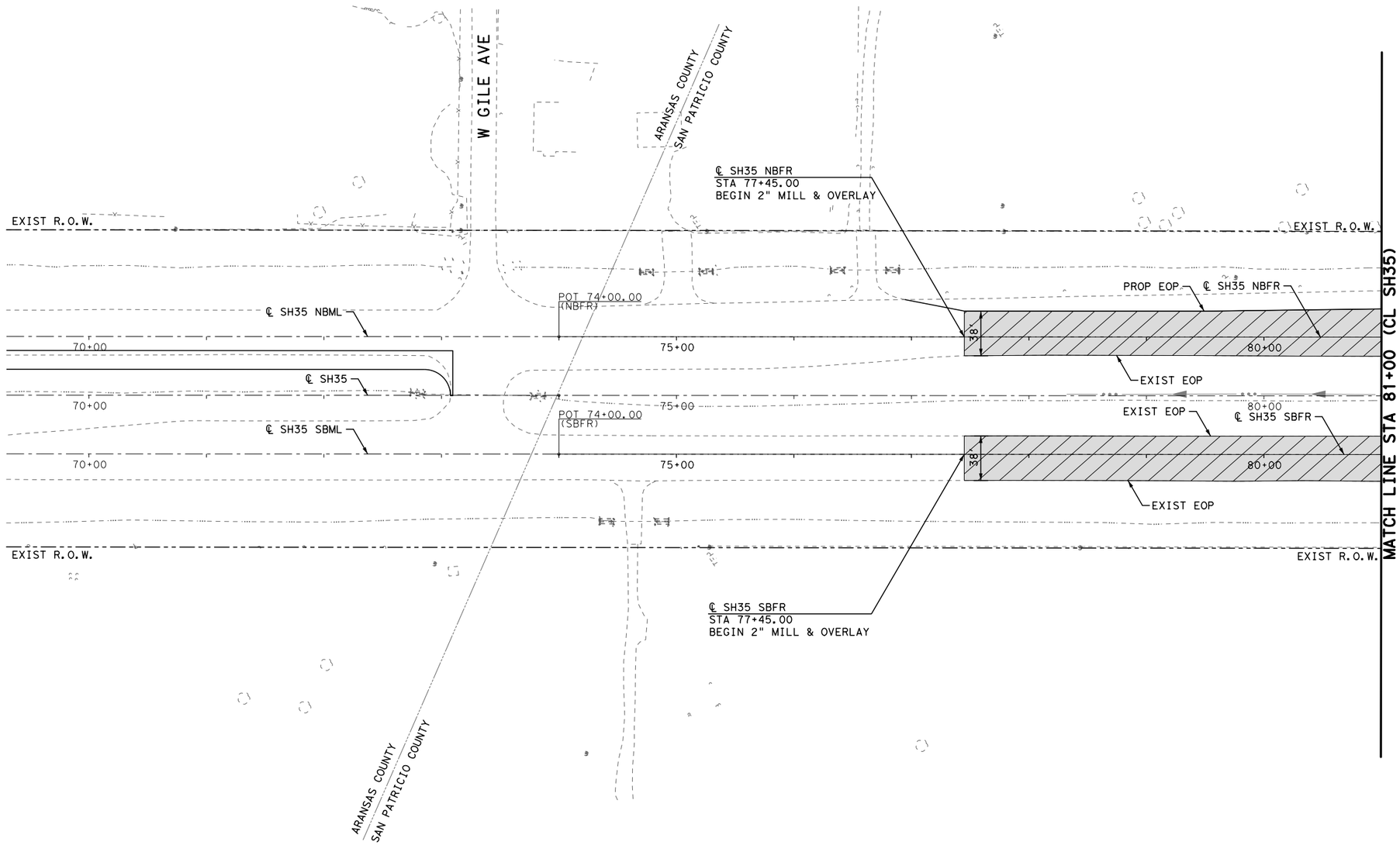
SCALE: 100.0000 ft / in.

0' 50' 100'(H)

SCALE IN FEET

MILL AND OVERLAY LEGEND

2" MILL & OVERLAY



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

MILL AND OVERLAY PLAN

PROJECT BEGIN TO STA 81+00

SHEET 1 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	145

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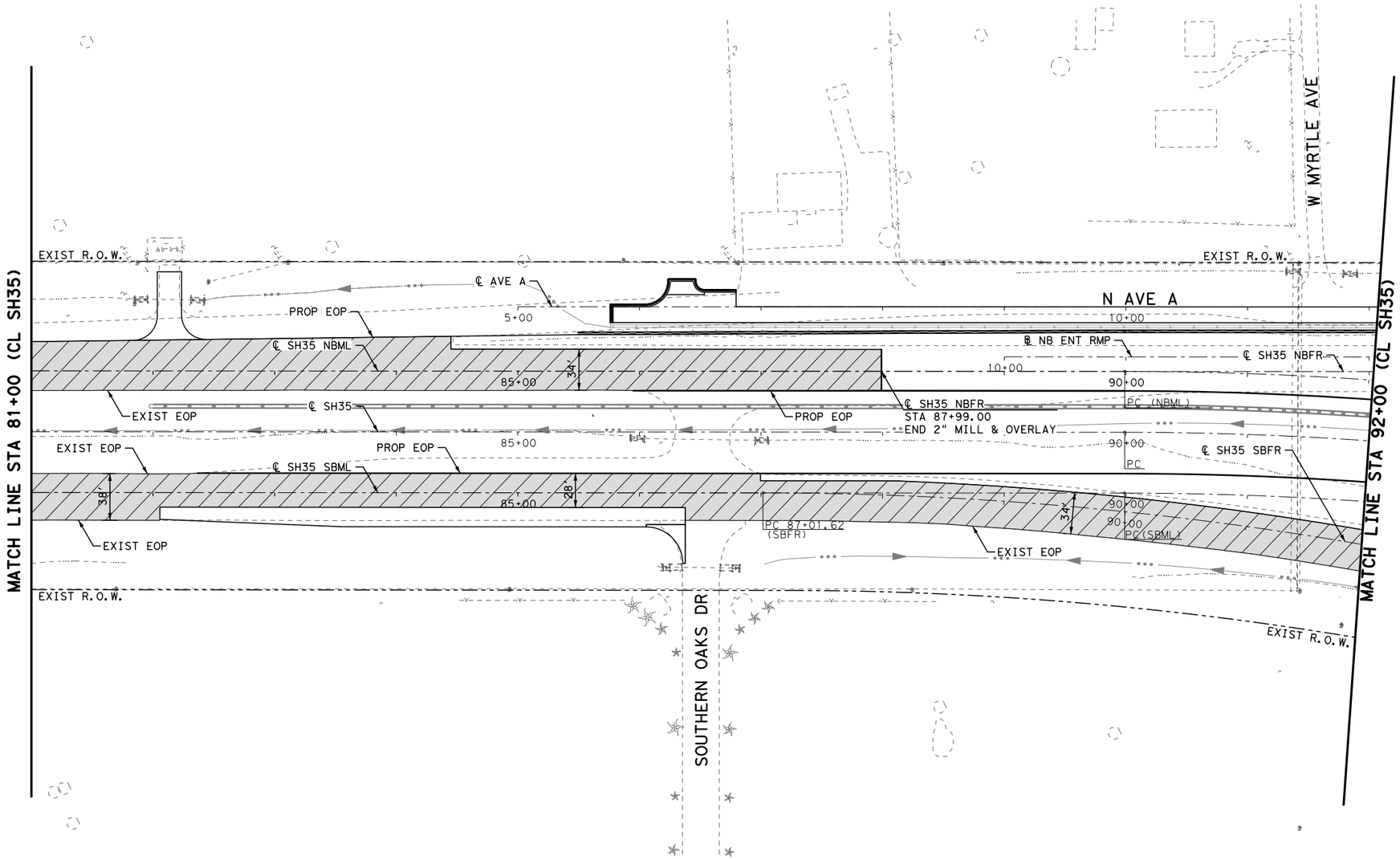
SCALE: 100.0000 ft / in.

0' 50' 100'(H)

SCALE IN FEET

MILL AND OVERLAY LEGEND

2" MILL & OVERLAY



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

MILL AND OVERLAY PLAN
STA 81+00 TO STA 92+00

SHEET 2 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	146

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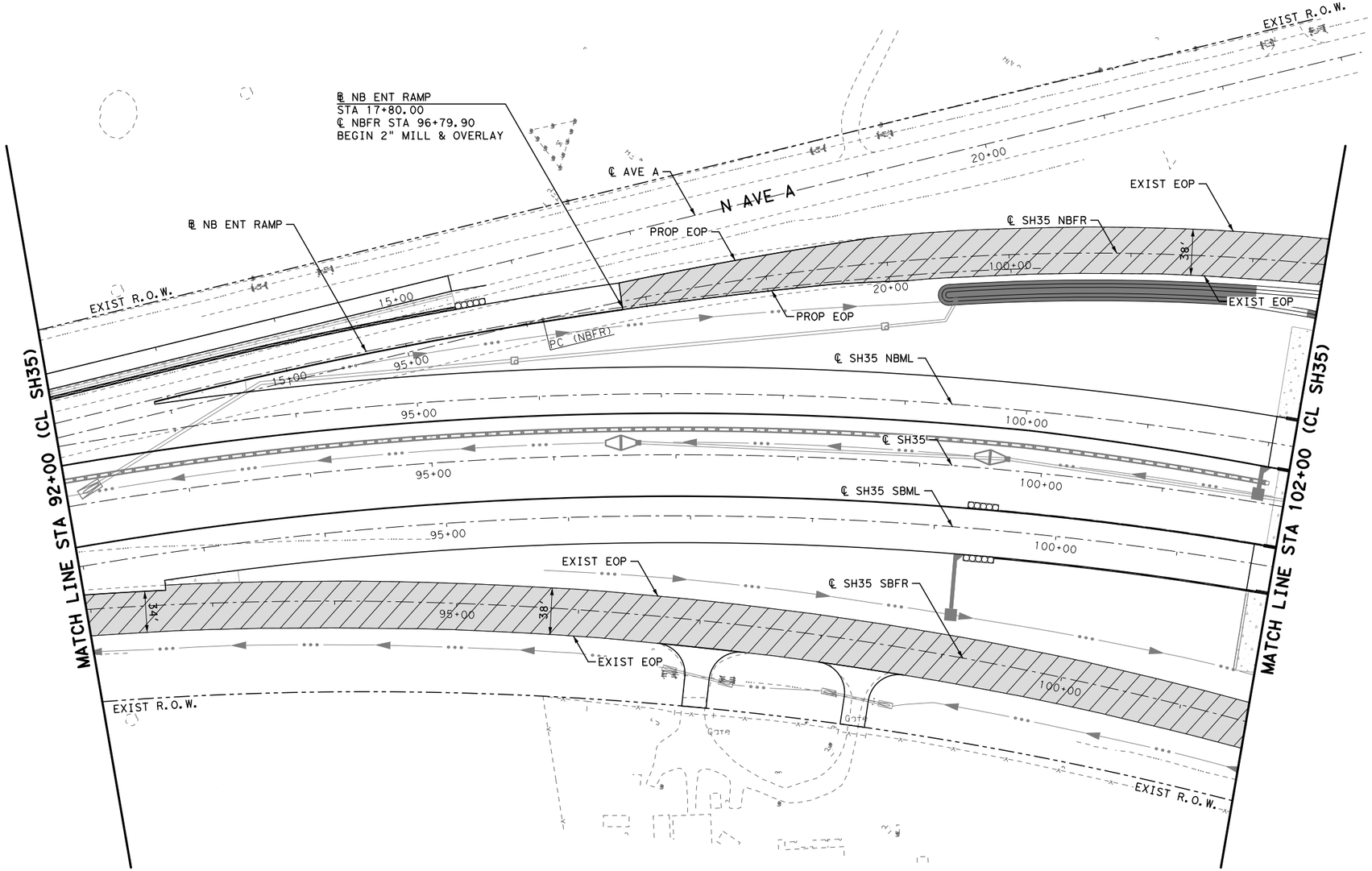
SCALE: 100.0000 ft / in.

0' 50' 100'(H)

SCALE IN FEET

MILL AND OVERLAY LEGEND

2" MILL & OVERLAY



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
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SH 35 AT OAK LANE

MILL AND OVERLAY PLAN

STA 92+00 TO STA 102+00

SHEET 3 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	147

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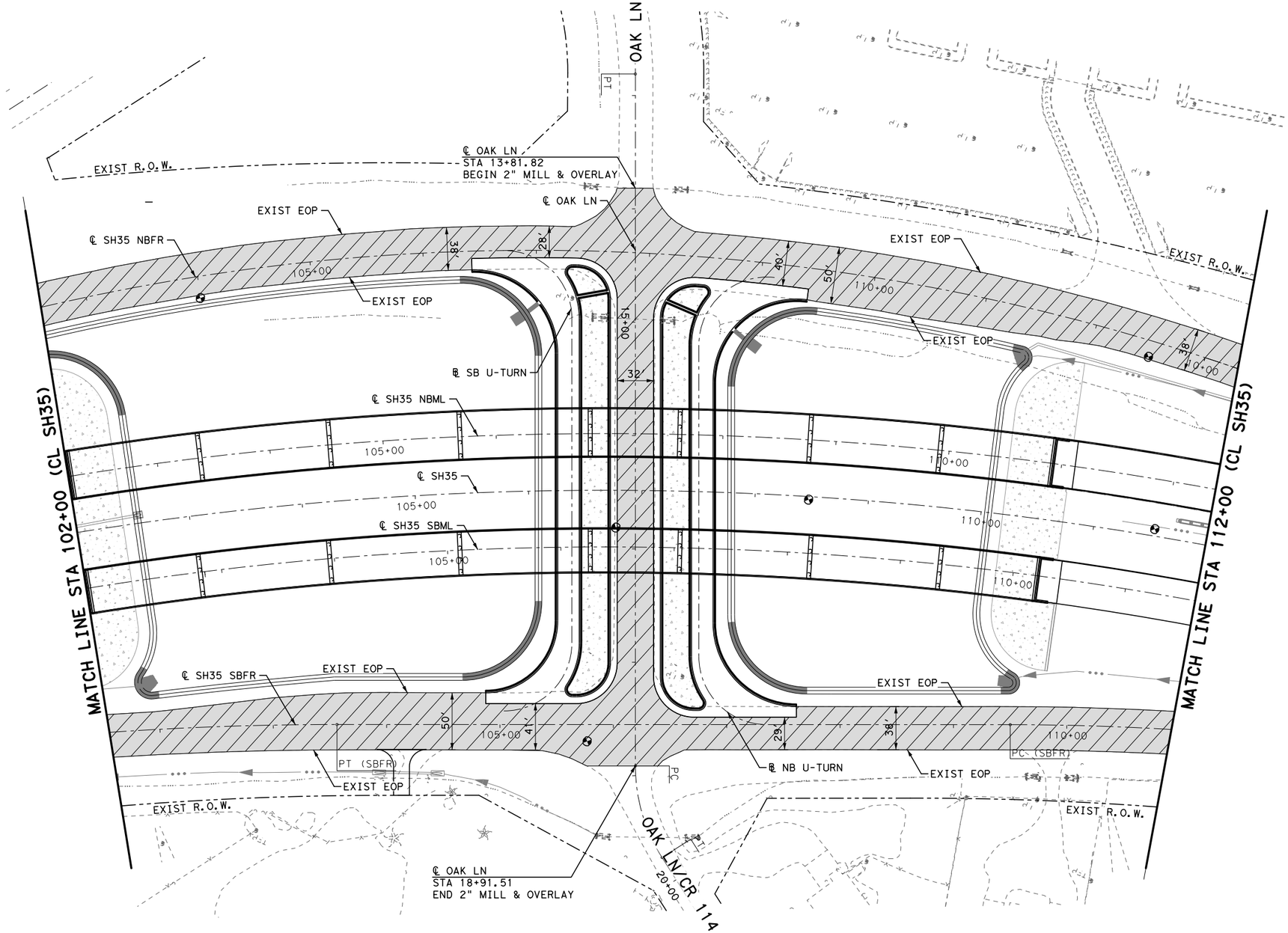
0' 50' 100'(H)

SCALE IN FEET

N

MILL AND OVERLAY LEGEND

2" MILL & OVERLAY



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

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Dallas, TX 75207
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TBPELS F-02263

SH 35 AT OAK LANE

MILL AND OVERLAY PLAN

STA 102+00 TO STA 112+00

SHEET 4 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	148

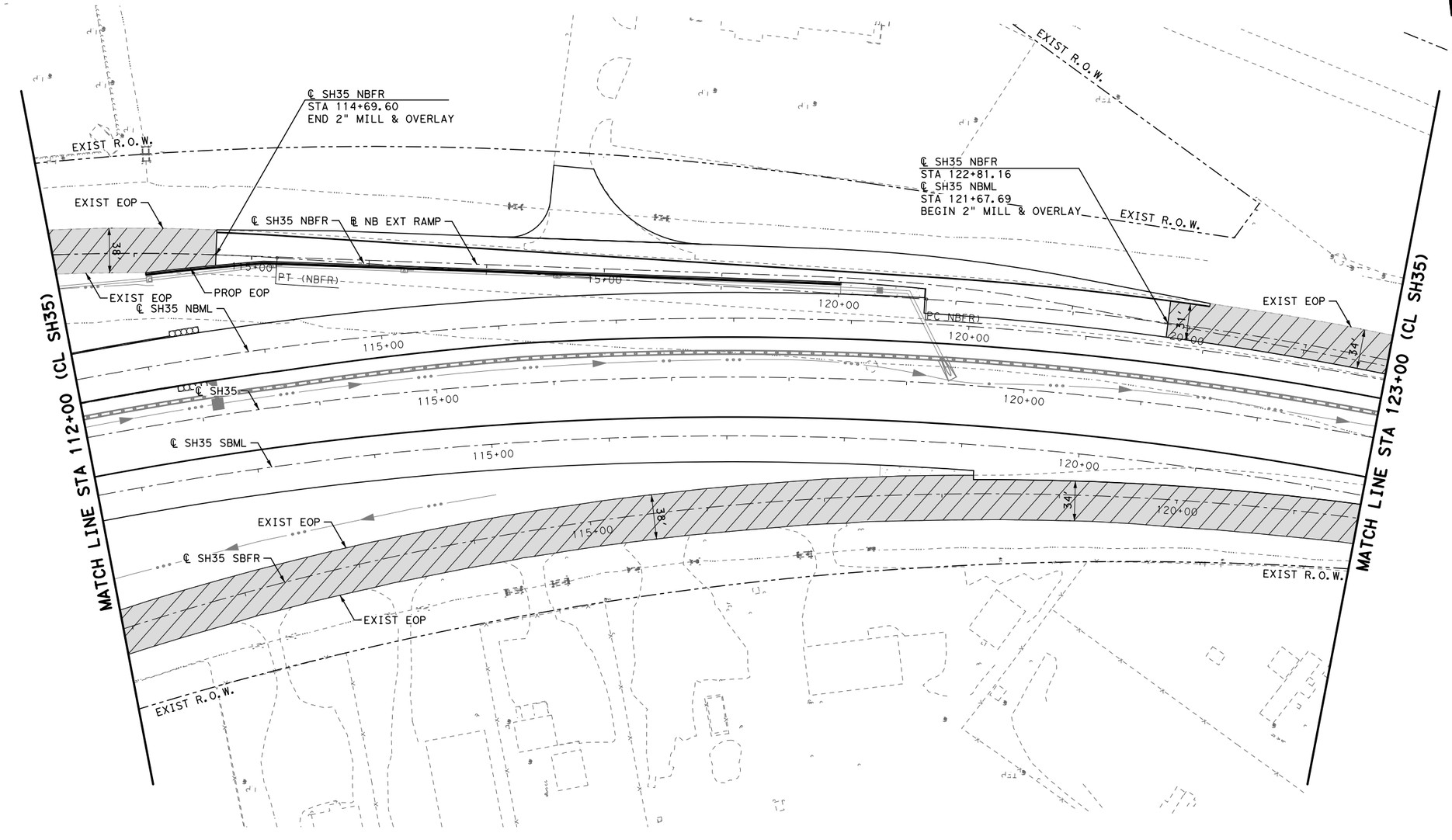
SCALE: 100.0000 ft / in.

0' 50' 100'(H)

SCALE IN FEET

MILL AND OVERLAY LEGEND

2" MILL & OVERLAY



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
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2777 N Stemmons Freeway, Suite 1600
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TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

MILL AND OVERLAY PLAN

STA 112+00 TO STA 123+00

SHEET 5 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	149

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SCALE: 100.0000 ft / in.

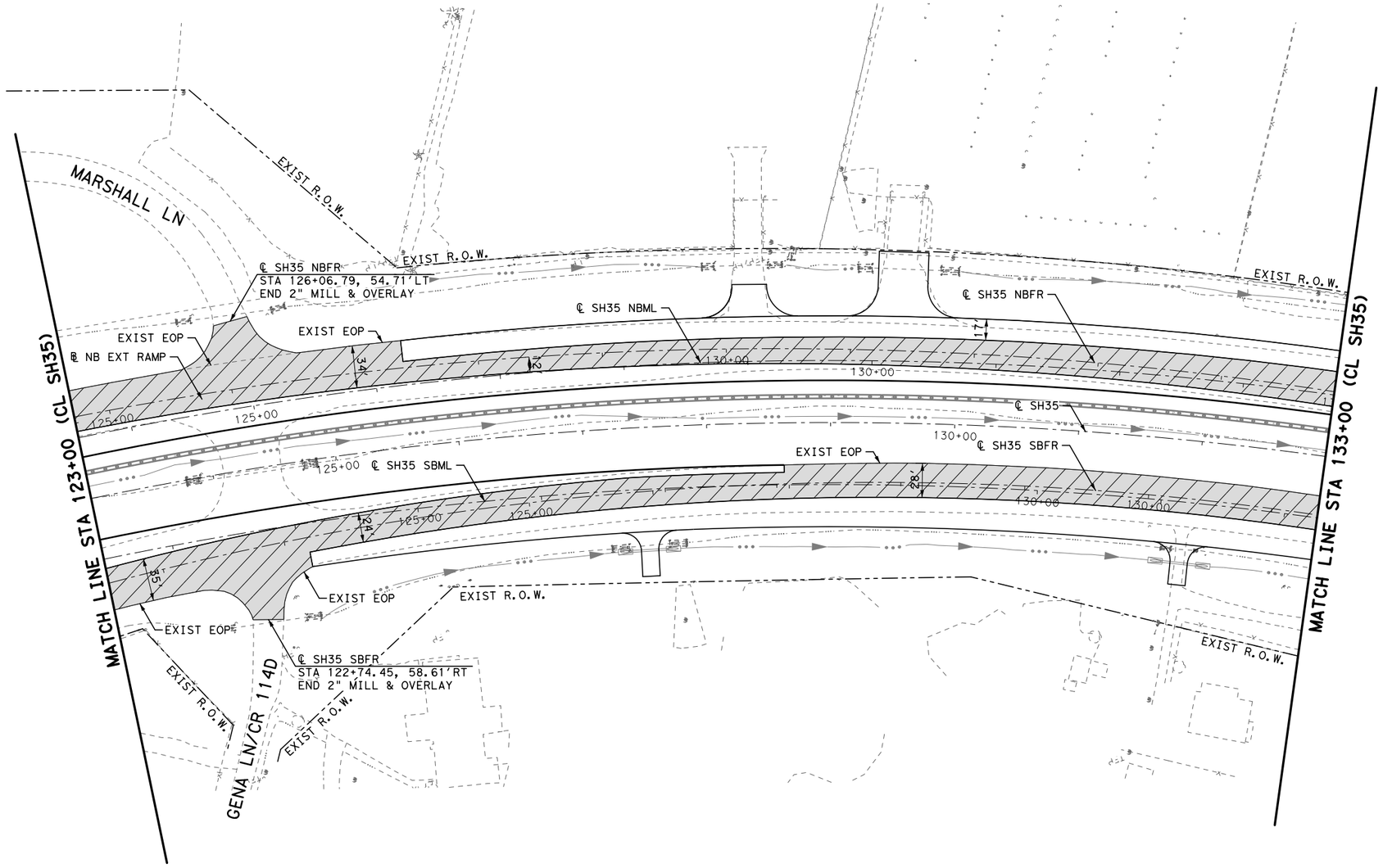
N

0' 50' 100'(H)

SCALE IN FEET

MILL AND OVERLAY LEGEND

2" MILL & OVERLAY



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
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TBPELS F-02263

SH 35 AT OAK LANE

MILL AND OVERLAY PLAN

STA 123+00 TO STA 133+00

SHEET 6 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	150

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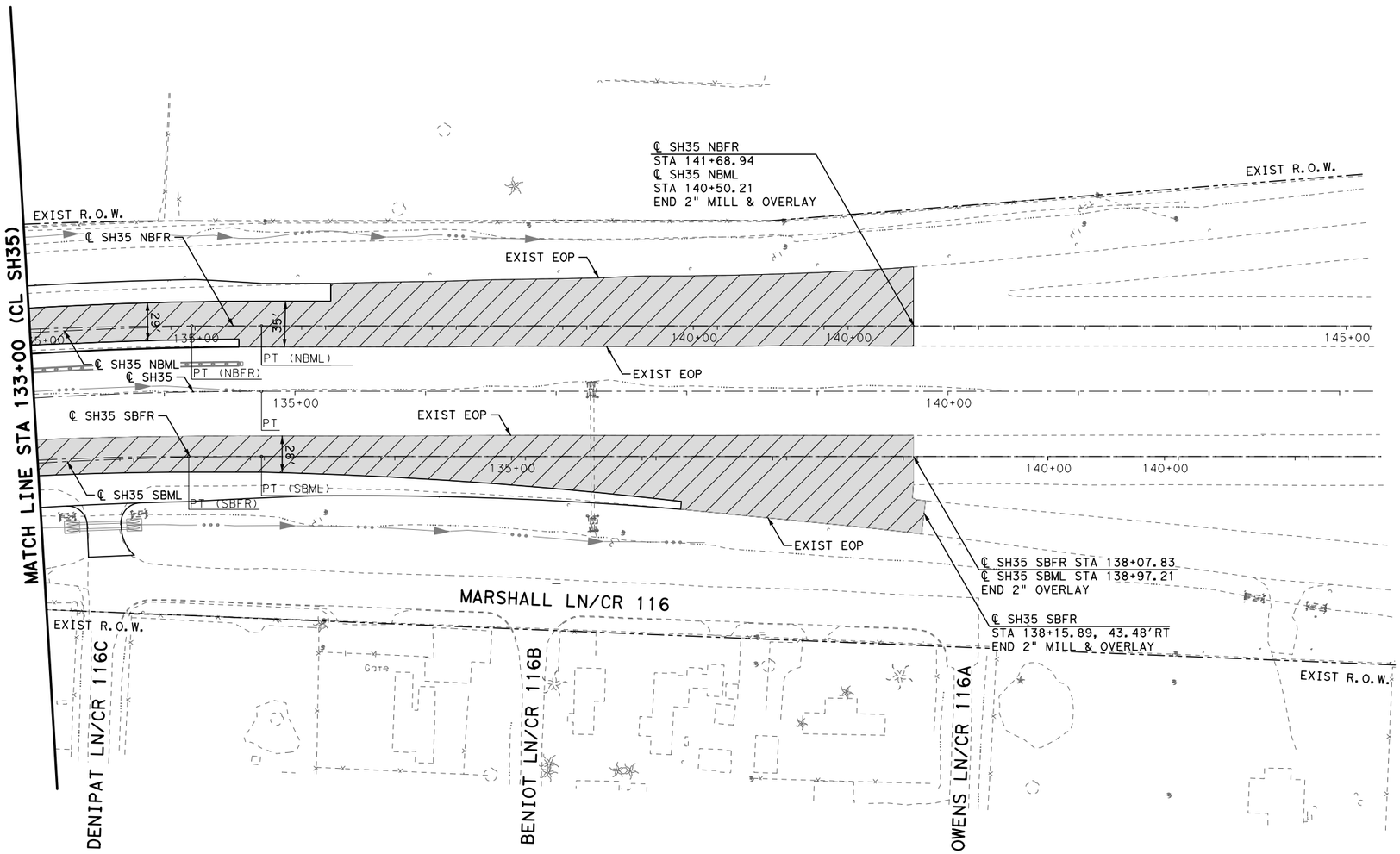

N

0' 50' 100'(H)

SCALE IN FEET

MILL AND OVERLAY LEGEND

2" MILL & OVERLAY

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

MILL AND OVERLAY PLAN
STA 133+00 TO END PROJECT

SHEET 7 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	151

DATE: 4/27/2021 TIME: 5:40:07 PM
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PATH: \\wspdw04tcso1\TCS_pdf_work_dir\12307018197 6_52\SH35_034_807-OVERLAY-07.dgn

SCALE: 100.0000 ft / in.

DITCH SBFR-A						
ALIGNMENT	STATION	OFFSET (FT)	FLOWLINE (FT)	S1:1	W (FT)	S2:1
SH35 SBFR	87+01.62	59.02	21.14	15	4	6
SH35 SBFR	88+50.00	49.46	19.27	6	4	6
SH35 SBFR	91+02.61	38.12	20.60	4	4	4
SH35 SBFR	92+00.00	35.11	20.97	4	4	4
SH35 SBFR	96+72.00	40.72	21.56	6	6	12
SH35 SBFR	97+33.00	51.26	21.65	10	6	12
SH35 SBFR	98+10.00	45.22	21.76	8	6	8
SH35 SBFR	98+66.00	48.96	21.82	9.5	6	10
SH35 SBFR	103+83.00	41.98	22.48	6	6	6
SH35 SBFR	104+45.00	43.16	22.54	6	6	4.7
SH35 SBFR	105+00.00	55.23	22.57	11	0	6

DITCH NBFR-A						
ALIGNMENT	STATION	OFFSET (FT)	FLOWLINE (FT)	S1:1	W (FT)	S2:1
SH35 NBML	125+37.00	79.04	20.32	6	4	8
SH35 NBML	127+20.00	81.47	19.68	6	6	8
SH35 NBML	128+65.00	79.85	19.23	6	6	8
SH35 NBML	129+30.00	77.43	19.00	6	6	8
SH35 NBML	129+85.00	71.44	18.43	6	6	6
SH35 NBML	130+70.00	72.21	18.03	6	6	6
SH35 NBML	133+00.00	71.83	16.86	6	6	6
SH35 NBML	135+00.00	69.28	14.46	6	6	5
SH35 NBML	136+04.00	73.20	13.71	6	6	8
SH35 NBML	138+00.00	66.27	13.23	8	0	10

DITCH SBFR-B						
ALIGNMENT	STATION	OFFSET (FT)	FLOWLINE (FT)	S1:1	W (FT)	S2:1
SH35 SBML	124+10.00	78.26	19.021	10	4	4
SH35 SBML	125+21.50	53.02	18.542	4	4	4
SH35 SBML	126+54.00	49.86	18.008	4	4	4
SH35 SBML	127+16.00	48.64	17.602	4	4	4
SH35 SBML	129+49.00	48.41	16.251	4	4	6
SH35 SBML	131+00.00	49.19	15.441	4	4	15
SH35 SBML	131+41.00	49.23	15.078	4	4	8
SH35 SBML	132+40.00	50.11	14.428	4	4	9
SH35 SBML	133+10.00	50.92	13.801	4	4	10
SH35 SBML	136+50.00	65.57	12.166	6	6	13

REV	DESCRIPTION	DATE	INIT

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2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

DITCH TABLES

N.T.S.

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	152

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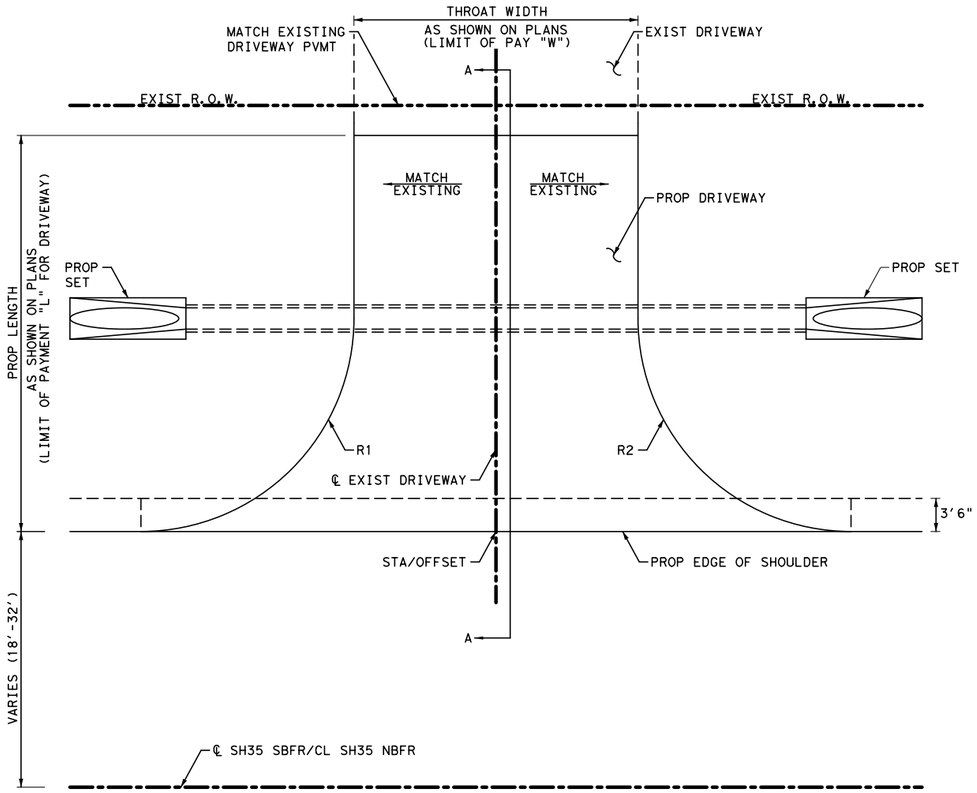
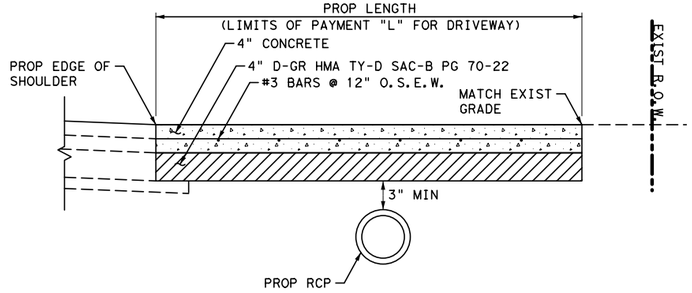
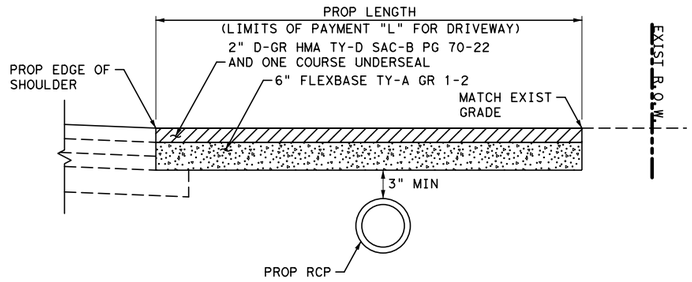


DRIVEWAYS
(N.T.S.)

DRIVEWAYS WILL CONSIST OF: BLADING AND RESHAPING THE SUBGRADE, WORKING DITCH SLOPES UPSTREAM AND DOWNSTREAM TO ALLOW POSITIVE DRAINAGE OF ADJACENT DITCHES, PROVIDING ADDITIONAL EMBANKMENT NECESSARY TO ACHIEVE PROPER SUBGRADE WIDTH, PLACEMENT OF PAVEMENT STRUCTURE AS SHOWN IN SECTION A-A. ALL WORK IS CONSIDERED SUBSIDIARY TO ITEM 530.



SECTION A-A
EXISTING CONCRETE DRIVEWAYS
(N.T.S.)

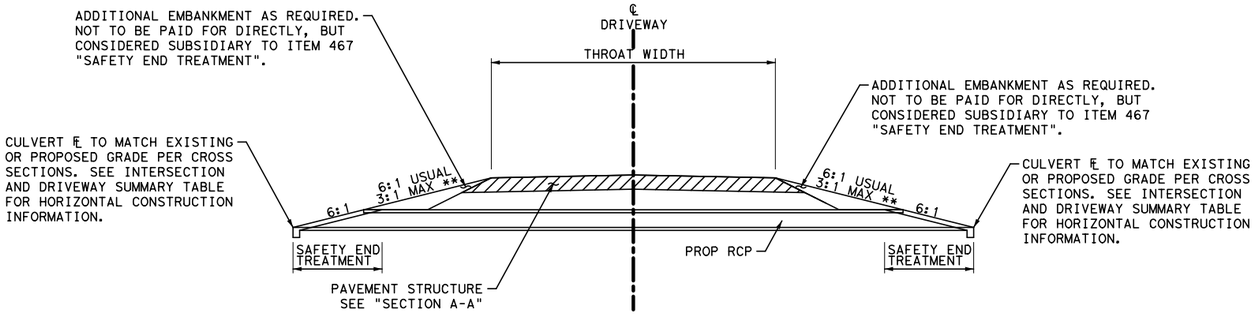


SECTION A-A
EXISTING ASPHALT DRIVEWAYS
(N.T.S.)

NOTES:

1. SEE PLAN LAYOUTS AND INTERSECTION AND DRIVEWAY SUMMARY TABLE FOR ADDITIONAL DETAILS AND DIMENSIONS.
2. MIMIMUM DRIVEWAY WIDTH IS 10' FOR DRIVEWAY RECONSTRUCTION.
3. DRIVEWAY PAVEMENT WILL BE CONSTRUCTED WITH FINAL ROADWAY SURFACE. ALL WORK WILL BE PAID UNDER ITEM 530.
4. ADDITIONAL GRADING OF DITCHES ADJACENT TO DRIVEWAY PIPE MAY BE REQUIRED TO PLACE PIPE AT PROPER DEPTH BELOW PROPOSED DRIVEWAY AND MAINTAIN POSITIVE DRAINAGE.
5. INSTALL PROP RCP AND SET ONLY AS SHOWN ON PLAN LAYOUTS. NOT ALL DRIVEWAYS HAVE PROP RCP.

** 3:1 MAX SLOPES TO BE PROTECTED BY SOIL RETENTION BLANKETS. SEE PLANS FOR LOCATIONS.



DRIVEWAY TYPICAL SECTION
(N.T.S.)

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

DRIVEWAY DETAILS

N.T.S. SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	153

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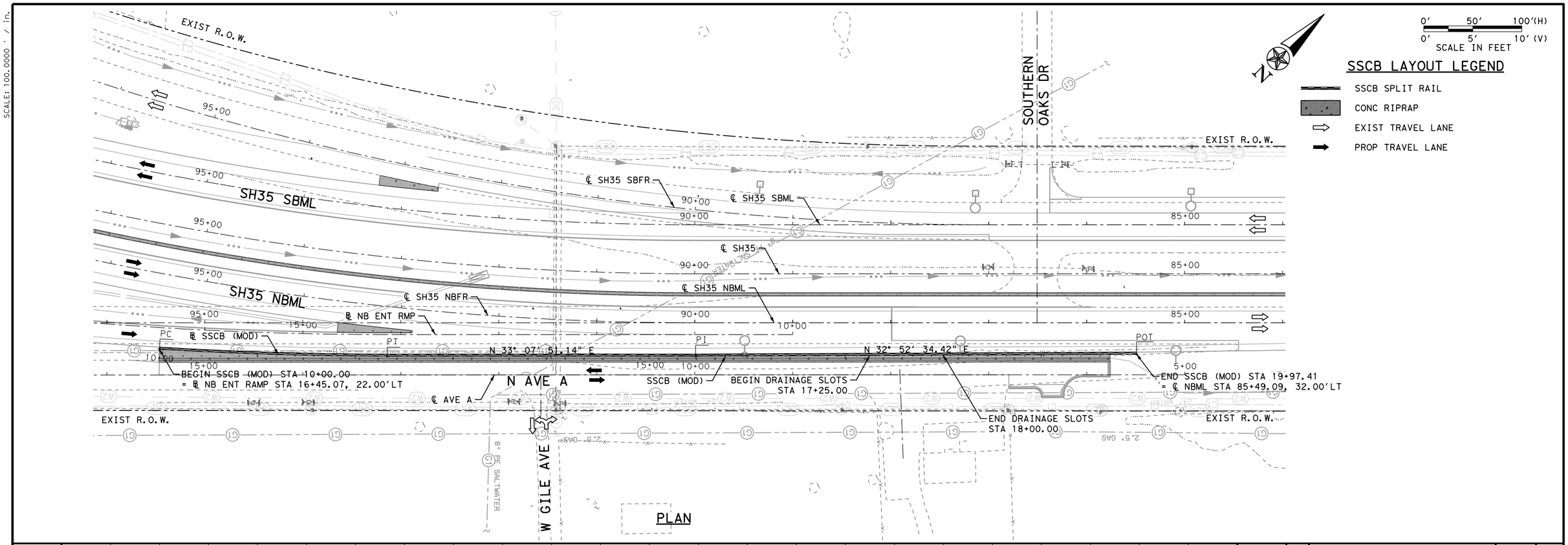
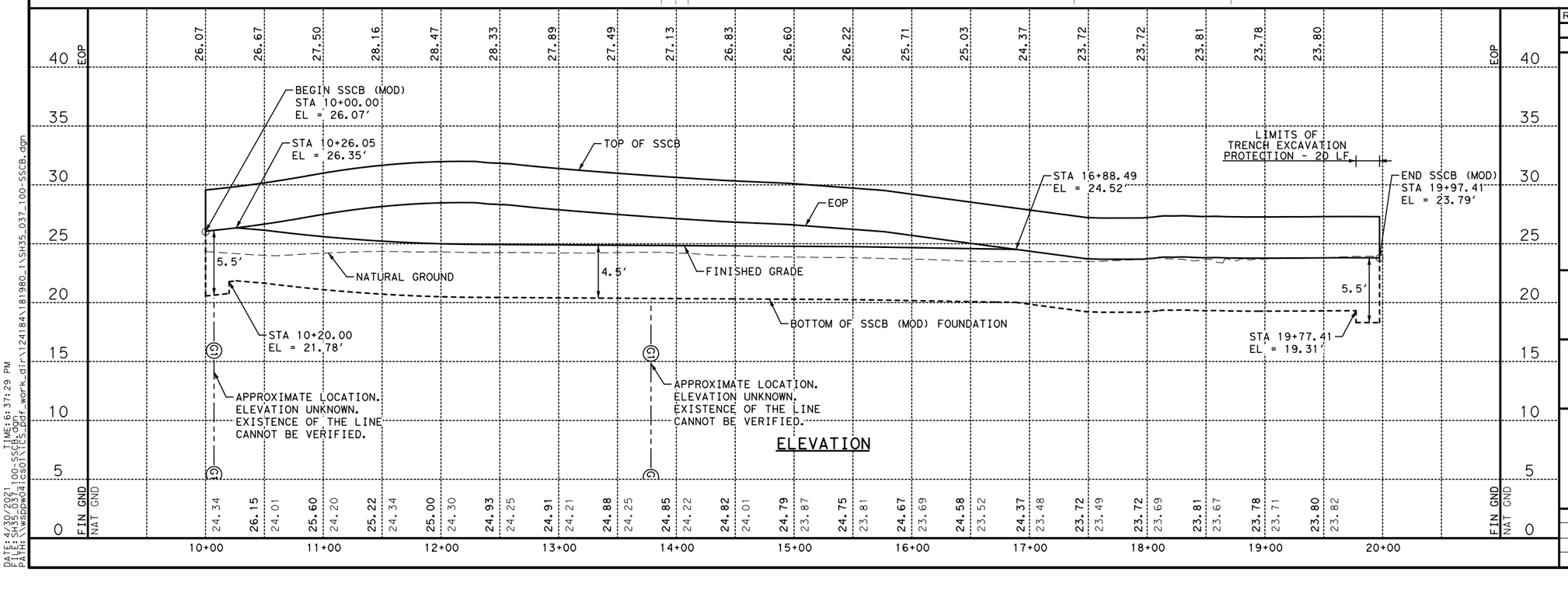


0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

SSCB LAYOUT LEGEND

- SSCB SPLIT RAIL
- CONC RIPRAP
- EXIST TRAVEL LANE
- PROP TRAVEL LANE



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

SSCB (MOD) LAYOUT

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	154

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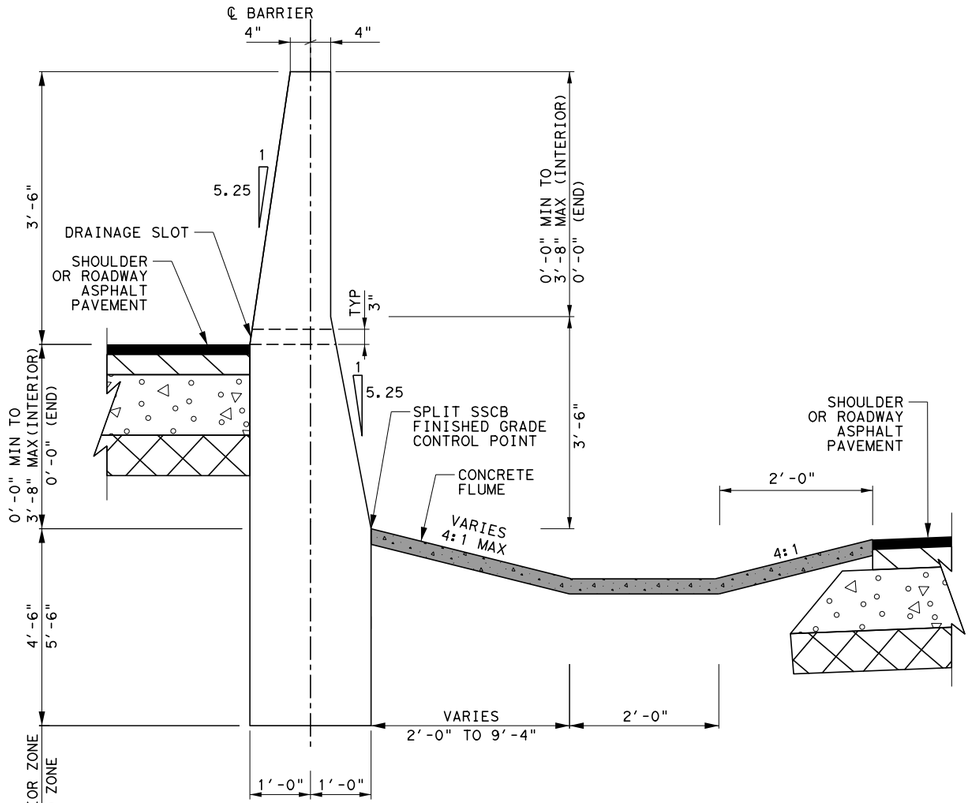
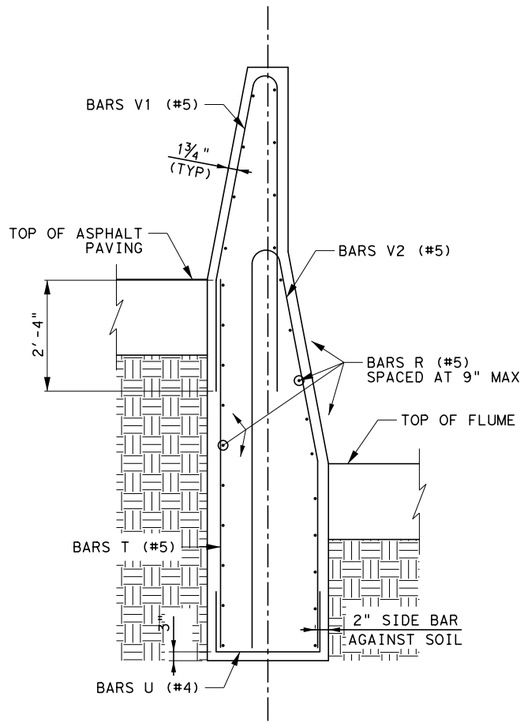
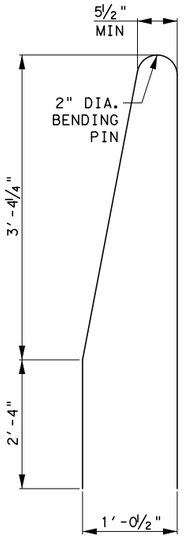


TYPICAL SECTION

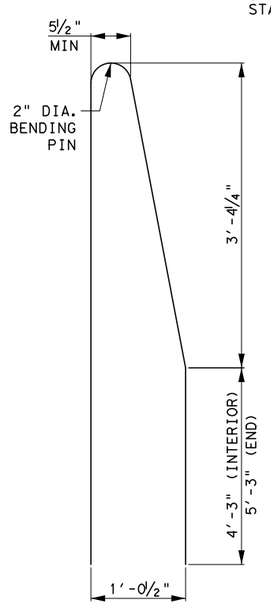
STA 10+00.00 TO 10+20.00 (END ZONE)
STA 10+20.00 TO 19+77.41 (INTERIOR ZONE)
STA 19+77.41 TO 19+97.41 (END ZONE)



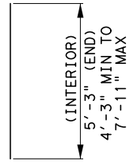
SECTION A-A



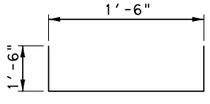
BAR V1



BAR V2



BAR T



BAR U

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

NOTES:

1. ALL CONCRETE SHALL BE CLASS C, F'C = 3600 PSI, UNLESS OTHERWISE SPECIFIED.
2. ALL REINFORCING STEEL SHALL BE GRADE 60, UNLESS OTHERWISE SPECIFIED.
3. BAR SPLICES SHALL BE A MINIMUM OF 24 TIMES THE NOMINAL DIAMETER OF THE BAR.
4. ALL EXPOSED EDGES SHALL HAVE A ¾" CHAMFER.
5. DRAINAGE SLOT LOCATIONS (12'-0" C-C MIN. SPACING) ARE SHOWN ON "SPLIT SSCB LAYOUT" (SHEET NO. 148). DRAINAGE SLOT HEIGHTS ON THE SSCB MAY BE INCREASED TO A MAXIMUM OF 5 INCHES, WITHOUT GEOMETRIC CHANGES TO THE BARRIER FACE. CONTRACTOR TO ENSURE THE BOTTOM OF DRAIN SLOT MATCHES TOP OF PAVEMENT FOR PROPER DRAINAGE.
6. THE EXPANSION JOINT IS ONLY ON BARRIER ABOVE TOP OF FLUME. BELOW THE FLUME, JOINT IS SET AS CONSTRUCTION JOINT. THE JOINTS ARE SPACED AT 100'-0" MAX.
7. BID PRICE PER LINEAR FOOT OF SSCB(MOD) INCLUDES ALL THE CONCRETE FOUNDATION, REINFORCEMENT, DRAINAGE SLOT, AND EXPANSION JOINT MATERIAL.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
CHENHUA FU
96101
LICENSED PROFESSIONAL ENGINEER

Chenhua Fu
4/26/2021

STATE OF TEXAS
HOSAM AL.T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER

04-26-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

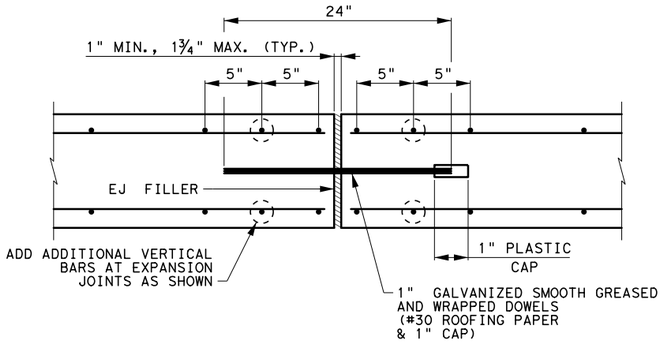
SH 35 AT OAK LANE

SSCB (MOD)

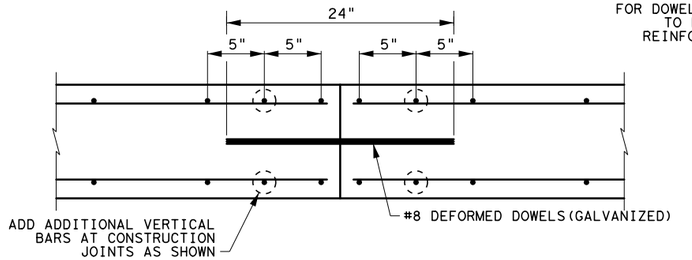
N.T.S.

SHEET 1 OF 2

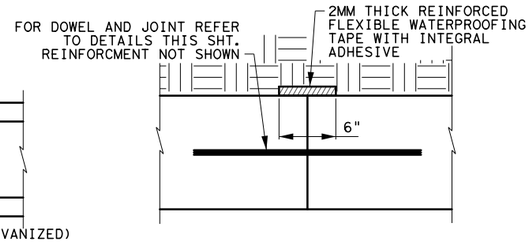
FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	155



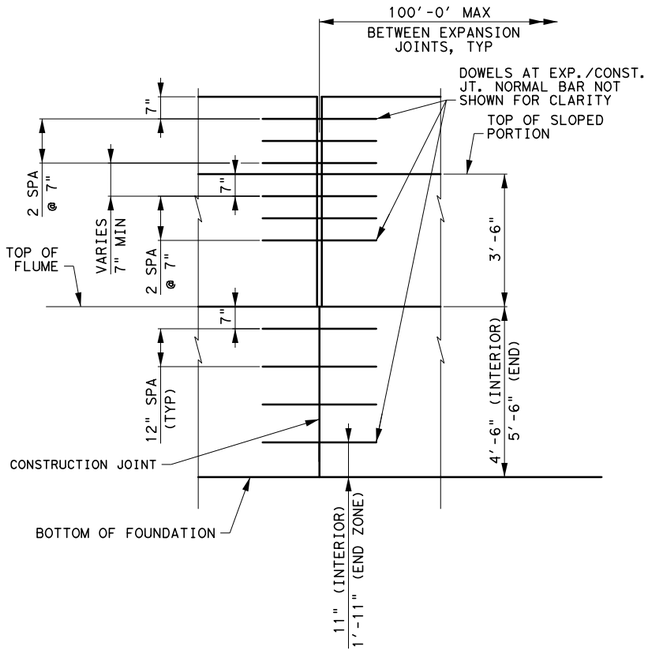
EXPANSION JOINT SECTION



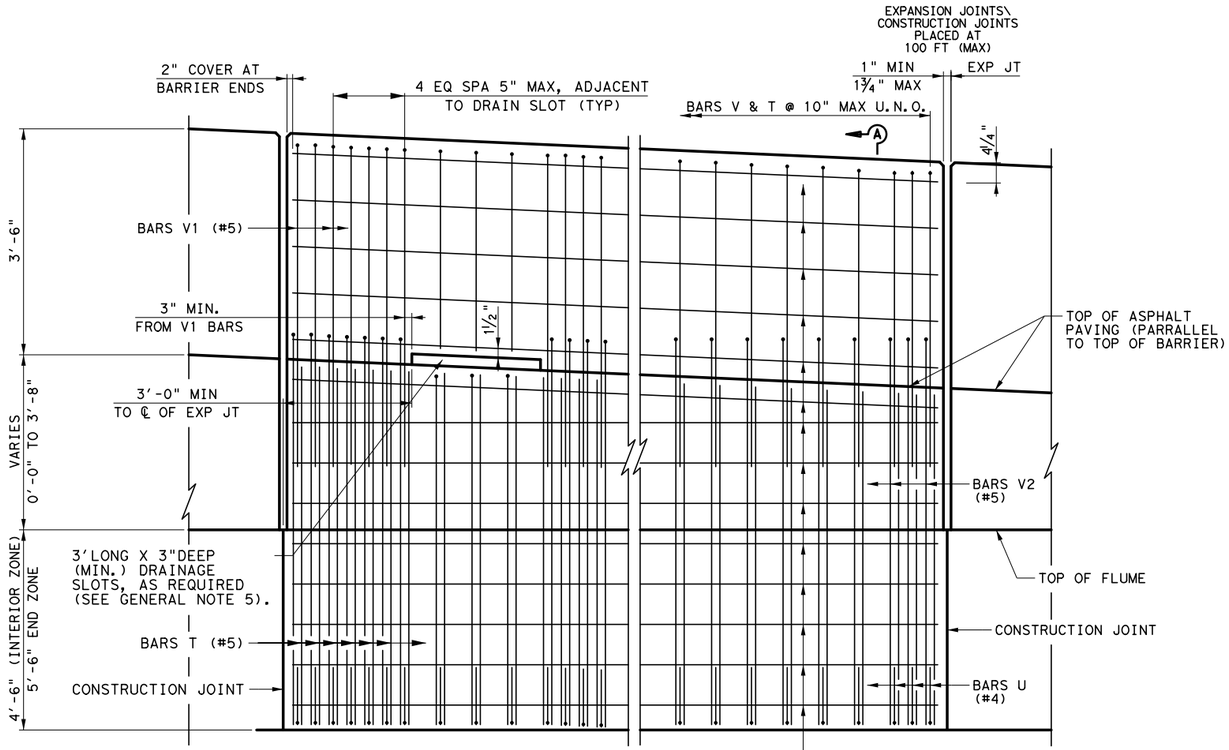
TYPICAL CONSTRUCTION JOINT SECTION



TYPICAL EXPANSION JOINT
W/ EARTH RETAINING



TYPICAL EXPANSION JOINT,
CONST JOINT ELEVATION DETAIL



NOTE:
REINFORCEMENT AROUND THE DRAINAGE SLOTS MAY BE CUT OR BENT TO ACCOMMODATE THE EDGE AND TOP CLEARANCES.

ROADWAY ELEVATION OF BARRIER
NTS

REV	DESCRIPTION	DATE	INIT

CHENHUA FU
96101
LICENSED PROFESSIONAL ENGINEER
4/26/2021

HOSAM ALT. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-26-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

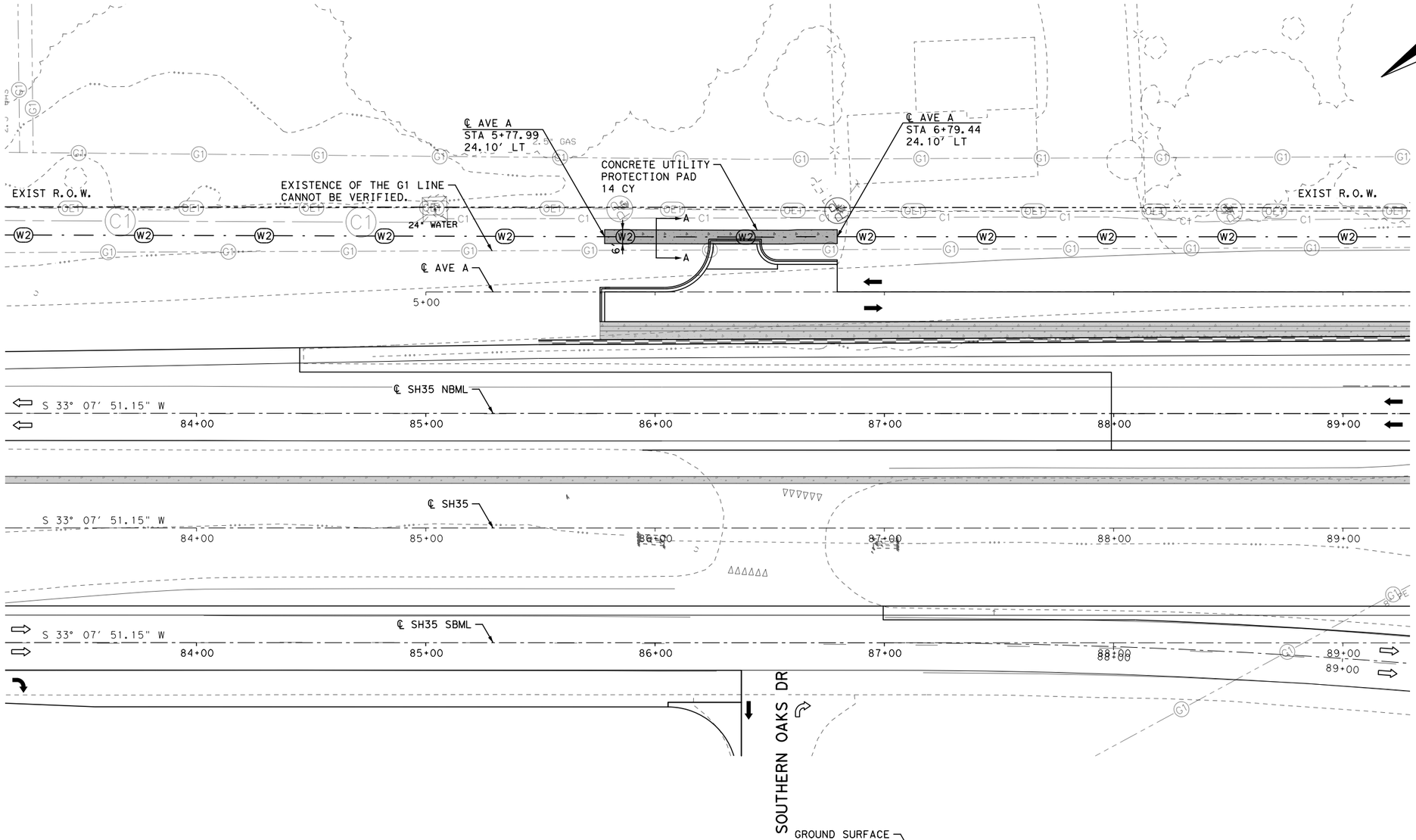
SH 35 AT OAK LANE

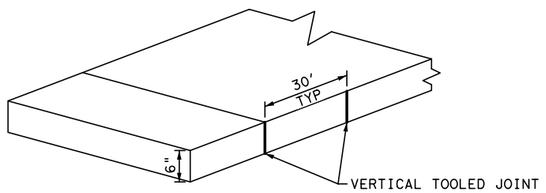
SSCB (MOD)

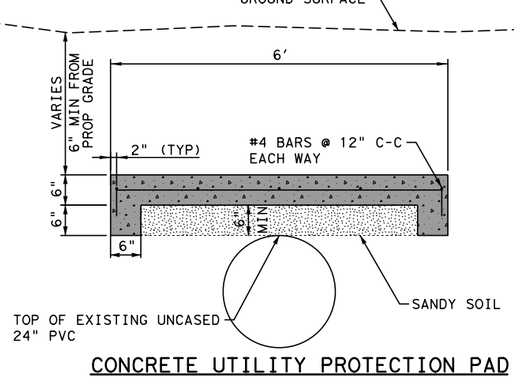
N.T.S.

SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	156







CONCRETE UTILITY PROTECTION PAD

SECTION A-A

(N.T.S.)

NOTES:

1. CONTRACTOR SHALL PROVIDE VERTICAL TOOLED JOINTS, 3/16" TO 1/4" WIDE, 3/4" DEEP, AT 30' CENTERS.
2. EXCAVATION, MISCELLANEOUS CONSTRUCTION ACTIVITIES, AND CAPPING/REMOVAL OF EXISTING VENT SHALL BE SUBSIDIARY TO ITEM 420 6144.
3. CONTRACTOR SHALL VERIFY LOCATION OF PRODUCT LINE BEFORE COMMENCING CONCRETE UTILITY PROTECTION PAD CONSTRUCTION.
4. CONTRACTOR SHALL EXERCISE SUCH REASONABLE CARE AS MAY BE NECESSARY FOR THE PROTECTION OF ANY UNDERGROUND FACILITY IN OR NEAR THE EXCAVATION AREA. USE EXTREME CAUTION ALONG WITH HAND DIGGING OR OTHER SOFT DIGGING METHODS, APPROVED BY THE ENGINEER.
5. THE CONTRACTOR SHALL COORDINATE WITH THE SAN PATRICIO MUNICIPAL WATER DISTRICT (SPMWD) PRIOR TO CONSTRUCTING THE CONCRETE CAP.

0' 25' 50'(H)

SCALE IN FEET

UTILITIES LEGEND

COMMUNICATION
QL"C"/"D"
- (C1) FRONTIER (TELE)
- (C2) AT&T (FO/DUCT)
- (C3) FRONTIER (FO/DUCT)
- (C4) CABLE ONE (CATV)
- (C5) AEP TEXAS (FO/DUCT)
- (C6) FIBERLIGHT (FO/DUCT)

QL"B"
- C1 FRONTIER (TELE)
- C2 AT&T (FO/DUCT)
- C3 FRONTIER (FO/DUCT)
- C4 CABLE ONE (CATV)
- C5 AEP TEXAS (FO/DUCT)
- C6 FIBERLIGHT (FO/DUCT)

ELECTRIC/POWER
QL"C"/"D"
- (E1) AEP TEXAS
- (E2) TxDOT
- (TS1) TxDOT (TRAFFIC SIGNAL)

QL"B"
- E1 AEP TEXAS
- E2 TxDOT
- TS1 TxDOT (TRAFFIC SIGNAL)

PIPELINES
QL"C"/"D"
- (G1) BRINKERHOFF OIL, INC.*

QL"B"
- G1 BRINKERHOFF OIL, INC.*

POTABLE WATER
QL"C"/"D"
- (W1) CITY OF ARANSAS PASS
- (W2) SAN PATRICIO WATER DISTRICT

QL"B"
- W1 CITY OF ARANSAS PASS
- W2 SAN PATRICIO WATER DISTRICT

CONCRETE UTILITY PROTECTION PAD

EXIST TRAVEL LANE

PROP TRAVEL LANE

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
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Texas Department of Transportation

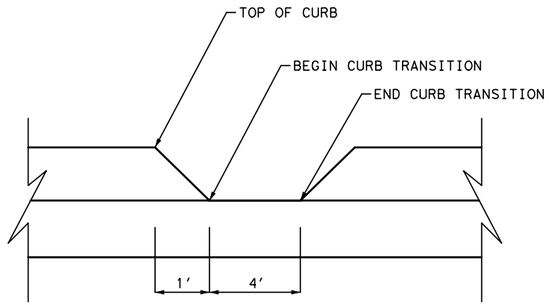
WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

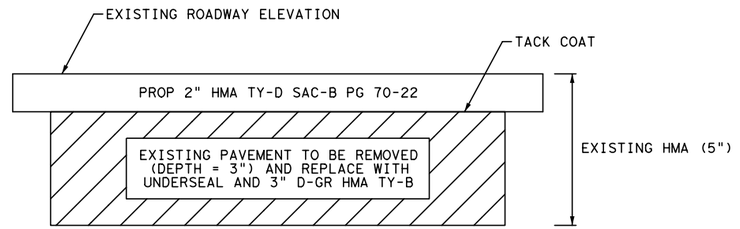
UTILITY PROTECTION PLAN

SHEET 1 OF 1

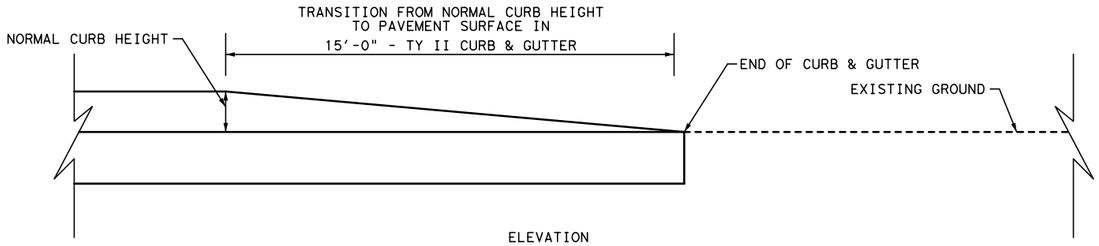
FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	157



ELEVATION
CONCRETE CURB SLOT DETAIL
(N.T.S.)



FLEXIBLE PAVEMENT STRUCTURE REPAIR DETAIL (3")
FOR MILLED SECTIONS
(N.T.S.)



ELEVATION
CURB END TRANSITION
(N.T.S.)

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
KAMERON K. RABURN
139952
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

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TBPELS F-02263

SH 35 AT OAK LANE

MISCELLANEOUS ROADWAY DETAILS

N.T.S. SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	158

DATE: 3/4/2021
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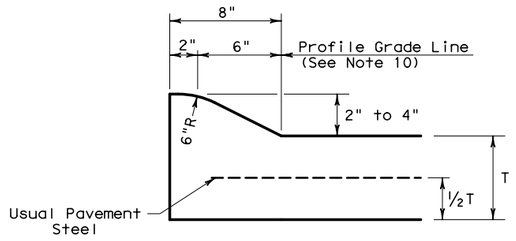
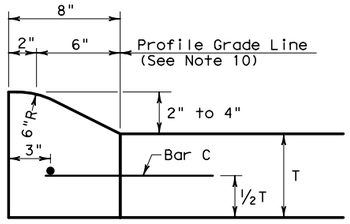
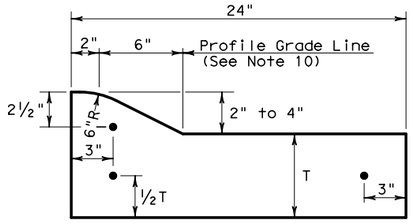


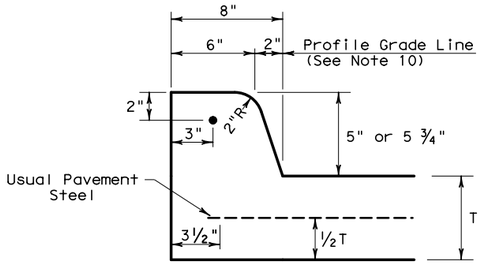
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



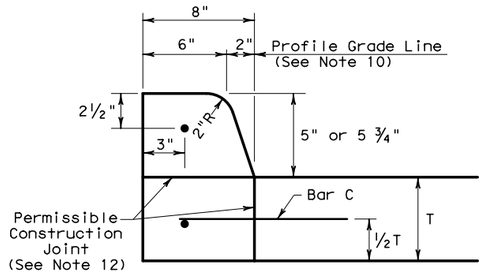
TYPE I CURB
2" - 4" HEIGHT



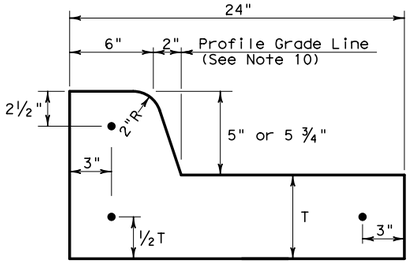
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



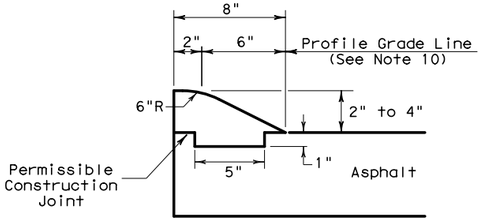
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



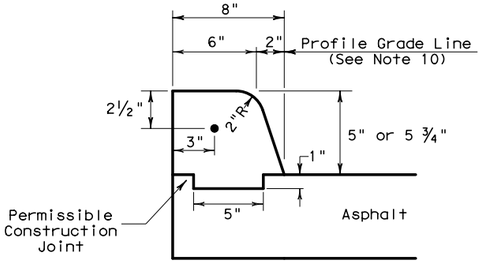
TYPE II CURB
5" - 5 ¾" HEIGHT



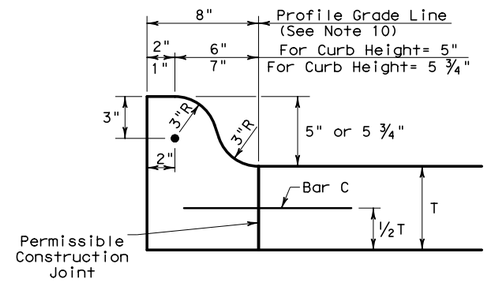
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



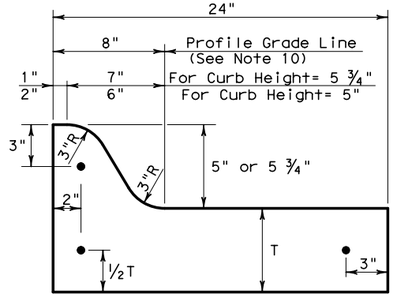
TYPE III CURB (KEYED)
2" - 4" HEIGHT



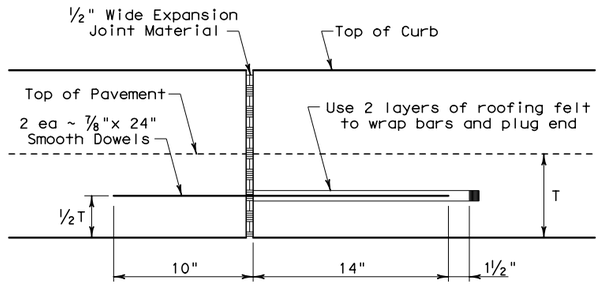
TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



TYPE IIa CURB
5" - 5 ¾" HEIGHT

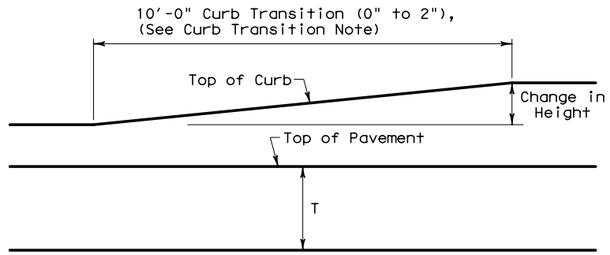


TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

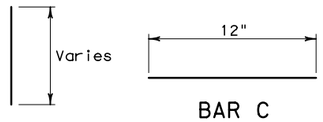
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and the grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C~C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B used as needed to support curb reinforcing steel during concrete placement.



BAR B

BAR C

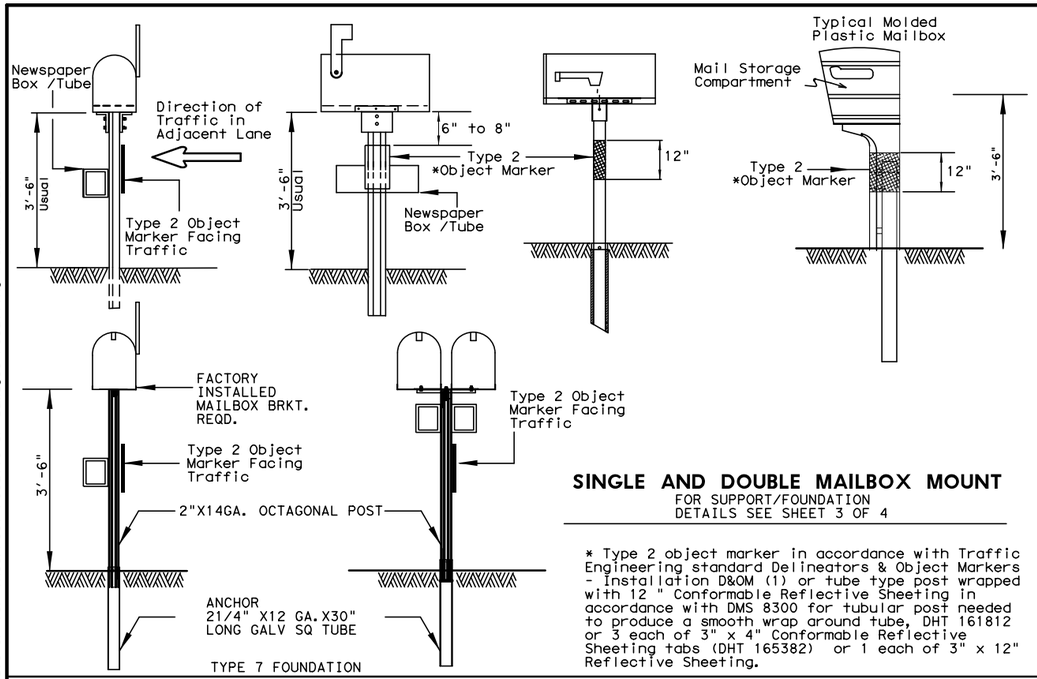
Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

CCCG-21

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: SS	CK: KM
©TxDOT: FEBRUARY 2021 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		159



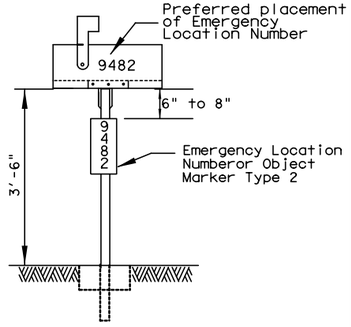
SINGLE AND DOUBLE MAILBOX MOUNT

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4

* Type 2 object marker in accordance with Traffic Engineering standard Delineators & Object Markers - Installation D&OM (1) or tube type post wrapped with 12 " Conformable Reflective Sheeting in accordance with DMS 8300 for tubular post needed to produce a smooth wrap around tube, DHT 161812 or 3 each of 3" x 4" Conformable Reflective Sheeting tabs (DHT 165382) or 1 each of 3" x 12" Reflective Sheeting.

Note: Mailbox installations in sidewalk areas shall be in accordance with the latest TxDOT Pedestrian Facilities Curb ramps standard *PED-XX for pedestrian facilities.

*PED-XX: XX is the standard year for example PED- 12 , PED-13,etc.



PLACEMENT OF EMERGENCY LOCATION NUMBER

Location Number shall be placed on: 1. A yellow, type A plate with class 1 flat surface reflective sheeting in accordance with DMS 8600. The color of numbers shall be black. or 2: A green or blue plate with white numbers attached to post beside the object marker. Other contrasting color configuration, as approved , may be used. (Use Same type plate as used for the type 2 Object Marker. Recommended sign size is 6" by 15")

TYPICAL MAILBOX SIZE				LIGHT WEIGHT MATERIAL	
				SHEET METAL	**PLASTIC
SIZE	LENGTH	WIDTH	HEIGHT	MAXIMUM WEIGHT	
	INCHES			POUNDS	
SMALL	19 ½	6	7	5	5
MEDIUM	22 ½	8	11 ½	7	7
LARGE	23 ½*	11 ½*	13 ½*	10	10

* Maximum allowed dimensions for mailbox
** Excluding Molded Plastic on 4 X 4 Post

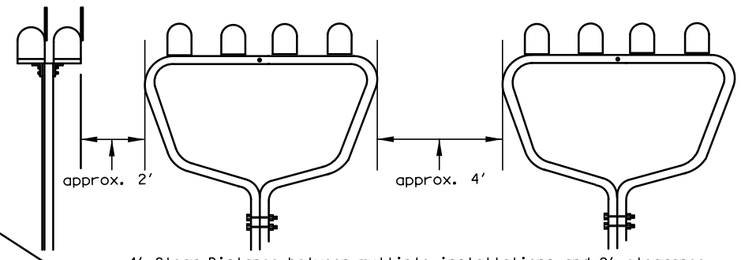
LOCKABLE ARCHITECTURAL MAILBOX SIZE (INCHES)					
VIEW	TOP	BOTTOM	FRONT SIDE	BACK SIDE	WEIGHT
SIDE	18	15	18.3	15	(POUNDS)
BACK	11 ½	11 ½		15	22.4

SEE TOP RIGHT CORNER OF SHEET 2 OF 4

MAILBOX SIZES

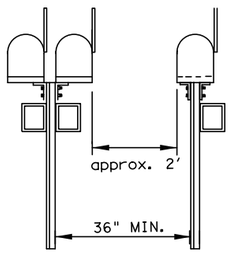
Mailboxes shall be made of light weight sheet metal or light weight plastic. Lockable architectural mailboxes shall meet the requirements of the above table.

Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.



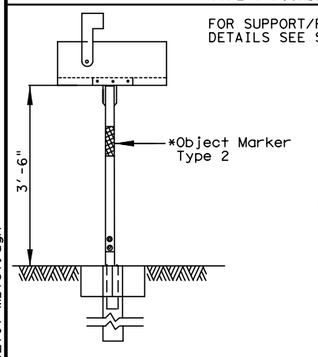
4' Clear Distance between multiple installations and 2' clearance between double or single installations and the multiple installation. DHT #'s 164116 or 149339.

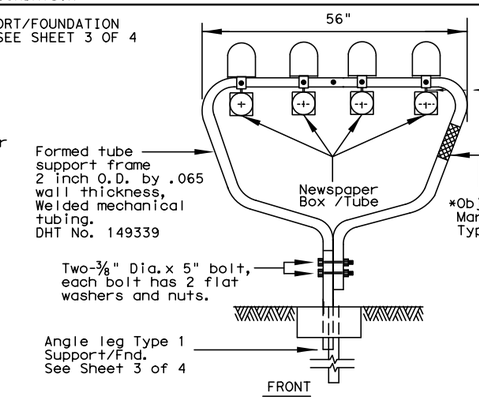
MULTIPLE MAILBOX PLACEMENT

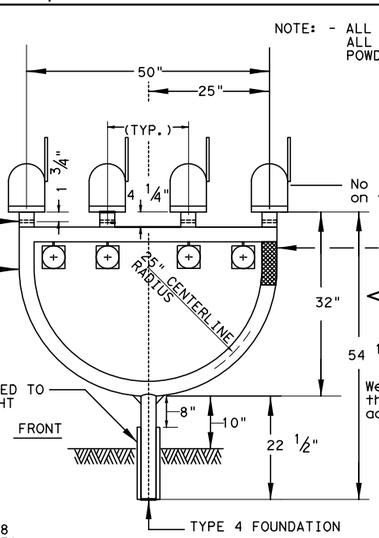


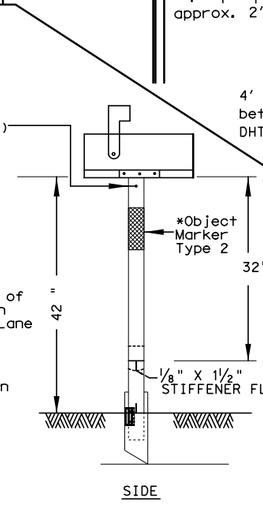
Clear Distance between single or double mounted posts. (Normally when 3 or more mailboxes are in one location, a multiple support is used).

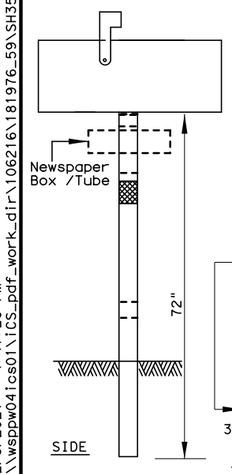
SINGLE & DOUBLE MAILBOX PLACEMENT

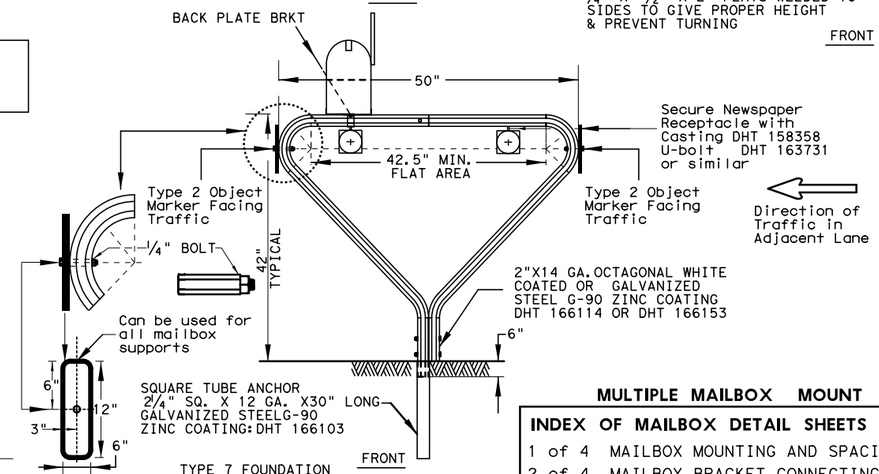












DOUBLE AND MULTIPLE MAILBOX MOUNT

FOR SUPPORT/FOUNDATION DETAILS SEE SHEET 3 OF 4
FOR DHT NUMBERS SEE SHEET 4 OF 4

MULTIPLE MAILBOX MOUNT

INDEX OF MAILBOX DETAIL SHEETS

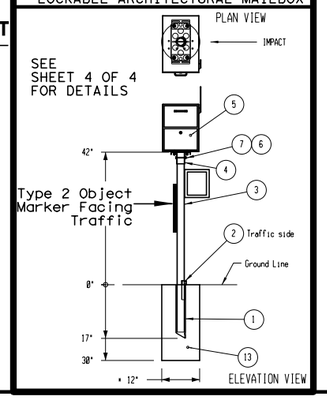
1 of 4 MAILBOX MOUNTING AND SPACING
2 of 4 MAILBOX BRACKET CONNECTING DETAILS
3 Of 4 MAILBOX SUPPORT / FOUNDATION
4 of 4 TABLE OF DHT NUMBERS

NEWSPAPER RECEPTACLE

A light weight receptacle for newspaper delivery can be attached to mailbox posts as shown on this page if the receptacle:

- Does not touch the mailbox.
- Does not present a hazard to traffic or delivery of the mail.
- Does not extend beyond the front of the mailbox.
- Does not display advertising, except the publication title.
- Newspaper receptacles on separate supports are prohibited.

LOCKABLE ARCHITECTURAL MAILBOX



Texas Department of Transportation

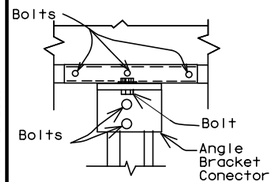
Maintenance Division Standard

MAILBOX MOUNTING AND SPACING

MB-15(1)

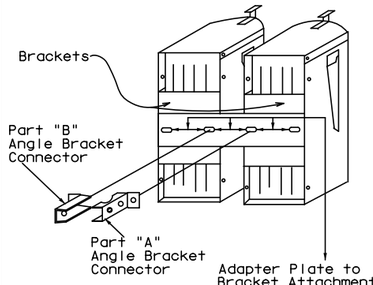
FILE: MB14(1).DGN	DN: JEO	CK: JEO	DW:	CK:
© TxDOT APRIL 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS: Added additional newspaper receptacle for double mailbox support	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		160

2/9/2021 4:41:11 PM
\\wsppw04icsol\ICS_pdf_work_dir\106216\181976_60\SH35_039_102-MB151.dgn



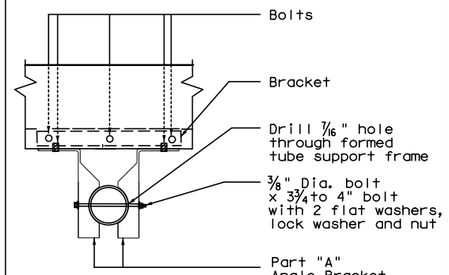
For bolt sizes see details below for "SMALL MAILBOX" and "MEDIUM AND LARGE MAILBOXES"

SINGLE MAILBOX

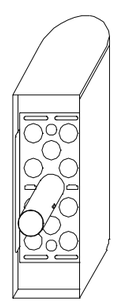


(Not permitted for Large Mailboxes)

DOUBLE MAILBOX

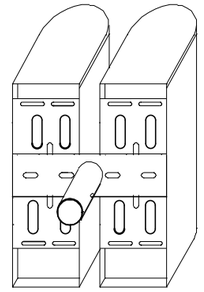


MULTIPLE MAILBOX



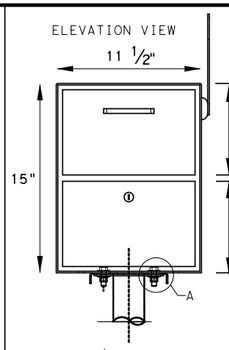
To be used with 2 3/8" OD RR or thinwall Steel posts.

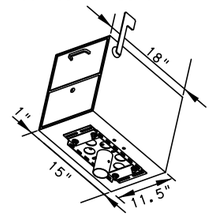
WELDED SINGLE MAILBOXBRACKET

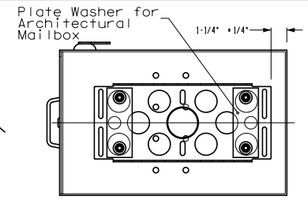


To be used with thinwall Steel posts. Not to be used with RR posts.

WELDED DOUBLE MAILBOX BRACKET WITHADAPTER PLATE

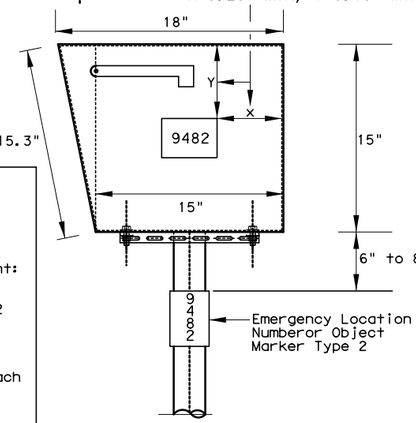






Preferred placement of Emergency Location Number

X~5.25" min; Y~5.75" min



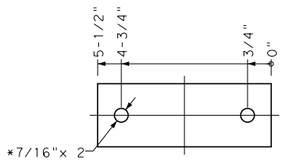
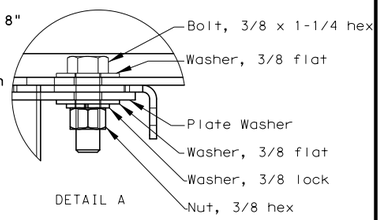
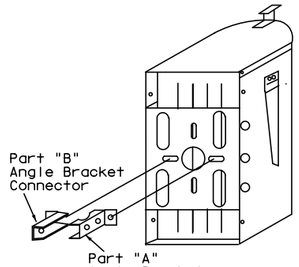
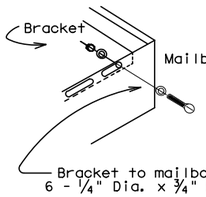


Plate Washer for Architectural Mailbox Plate, 2" x 1/8" ASTM A36 Steel



LOCKABLE ARCHITECTURAL MAILBOX CONNECTION DETAILS



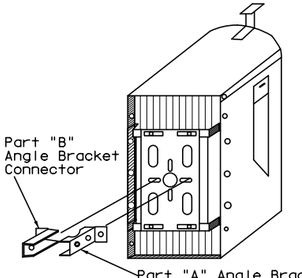


Bracket to mailbox attachment:
6 - 1/4" Dia. x 3/4" bolt w/ 2 flat washers and nut per each bolt.

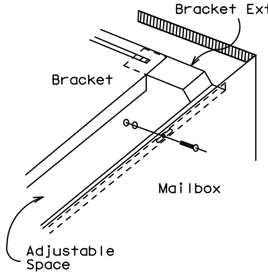
Angle to bracket attachment:
2 - 3/8" Dia. x 3/4" bolt with 2 flat washers, lock washer and nut per each bolt.

Angle to
2 - 3/8" Dia. x 2 1/2" bolt with 2 flat washers, lock washer and nut per each bolt.

SMALL MAILBOX



Use both Parts "A" and "B" Angle Bracket Connectors for Winged Channel Posts



Bracket to mailbox attachment:
6 - 1/4" Dia. x 3/4" bolt w/2 flat washers and nut per each bolt.

Bracket to bracket extension attachment:
2 - 1/4" Dia. x 3/4" carriage bolt w/ flat washer, lock washer and nut per bolt (4 bolts required if 2 bracket extensions are used).

Angle to bracket attachment:
2 - 3/8" Dia. x 3/4" bolt w/2 flat washers, lock washer and nut per each bolt.

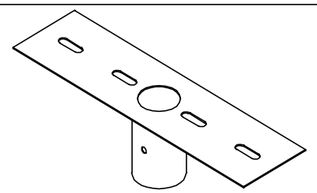
Angle to mailbox support attachment:
2 - 3/8" Dia. x 2 1/2" bolt w/2 flat washers, lock washer, and nut per each bolt.

Medium size mailboxes - one extension bracket
Large size mailboxes - two extension brackets

MEDIUM AND LARGE MAILBOXES

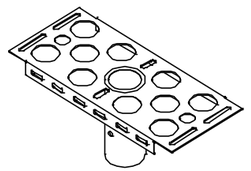
GENERAL NOTES

1. Connecting hardware detailed on this sheet is for the hardware that the Department stocks at the Regional Warehouses. This hardware is available to the contractor only when so stated elsewhere in the plans or specification.
2. Hardware for mounting mailboxes to the support/foundation furnished by industry should be used when shown on the Maintenance Divisions "Approved Products List." Only mailbox hardware that have been crash tested in accordance with NCHRP Report 350, will be on the approved list.
3. Hardware furnished by industry shall be erected in accordance with the manufacturer's recommendation.
4. Bracket and bracket extension shall be constructed of 14 gauge galvanized steel sheet metal.
5. The angles, brackets and adapter plates shall be constructed of 12 gauge galvanized steel sheet metal.
6. Items with evidence of damage to the galvanized coating or wet storage stains (white rust) will not be accepted.



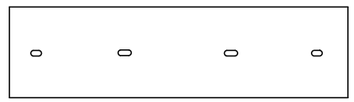
DHT 162323

For use with galvanized thinwall steel posts DHT # 143426 or powder-coated thinwall steel post DHT # 162911.



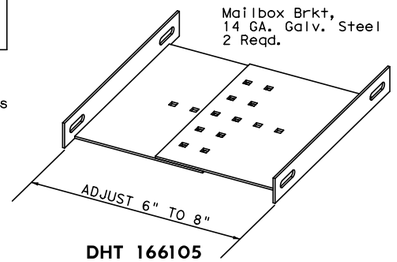
DHT 161443

For use with RCR post DHT # 161442 or galvanized thinwall steel post DHT # 143426 or powder-coated thinwall steel post. DHT # 162911.

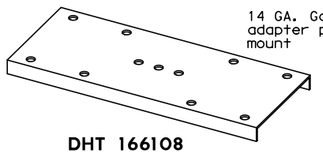


DHT #3789

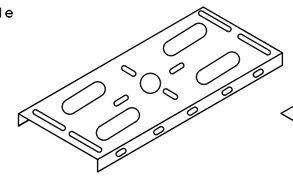
Used for mounting two Mailboxes on the same post.



DHT 166105

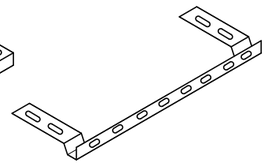


DHT 166108



DHT 148939

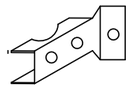
Mailbox Bracket



DHT 148938

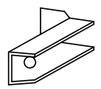
Used for extending 6" wide bracket to attach larger mailboxes.

Bracket Extension



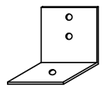
DHT 159489

Part "A" Angle Bracket Connector



DHT 159490

Part "B" Angle Bracket Connector



DHT 2917

Angle Bracket For Temporary Mailbox

HARDWARE AT TXDOT REGIONAL WAREHOUSES

Brackets and adapter plate shown in this section should be available to the Contractor when stated elsewhere in plans or specifications.

See Table of Applicable DHT Numbers on sheet 4 of 4 for DHT description and unit of measure.

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MAILBOX BRACKET CONNECTING DETAILS

MB-15(1)

FILE: MB14(1).DGN	DN: JEO	CK:	DW: JEO	CK:
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REVISIONS ADDED DHT 163730	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		161

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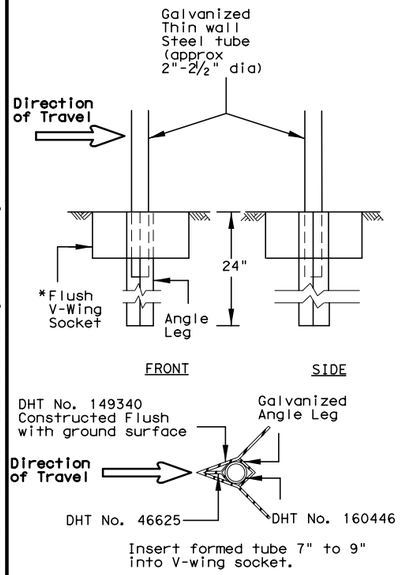
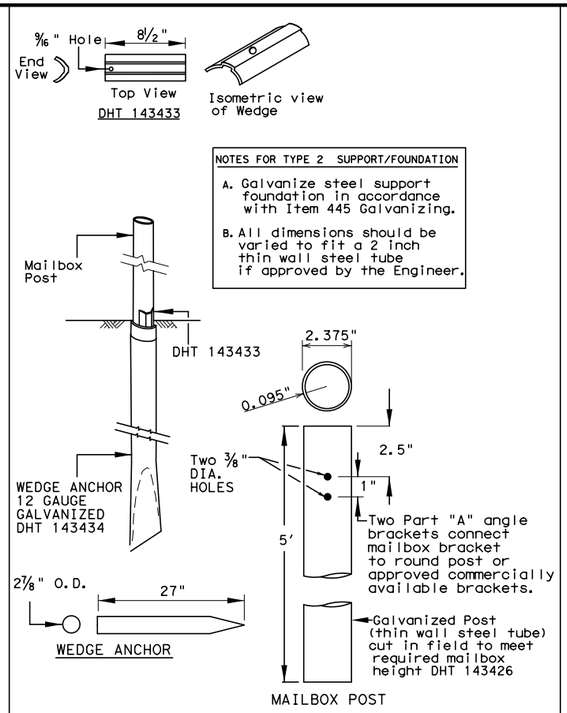


TYPE 1 SUPPORT/FOUNDATION

THIN WALL STEEL TUBE w/ V-LOC ANCHORAGE



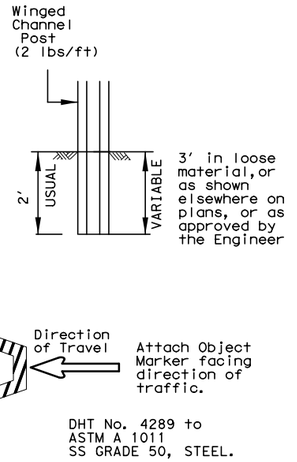
NOTES FOR TYPE 2 SUPPORT/FOUNDATION

A. Galvanize steel support foundation in accordance with Item 445 Galvanizing.

B. All dimensions should be varied to fit a 2 inch thin wall steel tube if approved by the Engineer.

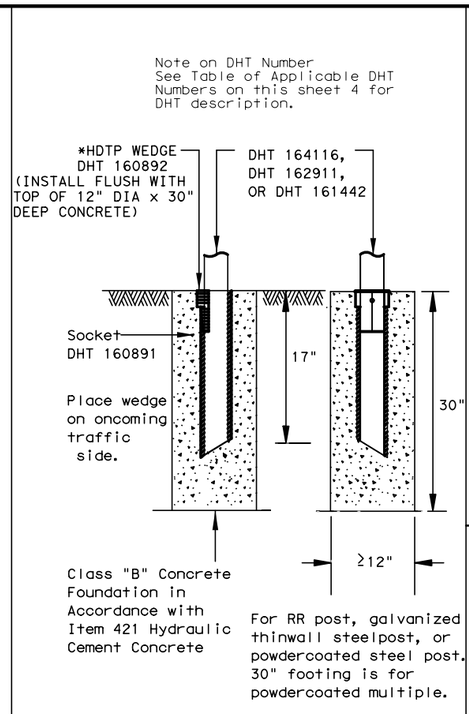
TYPE 2 SUPPORT/FOUNDATION

THIN WALL STEEL TUBE w/ WEDGE ANCHOR SYSTEM



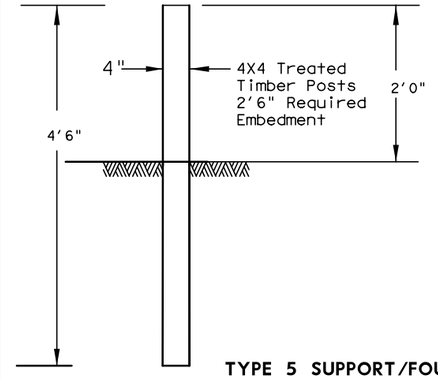
TYPE 3 SUPPORT/FOUNDATION

WINGED CHANNEL POST



TYPE 4 SUPPORT/FOUNDATION

FOR WHITECOATED STEEL POST, MULTIPLE POST, AND RECYCLED RUBBER.

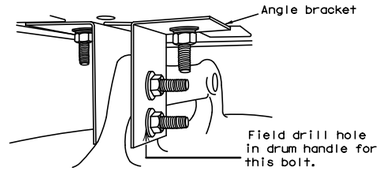


TYPE 5 SUPPORT/FOUNDATION

FOR ONE PIECE MOLDED PLASTIC MAILBOX

ONE PIECE MOLDED PLASTIC MAILBOXES

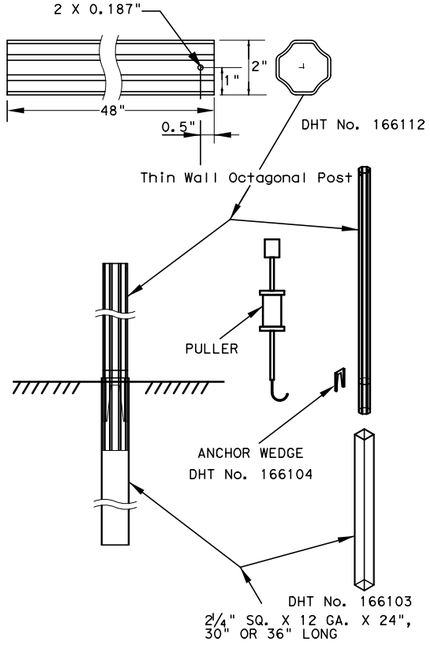
Molded Plastic Mailboxes shall be installed on 4"x4" treated timber posts only. The use of steel pipe or structural tubing in place of timber post is prohibited.



Placed on approved plastic drum as shown in the Compliant Work Zone Traffic Control Devices (CWZTCD).
Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

TYPE 6 TEMPORARY MAILBOX SUPPORT

CONNECTION DETAIL



TYPE 7 MAILBOX SUPPORT/FOUNDATION

CONNECTION DETAIL

GENERAL NOTES

1. Erect post plumb or vertical.
2. When galvanized part is required galvanize in accordance with Item 445.
3. type 1, 2, 3, 4 or 7 supports or foundation can be used for single or double mailbox installations. The RCR post should be used only for a single installation with a small mailbox. The Type 5 support/foundation is used for the single molded plastic mailbox. The Type 4 support/foundation is used for the 2.375" O.D. RR post, thin wall steel post, and white multiple mailbox post.
4. The Type 1 or type 7 support/foundation can be used for a multiple mailbox mount.
5. The Type 4 support should be used with thin wall steel pipe for the medium, large and double mailbox installations.
6. 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.

MB-(X) ASSM TY (XXX) (X) (XX) (OPTIONAL)

Type of Mailbox
- S = Single
- D = Double
- M = Multiple
- SP = Single 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
- Ty 7 = Wedge Anchor

Type of Bracket
- AB = Angle Bracket.
- TB = 2.375" Tube Bracket

DOUBLE AND LARGE MAILBOXES MUST BE ON STEEL POST.

*HDTP: High density thermoplastic polyesters

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MAILBOX SUPPORT AND FOUNDATION

MB-15(1)

FILE: MB14(1).DGN	DN: JEO	CK:	DW: JEO	CK:
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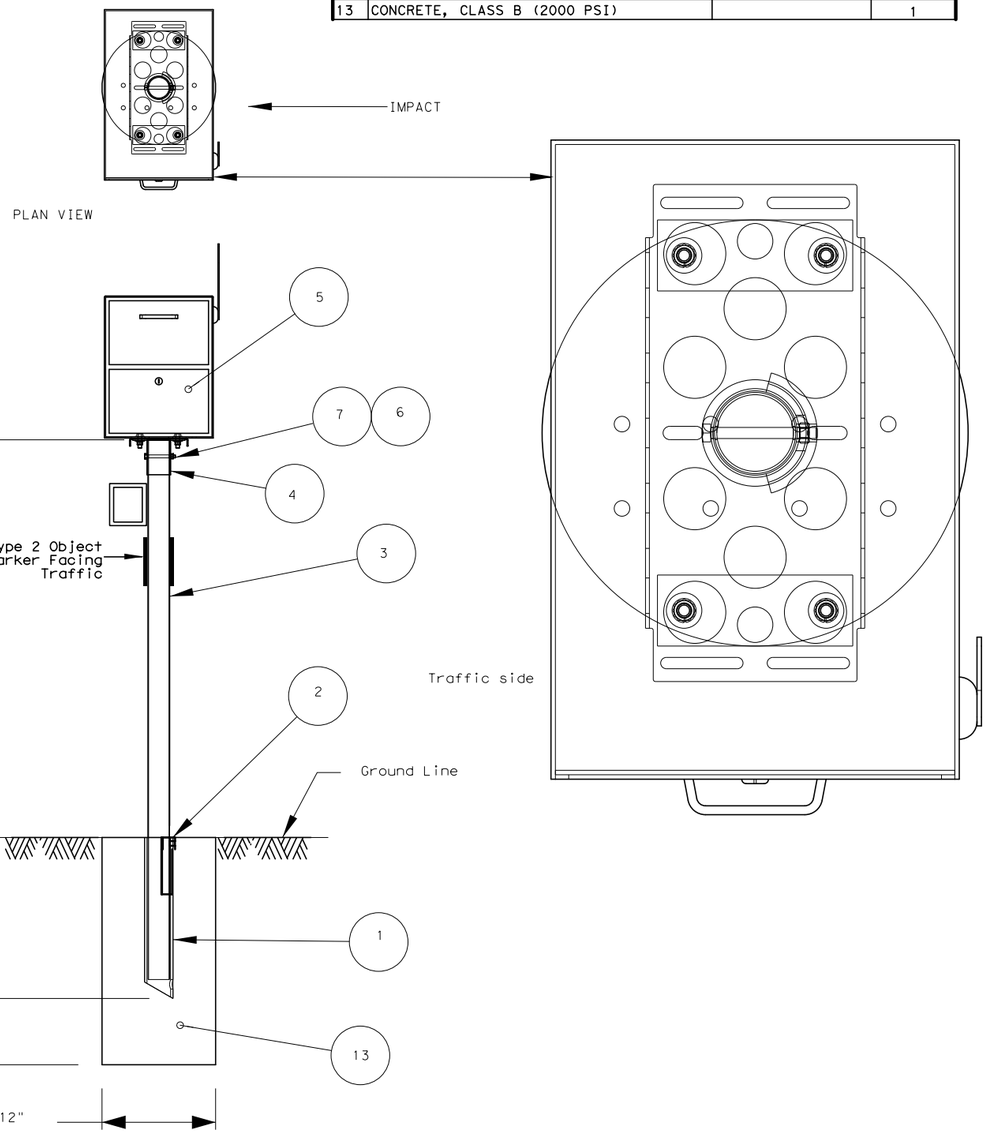
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		162

LOCKABLE ARCHITECTURAL MAILBOX

SINGLE-MOUNT INSTALLATION PARTS			
#	PART NAME	PART/DHT #	QTY
1	SOCKET, TYPE 4 FOUNDATION	160891	1
2	WEDGE FOR TYPE 4 FOUNDATION	160892	1
3	THIN-WALL WHITE STEEL TUBE 2.375 OD	162911	1
4	BRACKET FOR ATTACHING MAILBOX	161443	1
5	ARCHITECTURAL MAILBOX	SEE NOTE	1
6	NUT, 5/16" HEX	NUT, 5/16" HEX	1
7	BOLT, 5/16 X 3 HEX	GRADE 5	1
8	PLATE WASHER FOR ARCHITECTURAL MAILBOX	SEE SEE SHEET 2	2
9	WASHER, 3/8 FLAT		8
10	WASHER, 3/8 LOCK		4
11	NUT, 3/8 HEX		4
12	BOLT, 3/8 X 1-1/4 HEX	GRADE 5	4
13	CONCRETE, CLASS B (2000 PSI)		1

LOCKABLE ARCHITECTURAL MAILBOX DETAILS



ELEVATION VIEW

TABLE OF APPLICABLE DHT NUMBERS	
DHT NUMBER	DESCRIPTION
	FOUNDATIONS
46625	WEDGE FOR V-WING SOCKET FOR TYPE 1 FOUNDATION
149340	V-WING SOCKET FOR TYPE 1 FOUNDATION
143433	WEDGE FOR TYPE 2 FOUNDATION
143434	ANCHOR FOR TYPE 2 FOUNDATION
166103	ANCHOR FOR TYPE 7 FOUNDATION
160891	SOCKET FOR TYPE 4 FOUNDATION
160892	WEDGE FOR TYPE 4 FOUNDATION
166104	WEDGE FOR TYPE 7 FOUNDATION
	POSTS
4289	WINGED CHANNEL MAILBOX POST
149339	MULTIPLE MAILBOX POST (GALVANIZED TUBING)
164116	MULTIPLE MAILBOX POST (WHITE COATED)
166114	MULTIPLE MAILBOX POST (WHITE COATED OCTAGONAL)
166153	MULTIPLE MAILBOX POST (GALVANIZED OCTAGONAL)
161442	RECYCLED RUBBER POST. FOR SMALL MAILBOX ONLY
143426	THIN-WALL GALVANIZED STEEL TUBE 2.375" OUTER DIAMETER
162911	THINWALL WHITE STEEL TUBE 2.375" OUTER DIAMETER
166152	SINGLE OR DOUBLE THIN-WALL MAILBOX POST GALVANIZED 2" OCTAGONAL
166112	SINGLE OR DOUBLE THIN-WALL MAILBOX POST WHITECOATED 2" OCTAGONAL
	REFLECTIVE SHEETING
161812	REFLECTIVE SHEETING FOR EMERGENCY LOCATION NUMBER PANEL
	CONNECTING HARDWARE
2917	ANGLE BRACKET USED FOR TEMPORARY MAILBOX SUPPORT
166105	BRACKET FOR SINGLE MOUNTING OF MAILBOXES (MOUNTING KIT)
3789	PLATE FOR DOUBLE MOUNTING OF MAILBOXES
166108	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES (MOUNTING KIT)
166111	BRACKET FOR MULTIPLE MOUNTING OF MAILBOXES (MOUNTING KIT)
148939	BRACKET FOR ATTACHING SMALL OR MEDIUM SIZE MAIL BOX
148938	EXTENDER TO BRACKET FOR ATTACHING LARGE MAILBOX
159489	ANGLE BRACKET PART A
159490	ANGLE BRACKET PART B
162323	BRACKET FOR DOUBLE MOUNTING OF MAILBOXES ON THINWALL STEEL POST, GALVANIZED OR POWDERCOATED.
161443	BRACKET FOR ATTACHING MAILBOX TO RECYCLED RUBBER POST AND TO MULTIPLE WHITE MAILBOX POST
158358	CASTING (NEWSPAPER RECEPTACLE BRACKET)
163731	U-BOLT (NEWSPAPER RECEPTACLE BRACKET)
160698	BOLT;HEX HEAD, GALV;3/8"DIA X 3/4"L HD, W/2-FLAT WASHERS
163750	BOLT;HEX HEAD, GALV;3/8" X 1-1/2, 16 NC, W/WASHERS
160701	BOLT;HEX HEAD, GALV;3/8"DIA X 2-1/2"L, HD, W/2-FLAT WASHERS
163730	BOLT;HEX HEAD, GALV;3/8" X 3-1/2", NC, W/NUT, 2 FLAT WASHERS
160699	BOLT;HEX HEAD, GALV;3/8"DIA X 3-3/4"L HD, W/2-FLAT WASHERS
160700	BOLT;HEX HEAD, GALV;3/8"DIA X 4"L HD, W/2-FLAT WASHERS

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SHEET 4 OF 4

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DHT NUMBERS TABLE

MB-15(1)

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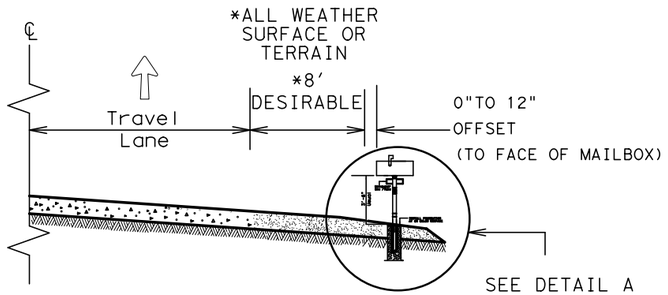
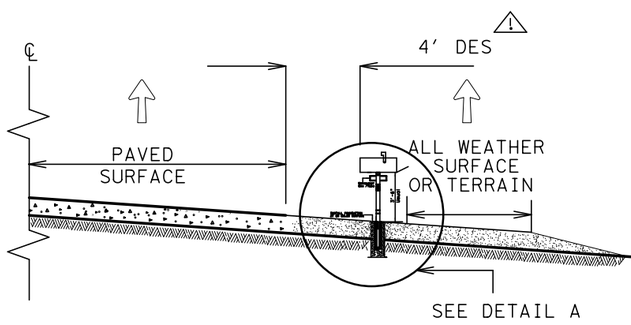
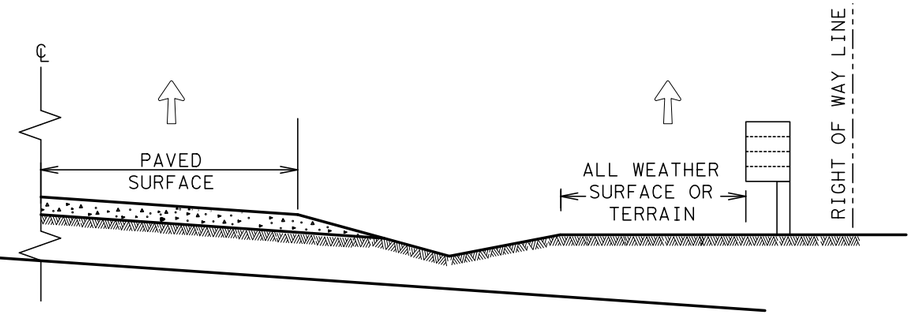


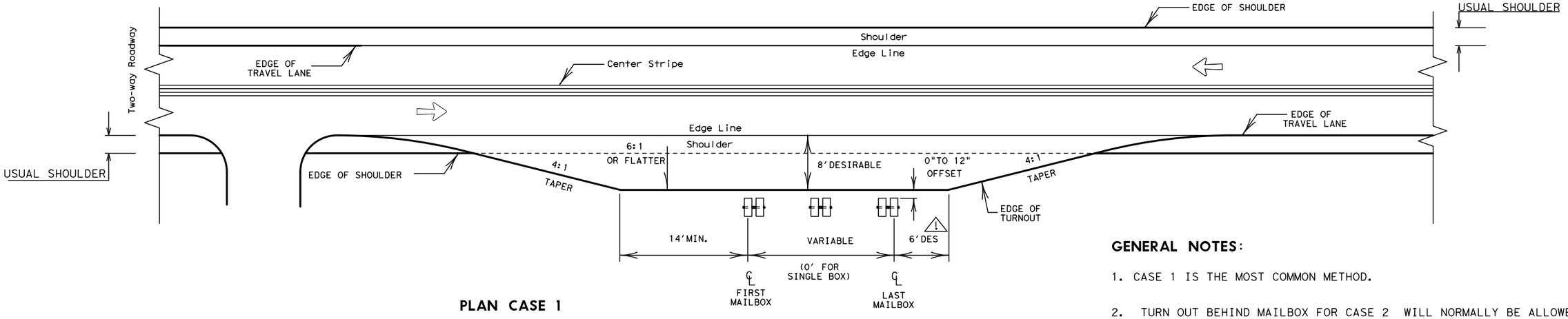
CASE 1. OFF TRAVEL WAY DELIVERY



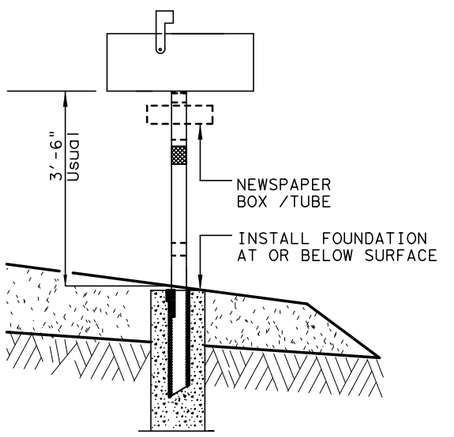
CASE 2. BACK SIDE DELIVERY



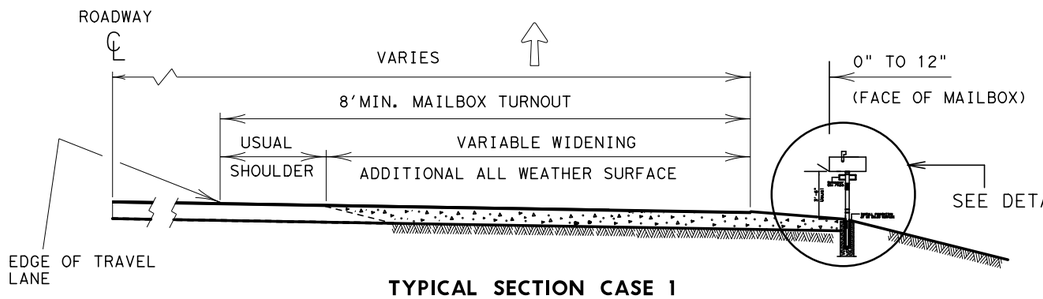
CASE 3. DELIVERY NEAR RIGHT OF WAY LINE



PLAN CASE 1



DETAIL A



TYPICAL SECTION CASE 1

MAIL DELIVERY VEHICLE TRAVEL DIRECTION

GENERAL NOTES:

1. CASE 1 IS THE MOST COMMON METHOD.
2. TURN OUT BEHIND MAILBOX FOR CASE 2 WILL NORMALLY BE ALLOWED FOR NATURAL TERRAIN THAT WILL SERVE AS AN ALL WEATHER SURFACE.
3. ALL WEATHER DRIVEWAYS FOR CASE 3 MAILBOXES LOCATED AT THE RIGHT OF WAY LINE SHOULD NORMALLY BE PLACED IN CONJUNCTION WITH COUNTY ROADS OR OTHER CONNECTING COMMUNITY ROADS OR STREETS. IF THE NUMBER OF MAILBOXES EXCEEDS FOUR, A COMMUNITY MAIL BOX SHOULD BE ENCOURAGED AT THESE LOCATIONS.

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Guideline

MAILBOX SIDE ROAD PLACEMENT AND TURNOUTS
MB-14(2)

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	CRP	SAN PAT.			164	

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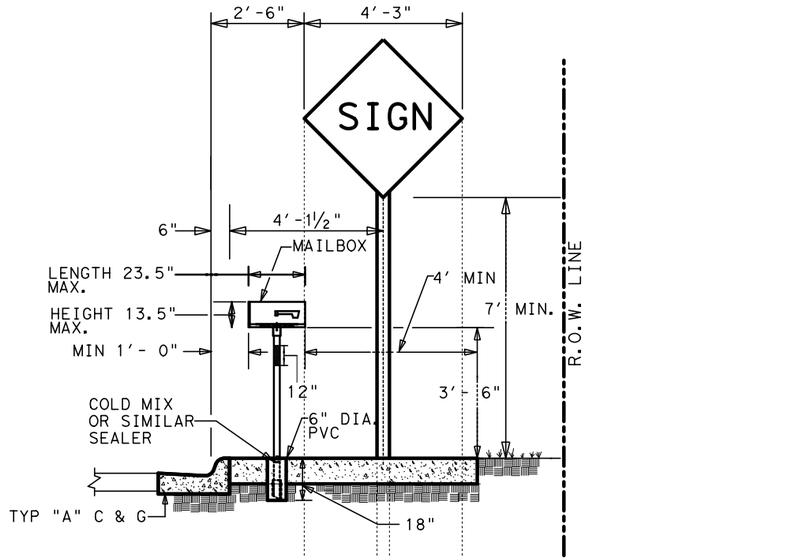
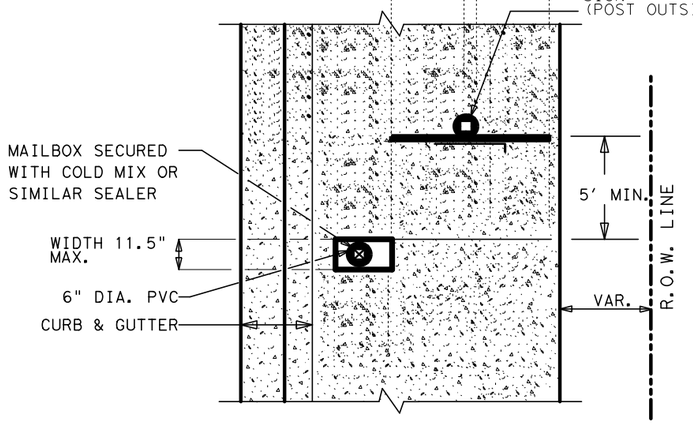


MAILBOX SIDEWALK INSTALLATION RELATIVE TO ANY OTHER OBSTRUCTION SUCH AS A SIGN
(MINIMUM BORDER DISTANCE)



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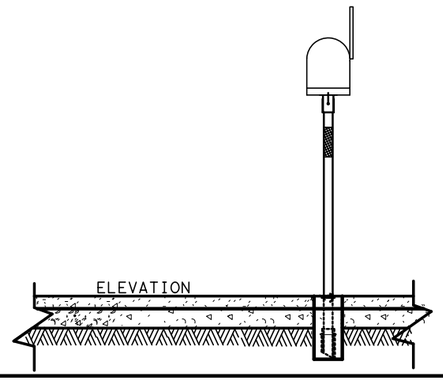
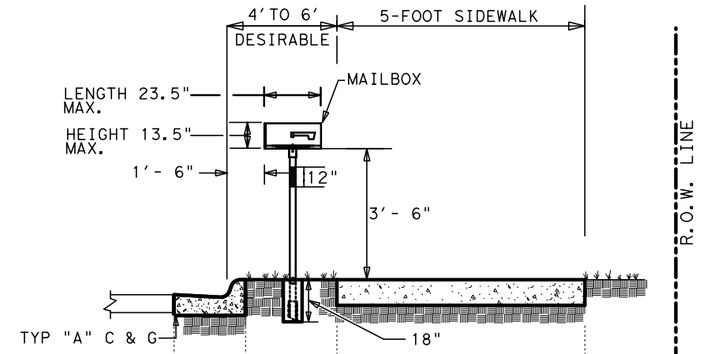
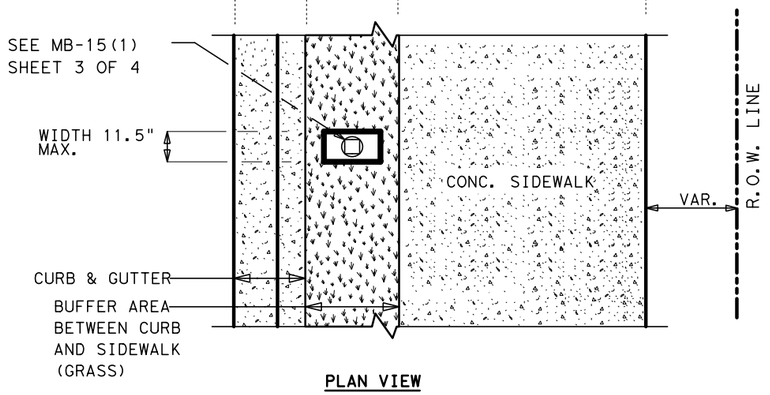




MAILBOX SIDEWALK INSTALLATION
(DESIRABLE BORDER DISTANCE)



PLAN VIEW

Texas Department of Transportation | Maintenance Division Standard

SINGLE MAILBOX PLACEMENT BEHIND CURBS WITH OR WITHOUT SIDEWALKS

MB-14(2A)

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	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		165

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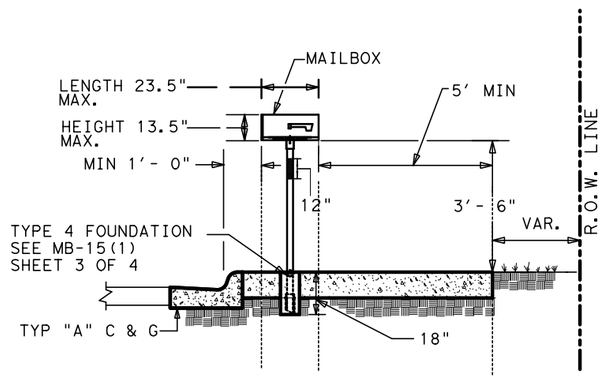
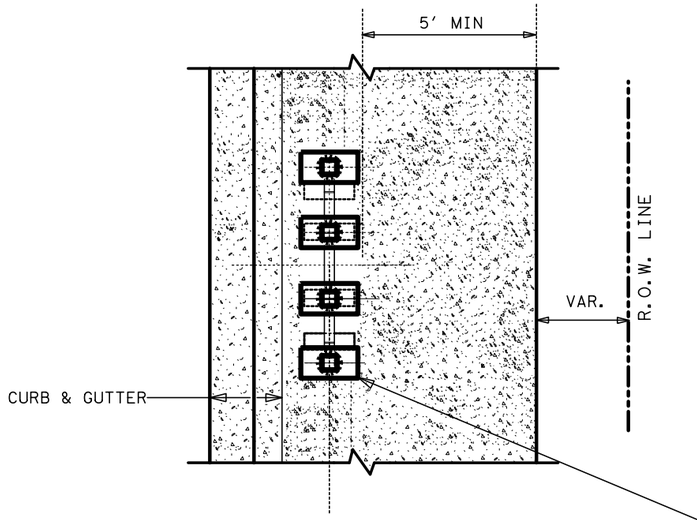


MAILBOX SIDEWALK INSTALLATION RELATIVE TO ANY OTHER OBSTRUCTION SUCH AS A SIGN
(MINIMUM BORDER DISTANCE)



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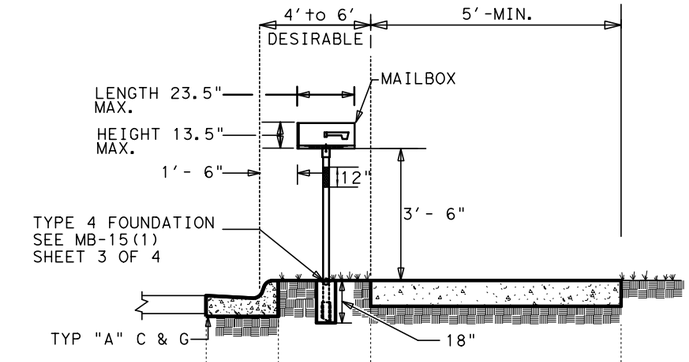
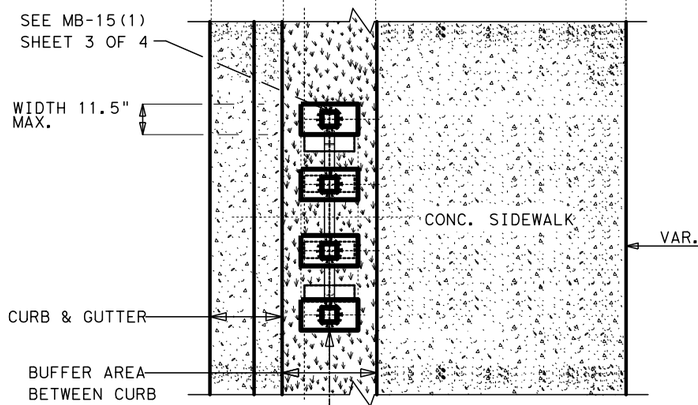
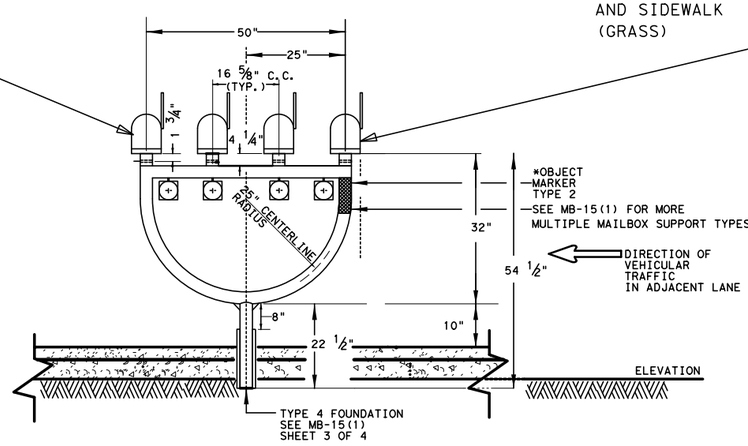


MAILBOX SIDEWALK INSTALLATION
(DESIRABLE BORDER DISTANCE)



PLAN VIEW



SHEET 3 OF 3

Texas Department of Transportation | Maintenance Division Standard

MULTIPLE MAILBOX PLACEMENT BEHIND CURBS WITH OR WITHOUT SIDEWALKS

MB-14(2B)

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© TxDOT MAY 2014	CONT	SECT	JOB	HIGHWAY
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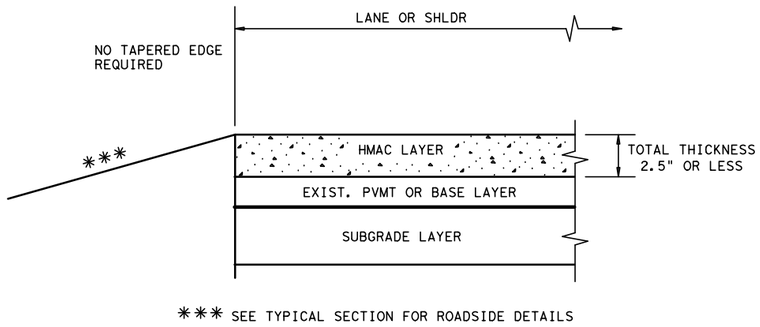
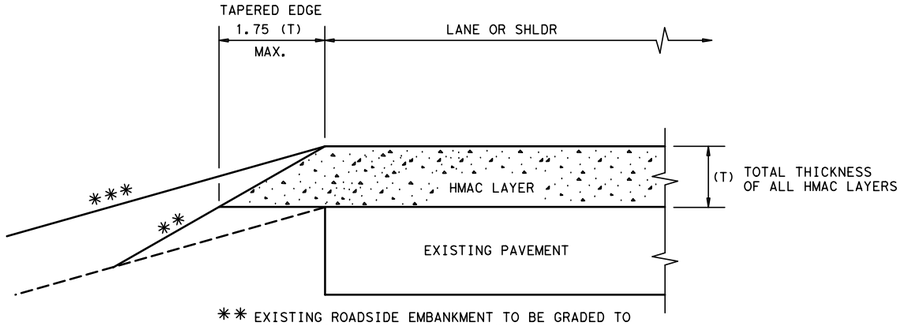


*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

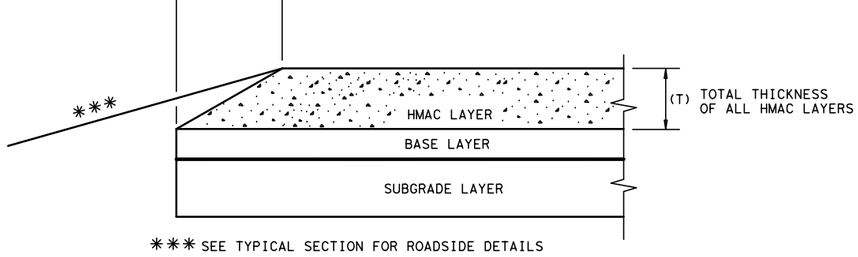
CONDITION - 1
THIN HMAC SURFACES OR HMAC OVERLAY WITH THICKNESS OF 2.5" OR LESS



** EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

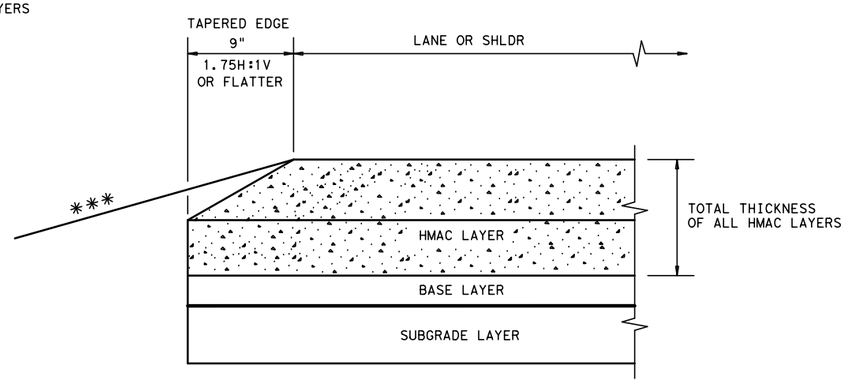
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2
OVERLAY OF EXISTING PAVEMENT HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3
NEW OR RECONSTRUCTED PAVEMENT HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 4
NEW OR RECONSTRUCTED PAVEMENT HMAC THICKNESS 5" OR GREATER

(NOT TO SCALE)

GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5".
2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
3. PAYMENT FOR TAPERED EDGE WILL BE IN ACCORDANCE WITH APPLICABLE ITEMS IN THE CONTRACT.
4. THE SLOPE OF THE TAPERED EDGE SHALL BE 1.75H:1V OR FLATTER.
5. THE TAPERED EDGE SHALL BE PRODUCED BY USE OF A SCREED ATTACHMENT CAPABLE OF PRODUCING A SMOOTH COMPACTED SURFACE. ADDITIONAL COMPACTING EFFORT BEHIND THE SCREED IS NOT REQUIRED.

Texas Department of Transportation

Design Division Standard

TAPERED EDGE DETAILS HMAC PAVEMENT

TE(HMAC)-11

FILE: tehmac11.dgn	DN: TxDOT	CK: RL	DW: KB	CK:
© TxDOT January 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		167

DATE: 2/24/2021 6:51:47 AM
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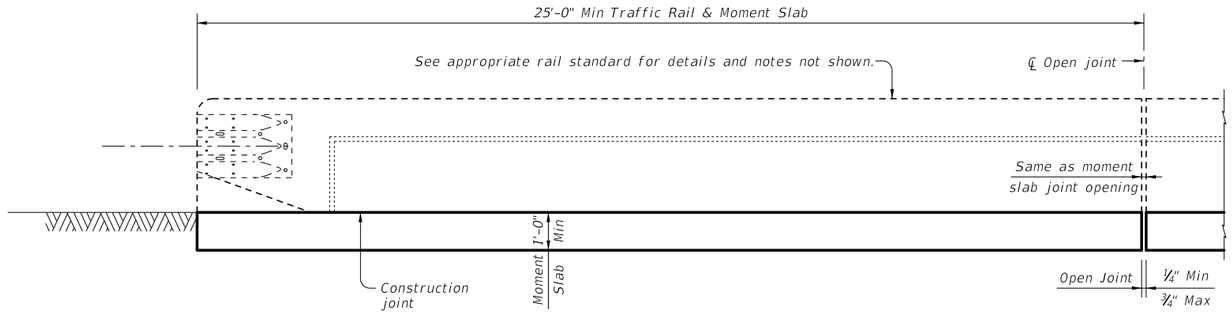
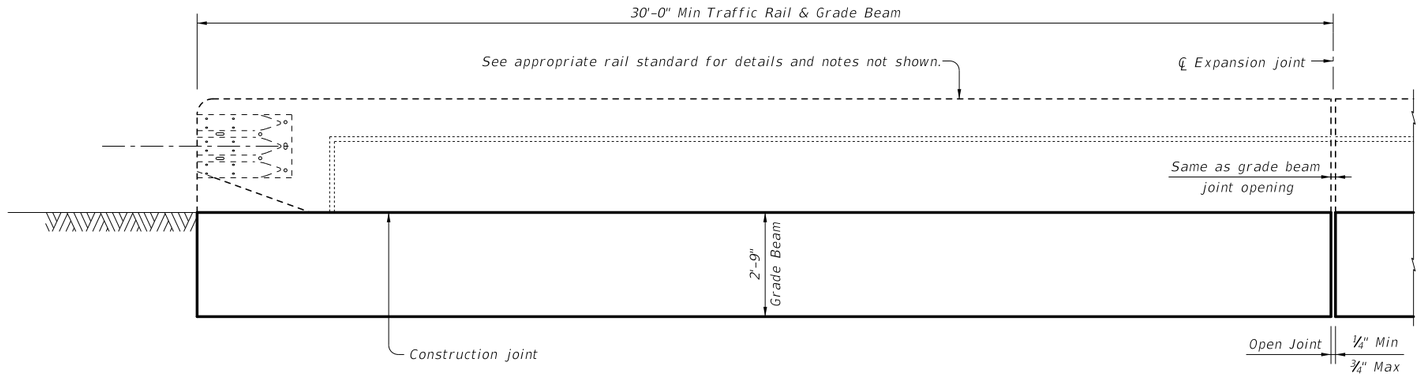


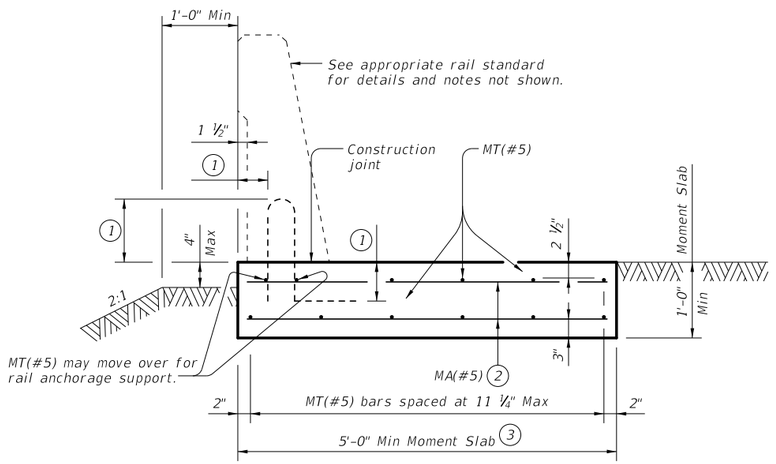
ROADWAY ELEVATION OF TRAFFIC RAIL ON MOMENT SLAB (TRF-MS)

(Showing SSTR rail other rails are similar. Reinforcing not shown for clarity.)



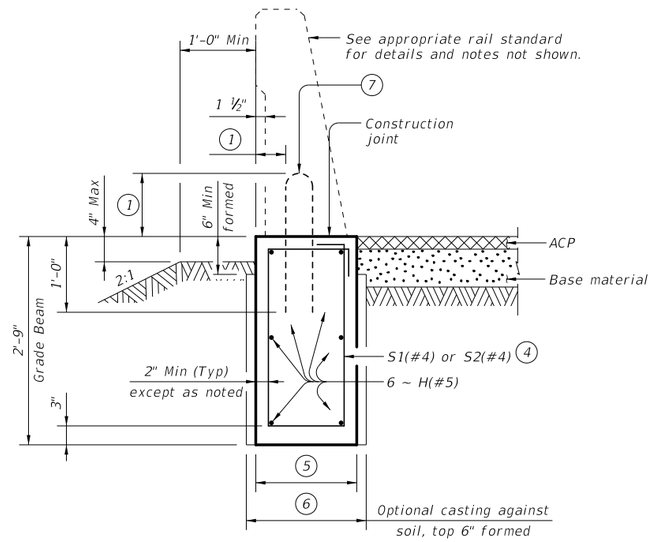
ROADWAY ELEVATION OF TRAFFIC RAIL ON GRADE BEAM (TRF-GB)

(Showing SSTR rail other rails are similar. Reinforcing not shown for clarity.)



SECTION OF TRAFFIC RAIL ON MOMENT SLAB (TRF-MS)

(Showing SSTR rail other rails are similar.)



SECTION OF TRAFFIC RAIL ON GRADE BEAM (TRF-GB)

(Showing SSTR rail other rails are similar.)

1 See applicable bridge rail standard.

2 MA(#5) space longitudinally along moment slab at 12" Max.
(Spaced 2 ½" longitudinally from outside edge of moment slab).

3 Approximate moment slab concrete = 0.19 CY/LF and reinforcement = 22.4 LB/LF.

4 S1(#4) or S2(#4) spaced longitudinally along grade beam at 8" Max.
(Spaced 2 ½" longitudinally from outside edge of grade beam).

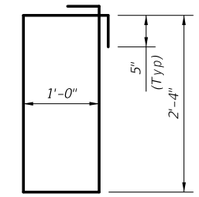
5 Use bar S1(#4) with 1'-4" grade beam width and bridge rail types: All rails except for T224, C412, T66, C66, T80HT and T80SS.
Approximate grade beam concrete = 0.14 CY/LF and reinforcement = 13.8 LB/LF.

Use bar S2(#4) with 1'-7" grade beam width and bridge rail types: T66 and C66.
Approximate grade beam concrete = 0.16 CY/LF and reinforcement = 14.2 LB/LF.

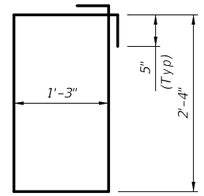
6 1'-6" for bridge rail types: All rails except for T224, C412, T66, C66, T80HT and T80SS.

1'-9" bridge rail types: T66 and C66.

7 Modify reinforcing on standard bridge rail anchorage if necessary by extending rail anchorage 12" Min, vertically into traffic rail



BARS S1(#4)



BARS S2(#4)

CONSTRUCTION NOTES:

Align moment slab (TRF-MS) or grade beam (TRF-GB) open joints with rail open joints maintaining no less than minimum rail length. Provide moment slab (TRF-MS) or grade beam (TRF-GB) with open joints at no greater than 100' spacing unless otherwise shown on the plans or approved by the Engineer.

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 required elsewhere.

Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) of equal size and spacing may be substituted for bars S1(#4), S2(#4) and H(#5) unless noted otherwise. Provide the same laps as required for reinforcing bars.

Provide bar laps, where required, as follows:
Uncoated or galvanized ~ #5 = 2'-4"
Epoxy coated ~ #5 = 3'-6"

GENERAL NOTES:

Use of these details will result in a moment slab (TRF-MS) or grade beam (TRF-GB) foundation that is acceptable for traffic rails which are MASH TL-2, TL-3, or TL-4 compliant.

See elsewhere in the plans for selected options between moment slab (TRF-MS) and/or grade beam (TRF-GB).

The foundation design resistance is based on the current AASHTO bridge railing requirements with the assumption of fair to good soil support conditions. Poor soil conditions will require suitably deeper and/or wider foundations.

See appropriate rail standard for details and notes not shown.

This detail is intended for use as a guide to unusual railing anchorage situations but may be included in the plans, modified as necessary to apply to specific installations required on the project.

Payment for moment slab (TRF-MS) and/or grade beam (TRF-GB) will be by Class "C" concrete or Class "C" (HPC) concrete for rail foundations.

The associated bridge railing will be paid for by the linear foot which includes the concrete and reinforcement.

Excavation will be subsidiary to other Items.

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

TRAFFIC RAIL FOUNDATIONS

FOR MASH TL-2, TL-3 & TL-4 BRIDGE RAILS

TRF

FILE: rlstd027-20.dgn	DN: TxDOT	CK: TAR	DW: JTR	CK: TAR
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
07-20: Added moment slab with rail foundation lengths.	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		168

DATE:
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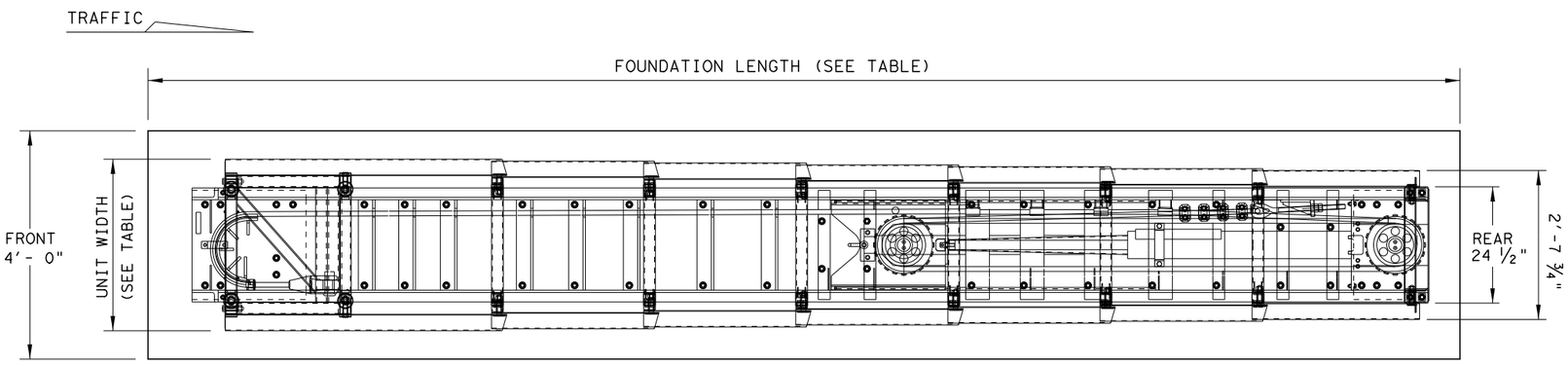
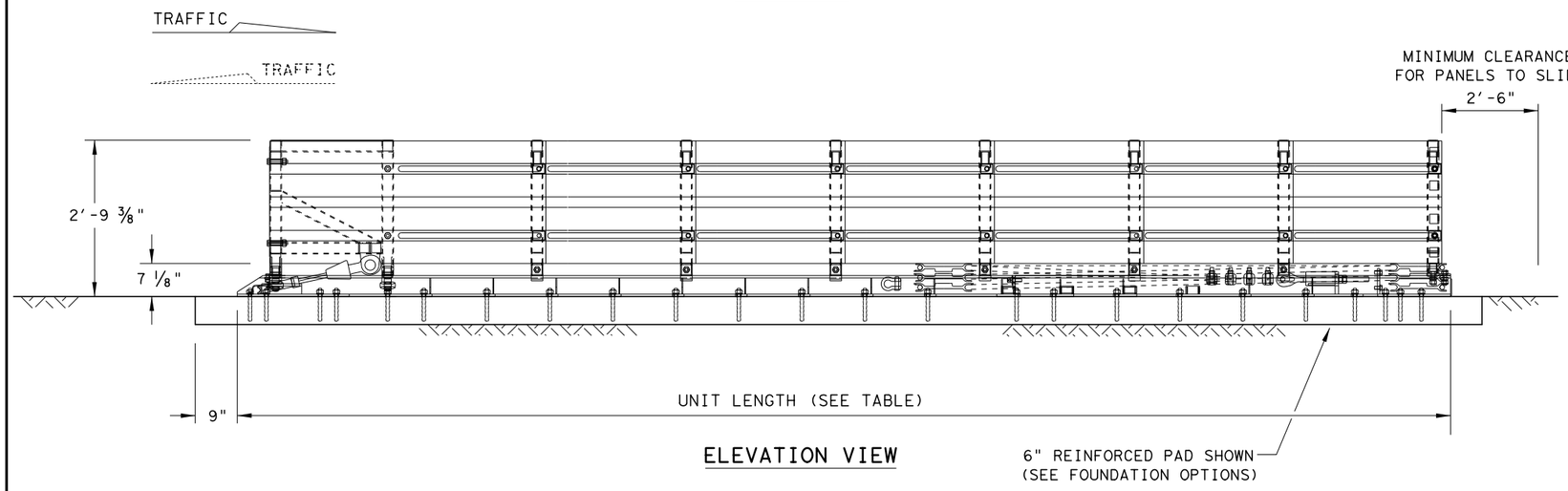


PLAN VIEW



ELEVATION VIEW

MODEL	TEST LEVEL	UNIT LENGTH (approx.)	UNIT WIDTH	FOUNDATION LENGTH	OBSTACLE WIDTH
SCI70GM	TL-2	13′-6"	2′-10 ⅝"	15′- 6 ¼"	24"to 36"
SCI100GM	TL-3	21′-6"	3′-1 ½"	23′- 0"	24"to 36"

SYSTEM AND PAD LENGTHS VARY DEPENDING ON BACKUP TYPE.

FOUNDATION OPTIONS
6" REINFORCED CONCRETE (5 ½" ANCHOR EMBEDMENT)
8" UNREINFORCED CONCRETE (5 ½" ANCHOR EMBEDMENT)
3" MIN. ASPHALT OVER 3" MIN. CONCRETE (16 ½" ANCHOR EMBED.)
6" ASPHALT OVER 6" COMPACT SUBBASE (16 ½" ANCHOR EMBED.)
8" MINIMUM ASPHALT (16 ½" ANCHOR EMBEDMENT)

FOR STEEL PLACEMENT IN CONCRETE FOUNDATIONS, SEE MANUFACTURER'S PRODUCT MANUAL.

TRANSITION OPTIONS
CONCRETE VERTICAL WALL
CONCRETE TRAFFIC BARRIERS
GUARDRAIL (W-BEAM)
GUARDRAIL (THRIE-BEAM)

TRANSITION TYPES ARE SHOWN ELSEWHERE ON THE PLANS (I.E. ATTENUATOR LOCATION DETAILS OR IN THE GENERAL NOTES).

FOR BI-DIRECTIONAL TRANSITION PANEL AND END SHOE DETAILS, SEE MANUFACTURER'S PRODUCT MANUAL.

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: WORK AREA PROTECTION, CORP. AT (800) 327-4417, OR (630) 377-9100.
2. FOR BI-DIRECTIONAL TRAFFIC, APPROPRIATE TRANSITION PANELS WILL BE REQUIRED.
3. ADDITIONAL DETAILS FOR THE TRANSITION OPTION AND FOUNDATION OPTION WILL BE SHOWN ON THE MANUFACTURER'S SHOP DRAWINGS FURNISHED TO THE ENGINEER.
4. CONCRETE SHALL BE CLASS "S" WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.
5. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
6. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
7. THE SCI100GM & SCI70GM SYSTEMS SHOULD BE APPROXIMATELY PARALLEL WITH THE BARRIER OR CENTERLINE OF MERGING BARRIERS.

NOTE:
FOR ATTACHMENT AND TRANSITIONS TO OTHER SHAPES, BARRIERS, RAILINGS AND BI-DIRECTIONAL TRAFFIC FLOWS ARE AVAILABLE. (SEE MANUFACTURER'S PRODUCT MANUAL)

NOTE:
SIDE PANELS CAN TRAVEL 30" BEYOND THE LAST TERMINAL BRACE AT THE REAR OF THE CUSHION. ALL OBJECTS THAT MAY INTERFERE WITH THIS MOTION CAN AFFECT PERFORMANCE OF AND MAY CAUSE UNDUE DAMAGE TO THE CRASH CUSHION.

Texas Department of Transportation

Design Division Standard

WORK AREA PROTECTION CORP (SMART-NARROW)

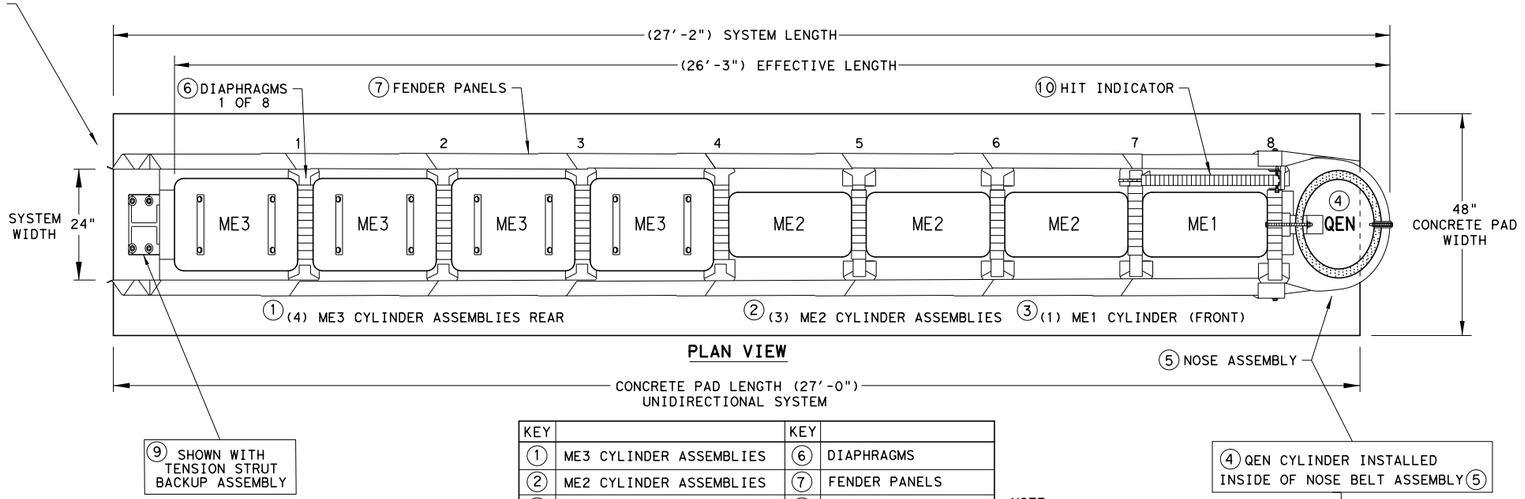
SMTC(N)-16

LOW MAINTENANCE

FILE: smtcn16.dgn	DN: TxDOT	CK: KM	DW: VP	CK: VP
©TxDOT: February 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED 06, 2013 (VP) REVISED 03, 2016 (VP)	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		169

NOTE:
A TRANSITION MAY BE REQUIRED TO INSTALL THE QUADGUARD ELITE M10 TO THE OBJECT BEING SHIELDED.

QUADGUARD EITE M10 24" WIDE (8 BAY) SYSTEM



PLAN VIEW

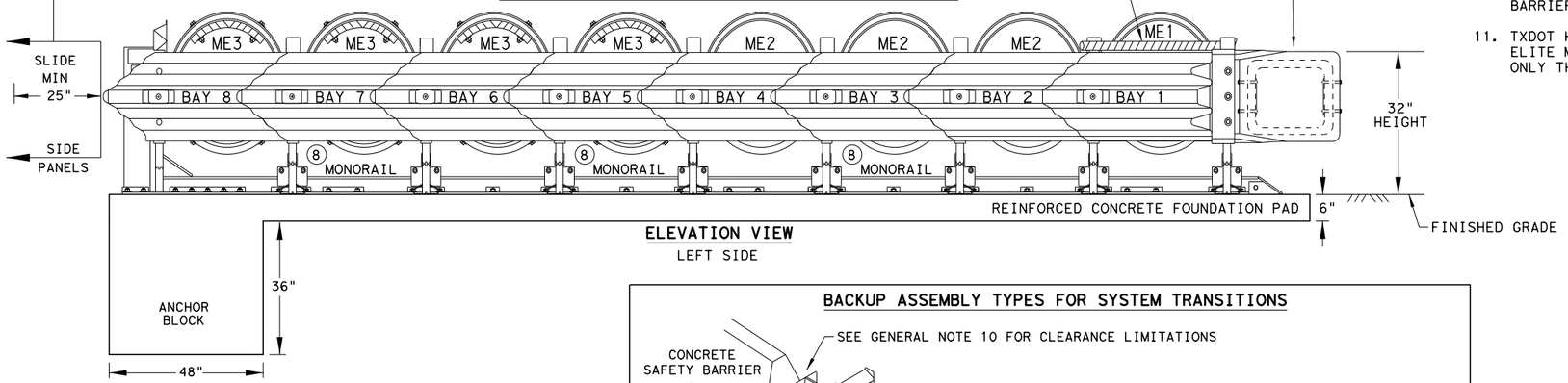
⑨ SHOWN WITH TENSION STRUT BACKUP ASSEMBLY

KEY		KEY	
①	ME3 CYLINDER ASSEMBLIES	⑥	DIAPHRAGMS
②	ME2 CYLINDER ASSEMBLIES	⑦	FENDER PANELS
③	ME1 CYLINDER ASSEMBLY	⑧	MONORAILS
④	QEN CYLINDER	⑨	TYPE OF BACKUP
⑤	NOSE BELT ASSEMBLY	⑩	HIT INDICATOR

④ QEN CYLINDER INSTALLED INSIDE OF NOSE BELT ASSEMBLY ⑤

NOTE:
HIT INDICATOR WILL RAISE UPON IMPACT.
⑩ HIT INDICATOR

NOTE:
PROVISION SHALL BE MADE FOR REAR FENDER SIDE PANELS TO SLIDE REARWARD UPON IMPACT, 25" 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 ELITE M10 FIELD INSTALATION AND INFORMATION REGARDING THE TYPE OF BACKUP ASSEMBLY REQUIRED FOR THE TRANSITION WILL BE PROVIDED BY THE MANUFACTURER TO THE ENGINEER AND INSTALLER.

6" REINFORCED CONCRETE PAD REQUIRES THE INSTALLATION OF AN ANCHOR BLOCK AS SHOWN ON THE MANUFACTURER'S DRAWING PACKAGE.

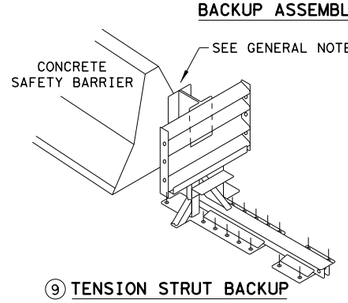
8" NON-REINFORCED CONCRETE PAD MAY NOT REQUIRE AN ANCHOR BLOCK, IF THE PAD IS INSTALLED AGAINST AN IMMOVABLE CONCRETE BACKUP.

CONCRETE PAD AND ANCHOR BLOCK COMBINATIONS SHALL BE CONFIRMED WITH THE MANUFACTURER BASED UPON SITE SPECIFIC DATA (SSD).

NOTE:
THE QUADGUARD ELITE M10 8-BAY, 24" WIDE - NARROW SYSTEM TESTED TO MASH TEST LEVEL 3.

TL-3 MODEL #	QM10024E	CYLINDER TYPES IN BAYS			
BAYS	8	TYPE-ME3	TYPE-ME2	TYPE-ME1	TYPE-QEN
DIAPHRAGMS	8	4	3	1	1
WIDTH	24"	REAR	FRONT		NOSE

BACKUP ASSEMBLY TYPES FOR SYSTEM TRANSITIONS

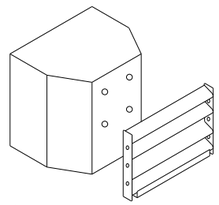


⑨ TENSION STRUT BACKUP

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 ELITE 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)



⑨ 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.

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE QUADGUARD ELITE M10 SYSTEM AND IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

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 ELITE M10 PRODUCT DESCRIPTION ASSEMBLY MANUAL FOR IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS AND THE DRAWING PACKAGE FOR THE NARROW 24" SYSTEM BEFORE INSTALLING THE QUADGUARD ELITE M10 AT ANY GIVEN LOCATION.
3. FOR BI-DIRECTIONAL TRAFFIC: THE LOCATION AND OR WIDTH OF THE QUADGUARD ELITE M10 IS RESTRICTED. AS BI-DIRECTIONAL TRAFFIC APPROACHES THE REAR OF THE QUADGUARD ELITE M10, THE QUADGUARD ELITE 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 ELITE M10 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 ELITE M10 SYSTEM IS SHIELDING. SEE THE QUADGUARD ELITE M10 PRODUCT DESCRIPTION & ASSEMBLY MANUAL FOR FURTHER DETAILS.
5. COMPONENTS FOR THE QUADGUARD ELITE (M10) BACKUP AND REINFORCING DETAILS ARE SHOWN ON THE QUADGUARD ELITE 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 ELITE 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 ELITE M10 SYSTEM. THE QUADGUARD ELITE M10 PRODUCT DESCRIPTION AND ASSEMBLY 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.

LOW MAINTENANCE

Texas Department of Transportation

Design Division Standard

TRINITY HIGHWAY ENERGY ABSORPTION QUADGUARD ELITE M10 (MASH TL-3)

QGELITE(M10)(N)-20

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	CRP	SAN PAT.		170

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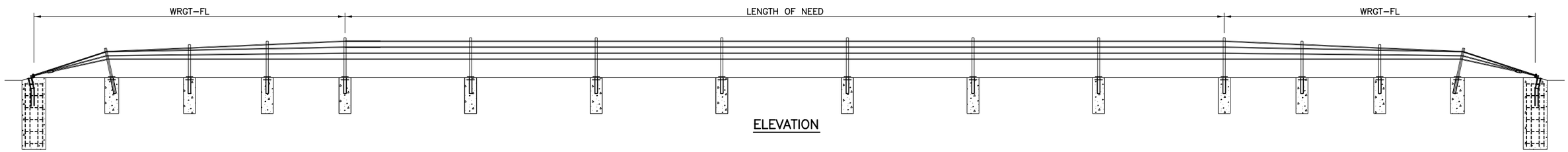
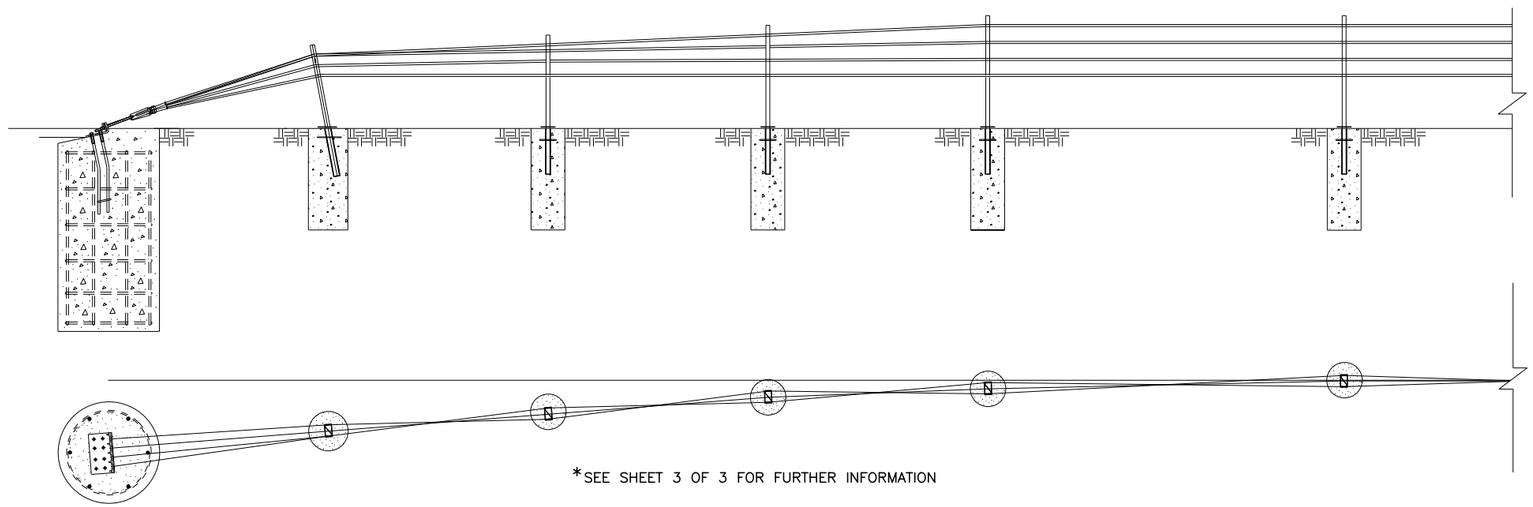


ELEVATION

PLAN

WRGT–FL END ANCHOR



*SEE SHEET 3 OF 3 FOR FURTHER INFORMATION

ROPE TENSION TABLE		
ROPE TEMP (°F)	TENSION (LBS)	TENSION (kN)
0	5700	25.4
5	5550	24.7
10	5400	24.0
15	5250	23.4
20	5100	22.7
25	4950	22.0
30	4800	21.4
35	4650	20.74
40	4500	20.0
45	4350	19.3
50	4200	18.7
55	4050	18.0
60	3900	17.3
65	3750	16.7
70	3600	16.0
75	3450	15.3
80	3300	14.7
85	3150	14.0
90	3000	13.3
95	2850	12.7
100	2700	12.0
105	2550	11.3
110	2400	10.7
115	2250	10.0
120	2100	9.3
125	1950	8.7
130	1800	8.0
135	1650	7.3
140	1500	6.7

*ROPE TENSION: ± 20% AFTER 2–WEEK INTERVAL

GENERAL NOTES:

1. BRIFEN DRAWINGS, SPECIFICATIONS, AND PRODUCT MANUAL SHOULD BE REVIEWED PRIOR TO STARTING AN INSTALLATION. FOR ADDITIONAL INFORMATION OR QUESTIONS, CONTACT BRIFEN USA, INC. AT 1–866–427–4336.

2. THE BRIFEN WRSF HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL–4 CONDITIONS ON SLOPES 6:1 OR FLATTER AND NCHRP 350 TL–3 CONDITIONS ON SLOPES 4:1 TO 6:1.

3. THE POST SPACING SHALL BE DETERMINED BY THE SPECIFYING AGENCY. POST SPACING MAY BE DECREASED TO AVOID OBSTRUCTIONS OR UTILITIES. IN NO EVENT SHALL THE POST SPACING EXCEED 21'–0".

4. BRIFEN WRSF SHALL BE PLACED ON A SMOOTH SURFACE, WITHOUT HUMPS, DROP–OFFS, HOLES, ETC THAT WOULD INTERFERE WITH THE STABILITY OF THE ERRANT VEHICLE. GRADING, FILL AND COMPACT MAY BE REQUIRED TO ASSURE THAT ROPES ARE INSTALLED AT THE DESIGN HEIGHT.

5. THE WRGT–FL END ANCHOR HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL–3 CONDITIONS. THE LENGTH OF NEED BEGINS 31'–0" FROM THE END ANCHOR. POSTS A THROUGH POST B3, SPACED 6'–6" APART, HAVE WEAKENED CUTS AT THE GROUND THAT SHALL FACE THE ANCHOR.

6. ANCHOR AND LINE POST DIMENSIONS AND STEEL REINFORCEMENT WILL BE DETERMINED ON PROJECT SPECIFIC SOIL CLASSIFICATION, PROPERTIES AND TEMPERATURE EXTREMES. CONTACT BRIFEN USA, INC. FOR ADDITIONAL INFORMATION.

7. ALL REINFORCEMENT AND CONCRETE FOR THE ANCHORS AND LINE POSTS PROVIDED BY OTHERS.

8. REINFORCEMENT AND CONCRETE PROPERTIES SHALL MEET AGENCY SPECIFICATIONS.

9. FOR PLACEMENT NEAR GUARDRAIL OR OTHER OBSTACLES CONTACT BRIFEN USA, INC. FOR ADDITIONAL DRAWINGS AND SUPPORT.

10. TAPER RATES FOR THE BRIFEN WRSF ARE AS FOLLOWS:
    HORIZONTAL: 25:1 MAXIMUM, 50:1 PREFERABLE
    VERTICAL: 25:1 MAXIMUM, 50:1 PREFERABLE

Texas Department of Transportation

Design Division Standard

BRIFEN
WIRE ROPE SAFETY FENCE
(TL-4)

BRIFEN(TL4)-14

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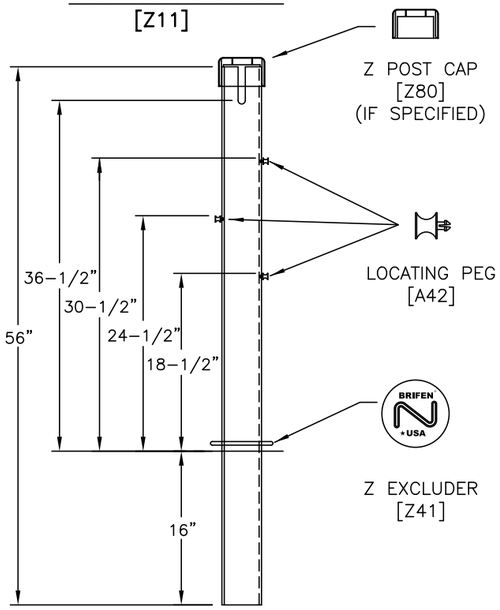
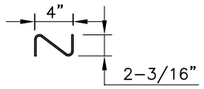
FILE: \\wsppw04ics01\ICS_pdf_work_dir\106864\181976_89\SH35_039_122-BRIFENTL414.dgn

LINE POST ASSEMBLY
[Z11]



ELEVATION

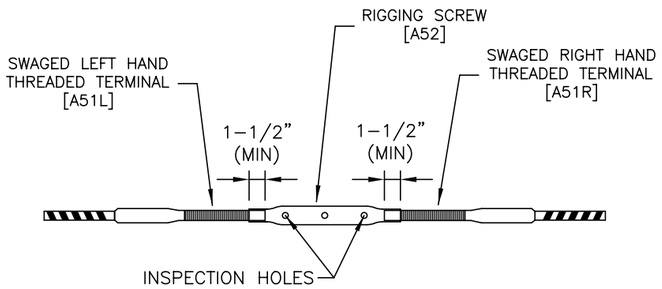


PLAN

NOTES SPECIFIC TO LINE POST ASSEMBLY

1. ROPE HEIGHTS SHALL BE ±1" TO GROUND LINE.
2. POST SHALL BE ±4" FROM VERTICAL PLUMB.
3. POST CAPS SHALL BE USED IF SPECIFIED.
4. REFLECTORS SHALL BE SPACED ACCORDING TO AGENCY SPECIFICATIONS.
5. REFLECTORS CAN BE PLACED ON THE POST CAP OR POST.

ROPE CONNECTION DETAIL

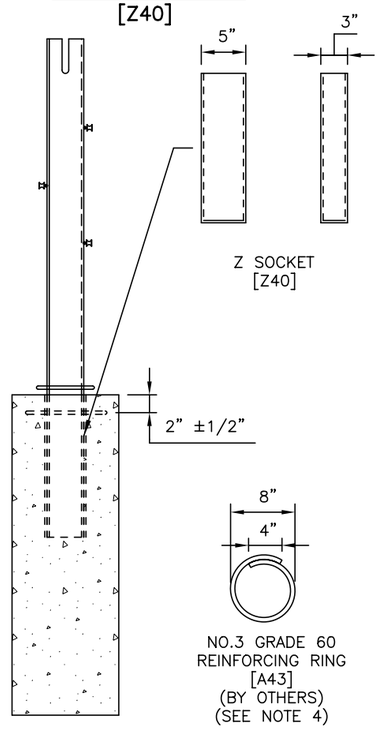


NOTES SPECIFIC TO ROPE CONNECTION DETAIL

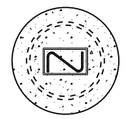
1. THE WIRE ROPE TERMINALS SHALL BE THREADED A MINIMUM OF 1-1/2" INTO RIGGING SCREW.
2. AFTER FINAL TENSIONING, THE TERMINALS SHALL BE VISIBLE IN THE INSPECTION HOLES.

SOCKET ASSEMBLY

CONCRETE FOOTING
[Z40]



ELEVATION

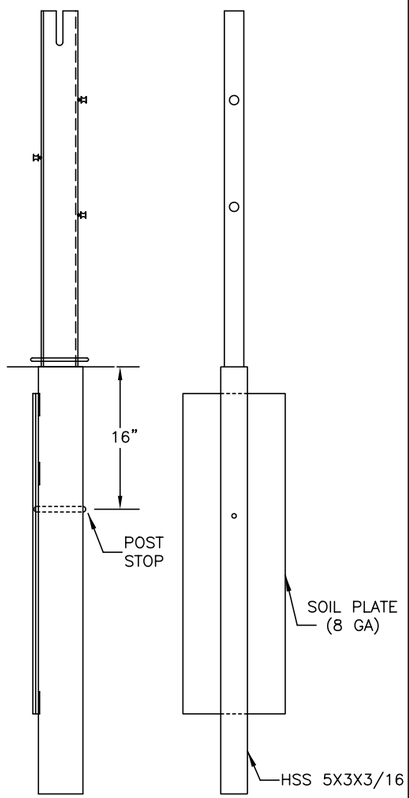


PLAN

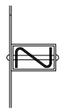
NOTES SPECIFIC TO CONCRETE FOOTING

1. SIZE OF FOOTING WILL BE DETERMINED BY SOIL CONDITIONS, FOUNDATION TYPE AND PROJECT CONDITIONS.
2. CONCRETE BASED ON AGENCY SPECIFICATIONS.
3. CONCRETE BY OTHERS.
4. REINFORCING RING (BY OTHERS) WILL BE USED ACCORDING TO FOUNDATION SIZE AND TYPE. THE REINFORCEING RING MAY BE OMITTED IF THE FOOTING IS PLACED IN A CONTINOUS CONCRETE MOW STRIP.
5. FOOTING SHALL BE FLUSH WITH THE GROUND LINE, TO A MAXIMUM OF 1 INCH BELOW OR ABOVE GROUND LINE.
6. SOCKET SHALL BE ±2° OF VERTICAL PLUMB.

DRIVE SOCKET
[Z44]



ELEVATION SIDE



PLAN

NOTES SPECIFIC TO DRIVE SOCKETS

1. SIZE OF SOIL PLATE WILL BE DETERMINED BY SOIL CONDITIONS AND PROJECT CONDITIONS.
2. THE SOIL PLATE SHALL BE PARALLEL TO ROADWAY AND CAN FACE TOWARD OR AWAY FROM THE TRAVEL LANE.
3. FOOTING SHALL BE FLUSH WITH THE GROUND LINE, TO A MAXIMUM OF 1 INCH BELOW OR ABOVE GROUND LINE.
4. SOCKET SHALL BE ±2° OF VERTICAL PLUM.
5. SOCKETS SHALL BE DRIVEN IN A MANNER TO NOT DISTORT OR DESTROY THE TOP OF SOCKET TO A DEGREE THAT PLACES THE SOCKET OR LINE POST OUT OF CONSTRUCTION TOLERANCES.

GENERAL NOTES:

1. BRIFEN DRAWINGS, SPECIFICATIONS, AND PRODUCT MANUAL SHOULD BE REVIEWED PRIOR TO STARTING AN INSTALLATION. FOR ADDITIONAL INFORMATION OR QUESTIONS, CONTACT BRIFEN USA, INC. 1-866-427-4336.
2. THE BRIFEN WRSF HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL-4 CONDITIONS ON SLOPES 6:1 OR FLATTER AND NCHRP 350 TL-3 CONDITIONS ON SLOPES 4:1 TO 6:1.
3. THE POST SPACING SHALL BE DETERMINED BY THE SPECIFYING AGENCY. POST SPACING MAY BE DECREASED TO AVOID OBSTRUCTIONS OR UTILITIES. IN NO EVENT SHALL THE POST SPACING EXCEED 21'-0".
4. BRIFEN WRSF SHALL BE PLACED ON A SMOOTH SURFACE, WITHOUT HUMPS, DROP-OFFS, HOLES, ETC THAT WOULD INTERFERE WITH THE STABILITY OF THE ERRANT VEHICLE. GRADING, FILL AND COMPACTION MAY BE REQUIRED TO ASSURE THAT ROPES ARE INSTALLED AT THE DESIGN HEIGHT.

Texas Department of Transportation

Design Division Standard

BRIFEN
WIRE ROPE SAFETY FENCE
(TL-4)

BRIFEN(TL4)-14

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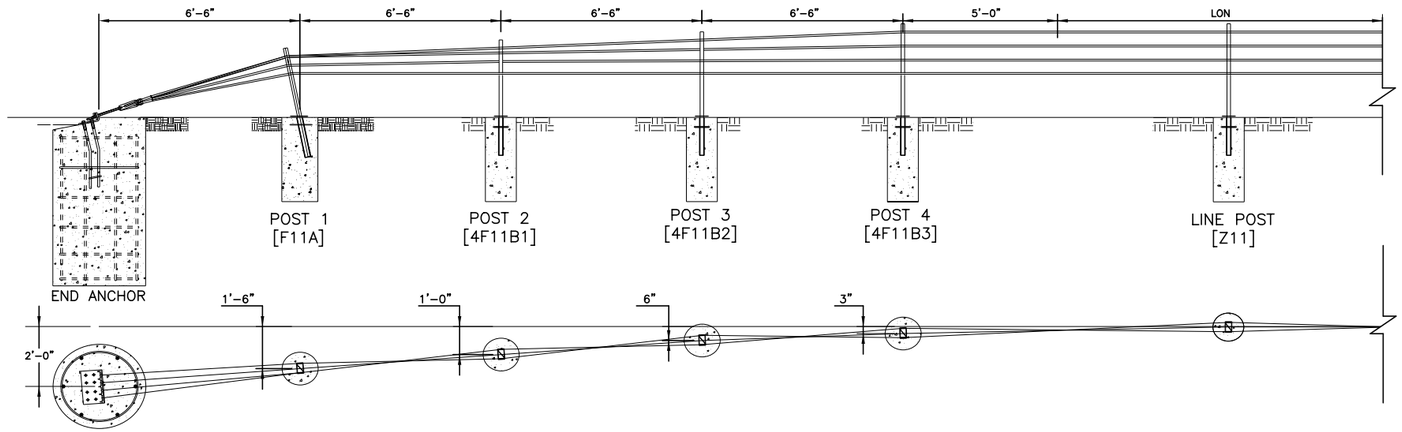
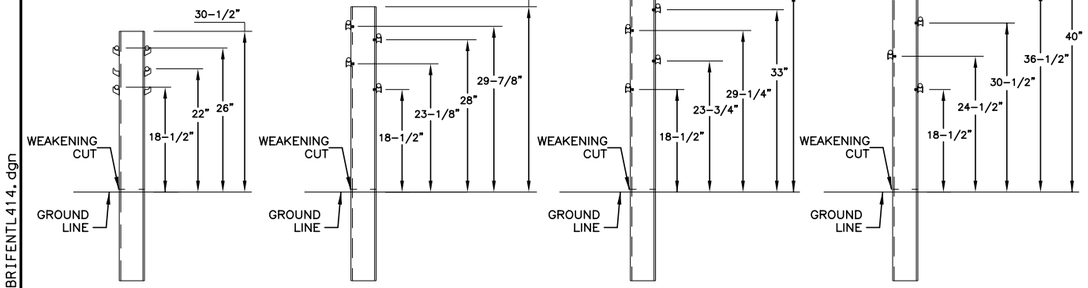
WRGT-FL END ANCHOR LAYOUT



GENERAL NOTES:

1. BRIFEN DRAWINGS, SPECIFICATIONS, AND PRODUCT MANUAL SHOULD BE REVIEWED PRIOR TO STARTING AN INSTALLATION. FOR ADDITIONAL INFORMATION OR QUESTIONS, CONTACT BRIFEN USA, INC. AT 1-866-427-4336.
2. THE WRGT-FL END ANCHOR HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL-3 CONDITIONS. THE LENGTH OF NEED BEGINS 31'-0" FROM THE END ANCHOR. POSTS A THROUGH POST B3, SPACED 6'-6" APART, HAVE WEAKENED CUTS AT THE GROUND THAT SHALL FACE THE ANCHOR.
3. ANCHOR AND LINE POST DIMENSIONS AND STEEL REINFORCEMENT WILL BE DETERMINED ON PROJECT SPECIFIC SOIL CLASSIFICATION, PROPERTIES AND TEMPERATURE EXTREMES. CONTACT BRIFEN USA, INC. FOR ADDITIONAL INFORMATION.
4. ALL REINFORCEMENT AND CONCRETE FOR THE ANCHORS AND LINE POSTS PROVIDED BY OTHERS.
5. REINFORCEMENT AND CONCRETE PROPERTIES SHALL MEET AGENCY SPECIFICATIONS.
6. FOR PLACEMENT NEAR GUARDRAIL OR OTHER OBSTACLES CONTACT BRIFEN USA, INC. FOR ADDITIONAL DRAWINGS AND SUPPORT.

WRGT-FL POST DETAILS

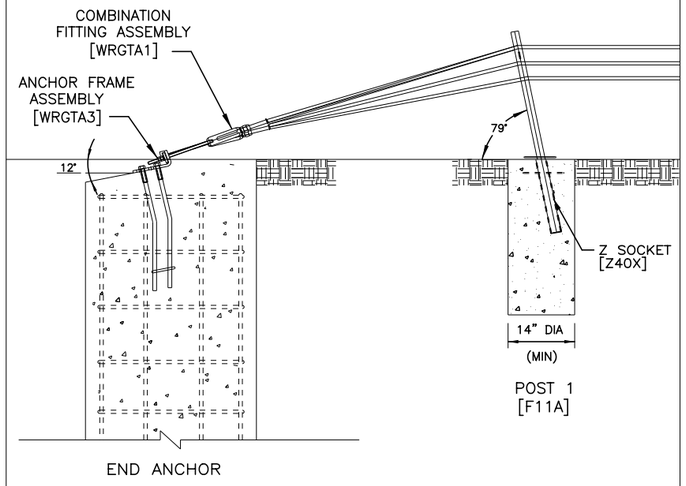


POST 1 [F11AL] | POST 2 [4F11B1L] | POST 3 [4F11B2L] | POST 4 [4F11B3L]

NOTES SPECIFIC TO WRGT-FL POST DETAIL

1. ROPE HEIGHTS SHALL BE ±1" TO GROUND LINE.
2. POST SHALL BE ±4" FROM VERTICAL PLUMB.
3. POST CAPS SHALL BE USED IF SPECIFIED.
4. REFLECTORS SHALL BE SPACED ACCORDING TO AGENCY SPECIFICATIONS.
5. REFLECTORS CAN BE PLACED ON THE POST CAP OR POST.
6. Z EXCLUDER (Z41) SHALL BE USED.
7. POST A & SOCKET SHALL BE PLACED 79° (±4°) TOWARD END ANCHOR FROM THE HORIZONTAL PLANE.
8. POST A SOCKET SHALL BE PLACED IN 14" (MIN) CONCRETE FOUNDATION. DEPTH TO BE DETERMINED FROM SOIL CONDITIONS AND PROJECT CONDITIONS.
9. FOUNDATIONS FOR POST 2 THRU 4 SHALL BE THE SAME AS THE LINE POST ASSEMBLY'S FOR THE PROJECT.
10. WEAKENED CUTS SHALL FACE END ANCHOR.

END ANCHOR DETAILS

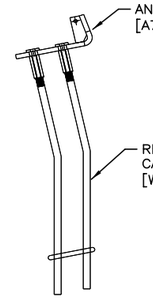


NOTES SPECIFIC TO END ANCHOR DETAIL

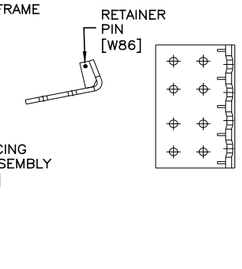
1. THE END ANCHOR ASSEMBLY SHALL BE PLACED 12° (+3°, −1°) BELOW HORIZONTAL PLANE.
2. POST 1 & SOCKET SHALL BE PLACED 79° (±4°) TOWARD END ANCHOR FROM THE HORIZONTAL PLANE.
3. POST 1 SOCKET SHALL BE PLACED IN 14" (MIN) CONCRETE FOUNDATION. DEPTH TO BE DETERMINED FROM SOIL CONDITIONS AND PROJECT CONDITIONS.

END ANCHOR COMPONENTS

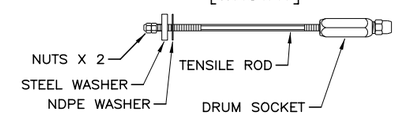
ANCHOR FRAME ASSEMBLY



ANCHOR FRAME [A70]



COMBINATION FITTING [WRGTA1]



SHEET 3 OF 3

Texas Department of Transportation | Design Division Standard

BRIFEN
WIRE ROPE SAFETY FENCE
(TL-4)

BRIFEN(TL4)-14

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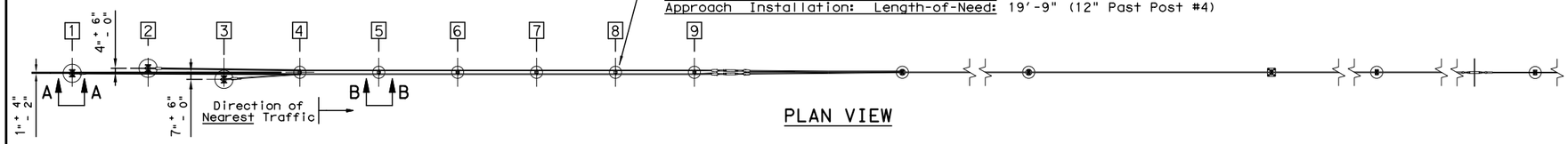
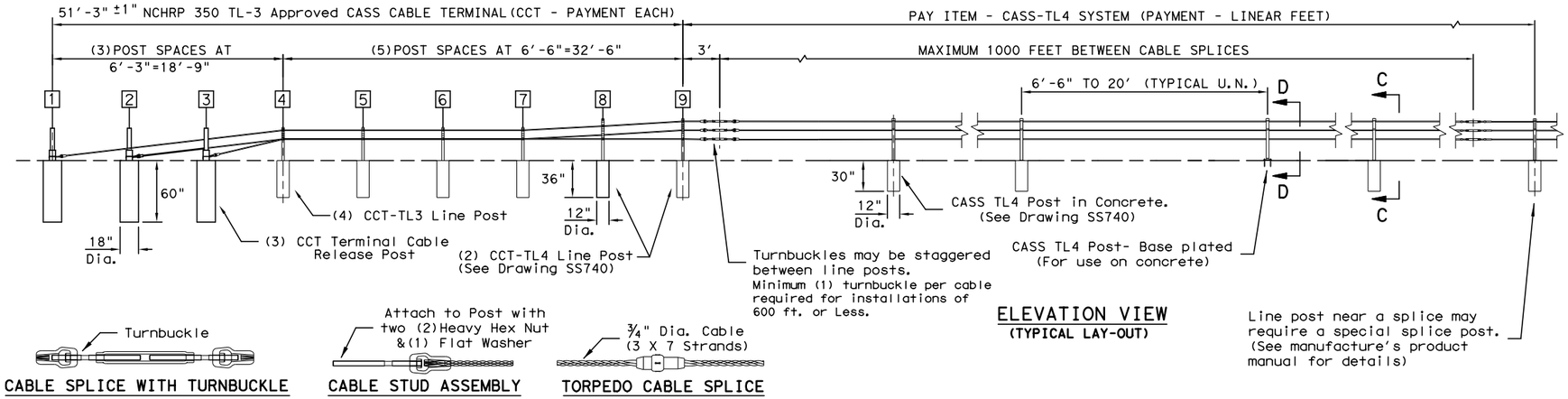
Preferred Installation: Locate post #2 away from nearest traffic.
System has been succesfully tested with opposite installation.

Length-of-Need Cass Cable Terminal (CCT):
Departure Installation: Length-of-Need: 44'-9" (At Post #8)
Approach Installation: Length-of-Need: 19'-9" (12" Past Post #4)



PLAN VIEW

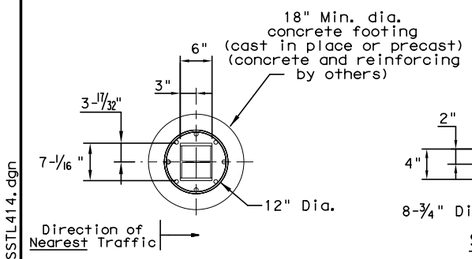


ELEVATION VIEW
(TYPICAL LAY-OUT)

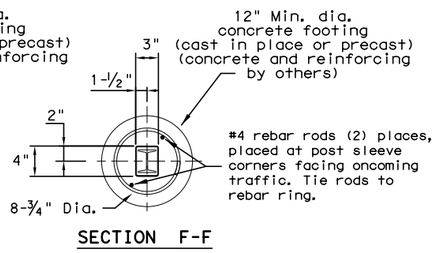
CABLE SPLICE WITH TURNBUCKLE
(OPEN BODY STYLE)

CABLE STUD ASSEMBLY

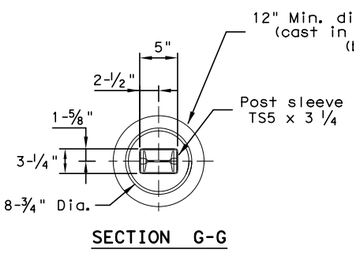
TORPEDO CABLE SPLICE



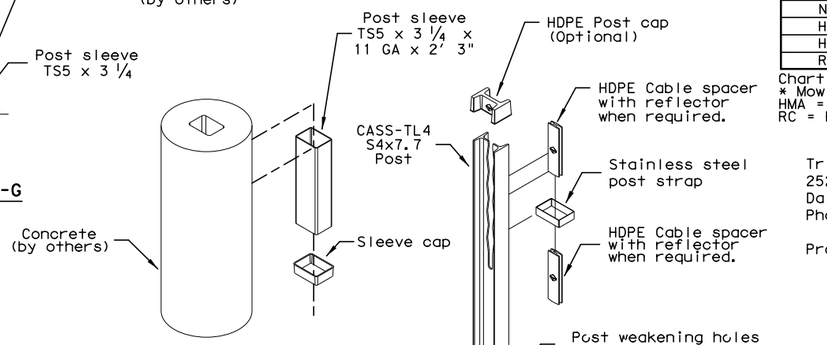
SECTION E-E



SECTION F-F

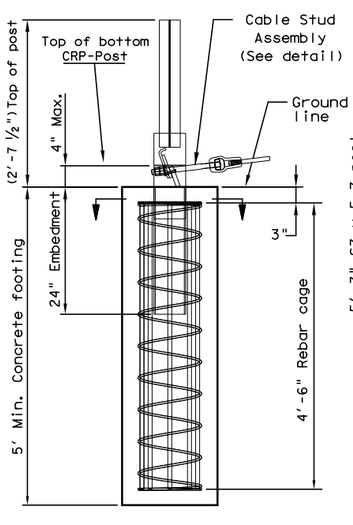


SECTION G-G

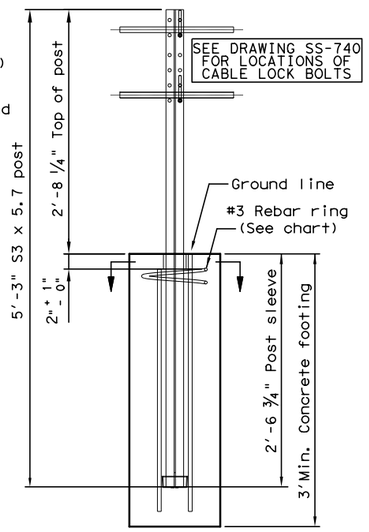


CONCRETE FOOTING
(IN QUALIFYING MOW STRIP SEE CHART)

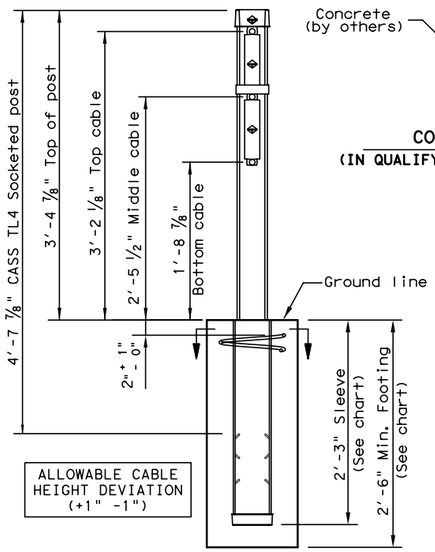
STANDARD POST & CONCRETE FOOTING
(SOCKETED POST)



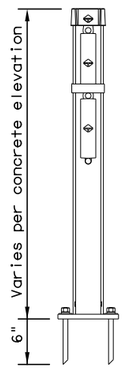
VIEW A-A
(CABLE RELEASE POST 1-3)



VIEW B-B
(TERMINAL LINE POST 4-7)



SECTION C-C
(SOCKETED POST)



SECTION D-D
(BASE PLATED POST)

GENERAL NOTES

1. This drawing is a general overview of CASS TL-4 Barrier System. See SS-740 (latest version) for specific details of CASS cable terminal (CCT) and cable safety system (CASS) requirements, proper installation, options and specification.
2. CASS is designed for bi-directional traffic flows and can be installed on either side of the median. Contact Trinity (800-527-6050) or consult the design, installation, or repair manual(s) for additional information.
3. All concrete for CASS footings shall be TxDOT class A. If class A or stronger concrete is utilized for the mowstrip, please see chart below for allowable footing depth and sleeve deviations.
4. All posts shall be socketed unless otherwise specified. All cables shall be pre-stretched unless otherwise specified.
5. For payment see Special Specification "Cable Barrier System".
6. CASS-TL4 shall be installed on shoulders or medians with slopes of 6:1 or flatter without obstructions, depressions, etc. That may significantly affect the stability of an errant vehicle. Grading of site and/or appropriate fill materials may be required. The designer/installer shall "Flatten" or "Round" various topographical inconsistencies that could interfere with the ability of the installer to consistently maintain the design height (in relation to the terrain) of the cables. Please consult manual(s) and / or TxDOT Memo(s) for installations in "Ditch Sections".
7. CASS TL-4 post spacing may be modified to avoid obstacles that conflict with the installation of cass-tl4 line posts or to reduce deflection on radiuses. No post space can exceed the maximum post TxDOT space limit of 20'. Reducing or increasing post spacing affects deflection. CASS TL-4 may be laterally transferred at a rate not to exceed 30:1.
8. Post foundations may be drilled through existing pavement. Please see line post foundation chart for minimum footing requirements in various applications.
9. For aesthetic purposes Trinity recommends all sleeves, driven posts, and lower cable release posts to be installed reasonably plumb (approximately 1/8" per foot).
10. CASS TL-4 shall be installed in well-drained, compacted, NCHRP Report 350 Standard soil. If soil does not meet this classification, if solid rock/concrete is encountered below grade or if soil is susceptable to severe freeze/thaw cycles, please contact Trinity about alternate footing design(s). Trinity suggests the use of "Mow strips" for erosion prevention and ease of maintenance / installation.
11. See the Texas MUTCD for proper "Barrier" Delineation.

MOW STRIP DETAIL*			CONCRETE FOOTING CHART		
MOW STRIP	DEPTH	WIDTH	FOOTING	TUBE SLEEVE	REBAR RING
NONE			30" Min.	27" Min.	YES
HMA	6" Min.	3' Min.	27" Min.	15" Min.	NO
HMA	8" Min.	3' Min.	24" Min.	15" Min.	NO
RC	3" Min.	3' Min.	24" Min.	15" Min.	NO

Chart does not apply to Terminal Posts 1 thru 9.
* Mow strip or pavement.
HMA = Hot Mix Asphalt (Not Recycled Asphalt Pavement).
RC = Reinforced Concrete (TxDOT Class A Minimum).

CABLE TENSION CHART	
FAHRENHEIT	PRE-STRETCHED
DEGREES	LB / FORCE
-10	7300
0	7000
10	6600
20	6300
30	6000
40	5600
50	5300
60	5000
70	4600
80	4300
90	4000
100	3600
110	3300
120	3000
130	2700
140	2500
150	2300

Allowable deviation from chart in tangent sections: +800, -200 pounds/force. Cable tension readings are typically higher in curved cable sections.

Trinity Highway Products, LLC.
2525 Stemmons Freeway
Dallas, TX 75207
Phone: (800) 644-7976

Product.INFO@TRIN.NET

Texas Department of Transportation
Design Division Standard

TRINITY CABLE SAFETY SYSTEM (TL-4)

CASS(TL4)-14

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	CRP	SAN PAT.		174

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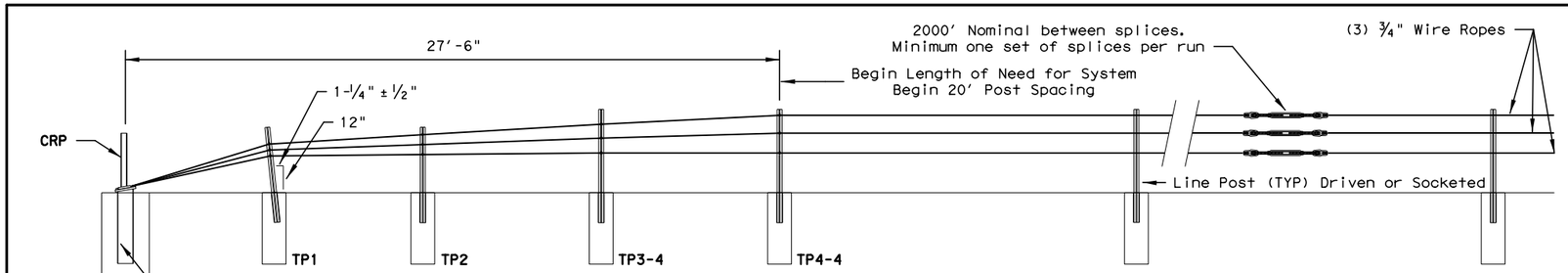
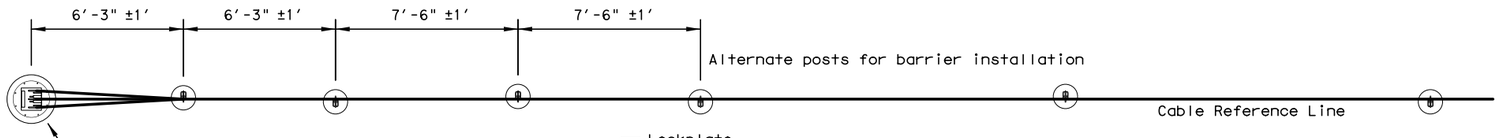
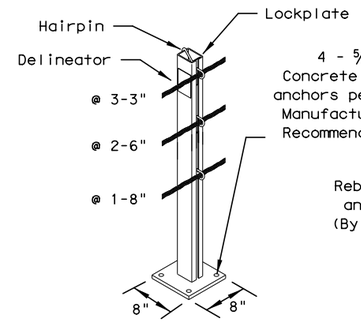
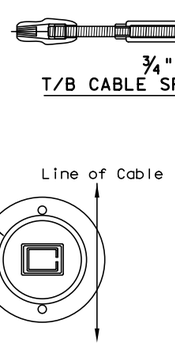


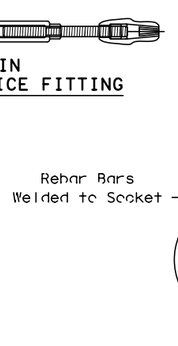




LINE POST
(BASE-PLATED OPTION)
Low-Fill Box Culvert Less than 15" Fill

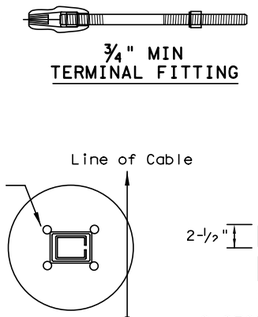


SECTION A

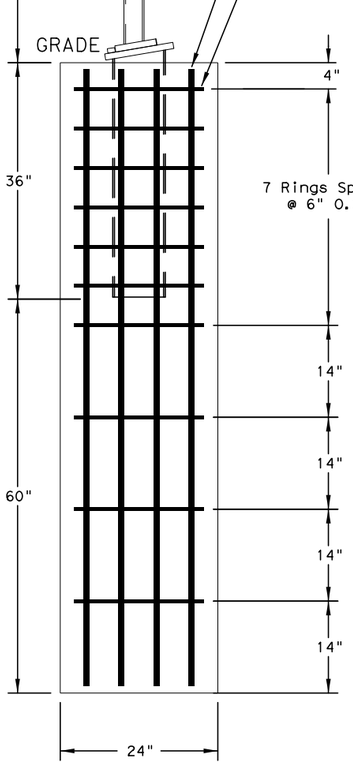


SECTION B

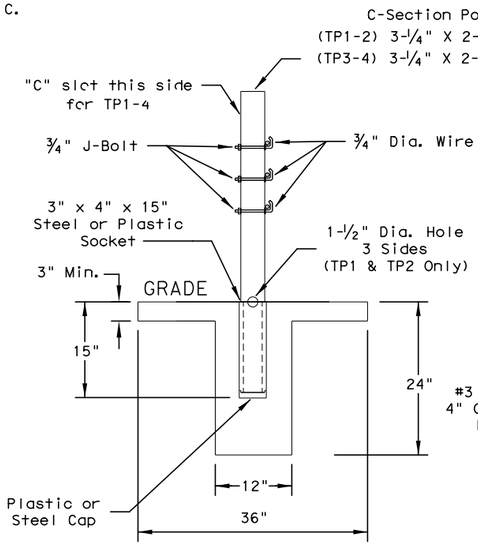
¾" MIN
T/B CABLE SPLICE FITTING



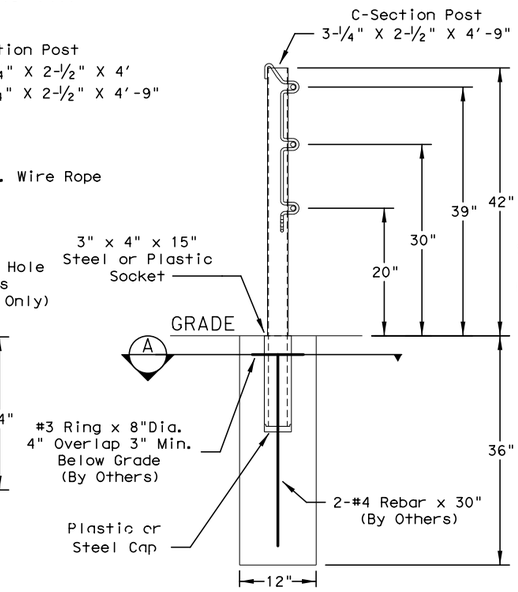
¾" MIN
TERMINAL FITTING



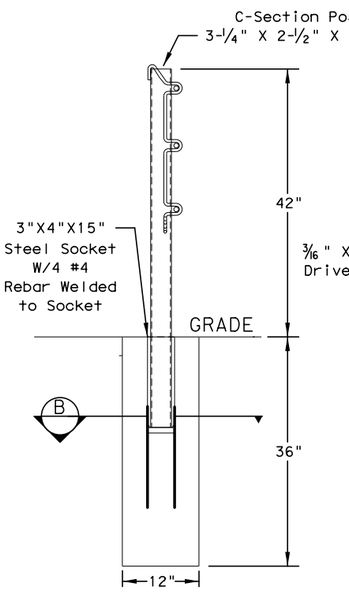
CABLE RELEASE AND ANCHOR POST



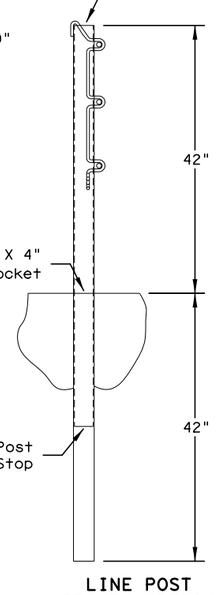
TERMINAL POST
(SHOWN WITH CONCRETE MOWSTRIP)
(Shown with Tube Plate Option)
(See Note 10)



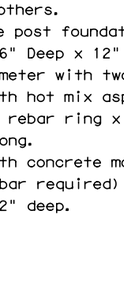
LINE POST SOCKETED
(Shown with Rebar Ring/Bars Socket Option)
(See Note 9)



LINE POST SOCKETED
(Shown with Welded Rebar Socket Option)
(See Note 9)



LINE POST
(DRIVEN OPTION)
(Shown with Driven
Socket Option)
(See Note 9)



C-SECTION POST

GENERAL NOTES

1. For additional information contact Gibraltar, Inc. at 1-800-495-8957, 830-798-5444, or see the manufacturer's product manual.
2. All concrete shall be CLASS A.
3. The Cable Barrier System shall be installed on shoulders or on medians with slopes of 6:1 or flatter. If installed on slopes steeper than 6:1 up to 4:1 the TL-4 system performs as a TL-3 and Gibraltar must be contacted for various guidelines related to placement.
4. The Cable Barrier System is accepted by the FHWA Test Level - 4.
5. See the Texas MUTCD for proper "Barrier" delineation.
6. Rock Clause: Where solid rock is encountered:
   A. For socketed post, continue digging 12" diameter, 15" deep into rock or the required plan depth, whichever comes first.
   B. For driven post, core drill a 4" diameter hole 18" deep into rock or the required plan depth, whichever comes first.
   C. For Anchor post, continue digging 24" diameter, 30" deep into rock or the required plan depth, whichever comes first.
7. Tolerances:
   * LP = 3" out of plumb, at top
   * Cable height = 1"
   * Anchor Post = 5" off of Cable Reference Line
8. The Gibraltar cable barrier system shall be installed in NCHRP Report 350 standard compacted soil. Soil must be well drained.
9. All non-welded rebar by others.
10. Minimum recommended line post foundation.
    A. Without mowstrip, 36" Deep x 12" diameter foundations with #3 rebar ring x 8" diameter with two #4 rebar vertical bars 30" long
    B. With 4" minimum depth hot mix asphalt, 30" deep x 12" diameter foundations with #3 rebar ring x 8" diameter with two #4 rebar vertical bars 30" long.
    C. With 3" minimum depth concrete mowstrip, 24" deep x 12" diameter foundations. (No rebar required)
    D. Direct drive post 42" deep.

CABLE TENSION CHART*	
-10 °F	8000
0 °F	7600
10 °F	7200
20 °F	6800
30 °F	6400
40 °F	6000
50 °F	5600
60 °F	5200
70 °F	4800
80 °F	4400
90 °F	4000
100 °F	3600
110 °F	3200

DEFLECTION	
Deflection	Post Spacing
8'-0"	20 FT
7'-0"	12 FT
6'-8"	10 FT

* Allowable Deviation from Chart +/- 10%

Texas Department of Transportation

Design Division Standard

GIBRALTAR CABLE BARRIER SYSTEM (TL-4)

GBRLTR(TL4)-14

FILE: gbrltrtl414.dgn	DN: TxDOT	CK: RM	DW: VP	CK:
©TxDOT: March 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		175

DATE: 2/12/2021
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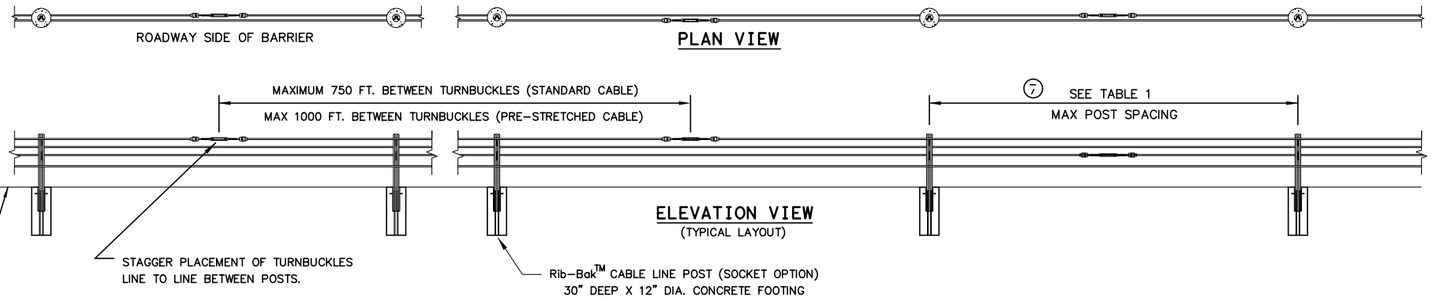
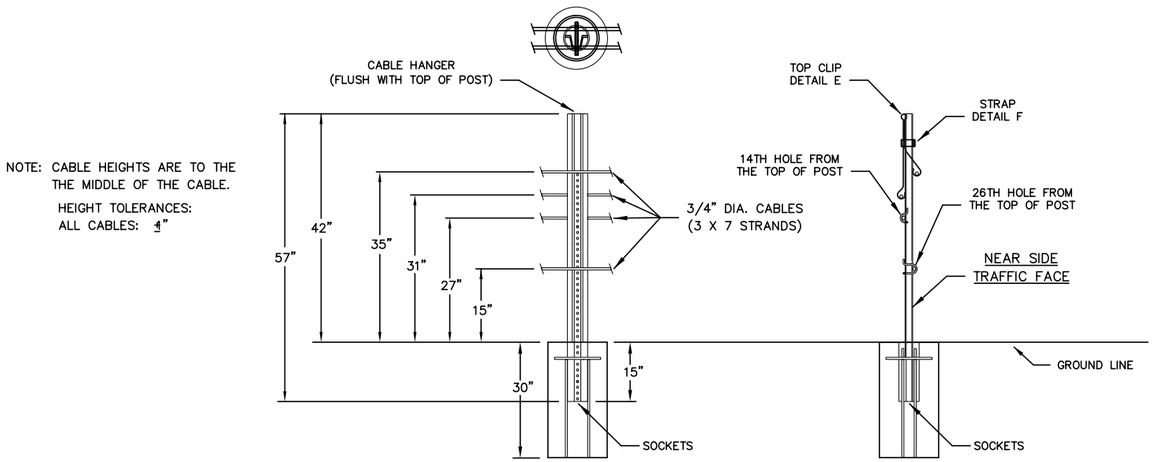
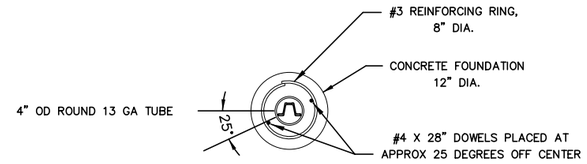
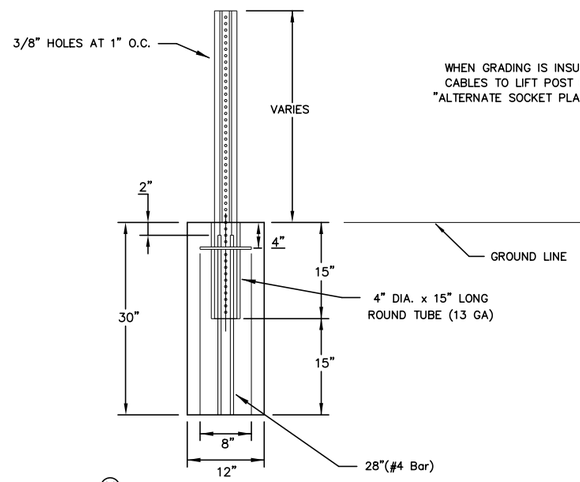


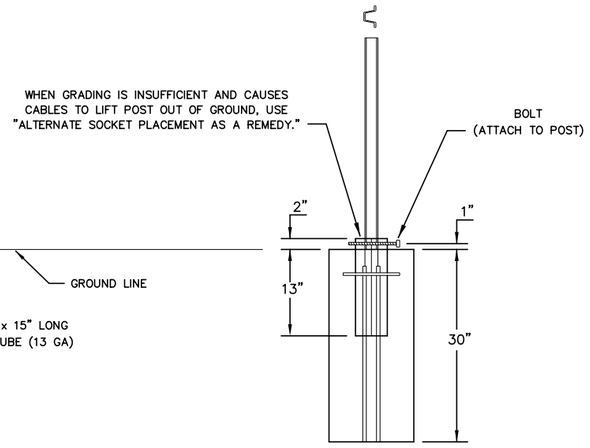


INSTALLATION DETAIL
4 CABLE 6:1

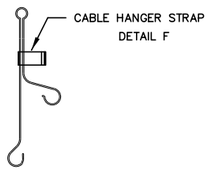




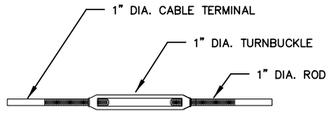
⑪ SOCKETED POST OPTION
(TYPE S POST)



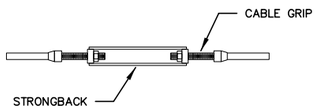
ALTERNATE SOCKET PLACEMENT
(TYPE S POST)



CABLE HANGER BRACKET
DETAIL E
(SUBJECT TO MANUFACTURER'S TOLERANCES)



WEDGED FITTING
TURNBUCKLE DETAIL
(TYPICAL)



STRONGBACK (SELF-SWAGING)
TURNBUCKLE DETAIL
(OPTIONAL)

GENERAL NOTES

1. FOR ADDITIONAL INFORMATION CONTACT YOUR DISTRIBUTOR OR NUCOR STEEL MARION, INC. AT (740) 383-4011.
2. FOR PAYMENT SEE SPECIAL SPECIFICATION "CABLE BARRIER SYSTEM".
3. FOR ADDITIONAL INFORMATION SEE THE MANUFACTURER'S PRODUCT MANUAL.
4. THE NU-CABLE SYSTEM IS DESIGNED FOR BI-DIRECTIONAL TRAFFIC FLOWS. SEE THE MANUFACTURER'S PRODUCT MANUAL FOR PLACEMENT ADJACENT TO GUARDRAIL END TREATMENTS.
5. THE NU-CABLE SYSTEM SHALL BE INSTALLED ON MEDIANS WITH SLOPES OF 6:1 OR FLATTER WITHOUT OBSTRUCTIONS, DEPRESSIONS, ETC; THAT MAY SIGNIFICANTLY AFFECT THE STABILITY OF AN ERRANT VEHICLE.
6. THE NU-CABLE SYSTEM MAY BE INSTALLED ON EITHER SIDE OF THE ROADWAY. Rib-Bak™ CABLE LINE POSTS MAY BE SOCKETED OR DRIVEN DESIGN.
7. THE TL-4 FOR 6:1 SLOPES CAN USE 4# / LF POST. SEE TABLE #1 FOR POST SIZE PER SPACING.
8. SEE (TABLE 2) FOR TENSION AMOUNT AT SPECIFIC CABLE TEMPERATURE FOR INITIAL INSTALLATION.
9. SEE (TABLE 3) FOR TENSION AMOUNT AT SPECIFIC CABLE TEMPERATURE FOR MAINTENANCE.
10. FOURTH (LOWEST) CABLE IS NOT OPTIONAL ON THE TL-4 SYSTEM.
11. CONSULT YOUR PROJECT PLAN SHEETS AND CABLE BARRIER SPECIFICATIONS FOR DESIRED SOCKET MATERIAL.
12. ALL FOUNDATION DESIGNS ARE BASED ON NCHRP 350 STRONG (S1) SOIL. CONSULT THE MANUFACTURER FOR SPECIFIC FOUNDATION DESIGN IF SOIL TYPES DIFFER.

⑦ TABLE 1

POST SIZE TABLE	
POST SPACING	POST SIZE
0' – 17'-6"	4# / LF X 4' OR 6' POST
17'-6" – 20'	5# / LF X 4' POST

POST SPACING IS PER 8 FOOT DEFLECTION REQUIRMENTS.
CONSULT PRODUCT MANUAL IF GREATER DEFLECTION IS PERMISSIBLE.

⑤ TABLE 2

CABLE TENSION CHART	
INITIAL INSTALL	
F	LBF
120	4624
110	4986
100	5350
90	5713
80	6077
70	6440
60	7167
50	7894
40	8619
30	9346
20	10073
10	10800
0	11525
-10	12252
-20	12979
-30	13706

③ TABLE 3

CABLE TENSION CHART	
MAINTENANCE	
F	LBF
120	4021
110	4336
100	4652
90	4968
80	5284
70	5600
60	6232
50	6864
40	7495
30	8127
20	8759
10	9391
0	10022
-10	10654
-20	11286
-30	11918

Texas Department of Transportation
Design Division Standard

NU-CABLE BARRIER SYSTEM (TL-4) (4 CABLE)

NU-CABLE(TL4)-14

FILE:	DN:	CK:	DW:	CK:
© TxDOT:	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		176

DATE: 2/12/2021
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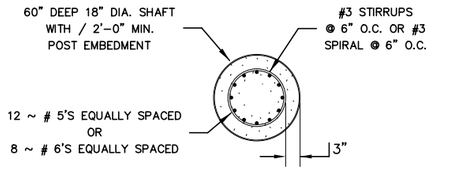
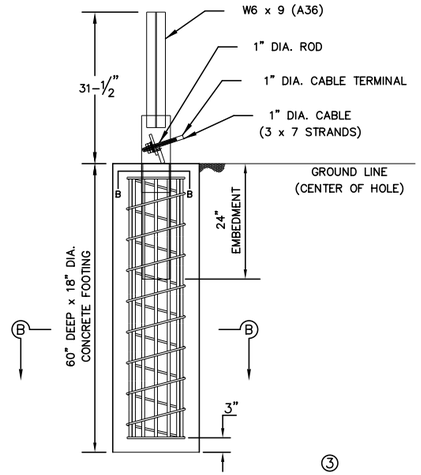
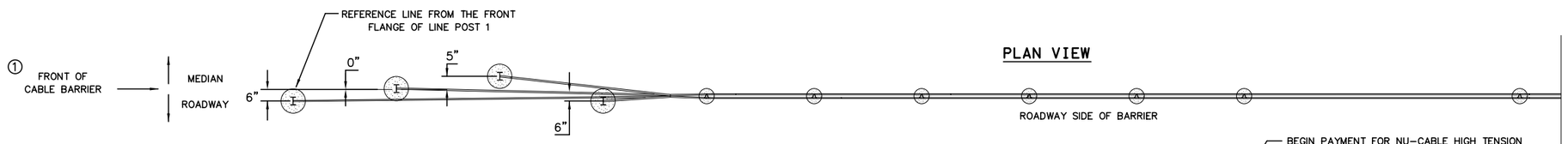


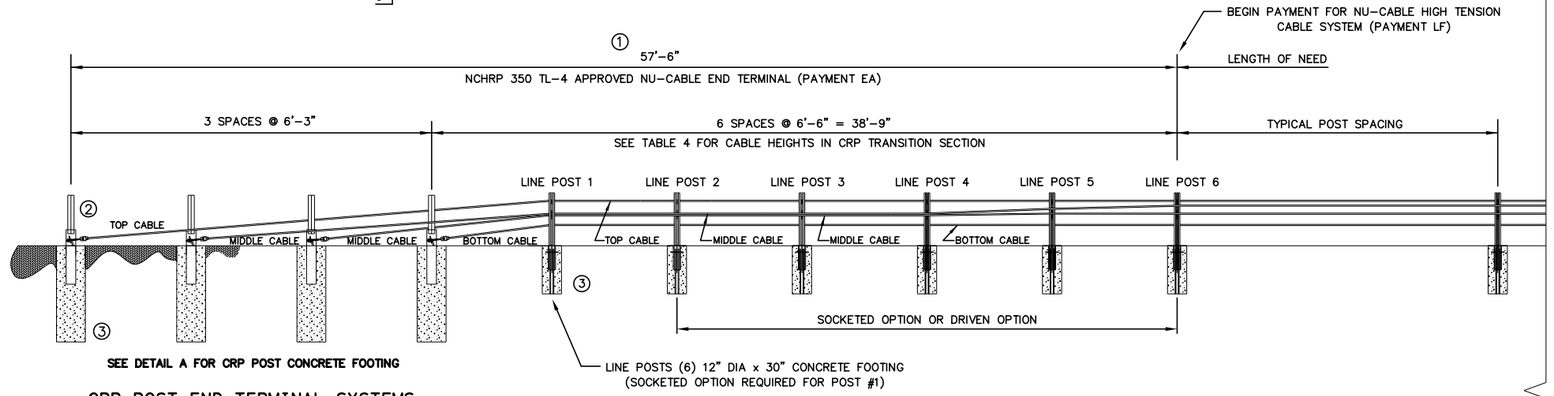
SECTION B–B
(CABLE RELEASE POST)



DETAIL A – CRP IN CONCRETE FOOTING ③
(3000 PSI MIN CONCRETE)



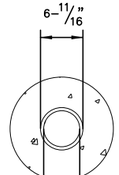
PLAN VIEW

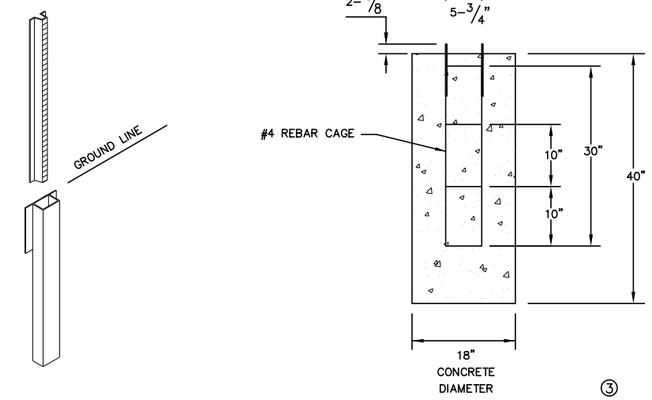


CRP POST END TERMINAL SYSTEMS

ELEVATION VIEW

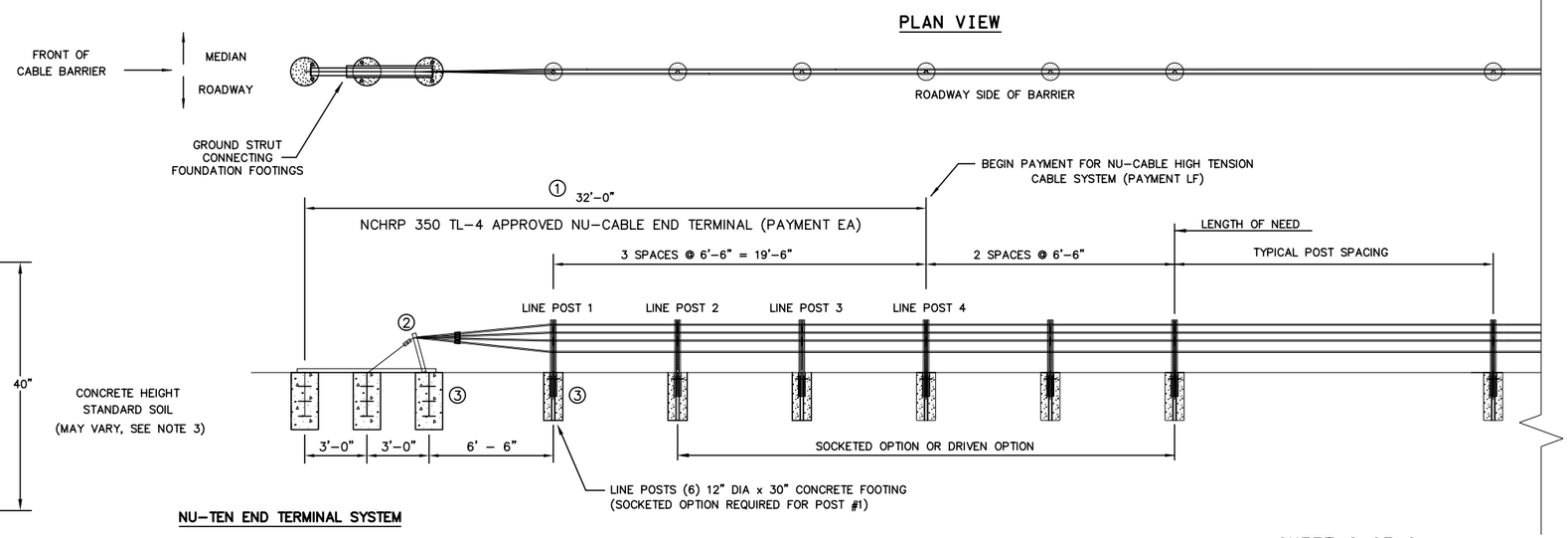
① THE OPPOSING END TREATMENTS ON A PARTICULAR RUN ARE MIRRORED IN THEIR LAYOUT.





DRIVEN SOCKET OPTION

NU–TEN CONCRETE FOOTING DETAIL ③



NU–TEN END TERMINAL SYSTEM

ELEVATION VIEW

④ **TABLE 4**

CRP END TERMINAL CABLE HEIGHTS - TL-4						
	LP 1	LP 2	LP 3	LP 4	LP 5	LP 6
TOP CABLE	34"	34"	34"	34"	34"	34"
UPPER-MIDDLE CABLE	27"	27"	27"	27"	28"	31"
BOTTOM-MIDDLE CABLE	24"	24"	24"	24"	24"	24"
BOTTOM CABLE	15"	15"	15"	15"	15"	15"

NOTES

1. THE OPPOSING END TREATMENTS ON A PARTICULAR RUN ARE MIRRORED IN THEIR LAYOUT. SYSTEM PAYMENT IS PER EACH (EA). REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL PAYMENT INFORMATION
2. REFER TO INSTALLATION MANUAL FOR CABLE END ASSEMBLY DETAIL.
3. ALL FOUNDATION DESIGNS ARE BASED ON NCHRP 350 STRONG (S1) SOIL. CONSULT THE MANUFACTURER FOR SPECIFIC FOUNDATION DESIGNS IF SOIL TYPES DIFFER.
4. SEE TABLE 4 CABLE HEIGHTS IN CRP TRANSITION SECTION.

Texas Department of Transportation

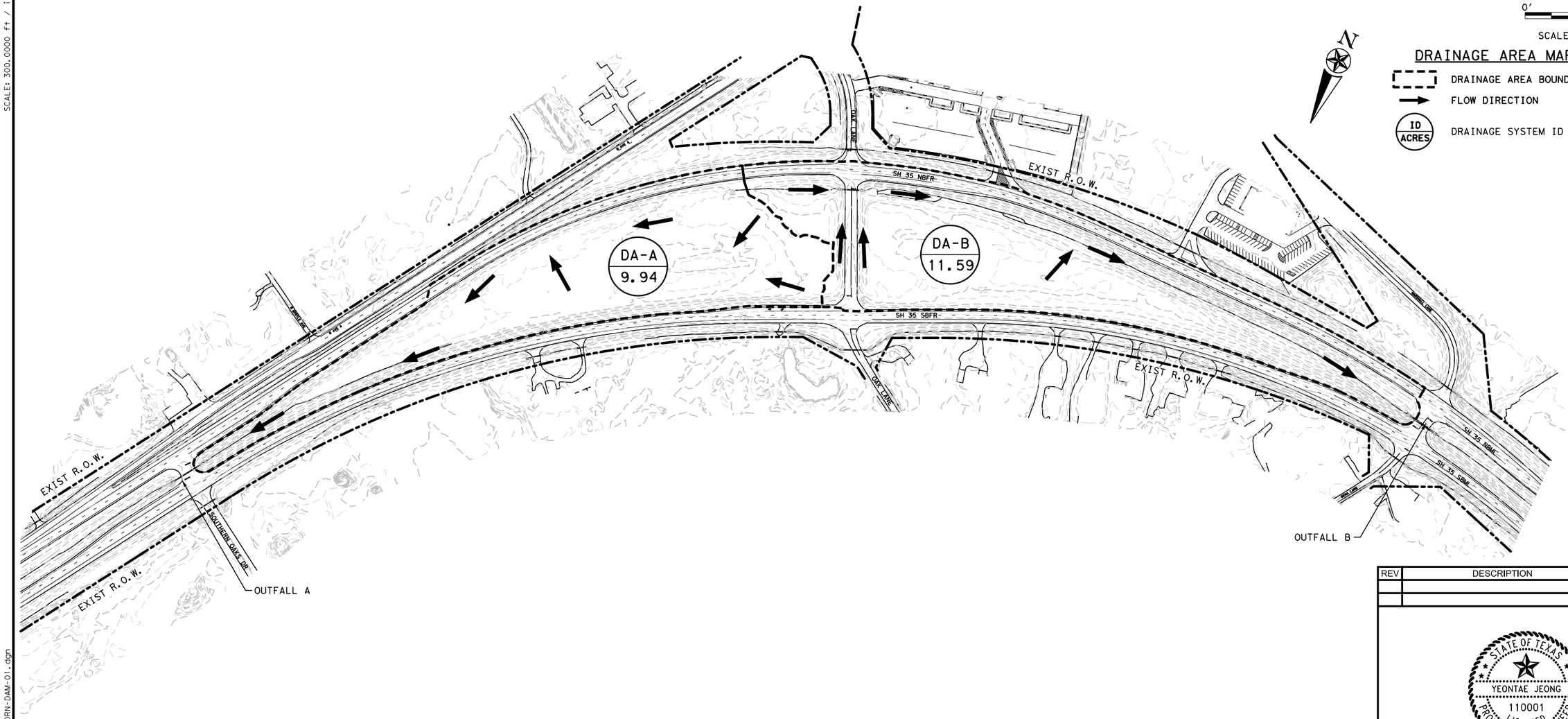
Design Division Standard

NU-CABLE BARRIER SYSTEM (TL-4) (4 CABLE)

NU-CABLE(TL4)-14

FILE:	DN:	CK:	DW:	CK:
© TxDOT:	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		177

SCALE: 300.0000 ft / in.



EXISTING HYDROLOGIC DATA (RATIONAL METHOD)							
DRAINAGE SYSTEM ID	AREA (AC)	WEIGHTED C VALUE	TIME OF CONC. (MIN)	10-YR RAINFALL INTENSITY	10-YR PEAK DISCHARGE (CFS)	100-YR RAINFALL INTENSITY	100-YR PEAK DISCHARGE (CFS)
DA-A	9.94	0.4	57	3.25	12.92	5.06	20.12
DA-B	11.59	0.46	42	4.1	21.78	6.31	33.54

*RAINFALL DATA TAKEN FROM ATLAS 14

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
YEONTAE JEONG
110001
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

EXISTING OVERALL DRAINAGE AREA MAP

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	178

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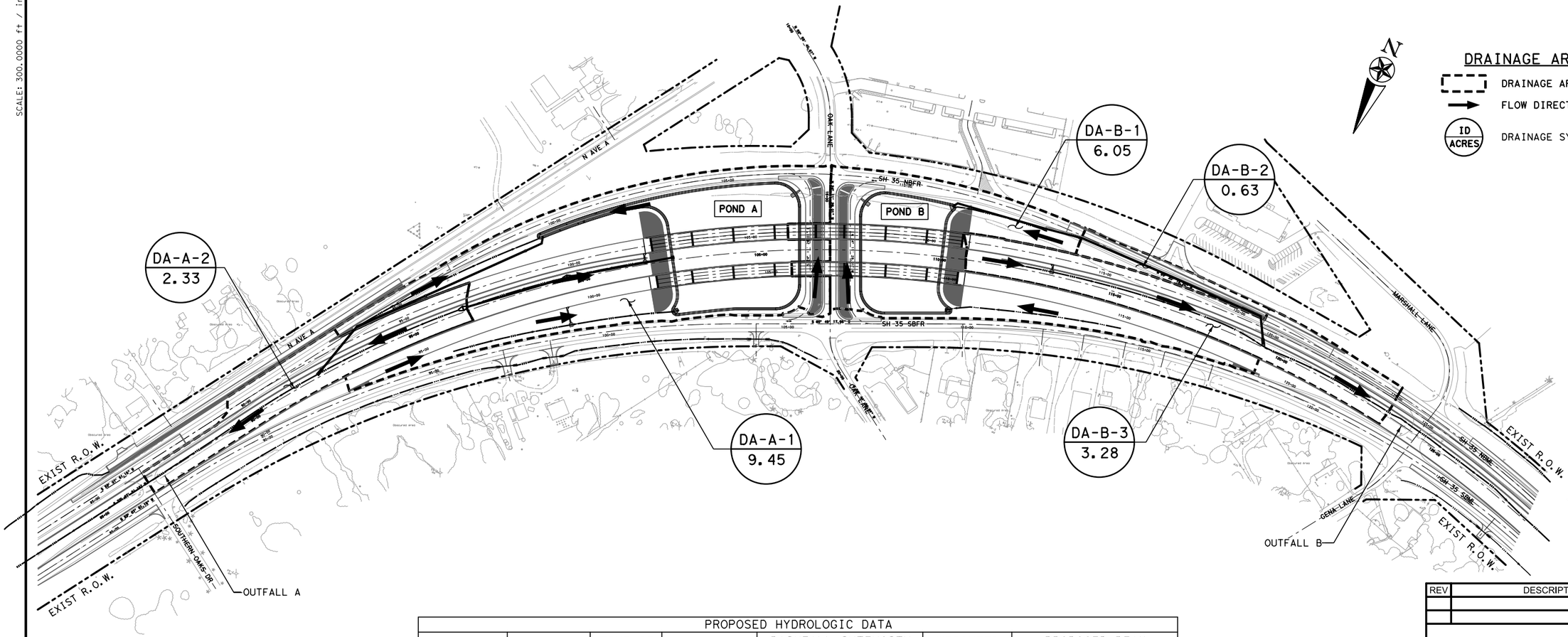

PROPOSED HYDROLOGIC DATA

DRAINAGE SYSTEM ID	AREA (AC)	TIME OF CONC. (MIN)	WEIGHTED C VALUE	RAINFALL INTENSITY (IN/HR)		WEIGHTED CURVE NUMBER	PROPOSED PEAK DISCHARGE (CFS)	
				10 YR	100 YR		10 YR	100 YR
DA-A-1*	9.45	17	N/A	N/A	N/A	69	2.07	4.41
DA-A-2**	2.33	10	0.54	7.71	11.55	N/A	9.7	14.53
DA-B-1*	6.05	10	N/A	N/A	N/A	74	2.38	4.65
DA-B-2**	0.63	10	0.69	7.71	11.55	N/A	3.35	5.02
DA-B-3**	3.28	10	0.60	7.71	11.55	N/A	15.17	22.73

*PROPOSED OUTFLOW PEAK DISCHARGE FROM POND, COMPUTED USING HEC-HMS WITH NRCS CN METHOD
**PROPOSED PEAK DISCHARGE COMPUTED USING GEOPAK DRAINAGE WITH RATIONAL METHOD

COMPARISON OF HYDROLOGIC DATA BETWEEN EXISTING AND PROPOSED AT OUTFALL A AND B

EXISTING CONDITIONS		PROPOSED CONDITIONS		10 YR			100 YR		
SYSTEM ID	AREA (AC)	SYSTEM ID	AREA (AC)	EXISTING PEAK DISCHARGE (CFS)	PROPOSED PEAK DISCHARGE (CFS)*	DISCHARGE REDUCTION (CFS)	EXISTING PEAK DISCHARGE (CFS)	PROPOSED PEAK DISCHARGE (CFS)*	DISCHARGE REDUCTION (CFS)
DA-A	9.94	DA-A-1	9.45	12.92	11.45	1.47	20.12	18.67	1.45
		DA-A-2	2.33						
DA-B	11.59	DA-B-1	6.05	21.78	19.96	1.82	33.54	32.20	1.34
		DA-B-2	0.63						
		DA-B-3	3.28						

*PROPOSED PEAK DISCHARGE FROM THE ROUTED FLOW THROUGH THE POND AND THE MEDIAN DITCH AT OUTFALL

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
YEONTAE JEONG
110001
LICENSED
PROFESSIONAL ENGINEER
4-27-21

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

PROPOSED OVERALL DRAINAGE AREA MAP

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
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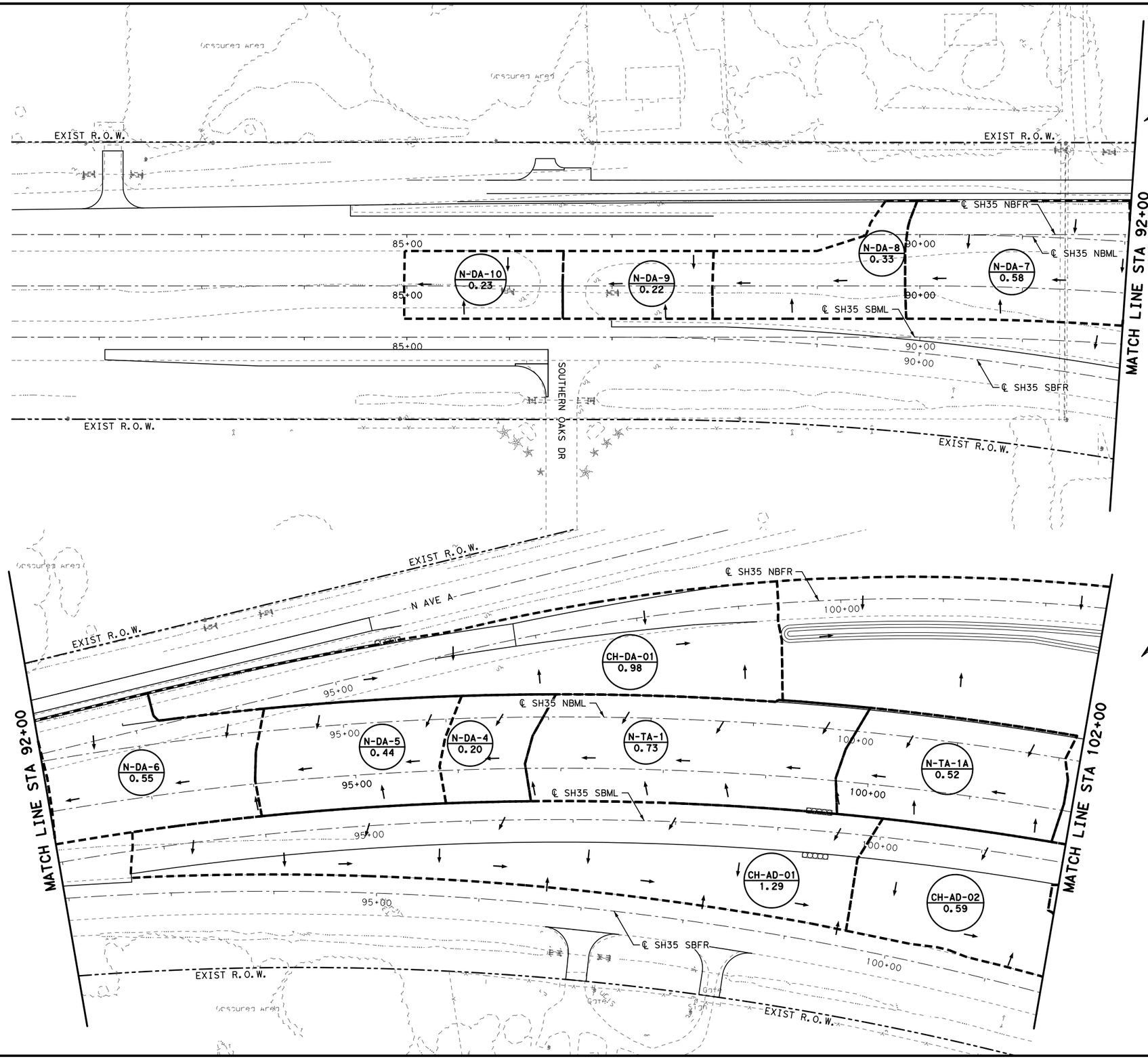

0' 150' 300'(H)

SCALE IN FEET

DRAINAGE AREA MAP LEGEND

- DRAINAGE AREA BOUNDARY
- FLOW DIRECTION
- ID / ACRES — DRAINAGE SYSTEM ID

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
YEONTAE JEONG
110001
LICENSED
PROFESSIONAL ENGINEER

yeontae jeong
4-27-21

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

STORM SEWER DRAINAGE AREA MAP

PROJECT BEGIN TO STA 102+00 (CL)

SHEET 1 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	180

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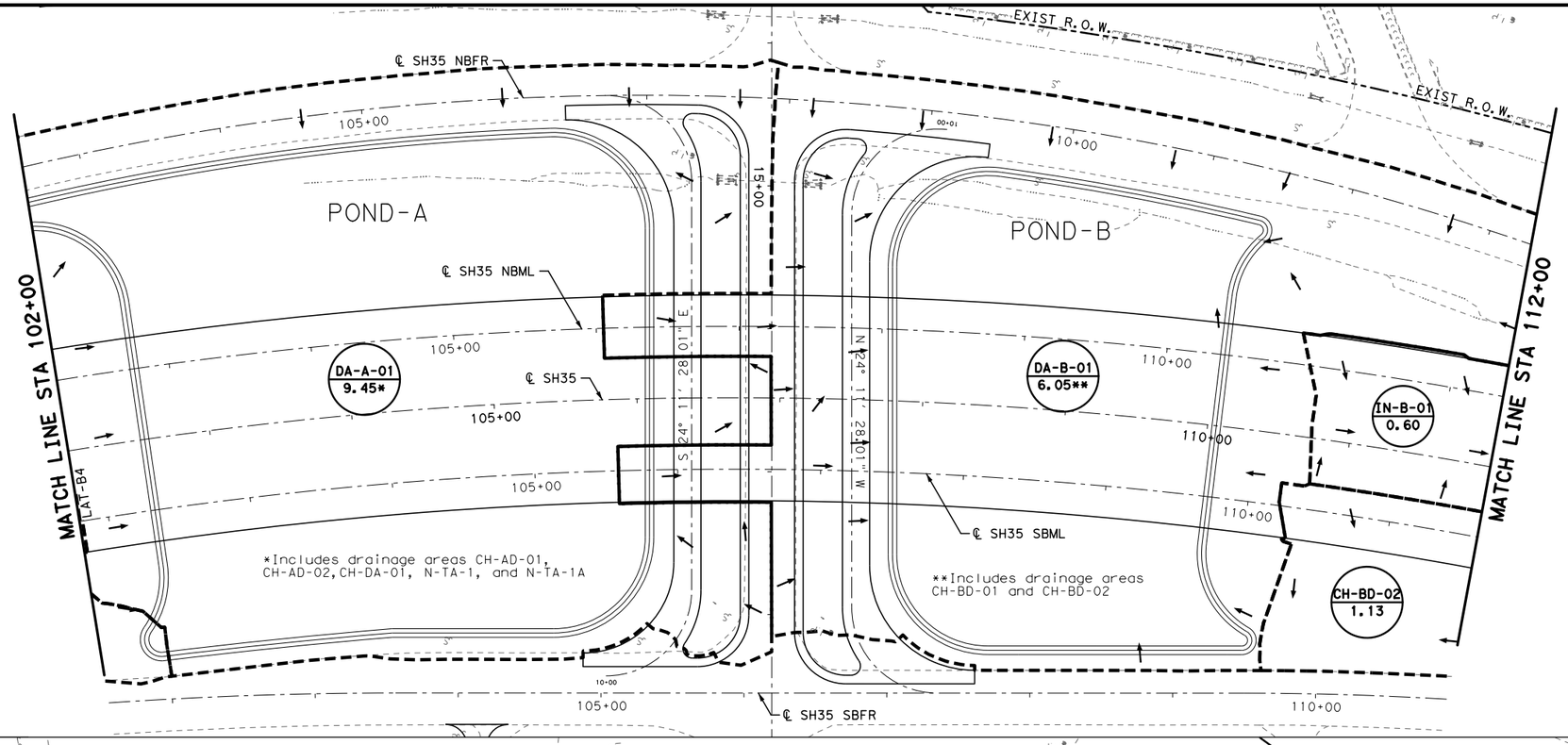

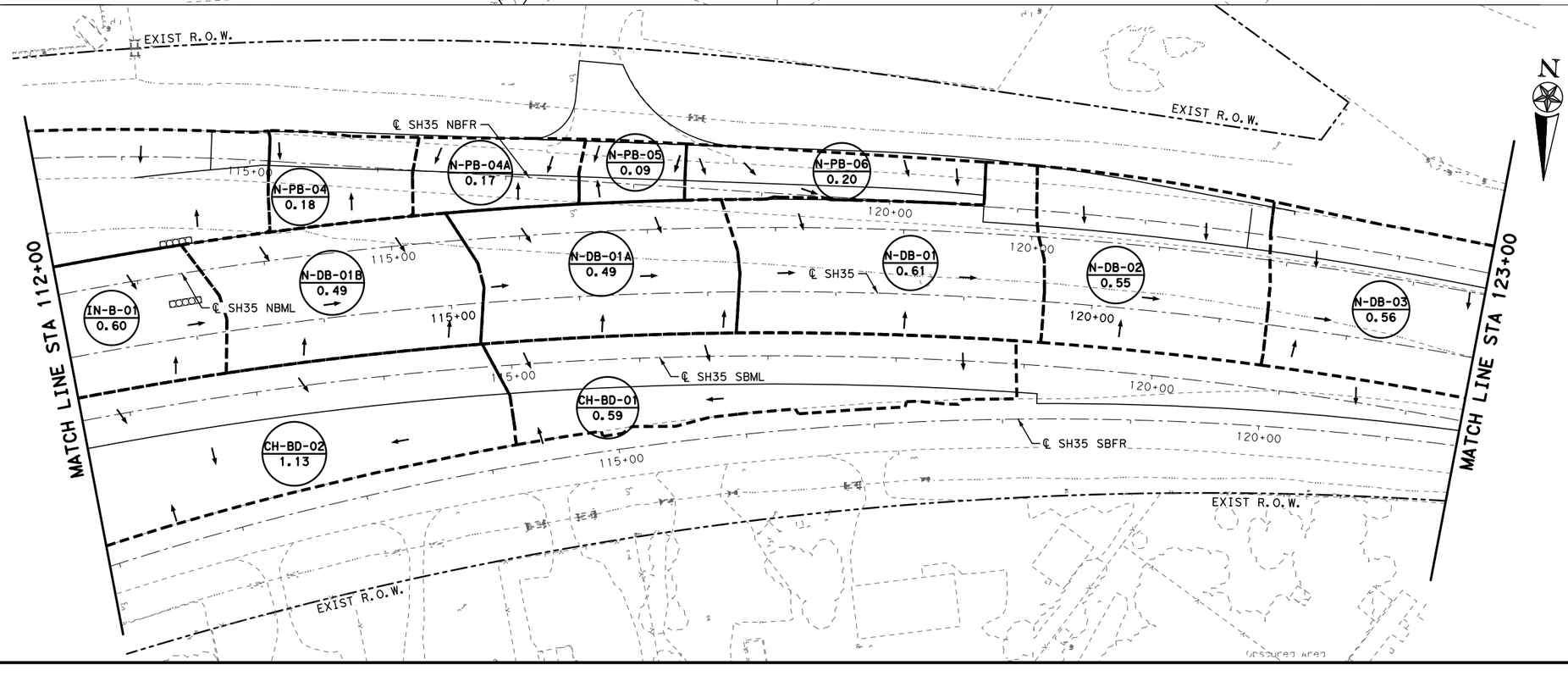

0′ 150′ 300′(H)

SCALE IN FEET

DRAINAGE AREA MAP LEGEND

- DRAINAGE AREA BOUNDARY
- FLOW DIRECTION
- ID / ACRES — DRAINAGE SYSTEM ID

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
YEONTAE JEONG
110001
LICENSED
PROFESSIONAL ENGINEER
4-27-21

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

STORM SEWER DRAINAGE AREA MAP

STA 102+00 TO STA 123+00 (CL)

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	181

DATE: 4/26/2021 TIME: 8:15:06 PM
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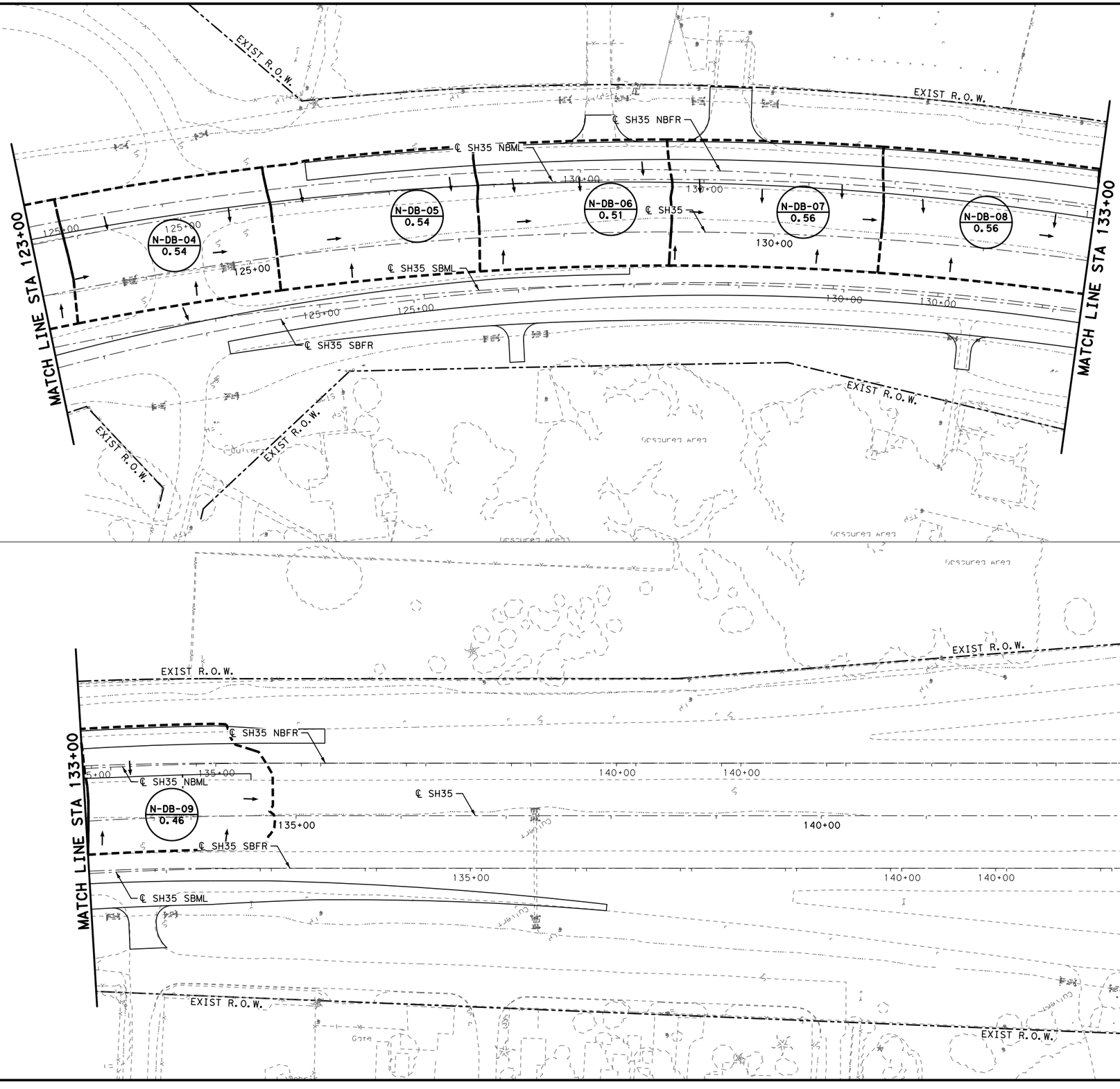

0′ 150′ 300′(H)

SCALE IN FEET

DRAINAGE AREA MAP LEGEND

- DRAINAGE AREA BOUNDARY
- FLOW DIRECTION
- ID / ACRES — DRAINAGE SYSTEM ID

REV	DESCRIPTION	DATE	INIT

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yeontae jeong
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WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

STORM SEWER DRAINAGE AREA MAP

STA 123+00 TO PROJECT END

SHEET 3 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	182

DATE: 4/26/2021 TIME: 8:14:05 PM
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SCALE: 100.0000 ft / in.

DRAINAGE AREA SYSTEM - POND A
FREQUENCY 10-YEAR

Area Identification	Area Composite C Value	Drainage Area (Ac)	Time of Concentration (Minutes)	Time Used (Minutes)	Intensity (In/Hr)	Discharge (CFS)	Remarks
N-DA-4	0.57	0.20	0.67	10.00	7.71	0.91	DITCH
N-DA-5	0.57	0.44	0.86	10.00	7.71	1.94	DITCH
N-DA-6	0.60	0.55	0.97	10.00	7.71	2.58	DITCH
N-DA-7	0.60	0.58	7.28	10.00	7.71	2.68	DITCH
N-DA-8	0.45	0.33	6.22	10.00	7.71	1.16	DITCH
N-DA-9	0.38	0.22	3.01	10.00	7.71	0.64	DITCH
N-DA-10	0.38	0.23	6.33	10.00	7.71	0.68	DITCH
CH-AD-01	0.63	1.29	4.19	10.00	7.71	6.27	DITCH
CH-AD-02	0.54	0.59	0.54	10.00	7.71	2.48	DITCH
CH-DA-01	0.55	0.98	2.00	10.00	7.71	4.19	DITCH
N-TA-1	0.57	0.73	0.97	10.00	7.71	3.19	
N-TA-1A	0.57	0.52	0.90	10.00	7.71	2.30	

DRAINAGE AREA SYSTEM - POND B
FREQUENCY 10-YEAR

Area Identification	Area Composite C Value	Drainage Area (Ac)	Time of Concentration (Minutes)	Time Used (Minutes)	Intensity (In/Hr)	Discharge (CFS)	Remarks
CH-BD-01	0.71	0.59	2.02	10.00	7.71	3.21	DITCH
CH-BD-02	0.56	1.13	2.79	10.00	7.71	4.87	DITCH
IN-B-01	0.59	0.60	2.14	10.00	7.71	2.72	DITCH
N-DB-01	0.59	0.61	2.51	10.00	7.71	2.75	DITCH
N-DB-01A	0.58	0.49	2.51	10.00	7.71	2.17	DITCH
N-DB-01B	0.59	0.49	2.51	10.00	7.71	2.20	DITCH
N-DB-02	0.64	0.55	2.15	10.00	7.71	2.69	DITCH
N-DB-03	0.62	0.56	2.61	10.00	7.71	2.66	DITCH
N-DB-04	0.62	0.54	2.58	10.00	7.71	2.58	DITCH
N-DB-05	0.61	0.54	2.58	10.00	7.71	2.54	DITCH
N-DB-06	0.61	0.51	2.59	10.00	7.71	2.37	DITCH
N-DB-07	0.61	0.56	2.68	10.00	7.71	2.61	DITCH
N-DB-08	0.61	0.56	2.69	10.00	7.71	2.63	DITCH
N-DB-09	0.60	0.46	2.42	10.00	7.71	2.12	DITCH
N-PB-04	0.58	0.18	1.66	10.00	7.71	0.80	
N-PB-04A	0.64	0.17	2.14	10.00	7.71	0.82	
N-PB-05	0.71	0.09	1.72	10.00	7.71	0.49	
N-PB-06	0.80	0.20	2.75	10.00	7.71	1.23	

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
YEONTAE JEONG
110001
LICENSED
PROFESSIONAL ENGINEER
yeontae jeong
4-27-21

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

STORM SEWER HYDRAULIC DATA

RUNOFF CALCULATON

SHEET 1 OF 4

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	183

DATE: 4/26/2021 TIME: 8:14:38 PM
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SCALE: 100.0000 ft / in.

INLET CONFIGURATION SYSTEM - POND A

Inlet ID	Node Library Item Name	Node Station	Node Reference Chain	Node Offset (ft)	Node Elevaton (ft)	Inlet Type	Inlet Profile Type	Inlet Composite Spread Slope (ft/ft)	Inlet Grate Type	Inlet Grate Length (ft)	Inlet Grate Width (ft)	Inlet Grate Area (ft^2)	Inlet Grate Perimeter (ft)	Inlet-Grate Clog Area Reduction	Inlet-Grate Clog Perim. Reduction
N-PA-1	PSL FG 3x3 W 3x3 GR	99+35.00	SH35_NBML	-85.00	23.95	Grate	Sag	0.333	Parallel 1 7/8 - 4	3.17	3.17	4.54	12.67	0.5	0.5
N-TA-1	PAZD FG 3x3 W 3x3 GR	96+81.00	SH35_NBML	40.00	28.71	Curb and Grate	Sag	0.029	Parallel 1 1/8	3.17	3.17	4.54	12.67	0.5	0.5
N-TA-1A	PAZD FG 3x3 W 3x3 GR	99+88.00	SH35_NBML	41.00	37.22	Curb and Grate	Sag	0.022	Parallel 1 1/8	3.17	3.17	4.54	12.67	0.5	0.5

INLET HYDRAULIC SYSTEM - POND A
FREQUENCY 10-YEAR

Inlet ID	Inlet Type	Inlet Profile Type	Node Station	Inlet Discharge (CFS)	Inlet Capacity (CFS)	Inlet By Pass Flow Into (CFS)	Inlet By Pass Flow (CFS)	Inlet By Pass Node ID	Inlet Computed Ponded Width (ft)	Inlet Max Ponded Width (ft)	Inlet Computed Ponded Depth (ft)	Inlet Max Ponded Depth (ft)	Inlet Longitudinal Slope (%)	Node Junction Loss (ft)	Inlet Spread Manning's N Value
N-PA-1	Pond A Outlet Stucture w/ 12" DIA Orifice. See Outlet Structure Detail Sheet for details.														
N-TA-1	Curb and Grate	Sag	96+81.00	3.19	39.79	0.00	0.00		10.15	12.00	0.30	1.00	n/a	0.23	0.035
N-TA-1A	Curb and Grate	Sag	99+88.00	2.30	39.79	0.00	0.00		10.87	12.00	0.24	1.00	n/a	0.08	0.035

INLET CONFIGURATION SYSTEM - POND B

Inlet ID	Node Library Item Name	Node Station	Node Reference Chain	Node Offset (ft)	Node Elevaton (ft)	Inlet Type	Inlet Profile Type	Inlet Composite Spread Slope (ft/ft)	Inlet Grate Type	Inlet Grate Length (ft)	Inlet Grate Width (ft)	Inlet Grate Area (ft^2)	Inlet Grate Perimeter (ft)	Inlet-Grate Clog Area Reduction	Inlet-Grate Clog Perim. Reduction
N-PB-01	PSL FG 3x3 W 3x3 GR	111+43.00	SH35_NBFR	39.50	23.42	Grate	Sag	0.099	Parallel 1 7/8 - 4	3.17	3.17	4.54	12.67	0.5	0.5
N-PB-04	PCO 10L 3x5	12+18.00	NB_EXT_RAMP_A	7.30	27.14	Curb	On Grade	0.043	n/a	n/a	n/a	n/a	n/a	n/a	n/a
N-PB-04A	PCO 10L 3x5	13+30.00	NB_EXT_RAMP_A	7.30	27.65	Curb	On Grade	0.020	n/a	n/a	n/a	n/a	n/a	n/a	n/a
N-PB-05	PCO 10L 3x5	14+60.00	NB_EXT_RAMP_A	7.30	28.11	Curb	On Grade	0.020	n/a	n/a	n/a	n/a	n/a	n/a	n/a
N-PB-06	PSL FG 4x4 W 4x4 GR	17+35.00	NB_EXT_RAMP_A	8.70	26.75	Grate	Sag	0.051	Parallel 1 7/8 - 4	4.17	4.17	8.19	16.67	0.5	0.5

INLET HYDRAULIC SYSTEM - POND B
FREQUENCY 10-YEAR

Inlet ID	Inlet Type	Inlet Profile Type	Node Station	Inlet Discharge (CFS)	Inlet Capacity (CFS)	Inlet By Pass Flow Into (CFS)	Inlet By Pass Flow (CFS)	Inlet By Pass Node ID	Inlet Computed Ponded Width (ft)	Inlet Max Ponded Width (ft)	Inlet Computed Ponded Depth (ft)	Inlet Max Ponded Depth (ft)	Inlet Longitudinal Slope (%)	Node Junction Loss (ft)	Inlet Spread Manning's N Value
N-PB-01	POND B Outlet Structure w/ 12" DIA Orifice. See Outlet Structure Detail Sheet for details														
N-PB-04	Curb	On Grade	12+18.00	0.80	0.80	0.00	0.00	N-PB-01	4.89	10.00	0.21	0.48	0.35	0.01	0.015
N-PB-04A	Curb	On Grade	13+30.00	0.82	0.82	0.00	0.00	N-PB-04	7.90	10.00	0.16	0.48	0.35	0.01	0.015
N-PB-05	Curb	On Grade	14+60.00	0.49	0.49	0.00	0.00	N-PB-04A	6.48	10.00	0.13	0.48	0.35	0.004	0.015
N-PB-06	Grate	Sag	17+35.00	1.23	16.71	0.00	0.00		4.55	10.00	0.13	0.75	n/a	0.014	0.015

NOTE: GEOPAK DRAINAGE WAS UTILIZED TO DESIGN THE STORM SEWER SYSTEM

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
YEONTAE JEONG
110001
LICENSED
PROFESSIONAL ENGINEER

yeontae jeong
4-27-21

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

STORM SEWER HYDRAULIC DATA

INLET CONFIGURATION AND HYDRAULICS

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	184

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SCALE: 100.0000 ft / in.

LINK CONFIGURATION SYSTEM - POND A

Link ID	Link Type	Link Upstream Node	Link Downstream Node	Link Shape	Link Material	Link Number of Barrels	Link Actual Length (ft)	Link Hydraulic Length (ft)	Link Spread Manning's N Value	Link Slope (%)	Link Rise (ft)	Link Span (ft)	Link Soffit Upstream (ft)	Link Soffit Downstream (ft)	Link Invert Upstream (ft)	Link Invert Downstream (ft)
L-PA-1	Pipe	N-PA-1	N-PA-2	Circular	Concrete	1	17.14	18.64	0.012	0.01	2.00	n/a	23.42	23.42	21.42	21.42
L-PA-2	Pipe	N-PA-2	N-PA-3	Circular	Concrete	1	47.18	49.68	0.012	0.01	2.00	n/a	23.42	23.41	21.42	21.41
L-PA-3	Pipe	N-PA-3	N-PA-4	Circular	Concrete	1	302.37	304.87	0.012	0.01	2.50	n/a	23.91	23.89	21.41	21.39
L-PA-5	Pipe	N-PA-4	N-PA-6	Circular	Concrete	1	208.99	208.99	0.012	0.01	2.50	n/a	23.89	23.86	21.39	21.36
L-PA-6	Pipe	N-PA-6	N-PA-7	Circular	Concrete	1	155.18	155.18	0.012	0.01	2.50	n/a	23.86	23.85	21.36	21.35
L-TA-1	Pipe	N-TA-1	N-TA-1A	Circular	Concrete	1	299.69	302.69	0.012	0.62	2.00	n/a	27.20	25.31	25.20	23.31
L-TA-1A	Pipe	N-TA-1A	N-TA-2	Circular	Concrete	1	279.38	280.88	0.012	0.67	2.00	n/a	25.31	23.42	23.31	21.42

LINK CONFIGURATION SYSTEM - POND B

Link ID	Link Type	Link Upstream Node	Link Downstream Node	Link Shape	Link Material	Link Number of Barrels	Link Actual Length (ft)	Link Hydraulic Length (ft)	Link Spread Manning's N Value	Link Slope (%)	Link Rise (ft)	Link Span (ft)	Link Soffit Upstream (ft)	Link Soffit Downstream (ft)	Link Invert Upstream (ft)	Link Invert Downstream (ft)
L-PB-01A	Pipe	N-PB-01	N-PB-01A	Circular	Concrete	1	13.56	15.06	0.012	0.07	2.00	n/a	23.42	23.41	21.42	21.41
L-PB-03	Pipe	N-PB-01A	N-PB-04B	Circular	Concrete	1	253.42	255.42	0.012	0.08	2.00	n/a	23.41	23.20	21.41	21.20
L-PB-03A	Pipe	N-PB-04B	N-PB-04	Circular	Concrete	1	101.02	105.52	0.012	0.08	2.00	n/a	23.20	23.12	21.20	21.12
L-PB-04	Pipe	N-PB-04	N-PB-04A	Circular	Concrete	1	107.00	112.00	0.012	0.08	2.00	n/a	23.12	23.03	21.12	21.03
L-PB-04A	Pipe	N-PB-04A	N-PB-05	Circular	Concrete	1	125.00	130.00	0.012	0.08	2.00	n/a	23.03	22.93	21.03	20.93
L-PB-05	Pipe	N-PB-05	N-PB-06	Circular	Concrete	1	270.17	274.67	0.012	0.09	2.50	n/a	23.43	23.18	20.93	20.68
L-PB-06	Pipe	N-PB-06	N-PB-06A	Circular	Concrete	1	22.85	24.85	0.012	0.16	2.50	n/a	23.18	23.14	20.68	20.64
L-PB-06A	Pipe	N-PB-06A	N-PB-06B	Circular	Concrete	1	63.69	63.69	0.012	0.06	2.50	n/a	23.14	23.10	20.64	20.60

NOTE: GEOPAK DRAINAGE WAS UTILIZED TO DESIGN THE STORM SEWER SYSTEM

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
YEONTAE JEONG
110001
LICENSED PROFESSIONAL ENGINEER
yeontae jeong
4-27-21

Texas Department of Transportation

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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

STORM SEWER HYDRAULIC DATA

LINK CONFIGURATION

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	185

DATE: 4/26/2021 TIME: 8:13:49 PM
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SCALE: 100.0000 ft / in.

LINK HYDRAULICS SYSTEM - POND A
FREQUENCY 10-YEAR

Link ID	Link Discharge (CFS)	Link Capacity (CFS)	Link Uniform Depth (ft)	Link Uniform Velocity (ft/s)	Link Critical Depth (ft)	Link Critical Velocity (ft/s)	Link Critical Slope (ft/ft)	Link Friction Slope (ft/ft)	Link Actual Velocity Downstream (ft/s)	Link Actual Velocity Upstream (ft/s)	Link Actual Depth Downstream (ft)	Link Actual Depth Upstream (ft)	Link HGL Downstream (ft)	Link HGL Upstream (ft)	Link EGL Downstream (ft)	Link EGL Upstream (ft)	Link Upstream Junction Loss (ft)	Cumulative Tc (min)	Tc Used (min)
L-PA-1	2.07	2.73	1.88	0.68	0.50	3.38	0.004	0	1.23	1.20	1.05	1.08	22.47	22.50	22.50	22.52	0.02	0.00	0.00
L-PA-2	2.07	2.37	1.88	0.68	0.50	3.38	0.004	0	1.30	1.23	1.01	1.05	22.42	22.47	22.44	22.50	0.03	0.46	0.00
L-PA-3	2.07	4.50	2.35	0.43	0.47	3.24	0.004	0	1.17	1.12	0.97	1.01	22.36	22.42	22.38	22.44	0.00	1.69	0.00
L-PA-5	2.07	5.73	1.17	0.92	0.47	3.24	0.004	0	1.20	1.17	0.96	0.97	22.31	22.36	22.34	22.38	0.00	13.43	0.00
L-PA-6	2.07	3.64	2.35	0.43	0.47	3.24	0.004	0	1.26	1.20	0.92	0.96	22.27	22.31	22.27	22.34	0.00	17.24	0.00
L-TA-1	3.19	20.83	0.55	4.54	0.62	3.81	0.004	0.006	4.54	2.51	0.55	0.85	23.86	26.05	24.18	26.28	0.23	0.97	10.00
L-TA-1A	5.49	21.63	0.72	5.44	0.83	4.48	0.004	0.007	5.44	3.95	0.72	0.91	22.14	24.22	22.60	24.53	0.08	2.08	10.00

LINK HYDRAULICS SYSTEM - POND B
FREQUENCY 10-YEAR

Link ID	Link Discharge (CFS)	Link Capacity (CFS)	Link Uniform Depth (ft)	Link Uniform Velocity (ft/s)	Link Critical Depth (ft)	Link Critical Velocity (ft/s)	Link Critical Slope (ft/ft)	Link Friction Slope (ft/ft)	Link Actual Velocity Downstream (ft/s)	Link Actual Velocity Upstream (ft/s)	Link Actual Depth Downstream (ft)	Link Actual Depth Upstream (ft)	Link HGL Downstream (ft)	Link HGL Upstream (ft)	Link EGL Downstream (ft)	Link EGL Upstream (ft)	Link Upstream Junction Loss (ft)	Cumulative Tc (min)	Tc Used (min)
L-PB-01A	2.38	6.79	0.82	1.96	0.54	3.51	0.004	0.001	1.61	1.53	0.95	0.99	22.36	22.41	22.40	22.45	0.04	0.00	0.00
L-PB-03	2.38	7.56	0.82	1.96	0.54	3.51	0.004	0.001	1.42	1.61	1.05	0.95	22.25	22.36	22.29	22.40	0.02	0.13	0.00
L-PB-03A	2.38	7.26	0.82	1.96	0.54	3.51	0.004	0.001	1.34	1.42	1.11	1.05	22.23	22.25	22.28	22.29	0.00	2.34	0.00
L-PB-04	3.18	7.47	0.94	2.20	0.62	3.81	0.004	0.001	1.73	1.79	1.14	1.11	22.17	22.23	22.24	22.28	0.01	3.24	10.00
L-PB-04A	4.00	7.31	1.12	2.22	0.70	4.07	0.004	0.001	2.18	2.18	1.14	1.14	22.07	22.17	22.13	22.24	0.01	4.09	10.00
L-PB-05	4.49	14.42	1.03	2.36	0.70	4.01	0.004	0.001	1.80	2.07	1.27	1.14	21.95	22.07	22.03	22.13	0.00	5.06	10.00
L-PB-06	5.72	19.18	0.99	3.16	0.79	4.29	0.004	0.002	2.27	2.30	1.28	1.27	21.92	21.95	22.01	22.03	0.01	7.00	10.00
L-PB-06A	5.72	11.98	1.32	2.18	0.79	4.29	0.004	0.001	2.42	2.27	1.22	1.28	21.82	21.92	21.82	22.01	0.06	7.13	10.00

NOTE: GEOPAK DRAINAGE WAS UTILIZED TO DESIGN THE STORM SEWER SYSTEM

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
YEONTAE JEONG
110001
LICENSED
PROFESSIONAL ENGINEER
yeontae jeong
4-27-21

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

STORM SEWER HYDRAULIC DATA

LINK HYDRAULICS

SHEET 4 OF 4

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	186

DATE: 4/26/2021 TIME: 8:14:05 PM
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PATH: \\wspdw04ics01\ICS_pdf_work_dir\122826\181982.29\SH35_052_104-DRN-CALC-04.dgn

SCALE: 100.0000 ft / in.

Ditch name	Ditch Section ID	Alignment Name	Station				Storm Frequency	Ditch Section			Grade of Ditch Segment (ft / ft)	Ditch Depth (ft)	*Ditch Normal Depth (ft)*	Cross Sectional Flow Area, A (ft²)	Wetted Perimeter, WP (ft)	Hydraulic Radius (R=A/WP) (ft)	Manning's "n"	Velocity, V (ft / s)	Velocity Head, VH (ft)	*Design Discharge Q (cfs)*	Remarks
			From	Offset	To	Offset		A	B	C											
DITCH AD	L-AD-01	SH35_SBFR	95+70.80	-30.44	99+57.49	-34.45	10-YR	3	0.00	12	0.0004	1.60	1.20	10.74	18.20	0.59	0.035	0.58	0.01	6.3	
	L-AD-02	SH35_SBFR	99+57.49	-34.45	101+96.59	-42.29	10-YR	3	0.00	12	0.0065	1.60	0.74	4.13	11.28	0.37	0.035	1.75	0.05	7.2	Outfall to Pond A
DITCH D	L-D-1	SH35_NBFR	94+19.55	-1.64	96+62.45	18.73	10-YR	10	0.00	3	0.0065	1.00	0.64	2.65	8.43	0.31	0.035	1.58	0.04	4.2	
	L-D-1A	SH35_NBFR	96+62.45	18.73	99+41.44	35.75	10-YR	10	0.00	3	0.0058	1.00	0.65	2.77	8.62	0.32	0.035	1.52	0.04	4.2	Outfall to Pond A
MEDIAN DITCH A	L-DA-4	SH35_NBML	102+10.99	43.21	94+09.86	40.16	10-YR	6	0.00	6	0.0185	3.60	0.30	0.55	3.70	0.15	0.035	1.63	0.04	0.9	
	L-DA-5	SH35_NBML	94+09.86	40.16	92+05.86	41.50	10-YR	6	0.00	6	0.0087	3.60	0.54	1.74	6.54	0.27	0.035	1.64	0.04	2.8	
	L-DA-6	SH35_NBML	92+05.86	41.50	89+85.90	43.21	10-YR	6	0.00	6	0.0046	3.60	0.96	5.58	11.74	0.48	0.035	1.76	0.05	7.5	Receives Pond A Outflow
	L-DA-7	SH35_NBML	89+85.90	43.21	87+97.78	47.21	10-YR	6	0.00	6	0.0016	3.60	1.30	10.07	15.76	0.64	0.035	1.24	0.02	10.2	
	L-DA-8	SH35_NBML	87+97.78	47.21	87+00.03	48.10	10-YR	6	0.00	6	0.0007	3.60	1.55	14.35	18.81	0.76	0.035	0.95	0.01	11.3	
	L-DA-9	SH35_NBML	87+00.03	48.10	82+00.00	49.06	10-YR	6	0.00	6	0.0017	3.60	1.32	10.47	16.07	0.65	0.035	1.32	0.03	11.5	

Ditch name	Ditch Section ID	Alignment Name	Station				Storm Frequency	Ditch Section			Grade of Ditch Segment (ft / ft)	Ditch Depth (ft)	*Ditch Normal Depth (ft)*	Cross Sectional Flow Area, A (ft²)	Wetted Perimeter, WP (ft)	Hydraulic Radius (R=A/WP) (ft)	Manning's "n"	Velocity, V (ft / s)	Velocity Head, VH (ft)	Design Discharge Q (cfs)	Remarks
			From	Offset	To	Offset		A	B	C											
DITCH BD	L-BD-01	SH35_SBFR	114+25.09	-35.04	109+64.15	-43.21	10-YR	3	0.00	12	0.0014	1.20	0.73	3.96	11.05	0.36	0.035	0.81	0.01	3.2	
	L-BD-02	SH35_SBFR	109+64.15	-43.21	109+39.63	-38.08	10-YR	3	0.00	12	0.0318	1.20	0.56	2.39	8.57	0.28	0.035	3.23	0.16	7.7	Outfall to Pond B
DITCH BA	L-BA-01	SH35_NBFR	114+04.61	26.31	112+07.18	30.77	10-YR	7	0.00	3	0.0071	0.90	0.04	0.01	0.37	0.02	0.035	0.24	0.00	0.0	
	L-BA-02	SH35_NBFR	112+07.18	30.77	111+95.28	31.90	10-YR	7	0.00	3	0.0107	0.90	0.04	0.01	0.36	0.02	0.035	0.29	0.00	0.0	
	L-BA-03	SH35_NBFR	111+95.28	31.90	111+53.12	46.32	10-YR	7	0.00	3	0.0255	0.90	0.03	0.00	0.28	0.01	0.035	0.38	0.00	0.0	
	L-BA-04	SH35_NBFR	111+53.12	46.32	111+40.27	45.80	10-YR	7	0.00	3	0.0203	0.90	0.44	0.98	4.52	0.22	0.035	2.18	0.07	2.1	
MEDIAN DITCH B	L-B-01	CL_SH35	111+24.34	-8.34	115+23.97	-12.24	10-YR	6	0.00	6	0.0289	2.80	0.42	1.07	5.14	0.21	0.035	2.54	0.10	2.7	
	L-DB-01B	CL_SH35	115+23.97	-12.24	117+22.99	-14.48	10-YR	6	0.00	6	0.0203	2.80	0.56	1.90	6.85	0.28	0.035	2.58	0.10	4.9	
	L-DB-01A	CL_SH35	117+22.99	-14.48	119+60.00	-2.16	10-YR	6	0.00	6	0.0151	2.80	0.68	2.80	8.31	0.34	0.035	2.53	0.10	7.1	
	L-DB-01	CL_SH35	119+60.00	-2.16	121+34.46	-9.73	10-YR	6	0.00	4	0.0027	2.80	1.35	9.16	13.81	0.66	0.035	1.69	0.04	15.5	Receives Pond B Outflow
	L-DB-02	CL_SH35	121+34.46	-9.73	123+29.41	-10.13	10-YR	6	0.00	4.8	0.0031	2.80	1.36	10.01	14.96	0.67	0.035	1.82	0.05	18.2	
	L-DB-03	CL_SH36	123+29.41	-10.13	125+24.17	-10.70	10-YR	6	0.00	5.4	0.0031	2.80	1.38	10.94	16.05	0.68	0.035	1.84	0.05	20.1	
	L-DB-04	CL_SH37	125+24.17	-10.70	134+57.00	-0.30	10-YR	6	0.00	11.1	0.0031	2.50	1.30	14.40	22.36	0.64	0.035	1.77	0.05	25.5	

Ditch name	Ditch Section ID	Alignment Name	Station				Storm Frequency	Ditch Section			Grade of Ditch Segment (ft / ft)	Ditch Depth (ft)	*Ditch Normal Depth (ft)*	Cross Sectional Flow Area, A (ft²)	Wetted Perimeter, WP (ft)	Hydraulic Radius (R=A/WP) (ft)	Manning's "n"	Velocity, V (ft / s)	Velocity Head, VH (ft)	Design Discharge Q (cfs)
			From	Offset	To	Offset		A	B	C										
DITCH SBFR-B	SBFR-B1	SH35_SBML	124+10.00	78.26	125+21.50	58.19	10-YR	10	4.00	4	0.0043	3.10	0.59	4.74	12.30	0.39	0.035	1.48	0.03	7.0
	SBFR-B2	SH35_SBML	125+21.50	58.19	126+54.00	49.86	10-YR	4	4.00	4	0.0040	1.90	0.93	7.20	11.68	0.62	0.035	1.96	0.06	14.1
	SBFR-B3	SH35_SBML	126+54.00	49.86	127+16.00	48.64	10-YR	4	4.00	4	0.0065	2.20	1.01	8.10	12.32	0.66	0.035	2.60	0.11	21.1
	SBFR-B4	SH35_SBML	127+16.00	48.64	129+49.00	48.41	10-YR	4	4.00	4	0.0058	2.50	1.19	10.48	13.84	0.76	0.035	2.69	0.11	28.2
	SBFR-B5	SH35_SBML	129+49.00	48.41	131+00.00	49.19	10-YR	4	4.00	6	0.0054	2.10	1.28	13.31	17.07	0.78	0.035	2.64	0.11	35.2
	SBFR-B6	SH35_SBML	131+00.00	49.19	131+41.00	49.23	10-YR	4	4.00	15	0.0089	2.90	1.05	14.70	24.14	0.61	0.035	2.88	0.13	42.3
	SBFR-B7	SH35_SBML	131+41.00	49.23	132+40.00	50.11	10-YR	4	4.00	8	0.0066	2.50	1.36	16.54	20.57	0.80	0.035	2.98	0.14	49.3
	SBFR-B8	SH35_SBML	132+40.00	50.11	133+10.00	50.92	10-YR	4	4.00	9	0.0090	3.00	1.32	16.58	21.38	0.78	0.035	3.40	0.18	56.4
	SBFR-B9	SH35_SBML	133+10.00	50.92	136+50.00	65.57	10-YR	4	4.00	10	0.0048	2.80	1.56	23.21	26.07	0.89	0.035	2.73	0.12	63.4

REV	DESCRIPTION	DATE	INIT

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Dallas, TX 75207
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TBPELS F-02263

SH 35 AT OAK LANE

DITCH HYDRAULIC DATA

DITCH CALCULATION

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	187

DATE:4/26/2021 TIME:8:15:37 PM
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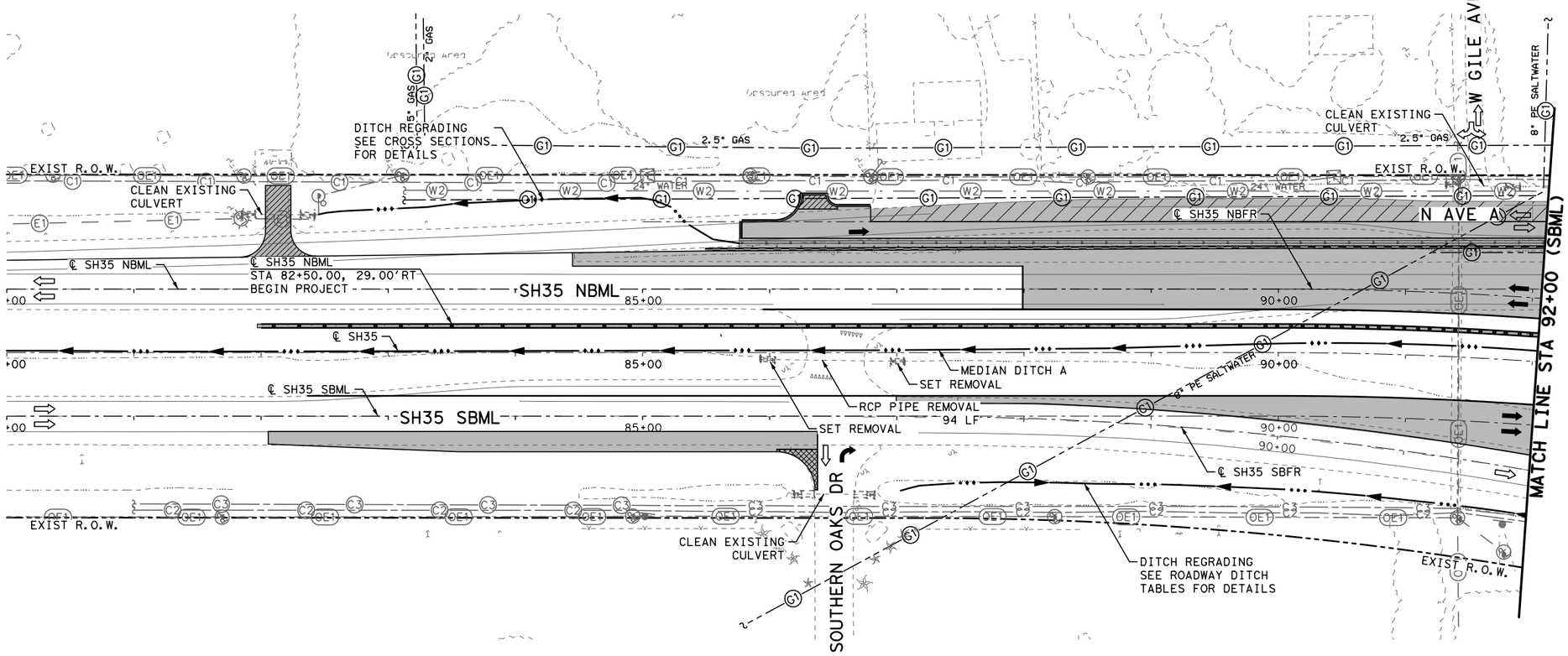
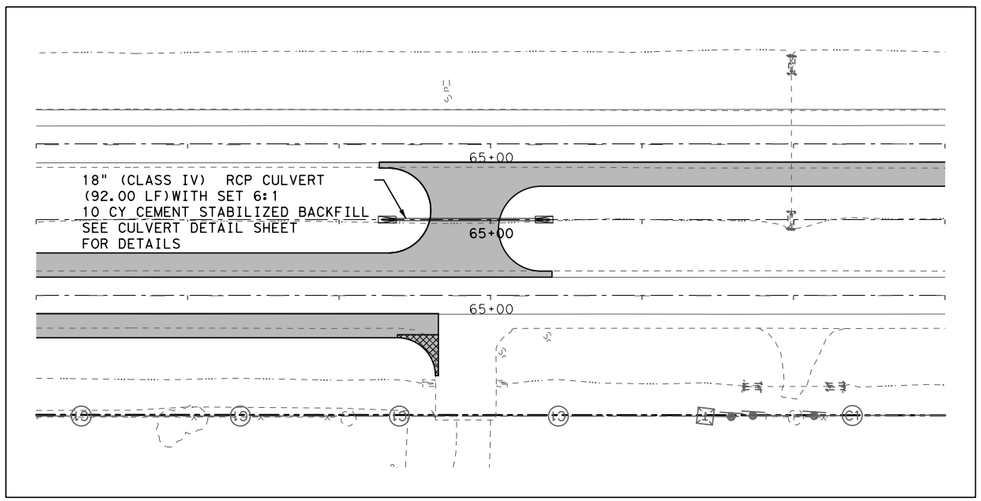


0′ 50′ 100′(H)
0′ 5′ 10′ (V)
SCALE IN FEET

DRAINAGE PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW

CROSSOVER CULVERT
STA 62+00 TO STA 68+00 (SBML)



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SH 35 AT OAK LANE

STORM SEWER PLAN AND PROFILE

BEGIN PROJECT TO STA 92+00

SHEET 1 OF 5

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	188

DATE: 4/26/2021 TIME: 8:14:00 PM
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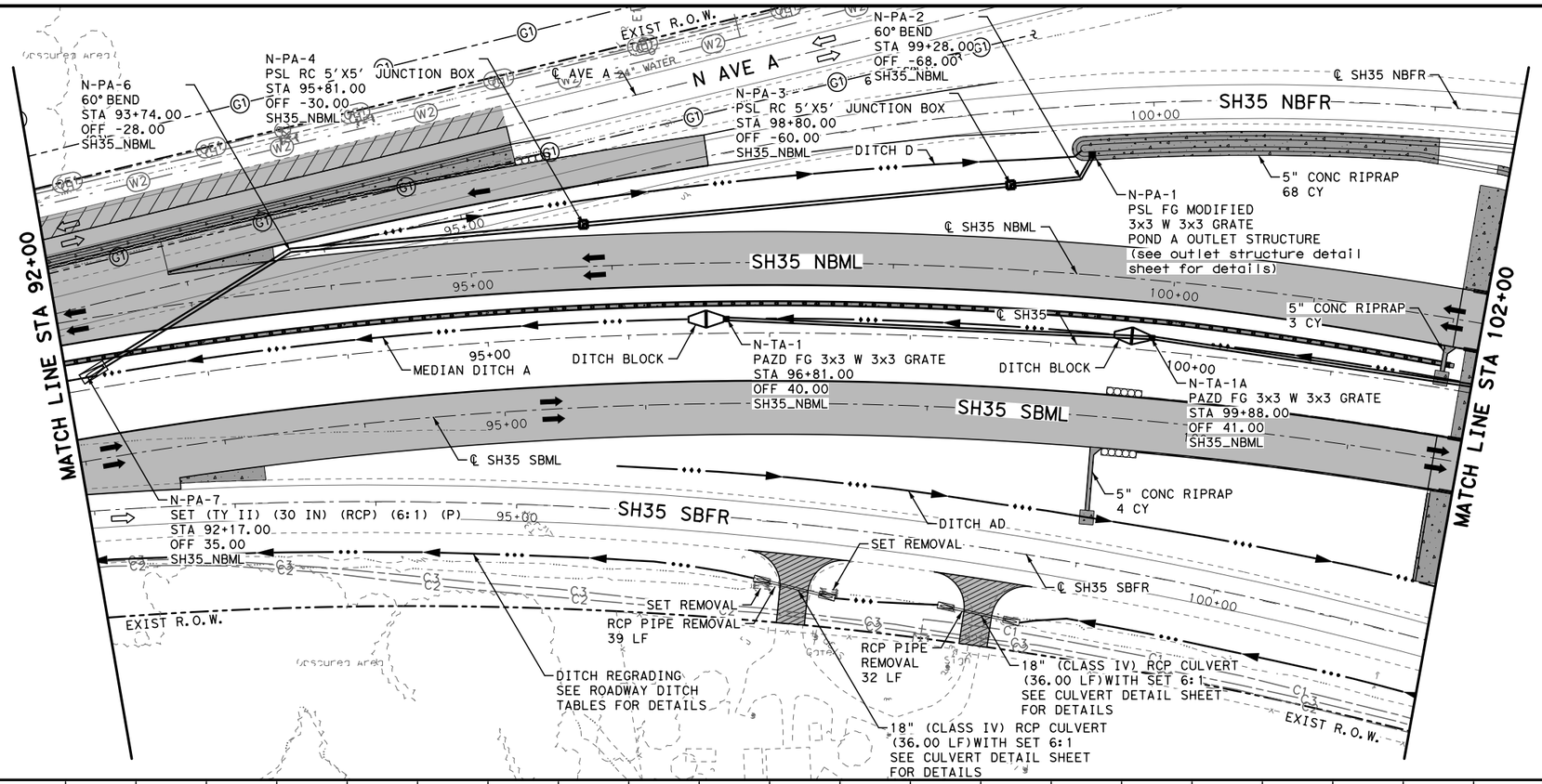

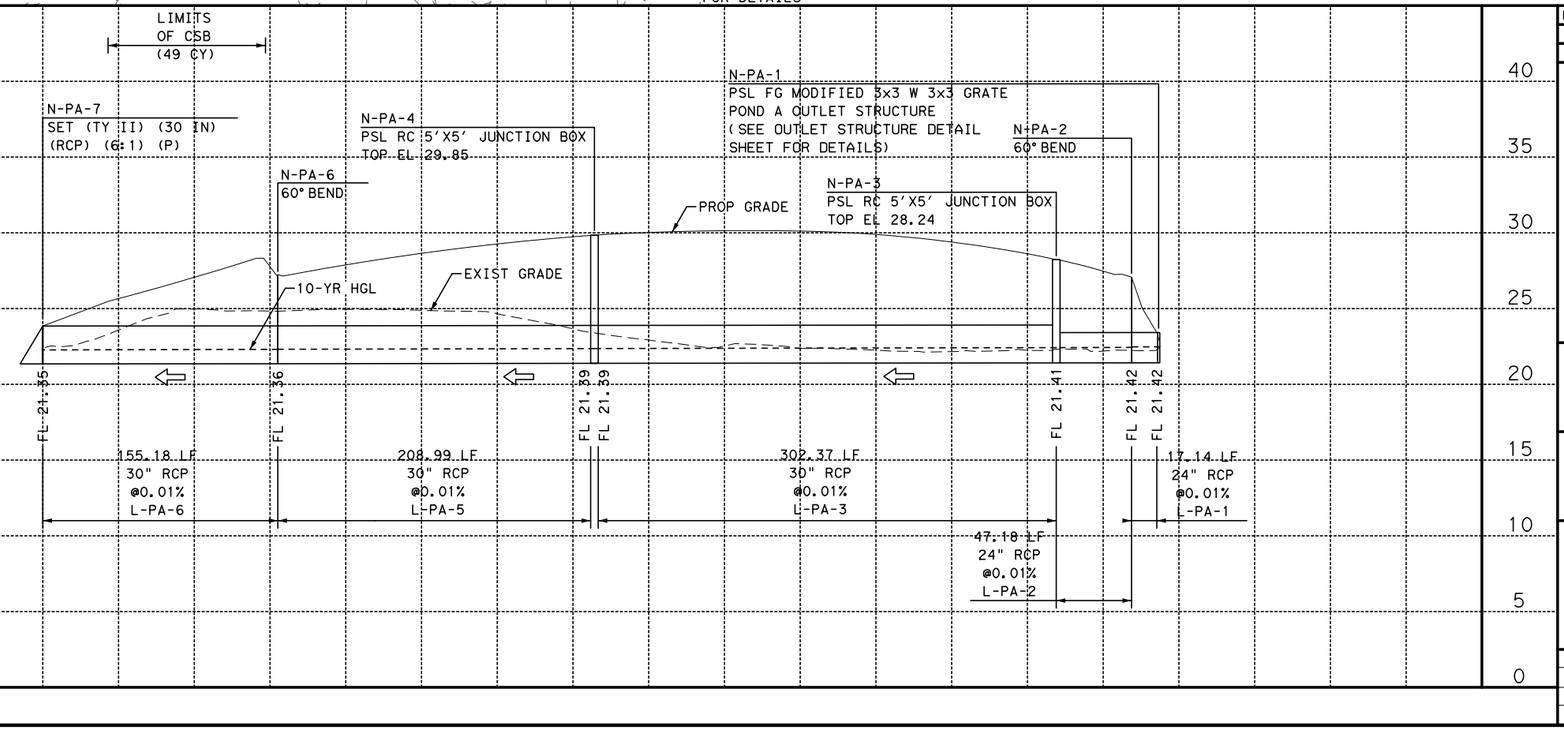

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SH 35 AT OAK LANE

STORM SEWER PLAN AND PROFILE

STA 92+00 TO STA 102+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	189

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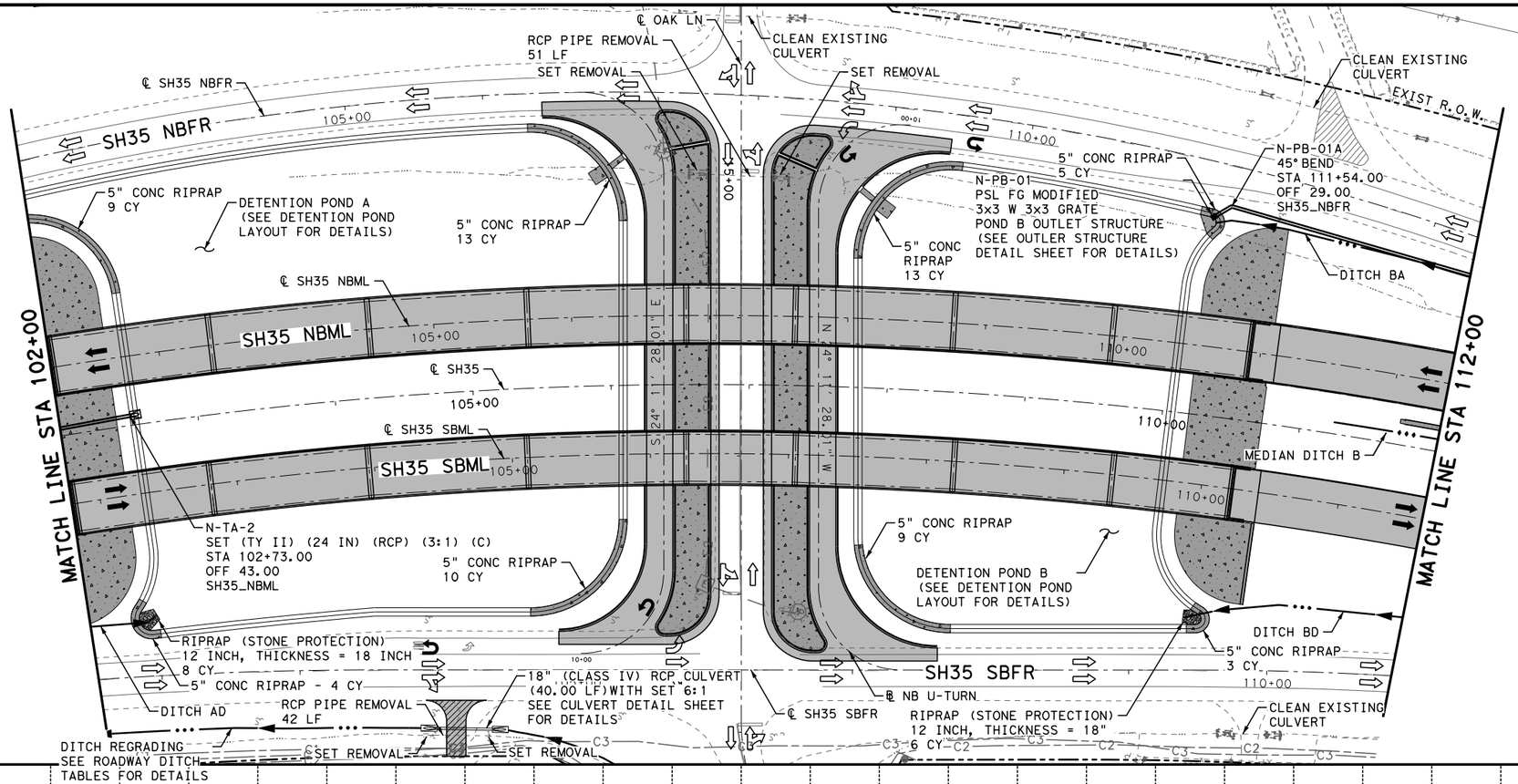
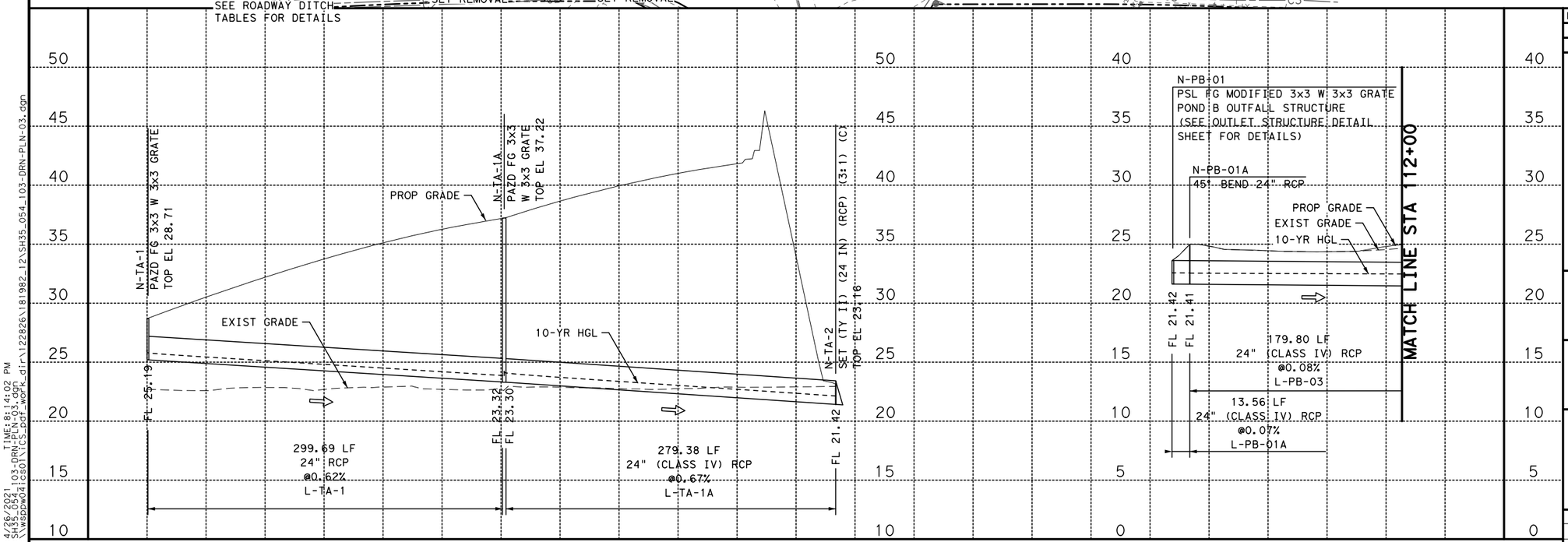


DRAINAGE PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW



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4-27-21

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SH 35 AT OAK LANE

STORM SEWER PLAN AND PROFILE
STA 102+00 TO STA 112+00

SHEET 3 OF 5

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	190

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SCALE: 100.0000 ' / in.

EXIST R.O.W.

N-PB-04B
PSL RC 4'X4'
JUNCTION BOX
11+13.00
OFF 22.00
NB_EXT_RAMP_A

N-PB-04
PCO 10L 3X5
12+18.00
OFF 7.30
NB_EXT_RAMP_A

N-PB-04A
PCO 10L 3X5
13+30.00
OFF 7.30
NB_EXT_RAMP_A

N-PB-05
PCO 10L 3X5
14+60.00
OFF 7.30
NB_EXT_RAMP_A

CLEAN EXISTING CULVERT

N-PB-06
PSL FG 4X4 W 4X4 GR
17+35.00
OFF 8.70
NB_EXT_RAMP_A

N-PB-06A
60° WYE
17+60.00
OFF 8.30
NB_EXT_RAMP_A

N-PB-06B
SET (TY II) (30 IN) (RCP) (6:1) (C)
120+92.00
OFF 50.00
SH35_NBFR

EXIST R.O.W.

EXIST R.O.W.

SH35 NBFR

℄ SH35 NBFR

℄ SH35 NBML

SH35 NBML

MATCH LINE STA 112+00

MATCH LINE STA 123+00

115+00

120+00

℄ SH35

MEDIAN DITCH B

3" DAS
3" GAS

5" CONC RIRRAP
3 CY

℄ SH35 SBML

SH35 SBML

℄ SH35 SBFR

DITCH BD

SH35 SBFR

CLEAN EXISTING CULVERT

CLEAN EXISTING CULVERT

CLEAN EXISTING CULVERT

CLEAN EXISTING CULVERT

CLEAN EXISTING CULVERT

EXIST R.O.W.

EXIST R.O.W.

N

0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

DRAINAGE PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW

LIMITS OF TRENCH EXCAVATION PROTECTION - 611 LF

LIMITS OF CSB (59 CY)

MATCH LINE STA 112+00

N-PB-04B
PSL RC 4'X4'
JUNCTION BOX
TOP EL 25.89

N-PB-04
PCO 10L 3X5
TOP EL 27.14

N-PB-04A
PCO 10L 3X5
TOP EL 27.65

N-PB-05
PCO 10L 3X5
TOP EL 28.11

N-PB-06A
60° WYE

N-PB-06
PSL FG-SFG 4x4 w 4x4 GR
TOP EL 26.75

N-PB-06B
SET (TY II) (30 IN) (RCP) (6:1) (C)

PROP GRADE

EXIST GRADE

10-YR HGL

35
30
25
20
15
10
5
0

FL 21.20
FL 21.12
FL 21.12
FL 21.03
FL 21.03
FL 20.93
FL 20.93
FL 20.68
FL 20.64
FL 20.60

73.20 LF
24" (CLASS IV) RCP
@0.08%
L-PB-03

101.01 LF
24" RCP
@0.08%
L-PB-03A

107.00 LF
24" RCP
@0.08%
L-PB-04

125.00 LF
24" RCP
@0.08%
L-PB-04A

270.17 LF
30" RCP
@0.09%
L-PB-05

22.85 LF
30" RCP
@0.16%
L-PB-06

63.69 LF
30" RCP
@0.06%
L-PB-06A

APPROXIMATE LOCATION.
ELEVATION UNKNOWN.
EXISTENCE OF THE LINE
CANNOT BE VERIFIED.

REV	DESCRIPTION	DATE	INIT

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SH 35 AT OAK LANE

STORM SEWER PLAN AND PROFILE

STA 112+00 TO STA 123+00

SHEET 4 OF 5

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	191

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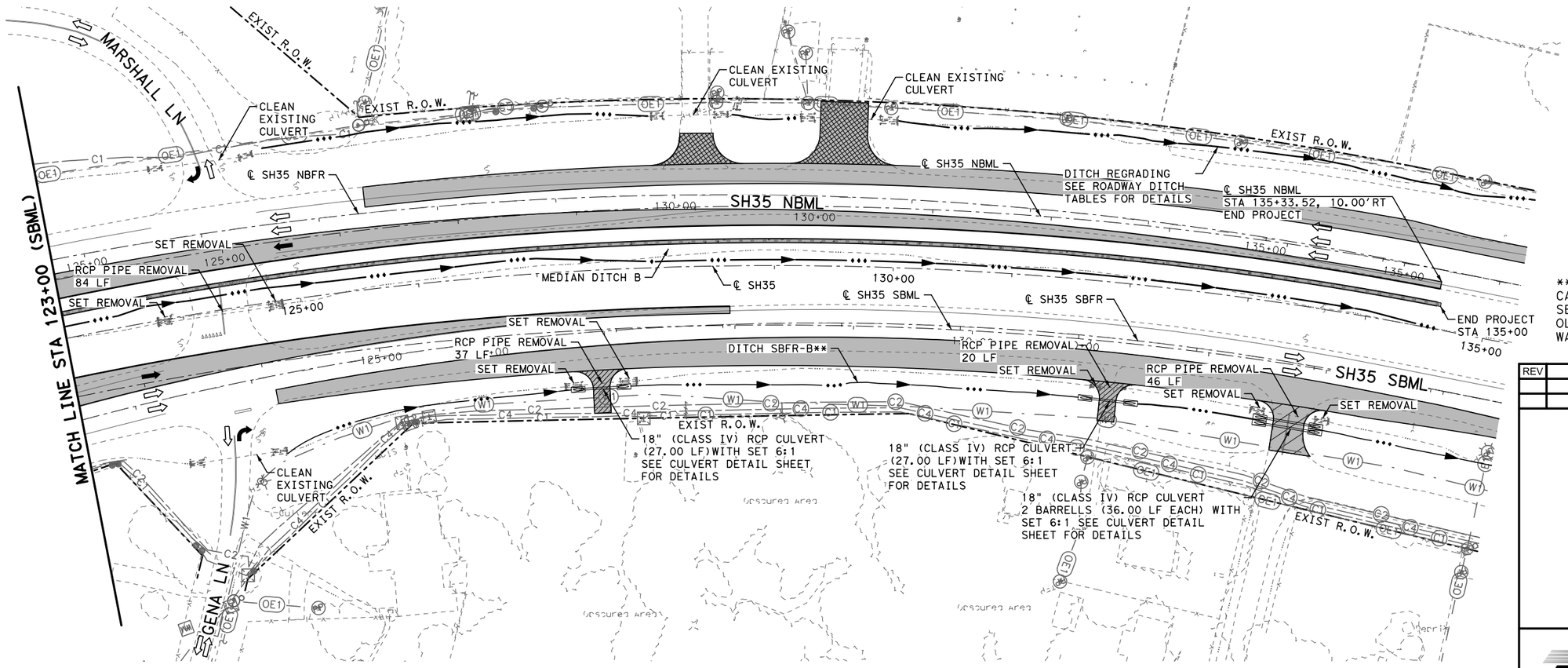
SCALE: 100.0000 ' / in.

0' 50' 100'(H)
0' 5' 10' (V)
SCALE IN FEET

DRAINAGE PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW



**CONTRACTOR TO USE EXTREME CAUTION WHEN GRADING DITCH SBFR-B DUE TO PROXIMITY TO OLD CITY OF ARANSAS PASS WATER LINE

REV	DESCRIPTION	DATE	INIT

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SH 35 AT OAK LANE

STORM SEWER PLAN AND PROFILE

STA 123+00 TO STA PROJECT END

SHEET 5 OF 5

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	192

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SCALE: 80.0000 ft / in.

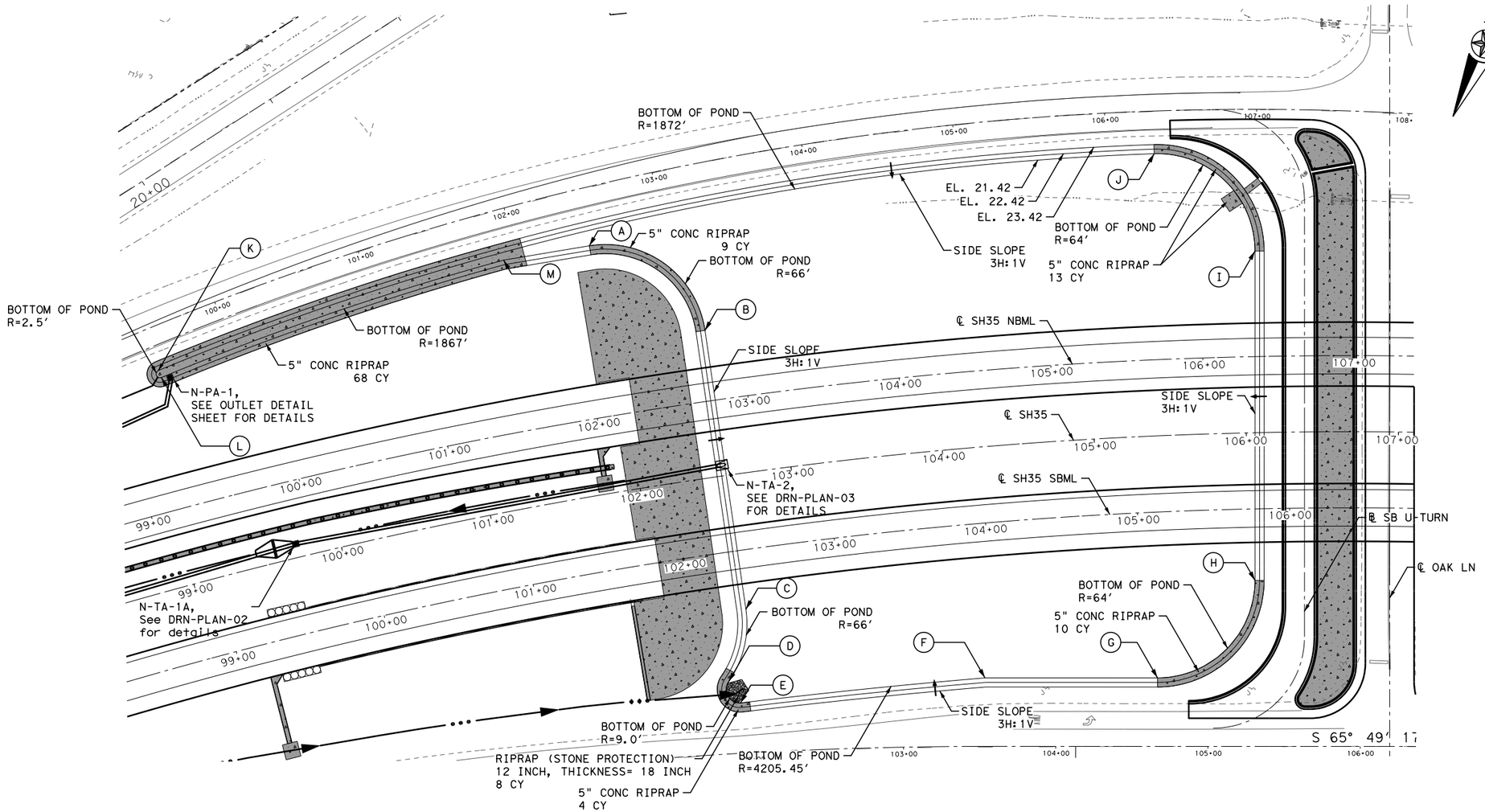
0′ 40′ 80′(H)

SCALE IN FEET

DETENTION POND LAYOUT LEGEND

DITCH LINE

CONCRETE PIPE



DETENTION POND A VOLUME CALCULATIONS				
ELEVATION (FT)	SURFACE AREA (AC)	INCREMENTAL VOLUME (AC-FT)	CUMULATIVE VOLUME (AC-FT)	COMMENT
21.42	2.77	0.00	0.00	INVERT
22.42	2.91	2.84	2.84	
23.42	3.05	2.98	5.82	TOP OF BANK

DETENTION POND A ROUTING RESULTS				
FREQUENCY (YR)	INFLOW (CFS)	OUTFLOW (CFS)	WSEL (FT)	FREEBOARD (FT)
2	13.34	0.23	21.92	1.50
5	22.87	1.24	22.03	1.39
10	32.42	2.07	22.22	1.20
25	47.22	3.05	22.56	0.86
50	59.91	3.72	22.88	0.54
100	74.41	4.41	23.27	0.15

CONTROL POINTS				
POINTS	BASELINE	STATION	OFFSET	ELEVATION
A	CL_SH35	101+92.73	-162.67	21.42
B	CL_SH35	102+56.62	-96.29	21.42
C	CL_SH35	102+57.63	88.76	21.42
D	CL_SH35	102+39.00	134.14	21.42
E	CL_SH35	102+44.85	149.26	21.42
F	CL_SH35	104+15.04	151.37	21.42
G	CL_SH35	105+34.50	158.83	21.42
H	CL_SH35	106+03.65	97.01	21.42
I	CL_SH35	106+08.18	-119.28	21.42
J	CL_SH35	105+47.13	-185.24	21.42
K	CL_SH35	99+13.25	-141.56	21.42
L	CL_SH35	99+13.90	-136.61	21.42
M	CL_SH35	101+38.65	-163.02	21.42

NOTE: EXCAVATION OF DETENTION POND IS PAID FOR IN THE EARTHWORK SUMMARY SHEET

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
YEONTAE JEONG
110001
LICENSED
PROFESSIONAL ENGINEER

yeontae jeong
4-27-21

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

DETENTION POND LAYOUT
POND A

SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	193

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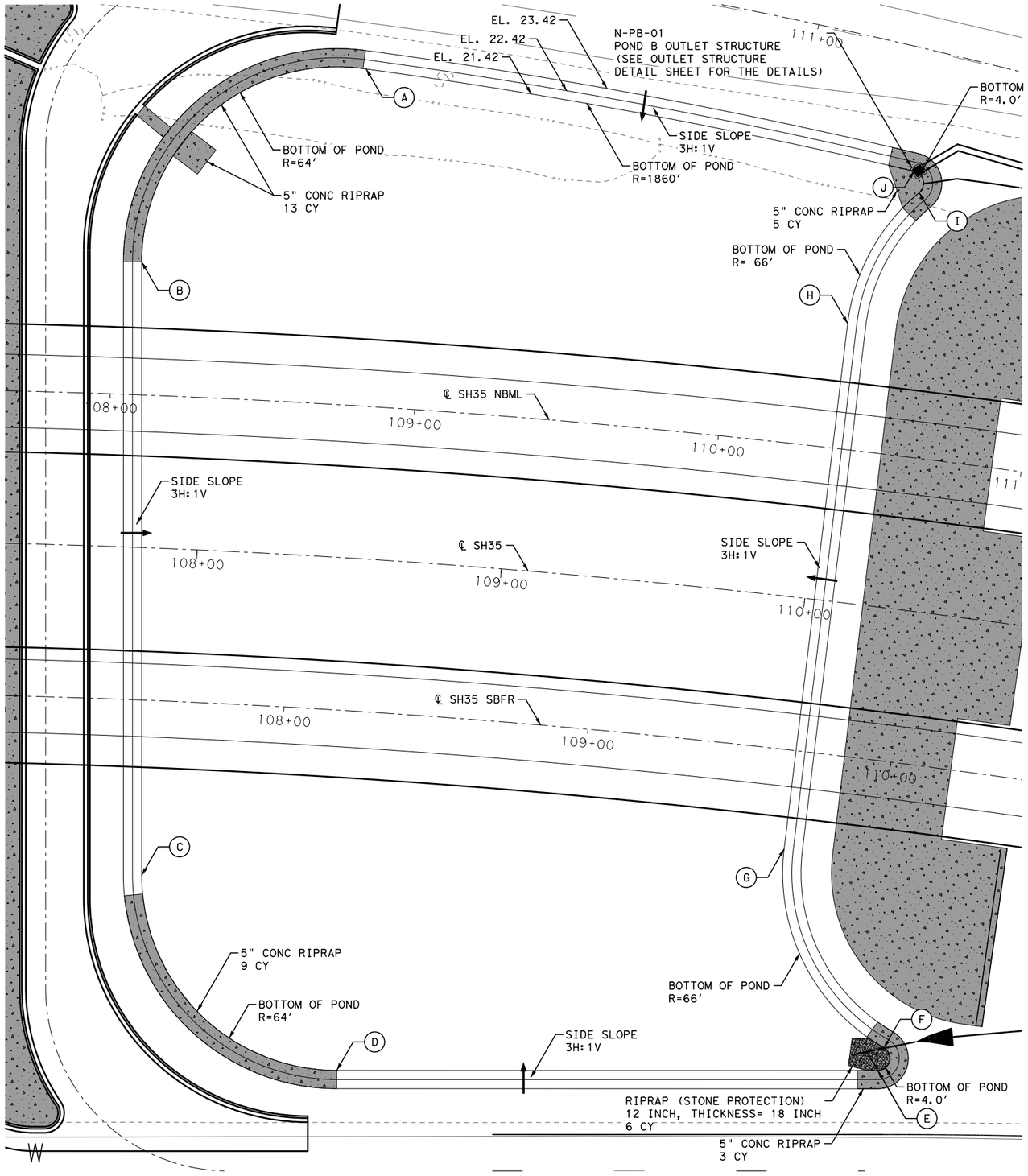

0' 20' 40'(H)

SCALE IN FEET

DETENTION POND LAYOUT LEGEND

DITCH LINE

CONCRETE PIPE

DETENTION POND B VOLUME CALCULATIONS				
ELEVATION (FT)	SURFACE AREA (AC)	INCREMENTAL VOLUME (AC-FT)	CUMULATIVE VOLUME (AC-FT)	COMMENT
21.42	1.61	0.00	0.00	INVERT
22.42	1.69	1.65	1.65	
23.42	1.77	1.73	3.38	TOP OF BANK

DETENTION POND B ROUTING RESULTS				
FREQUENCY (YR)	INFLOW (CFS)	OUTFLOW (CFS)	WSEL (FT)	FREEBOARD (FT)
2	11.98	0.56	21.94	1.48
5	19.30	1.55	22.09	1.33
10	26.33	2.38	22.31	1.11
25	36.84	3.33	22.69	0.73
50	45.93	3.99	23.02	0.40
100	56.46	4.65	23.41	0.01

CONTROL POINTS				
POINTS	BASELINE	STATION	OFFSET	ELEVATION
A	CL_SH35	108+44.75	-160.45	21.42
B	CL_SH35	107+78.25	-93.61	21.42
C	CL_SH35	107+86.16	107.39	21.42
D	CL_SH35	108+56.76	167.97	21.42
E	CL_SH35	110+43.64	150.87	21.42
F	CL_SH35	110+44.70	143.20	21.42
G	CL_SH35	110+02.68	82.47	21.42
H	CL_SH35	110+03.63	-91.14	21.42
I	CL_SH35	110+21.19	-136.55	21.42
J	CL_SH35	110+18.72	-143.30	21.42

NOTE: EXCAVATION OF DETENTION POND IS PAID FOR IN THE EARTHWORK SUMMARY SHEET

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STATE OF TEXAS
YEONTAE JEONG
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PROFESSIONAL ENGINEER

yeontae jeong
4-27-21

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

DETENTION POND LAYOUT
POND B

SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	194

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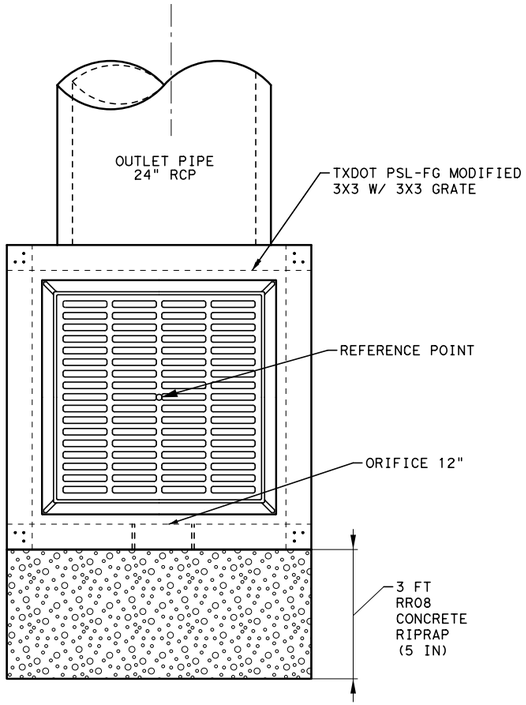
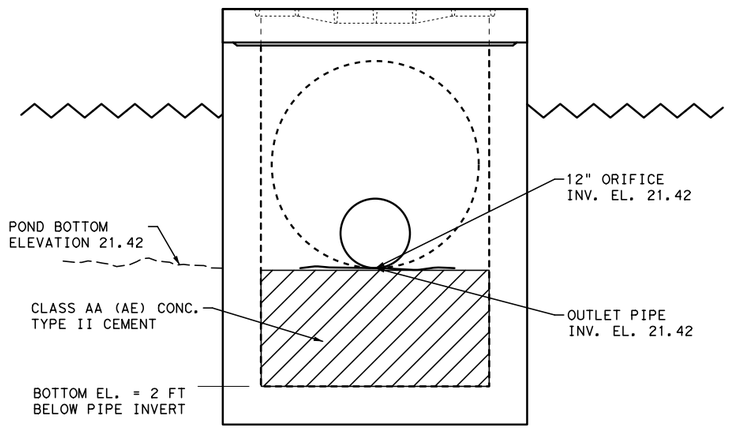
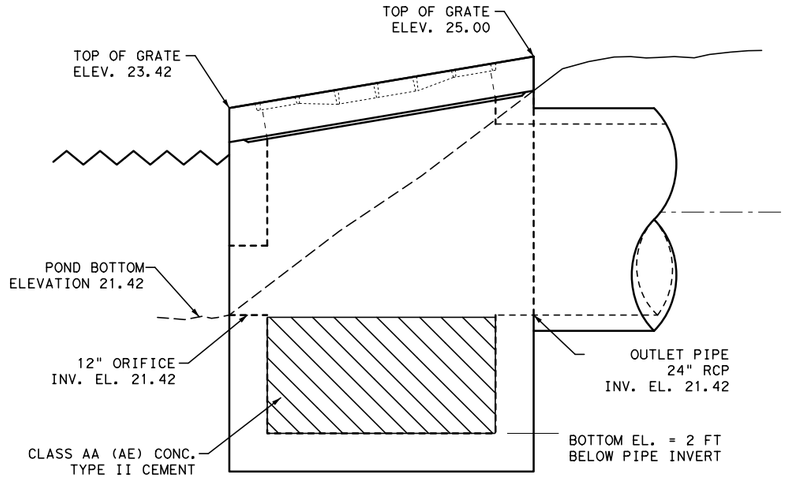


PLAN
N.T.S





PROFILE
N.T.S

OUTFLOW STRUCTURE							OUTLET PIPE			ORIFICE	
POND ID	STRUCTURE ID	CHAIN ID	STA	OFFSET	BOTTOM EL.	POND BOTTOM EL.	DIAM. (IN)	MATERIAL	INV EL.	DIAM. (IN)	INV EL.
POND A	N-PA-1	SH35_NBML	99+35.00	-85.00	21.42	21.42	24	RCP	21.42	12	21.42
POND B	N-PB-01	SH35_NBFR	111+43.00	39.50	21.42	21.42	24	RCP	21.42	12	21.42

REV	DESCRIPTION	DATE	INIT

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2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
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SH 35 AT OAK LANE

DRAINAGE DETAIL

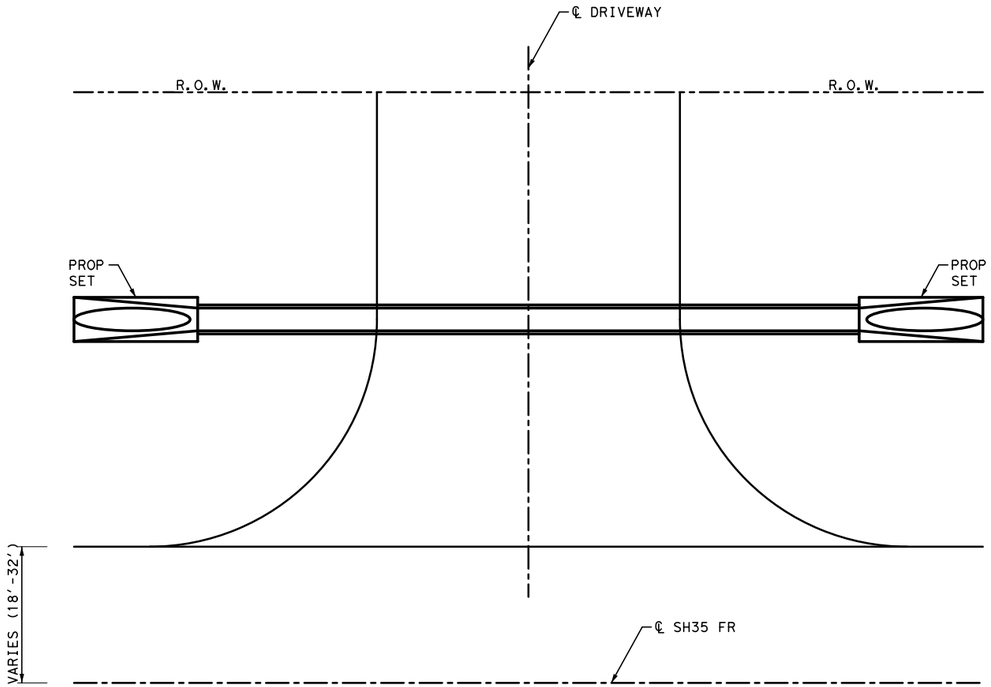
DETENTION POND OUTLET DETAIL

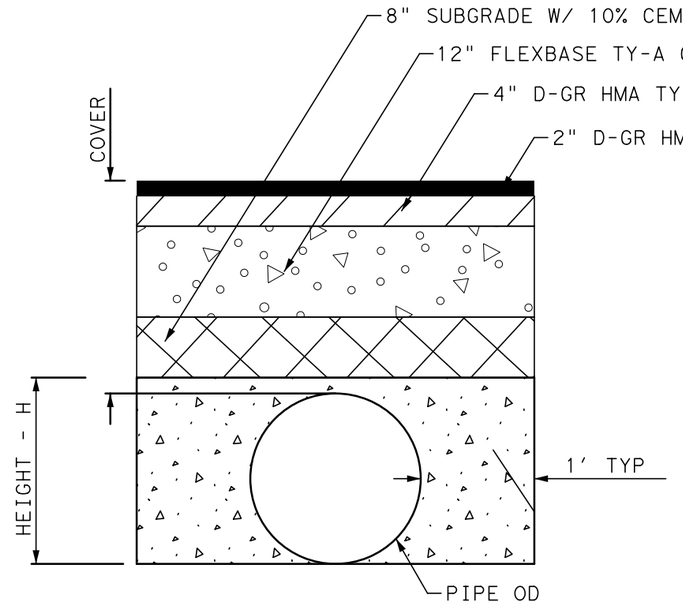
SHEET 1 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	195

SCALE: 100.0000 ' / in.

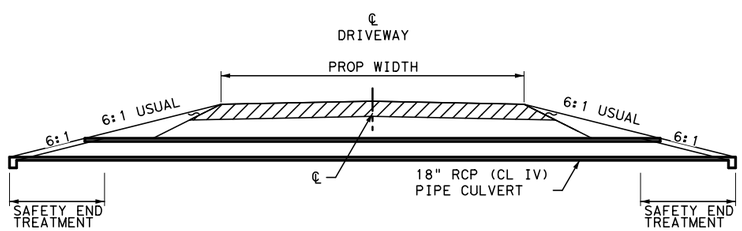
SH 35 CROSSOVER/DRIVEWAY CULVERTS																			
	CROSSOVER/DRIVEWAY				CULVERT														
ALIGNMENT	TYPE	STATION	LT/RT	OFFSET FT	RISE FT	BARRELS	LENGTH FT	SLOPE %	U/S STATION	U/S OFFSET	U/S FL	U/S END	D/S STATION	D/S OFFSET	D/S FL	D/S END	COVER	W (CSB) FT	CEM STAB BACKFILL CY
CL_SH35	CROSSOVER	64+83.57	IN CENTER OF ML		1.5	1	92	0.30	64+37.57	0.00	22.71	SET TY (II) 6:1	65+29.57	0.00	22.43	SET TY (II) 6:1	2.34	46.00	10
CL_SBFR	DRIVEWAY	97+02.38	RT	22.00	1.5	1	36	0.15	97+20.77	47.95	21.63	SET TY (II) 6:1	96+84.53	43.14	21.58	SET TY (II) 6:1	0.92	N/A	N/A
CL_SBFR	DRIVEWAY	98+36.21	RT	22.00	1.5	1	36	0.12	98+54.97	48.01	21.81	SET TY (II) 6:1	98+18.47	45.71	21.77	SET TY (II) 6:1	0.92	N/A	N/A
CL_SBFR	DRIVEWAY	104+13.14	RT	22.00	1.5	1	40	0.09	104+39.22	42.96	22.53	SET TY (II) 6:1	103+99.21	42.29	22.49	SET TY (II) 6:1	0.92	N/A	N/A
CL_SBFR	DRIVEWAY	125+94.58	RT	32.50	1.5	1	27	0.66	125+79.89	47.33	17.93	SET TY (II) 6:1	126+07.44	47.80	17.75	SET TY (II) 6:1	0.75	N/A	N/A
CL_SBFR	DRIVEWAY	130+29.70	RT	37.15	1.5	1	27	0.76	130+16.15	52.49	15.45	SET TY (II) 6:1	130+43.75	52.67	15.24	SET TY (II) 6:1	1.25	N/A	N/A
CL_SBFR	DRIVEWAY	131+85.36	RT	35.69	1.5	2	36	0.86	131+67.44	52.39	14.39	SET TY (II) 6:1	132+04.24	52.15	14.08	SET TY (II) 6:1	1.12	N/A	N/A





CEMENT STABILIZED BACKFILL DETAIL
N.T.S

CEMENT STB BKFL CALCULATION:
((((PIPE OD+2')X H)-PIPE OD AREA)
X LENGTH UNDER CROSSOVER PAVEMENT)/27 CY



DRIVEWAY TYPICAL SECTION
N.T.S

REV	DESCRIPTION	DATE	INIT

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WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

DRAINAGE DETAIL
CULVERT DETAILS

SHEET 2 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	196

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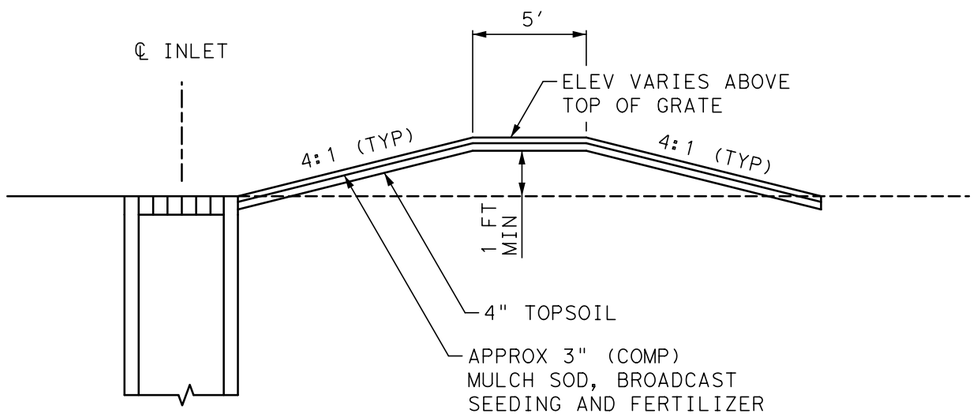
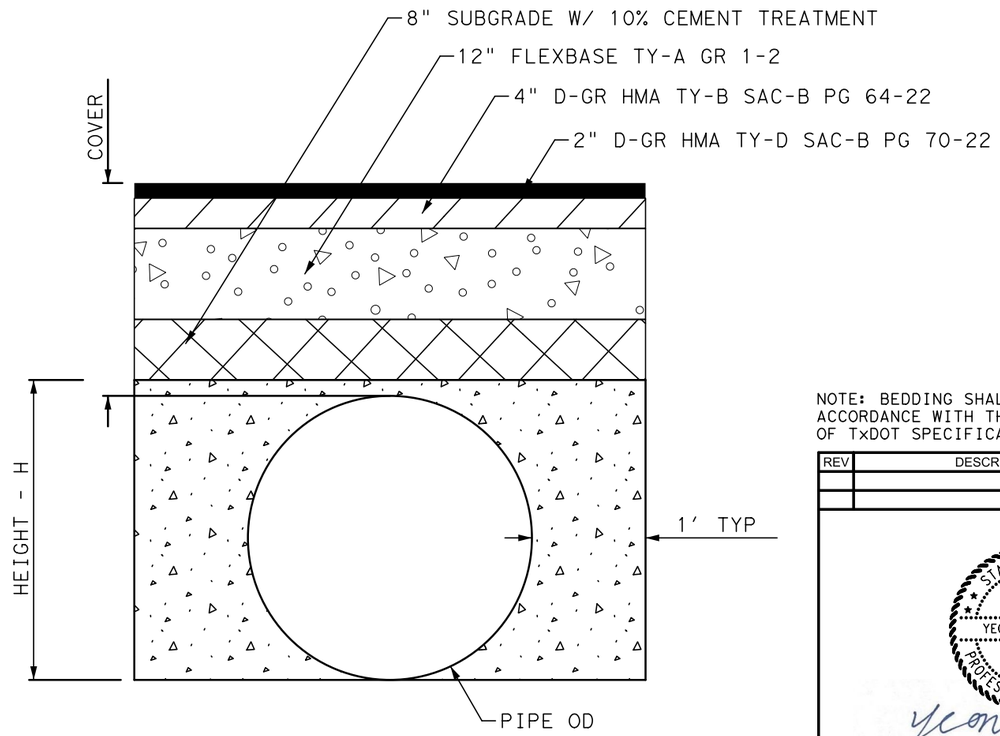


DITCH BLOCK DETAIL
N. T. S



CEMENT STB BKFL CALCULATION:
((((PIPE OD+2')X H)-PIPE OD AREA)
X LENGTH UNDER PAVEMENT)/27 CY

CEMENT STABILIZED BACKFILL DETAIL
N. T. S

NOTE: BEDDING SHALL BE PLACED IN ACCORDANCE WITH THE PERTINENT ITEMS OF TxDOT SPECIFICATIONS

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
YEONTAE JEONG
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2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
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SH 35 AT OAK LANE

DRAINAGE DETAIL
MISCELLANEOUS DETAILS

SHEET 3 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	197

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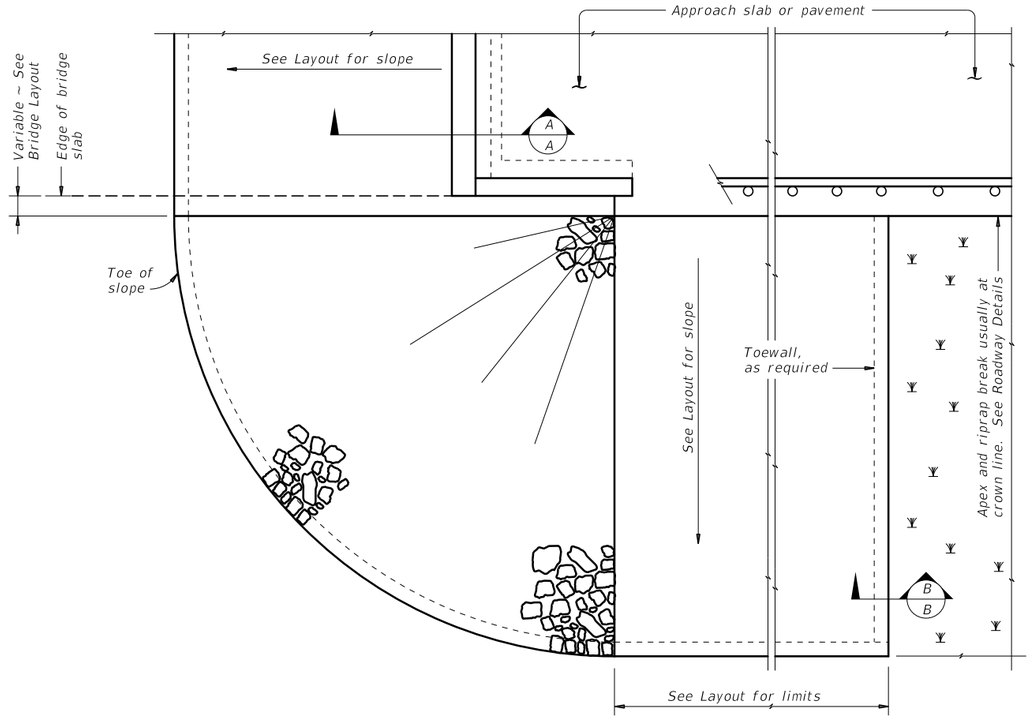
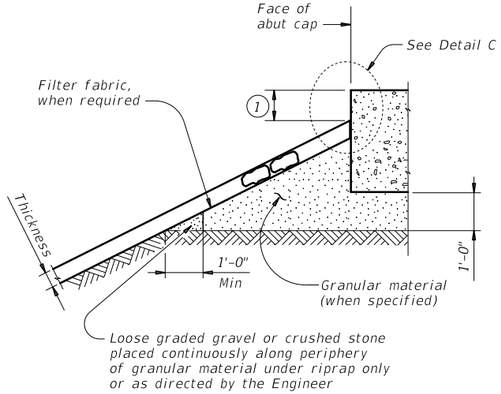
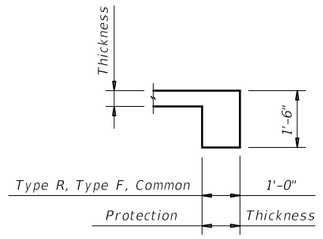


PLAN

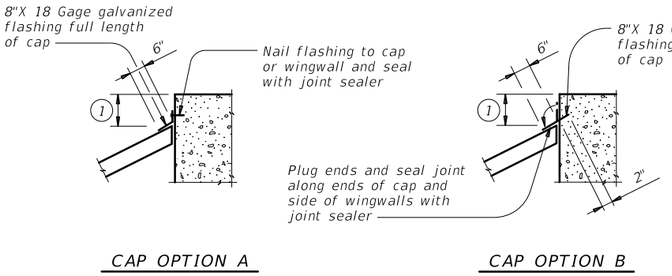


SECTION A-A AT CAP



SECTION B-B

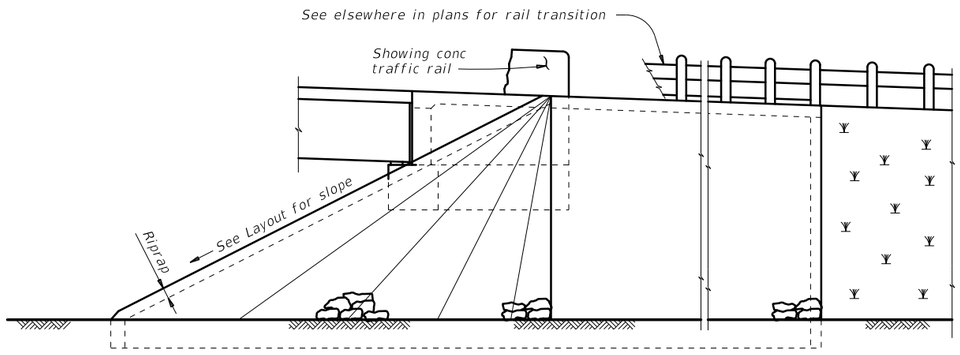
Provide toewall when shoulder drain is located adjacent to limits of stone riprap. Omit toewall when thickness of protection riprap is greater than 18".



CAP OPTION A

CAP OPTION B

DETAIL C



ELEVATION

GENERAL NOTES:
Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.
See elsewhere in plans for locations and details of shoulder drains.

(1) Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrstde1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		198

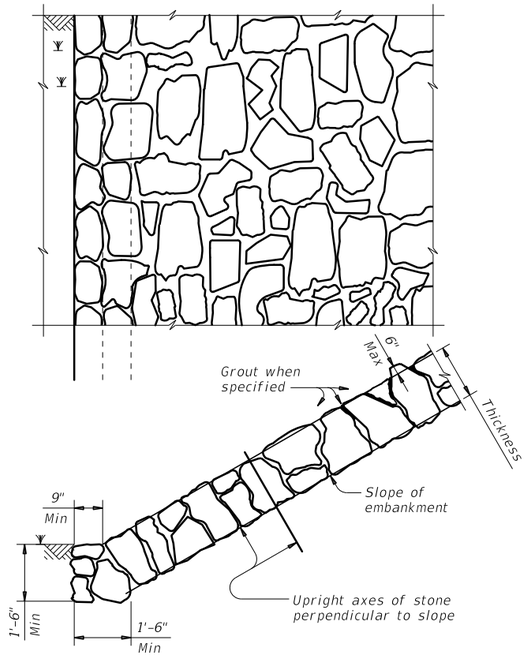


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

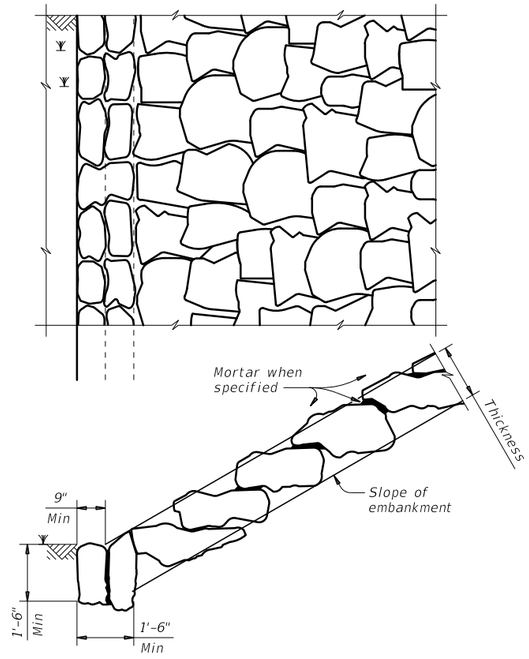


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

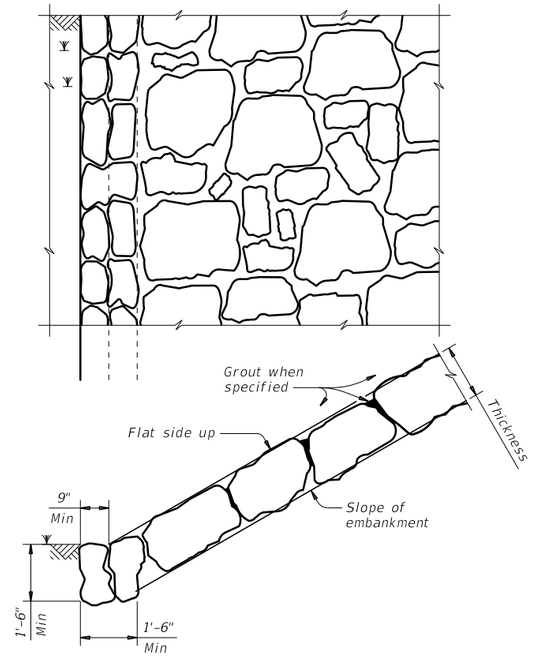


FIGURE 3 ~ TYPE F STONE RIPRAP

grouted

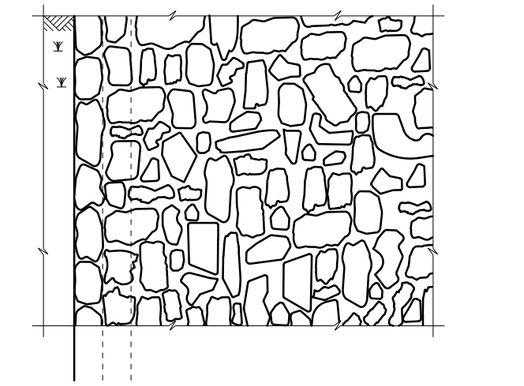


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted

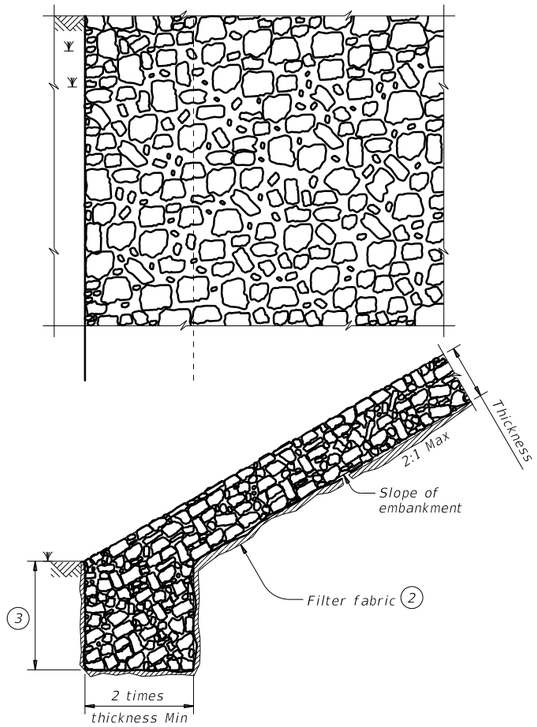


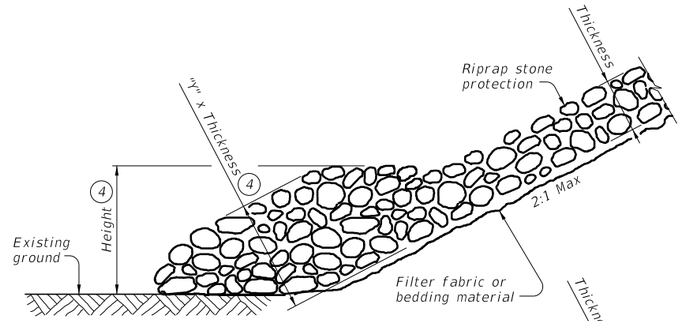
FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

(2) *Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.*

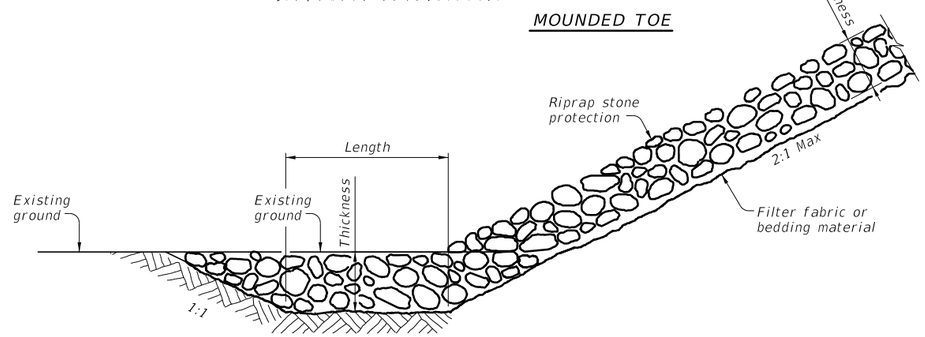
(3) *Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.*

(4) *"Y" and Height need to be defined. See layout or detail sheet for values if this option is used.*

(5) *List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.*
Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.



MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)

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SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrstde1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		199

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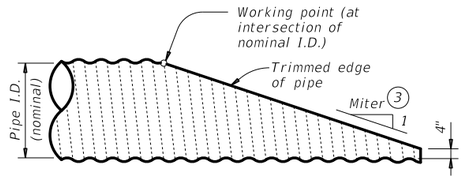
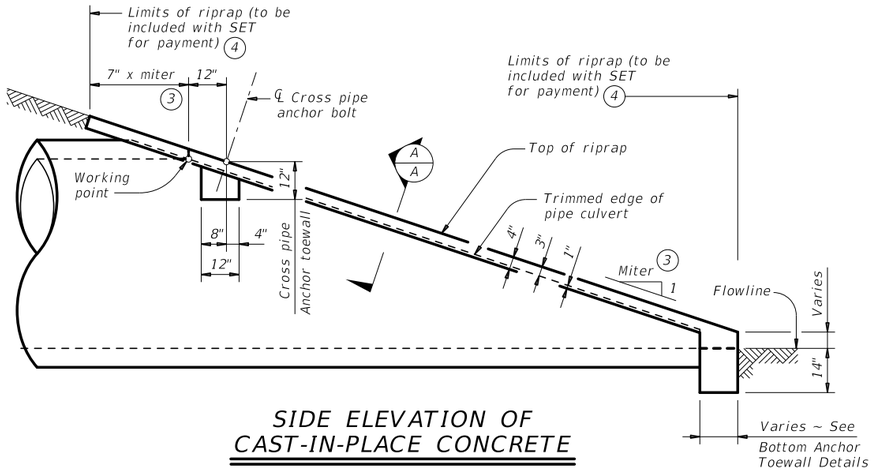


NOTE: All pipe runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

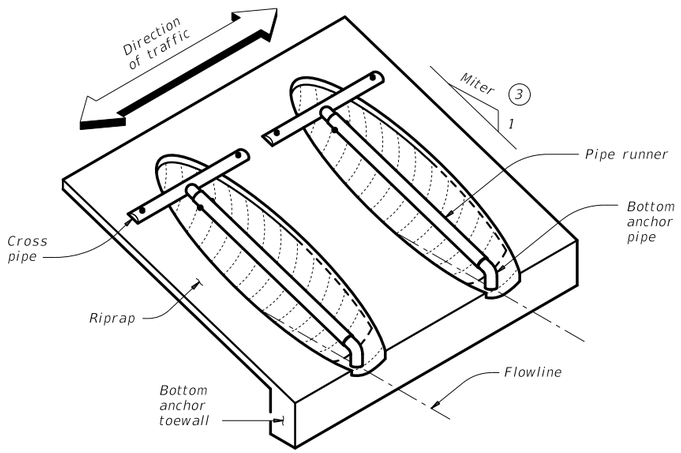
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert. Details of reinforced concrete pipe (RCP) culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details of corrugated metal pipe (CMP) culvert are similar. Pipe runners not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

CROSS PIPE LENGTHS AND PIPE RUNNER LENGTHS (1)(2)

Nominal Culvert I.D.	Pipe Culvert Spa ~ G	Cross Pipe Length	Pipe Runner Length											
			3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
			0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
24"	1' – 7"	3' – 5"	N/A	N/A	N/A	5' – 10"	N/A	N/A	N/A	8' – 1"	N/A	N/A	N/A	12' – 9"
27"	1' – 8"	3' – 8"	N/A	N/A	5' – 5"	6' – 11"	N/A	N/A	7' – 7"	9' – 7"	N/A	N/A	11' – 11"	14' – 11"
30"	1' – 10"	3' – 11"	N/A	N/A	6' – 4"	8' – 0"	N/A	N/A	8' – 9"	11' – 0"	N/A	N/A	13' – 8"	17' – 0"
33"	1' – 11"	4' – 2"	6' – 2"	6' – 5"	7' – 3"	9' – 1"	8' – 6"	8' – 10"	10' – 0"	12' – 5"	13' – 3"	13' – 9"	15' – 5"	19' – 2"
36"	2' – 1"	4' – 5"	6' – 11"	7' – 3"	8' – 2"	10' – 2"	9' – 6"	9' – 11"	11' – 2"	13' – 10"	14' – 9"	15' – 3"	17' – 2"	21' – 3"
42"	2' – 4"	4' – 11"	8' – 6"	8' – 10"	9' – 11"	12' – 4"	11' – 7"	12' – 0"	13' – 6"	16' – 8"	17' – 9"	18' – 5"	20' – 8"	25' – 7"
48"	2' – 7"	5' – 5"	10' – 1"	10' – 5"	11' – 9"	N/A	13' – 7"	14' – 2"	15' – 10"	N/A	20' – 9"	21' – 6"	24' – 2"	N/A
54"	3' – 0"	5' – 11"	11' – 8"	12' – 1"	N/A	N/A	15' – 8"	16' – 3"	N/A	N/A	23' – 10"	24' – 8"	N/A	N/A
60"	3' – 3"	6' – 5"	13' – 3"	N/A	N/A	N/A	17' – 9"	N/A	N/A	N/A	26' – 10"	N/A	N/A	N/A

TYPICAL PIPE CULVERT MITERS (3)

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED (2)

Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (no skew)	Always required
42" thru 60"	Always required	Always required

STANDARD PIPE SIZES AND MAX PIPE RUNNER LENGTHS (1)

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10' – 0"
4" STD	4.500"	4.026"	19' – 8"
5" STD	5.563"	5.047"	34' – 2"

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) (5)

Nominal Culvert I.D.	3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A

(1) *Provide pipe runner of the size shown in the tables. Provide cross pipe of the same size as the pipe runner. Provide cross pipe stub out and bottom anchor pipe of the next smaller size pipe as shown in the Standard Pipe Sizes and Max Pipe Runner Lengths table.*

(2) *This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:*

For 60" culvert pipes, the skew must not exceed 0°.
For 54" culvert pipes, the skew must not exceed 15°.
For 48" culvert pipes, the skew must not exceed 30°.
For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT Roadway Design Manual.

(3) *Miter = slope of mitered end of pipe culvert.*

(4) *Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".*

(5) *Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.*

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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	CRP	SAN PAT.		200

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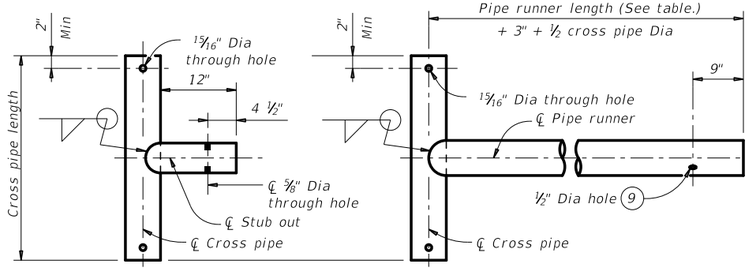
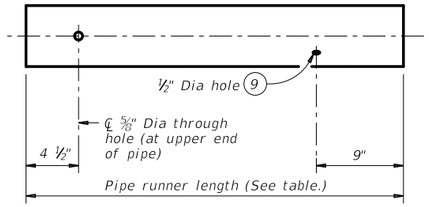


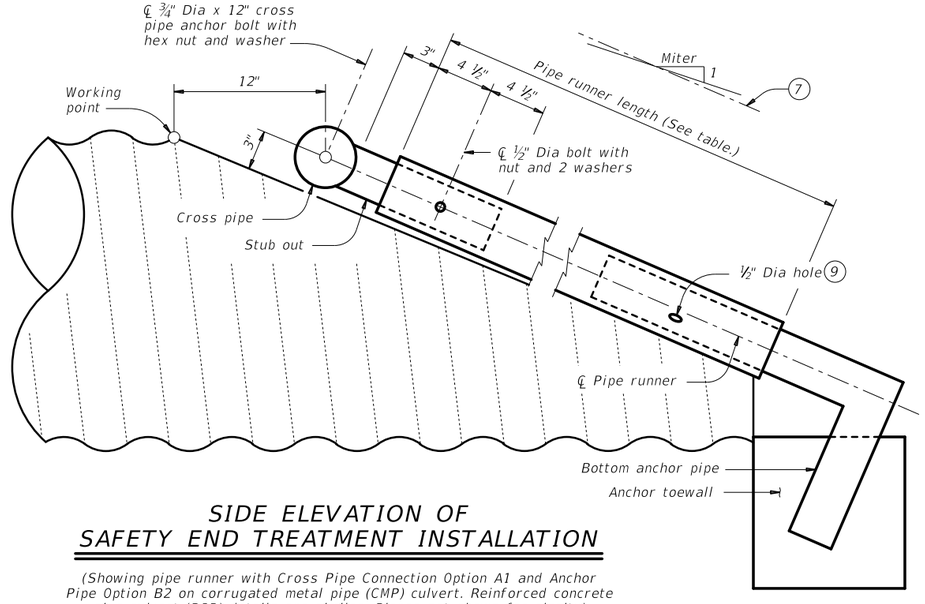
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS



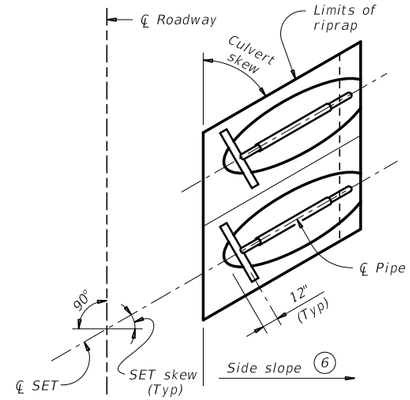
NOTE: The separate pipe runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS

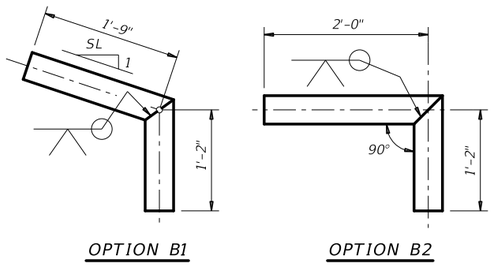


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(Showing pipe runner with Cross Pipe Connection Option A1 and Anchor Pipe Option B2 on corrugated metal pipe (CMP) culvert. Reinforced concrete pipe culvert (RCP) details are similar. Riprap not shown for clarity)

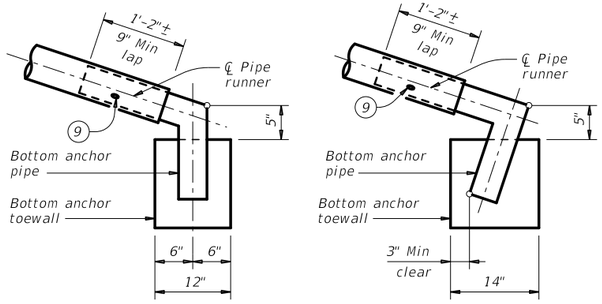


PLAN OF SKEWED INSTALLATION



OPTION B1 OPTION B2

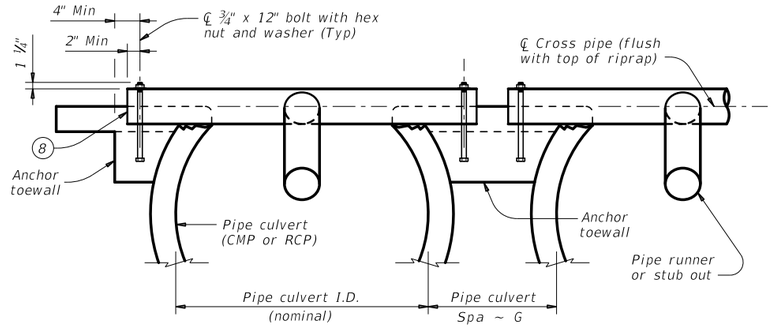
BOTTOM ANCHOR PIPE DETAILS (10)



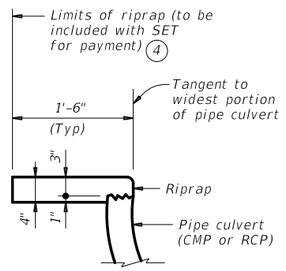
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Culvert and riprap not shown for clarity.)



SHOWING CROSS PIPE AND ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SECTION A-A

(4) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Recommended values of side slope are 3:1, 4:1, and 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.

(7) Note that actual slope of pipe runner may vary slightly from side slope of riprap and trimmed culvert pipe edge.

(8) Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(9) After installation, inspect the ½" hole to ensure that the lap of the pipe runner with the bottom anchor pipe is adequate.

(10) At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the runner) may be substituted for the mitered and welded joint in the bottom anchor pipe.

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide pipe runners, cross pipes, and anchor pipes conforming to the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.

Provide ASTM A307 bolts and nuts.

Galvanize all steel components, except concrete reinforcing, after fabrication.

Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.

Payment for riprap and toewall is included in the price bid for each safety end treatment.

Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

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	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		201

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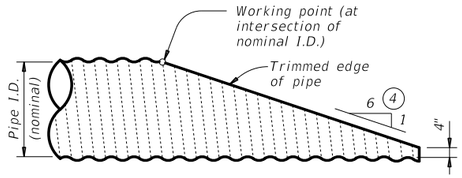
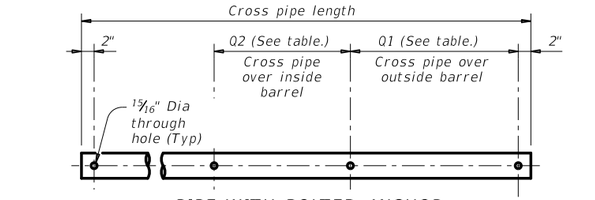


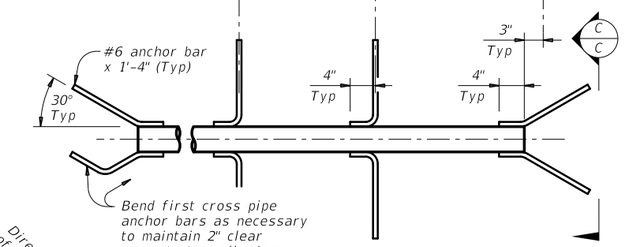
NOTE: All cross pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

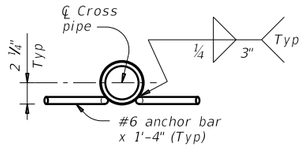
(Showing corrugated metal pipe (CMP) culvert Details at reinforced concrete pipe (RCP) culvert are similar.)



PIPE WITH BOLTED ANCHOR

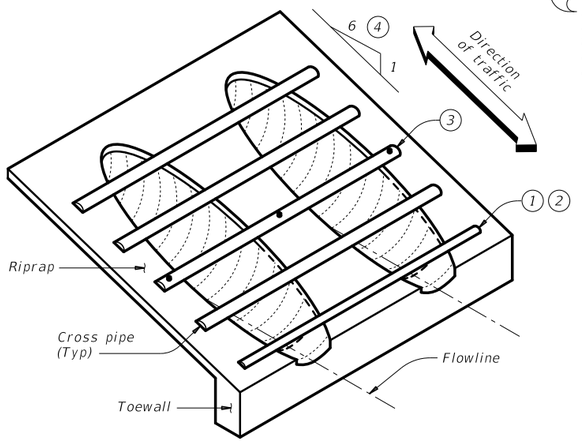


PIPE WITH ANCHOR BARS

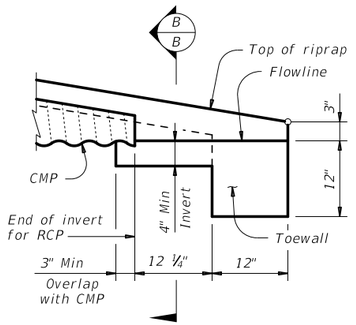


SECTION C-C

CROSS PIPE DETAILS

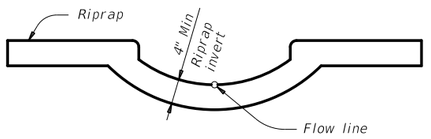


ISOMETRIC VIEW OF TYPICAL INSTALLATION



DETAIL "A"

(Showing invert with corrugated metal pipe (CMP) culvert. Reinforced concrete pipe (RCP) culvert details are similar. Cross pipes not shown for clarity.)



SECTION B-B

(Cross pipes not shown for clarity.)

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, AND RIPRAP QUANTITIES (2)

Nominal Culvert I.D.	Conc Riprap (CY) (6)	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
12"	0.6	0' – 9"	N/A	2' – 1"	1' – 9"	3 or more pipe culverts	3" Std (3.500" O.D.)
15"	0.7	0' – 11"	N/A	2' – 5"	2' – 2"		
18"	0.8	1' – 2"	N/A	2' – 10"	2' – 8"		
21"	0.9	1' – 4"	N/A	3' – 2"	3' – 1"		
24"	0.9	1' – 7"	N/A	3' – 6"	3' – 7"		
27"	1.0	1' – 8"	N/A	3' – 10"	3' – 11"	3 or more pipe culverts	3 1/2" Std (4.000" O.D.)
30"	1.1	1' – 10"	N/A	4' – 2"	4' – 4"	2 or more pipe culverts	
33"	1.2	1' – 11"	4' – 2"	4' – 5"	4' – 8"	All pipe culverts	
36"	1.3	2' – 1"	4' – 5"	4' – 9"	5' – 1"	All pipe culverts	4" Std (4.500" O.D.)
42"	1.5	2' – 4"	4' – 11"	5' – 5"	5' – 10"		
48"	1.7	2' – 7"	5' – 5"	6' – 0"	6' – 7"	All pipe culverts	5" Std (5.563" O.D.)
54"	2.0	3' – 0"	5' – 11"	6' – 9"	7' – 6"		
60"	2.2	3' – 3"	6' – 5"	7' – 4"	8' – 3"		
66"	2.4	3' – 3"	6' – 11"	7' – 10"	8' – 9"		
72"	2.7	3' – 4"	7' – 5"	8' – 5"	9' – 4"		

(1) The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe no more than 6" above the flow line.

(2) Provide cross pipes, except the first bottom pipe, of the size shown in the table. Provide a 3 1#2" standard pipe (4" O.D.) for the first bottom pipe.

(3) Install the third cross pipe from the bottom of the culvert using a bolted connection. Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, install all other cross pipes using the bolted connection details.

(4) Match cross slope as shown elsewhere in the plans. Cross slope of 6:1 or flatter is required for vehicle safety.

(5) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for contractor's information only.

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide cross pipes that meet the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 (Gr B), or API 5LX52.

Provide ASTM A307 bolts and nuts.

Galvanize all steel components, except concrete reinforcing, after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

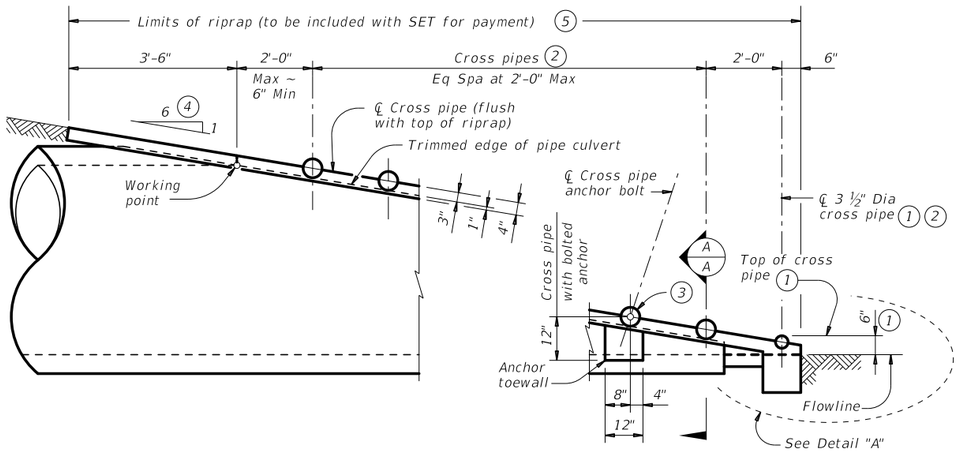
GENERAL NOTES:

Cross pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes.

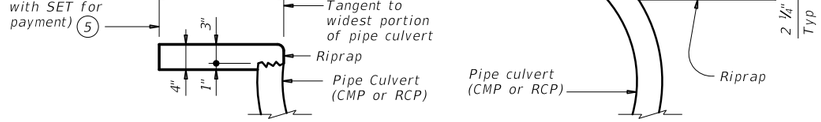
Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.



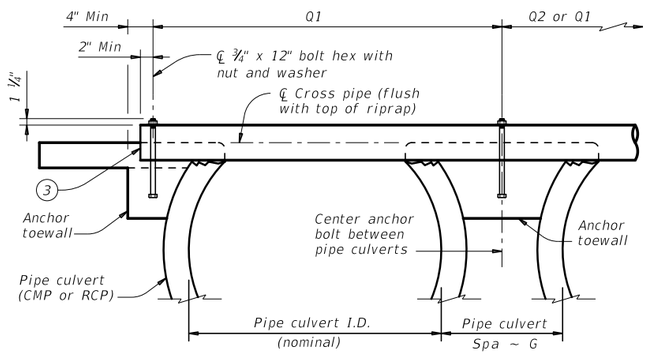
SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details at corrugated metal pipe (CMP) culvert are similar.)



SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SHOWING CROSS PIPE WITH ANCHOR BAR



SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA
PIPE CULVERTS
TYPE II ~ PARALLEL DRAINAGE

SETP-PD

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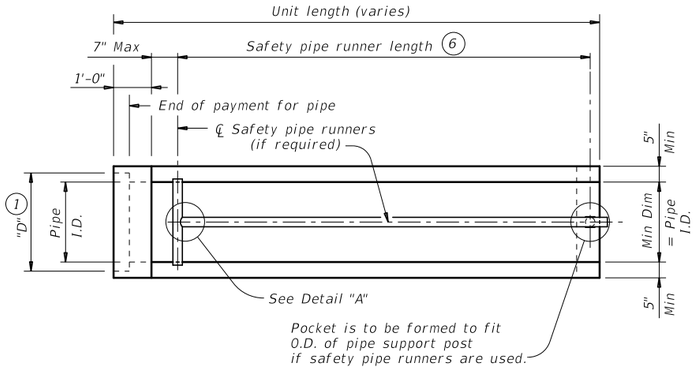
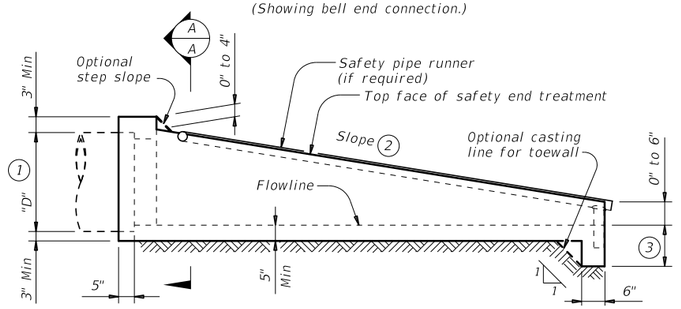
REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (8)	"D" (1)	Slope	Min Length of Unit	Single Pipe Skew	Single Pipe Pipe Runners Required	Multiple Pipes Skew	Multiple Pipes Pipe Runners Required
12"	2"	1.15"	17.00"	3:1	2' – 11"	≤ 45°	No	≤ 45°	No
				4:1	3' – 6"				
				6:1	4' – 9"				
15"	2 ¼"	1.30"	20.50"	3:1	3' – 8"	≤ 45°	No	≤ 45°	No
				4:1	4' – 7"				
				6:1	6' – 5"				
18"	2 ½"	1.60"	24.00"	3:1	4' – 6"	≤ 45°	No	≤ 45°	No
				4:1	5' – 8"				
				6:1	8' – 0"				
24"	3"	1.95"	31.00"	3:1	6' – 2"	≤ 45°	No	= 30°	No
				4:1	7' – 10"			> 30°	Yes
				6:1	11' – 3"				
30"	3 ½"	2.65"	38.50"	3:1	7' – 10"	= 15°	No	= 15°	No
				4:1	10' – 1"	> 15°	Yes	> 15°	Yes
				6:1	14' – 8"				
36"	4"	2.75"	45.50"	3:1	9' – 5"	= 0°	No	≥ 0°	Yes
				4:1	12' – 3"	> 0°	Yes		
				6:1	17' – 11"				
42"	4 ½"	N/A	52.50"	3:1	11' – 1"	≥ 0°	Yes	≥ 0°	Yes
				4:1	14' – 5"				
				6:1	21' – 2"				



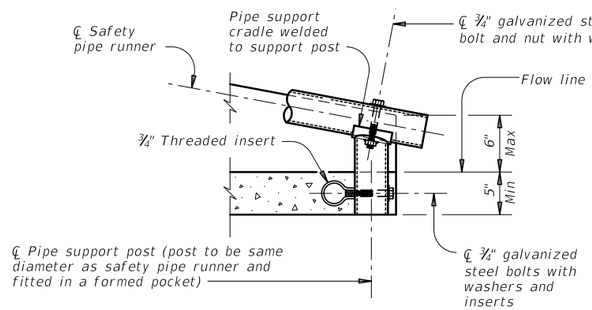
PLAN

(Showing bell end connection.)



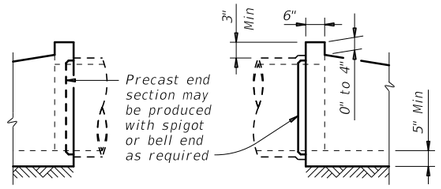
LONGITUDINAL ELEVATION

(Showing bell end connection.)



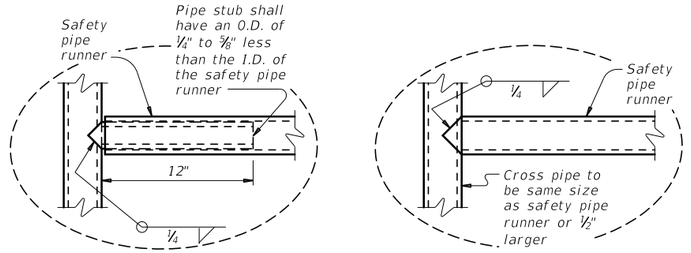
END DETAIL FOR INSTALLATION OF SAFETY PIPE RUNNERS

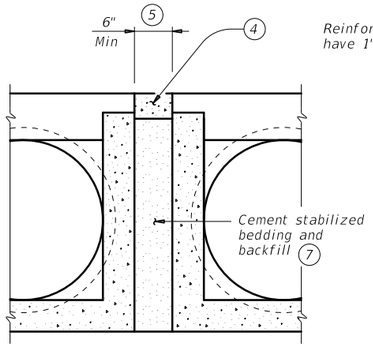
(If required)



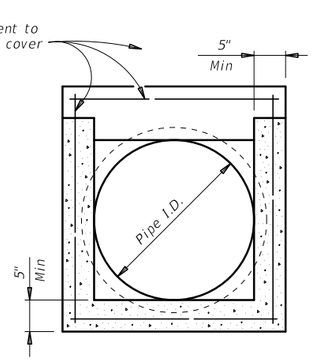
OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment)

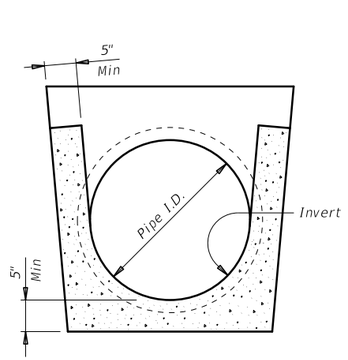




MULTIPLE PIPE INSTALLATION

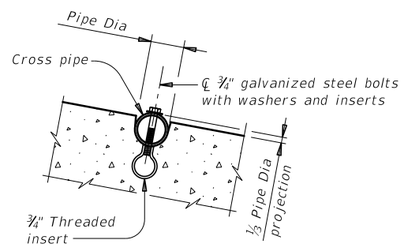


OPTION WITH SQUARE BOTTOM



OPTION WITH INVERT BOTTOM

SECTION A-A



INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)

SAFETY PIPE RUNNER DIMENSIONS

Max Safety Pipe Runner Length	Required Pipe Runner Size: Pipe Size	Pipe O.D.	Pipe I.D.
11' – 2"	3" STD	3.500"	3.068"
15' – 6"	3 ½" STD	4.000"	3.548"
20' – 10"	4" STD	4.500"	4.026"
35' – 4"	5" STD	5.563"	5.047"

(1) Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.

(2) Slope as shown elsewhere in plans. Slope of 3:1 or flatter is required for vehicle safety.

(3) Toewall to be used only when dimension is shown elsewhere in the plans.

(4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment".

(5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(6) Measured along slope.

(7) Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(8) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below :

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" – D12 x D12 or 5"x5" – D10 x D10 welded wire reinforcement (WWR).
B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

At the option and expense of the Contractor, the next larger size of safety end treatment may be furnished as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 1,800 Lbs at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

Provide safety pipe runners, cross pipes, pipe support posts, and pipe stubs meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464 "Reinforced Concrete Pipe". Connect TP by grouting. See PBGC standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT
TYPE II ~ CROSS DRAINAGE

PSET-SC

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	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		203

DATE: 4/26/2021 8:14:28 PM
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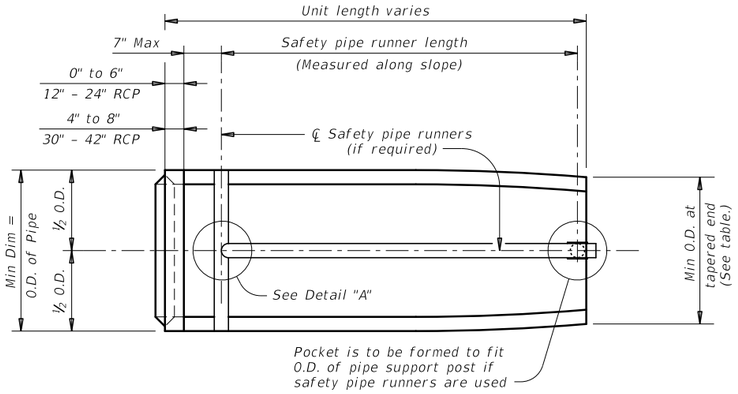
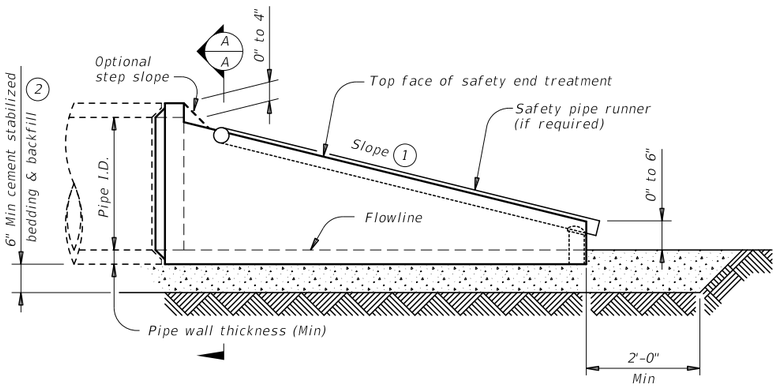


PLAN VIEW

(Showing spigot end connection.)



LONGITUDINAL ELEVATION

(Showing spigot end connection.)

MAX SAFETY PIPE RUNNER LENGTHS AND REQUIRED SAFETY PIPE RUNNER SIZES			
Max Safety Pipe Runner Length	Required Pipe Runner Size		
	Pipe Size	Pipe O.D.	Pipe I.D.
11' – 2"	3" STD	3.500"	3.068"
15' – 6"	3 ½" STD	4.000"	3.548"
20' – 10"	4" STD	4.500"	4.026"
35' – 4"	5" STD	5.563"	5.047"

(1) Slope as shown elsewhere in the plans. Slope of 3:1 or flatter is required for vehicle safety.

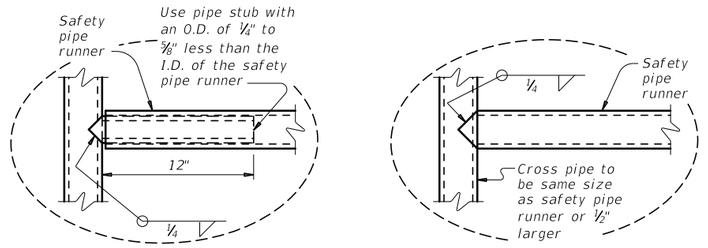
(2) Provide cement stabilized bedding and backfill in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(3) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap be considered subsidiary to the Item "Safety End Treatment".

(4) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

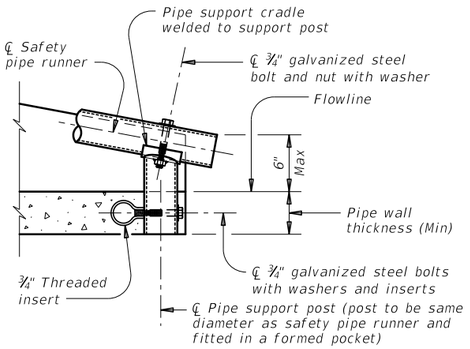
Pipe I.D.	Min Wall Thickness	Min O.D.	Min O.D. at Tapered End	Min Reinf Requirements (sq. in. / ft. of pipe)	Slope	Minimum Length of Unit	Single Pipe		Multiple Pipe	
							Skew	Pipe Runners Required	Skew	Pipe Runners Required
12"	2"	16"	16"	0.07 Circ.	3:1	2' – 0"	≤ 45°	No	≤ 45°	No
					4:1	2' – 8"				
					6:1	4' – 0"				
15"	2 ¼"	19 ½"	19"	0.07 Circ.	3:1	2' – 10"	≤ 45°	No	≤ 45°	No
					4:1	3' – 9"				
					6:1	5' – 8"				
18"	2 ½"	23"	21 ½"	0.07 Circ.	3:1	3' – 8"	≤ 45°	No	≤ 45°	No
					4:1	4' – 10"				
					6:1	7' – 3"				
24"	3"	30"	27"	0.07 Circ.	3:1	5' – 3"	≤ 45°	No	≤ 30°	No
					4:1	7' – 0"			> 30°	Yes
					6:1	10' – 6"				
30"	3 ½"	37"	31"	0.18 Circ.	3:1	6' – 3"	≤ 15°	No	≤ 15°	No
					4:1	8' – 2"	> 15°	Yes	> 15°	Yes
					6:1	12' – 1"				
36"	4"	44"	36"	0.19 Ellip.	3:1	7' – 10"	= 0°	No	≥ 0°	Yes
					4:1	10' – 4"	> 0°	Yes		
					6:1	15' – 4"				
42"	4 ½"	51"	41 ½"	0.23 Ellip.	3:1	9' – 6"	≥ 0°	Yes	≥ 0°	Yes
					4:1	12' – 6"				
					6:1	18' – 7"				



OPTION A

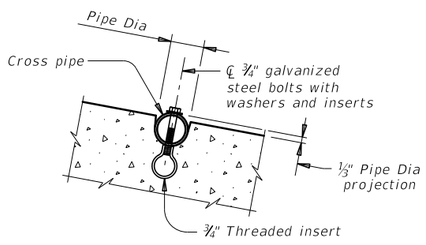
OPTION B

DETAIL A



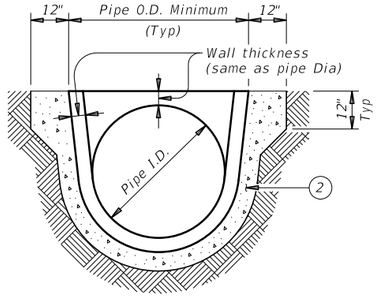
END DETAIL FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

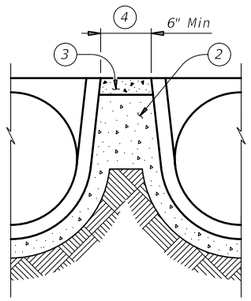


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



SECTION A-A



MULTIPLE PIPE INSTALLATION

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide safety pipe runners, cross pipes, pipe support posts, and pipe stubs meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (CRP) may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Manufacture precast concrete end sections in accordance with Item 464, "Reinforced Concrete Pipe" and in accordance with ASTM Specification C-76, Class III, Wall B for circular pipe.

Provide precast concrete end sections with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for grout, mortar, cold applied asphalt joint compound or pre-formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading, and installation.

Pipe runners are designed for a traversing load of 1,800 Lbs at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ CROSS DRAINAGE

PSET-RC

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	CRP	SAN PAT.		204

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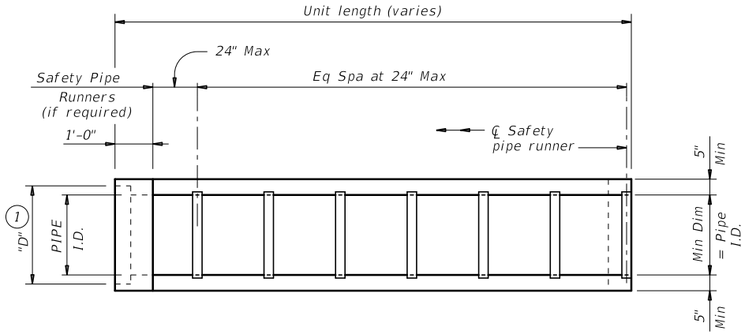
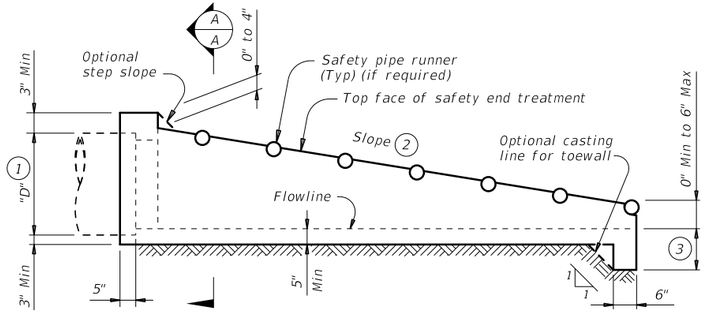


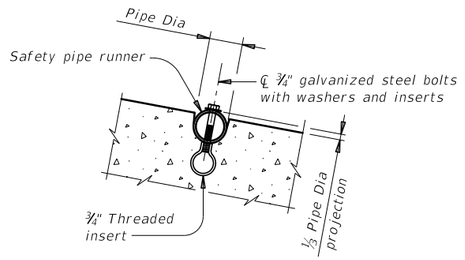
PLAN

(Showing bell end connection.)



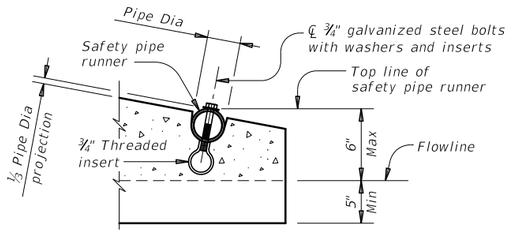
LONGITUDINAL ELEVATION

(Showing bell end connection.)

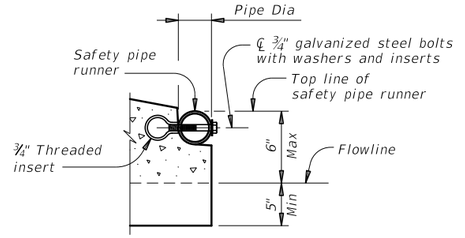


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



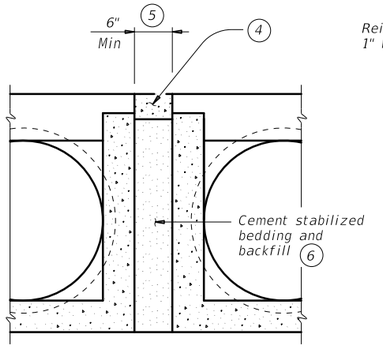
OPTION A



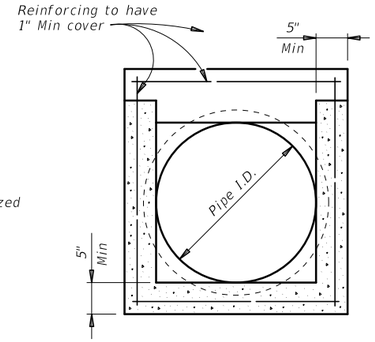
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

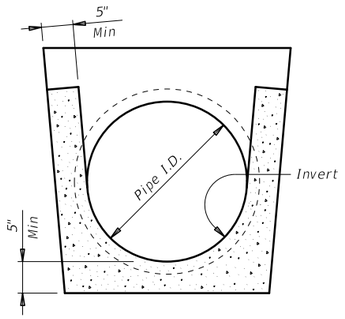
(If required)



MULTIPLE PIPE INSTALLATION

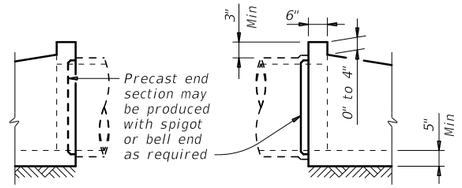


OPTION WITH SQUARE BOTTOM



OPTION WITH INVERT BOTTOM

SECTION A-A



OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment.)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (7)	"D" (1)	Slope	Min Length	Pipe Runners Required		Required Pipe Runner Size		
						Single Pipe	Multiple Pipe	Nominal Dia.	O.D.	I.D.
12"	2"	1.15"	17.00"	6:1	4' – 9"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
15"	2 ¼"	1.30"	20.50"	6:1	6' – 5"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
18"	2 ½"	1.60"	24.00"	6:1	8' – 0"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
24"	3"	1.95"	31.00"	6:1	11' – 3"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
30"	3 ½"	2.65"	38.50"	6:1	14' – 8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17' – 11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	N/A	52.50"	6:1	21' – 2"	Yes	Yes	4" STD	4.500"	4.026"

(1) Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.

(2) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

(3) Toewall to be used only when dimension is shown elsewhere in the plans.

(4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment".

(5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(6) Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(7) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below :

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" – D12 x D12 or 5"x5" – D10 x D10 welded wire reinforcement (WWR).

B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464, "Reinforced Concrete Pipe". Connect TP by grouting. See PBGC standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-SP

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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		205

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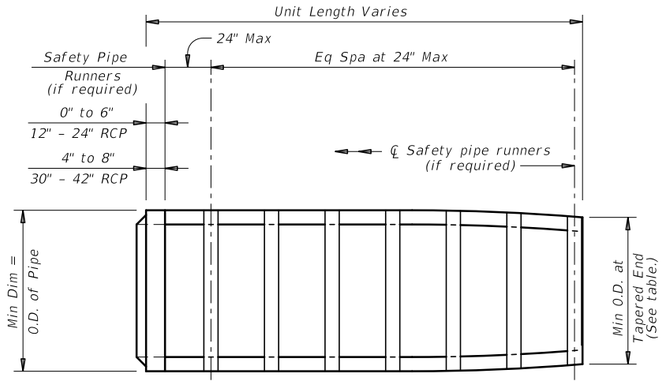
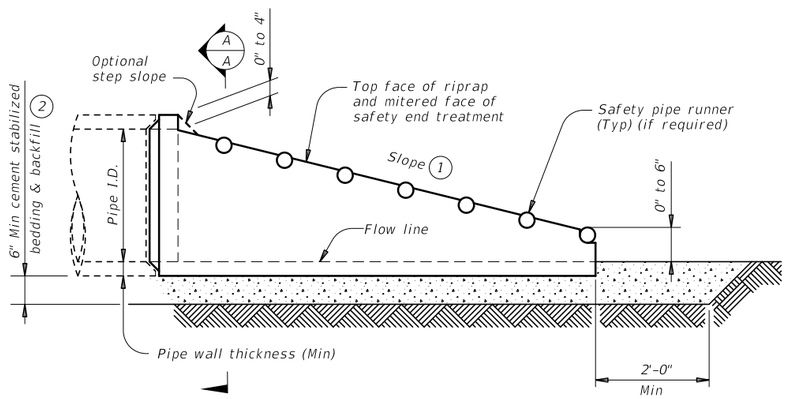


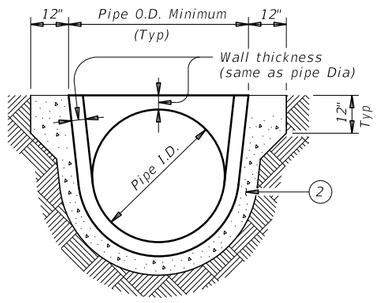
PLAN VIEW – 12" THRU 24"

(Showing spigot end connection.)

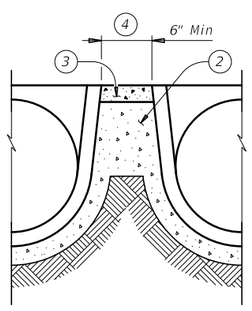


LONGITUDINAL ELEVATION - 12" THRU 24"

(Showing spigot end connection.)



SECTION A-A



MULTIPLE PIPE INSTALLATION

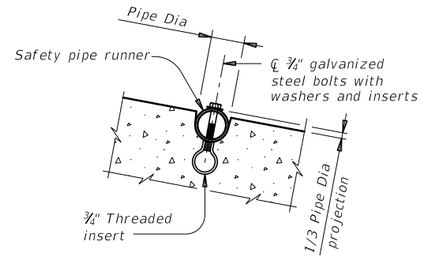
(1) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

Provide cement stabilized bedding and backfill in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(3) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment".

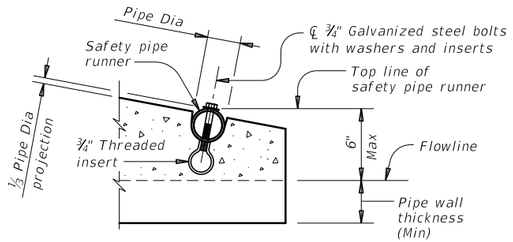
(4) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(5) Safety pipe runners are required for multiple pipe culverts with more than two pipes.

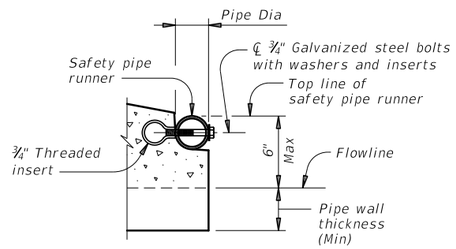


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



OPTION A



OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	Min Wall Thickness	Min O.D.	Min O.D. at Tapered End	Min Reinf Requirements (sq. in. per ft. of Pipe)	Max Slope	Min Length of Unit	Pipe Runner Requirements		Required Pipe Runner Sizes		
							Single Pipe	Multiple Pipe	Nominal Dia	O.D.	I.D.
12"	2"	16"	16"	0.07 Circ.	6:1	4'–0"	No	(5)	3" STD	3.500"	3.068"
15"	2 ¼"	19 ½"	19"	0.07 Circ.	6:1	5'–8"	No	(5)	3" STD	3.500"	3.068"
18"	2 ½"	23"	21 ½"	0.07 Circ.	6:1	7'–3"	No	(5)	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 Circ.	6:1	10'–6"	No	(5)	3" STD	3.500"	3.068"
30"	3 ½"	37"	31"	0.18 Circ.	6:1	12'–1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 Ellip.	6:1	15'–4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	51"	41 ½"	0.23 Ellip.	6:1	18'–7"	Yes	Yes	4" STD	4.500"	4.026"

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.

Galvanize steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP) may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Manufacture precast concrete end sections in accordance with Item 464, "Reinforced Concrete Pipe" and in accordance with ASTM Specification C-76, Class III, Wall B for circular pipe.

Provide precast concrete end sections with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for grout, mortar, cold applied asphalt joint compound or pre-formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-RP

FILE: psetrpss-20.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		206

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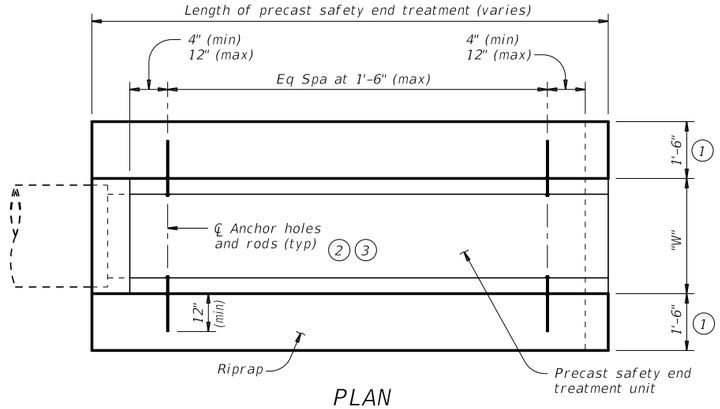
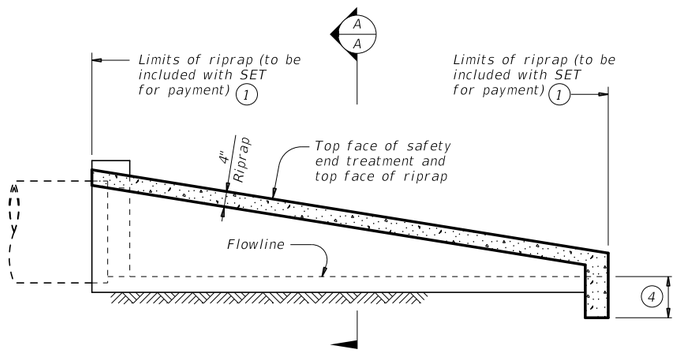
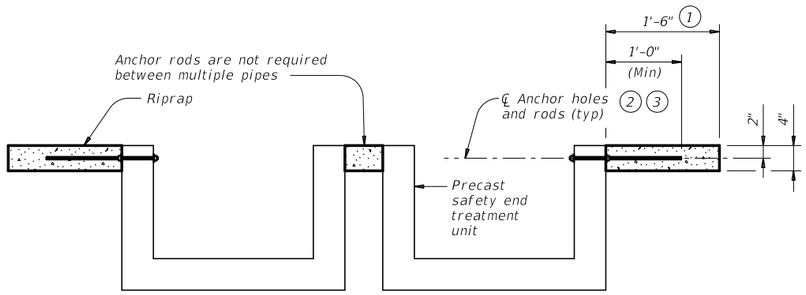


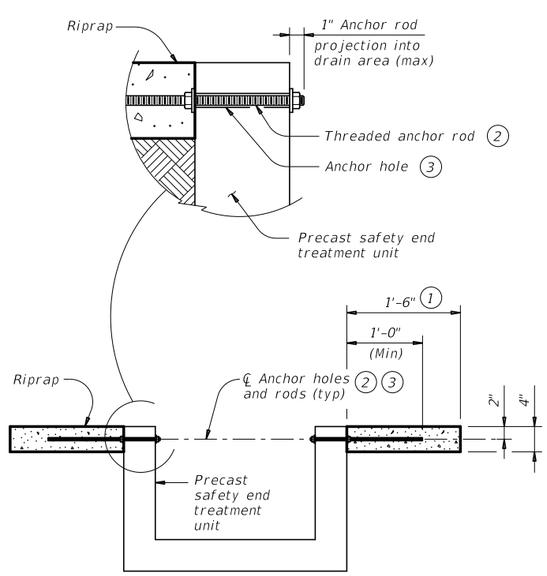
PLAN



LONGITUDINAL ELEVATION



MULTIPLE PIPE INSTALLATION



SINGLE PIPE INSTALLATION

SECTION A-A

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) 5

Nominal Culvert (Pipe) I.D.	PSET-SC and PSET-SP Standards				PSET-RC and PSET-RP Standards			
	Unit Width "W"	Side Slope			Unit Width "W"	Side Slope		
		3:1	4:1	6:1		3:1	4:1	6:1
12"	23.0"	0.1	0.2	0.2	16.0"	0.1	0.1	0.2
15"	26.5"	0.2	0.2	0.3	19.5"	0.1	0.2	0.2
18"	30.0"	0.2	0.2	0.3	23.0"	0.2	0.2	0.3
24"	37.0"	0.3	0.3	0.5	30.0"	0.2	0.3	0.4
30"	44.5"	0.3	0.4	0.6	37.0"	0.3	0.3	0.5
36"	51.5"	0.4	0.5	0.7	44.0"	0.3	0.4	0.6
42"	58.5"	0.5	0.6	0.8	51.0"	0.4	0.5	0.7

(1) Riprap placed beyond the limits shown will be paid as concrete riprap in accordance with Item 432, "Riprap". When riprap is cast integrally with the precast safety end treatment, this dimension is 1'-0" minimum.

(2) 1#2" Dia ASTM A307 Gr A threaded anchor rod with 2 nuts and 2 washers. Galvanize all components in accordance with Item 445, "Galvanizing". Repair galvanizing that is damaged during transport or construction in accordance with the specifications.

(3) 3#4" through holes in walls of safety end treatment for riprap anchor rods may be drilled with rotary (coring or masonry) type drilling equipment or may be formed. Do not use percussive (star) type drilling equipment. If holes are drilled, patch spalls in the inside face of the wall exceeding 1#2" from the holes.

(4) Provide riprap toe wall when dimension is shown elsewhere in the plans or when field conditions require a toe wall.

(5) Quantities shown are for one end of one reinforced concrete pipe culvert. For multiple pipe culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only. Quantities are based on the minimum unit lengths shown on the Precast Saftey End Treatment (SET) standard sheets.

MATERIAL NOTES:

Provide Class "B" riprap in accordance with Item 432, "Riprap".
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise. The anchor rods shown are always required.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment".
Refer to PSET-SC or PSET-SP standard sheets for details of square safety end treatments not shown. Refer to PSET-RC or PSET-RP standard sheets for details of round safety end treatments not shown.
For precast units with integrally cast riprap, substitute reinforcing steel in the amount on 0.26 in./ft. minimum for the threaded anchor rods shown. When requested, submit sealed engineering drawings for approval prior to construction. Shop drawings will not be required. Note that a proprietary precast unit with integral riprap is available from L&R Precast Concrete Works, Inc. (956) 583-6293 or www.lrprecast.com.
Payment for riprap and toewalls is included in the price bid for each safety end treatment.

These riprap details are only applicable when notes that require placement of riprap with precast safety end treatments are shown elsewhere in the plans.

Precast units with integrally cast riprap are permitted unless noted otherwise on the plans.

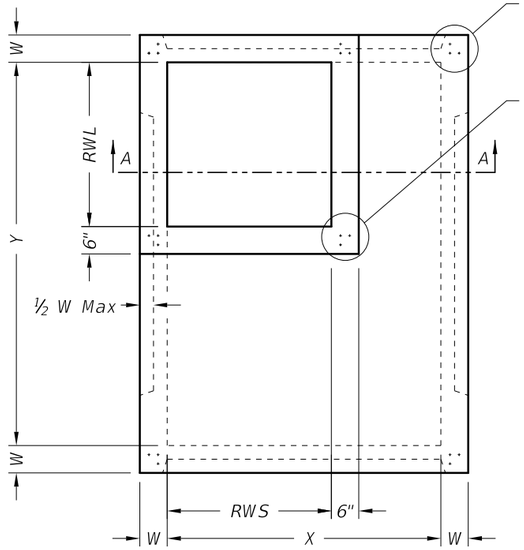
Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT
TYPE II
RIPRAP DETAILS

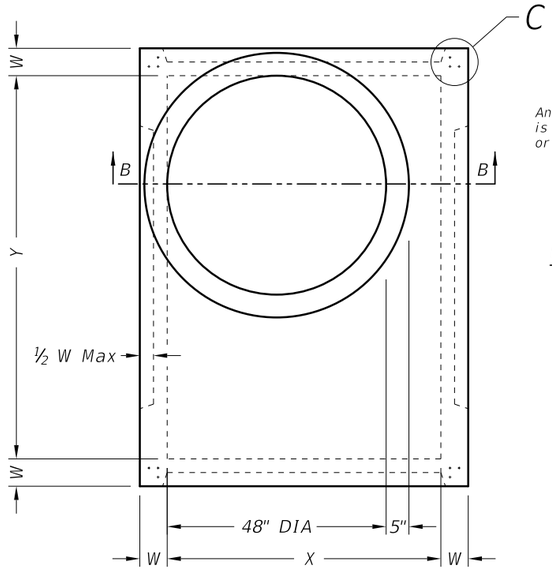
PSET-RR

FILE: psetrrse-20.dgn	DN: GAF	CK: TxDOT	DW: JRP	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		207



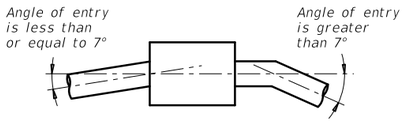
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



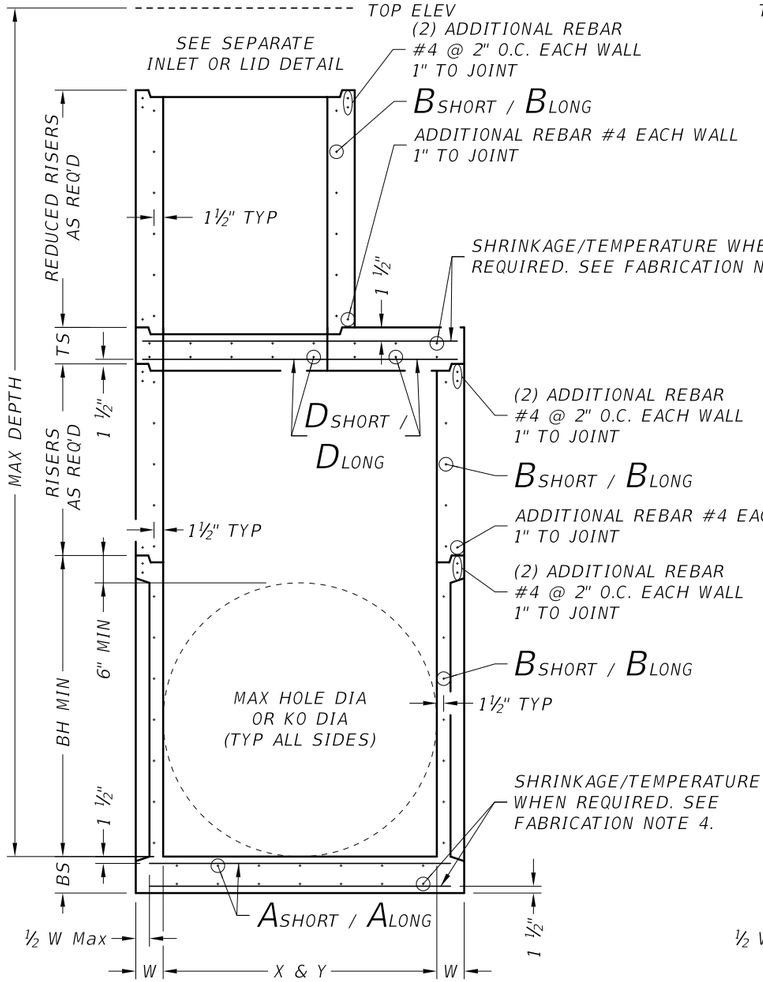
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



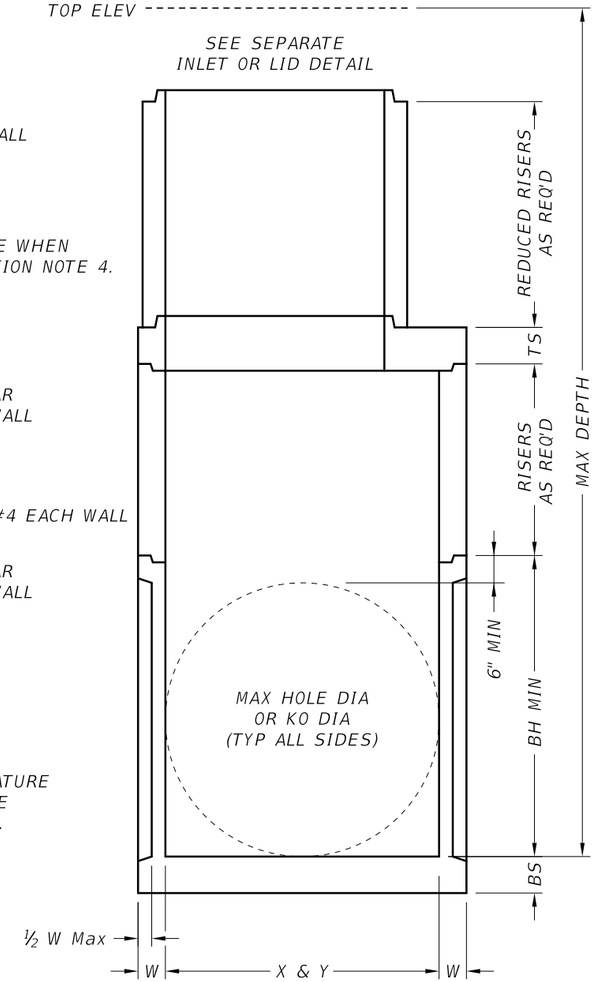
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved
approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

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

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST BASE

PB

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REVISIONS	0180	06	067	SH 35
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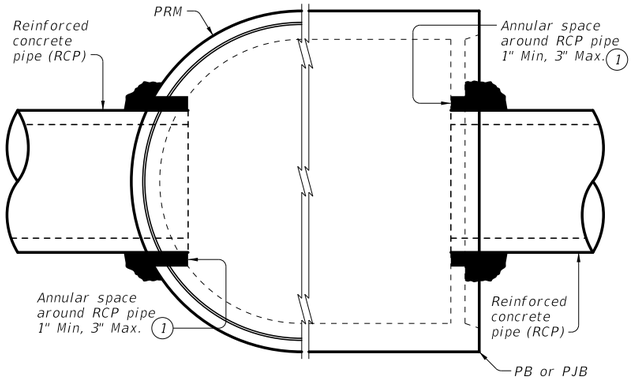
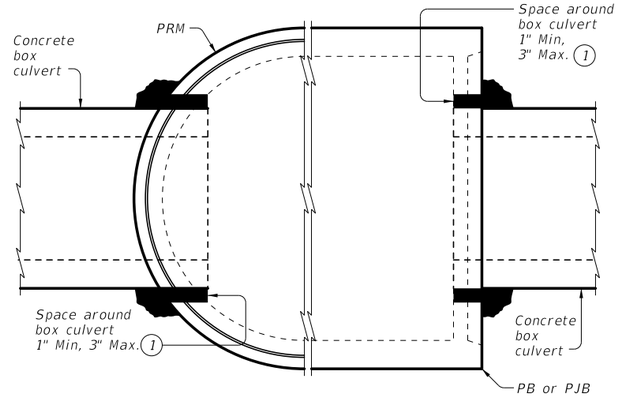


PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

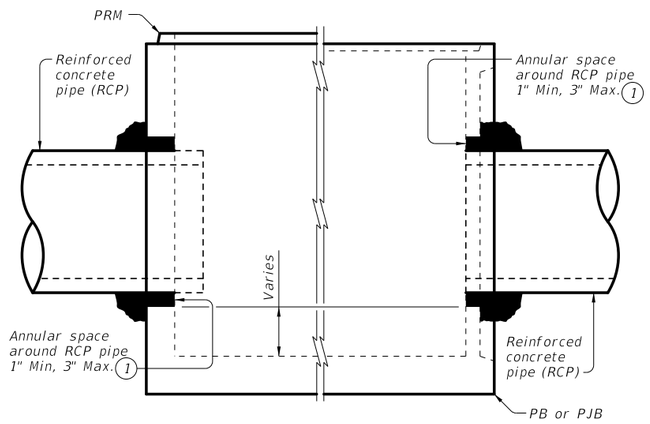
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

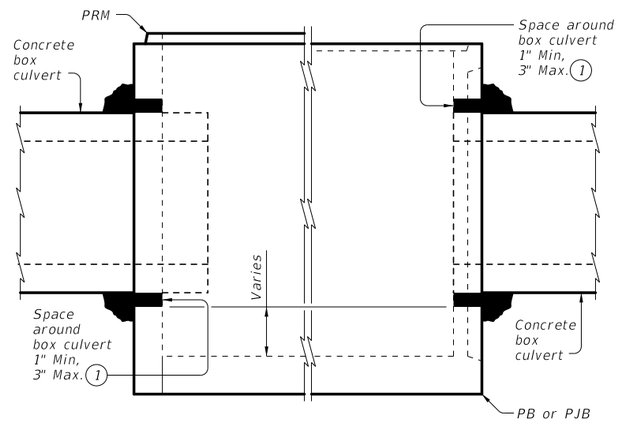
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

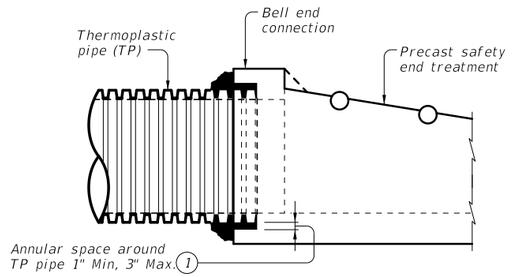
TYPICAL HALF ELEVATION



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

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©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
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DATE: 4/26/2021 8:14:25 PM
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	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

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REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		210

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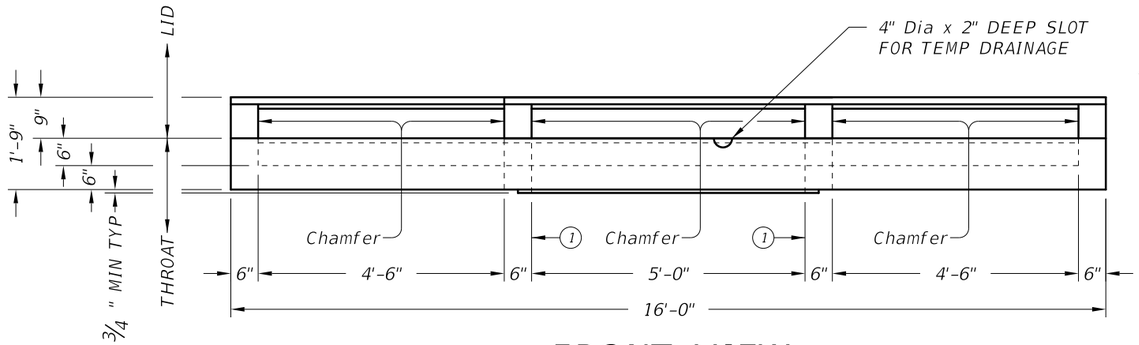
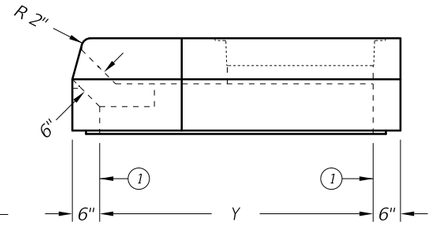


FRONT VIEW

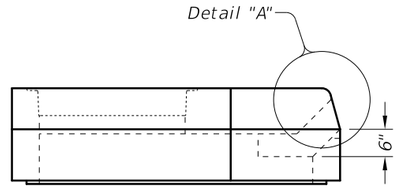
(SHOWING LEFT AND RIGHT EXTENSIONS)



RIGHT VIEW

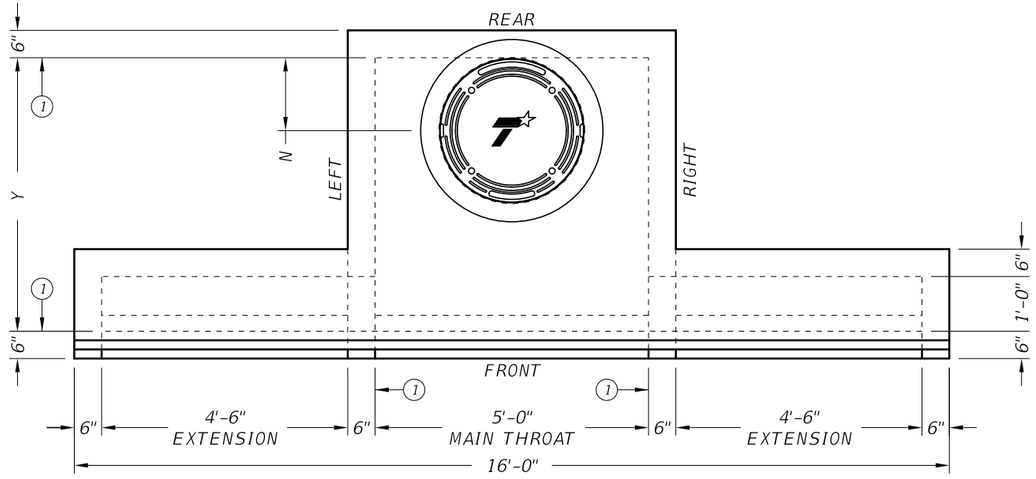
REAR VIEW

(EXTENSIONS NOT SHOWN)



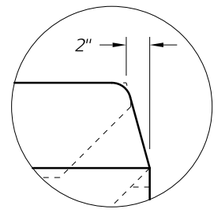
LEFT VIEW

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



PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



DETAIL "A"

HS20 LOADING

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRECAST CURB INLET OUTSIDE ROADWAY

PCO

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	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		211

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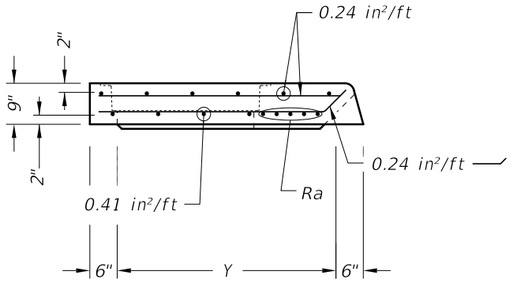
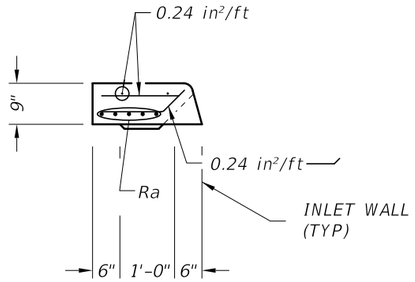
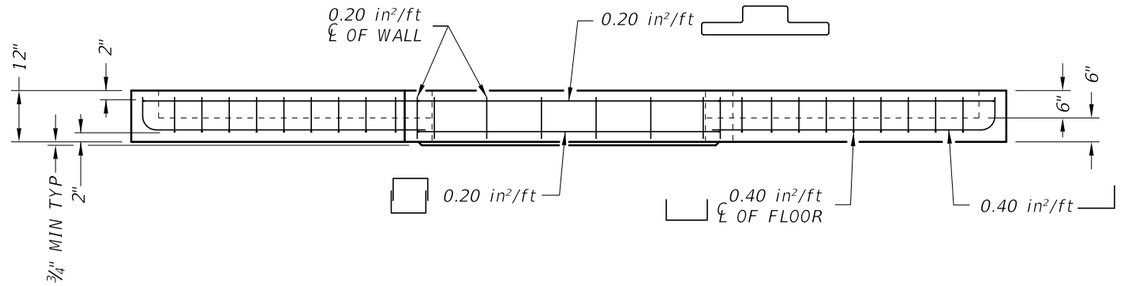


LID SECTION A-A

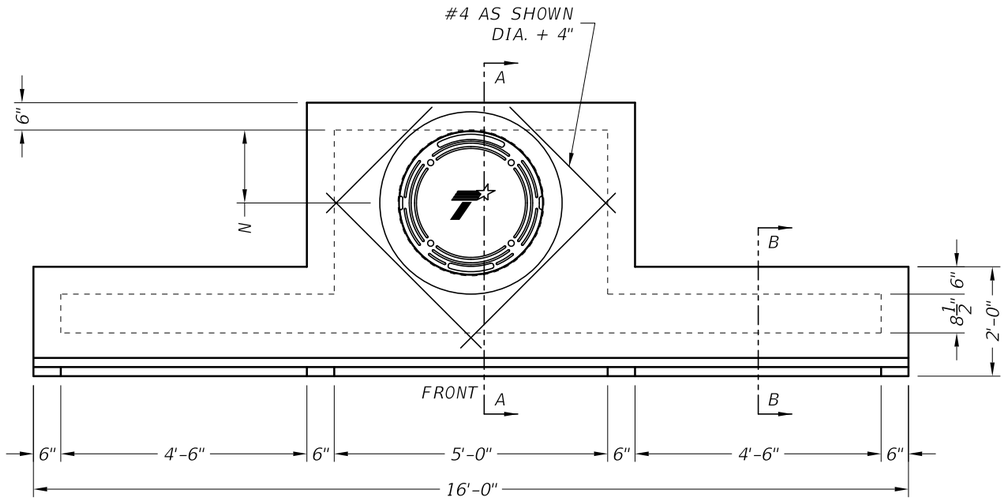


LID SECTION B-B



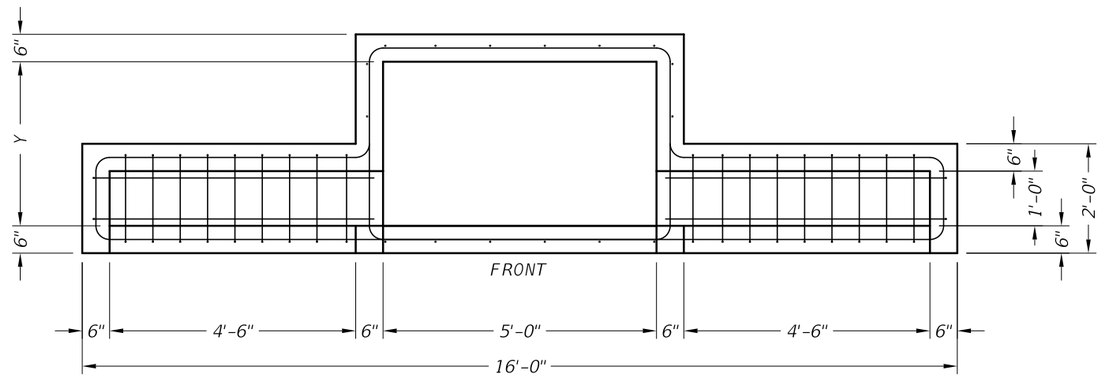
THROAT ELEVATION VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



LID PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



THROAT PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)

SIZE(Y)	N	MH DIA*	Ra
3'	9"	18"	(4) #5 Additional
4'	16"	32"	(4) #5 Additional
5'	16"	32"	(4) #5 Additional
6'	16"	32"	(4) #5 Additional

* Nominal ring and cover size.

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. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in the plans.
4. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾". Lid may employ a butt joint with dowels at the Contractor's option.
5. Provide lifting devices in conformance with Manufacturer's recommendations.
6. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.
7. Chamfer vertical edges of inlet lid ¾" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Open area of main throat = 360 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.

Cover dimensions are clear dimensions, unless noted otherwise.

HS20 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST CURB INLET OUTSIDE ROADWAY

PCO

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	CRP	SAN PAT.		212

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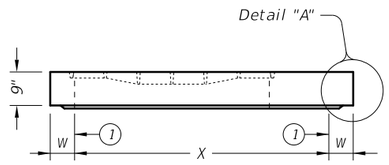
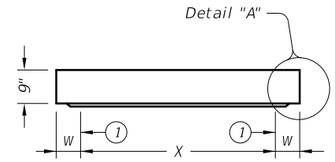
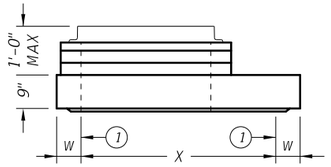


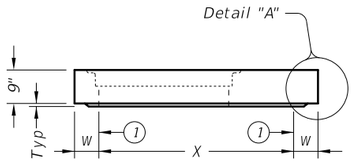
STYLE 'FG'



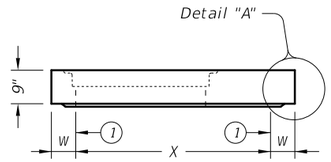
ELEVATION VIEW



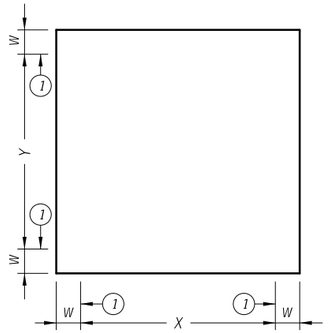
ELEVATION VIEW



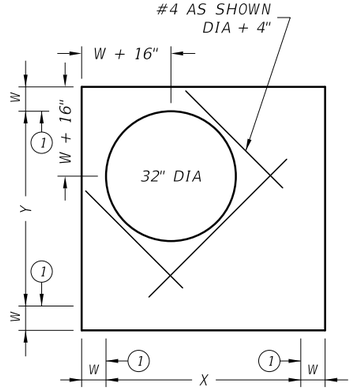
ELEVATION VIEW



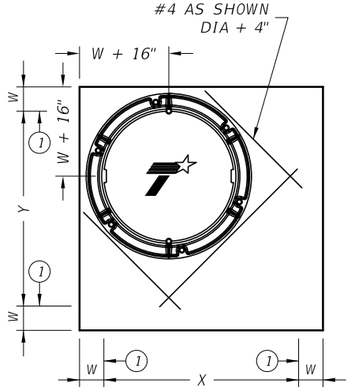
ELEVATION VIEW



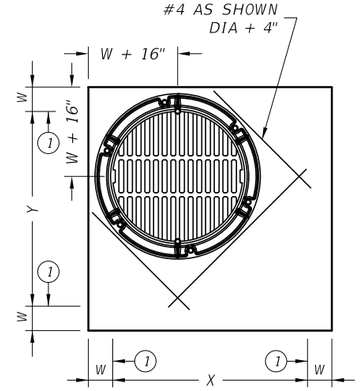
PLAN VIEW
NO OPENINGS
STYLE 'SL'



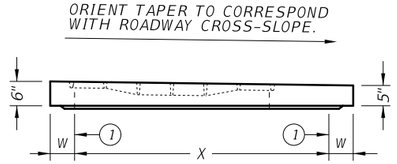
PLAN VIEW
SHIP LOOSE RING & COVER
STYLE 'RH'



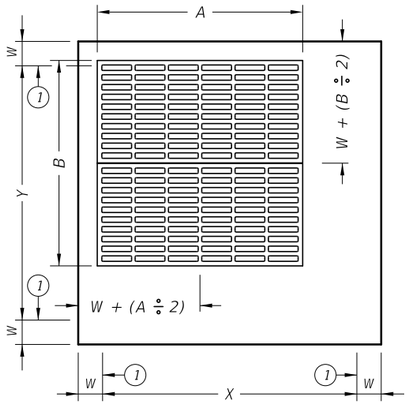
PLAN VIEW
32" DIA CAST-IN RING & COVER
STYLE 'RC'



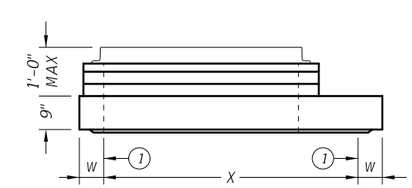
PLAN VIEW
32" DIA CAST-IN RING & GRATE
STYLE 'RG'



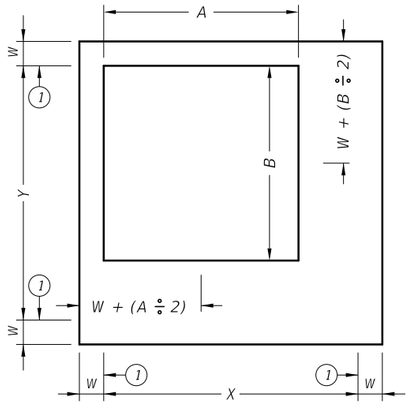
STYLE 'SFG'
ELEVATION VIEW



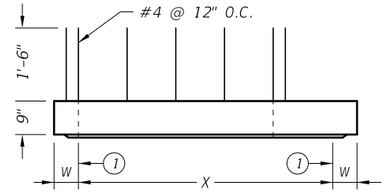
PLAN VIEW
CAST-IN FRAME & GRATE
STYLES 'FG' & 'SFG'



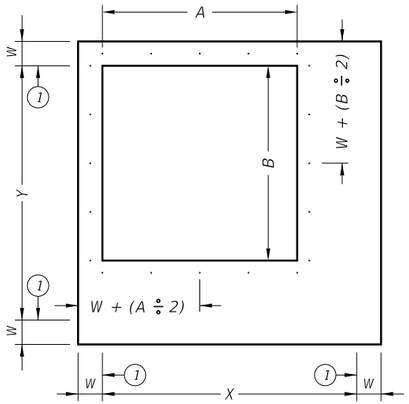
ELEVATION VIEW



PLAN VIEW
SHIP LOOSE FRAME & GRATE
STYLE 'SH'



ELEVATION VIEW



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
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
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	CRP	SAN PAT.		213

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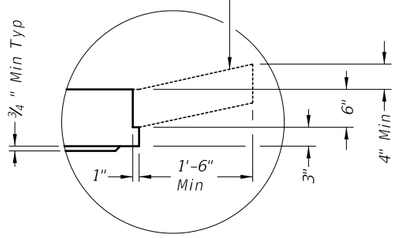
Style	Size (X x Y)	W (2)	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in²/ft	0.37 in²/ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in²/ft	0.37 in²/ft
SFG	3'x3'	6"	3'x3'	0.32 in²/ft	0.32 in²/ft
SL	4'x4'	6"	n/a	0.34 in²/ft	0.34 in²/ft
RH,RC,RG,SH,S1,FG	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

FILE: prestd05-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		214

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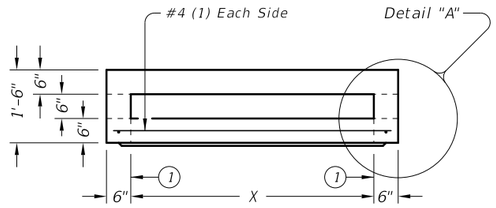
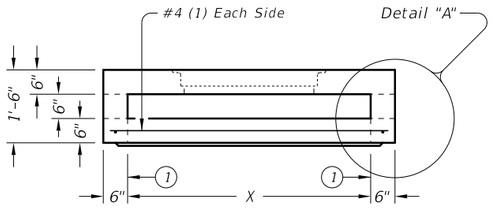


ELEVATION VIEW



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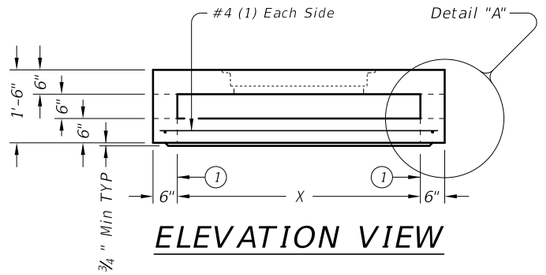
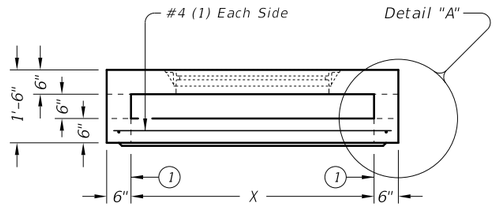
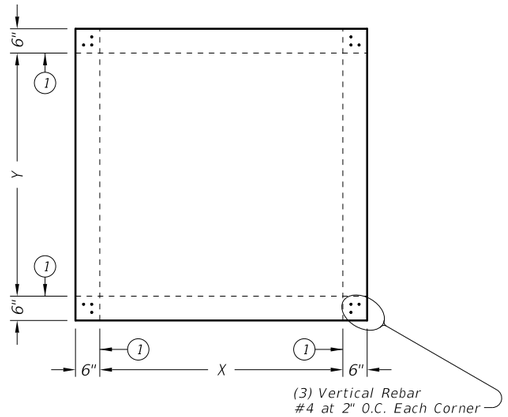


ELEVATION VIEW

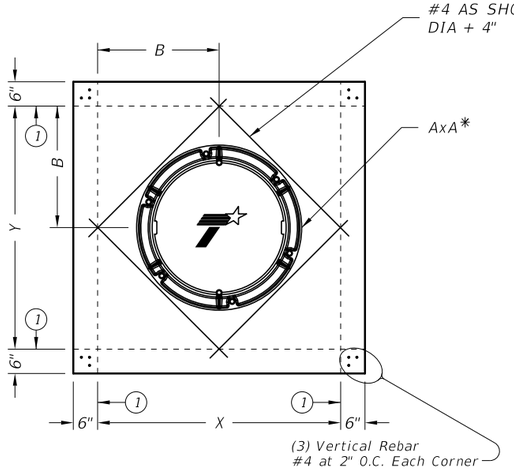


ELEVATION VIEW



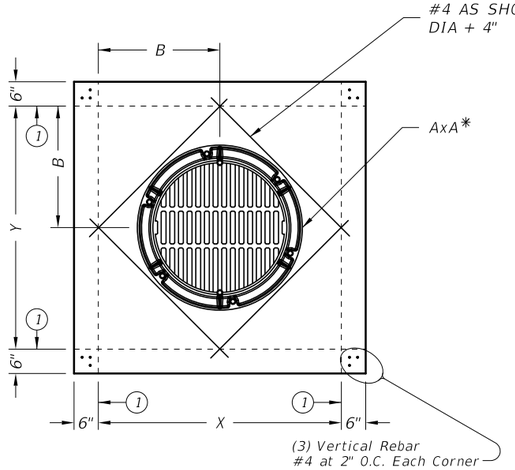
PLAN VIEW
NO OPENINGS

STYLE 'SL'



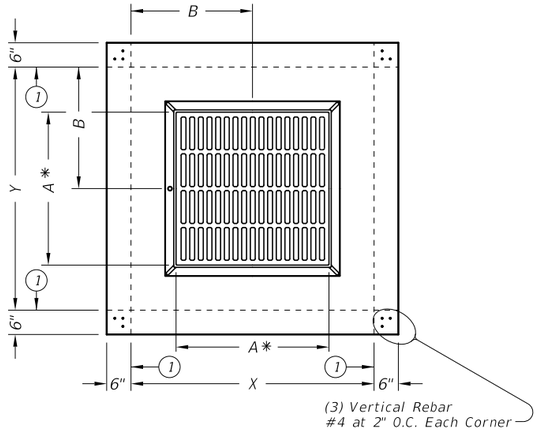
PLAN VIEW
32" DIA CAST-IN RING & COVER

STYLE 'RC'



PLAN VIEW
32" DIA CAST-IN RING & GRATE

STYLE 'RG'



PLAN VIEW
CAST-IN FRAME & GRATE

STYLE 'FG'

Style	Size (X x Y)	A x A *	B x B	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	n/a	n/a	0.37 in²/ft	0.37 in²/ft
RC,RG	3'x3'	32" Dia	1.5'x1.5'	0.37 in²/ft	0.37 in²/ft
FG	3'x3'	3'x3'	1.5'x1.5'	0.37 in²/ft	0.37 in²/ft
SL	4'x4'	n/a	n/a	0.34 in²/ft	0.34 in²/ft
RC,RG	4'x4'	32" Dia	2'x2'	0.34 in²/ft	0.34 in²/ft
FG	4'x4'	3'x3'	2'x2'	0.34 in²/ft	0.34 in²/ft
FG	4'x4'	4'x4'	2'x2'	0.34 in²/ft	0.34 in²/ft
SL	5'x5'	n/a	n/a	0.43 in²/ft	0.43 in²/ft
RC,RG	5'x5'	32" Dia	2.5'x2.5'	0.68 in²/ft	0.68 in²/ft
FG	5'x5'	3'x3'	2.5'x2.5'	0.43 in²/ft	0.43 in²/ft
FG	5'x5'	4'x4'	2.5'x2.5'	0.43 in²/ft	0.43 in²/ft

* Nominal frame/grate or ring/cover size.

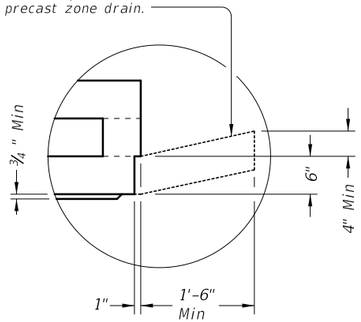
(1) Matches inside face of wall of precast base or riser below inlet.

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 clear cover of ¾" to reinforcing from bottom of slab for structural reinforcement. Place short span reinforcing closest to surface.
4. No substitution is allowed for diagonal #4 bars around openings.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
6. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:
1. PAZD is for use in ditches and medians outside of the horizontal clearance (clear zone). Precast Area Zone Drain is not intended for direct traffic and may not 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.

GENERAL NOTES:
1. Designed according to ASTM C913.
2. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Construct cast-in-place reinforced concrete apron when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PAZD. 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 PAZD, use detail above to create an apron ledge on all 4 sides.

Texas Department of Transportation

Bridge Division Standard

PRECAST AREA ZONE DRAIN

PAZD

FILE: prestd08-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		215

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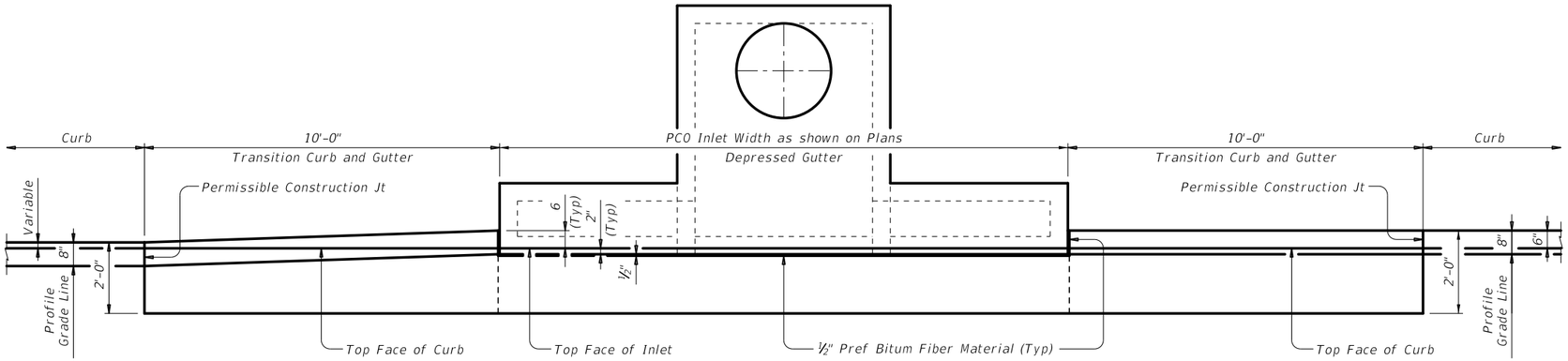
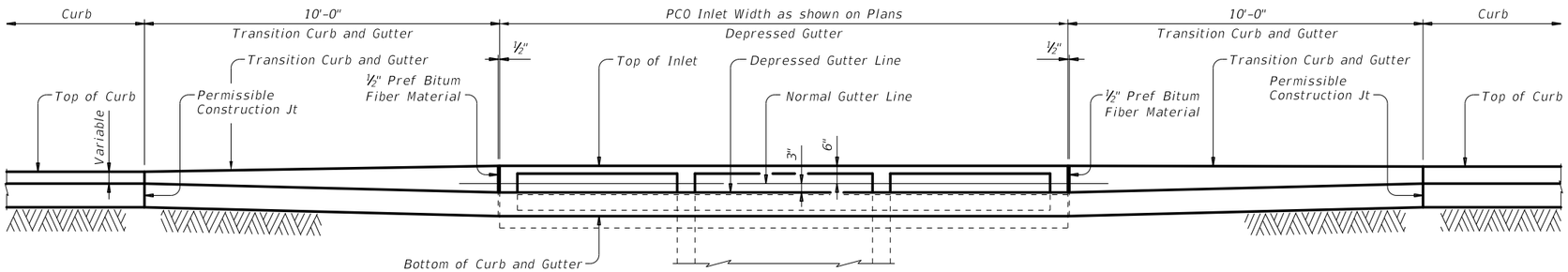


SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

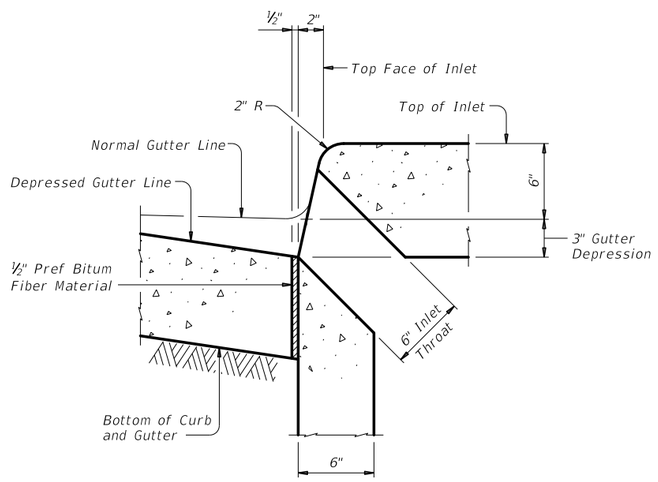
PLAN



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

ELEVATION



SECTION AT GUTTER AND INLET

Reinforcing steel not shown for clarity.

CONSTRUCTION NOTES:
Align top face of curb with PCO Inlet as shown.

MATERIAL NOTES:
Provide ½" Preformed Bituminous Fiber Material.

GENERAL NOTES:
See Precast Curb Inlet Outside Roadway (PCO) standard for details and notes not shown.
See Concrete Curb and Curb and Gutter (CCCG-12) standard for details and notes not shown.
Curb and Gutter Transitions is paid for and in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
Preformed Bituminous Fiber Material is subsidiary to PCO Inlet.

Texas Department of Transportation

Bridge Division Standard

CURB AND GUTTER TRANSITION DETAILS FOR PCO INLET

CGT-PCO

FILE: prestd13-20.dgn	DN: TxDOT	CK: AES	DW: JTR	CK: AES
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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	CRP	SAN PAT.		216

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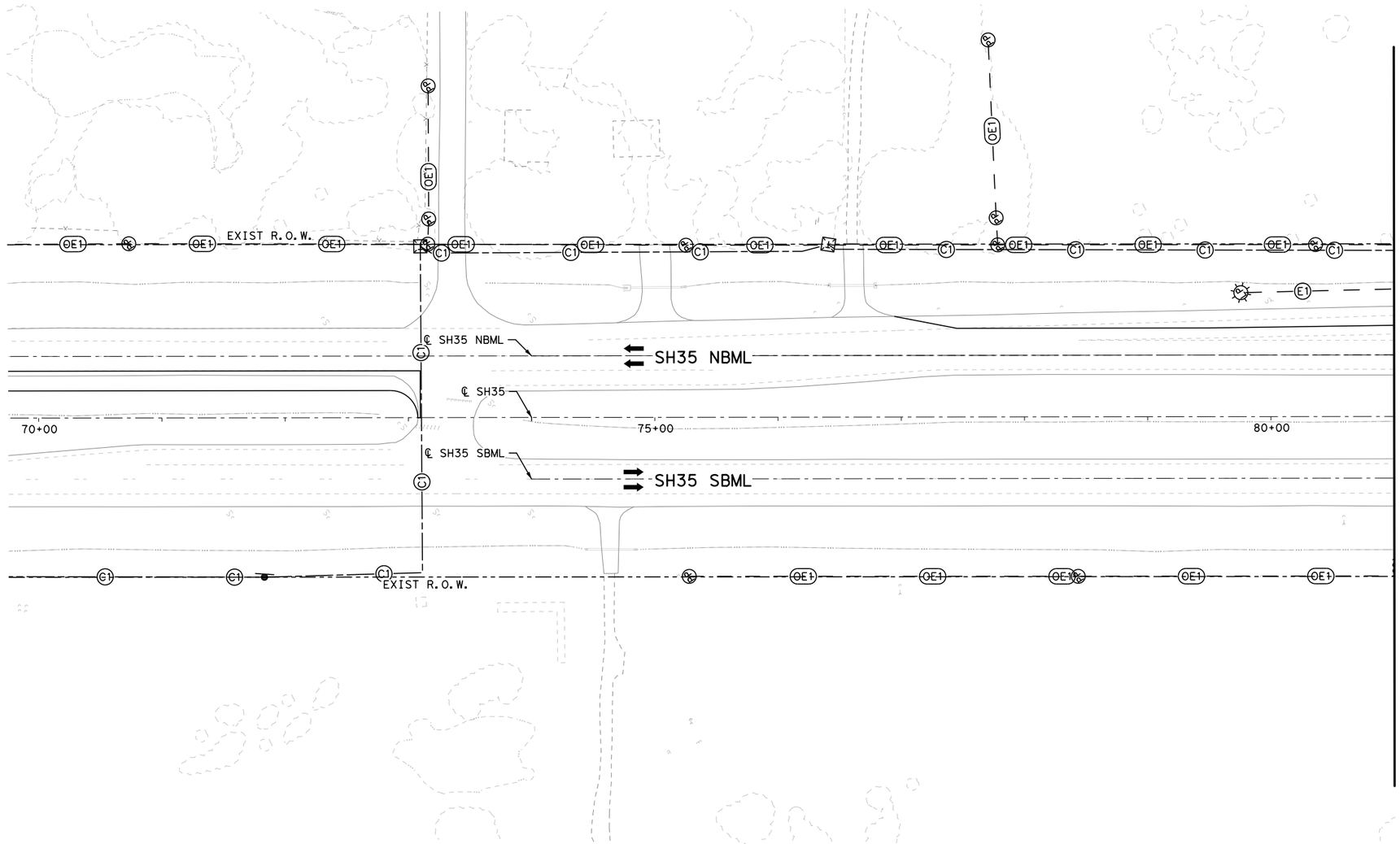

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SCALE IN FEET

UTILITIES LEGEND

COMMUNICATION
QL"C"/"D"
- (C1) FRONTIER (TELE)
- (C2) AT&T (FO/DUCT)
- (C3) FRONTIER (FO/DUCT)
- (C4) CABLE ONE (CATV)
- (C5) AEP TEXAS (FO/DUCT)
- (C6) FIBERLIGHT (FO/DUCT)

QL"B"
- C1 FRONTIER (TELE)
- C2 AT&T (FO/DUCT)
- C3 FRONTIER (FO/DUCT)
- C4 CABLE ONE (CATV)
- C5 AEP TEXAS (FO/DUCT)
- C6 FIBERLIGHT (FO/DUCT)

ELECTRIC/POWER
QL"C"/"D"
- (E1) AEP TEXAS
- (E2) TxDOT
- (TS1) TxDOT (TRAFFIC SIGNAL)

QL"B"
- E1 AEP TEXAS
- E2 TxDOT
- TS1 TxDOT (TRAFFIC SIGNAL)

PIPELINES
QL"C"/"D"
- (G1) BRINKERHOFF OIL, INC.*

QL"B"
- G1 BRINKERHOFF OIL, INC.*

POTABLE WATER
QL"C"/"D"
- (W1) CITY OF ARANSAS PASS
- (W2) SAN PATRICIO WATER DISTRICT

QL"B"
- W1 CITY OF ARANSAS PASS
- W2 SAN PATRICIO WATER DISTRICT

OVERHEAD
QL"C"/"D"
- (OE1) AEP TEXAS

* BRINKERHOFF OIL/SALTWATER LINE INFORMATION WAS OBTAINED FROM TxDOT RIGHT OF WAY MAPS. TRG COULD NOT FIND ANY OTHER INFORMATION ON THESE UTILITIES.

REV	DESCRIPTION	DATE	INIT

The Rios Group, Inc. TBPE Firm #F-14595

STATE OF TEXAS
J. S. ANDERSON
69493
LICENSED
PROFESSIONAL ENGINEER
4/28/2021

Texas Department of Transportation

THE RIOS GROUP
SUBSURFACE UTILITY ENGINEERING
UTILITY COORDINATION
7400 Sand Street
Fort Worth TX, 76118
817.345.7500

SH 35 AT OAK LANE

UTILITIES - EXISTING PLAN

PROJECT BEGIN TO STA 81+00

SHEET 1 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
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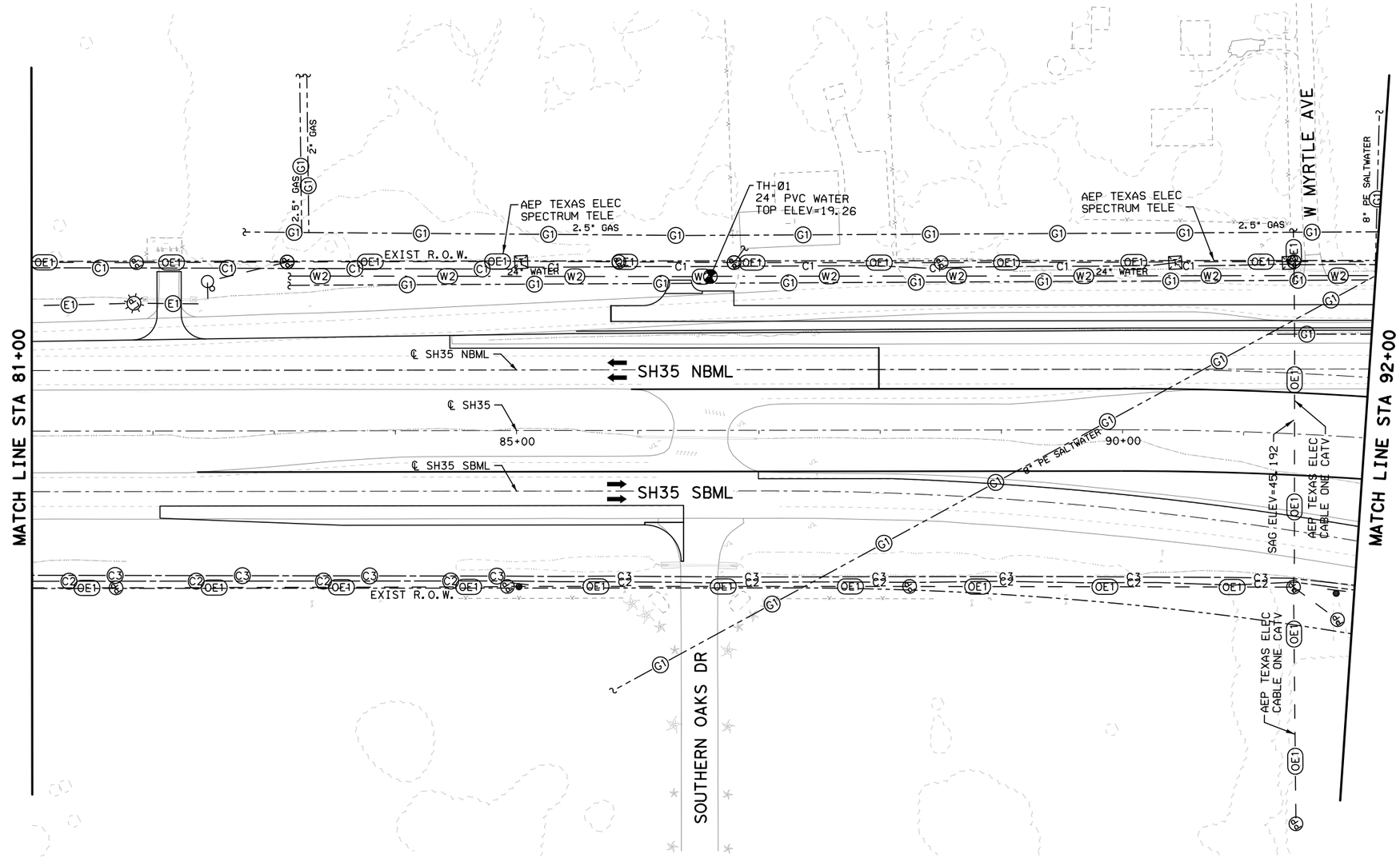

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SCALE IN FEET

UTILITIES LEGEND

COMMUNICATION
QL"C"/"D"
- (C1) FRONTIER (TELE)
- (C2) AT&T (FO/DUCT)
- (C3) FRONTIER (FO/DUCT)
- (C4) CABLE ONE (CATV)
- (C5) AEP TEXAS (FO/DUCT)
- (C6) FIBERLIGHT (FO/DUCT)

QL"B"
- C1 FRONTIER (TELE)
- C2 AT&T (FO/DUCT)
- C3 FRONTIER (FO/DUCT)
- C4 CABLE ONE (CATV)
- C5 AEP TEXAS (FO/DUCT)
- C6 FIBERLIGHT (FO/DUCT)

ELECTRIC/POWER
QL"C"/"D"
- (E1) AEP TEXAS
- (E2) TxDOT
- (TS1) TxDOT (TRAFFIC SIGNAL)

QL"B"
- E1 AEP TEXAS
- E2 TxDOT
- TS1 TxDOT (TRAFFIC SIGNAL)

PIPELINES
QL"C"/"D"
- (G1) BRINKERHOFF OIL, INC.*

QL"B"
- G1 BRINKERHOFF OIL, INC.*

POTABLE WATER
QL"C"/"D"
- (W1) CITY OF ARANSAS PASS
- (W2) SAN PATRICIO WATER DISTRICT

QL"B"
- W1 CITY OF ARANSAS PASS
- W2 SAN PATRICIO WATER DISTRICT

OVERHEAD
QL"C"/"D"
- (OE1) AEP TEXAS

* BRINKERHOFF OIL/SALTWATER LINE INFORMATION WAS OBTAINED FROM TxDOT RIGHT OF WAY MAPS. TRG COULD NOT FIND ANY OTHER INFORMATION ON THESE UTILITIES.

REV	DESCRIPTION	DATE	INIT

The Rios Group, Inc. TBPE Firm #F-14595

STATE OF TEXAS
J. S. ANDERSON
69493
LICENSED
PROFESSIONAL ENGINEER
4/28/2021

Texas Department of Transportation

THE RIOS GROUP
SUBSURFACE UTILITY ENGINEERING
UTILITY COORDINATION
7400 Sand Street
Fort Worth TX, 76118
817.345.7500

SH 35 AT OAK LANE

UTILITIES - EXISTING PLAN

STA 81+00 TO STA 92+00

SHEET 2 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
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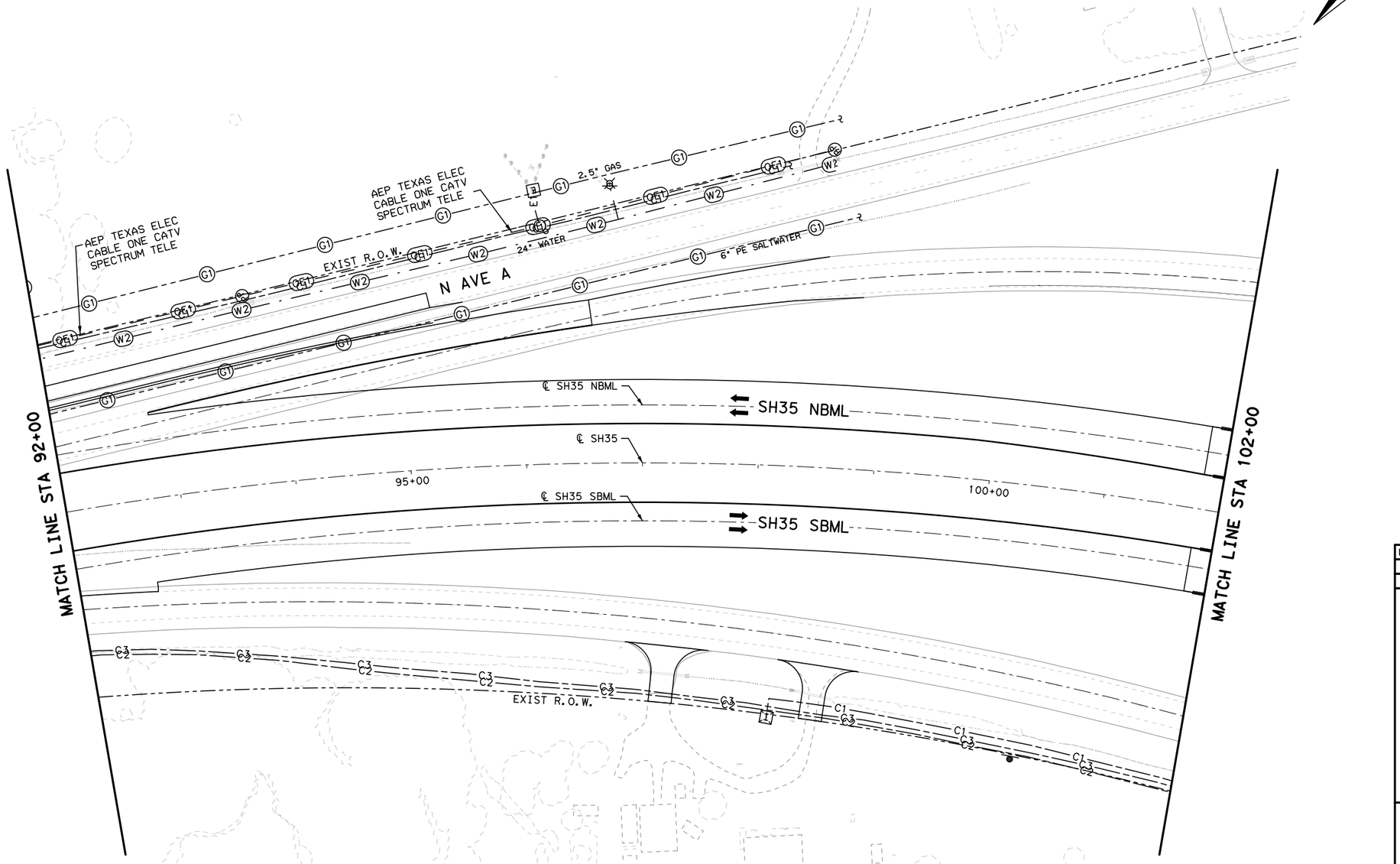

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SCALE IN FEET

UTILITIES LEGEND

COMMUNICATION
QL"C"/"D"
- (C1) FRONTIER (TELE)
- (C2) AT&T (FO/DUCT)
- (C3) FRONTIER (FO/DUCT)
- (C4) CABLE ONE (CATV)
- (C5) AEP TEXAS (FO/DUCT)
- (C6) FIBERLIGHT (FO/DUCT)

QL"B"
- C1 FRONTIER (TELE)
- C2 AT&T (FO/DUCT)
- C3 FRONTIER (FO/DUCT)
- C4 CABLE ONE (CATV)
- C5 AEP TEXAS (FO/DUCT)
- C6 FIBERLIGHT (FO/DUCT)

ELECTRIC/POWER
QL"C"/"D"
- (E1) AEP TEXAS
- (E2) TxDOT
- (TS1) TxDOT (TRAFFIC SIGNAL)

QL"B"
- E1 AEP TEXAS
- E2 TxDOT
- TS1 TxDOT (TRAFFIC SIGNAL)

PIPELINES
QL"C"/"D"
- (G1) BRINKERHOFF OIL, INC.*

QL"B"
- G1 BRINKERHOFF OIL, INC.*

POTABLE WATER
QL"C"/"D"
- (W1) CITY OF ARANSAS PASS
- (W2) SAN PATRICIO WATER DISTRICT

QL"B"
- W1 CITY OF ARANSAS PASS
- W2 SAN PATRICIO WATER DISTRICT

OVERHEAD
QL"C"/"D"
- (OE1) AEP TEXAS

* BRINKERHOFF OIL/SALTWATER LINE INFORMATION WAS OBTAINED FROM TxDOT RIGHT OF WAY MAPS. TRG COULD NOT FIND ANY OTHER INFORMATION ON THESE UTILITIES.

REV	DESCRIPTION	DATE	INIT

The Rios Group, Inc. TBPE Firm #F-14595

STATE OF TEXAS
J. S. ANDERSON
69493
LICENSED
PROFESSIONAL ENGINEER
4/28/2021

Texas Department of Transportation

THE RIOS GROUP
SUBSURFACE UTILITY ENGINEERING
UTILITY COORDINATION
7400 Sand Street
Fort Worth TX. 76118
817.345.7500

SH 35 AT OAK LANE

UTILITIES - EXISTING
PLAN
STA 92+00 TO STA 102+00

SHEET 3 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
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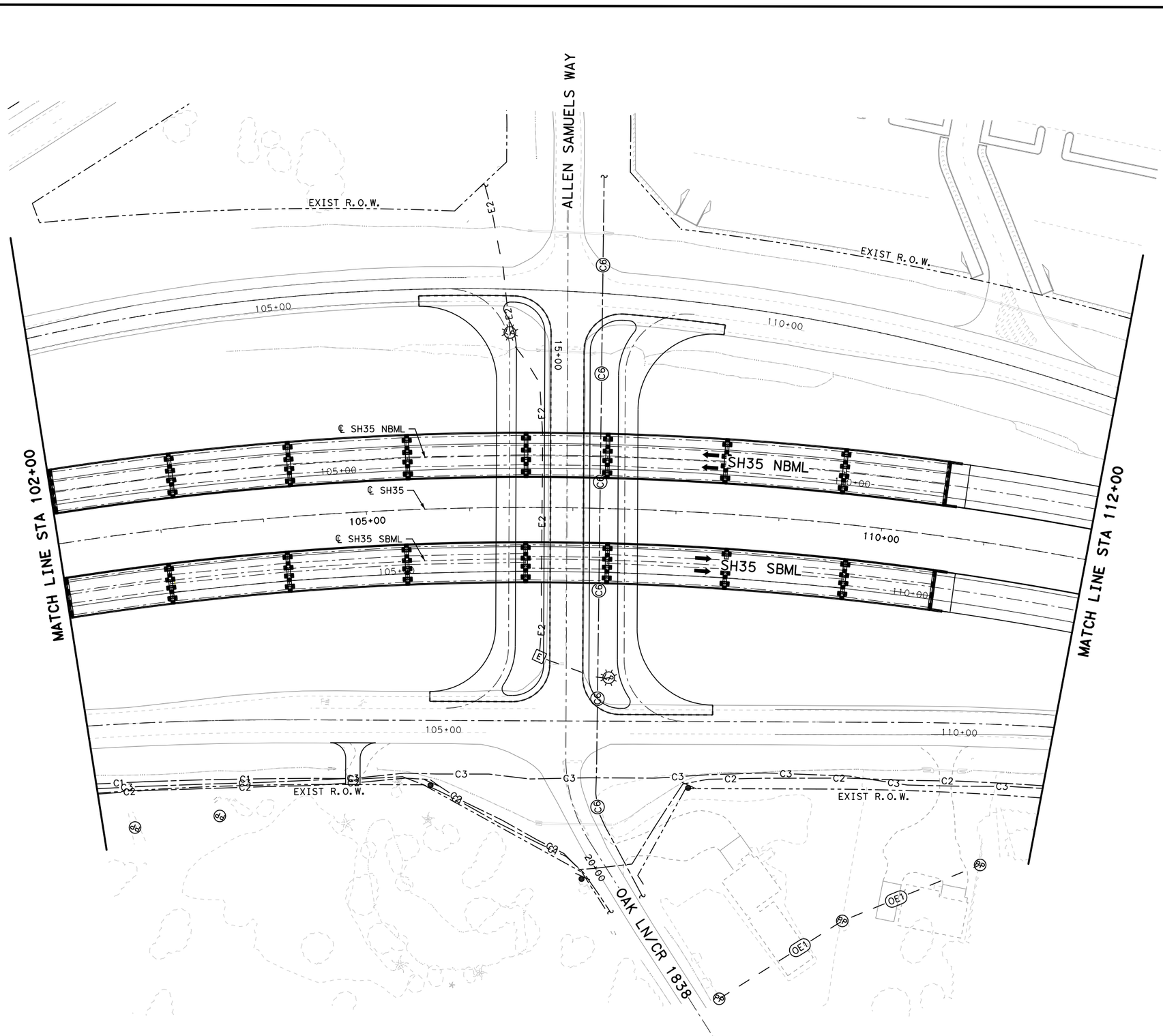

SCALE: 100.3440 ft / in.

0′ 50′ 100′(H)

SCALE IN FEET

UTILITIES LEGEND

COMMUNICATION
QL"C"/"D"
- (C1) FRONTIER (TELE)
- (C2) AT&T (FO/DUCT)
- (C3) FRONTIER (FO/DUCT)
- (C4) CABLE ONE (CATV)
- (C5) AEP TEXAS (FO/DUCT)
- (C6) FIBERLIGHT (FO/DUCT)

QL"B"
- C1 FRONTIER (TELE)
- C2 AT&T (FO/DUCT)
- C3 FRONTIER (FO/DUCT)
- C4 CABLE ONE (CATV)
- C5 AEP TEXAS (FO/DUCT)
- C6 FIBERLIGHT (FO/DUCT)

ELECTRIC/POWER
QL"C"/"D"
- (E1) AEP TEXAS
- (E2) TxDOT
- (TS1) TxDOT (TRAFFIC SIGNAL)

QL"B"
- E1 AEP TEXAS
- E2 TxDOT
- TS1 TxDOT (TRAFFIC SIGNAL)

PIPELINES
QL"C"/"D"
- (G1) BRINKERHOFF OIL, INC.*

QL"B"
- G1 BRINKERHOFF OIL, INC.*

POTABLE WATER
QL"C"/"D"
- (W1) CITY OF ARANSAS PASS
- (W2) SAN PATRICIO WATER DISTRICT

QL"B"
- W1 CITY OF ARANSAS PASS
- W2 SAN PATRICIO WATER DISTRICT

OVERHEAD
QL"C"/"D"
- (OE1) AEP TEXAS

* BRINKERHOFF OIL/SALTWATER LINE INFORMATION WAS OBTAINED FROM TxDOT RIGHT OF WAY MAPS. TRG COULD NOT FIND ANY OTHER INFORMATION ON THESE UTILITIES.

REV	DESCRIPTION	DATE	INIT

The Rios Group, Inc. TBPE Firm #F-14595

STATE OF TEXAS
J. S. ANDERSON
69493
LICENSED
PROFESSIONAL ENGINEER
4/28/2021

Texas Department of Transportation

THE RIOS GROUP
SUBSURFACE UTILITY ENGINEERING
UTILITY COORDINATION
7400 Sand Street
Fort Worth TX, 76118
817.345.7500

SH 35 AT OAK LANE

UTILITIES - EXISTING PLAN

STA 102+00 TO STA 112+00

SHEET 4 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	220

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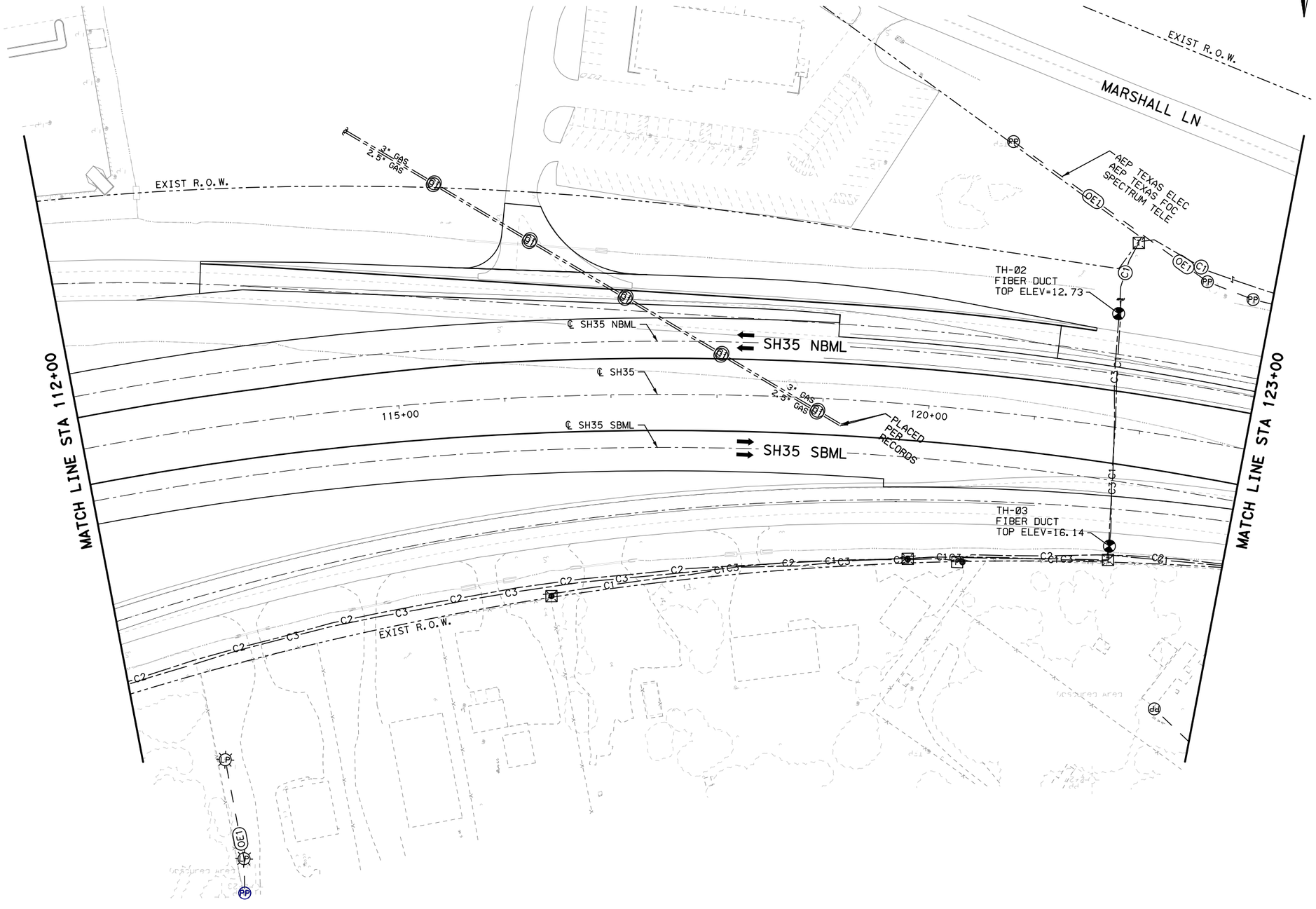

UTILITIES LEGEND

COMMUNICATION
QL"C"/"D"
- (C1) FRONTIER (TELE)
- (C2) AT&T (FO/DUCT)
- (C3) FRONTIER (FO/DUCT)
- (C4) CABLE ONE (CATV)
- (C5) AEP TEXAS (FO/DUCT)
- (C6) FIBERLIGHT (FO/DUCT)

QL"B"
- C1 FRONTIER (TELE)
- C2 AT&T (FO/DUCT)
- C3 FRONTIER (FO/DUCT)
- C4 CABLE ONE (CATV)
- C5 AEP TEXAS (FO/DUCT)
- C6 FIBERLIGHT (FO/DUCT)

ELECTRIC/POWER
QL"C"/"D"
- (E1) AEP TEXAS
- (E2) TxDOT
- (TS1) TxDOT (TRAFFIC SIGNAL)

QL"B"
- E1 AEP TEXAS
- E2 TxDOT
- TS1 TxDOT (TRAFFIC SIGNAL)

PIPELINES
QL"C"/"D"
- (G1) BRINKERHOFF OIL, INC.*

QL"B"
- G1 BRINKERHOFF OIL, INC.*

POTABLE WATER
QL"C"/"D"
- (W1) CITY OF ARANSAS PASS
- (W2) SAN PATRICIO WATER DISTRICT

QL"B"
- W1 CITY OF ARANSAS PASS
- W2 SAN PATRICIO WATER DISTRICT

OVERHEAD
QL"C"/"D"
- (OE1) AEP TEXAS

* BRINKERHOFF OIL/SALTWATER LINE INFORMATION WAS OBTAINED FROM TxDOT RIGHT OF WAY MAPS. TRG COULD NOT FIND ANY OTHER INFORMATION ON THESE UTILITIES.

REV	DESCRIPTION	DATE	INIT

The Rios Group, Inc. TBPE Firm #F-14595

STATE OF TEXAS
J. S. ANDERSON
69493
LICENSED
PROFESSIONAL ENGINEER
4/28/2021

Texas Department of Transportation

THE RIOS GROUP
SUBSURFACE UTILITY ENGINEERING
UTILITY COORDINATION
7400 Sand Street
Fort Worth TX, 76118
817.345.7500

SH 35 AT OAK LANE

UTILITIES - EXISTING PLAN

STA 112+00 TO STA 123+00

SHEET 5 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	221

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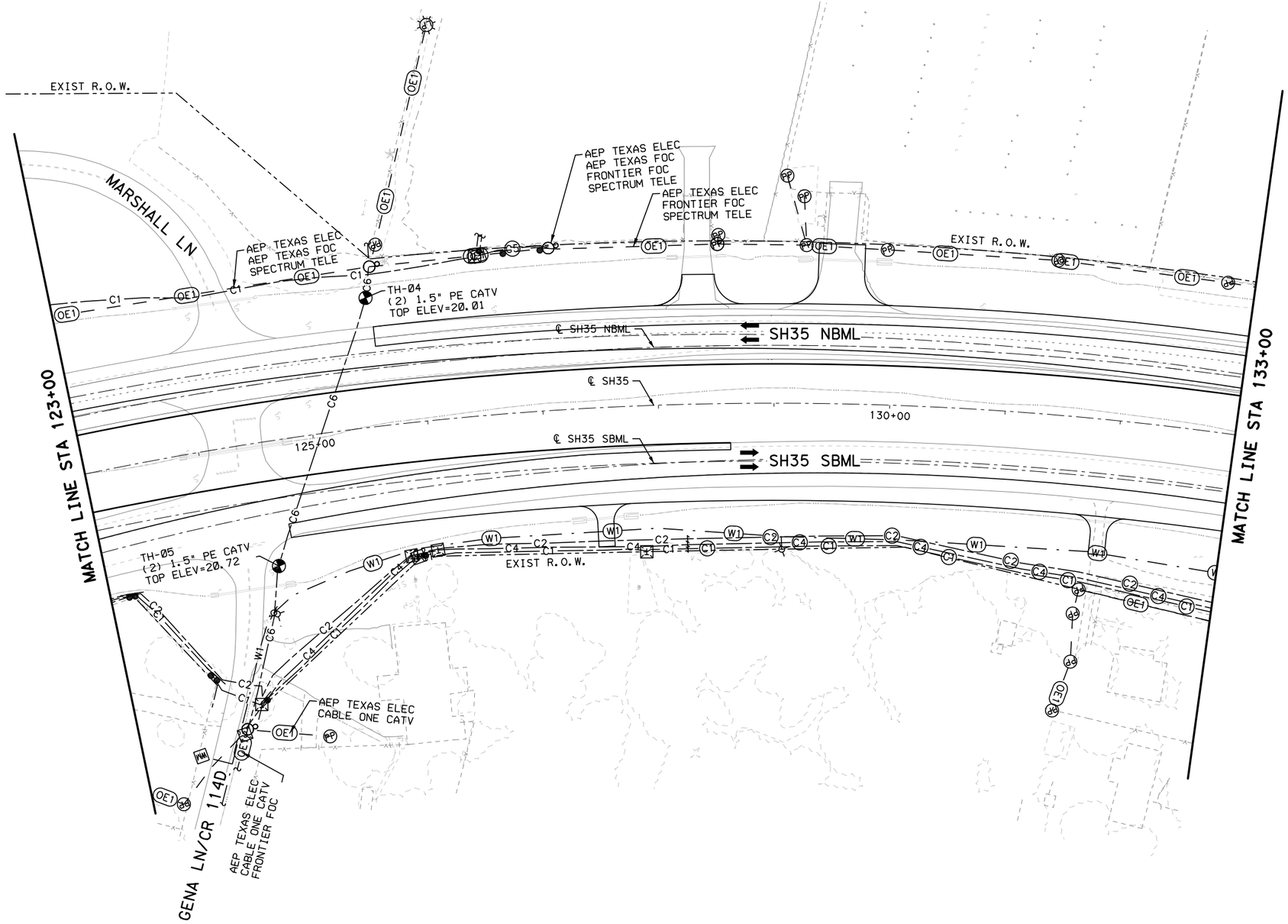

0′ 50′ 100′(H)

SCALE IN FEET

N

UTILITIES LEGEND

COMMUNICATION
QL "C"/"D"
- (C1) FRONTIER (TELE)
- (C2) AT&T (FO/DUCT)
- (C3) FRONTIER (FO/DUCT)
- (C4) CABLE ONE (CATV)
- (C5) AEP TEXAS (FO/DUCT)
- (C6) FIBERLIGHT (FO/DUCT)

QL "B"
- C1 FRONTIER (TELE)
- C2 AT&T (FO/DUCT)
- C3 FRONTIER (FO/DUCT)
- C4 CABLE ONE (CATV)
- C5 AEP TEXAS (FO/DUCT)
- C6 FIBERLIGHT (FO/DUCT)

ELECTRIC/POWER
QL "C"/"D"
- (E1) AEP TEXAS
- (E2) TxDOT
- (TS1) TxDOT (TRAFFIC SIGNAL)

QL "B"
- E1 AEP TEXAS
- E2 TxDOT
- TS1 TxDOT (TRAFFIC SIGNAL)

PIPELINES
QL "C"/"D"
- (G1) BRINKERHOFF OIL, INC.*

QL "B"
- G1 BRINKERHOFF OIL, INC.*

POTABLE WATER
QL "C"/"D"
- (W1) CITY OF ARANSAS PASS
- (W2) SAN PATRICIO WATER DISTRICT

QL "B"
- W1 CITY OF ARANSAS PASS
- W2 SAN PATRICIO WATER DISTRICT

OVERHEAD
QL "C"/"D"
- (OE1) AEP TEXAS

QL "C"/"D"
- (OE1) AEP TEXAS

* BRINKERHOFF OIL/SALTWATER LINE INFORMATION WAS OBTAINED FROM TxDOT RIGHT OF WAY MAPS. TRG COULD NOT FIND ANY OTHER INFORMATION ON THESE UTILITIES.

REV	DESCRIPTION	DATE	INIT

The Rios Group, Inc. TBPE Firm #F-14595

STATE OF TEXAS
J. S. ANDERSON
69493
LICENSED
PROFESSIONAL ENGINEER
4/28/2021

Texas Department of Transportation

THE RIOS GROUP
SUBSURFACE UTILITY ENGINEERING
UTILITY COORDINATION
7400 Sand Street
Fort Worth TX. 76118
817.345.7500

SH 35 AT OAK LANE

UTILITIES - EXISTING PLAN

STA 123+00 TO STA 133+00

SHEET 6 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	222

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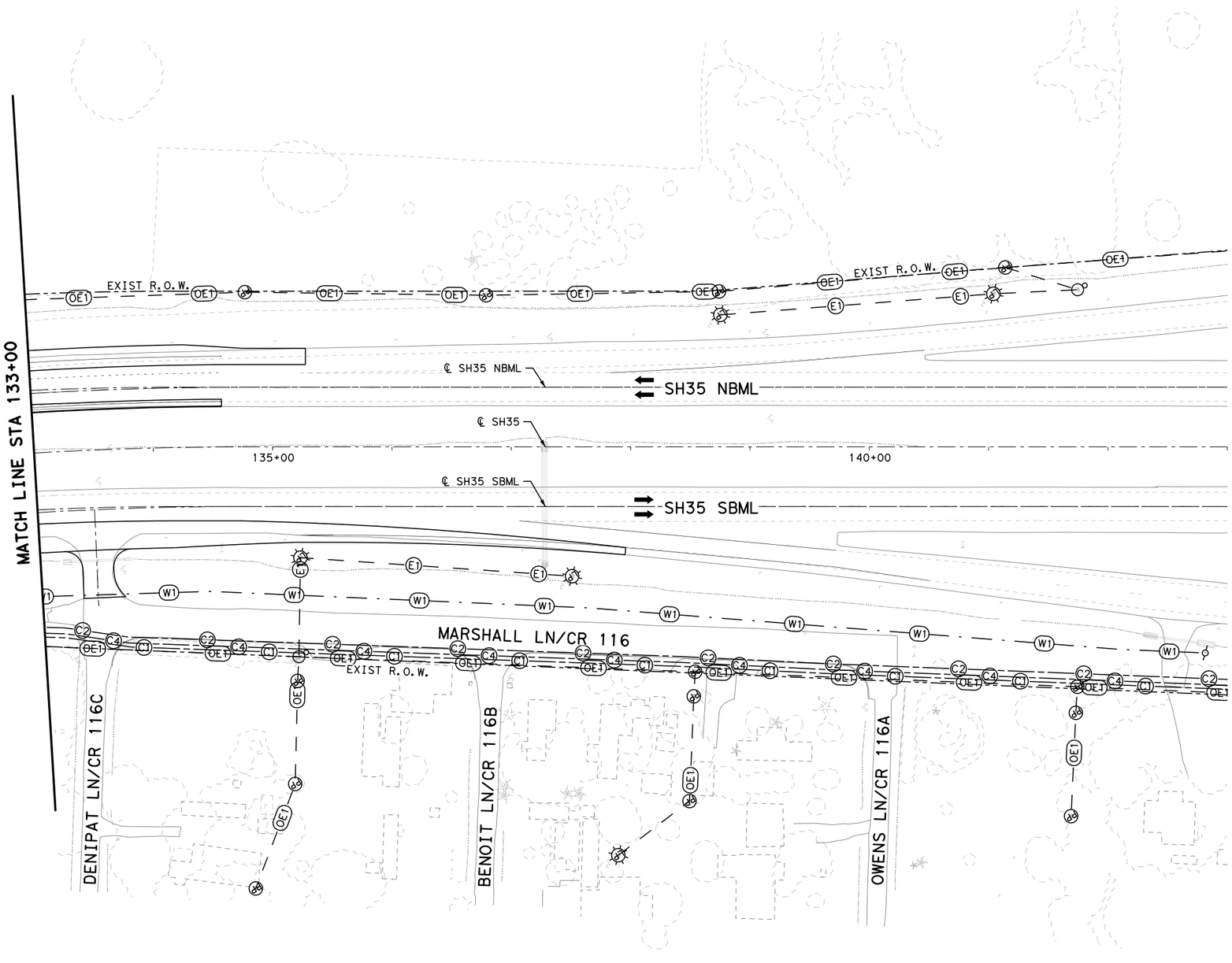

0′ 50′ 100′(H)

SCALE IN FEET

N

UTILITIES LEGEND

COMMUNICATION
QL"C"/"D"
- (C1) FRONTIER (TELE)
- (C2) AT&T (FO/DUCT)
- (C3) FRONTIER (FO/DUCT)
- (C4) CABLE ONE (CATV)
- (C5) AEP TEXAS (FO/DUCT)
- (C6) FIBERLIGHT (FO/DUCT)

QL"B"
- C1 FRONTIER (TELE)
- C2 AT&T (FO/DUCT)
- C3 FRONTIER (FO/DUCT)
- C4 CABLE ONE (CATV)
- C5 AEP TEXAS (FO/DUCT)
- C6 FIBERLIGHT (FO/DUCT)

ELECTRIC/POWER
QL"C"/"D"
- (E1) AEP TEXAS
- (E2) TxDOT
- (TS1) TxDOT (TRAFFIC SIGNAL)

QL"B"
- E1 AEP TEXAS
- E2 TxDOT
- TS1 TxDOT (TRAFFIC SIGNAL)

PIPELINES
QL"C"/"D"
- (G1) BRINKERHOFF OIL, INC.*

QL"B"
- G1 BRINKERHOFF OIL, INC.*

POTABLE WATER
QL"C"/"D"
- (W1) CITY OF ARANSAS PASS
- (W2) SAN PATRICIO WATER DISTRICT

QL"B"
- W1 CITY OF ARANSAS PASS
- W2 SAN PATRICIO WATER DISTRICT

OVERHEAD
QL"C"/"D"
- (OE1) AEP TEXAS

* BRINKERHOFF OIL/SALTWATER LINE INFORMATION WAS OBTAINED FROM TxDOT RIGHT OF WAY MAPS. TRG COULD NOT FIND ANY OTHER INFORMATION ON THESE UTILITIES.

REV	DESCRIPTION	DATE	INIT

The Rios Group, Inc. TBPE Firm #F-14595

STATE OF TEXAS
J. S. ANDERSON
69493
LICENSED
PROFESSIONAL ENGINEER
4/28/2021

Texas Department of Transportation

THE RIOS GROUP
SUBSURFACE UTILITY ENGINEERING
UTILITY COORDINATION
7400 Sand Street
Fort Worth TX. 76118
817.345.7500

SH 35 AT OAK LANE

UTILITIES - EXISTING
PLAN
STA 133+00 TO PROJECT END

SHEET 7 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	223

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SCALE: 100.0000 ft / in.

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-1	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/05/2019
CSJ	0180-06-067	Station	120+36.4924	Grnd. Elev.	25.16 ft
		Offset	56.0936' LT	GW Elev.	18.66 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
24.8			ASPHALT, 4 inches BASE, crushed limestone							
22.8		10 (6) 12 (6)	SAND, slightly compact to loose, wet, light brown to brown, silty (SM)			4				
5		7 (6) 7 (6)								SPT at 6.5' 2/2/4
										#200=4
										SPT at 8.5' 2/3/4
10		8 (6) 10 (6)								
15		17 (6) 17 (6)								
						24				SPT at 16.5' 3/4/4
20		17 (6) 11 (6)								
3.7			CLAY, stiff, gray, w/ sand seams and layers (CH)							SPT at 21.5' 2/1/3
25		9 (6) 12 (6)		0	21.53	25	63	41	123	
-3.3			SAND, compact to dense, gray, silty (SM)							
30		20 (6) 22 (6)				24				-#200=9 SPT at 31.5' 3/7/9
35		50 (4) 50 (3)								
						21				SPT at 36.5' 15/37/44
40		24 (6) 38 (6)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-1	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/05/2019
CSJ	0180-06-067	Station	120+36.4924	Grnd. Elev.	25.16 ft
		Offset	56.0936' LT	GW Elev.	18.66 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			SAND, compact to dense, gray, silty (SM)							SPT at 41.5' 5/7/15
45		38 (6) 39 (6)								SPT at 46.5' 8/15/28
-24.8		28 (6) 18 (6)								
50										
55										
60										
65										
70										
75										
80										

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
HOSAM ALT. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 1 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	224

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SCALE: 100.0000 ft / in.

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-2	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/04/2019
CSJ	0180-06-067	Station	117+49.6874	Grnd. Elev.	23.87 ft
		Offset	24.6732' RT	GW Elev.	17.37 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			SAND, slightly compact to loose, wet, brown (SP)			9				SPT at 1.5' 4/2/6
		10 (6) 11 (6)								
5		7 (6) 9 (6)				20				-#200=7 SPT at 6.5' 1/3/4
										SPT at 8' 3/3/5
10		14 (6) 16 (6)								
15		12 (6) 12 (6)				23				SPT at 16.5' 4/8/14
20		26 (6) 36 (6)								SPT at 21.5' 7/9/7
2.4			CLAY, soft, gray, sandy, w/ sand seams and layers (CH)	0	5.56	32	72	47	116	-#200=63
25		7 (6) 7 (6)								
-4.6			SAND, compact, gray, silty (SM)							
30		36 (6) 40 (6)				26				-#200=15 SPT at 31.5' 8/12/17
35		25 (6) 34 (6)								SPT at 36.5' 6/9/14
40		18 (6) 27 (6)								

Remarks: * Failed along slickensided joint

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger:** Brandon Creeks **Organization:** AGG

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DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-2	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/04/2019
CSJ	0180-06-067	Station	117+49.6874	Grnd. Elev.	23.87 ft
		Offset	24.6732' RT	GW Elev.	17.37 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			SAND, compact, gray, silty (SM)							SPT at 41.5' 3/5/9
45		22 (6) 38 (6)								SPT at 46.5' 4/6/11
-26.1		29 (6) 38 (6)								
55										
60										
65										
70										
75										
80										

Remarks: * Failed along slickensided joint

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger:** Brandon Creeks **Organization:** AGG

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REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
HOSAM AL.T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 2 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	225

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DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-3	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/4/2019
CSJ	0180-06-067	Station	114+48.0862	Grnd. Elev.	24.71 ft
		Offset	6.6320' RT	GW Elev.	18.21 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, loose to compact, wet, brown, silty (SM)			9				SPT at 1' 2/3/6
		20 (6) 21 (6)								
5		15 (6) 18 (6)				20				-#200=11 SPT at 6.5' 2/4/7
										SPT at 8.5' 1/1/1
10		11 (6) 12 (6)								
15		8 (6) 9 (6)				20				SPT at 16.5' 3/7/11
20		27 (6) 38 (6)								SPT at 21.5' 7/11/7
2.7			CLAY, soft, gray, w/ sand layers (CH)	0	22.22	37	77	49	121	
25		6 (6) 6 (6)								
-5.3		22 (6) 34 (6)	SAND, slightly compact to dense, gray, silty (SM)							SPT at 31.5' 3/7/14
35		50 (3.75) 50 (3.75)								
						22				-#200=8 SPT at 36.5' 10/16/20
40		14 (6) 9 (6)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-3	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/4/2019
CSJ	0180-06-067	Station	114+48.0862	Grnd. Elev.	24.71 ft
		Offset	6.6320' RT	GW Elev.	18.21 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, slightly compact to dense, gray, silty (SM)							SPT at 41.5' 7/15/19
45		17 (6) 18 (6)								
										SPT at 46.5' 3/4/5
-25.3		27 (6) 33 (6)								
50										
55										
60										
65										
70										
75										
80										

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

REV	DESCRIPTION	DATE	INIT

HOSAM AL.T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 3 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	226

SCALE: 100.0000 ft / in.

DRILLING LOG

WinCore Version 3.3	County	San Patrico	Hole	B-4	District	Corpus Christi
	Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/7/2019
	CSJ	0180-06-067	Station	114+48.0862	Grnd. Elev.	24.20 ft
			Offset	6.1473' LT	GW Elev.	17.70 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	Properties: LL	Properties: PI	Properties: Wet Den. (pcf)	Additional Remarks
			SAND, loose to slightly compact, wet, tan, silty (SM)			11				-#200=4 SPT at 1' 3/4/5
		8 (6) 5 (6)								
5		8 (6) 9 (6)				21				SPT at 6.5' 1/3/5
										SPT at 8.5' 1/1/1
10		11 (6) 14 (6)				21				
15		12 (6) 14 (6)				20				SPT at 16.5' 3/14/10
		19 (6) 14 (6)								
20										SPT at 21.5' 5/8/8
1.7			CLAY, gray, w/ sand and silt seams (CH)	0	11.8	28			117	
-.8		18 (6) 22 (6)								
25			SAND, slightly compact to dense, gray, silty (SM)							
30		32 (6) 40 (6)				23				-#200=13 SPT at 31.5' 8/12/16
35		40 (6) 49 (6)								
40		23 (6) 17 (6)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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DRILLING LOG

WinCore Version 3.3	County	San Patrico	Hole	B-4	District	Corpus Christi
	Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/7/2019
	CSJ	0180-06-067	Station	114+48.0862	Grnd. Elev.	24.20 ft
			Offset	6.1473' LT	GW Elev.	17.70 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	Properties: LL	Properties: PI	Properties: Wet Den. (pcf)	Additional Remarks
			SAND, slightly compact to dense, gray, silty (SM)			28				-#200=13 SPT at 41.5' 5/7/9
45		40 (6) 50 (5)								
50		39 (6) 35 (6)								SPT at 51.5' 5/9/16
55		42 (6) 50 (5)								
-34.8			SAND, compact, gray, silty, w/ clay layers (SM)							
60		32 (6) 47 (6)				23				SPT at 61.5' 10/12/16
-39.8			SAND, compact to dense, gray to brown, silty (SM)							
65		50 (4) 50 (3.75)				23				SPT at 66.5' 12/17/22
70		50 (3.25) 50 (2.5)								
75		32 (6) 37 (6)								SPT at 76.5' 6/8/11
-55.8										
80		32 (6) 40 (6)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
HOSAM AL.T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 4 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	227

DATE: 4/21/2021 TIME: 8:34:28 PM
FILE: SH35_070_104-BORE-04.dgn
PATH: \\wspdw04\cso1\CS_pdf_work_dir\121802\181995_4\SH35_070_104-BORE-04.dgn

SCALE: 100.0000 ft / in.

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-5	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/7/2019
CSJ	0180-06-067	Station	108+47.3509	Grnd. Elev.	24.98 ft
		Offset	2.7524' LT	GW Elev.	18.48 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, loose to slightly compact, wet, tan and gray (SP)			13				SPT at 1.5' 3/3/4
						11				SPT at 3' 5/7/9
5		8 (6) 9 (6)								
										SPT at 6.5' 3/3/5
						22				#200=5 SPT at 8' 4/4/7
10		10 (6) 14 (6)								
15		14 (6) 16 (6)								
						20				SPT at 16.5' 8/11/14
20		5 (6) 11 (6)								
1.										
25		16 (6) 18 (6)	CLAY, stiff, gray, w/ sand and silt seams (CH)	0	12.49	31	51	32	117	
-1.5						27				SPT at 26.5' 7/3/2
			SAND, very loose to dense, gray, silty (SM)							
30		2 (6) 3 (6)								
35		24 (6) 35 (6)								
40		28 (6) 32 (6)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-5	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/7/2019
CSJ	0180-06-067	Station	108+47.3509	Grnd. Elev.	24.98 ft
		Offset	2.7524' LT	GW Elev.	18.48 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, very loose to dense, gray, silty (SM)			25				
45		50 (3.25) 50 (3.5)								
50		48 (6) 50 (3.5)								
						28				SPT at 51.5' 6/9/12
55		38 (6) 50 (4)								
-33.			CLAY, very stiff, gray, sandy, w/ sand and silt seams (CL)							
60		28 (6) 38 (6)								
						21	34	19		SPT at 61.5' 5/9/14
-38.			SAND, slightly compact to dense, gray, silty (SM)							
65		50 (6) 50 (3)								
						20				SPT at 66.5' 11/17/22
70		50 (4) 50 (2.25)								
75		15 (6) 27 (6)								
										SPT at 76.5' 9/8/12
80		28 (6) 44 (6)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

REV	DESCRIPTION	DATE	INIT

HOSAM AL T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 5 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	228

DATE: 4/21/2021 TIME: 8:34:32 PM
FILE: SH35_070_105-BORE-05.dgn
PATH: \\wspdw04icsd1\ICS_pdf_work_dir\121802\181995_5\SH35_070_105-BORE-05.dgn

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-5	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/7/2019
CSJ	0180-06-067	Station	108+47.3509	Grnd. Elev.	24.98 ft
		Offset	2.7524' LT	GW Elev.	18.48 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, slightly compact to dense, gray, silty (SM)							
-58.5										
85		18 (6) 22 (6)	CLAY, stiff to very stiff, brown, w/ sand and silt seams (CH)							
						24				SPT at 86.5' 4/8/12
90		17 (6) 22 (6)								SPT at 91.5' 6/9/12
95		17 (6) 18 (6)								SPT at 96.5' 4/4/6
-75. 100		14 (6) 18 (6)								
105										
110										
115										
120										

Remarks:

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Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-6	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/19/2019
CSJ	0180-06-067	Station	106+77.6215	Grnd. Elev.	25.92 ft
		Offset	32.8646' RT	GW Elev.	19.92 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
25.5			ASPHALT, 4 inches							
23.7			BASE, crushed limestone							
			SAND, loose to slightly compact, tan to gray, silty (SM)							
						13				-#200=5 SPT at 3.5' 4/8/6
5		7 (6) 6 (6)								SPT at 6.5' 1/1/2
						22				SPT at 8.5' 2/3/3
10		11 (6) 11 (6)								
15		12 (6) 14 (6)								
						25				SPT at 16.5' 3/3/4
20		6 (6) 8 (6)								
1.9										
25		10 (6) 11 (6)	CLAY, stiff, moist, tan and gray, sandy, silty (CL)							
						38				-#200=73 SPT at 26.5' 2/3/6
-2.6										
30		50 (3) 50 (2)	SAND, dense to very dense, tan and gray, silty, w/ clay seams and layers (SM)							SPT at 31.5' 8/11/17
35		50 (4.25) 50 (3.25)								
40		50 (5) 50 (3.75)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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REV	DESCRIPTION	DATE	INIT

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 6 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	229

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-6	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/19/2019
CSJ	0180-06-067	Station	106+77.6215	Grnd. Elev.	25.92 ft
		Offset	32.8646' RT	GW Elev.	19.92 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, dense to very dense, tan and gray, silty, w/ clay seams and layers (SM)							SPT at 41.5' 8/12/16
45		50 (2) 50 (1.25)								
50		50 (4.25) 50 (3)				23				SPT at 51.5' 5/14/17
55		43 (6) 50 (4)								
60		50 (4) 50 (3.5)								SPT at 61.5' 12/14/12
65		47 (6) 50 (4)				27				-#200=31 SPT at 66.5' 8/12/14
70		36 (6) 44 (6)								
75		17 (6) 22 (6)				22				SPT at 76.5' 4/6/7
80		50 (4.5) 50 (3.75)								

Remarks:

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Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-6	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/19/2019
CSJ	0180-06-067	Station	106+77.6215	Grnd. Elev.	25.92 ft
		Offset	32.8646' RT	GW Elev.	19.92 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, dense to very dense, tan and gray, silty, w/ clay seams and layers (SM)							
-58.1										
85		17 (6) 21 (6)	CLAY, stiff to very stiff, brown and gray, sandy, w/ sand seams and layers (CL)			24				-#200=78 SPT at 86.5' 3/4/6
90		23 (6) 26 (6)								
95		21 (6) 24 (6)				31				SPT at 96.5' 4/6/7
-74.1	100	22 (6) 26 (6)								
105										
110										
115										
120										

Remarks:

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Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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REV	DESCRIPTION	DATE	INIT

HOSAM AL.T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 7 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	230

SCALE: 100.0000 ft / in.

DRILLING LOG

WinCore Version 3.3	County	San Patrico	Hole	B-7	District	Corpus Christi
	Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/6/2019
	CSJ	0180-06-067	Station	103+31.6356	Grnd. Elev.	24.58 ft
			Offset	190.0595' LT	GW Elev.	18.58 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	Properties: LL	Properties: PI	Properties: Wet Den. (pcf)	Additional Remarks
24.1			SAND, brown, silty (SM)							SPT at 1' 5/7/8
			BASE, crushed limestone							
22.1			SAND, loose to slightly compact, wet, tan, silty, (SM)			16				#200=6 SPT at 3' 1/2/3
5		6 (6) 6 (6)								SPT at 6.5' 1/2/3
						22				#200=5 SPT at 8' 3/4/5
10		8 (6) 8 (6)								
15		12 (6) 12 (6)				24				SPT at 16.5' 2/3/3
20		17 (6) 19 (6)								SPT at 21.5' 5/9/11
.6										
25		5 (6) 11 (6)	CLAY, soft, gray, w/ sand seams (CL)	0	12.49	26			121	
-1.4			SAND, dense, tan, silty (SM)							
30		42 (6) 50 (5.25)				22				#200=8 SPT at 31.5' 12/38/40
35		50 (4) 50 (4)								
-15.4 40		44 (6) 50 (4.25)								

Remarks: * Failed along slickensided joint

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger:** Brandon Creeks **Organization:** AGG

C:\Users\reyesj\Desktop\DE19-461.CLG

DRILLING LOG

WinCore Version 3.3	County	San Patrico	Hole	B-7	District	Corpus Christi
	Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/6/2019
	CSJ	0180-06-067	Station	103+31.6356	Grnd. Elev.	24.58 ft
			Offset	190.0595' LT	GW Elev.	18.58 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	Properties: LL	Properties: PI	Properties: Wet Den. (pcf)	Additional Remarks
			SAND, compact to very dense, tan to gray, silty (SM)			24				SPT at 41.5' 9/12/17
45		50 (3.75) 50 (2.5)								
50		50 (3.5) 50 (2.5)								SPT at 51.5' 6/15/18
55		50 (2.5) 50 (2)								
60		22 (6) 27 (6)				24				SPT at 61.5' 12/14/16
65		32 (6) 45 (6)								
70		50 (4.25) 50 (3.75)								SPT at 71.5' 15/20/22
75		22 (6) 27 (6)								
-55.4 80		20 (6) 25 (6)								

Remarks: * Failed along slickensided joint

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger:** Brandon Creeks **Organization:** AGG

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REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
HOSAM AL.T. SALMAN
91143
LICENSED
PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 8 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	231

DATE: 4/21/2021 TIME: 8:34:46 PM
FILE: SH35_070_108-BORE-08.dgn
PATH: \\spdw04\cs01\CS_pdf_work_dir\121802\1819958_8\SH35_070_108-BORE-08.dgn

SCALE: 100.0000 ft / in.

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-7	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/6/2019
CSJ	0180-06-067	Station	103+31.6356	Grnd. Elev.	24.58 ft
		Offset	190.0595' LT	GW Elev.	18.58 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			CLAY, stiff to very stiff, brown and light gray, sandy, w/ sand seams (CL)							SPT at 81.5' 5/7/9
85		14 (6) 16 (6)				22				-#200=77
90		14 (6) 14 (6)								SPT at 92.5' 4/7/9
95		20 (6) 22 (6)								
-75.4 100		26 (6) 32 (6)								
105										
110										
115										
120										

Remarks: * Failed along slickensided joint

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger:** Brandon Creeks **Organization:** AGG

C:\Users\reyesj\Desktop\DE19-461.CLG

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-8	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/18/2019
CSJ	0180-06-067	Station	100+39.1530	Grnd. Elev.	26.72 ft
		Offset	149.3678' RT	GW Elev.	19.72 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
26.3			ASPHALT, 4 inches							
25.2			SAND, tan, fine (SP)							
			SAND, loose, gray, very fine to fine (SP)			5				-#200=0.1 SPT at 3.5' 5/7/10
5		7 (6) 5 (6)								
20.2			SAND, slightly compact to compact, wet, brown and gray (SP)							SPT at 6.5' 1/1/1
						22				SPT at 8.5' 2/2/4
10		14 (6) 18 (6)								
15		17 (6) 18 (6)								SPT at 16.5' 3/4/4
20		23 (6) 32 (6)								
3.7			SAND, loose, moist, gray and tan, w/ sandy clay seams and layers			21				
25		4 (6) 5 (6)								
-2.3			SAND, slightly compact to dense, gray (SP)							
30		16 (6) 19 (6)				25				SPT at 31.5' 3/6/9
35		50 (4) 50 (3)								
40		50 (3.5) 50 (2)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger:** Brandon Creeks **Organization:** AGG

C:\Users\reyesj\Desktop\DE19-461.CLG

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
HOSAM AL.T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S.

SHEET 9 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	232

DATE: 4/21/2021 TIME: 8:34:39 PM
FILE: SH35_070_109-BORE-09.dgn
PATH: \\wspdw04fcs01fcs.pdf_work_dir\121802\181995_9\SH35_070_109-BORE-09.dgn

SCALE: 100.0000 ft / in.

DRILLING LOG

WinCore Version 3.3	County	San Patrico	Hole	B-8	District	Corpus Christi
	Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/18/2019
	CSJ	0180-06-067	Station	100+39.1530	Grnd. Elev.	26.72 ft
			Offset	149.3678' RT	GW Elev.	19.72 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, slightly compact to dense, gray (SP)			23				SPT at 41.5' 10/17/27
45		50 (3.25) 50 (2.25)								
50		15 (6) 18 (6)								
-24.3			SAND, slightly compact, gray, clayey (SC)			22				-#200=36 SPT at 51.5' 3/5/9
-27.3			CLAY, compact, gray and tan, w/ sand (CH)							
55		22 (6) 39 (6)				21	61	38		SPT at 56.5' 4/5/7
-32.3			SAND, compact to dense, gray and tan, clayey, w/ clay seams and layers (SC)							
60		33 (6) 26 (6)				21				-#200=36 SPT at 61.5' 4/7/10
65		50 (5) 50 (3.5)				16				-#200=24 SPT at 66.5' 14/16/22
70		50 (5.25) 50 (3.25)								
75		24 (6) 25 (6)								SPT at 76.5' 6/7/8
80		26 (6) 39 (6)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

DRILLING LOG

WinCore Version 3.3	County	San Patrico	Hole	B-8	District	Corpus Christi
	Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/18/2019
	CSJ	0180-06-067	Station	100+39.1530	Grnd. Elev.	26.72 ft
			Offset	149.3678' RT	GW Elev.	19.72 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, compact to dense, gray and tan, clayey, w/ clay seams and layers (SC)							
-57.3										
85		15 (6) 17 (6)	CLAY, stiff to very stiff, tan, sandy (CL)							SPT at 86.5' 3/4/7
90		21 (6) 24 (6)				24				-#200=74
95		21 (6) 24 (6)								
-69.3			CLAY, very stiff, tan and gray (CH)							SPT at 96.5 3/5/8
-73.3	100	21 (6) 24 (6)								
105										
110										
115										
120										

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
HOSAM AL.T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S.

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	233

DATE: 4/21/2021 TIME: 8:35:16 PM
FILE: SH35_070_110-BORE-10.dgn
PATH: \\wspdw04icsd01\ICS_pdf_work_dir\121802\181995_10\SH35_070_110-BORE-10.dgn

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-9	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/9/2019
CSJ	0180-06-067	Station	98+01.6006	Grnd. Elev.	24.28 ft
		Offset	136.0542' LT	GW Elev.	17.78 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
23.8			~~ASPHALT, 5 inches~~ BASE, crushed limestone							
22.			SAND, loose to slightly compact, wet, tan to brown, silty (SM)			16				SPT at 3.5' 3/4/4
5		7 (6) 7 (6)				20				-#200=21 SPT at 6.5' 1/3/3
10		14 (6) 17 (6)								
15		12 (6) 14 (6)				24				SPT at 16.5' 2/4/6
20		18 (6) 18 (6)								
.3										
25		14 (6) 18 (6)	SAND, slightly compact to very dense, gray, silty, w/ clay layers (SM)							
30		50 (2) 50 (1.75)				23				-#200=9 SPT at 31.5' 14/22/32
35		50 (2.25) 50 (1.25)								
40		48 (6) 50 (3.75)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-9	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/9/2019
CSJ	0180-06-067	Station	98+01.6006	Grnd. Elev.	24.28 ft
		Offset	136.0542' LT	GW Elev.	17.78 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, slightly compact to very dense, gray, silty, w/ clay layers (SM)							SPT at 41.5' 12/16/28
45		50 (2) 50 (1.25)								
-23.7			CLAY, stiff to very stiff, gray, w/ sand and silt seams (CH)							
50		17 (6) 22 (6)				35	87	58		-#200=91 SPT at 51.5' 4/6/9
55		29 (6) 33 (6)								
-32.2			SAND, compact to dense, gray, silty, w/ clay seams and layers (SM)							SPT at 56.5' 6/8/12
60		29 (6) 40 (6)				19				-#200=26 SPT at 61.5' 6/11/18
65		50 (4.25) 50 (3.25)								
70		50 (3.25) 50 (2.5)				22				SPT at 71.5' 14/26/26
75		28 (6) 34 (6)								
-54.7			SAND, slightly compact, brown, clayey, w/ silt seams (SC)							
80		17 (6) 20 (6)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
HOSAM AL.T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 11 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	234

SCALE: 100.0000 ft / in.

DRILLING LOG

Texas Department of Transportation

WinCore Version 3.3	County	San Patrico	Hole	B-9	District	Corpus Christi
	Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/9/2019
	CSJ	0180-06-067	Station	98+01.6006	Grnd. Elev.	24.28 ft
			Offset	136.0542' LT	GW Elev.	17.78 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, slightly compact, brown, clayey, w/ silt seams (SC)							SPT at 81.5' 5/8/9
85		12 (6) 10 (6)								
90		14 (6) 10 (6)								
-67.2			CLAY, very stiff to stiff, w/ sand layers (CL)							SPT at 91.5 4/6/6
95		15 (6) 19 (6)								
-75.7		26 (6) 31 (6)								
100										
105										
110										
115										
120										

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

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DRILLING LOG

Texas Department of Transportation

WinCore Version 3.3	County	San Patrico	Hole	B-10	District	Corpus Christi
	Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/17/2019
	CSJ	0180-06-067	Station	94+04.8271	Grnd. Elev.	26.20 ft
			Offset	90.3584' RT	GW Elev.	19.20 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
25.8			ASPHALT 4 inches BASE, crushed limestone							
24.2			SAND, slightly compact to compact, wet, tan to gray, silty, w/ clay seams and layers (SM)						4	-#200=6 SPT at 3' 4/5/6
5		12 (6) 10 (6)								SPT at 6.5' 1/2/2
10		19 (6) 19 (6)								SPT at 8.5' 2/3/5
15		14 (6) 16 (6)							22	SPT at 16.5' 3/5/4
20		20 (6) 20 (6)								
3.7			CLAY, soft, tan and gray, sandy (CL)						26	
25		5 (6) 7 (6)								
-.8			SAND, loose to very dense, tan and gray, silty (SM)							
30		14 (6) 26 (6)								SPT at 31.5' 18/12/16
35		50 (2.5) 50 (2)								
40		50 (2.75) 50 (2.25)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

REV	DESCRIPTION	DATE	INIT

HOSAM AL.T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 12 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	235

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SCALE: 100.0000 ft / in.

DRILLING LOG

WinCore Version 3.3	County	San Patrico	Hole	B-10	District	Corpus Christi
	Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/17/2019
	CSJ	0180-06-067	Station	94+04.8271	Grnd. Elev.	26.20 ft
			Offset	90.3584' RT	GW Elev.	19.20 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, loose to very dense, tan and gray, silty (SM)			23				-#200=7 SPT at 41.5' 8/14/16
45		50 (3.25) 50 (2.25)								
50		50 (4) 50 (3.25)								SPT at 51.5' 6/9/17
55		15 (6) 28 (6)								
60		17 (6) 25 (6)				18				SPT at 61.5 6/11/16
65		32 (6) 50 (4)								
70		50 (5) 50 (3.25)								SPT at 71.5' 7/11/12
75		23 (6) 25 (6)								
-50.8			SAND, compact to slightly compact, brown, clayey, w/ clay lenses, silty (SC)							
80		30 (6) 32 (6)								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

DRILLING LOG

WinCore Version 3.3	County	San Patrico	Hole	B-10	District	Corpus Christi
	Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/17/2019
	CSJ	0180-06-067	Station	94+04.8271	Grnd. Elev.	26.20 ft
			Offset	90.3584' RT	GW Elev.	19.20 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			SAND, compact to slightly compact, brown, clayey, w/ clay lenses, silty (SC)							SPT at 81.5' 4/5/8
85		14 (6) 15 (6)								
-63.8		18 (6) 18 (6)								
90			CLAY, stiff, tan and gray, w/ sandy silt seams (CH)			31	61	42		-#200=90
95		17 (6) 18 (6)								SPT at 92.5' 4/5/5
-73.8		14 (6) 17 (6)								
100										
105										
110										
115										
120										

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
HOSAM AL.T. SALMAN
91143
LICENSED
PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 13 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	236

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SCALE: 100.0000 ft / in.

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-11	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/30/2019
CSJ	0180-06-067	Station	89+96.4408	Grnd. Elev.	25.04 ft
		Offset	79.2467' RT	GW Elev.	19.04 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC LL PI	Properties: Wet Den. (pcf)	Additional Remarks
24.6			ASPHALT, 3 inches					
			BASE, crushed limestone			7		
22.8		27 (6) 42 (6)	SAND, loose to compact, wet, tan and brown to gray, silty (SM)					
5		14 (6) 11 (6)						SPT at 6.5' 1/2/3
								SPT at 8.5' 2/3/5
10		15 (6) 18 (6)						
15		14 (6) 15 (6)				23		SPT at 16.5' 3/4/4
20		22 (6) 12 (6)						SPT at 21.5' 2/2/3
. 25		8 (6) 8 (6)	CLAY, soft, tan and gray, sandy (CL)			40		SPT at 26.5' 1/1/2
-4. 30		8 (6) 9 (6)	SAND, loose to compact, tan and brown to gray, silty (SM)					
35		11 (6) 12 (6)				24		SPT at 36.5' 3/5/7
-15. 40		33 (6) 35 (6)						

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

DRILLING LOG

WinCore Version 3.3

County	San Patrico	Hole	B-11	District	Corpus Christi
Highway	SH 35 at Oak Lane	Structure	Bridge	Date	12/30/2019
CSJ	0180-06-067	Station	89+96.4408	Grnd. Elev.	25.04 ft
		Offset	79.2467' RT	GW Elev.	19.04 ft

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test: Lateral Press. (psi)	Triaxial Test: Deviator Stress (psi)	Properties: MC LL PI	Properties: Wet Den. (pcf)	Additional Remarks
			SAND, compact to dense, gray, silty, w/ clay seams and layers (SM)					
45		49 (6) 50 (4.5)				27		SPT at 46.5' 11/9/14
50		50 (2.25) 50 (2)						
55		32 (6) 42 (6)						SPT at 56.5' 6/9/12
60		33 (6) 49 (6)						
65		50 (3.25) 50 (2)						SPT at 66.5' 17/33/20
-45. 70		37 (6) 50 (4)						
75								
80								

Remarks:

Any ground water elevation information provided on this boring log is representative of conditions existing on the day and for the specific location where this information was collected. The actual groundwater elevation may fluctuate due to time, climatic conditions, and/or construction activity.

Driller: RD Cromeans **Logger: Brandon Creeks** **Organization: AGG**

C:\Users\reyesj\Desktop\DE19-461.CLG

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
HOSAM AL.T. SALMAN
91143
LICENSED PROFESSIONAL ENGINEER
04-23-2021

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

BORING LOG

N.T.S. SHEET 14 OF 14

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	237

DATE: 4/21/2021 TIME: 8:35:37 PM
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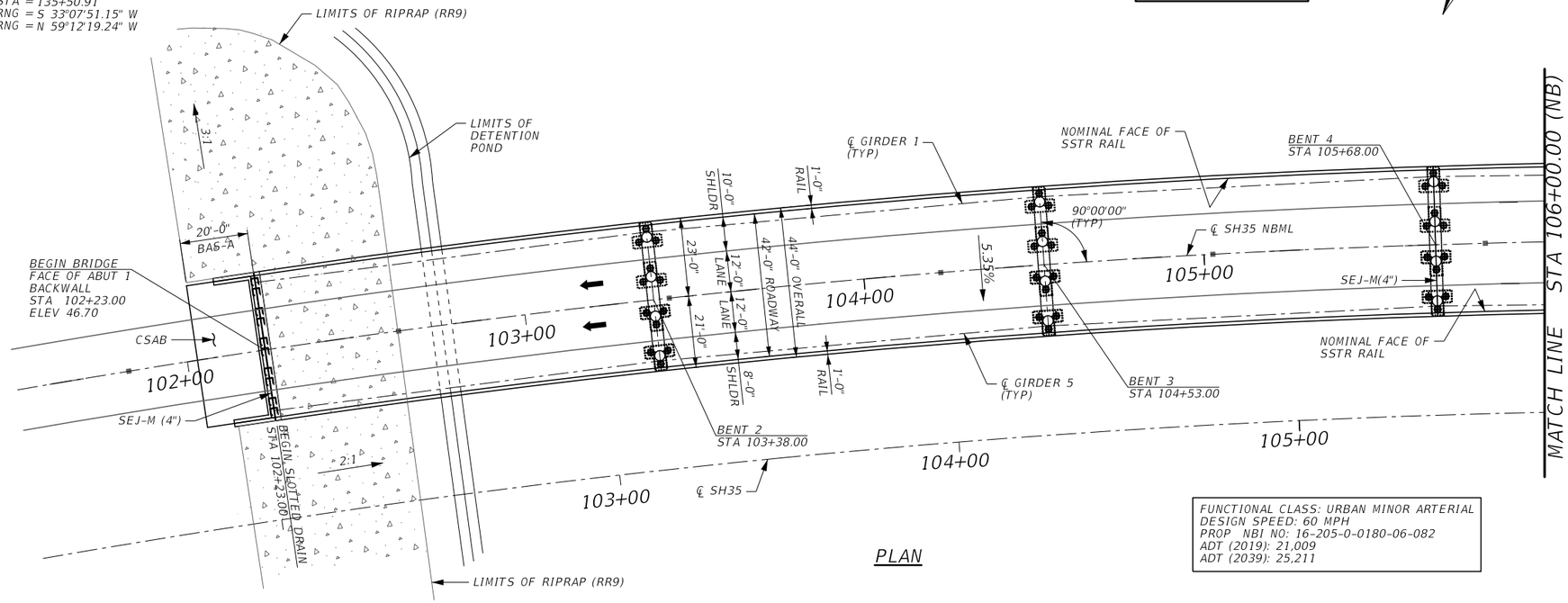
PATH: \\wspdw04\cs01\CS_pdf_work_dir\121802\181995_14\SH35_070_114-BORE-14.dgn

HORIZONTAL CURVE DATA

PI STA = 118+55.20
DELTA = 87°39'49.61" RT
D = 1°55'33.27"
T = 2,856.10
L = 4,551.81
R = 2,975.00
PC STA = 89+99.10
PT STA = 135+50.91
BACK BRNG = S 33°07'51.15" W
AHD BRNG = N 59°12'19.24" W

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:

ABUT 1 ~ S 33°17'53" E
BENT 2 ~ S 31°04'59" E
BENT 3 ~ S 28°52'06" E
BENT 4 ~ S 26°39'12" E



PLAN

FUNCTIONAL CLASS: URBAN MINOR ARTERIAL
DESIGN SPEED: 60 MPH
PROP NBI NO: 16-205-0-0180-06-082
ADT (2019): 21,009
ADT (2039): 25,211

0' 20' 40'
SCALE IN FEET

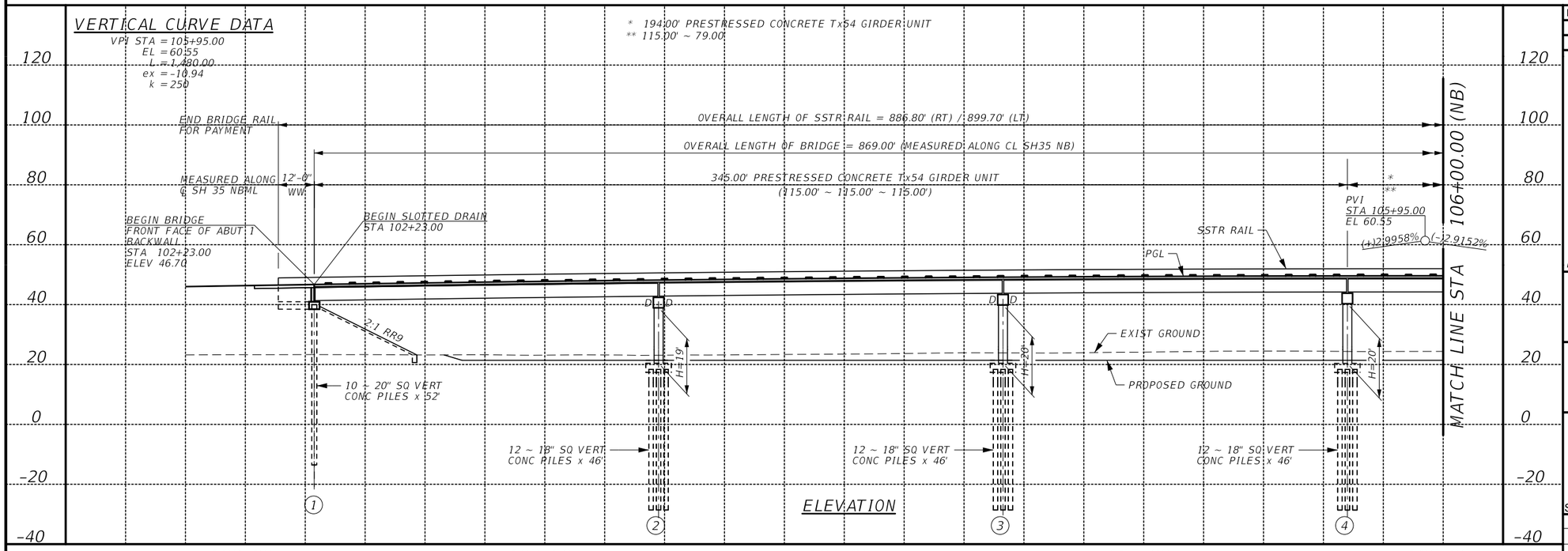
GENERAL NOTES:

1. DESIGNED ACCORDING TO 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, AND INTERIM SPECIFICATIONS.
2. CONTRACTOR MUST FIELD VERIFY LOCATIONS OF ALL UTILITIES PRIOR TO CONSTRUCTION, EXCAVATION AND DRILLING.
3. "D" DENOTES DOWELLED END CONDITION. SEE INTERIOR BENT DETAILS FOR LOCATION.
4. "H" VALUES ARE ESTIMATED AVERAGE COLUMN HEIGHTS. CONTRACTOR IS RESPONSIBLE TO CALCULATE COLUMN HEIGHTS BASED ON FIELD CONDITIONS.
5. SEE TxDOT STANDARD BMCS FOR BRIDGE MOUNTED CLEARANCE SIGN DETAILS.
6. SEE ILLUMINATION PLANS FOR ILLUMINATION DETAILS.
7. SEE FOUNDATION LAYOUTS AND UTILITY PLANS FOR EXISTING AND PROPOSED UTILITY LOCATIONS.
8. SAW-CUT GROOVING OF THE BRIDGE DECK AND APPROACH SLAB IS REQUIRED.
9. SEE "BORING LOG" SHEETS 4 OF 14 AND SHEETS 5 OF 14 FOR GEOTECHNICAL INFORMATION.
10. PILES SHALL BE DRIVEN TO THE SPECIFIED TIP ELEVATIONS OR TO THE REQUIRED ULTIMATE PILE CAPACITY UPON APPROVAL OF THE DESIGNING ENGINEER. PILE DRIVING ANALYZER SHALL BE USED DURING INSTALLATION TO CONFIRM ULTIMATE PILE CAPACITY.
11. IF HARD DRIVING IS ENCOUNTERED DURING PILE INSTALLATION, PREDRILLING TO FACILITATE DRIVING MAY BE USED. PREDRILLED HOLES SHALL BE 1 INCH SMALLER THAN THE PILE SQUARE SIDE AND SHOULD BE APPROVED BY DESIGNING ENGINEER.
12. IF PILES ARE DRIVEN 1 MONTH BEFORE EMBANKMENT COMPLETION, ABUTMENT PILES SHALL BE DRIVEN AT LEAST 2 FEET HIGHER THAN THE DESIGN DEPTH OR TO AN ELEVATION DETERMINED BY THE CONTRACTOR THAT ALLOWS THE PILE TO BE RE-DRIVEN AFTER EMBANKMENT CONSTRUCTION. PILES AT ABUTMENTS SHOULD BE RE-DRIVEN AFTER EMBANKMENT CONSTRUCTION AND AFTER AN ESTIMATED SETTLEMENT PERIOD OF 1 MONTH TO PRACTICAL REFUSAL. IF PILES ARE NOT DRIVEN UNTIL AFTER 1 MONTH OF EMBANKMENT COMPLETION, THEN THE PILES CAN BE DIRECTLY DRIVEN TO THE DESIGN DEPTH.

VERTICAL CURVE DATA

VPI STA = 105+95.00
EL = 60.55
L = 1,480.00
ex = -10.94
k = 250

* 194.00' PRESTRESSED CONCRETE Tx54 GIRDER UNIT
** 115.00' ~ 79.00'



ELEVATION

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

BRIDGE LAYOUT
NB SH 35 OVERPASS AT OAK LANE

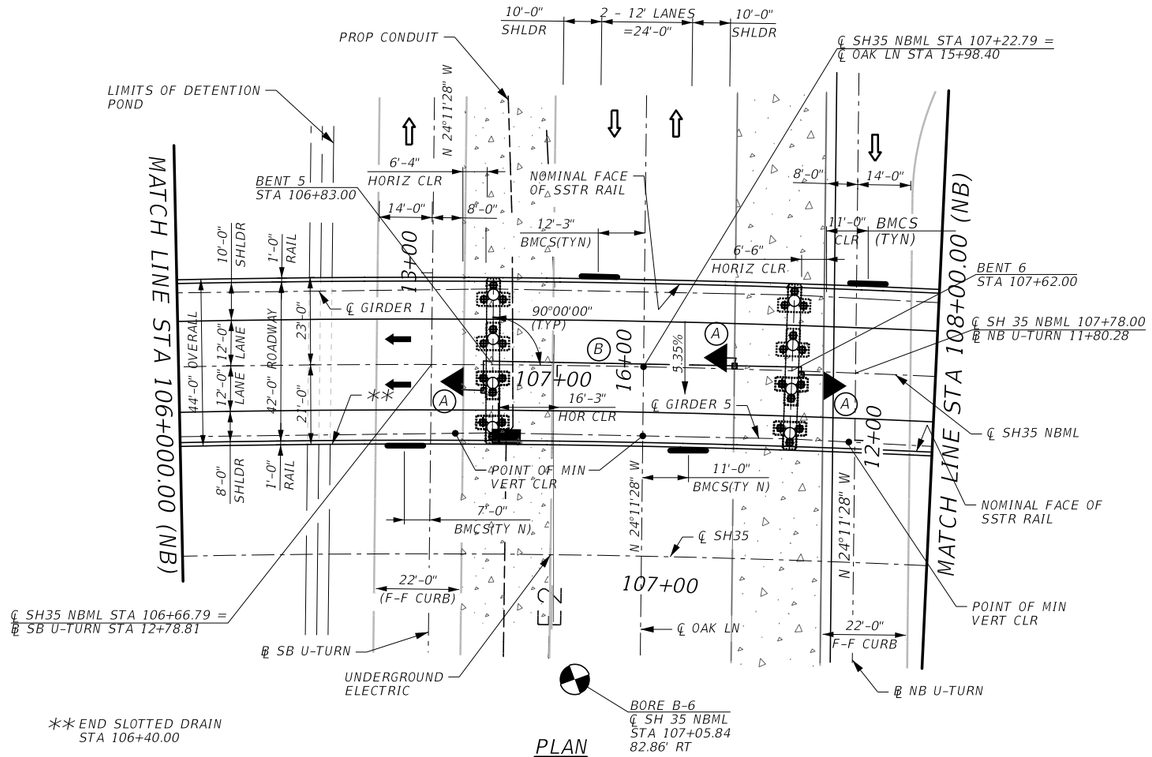
SCALE: 1"=40' SHEET 1 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	238

SCALE: 40.0000 ft / in.

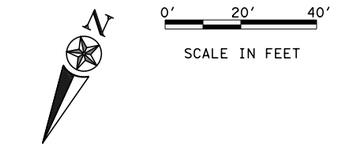
HORIZONTAL CURVE DATA

PI STA = 118+55.20
DELTA = 87°39'49.61" RT
D = 1°55'33.27"
T = 2,856.10
L = 4,551.81
R = 2,975.00
PC STA = 89+99.10
PT STA = 135+50.91
BACK BRNG = S 33°07'51.15" W
AHD BRNG = N 59°12'19.24" W



** END SLOTTED DRAIN
STA 106+40.00

PLAN



GENERAL NOTES:

1. REFER TO SHEET 1 OF 3 FOR GENERAL NOTES.

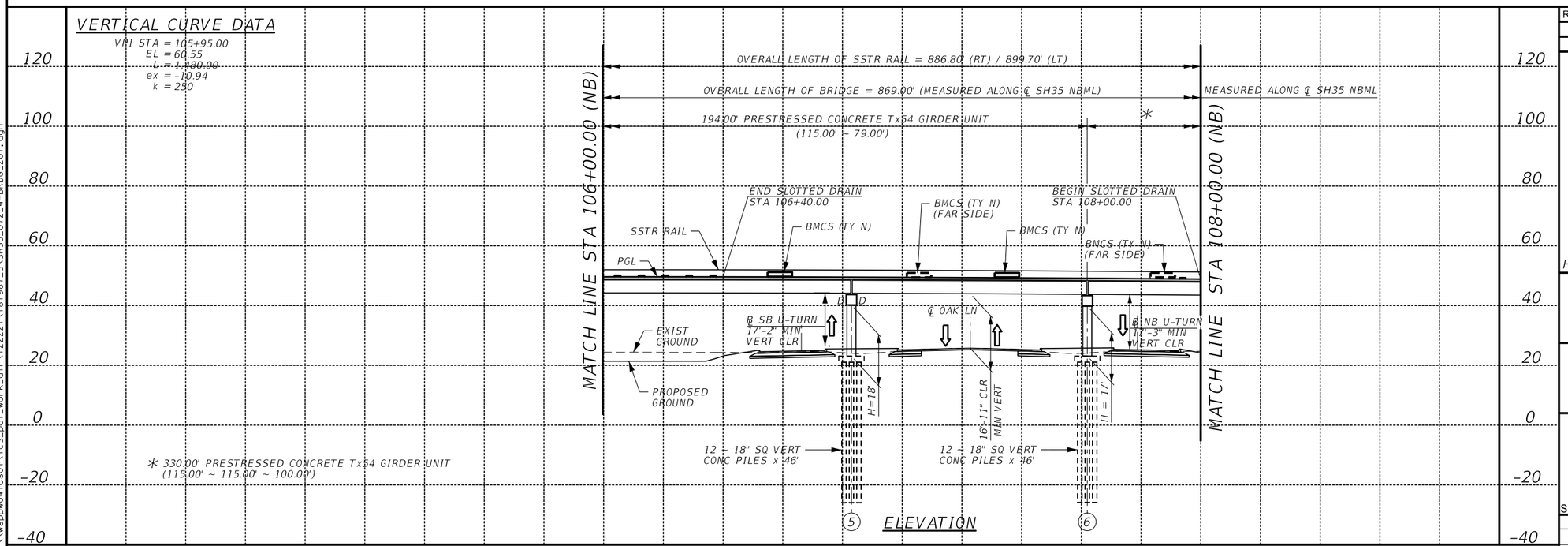
NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:
BENT 5 ~ S 24°26'20" E
BENT 6 ~ S 22°55'02" E

(A) UNDERPASS LIGHTING

(B) CONDUIT ATTACHED TO BRIDGE

VERTICAL CURVE DATA

VPI STA = 105+95.00
EL = 60.55
L = 1,480.00
ex = -10.94
k = 230



* 330.00' PRESTRESSED CONCRETE Tx54 GIRDER UNIT (115.00' ~ 115.00' ~ 100.00')

(5) (6) ELEVATION

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

BRIDGE LAYOUT
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=40' SHEET 2 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	239

DATE: 4/23/2021 TIME: 2:45:19 PM
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PATH: \\wsdpw041cs01\ICS_pdf_work_dir\122221\181987_3\SH35_072_4-BRDG_201.dgn

SCALE: 40.0000 ft / in.

HORIZONTAL CURVE DATA

PI STA = 118+55.20
DELTA = 87°39'49.61" RT
D = 1°55'33.27"
T = 2,856.10
L = 4,551.81
R = 2,975.00
PC STA = 89+99.10
PT STA = 135+50.91
BACK BRNG = S 33°07'51.15" W
AHD BRNG = N 59°12'19.24" W

N

0' 20' 40'
SCALE IN FEET

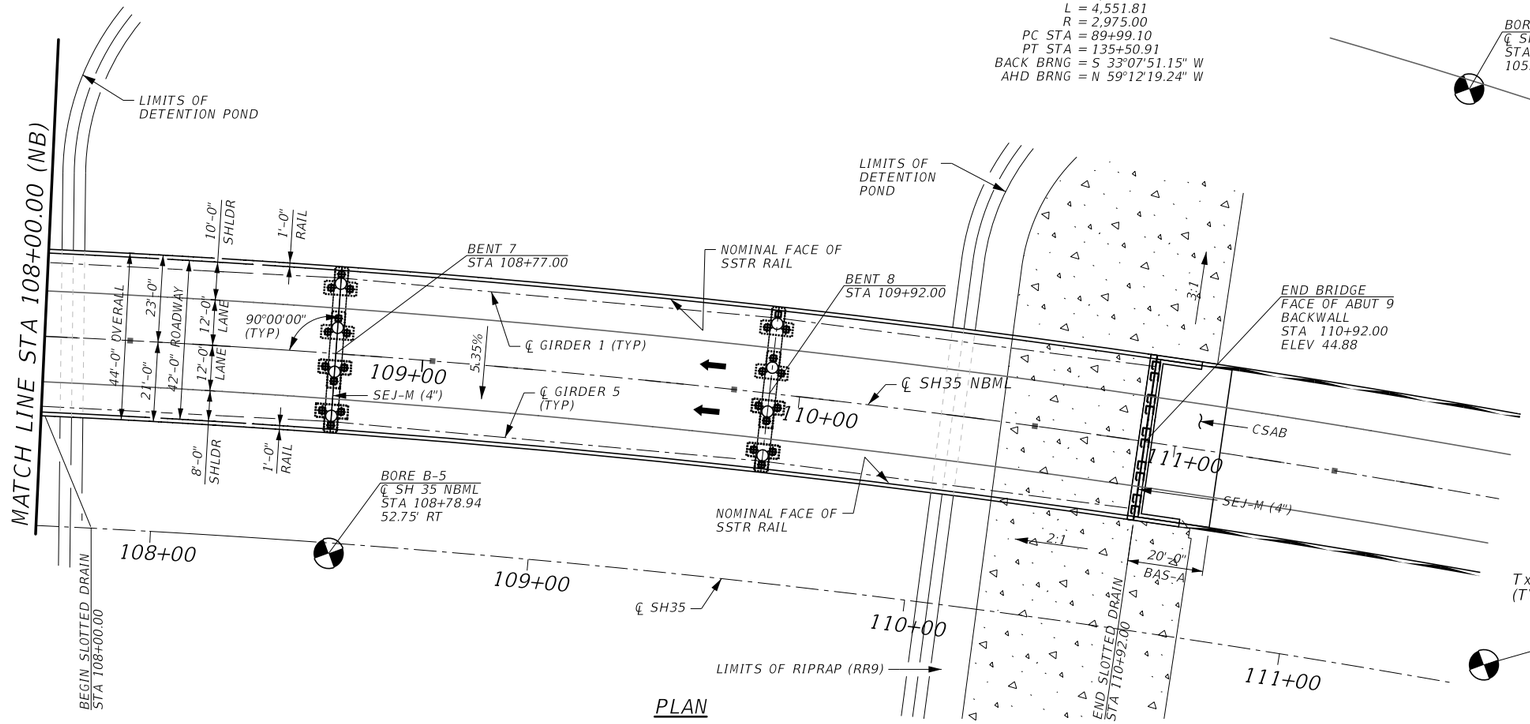
BORE C-14
℄ SH 35 NBML
STA 111+60.85
105.25' LT

GENERAL NOTES:

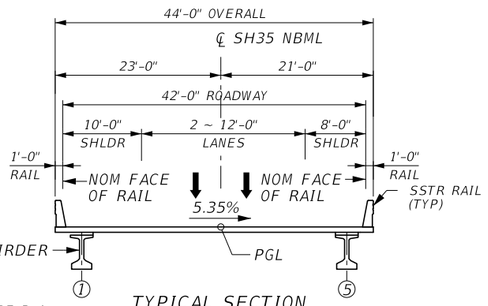
1. REFER TO SHEET 1 OF 3 FOR GENERAL NOTES.

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:

BENT 7 ~ S 20°42'08" E
BENT 8 ~ S 18°29'15" E
ABUT 9 ~ S 16°33'42" E



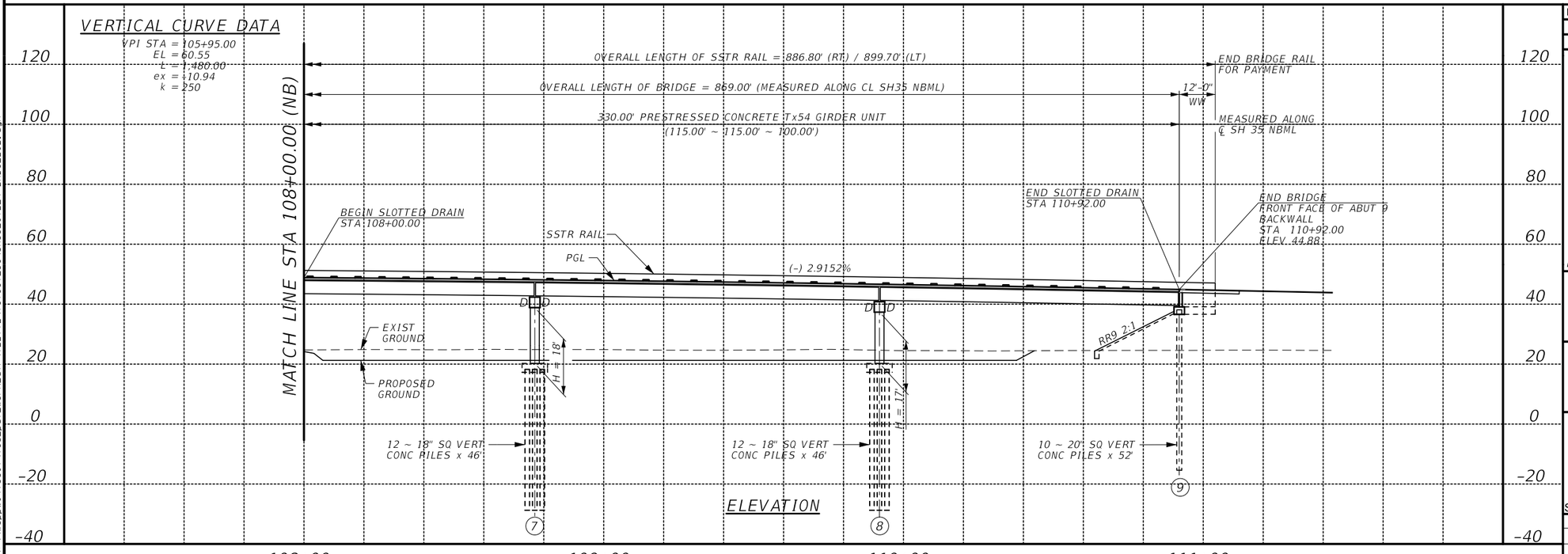
PLAN



TYPICAL SECTION
SCALE: NTS

VERTICAL CURVE DATA

VPI STA = 105+95.00
EL = 60.55
L = 1,480.00
ex = 10.94
k = 250



ELEVATION

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

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IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
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Firm Registration: F-10161

SH 35 AT OAK LANE

BRIDGE LAYOUT
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=40' SHEET 3 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	240

DATE: 4/23/2021 TIME: 3:50:16 AM
FILE: SH35_072_4-BRDG_202.dgn
PATH: \\wspdw04icsd01\ICS_pdf_work_dir\122172\181987_56\SH35_072_4-BRDG_202.dgn

SCALE: 1.0000 ft / in.

NOTES:

1. ALL RIPRAP (CONC) (CL B) (RR8&RR9) FOR BOTH SBML & NBML BRIDGES IS INCLUDED IN NBML QUANTITIES.

SUMMARY OF ESTIMATED QUANTITIES

BID ITEM NO	400-6005	409-6002	409-6003	420-6013	420-6029	420-6037	420-6043	422-6001	422-6015	425-6039	432-6008	450-6023	454-6018
ITEM DESCRIPTION	CEM STABIL BKFL	PRESTR CONC PIL (18 IN SQ)	PRESTR CONC PIL (20 IN SQ)	CL C CONC (ABUT)	CL C CONC (CAP)	CL C CONC (COLUMN)	CL C CONC (FOOTING)	REINF CONC SLAB	APPROACH SLAB	PRESTR CONC GIRDER (Tx54)	RIPRAP(CONC) (CL B) (RR8 &RR9)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN) (SEJ-M)
UNIT	CY	LF	LF	CY	CY	CY	CY	SF	CY	LF	CY	LF	LF
2 - ABUTMENTS	239		1,040	61.8					67.4		357	48.0	88
7 - BENTS		3,864			133.0	132.8	134.4						88
345.00' PS CONC I-GIRDER UNIT								15,186		1,718.06		690.2	
194.00' PS CONC I-GIRDER UNIT								8,539		965.29		388.1	
330.00' PS CONC I-GIRDER UNIT								14,525		1,643.10		660.2	
TOTAL	239	3,864	1,040	61.8	133.0	132.8	134.4	38,250	67.4	4,326.45	357	1,786.5	176

BEARING SEAT ELEVATIONS

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
ABUT	1 (FWD)	42.033	41.525	41.016	40.508	40.000
		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT	2 (BK)	43.499	42.990	42.482	41.974	41.465
	(FWD)	43.520	43.011	42.503	41.995	41.487
		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT	3 (BK)	44.466	43.958	43.450	42.941	42.433
	(FWD)	44.478	43.970	43.462	42.953	42.445
		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT	4 (BK)	44.906	44.397	43.889	43.381	42.873
	(FWD)	44.908	44.400	43.892	43.384	42.876
		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT	5 (BK)	44.817	44.308	43.800	43.292	42.784
	(FWD)	44.832	44.323	43.815	43.307	42.799
		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT	6 (BK)	44.471	43.963	43.454	42.946	42.438
	(FWD)	44.437	43.929	43.421	42.912	42.404
		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT	7 (BK)	43.470	42.961	42.453	41.945	41.437
	(FWD)	43.448	42.940	42.431	41.923	41.415
		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT	8 (BK)	41.961	41.453	40.945	40.437	39.929
	(FWD)	41.952	41.443	40.935	40.427	39.918
		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
ABUT	9 (BK)	40.241	39.733	39.225	38.717	38.209

REV	DESCRIPTION	DATE	INIT

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4/23/2021

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IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

EST QTY & BEARING SEAT ELEV
NB SH 35 OVERPASS AT OAK LANE

N.T.S. SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	241

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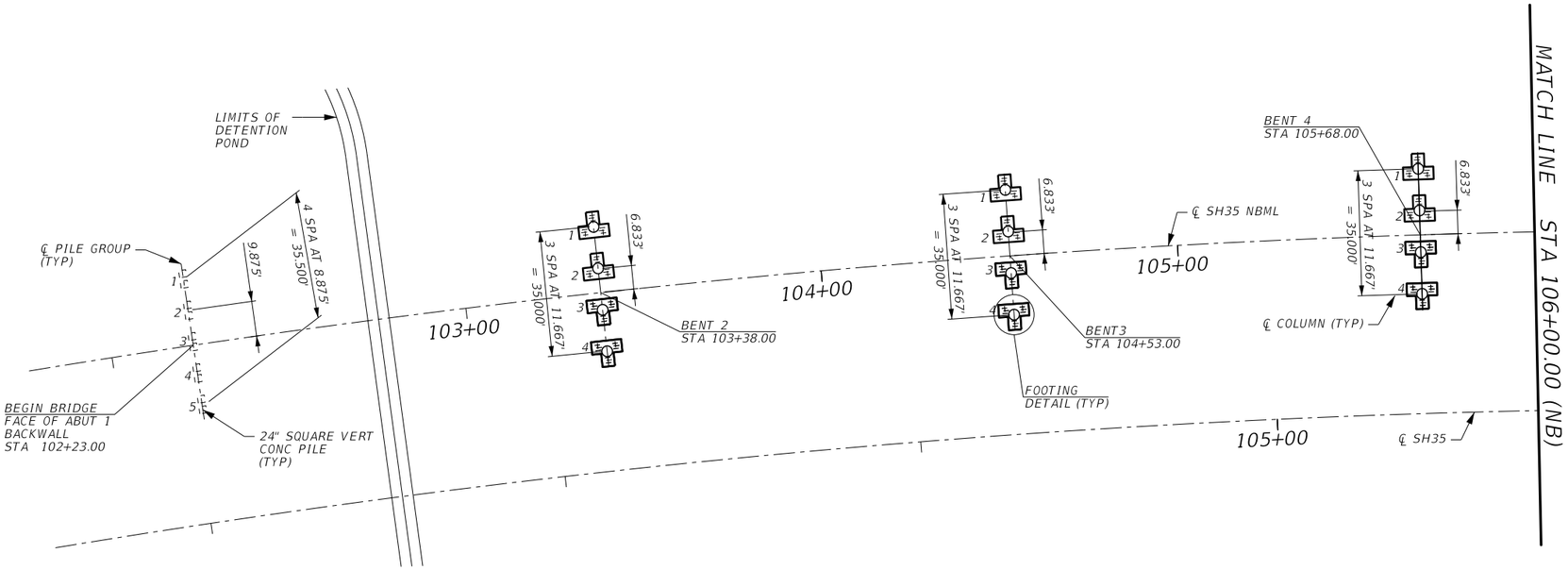
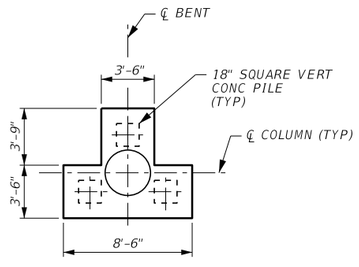
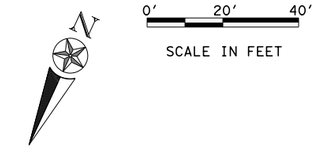


PLAN



FOOTING DETAIL
N.T.S.



GENERAL NOTES:

1. SEE BRIDGE LAYOUT SHEET FOR FOUNDATION LENGTHS.
2. SEE UTILITY PLANS FOR ANY UTILITY RELOCATIONS.
3. CONTRACTOR MUST FIELD VERIFY LOCATIONS OF ALL UTILITIES AND EXISTING STRUCTURES PRIOR TO CONSTRUCTION, EXCAVATION AND DRILLING.
4. SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DETAILS AND NOTES NOT SHOWN.

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:

ABUT 1 ~ S 33°17'53" E
BENT 2 ~ S 31°04'59" E
BENT 3 ~ S 28°52'06" E
BENT 4 ~ S 26°39'12" E

REV	DESCRIPTION	DATE	INIT

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4/23/2021

HL93 LOADING

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IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

FOUNDATION PLAN
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=40' SHEET 1 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	242

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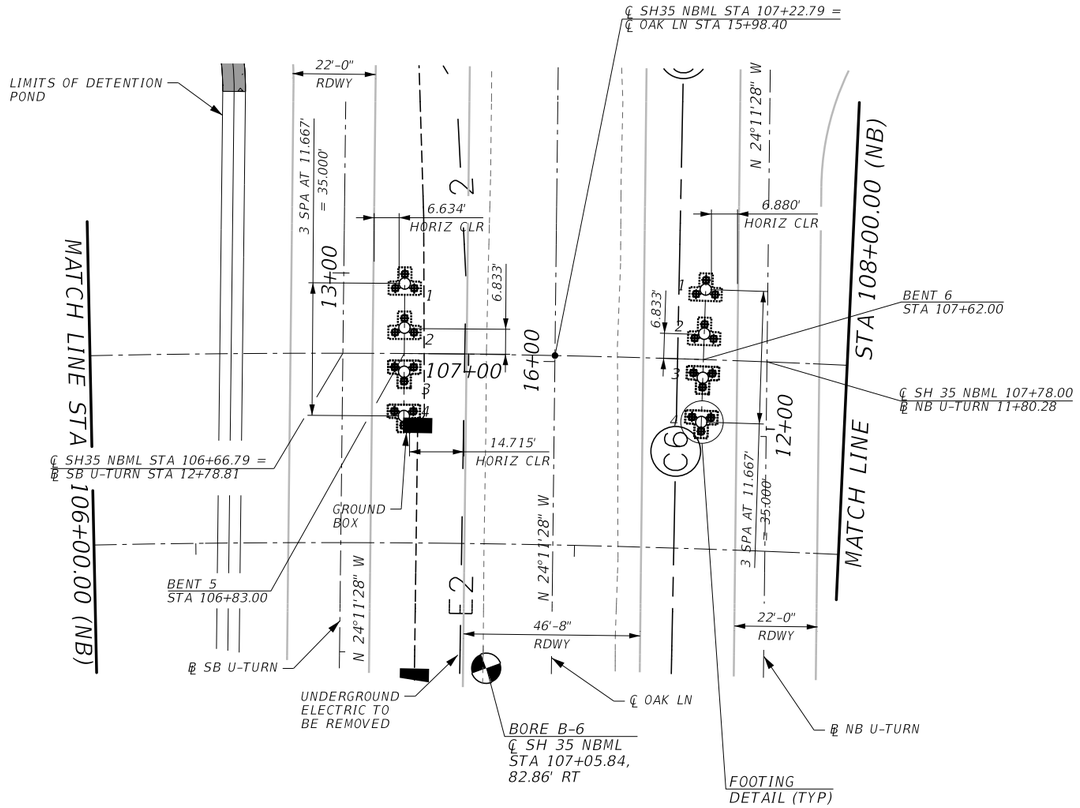
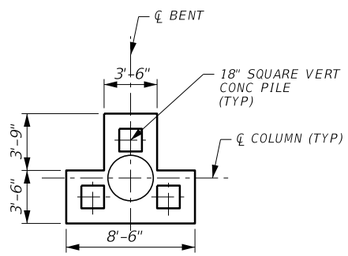
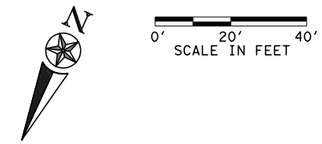


PLAN



FOOTING DETAIL
N.T.S



GENERAL NOTES:

1. SEE FOUNDATION PLAN SHEET 1 OF 3 FOR NOTES.
2. CONDUIT WORK TO BEGIN WITH CONSTRUCTION OF FOUNDATIONS. SEE UNDERPASS ILLUMINATION DETAILS.
3. THE PHASING FOR CONSTRUCTION OF U-TURNS SHOULD CONSIDER EXCAVATION LIMITS FOR CONSTRUCTION OF FOOTINGS.

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:
BENT 5 – S 24°26'20" E
BENT 6 – S 22°55'02" E

REV	DESCRIPTION	DATE	INIT

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Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

FOUNDATION PLAN
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=40' SHEET 2 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	243

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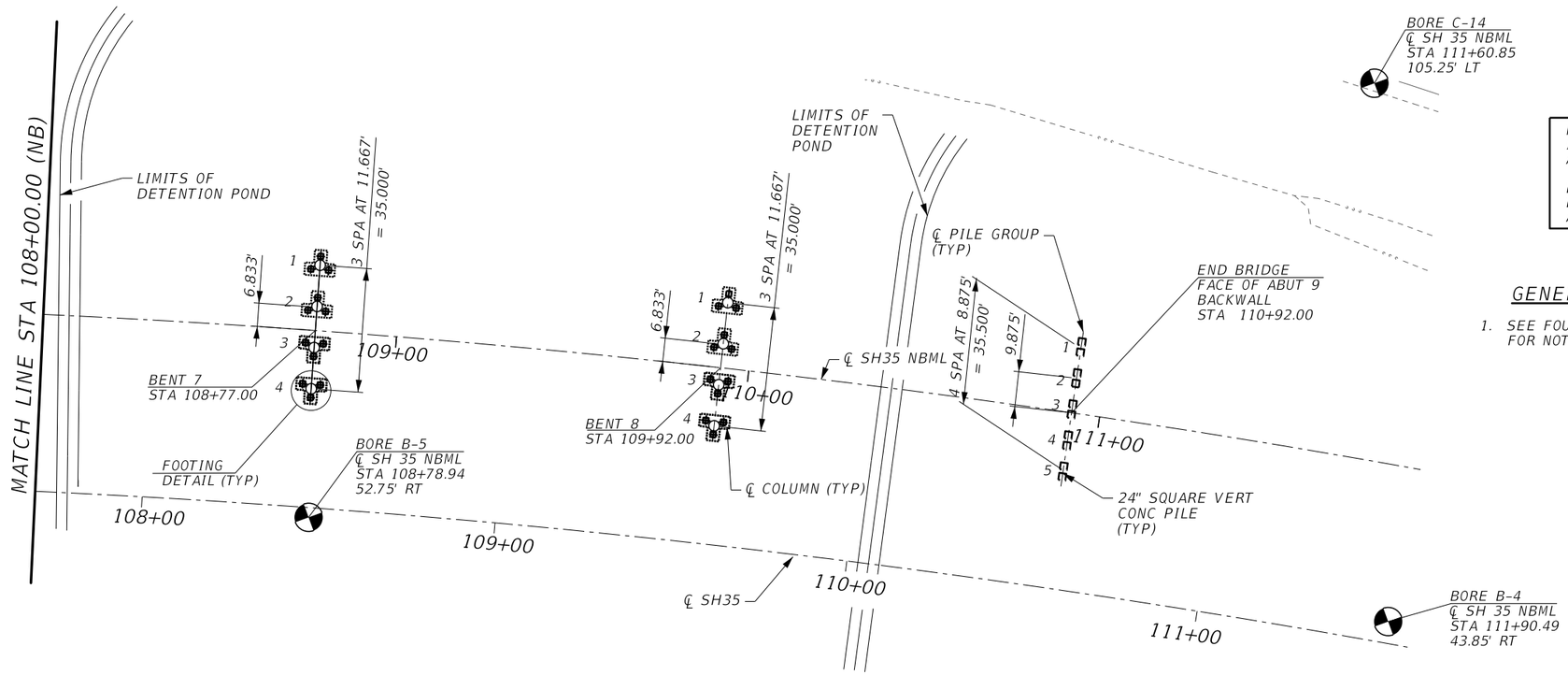

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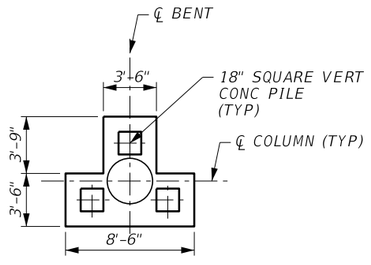

FOOTING DETAIL
N.T.S.

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:

BENT 7 ~ S 20°42'08" E
BENT 8 ~ S 18°29'15" E
ABUT 9 ~ S 16°33'42" E

GENERAL NOTES:

1. SEE FOUNDATION PLAN SHEET 1 OF 3 FOR NOTES.

0' 20' 40'
SCALE IN FEET

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
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4/23/2021

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SH 35 AT OAK LANE

FOUNDATION PLAN
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=40' SHEET 3 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	244

SCALE: 40.0000 ft / in.

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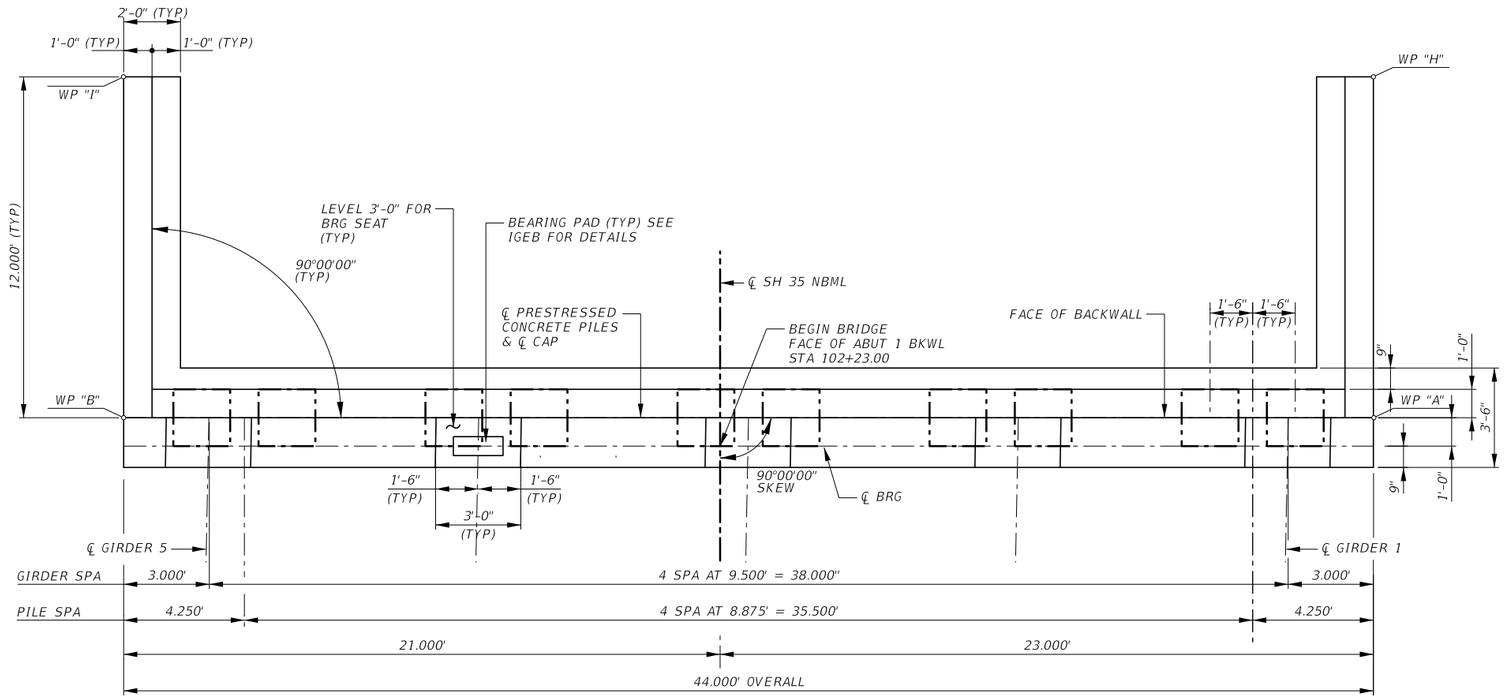
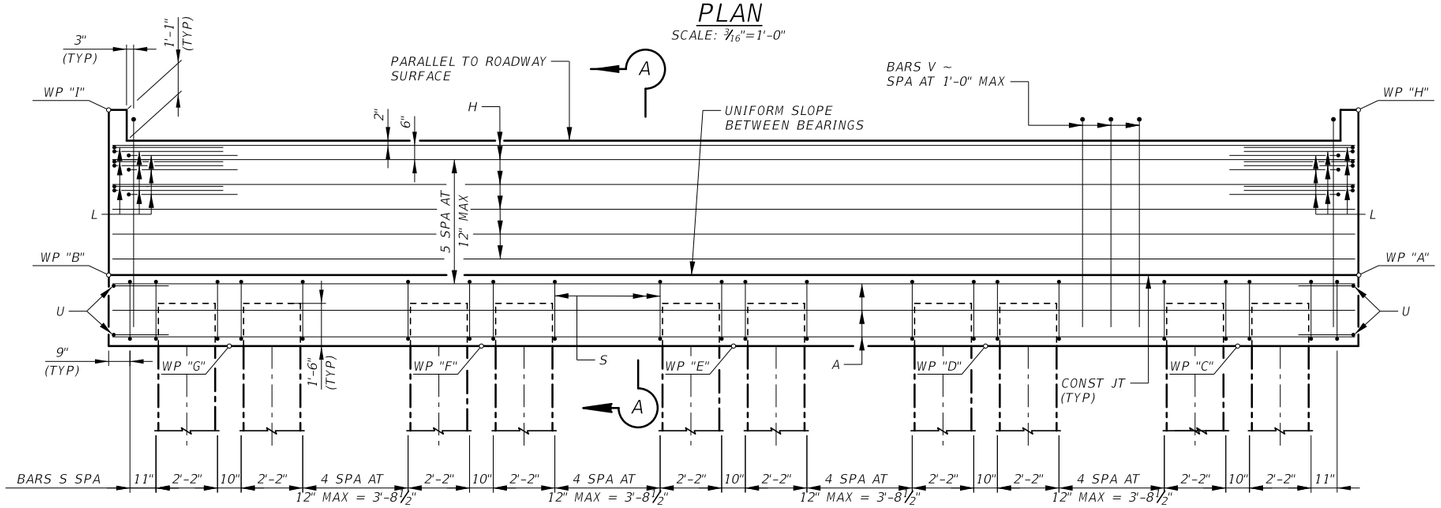
SCALE: 5.3333 ft / in.



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



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

WORK POINT ELEVATIONS (1)

ABUT NO	WP "A"	WP "B"	WP "C"	WP "D"	WP "E"	WP "F"	WP "G"	WP "H"	WP "I"
1	42.069	39.715	39.342	38.867	38.392	37.917	37.442	47.944	45.590

(1) WORK POINT ELEVATIONS TAKEN ALONG FRONT FACE ABUTMENT BACKWALL

NOTES:

1. SEE ABUTMENT 1 & 9 DETAILS SHEET FOR NOTES.

REV	DESCRIPTION	DATE	INIT

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SH 35 AT OAK LANE

ABUTMENT 1 DETAILS
NB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	245

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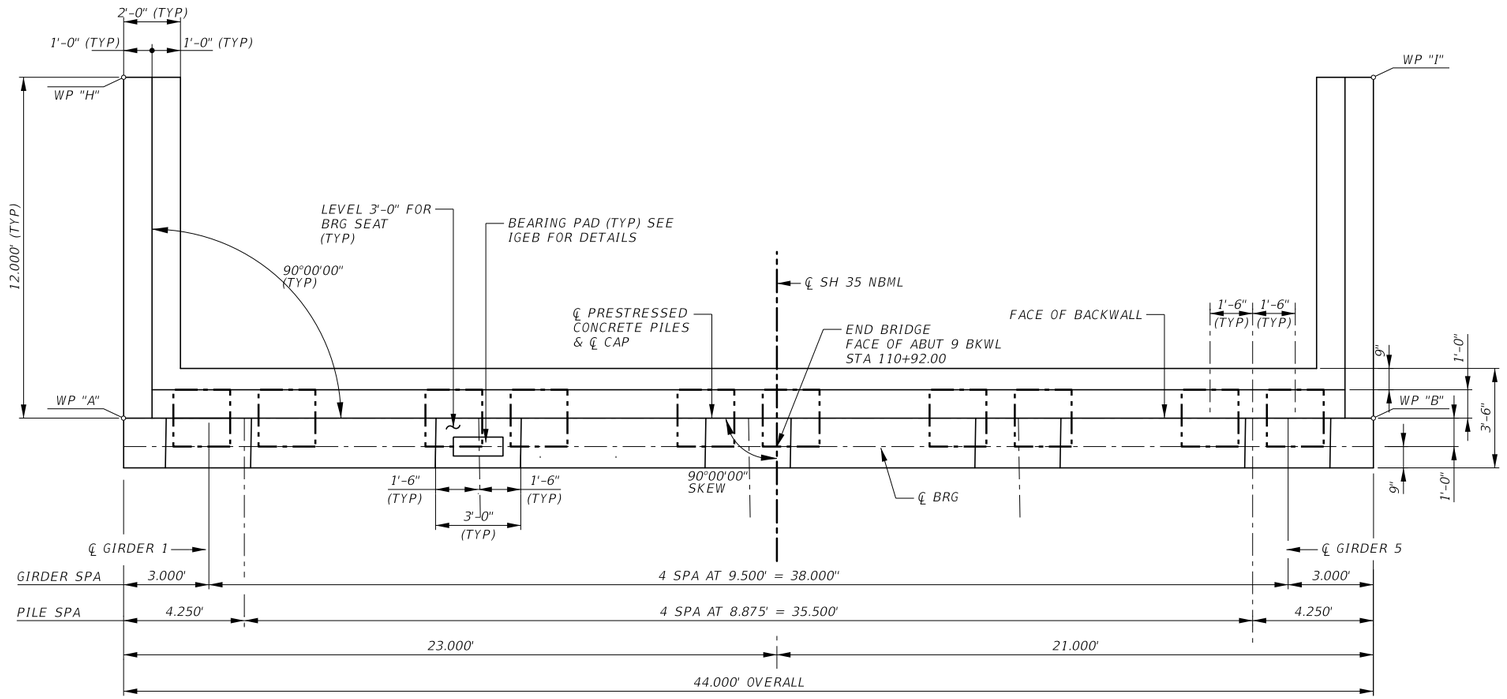
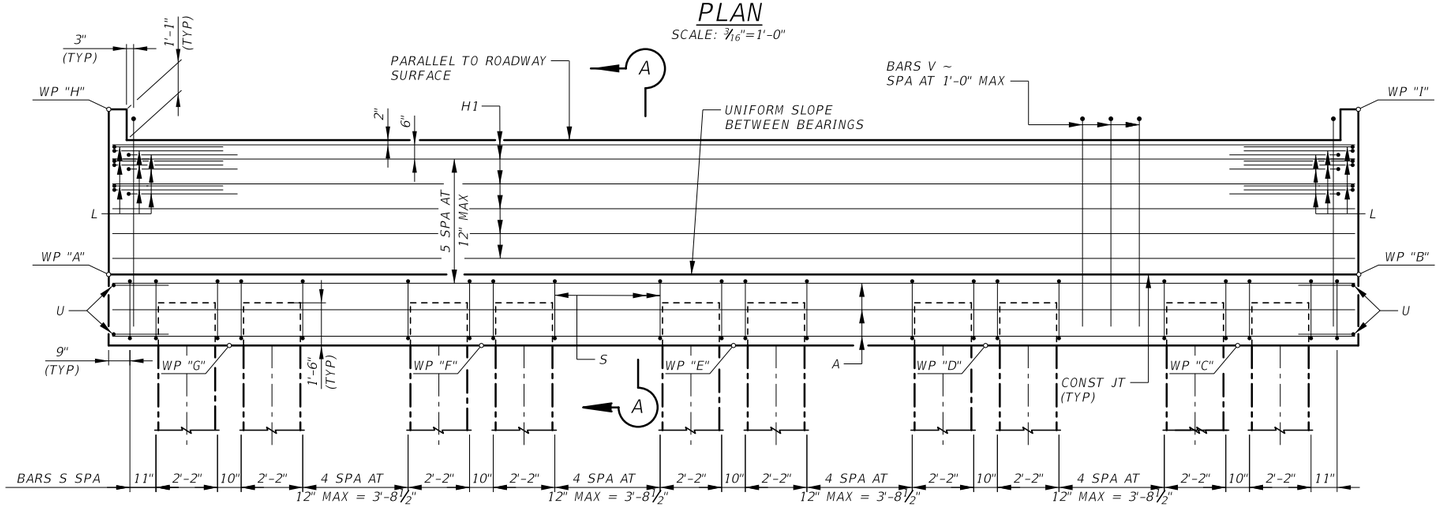


PLAN

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



ELEVATION

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

NOTES:

1. SEE ABUTMENT 1 & 9 DETAILS SHEET FOR NOTES.

WORK POINT ELEVATIONS ①

ABUT NO	WP "A"	WP "B"	WP "C"	WP "D"	WP "E"	WP "F"	WP "G"	WP "H"	WP "I"
9	40.277	37.923	37.550	37.075	36.600	36.126	35.651	46.131	43.777

① WORK POINT ELEVATIONS TAKEN ALONG FRONT FACE ABUTMENT BACKWALL

REV	DESCRIPTION	DATE	INIT

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DALLAS, TX 75252
Phone: +1 (214) 884-4253
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SH 35 AT OAK LANE

ABUTMENT 9 DETAILS
NB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	246

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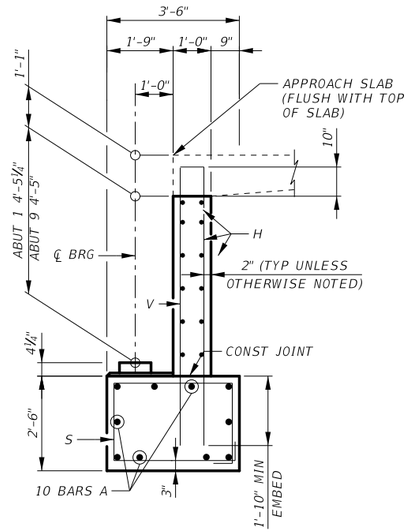
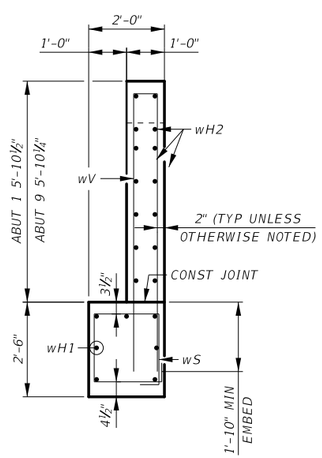
SCALE: 5.3333 ft / in.

SCALE: 4.0000 ft / in.



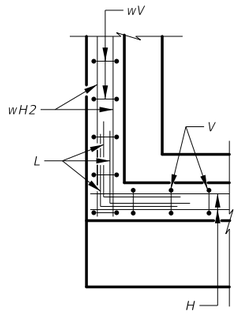
SECTION A-A

SCALE: ¼"=1'-0"

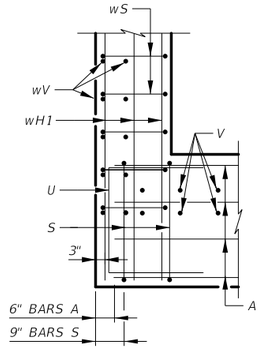


SECTION B-B

SCALE: ¼"=1'-0"



BACKWALL



CAP

CORNER DETAILS

SCALE: ¼"=1'-0"

TABLE OF QUANTITIES ABUTMENT 1

BAR	NO	SIZE	LENGTH	WEIGHT
A	10	#11	43'-0"	2,285
H	12	#6	43'-8"	788
L	18	#6	4'-0"	109
S	34	#5	11'-6"	408
U	4	#6	8'-1"	49
V	43	#5	15'-9"	707
wH1	14	#6	13'-4"	281
wH2	28	#6	11'-7"	488
wS	26	#4	7'-10"	137
wV	26	#5	15'-9"	428
REINFORCING STEEL			LB	5,680
CLASS "C" CONCRETE (ABUT)			CY	30.9

TABLE OF QUANTITIES ABUTMENT 9

BAR	NO	SIZE	LENGTH	WEIGHT
A	10	#11	43'-0"	2,285
H	12	#6	43'-8"	788
L	18	#6	4'-0"	109
S	34	#5	11'-6"	408
U	4	#6	8'-1"	49
V	43	#5	15'-9"	707
wH1	14	#6	13'-4"	281
wH2	28	#6	11'-7"	488
wS	26	#4	7'-10"	137
wV	26	#5	15'-9"	428
REINFORCING STEEL			LB	5,680
CLASS "C" CONCRETE (ABUT)			CY	30.9

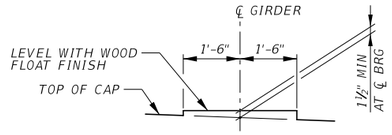
COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, 2017 AND INTERIM SPECIFICATIONS.
2. SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DETAILS AND NOTES NOT SHOWN.
3. SEE CONCRETE RIPRAP (CRR) STANDARD SHEET FOR RIPRAP ATTACHMENT DETAILS.
4. CALCULATED PRESTRESSED CONCRETE PILE FOUNDATION LOAD:
   ABUT 1 & 9 = 79 TONS/PILE.
5. SEE RAILING (SSTR) STANDARDS FOR RAIL ANCHORAGE IN WINGWALLS.

MATERIAL NOTES:

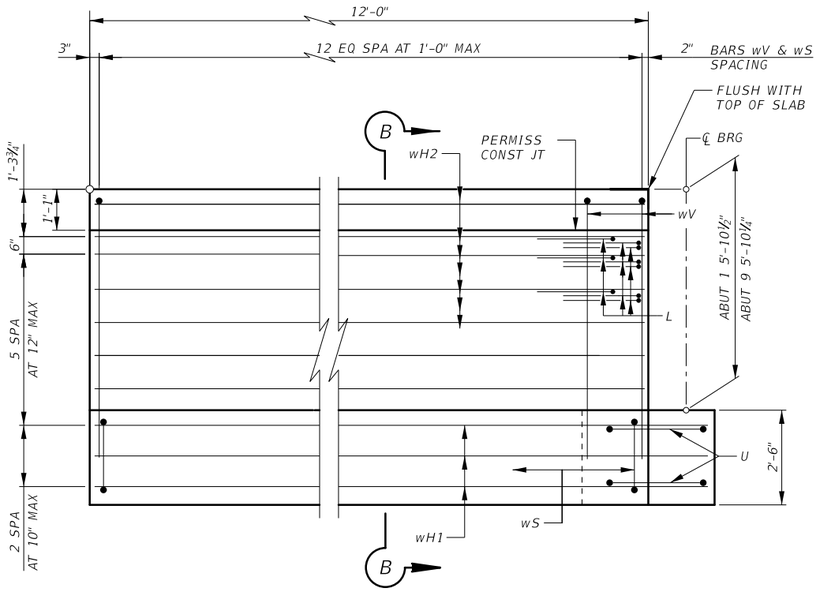
1. PROVIDE CLASS C CONCRETE (f'c = 3,600psi)
2. PROVIDE GRADE 60 REINFORCING STEEL.



BEARING SEAT DETAIL

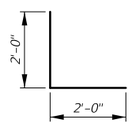
SCALE: NTS

(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING PAD.)

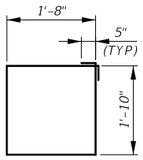


WINGWALL ELEVATION

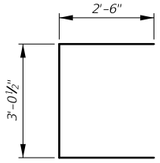
SCALE: ¼"=1'-0"



BARS L



BARS wS



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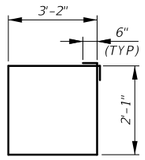
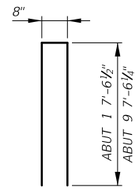


BARS S



BARS V & wV

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

ABUTMENT 1 & 9 DETAILS
NB SH 35 OVERPASS AT OAK LANE

SCALE: ¼" = 1'-0" SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	247

DATE: 4/23/2021 TIME: 3:48:36 AM
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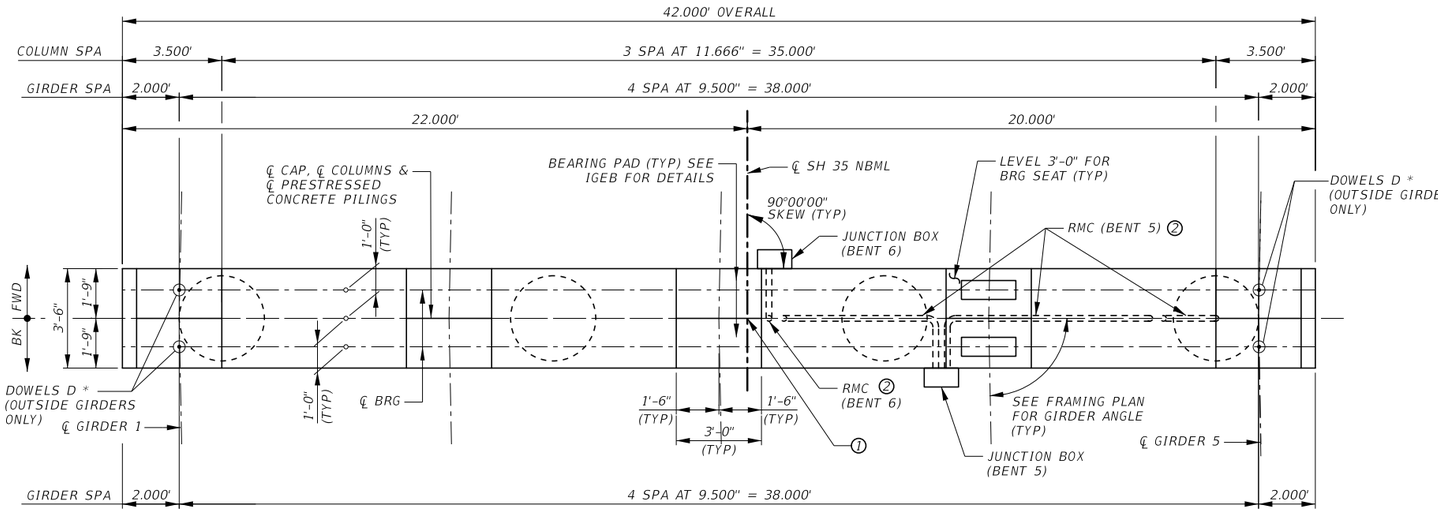
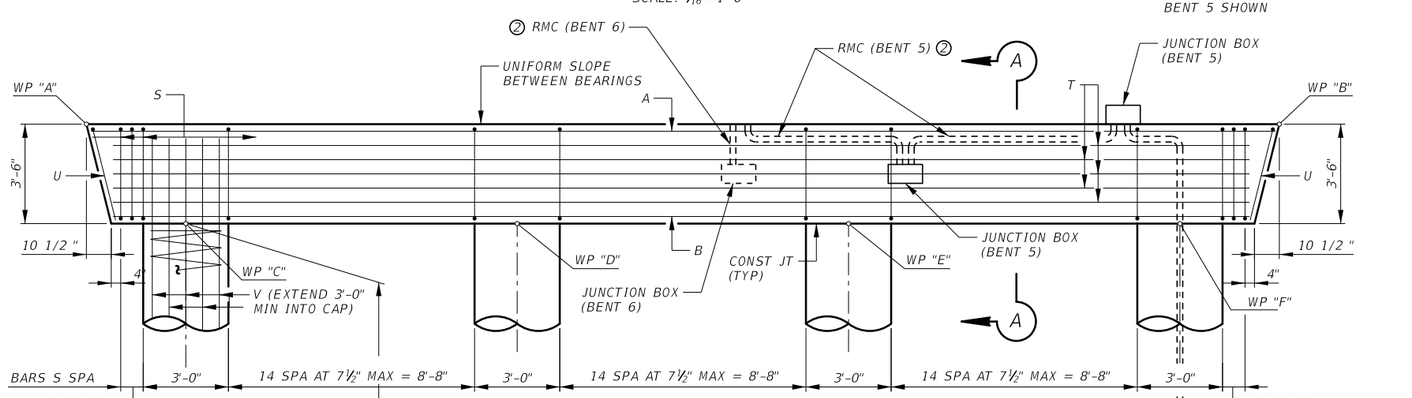


PLAN

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

* BENTS 4 AND 6 NO DOWELS
BENT 5 SHOWN



ELEVATION

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

② SEE ILLUMINATION PLANS FOR LOCATION OF UNDERPASS LIGHTING CONDUIT & RID (3)-17 FOR DETAILS (ILLUMINATION APPLIES TO BENTS 5 & 6 ONLY).

NOTES:

SEE SHEET 2 OF 2 FOR NOTES.

① ℄ BENT 2 STA 103+38.00
℄ BENT 3 STA 104+53.00
℄ BENT 4 STA 105+68.00
℄ BENT 5 STA 106+83.00
℄ BENT 6 STA 107+62.00
℄ BENT 7 STA 108+77.00
℄ BENT 8 STA 109+92.00

WORK POINT ELEVATIONS ①

BENT NO	WP "A"	WP "B"	WP "C"	WP "D"	WP "E"	WP "F"	WP "G"	WP "H"	WP "I"	WP "J"
2 NB	43.481	41.234	39.794	39.170	38.545	37.921	19.794	20.170	19.545	19.921
3 NB	44.449	42.202	40.762	40.137	39.513	38.889	20.762	20.137	20.513	19.889
4 NB	44.888	42.641	41.201	40.577	39.953	39.329	21.201	20.577	20.953	21.329
5 NB	44.799	42.552	41.112	40.488	39.864	39.240	23.112	22.488	22.864	22.240
6 NB	44.420	42.173	40.733	40.108	39.484	39.360	22.733	23.108	22.484	22.360
7 NB	43.430	41.183	39.743	39.119	38.495	37.871	20.743	21.119	21.495	21.871
8 NB	41.934	39.687	38.247	37.622	36.998	36.374	20.247	20.622	20.998	21.374

① WORK POINT ELEVATIONS TAKEN ALONG ℄ CAP & ℄ COLUMNS

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

BENTS 2 THRU 8 DETAILS
NB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	248

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SCALE: 5.3333 ft / in.

TABLE OF COLUMN QUANTITIES

BENT NO	COL NO	HEIGHT "H"	BARS "V" 10-#9 (PER COL)		BARS "Z" #4 (PER COL)		REINF STEEL	CL "C" CONC COLUMN	TOTAL REINF STEEL PER BENT	CL "C" CONC COLUMN PER BENT
			LENGTH	WEIGHT	LENGTH	WEIGHT				
		FT	FT-IN	LBS	FT-IN	LBS	LB	CY	LB	CY
2	1	20'-0"	23'-0"	782	636'-3"	425	1,207	5.24	4,611	19.9
2	2,3	19'-0"	22'-0"	748	604'-10"	405	1,153	4.97		
2	4	18'-0"	21'-0"	714	537'-5"	384	1,098	4.71		
3	1,2	20'-0"	23'-0"	782	636'-3"	425	1,207	5.24	4,720	20.5
3	3,4	19'-0"	22'-0"	748	604'-10"	405	1,153	4.97		
4	1,2	20'-0"	23'-0"	782	636'-3"	425	1,207	5.24	4,665	20.2
4	3	19'-0"	22'-0"	748	604'-10"	405	1,153	4.97		
4	4	18'-0"	21'-0"	714	573'-5"	384	1,098	4.71		
5	1,2	18'-0"	21'-0"	714	573'-5"	384	1,098	4.71	4,282	18.4
5	3,4	17'-0"	20'-0"	680	542'-0"	363	1,043	4.45		
6	1	18'-0"	21'-0"	714	573'-5"	384	1,098	4.71	4,227	18.1
6	2,3,4	17'-0"	20'-0"	680	542'-0"	363	1,043	4.45		
7	1	19'-0"	22'-0"	748	604'-10"	405	1,153	4.97	4,282	18.4
7	2	18'-0"	22'-0"	748	604'-10"	405	1,153	4.97		
7	3	17'-0"	20'-0"	680	542'-0"	363	1,043	4.45		
7	4	16'-0"	19'-0"	646	510'-7"	342	988	4.19		
8	1	18'-0"	21'-0"	714	573'-5"	384	1,098	4.71	4,062	17.3
8	2	17'-0"	20'-0"	680	542'-0"	363	1,043	4.45		
8	3	16'-0"	19'-0"	646	510'-7"	342	988	4.19		
8	4	15'-0"	18'-0"	612	479'-2"	321	933	3.93		

* QUANTITIES SHOWN ARE BASED ON "H" VALUE SHOWN. CONTRACTOR IS RESPONSIBLE FOR CALCULATING, THE ACTUAL COLUMN HEIGHTS BASED ON FIELD CONDITIONS. FOR EACH LINEAR FOOT VARIATION IN "H" VALUE, MAKE THE FOLLOWING ADJUSTMENTS PER BENT:

BARS V LENGTH 1'-0"
BARS Z LENGTH 31'-5"
REINFORCING STEEL 55 LB
CLASS "C" CONC (COL) 0.26 CY

TABLE OF CAP QUANTITIES
② BENTS 2, 3, 5, 7 & 8

BAR	NO	SIZE	LENGTH	WEIGHT
A	5	#11	41'-6"	1,103
B	5	#11	40'-0"	1,063
D	4	#9	1'-8"	23
S	51	#5	13'-8"	727
T	10	#5	40'-0"	418
U	2	#5	9'-8"	21
REINFORCING STEEL			LB	3,355
CL C CONC (CAP)			CY	19.0

② QUANTITIES SHOWN FOR ONE BENT CAP ONLY

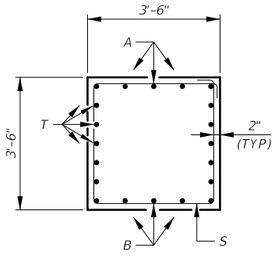
TABLE OF CAP QUANTITIES
② BENTS 4 & 6

BAR	NO	SIZE	LENGTH	WEIGHT
A	5	#11	41'-6"	1,103
B	5	#11	40'-0"	1,063
S	49	#5	13'-8"	727
T	10	#5	40'-0"	418
U	2	#5	9'-8"	21
REINFORCING STEEL			LB	3,332
CL C CONC (CAP)			CY	19.0

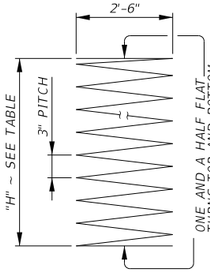
COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

GENERAL NOTES:

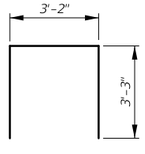
1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, 2017 AND INTERIM SPECIFICATIONS.
2. PROVIDE CLASS C CONCRETE STRENGTH f_c=3.600 psi.
3. PROVIDE GRADE 60 REINFORCING STEEL.
4. SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DEATAILS AND NOTES NOT SHOWN.
5. CALCULATED FOUNDATION LOAD:
   BENT 2 - 110 TONS/PILE
   BENT 3 - 111 TONS/PILE
   BENT 4 - 111 TONS/PILE
   BENT 5 - 101 TONS/PILE
   BENT 6 - 100 TONS/PILE
   BENT 7 - 109 TONS/PILE
   BENT 8 - 109 TONS/PILE



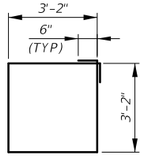
SECTION A-A
SCALE: ¼"=1'-0"



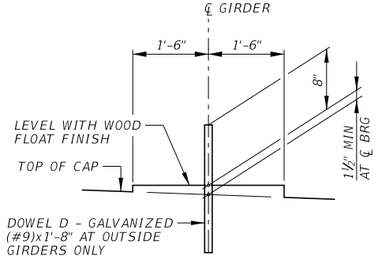
BARS Z



BARS U



BARS S



BEARING SEAT DETAIL
SCALE: NTS

(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING PAD.)

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

BENTS 2 THRU 8 DETAILS
NB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	249

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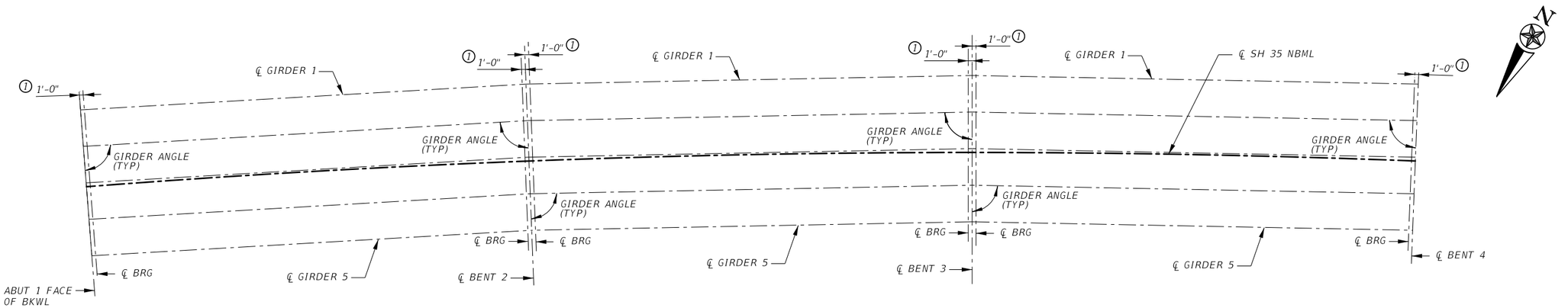


SPAN 1
Tx54 GIRDER

SPAN 2
Tx54 GIRDER

SPAN 3
Tx54 GIRDER

PLAN
SCALE: NTS

1. SEE IGEB FOR ORIENTATION OF DIMENSION TO CENTERLINE BEARING.
2. GIRDER LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

BENT REPORT

ABUT NO. 1 (S 33 17 52.55 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

			BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 1	GRD	1	0.000	88 53 33
	GRD	2	9.500	88 53 33
	GRD	3	9.500	88 53 33
	GRD	4	9.500	88 53 33
	GRD	5	9.500	88 53 33
	TOTAL		38.000	

BENT NO. 2 (S 31 4 59.29 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

			BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 1	GRD	1	0.000	88 53 33
	GRD	2	9.500	88 53 33
	GRD	3	9.500	88 53 33
	GRD	4	9.500	88 53 33
	GRD	5	9.500	88 53 33
	TOTAL		38.000	
SPAN 2	GRD	1	0.000	88 53 33
	GRD	2	9.500	88 53 33
	GRD	3	9.500	88 53 33
	GRD	4	9.500	88 53 33
	GRD	5	9.500	88 53 33
	TOTAL		38.000	

BENT NO. 3 (S 28 52 6.03 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

			BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 2	GRD	1	0.000	88 53 33
	GRD	2	9.500	88 53 33
	GRD	3	9.500	88 53 33
	GRD	4	9.500	88 53 33
	GRD	5	9.500	88 53 33
	TOTAL		38.000	
SPAN 3	GRD	1	0.000	88 53 33
	GRD	2	9.500	88 53 33
	GRD	3	9.500	88 53 33
	GRD	4	9.500	88 53 33
	GRD	5	9.500	88 53 33
	TOTAL		38.000	

BENT NO. 4 (S 26 39 12.76 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

			BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 3	GRD	1	0.000	88 53 33
	GRD	2	9.500	88 53 33
	GRD	3	9.500	88 53 33
	GRD	4	9.500	88 53 33
	GRD	5	9.500	88 53 33
	TOTAL		38.000	

GIRDER REPORT

GIRDER REPORT, SPAN 1

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE BOT. BM. FLG. (2)	
GIRDER 1	115.766	113.766	115.28	0.0129
GIRDER 2	115.399	113.399	114.91	0.0129
GIRDER 3	115.031	113.031	114.54	0.0130
GIRDER 4	114.664	112.664	114.17	0.0130
GIRDER 5	114.297	112.297	113.81	0.0130

GIRDER REPORT, SPAN 2

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE BOT. BM. FLG. (2)	
GIRDER 1	115.766	113.766	115.27	0.0083
GIRDER 2	115.399	113.399	114.90	0.0083
GIRDER 3	115.031	113.031	114.54	0.0084
GIRDER 4	114.664	112.664	114.17	0.0084
GIRDER 5	114.297	112.297	113.80	0.0084

GIRDER REPORT, SPAN 3

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE BOT. BM. FLG. (2)	
GIRDER 1	115.766	113.766	115.27	0.0038
GIRDER 2	115.399	113.399	114.90	0.0038
GIRDER 3	115.031	113.031	114.53	0.0038
GIRDER 4	114.664	112.664	114.17	0.0038
GIRDER 5	114.297	112.297	113.80	0.0038

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

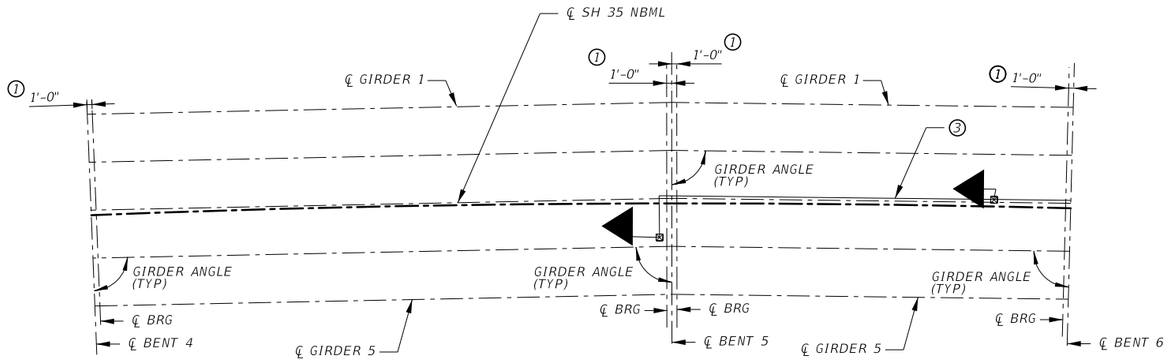
IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

FRAMING PLAN
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 1 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	250



SPAN 4
Tx54 GIRDER

SPAN 5
Tx54 GIRDER

PLAN
SCALE: NTS

(1) SEE IGEB FOR ORIENTATION OF DIMENSION TO CENTERLINE BEARING.

(2) GIRDER LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

(3) CONDUIT ATTACHED TO GIRDER IN SPAN 5 ONLY. SEE ILLUMINATION PLANS FOR LOCATION OF UNDERPASS LIGHTING CONDUIT AND RID(3)-17 STANDARD FOR DETAILS.

BENT REPORT

BENT NO. 4 (S 26 39 12.76 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 4	GRD 1	0.000	88 53 33
	GRD 2	9.500	88 53 33
	GRD 3	9.500	88 53 33
	GRD 4	9.500	88 53 33
	GRD 5	9.500	88 53 33
	TOTAL	38.000	

BENT NO. 5 (S 24 26 19.50 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 4	GRD 1	0.000	88 53 33
	GRD 2	9.500	88 53 33
	GRD 3	9.500	88 53 33
	GRD 4	9.500	88 53 33
	GRD 5	9.500	88 53 33
	TOTAL	38.000	
SPAN 5	GRD 1	0.000	89 14 21
	GRD 2	9.500	89 14 21
	GRD 3	9.500	89 14 21
	GRD 4	9.500	89 14 21
	GRD 5	9.500	89 14 21
	TOTAL	38.000	

BENT NO. 6 (S 22 55 2.23 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 5	GRD 1	0.000	89 14 21
	GRD 2	9.500	89 14 21
	GRD 3	9.500	89 14 21
	GRD 4	9.500	89 14 21
	GRD 5	9.500	89 14 21
	TOTAL	38.000	

GIRDER REPORT

GIRDER REPORT, SPAN 4

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE (2) BOT. BM. FLG.	
GIRDER 1	115.766	113.766	115.27	-0.0008
GIRDER 2	115.399	113.399	114.90	-0.0008
GIRDER 3	115.031	113.031	114.53	-0.0008
GIRDER 4	114.664	112.664	114.16	-0.0008
GIRDER 5	114.297	112.297	113.80	-0.0008

GIRDER REPORT, SPAN 5

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE (2) BOT. BM. FLG.	
GIRDER 1	79.529	77.529	79.03	-0.0047
GIRDER 2	79.276	77.276	78.78	-0.0047
GIRDER 3	79.024	77.024	78.53	-0.0047
GIRDER 4	78.772	76.772	78.27	-0.0047
GIRDER 5	78.520	76.520	78.02	-0.0047

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

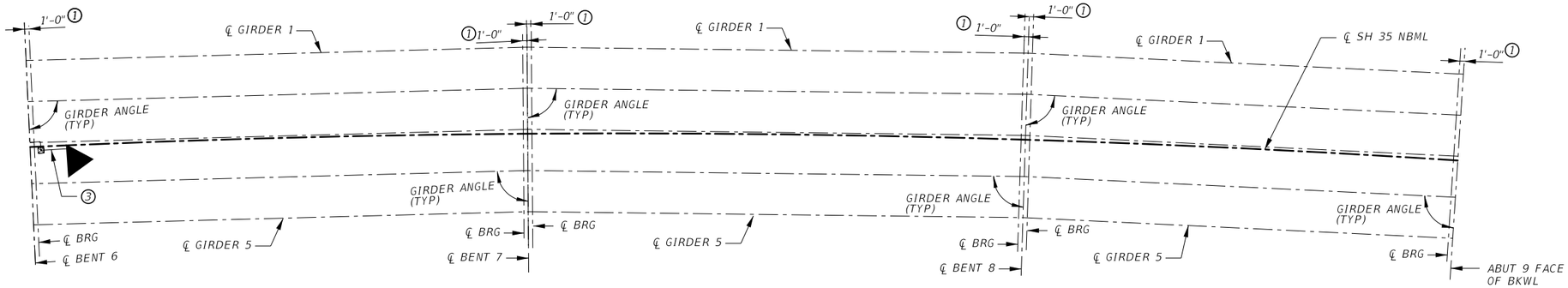
IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

FRAMING PLAN
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 2 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	251



SPAN 6
Tx54 GIRDER

SPAN 7
Tx54 GIRDER

SPAN 8
Tx54 GIRDER

PLAN
SCALE: NTS

① SEE IGEB FOR ORIENTATION OF DIMENSION TO CENTERLINE BEARING.

② GIRDER LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

③ CONDUIT ATTACHED TO GIRDER IN SPAN 5 ONLY. SEE ILLUMINATION PLANS FOR LOCATION OF UNDERPASS LIGHTING CONDUIT AND RID(3)-17 STANDARD FOR DETAILS.

BENT REPORT

BENT NO. 6 (S 22 55 2.23 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 6	GRD 1	0.000	88	53	33
	GRD 2	9.500	88	53	33
	GRD 3	9.500	88	53	33
	GRD 4	9.500	88	53	33
	GRD 5	9.500	88	53	33
	TOTAL	38.000			

BENT NO. 7 (S 20 42 8.96 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 6	GRD 1	0.000	88	53	33
	GRD 2	9.500	88	53	33
	GRD 3	9.500	88	53	33
	GRD 4	9.500	88	53	33
	GRD 5	9.500	88	53	33
	TOTAL	38.000			
SPAN 7	GRD 1	0.000	88	53	33
	GRD 2	9.500	88	53	33
	GRD 3	9.500	88	53	33
	GRD 4	9.500	88	53	33
	GRD 5	9.500	88	53	33
	TOTAL	38.000			

BENT NO. 8 (S 18 29 15.70 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 7	GRD 1	0.000	88	53	33
	GRD 2	9.500	88	53	33
	GRD 3	9.500	88	53	33
	GRD 4	9.500	88	53	33
	GRD 5	9.500	88	53	33
	TOTAL	38.000			
SPAN 8	GRD 1	0.000	89	2	13
	GRD 2	9.500	89	2	13
	GRD 3	9.500	89	2	13
	GRD 4	9.500	89	2	13
	GRD 5	9.500	89	2	13
	TOTAL	38.000			

ABUT NO. 9 (S 16 33 42.43 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 20.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 8	GRD 1	0.000	89	2	13
	GRD 2	9.500	89	2	13
	GRD 3	9.500	89	2	13
	GRD 4	9.500	89	2	13
	GRD 5	9.500	89	2	13
	TOTAL	38.000			

GIRDER REPORT

GIRDER REPORT, SPAN 6

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE ② BOT. BM. FLG.	
GIRDER 1	115.766	113.766	115.27	-0.0085
GIRDER 2	115.399	113.399	114.90	-0.0085
GIRDER 3	115.031	113.031	114.54	-0.0086
GIRDER 4	114.664	112.664	114.17	-0.0086
GIRDER 5	114.297	112.297	113.80	-0.0086

GIRDER REPORT, SPAN 7

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE ② BOT. BM. FLG.	
GIRDER 1	115.766	113.766	115.28	-0.0131
GIRDER 2	115.399	113.399	114.91	-0.0131
GIRDER 3	115.031	113.031	114.54	-0.0132
GIRDER 4	114.664	112.664	114.17	-0.0132
GIRDER 5	114.297	112.297	113.81	-0.0132

GIRDER REPORT, SPAN 8

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE ② BOT. BM. FLG.	
GIRDER 1	100.668	98.667	100.18	-0.0173
GIRDER 2	100.348	98.348	99.86	-0.0174
GIRDER 3	100.029	98.029	99.54	-0.0174
GIRDER 4	99.710	97.709	99.22	-0.0175
GIRDER 5	99.390	97.390	98.91	-0.0176

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

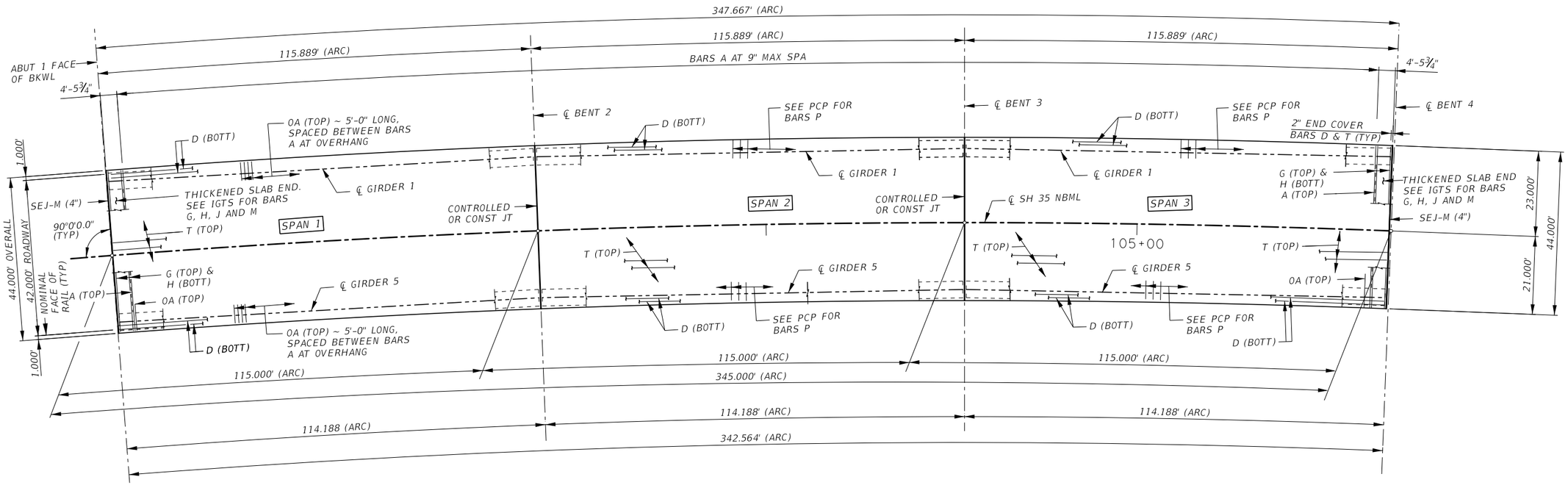
SH 35 AT OAK LANE

FRAMING PLAN
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 3 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	252

SCALE: 30.0000 sf / in.



PLAN
SCALE: 1"=30'

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, 2017 AND INTERIM SPECIFICATIONS.
2. SEE PRESTRESSED CONCRETE PANELS (PCP) AND PRECAST CONCRETE PANEL FABRICATION DETAILS (PCP-FAB) STANDARD SHEETS FOR PANEL DETAILS NOT SHOWN.
3. SEE THICKENED SLAB END DETAILS (IGTS) STANDARD SHEET FOR THICKENED SLAB END DETAILS AND QUANTITY ADJUSTMENTS.
4. SEE MISCELLANEOUS SLAB DETAILS (IGMS) STANDARD SHEET FOR MISCELLANEOUS SLAB DETAILS NOT SHOWN.
5. SEE RAILING (SSTR) STANDARD SHEETS FOR RAIL ANCHORAGE IN SLAB.
6. SEE PERMANENT METAL DECK FORMS (PMDF) STANDARD SHEET FOR DETAILS AND QUANTITY ADJUSTMENTS IF THIS OPTION IS USED.
7. COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

345.00' PRES CONC GIRDER UNIT 1
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	253

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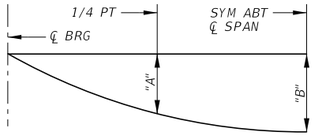


DEAD LOAD DEFLECTION DIAGRAM

NOTE
DEFLECTIONS SHOWN ARE DUE TO PRESTRESSED CONCRETE PANELS AND CAST-IN-PLACE SLAB ONLY. (Ec =5,000 ksi) ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.

SPAN	GIRDER NO	"A" FT	"B" FT
1	1	0.131	0.183
	2	0.149	0.209
	3	0.147	0.206
	4	0.145	0.203
	5	0.110	0.154
2	1	0.131	0.183
	2	0.149	0.209
	3	0.147	0.206
	4	0.145	0.203
	5	0.110	0.154
3	1	0.131	0.183
	2	0.149	0.209
	3	0.147	0.206
	4	0.145	0.203
	5	0.110	0.154

BAR TABLE

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

TABLE OF SECTION DEPTHS

SPAN	GIRDER NO	"X" AT ℄ BRG	③"Y" AT ℄ BRG	"Z" AT ℄ SPAN
1	1	12¼"	5'-6¼"	10$^{3}/_{32}$"
	2-4	12¼"	5'-6¼"	10$^{5}/_{32}$"
	5	12¼"	5'-6¼"	10¼"
2	1	12¼"	5'-6¼"	10$^{3}/_{32}$"
	2-4	12¼"	5'-6¼"	10$^{5}/_{32}$"
	5	12¼"	5'-6¼"	10¼"
3	1	12¼"	5'-6¼"	10$^{3}/_{32}$"
	2-4	12¼"	5'-6¼"	10$^{5}/_{32}$"
	5	12¼"	5'-6¼"	10¼"

③ "Y" VALUE SHOWN IS BASED ON THEORETICAL GIRDER CAMBER, DEAD LOAD DEFLECTION FROM AN 8½" CONCRETE SLAB. A CONSTANT ROADWAY GRADE, AND USING PRECAST CONCRETE PANELS (PCP). THE CONTRACTOR WILL AJUST THIS VALUE AS NECESSARY FROM ANY ROADWAY VERTICAL CURVE.

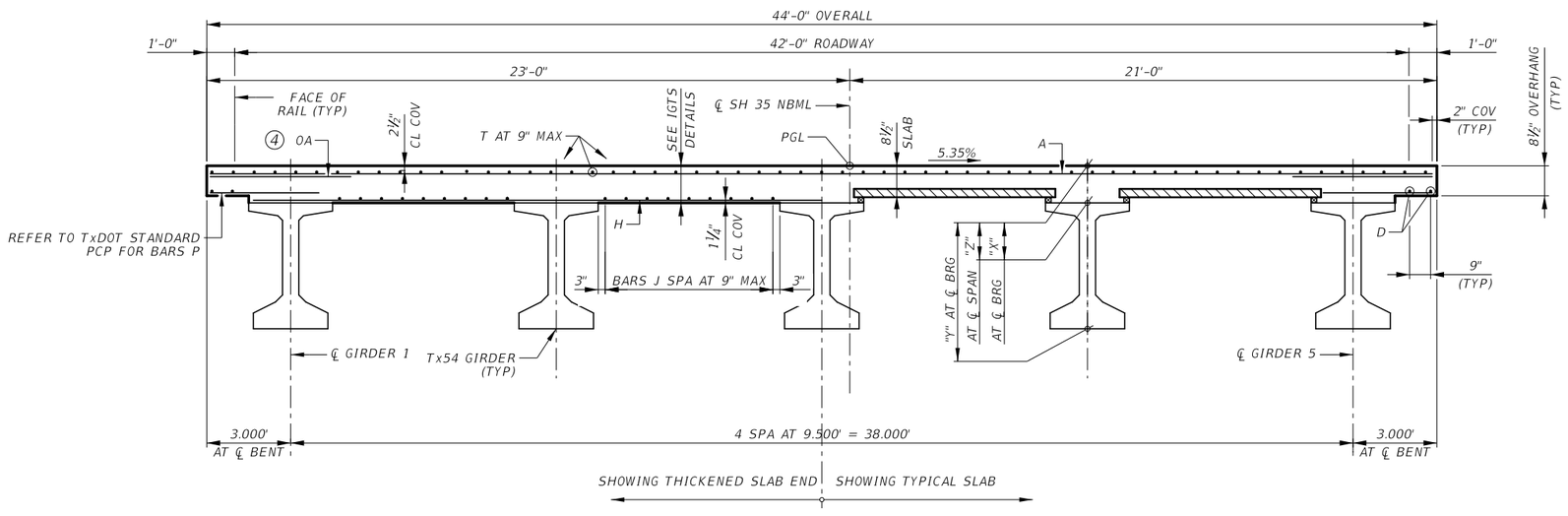
④ BARS OA SHALL EXTEND 2'-0" MIN PAST EXTERIOR GIRDER CENTERLINE. EXCEPT AS NOTED. SPACE 9" FOR TYPICAL SLAB AND 7" FOR THICKENED SLAB END.

TABLE OF ESTIMATED QUANTITIES

SPAN	REINF CONCRETE SLAB	① PRESTR CONCRETE GIRDERS (TY Tx54)	② REINF STEEL
	SF	LF	LB
SPAN 1	5,062	572.71	11,643
SPAN 2	5,062	572.68	11,643
SPAN 3	5,062	572.67	11,643
TOTAL	15,186	1,718.06	34,929

① LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

② REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3 LBS/SF.



TYPICAL RADIAL SECTION

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

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

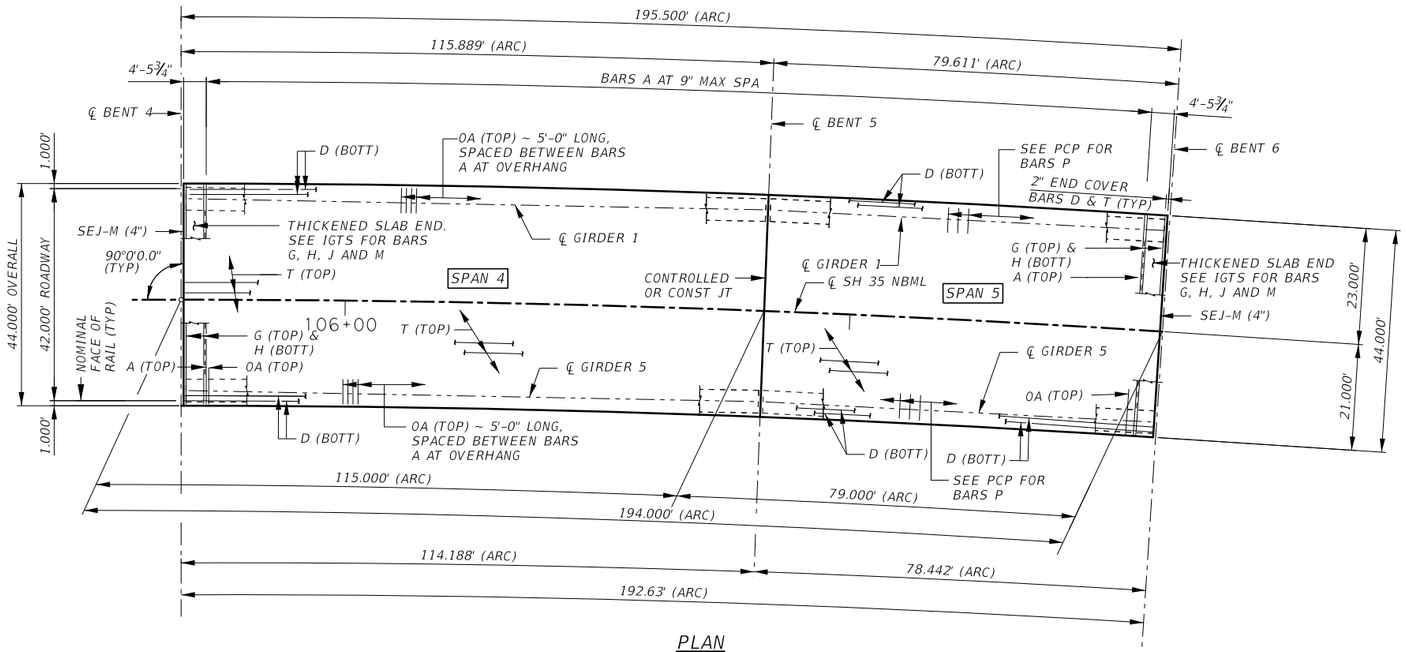
SH 35 AT OAK LANE

345.00' PRES CONC GIRDER UNIT 1
NB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	254

SCALE: 30.0000 sf / in.



PLAN
SCALE: 1"=30'

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. 8TH EDITION, 2017 AND INTERIM SPECIFICATIONS.
2. SEE PRESTRESSED CONCRETE PANELS (PCP) AND PRECAST CONCRETE PANEL FABRICATION DETAILS (PCP-FAB) STANDARD SHEETS FOR PANEL DETAILS NOT SHOWN.
3. SEE THICKENED SLAB END DETAILS (IGTS) STANDARD SHEET FOR THICKENED SLAB END DETAILS AND QUANTITY ADJUSTMENTS.
4. SEE MISCELLANEOUS SLAB DETAILS (IGMS) STANDARD SHEET FOR MISCELLANEOUS SLAB DETAILS NOT SHOWN.
5. SEE RAILING (SSTR) STANDARD SHEETS FOR RAIL ANCHORAGE IN SLAB.
6. SEE PERMANENT METAL DECK FORMS (PMDF) STANDARD SHEET FOR DETAILS AND QUANTITY ADJUSTMENTS IF THIS OPTION IS USED.
7. COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

194.00' PRES CONC GIRDER UNIT 2
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	255

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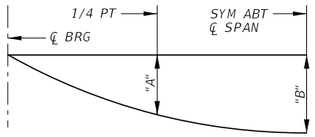
SCALE: 5.3333 sf / in.



DEAD LOAD DEFLECTION DIAGRAM

NOTE
DEFLECTIONS SHOWN ARE DUE TO PRESTRESSED CONCRETE PANELS AND CAST-IN-PLACE SLAB ONLY. (Ec =5,000 ksi) ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.

SPAN	GIRDER NO	"A" FT	"B" FT
4	1	0.131	0.183
	2	0.149	0.209
	3	0.147	0.206
	4	0.145	0.203
	5	0.110	0.154
5	1	0.028	0.038
	2	0.033	0.045
	3	0.032	0.044
	4	0.032	0.044
	5	0.025	0.034

BAR TABLE

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

TABLE OF SECTION DEPTHS

SPAN	GIRDER NO	"X" AT ℄ BRG	③ "Y" AT ℄ BRG	"Z" AT ℄ SPAN
4	1	12¼"	5'-6¼"	10$^{3}/_{32}$"
	2-4	12¼"	5'-6¼"	10$^{3}/_{32}$"
	5	12¼"	5'-6¼"	10¼"
5	1-5	12"	5'-6"	10$^{3}/_{32}$"

③ "Y" VALUE SHOWN IS BASED ON THEORETICAL GIRDER CAMBER, DEAD LOAD DEFLECTION FROM AN 8½" CONCRETE SLAB. A CONSTANT ROADWAY GRADE, AND USING PRECAST CONCRETE PANELS (PCP). THE CONTRACTOR WILL AJUST THIS VALUE AS NECESSARY FROM ANY ROADWAY VERTICAL CURVE.

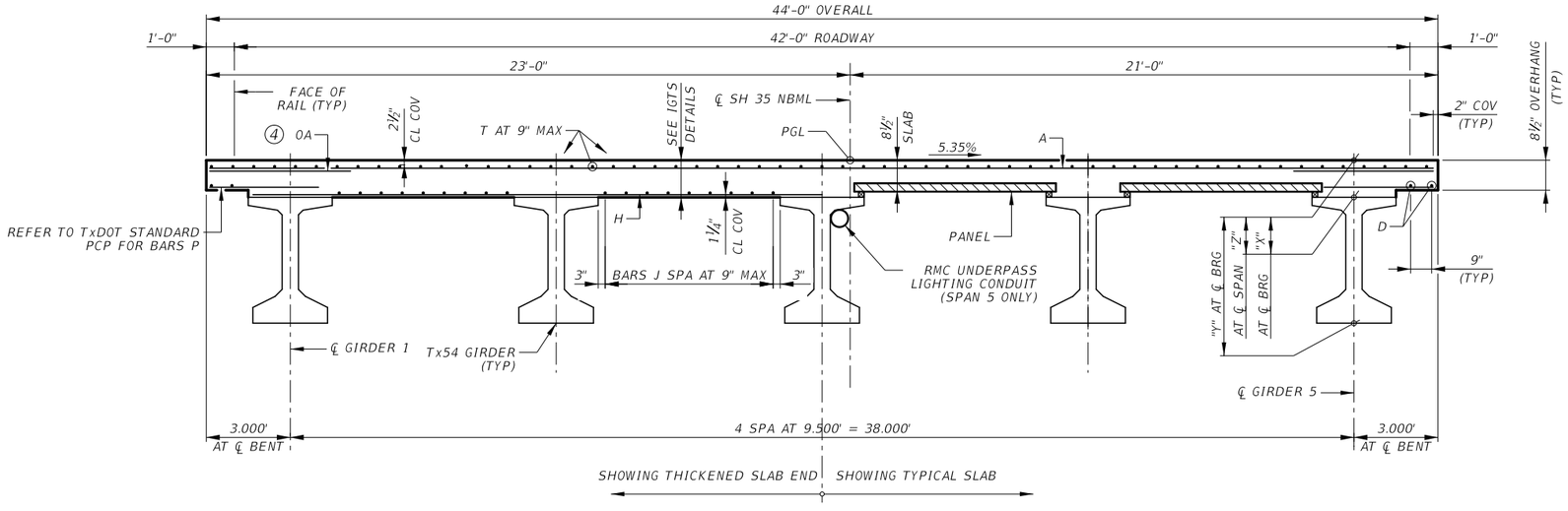
④ BARS OA SHALL EXTEND 2'-0" MIN PAST EXTERIOR GIRDER CENTERLINE. EXCEPT AS NOTED. SPACE 9" FOR TYPICAL SLAB AND 7" FOR THICKENED SLAB END.

TABLE OF ESTIMATED QUANTITIES

SPAN	REINF CONCRETE SLAB	① PRESTR CONCRETE GIRDERS (TY Tx54)	② REINF STEEL
	SF	LF	LB
SPAN 4	5,062	572.66	11,643
SPAN 5	3,477	392.63	7,998
TOTAL	8,539	965.29	19,641

① LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

② REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3 LBS/SF.



TYPICAL RADIAL SECTION

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

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

194.00' PRES CONC GIRDER UNIT 2
NB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	256

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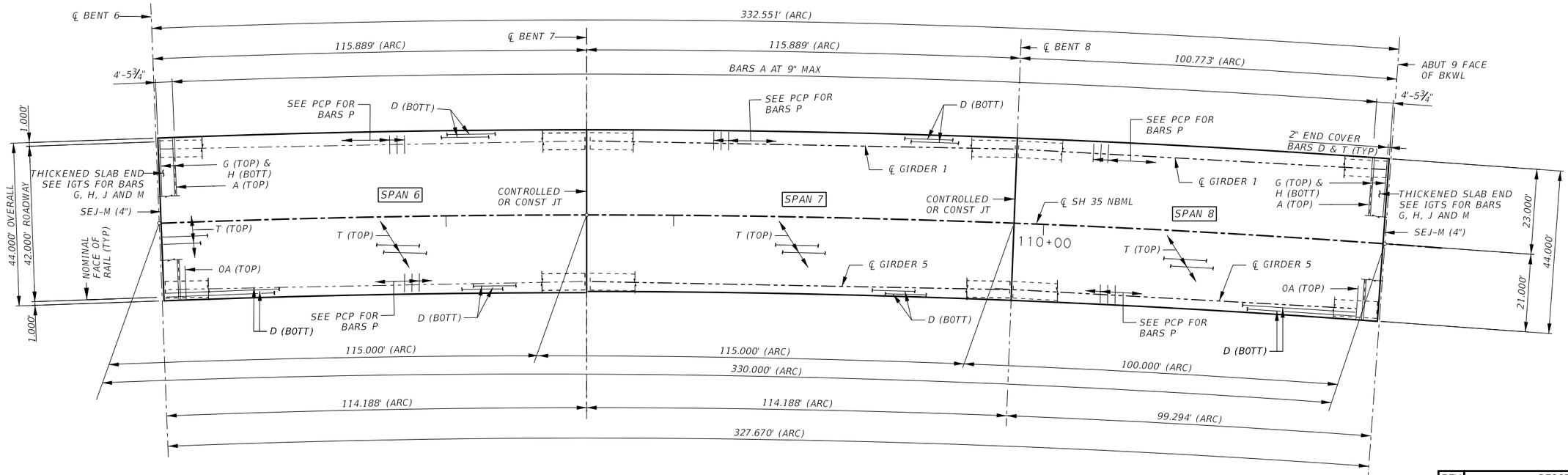

PLAN
SCALE: 1"=30'

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. 8TH EDITION, 2017 AND INTERIM SPECIFICATIONS.
2. SEE PRESTRESSED CONCRETE PANELS (PCP) AND PRECAST CONCRETE PANEL FABRICATION DETAILS (PCP-FAB) STANDARD SHEETS FOR PANEL DETAILS NOT SHOWN.
3. SEE THICKENED SLAB END DETAILS (IGTS) STANDARD SHEET FOR THICKENED SLAB END DETAILS AND QUANTITY ADJUSTMENTS.
4. SEE MISCELLANEOUS SLAB DETAILS (IGMS) STANDARD SHEET FOR MISCELLANEOUS SLAB DETAILS NOT SHOWN.
5. SEE RAILING (SSTR) STANDARD SHEETS FOR RAIL ANCHORAGE IN SLAB.
6. SEE PERMANENT METAL DECK FORMS (PMDF) STANDARD SHEET FOR DETAILS AND QUANTITY ADJUSTMENTS IF THIS OPTION IS USED.
7. COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
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LICENSED PROFESSIONAL ENGINEER
4/23/2021

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IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

330.00' PRES CONC GIRDER UNIT 3
NB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	257

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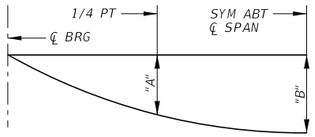
SCALE: 5.3333 sf / in.



DEAD LOAD DEFLECTION DIAGRAM

NOTE
DEFLECTIONS SHOWN ARE DUE TO PRESTRESSED CONCRETE PANELS AND CAST-IN-PLACE SLAB ONLY. (Ec =5,000 ksi) ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.

SPAN	GIRDER NO	"A" FT	"B" FT
6	1	0.131	0.183
	2	0.149	0.209
	3	0.147	0.206
	4	0.145	0.203
	5	0.110	0.154
7	1	0.131	0.183
	2	0.149	0.209
	3	0.147	0.206
	4	0.145	0.203
	5	0.110	0.154
8	1	0.073	0.102
	2	0.085	0.118
	3	0.084	0.117
	4	0.082	0.115
	5	0.064	0.089

BAR TABLE

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

TABLE OF SECTION DEPTHS

SPAN	GIRDER NO	"X" AT ℄ BRG	③ "Y" AT ℄ BRG	"Z" AT ℄ SPAN
6	1	12¼"	5'-6¼"	10$\frac{3}{32}$"
	2-4	12¼"	5'-6¼"	10$\frac{3}{32}$"
	5	12¼"	5'-6¼"	10¼"
7	1	12¼"	5'-6¼"	10$\frac{3}{32}$"
	2-4	12¼"	5'-6¼"	10$\frac{3}{32}$"
	5	12¼"	5'-6¼"	10¼"
8	1 & 5	12"	5'-6"	10½"
	2-4	12"	5'-6"	10$\frac{3}{4}$"

③ "Y" VALUE SHOWN IS BASED ON THEORETICAL GIRDER CAMBER, DEAD LOAD DEFLECTION FROM AN 8½" CONCRETE SLAB. A CONSTANT ROADWAY GRADE, AND USING PRECAST CONCRETE PANELS (PCP). THE CONTRACTOR WILL AJUST THIS VALUE AS NECESSARY FROM ANY ROADWAY VERTICAL CURVE.

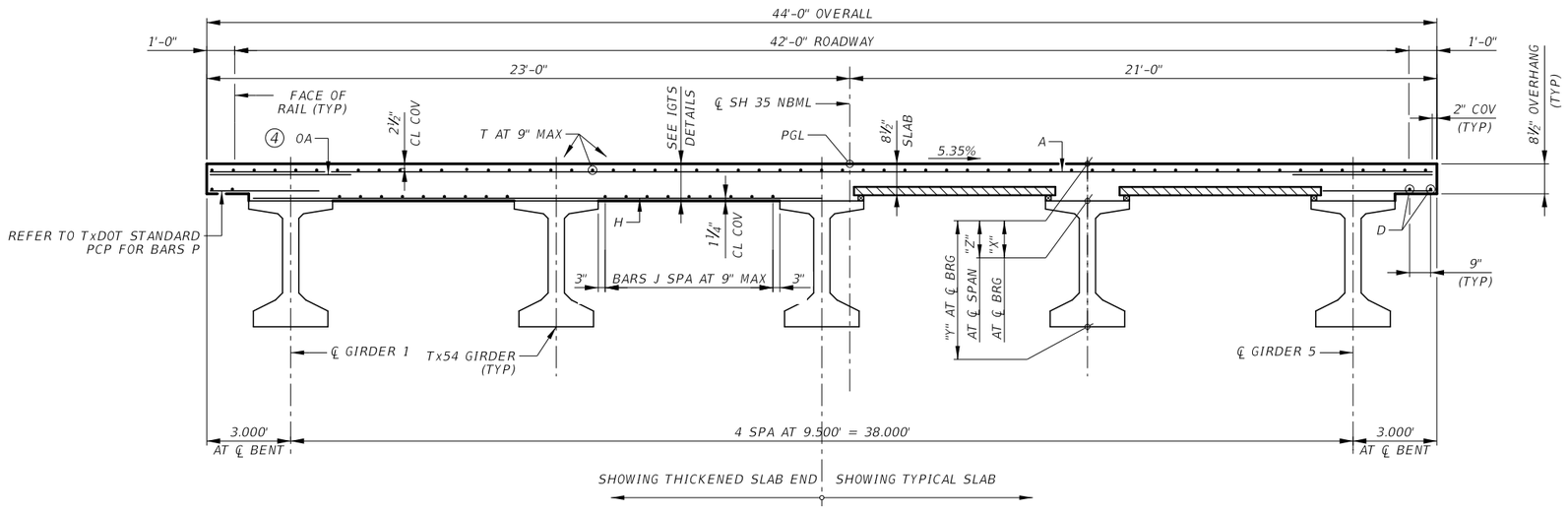
④ BARS OA SHALL EXTEND 2'-0" MIN PAST EXTERIOR GIRDER CENTERLINE. EXCEPT AS NOTED. SPACE 9" FOR TYPICAL SLAB AND 7" FOR THICKENED SLAB END.

TABLE OF ESTIMATED QUANTITIES

SPAN	REINF CONCRETE SLAB	① PRESTR CONCRETE GIRDERS (TY Tx54)	② REINF STEEL
	SF	LF	LB
SPAN 6	5,062	572.68	11,643
SPAN 7	5,062	572.71	11,643
SPAN 8	4,401	497.71	10,123
TOTAL	14,525	1,643.10	33,409

① LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

② REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3 LBS/SF.



TYPICAL RADIAL SECTION

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

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

330.00' PRES CONC GIRDER UNIT 3
NB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	258

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DATE: DATE TIME
FILE: DOCUMENT NAME

STRUCTURE	DESIGNED GIRDERS									DEPRESSED STRAND PATTERN		CONCRETE		OPTIONAL DESIGN				
	SPAN NO.	GIRDER NO.	GIRDER TYPE	PRESTRESSING STRANDS						NO.	TO END (in)	RELEASE STRGTH (1) f'ci (ksi)	MINIMUM 28 DAY COMP STRGTH f'c (ksi)	DESIGN LOAD COMP STRESS (TOP ℄) (SERVICE I) fct(ksi)	DESIGN LOAD TENSILE STRESS (BOTT ℄) (SERVICE III) fcb(ksi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (kip-ft)	LIVE LOAD DISTRIBUTION FACTOR (2)	
				NON-STD STRAND PATTERN	TOTAL NO.	SIZE (in)	STRGTH fpu (ksi)	"e" ℄ (in)	"e" END (in)								Moment	Shear
NBML	1-4, 6, 7	ALL	Tx54		44	0.6	270	18.83	11.92	8	46.5	5.700	6.800	4.367	-4.333	8518	0.711	0.918
	5, 8	ALL	Tx54		32	0.6	270	19.63	13.26	6	40.5	4.500	5.100	3.323	-3.372	6814	0.738	0.918
SBML	1-4, 6, 7	ALL	Tx54		40	0.6	270	19.11	13.71	6	42.5	5.500	6.400	4.106	-4.092	8184	0.715	0.849
	5, 8	ALL	Tx54		28	0.6	270	20.01	14.29	4	44.5	4.000	5.000	2.689	-2.875	6070	0.875	1.040

NON-STANDARD STRAND PATTERNS

PATTERN	STRAND ARRANGEMENT AT ℄ OF GIRDER

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

Compression = 0.65 f'ci

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

Optional designs must likewise conform.

(2) Portion of full HL93.

DESIGN NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

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

Prestress losses for the designed girders have been calculated for a relative humidity of 60 percent. Optional designs must likewise conform.

FABRICATION NOTES:

Provide Class H concrete.

Provide Grade 60 reinforcing steel bars.

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

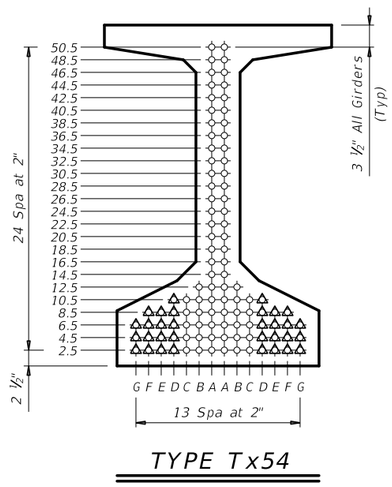
Strand debonding must comply with Item 424.4.2.2.2.4. Full-length debonded strands are only permitted in positions marked Δ. Double wrap full-length debonded strands in outer most position of each row.

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

Seal cracks in girder ends exceeding 0.005" in width as directed by the Engineer. The fabricator is permitted to decrease the spacing of Bars R and S by providing additional bars to help limit crack width provided the decreased spacing results in no less than 1" clear between bars. The fabricator must take an approved corrective action if cracks greater than 0.005" form on a repetitive basis.

DEPRESSED STRAND DESIGNS:

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



TYPE Tx54

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/29/2021

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

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

IGND

FILE: SH35_072_4-BRDG_221.dgn	DN: BA	CK: EGJ	DW: BQ	CK: EGJ
©TxDOT August 2017	CONT	SECT	JOB	HIGHWAY
REVISIONS 10-19: Modified for depressed strands only.	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		259

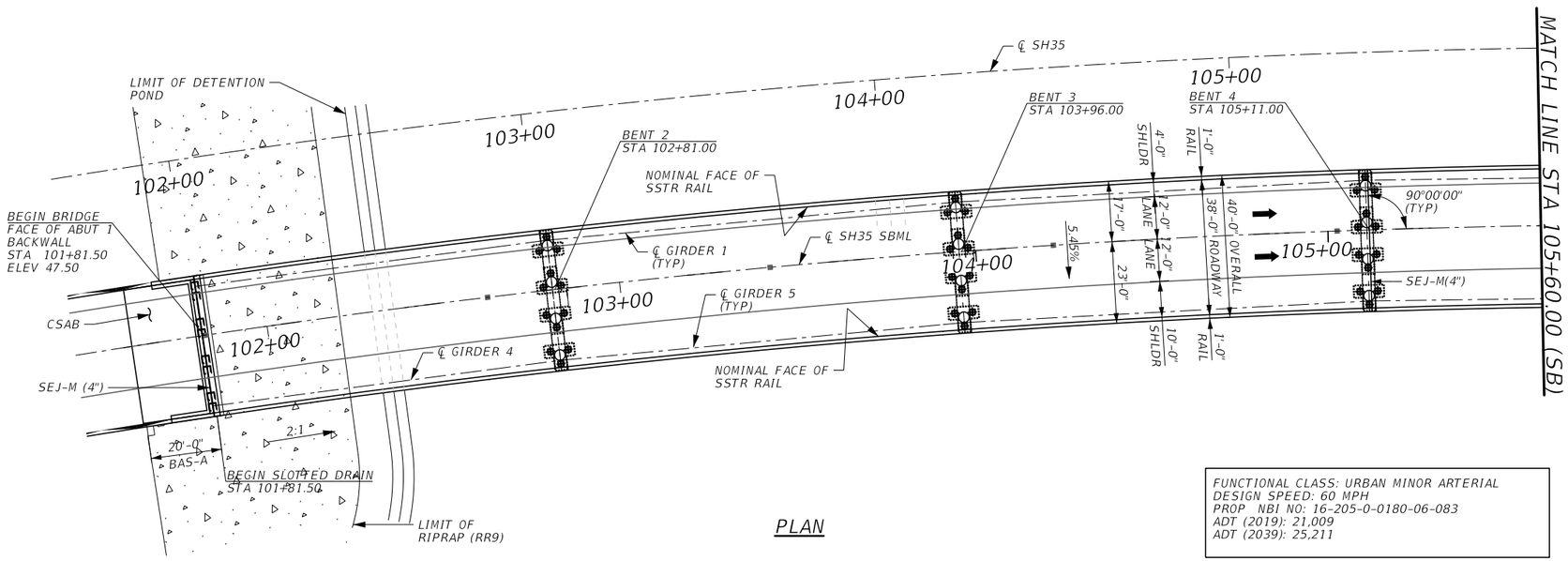
SCALE: 40.0000 ft / in.

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:

ABUT 1 ~ S 33°18'18" E
BENT 2 ~ S 31°19'20" E
BENT 3 ~ S 29°01'49" E
BENT 4 ~ S 26°44'19" E

HORIZONTAL CURVE DATA

PI STA = 117+59.20
DELTA = 87°39'49.61" RT
D = 1°59'34.43"
T = 2,760.10
L = 4,398.81
R = 2,875.00
PC STA = 89+99.10
PT STA = 133+97.91
BACK BRNG = S 33°07'51.15" W
AHD BRNG = N 59°12'19.24" W



PLAN

FUNCTIONAL CLASS: URBAN MINOR ARTERIAL
DESIGN SPEED: 60 MPH
PROP NBI NO: 16-205-0-0180-06-083
ADT (2019): 21,009
ADT (2039): 25,211

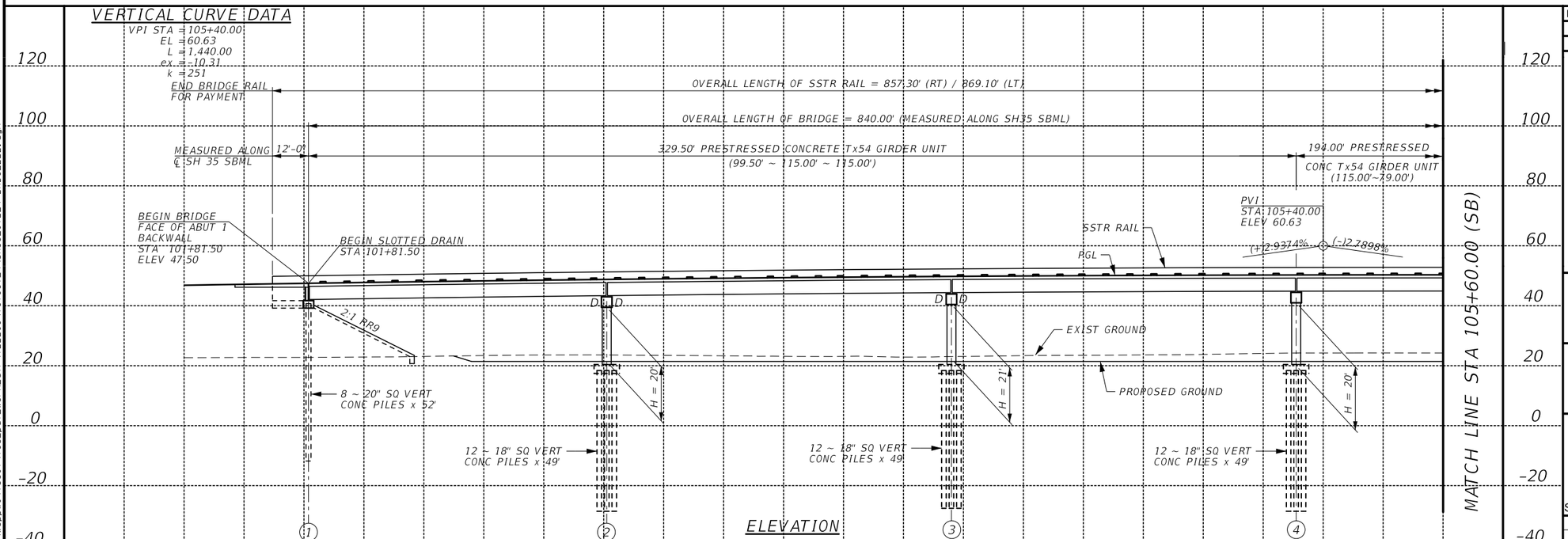
0' 20' 40'
SCALE IN FEET

GENERAL NOTES:

1. DESIGNED ACCORDING TO 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, AND INTERIM SPECIFICATIONS.
2. CONTRACTOR MUST FIELD VERIFY LOCATIONS OF ALL UTILITIES PRIOR TO CONSTRUCTION, EXCAVATION AND DRILLING.
3. "D" DENOTES DOWELLED END CONDITION. SEE INTERIOR BENT DETAILS FOR LOCATION.
4. "H" VALUES ARE ESTIMATED AVERAGE COLUMN HEIGHTS. CONTRACTOR IS RESPONSIBLE TO CALCULATE COLUMN HEIGHTS BASED ON FIELD CONDITIONS.
5. SEE TxDOT STANDARD BMCS FOR BRIDGE MOUNTED CLEARANCE SIGN DETAILS.
6. SEE ILLUMINATION PLANS FOR ILLUMINATION DETAILS.
7. SEE FOUNDATION LAYOUTS AND UTILITY PLANS FOR EXISTING AND PROPOSED UTILITY LOCATIONS.
8. SAW-CUT GROOVING OF THE BRIDGE DECK AND APPROACH SLAB IS REQUIRED.
9. SEE "BORING LOG" SHEETS 4 OF 14 AND SHEETS 5 OF 14 FOR GEOTECHNICAL INFORMATION.
10. PILES SHALL BE DRIVEN TO THE SPECIFIED TIP ELEVATION OR TO THE REQUIRED ULTIMATE PILE CAPACITY UPON APPROVAL OF THE DESIGNING ENGINEER. PILE DRIVING ANALYZER SHALL BE USED DURING INSTALLATION TO CONFIRM ULTIMATE PILE CAPACITY.
11. IF HARD DRIVING IS ENCOUNTERED DURING PILE INSTALLATION, PREDRILLING TO FACILITATE DRIVING MAY BE USED. PREDRILLED HOLES SHALL BE 1 INCH SMALLER THAN THE PILE SQUARE SIDE AND SHOULD BE APPROVED BY DESIGNING ENGINEER.
12. IF PILES ARE DRIVEN 1 MONTH BEFORE EMBANKMENT COMPLETION, ABUTMENT PILES SHALL BE DRIVEN AT LEAST 2 FEET HIGHER THAN THE DESIGN DEPTH OR TO AN ELEVATION DETERMINED BY THE CONTRACTOR THAT ALLOWS THE PILE TO BE RE-DRIVEN AFTER EMBANKMENT CONSTRUCTION. PILES AT ABUTMENTS SHOULD BE RE-DRIVEN AFTER EMBANKMENT CONSTRUCTION AND AFTER AN ESTIMATED SETTLEMENT PERIOD OF 1 MONTH TO PRACTICAL REFUSAL. IF PILES ARE NOT DRIVEN UNTIL AFTER 1 MONTH OF EMBANKMENT COMPLETION, THEN THE PILES CAN BE DIRECTLY DRIVEN TO THE DESIGN DEPTH.

VERTICAL CURVE DATA

VPI STA = 105+40.00
EL = 60.63
L = 1,440.00
ex = -10.31
k = 251



ELEVATION

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

1

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

BRIDGE LAYOUT
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=40' SHEET 1 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	260

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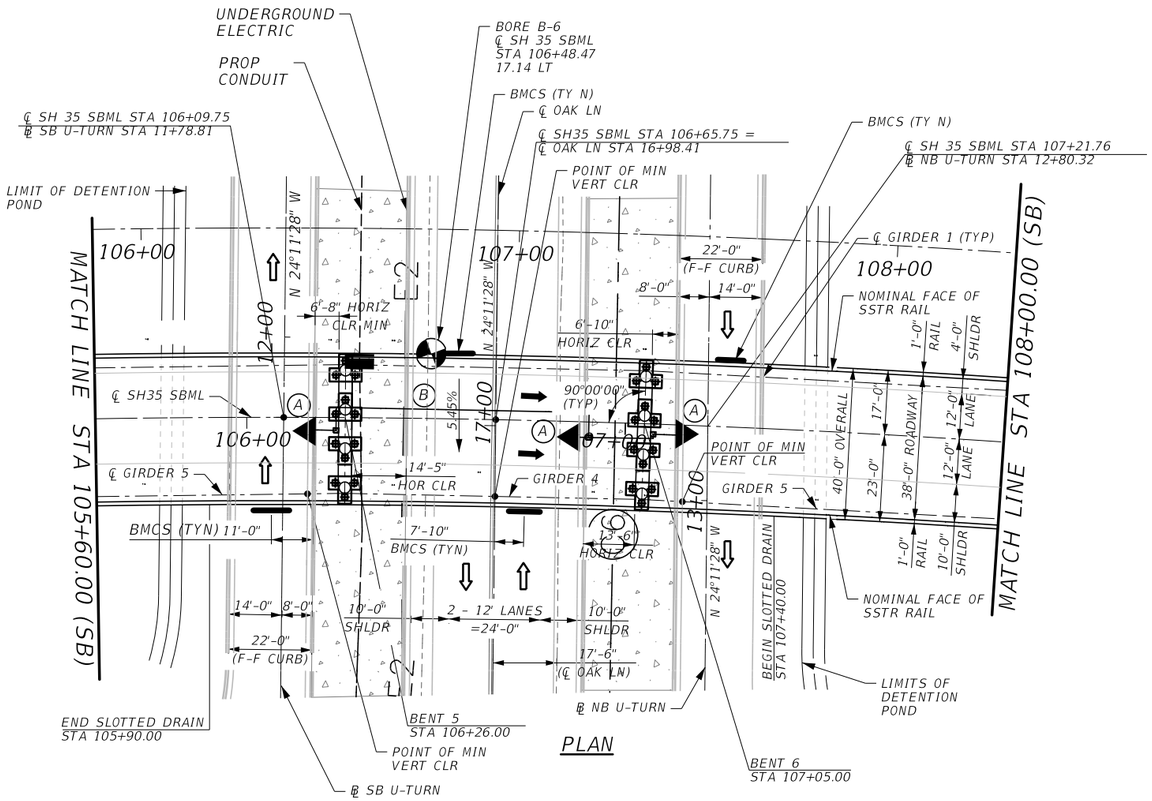


PLAN

0' 20' 40'

SCALE IN FEET

HORIZONTAL CURVE DATA

PI STA = 117+59.20
DELTA = 87°39'49.61" RT
D = 1°59'34.43"
T = 2,760.10
L = 4,398.81
R = 2,875.00
PC STA = 89+99.10
PT STA = 133+97.91
BACK BRNG = S 33°07'51.15" W
AHD BRNG = N 59°12'19.24" W

GENERAL NOTES:

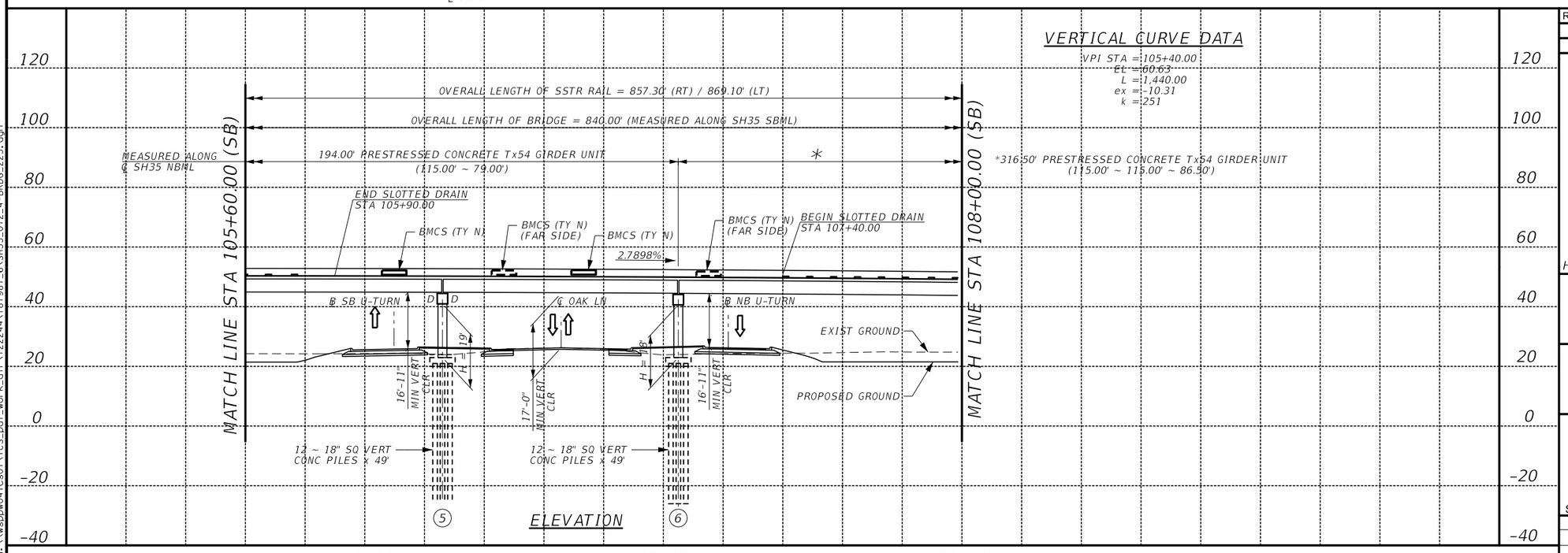
1. REFER TO SHEET 1 OF 3 FOR GENERAL NOTES.

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:

BENT 5 ~ S 24°26'48" E
BENT 6 ~ S 22°52'20" E

(A) UNDERPASS LIGHTING

(B) CONDUIT ATTACHED TO BRIDGE



(5) (6)

ELEVATION

VERTICAL CURVE DATA

VPI STA = 105+40.00
EL = 60.63
L = 1,440.00
ex = -10.31
k = 251

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

BRIDGE LAYOUT
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=40' SHEET 2 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	261

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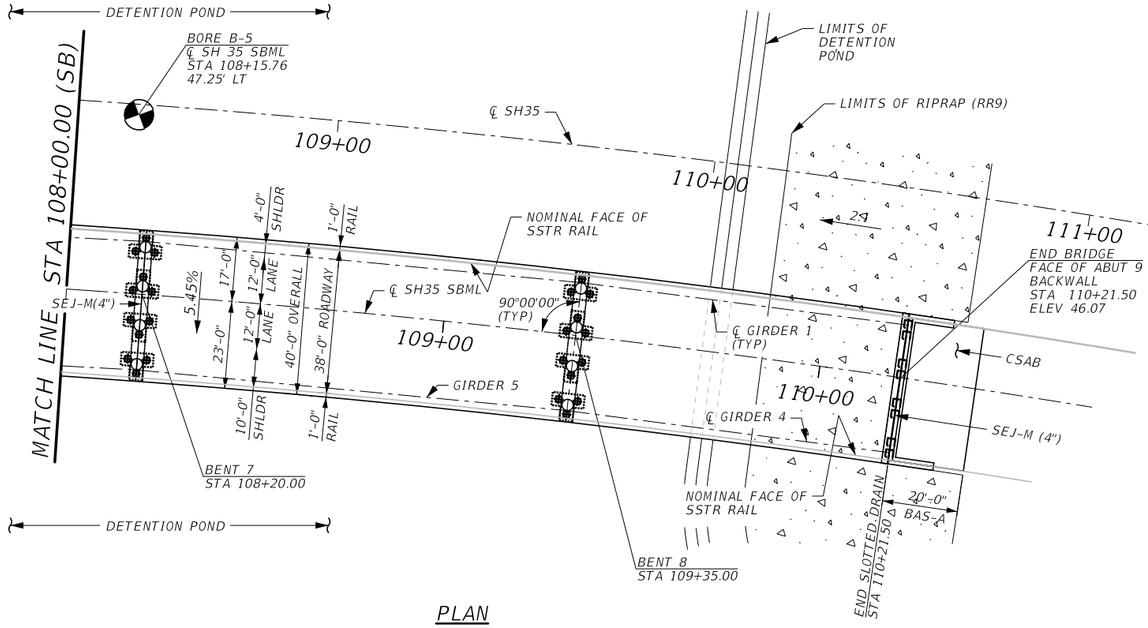
SCALE: 40.0000 ft / in.

HORIZONTAL CURVE DATA

PI STA = 117+59.20
DELTA = 87°39'49.61" RT
D = 1°59'34.43"
T = 2,760.10
L = 4,398.81
R = 2,875.00
PC STA = 89+99.10
PT STA = 133+97.91
BACK BRNG = S 33°07'51.15" W
AHD BRNG = N 59°12'19.24" W

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:

BENT 7 ~ S 20°34'50" E
BENT 8 ~ S 18°17'19" E
ABUT 9 ~ S 16°33'53" E



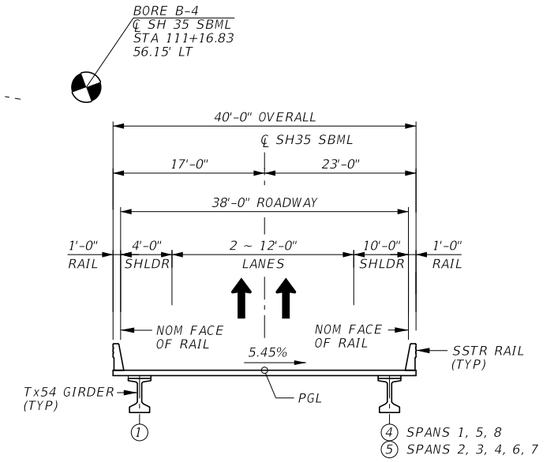
PLAN

0' 20' 40'
SCALE IN FEET

N

GENERAL NOTES:

1. REFER TO SHEET 1 OF 3 FOR GENERAL NOTES.



TYPICAL SECTION
SCALE: NTS

VERTICAL CURVE DATA

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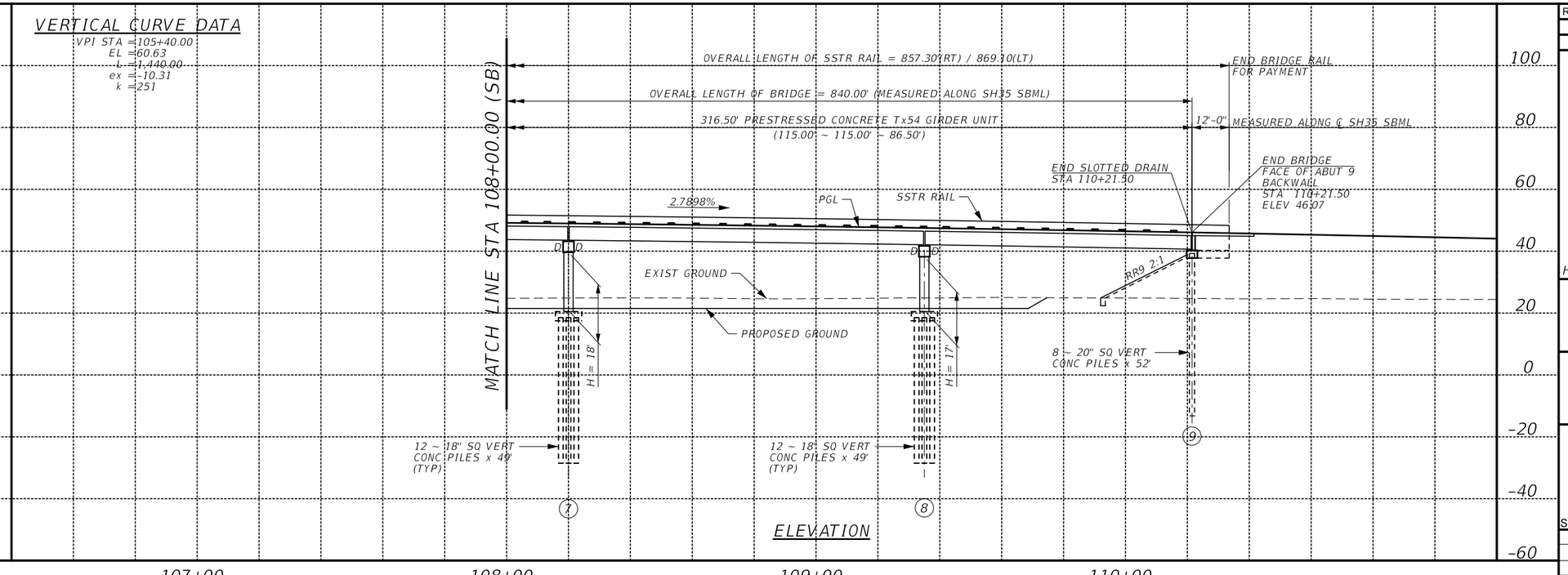
L = 1,440.00
ex = -10.31
k = 251



ELEVATION

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

BRIDGE LAYOUT
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=40' SHEET 3 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	262

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NOTES:

1. ALL RIPRAP (CONC) (CL B) (RR8&RR9) FOR BOTH SBML & NBML BRIDGES IS INCLUDED IN NBML QUANTITIES. REFER TO SHEET 202, EST QTY & BEARING SEAT ELEV NB SH 35 OVERPASS AT OAK LANE.

BID ITEM NO	400-6005	409-6002	409-6003	420-6013	420-6029	420-6037	420-6043	422-6001	422-6015	425-6039	450-6023	454-6018
ITEM DESCRIPTION	CEM STABIL BKFL	PRESTR CONC PIL (18 IN SQ)	PRESTR CONC PIL (20 IN SQ)	CL C CONC (ABUT)	CL C CONC (CAP)	CL C CONC (COLUMN)	CL C CONC (FOOTING)	REINF CONC SLAB	APPROACH SLAB	PRESTR CONC GIRDER (Tx54)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN) (SEJ-M)
UNIT	CY	LF	LF	CY	CY	CY	CY	SF	CY	LF	LF	LF
2 - ABUTMENTS	182		832	57.7					61.0		48.0	80
7 - BENTS		4,116			119.0	138.1	134.4					80
329.50' PS CONC I-GIRDER UNIT								13,166		1,539.35	658.4	
194.00' PS CONC I-GIRDER UNIT								7,752		885.51	387.6	
316.50' PS CONC I-GIRDER UNIT								12,646		1,487.48	632.4	
TOTAL	182	4,116	832	57.7	119.0	138.1	134.4	33,564	61.0	3,912.34	1,726.4	160

		BEAM 1	BEAM 2	BEAM 3	BEAM 4
ABUT 1	(FWD)	42.507	41.889	41.272	40.654

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT 2	(BK)	43.777	43.159	42.541	41.923	
	(FWD)	43.819	43.356	42.893	42.429	41.966

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT 3	(BK)	44.808	44.345	43.882	43.419	42.955
	(FWD)	44.821	44.358	43.895	43.431	42.968

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT 4	(BK)	45.294	44.830	44.367	43.904	43.440
	(FWD)	45.297	44.834	44.371	43.908	43.444

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT 5	(BK)	45.253	44.790	44.326	43.863	43.400
	(FWD)	45.269	44.651	44.033	43.416	

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT 6	(BK)	44.941	44.324	43.706	43.088	
	(FWD)	44.908	44.445	43.982	43.519	43.055

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT 7	(BK)	43.992	43.529	43.066	42.602	42.139
	(FWD)	43.971	43.508	43.045	42.582	42.118

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
BENT 8	(BK)	42.538	42.075	41.612	41.148	40.685
	(FWD)	42.529	41.912	41.294	40.676	

		BEAM 1	BEAM 2	BEAM 3	BEAM 4
ABUT 9	(BK)	41.119	40.501	39.884	39.266

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
5/2/2021

HL93 LOADING

Texas Department of Transportation

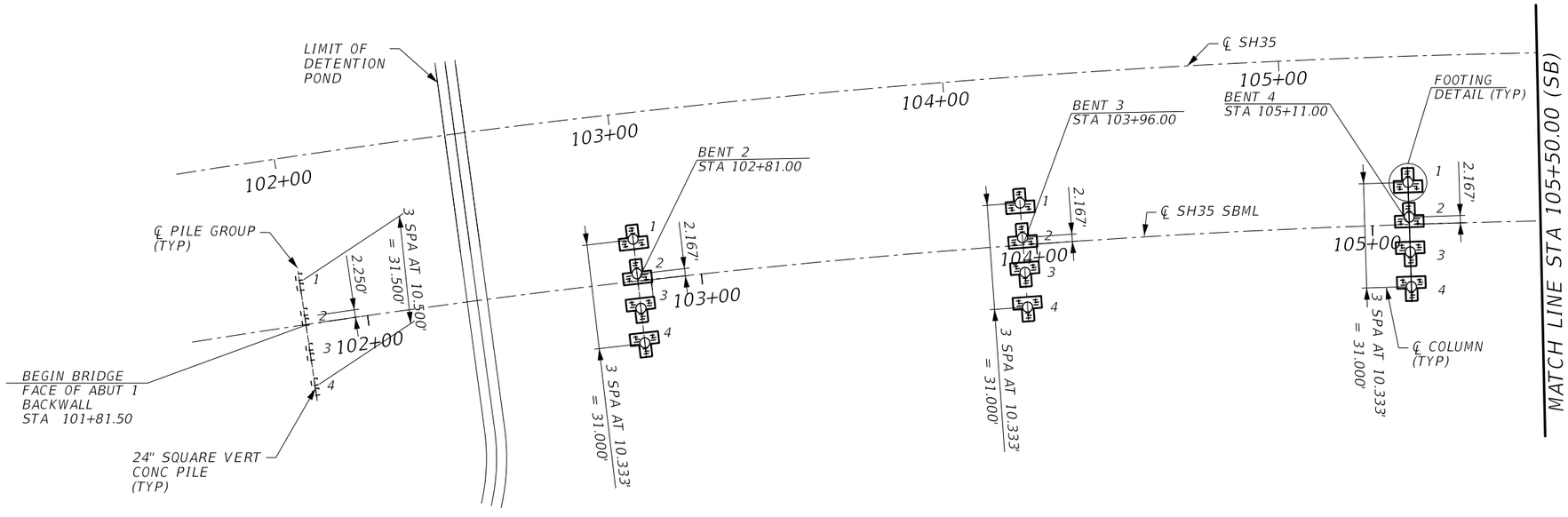
IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

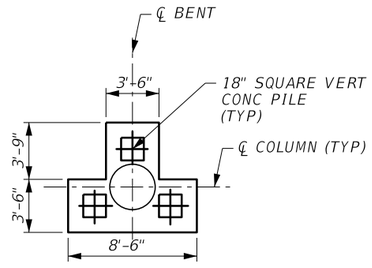
EST QTY & BEARING SEAT ELEV
SB SH 35 OVERPASS AT OAK LANE

N.T.S. SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	263



PLAN



FOOTING DETAIL
N.T.S.

GENERAL NOTES:

1. SEE BRIDGE LAYOUT SHEETS FOR FOUNDATION LENGTHS.
2. SEE UTILITY PLANS FOR ANY UTILITY RELOCATIONS.
3. CONTRACTOR MUST FIELD VERIFY LOCATIONS OF ALL UTILITIES AND EXISTING STRUCTURES PRIOR TO CONSTRUCTION, EXCAVATION AND DRILLING.
4. SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DETAILS AND NOTES NOT SHOWN.

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:

ABUT 1 ~ S 33°18'18" E
BENT 2 ~ S 31°19'20" E
BENT 3 ~ S 29°01'49" E
BENT 4 ~ S 26°44'19" E

0' 20' 40'
SCALE IN FEET

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

FOUNDATION PLAN
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=40' SHEET 1 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	264

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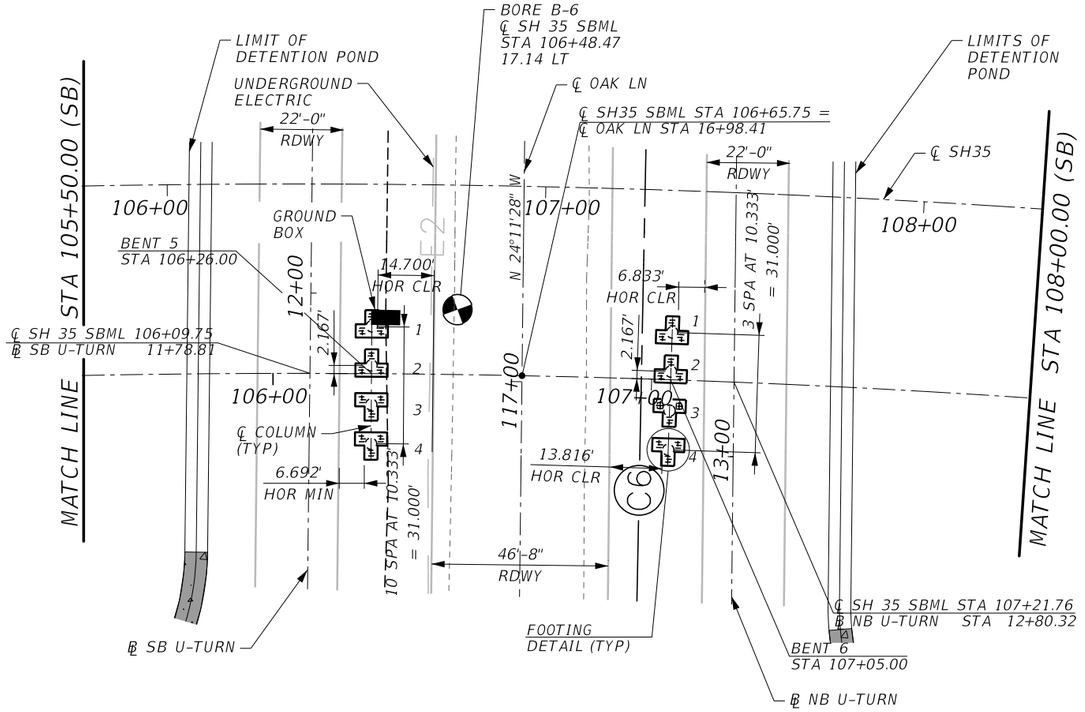
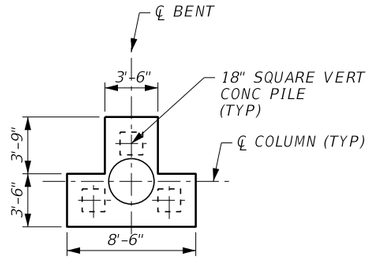


PLAN



FOOTING DETAIL
N.T.S.

0' 20' 40'

SCALE IN FEET

GENERAL NOTES:

1. SEE FOUNDATION PLAN SHEET 1 OF 3 FOR NOTES.
2. CONDUIT WORK TO BEGIN WITH CONSTRUCTION OF FOUNDATIONS. SEE UNDERPASS ILLUMINATION DETAILS.
3. THE PHASING FOR CONSTRUCTION OF U-TURNS SHOULD CONSIDER EXCAVATION LIMITS FOR CONSTRUCTION OF FOOTINGS.

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:

BENT 5 ~ S 24°26'48" E
BENT 6 ~ S 22°52'20" E

REV	DESCRIPTION	DATE	INIT

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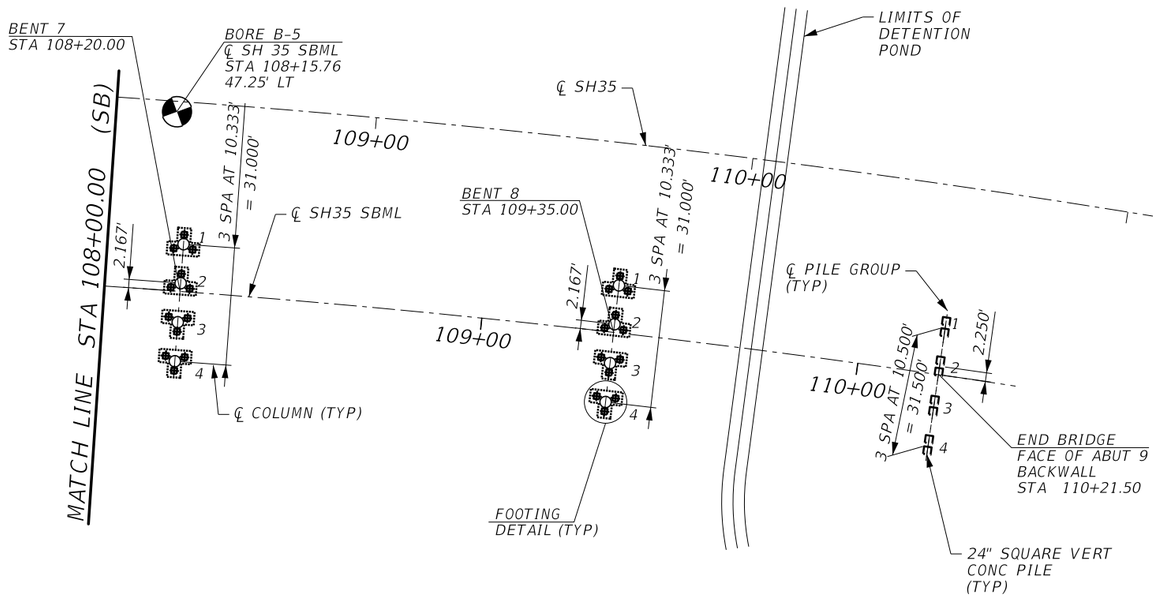
SH 35 AT OAK LANE

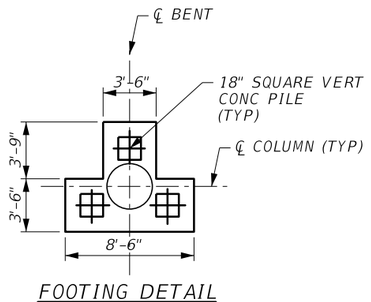
FOUNDATION PLAN
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=40' SHEET 2 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	265



PLAN



FOOTING DETAIL

0' 20' 40'

SCALE IN FEET

N

BORE B-4
℄ SH 35 SBML
STA 111+16.83
56.15' LT

GENERAL NOTES:

1. SEE FOUNDATION PLAN SHEET 1 OF 3 FOR NOTES

NOTE: ABUTMENT AND INTERIOR BENTS PLACED ALONG BEARING:

BENT 7 ~ S 20°34'50" E
BENT 8 ~ S 18°17'19" E
ABUT 9 ~ S 16°33'53" E

REV	DESCRIPTION	DATE	INIT

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IEA
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DALLAS, TX 75252
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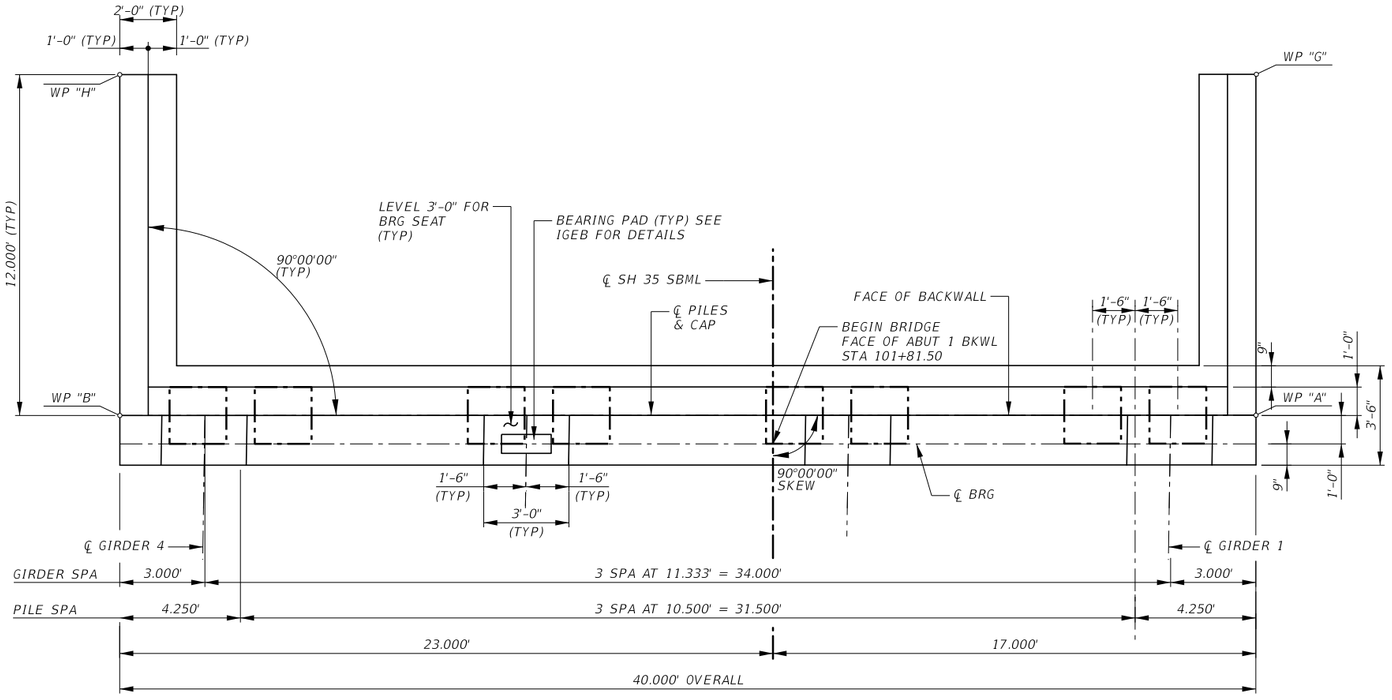
SH 35 AT OAK LANE

FOUNDATION PLAN
SB SH 35 OVERPASS AT OAK LANE

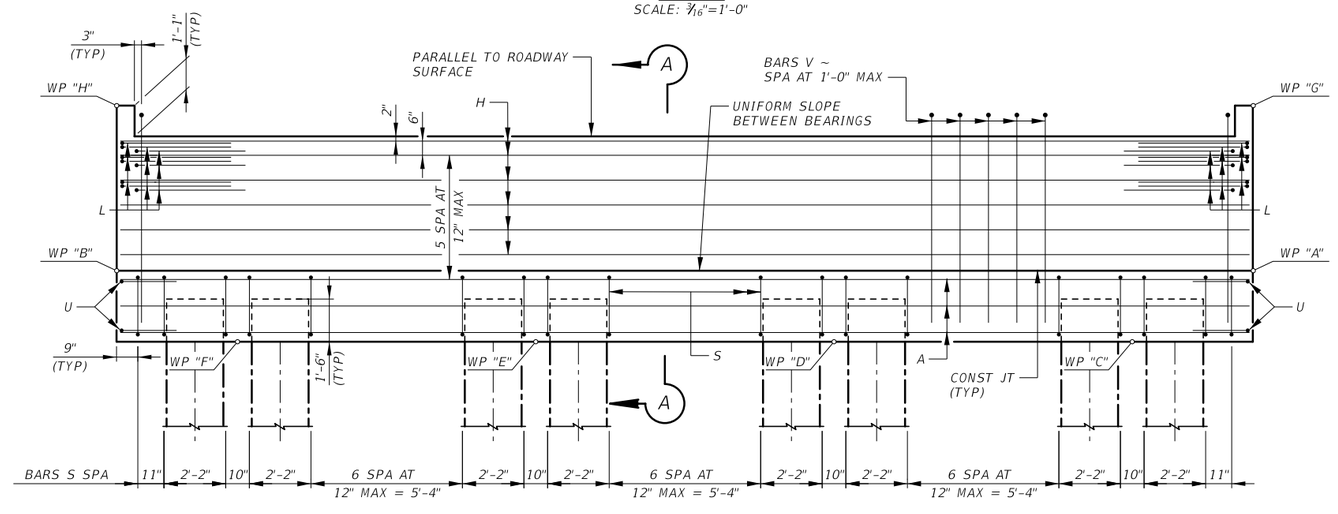
SCALE: 1"=40' SHEET 3 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	266



PLAN

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



ELEVATION

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

WORK POINT ELEVATIONS①								
ABUT NO	WP "A"	WP "B"	WP "C"	WP "D"	WP "E"	WP "F"	WP "G"	WP "H"
1	42.546	40.366	39.814	39.242	38.670	38.098	48.421	46.241

① WORK POINT ELEVATIONS TAKEN ALONG FRONT FACE ABUTMENT BACKWALL

NOTES:

1. SEE ABUTMENT 1 & 9 DETAILS SHEET FOR NOTES.

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

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4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

ABUTMENT 1 DETAILS
SB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	267

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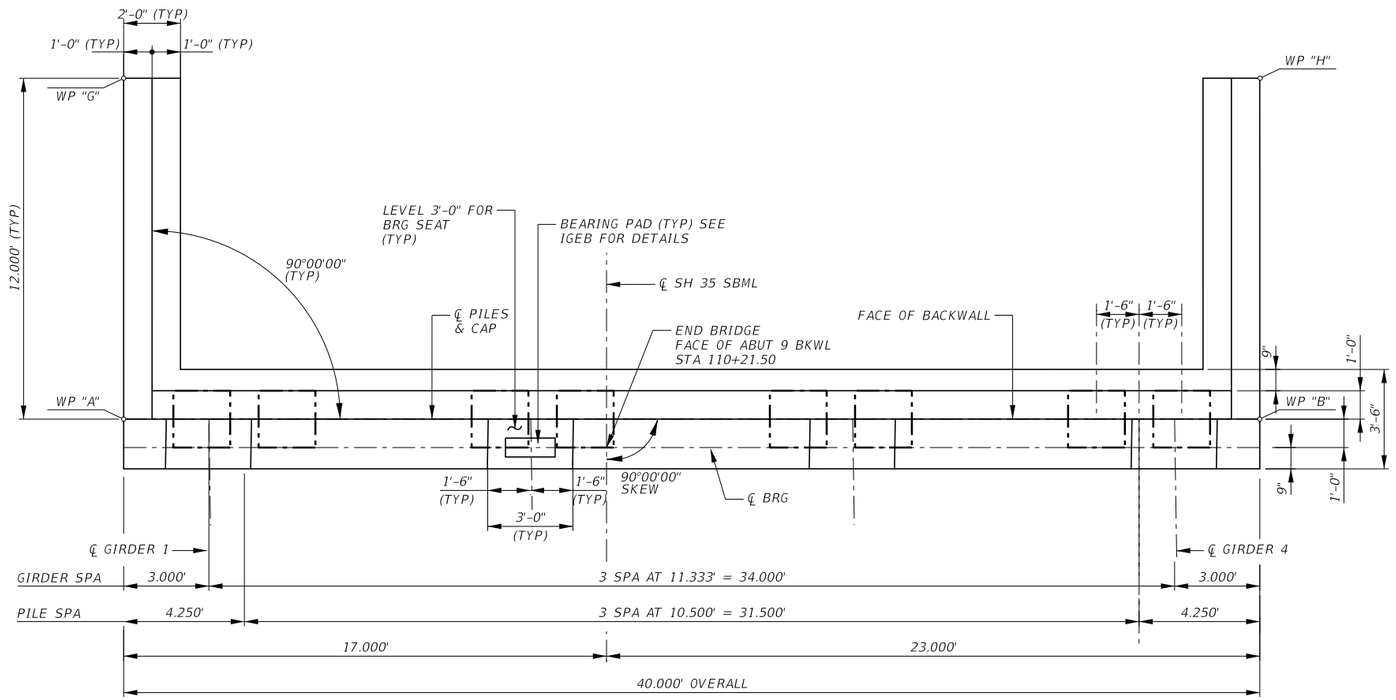
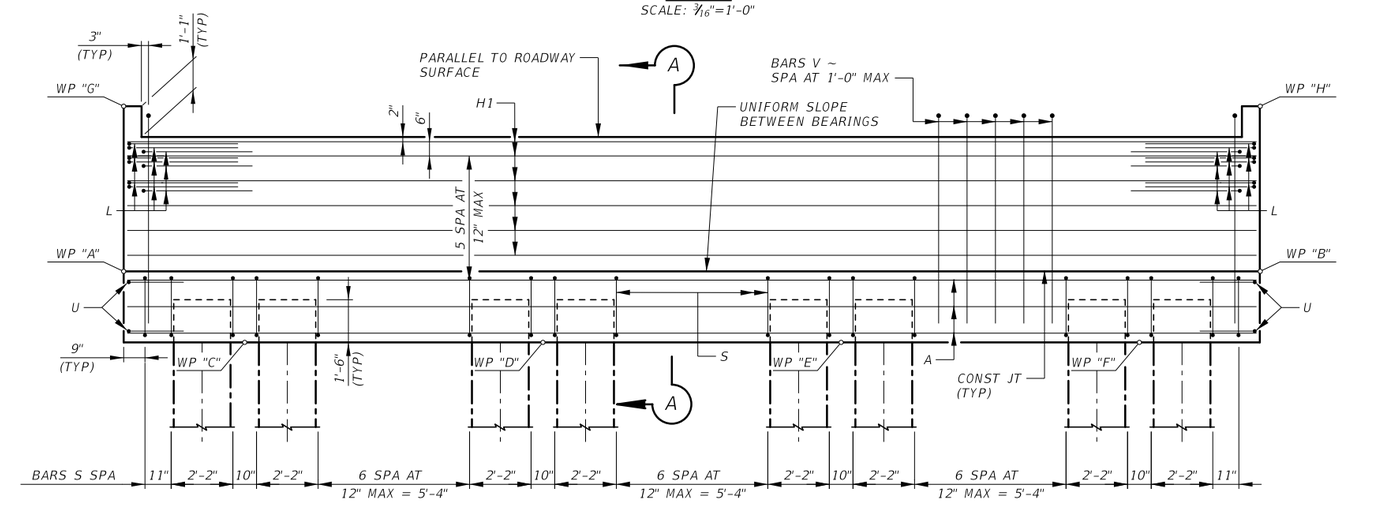


PLAN

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



ELEVATION

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

WORK POINT ELEVATIONS①								
ABUT NO	WP "A"	WP "B"	WP "C"	WP "D"	WP "E"	WP "F"	WP "G"	WP "H"
9	41.158	38.978	38.426	37.854	37.282	36.710	47.012	44.832

① WORK POINT ELEVATIONS TAKEN ALONG FRONT FACE ABUTMENT BACKWALL

NOTES:

1. SEE ABUTMENT 1 & 9 DETAILS SHEET FOR NOTES.

REV	DESCRIPTION	DATE	INIT

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LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
4/23/2021

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Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

ABUTMENT 9 DETAILS
SB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	268

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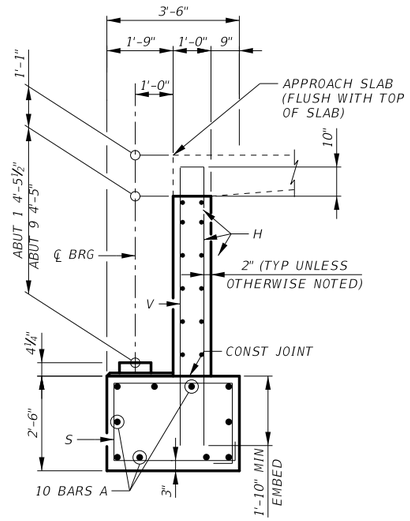
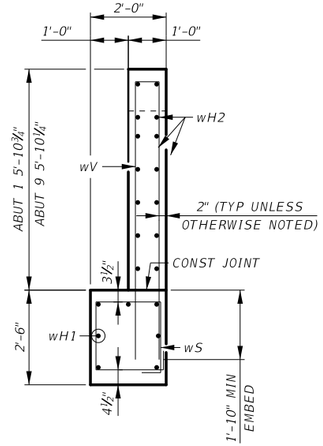
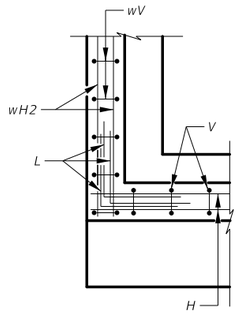


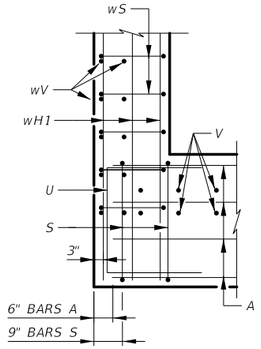
SECTION A-A
SCALE: ¼"=1'-0"



SECTION B-B
SCALE: ¼"=1'-0"

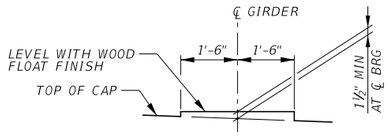


BACKWALL



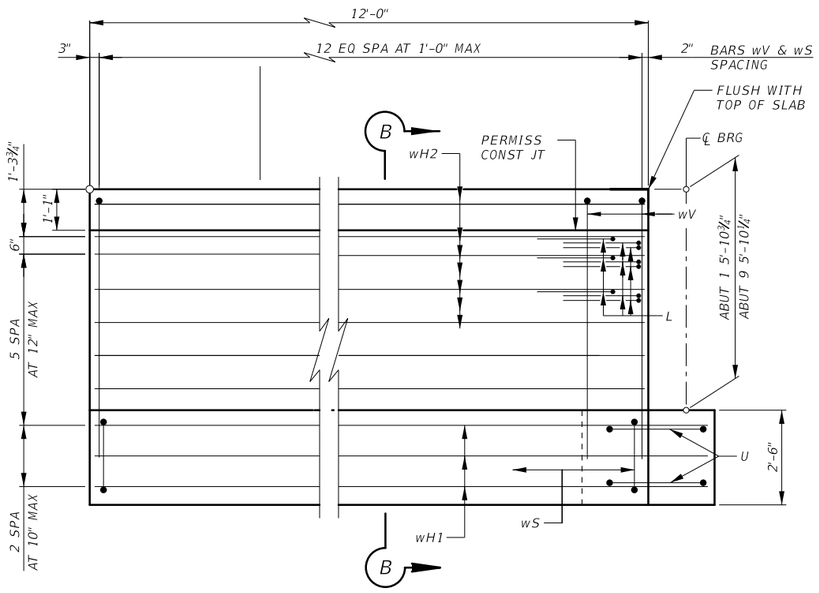
CAP

CORNER DETAILS
SCALE: ¼"=1'-0"

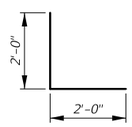


BEARING SEAT DETAIL
SCALE: NTS

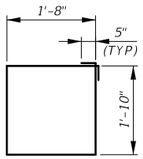
(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING PAD.)



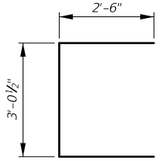
WINGWALL ELEVATION
SCALE: ¼"=1'-0"



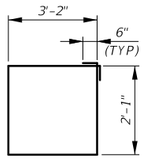
BARS L



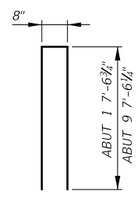
BARS wS



BARS U



BARS S



BARS V & wV

TABLE OF QUANTITIES ABUTMENT 1

BAR	NO	SIZE	LENGTH	WEIGHT
A	10	#11	39'-0"	2,073
H	12	#6	39'-8"	715
L	18	#6	4'-0"	109
S	33	#5	11'-6"	396
U	4	#6	8'-1"	49
V	39	#5	15'-9"	641
wH1	14	#6	13'-4"	281
wH2	28	#6	11'-7"	488
wS	26	#4	7'-10"	137
wV	26	#5	15'-9"	428
REINFORCING STEEL			LB	5,317
CLASS "C" CONCRETE (ABUT)			CY	28.9

TABLE OF QUANTITIES ABUTMENT 9

BAR	NO	SIZE	LENGTH	WEIGHT
A	10	#11	39'-0"	2,073
H	12	#6	39'-8"	715
L	18	#6	4'-0"	109
S	33	#5	11'-6"	396
U	4	#6	8'-1"	49
V	39	#5	15'-9"	641
wH1	14	#6	13'-4"	281
wH2	28	#6	11'-7"	488
wS	26	#4	7'-10"	137
wV	26	#5	15'-9"	428
REINFORCING STEEL			LB	5,317
CLASS "C" CONCRETE (ABUT)			CY	28.8

COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, 2017 AND INTERIM SPECIFICATIONS.
2. SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DETAILS AND NOTES NOT SHOWN.
3. SEE CONCRETE RIPRAP (CRR) STANDARD SHEET FOR RIPRAP ATTACHMENT DETAILS.
4. CALCULATED PRESTRESSED CONCRETE PILE FOUNDATION LOAD:
   ABUT 1 & 9 = 58 TONS/PILE.
5. SEE RAILING (SSTR) STANDARDS FOR RAIL ANCHORAGE IN WINGWALLS.

MATERIAL NOTES:

1. PROVIDE CLASS C CONCRETE (f'c = 3,600psi)
2. PROVIDE GRADE 60 REINFORCING STEEL.

REV	DESCRIPTION	DATE	INIT

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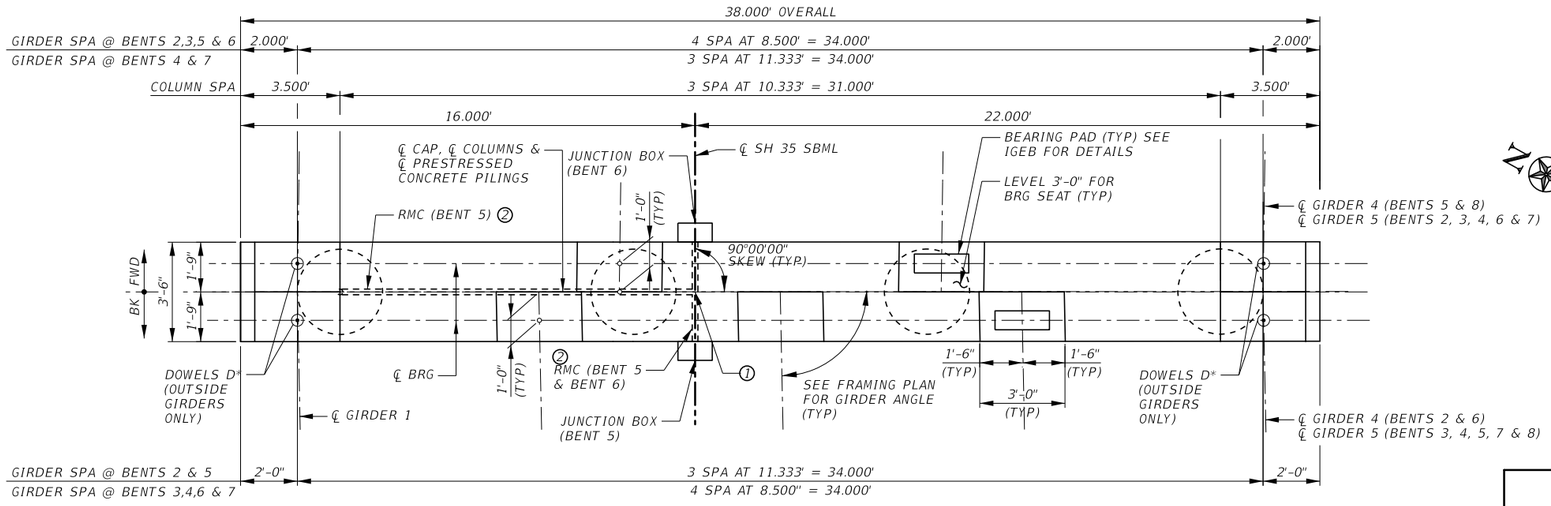
SH 35 AT OAK LANE

ABUTMENT 1 & 9 DETAILS
SB SH 35 OVERPASS AT OAK LANE

SCALE: ¼" = 1'-0" SHEET 1 OF 1

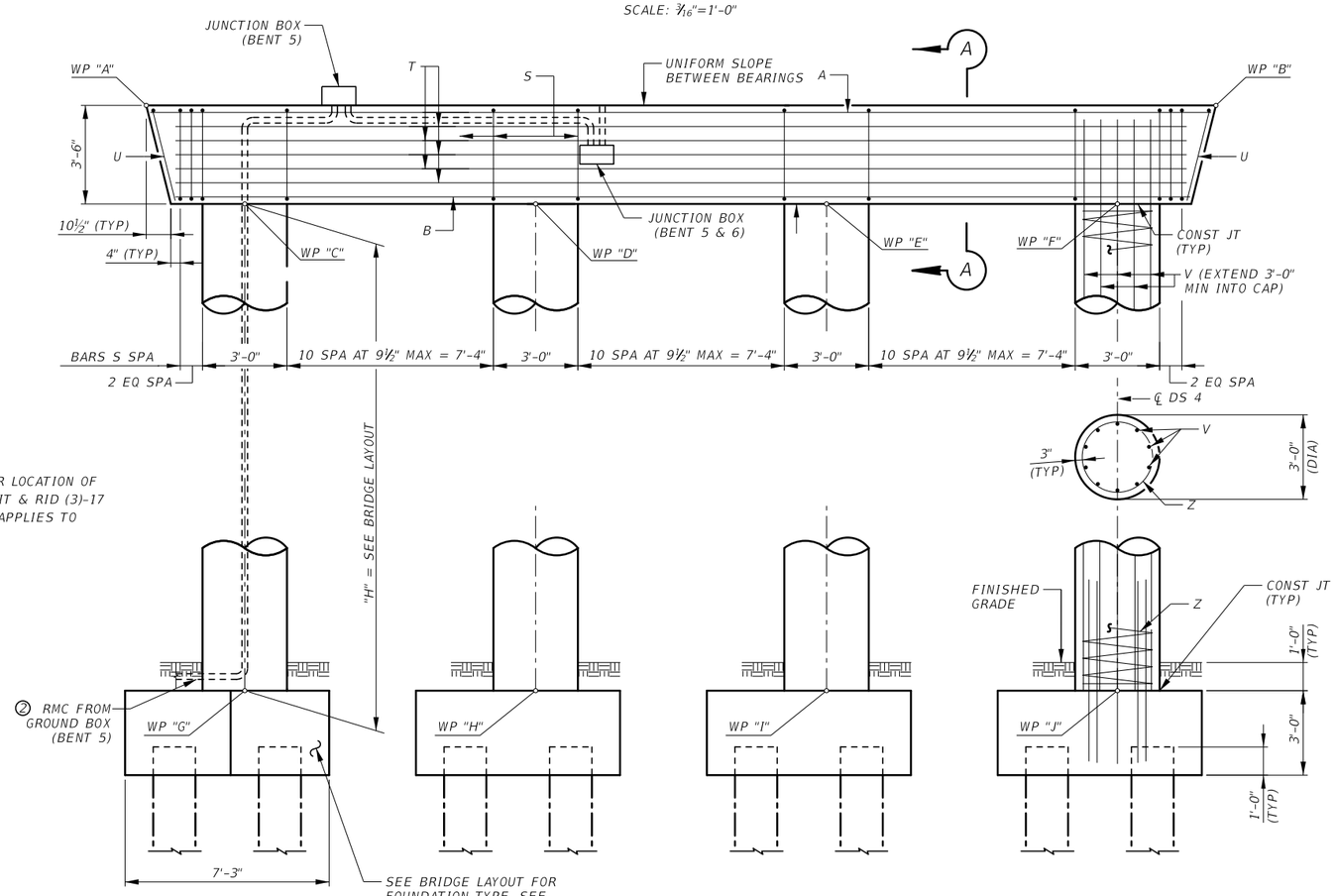
FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	269



PLAN

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

* BENTS 4 AND 6 NO DOWELS BENT 5 SHOWN



ELEVATION

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

② SEE ILLUMINATION PLANS FOR LOCATION OF UNDERPASS LIGHTING CONDUIT & RID (3)-17 FOR DETAILS (ILLUMINATION APPLIES TO BENTS 5 & 6 ONLY).

NOTES:

SEE SHEET 2 OF 2 FOR NOTES.

① ℄ BENT 2 STA 102+81.00
℄ BENT 3 STA 103+96.00
℄ BENT 4 STA 105+11.00
℄ BENT 5 STA 106+26.00
℄ BENT 6 STA 107+05.00
℄ BENT 7 STA 108+20.00
℄ BENT 8 STA 109+35.00

WORK POINT ELEVATIONS ①

BENT NO	WP "A"	WP "B"	WP "C"	WP "D"	WP "E"	WP "F"	WP "G"	WP "H"	WP "I"	WP "J"
2 SB	43.761	41.690	40.070	39.507	38.944	38.381	20.070	20.507	18.944	19.381
3 SB	44.793	42.722	41.102	40.539	39.976	39.413	19.102	19.539	19.976	19.413
4 SB	45.278	43.207	41.587	41.024	40.461	39.898	20.587	21.024	20.461	20.898
5 SB	45.237	43.166	41.547	40.983	40.420	39.857	22.547	21.983	22.420	21.857
6 SB	44.893	42.822	41.202	40.639	40.076	40.013	22.202	22.639	22.076	22.013
7 SB	43.956	41.885	40.265	39.702	39.139	38.576	21.265	21.702	21.139	21.576
8 SB	42.514	40.443	38.823	38.260	37.697	37.134	21.823	21.260	21.697	21.134

① WORK POINT ELEVATIONS TAKEN ALONG ℄ CAP & ℄ COLUMNS

REV	DESCRIPTION	DATE	INIT

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SH 35 AT OAK LANE

BENTS 2 THRU 8 DETAILS
SB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	270

SCALE: 5.3333 ft / in.

TABLE OF COLUMN QUANTITIES

BENT NO	COL NO	HEIGHT "H"	BARS "V" 10-#9 (PER COL)		BARS "Z" #4 (PER COL)		REINF STEEL	CL "C" CONC COLUMN	TOTAL REINF STEEL PER BENT	CL "C" CONC COLUMN PER BENT
			LENGTH	WEIGHT	LENGTH	WEIGHT				
		FT	FT-IN	LBS	FT-IN	LBS	LB	CY	LB	CY
2	1,3	20'-0"	23'-0"	782	636'-3"	425	1,207	5.24	4,720	20.5
2	2,4	19'-0"	22'-0"	748	604'-10"	405	1,153	4.97		
3	1	22'-0"	25'-0"	850	699'-1"	467	1,317	5.76	4,993	21.8
3	2	21'-0"	24'-0"	816	667'-8"	446	1,262	5.50		
3	3, 4	20'-0"	23'-0"	782	636'-3"	425	1,207	5.24		
4	1	21'-0"	24'-0"	816	667'-8"	446	1,262	5.50	4,829	21.0
4	2, 3	20'-0"	23'-0"	782	636'-3"	425	1,207	5.24		
4	4	19'-0"	22'-0"	748	604'-10"	405	1,153	4.97		
5	1, 2	19'-0"	22'-0"	748	604'-10"	405	1,153	4.97	4,502	19.4
5	3, 4	18'-0"	21'-0"	714	573'-5"	384	1,098	4.71		
6	1	19'-0"	22'-0"	748	604'-10"	405	1,153	4.97	4,447	19.2
6	2, 3, 4	18'-0"	21'-0"	714	573'-5"	384	1,098	4.71		
7	1	19'-0"	22'-0"	748	604'-10"	405	1,153	4.97	4,392	18.9
7	2, 3	18'-0"	21'-0"	714	573'-5"	384	1,098	4.71		
7	4	17'-0"	20'-0"	680	542'-0"	363	1,043	4.45		
8	1, 2	17'-0"	20'-0"	680	542'-0"	363	1,043	4.45	4,062	17.3
8	3, 4	16'-0"	19'-0"	646	510'-7"	342	988	4.19		

* QUANTITIES SHOWN ARE BASED ON "H" VALUE SHOWN. CONTRACTOR IS RESPONSIBLE FOR CALCULATING, THE ACTUAL COLUMN HEIGHTS BASED ON FIELD CONDITIONS. FOR EACH LINEAR FOOT VARIATION IN "H" VALUE, MAKE THE FOLLOWING ADJUSTMENTS PERBENT:

BARS V LENGTH 1'-0"
BARS Z LENGTH 31'-5"
REINFORCING STEEL 55 LB
CLASS "C" CONC (COL) 0.26 CY

TABLE OF CAP QUANTITIES
② BENTS 2, 3, 5, 7 & 8

BAR	NO	SIZE	LENGTH	WEIGHT
A	5	#11	37'-6"	997
B	5	#11	36'-0"	957
D	4	#9	1'-8"	23
S	39	#5	13'-8"	556
T	10	#5	36'-0"	376
U	2	#5	9'-8"	21
REINFORCING STEEL			LB	2,930
CL C CONC (CAP)			CY	17.0

② QUANTITIES SHOWN FOR ONE BENT CAP ONLY

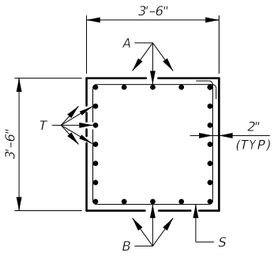
TABLE OF CAP QUANTITIES
② BENTS 4 & 6

BAR	NO	SIZE	LENGTH	WEIGHT
A	5	#11	37'-6"	997
B	5	#11	36'-0"	957
S	39	#5	13'-8"	556
T	10	#5	36'-0"	376
U	2	#5	9'-8"	21
REINFORCING STEEL			LB	2,907
CL C CONC (CAP)			CY	17.0

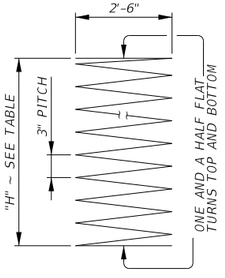
COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BAR.

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION 2017, AND INTERIM SPECIFICATIONS.
2. PROVIDE CLASS C CONCRETE STRENGTH fc=3.600 psi.
3. PROVIDE GRADE 60 REINFORCING STEEL.
4. SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DEATAILS AND NOTES NOT SHOWN.
5. CALCULATED FOUNDATION LOAD:
   BENT 2 - 111 TONS/PILE
   BENT 3 - 107 TONS/PILE
   BENT 4 - 107 TONS/PILE
   BENT 5 - 99 TONS/PILE
   BENT 6 - 98 TONS/PILE
   BENT 7 - 106 TONS/PILE
   BENT 8 - 106 TONS/PILE



SECTION A-A
SCALE: ¼"=1'-0"



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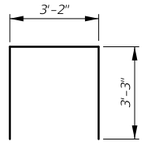

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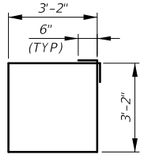

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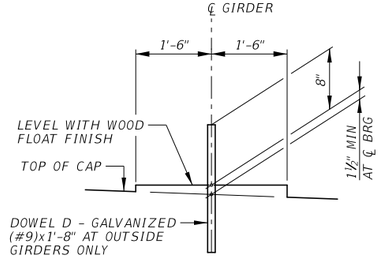

BEARING SEAT DETAIL
SCALE: NTS

(BEARING SURFACE MUST BE CLEAN AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING BEARING PAD.)

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

BENTS 2 THRU 8 DETAILS
SB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	271

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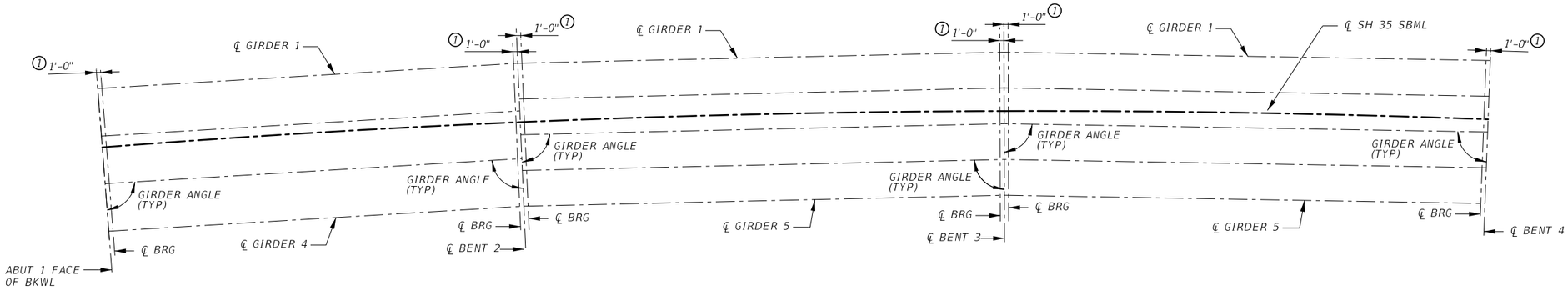


SPAN 1
Tx54 GIRDER

SPAN 2
Tx54 GIRDER

SPAN 3
Tx54 GIRDER

PLAN
SCALE: NTS

① SEE IGEB FOR ORIENTATION OF DIMENSION TO CENTERLINE BEARING.

② GIRDER LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

BENT REPORT

ABUT NO. 1 (S 33 18 18.42 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 1	GRD 1	0.000	89 0 30
	GRD 2	11.333	89 0 30
	GRD 3	11.333	89 0 30
	GRD 4	11.333	89 0 30
	TOTAL	34.000	

BENT NO. 2 (S 31 19 19.86 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 1	GRD 1	0.000	89 0 30
	GRD 2	11.333	89 0 30
	GRD 3	11.333	89 0 30
	GRD 4	11.333	89 0 30
	TOTAL	34.000	
SPAN 2	GRD 1	0.000	88 51 14
	GRD 2	8.500	88 51 14
	GRD 3	8.500	88 51 14
	GRD 4	8.500	88 51 14
	GRD 5	8.500	88 51 14
	TOTAL	34.000	

BENT NO. 3 (S 29 1 49.27 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 2	GRD 1	0.000	88 51 14
	GRD 2	8.500	88 51 14
	GRD 3	8.500	88 51 14
	GRD 4	8.500	88 51 14
	GRD 5	8.500	88 51 14
	TOTAL	34.000	
SPAN 3	GRD 1	0.000	88 51 14
	GRD 2	8.500	88 51 14
	GRD 3	8.500	88 51 14
	GRD 4	8.500	88 51 14
	GRD 5	8.500	88 51 14
	TOTAL	34.000	

BENT NO. 4 (S 26 44 18.68 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 3	GRD 1	0.000	88 51 14
	GRD 2	8.500	88 51 14
	GRD 3	8.500	88 51 14
	GRD 4	8.500	88 51 14
	GRD 5	8.500	88 51 14
	TOTAL	34.000	

GIRDER REPORT

GIRDER REPORT, SPAN 1

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE ② BOT. BM. FLG.	
GIRDER 1	99.980	97.979	99.49	0.0130
GIRDER 2	99.587	97.587	99.10	0.0130
GIRDER 3	99.195	97.195	98.70	0.0131
GIRDER 4	98.803	96.803	98.31	0.0131

GIRDER REPORT, SPAN 2

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE ② BOT. BM. FLG.	
GIRDER 1	115.552	113.552	115.06	0.0087
GIRDER 2	115.212	113.212	114.72	0.0087
GIRDER 3	114.872	112.872	114.38	0.0088
GIRDER 4	114.532	112.532	114.04	0.0088
GIRDER 5	114.192	112.192	113.70	0.0088

GIRDER REPORT, SPAN 3

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE ② BOT. BM. FLG.	
GIRDER 1	115.552	113.552	115.05	0.0042
GIRDER 2	115.212	113.212	114.71	0.0042
GIRDER 3	114.872	112.872	114.37	0.0042
GIRDER 4	114.532	112.532	114.03	0.0042
GIRDER 5	114.192	112.192	113.69	0.0042

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

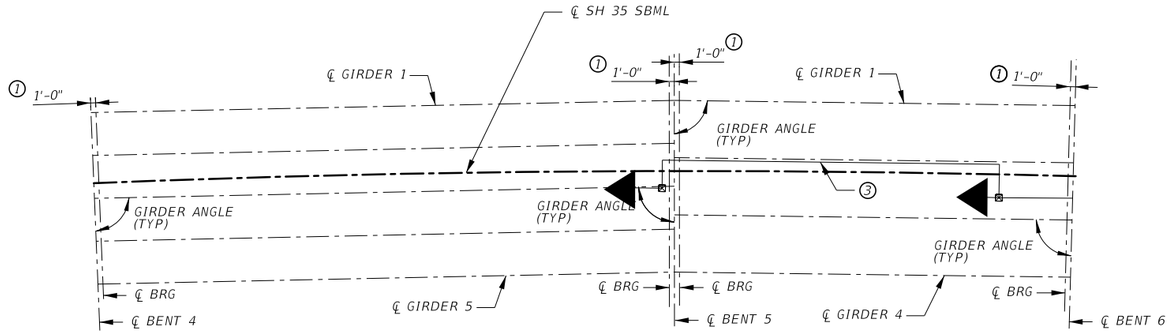
IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

FRAMING PLAN
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 1 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	272



SPAN 4
Tx54 GIRDER

SPAN 5
Tx54 GIRDER

PLAN
SCALE: NTS

1. SEE IGEB FOR ORIENTATION OF DIMENSION TO CENTERLINE BEARING.
2. GIRDER LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.
3. CONDUIT ATTACHED TO GIRDER IN SPAN 5 ONLY. SEE ILLUMINATION PLANS FOR LOCATION OF UNDERPASS LIGHTING CONDUIT AND RID(3)-17 STANDARD FOR DETAILS.

BENT REPORT

BENT NO. 4 (S 26 44 18.68 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 4	GRD 1	0.000	88 51 14
	GRD 2	8.500	88 51 14
	GRD 3	8.500	88 51 14
	GRD 4	8.500	88 51 14
	GRD 5	8.500	88 51 14
	TOTAL	34.000	

BENT NO. 5 (S 24 26 48.09 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 4	GRD 1	0.000	88 51 14
	GRD 2	8.500	88 51 14
	GRD 3	8.500	88 51 14
	GRD 4	8.500	88 51 14
	GRD 5	8.500	88 51 14
	TOTAL	34.000	
SPAN 5	GRD 1	0.000	89 12 46
	GRD 2	11.333	89 12 46
	GRD 3	11.333	89 12 46
	GRD 4	11.333	89 12 46
	TOTAL	34.000	

BENT NO. 6 (S 22 52 20.28 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D M S
SPAN 5	GRD 1	0.000	89 12 45
	GRD 2	11.333	89 12 45
	GRD 3	11.333	89 12 45
	GRD 4	11.333	89 12 45
	TOTAL	34.000	

GIRDER REPORT

GIRDER REPORT, SPAN 4

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE BOT. BM. FLG. (2)	
GIRDER 1	115.552	113.552	115.05	-0.0004
GIRDER 2	115.212	113.212	114.71	-0.0004
GIRDER 3	114.872	112.872	114.37	-0.0004
GIRDER 4	114.532	112.532	114.03	-0.0004
GIRDER 5	114.192	112.192	113.69	-0.0004

GIRDER REPORT, SPAN 5

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE BOT. BM. FLG. (2)	
GIRDER 1	79.382	77.382	78.88	-0.0042
GIRDER 2	79.071	77.071	78.57	-0.0042
GIRDER 3	78.759	76.759	78.26	-0.0043
GIRDER 4	78.448	76.448	77.95	-0.0043

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

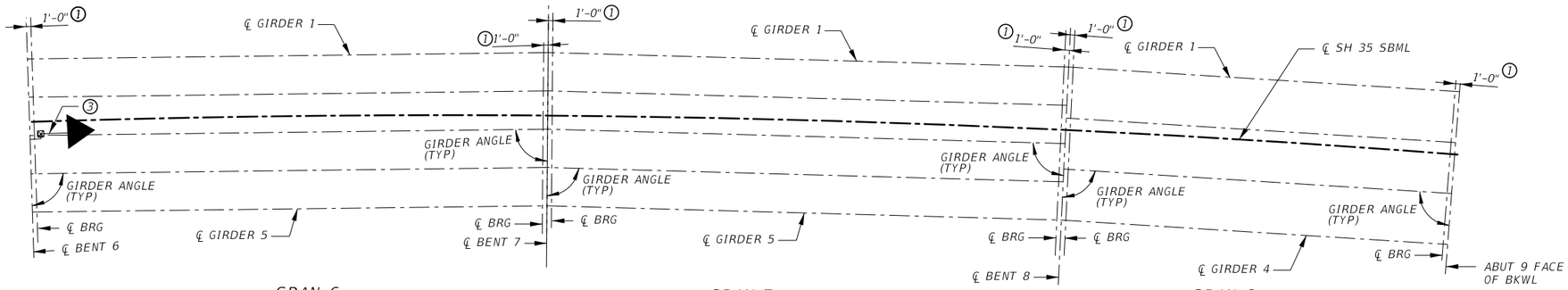
IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

FRAMING PLAN
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 2 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	273



SPAN 6
Tx54 GIRDER

SPAN 7
Tx54 GIRDER

SPAN 8
Tx54 GIRDER

PLAN
SCALE: NTS

① SEE IGEB FOR ORIENTATION OF DIMENSION TO CENTERLINE BEARING.

② GIRDER LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

③ CONDUIT ATTACHED TO GIRDER IN SPAN 5 ONLY. SEE ILLUMINATION PLANS FOR LOCATION OF UNDERPASS LIGHTING CONDUIT AND RID(3)-17 STANDARD FOR DETAILS.

BENT REPORT

BENT NO. 6 (S 22 52 20.28 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 6	GRD 1	0.000	88	51	14
	GRD 2	8.500	88	51	14
	GRD 3	8.500	88	51	14
	GRD 4	8.500	88	51	14
	GRD 5	8.500	88	51	14
	TOTAL	34.000			

BENT NO. 7 (S 20 34 49.69 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 6	GRD 1	0.000	88	51	14
	GRD 2	8.500	88	51	14
	GRD 3	8.500	88	51	14
	GRD 4	8.500	88	51	14
	GRD 5	8.500	88	51	14
	TOTAL	34.000			
SPAN 7	GRD 1	0.000	88	51	14
	GRD 2	8.500	88	51	14
	GRD 3	8.500	88	51	14
	GRD 4	8.500	88	51	14
	GRD 5	8.500	88	51	14
	TOTAL	34.000			

BENT NO. 8 (S 18 17 19.10 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 7	GRD 1	0.000	88	51	14
	GRD 2	8.500	88	51	14
	GRD 3	8.500	88	51	14
	GRD 4	8.500	88	51	14
	GRD 5	8.500	88	51	14
	TOTAL	34.000			
SPAN 8	GRD 1	0.000	89	8	17
	GRD 2	11.333	89	8	17
	GRD 3	11.333	89	8	17
	GRD 4	11.333	89	8	17
	TOTAL	34.000			

ABUT NO. 9 (S 16 33 53.22 E)
DISTANCE BETWEEN STATION LINE AND BEAM 1 14.000 L

		BEAM SPAC. (C.L. BENT)	BEAM ANGLE D	M	S
SPAN 8	GRD 1	0.000	89	8	16
	GRD 2	11.333	89	8	16
	GRD 3	11.333	89	8	16
	GRD 4	11.333	89	8	16
	TOTAL	34.000			

GIRDER REPORT

GIRDER REPORT, SPAN 6

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE BOT. BM. FLG.	②
GIRDER 1	115.552	113.552	115.06	-0.0081
GIRDER 2	115.212	113.212	114.72	-0.0081
GIRDER 3	114.872	112.872	114.38	-0.0081
GIRDER 4	114.532	112.532	114.04	-0.0081
GIRDER 5	114.192	112.192	113.70	-0.0082

GIRDER REPORT, SPAN 7

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE BOT. BM. FLG.	②
GIRDER 1	115.552	113.552	115.06	-0.0126
GIRDER 2	115.212	113.212	114.72	-0.0127
GIRDER 3	114.872	112.872	114.38	-0.0127
GIRDER 4	114.532	112.532	114.04	-0.0127
GIRDER 5	114.192	112.192	113.70	-0.0128

GIRDER REPORT, SPAN 8

	HORIZONTAL DISTANCE C-C BENT	C-C BRG.	TRUE DISTANCE BOT. BM. FLG.	②
GIRDER 1	86.918	84.918	86.43	-0.0166
GIRDER 2	86.577	84.577	86.09	-0.0167
GIRDER 3	86.236	84.236	85.75	-0.0167
GIRDER 4	85.895	83.895	85.41	-0.0168

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

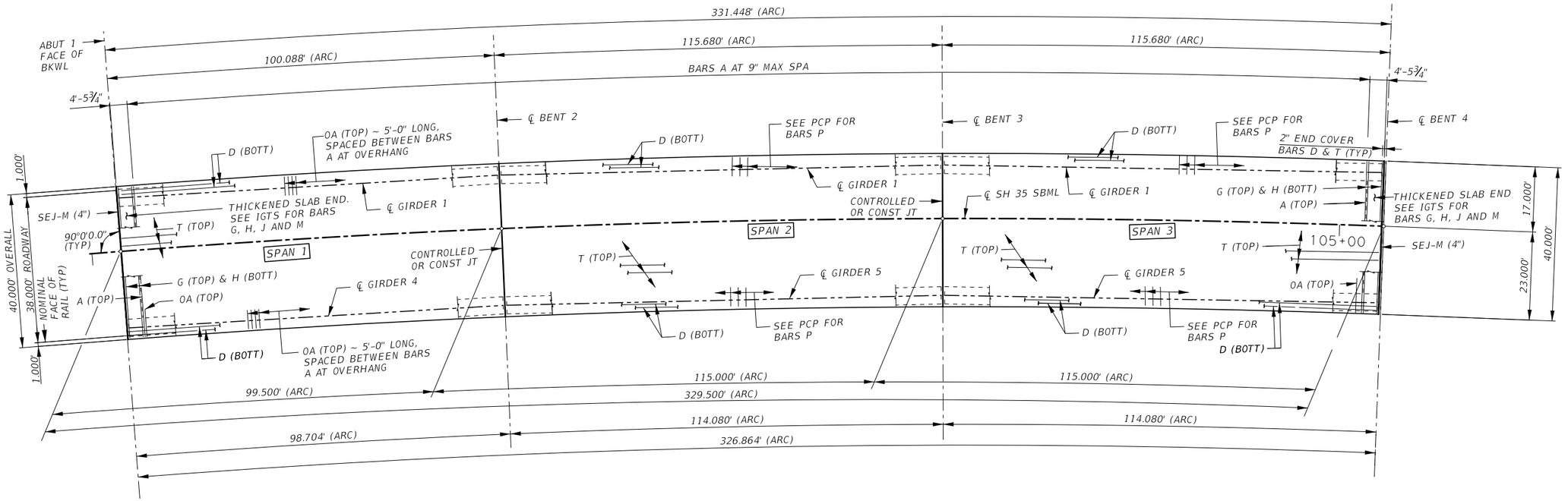
SH 35 AT OAK LANE

FRAMING PLAN
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 3 OF 3

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	274

SCALE: 30.0000 sf / in.



PLAN
SCALE: 1"=30'

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, 2017 AND INTERIM SPECIFICATIONS.
2. SEE PRESTRESSED CONCRETE PANELS (PCP) AND PRECAST CONCRETE PANEL FABRICATION DETAILS (PCP-FAB) STANDARD SHEETS FOR PANEL DETAILS NOT SHOWN.
3. SEE THICKENED SLAB END DETAILS (IGTS) STANDARD SHEET FOR THICKENED SLAB END DETAILS AND QUANTITY ADJUSTMENTS.
4. SEE MISCELLANEOUS SLAB DETAILS (IGMS) STANDARD SHEET FOR MISCELLANEOUS SLAB DETAILS NOT SHOWN.
5. SEE RAILING (SSTR) STANDARD SHEETS FOR RAIL ANCHORAGE IN SLAB.
6. SEE PERMANENT METAL DECK FORMS (PMDF) STANDARD SHEET FOR DETAILS AND QUANTITY ADJUSTMENTS IF THIS OPTION IS USED.
7. COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

329.50' PRES CONC GIRDER UNIT 1
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	275

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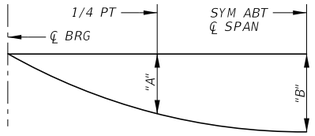
SCALE: 5.3333 sf / in.



DEAD LOAD DEFLECTION DIAGRAM

NOTE
DEFLECTIONS SHOWN ARE DUE TO PRESTRESSED CONCRETE PANELS AND CAST-IN-PLACE SLAB ONLY. (Ec =5,000 ksi) ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.

SPAN	GIRDER NO	"A" FT	"B" FT
1	1	0.079	0.110
	2	0.098	0.137
	3	0.096	0.134
	4	0.070	0.097
2	1	0.122	0.171
	2	0.133	0.186
	3	0.131	0.183
	4	0.129	0.181
	5	0.102	0.143
3	1	0.122	0.171
	2	0.133	0.186
	3	0.131	0.183
	4	0.129	0.181
	5	0.102	0.143

BAR TABLE

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

TABLE OF SECTION DEPTHS

SPAN	GIRDER NO	"X" AT ℄ BRG	③ "Y" AT ℄ BRG	"Z" AT ℄ SPAN
1	1	12½"	5'-6½"	10⅜"
	2 & 3	12½"	5'-6½"	10⅜"
	4	12½"	5'-6½"	10¼"
2	1	12¼"	5'-6¼"	10½"
	2-4	12¼"	5'-6¼"	10⅜"
	5	12¼"	5'-6¼"	10¼"
3	1	12¼"	5'-6¼"	10½"
	2-4	12¼"	5'-6¼"	10⅜"
	5	12¼"	5'-6¼"	10¼"

③ "Y" VALUE SHOWN IS BASED ON THEORETICAL GIRDER CAMBER, DEAD LOAD DEFLECTION FROM AN 8½" CONCRETE SLAB. A CONSTANT ROADWAY GRADE, AND USING PRECAST CONCRETE PANELS (PCP). THE CONTRACTOR WILL AJUST THIS VALUE AS NECESSARY FROM ANY ROADWAY VERTICAL CURVE.

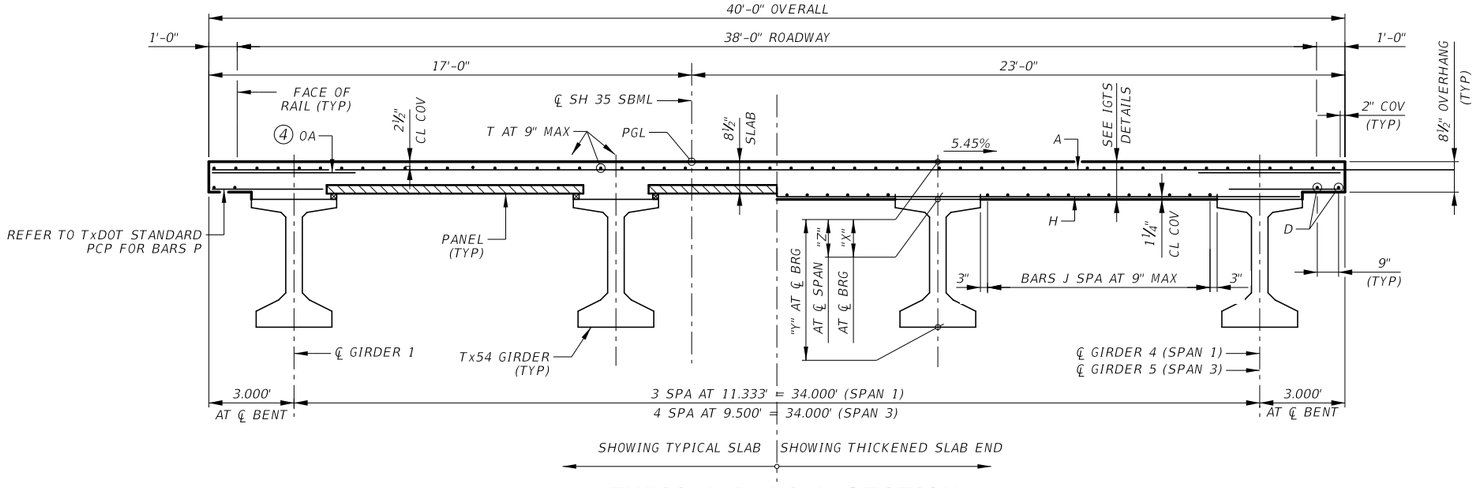
④ BARS OA SHALL EXTEND 2'-0" MIN PAST EXTERIOR GIRDER CENTERLINE. EXCEPT AS NOTED. SPACE 9" FOR TYPICAL SLAB AND 7" FOR THICKENED SLAB END.

TABLE OF ESTIMATED QUANTITIES

SPAN	REINF CONCRETE SLAB	① PRESTR CONCRETE GIRDERS (TY Tx54)	② REINF STEEL
	SF	LF	LB
SPAN 1	3,976	395.60	9,145
SPAN 2	4,595	571.90	10,569
SPAN 3	4,595	571.85	10,569
TOTAL	13,166	1,539.35	30,283

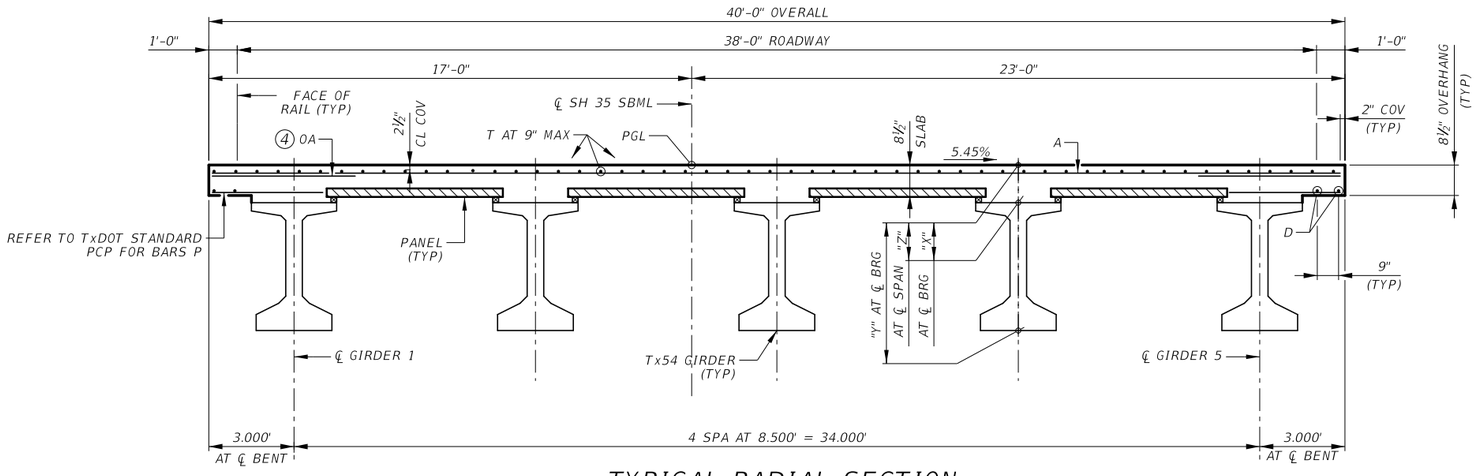
① LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

② REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3 LBS/SF.



TYPICAL RADIAL SECTION SPAN 1 & 3

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



TYPICAL RADIAL SECTION SPAN 2

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

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher
STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

329.50' PRES CONC GIRDER UNIT 1
SB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	276

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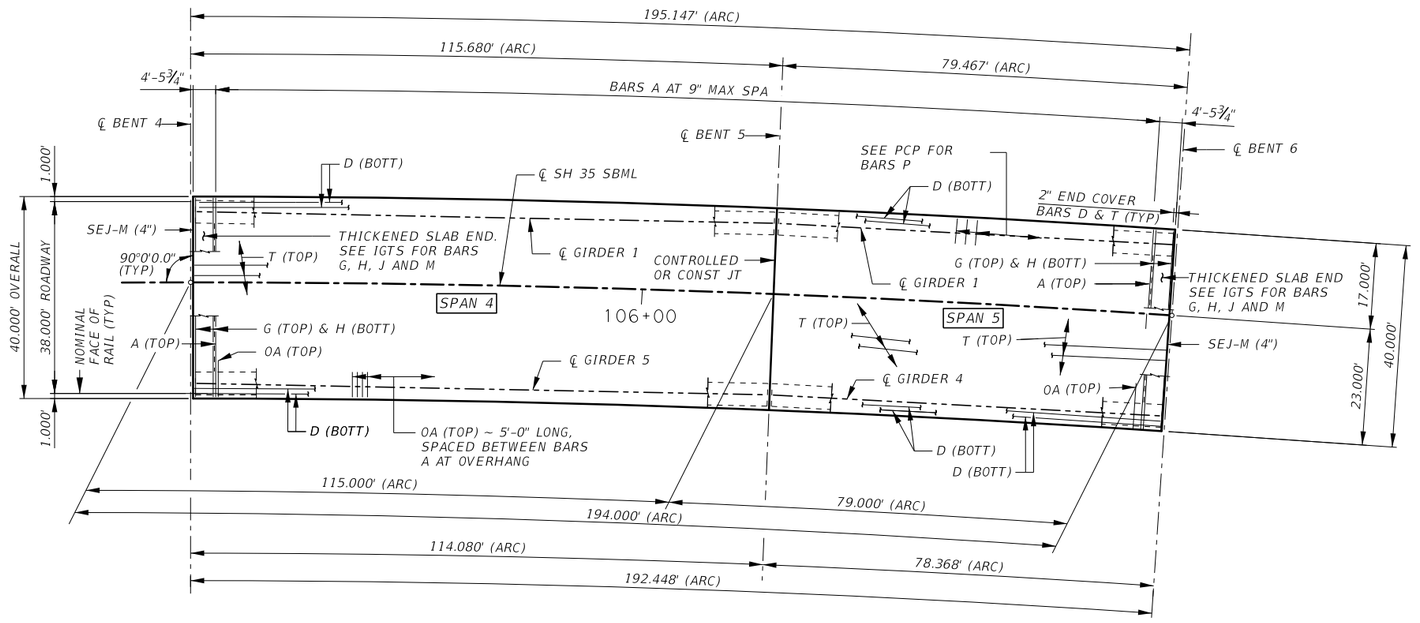
SCALE: 30.0000 sf / in.



PLAN
SCALE: 1"=30'

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, 2017 AND INTERIM SPECIFICATIONS.
2. SEE PRESTRESSED CONCRETE PANELS (PCP) AND PRECAST CONCRETE PANEL FABRICATION DETAILS (PCP-FAB) STANDARD SHEETS FOR PANEL DETAILS NOT SHOWN.
3. SEE THICKENED SLAB END DETAILS (IGTS) STANDARD SHEET FOR THICKENED SLAB END DETAILS AND QUANTITY ADJUSTMENTS.
4. SEE MISCELLANEOUS SLAB DETAILS (IGMS) STANDARD SHEET FOR MISCELLANEOUS SLAB DETAILS NOT SHOWN.
5. SEE RAILING (SSTR) STANDARD SHEETS FOR RAIL ANCHORAGE IN SLAB.
6. SEE PERMANENT METAL DECK FORMS (PMDF) STANDARD SHEET FOR DETAILS AND QUANTITY ADJUSTMENTS IF THIS OPTION IS USED.
7. COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

194.00' PRES CONC GIRDER UNIT 2
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	277

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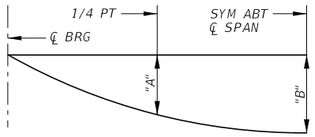


DEAD LOAD DEFLECTION DIAGRAM

NOTE
DEFLECTIONS SHOWN ARE DUE TO PRESTRESSED CONCRETE PANELS AND CAST-IN-PLACE SLAB ONLY. (Ec =5,000 ksi) ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.

SPAN	GIRDER NO	"A" FT	"B" FT
4	1	0.122	0.171
	2	0.133	0.186
	3	0.131	0.183
	4	0.129	0.181
	5	0.102	0.143
5	1	0.030	0.042
	2	0.038	0.053
	3	0.038	0.052
	4	0.028	0.038

BAR TABLE

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

TABLE OF SECTION DEPTHS

SPAN	GIRDER NO	"X" AT ℄ BRG	(3) "Y" AT ℄ BRG	"Z" AT ℄ SPAN
4	1	12¼"	5'-6¼"	10½"
	2-4	12¼"	5'-6¼"	10⅜"
	5	12¼"	5'-6¼"	10¼"
5	1-4	12"	5'-6"	10½"
	2-3	12"	5'-6"	10⅜"

(3) "Y" VALUE SHOWN IS BASED ON THEORETICAL GIRDER CAMBER, DEAD LOAD DEFLECTION FROM AN 8½" CONCRETE SLAB. A CONSTANT ROADWAY GRADE, AND USING PRECAST CONCRETE PANELS (PCP). THE CONTRACTOR WILL AJUST THIS VALUE AS NECESSARY FROM ANY ROADWAY VERTICAL CURVE.

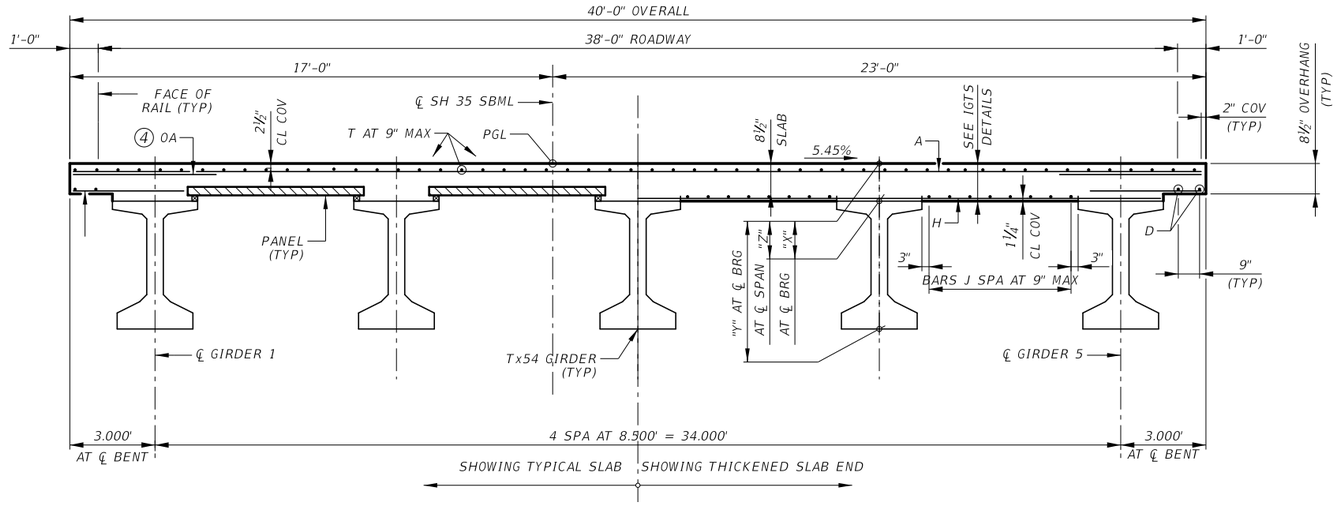
(4) BARS OA SHALL EXTEND 2'-0" MIN PAST EXTERIOR GIRDER CENTERLINE. EXCEPT AS NOTED. SPACE 9" FOR TYPICAL SLAB AND 7" FOR THICKENED SLAB END.

TABLE OF ESTIMATED QUANTITIES

SPAN	REINF CONCRETE SLAB	(1) PRESTR CONCRETE GIRDERS (TY Tx54)	(2) REINF STEEL
	SF	LF	LB
SPAN 4	4,595	571.85	10,569
SPAN 5	3,157	313.66	7,262
TOTAL	7,752	885.51	17,831

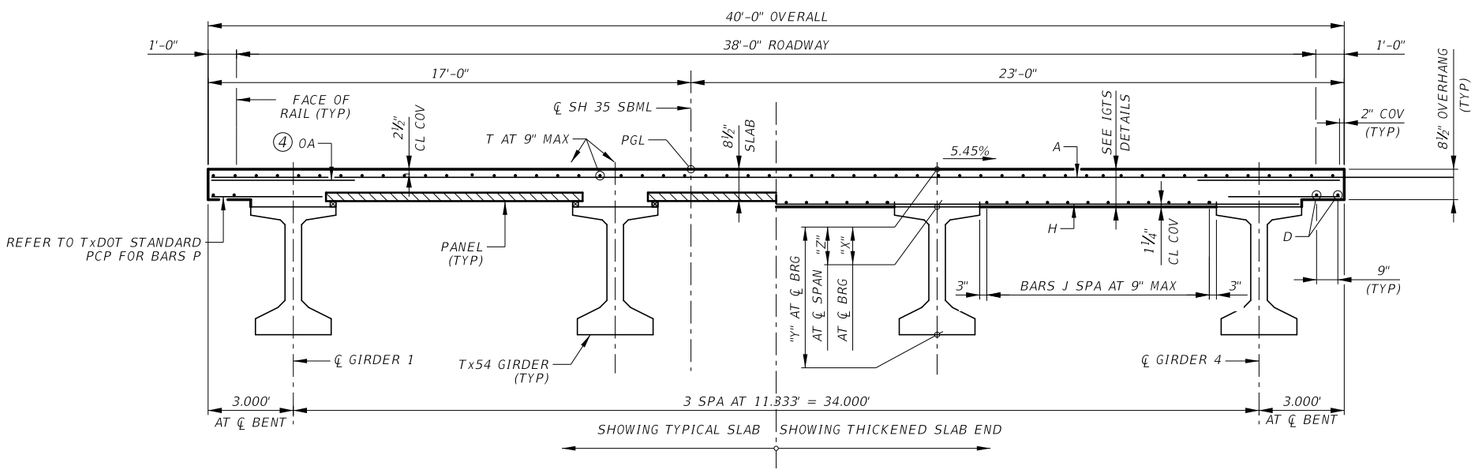
(1) LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

(2) REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3 LBS/SF.



TYPICAL RADIAL SECTION SPAN 4

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



TYPICAL RADIAL SECTION SPAN 5

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

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

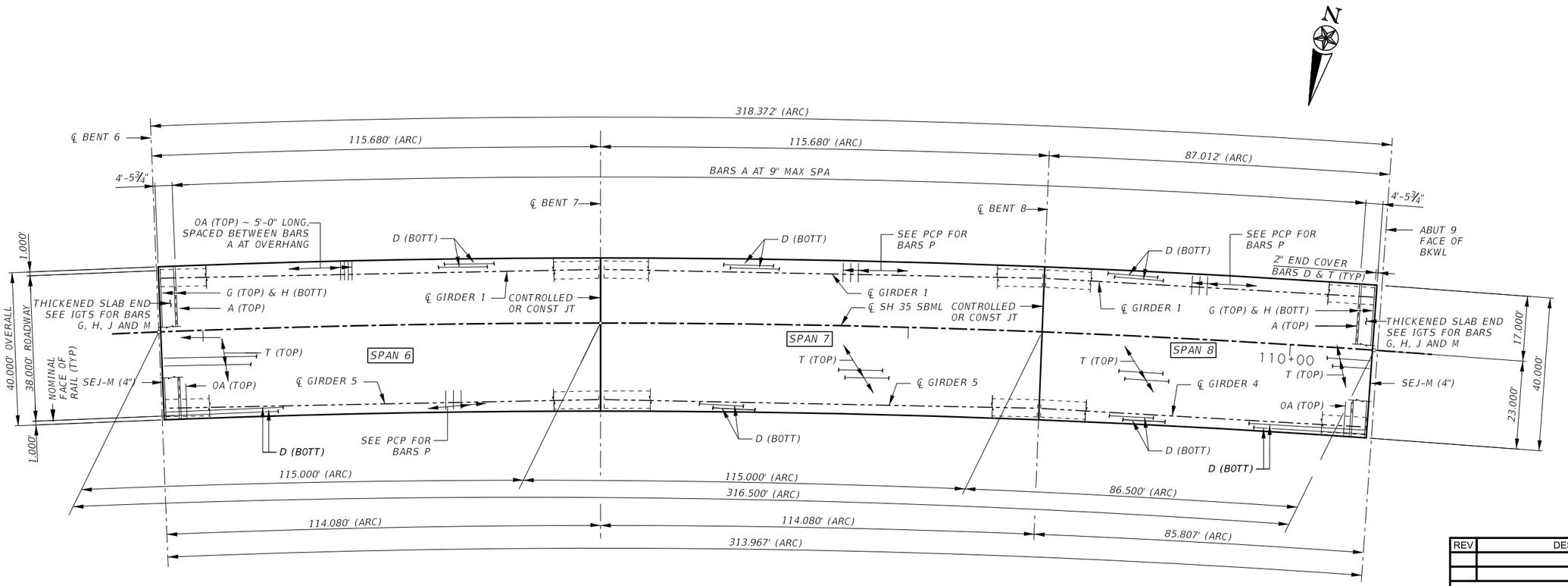
SH 35 AT OAK LANE

194.00' PRES CONC GIRDER UNIT 2
SB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	278

SCALE: 30.0000 sf / in.



PLAN
SCALE: 1"=30'

GENERAL NOTES:

1. DESIGNED ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. 8TH EDITION, 2017 AND INTERIM SPECIFICATIONS.
2. SEE PRESTRESSED CONCRETE PANELS (PCP) AND PRECAST CONCRETE PANEL FABRICATION DETAILS (PCP-FAB) STANDARD SHEETS FOR PANEL DETAILS NOT SHOWN.
3. SEE THICKENED SLAB END DETAILS (IGTS) STANDARD SHEET FOR THICKENED SLAB END DETAILS AND QUANTITY ADJUSTMENTS.
4. SEE MISCELLANEOUS SLAB DETAILS (IGMS) STANDARD SHEET FOR MISCELLANEOUS SLAB DETAILS NOT SHOWN.
5. SEE RAILING (SSTR) STANDARD SHEETS FOR RAIL ANCHORAGE IN SLAB.
6. SEE PERMANENT METAL DECK FORMS (PMDF) STANDARD SHEET FOR DETAILS AND QUANTITY ADJUSTMENTS IF THIS OPTION IS USED.
7. COVER DIMENSIONS ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE.

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

316.50' PRES CONC GIRDER UNIT 3
SB SH 35 OVERPASS AT OAK LANE

SCALE: 1"=30' SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	279

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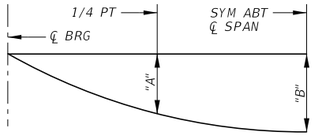


DEAD LOAD DEFLECTION DIAGRAM

NOTE
DEFLECTIONS SHOWN ARE DUE TO PRESTRESSED CONCRETE PANELS AND CAST-IN-PLACE SLAB ONLY. (Ec =5,000 ksi) ADJUST DEFLECTIONS BASED ON FIELD OBSERVATIONS AS NEEDED.

SPAN	GIRDER NO	"A" FT	"B" FT
6	1	0.122	0.171
	2	0.133	0.186
	3	0.131	0.183
	4	0.129	0.181
	5	0.102	0.143
7	1	0.122	0.171
	2	0.133	0.186
	3	0.131	0.183
	4	0.129	0.181
	5	0.102	0.143
8	1	0.045	0.062
	2	0.055	0.077
	3	0.055	0.076
	4	0.040	0.055

BAR TABLE

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

TABLE OF SECTION DEPTHS

SPAN	GIRDER NO	"X" AT ℄ BRG	(3) "Y" AT ℄ BRG	"Z" AT ℄ SPAN
6	1	12¼"	5'-6¼"	10½"
	2-4	12¼"	5'-6¼"	10⅜"
	5	12¼"	5'-6¼"	10¼"
7	1	12¼"	5'-6¼"	10½"
	2-4	12¼"	5'-6¼"	10⅜"
	5	12¼"	5'-6¼"	10¼"
8	1 & 4	12"	5'-6"	10½"
	2 & 3	12"	5'-6"	10¾"

(3) "Y" VALUE SHOWN IS BASED ON THEORETICAL GIRDER CAMBER, DEAD LOAD DEFLECTION FROM AN 8½" CONCRETE SLAB. A CONSTANT ROADWAY GRADE, AND USING PRECAST CONCRETE PANELS (PCP). THE CONTRACTOR WILL AJUST THIS VALUE AS NECESSARY FROM ANY ROADWAY VERTICAL CURVE.

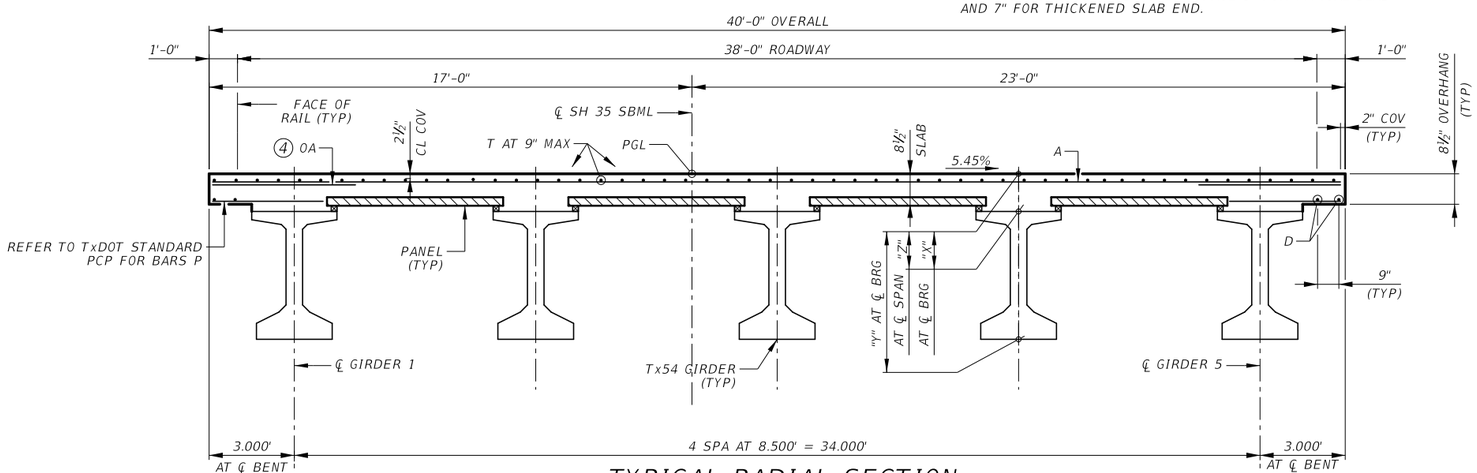
(4) BARS OA SHALL EXTEND 2'-0" MIN PAST EXTERIOR GIRDER CENTERLINE. EXCEPT AS NOTED. SPACE 9" FOR TYPICAL SLAB AND 7" FOR THICKENED SLAB END.

TABLE OF ESTIMATED QUANTITIES

SPAN	REINF CONCRETE SLAB	(1) PRESTR CONCRETE GIRDERS (TY Tx54)	(2) REINF STEEL
	SF	LF	LB
SPAN 6	4,595	571.90	10,569
SPAN 7	4,595	571.90	10,569
SPAN 8	3,456	343.68	7,949
TOTAL	12,646	1,487.48	29,087

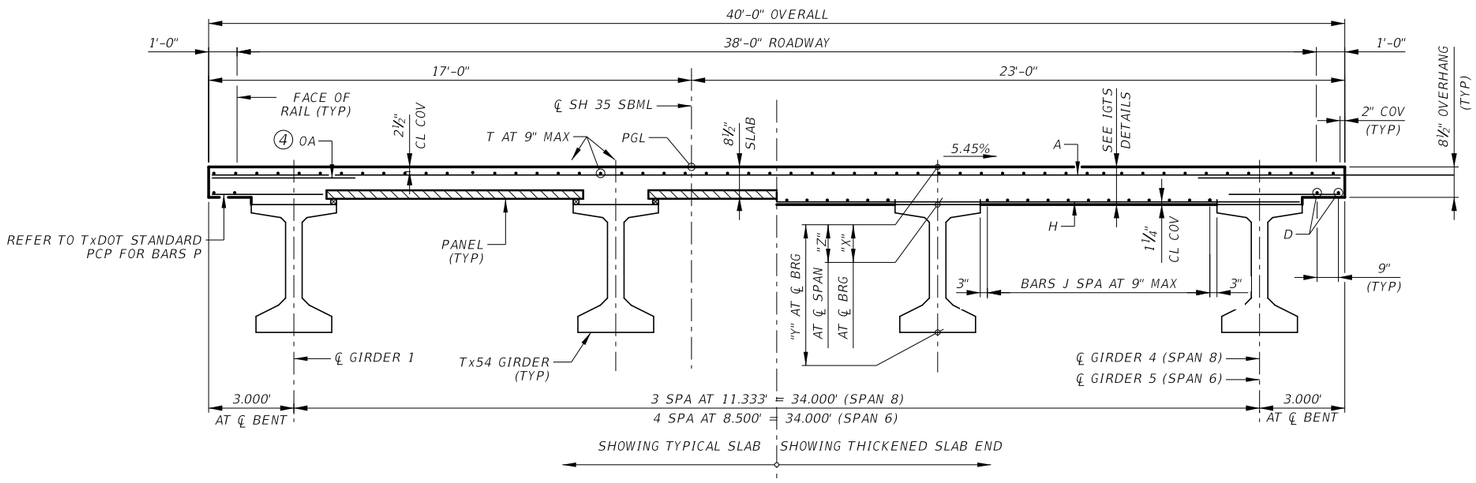
(1) LENGTHS SHOWN ARE BOTTOM GIRDER FLANGE LENGTHS WITH ADJUSTMENTS MADE FOR GIRDER SLOPE.

(2) REINFORCING STEEL WEIGHT IS CALCULATED USING AN APPROXIMATE FACTOR OF 2.3 LBS/SF.



TYPICAL RADIAL SECTION
SPAN 7

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



TYPICAL RADIAL SECTION
SPAN 6 & 8

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

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER
4/23/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

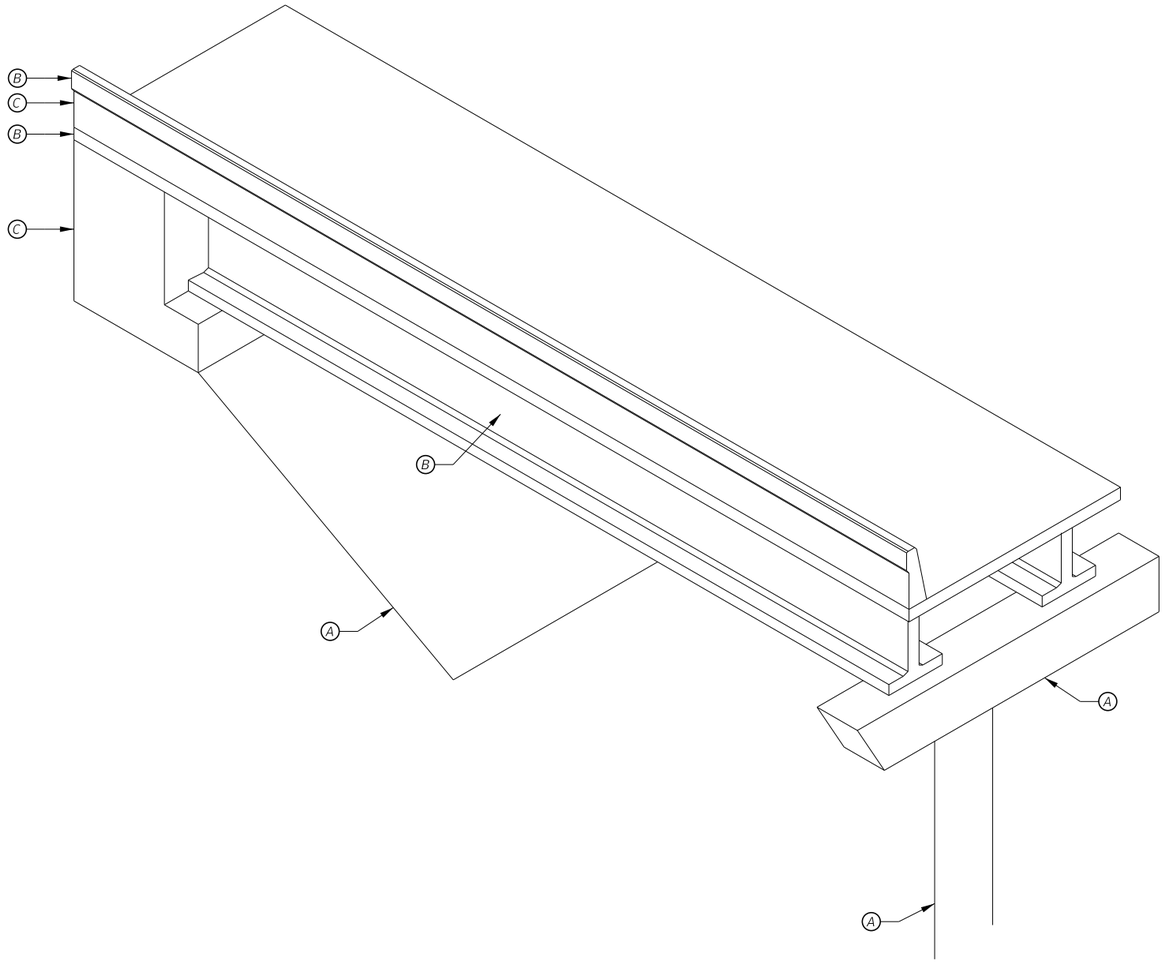
SH 35 AT OAK LANE

316.50' PRES CONC GIRDER UNIT 3
SB SH 35 OVERPASS AT OAK LANE

SCALE: 3/16" = 1'-0" SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	280

SCALE: 3.9169 sf / in.



SCHEDULE OF FINISHES AND COLORS

SYM	COLOR	TEXTURE	AREAS
A	SHERWIN WILLIAMS #6108 "LATTE" (*) OR APPROVED EQUAL	SMOOTH	RIPRAP, COLUMN BENT
B	SHERWIN WILLIAMS #7018 "DOVETAIL" (*) OR APPROVED EQUAL	SMOOTH	BEAM, RAIL
C	SHERWIN WILLIAMS #6054 "CANYON CLAY" (*) OR APPROVED EQUAL	SMOOTH	RAIL STRIPE, ABUTMENT

(*) SOLVENT-BASED STAIN ONLY. WATER BASED STAIN IS NOT ALLOWED.

NOTES:

1. ALL PAINT WILL BE SUBSIDIARY TO VARIOUS BRIDGE ITEMS. SAMPLES OF COLORS SHOULD BE BROUGHT TO THE ENGINEER AND AREA OFFICE ONE MONTH IN ADVANCE FOR APPROVAL BEFORE ORDERING. THE ENGINEER AND AREA OFFICE MAY CHANGE COLOR SCHEME AS APPROPRIATE.

REV	DESCRIPTION	DATE	INIT

Eric J. Goucher

STATE OF TEXAS
ERIC J GOUCHER
127776
LICENSED PROFESSIONAL ENGINEER

5/18/2021

HL93 LOADING

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

BRIDGE AESTHETICS

SCALE: NTS

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	281

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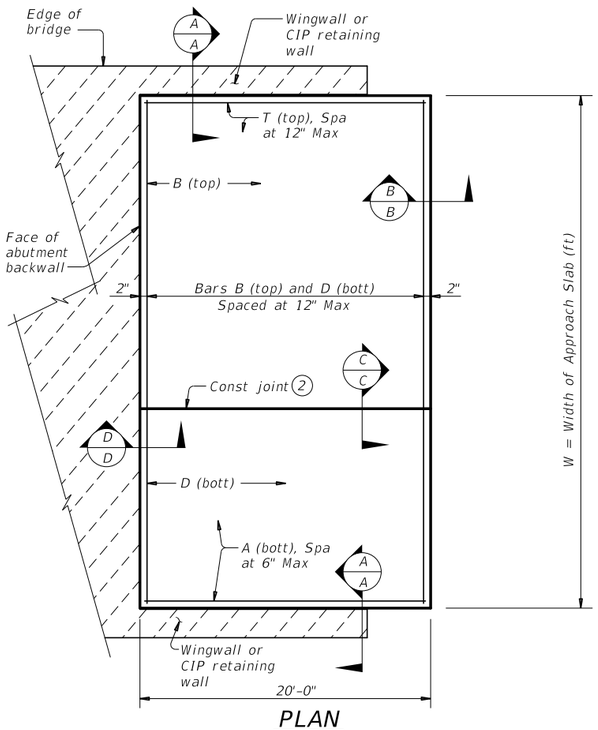
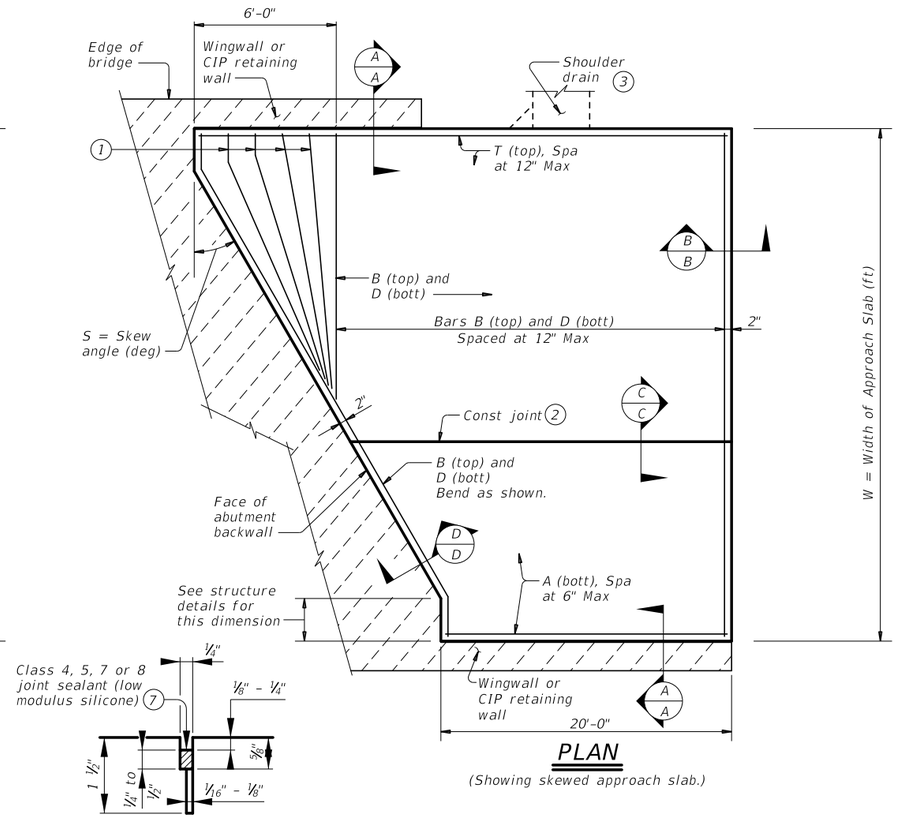


PLAN

(Showing non-skewed approach slab.)



PLAN

(Showing skewed approach slab.)

BAR TABLE

BAR	SIZE
A	#8
B	#5
D	#5
T	#5

APPROXIMATE QUANTITIES (4)

Reinf steel weight = 8.5 Lbs/SF of Approach Slab

Volume of Appr Slab Conc (CY) = $0.802W + 0.02W^2 \tan S$

W = Width of Approach Slab (ft)

S = Skew Angle (deg)

(1) Flare Bars B and D in this region (1'-6" Max Spa, 3" Min Spa). Minimum flared bar length = 2'-6". Bend bars as necessary.

(2) Provide longitudinal construction joints that align with longitudinal construction joints in the bridge slab with bridges built in stages. Other longitudinal construction joints must receive approval of the Engineer.

(3) See details elsewhere in plans for shoulder drain location and details.

(4) For Contractor's information only. Quantities shown are for one approach slab.

(5) Multiple piece tie bars are acceptable at longitudinal construction joints provided minimum laps shown are achieved.

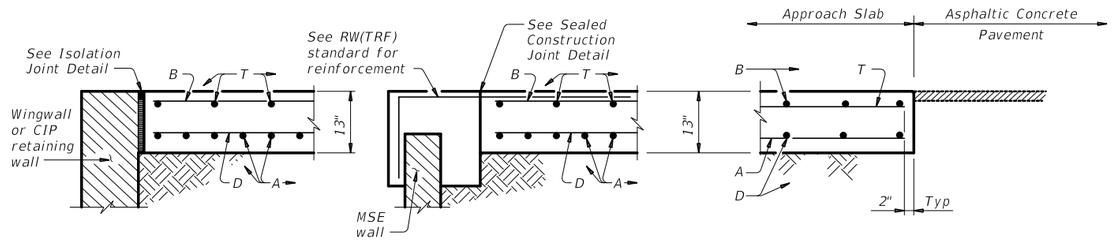
(6) See details elsewhere in plans for required cross-slope.

(7) Place in accordance with Item 438.

(8) Provide backer rod that is 25% larger than joint opening and compatible with the sealant.

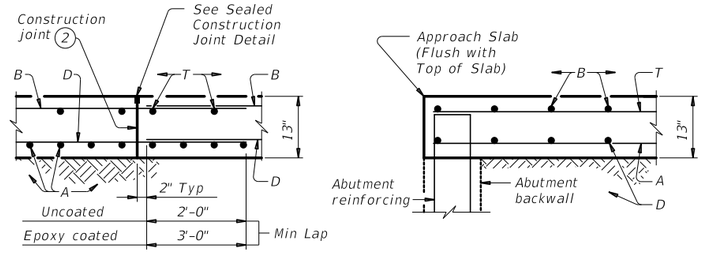
(9) If bridge rail is present at the wingwall or CIP retaining wall, place ½" rebonded recycled tire rubber between concrete railing and top of approach slab as shown when concrete railing projects over the approach slab.

LONGITUDINAL SAW CUT JOINT DETAIL



SHOWING WINGWALL OR CIP RETAINING WALL

SHOWING MSE WALL

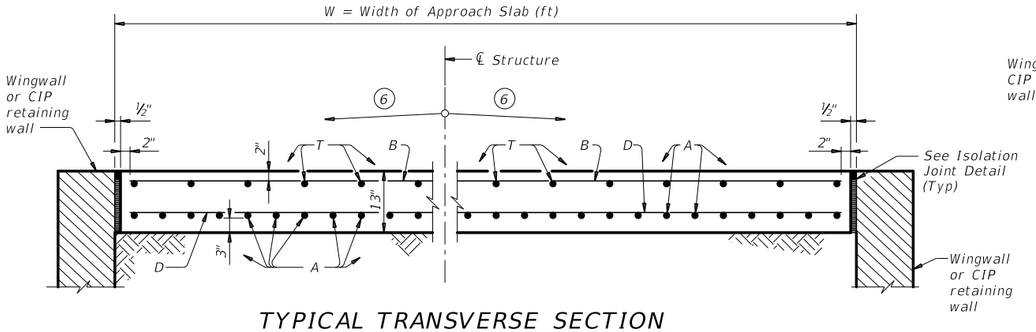


SECTION A-A

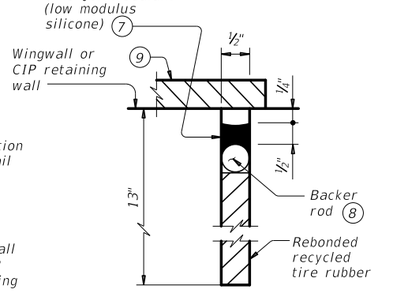
SECTION B-B

SECTION C-C (5)

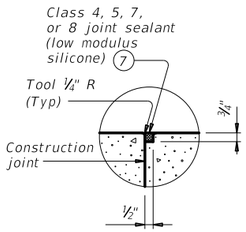
SECTION D-D



TYPICAL TRANSVERSE SECTION



ISOLATION JOINT DETAIL



SEALED CONSTRUCTION JOINT DETAIL

GENERAL NOTES:

Construct approach slab in accordance with Item 422.

Provide Class "S" concrete with a minimum compressive strength of 4,000 psi.

Provide Grade 60 reinforcing steel.

Provide longitudinal joints as shown on the Longitudinal Saw Cut Joint Detail at lane lines and shoulders when width between longitudinal construction joints or edges of approach slab exceeds 16 feet. Saw cut joints within 24 hours of concrete placement to a depth of 1 ½" and seal in accordance with Item 438. Alternately, provide a controlled joint consisting of 1 ½" vinyl or plastic joint former (Stress Cap, Zip Strip, Stress Lock, or equal as approved by the Engineer.)

Provide rebonded recycled tire rubber joint filler that meets the requirements of DMS-6310, "Joint Sealants and Fillers."

Construct the subgrade or subbase away from the bridge for a minimum distance of 100 feet prior to the approach slab, unless otherwise indicated on the plans.

Compact and finish the subgrade or foundation for the approach slab to the typical cross-section and to the lines and grades shown on the plans.

Cure for 4 days using water or membrane curing per Item 422.

All details shown herein are subsidiary to bridge approach slab.

Cover dimensions are clear dimensions, unless noted otherwise.

Texas Department of Transportation

Bridge Division Standard

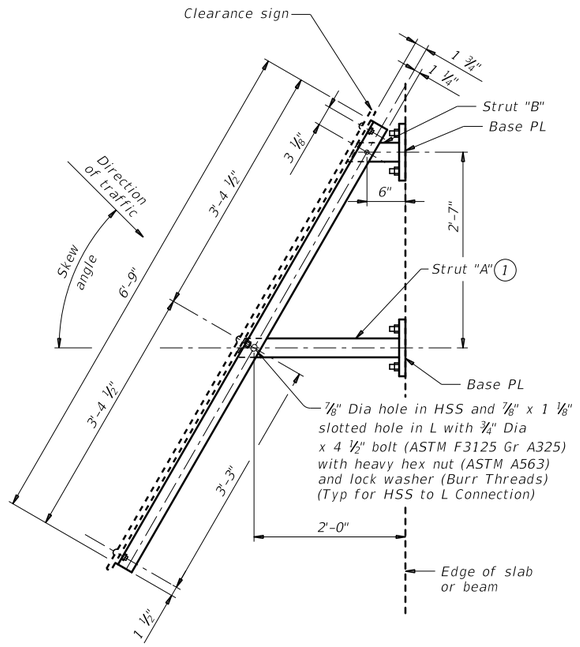
BRIDGE APPROACH SLAB

ASPHALTIC CONCRETE PAVEMENT

BAS-A

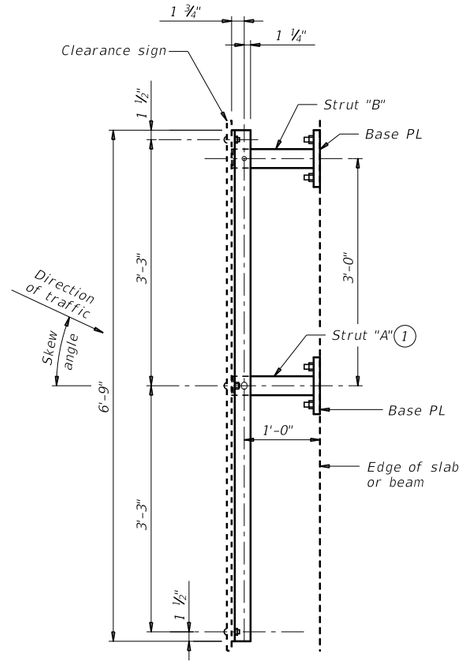
FILE: basaste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
02-20: Removed stress relieving pad.	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		282

DATE: DATE TIME
FILE: DOCUMENT NAME



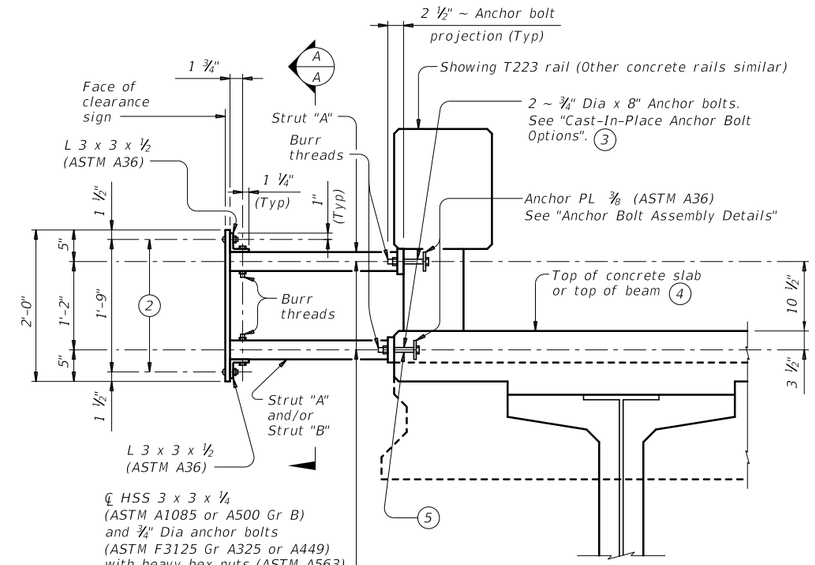
PLAN OF TYPE S MOUNT

(Used for skews over 30°)

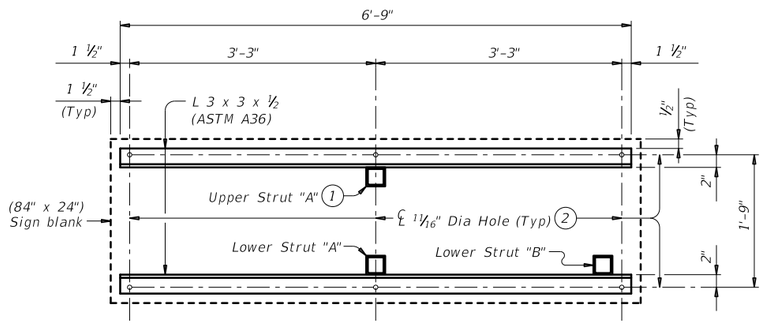


PLAN OF TYPE N MOUNT

(Used for 0° to 30° skews)



SECTION



SECTION A-A

1. Locate centerline of Strut A no closer than 12" from a vertical concrete edge.
2. ℄ ⅝" Dia x 2" Hexagon socket button head cap screws (ASTM A574) with hex nuts. Attach hex nuts to L 3 x 3 x ½ by tack welding in two places. Threads must have Class 3A fit tolerance in accordance ASME B1.1. Six screws required.
3. At the Contractor's option fully threaded adhesive anchors may be use instead of cast-in-place anchor bolts. Expansion anchors are not allowed. Provide adhesive anchors that are ¾" Dia ASTM A193 Gr B7 or F1554 Gr 105 fully threaded rods with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). Embed fully threaded rods using a Type III, Class C, D, E, or F anchor adhesive. Adhesive anchor embedment depth is 8". Anchor adhesive chosen must be able to achieve a factored bond strength in tension of 2.2 kips per anchor (edge distance and spacing must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".
4. For decked slab beams topped with a 2 course surface treatment and ACP overlay.
5. Anchor bolts to be cast into decked slab beams topped with a 2 course surface treatment or ACP overlay. Anchor bolts with heavy hex nuts, regular lock washers, hardened washers and anchor plate that is embedded in the beam will be provided by the beam Fabricator.

CONSTRUCTION NOTES:

Install the vertical face of clearance sign plumb unless otherwise approved by the Engineer.

Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 1 anchor per bridge mounted clearance sign installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.

MATERIAL NOTES:

Galvanize all steel components after fabrication unless otherwise noted.

GENERAL NOTES:

This standard provides details to mount a vertical clearance sign (84" x 24") to bridges. Rail Types T631, T631LS, PR11, PR22 and PR3 are not accommodated.

The Engineer will furnish the clearance to be shown on the sign.

See Bridge Layout for sign location and mounting type (Type N or S).

Cost of furnishing, installing, relocating or removing a clearance sign, including structural steel for sign mount, is included in unit price bid for Item 644, "Small Roadside Sign Assemblies".

One Sign Blank (84" x 24") is 14 SF.

Average steel weight for one complete Type N Mount is 219 Lb.

Average steel weight for one complete Type S Mount is 233 Lb.

SHEET 1 OF 3

Texas Department of Transportation

Bridge Division Standard

BRIDGE MOUNTED CLEARANCE SIGN ASSEMBLY

BMCS

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©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
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	CRP	SAN PAT.		283

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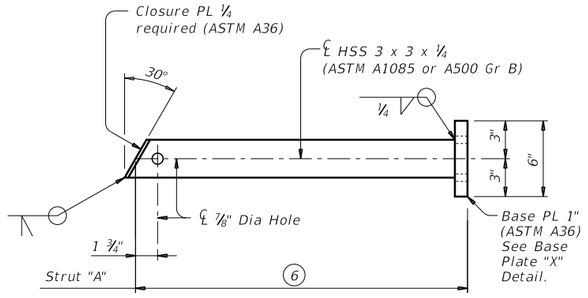
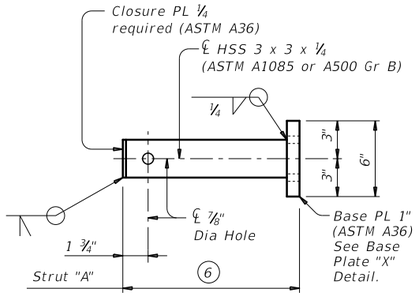
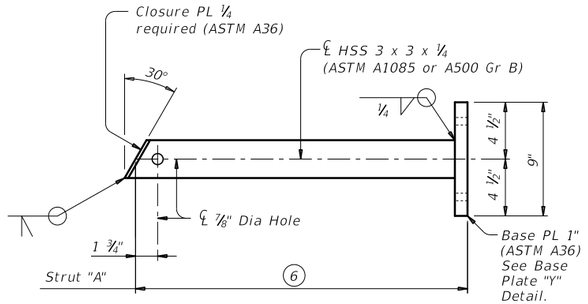


FOR T411 AND C411 RAIL TYPES



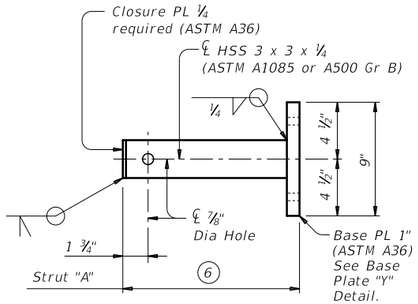
FOR T411 AND C411 RAIL TYPES



FOR T221, C221, T222, T223, C223, T401, T402, C402, T551, T552, T80HT, T80SS AND SSTR RAIL TYPES

UPPER STRUT DETAIL FOR (TYPE S MOUNT)

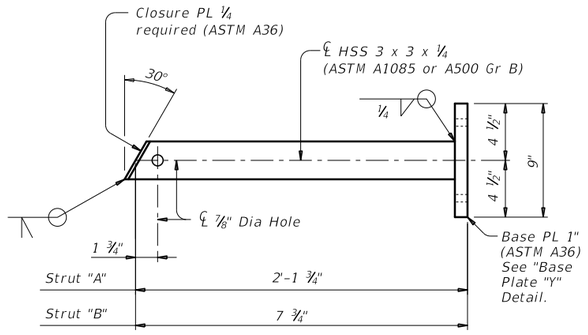
(Used for skews over 30°)



FOR T221, C221, T222, T223, C223, T401, T402, C402, T551, T552, T80HT, T80SS AND SSTR RAIL TYPES

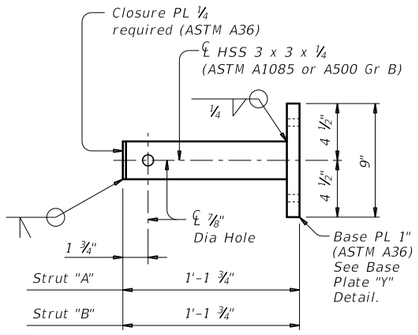
UPPER STRUT DETAIL FOR (TYPE N MOUNT)

(Used for 0° to 30° skews)



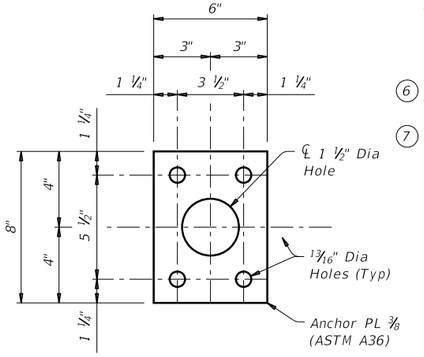
LOWER STRUT DETAILS FOR (TYPE S MOUNT)

(Used for skews over 30°)

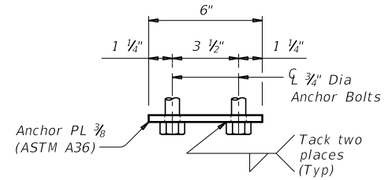


LOWER STRUT DETAILS FOR (TYPE N MOUNT)

(Used for 0° to 30° skews)



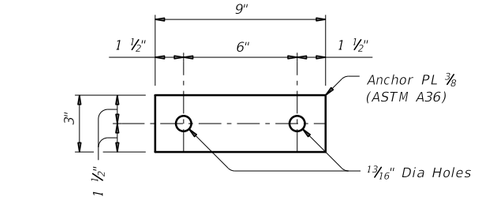
PLAN OF ANCHOR PLATE



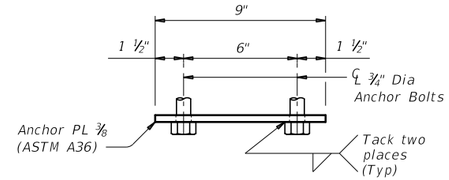
ELEVATION

ANCHOR BOLT ASSEMBLY DETAILS (3)

(Used on Base Plate "X" with T411 and C411 rail types.)



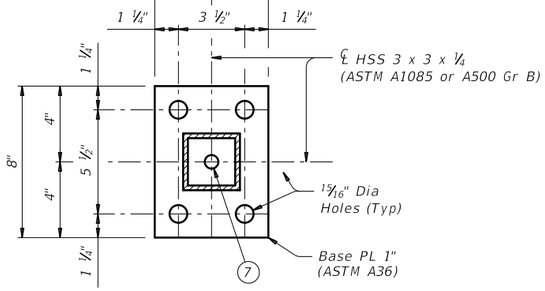
PLAN OF ANCHOR PLATE



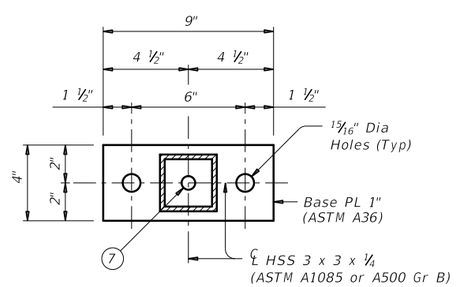
ELEVATION

ANCHOR BOLT ASSEMBLY DETAILS (3)

(Used on Base Plate "Y" and with T1F, T2P, C2P, T1W, C1W, T66 and C66 rail types.)

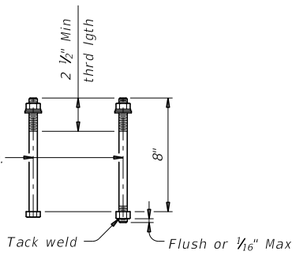


BASE PLATE "X" DETAIL



BASE PLATE "Y" DETAIL

℄ ¾" Dia heavy hex head anchor bolt (ASTM F3125 Gr A325 or A449) or threaded rod (ASTM A193 Gr B7 or F1554 Gr 105) with one hardened washer and one regular lock washer placed under heavy hex nut (ASTM A563). Furnish one additional heavy hex nut for each threaded rod.



CAST-IN-PLACE ANCHOR BOLT OPTIONS (3)

(3) At the Contractor's option fully threaded adhesive anchors may be use instead of cast-in-place anchor bolts. Expansion anchors are not allowed. Provide adhesive anchors that are ¾" Dia ASTM A193 Gr B7 or F1554 Gr 105 fully threaded rods with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). Embed fully threaded rods using a Type III, Class C, D, E, or F anchor adhesive. Adhesive anchor embedment depth is 8". Anchor adhesive chosen must be able to achieve a factored bond strength in tension of 2.2 kips per anchor (edge distance and spacing must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

(6) Adjust length to accommodate edge of slab to back of rail for specific project conditions and to help plumb the vertical face of clearance sign.

(7) Hole required to drain zinc from base plate during galvanizing.

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Bridge Division Standard

BRIDGE MOUNTED CLEARANCE SIGN ASSEMBLY

BMCS

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	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		284

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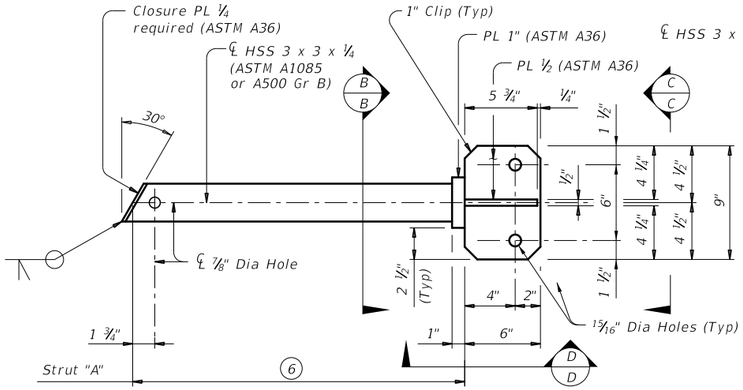
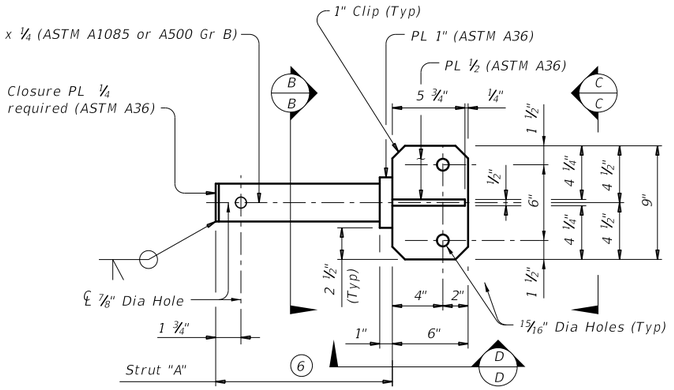


FOR T1F, T2P, C2P, T1W, C1W, T66 AND C66 RAIL TYPES

UPPER STRUT DETAIL FOR (TYPE S MOUNT)

(Used for skews over 30°)



FOR T1F, T2P, C2P, T1W, C1W, T66 AND C66 RAIL TYPES

UPPER STRUT DETAIL FOR (TYPE N MOUNT)

(Used for 0° to 30° skews)

(2) ℄ ⅞" Dia x 2" Hexagon socket button head cap screws (ASTM A574) with hex nuts. Attach hex nuts to L 3 x 3 x ½ by tack welding in two places. Threads must have Class 3A fit tolerance in accordance ASME B1.1. Six screws required.

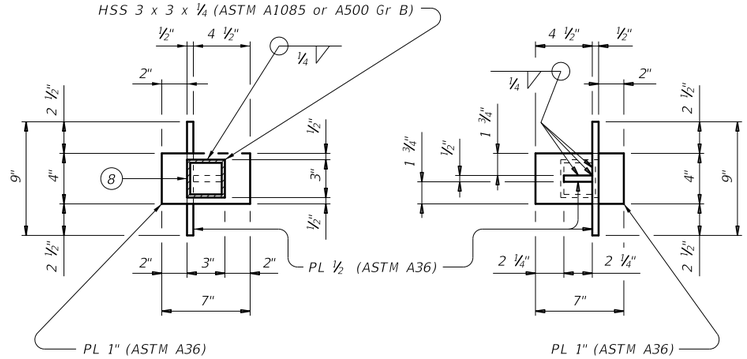
(3) At the Contractor's option fully threaded adhesive anchors may be use instead of cast-in-place anchor bolts. Expansion anchors are not allowed. Provide adhesive anchors that are ¾" Dia ASTM A193 Gr B7 or F1554 Gr 105 fully threaded rods with one hardened steel washer (ASTM F436) and one regular lock washer placed under heavy hex nut (ASTM A563). Embed fully threaded rods using a Type III, Class C, D, E, or F anchor adhesive. Adhesive anchor embedment depth is 8". Anchor adhesive chosen must be able to achieve a factored bond strength in tension of 2.2 kips per anchor (edge distance and spacing must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

(4) For decked slab beams topped with a 2 course surface treatment and ACP overlay.

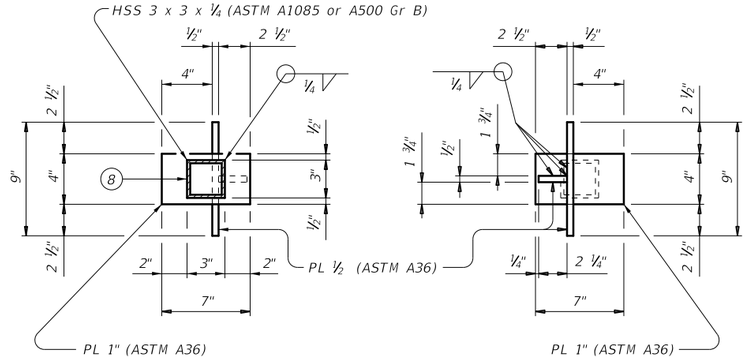
(6) Adjust length to accommodate edge of slab to back of rail for specific project conditions and to help plumb the vertical face of clearance sign.

(8) Hole required in bottom of HSS to drain zinc during galvanizing.

(9) 11" curb is for structures with 2" ACP overlay.



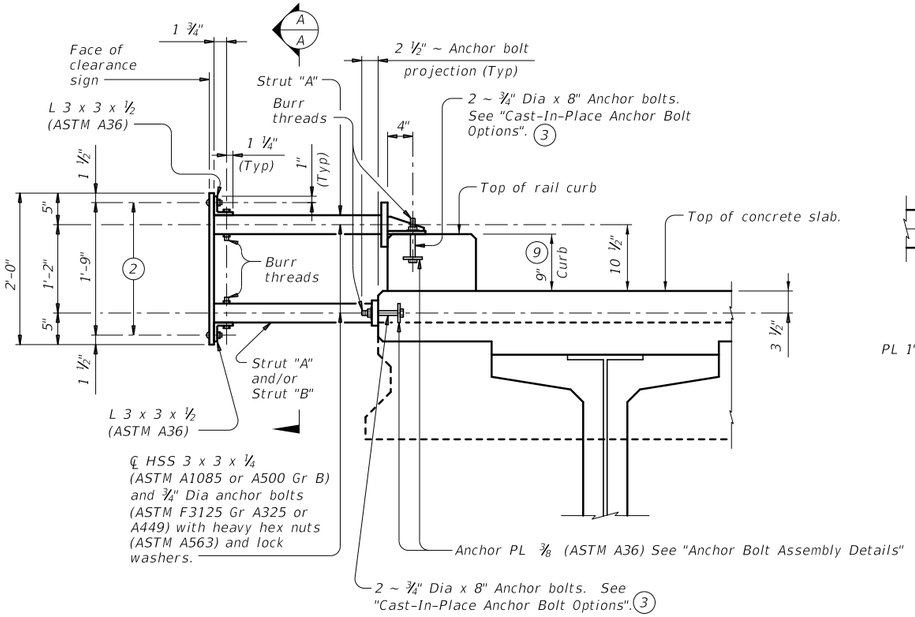
FOR 9" HIGH CURBS



FOR 11" HIGH CURBS

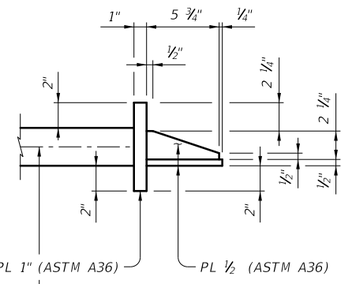
SECTION B-B

VIEW C-C

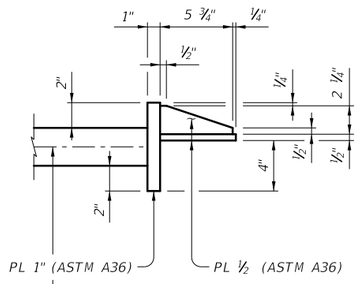


SECTION THRU T1F, T2P, C2P, T1W, C1W, T66 AND C66 RAIL CURB

Showing sign mount on a 9" high curb, 11" high curb similar.



FOR 9" HIGH CURBS



FOR 11" HIGH CURBS

VIEW D-D

SHEET 3 OF 3

Texas Department of Transportation

Bridge Division Standard

BRIDGE MOUNTED CLEARANCE SIGN ASSEMBLY

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	CRP	SAN PAT.		285

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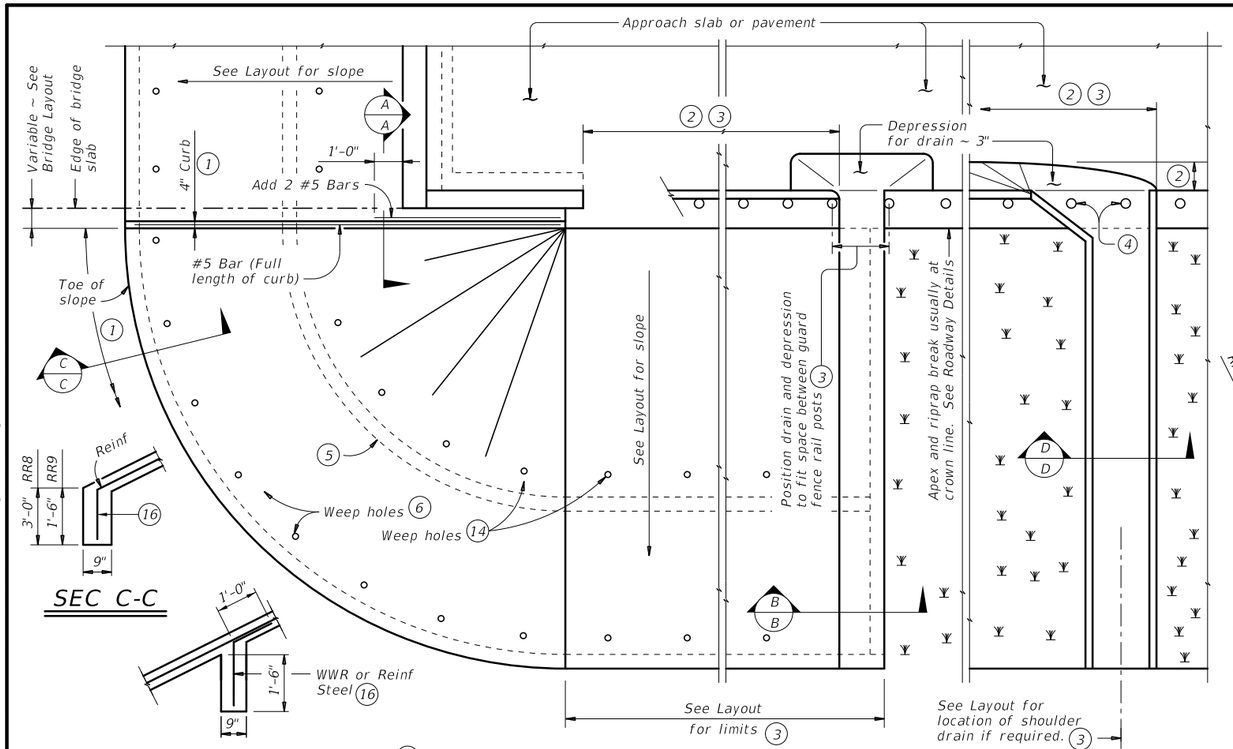
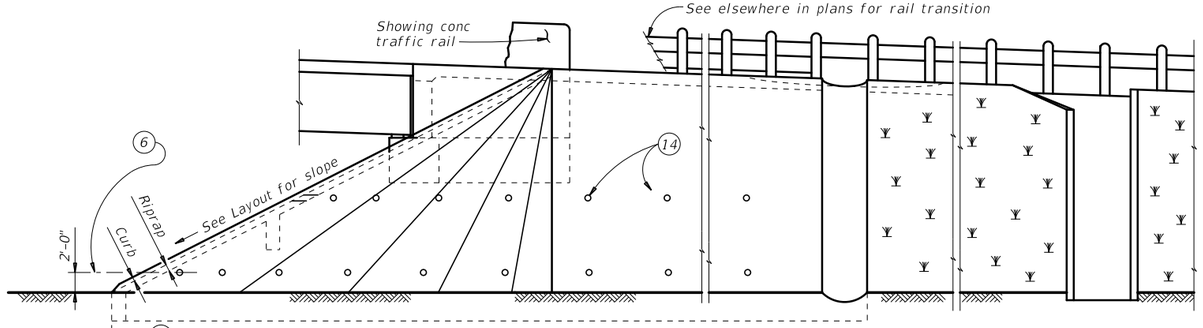


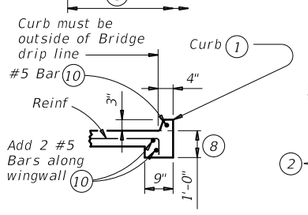
PLAN

SEC C-C

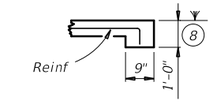
INTERMEDIATE TOEWALL (5)



ELEVATION

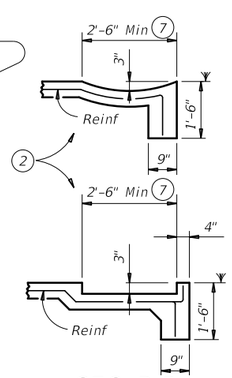


SEC A-A



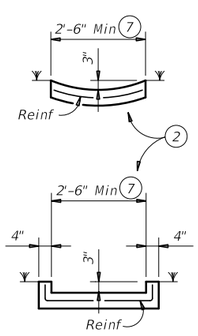
SEC B-B

(No drain)



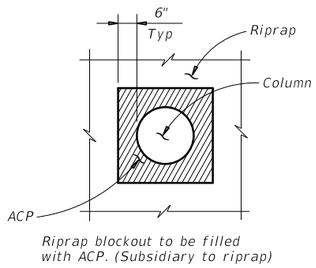
SEC B-B

(Shoulder drain integral with riprap)



SEC D-D

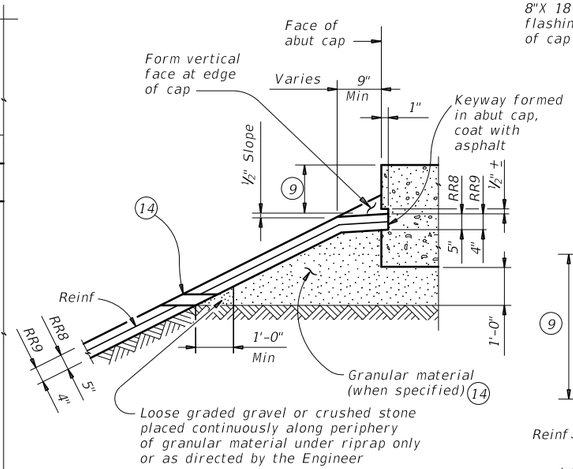
(Shoulder drain)



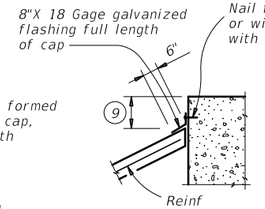
Riprap blockout to be filled with ACP. (Subsidiary to riprap)

RIPRAP DETAIL AT COLUMNS

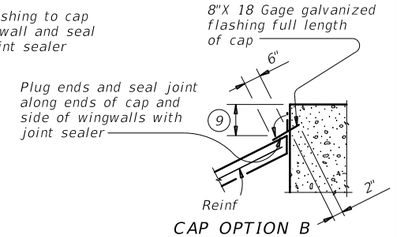
(As directed by the Engineer)



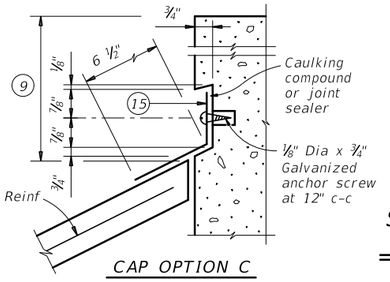
SHOWING KEYWAY OPTION



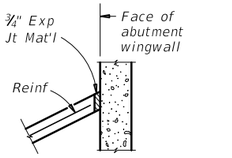
CAP OPTION A



CAP OPTION B

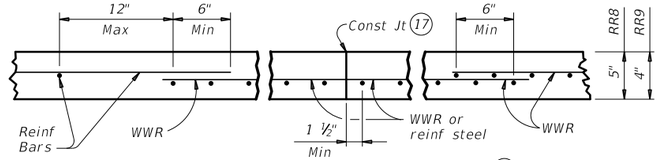


CAP OPTION C



SECT THRU RIPRAP AT WINGWALL (12)

SECTIONS THRU RIPRAP AT CAP (11)



REINFORCEMENT DETAILS (13)

See General Notes for optional synthetic fiber reinforcement.

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

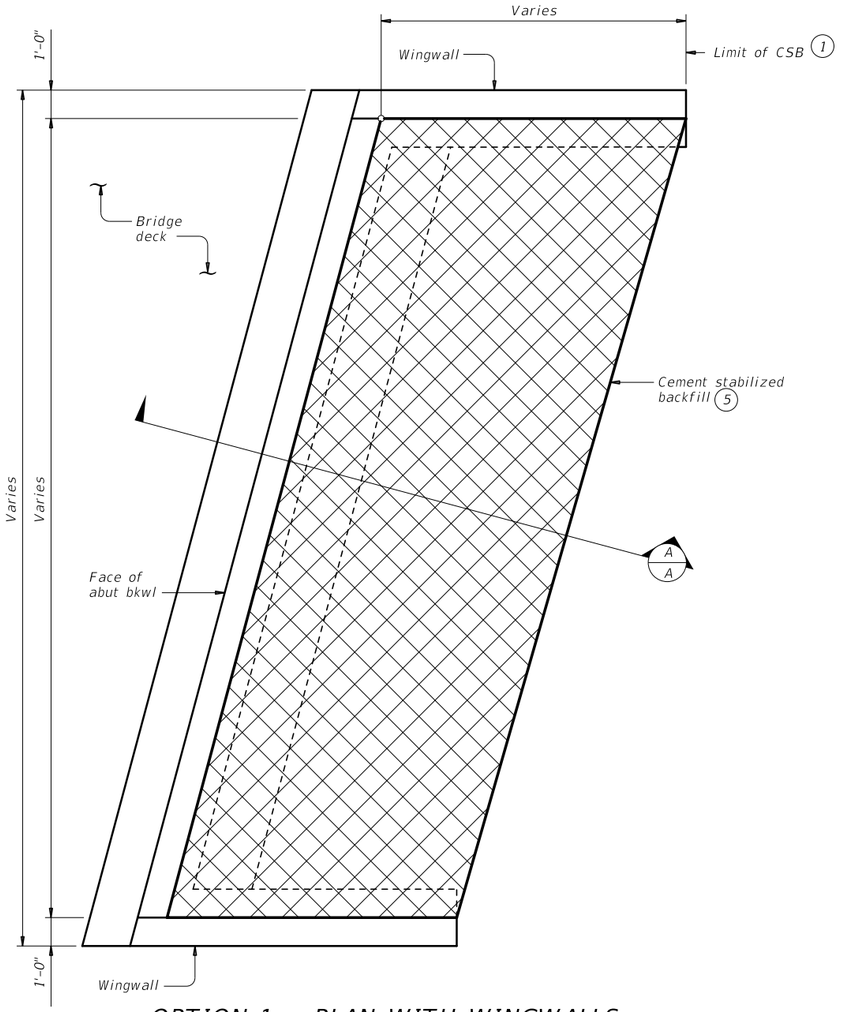
Bridge Division Standard

CONCRETE RIPRAP AND SHOULDER DRAINS
EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9)

CRR

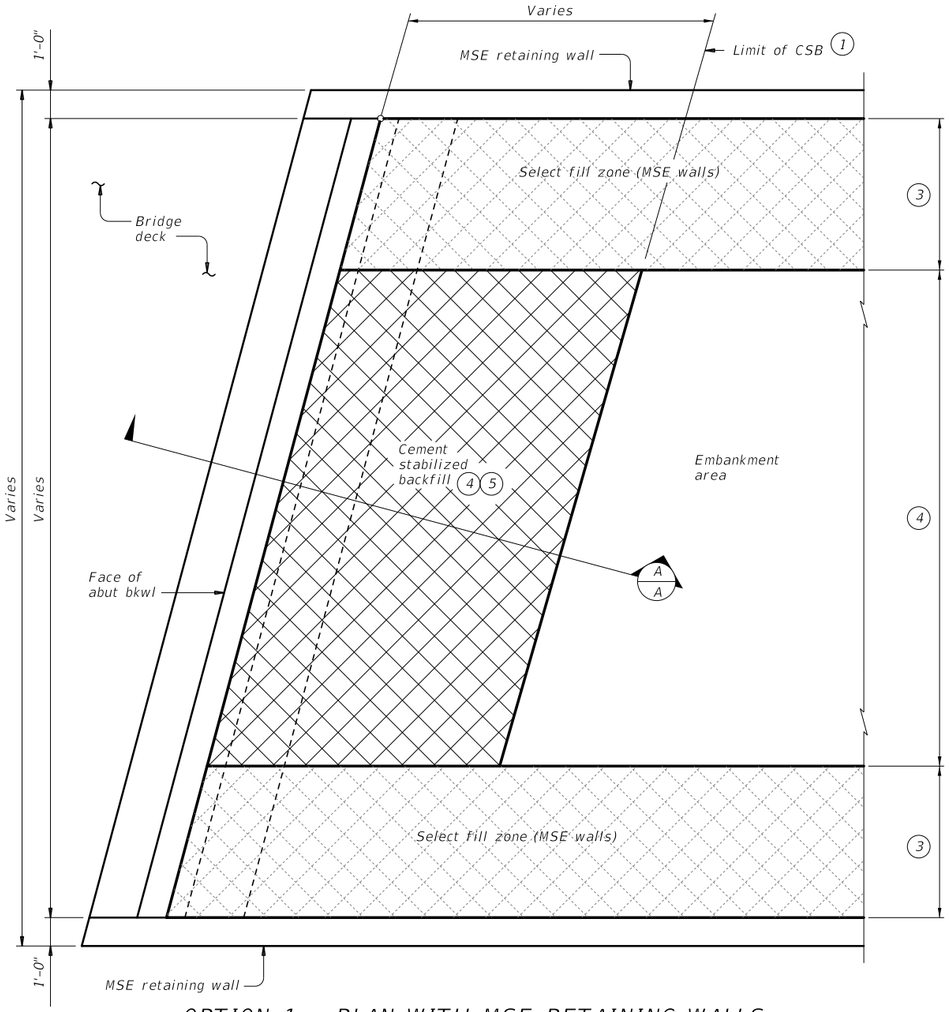
FILE: crrstde1-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		286

DATE: DATE TIME
FILE: DOCUMENT NAME



OPTION 1 ~ PLAN WITH WINGWALLS

Cast-in-place retaining walls similar.



OPTION 1 ~ PLAN WITH MSE RETAINING WALLS

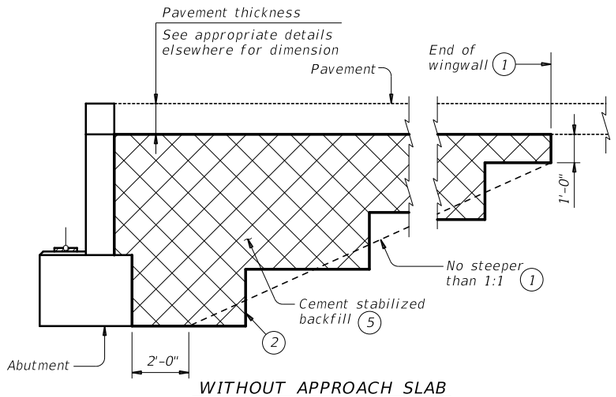
(1) Usual limit of Cement Stabilized Backfill is at end of wingwall. Extend CSB limits as required to maintain a slope no steeper than 1:1 at bottom of backfill.

(2) Bench backfill as shown with 12" (approximate) bench depths.

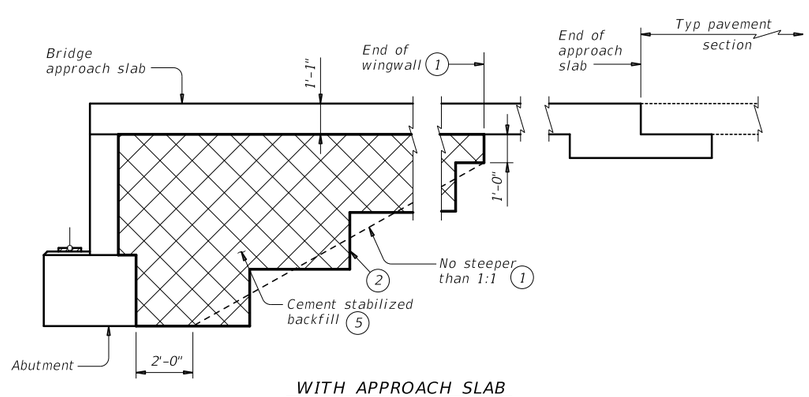
(3) Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.

(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 A-A

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

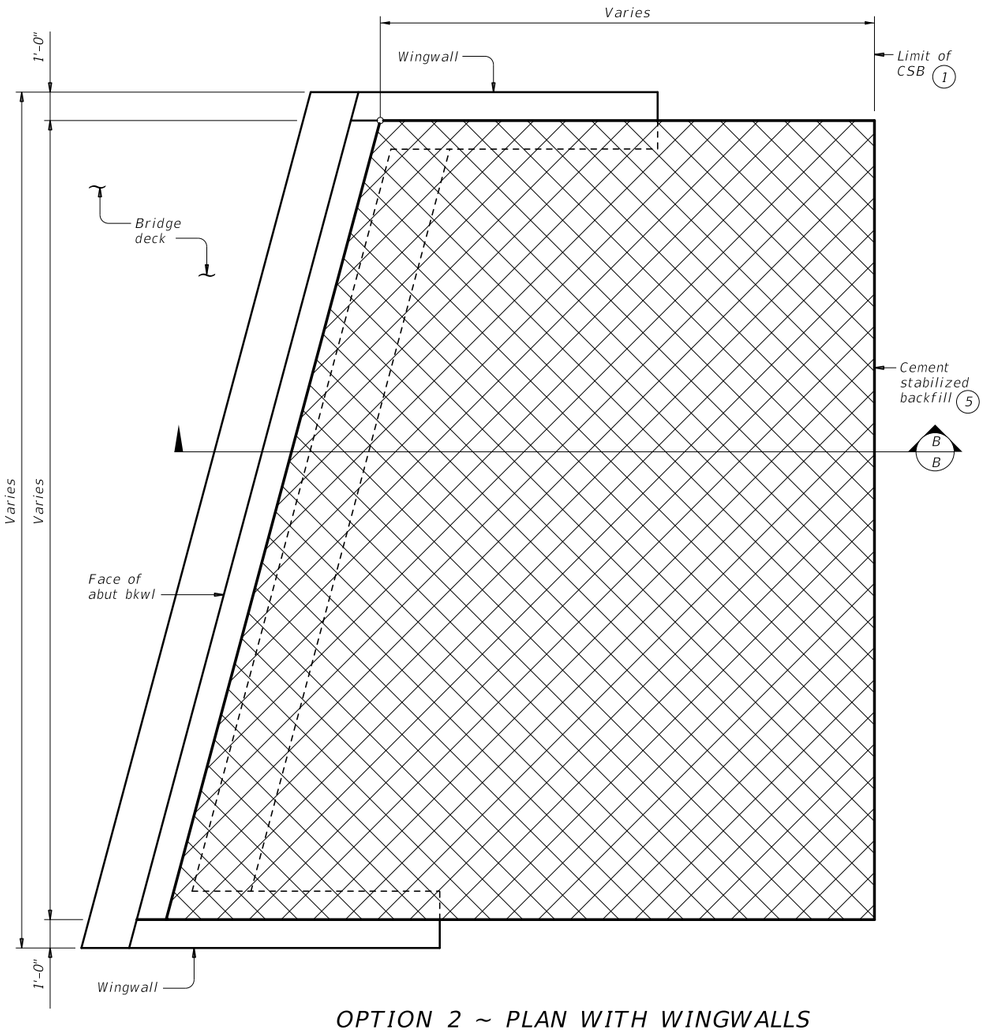
CEMENT STABILIZED ABUTMENT BACKFILL

BRIDGE ABUTMENT

CSAB

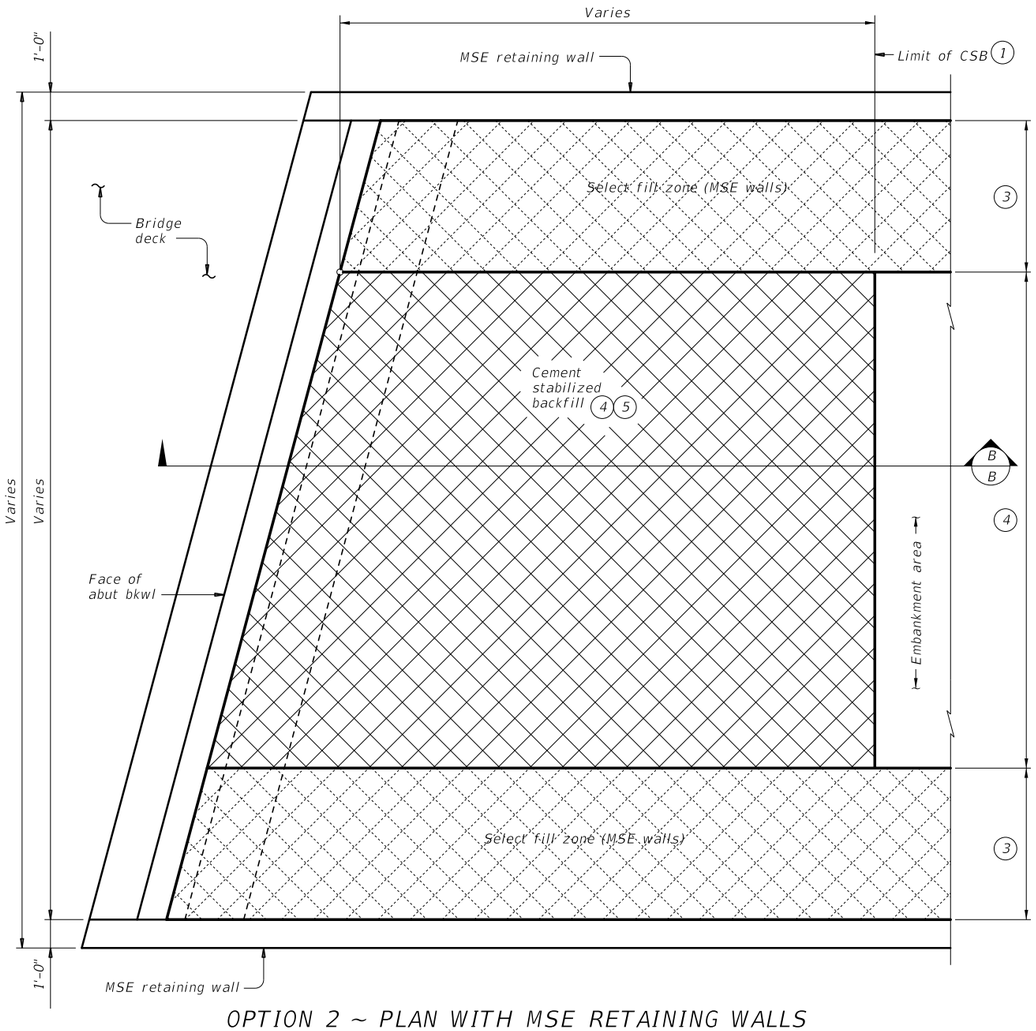
FILE: csabste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
02-20: Added Option 2.	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		287

DATE: DATE TIME
FILE: DOCUMENT NAME



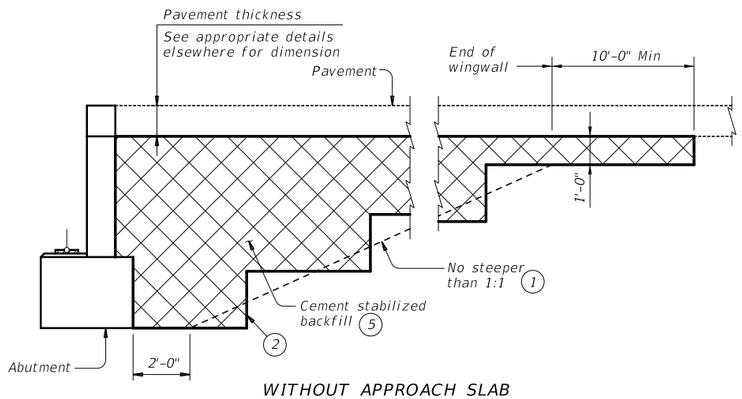
OPTION 2 ~ PLAN WITH WINGWALLS

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).



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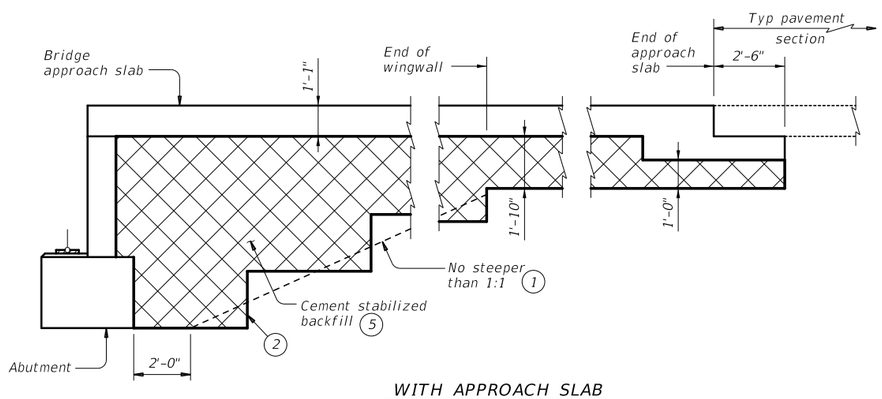


WITH APPROACH SLAB

(Showing BAS-C, BAS-A similar.)

SECTION B-B

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

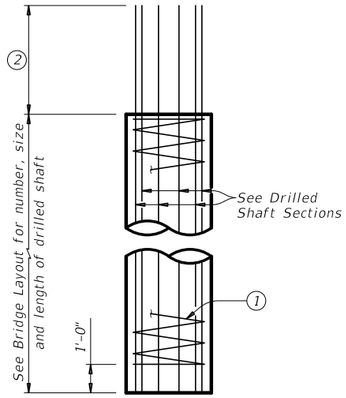
CEMENT STABILIZED ABUTMENT BACKFILL

BRIDGE ABUTMENT

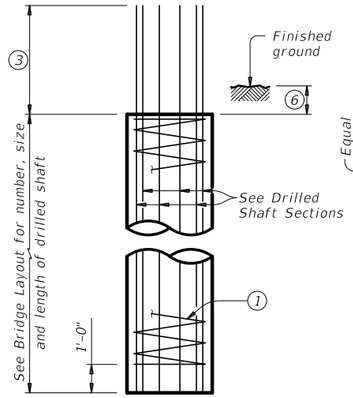
CSAB

FILE: csabste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
02-20: Added Option 2.	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		288

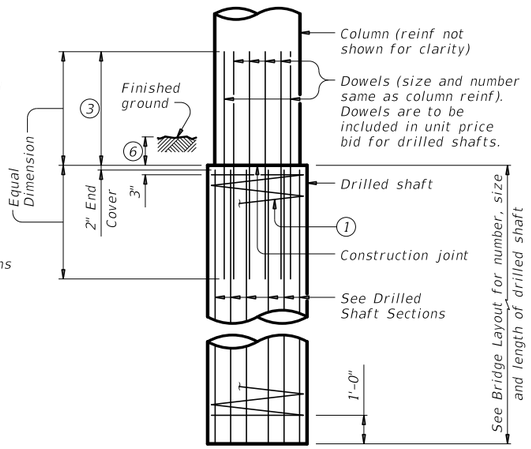
DATE: DATE TIME
FILE: DOCUMENT NAME



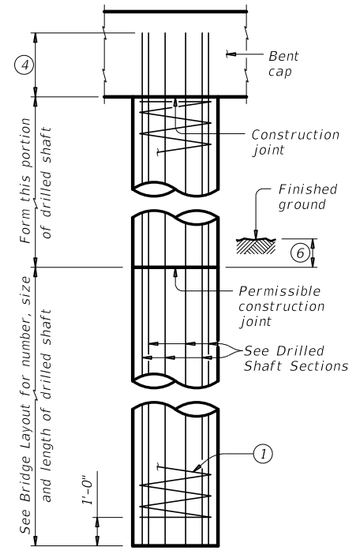
ABUTMENTS, WINGWALLS AND MULTI-DRILLED SHAFT FOOTINGS



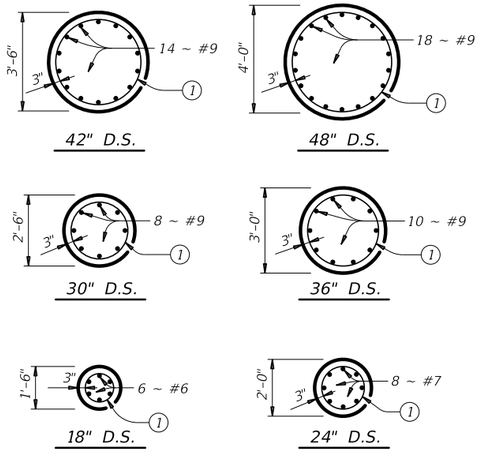
INTERIOR BENTS DRILLED SHAFT DIA EQUAL TO COLUMN DIA



INTERIOR BENTS DRILLED SHAFT DIA GREATER THAN COLUMN DIA



OPTIONAL INTERIOR BENT DRILLED SHAFT DETAIL (5)

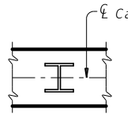


DRILLED SHAFT SECTIONS

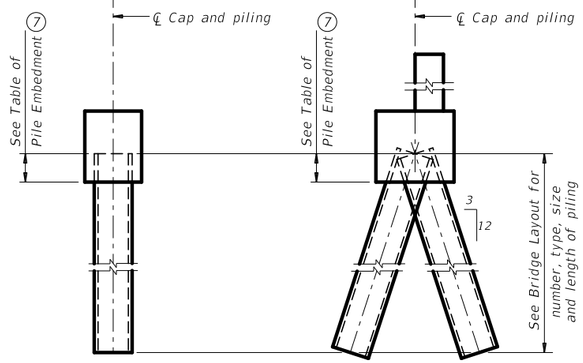
DRILLED SHAFT DETAILS

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"

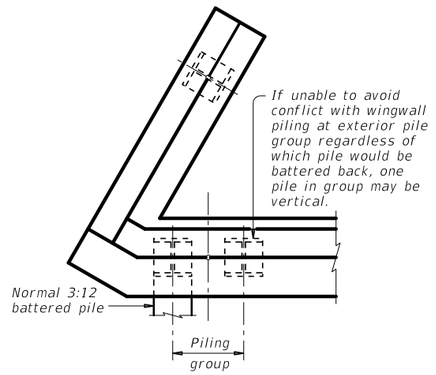
See Prestressed Concrete Piling (CP) standard for additional details on concrete pile embedment.



ORIENTATION OF STEEL H-PILING



PILING DETAILS
(Concrete or steel H)



DETAIL "A"
(Showing plan view of a 30° skewed abutment)

(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"

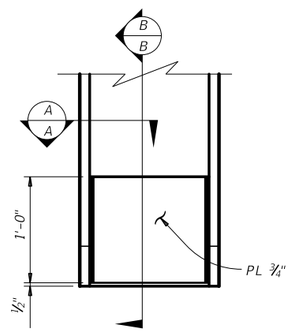
(3) Min lap with column reinf:
#7 Bars = 2'-11"
#9 Bars = 3'-9"
#11 Bars = 4'-8"

(4) Min extension into supported element:
#6 Bars = 1'-11"
#7 Bars = 2'-3"
#9 Bars = 2'-9"

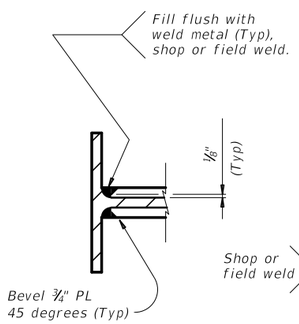
(5) Drilled shafts may extend to the bottom of bent caps for "H" heights of 6 ft and less (as shown on the Bridge Layout), if approved. This option can only be used when the drilled shaft diameter equals the column diameter. Obtain approval of the forming method above the ground line prior to construction. No adjustments in payment will be made if this option is used.

(6) 1'-0" Min, unless shown otherwise on plans.

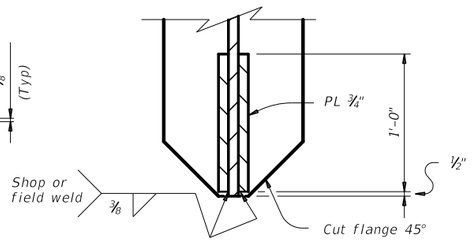
(7) Or as shown on plans.



ELEVATION



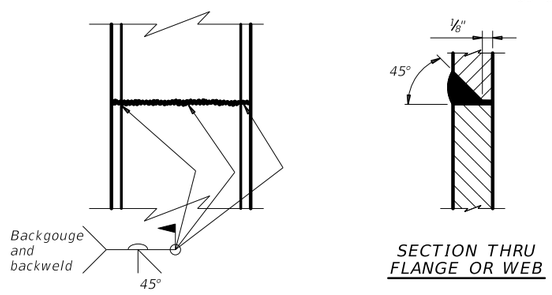
SECTION A-A



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.

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

COMMON FOUNDATION DETAILS

FD

FILE: fdstde01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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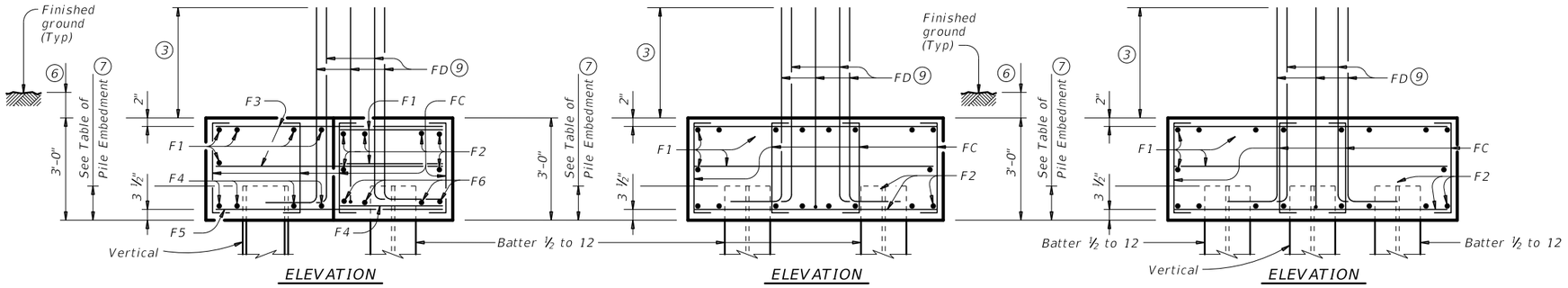
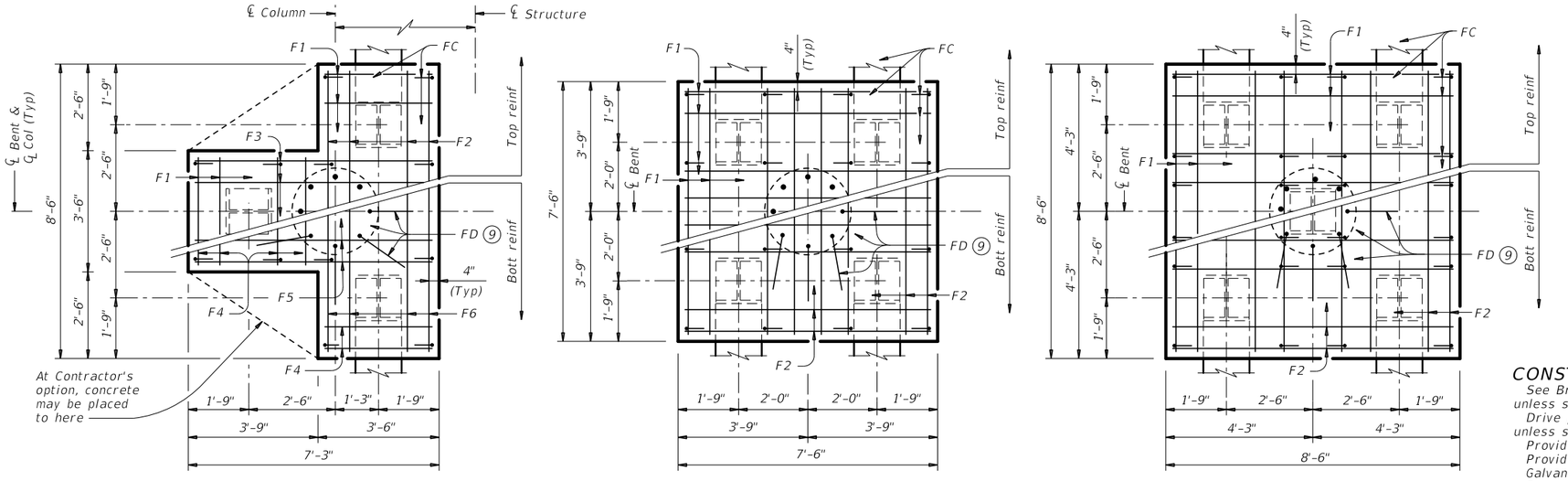
REVISIONS	0180	06	067	SH 35
01-20: Added #11 bars to the FD bars.	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		289

DATE: DATE TIME
FILE: DOCUMENT NAME





THREE PILE FOOTING (8)

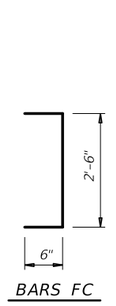
For 36" Dia and smaller columns.

FOUR PILE FOOTING (8)

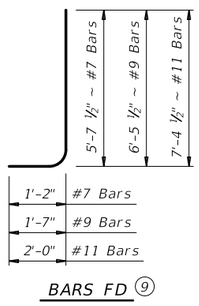
For 42" Dia and smaller columns.

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
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REVISIONS	0180	06	067	SH 35
01-20: Added #11 bars to the FD bars.	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		290

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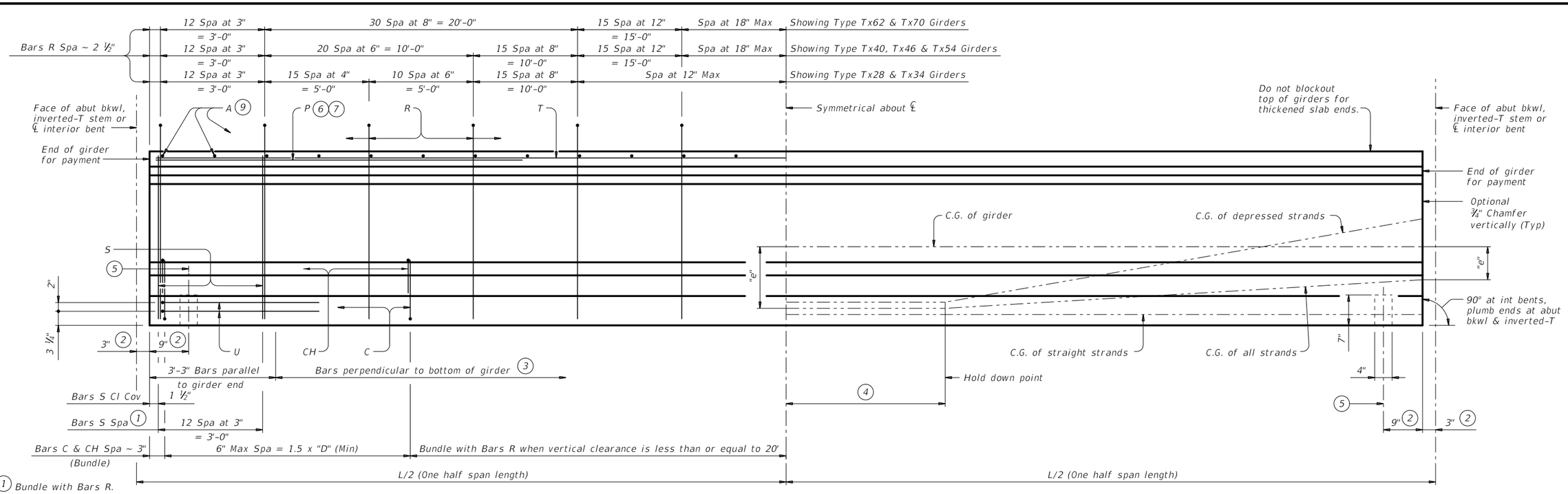


(1) Bundle with Bars R.

(2) Measured along ℄ Girder at interior bents; perpendicular to abutment bkwl or inverted-T stem.

(3) The average of the top and bottom spacing of Bars R cannot exceed the required spacing.

(4) L/20, but not less than 5'-0" (-0,+2').

(5) ℄ 4" x 1 ½" Vertical Slotted Hole at doweled girder end [labeled (D) on Bridge Layout]. Required for outside girder only or as shown on substructure details. Anchorage holes may be tapered (4 ¾" x 1 ⅝") at base. If holes are formed with sheet metal, forms may be left in place.

GIRDER ELEVATION

(6) Bars P (#6 x 15'-0") required in Tx62 and Tx70 girders. At the fabricator's option bars larger than #6 may be used. When L is less than 50 ft, Bars P are to be the same length as Bars T.

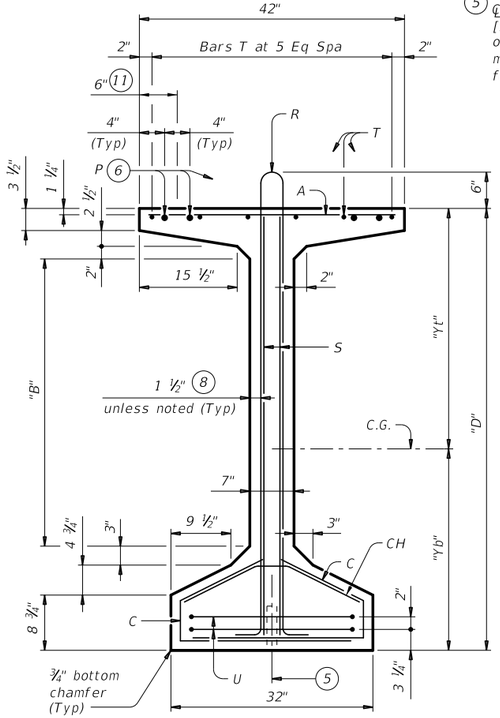
(7) Bars P (#6 x 15'-0") are only required in Tx28, Tx34, Tx40, Tx46, and Tx54 girders when "e" at girder ends exceeds 0.25 x "D". At the fabricator's option bars larger than #6 may be used. When L is less than 50 ft, Bars P are to be the same length as Bars T.

(8) 1 ⅜" Clear Cover to Bars S.

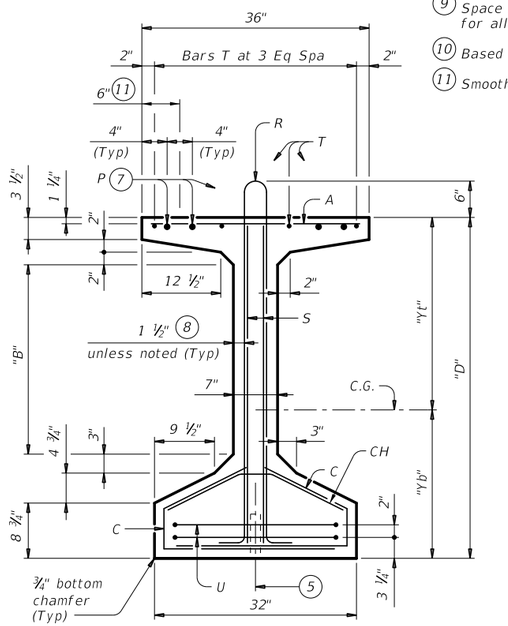
(9) Space Bars A at 6" Max for girders requiring overhang bracket hangers. Space at 12" Max for all other girders. Tie to Bars R as necessary. See standard IGMS for "Deck Forming Notes".

(10) Based on 155 pcf total weight of concrete and reinforcing steel.

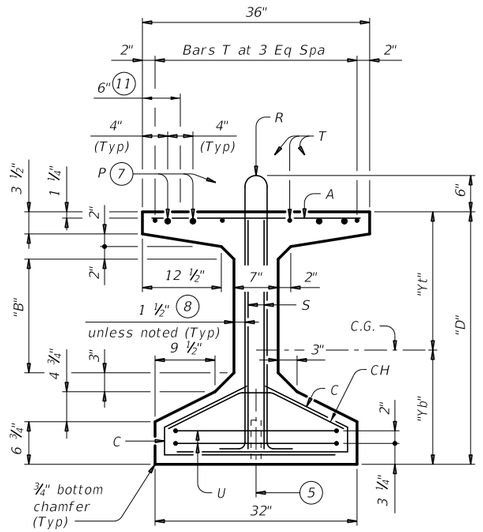
(11) Smooth trowel finish on the slab overhang side of exterior girder.



TYPE Tx62 & Tx70



TYPE Tx46 & Tx54



TYPE Tx28, Tx34 & Tx40

GIRDER DIMENSIONS AND SECTION PROPERTIES

Girder Type	"D" (in.)	"B" (in.)	"Yt" (in.)	"Yb" (in.)	Area (in.²)	"Ix" (in.⁴)	"Iy" (in.⁴)	Weight (10) (plf)
Tx28	28	6	15.02	12.98	585	52,772	40,559	630
Tx34	34	12	18.49	15.51	627	88,355	40,731	675
Tx40	40	18	21.90	18.10	669	134,990	40,902	720
Tx46	46	22	25.90	20.10	761	198,089	46,478	819
Tx54	54	30	30.49	23.51	817	299,740	46,707	880
Tx62	62	37 ½"	33.72	28.28	910	463,072	57,351	980
Tx70	70	45 ½"	38.09	31.91	966	628,747	57,579	1,040

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Provide Class H concrete.
Provide Grade 60 reinforcing steel.
An equal area of deformed Welded Wire Reinforcement (WWR) (ASTM A1064) may be substituted for Bars A, C, R or T unless otherwise noted.
It is permissible for bars or strands to come in contact with materials used in forming anchor holes.

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

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE I-GIRDER DETAILS

IGD

FILE: igdstds1-19.dgn	DN: TxDOT	CK: JMH	DW: JTR	CK: TAR
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REVISIONS	0180	06	067	SH 35
10-19: Added Bars C and CH full length for VC<= 20'	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		291

DATE: DATE TIME
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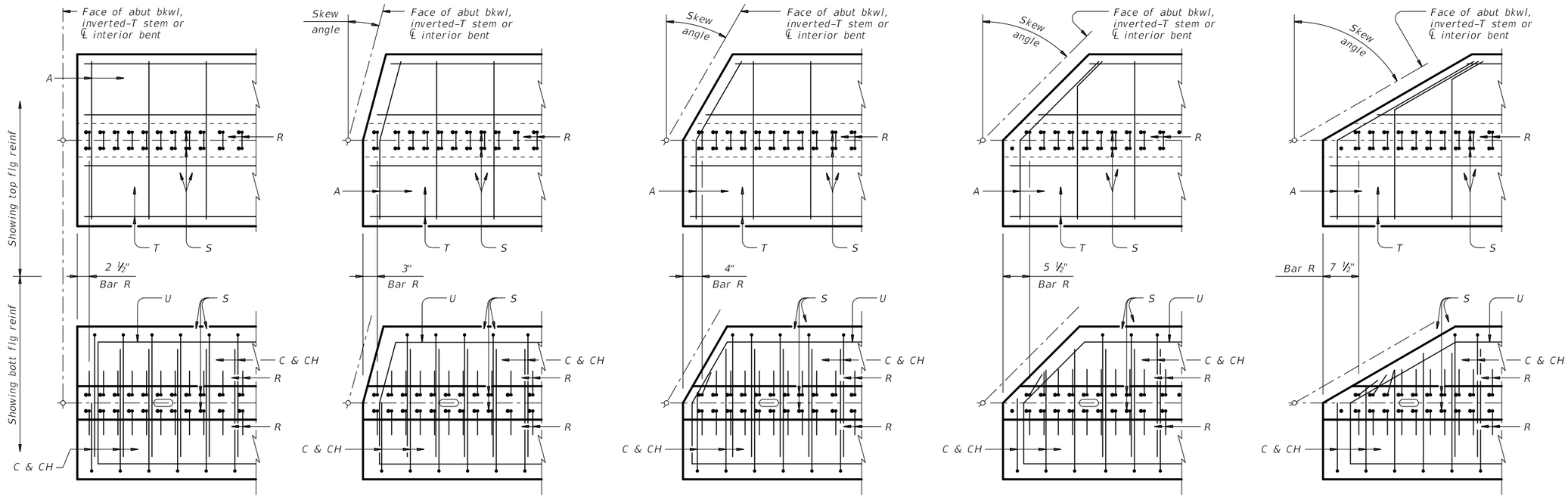
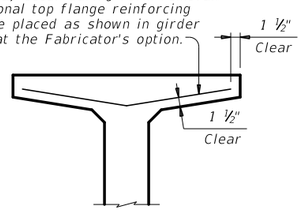
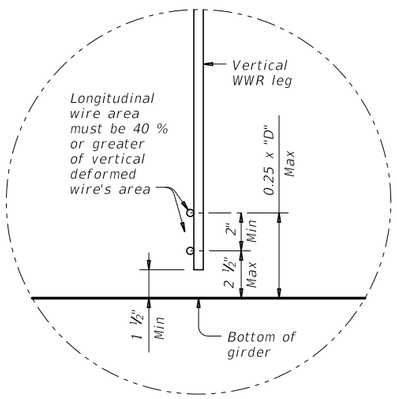


PLAN OF GIRDER ENDS (12)

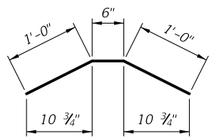
To control top flange cracking that may occur during form removal, additional top flange reinforcing may be placed as shown in girder ends at the Fabricator's option.



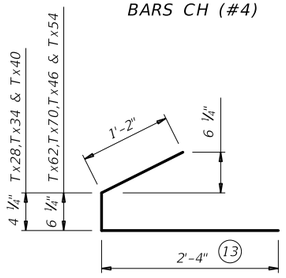
OPTIONAL TOP FLANGE REINFORCING DETAIL



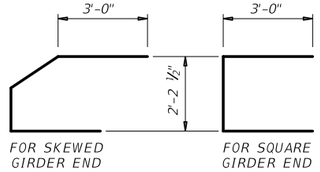
OPTIONAL WELDED WIRE REINFORCEMENT (WWR) DETAIL



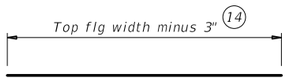
BARS CH (#4)



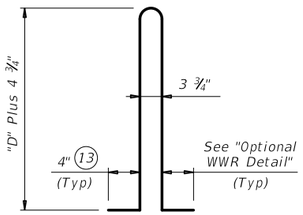
BARS C (#4)



BARS U (#5)

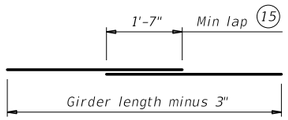


BARS A (#3)



BARS R (#4) (16)

BARS S (#6)



BARS T (#4)

(12) Reinforcing patterns shown are provided as guides to determine reinforcement placement in skewed ends. Place Bars S as close to girder end as cover requirements permit, which may prevent them to be bundled with Bars R.

(13) Bars may be cut or bent at skewed end as required.

(14) Increase as necessary for bars at skewed end.

(15) No portion of bar less than 10 ft.

(16) For Welded Wire Reinforcement (WWR) option, area of Bars R may be reduced in proportion to the increase in reinforcement yield strength over 60 ksi. Yield strength of WWR is limited to 75 ksi.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE I-GIRDER DETAILS

IGD

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REVISIONS	0180	06	067	SH 35
10-19: Added Bars C and CH full length for VC<= 20'	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		292

DATE: DATE TIME
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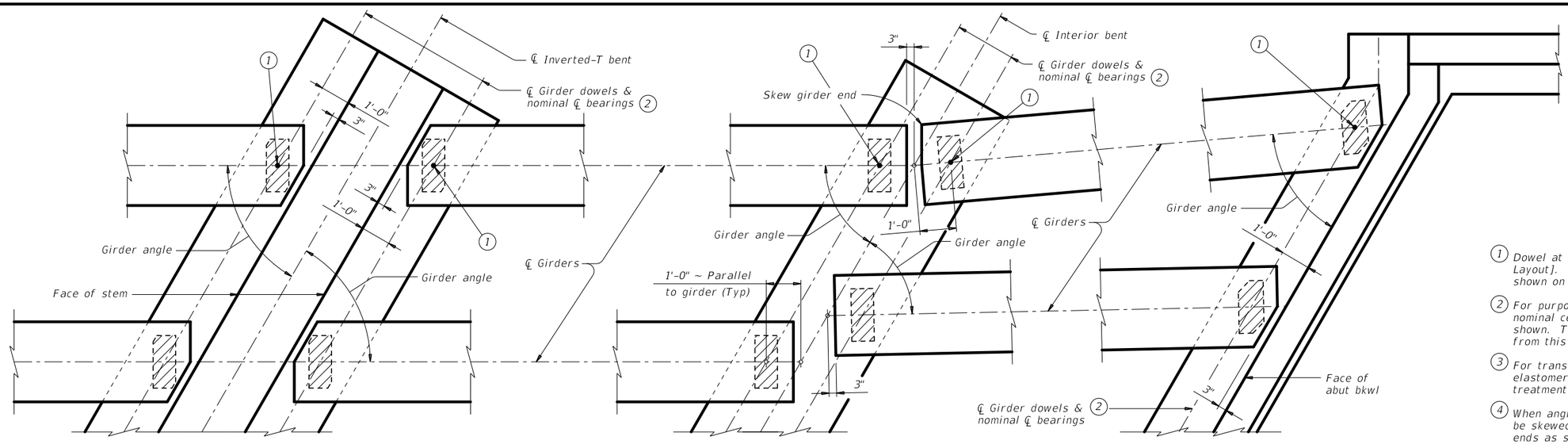


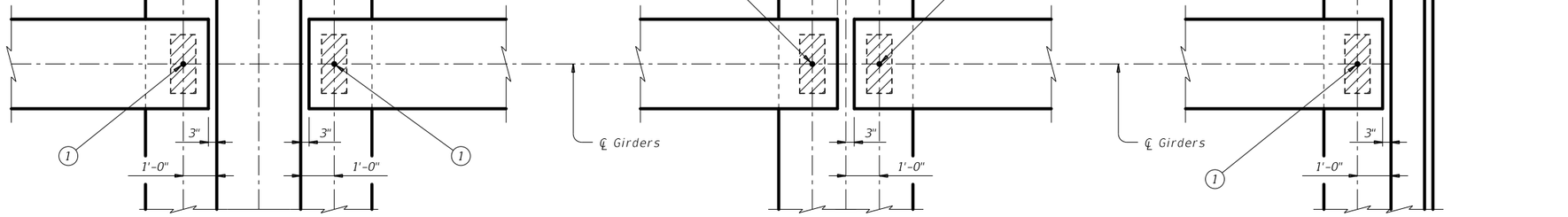
(1) Dowel at doweled girder end [labeled (D) on Bridge Layout]. Required for outside girder only or as shown on substructure details.

(2) For purposes of computing bearing seat elevations, nominal centerline of bearing must be defined as shown. The actual center of bearing pad may vary from this line.

(3) For transition bents with backwall, girder and elastomeric bearings must receive the same treatment as shown for abutments.

(4) When angle exceeds 0°, one or both girders ends must be skewed to maintain the clearance between girder ends as shown in view.

(5) See Table of Bearing Pad Dimensions for bearing size. Girder end skew angles in Table not applicable for this situation. Table reflects girder conflicts of this type on radial bents only.



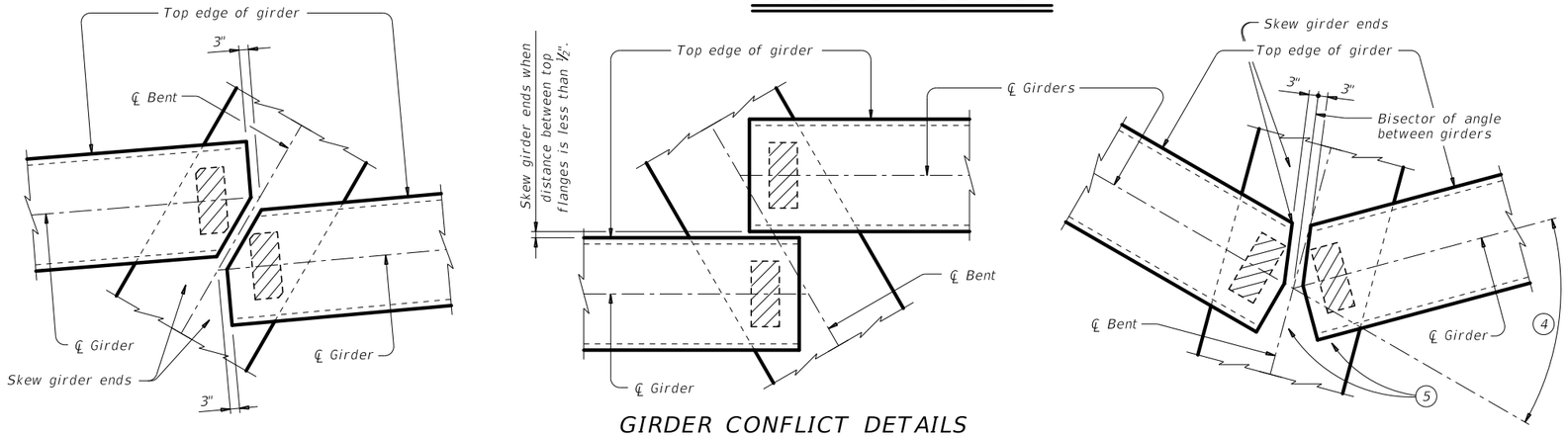
GENERAL NOTES:

These details accommodate skew angles up to 60°. Shop drawings for approval are required.

A bearing layout which identifies location and orientation of all bearings must be developed by the bearing fabricator. Permanently mark each bearing in accordance with the bearing layout. A copy of the bearing layout is to be provided to the Engineer.

Cost of furnishing and installing elastomeric bearings, including beveled and embedded steel plates, must be included in unit price bid for "Prestressed Concrete Girders".

GIRDER END DETAILS



GIRDER CONFLICT DETAILS

HL93 LOADING SHEET 1 OF 3

Texas Department of Transportation

Bridge Division Standard

ELASTOMERIC BEARING AND GIRDER END DETAILS

PRESTR CONCRETE I-GIRDERS

IGEB

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REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		293

DATE: DATE TIME
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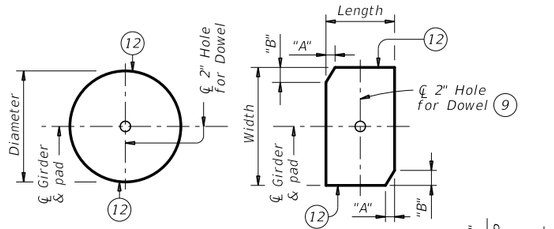
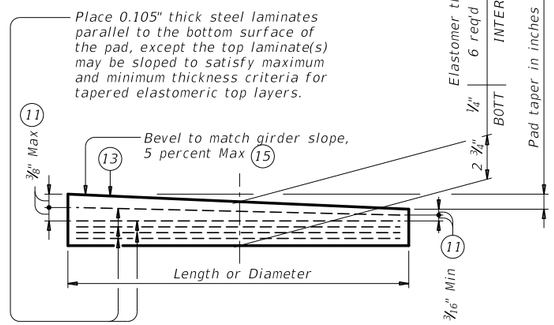


PLANS (10)



ELEVATION

LAMINATED ELASTOMERIC BEARING PAD

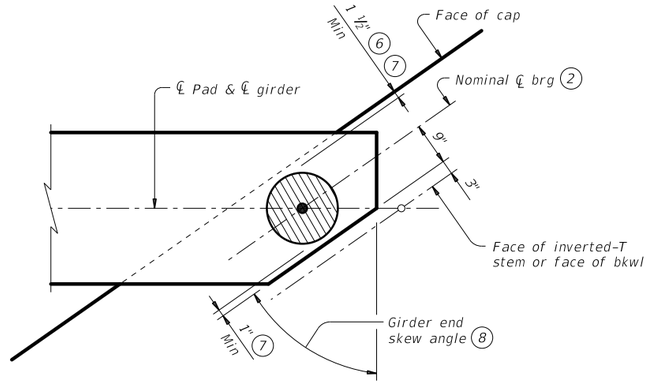
(50 DUROMETER)

TABLE OF MINIMUM SUBSTRUCTURE DIMENSIONS (14)

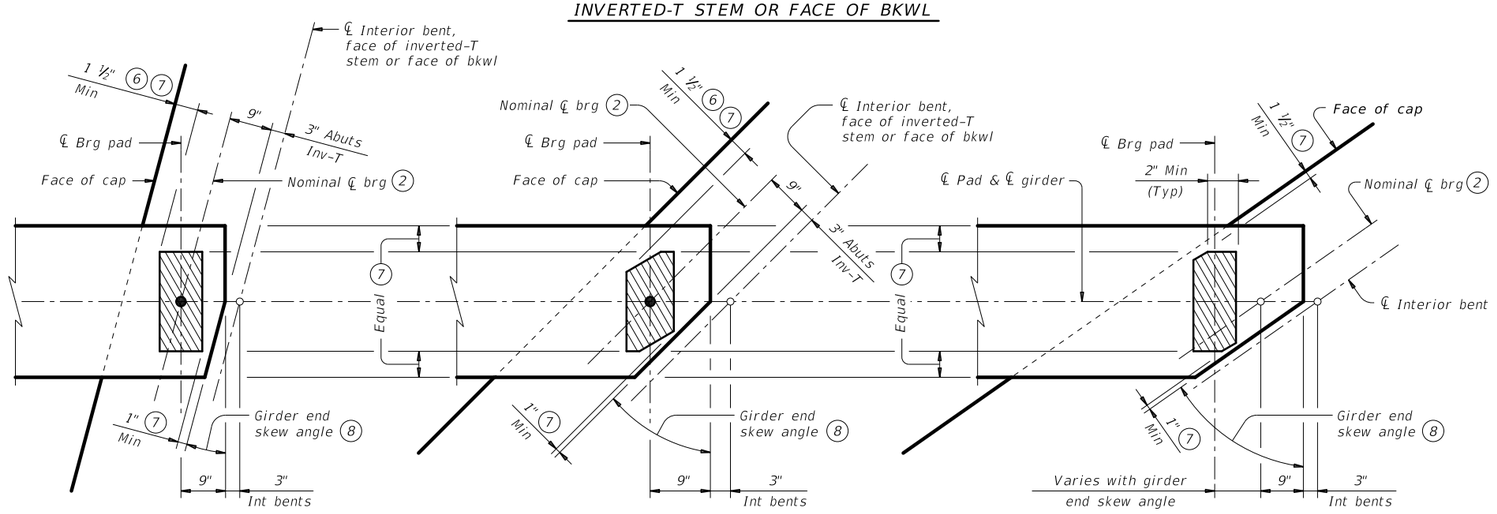
Girder Type	Abutments	Int Bents	Inv-T Bents
	Face of Bkwl to Face of Cap	Overall Cap Width	Corbel Width
Tx28 thru Tx54	1'-9"	3'-6"	1'-10 ½"
Tx62 & Tx70	2'-0"	4'-0"	2'-1 ½"

TABLE OF BEARING PAD DIMENSIONS

Bent Type	Girder Type	Bearing Type (13)	Girder End Skew Angle Range	Pad Size Lgth x Wdth	Pad Clip Dimensions "A"	Pad Clip Dimensions "B"
ABUTMENTS, INVERTED-T AND TRANSITION BENTS WITH BACKWALLS	Tx28,Tx34, Tx40,Tx46 & Tx54	G-1-"N"	0° thru 21°	8" x 21"	---	---
		G-2-"N"	21°+ thru 30°	8" x 21"	1 ½"	2 ½"
		G-3-"N"	30°+ thru 45°	9" x 21"	4 ½"	4 ½"
		G-4-"N"	45°+ thru 60°	15" Dia	---	---
	Tx62 & Tx70	G-5-"N"	0° thru 21°	9" x 21"	---	---
		G-6-"N"	21°+ thru 30°	9" x 21"	1 ½"	2 ½"
		G-7-"N"	30°+ thru 45°	10" x 21"	4 ½"	4 ½"
		G-8-"N"	45°+ thru 60°	10" x 21"	7 ¼"	4 ¼"
CONVENTIONAL INTERIOR BENTS	Tx28,Tx34, Tx40,Tx46 & Tx54	---	---	---	---	---
		---	---	---	---	---
		G-1-"N"	0° thru 60°	8" x 21"	---	---
	Tx62 & Tx70	G-5-"N"	0° thru 60°	9" x 21"	---	---
CONVENTIONAL INTERIOR BENTS WITH SKEWED GIRDER ENDS (GIRDER CONFLICTS) (16)	Tx28,Tx34, Tx40,Tx46 & Tx54	G-1-"N"	0° thru 18°	8" x 21"	---	---
		G-2-"N"	18°+ thru 30°	8" x 21"	1 ½"	2 ½"
		G-9-"N"	30°+ thru 45°	8" x 21"	3"	3"
		G-10-"N"	45°+ thru 60°	9" x 21"	6"	3 ½"
	Tx62 & Tx70	G-5-"N"	0° thru 18°	9" x 21"	---	---
		G-5-"N"	18°+ thru 30°	9" x 21"	---	---
		G-11-"N"	30°+ thru 45°	9" x 21"	1 ½"	1 ½"
		G-12-"N"	45°+ thru 60°	9" x 21"	3"	1 ¾"



ROUND BEARINGS FOR SKEWED GIRDER ENDS AT FACE OF INVERTED-T STEM OR FACE OF BKWL



SKEWED GIRDER ENDS AT INT BENTS, FACE OF INVERTED-T STEM OR FACE OF BKWL

SKEWED GIRDER ENDS AT CONVENTIONAL INTERIOR BENTS (16)

(NO GIRDER DOWELS)

BEARING PAD PLACEMENT DIAGRAMS

(2) For purposes of computing bearing seat elevations, nominal centerline of bearing must be defined as shown. The actual center of bearing pad may vary from this line.

(6) 3" for inverted-T.

(7) Place centerline pad as near nominal centerline bearing as possible between limits shown.

(8) Girder end skew angle is equal to 90° minus the girder angle except at some conflicting girders.

(9) Provide 2" dia hole only at locations required. See Substructure details for location.

(10) See Table of Bearing Pad Dimensions for dimensions.

(11) Maximum and minimum layer thicknesses shown are for elastomer only, on tapered layers.

(12) Locate Permanent Mark here.

(13) Indicate BEARING TYPE on all pads. For tapered pads, locate BEARING TYPE on the high side. The Fabricator must include the value of "N" (amount of taper in ⅛" increments) in this mark.
Examples: N=0, (for 0" taper)
N=1, (for ⅛" taper)
N=2, (for ¼" taper)
(etc.)
Fabricated pad top surface slope must not vary from plan girder slope by more than $\left(\frac{0.0625"}{\text{Length or Dia}}\right)$ IN/IN.

(14) Substructure dimensions must satisfy the minimums provided to accommodate the elastomeric bearings shown on this standard.

(15) See sheet 3 of 3 for beveled plate use when slopes exceed 5 percent.

(16) If girder end is skewed for a girder conflict at an interior bent and a beveled sole plate is required, use bearing type for abutments at this location. Location of bearing centerline is to be set as for abutments in this case.

HL93 LOADING SHEET 2 OF 3

Texas Department of Transportation

Bridge Division Standard

ELASTOMERIC BEARING AND GIRDER END DETAILS

PRESTR CONCRETE I-GIRDERS

IGEB

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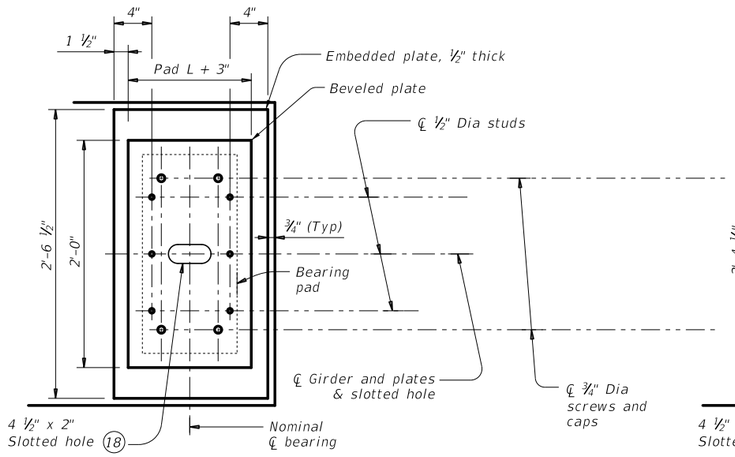
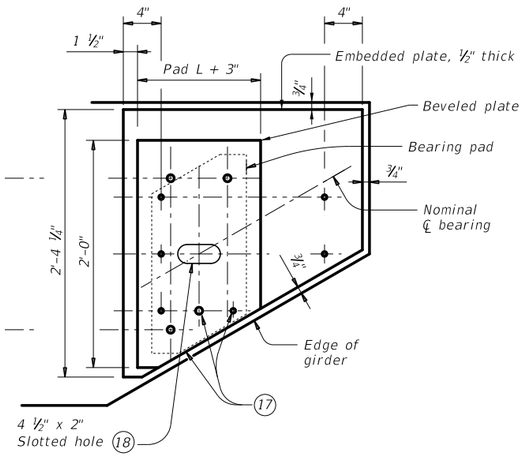
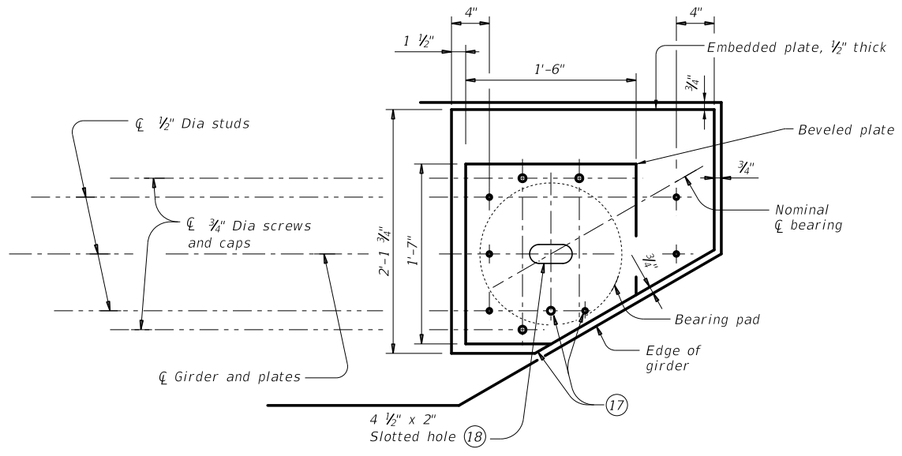


NORMAL GIRDER END
RECTANGULAR BEARING PAD

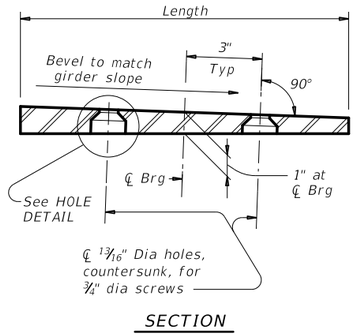


SKEWED GIRDER END
CLIPPED RECTANGULAR BEARING PAD

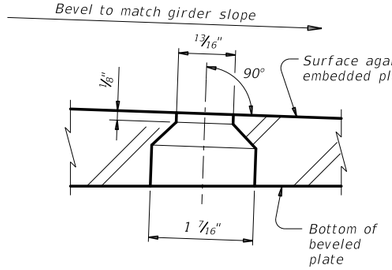


SKEWED GIRDER END
15" DIA BEARING PAD

PLAN VIEW OF SOLE PLATE DETAILS

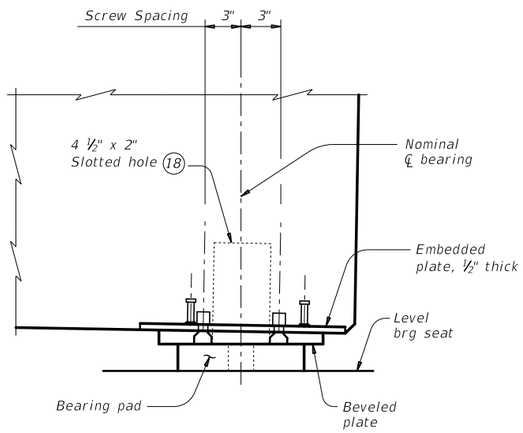


SECTION

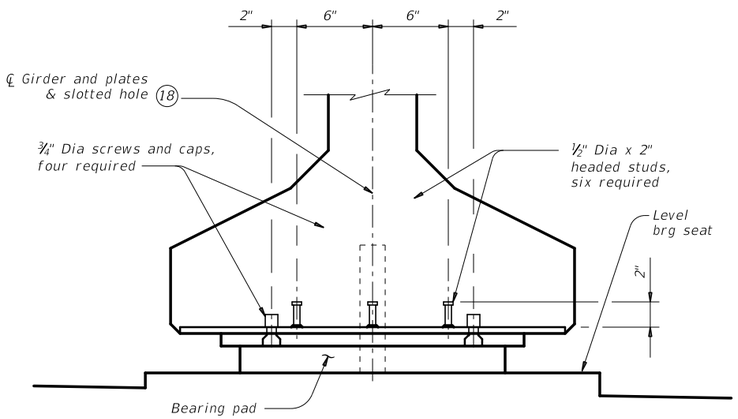


HOLE DETAIL

BEVELED PLATE DETAILS



SIDE ELEVATION



END ELEVATION
Showing normal girder end.

GIRDER DETAILS

(17) Cut beveled and embedded plates to match girder end skew. Adjust location of screw and stud as shown when necessary.

(18) Slotted hole is required at doweled girder end locations.

SOLE PLATE NOTES:

Provide constant thickness elastomeric bearings with beveled and embedded steel sole plates in accordance with these details when the girder slope exceeds 5 percent or if otherwise required in the plans. Provide for all girders in the span.

On the shop drawings, dimension sole plates to the nearest 1/16" based on required thickness at centerline of bearing and slope of girder. Thickness tolerance variation from the approved shop drawings is 1/16"+/-, except variation from a plane parallel to the theoretical top surface can not exceed 1/16" total. Bearing surface tolerances listed in Item 424 apply to embedded and beveled plates.

Steel plate must conform to ASTM A36, A572 Gr 50, or A709 Gr 36 or Gr 50. Hot dip galvanize both the embedded plate and beveled sole plate after fabrication. Seal weld caps to embedded plate before galvanizing.

When determining if relocation of screw holes and studs are necessary for skewed girder ends, minimum clearance from screw or stud centerline to plate edge is 1.25".

Tap threads in the embedded plate only. Drill and tap prior to galvanizing.

¾" Dia screws must be electroplated, socket flat head countersunk cap screws conforming to ASTM F835. Electroplating must conform to ASTM B633, SC 2, Type I. Provide screws long enough to maintain a ¾" minimum embedment into the embedded plate and galvanized cap. Provide galvanized steel caps (16 ga Min) with a nominal 1" inside diameter and deep enough to accommodate the screws, but not less than ½" deep or deeper than 1".

Install beveled sole plates prior to shipping girders. Installed screw heads must not protrude below the bottom of the beveled plate.

HL93 LOADING SHEET 3 OF 3

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ELASTOMERIC BEARING AND GIRDER END DETAILS
PRESTR CONCRETE I-GIRDERS

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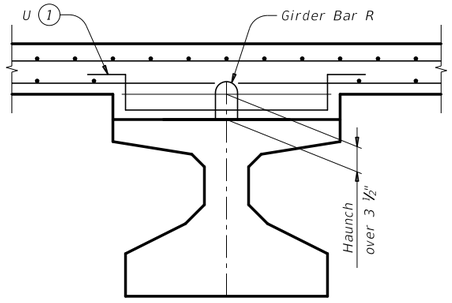
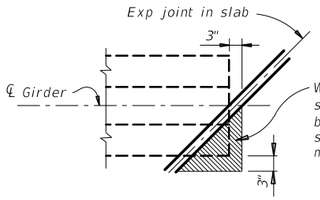
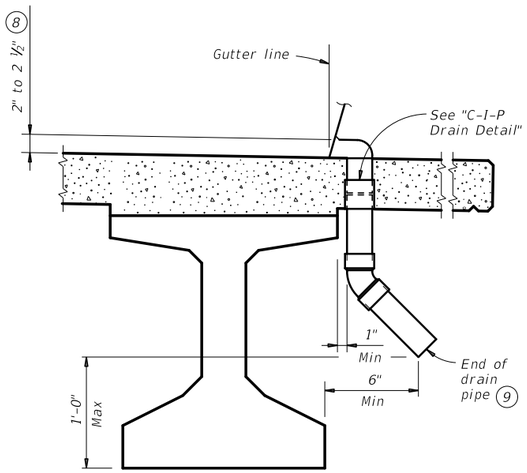


HAUNCH REINFORCING DETAIL

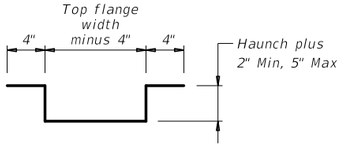


Where flanges project under slab of adjacent span, provide a minimum of ½" clearance between top of girder and bottom of adjacent slab. Polystyrene or other suitable compressible material may be used as a filler.

TREATMENT AT GIRDER END FOR SKEWED SPANS



DRAIN DETAIL (10)



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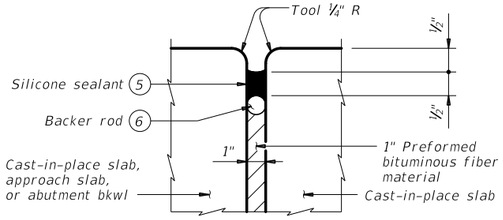
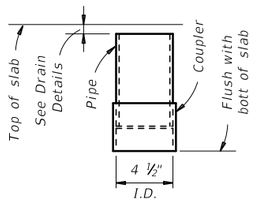
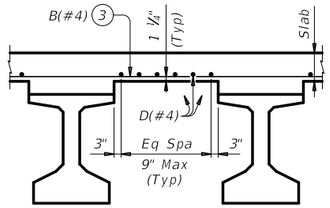


TYPE A JOINT DETAIL (7)



C-I-P DRAIN DETAIL (2)



TYPICAL PART TRANSVERSE SLAB SECTION WITHOUT PCP (4)

Top reinforcing steel not shown for clarity.

(1) Space Bars U with girder Bars R in all areas where measured haunch exceeds 3 ½".

(2) Roughen outside of PVC with coarse rasp or equal to ensure bond with cast-in-place concrete.

(3) Bars B(#4) spaced at 9" Max with 2" end cover. Overhang option, Contractor's may end alternating bars B(#4) at centerline outside girder.

(4) Provide Grade 60 reinforcing steel. Provide bar laps, where required, as follows:
Uncoated ~ #4 = 1'-7"
Epoxy coated ~ #4 = 2'-5"

(5) 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.

(6) 1 ¼" backer rod 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) The maximum distance between Type A expansion joints is 100'. See Bridge Layout for location of joints.

(8) Drain entrance formed in rail or sidewalk.

(9) Water may not be discharged onto girders.

(10) All drain pipe and fittings to be 4" diameter (Sch 40) PVC. See Item 481 "Pipe for Drains" for pipe, connections and solvent welding. Bend reinforcing steel to clear PVC 1". Drain length and location is as directed by the Engineer. Drains are not permitted over roadways or railways, or within 10'-0" of bent caps. Degrease outside of exposed PVC, apply acrylic water base primer, then coat with same surface finishing material as used for outside girder face. Variations of the above designs, as required for the type of rail used and its location on the structure, may be installed with the approval and direction of the Engineer.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Payment for Type A joint will be as per Item 454, "Bridge Expansion Joints."

All other items (reinforcing steel, drains, etc.) shown on this sheet are subsidiary to other bid items.

Cover dimensions are clear dimensions, unless noted otherwise.

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

DECK FORMWORK NOTES:

Overhang bracket hangers are limited to a safe working load of 3,600 lbs, applied to and along the axis of a coil rod at 45 degrees from vertical, regardless of higher loads permitted by hanger manufacturers. Do not place a hanger less than 12" from girder end. Space hangers accordingly.

Texas Department of Transportation

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MISCELLANEOUS SLAB DETAILS

PRESTR CONCRETE I-GIRDERS

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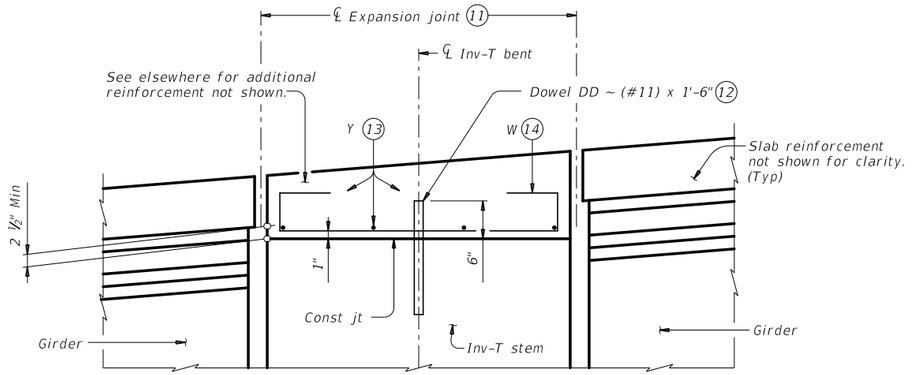
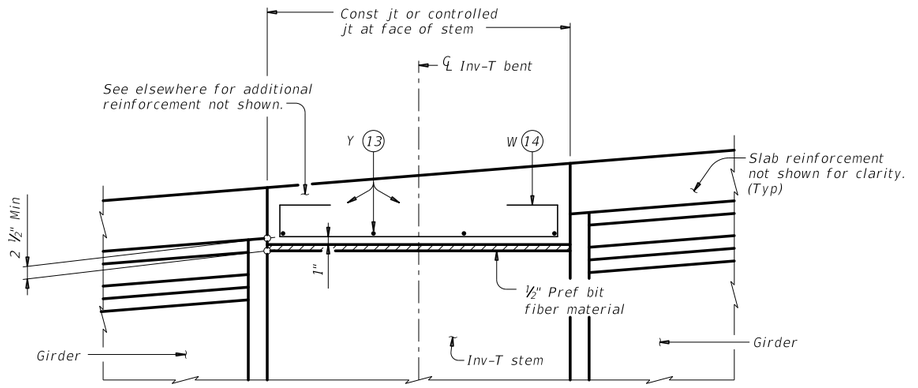
REVISIONS	0180	06	067	SH 35
10-19: Modified Note 7. Type A now a pay item.	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		296

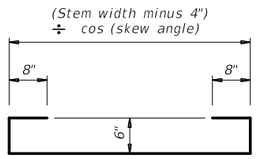


SHOWING EXPANSION JOINTS

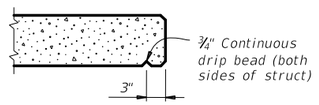


SHOWING CONST JTS OR CONTROLLED JTS

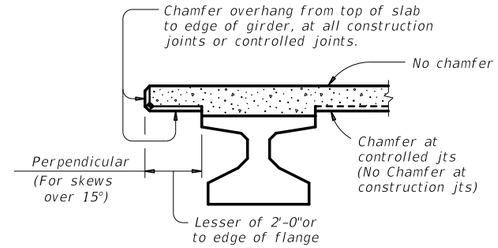
REINFORCEMENT OVER INV-T BENTS



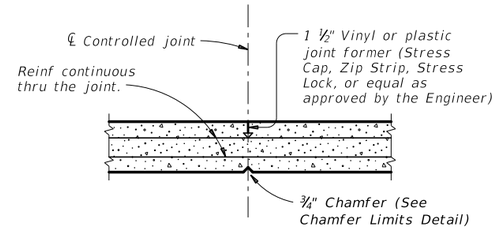
BARS W (#4)



DRIP BEAD DETAIL



CHAMFER LIMITS DETAIL (15)



CONTROLLED JOINT DETAIL

(Saw-cutting is not allowed)

(11) See Layout for joint type.

(12) Dowels DD (#11) spaced at 5 Ft Max. See Inv-T bents for quantity and location.

(13) Space Bars Y (#4) at 12" Max. Use 2" end cover. Number of Bars Y must satisfy spacing limit. Place parallel to bent.

(14) Space Bars W at 12" Max (3" from end of cap). Tilt if necessary to maintain cover requirements. Place parallel to longitudinal slab reinforcement.

(15) See Span details for type of joint and joint locations.

DATE: DATE TIME
FILE: DOCUMENT NAME

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Bridge Division Standard

MISCELLANEOUS SLAB DETAILS

PRESTR CONCRETE I-GIRDERS

IGMS

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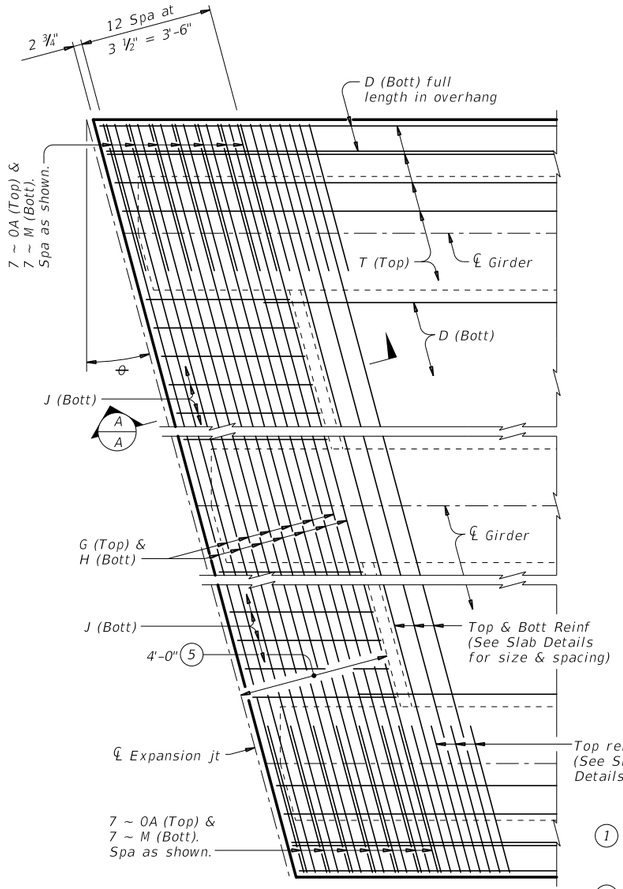
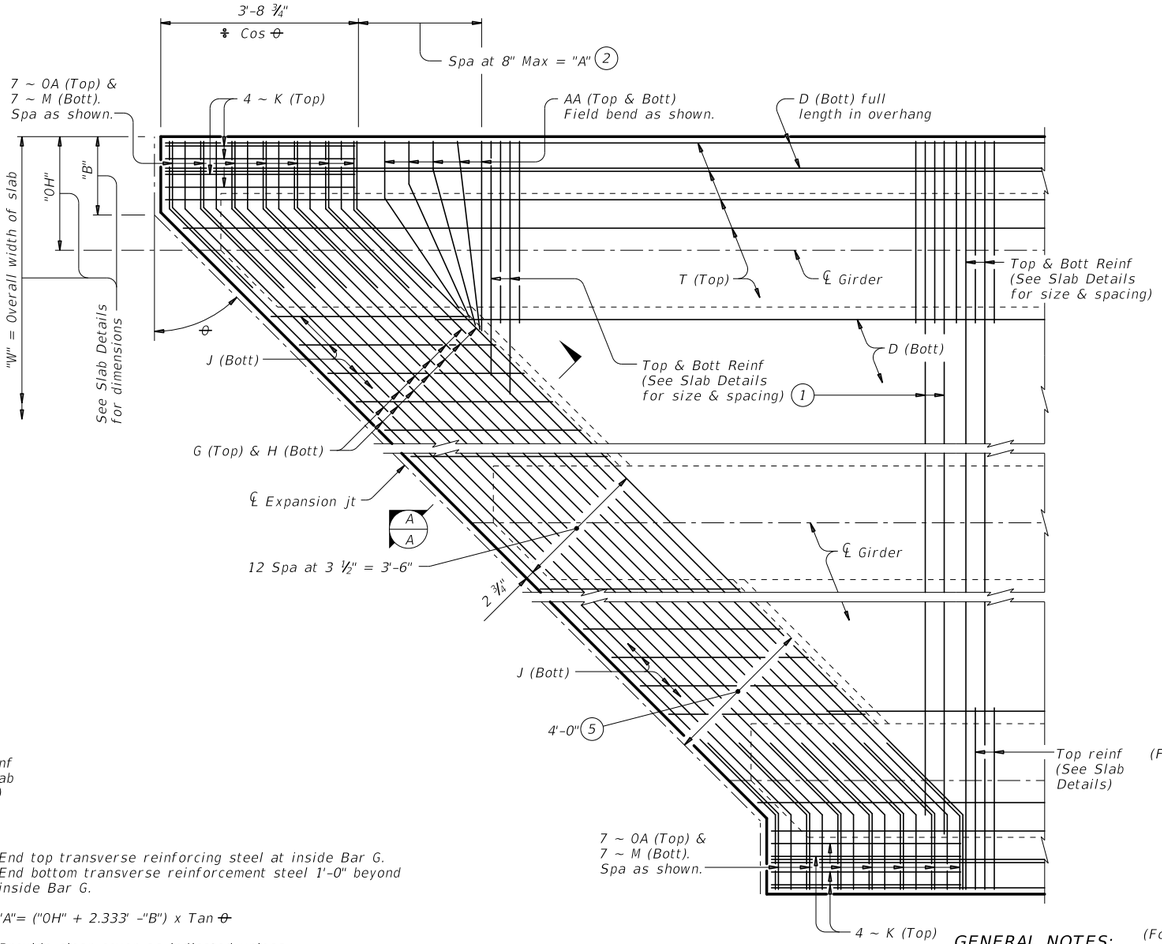


PARTIAL PLAN FOR SLABS WITHOUT BREAKBACK



PARTIAL PLAN FOR SLABS WITH BREAKBACK

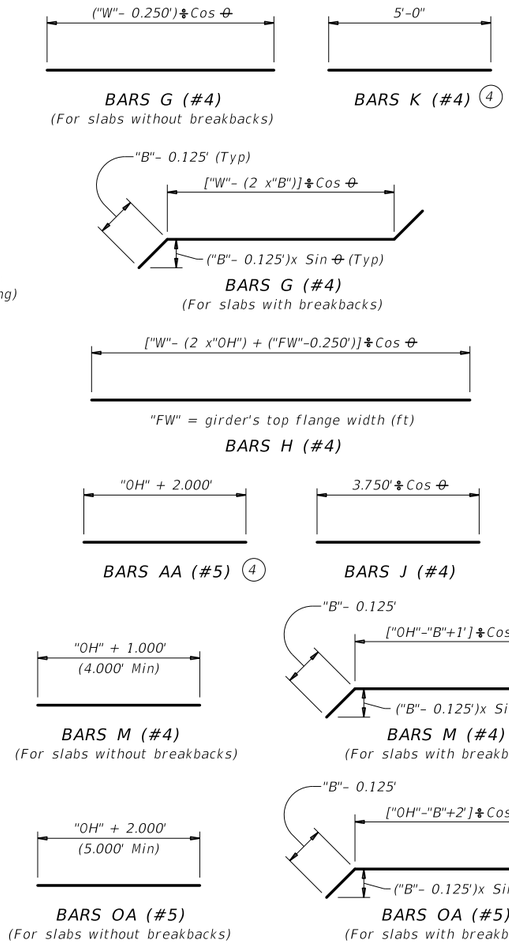
(1) End top transverse reinforcing steel at inside Bar G. End bottom transverse reinforcement steel 1'-0" beyond inside Bar G.

(2) "A"= ("0H" + 2.333' -"B") x Tan θ

(3) Provide clear cover as indicated unless otherwise shown on Span Details.

(4) Only required on slabs with breakbacks.

(5) Thickened slab end dimensioned perpendicular to face of bkwl, centerline interior bent or face of inverted-T stem.



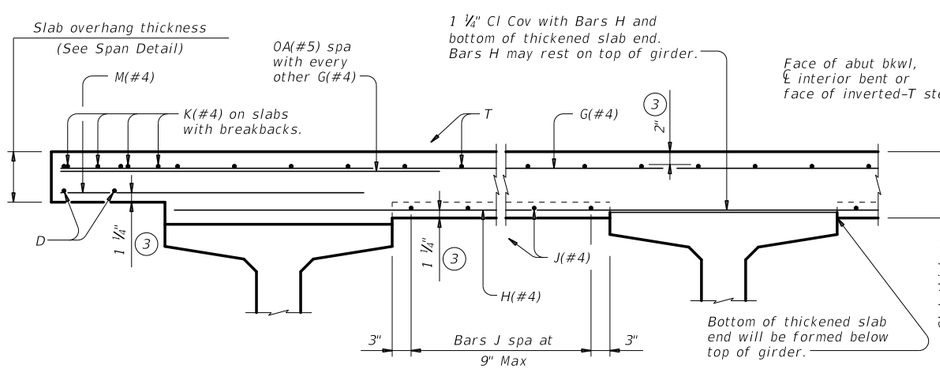
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
These details are restricted to Prestressed Concrete I-Girder Spans.
These details are to be used in conjunction with the Span Details and PCP standard (if prestressed concrete panels are used).
When Option 2 from PCP standard is used, provide Bars AA, G, K and OA in the slab.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
If slab reinforcing steel is shown on the Slab Details to be epoxy coated, then Bars AA, G, K, H, J, M and OA must be epoxy coated.
Provide bar laps, where required, as follows:
Uncoated ~ #4 = 1'-7"
Epoxy Coated ~ #4 = 2'-5"

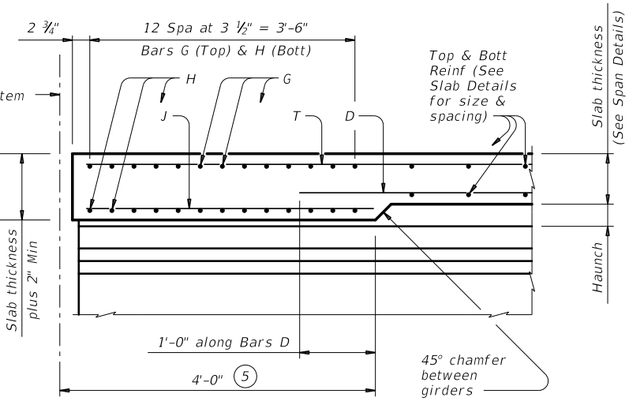
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



2" AND MORE OF HAUNCH — LESS THAN 2" OF HAUNCH

TYPICAL TRANSVERSE SECTION

(Showing Prestressed Conc I-Girders at ℄ Brg)



SECTION A-A

(Showing with 2" and more of haunch)

HL93 LOADING

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THICKENED SLAB END DETAILS

PRESTRESSED CONCRETE I-GIRDER SPANS

IGTS

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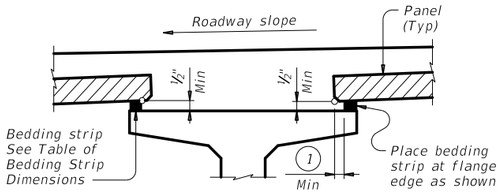
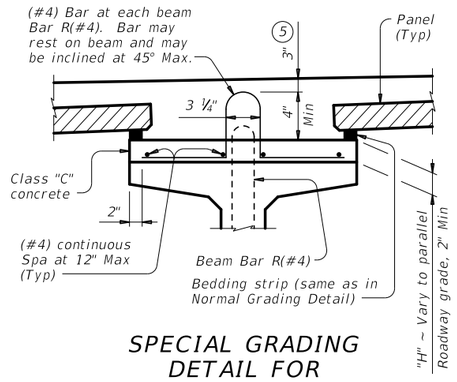


NORMAL GRADING DETAIL (3)

Showing prestressed concrete I-girders. (Other beam types similar)



SPECIAL GRADING DETAIL FOR CONCRETE BEAMS

Showing prestressed concrete I-girders. (Other beam types similar)

TABLE OF BEDDING STRIP DIMENSIONS		
WIDTH	HEIGHT (4)	
	Min	Max
1" (Min)	½"	2"
1 ¼"	½"	2 ½"
1 ½"	½"	3"
1 ¾"	½"	3 ½"
2"	½"	4"
2 ¼"	½"	4 ½" (2)
2 ½"	½"	5" (2)
2 ¾"	½"	5 ½" (2)
3" (Max)	½"	6" (2)

(1) 2" Min for I-giders, 1 ½" Min for all other beam types.

(2) Allowed for I-girders, not allowed on other beam types.

(3) To reduce the quantity of cast-in-place concrete, bedding strip thickness may be increased in ¼" increments. Bedding strips must be comprised of one layer. Bond bedding strips to the beams with an adhesive compatible with bedding strips. Bedding strips over 2.5" high may need to be bonded to panels. The same thickness strip must be used under any one panel edge and the maximum change in thickness between adjacent panels is ¼". Alternatively, bedding strips may be cut to grade. Panels may be supported by an alternate method, using a commercial product, if approved by the Engineer of Bridge Design, Bridge Division. If bedding strips exceed 6" high for I-Girders, 4" high for all other beam types, use Special Grading Detail for Concrete Beams or submit an alternate method to the Bridge Division for approval.

(4) Height must not exceed twice the width.

(5) Provide clear cover as indicated unless otherwise shown on Span Details.

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(7) Space Bars UP(#4) with Beam Bars R(#4) in all areas where measured haunch exceeds 3 ½" with I-girders, and 3" for all other beam types. Epoxy coating for Bars UP is not required.

(8) Do not locate construction joints on top of a panel.

(9) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c..

CONSTRUCTION NOTES:

Erected panels must bear uniformly on bedding strips of extruded polystyrene placed along top flange edges.

Placing panels to minimize joint openings is recommended.

If additional blocking is needed, special grading details for supporting the panels and extra reinforcing between beam and slab will be considered subsidiary to deck construction.

Bars U, shown on PCP-FAB, may be bent over or cut off if necessary.

Care must be taken to ensure proper cleaning of construction debris and consolidation of concrete material under the edges of the panels. Bedding strips must be placed at beam flange edges so that adequate space is provided for the mortar to flow a minimum of 1 ½" under the panels as the slab concrete is placed.

To allow the proper amount of mortar to flow between beam and panel, the minimum vertical opening must be at least ½". Roadway cross-slope reduces the opening available for entry of the mortar. Bedding strips varying in thickness across the beam are therefore required.

For clear span between U-beams less than or equal to 18", see Permissible Slab Forming Detail on Miscellaneous Slab Detail sheets, UBMS.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel in the cast-in-place slab. See Table of Reinforcing Steel for size and spacing of reinforcement.

If the top and bottom layer of reinforcing steel is shown on the Span Details to be epoxy coated, then the D, E, P, & Z bars must be epoxy coated.

Provide bar Laps, where required, as follows:

Uncoated ~ #4 = 1'-7"
Epoxy Coated ~ #4 = 2'-5"

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Panel placement may follow either Option 1 or Option 2 except Option 1 must be used if the skew exceeds 45 degrees.

Use of Prestressed Concrete Panels is not permitted for horizontally curved steel plate or tub girders. See Span Details for other possible restrictions on their use.

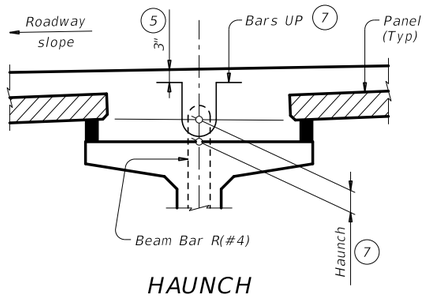
These details are to be used in conjunction with the Span Details, PCP-FAB and other applicable standard drawings.

When panel support (bedding strips) deviates from what is shown herein, provide details signed and sealed by a professional Engineer.

Any additional reinforcement or concrete required on this standard is considered subsidiary to the bid Item "Reinforced Concrete Slab".

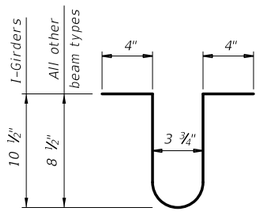
Cover dimensions are clear dimensions, unless noted otherwise.

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

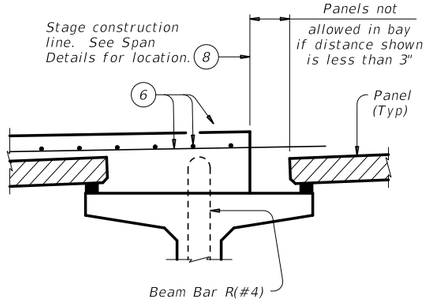


HAUNCH REINFORCING DETAIL

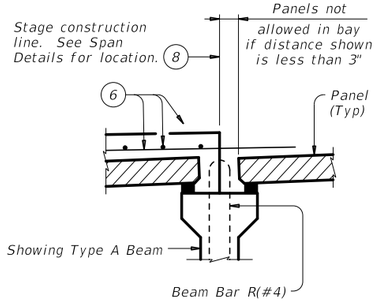
Showing prestressed concrete I-girders. (Other beam types similar)



BARS UP (#4) (7)



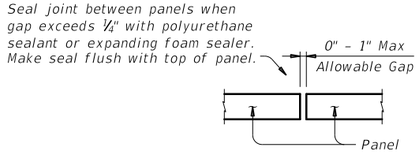
PRESTR CONC I-GIRDERS



PRESTR CONC I-BEAMS

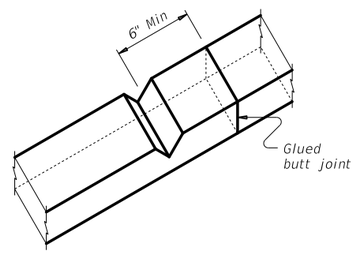
STAGE CONSTRUCTION LIMITATIONS

(Other beam types similar)



PANEL JOINTS

(Panel reinforcing not shown for clarity. The gap cannot be considered as a panel fabrication tolerance. Adjust panel placement to minimize joint openings.)



BEDDING STRIP DETAIL (9)

HL93 LOADING

SHEET 1 OF 4

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANELS DECK DETAILS

PCP

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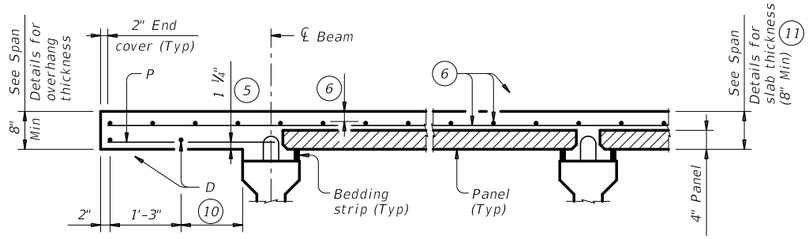
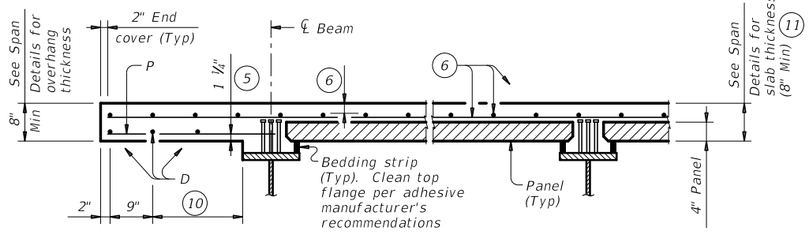
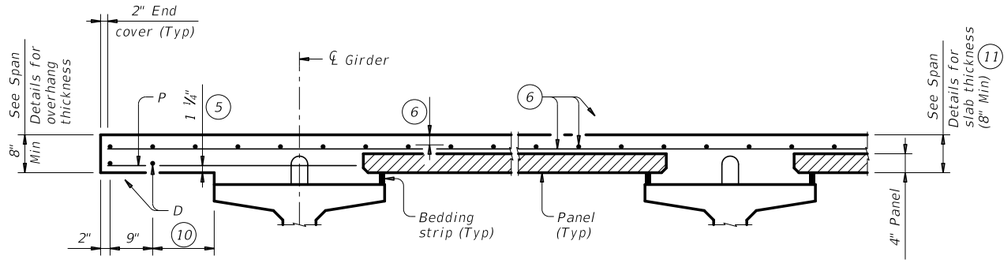


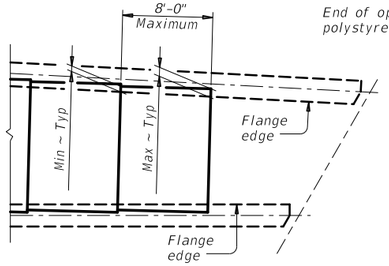
PRESTRESSED CONCRETE I-BEAMS



STEEL BEAMS

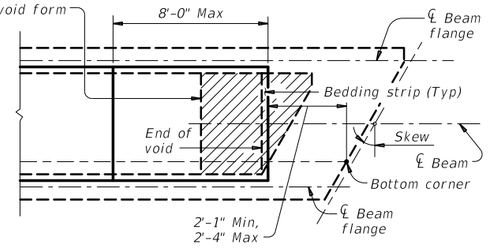


PRESTRESSED CONCRETE I-GIRDERS

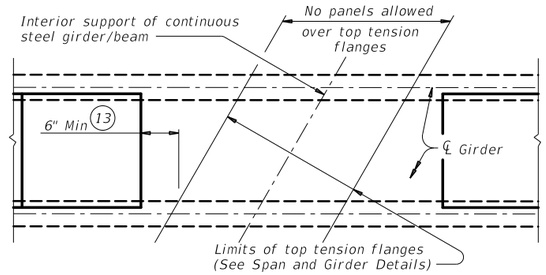


AT FLARED BEAMS OR GIRDERS

See PCP-FAB standard for Min and Max dimensions based on bemm/girder type.



OVER CONC U-BEAMS



AT INT SUPPORTS OF CONTINUOUS STEEL GIRDERS

PART PLANS OF PANEL PLACEMENT

(5) Provide clear cover as indicated unless otherwise shown on Span Details.

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

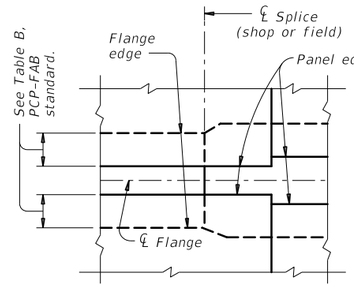
(9) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c..

(10) Equally space additional bar if more than 1'-3" Max.

(11) The actual thickness constructed may exceed the slab thickness shown on the Span Details but the extra thickness may be no more than 2" (1" for prestressed concrete U-beams and steel beams). Bearing seat elevations or finished grade may be adjusted.

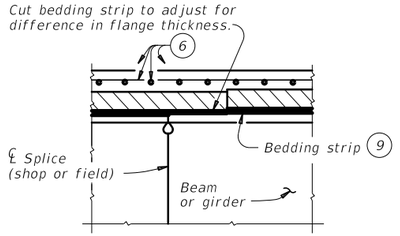
(12) Field adjust Bars Z1(#4) to match actual slope of slab overhangs. Width of slab overhang will vary along span with curved slab edges. Adjust Bar Z1(#4) dimensions to maintain proper cover. Bars Z2(#4) are located at Inverted-Tee stems only.

(13) Location of concrete placement sequence boundaries and bolted field splices should be considered by the contractor in determining panel limits.



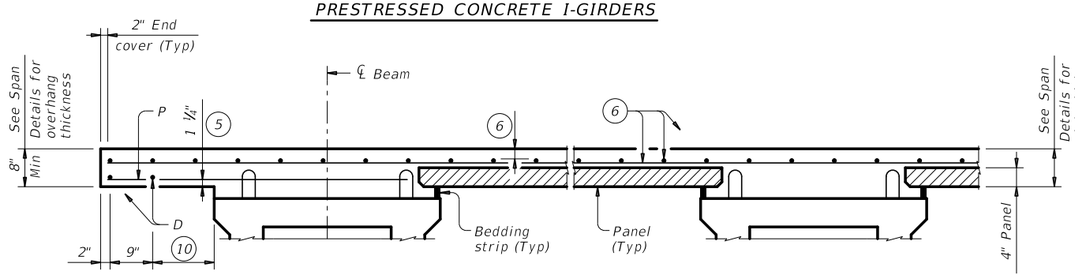
PLAN AT SPLICE

(Showing steel beams with flange width transition)

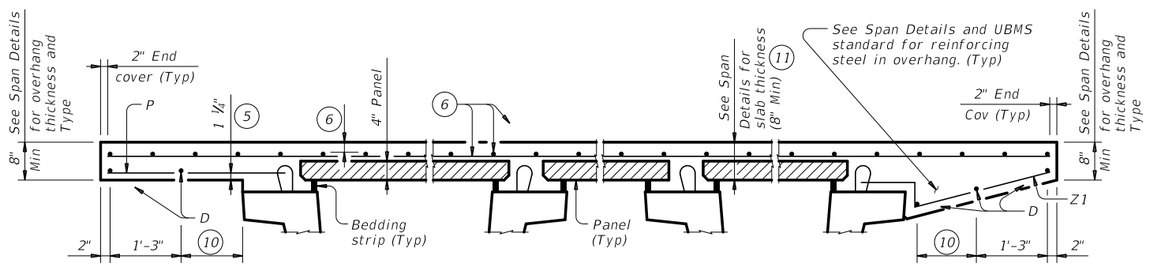


ELEVATION AT SPLICE

(Showing steel beams with different flange thickness)

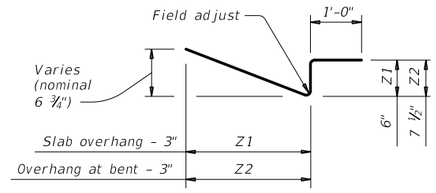


NORMAL OVERHANG WITH PRESTR CONC U-BEAMS

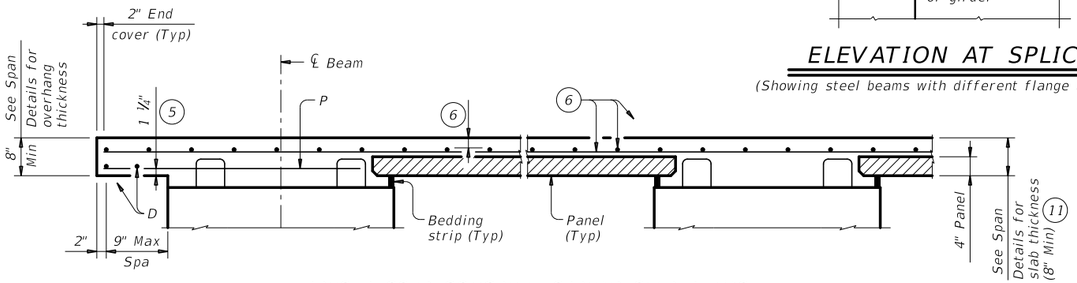


SLOPED OVERHANG WITH PRESTR CONC U-BEAMS

TYPICAL PART TRANSVERSE SECTIONS



BARS Z (#4) (12)



PRESTRESSED CONCRETE SPREAD SLAB BEAMS

Bars P over exterior beams are still required when no overhang is used. In this case, only one Bar D, 2" from slab edge, is required.

HL93 LOADING SHEET 2 OF 4

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANELS
DECK DETAILS

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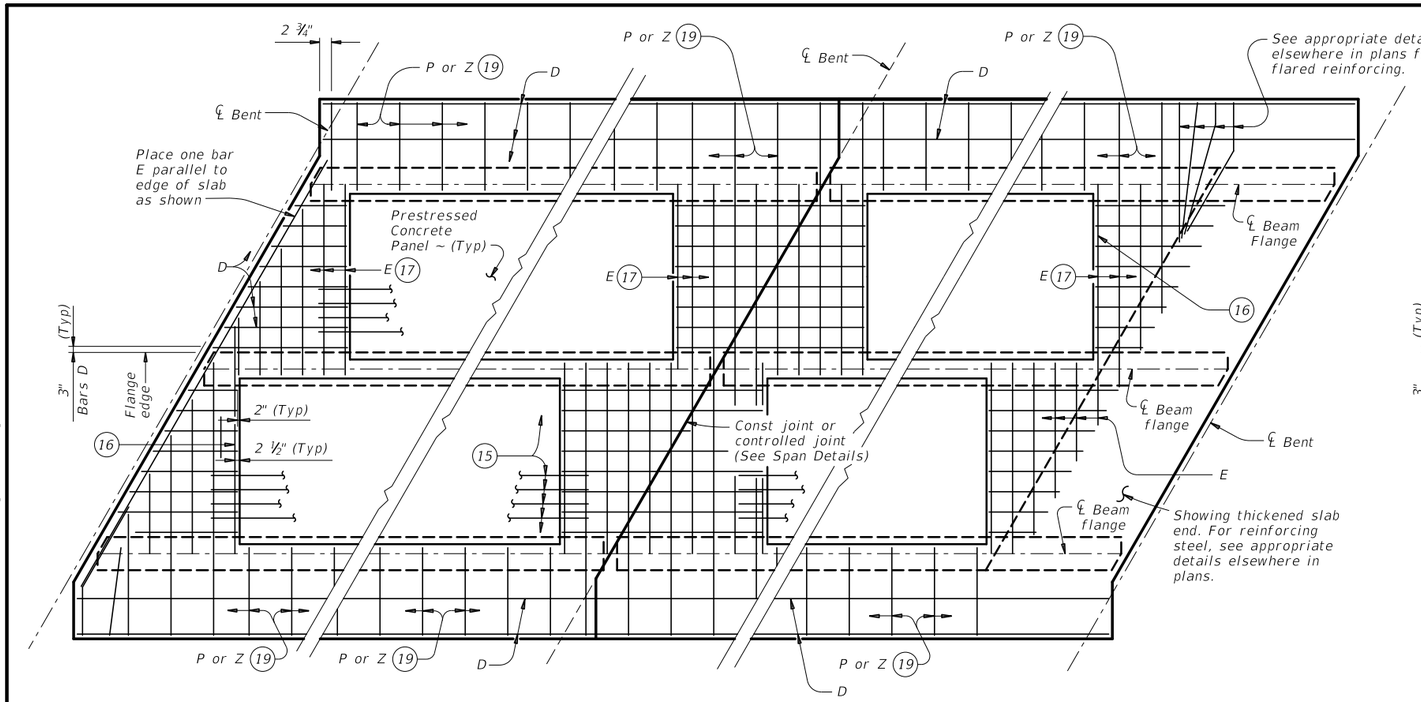
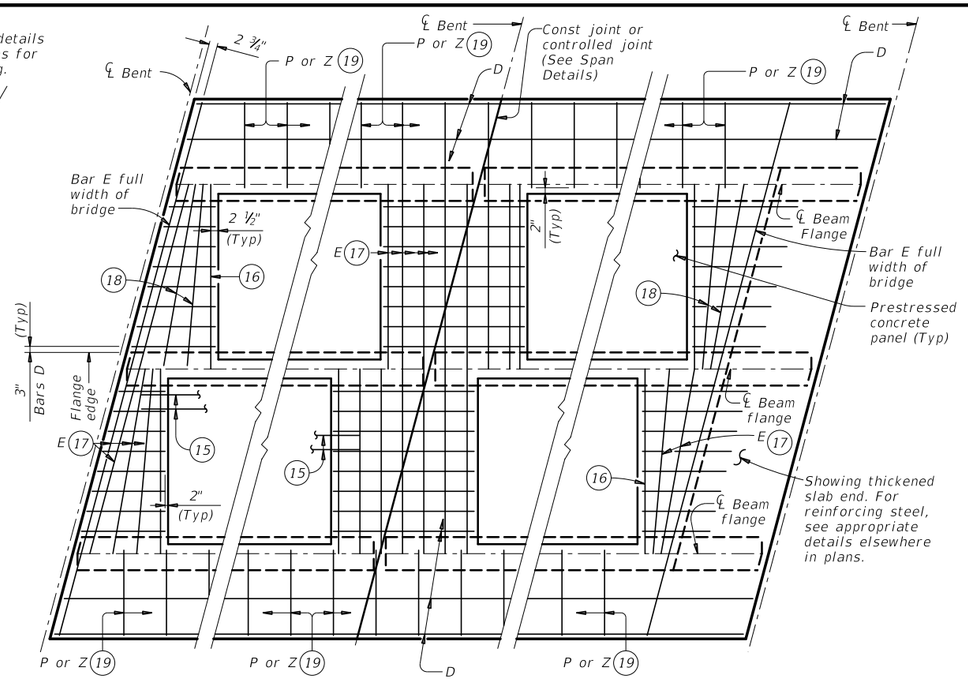


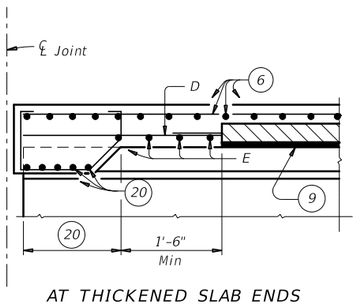
AT ALL SPAN ENDS UNLESS NOTED OTHERWISE | AT INTERIOR BENTS | AT THICKENED END SLABS

OPTION 1 ~ PLAN OF SLABS WITH NORMAL REINFORCEMENT

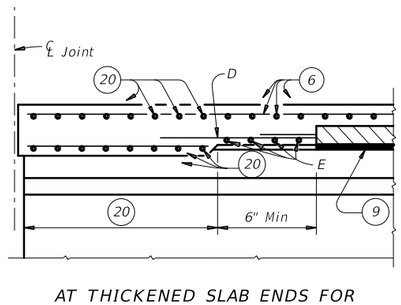


AT ALL SPAN ENDS UNLESS NOTED OTHERWISE | AT INTERIOR BENTS | AT THICKENED END SLABS

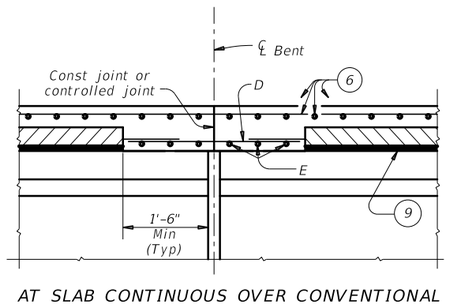
OPTION 1 ~ PLAN OF SLABS WITH SKEWED REINFORCEMENT



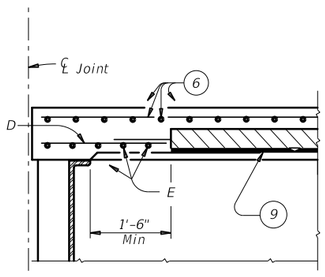
AT THICKENED SLAB ENDS FOR PRESTR CONC U-BMS



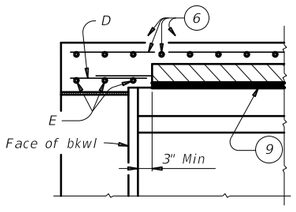
AT THICKENED SLAB ENDS FOR PRESTR CONC I-BMS AND STEEL BMS



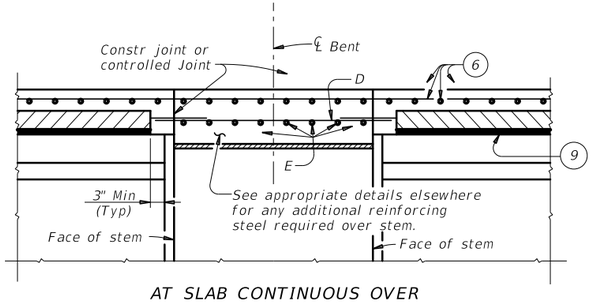
AT SLAB CONTINUOUS OVER CONVENTIONAL INTERIOR BENTS FOR ALL SIMPLE SPAN BMS



AT CONVENTIONAL END DIAPHRAGMS FOR STEEL BMS



AT SLAB OVER ABUTMENT BACKWALL FOR ALL BMS



AT SLAB CONTINUOUS OVER INVERTED-T BENTS FOR ALL BMS

OPTION 1 ~ ELEVATIONS AT BEAM ENDS

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(9) Butt adjacent bedding strips together with adhesive. Cut v-notches, approx ¼" deep, in the top of the bedding strips at 8' o.c.

(14) Max Spacing as listed unless otherwise shown.

(15) At connection with cast-in-place slab, extend longitudinal panel reinforcement. See PCP-FAB for details.

(16) Maintain one Bar E(#4) parallel to panel ends (Typ).

(17) Bars E(#4) not continuous over beam flanges must overlap beam flange 6" Min.

(18) Add flared Bars E(#4) (Min Spa = 6", Max Spa = 12") as required at panel ends.

(19) Where possible, Bars E(#4) may be extended into overhangs to replace Bars P(#4). Bars Z(#4) are required for sloped overhangs with U-Beams.

(20) See appropriate thickened slab end details for reinforcing and limits of thickened slab end.

TABLE OF REINFORCING STEEL (14)

BAR	SIZE	Max Spa (in.)
D	#4	9
E	#4	9
P	#4	18
UP	#4	~
Z	#4	18

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Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANELS
DECK DETAILS

PCP

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	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		301

DATE: DATE TIME
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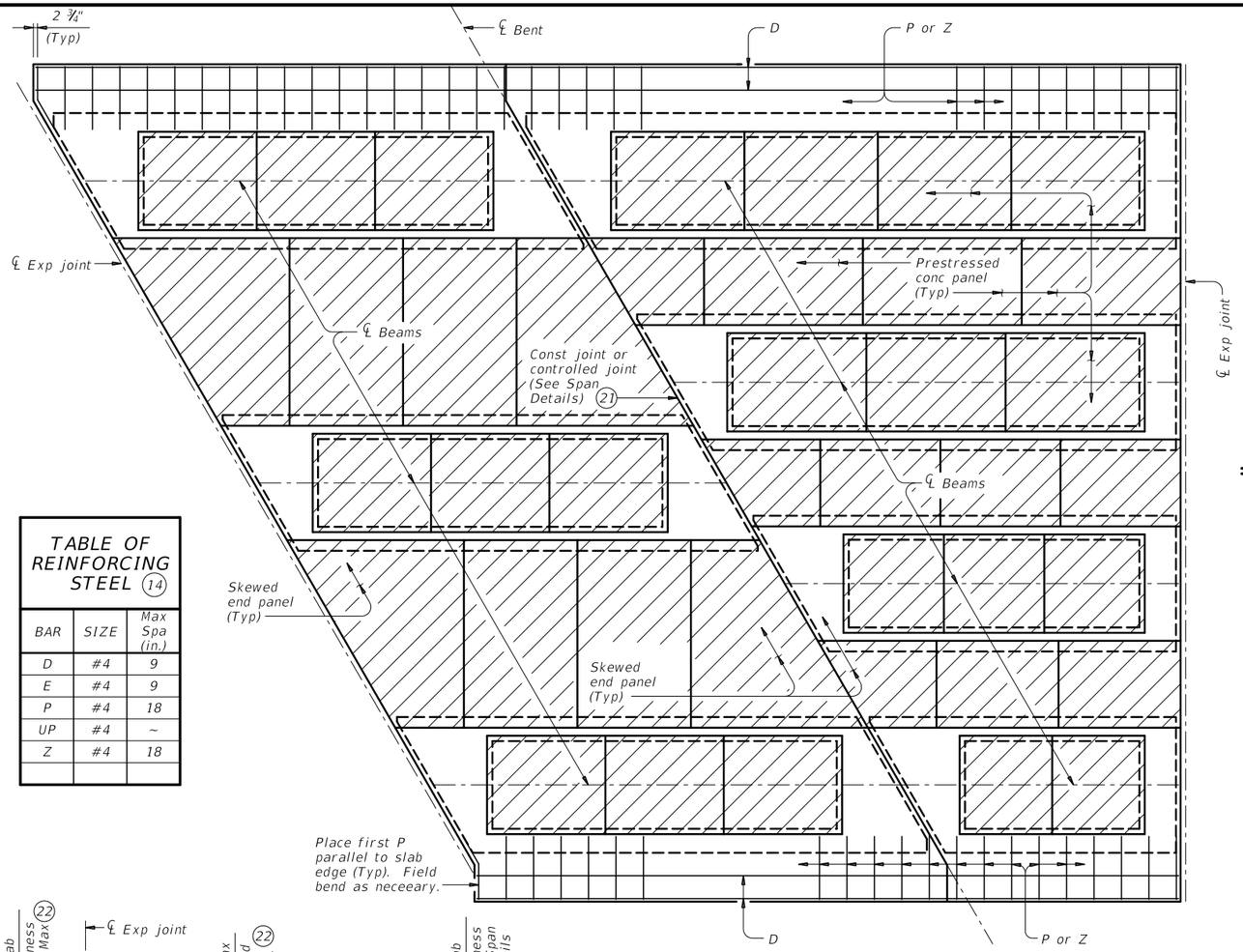
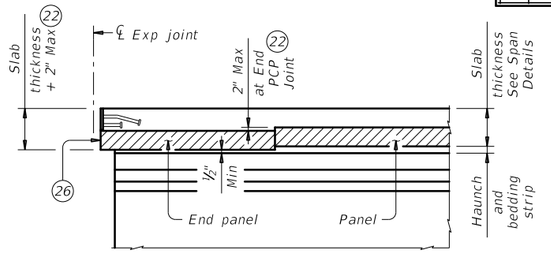


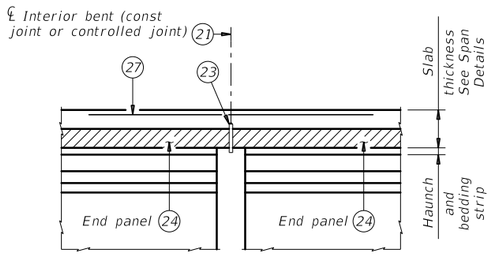
OPTION 2 ~ PLAN OF SLAB

(Showing U-Beams; other beams similar)



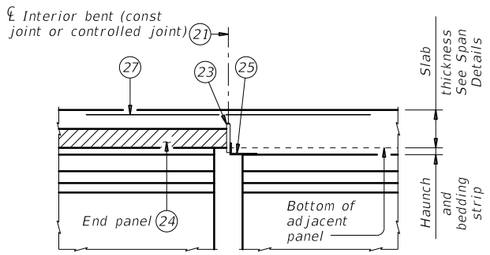
JOINTS (BETWEEN BEAMS/GIRDERS OR AT INV-T STEM)

For SEJ-A, SEJ-S(0), AJ, and Type A expansion joints only.



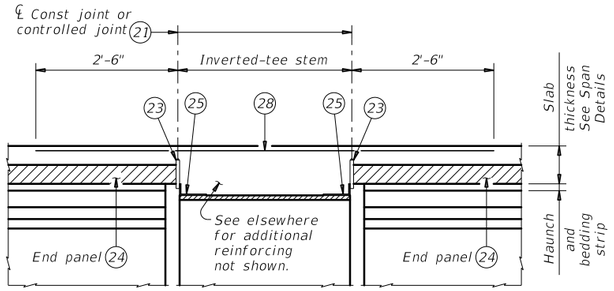
CONVENTIONAL INTERIOR BENT

Panel against panel between beams/girders.



CONVENTIONAL INTERIOR BENT

Panel against beam/girder end in adacent span.



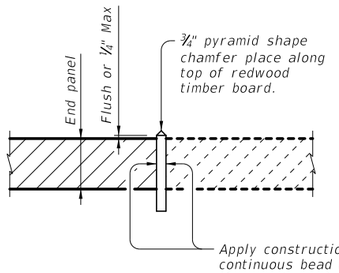
INVERTED-T BENT

Panels against inverted-tee stem

OPTION 2 ~ ELEVATIONS AT BEAM ENDS (6)

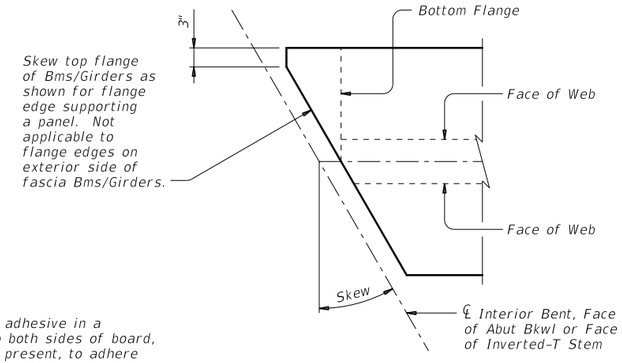
TABLE OF REINFORCING STEEL (14)

BAR	SIZE	Max Spa (in.)
D	#4	9
E	#4	9
P	#4	18
UP	#4	~
Z	#4	18



ELEVATION EXAMPLE OF END PANEL AND TIMBER BOARD (23)

See "Option 2 ~ Elevation At Beam Ends".



OPTION 2 ~ SHOWING MODIFICATION TO BEAM/GIRDER TOP FLANGE FOR SKEWS OVER 5°

Showing I-Bm/I-Girder, U-Bms and Steel Bms similar.

(6) See Span Details and Thickened Slab End Details for top slab reinforcement and clear cover. Transverse top slab reinforcement may rest on top of prestressed concrete panels if necessary to maintain clear cover.

(14) Max Spacing as listed unless otherwise shown.

(21) 1 ½" Vinyl or plastic joint former at controlled joints (Stress Cap, Zip Strip, Stress Lock, or equal as approved by the Engineer.)

(22) End panel may be set up to 2" lower to accommodate expansion joint hardware, provided bedding strip is not less than ½" thick.

(23) ¾" thick redwood timber board, leave in place. Redwood timber board placed flush with top of panel or within ¼" Max above panel. Place ¾" pyramid shape chamfer along top of timber board. See "Elevation Example of End Panel and Timber Board". Place straight, within ¼" of centerline of bent or face of inverted-tee, across bridge width and end board at exterior flange edge of fascia beams/girders. Do not extend into overhang.

(24) Place panel within ½" of ¾" thick board.

(25) Permanent galvanized steel sheet form. Removable formwork is acceptable.

(26) Place end panel within ½" of expansion joint opening. End panel cannot encroach on required expansion joint opening.

(27) Place additional (#4) bar 5'-0" in length between every slab bars T. Center (#4) bar on Joint.

(28) Place additional (#4) bar continuous 2'-6" beyond each side of Inverted-T Stem between every slab bars T.

SPECIAL OPTION 2 CONSTRUCTION NOTES:

When Option 2 is chosen bottom mat of thickened end slab reinforcing is not required. Use the same top mat as shown on the Thickened Slab End Details sheet.

Placing panels adjacent to expansion joints and bent centerlines prior to completing interior panel placement is recommended. Saw cutting panels to fit is acceptable when approved by the Engineer. Minimum distance from a saw cut edge to a panel strand is 1 ½".

Do not extend the longitudinal panel reinforcement into the cast-in-place slab.

Top flanges of beams and girders on skewed bridges must be modified as shown on this drawing. The Contractor is responsible for coordinating this modification with the beam fabricator prior to submitting shop drawings for approval.

Fabricator may optionally skew the whole end. When electing to skew whole end, girder end details and bearing type at conventional interior bent must be changed to use condition at abutment. Fabricator must coordinate change in bearing type, bearing centerline location, and dowel location with Engineer and Contractor. Show appropriate changes on girder and bearing shop drawings.

Bending of anchor studs of expansion joints shown on standards AJ, SEJ-A and SEJ-S(0) is permissible if necessary to clear top of end panels. The Contractor is responsible for coordinating modifications with the joint fabricator. Submit shop drawings for approval when modifications to expansion joint hardware are made.

Bedding strips under skewed end panels must conform to the requirements of Item 422 except their minimum compressive strength must be 60 psi.

Provide Bars AA, G, K and 0A from standard IGTS in the slab.

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Texas Department of Transportation

Bridge Division Standard

PRESTRESSED CONCRETE PANELS
DECK DETAILS

PCP

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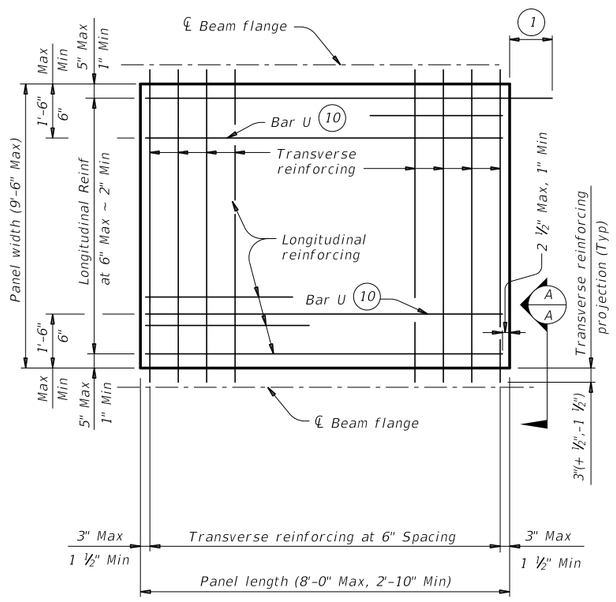
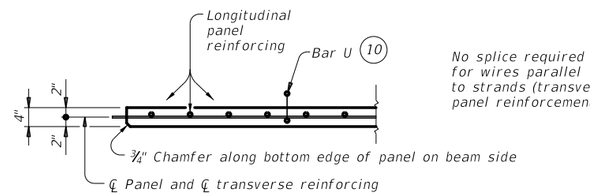
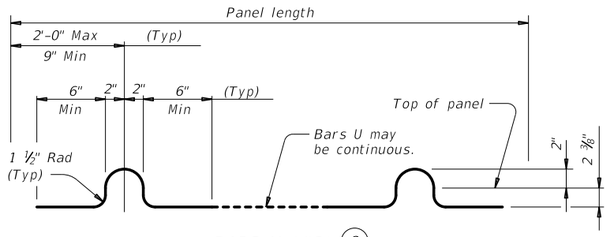


TYPICAL NON-SKEWED PANEL PLAN

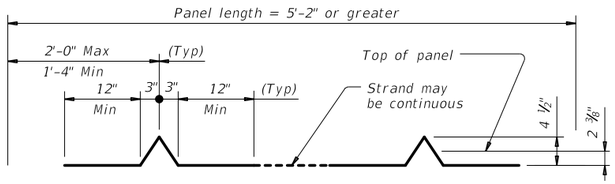


SECTION A-A

(Not showing supplemental #4 bars for skewed end panels.)

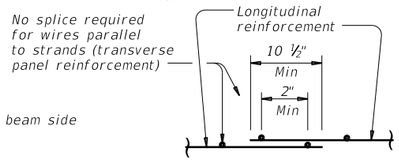


BARS U (#3) (2)



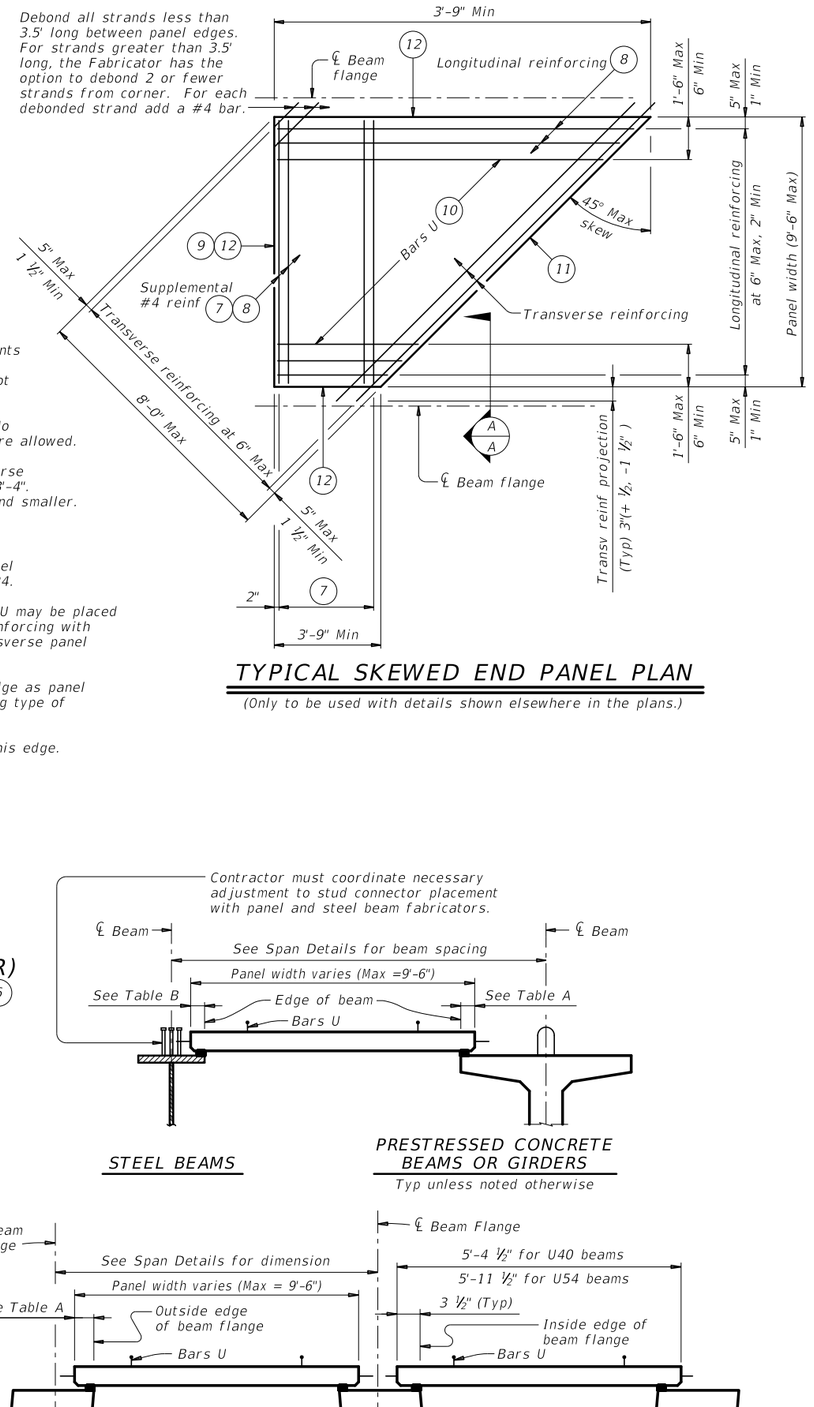
OPTIONAL STRAND FOR BARS U (3)

1. At connection with cast-in-place slab, extend longitudinal panel reinforcement 1'-0" (+2",-0") past panel end. Alternatively, provide (#3) x 2'-0" dowels at 6" Max Spacing and extend dowels 1'-0" past panel end.
2. Four loops required per panel.
3. Four loops required per panel. ⅜" or ½" strands may be used.
4. Normal dimensions must be used on spans with parallel beams. Maximum and Minimum dimensions apply only to spans with flared beams.
5. See Normal Grading Detail on PCP standard for lap requirements and bedding strip dimensions. Some laps shown in tables cannot utilize all bedding strip widths.
6. One Splice allowed per panel. No more than two sheets of WWR are allowed.
7. Provide (#4) bars under transverse reinforcing, 10 Spaces at 4" = 3'-4". Omit for 5 degree (1:12) skew and smaller.
8. End Cover 2 ½" Max, 1" Min.
9. Recess strands on indicated panel edge in accordance with Item 424.
10. At the fabricator's option, Bars U may be placed parallel to transverse panel reinforcing with horizontal legs in plane of transverse panel reinforcing.
11. Use length of indicated panel edge as panel width for purpose of determining type of transverse reinforcing.
12. Timber form work permissible this edge.



WELDED WIRE REINFORCEMENT (WWR) SPLICE DETAIL (6)

Debond all strands less than 3.5' long between panel edges. For strands greater than 3.5' long, the Fabricator has the option to debond 2 or fewer strands from corner. For each debonded strand add a #4 bar.



TYPICAL SKEWED END PANEL PLAN

(Only to be used with details shown elsewhere in the plans.)

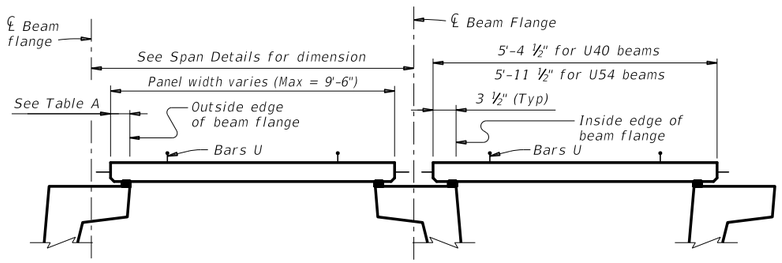
TABLE A (4) (5)			
Beam Type	Normal (In.)	Min (In.)	Max (In.)
A	3	2 ½	3 ½
B	3	2 ½	3 ½
C	4	3	4 ½
IV	6	4	7 ½
VI	6 ½	4 ½"	8 ½
U40 – 54	5 ½	5 ½	7
Tx28-70	6	5	7 ½
XB20 – 40	4	3	4 ½
XSB12 – 15	4	3	4 ½

TABLE B (4) (5)			
Top Flange Width	Normal (In.)	Min (In.)	Max (In.)
11" to 12"	2 ¾	2 ½	2 ¾
Over 12" to 15"	3 ¼	3	3 ¼
Over 15" to 18"	4	3	4 ¾
Over 18"	5	3 ½	6 ¼

STEEL BEAMS

PRESTRESSED CONCRETE BEAMS OR GIRDERS

Typ unless noted otherwise



PRESTRESSED CONCRETE U-BEAMS

TYPICAL SECTIONS FOR DETERMINING PANEL WIDTH

GENERAL NOTES:

Provide Class H concrete for panels. Release strength f'ci=3,500 psi. Minimum 28 day strength f'c=5,000 psi.

Provide ¾" chamfer along bottom edge of panel on beam side.

Do not use epoxy-coated reinforcing steel bar or strand in panels.

Remove laitance from top panel surface.

Finish top of panel to a roughness between a No. 6 and No. 9 concrete surface profile, inclusive, as specified by the International Concrete Repair Institute (ICRI).

Shop drawings for the fabrication of panels will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

A panel layout which identifies location of each panel must be developed by the Fabricator. Permanently mark each panel in accordance with the panel layout. A copy of the layout is to be provided to the Engineer.

TRANSVERSE PANEL REINFORCEMENT:

For panel widths over 5', use ⅜" or ½" Dia (270k) prestressing strands with a tension of 14.4 kips per strand.

For panel widths over 3'-6" up to and including 5', use ⅜" or ½" Dia (270k) prestressing strands with a tension of 14.4 kip per strand. Optionally, (#4) Grade 60 reinforcing bars may be used in lieu of prestressed strands.

For panel widths up to 3'-6", use (#4) Grade 60 reinforcing bars (prestressed strands alone are not allowed).

Place transverse panel reinforcement at panel centroid and space at 6" Max.

LONGITUDINAL PANEL REINFORCEMENT:

Any of the following options may be used for longitudinal panel reinforcement:

1. (#3) Grade 60 reinforcing steel at 6" Max Spacing. No splices allowed.
2. ⅜" Dia prestressing strands at 4 ½" Max Spacing (unstressed). No splices allowed.
3. ½" Dia prestressing strands at 6" Max Spacing (unstressed). No splices allowed.
4. Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) providing 0.22 sq in per foot of panel width. Wires larger than D11 not permitted. Provide transverse wires to ensure proper handling of reinforcing. One splice per panel is allowed. See WWR Splice Detail.

No combination of longitudinal reinforcement options in a panel is allowed.

Place longitudinal panel reinforcement above or below transverse panel reinforcement. Must be placed above transverse panel reinforcement for skewed end panels with supplemental (#4) reinforcement.

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PRESTRESSED CONCRETE PANEL FABRICATION DETAILS

PCP-FAB

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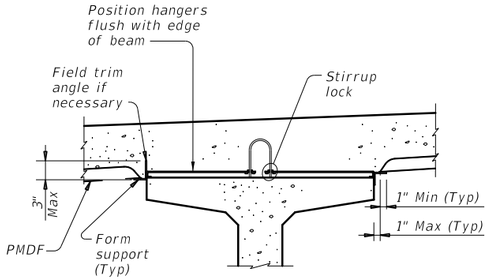
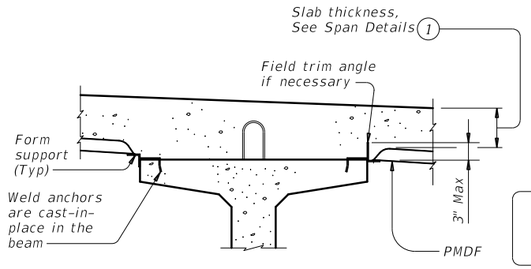
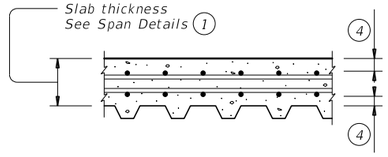


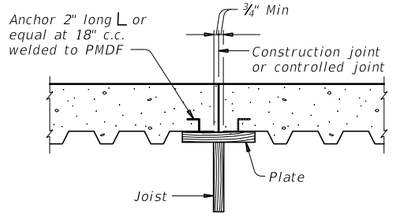
PRESTR CONC I-BEAMS AND I-GIRDERS WITH STIRRUP LOCKS



PRESTR CONC I-BEAMS AND I-GIRDERS WITH WELD ANCHORS

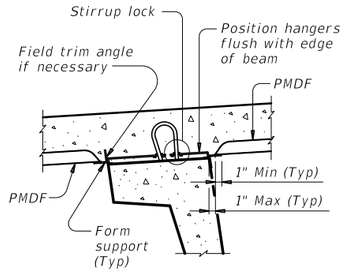


TYP LONGITUDINAL SLAB SECTION

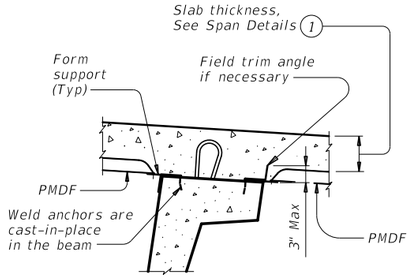


Note: In spans where PMD forms are used, timber forms must be used at construction joints. Adequate provision must be made to support edge of metal form and to provide anchorage of metal form to slab concrete where joined to wood forms.

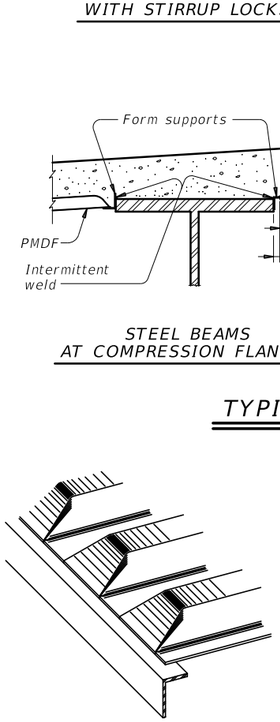
SECTION THRU CONSTRUCTION JOINT



U-BEAMS WITH STIRRUP LOCKS



U-BEAMS WITH WELD ANCHORS



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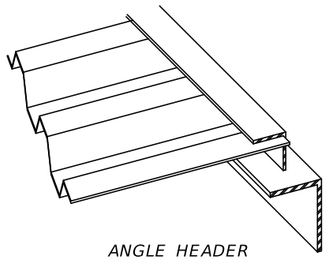
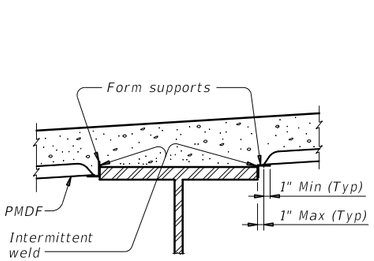


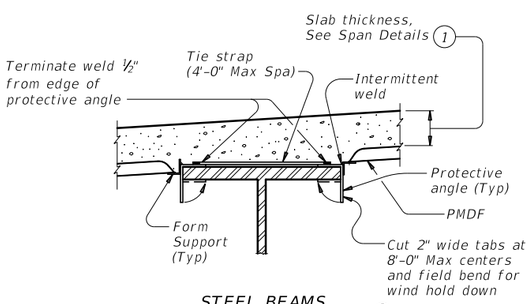
ANGLE HEADER

NOTE: This type is to be used for skewed ends only.

TYPES OF END CLOSURES



STEEL BEAMS AT COMPRESSION FLANGES



STEEL BEAMS AT TENSION FLANGES (2)

TYPICAL TRANSVERSE SECTIONS

SIDE LAP DETAILS

(1) Slab thickness minus 5/8" if corrugations match reinforcing bars.

(2) Welding of form supports to tension flanges will not be permitted. Other methods of providing wind hold down resistance for PMDF in tension flange zones will be considered. At least one layer of sheet metal must be provided between the flange and the weld joint.

(3) The direction of concrete placement will be such that the upper layer of the form overlap is loaded first.

(4) See Span details for cover requirements.

FOR PRESTR CONC U-BEAM AND STEEL GIRDER BRIDGES:
Unless shown elsewhere in the plans, size, spacing, and orientation of bottom mat of slab reinforcement must match the top mat of reinforcing shown on the span details except all bottom mat bars are to be #5. Bottom mat reinforcement and additional concrete is subsidiary to Item 422 "Concrete Superstructures."

FOR PRESTR CONC TX-GIRDER BRIDGES:
See Miscellaneous Slab Details, Prestr Concrete I-Girders (IGMS) standard sheet for bottom mat reinforcing.

GENERAL NOTES:

Steel for Permanent Metal Deck Forms (PMDF) and support angles shall conform to ASTM A653, structural steel (SS), with coating designation G165. Steel must have a minimum yield strength of 33 ksi. Minimum thickness of PMDF is 20 gage and that of support angles and protective angles is 12 gage.

Submit two copies of forming plans for PMDF to the Engineer. These plans must show all essential details of proposed form sheets, closures, fasteners, supports, connectors, special conditions and size and location of welds. These plans must clearly show areas of tension flanges for steel beams and provisions for protecting the tension flanges from welding notch effects by inclusion of separating sheet metal or other positive method. These plans must be designed, signed, and sealed by a licensed professional engineer. Department approval of these plans is not required, but the Department reserves the right to require modifications to the plans. The Contractor is responsible for the adequacy of these plans.

The details and notes shown on this standard are to be used as a guide in preparation of the forming plans.

All material, labor, tools and incidentals necessary to form a bridge deck with Permanent Metal Deck Forms is considered subsidiary to Item 422, "Concrete Superstructures".

DESIGN NOTES:

As a minimum, PMDF and support angles must be designed for the dead load of the form, reinforcement and concrete plus 50 psf for construction loads. Flexural stresses due to these design loads must not exceed 75 percent of the yield strength of the steel. Allowable stress for weld metal must be 12,400 psi.

Maximum deflection under the weight of forms, reinforcement and concrete or 120 psf, whichever is greater, shall not exceed the following:

1/180 of the form design span, but not more than 0.50", for design spans of 10' or less.

1/240 of the form design span, but not more than 0.75", for design spans greater than 10'.

The form design span must not be less than the clear distance between beam flanges, measured parallel to the form flutes, minus 2".

CONSTRUCTION NOTES:

Form sheets must not be permitted to rest directly on the top of beam flanges. Form sheets must be securely fastened to form supports and must have a minimum bearing length of one inch at each end. Form supports must be placed in direct contact with beam flanges.

All attachments must be made by permissible welds, screws, bolts, clips or other means shown on the the forming plans. All sheet metal assembly screws must be installed with torque-limiting devices to prevent stripping. Only welds or bolts must be used to support vertical loads.

Welding and welds must be in accordance with the provisions of Item 448, "Structural Field Welding", pertaining to fillet welds. All welds must be made by a qualified welder in accordance with Item 448.

All permanently exposed form metal, where the galvanized coating has been damaged, must be thoroughly cleaned and repaired in accordance with Item 445, "Galvanizing". Minor heat discoloration in areas of welds need not be touched up.

Flutes must line up uniformly across the entire width of the structure where main reinforcing steel is located in the flute.

Construction joints will not be permitted unless shown on the plans. The location of and forming details for any construction joint used must be shown on the forming plans. Forms below a construction joint must be removed after curing of the slab.

A sequence for uniform vibration of concrete must be approved by the Engineer prior to concrete placement. Attention must be given to prevent damage to the forms, yet provide proper vibration to prevent voids or honeycomb in the flutes and at headers and/or construction joints.

Texas Department of Transportation

Bridge Division Standard

PERMANENT METAL DECK FORMS

PMDF

FILE: pmdfste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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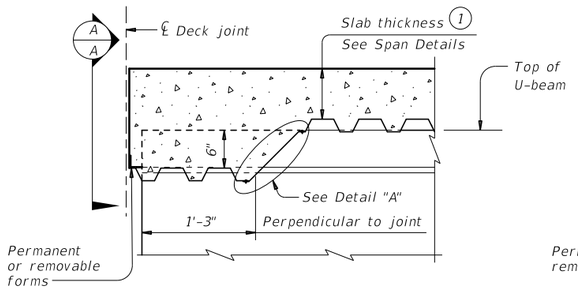
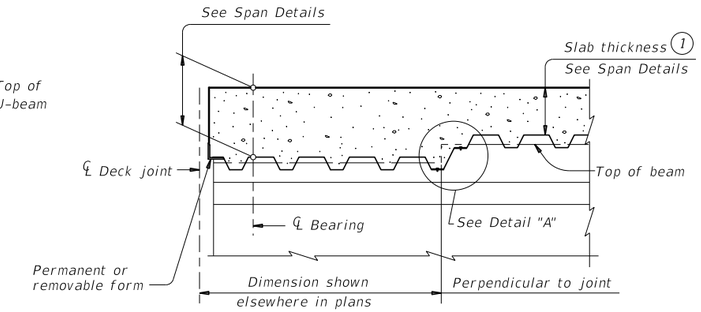
REVISIONS	0180	06	067	SH 35
02-20: Modified box note by adding steel beams/girders and subsidiary.	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		304

DATE: DATE TIME
FILE: DOCUMENT NAME

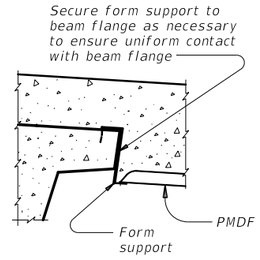


AT THICKENED SLAB END FOR U-BEAMS

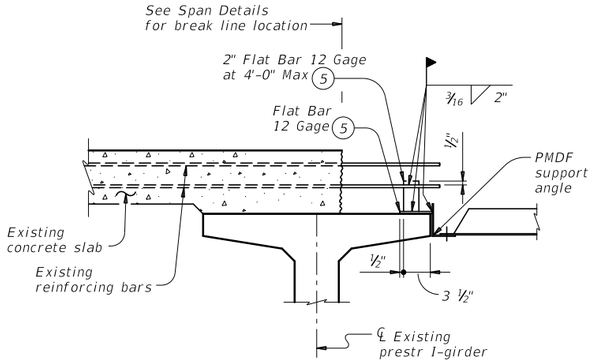


AT THICKENED SLAB END FOR PRESTRESSED I-BEAMS, I-GIRDERS AND STEEL BEAMS

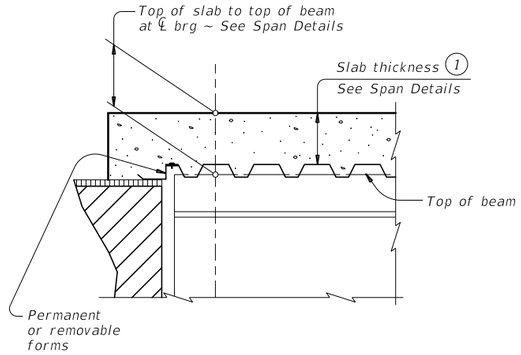
Showing I-beam block-out. No block-out for I-girders or steel beams.



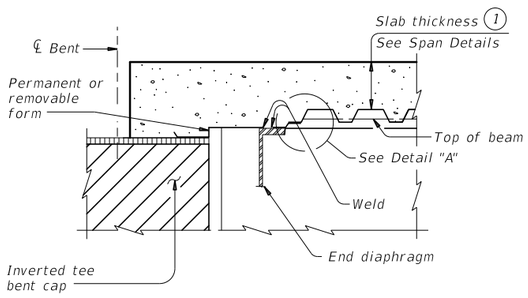
SECTION A-A



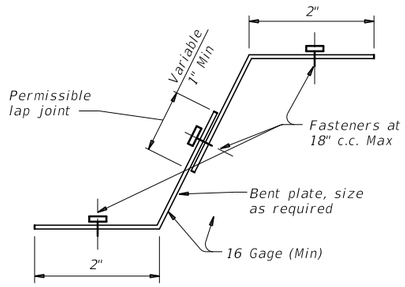
SHOWING PRESTRESSED CONCRETE I-BEAMS, I-GIRDERS AND U-BEAMS



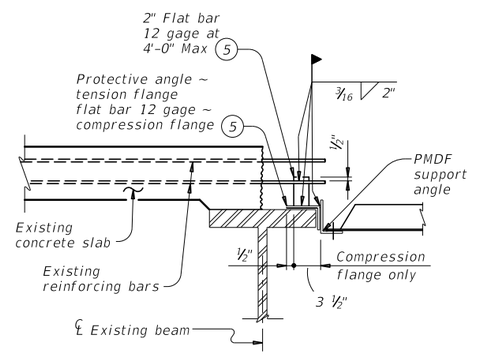
AT SLAB OVER ABUT BKWL OR INV TEE STEM FOR CONC BEAMS WITHOUT THICKENED SLAB END



AT SLAB OVER INV TEE STEM FOR STEEL BEAMS WITHOUT THICKENED SLAB END

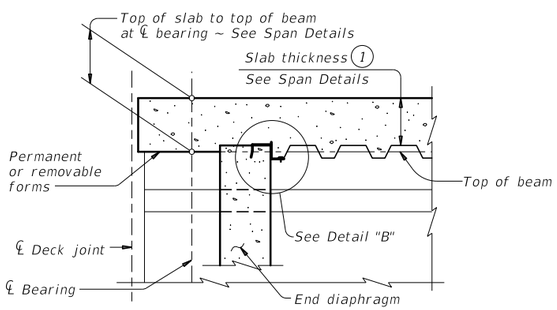


DETAIL "A"

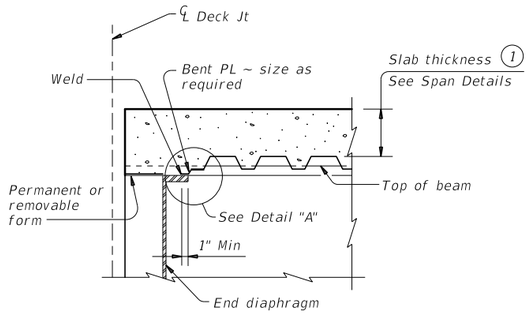


SHOWING STEEL BEAMS

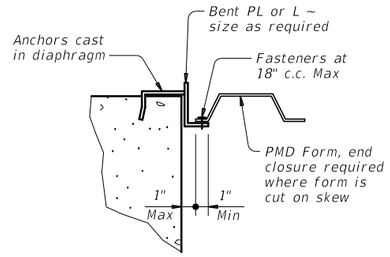
WIDENING DETAILS



AT CONC END DIAPHRAGM FOR PRESTRESSED I-BEAMS AND STEEL BEAMS



AT END DIAPHRAGM FOR STEEL BEAMS WITHOUT THICKENED SLAB END



DETAIL "B"

(1) Slab thickness minus 5/8" if corrugations match reinforcing bars

(5) Minimum yield stress of 12 gage bars shall be 40 ksi

DETAILS AT ENDS OF BEAMS

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

PERMANENT METAL DECK FORMS

PMDF

FILE: pmdfste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0180	06	067	SH 35
02-20: Modified box note by adding steel beams/girders and subsidiary.	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		305

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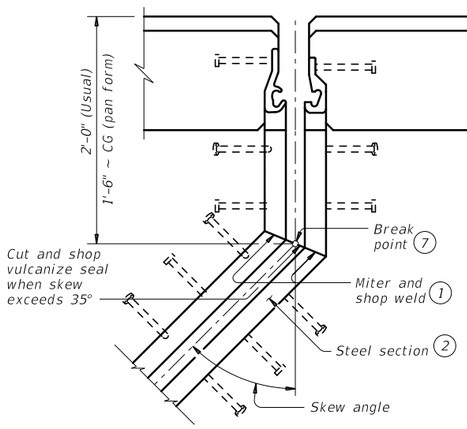
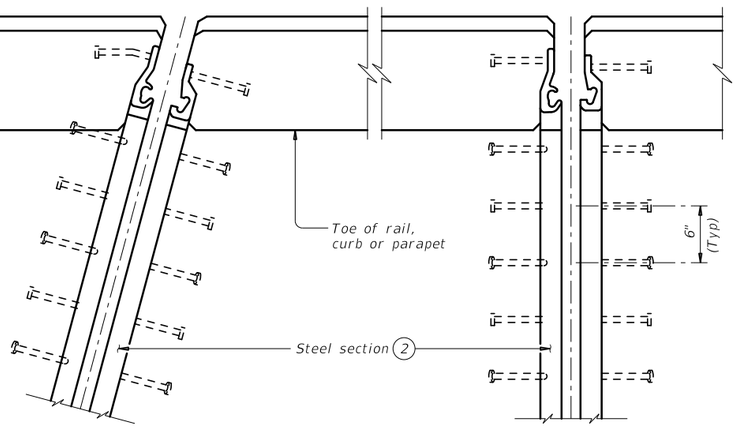
FILE:
DATE TIME
DOCUMENT NAME



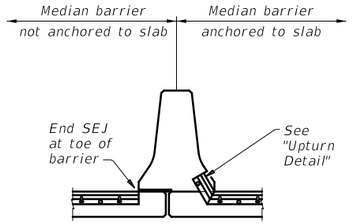
SHOWING SKEWS WITH SLAB BREAKBACKS



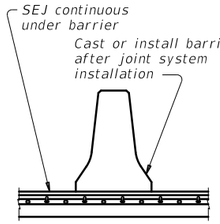
SHOWING SKEWS WITHOUT SLAB BREAKBACKS

SHOWING WITHOUT SKEWS AND SLAB BREAKBACKS

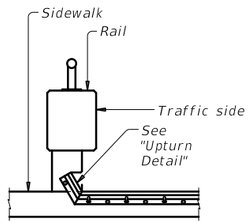
PLANS OF END CONDITIONS



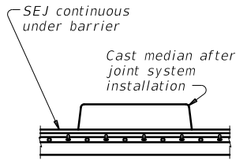
WITH OPEN DECK JOINT BELOW MEDIAN BARRIER



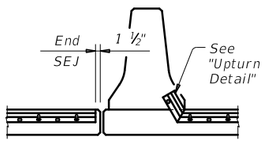
AT MEDIAN BARRIER



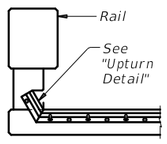
AT SIDEWALK BEHIND BRIDGE RAIL



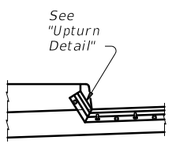
AT RAISED MEDIAN



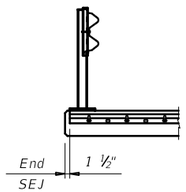
WITH OPEN DECK JOINT ADJACENT TO MEDIAN BARRIER



AT CONCRETE BRIDGE RAIL

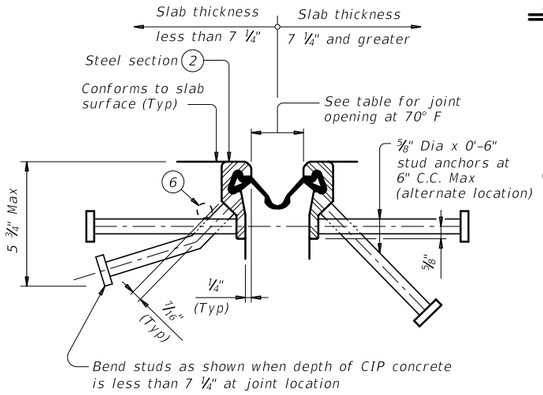


AT SIDEWALK

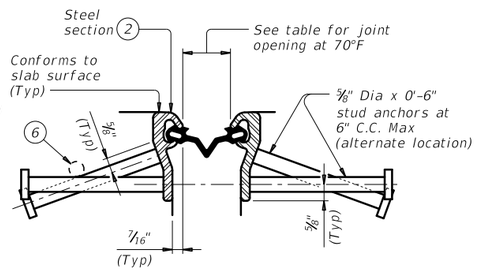


AT STEEL POST BRIDGE RAIL

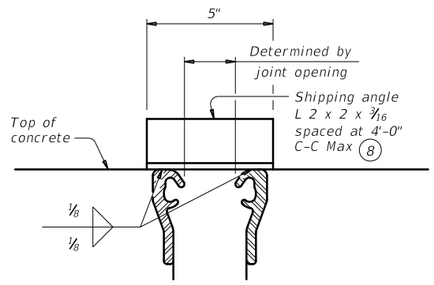
TYPICAL SECTIONS (5)



SECTION THRU WATSON BOWMAN ACME (SE-400 OR SE-500) JOINTS



SECTION THRU D.S. BROWN (A2R-400 OR A2R-XTRA) JOINTS



SHOWING D.S. BROWN (Ty SSCM2)
(All joints are similar.) (Studs are not shown for clarity.)

SHIPPING ANGLE

An alternate method of securing joint sections may be used if approved by the Bridge Division. Erection bolts are not allowed.

TABLE OF SEALED EXPANSION JOINT INFORMATION

MANUFACTURER	STEEL SECTION (2)	STRIP SEAL			
		4" JOINT		5" JOINT	
		Seal Type	Joint Opening (3)	Seal Type	Joint Opening (3)
D.S. Brown	Type SSCM2	A2R-400	1 ¾"	A2R-XTRA	2"
Watson Bowman Acme	Type R	SE-400	1 ¾"	SE-500	2"

REDUCED LONGITUDINAL MOVEMENT RANGE

SKEW (deg)	JOINT SIZE	
	4"	5"
0	4.0"	5.0"
15	4.0"	5.0"
30	3.5"	4.3"
45	2.8"	3.5"

DESIGN NOTES:

Joints installed on a skew have reduced ability to accommodate longitudinal movement. Use table values to determine the correct joint size for skewed installations.

For other skews over 25 degrees, calculate reduced movement range by multiplying joint size by cosine (skew).

(1) Remove all burrs which will be in contact with seal prior to making splice.

(2) Shape of steel section shown is typical. Variations in sections must be approved by the Engineer.

(3) These openings are also the recommended minimum installation openings.

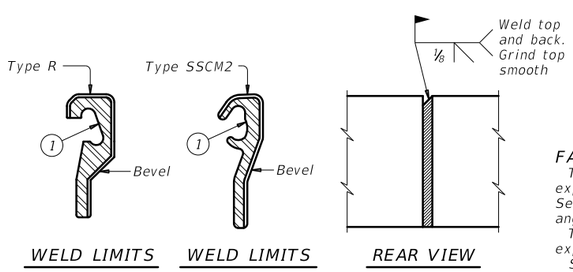
(4) Reduce for sidewalk or parapet heights less than 6".

(5) Other conditions affecting the joint profile should be noted elsewhere.

(6) Move transverse bars that are in conflict with SEJ studs, in either the bridge slab or approach slab, to rest at the junction of the studs.

(7) See Span details for location of break point.

(8) Align shipping angle perpendicular to joint.



WELD LIMITS WELD LIMITS REAR VIEW

FIELD SPLICE DETAIL

FABRICATION NOTES:

Temporarily shop assemble corresponding sections of sealed expansion joints (SEJ), check for fit, and match mark for shipment. Secure corresponding sections together for shipment with shipping angle. Do not use erection bolts.

The seal must be continuous and included in the price bid for sealed expansion joint.

Ship steel sections in convenient lengths of 10'-0" Min and 24'-0" Max unless necessary for staged construction or widenings. One shop splice is permitted in each shipping length provided no piece is less than 2'-0" long and sufficient studs are added to limit the stud to shop splice distance to 2" Min and 4" Max.

Weld studs in accordance with AWS D1.1.

Butt weld all shop and field splices and grind smooth areas in contact with seal. Make all necessary field splice joint preparations in the shop.

Paint the entire steel section with System II or IV primer in accordance with Item 446, "Feild Cleaning and Painting Steel", unless required to galvanize when shown in the plans. Provide galvanizing in accordance with Item 445, "Galvanizing". Provide paints in accordance with Item 446.2. Prepare steel and apply paint in accordance with Item 446.4.7.3 and 446.4.7.4.

Shop drawings for the fabrication of sealed expansion joints will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

CONSTRUCTION NOTES:

Secure the sealed expansion joint in position and place to the proper grade and alignment by welding braces to adjacent reinforcing steel, to prestressed beam stirrups, or to anchors cast in concrete diaphragms. Include cost of temporary bracing in the price bid for sealed expansion joint.

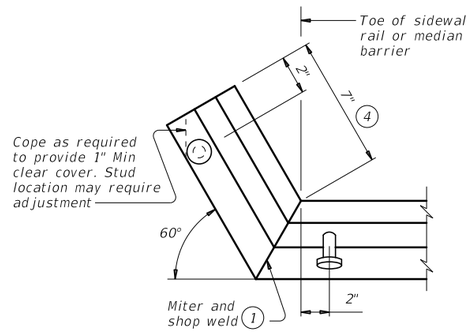
Remove shipping angle immediately after each joint half is secured in place. Grind smooth, and touch up with organic zinc-rich paint.

Clean and prepare seal cavity for seal installation as per the Manufacturer's installation procedures.

GENERAL NOTES:

Provide sealed expansion joints in the size and at locations shown on the plans.

Minimum slab and overhang thickness required for the use of SEJ-M is 6 ½".



UPTURN DETAIL

Texas Department of Transportation

Bridge Division Standard

SEALED EXPANSION JOINT TYPE M WITHOUT OVERLAY

SEJ-M

FILE: sejmste1-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		306

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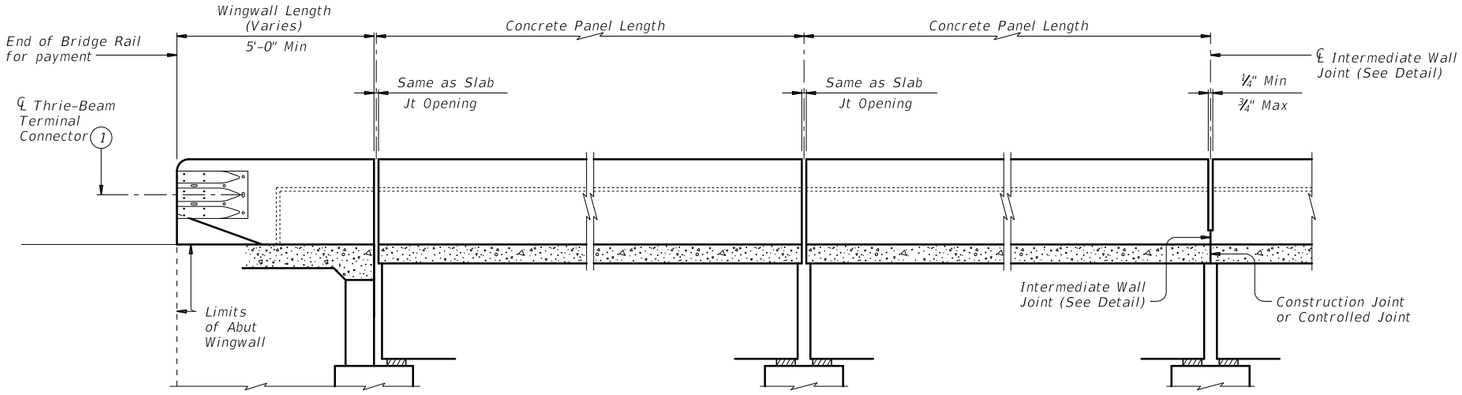
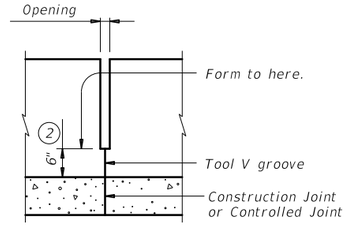


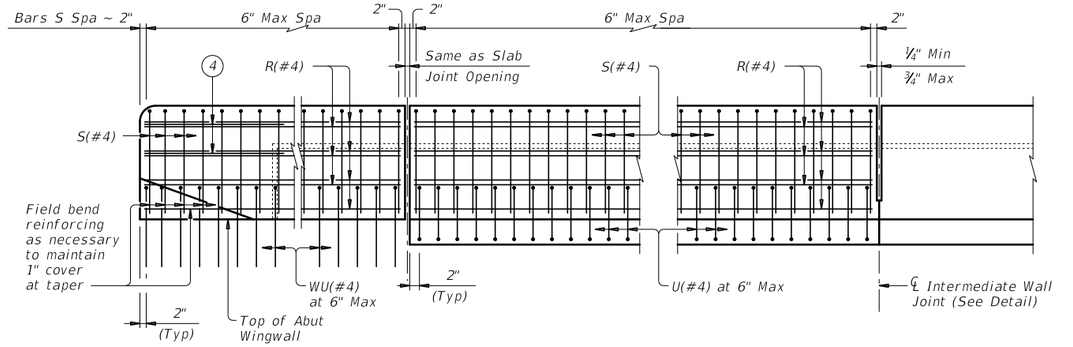
AT ABUTMENTS | AT BENTS WITH SLAB EXP JOINTS | AT BENTS WITHOUT SLAB EXP JOINTS

ROADWAY ELEVATION OF RAIL

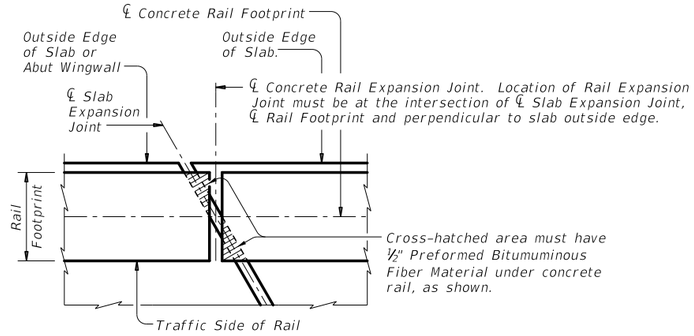


INTERMEDIATE WALL JOINT DETAIL

Provide at all interior bents without slab expansion joints.



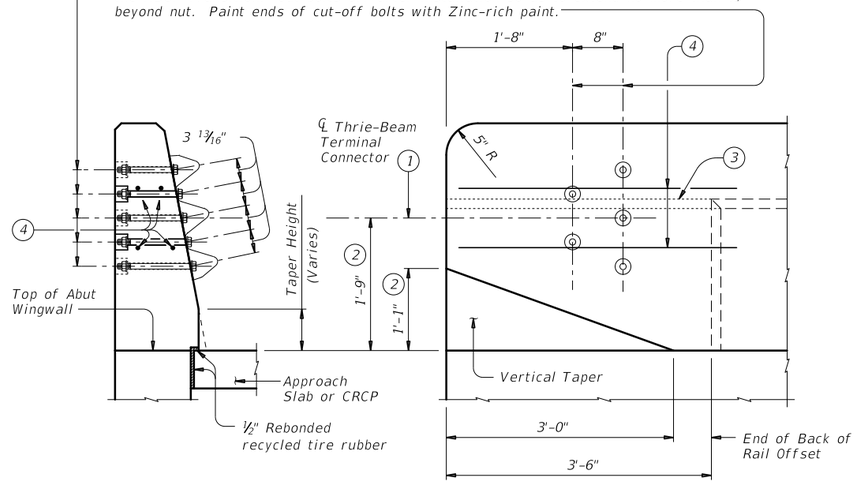
ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT



PLAN OF RAIL AT EXPANSION JOINTS

Example showing Slab Expansion Joints without breakbacks.

℄ 5 ~ 1" Dia holes and 2 ½" Dia x 2" deep recesses. Form or core holes and recesses. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes and recesses. Bolt recesses are only required when pedestrian sidewalks are adjacent to back of rail. Tighten the 5 Terminal Connection Bolts in a well distributed pattern so to prevent damage or distortion of the Thrie-Beam Connection and the MBGF Transition. Cut bolts off after installation so as to extend no more than ¾" beyond nut. Paint ends of cut-off bolts with Zinc-rich paint.



SECTION | ELEVATION

TERMINAL CONNECTION DETAILS

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. Increase 2" for structures with Overlay.
3. Back of rail offset may, with Engineer's approval, be continued to the end of the railing.
4. Place 4 additional Bars R(#4) 3'-8" in length inside Bars S(#4) and centered 2'-0" from end of rail when Terminal Connections are required.

Texas Department of Transportation | Bridge Division Standard

TRAFFIC RAIL SINGLE SLOPE

TYPE SSTR

FILE: rlstd014-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TxDOT
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REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		307

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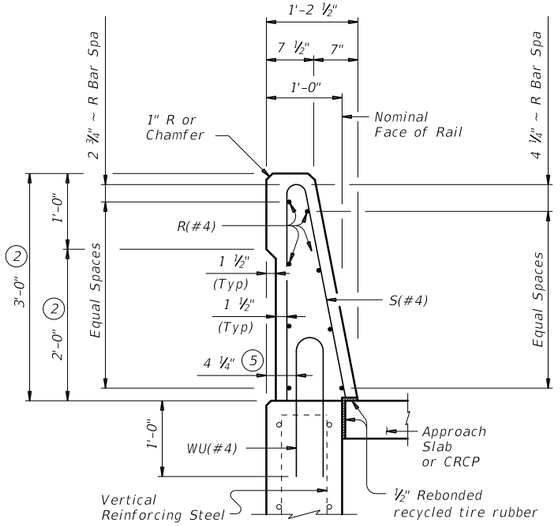
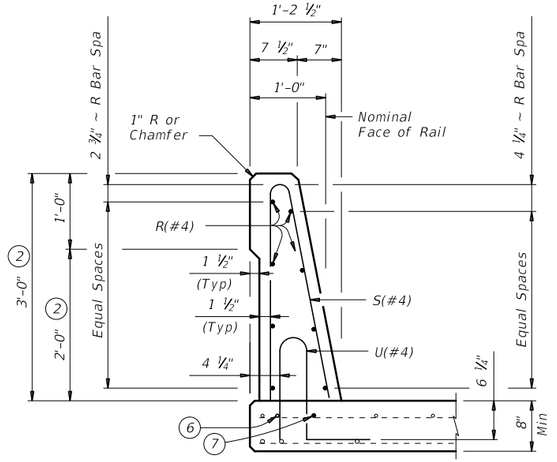


ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS



ON BRIDGE SLAB

SECTIONS THRU RAIL

(2) Increase 2" for structures with Overlay.

(5) 5 ¼" when vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls or retaining walls on traffic side of wall.

(6) As an aid in supporting reinforcement, additional longitudinal bars may be used in the slab with the approval of the Engineer. Such bars must be furnished at the Contractor's expense.

(7) Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.

(8) No longitudinal wires may be within upper bend.

(9) Bend or cut as required to clear drain slots.

(10) Space U(#4) bars at 4" Max when end region of panel length is less than 6'-0" to side slot drain. Space U(#4) bars at 6" Max when end region of panel length is 6'-0" and greator to side slot drain.

CONSTRUCTION NOTES:

This railing may be constructed by the slipform process when approved by the Engineer, with equipment approved by the Engineer. Provide sensor control for both line and grade. Tack welding to provide bracing for slipform operations is acceptable. Welding may be performed at a minimum spacing of 3 ft between the cage and the anchorage. It is permissible to weld to bars U, WU and S at any location on the cage. If increased bracing is needed, provide additional anchorage devices and weld in the upper two thirds of the cage. Paint welded areas on epoxy coated and/or galvanized reinforcing with an organic zinc rich paint in accordance with Item 445 "Galvanizing".

If rail is slipformed, apply an heavy epoxy bead 1" behind toe of traffic side of rail to concrete deck just prior to slip forming. Provide a ⅜" width x ¼" tall heavy epoxy bead with Type III, Class C or a Type V epoxy.

The back of railing must be vertical unless otherwise shown in the plans or approved by the Engineer.

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 Reinforcement (WWR) (ASTM A1064) of equal size and spacing may be substituted for Bars U and WU unless noted otherwise. Deformed WWR (ASTM A1064) may be substituted for Bars R and S, as shown. Combinations of reinforcing steel and WWR or configurations of WWR other than shown are permitted if conditions in the table are satisfied. Provide the same laps as required for reinforcing bars.

Provide bar laps, where required, as follows:

Uncoated or galvanized ~ #4 = 1'-7"

Epoxy coated ~ #4 = 2'-5"

GENERAL NOTES:

This rail has been successfully evaluated by full-scale crash test to meet MASH TL-4 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.

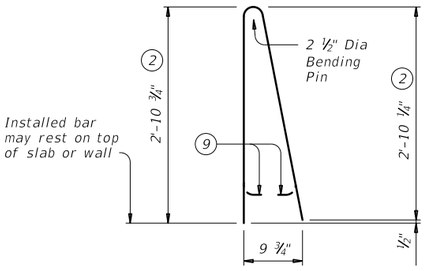
Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Shop drawings will not be required for this rail.

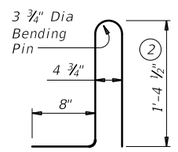
Average weight of railing with no overlay is 376 plf.

Cover dimensions are clear dimensions, unless noted otherwise.

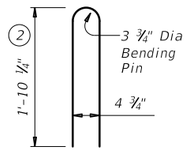
Reinforcing bar dimensions shown are out-to-out of bar.



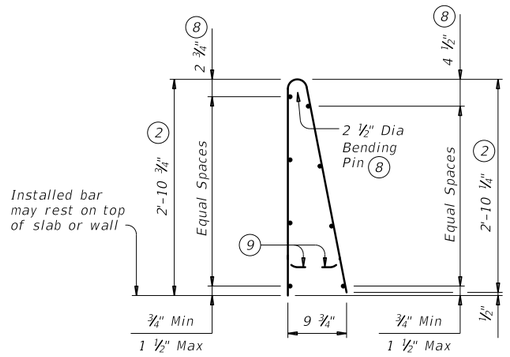
BARS S (#4)



BARS U (#4)

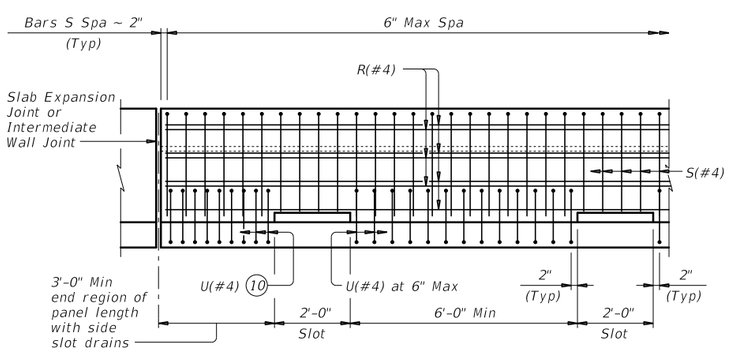


BARS WU (#4)



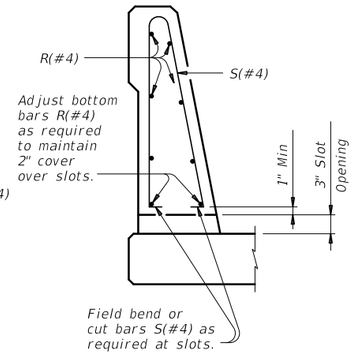
OPTIONAL WELDED WIRE REINFORCEMENT (WWR)

DESCRIPTION	LONGITUDINAL WIRES	VERTICAL WIRES
Minimum (Cumulative Total) Wire Area	1.067 Sq In.	0.267 Sq In. per Ft
	No. of Wires	Spacing
Minimum	8	4"
Maximum	10	8"
Maximum Wire Size Differential	The smaller wire must have an area of 40% or more of the larger wire.	



OPTIONAL SIDE SLOT DRAIN DETAIL

Note: Side Slot Drains may be used where shown elsewhere on the plans or as directed by the Engineer. Drains should not be placed over railroad tracks, lower roadways, or sidewalks. When this rail is used as a separator between a roadway surface and a sidewalk surface, side drain slots will not be permitted.



SECTION THRU OPTIONAL SIDE SLOT DRAIN

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

TRAFFIC RAIL SINGLE SLOPE

TYPE SSTR

FILE: rlstd014-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TxDOT
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		308

SCALE: 100.0000 ft / in.

ELECTRICAL SERVICE DATA											
ELEC. SERVICE ID	ELECTRIC SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CIRCUIT BREAKER POLE/AMPS	TWO POLE CONTRACTOR AMPS	PANEL BED/LOADC ENTER AMP RATING	BRANCH CIRCUIT ID	BRANCH CIRCUIT BREAKER POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
ES#1	ELC SRV TY A 240/480 060 (SS)SS(E)GC(O)	1 1/4"	3 - #6	60	2P/60	2P/60	N/A	A	2P/20	2.8	1.34
								FUTURE	2P/20		
								FUTURE	2P/20		
ES#2	ELC SRV TY A 240/480 060 (SS)SS(E)GC(O)	1 1/4"	3 - #6	60	2P/60	2P/60	N/A	A-NBFR	2P/20	1.75	2.28
								B-Underpass	1P/20	2.52	
								C-SBFR	2P/20	1.75	
ES#3	ELC SRV TY A 240/480 060 (SS)SS(E)GC(O)	1 1/4"	3 - #6	60	2P/60	2P/60	N/A	A	2P/20	2.8	1.34
								FUTURE	2P/20		
								FUTURE	2P/20		

NOTE:
ALL EXISTING ELECTRICAL SERVICE THAT ARE TO BE REPLACE WILL BE RETURNED TO TXDOT TRAFFIC SIGNAL OFFICE LOCATED AT 1701 S.P.I.D CORPUS CHRISTI, TEXAS. CONTACT CARLOS CARILLO (361)-808-2216 TO SCHEDULE A DELIVERY DATE.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
BILAL MUAHID KHAN
126859
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ILLUMINATION
ELECTRICAL SERVICE DATA CHART

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	309

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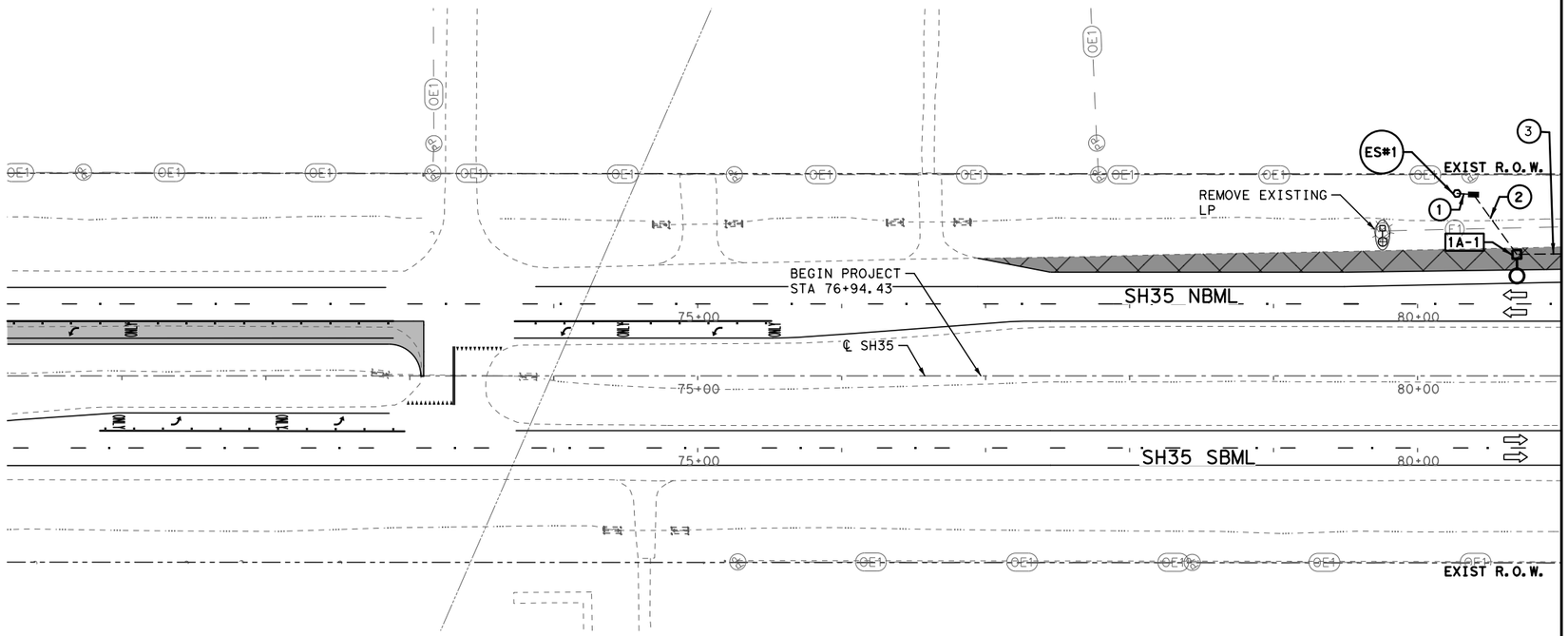


MATCH LINE STA 81+00

0′ 50′ 100′(H)

SCALE IN FEET

ILLUMINATION PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- PAVEMENT TO BE REMOVED
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW
- RDWY ILL ASSEMBLY (TY SP 38S-8) (250W EQ) LED
- RDWY ILL ASSEMBLY (TY SA 40T-8) (250W EQ) LED
- EXISTING ILL ASSEMBLY TO REMAIN
- EXISTING ILL ASSEMBLY TO REMOVE
- RDWY ILL AM (U/P) (150W EQ) LED
- PROPOSED ELECTRICAL SERVICE
- CONDUIT & CONDUCTER (TRENCHED)
- CONDUIT & CONDUCTER (BORED)
- RIGID METAL CONDUIT
- (1) CONDUIT RUN NUMBER
- GROUND BOX TY A
- JUNCTION BOX
- FUSED DISCONNECT
- [1A-1] POLE DESIGNATION
  - POLE OR LUMINAIRE NO.
  - CIRCUIT NO.
  - SERVICE NO.

SHEET SUMMARY

ITEM NO.		DESCRIPTION	UNIT	APPROX. QUANTITIES
BID ITEM	DESC CODE			
416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	8
432	6006	RIPRAP (CONC)(CL B)	CY	1
610	6009	REMOVE RD IL ASM (TRANS-BASE)	EA	1
610	6214	IN RD IL (TY SA) 40T-8 (250W EQ) LED	EA	1
618	6046	CONDT (PVC) (SCH 80) (2")	LF	105
620	6008	ELEC CONDR (NO.8) INSULATED	LF	315 *
624	6002	GROUND BOX TY A (122311)W/APRON	EA	1
628	6051	ELC SRV TY A 240/480 060(SS)SS(E)GC(O)	EA	1

* INCLUDES THE ADDITIONAL CONDUCTOR QUANTITY AS REQUIRED BY TXDOT IN (GROUND BOX AND LUMINAIRE BASE)

CONDUIT AND CONDUCTOR SCHEDULE

RUN NO.	RUN LENGTH (FT)	CONDR SIZE AND TYPE		CONDUIT SIZE AND TYPE			CONDUIT NOTES
		NO.8 XHHW	NO.8 BARE	(PVC) (SCHD 80) (2") (TRENCH)	(PVC) (SCHD 80) (2") (BORE)	(RM) (1")	
1	15	3		1			
2	55	3		1			
3	35	3		1			
TOTALS		315	0	105	0	0	

NOTE:
ALL NEW CONDUIT TERMINATING IN GROUND BOXES AND LUMINAIRE POLE BASE SHALL BE SEALED WITH A SEALANT TO BE MADE OF A POLYURETHANE OR EQUIVALENT MATERIAL OF A COMPOSITION THAT WILL CURE IN THE PRESENCE OF MOISTURE

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES

DESCRIPTION	POLE NUMBER	ALIGNMENT	STATION	OFFSET (FT)	MOUNTING TYPE	DRILL SHAFT DIA/ ARM LEN.
IN RD IL (TY SA) 40T-8 (250W EQ) LED	1A-1	CL_SH35_NBML	80+68.97	34.40′ LT	GROUND	30"/8′

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
BILAL MUAHID KHAN
126859
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ILLUMINATION PLAN LAYOUT

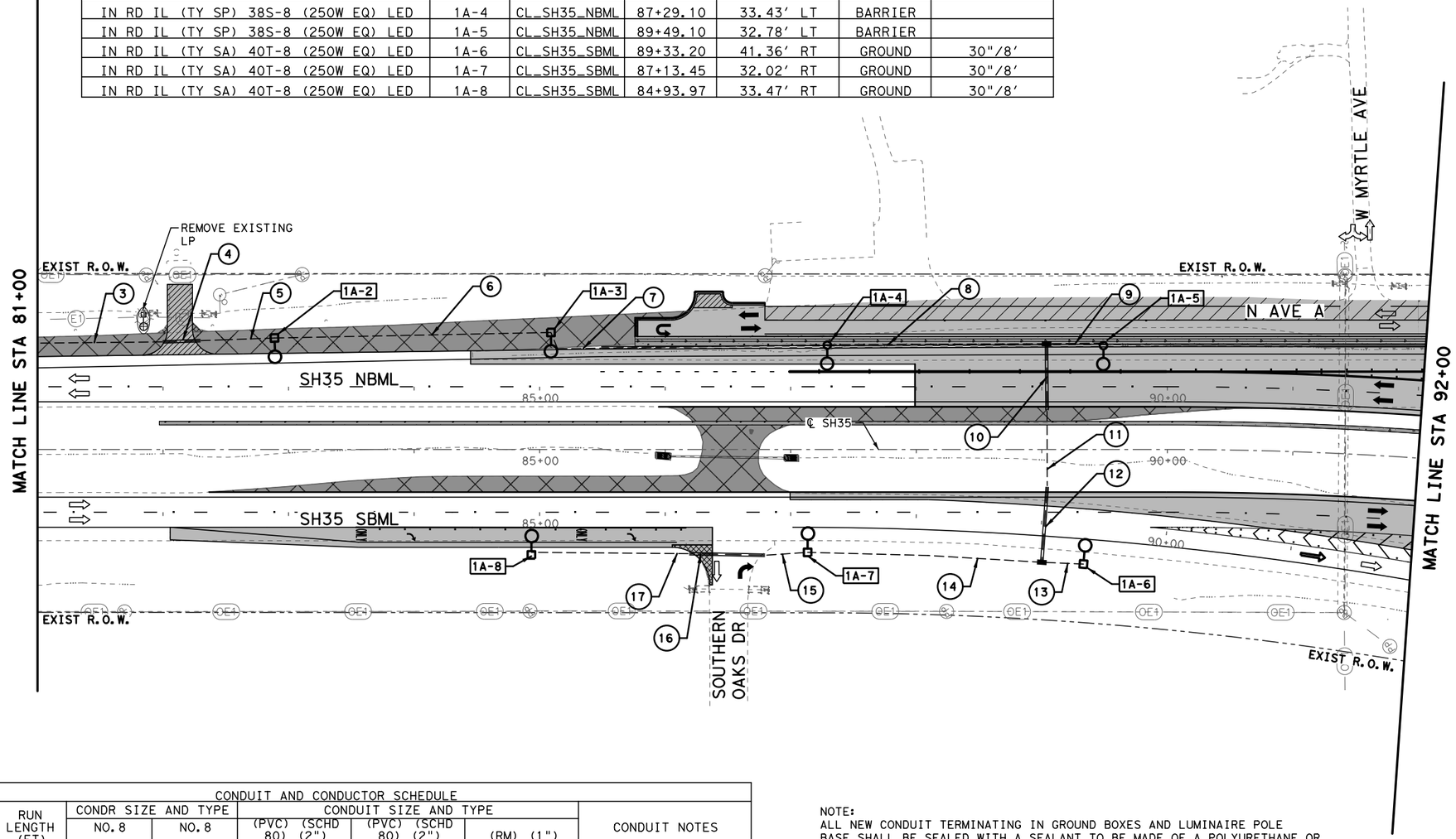
PROJECT BEGIN TO STA 81+00

SHEET 1 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	310

SCALE: 100.0000 ft / in.

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES						
DESCRIPTION	POLE NUMBER	ALIGNMENT	STATION	OFFSET (FT)	MOUNTING TYPE	DRILL SHAFT DIA/ ARM LEN.
IN RD IL (TY SA) 40T-8 (250W EQ) LED	1A-2	CL_SH35_NBML	82+88.75	38.80' LT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	1A-3	CL_SH35_NBML	85+09.00	43.20' LT	GROUND	30"/8'
IN RD IL (TY SP) 38S-8 (250W EQ) LED	1A-4	CL_SH35_NBML	87+29.10	33.43' LT	BARRIER	
IN RD IL (TY SP) 38S-8 (250W EQ) LED	1A-5	CL_SH35_NBML	89+49.10	32.78' LT	BARRIER	
IN RD IL (TY SA) 40T-8 (250W EQ) LED	1A-6	CL_SH35_SBML	89+33.20	41.36' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	1A-7	CL_SH35_SBML	87+13.45	32.02' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	1A-8	CL_SH35_SBML	84+93.97	33.47' RT	GROUND	30"/8'



0' 50' 100'(H)

SCALE IN FEET

ILLUMINATION PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- PAVEMENT TO BE REMOVED
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW
- RDWY ILL ASSEMBLY (TY SP 38S-8) (250W EQ) LED
- RDWY ILL ASSEMBLY (TY SA 40T-8) (250W EQ) LED
- EXISTING ILL ASSEMBLY TO REMAIN
- EXISTING ILL ASSEMBLY TO REMOVE
- RDWY ILL AM (U/P) (150W EQ) LED
- PROPOSED ELECTRICAL SERVICE
- CONDUIT & CONDUCTER (TRENCHED)
- CONDUIT & CONDUCTER (BORED)
- RIGID METAL CONDUIT
- (1) CONDUIT RUN NUMBER
- GROUND BOX TY A
- JUNCTION BOX
- FUSED DISCONNECT
- [1A-1] POLE DESIGNATION
  - POLE OR LUMINAIRE NO.
  - CIRCUIT NO.
  - SERVICE NO.

CONDUIT AND CONDUCTOR SCHEDULE							
RUN NO.	RUN LENGTH (FT)	CONDR SIZE AND TYPE		CONDUIT SIZE AND TYPE			CONDUIT NOTES
		NO. 8 XHHW	NO. 8 BARE	(PVC) (SCHD 80) (2") (TRENCH)	(PVC) (SCHD 80) (2") (BORE)	(RM) (1")	
3	100	3		1			
4	30	3			1		
5	60	3		1			
6	225	3		1			
7	230	3		1			
8	175	3		1			
9	50	3		1			
10	55	3			1		
11	60	3		1			
12	60	3			1		
13	35	3		1			
14	190	3		1			
15	35	3		1			
16	60	3			1		
17	125	3		1			
TOTALS		4470	0	1285	205	0	

NOTE:
ALL NEW CONDUIT TERMINATING IN GROUND BOXES AND LUMINAIRE POLE BASE SHALL BE SEALED WITH A SEALANT TO BE MADE OF A POLYURETHANE OR EQUIVALENT MATERIAL OF A COMPOSITION THAT WILL CURE IN THE PRESENCE OF MOISTURE

SHEET SUMMARY				
ITEM NO.		DESCRIPTION	UNIT	APPROX. QUANTITIES
BID ITEM	DESC CODE			
416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	40
432	6006	RIPRAP (CONC)(CL B)	CY	2
610	6009	REMOVE RD IL ASM (TRANS-BASE)	EA	1
610	6190	IN RD IL (TY SP) 38S-8 (250W EQ) LED	EA	2
610	6214	IN RD IL (TY SA) 40T-8 (250W EQ) LED	EA	5
618	6046	CONDT (PVC) (SCH 80) (2")	LF	1285
618	6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	205
620	6008	ELEC CONDR (NO.8) INSULATED	LF	4470 *
624	6002	GROUND BOX TY A (122311)W/APRON	EA	2

* INCLUDES THE ADDITIONAL CONDUCTOR QUANTITY AS REQUIRED BY TXDOT IN (GROUND BOX AND LUMINAIRE BASE)

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
BILAL MUAHID KHAN
126859
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ILLUMINATION PLAN LAYOUT

STA 81+00 TO STA 92+00

SHEET 2 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	311

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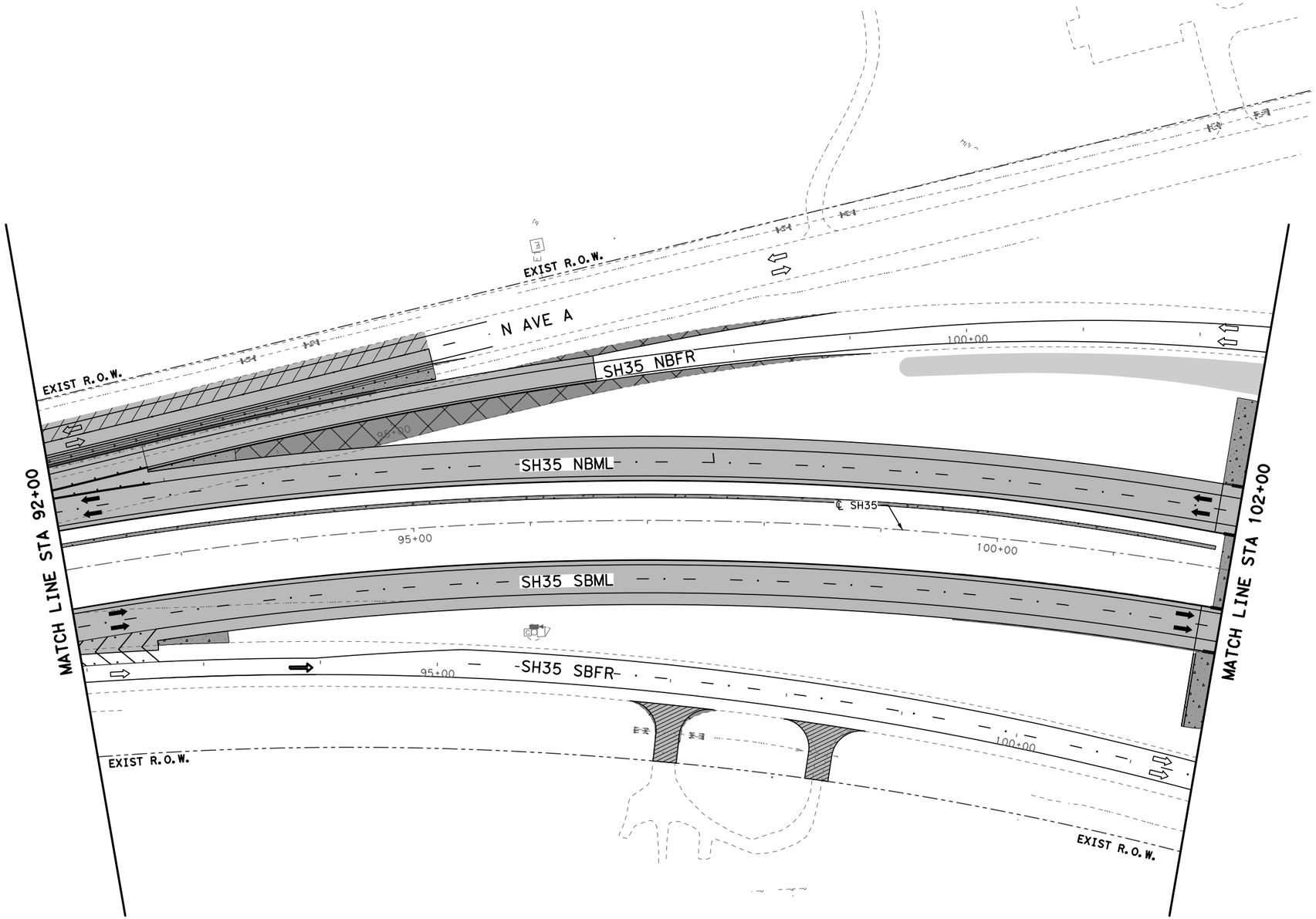

NOTE: NO ILLUMINATION DESIGN ON THIS SHEET.

0' 50' 100'(H)

SCALE IN FEET

ILLUMINATION PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- PAVEMENT TO BE REMOVED
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW
- RDWY ILL ASSEMBLY (TY SP 38S-8) (250W EQ) LED
- RDWY ILL ASSEMBLY (TY SA 40T-8) (250W EQ) LED
- EXISTING ILL ASSEMBLY TO REMAIN
- EXISTING ILL ASSEMBLY TO REMOVE
- RDWY ILL AM (U/P) (150W EQ) LED
- PROPOSED ELECTRICAL SERVICE
- CONDUIT & CONDUCTER (TRENCHED)
- CONDUIT & CONDUCTER (BORED)
- RIGID METAL CONDUIT
- (1) CONDUIT RUN NUMBER
- GROUND BOX TY A
- JUNCTION BOX
- FUSED DISCONNECT
- [1A-1] POLE DESIGNATION
  - POLE OR LUMINAIRE NO.
  - CIRCUIT NO.
  - SERVICE NO.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
BILAL MUAHID KHAN
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Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ILLUMINATION PLAN LAYOUT

STA 92+00 TO STA 102+00

SHEET 3 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	312

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SCALE: 100.0000 ft / in.

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES

DESCRIPTION	POLE NUMBER	ALIGNMENT	STATION	OFFSET (FT)	MOUNTING TYPE	DRILL SHAFT DIA/ ARM LEN.
IN RD IL (TY SA) 40T-8 (250W EQ) LED	2A-1	SH35_NBFR	106+02.58	20.65' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	2A-2	OAK_LN	14+70.51	38.94' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	2A-3	OAK_LN	13+74.74	27.00' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	2A-4	SH35_NBFR	109+00.91	25.58' LT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	2A-5	SH35_NBFR	111+17.98	25.34' LT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	2C-1	SH35_SBFR	103+02.87	26.78' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	2C-2	SH35_SBFR	105+23.36	26.83' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	2C-3	OAK_LN	18+18.24	29.91' LT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	2C-4	SH35_SBFR	107+95.15	23.28' LT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	2C-5	OAK_LN	19+15.36	27.00' LT	GROUND	30"/8'

SHEET SUMMARY

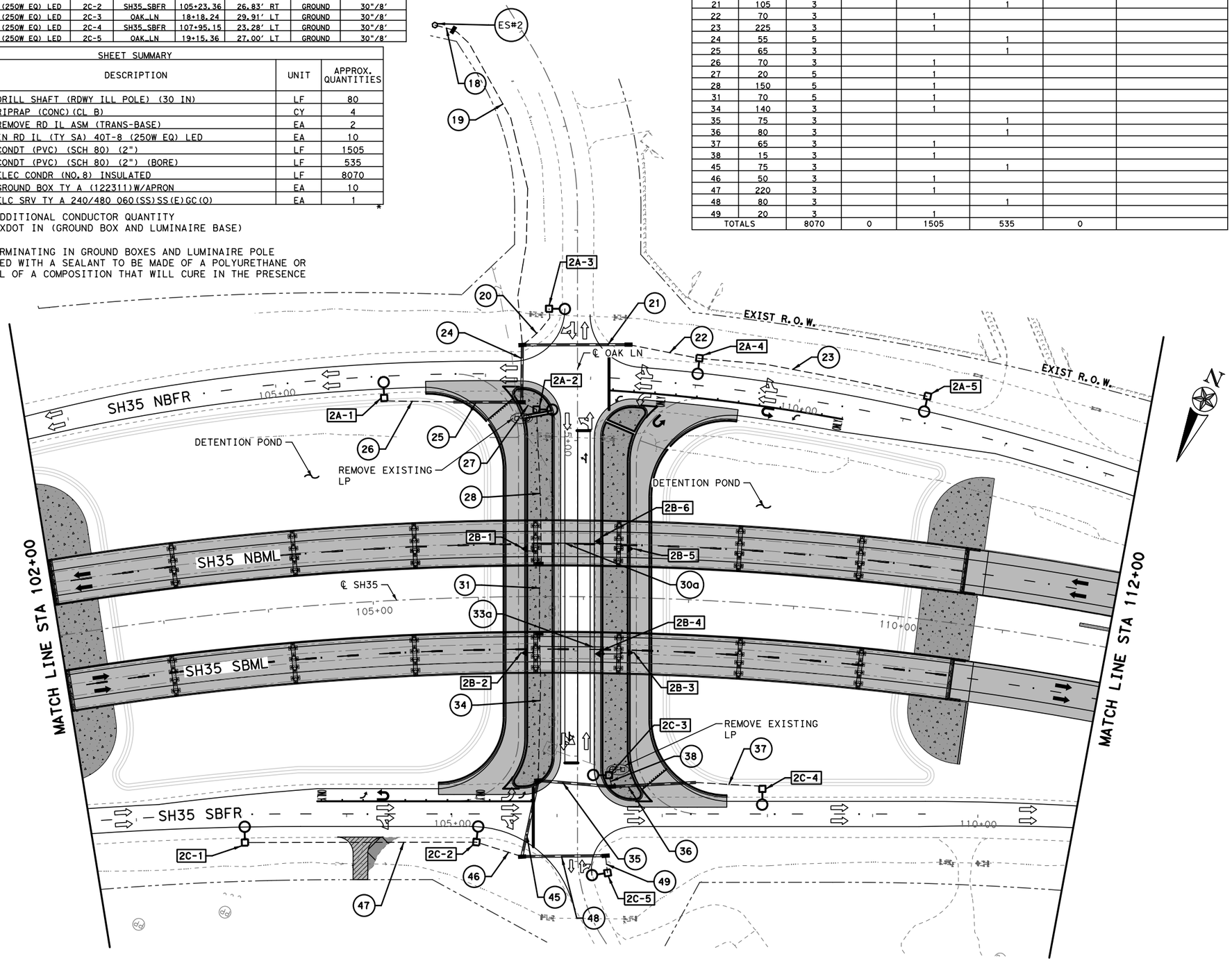
ITEM NO. BID ITEM	ITEM NO. DESC CODE	DESCRIPTION	UNIT	APPROX. QUANTITIES
416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	80
432	6006	RIPRAP (CONC)(CL B)	CY	4
610	6009	REMOVE RD IL ASM (TRANS-BASE)	EA	2
610	6214	IN RD IL (TY SA) 40T-8 (250W EQ) LED	EA	10
618	6046	CONDT (PVC) (SCH 80) (2")	LF	1505
618	6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	535
620	6008	ELEC CONDR (NO.8) INSULATED	LF	8070
624	6002	GROUND BOX TY A (122311)W/APRON	EA	10
628	6051	ELC SRV TY A 240/480 060(SS)SS(E)GC(O)	EA	1 *

* INCLUDES THE ADDITIONAL CONDUCTOR QUANTITY AS REQUIRED BY TXDOT IN (GROUND BOX AND LUMINAIRE BASE)

NOTE:
ALL NEW CONDUIT TERMINATING IN GROUND BOXES AND LUMINAIRE POLE BASE SHALL BE SEALED WITH A SEALANT TO BE MADE OF A POLYURETHANE OR EQUIVALENT MATERIAL OF A COMPOSITION THAT WILL CURE IN THE PRESENCE OF MOISTURE

CONDUIT AND CONDUCTOR SCHEDULE

RUN NO.	RUN LENGTH (FT)	CONDR SIZE AND TYPE NO. 8 XHHW	CONDR SIZE AND TYPE NO. 8 BARE	CONDUIT SIZE AND TYPE (PVC) (SCHD 80) (2") (TRENCH)	CONDUIT SIZE AND TYPE (PVC) (SCHD 80) (2") (BORE)	CONDUIT SIZE AND TYPE (RM) (1")	CONDUIT NOTES
18	20	7		1			
19	320	7		1			
20	50	3		1			
21	105	3			1		
22	70	3		1			
23	225	3		1			
24	55	5			1		
25	65	3			1		
26	70	3		1			
27	20	5		1			
28	150	5		1			
31	70	5		1			
34	140	3		1			
35	75	3			1		
36	80	3			1		
37	65	3		1			
38	15	3		1			
45	75	3			1		
46	50	3		1			
47	220	3		1			
48	80	3			1		
49	20	3		1			
TOTALS		8070	0	1505	535	0	



0' 50' 100'(H)

SCALE IN FEET

ILLUMINATION PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- PAVEMENT TO BE REMOVED
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW
- RDWY ILL ASSEMBLY (TY SP 38S-8) (250W EQ) LED
- RDWY ILL ASSEMBLY (TY SA 40T-8) (250W EQ) LED
- EXISTING ILL ASSEMBLY TO REMAIN
- EXISTING ILL ASSEMBLY TO REMOVE
- RDWY ILL AM (U/P) (150W EQ) LED
- PROPOSED ELECTRICAL SERVICE
- CONDUIT & CONDUCTER (TRENCHED)
- CONDUIT & CONDUCTER (BORED)
- RIGID METAL CONDUIT
- (1) CONDUIT RUN NUMBER
- GROUND BOX TY A
- JUNCTION BOX
- FUSED DISCONNECT
- 1A-1 POLE DESIGNATION
  - POLE OR LUMINAIRE NO.
  - CIRCUIT NO.
  - SERVICE NO.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
BILAL MUAHID KHAN
126859
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ILLUMINATION PLAN LAYOUT

STA 102+00 TO STA 122+00

SHEET 4 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	313

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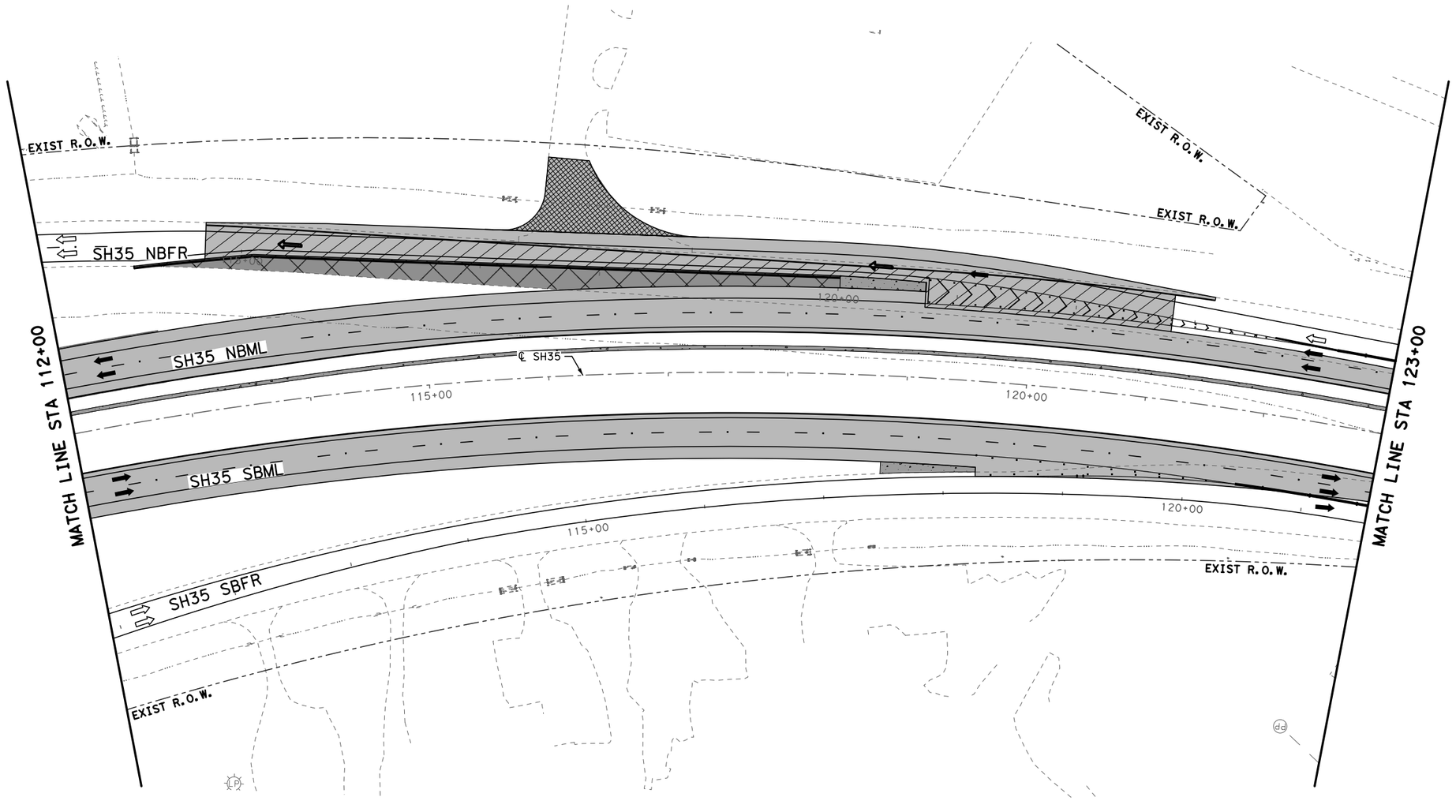

NOTE: NO ILLUMINATION DESIGN ON THIS SHEET

0′ 50′ 100′(H)

SCALE IN FEET

ILLUMINATION PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- PAVEMENT TO BE REMOVED
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW
- RDWY ILL ASSEMBLY (TY SP 38S-8) (250W EQ) LED
- RDWY ILL ASSEMBLY (TY SA 40T-8) (250W EQ) LED
- EXISTING ILL ASSEMBLY TO REMAIN
- EXISTING ILL ASSEMBLY TO REMOVE
- RDWY ILL AM (U/P) (150W EQ) LED
- PROPOSED ELECTRICAL SERVICE
- CONDUIT & CONDUCTER (TRENCHED)
- CONDUIT & CONDUCTER (BORED)
- RIGID METAL CONDUIT
- (1) CONDUIT RUN NUMBER
- GROUND BOX TY A
- JUNCTION BOX
- FUSED DISCONNECT
- [1A-1] POLE DESIGNATION
  - POLE OR LUMINAIRE NO.
  - CIRCUIT NO.
  - SERVICE NO.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
BILAL MUAHID KHAN
126859
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ILLUMINATION PLAN LAYOUT

STA 112+00 TO STA 123+00

SHEET 5 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	314

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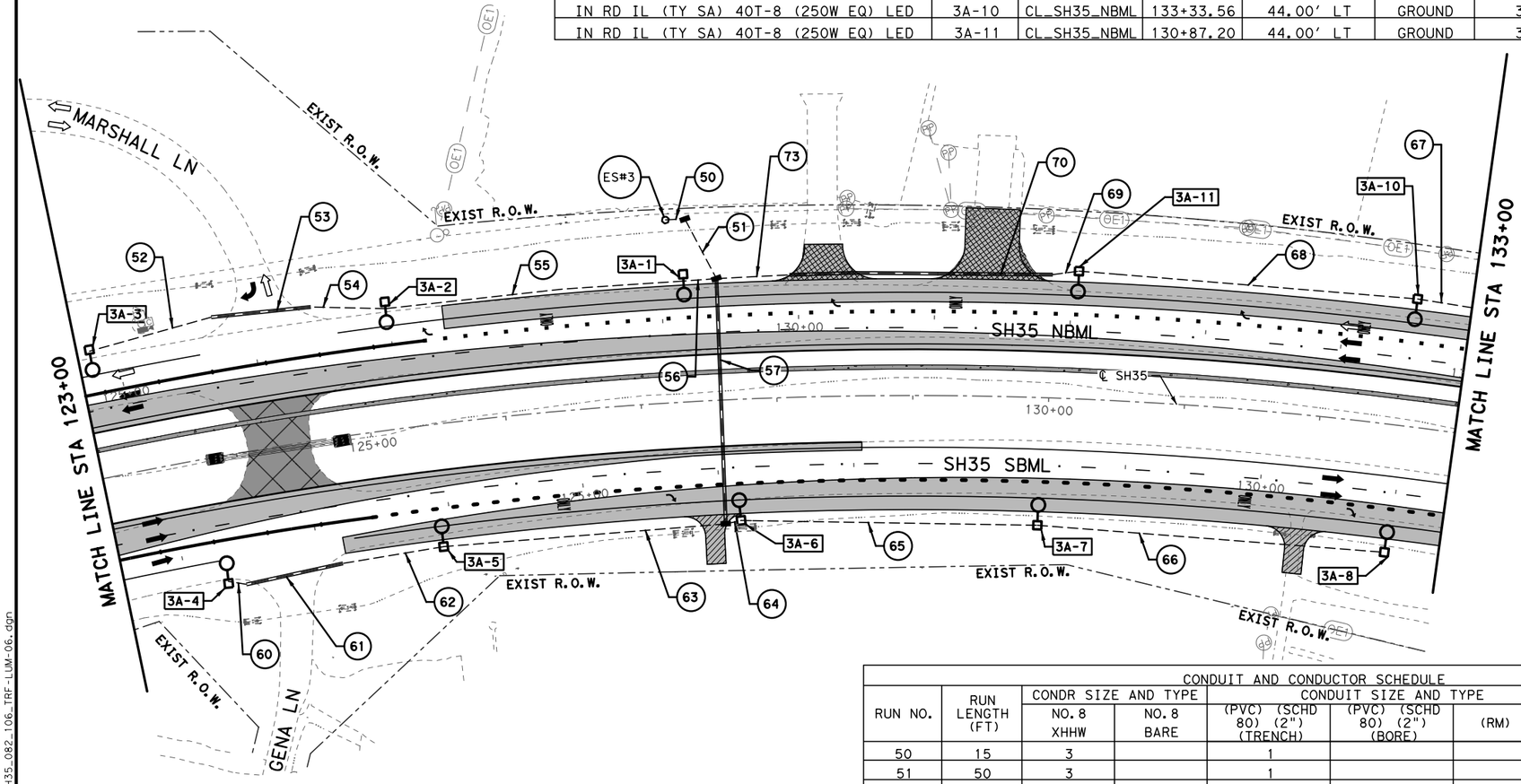
SCALE: 100.0000 ft / in.

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES						
DESCRIPTION	POLE NUMBER	ALIGNMENT	STATION	OFFSET (FT)	MOUNTING TYPE	DRILL SHAFT DIA/ ARM LEN
IN RD IL (TY SA) 40T-8 (250W EQ) LED	3A-1	CL_SH35_NBML	128+00.02	44.00' LT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	3A-2	CL_SH35_NBML	125+82.95	44.00' LT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	3A-3	CL_SH35_NBML	123+65.81	45.00' LT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	3A-4	CL_SH35_SBML	123+19.44	43.34' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	3A-5	CL_SH35_SBML	124+82.46	40.16' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	3A-6	CL_SH35_SBML	127+05.22	39.15' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	3A-7	CL_SH35_SBML	129+26.39	44.00' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	3A-8	CL_SH35_SBML	131+86.47	44.00' RT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	3A-10	CL_SH35_NBML	133+33.56	44.00' LT	GROUND	30"/8'
IN RD IL (TY SA) 40T-8 (250W EQ) LED	3A-11	CL_SH35_NBML	130+87.20	44.00' LT	GROUND	30"/8'



0' 50' 100'(H)

SCALE IN FEET

ILLUMINATION PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- PAVEMENT TO BE REMOVED
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW
- RDWY ILL ASSEMBLY (TY SP 38S-8) (250W EQ) LED
- RDWY ILL ASSEMBLY (TY SA 40T-8) (250W EQ) LED
- EXISTING ILL ASSEMBLY TO REMAIN
- EXISTING ILL ASSEMBLY TO REMOVE
- RDWY ILL AM (U/P) (150W EQ) LED
- PROPOSED ELECTRICAL SERVICE
- CONDUIT & CONDUCTER (TRENCHED)
- CONDUIT & CONDUCTER (BORED)
- RIGID METAL CONDUIT
- (1) CONDUIT RUN NUMBER
- GROUND BOX TY A
- JUNCTION BOX
- FUSED DISCONNECT
- [1A-1] POLE DESIGNATION
  - POLE OR LUMINAIRE NO.
  - CIRCUIT NO.
  - SERVICE NO.

SHEET SUMMARY				
ITEM NO.		DESCRIPTION	UNIT	APPROX. QUANTITIES
BID ITEM	DESC CODE			
416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	88 *
432	6006	RIPRAP (CONC)(CL B)	CY	4
610	6214	IN RD IL (TY SA) 40T-8 (250W EQ) LED	EA	11
618	6046	CONDT (PVC) (SCH 80) (2")	LF	1605
618	6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	540
620	6008	ELEC CONDR (NO.8) INSULATED	LF	6435
624	6002	GROUND BOX TY A (122311)W/APRON	EA	3
628	6051	ELC SRV TY A 240/480 060(SS)SS(E)GC(O)	EA	1

* INCLUDES THE ADDITIONAL CONDUCTOR QUANTITY AS REQUIRED BY TXDOT IN (GROUND BOX AND LUMINAIRE BASE)

NOTE:
ALL NEW CONDUIT TERMINATING IN GROUND BOXES AND LUMINAIRE POLE BASE SHALL BE SEALED WITH A SEALANT TO BE MADE OF A POLYURETHANE OR EQUIVALENT MATERIAL OF A COMPOSITION THAT WILL CURE IN THE PRESENCE OF MOISTURE

CONDUIT AND CONDUCTOR SCHEDULE							
RUN NO.	RUN LENGTH (FT)	CONDR SIZE AND TYPE		CONDUIT SIZE AND TYPE			CONDUIT NOTES
		NO. 8 XHHW	NO. 8 BARE	(PVC) (SCHD 80) (2") (TRENCH)	(PVC) (SCHD 80) (2") (BORE)	(RM) (1")	
50	15	3		1			
51	50	3		1			
52	100	3		1			
53	75	3			1		
54	60	3		1			
55	225	3		1			
56	25	3		1			
57	190	3			1		
60	15	3		1			
61	75	3			1		
62	80	3		1			
63	210	3		1			
64	15	3		1			
65	220	3		1			
66	220	3		1			
67	45	3		1			
68	250	3		1			
69	20	3		1			
70	200	3			1		
73	55	3		1			
TOTALS		6435	0	1605	540	0	

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
BILAL MUAHID KHAN
126859
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ILLUMINATION PLAN LAYOUT

STA 123+00 TO STA 133+00

SHEET 6 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	315

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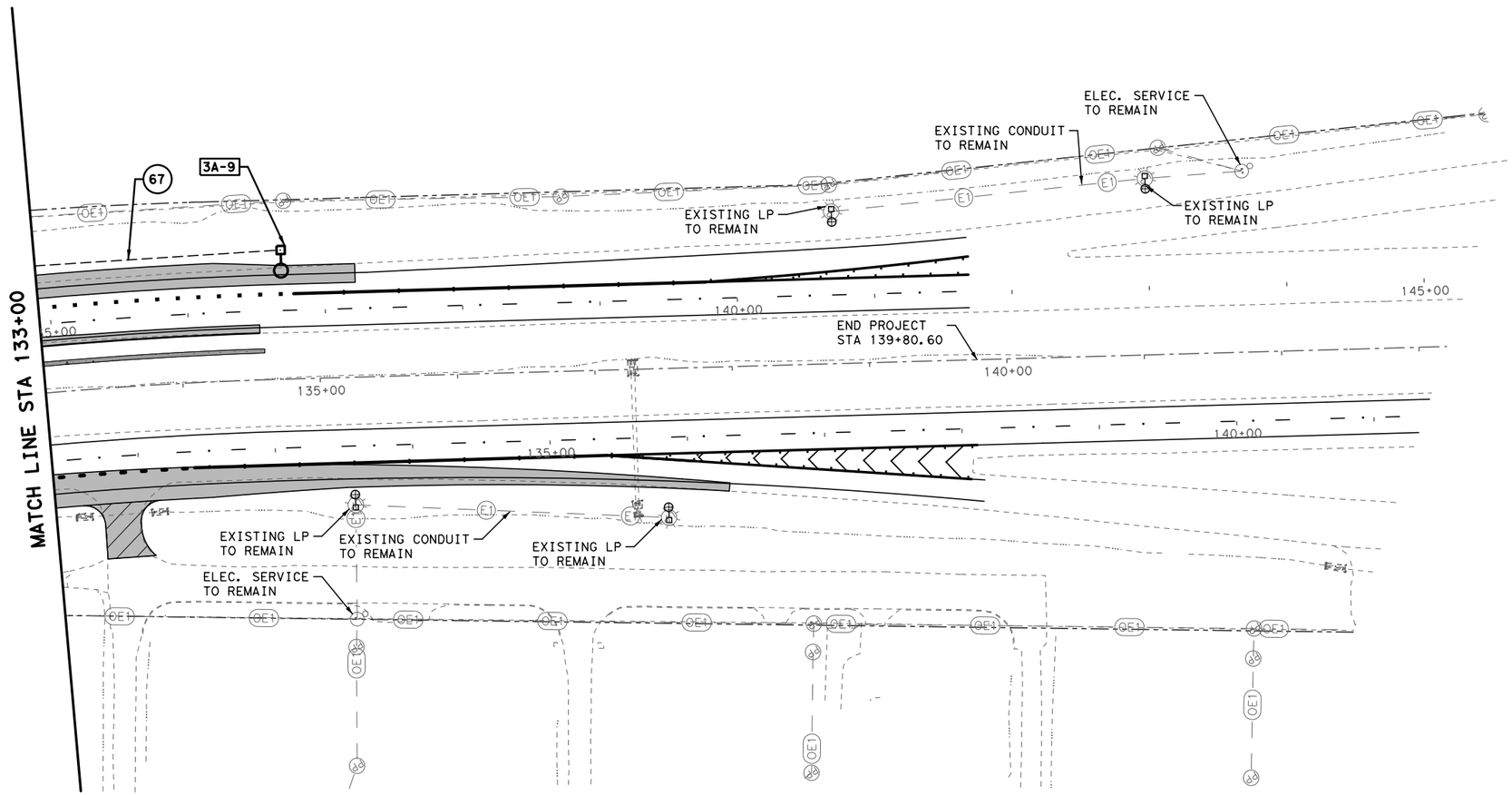
SCALE: 100.0000 ft / in.

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES						
DESCRIPTION	POLE NUMBER	ALIGNMENT	STATION	OFFSET (FT)	MOUNTING TYPE	DRILL SHAFT DIAMETER/ ARM LENGTH
IN RD IL (TY SA) 40T-8 (250W EQ) LED	1A-1	CL_SH35_NBML	135+50.35	44.00' LT	GROUND	30"/8'



0' 50' 100'(H)

SCALE IN FEET

ILLUMINATION PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- PAVEMENT TO BE REMOVED
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW
- RDWY ILL ASSEMBLY (TY SP 38S-8) (250W EQ) LED
- RDWY ILL ASSEMBLY (TY SA 40T-8) (250W EQ) LED
- EXISTING ILL ASSEMBLY TO REMAIN
- EXISTING ILL ASSEMBLY TO REMOVE
- RDWY ILL AM (U/P) (150W EQ) LED
- PROPOSED ELECTRICAL SERVICE
- CONDUIT & CONDUCTER (TRENCHED)
- CONDUIT & CONDUCTER (BORED)
- RIGID METAL CONDUIT
- (1) CONDUIT RUN NUMBER
- GROUND BOX TY A
- JUNCTION BOX
- FUSED DISCONNECT
- [1A-1] POLE DESIGNATION
  - POLE OR LUMINAIRE NO.
  - CIRCUIT NO.
  - SERVICE NO.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
BILAL MUAHID KHAN
126859
LICENSED
PROFESSIONAL ENGINEER

CONDUIT AND CONDUCTOR SCHEDULE							
RUN NO.	RUN LENGTH (FT)	CONDR SIZE AND TYPE		CONDUIT SIZE AND TYPE			CONDUIT NOTES
		NO. 8 XHHW	NO. 8 BARE	(PVC) (SCHD 80) (2") (TRENCH)	(PVC) (SCHD 80) (2") (BORE)	(RM) (1")	
67	180	3		1			
TOTALS		540	0	180	0	0	

NOTE:
ALL NEW CONDUIT TERMINATING IN GROUND BOXES AND LUMINAIRE POLE BASE SHALL BE SEALED WITH A SEALANT TO BE MADE OF A POLYURETHANE OR EQUIVALENT MATERIAL OF A COMPOSITION THAT WILL CURE IN THE PRESENCE OF MOISTURE

SHEET SUMMARY				
ITEM NO.		DESCRIPTION	UNIT	APPROX. QUANTITIES
BID ITEM	DESC CODE			
416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	8
432	6006	RIPRAP (CONC)(CL B)	CY	1
610	6214	IN RD IL (TY SA) 40T-8 (250W EQ) LED	EA	1
618	6046	CONDT (PVC) (SCH 80) (2")	LF	180
620	6008	ELEC CONDR (NO.8) INSULATED	LF	540 *

* INCLUDES THE ADDITIONAL CONDUCTOR QUANTITY AS REQUIRED BY TXDOT IN (GROUND BOX AND LUMINAIRE BASE)

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ILLUMINATION PLAN LAYOUT

STA 133+00 TO PROJECT END

SHEET 7 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	316

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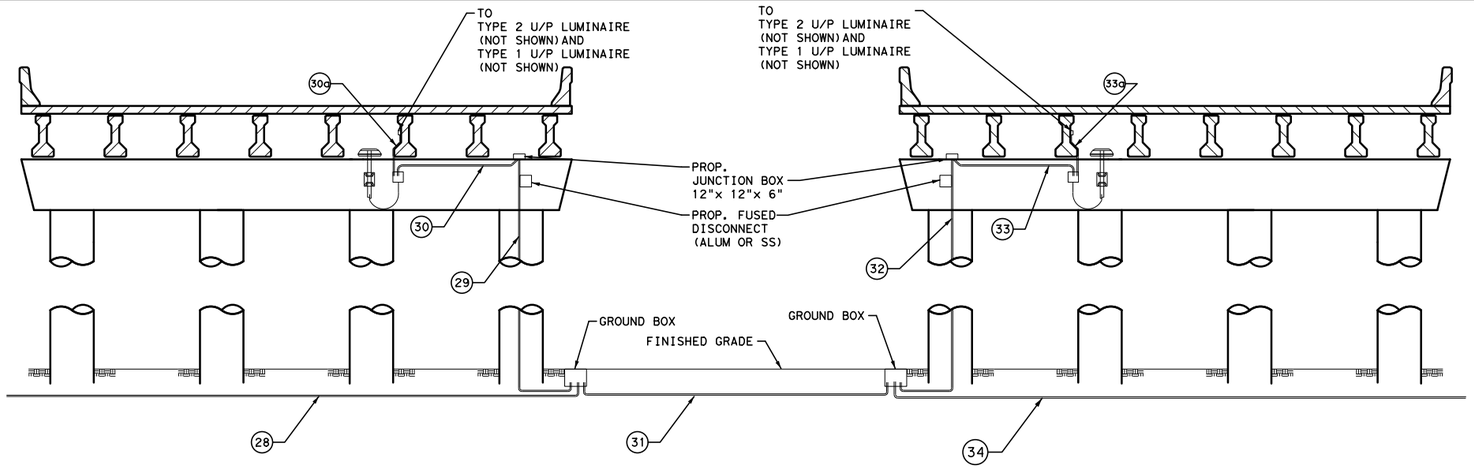


SECTION "A-A"
N.T.S.

SEE STANDARD SHEET "RID (3)-17" FOR MORE DETAIL

SCHEDULE OF ROADWAY ILLUMINATION ASSEMBLIES

DESCRIPTION	POLE NUMBER	ALIGNMENT	STATION	OFFSET (FT)	MOUNTING TYPE
IN RD IL (U/P) (TY 1) (150W EQ) LED	2B-1	OAK_LN	16+03.02	49.02' RT	TYPE 1
IN RD IL (U/P) (TY 1) (150W EQ) LED	2B-2	OAK_LN	17+02.06	49.87' RT	TYPE 1
IN RD IL (U/P) (TY 1) (150W EQ) LED	2B-3	OAK_LN	17+01.61	49.86' LT	TYPE 1
IN RD IL (U/P) (TY 2) (150W EQ) LED	2B-4	OAK_LN	17+02.71	19.03' LT	TYPE 2
IN RD IL (U/P) (TY 1) (150W EQ) LED	2B-5	OAK_LN	16+02.89	49.89' LT	TYPE 1
IN RD IL (U/P) (TY 2) (150W EQ) LED	2B-6	OAK_LN	15+95.81	19.49' LT	TYPE 2

SHEET SUMMARY

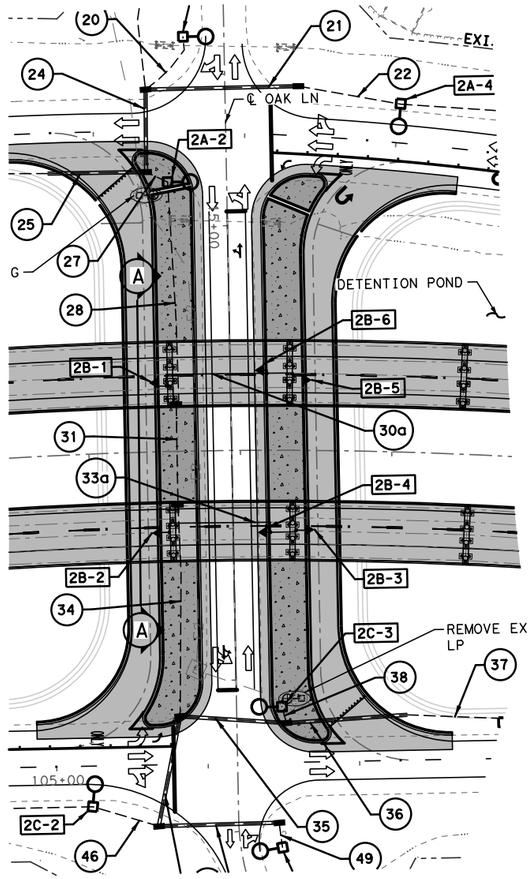
ITEM NO.		DESCRIPTION	UNIT	APPROX. QUANTITIES
BID ITEM	DESC CODE			
610	6104	IN RD IL (U/P) (TY 1) (150W EQ) LED	EA	4
610	6106	IN RD IL (U/P) (TY 2) (150W EQ) LED	EA	2
618	6046	CONDT (PVC) (SCH 80) (2")	LF	60
618	6064	CONDT (RM) (1")	LF	265
620	6008	ELEC CONDR (NO.8) INSULATED	LF	975 *
**	**	JUNCTION BOX (12"X12"X6") METAL	EA	10
**	**	FUSED DISCONNECT (AL OR SS)	EA	2

* INCLUDES THE ADDITIONAL CONDUCTOR QUANTITY AS REQUIRED BY TXDOT IN (GROUND BOX AND LUMINAIRE BASE)

** SUBSIDIARY TO ITEM 610

CONDUIT AND CONDUCTOR SCHEDULE

RUN NO.	RUN LENGTH (FT)	CONDR SIZE AND TYPE		CONDUIT SIZE AND TYPE			CONDUIT NOTES
		NO.8 XHHW	NO.8 BARE	(PVC) (SCHD 80) (2") (TRENCH)	(PVC) (SCHD 80) (2")	(RM) (1")	
29	30	3			1		EMBED PVC CONDUIT IN COLUMN/BENT
30	15	3				1	
30a	110	3				1	CONDUIT TO U/P ILLUM 2B-5,6
32	30	3			1		EMBED PVC CONDUIT IN COLUMN/BENT
33	20	3				1	
33a	120	3				1	CONDUIT TO U/P ILLUM 2B-3,4
TOTALS		975	0	0	60	265	



0' 50' 100'(H)

SCALE IN FEET

ILLUMINATION PLAN LEGEND

- PROPOSED DITCH BOTTOM
- PROPOSED CONCRETE PIPE/CULVERT
- PROPOSED PAVEMENT
- PAVEMENT TO BE REMOVED
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW
- RDWY ILL ASSEMBLY (TY SP 38S-8) (250W EQ) LED
- RDWY ILL ASSEMBLY (TY SA 40T-8) (250W EQ) LED
- EXISTING ILL ASSEMBLY TO REMAIN
- EXISTING ILL ASSEMBLY TO REMOVE
- RDWY ILL AM (U/P) (150W EQ) LED
- PROPOSED ELECTRICAL SERVICE
- CONDUIT & CONDUCTER (TRENCHED)
- CONDUIT & CONDUCTER (BORED)
- RIGID METAL CONDUIT
- (1) CONDUIT RUN NUMBER
- GROUND BOX TY A
- JUNCTION BOX
- FUSED DISCONNECT
- 1A-1 POLE DESIGNATION
  - POLE OR LUMINAIRE NO.
  - CIRCUIT NO.
  - SERVICE NO.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
BILAL MUAHID KHAN
126859
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

UNDERPASS ILLUMINATION DETAILS

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	317

SCALE: 100.0000 ft / in.

0' 50' 100'(H)

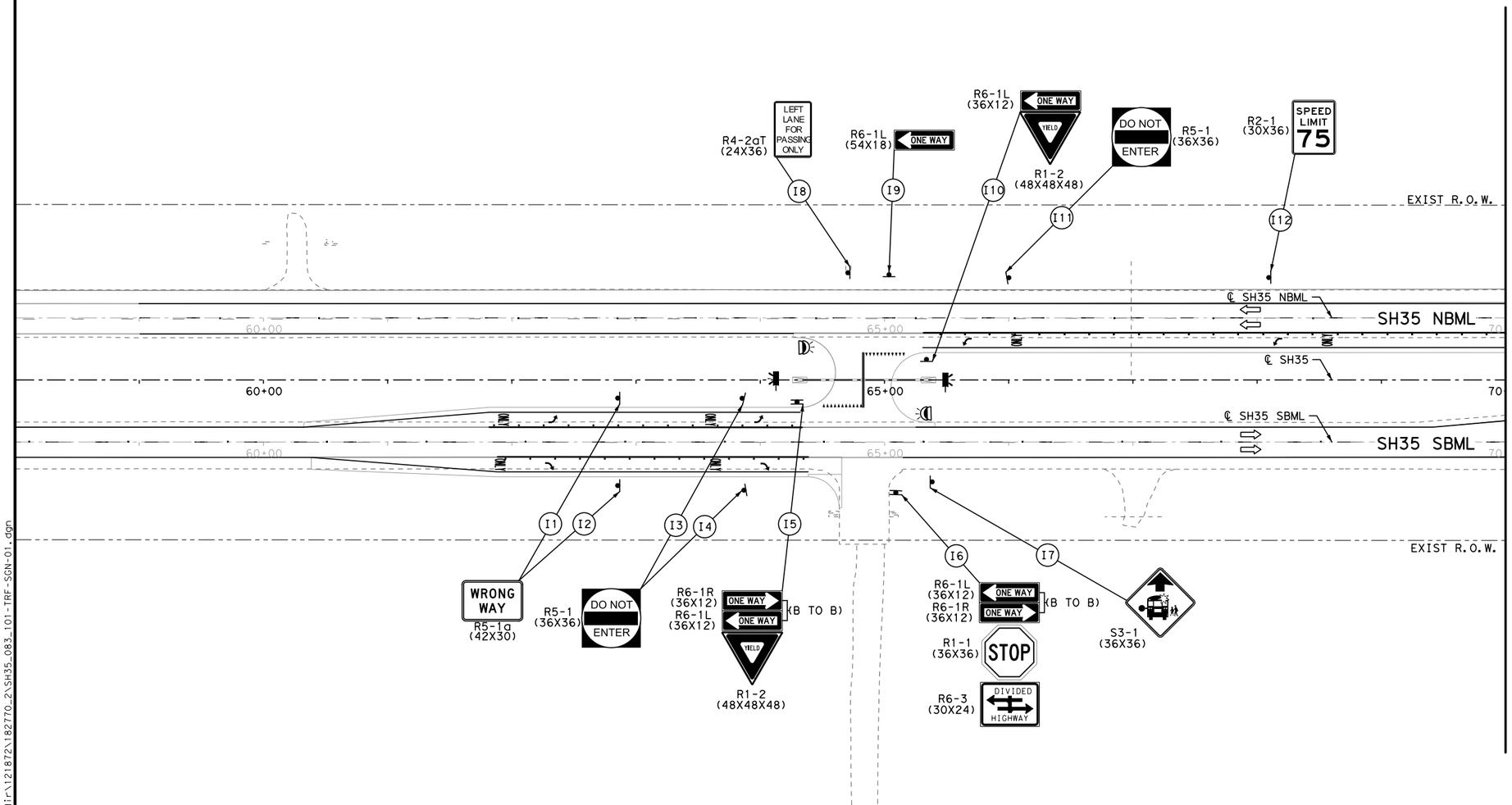
SCALE IN FEET

LEGEND

- SMALL SIGN
- LARGE SIGN
- BACK TO BACK SIGN
- (##) SIGN NUMBER
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

NOTES:

1. SIGN DIMENSIONS ARE IN INCHES
2. VERIFY SIGN LOCATION WITH THE ENGINEER PRIOR TO SIGN INSTALLATION
3. ALL EXISTING SIGNS TO BE REMOVED UNLESS OTHERWISE NOTED. SEE SUMMARY OF SIGN REMOVAL AND RELOCATION FOR MORE DETAILS.



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SIGNING LAYOUT

PROJECT BEGIN TO STA 70+00

SHEET 1 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	318

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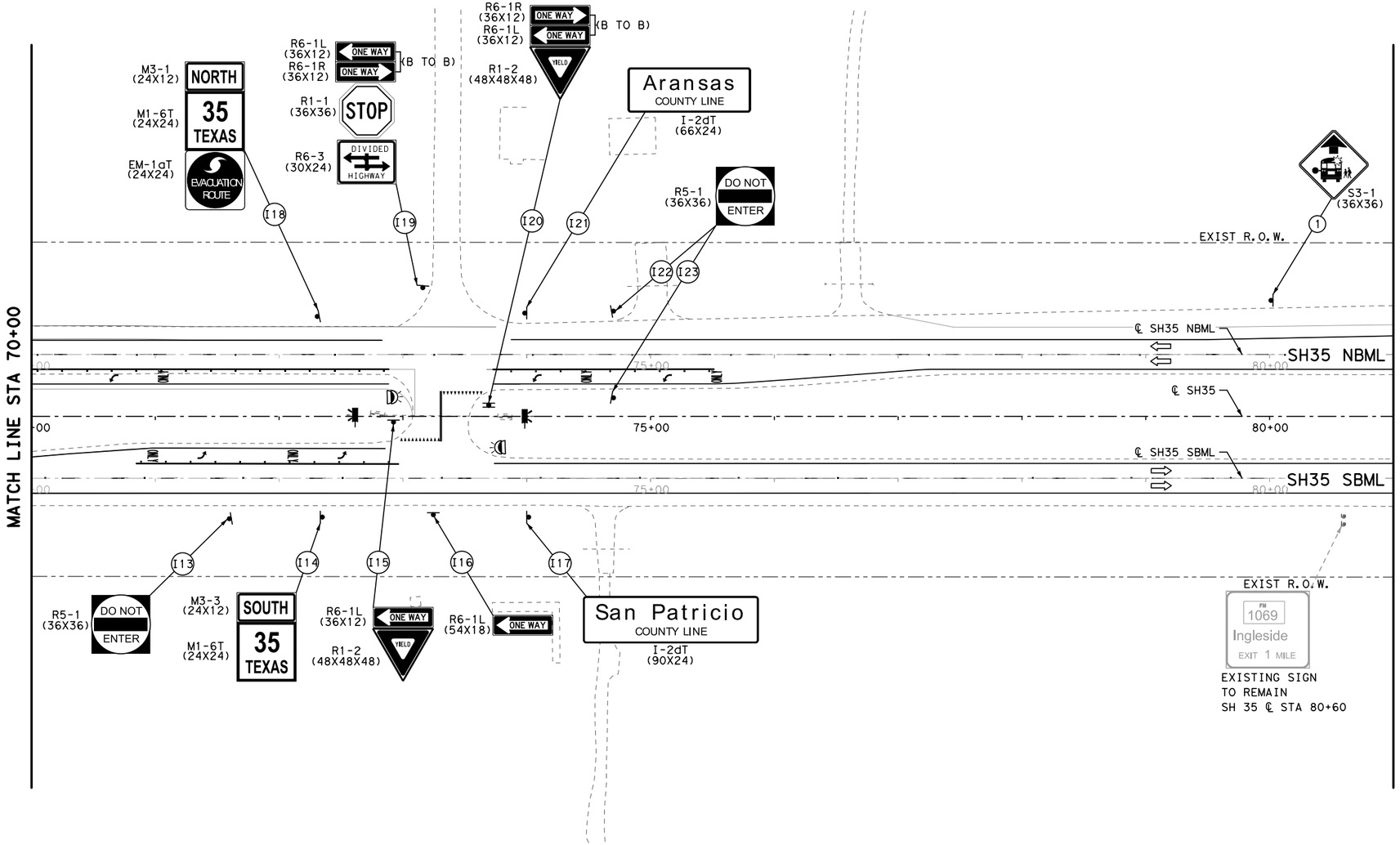

0′ 50′ 100′(H)

SCALE IN FEET

LEGEND

- SMALL SIGN
- LARGE SIGN
- BACK TO BACK SIGN
- (##) SIGN NUMBER
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

NOTES:

1. SIGN DIMENSIONS ARE IN INCHES
2. VERIFY SIGN LOCATION WITH THE ENGINEER PRIOR TO SIGN INSTALLATION
3. ALL EXISTING SIGNS TO BE REMOVED UNLESS OTHERWISE NOTED. SEE SUMMARY OF SIGN REMOVAL AND RELOCATION FOR MORE DETAILS.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LTRA
LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SIGNING LAYOUT

STA 70+00 TO STA 81+00

SHEET 2 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	319

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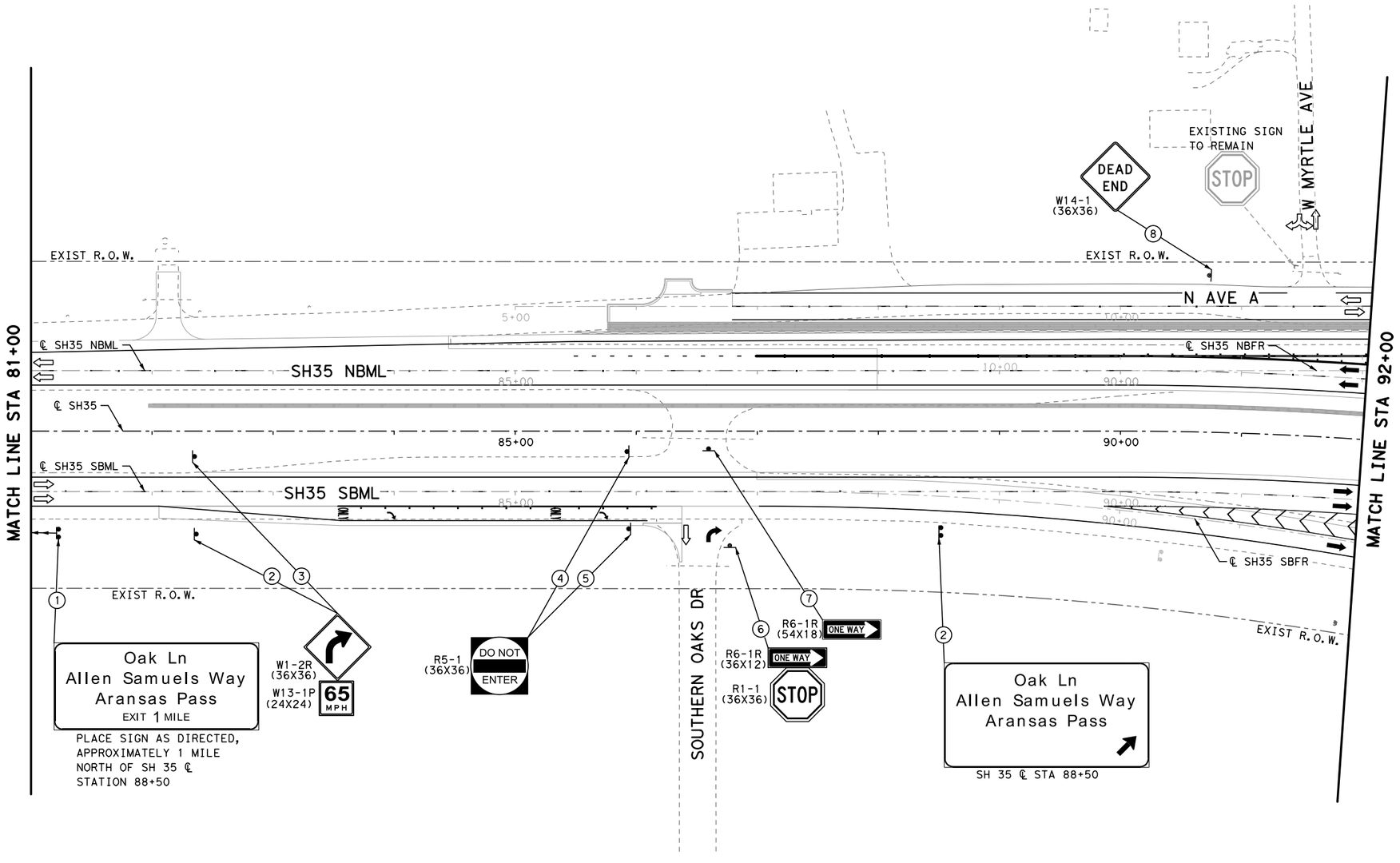

0′ 50′ 100′(H)

SCALE IN FEET

LEGEND

- SMALL SIGN
- LARGE SIGN
- BACK TO BACK SIGN
- (##) SIGN NUMBER
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

NOTES:

1. SIGN DIMENSIONS ARE IN INCHES
2. VERIFY SIGN LOCATION WITH THE ENGINEER PRIOR TO SIGN INSTALLATION
3. ALL EXISTING SIGNS TO BE REMOVED UNLESS OTHERWISE NOTED. SEE SUMMARY OF SIGN REMOVAL AND RELOCATION FOR MORE DETAILS.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED PROFESSIONAL ENGINEER
4/29/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SIGNING LAYOUT

STA 81+00 TO STA 92+00

SHEET 3 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	320

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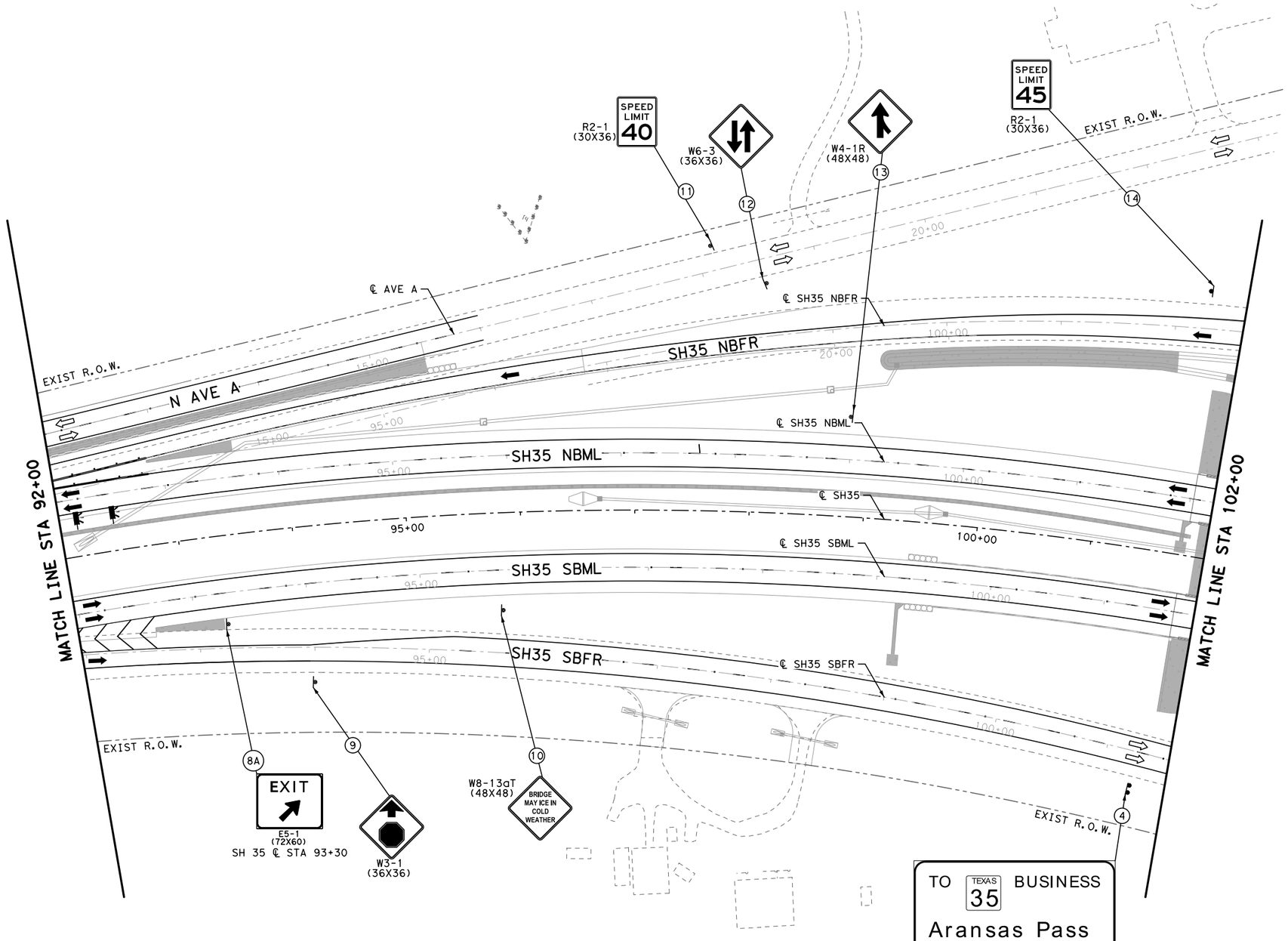

0′ 50′ 100′(H)

SCALE IN FEET

LEGEND

- SMALL SIGN
- LARGE SIGN
- BACK TO BACK SIGN
- (##) SIGN NUMBER
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

NOTES:

1. SIGN DIMENSIONS ARE IN INCHES
2. VERIFY SIGN LOCATION WITH THE ENGINEER PRIOR TO SIGN INSTALLATION
3. ALL EXISTING SIGNS TO BE REMOVED UNLESS OTHERWISE NOTED. SEE SUMMARY OF SIGN REMOVAL AND RELOCATION FOR MORE DETAILS.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED PROFESSIONAL ENGINEER
5/11/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SIGNING LAYOUT

STA 92+00 TO STA 102+00

SHEET 4 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	321

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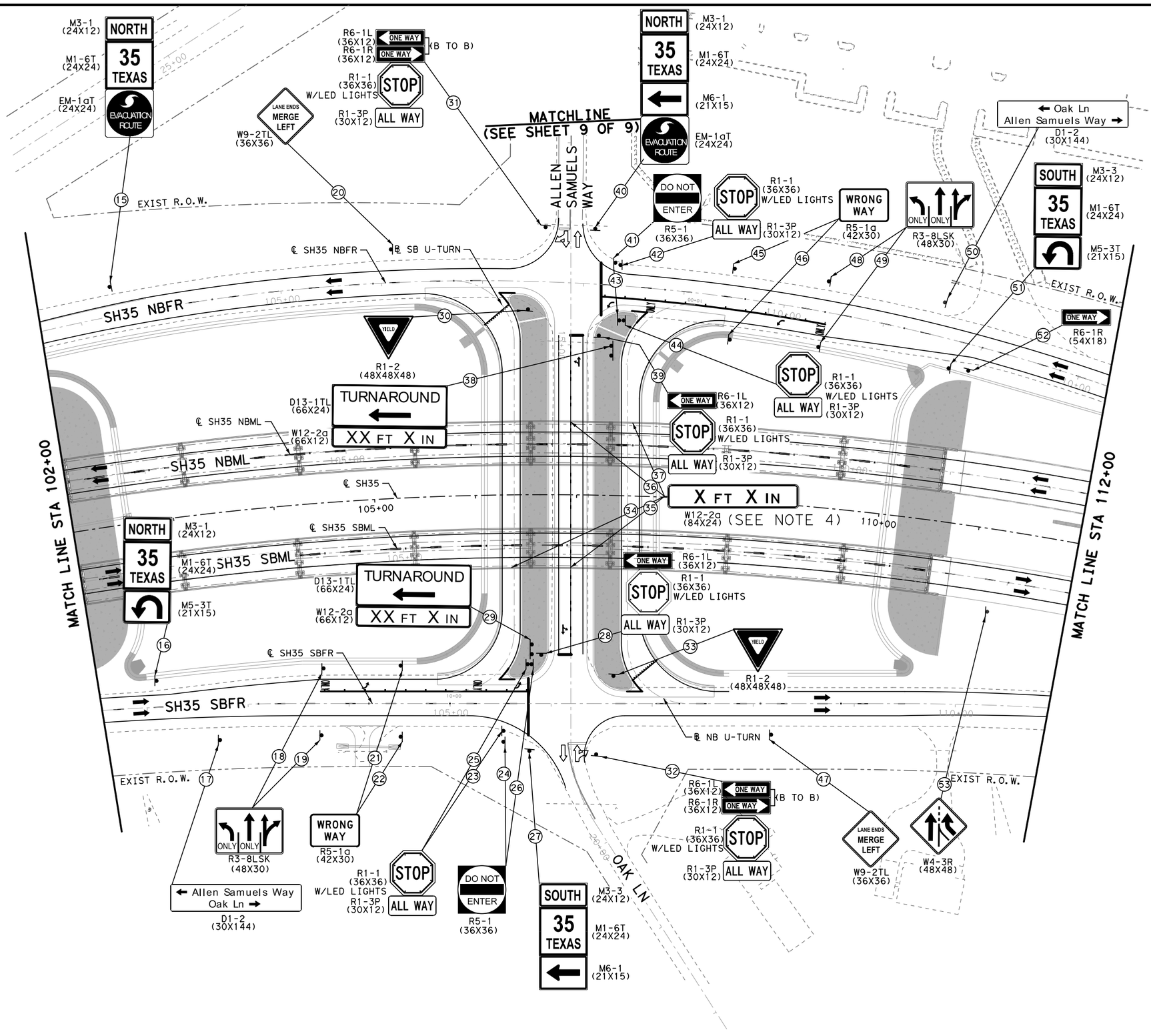

LEGEND

- SMALL SIGN
- LARGE SIGN
- BACK TO BACK SIGN
- (##) SIGN NUMBER
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

NOTES:

1. SIGN DIMENSIONS ARE IN INCHES
2. VERIFY SIGN LOCATION WITH THE ENGINEER PRIOR TO SIGN INSTALLATION
3. ALL EXISTING SIGNS TO BE REMOVED UNLESS OTHERWISE NOTED. SEE SUMMARY OF SIGN REMOVAL AND RELOCATION FOR MORE DETAILS.
4. CONTRACTOR TO VERIFY LEGEND WITH ENGINEER FOR APPROVAL BEFORE SIGN FABRICATION.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER
4/29/2021

Texas Department of Transportation

LTRA
LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SIGNING LAYOUT

STA 102+00 TO STA 112+00

SHEET 5 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	322

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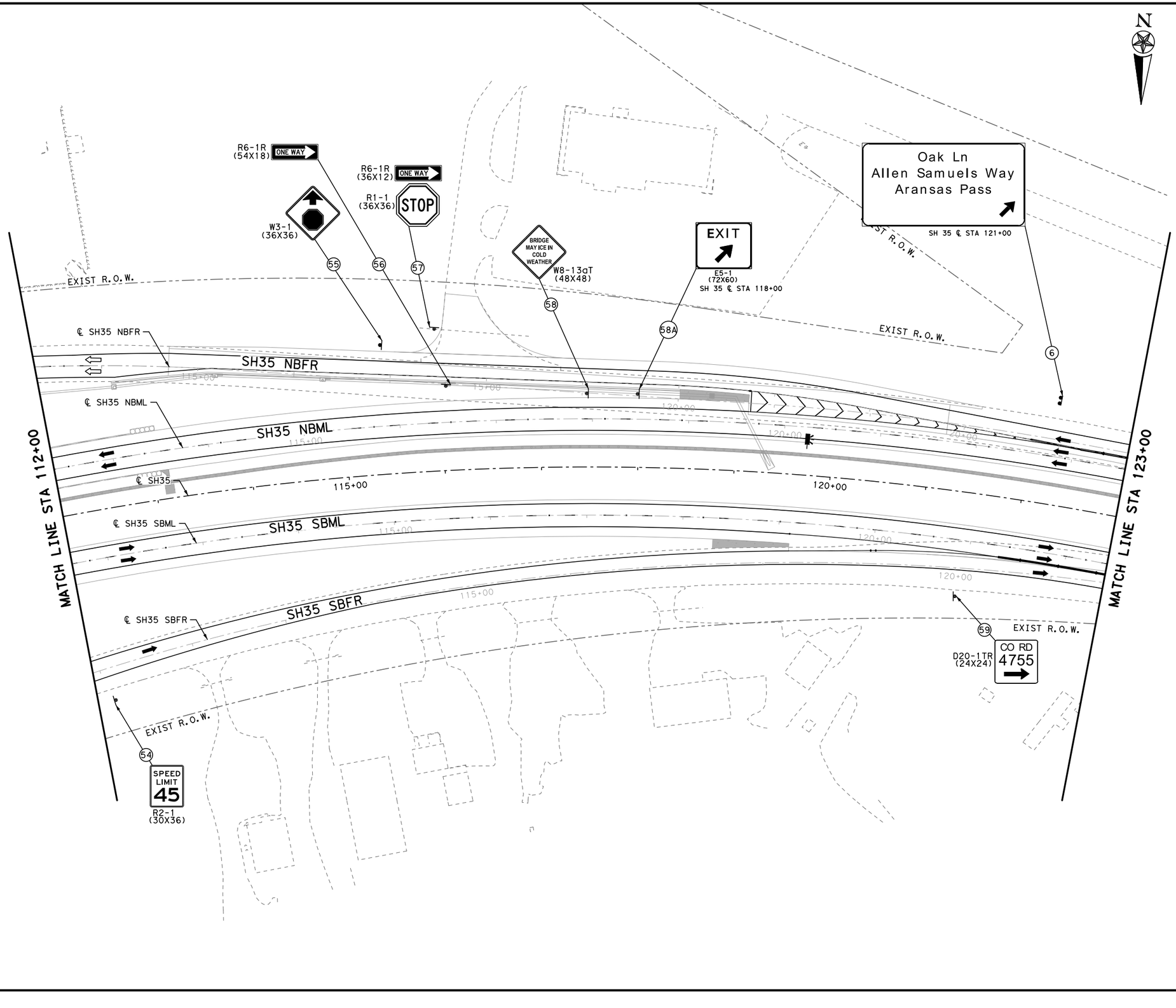

0′ 50′ 100′(H)

SCALE IN FEET

LEGEND

- SMALL SIGN
- LARGE SIGN
- BACK TO BACK SIGN
- (##) SIGN NUMBER
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

NOTES:

1. SIGN DIMENSIONS ARE IN INCHES
2. VERIFY SIGN LOCATION WITH THE ENGINEER PRIOR TO SIGN INSTALLATION
3. ALL EXISTING SIGNS TO BE REMOVED UNLESS OTHERWISE NOTED. SEE SUMMARY OF SIGN REMOVAL AND RELOCATION FOR MORE DETAILS.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED PROFESSIONAL ENGINEER
5/11/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SIGNING LAYOUT

STA 112+00 TO STA 123+00

SHEET 6 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	323

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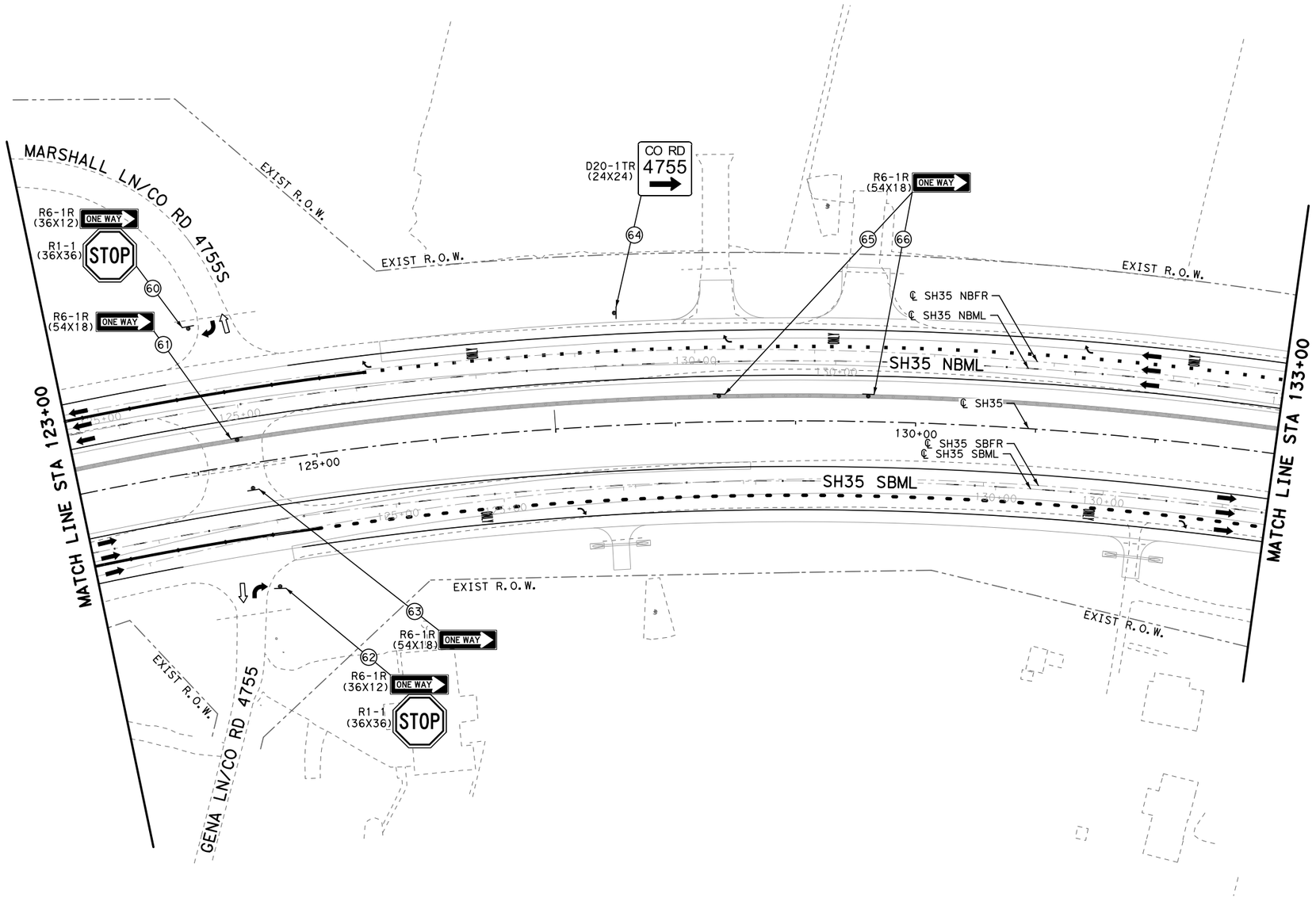

N

0′ 50′ 100′(H)

SCALE IN FEET

LEGEND

- SMALL SIGN
- LARGE SIGN
- BACK TO BACK SIGN
- ## - SIGN NUMBER
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

NOTES:

1. SIGN DIMENSIONS ARE IN INCHES
2. VERIFY SIGN LOCATION WITH THE ENGINEER PRIOR TO SIGN INSTALLATION
3. ALL EXISTING SIGNS TO BE REMOVED UNLESS OTHERWISE NOTED. SEE SUMMARY OF SIGN REMOVAL AND RELOCATION FOR MORE DETAILS.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SIGNING LAYOUT

STA 123+00 TO STA 133+00

SHEET 7 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	324

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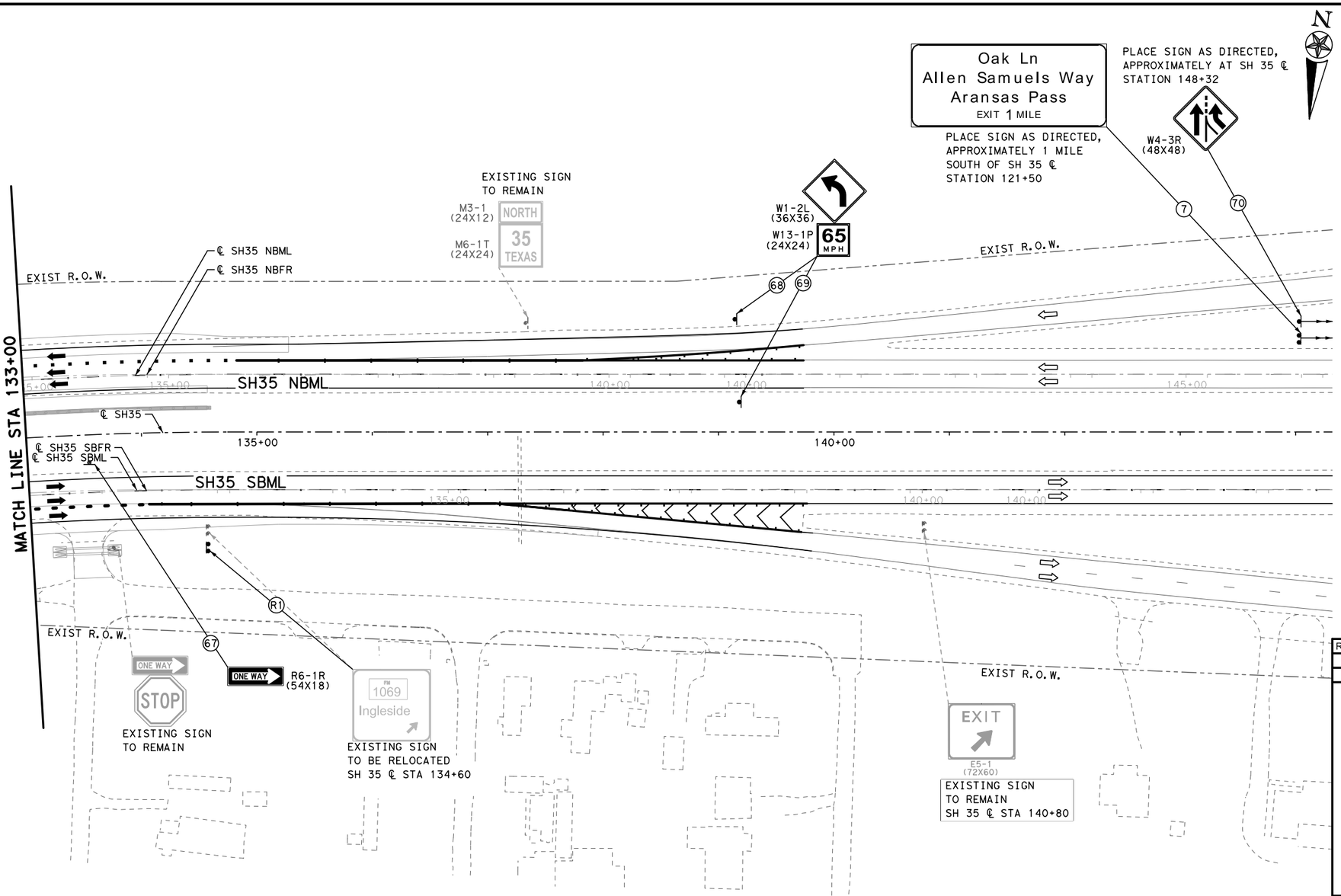


LEGEND

- SMALL SIGN
- LARGE SIGN
- BACK TO BACK SIGN
- (##) SIGN NUMBER
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

NOTES:

1. SIGN DIMENSIONS ARE IN INCHES
2. VERIFY SIGN LOCATION WITH THE ENGINEER PRIOR TO SIGN INSTALLATION
3. ALL EXISTING SIGNS TO BE REMOVED UNLESS OTHERWISE NOTED. SEE SUMMARY OF SIGN REMOVAL AND RELOCATION FOR MORE DETAILS.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED PROFESSIONAL ENGINEER
4/29/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

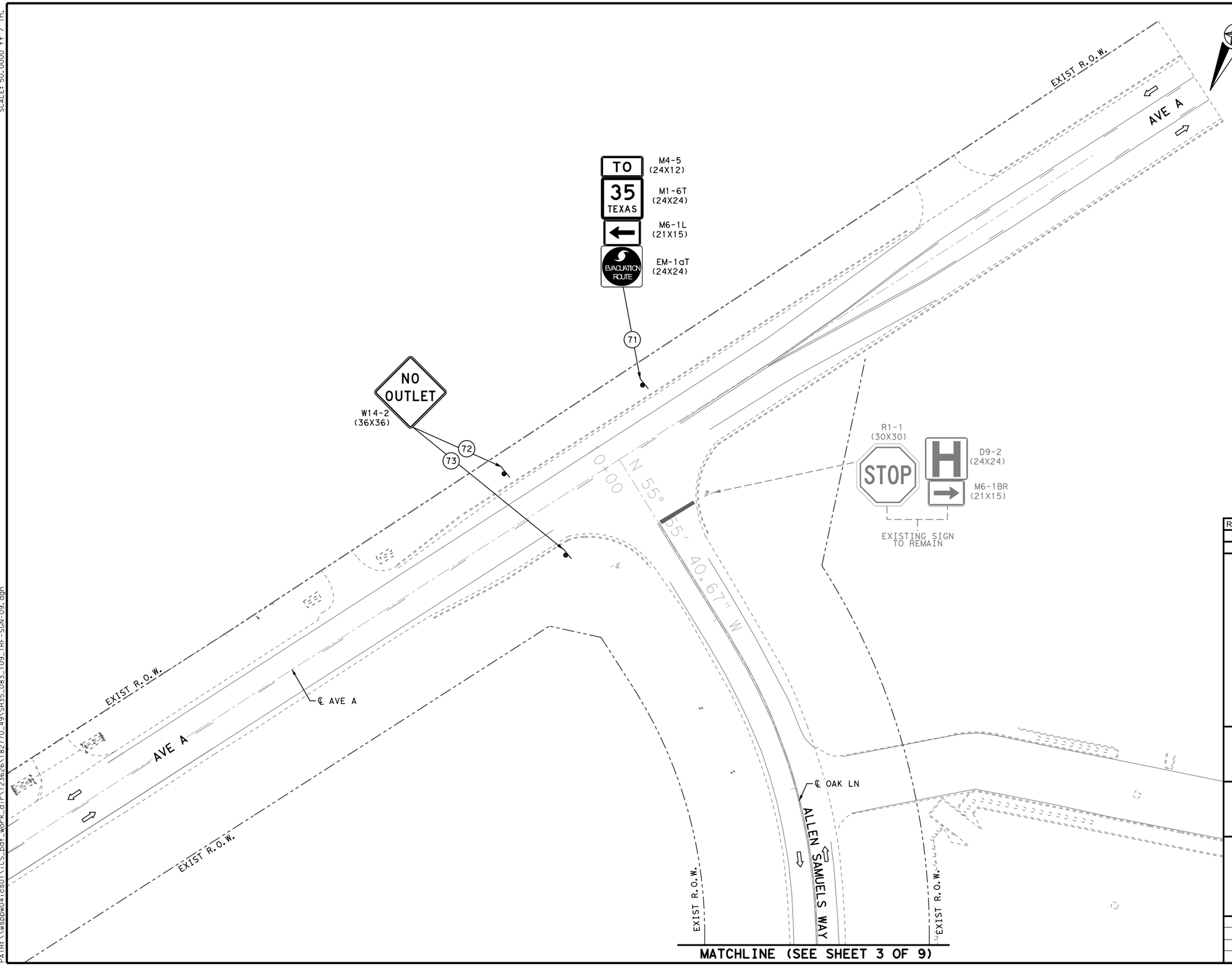
SH 35 AT OAK LANE

SIGNING LAYOUT

STA 133+00 TO PROJECT END

SHEET 8 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	325



0′ 25′ 50′(H)

SCALE IN FEET

LEGEND

- SMALL SIGN
- LARGE SIGN
- BACK TO BACK SIGN
- (##) SIGN NUMBER
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

NOTES:

1. SIGN DIMENSIONS ARE IN INCHES
2. VERIFY SIGN LOCATION WITH THE ENGINEER PRIOR TO SIGN INSTALLATION
3. ALL EXISTING SIGNS TO BE REMOVED UNLESS OTHERWISE NOTED. SEE SUMMARY OF SIGN REMOVAL AND RELOCATION FOR MORE DETAILS.

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED PROFESSIONAL ENGINEER
4/29/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

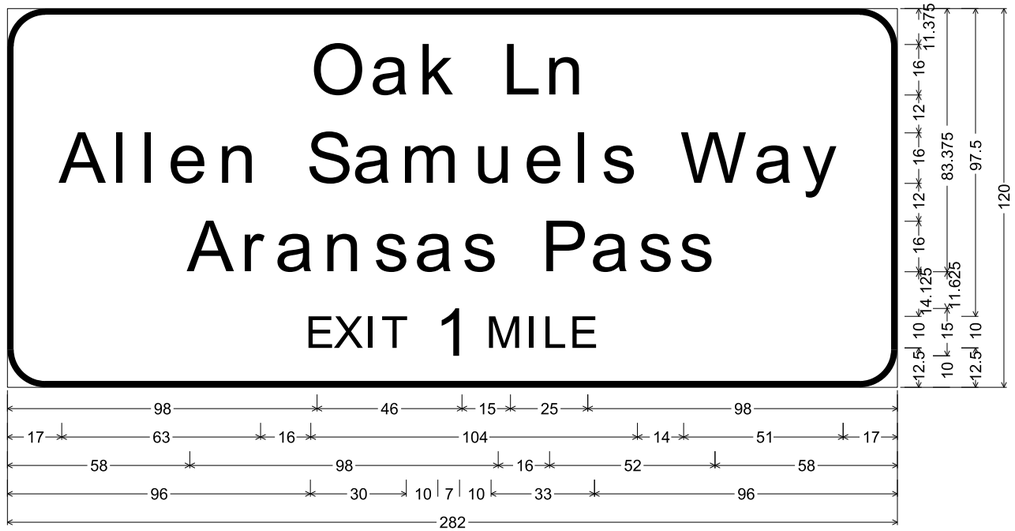
SH 35 AT OAK LANE

SIGNING LAYOUT

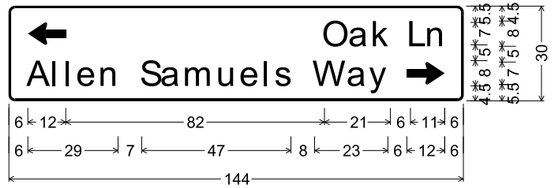
OAK LANE AT AVE A

SHEET 9 OF 9

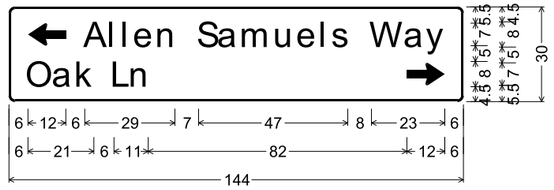
FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	326



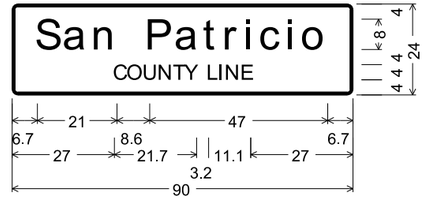
12" Radius, 2" Border, White on, Green;
"Oak Ln", ClearviewHwy-5-W-R; "Allen Samuels Way", ClearviewHwy-5-W-R; "Aransas Pass", ClearviewHwy-5-W-R;
"EXIT", ClearviewHwy-5-W-R; "1", ClearviewHwy-5-W-R; "MILE", ClearviewHwy-5-W-R;



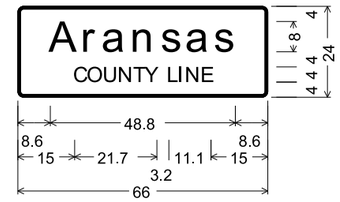
D1-2;
1.875" Radius, 0.75" Border, White on, Green;
Standard Arrow Custom 12" X 7" 180';
"Oak Ln", ClearviewHwy-3-W; "Allen", ClearviewHwy-3-W;
"Samuels", ClearviewHwy-3-W; "Way", ClearviewHwy-3-W;
Standard Arrow Custom 12" X 7" 0';



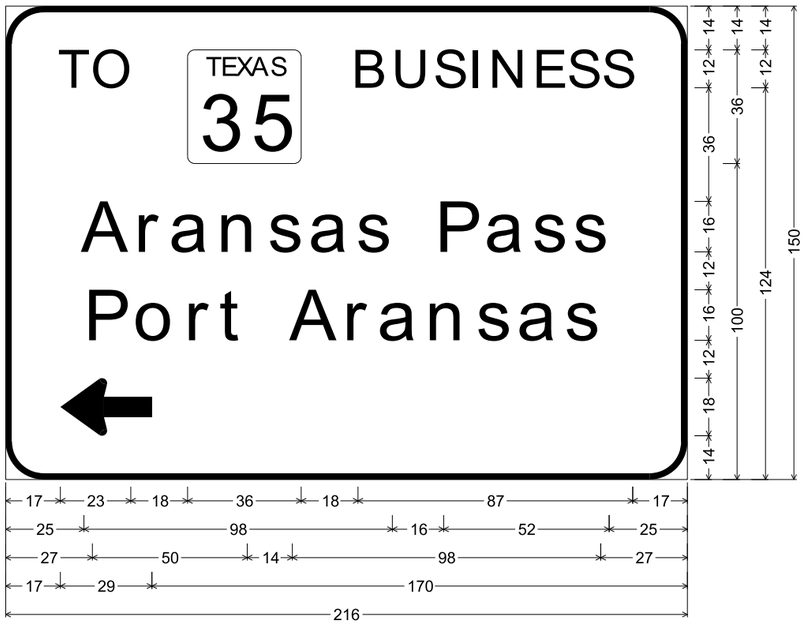
D1-2;
1.875" Radius, 0.75" Border, White on, Green;
Standard Arrow Custom 12" X 7" 180';
"Allen", ClearviewHwy-3-W; "Samuels", ClearviewHwy-3-W;
"Way", ClearviewHwy-3-W; "Oak Ln", ClearviewHwy-3-W;
Standard Arrow Custom 12" X 7" 0';



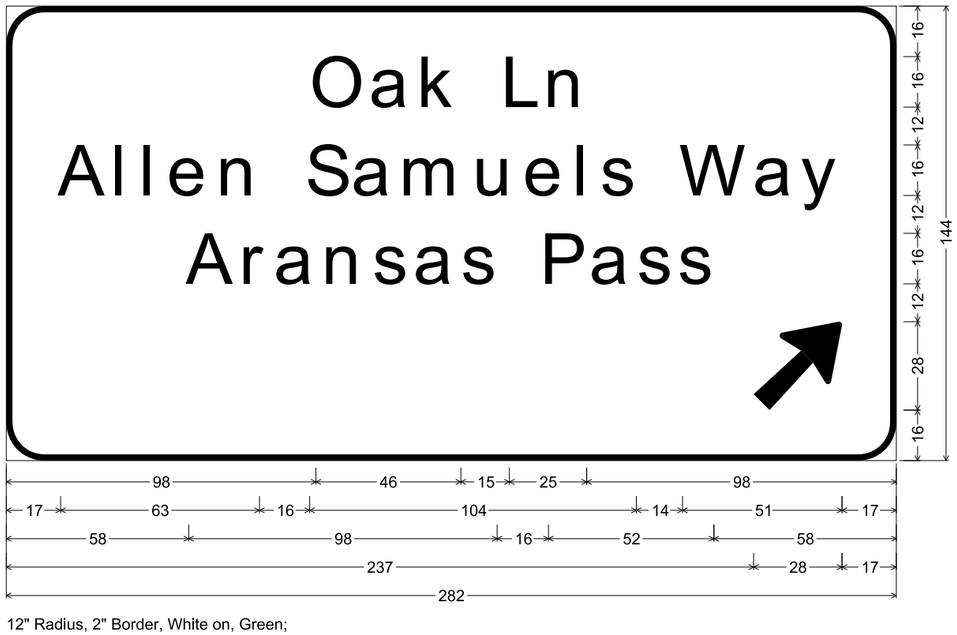
I-2dT 8in;
1.5" Radius, 0.8" Border, White on, Green;
"San Patricio", ClearviewHwy-5-W-R;
"COUNTY LINE", ClearviewHwy-3-W;



I-2dT 8in;
1.5" Radius, 0.8" Border, White on, Green;
"Aransas", ClearviewHwy-5-W-R;
"COUNTY LINE", ClearviewHwy-3-W;



12" Radius, 2" Border, White on, Green;
"TO", ClearviewHwy-5-W-R; State Highway 35 M1-6T2;
"BUSINESS", ClearviewHwy-5-W-R; "Aransas Pass", ClearviewHwy-5-W-R;
"Port Aransas", ClearviewHwy-5-W-R; Standard Arrow Custom 29" X 18" 180";



12" Radius, 2" Border, White on, Green;
"Oak Ln", ClearviewHwy-5-W-R; "Allen Samuels Way", ClearviewHwy-5-W-R; "Aransas Pass", ClearviewHwy-5-W-R;
Arrow A-3 - 35.625" 45';

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER
5/11/2021

Texas Department of Transportation

LTRA
LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

LARGE SIGN DETAILS

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	327

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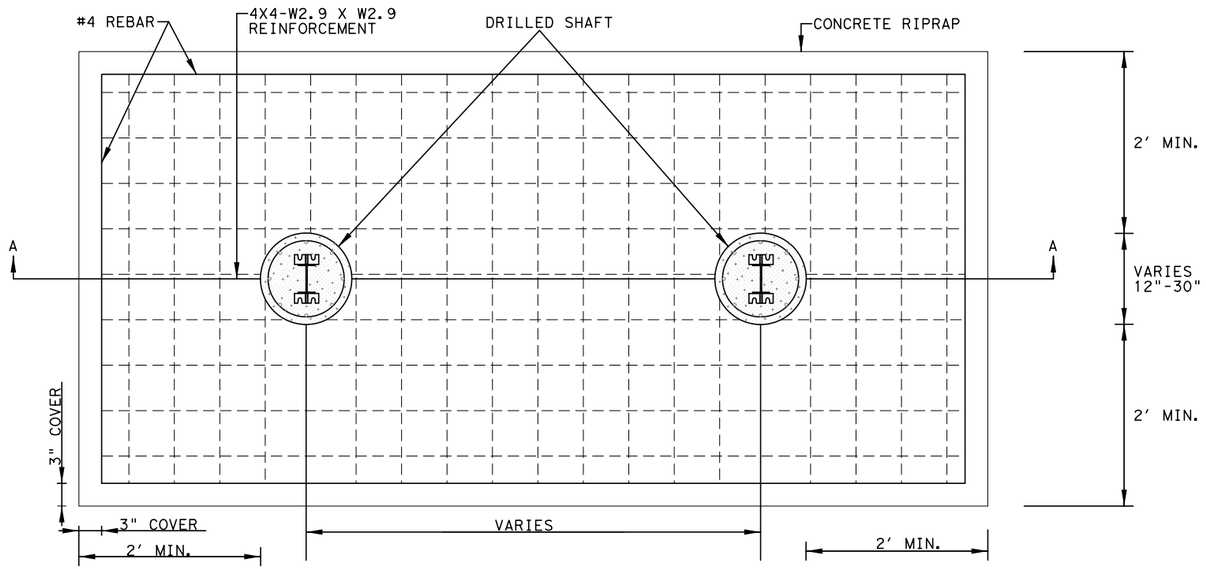
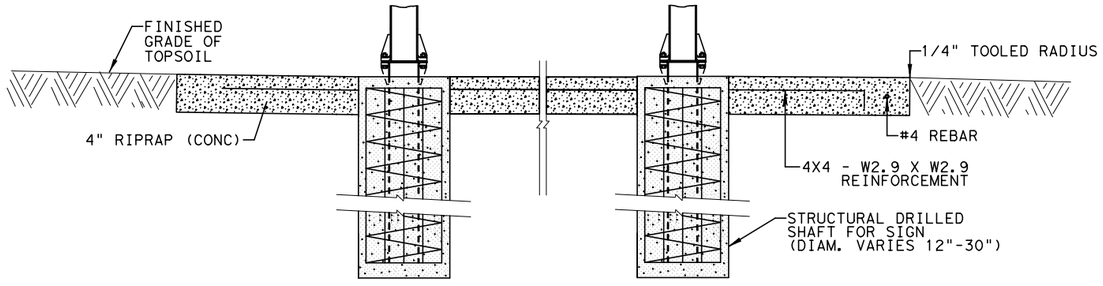
SCALE: 40.0000 ft / in.

PLAN VIEW



1. THE THICKNESS OF THE CONCRETE RIPRAP SHALL NOT BE APPLIED TO THE STRUCTURAL DRILLED SHAFT SO AS TO SHORTEN THE REQUIRED DRILL SHAFT LENGTH.
2. THIS TREATMENT SHALL BE PROVIDED FOR ALL SIGNS REQUIRING VEGETATION CONTROL OR AS DIRECTED BY THE ENGINEER.
3. ALL RIPRAP CONCRETE SHALL BE BE IN ACCORDANCE WITH ITEM 432-6001 "RIPRAP (CONC) (4 IN)".
4. REINFORCEMENT SHALL BE FLAT SHEETS OF 4X4-W2.9XW2.9 REINFORCED. PLACE #4 REBAR AROUND THE PERIMETER ON LARGE GUIDE SIGNS.
5. ASPHALTIC JOINT MATERIAL SHALL BE USED BETWEEN THE RIPRAP AND THE SIGN FOUNDATION.
6. CARE SHOULD BE TAKEN TO ENSURE THAT THE FINISHED GRADE OF THE RIPRAP SHALL MATCH THE FINISHED GRADE OF THE ADJACENT TOPSOIL.

LARGE ROADSIDE SIGN RIPRAP APRON



SECTION A-A

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

SIGN RIPRAP DETAIL

N.T.S.

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	328

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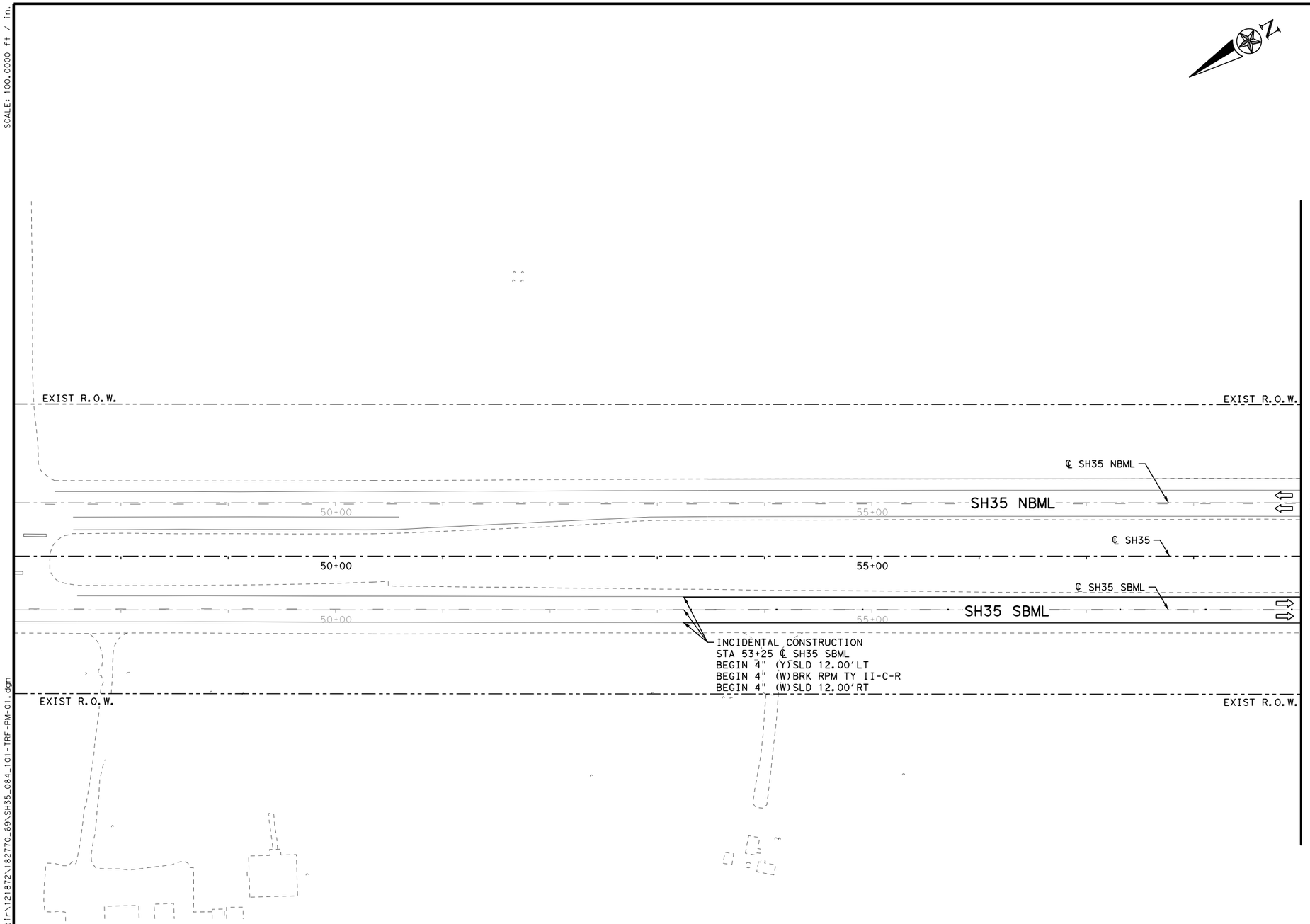

0' 50' 100'(H)

SCALE IN FEET

LEGEND

- OM ASSM(OM-2Z) (WFLX)GND
- OM ASSM(OM-4) (TWT)WAS
- DEL ASSM(D-SW)SZ 1 (WFLX)GND
- DEL ASSM(D-DW)SZ 1 (WFLX)GND
- DEL ASSM(D-SW)SZ (BRF)CTB
- DEL ASSM(D-SW)SZ 1 (BRF)GF2
- DEL ASSM(D-SY)SZ (BRF)CTB
- DEL ASSM(D-DY)SZ 1 (YFLX)GND
- PREFAB PAV MRK TYC(W)(ARROW)
- PREFAB PAV MRK TYC(W)(DBL ARROW)
- PREFAB PAV MRK TYC(W)(WORD)
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

PAVEMENT MARKING LAYOUT

PROJECT BEGIN TO STA 59+00

SHEET 1 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	329

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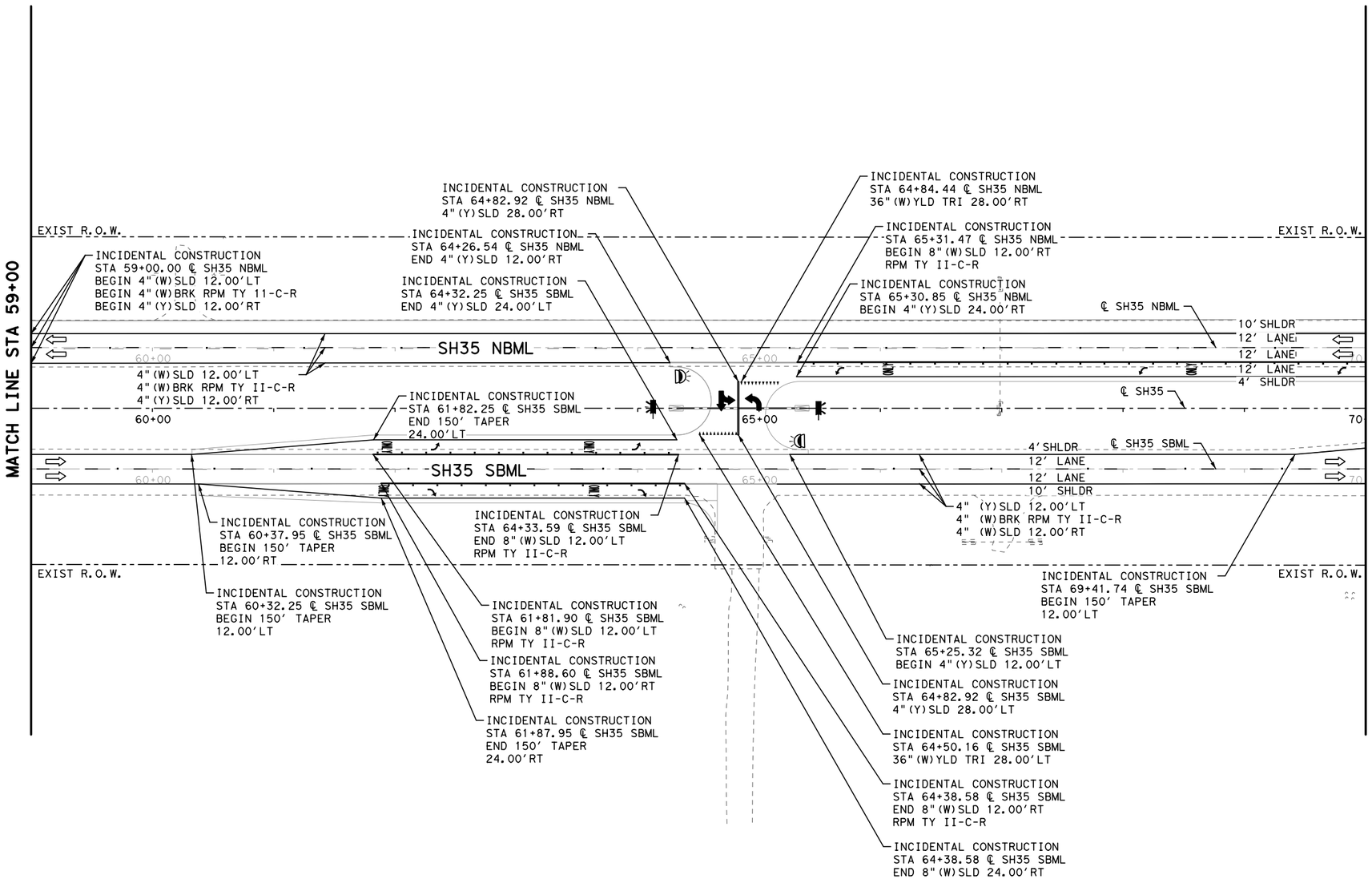

0' 50' 100'(H)

SCALE IN FEET

LEGEND

- OM ASSM(OM-2Z) (WFLX)GND
- OM ASSM(OM-4) (TWT)WAS
- DEL ASSM(D-SW)SZ 1 (WFLX)GND
- DEL ASSM(D-DW)SZ 1 (WFLX)GND
- DEL ASSM(D-SW)SZ (BRF)CTB
- DEL ASSM(D-SW)SZ 1 (BRF)GF2
- DEL ASSM(D-SY)SZ (BRF)CTB
- DEL ASSM(D-DY)SZ 1 (YFLX)GND
- PREFAB PAV MRK TYC(W)(ARROW)
- PREFAB PAV MRK TYC(W)(DBL ARROW)
- PREFAB PAV MRK TYC(W)(WORD)
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

PAVEMENT MARKING LAYOUT

STA 59+00 TO STA 70+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	330

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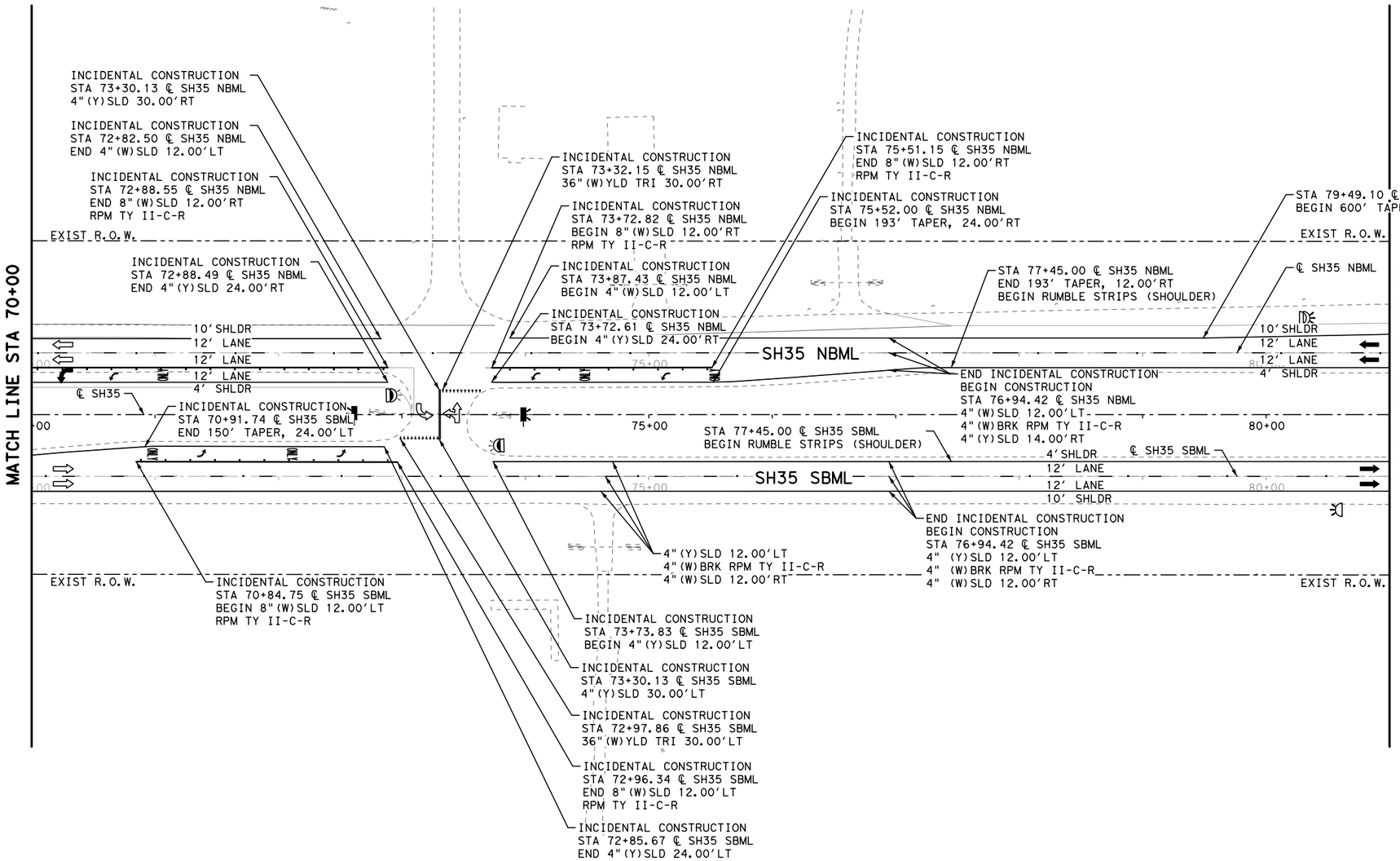

0' 50' 100'(H)

SCALE IN FEET

LEGEND

- OM ASSM(OM-2Z) (WFLX)GND
- OM ASSM(OM-4) (TWT)WAS
- DEL ASSM(D-SW)SZ 1 (WFLX)GND
- DEL ASSM(D-DW)SZ 1 (WFLX)GND
- DEL ASSM(D-SW)SZ (BRF)CTB
- DEL ASSM(D-SW)SZ 1 (BRF)GF2
- DEL ASSM(D-SY)SZ (BRF)CTB
- DEL ASSM(D-DY)SZ 1 (YFLX)GND
- PREFAB PAV MRK TYC(W)(ARROW)
- PREFAB PAV MRK TYC(W)(DBL ARROW)
- PREFAB PAV MRK TYC(W)(WORD)
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

PAVEMENT MARKING LAYOUT

STA 70+00 TO STA 81+00

SHEET 3 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	331

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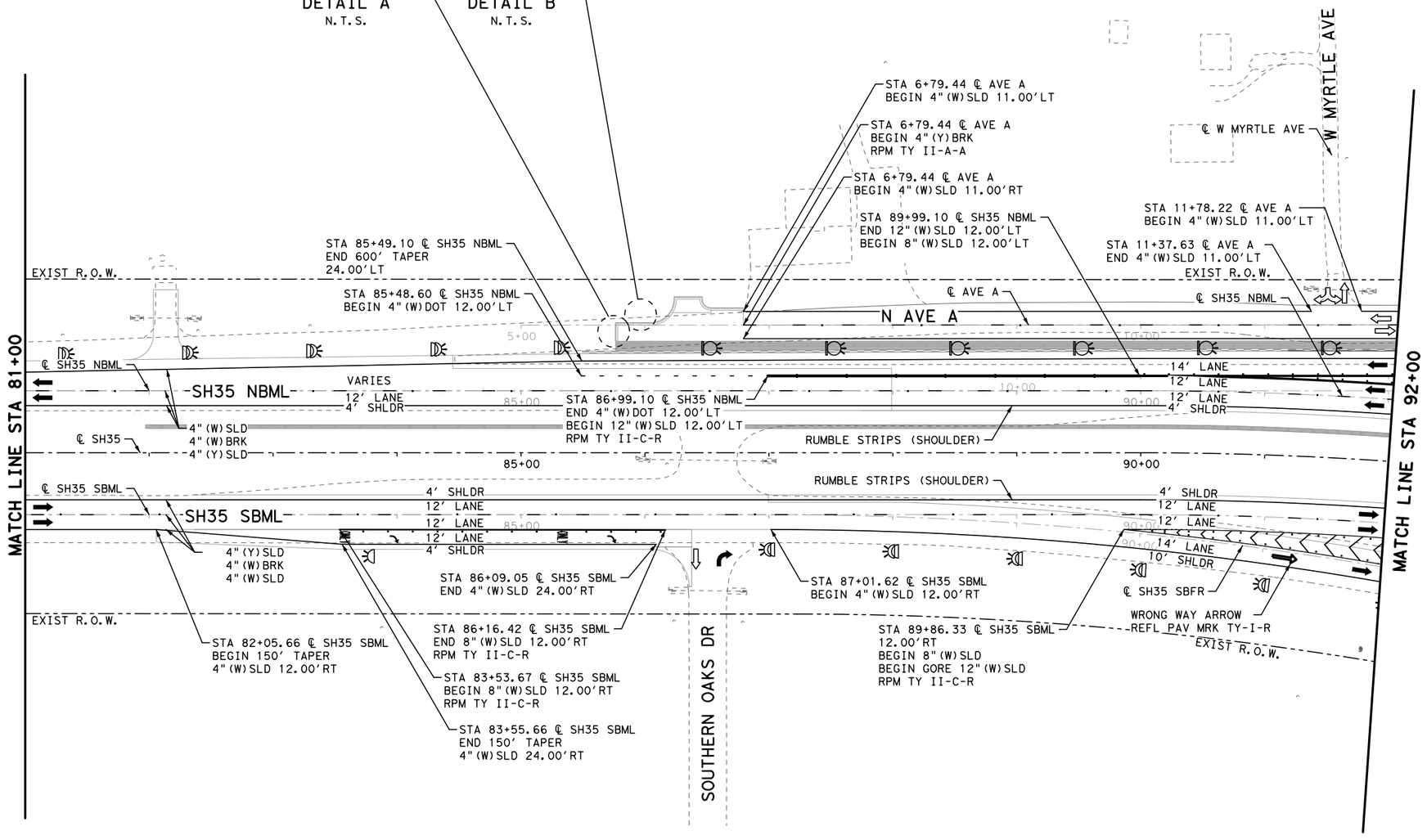
SCALE: 100.0000 ft / in.

DEAD END TY III BARRICADE
SEE STANDARD D&OM(4)-20 FOR INSTALLATION.
TY III BARRICADE SHALL BE SUBSIDIARY TO ITEM 658 6078 INSTL OM ASSM(OM-4)(TWT)WAS

SEE STANDARD D & OM(4)-20 FOR INSTALLATION OF OM-4

DETAIL A
N.T.S.

DETAIL B
N.T.S.



0' 50' 100'(H)

SCALE IN FEET

LEGEND

- OM ASSM(OM-2Z) (WFLX)GND
- OM ASSM(OM-4) (TWT)WAS
- DEL ASSM(D-SW)SZ 1 (WFLX)GND
- DEL ASSM(D-DW)SZ 1 (WFLX)GND
- DEL ASSM(D-SW)SZ (BRF)CTB
- DEL ASSM(D-SW)SZ 1 (BRF)GF2
- DEL ASSM(D-SY)SZ (BRF)CTB
- DEL ASSM(D-DY)SZ 1 (YFLX)GND
- PREFAB PAV MRK TYC(W)(ARROW)
- PREFAB PAV MRK TYC(W)(DBL ARROW)
- PREFAB PAV MRK TYC(W)(WORD)
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

PAVEMENT MARKING LAYOUT

STA 81+00 TO STA 92+00

SHEET 4 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	332

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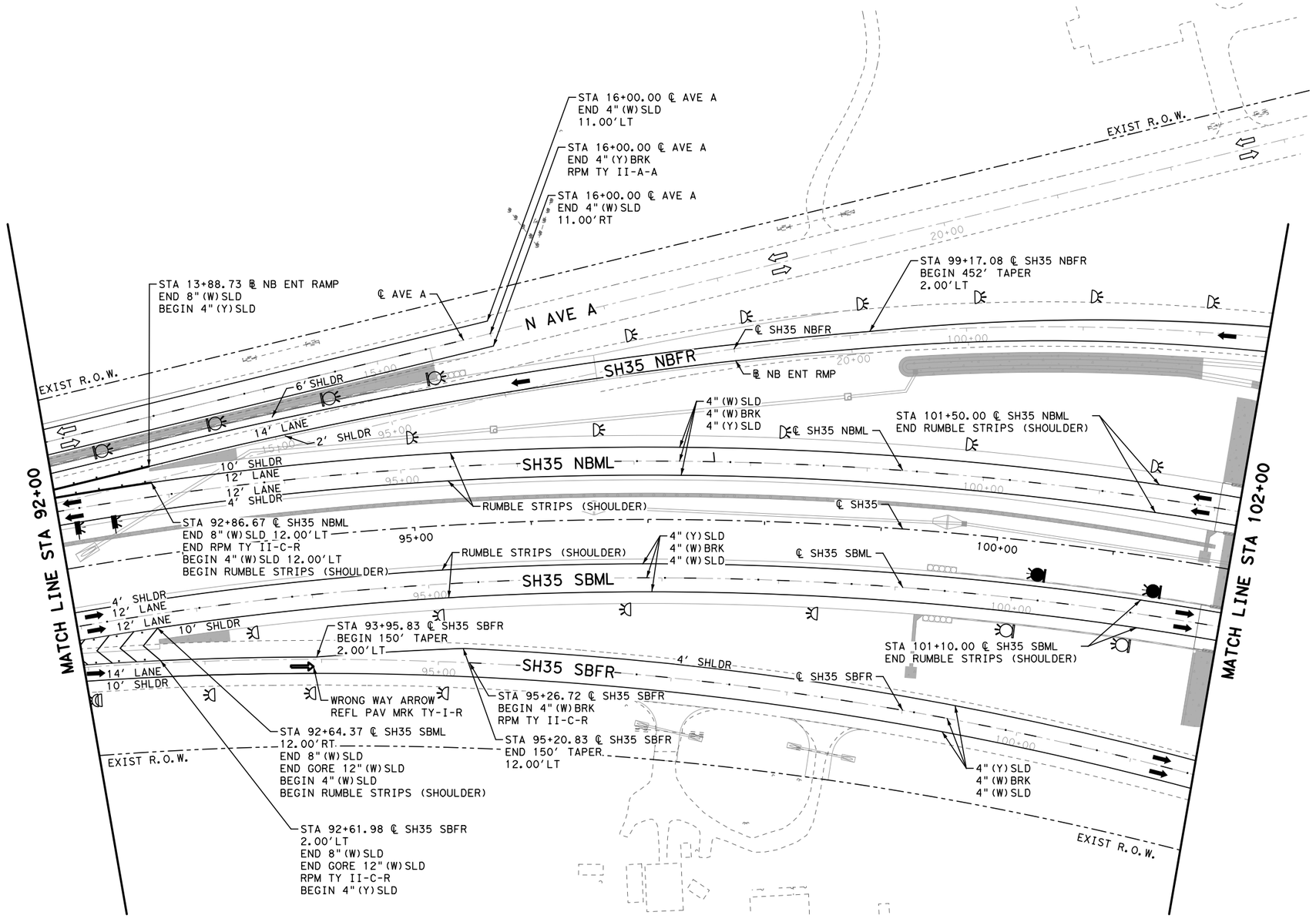

0' 50' 100'(H)

SCALE IN FEET

LEGEND

- OM ASSM(OM-2Z) (WFLX)GND
- OM ASSM(OM-4) (TWT)WAS
- DEL ASSM(D-SW)SZ 1 (WFLX)GND
- DEL ASSM(D-DW)SZ 1 (WFLX)GND
- DEL ASSM(D-SW)SZ (BRF)CTB
- DEL ASSM(D-SW)SZ 1 (BRF)GF2
- DEL ASSM(D-SY)SZ (BRF)CTB
- DEL ASSM(D-DY)SZ 1 (YFLX)GND
- PREFAB PAV MRK TYC(W)(ARROW)
- PREFAB PAV MRK TYC(W)(DBL ARROW)
- PREFAB PAV MRK TYC(W)(WORD)
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

PAVEMENT MARKING LAYOUT

STA 92+00 TO STA 102+00

SHEET 5 OF 9

FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	333

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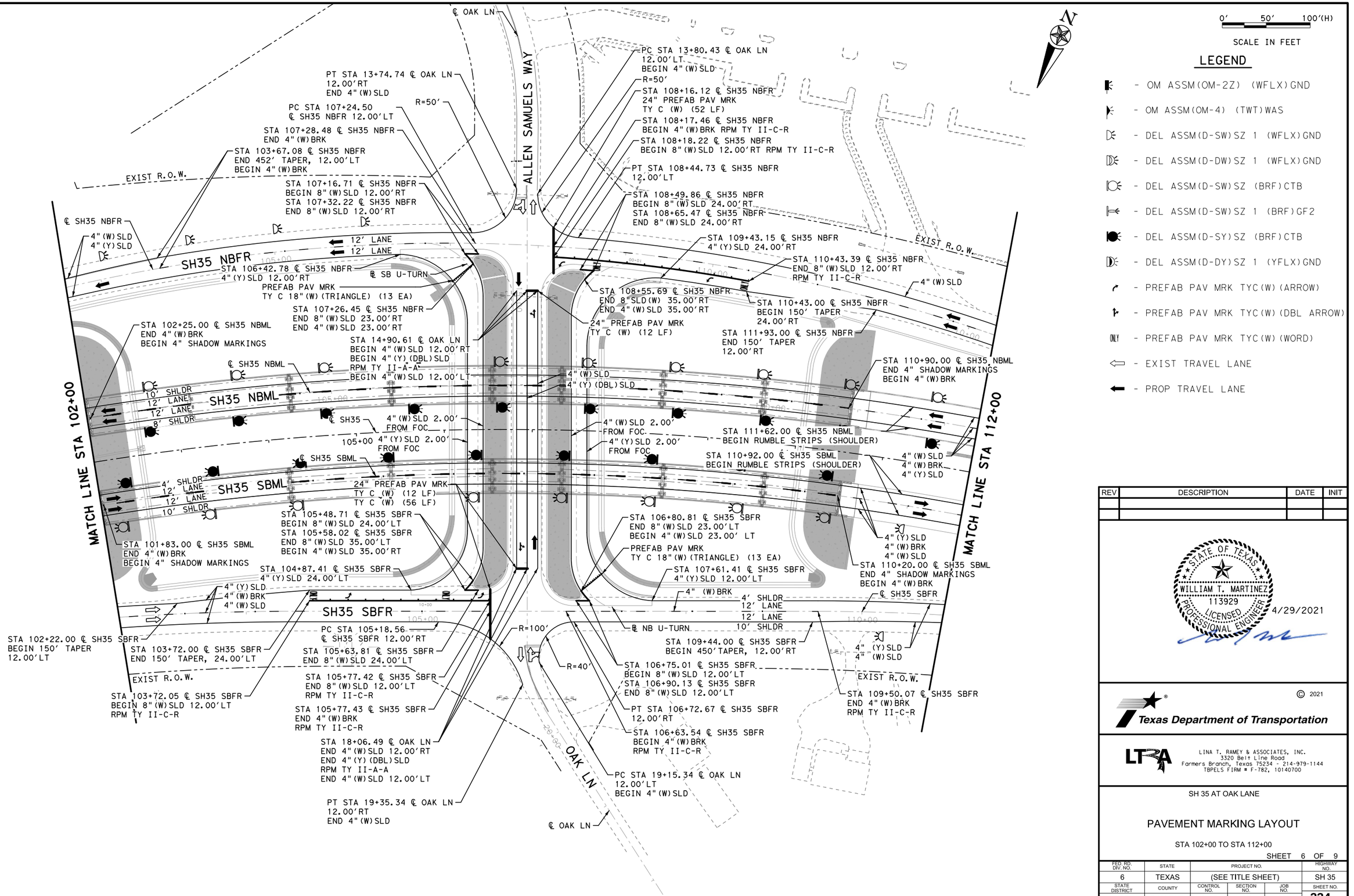

0' 50' 100'(H)

SCALE IN FEET

LEGEND

- OM ASSM(OM-2Z) (WFLX)GND
- OM ASSM(OM-4) (TWT)WAS
- DEL ASSM(D-SW)SZ 1 (WFLX)GND
- DEL ASSM(D-DW)SZ 1 (WFLX)GND
- DEL ASSM(D-SW)SZ (BRF)CTB
- DEL ASSM(D-SW)SZ 1 (BRF)GF2
- DEL ASSM(D-SY)SZ (BRF)CTB
- DEL ASSM(D-DY)SZ 1 (YFLX)GND
- PREFAB PAV MRK TYC(W)(ARROW)
- PREFAB PAV MRK TYC(W)(DBL ARROW)
- PREFAB PAV MRK TYC(W)(WORD)
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER
4/29/2021

Texas Department of Transportation

LTRA

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

PAVEMENT MARKING LAYOUT

STA 102+00 TO STA 112+00

SHEET 6 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	334

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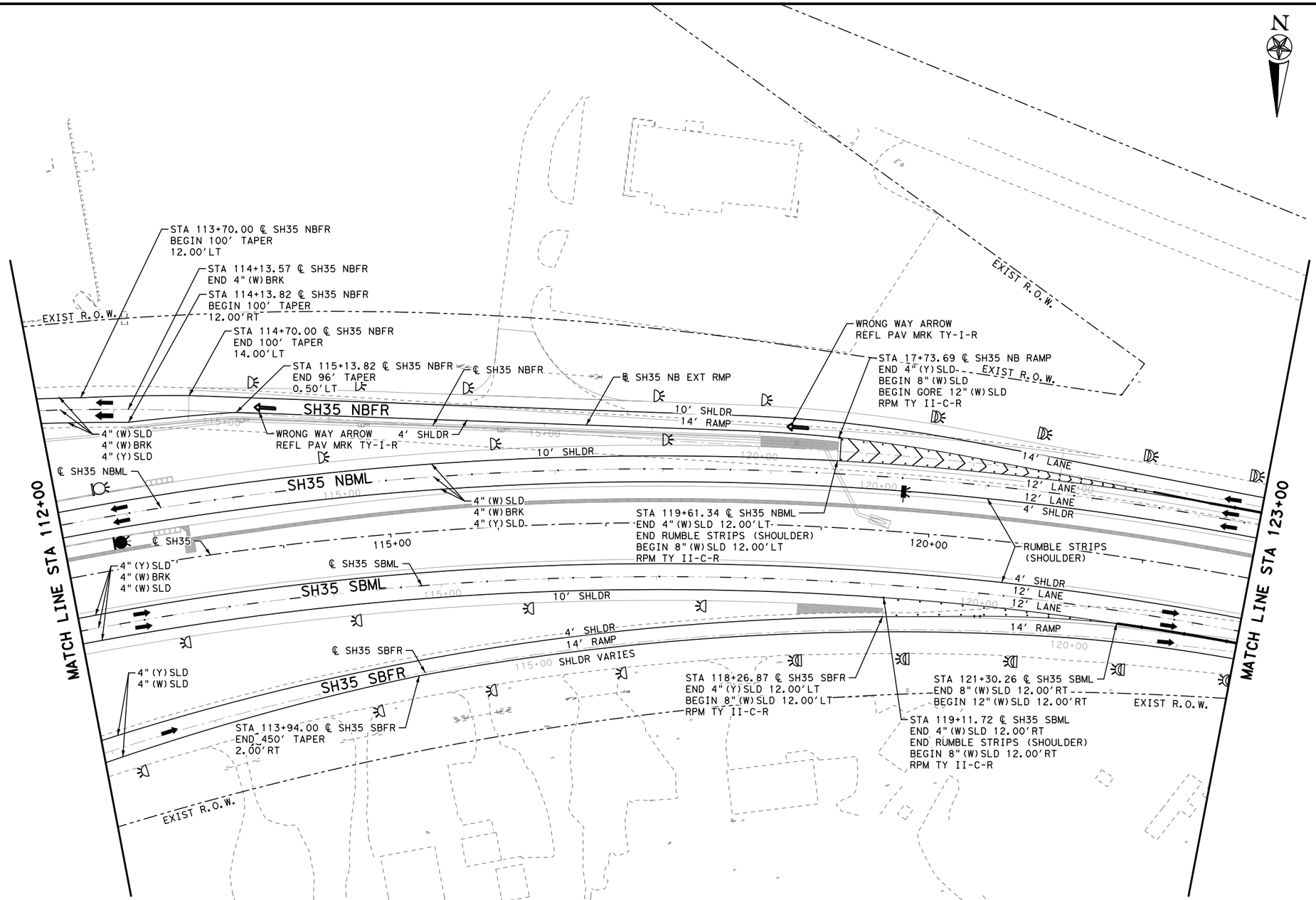

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

PAVEMENT MARKING LAYOUT

STA 112+00 TO STA 123+00

SHEET 7 OF 9

FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	335

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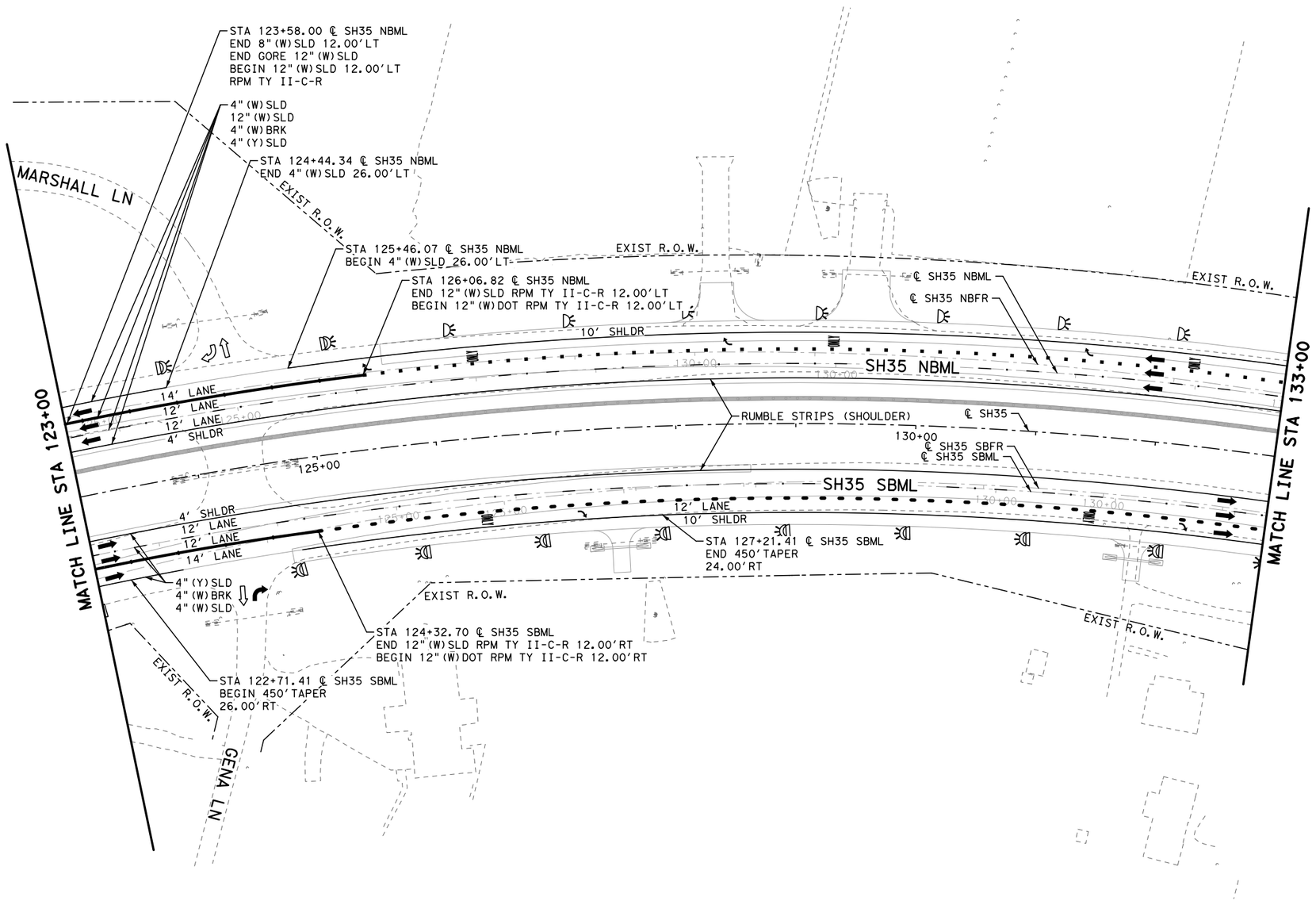

0' 50' 100'(H)

SCALE IN FEET

LEGEND

- OM ASSM(OM-2Z) (WFLX)GND
- OM ASSM(OM-4) (TWT)WAS
- DEL ASSM(D-SW)SZ 1 (WFLX)GND
- DEL ASSM(D-DW)SZ 1 (WFLX)GND
- DEL ASSM(D-SW)SZ (BRF)CTB
- DEL ASSM(D-SW)SZ 1 (BRF)GF2
- DEL ASSM(D-SY)SZ (BRF)CTB
- DEL ASSM(D-DY)SZ 1 (YFLX)GND
- PREFAB PAV MRK TYC(W)(ARROW)
- PREFAB PAV MRK TYC(W)(DBL ARROW)
- PREFAB PAV MRK TYC(W)(WORD)
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

PAVEMENT MARKING LAYOUT

STA 123+00 TO STA 133+00

SHEET 8 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	336

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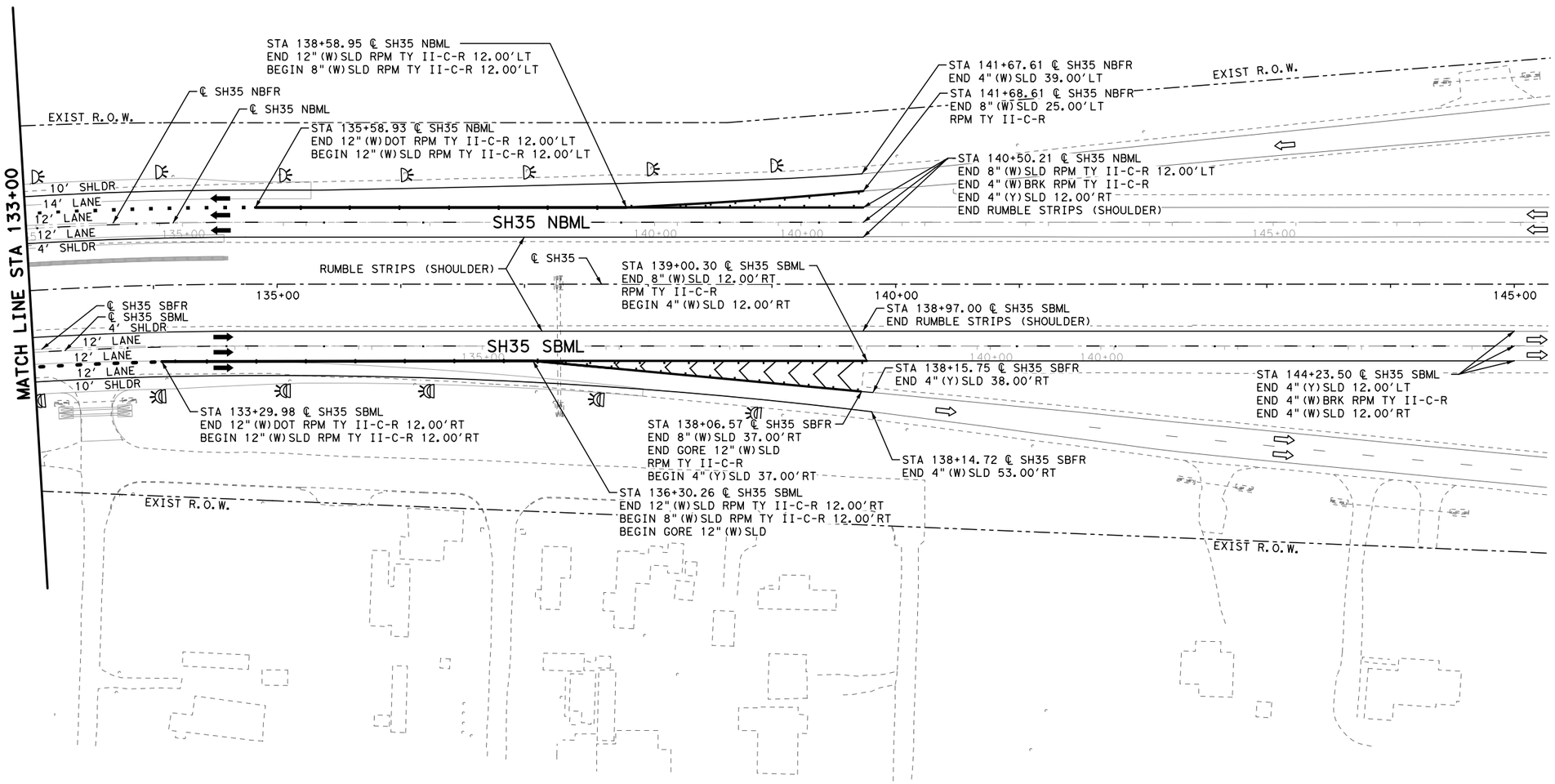

N

0' 50' 100'(H)

SCALE IN FEET

LEGEND

- OM ASSM(OM-2Z) (WFLX)GND
- OM ASSM(OM-4) (TWT)WAS
- DEL ASSM(D-SW)SZ 1 (WFLX)GND
- DEL ASSM(D-DW)SZ 1 (WFLX)GND
- DEL ASSM(D-SW)SZ (BRF)CTB
- DEL ASSM(D-SW)SZ 1 (BRF)GF2
- DEL ASSM(D-SY)SZ (BRF)CTB
- DEL ASSM(D-DY)SZ 1 (YFLX)GND
- PREFAB PAV MRK TYC(W)(ARROW)
- PREFAB PAV MRK TYC(W)(DBL ARROW)
- PREFAB PAV MRK TYC(W)(WORD)
- EXIST TRAVEL LANE
- PROP TRAVEL LANE

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
WILLIAM T. MARTINEZ
113929
LICENSED
PROFESSIONAL ENGINEER
4/22/2021

Texas Department of Transportation

LINA T. RAMEY & ASSOCIATES, INC.
3320 Belt Line Road
Farmers Branch, Texas 75234 - 214-979-1144
TBPELS FIRM # F-782, 10140700

SH 35 AT OAK LANE

PAVEMENT MARKING LAYOUT

STA 133+00 TO PROJECT END

SHEET 9 OF 9

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	337

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SCALE: 100.0000 ft / in.

ITS ELECTRIC SERVICE METER CHART												
Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service *Conduit Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Lighting Contactor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
NO.1	3 of 7	ELC SRV TY D 120/240 060 (NS)SS(N)GC(U)	2"	3/#6	N/A	2P/60	N/A	100	CCTV NO.01	1P/20	16	1.92
NO.2	6 of 7	ELC SRV TY D 120/240 060 (NS)SS(N)GC(U)	2"	3/#6	N/A	2P/60	N/A	100	CCTV NO.02	1P/20	16	1.92

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
DOUGLAS BURNETT JR.
140757
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ITS ELECTRIC SERVICE CHART

SHEET 1 OF 1

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	338

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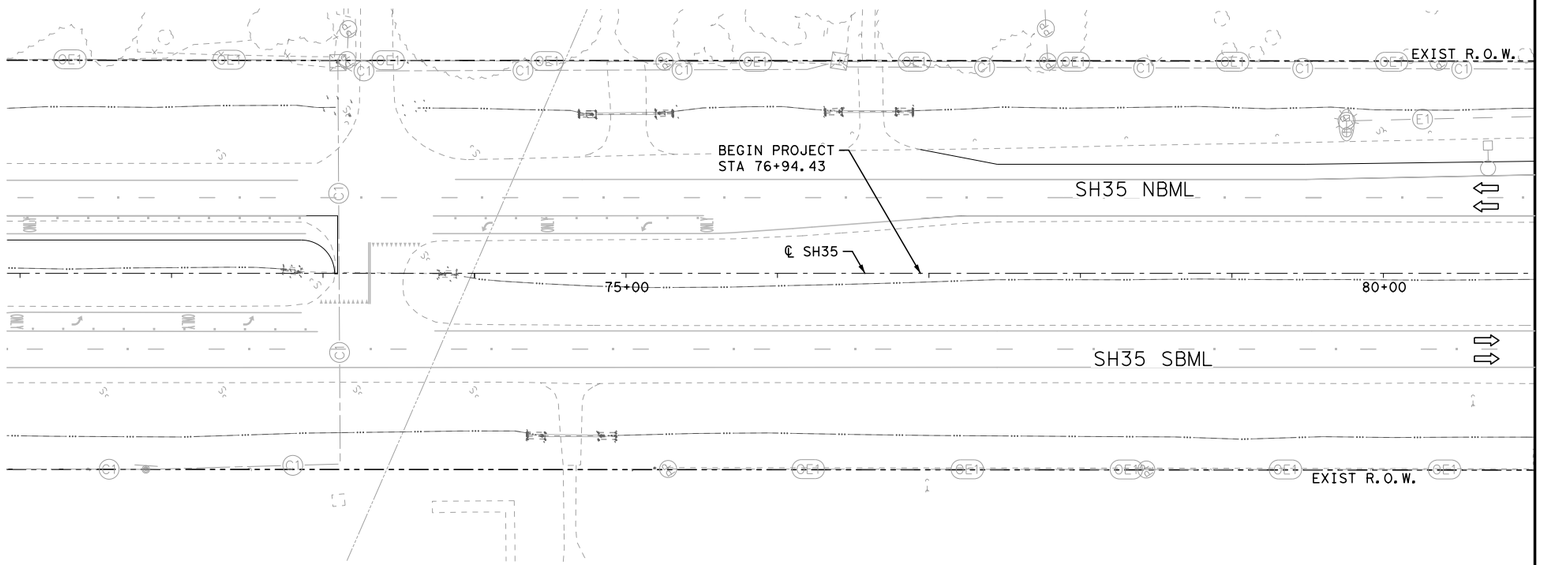

MATCH LINE STA 81+00

0′ 50′ 100′(H)

SCALE IN FEET

ITS PLAN LEGEND

- PROP ITS POLE(W/POLE MOUNTED CAB)
- PROP CCTV FIELD EQUIPMENT (DIGITAL)
- PROP CELL MODEM(STATE FURNISHED)
- PROP CONDT(PVC)(SCH 40)(2")
- PROP CONDT(PVC)(SCH 40)(2")(BORE)
- (1.01) PROP CONDUIT RUN ID NO.
- PROP GROUND BOX TY D(W/APRON)
- (M) PROP ELECTRIC SERVICE METER
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW

NO ITS WORK ON THIS SHEET

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
DOUGLAS BURNETT JR.
140757
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ITS PLAN LAYOUT

PROJECT BEGIN TO STA 81+00

SHEET 1 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	339

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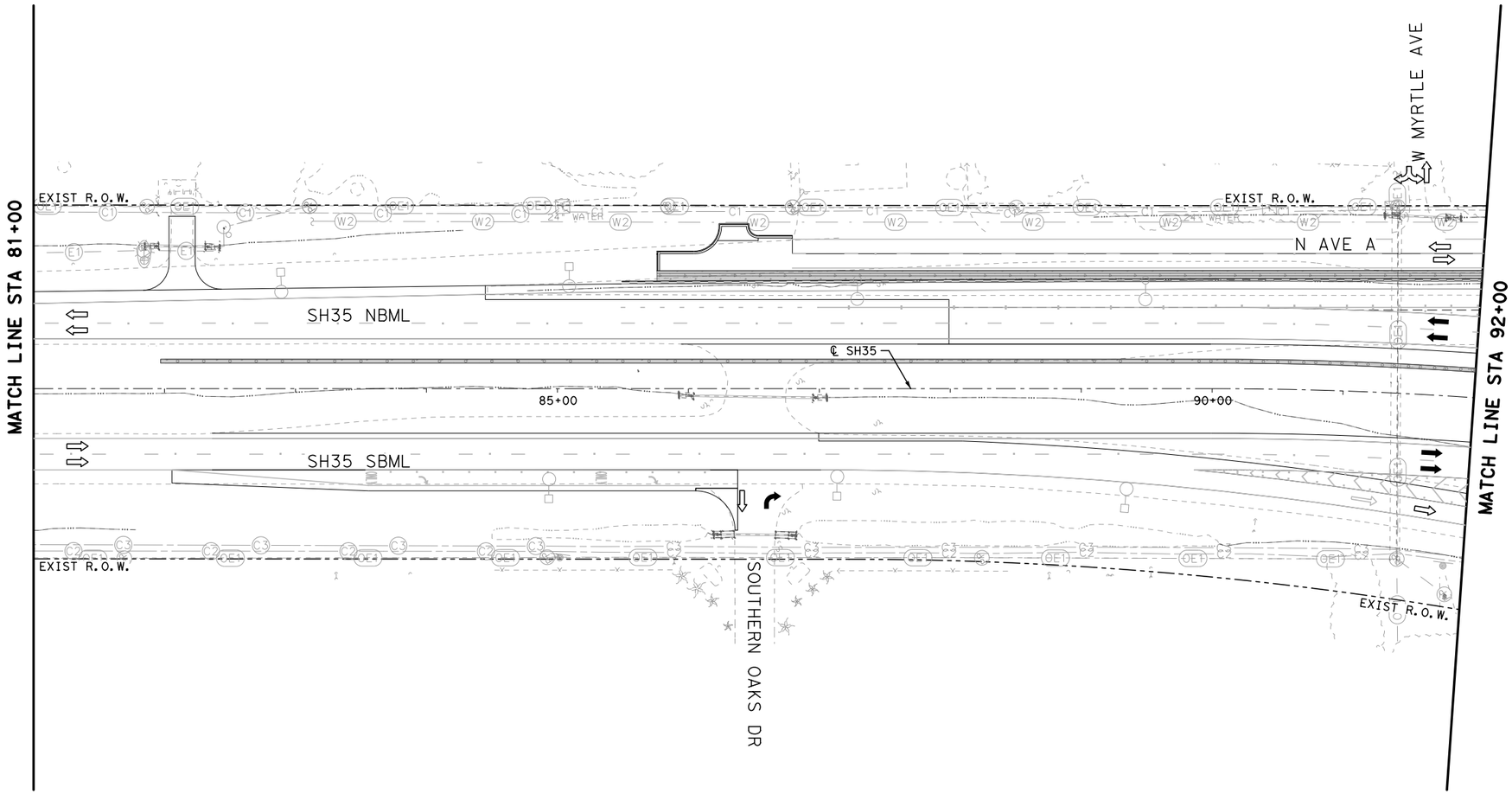

NO ITS WORK ON THIS SHEET

SCALE IN FEET

0′ 50′ 100′(H)

ITS PLAN LEGEND

- PROP ITS POLE(W/POLE MOUNTED CAB)
- PROP CCTV FIELD EQUIPMENT (DIGITAL)
- PROP CELL MODEM(STATE FURNISHED)
- PROP CONDT(PVC)(SCH 40)(2")
- PROP CONDT(PVC)(SCH 40)(2")(BORE)
- 1.01 PROP CONDUIT RUN ID NO.
- PROP GROUND BOX TY D(W/APRON)
- M PROP ELECTRIC SERVICE METER
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
DOUGLAS BURNETT JR.
140757
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ITS PLAN LAYOUT

STA 81+00 TO STA 92+00

SHEET 2 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	340

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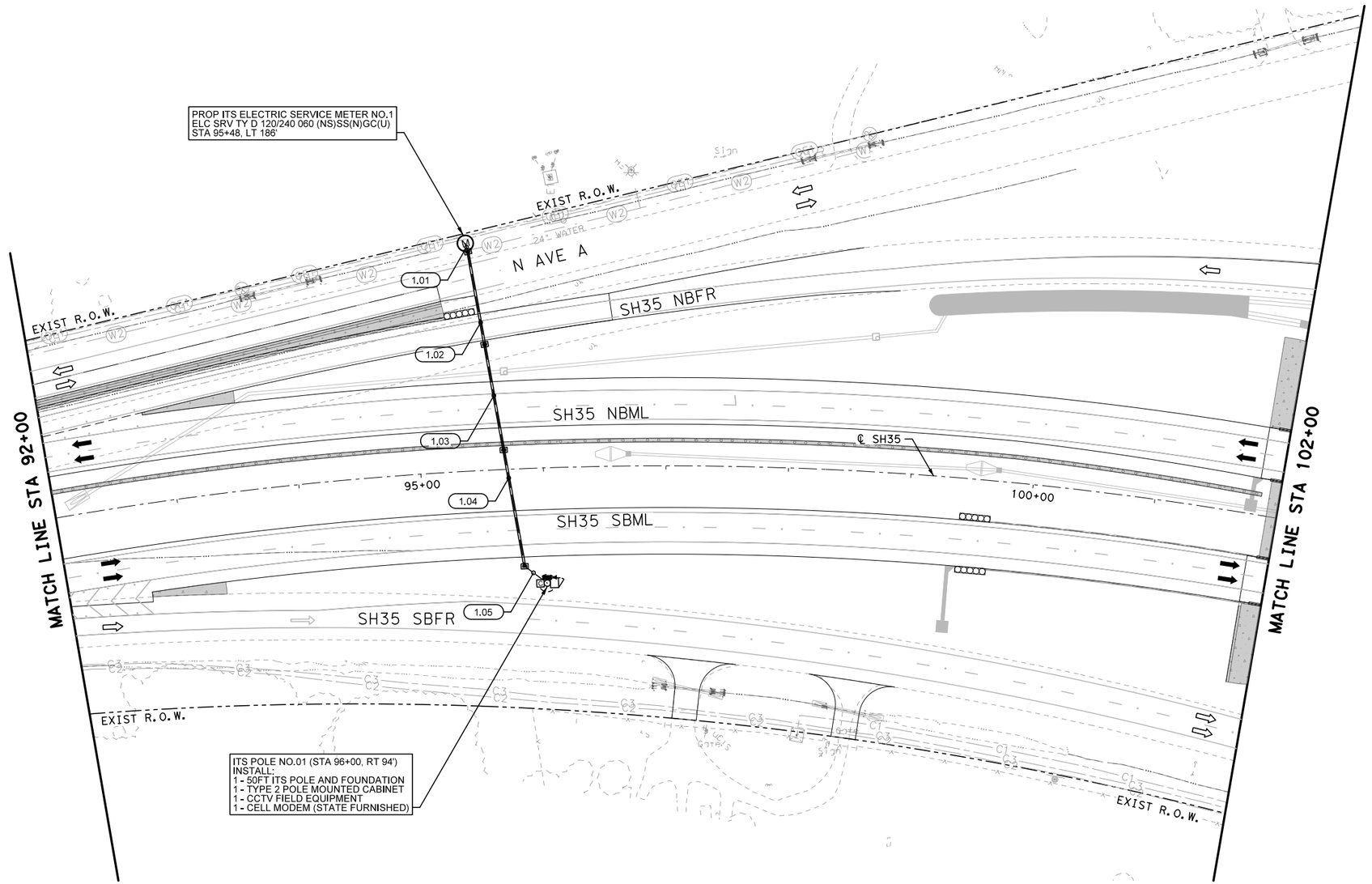

0' 50' 100'(H)

SCALE IN FEET

ITS PLAN LEGEND

- PROP ITS POLE(W/POLE MOUNTED CAB)
- PROP CCTV FIELD EQUIPMENT (DIGITAL)
- PROP CELL MODEM(STATE FURNISHED)
- PROP CONDT(PVC)(SCH 40)(2")
- PROP CONDT(PVC)(SCH 40)(2")(BORE)
- 1.01 PROP CONDUIT RUN ID NO.
- PROP GROUND BOX TY D(W/APRON)
- M PROP ELECTRIC SERVICE METER
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
DOUGLAS BURNETT JR.
140757
LICENSED PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ITS PLAN LAYOUT

STA 92+00 TO STA 102+00

SHEET 3 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	341

CONDUIT AND CABLE SCHEDULE				
RUN ID	RUN LENGTH (LF)	COND. (PVC) (SCH 40) (2")	COND. (PVC) (SCH 40) (2")(BORED)	ELEC. CONDR (NO.10) INS.
		QTY	QTY	QTY
1.01	15	1		3
1.02	90		1	3
1.03	100		1	3
1.04	110		1	3
1.05	35	1		3
TOTALS		50	300	1050

SHEET QUANTITY				
BID CODE		DESCRIPTION	UNIT	QTY
416	6005	DRILL SHAFT (42 IN)	LF	20
432	6006	RIPRAP (CONC)(CL B)	CY	2
618	6046	CONDT (PVC) (SCH 80) (2")	LF	50
618	6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	300
620	6006	ELEC CONDR (NO.10) INSULATED	LF	1050
620	6008	ELEC CONDR (NO.8) INSULATED	LF	-
624	6002	GROUND BOX TY A (122311)W/APRON	EA	4
628	6150	ELC SRV TY D 120/240 060 (NS)SS(N)GC(U)	EA	1
6010	6002	CCTV FIELD EQUIPMENT (DIGITAL)	EA	1
6010	6004	CCTV MOUNT (POLE)	EA	1
6064	6039	ITS POLE (50 FT)(130 MPH)	EA	1
6064	6080	ITS POLE MNT CAB (TY 2)(CONF 1)	EA	1
6247	6005	INSTALL OF CELLULAR MODEM	EA	1

DATE:4/29/2021 TIME: 8:28:09 PM
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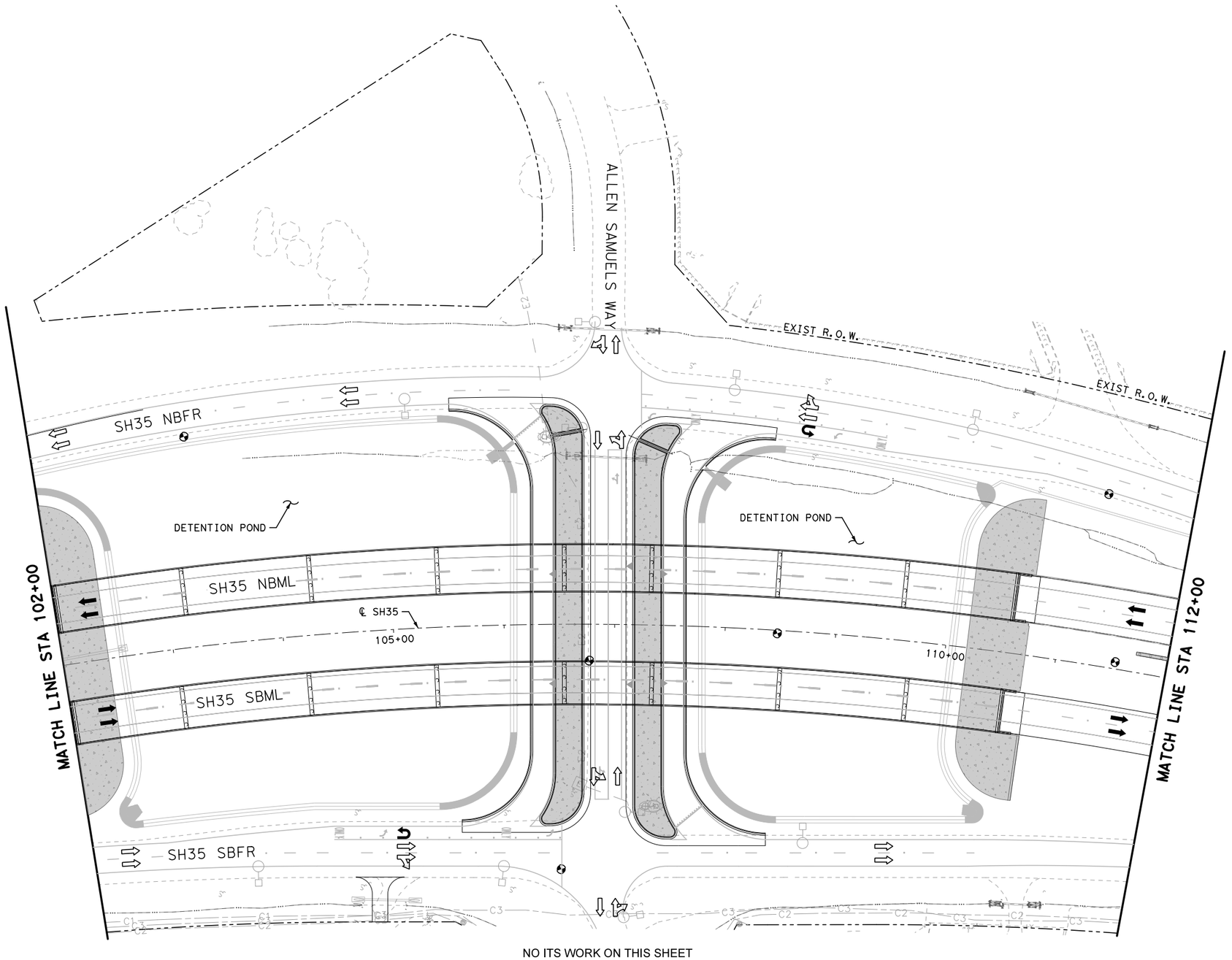

NO ITS WORK ON THIS SHEET

0′ 50′ 100′(H)

SCALE IN FEET

ITS PLAN LEGEND

- PROP ITS POLE(W/POLE MOUNTED CAB)
- PROP CCTV FIELD EQUIPMENT (DIGITAL)
- PROP CELL MODEM(STATE FURNISHED)
- PROP CONDT(PVC)(SCH 40)(2")
- PROP CONDT(PVC)(SCH 40)(2")(BORE)
- 1.01 PROP CONDUIT RUN ID NO.
- PROP GROUND BOX TY D(W/APRON)
- M PROP ELECTRIC SERVICE METER
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
DOUGLAS BURNETT JR.
140757
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ITS PLAN LAYOUT

STA 102+00 TO STA 112+00

SHEET 4 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	342

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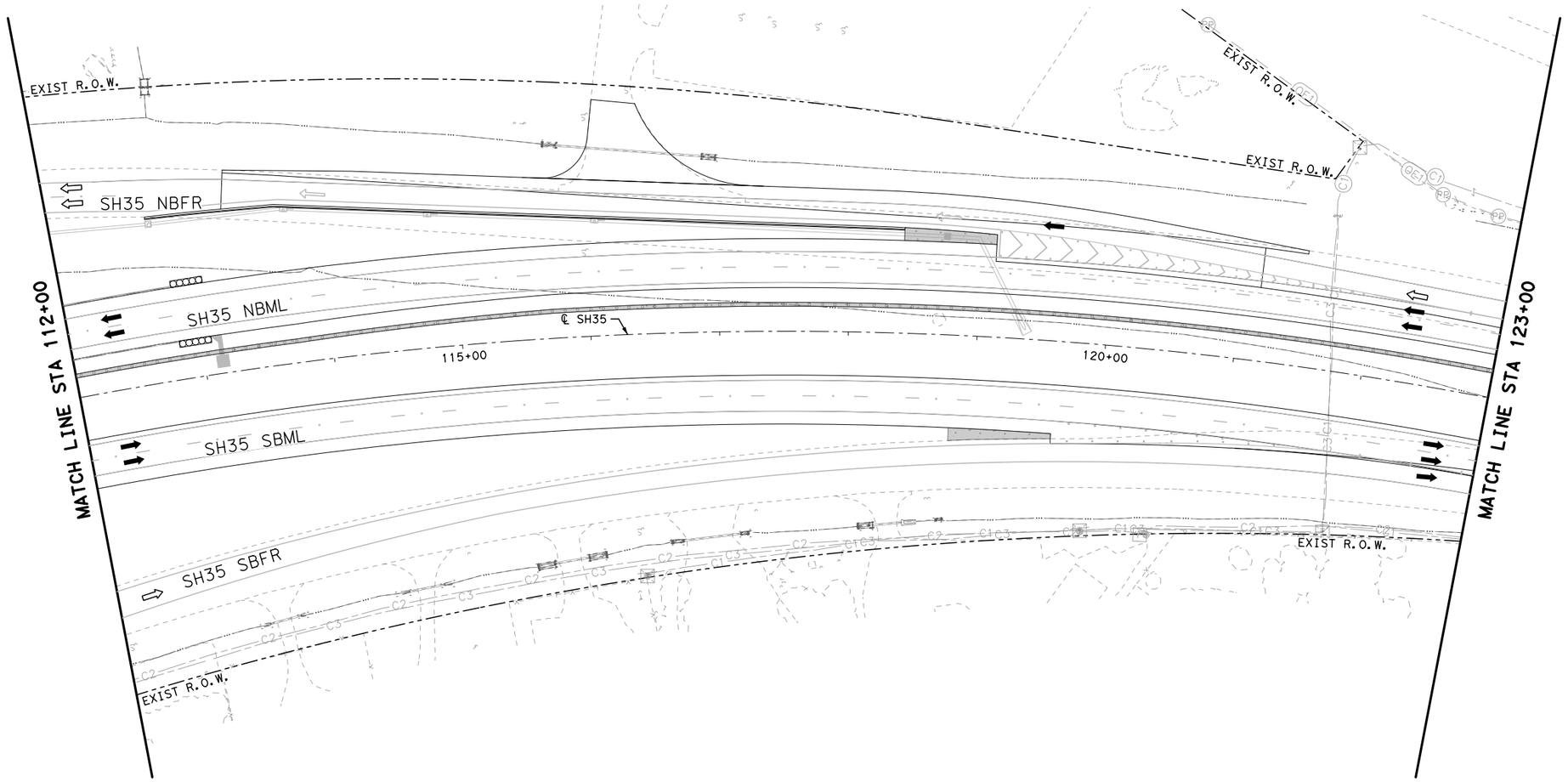
SCALE: 100.0000 ft / in.



NO ITS WORK ON THIS SHEET

0′ 50′ 100′(H)

SCALE IN FEET

ITS PLAN LEGEND

- PROP ITS POLE(W/POLE MOUNTED CAB)
- PROP CCTV FIELD EQUIPMENT (DIGITAL)
- PROP CELL MODEM(STATE FURNISHED)
- PROP CONDT(PVC)(SCH 40)(2")
- PROP CONDT(PVC)(SCH 40)(2")(BORE)
- (1.01) PROP CONDUIT RUN ID NO.
- PROP GROUND BOX TY D(W/APRON)
- (M) PROP ELECTRIC SERVICE METER
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
DOUGLAS BURNETT JR.
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LICENSED
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WSP USA Inc
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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ITS PLAN LAYOUT

STA 112+00 TO STA 123+00

SHEET 5 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	343

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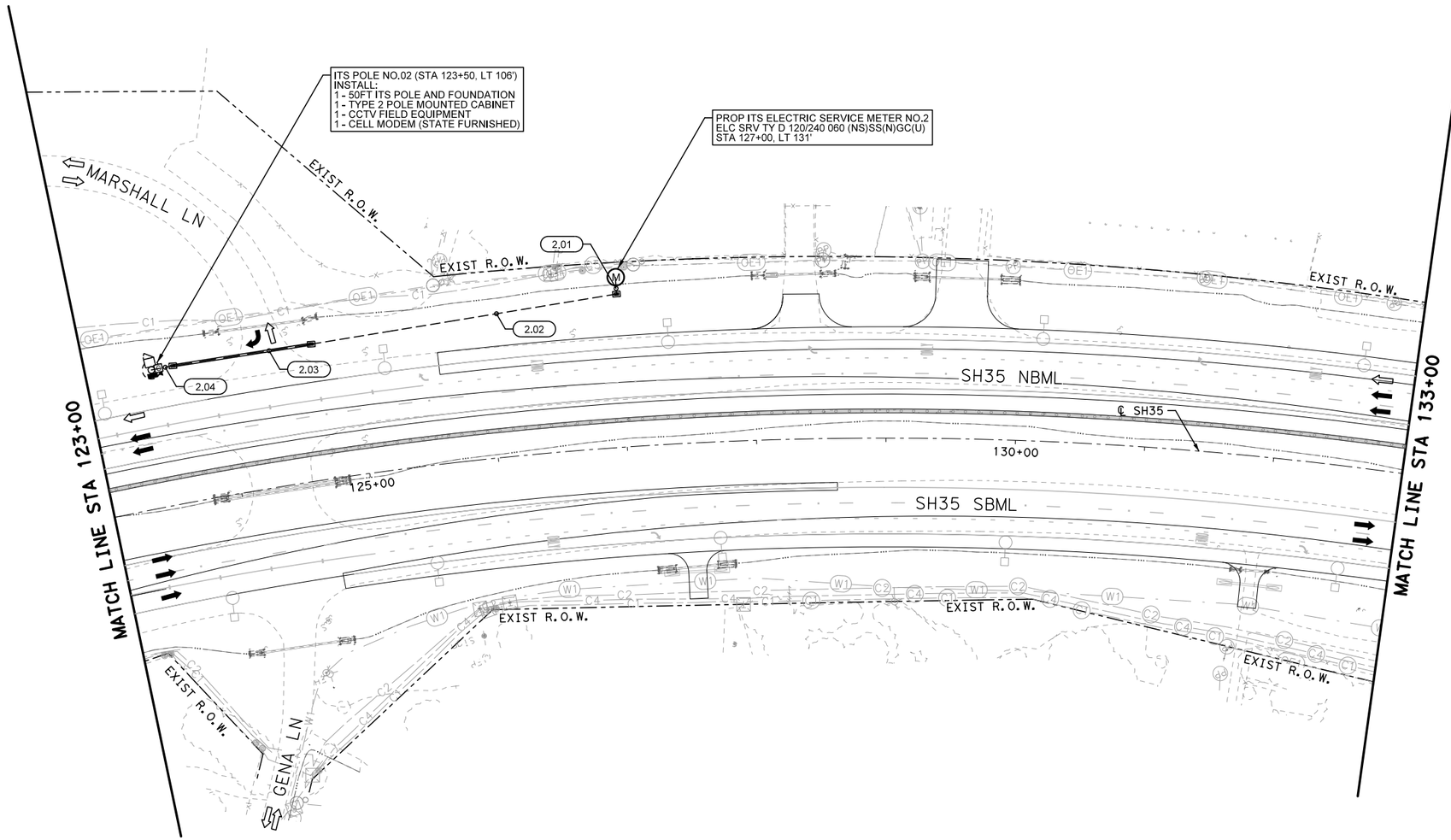

0' 50' 100'(H)

SCALE IN FEET

ITS PLAN LEGEND

- PROP ITS POLE(W/POLE MOUNTED CAB)
- PROP CCTV FIELD EQUIPMENT (DIGITAL)
- PROP CELL MODEM(STATE FURNISHED)
- PROP CONDT(PVC)(SCH 40)(2")
- PROP CONDT(PVC)(SCH 40)(2")(BORE)
- 1.01 PROP CONDUIT RUN ID NO.
- PROP GROUND BOX TY D(W/APRON)
- M PROP ELECTRIC SERVICE METER
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
DOUGLAS BURNETT JR.
140757
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

WSP USA Inc
2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ITS PLAN LAYOUT

STA 123+00 TO STA 133+00

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	344

CONDUIT AND CABLE SCHEDULE				
RUN ID	RUN LENGTH (LF)	COND. (PVC) (SCH 40) (2")	COND. (PVC) (SCH 40) (2")(BORED)	ELEC. CONDR (NO.8) INS.
		QTY	QTY	QTY
2.01	25	1		3
2.02	250	1		3
2.03	120		1	3
2.04	30	1		3
TOTALS		305	120	1275

SHEET QUANTITY				
BID CODE		DESCRIPTION	UNIT	QTY
416	6005	DRILL SHAFT (42 IN)	LF	20
432	6006	RIPRAP (CONC)(CL B)	CY	2
618	6046	CONDT (PVC) (SCH 80) (2")	LF	305
618	6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	120
620	6006	ELEC CONDR (NO.10) INSULATED	LF	-
620	6008	ELEC CONDR (NO.8) INSULATED	LF	1275
624	6002	GROUND BOX TY A (122311)W/APRON	EA	3
628	6150	ELC SRV TY D 120/240 060 (NS)SS(N)GC(U)	EA	1
6010	6002	CCTV FIELD EQUIPMENT (DIGITAL)	EA	1
6010	6004	CCTV MOUNT (POLE)	EA	1
6064	6039	ITS POLE (50 FT)(130 MPH)	EA	1
6064	6080	ITS POLE MNT CAB (TY 2)(CONF 1)	EA	1
6247	6005	INSTALL OF CELLULAR MODEM	EA	1

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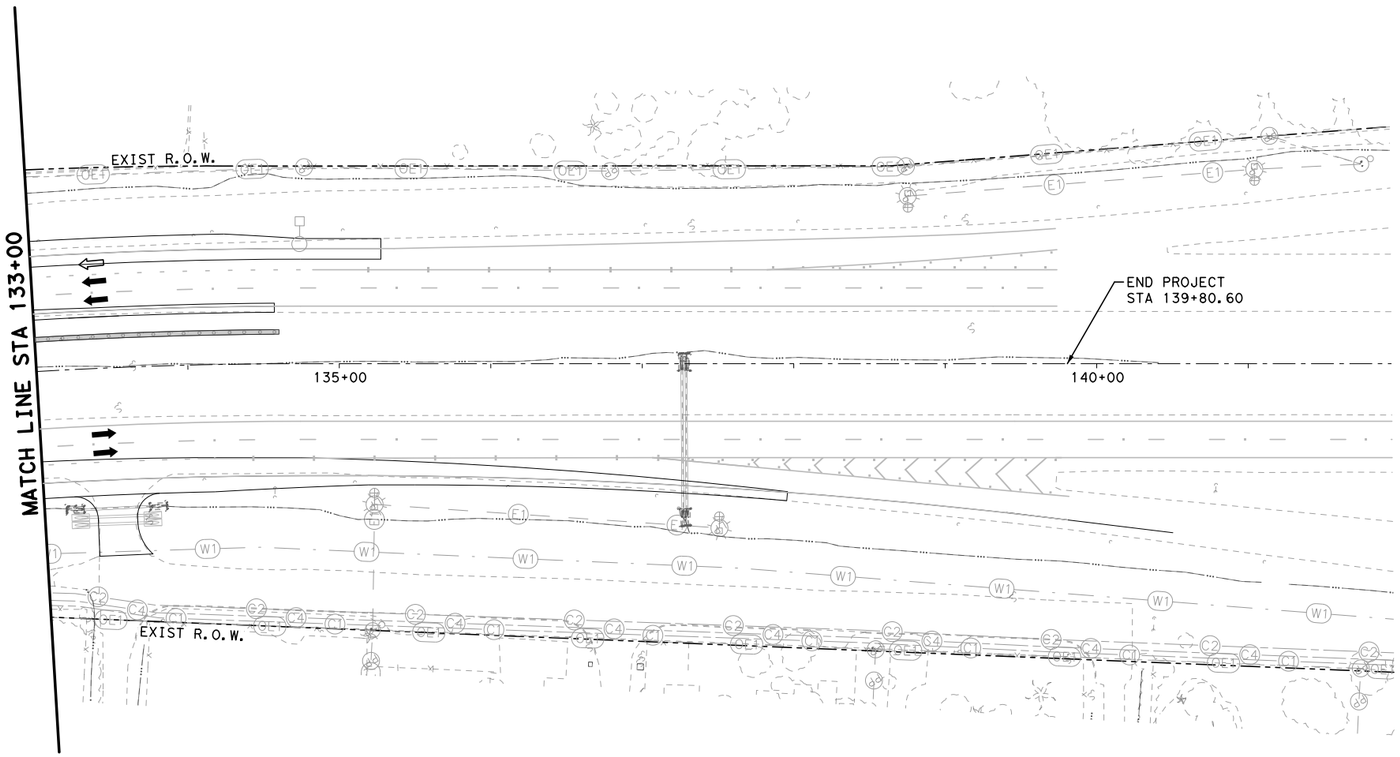

NO ITS WORK ON THIS SHEET

N

0′ 50′ 100′(H)

SCALE IN FEET

ITS PLAN LEGEND

- PROP ITS POLE(W/POLE MOUNTED CAB)
- PROP CCTV FIELD EQUIPMENT (DIGITAL)
- PROP CELL MODEM(STATE FURNISHED)
- PROP CONDT(PVC)(SCH 40)(2")
- PROP CONDT(PVC)(SCH 40)(2")(BORE)
- 1.01 PROP CONDUIT RUN ID NO.
- PROP GROUND BOX TY D(W/APRON)
- M PROP ELECTRIC SERVICE METER
- EXISTING TRAFFIC FLOW ARROW
- PROPOSED TRAFFIC FLOW ARROW

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2777 N Stemmons Freeway, Suite 1600
Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ITS PLAN LAYOUT

STA 133+00 TO PROJECT END

SHEET 7 OF 7

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	345

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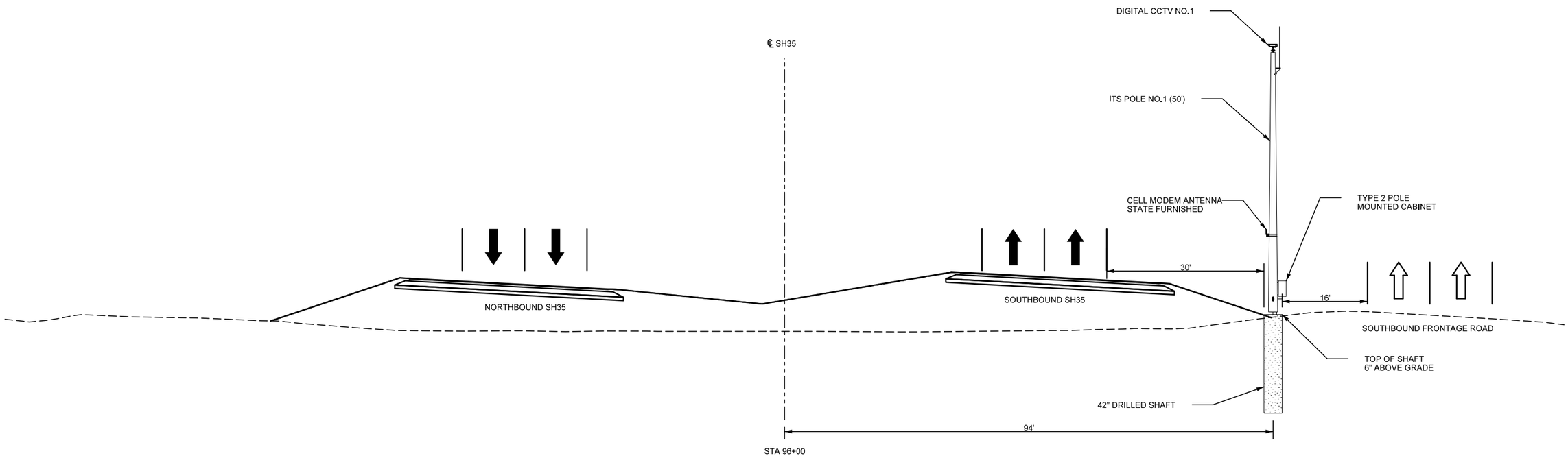
0' 10' 20' (V)
SCALE IN FEET



NOTES:
1. DEVICES AND EQUIPMENT SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY.
   CONTRACTOR TO REFER TO APPLICABLE TXDOT STANDARDS FOR INSTALLATION AND CONSTRUCTION DETAILS.
2. CONTRACTOR TO REFER TO MANUFACTURES SPECIFICATIONS FOR DEVICE MOUNTING HEIGHTS AND INSTALLATION DETAILS.

REV	DESCRIPTION	DATE	INIT

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Dallas, TX 75207
TEL: 214.583.3400
TBPELS F-02263

SH 35 AT OAK LANE

ITS ELEVATION DETAIL

SHEET 1 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	346

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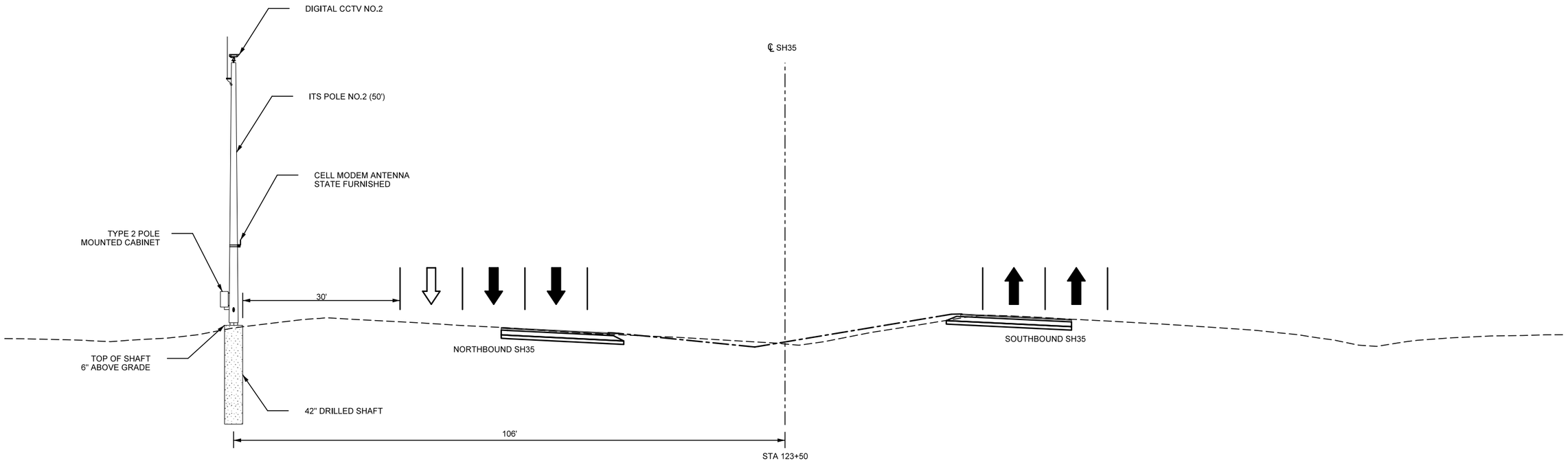
0' 10' 20' (V)
SCALE IN FEET



NOTES:
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TBPELS F-02263

SH 35 AT OAK LANE

ITS ELEVATION DETAIL

SHEET 2 OF 2

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	347

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GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

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© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS		0180	06	067	SH 35
		DIST	COUNTY		SHEET NO.
		CRP	SAN PAT.		348

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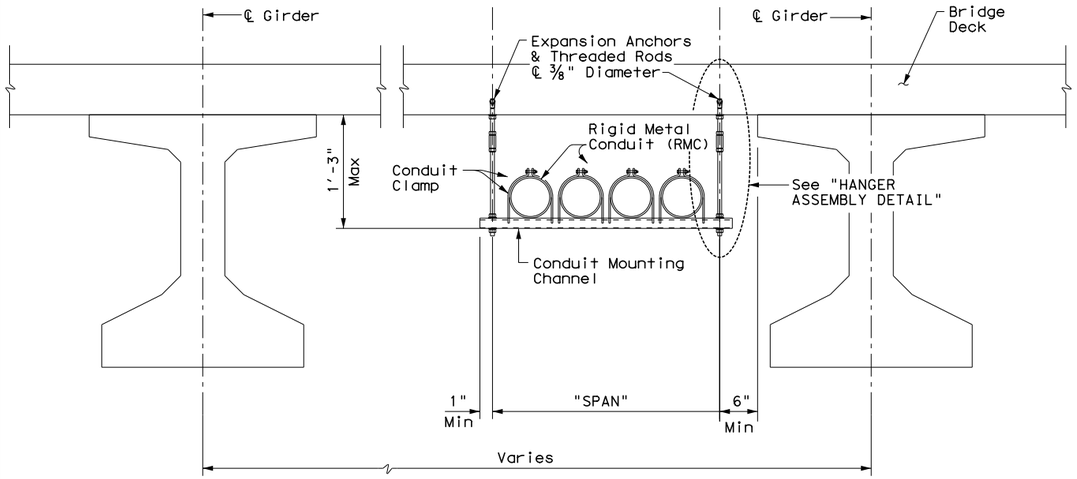
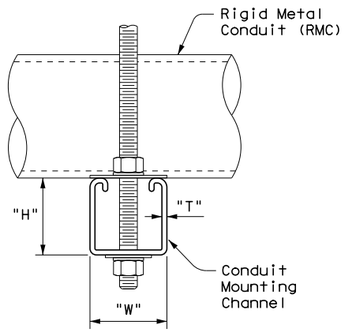
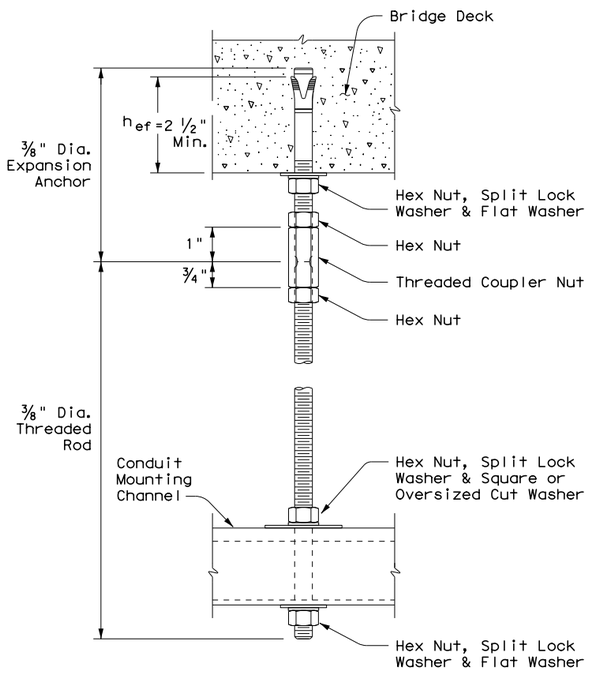


CONDUIT HANGING DETAIL

CONDUIT MOUNTING CHANNEL		
"SPAN"	"W" x "H"	"T"
less than 2'	1 5/8" x 1 3/8"	12 Ga.
2'-0" to 2'-6"	1 5/8" x 1 5/8"	12 Ga.
>2'-6" to 3'-0"	1 5/8" x 2 7/16"	12 Ga.

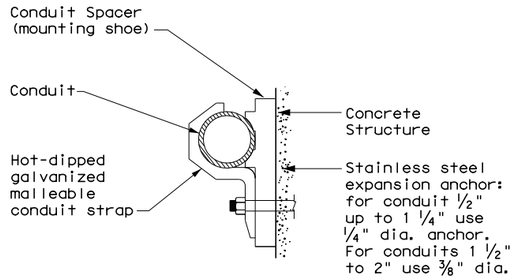
Channels with round or short slotted hole patterns are allowed, if the load carrying capacity is not reduced by more than 15%.

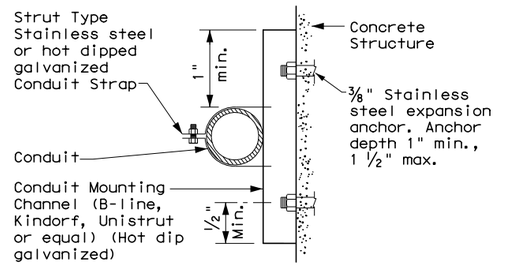




HANGER ASSEMBLY DETAIL

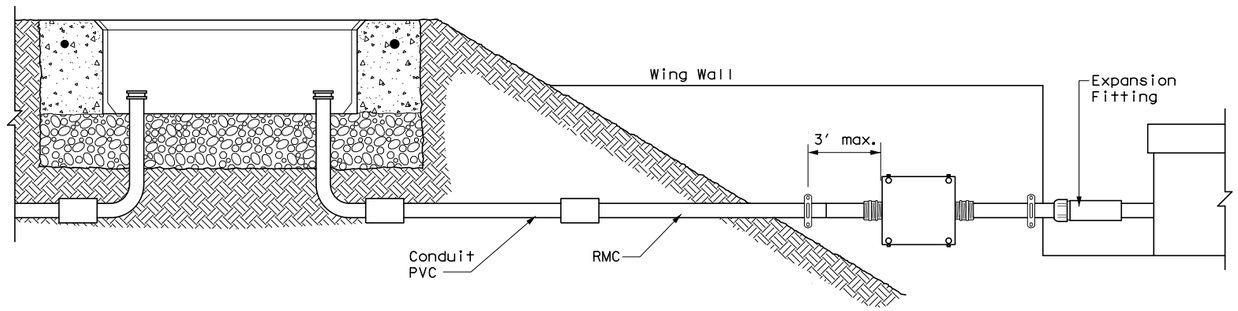
ELECTRIC CONDUIT TO BRIDGE DECK ATTACHMENT





CONDUIT MOUNTING OPTIONS

Attachment to concrete surfaces
See ED(1)B.2



TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

EXPANSION ANCHOR NOTES FOR BRIDGE DECK ATTACHMENT

1. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). The chosen anchor product shall have a designated ICC-ES Evaluation Report number, and its approval status shall be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.

2. Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.

3. Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environment, both the anchor body and expansion wedge shall be stainless steel.

4. Install anchors as shown on the plans and in accordance with the anchor manufacturer's published installation instructions. Arrange a field demonstration test to evaluate the procedures and tools. The test shall be witnessed and approved by the Engineer prior to furnishing anchors on the structure.

5. Prior to hole drilling, use rebar locator to ensure clearing of existing deck strands or reinforcement. Install anchors to ensure a minimum effective embedment depth, (h_{ef}), as shown. Increase (h_{ef})as needed to ensure sufficient thread length for proper torqueing and tightening of anchors.

6. Use anchors of minimum 1600 Lbs tensile capacity (minimum of steel, concrete breakout, and concrete pullout strengths as determined by ACI 318 Appendix D) at the required minimum embedment depth (h_{ef}). No lateral loads shall be introduced after conduit installation.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUIT SUPPORTS

ED(2)-14

FILE: ed2-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	CRP	SAN PAT.		349

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.

2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.

3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.

4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.

2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.

3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.

4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.

5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.

6. Support conductors in illumination poles with a J-hook at the top of the pole.

7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.

8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.

9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.

10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.

11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.

2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.

3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.

4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.

5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.

2. Do not place ground rods in the same drilled hole as a timber pole.

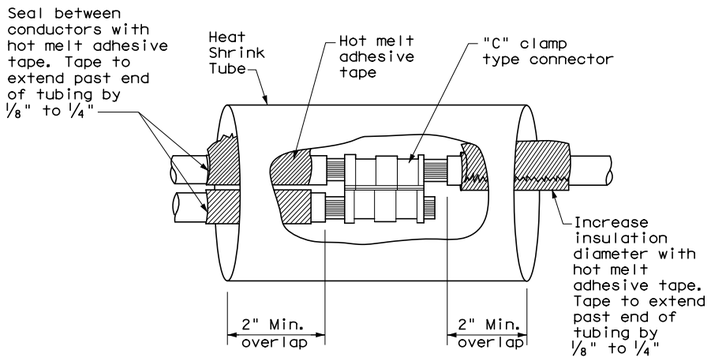
3. Install ground rods so the imprinted part number is at the upper end of the rod.

4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.

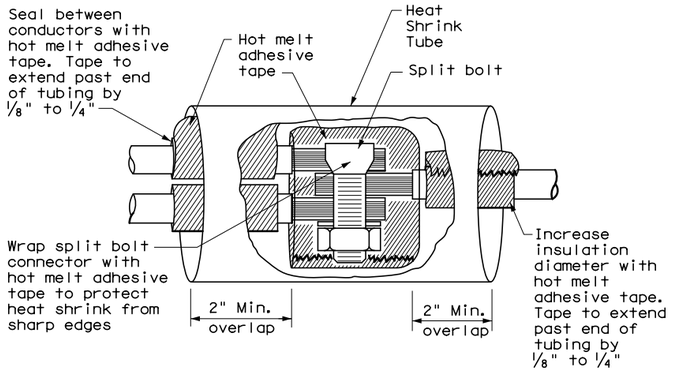
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.

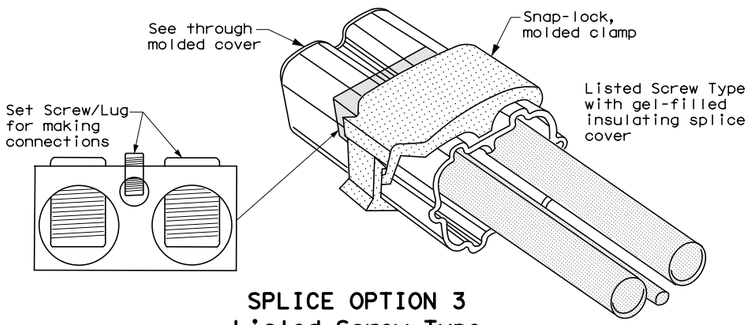
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

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Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

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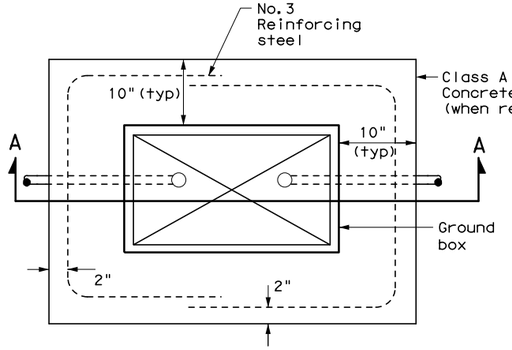
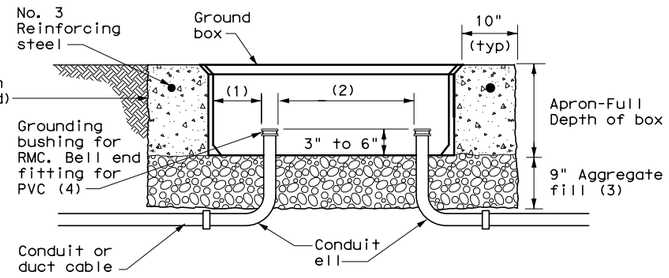


PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

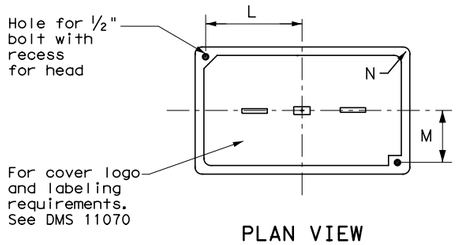
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

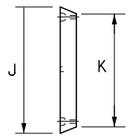
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



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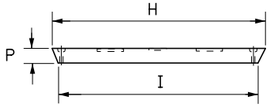

SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-14

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ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

Schematic Type

Service Voltage V / V

Disconnect Amp Rating
000 indicates main lug only/
Typically Type T

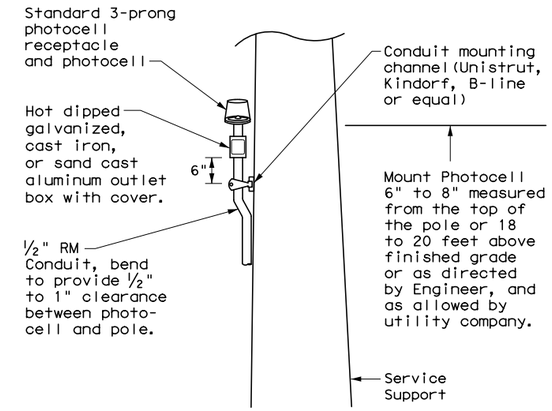
(SS)= Safety Switch Ahead of Meter-Check with Utility
(NS)= No safety Switch Ahead of Meter-Check with Utility

Enclosure Type
GS= Galvanized steel("off the shelf")
SS= Stainless steel(Custom Enclosure)See MPL
AL= Aluminum (Custom Enclosure)See MPL

Photocell Mounting Location
(E)= Inside Service/Enclosure Mounted
(T)= Top of pole
(L)= Luminaire mounted
(N)= None/No Photocell or Lighting Contactor Required

Service Support Type
GC= Granite concrete
OC= Other concrete
TP= Timber pole
SP= Steel pole
SF= Steel frame
OT= Pole by others or paid for separately
EX= Existing pole
TS= Service on traffic signal pole
PS= Pedestal Service

O= Overhead Service Feed from Utility
U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

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Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

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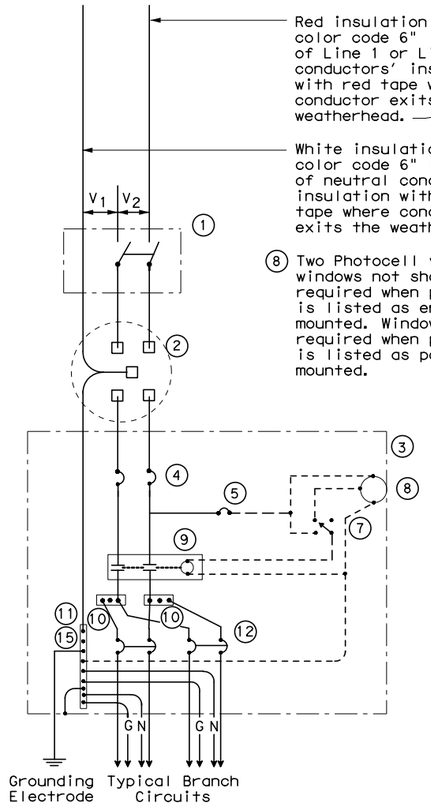
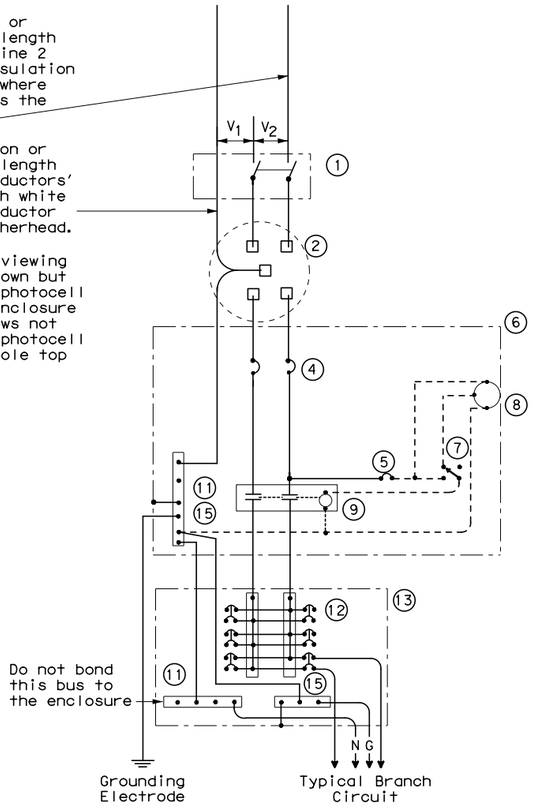
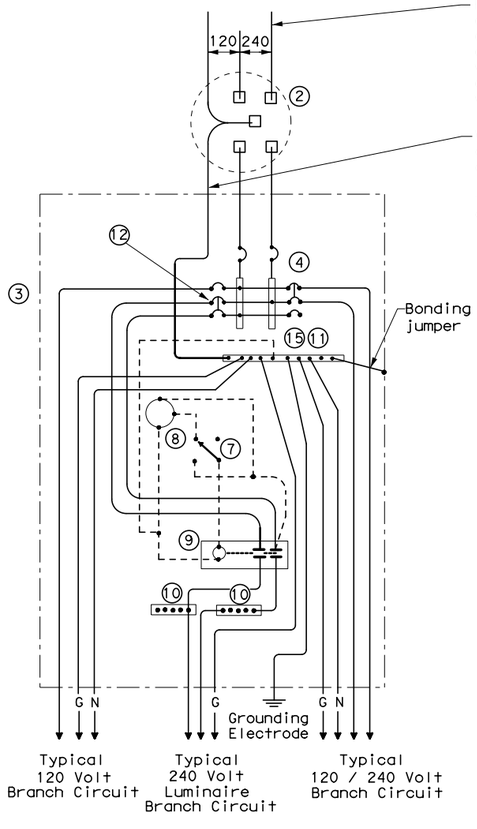


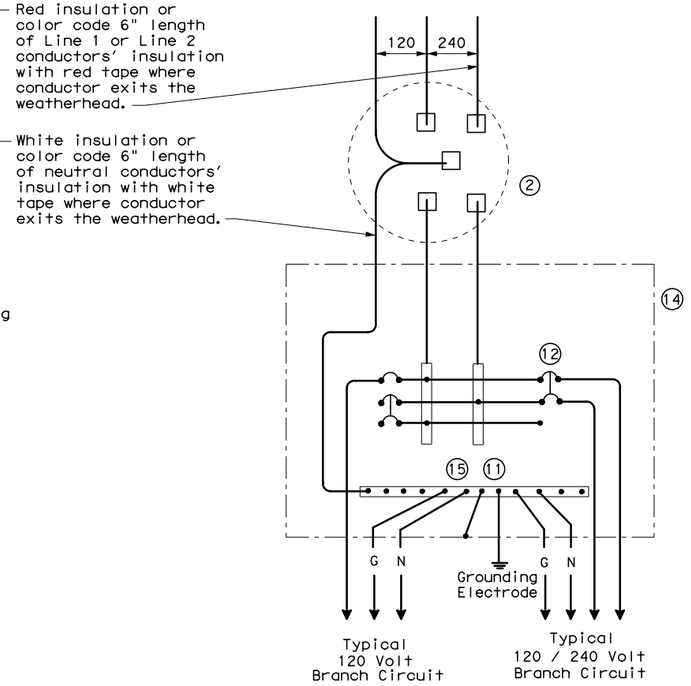
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
·------	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

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TIMBER POLE (TP) SERVICE SUPPORT NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627 "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Conduit and electrical conductors attached to the electrical service pole and underground within 12 in. of service pole are not paid for directly but are subsidiary to the electrial service.
3. Install pole-top mounted photocell (T) on north side of pole, or in service enclosure (E) as required. See Electrical Service Data chart in plan set.
4. Gain pole as required to provide flat surface for each channel. Gain timber pole to 5/8 in. max. depth and 1 7/8 in. max. height. Gain pole in a neat and workmanlike manner.
5. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to 3 3/4 in. maximum depth, and 1 1/2 in. to 1 5/8 in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or SS lag bolts, 1/4 in. minimum diameter by 1 1/2 in. minimum length. Use a galvanized or SS flat washer on each lag bolt. Do not stack channel.
6. When excess length must be trimmed from poles, trim from the top end only.

(1) Class 5 pole, height as required

(2) Service drop from utility company (attached below weatherhead)

(3) Service conduit (RMC) and service entrance conductors - One Red, One Black, One White (See Electrical Service Data)

(4) Safety switch (when required)

(5) Meter (when required)

(6) Service enclosure

(7) 6 AWG bare grounding electrode conductor in 1/2 in. PVC to ground rod - extend 1/2 in. PVC 6 in. underground.

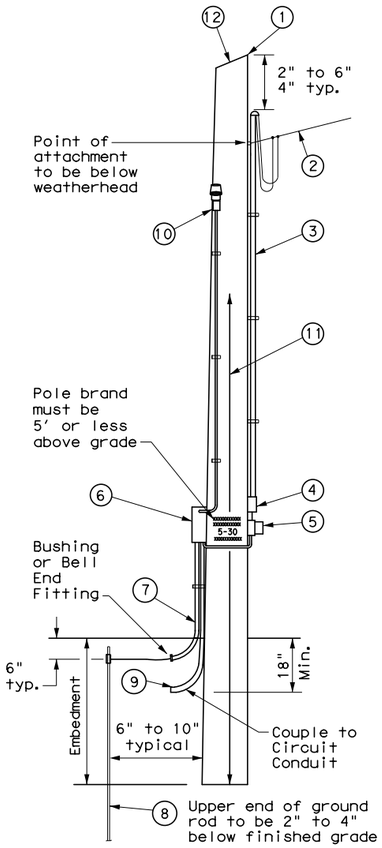
(8) 5/8 in. x 8 ft. Copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.

(9) RMC same size as branch circuit conduit.

(10) See pole-top mounted photocell detail on ED(5).

(11) When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.

(12) When required by utility, cut top of pole at an angle to enhance rain run off.

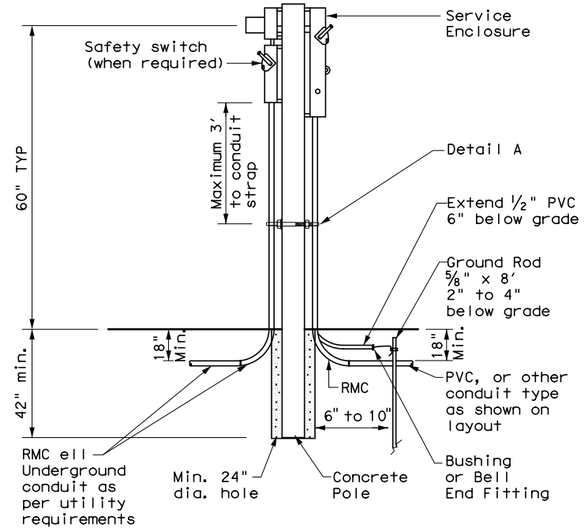


SERVICE SUPPORT TYPE TP (O)

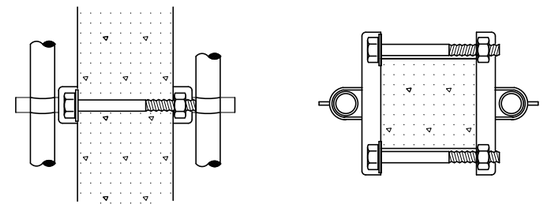
GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) NOTES

Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the following requirements.

1. Provide GC and OC poles that meet the requirements of DMS 11080 "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS 11080. Location of marking should be approximately 4' above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Ensure all installation details of services are in accordance with utility company specifications.
6. Install a one point rack or eye bolt bracket 6 inches to 12 inches below the weatherhead as an overhead service drop anchoring point for the electric utility.
7. Furnish and install galvanized or stainless steel channel strut 1 1/2 in. or 1 5/8 in. wide by 1 in. up to 3 3/4 in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1" depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.
8. Backfill the holes thoroughly by tamping in 6 in. lifts. After tamping to grade, place additional backfill material in a 6 inch high cone around the pole to allow for settling. Use material equal in composition and density to the surrounding area. Backfilling will not be paid for directly but is subsidiary to various bid items.

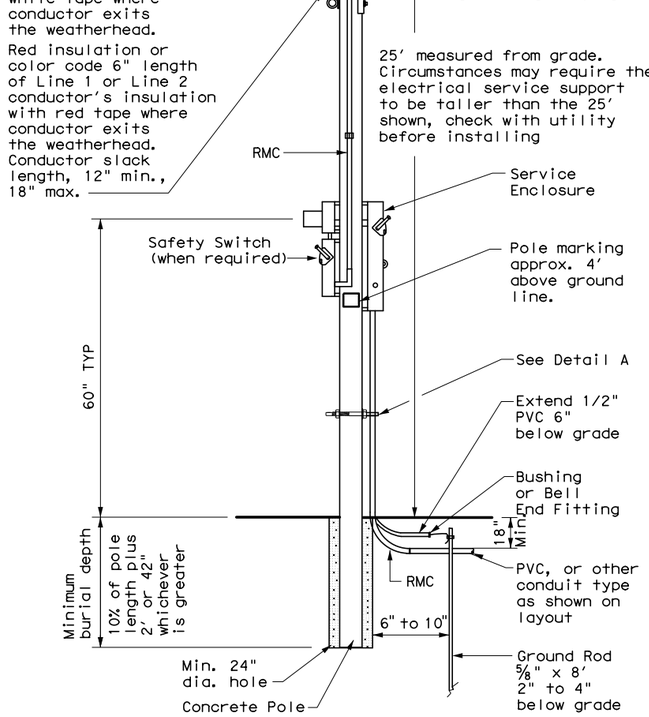


CONCRETE SERVICE SUPPORT
Underground (U)



DETAIL A

See Note 7. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.



CONCRETE SERVICE SUPPORT
Overhead (O)

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP

ED(10)-14

FILE: ed10-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		354

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DUCT CABLE & HDPE CONDUIT NOTES

1. Provide duct cable in accordance with Departmental Material Specification (DMS) 11060 "Duct Cable" and Item 622 "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 622.

2. Provide High-Density Polyethylene (HDPE) conduit in accordance with DMS 11060 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.

3. Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.

4. Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel RMC elbows are called for in the plans and any portion of the RMC elbow is buried less than 18" from possible contact, ground the RMC elbow.

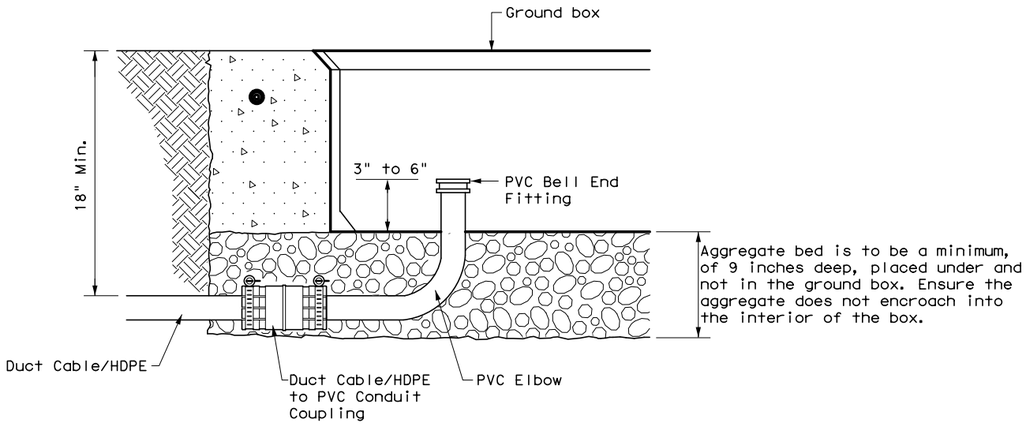
5. Furnish and install duct cable with factory installed conductors, sized as shown in the plans and as required by the National Electrical Code (NEC). The NEC contains specific requirements for duct cable in Article, "Nonmetallic Underground Conduit with Conductors: Type NUCC."

6. When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.

7. Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after completing the pull tests required by Item 622.

8. Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.

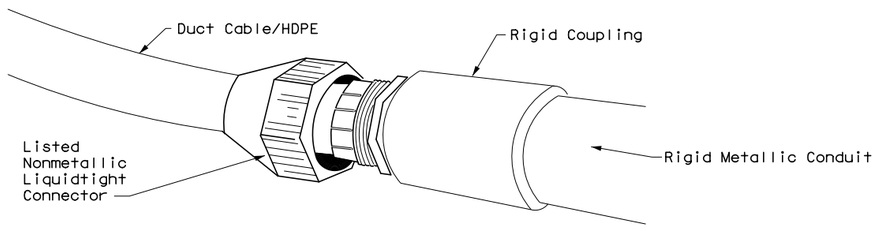
9. Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field-threaded and spliced with PVC or RMC threaded couplings; connected with listed tie-wrap fittings; connected using listed coupling made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors all installed in accordance with their manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.



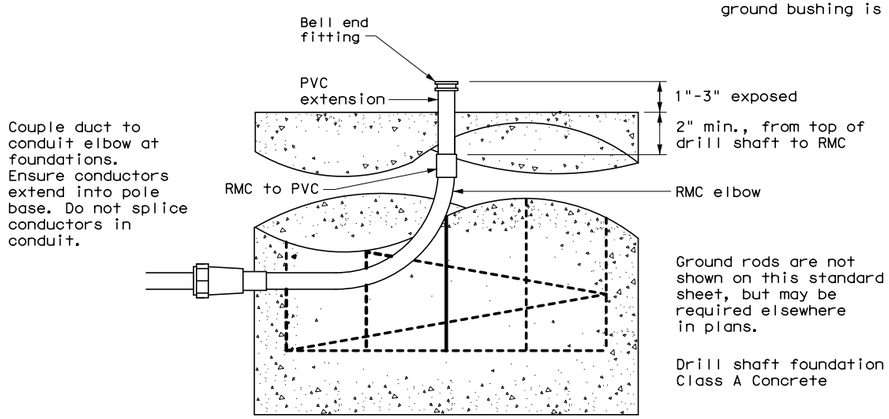
DUCT CABLE/HDPE AT GROUND BOX

When the upper end of an RMC Ell does not enter the ground box, it may be extended with a SCH-40 PVC conduit nipple and bell end, provided there is a minimum of 18" of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.

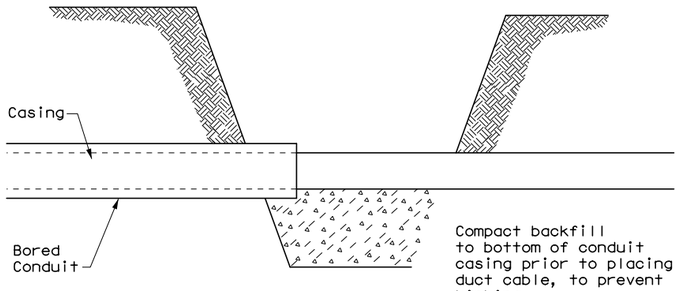
DUCT CABLE/HDPE TO PVC



DUCT CABLE/HDPE TO RMC



DUCT CABLE / HDPE AT FOUNDATION



BORE PIT DETAIL

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS DUCT CABLE/ HDPE CONDUIT

ED(11)-14

FILE: ed11-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		355

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ROADWAY ILLUMINATION ASSEMBLY NOTES

1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the State such warranties or guarantees.

2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.

3. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC),TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA),and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association, Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection.

4. Provide Roadway Illumination Light Fixtures as per TxDOT Departmental Material Specification (DMS) 11010, Item 610, and as shown on the Material Producers List (MPL) for Roadway Illumination and Electrical Supplies.

5. Fabricate steel roadway illumination poles in accordance with Roadway Illumination Poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.

   a. Alternate designs to RIP standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" on the TxDOT web site.

   b. Limitations on use of the RIP standard: The RIP standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25′ above the elevation of the surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 6th Edition (2013) of the AASHTO Design Specifications. For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25′ above the surrounding terrain, provide poles meeting the following requirements:

      i. Submittals. Following the electronic shop drawing submittal process (see Guide to Electronic Shop Drawing Submittal on the TxDOT web site), submit to the Engineer for approval fabrication drawings and calculations for the poles, sealed by a Texas licensed professional engineer (P.E.).

      ii. Luminaire Structural Support Requirements. Provide light poles, arms, and anchor bolt assemblies with a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the 6th edition (2013) of the AASHTO Design Specifications. For transformer base poles, include transformer base and connecting hardware in calculations and shop drawing submittals. Structurally test all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished with the shop drawings. Show breakaway base model number, manufacturer's name, and logo on shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.

6. For both transformer and shoe-base type illumination poles, provide and install double-pole breakaway fuse holders as specified by DMS-11040. Breakaway fuse holders are listed on the MPL for Roadway Illumination and Electrical Supplies under Items 610 & 620. Provide 10 amp time delay fuses for breakaway connectors in light poles, or inside the light fixture for underpass luminaires. In each pole, connect luminaires to the breakaway connector with continuous stranded 12 AWG copper conductors as listed on the MPL. Bond all equipment grounding conductors together and to the ground lug in the transformer base or hand hole.

7. Tighten anchor bolts for shoe base, concrete traffic barrier base, and bridge mount roadway illumination poles, in accordance with Item 449.

8. Install T-Base with following procedure:

   a. Anchor Bolt Tightening.

      i. Coat the threads of the anchor bolts with electrically conductive lubricant.

      ii. Place the T-base over the anchor bolts. Foundation must be level and flat. The maximum permissible gap under any one corner of the t-base is 1/8" before nuts are tightened.

      iii. Coat the bearing surfaces of the nuts and washers with electrically conductive lubricant. Install (1) 1/2" hold down washer, (1) lock washer, and (1) nut on each anchor bolt. Turn the nuts onto the bolts so that each is hand-tight against the washer.

      iv. Using a torque wrench, tighten each nut to 150 ft-lb. Uniform contact is required between the foundation and the T-base in the corner regions of the T-base, and all corner gaps must be closed after applying torque. If a gap still exists after torquing to 150 ft-lbs, continue torquing each bolt incrementally until gap is closed or maximum allowable torque of 250 ft. pound is reached, whichever comes first. If 250 ft-lbs is not enough to close the gap the foundation must be leveled. Gaps along the straight sides of the T-bases and the foundation are permissible. Ensure that no high point of contact occurs between the straight sides of the T-base and the foundation.

      v. Check top of T-base for level. If not level then foundation must be leveled.

   b. Top Bolt Procedure

      i. Erect pole over T-base with crane. Coat bolts, nuts, washers, and lock washers with electrically conductive lubricant.

      ii. Install bolts and 1/2" connecting washers from the inside of the T-base, thread up through the pole base. Install flat washers, lock washers and nuts snug tight according to Item 447, "Structural Bolting."

      iii. Tighten each nut to 150 ft-lb. using a torque wrench.

   c. Level and Plumb

      i. Ensure pole is plumb and mast arm is perpendicular to the roadway according to plans to within 5 degrees.

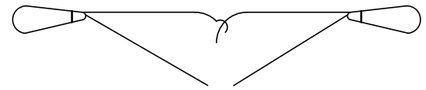
9. Construct luminaire pole foundations in accordance with Item 416, "Drilled Shaft Foundations," and TxDOT standard sheet RID(2).

10. Provide and install underpass luminaires in accordance with Item 610, DMS-11010, and TxDOT standard sheet RID(3). Typical luminaire size for underpass luminaires is 150W HPS or 150W EQ LED.

11. Mount luminaires on arms level as shown by the luminaire level indicator.

12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.

Wiring Diagram Notes:



(1) Use 1/2 in.-13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.

(2) Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unfused and marked white.

(3) Split Bolt or other connector.

Decorative LED Lighting Notes:

1. LED Drivers in Remote Outdoor enclosures (for drivers that do not include an enclosure as part of a factory assembly):

   a. Provide NEMA 3R outdoor enclosure or as approved.

   b. Install enclosure at least 12" above ground or other horizontal surface. Mount vertically or on ceiling, and avoid direct sun where possible.

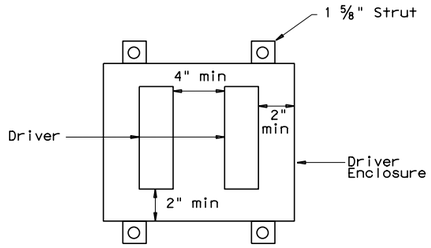
   c. Install drivers with at least 2 inches of space from enclosure walls.

   d. For multiple drivers in an enclosure, provide at least 4 inches side to side and 1 inch end to end from other drivers or electronic equipment

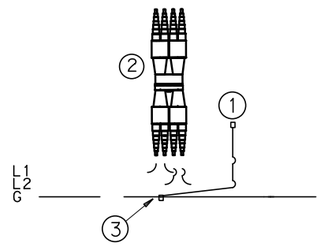
   e. For drivers mounted on back wall of enclosure, mount enclosure on 1 5/8" strut or other standoff to dissipate heat, or mount driver to side of the enclosure or to the metal cover.

   f. Provide remote drivers with a maximum of 100 watts

   g. Provide drivers with documentation of 100,000 hr lifetime at Tcase of 65C or higher.



Driver Spacing In Remote Enclosure



L1,L2 = Hot Conductors
G = Grounding Conductor

TYPICAL WIRING DIAGRAM

LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS

RID(1)-20

FILE: rid1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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7-17	DIST	COUNTY		SHEET NO.
12-20	CRP	SAN PAT.		356

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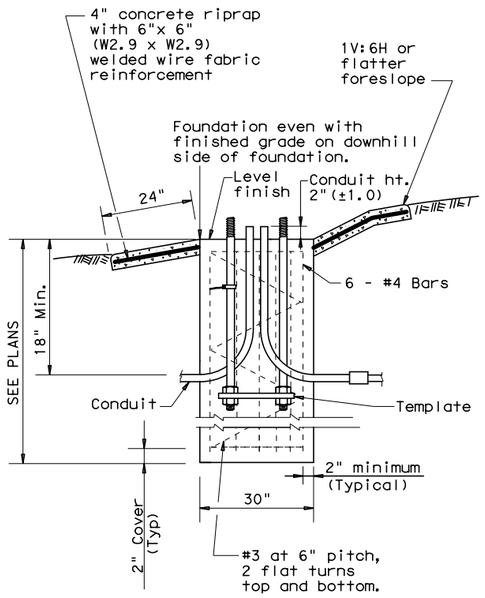
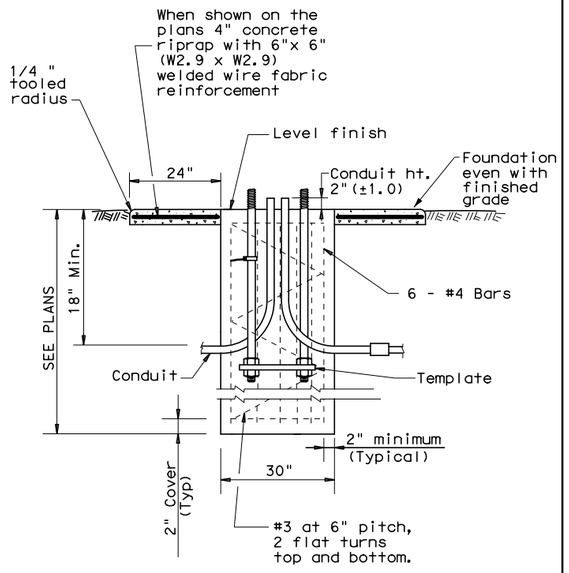


SECTION A-A
SHOWING SLOPED GRADE



SECTION A-A
SHOWING CONSTANT GRADE

TABLE 1

ANCHOR BOLTS

POLE MOUNTING HEIGHT	BOLT CIRCLE		ANCHOR BOLT SIZE
	Shoe Base	T-Base	
<40 ft.	13 in.	14 in.	1in.x 30in.
40-50 ft.	15 in.	17 ¼in.	1 ¼in. x 30in.

TABLE 2

RECOMMENDED FOUNDATION LENGTHS (See note 1)

MOUNTING HEIGHT	TEXAS CONE PENETROMETER N Blows/ft		
	10	15	40
≤20 ft.	6′	6′	6′
>20 ft. to 30 ft.	8′	6′	6′
>30 ft. to 40 ft.	8′	8′	6′
>40 ft. to 50 ft.	10′	8′	6′

TABLE 3

PAY QUANTITY OF RIPRAP PER FOUNDATION (Install only when shown on the plans)

Foundation Diameter	RIPRAP DIAMETER	RIPRAP (CONC) (CL B)
30 in.	78 in.	0.35 CY

GENERAL NOTES:

1. "Recommended Foundation Lengths" table is for information purposes only. Foundation lengths shall be as shown on the plans, or as directed by the Engineer. Foundations will be paid for under Item 416, "Drilled Shaft Foundations," unless otherwise shown on the plans.
2. Erect roadway illumination assembly poles plumb and true. Form and level the top 6" of the foundation so the pole will be plumb. Use leveling nuts to plumb shoe base poles. Do not use shims or leveling nuts under transformer bases. Do not grout between baseplate and the foundation.
3. Ensure Class 2A and 2B fit for anchor bolts and nuts. Tap and chase nuts after galvanizing. Anchor bolt body with rolled threads need not be full size.
4. Use appropriate class of concrete as specified in Items 416 and 432. Concrete for riprap may be upgraded to Class C at no extra cost to the Department.
5. Place riprap around the foundation when called for elsewhere in the plans. Riprap will be paid for under Item 432.
6. Locate breakaway roadway illumination assemblies as shown in the placement table, unless otherwise dimensioned on the plans. Protect non-breakaway illumination assemblies from vehicular impact (i.e. 2.5 ft. behind guard rail or mounted on traffic barrier), or located outside the clear zone, except that 2.5 ft. from curb face is minimum desired for light poles on city streets, 45 mph or less. See Roadway Design Manual for further information.
7. Use 4 hold down and 4 connecting washers on transformer base poles as recommended by the manufacturer and supplied with base.
8. Install a minimum of 2 conduits in each foundation. See lighting layout sheets for locations of foundations with more than 2 conduits. Cap unused conduits in foundations on both ends.
9. Conduit location in foundations is critical for breakaway devices. Place conduits 2 in. apart on centerline as shown.
10. Bond anchor bolt to rebar cage with #6 bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. The bonded steel in the foundation creates a concrete encased grounding electrode which replaces the ground rod.
11. Grade earthwork around T-base foundations even with the finished grade as shown in Section A-A to ensure proper function of the breakaway device. Use riprap on T-base foundations that are located on sloped grades, and as shown on the plans for level grades.

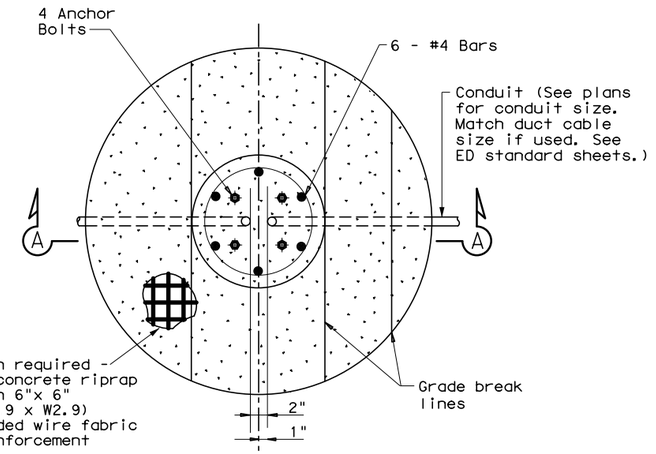
TABLE 4

BREAKAWAY POLE PLACEMENT (See note 6)

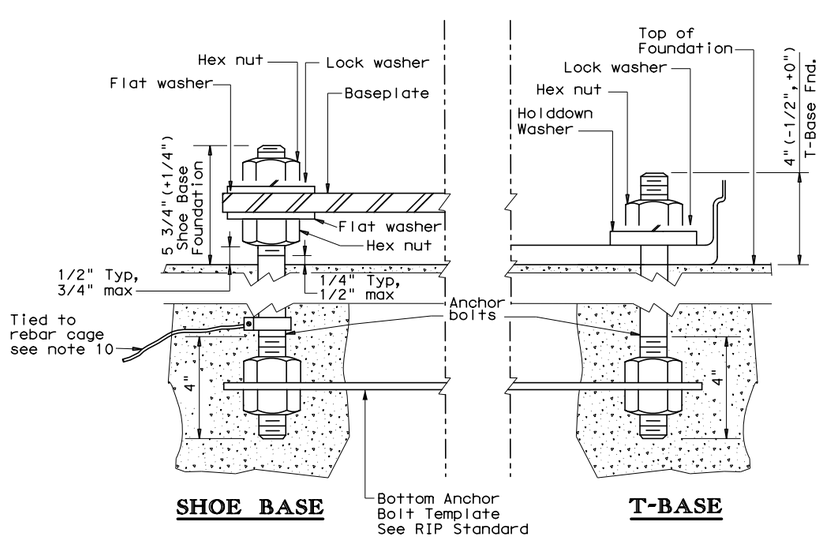
ROADWAY FUNCTIONAL CLASSIFICATION	** POLE OFFSET (DISTANCE TO FACE OF TRANSFORMER BASE)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum*(15 ft. desirable) from lane edge

* or as close to ROW line as is practical

** provide 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on the other travel lanes. See design guidelines.



FOUNDATION DETAIL



ANCHOR BOLT DETAIL

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS
(RDWY ILLUM FOUNDATIONS)

RID(2)-20

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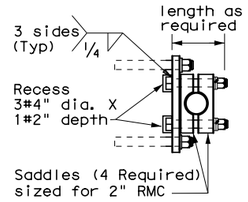
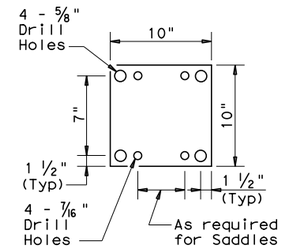
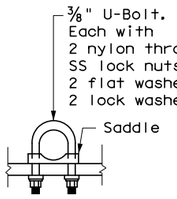


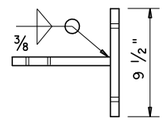
SECTION A-A



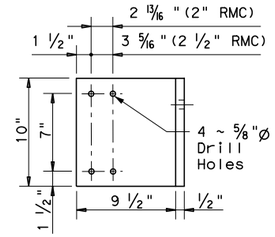
MOUNTING PLATE
(ASTM A-36 or better)



CLAMP DETAIL
(2 Req'd)



PLAN VIEW



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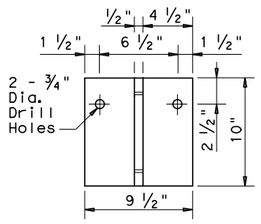
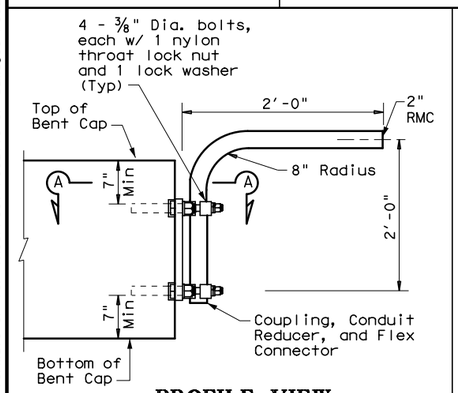
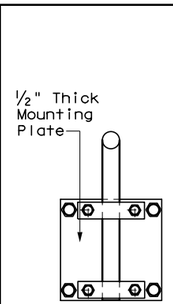


SIDE

BRACKET DETAIL
Make from 1/2" plate (ASTM A-36 or better)

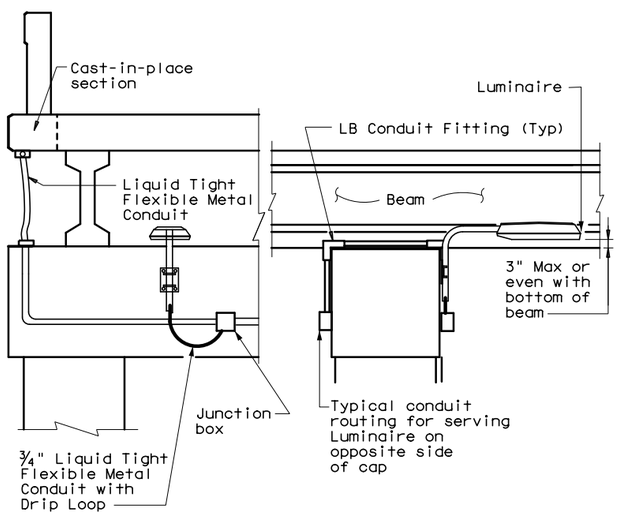


PROFILE VIEW
Or as Required
(See Note A.3)



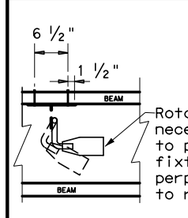
END VIEW

UNDERPASS LIGHTING ARM

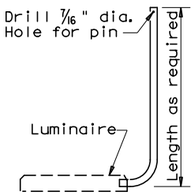


IN RD IL AM (U/P)(TY 1)
If bridge has pre-cast panels under deck, run circuit under deck edge.

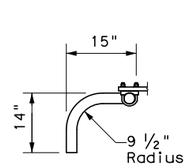
UNDERPASS LIGHTING TYPE 1



PLAN VIEW



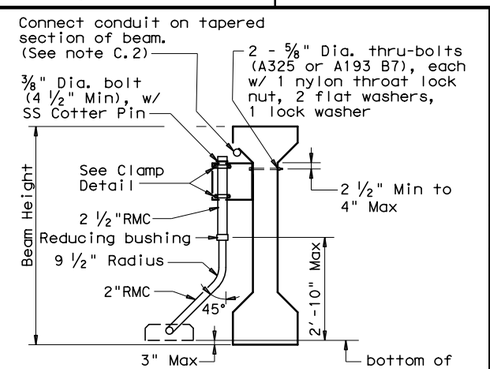
SIDE



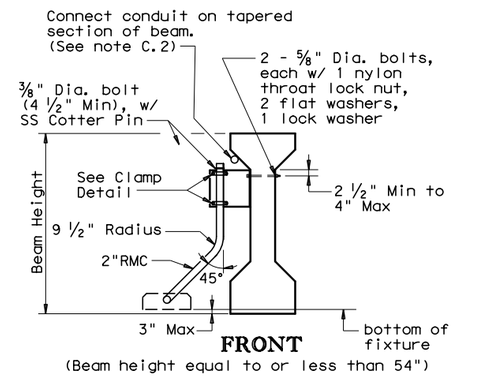
PLAN VIEW

FIXTURE ORIENTATION

ARM DETAIL

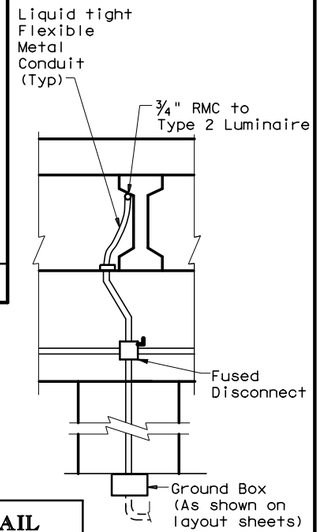


FRONT
(Beam height greater than 54")



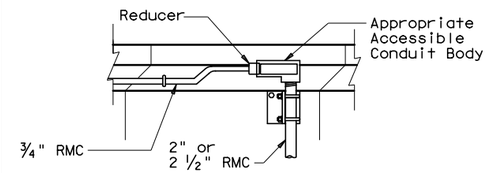
FRONT
(Beam height equal to or less than 54")

IN RD IL AM (U/P)(TY 2)



3 - No. 12 XHHW in 3/4" RMC for Branch Circuit runs from fused disconnect to underpass Luminaires

CONDUIT DETAIL



CONDUIT CONNECTION PROFILE

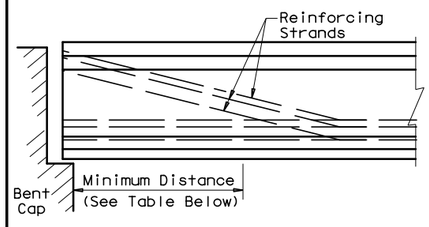


TABLE 5

LOCATION OF UNDERPASS LIGHT MOUNTING BRACKET TABLE

SPAN LENGTH	MINIMUM DISTANCE
≤ 50'	10'-0"
50' - 70'	15'-0"
70' - 90'	20'-0"
> 90'	25'-0"

LOCATION OF UNDERPASS LIGHT MOUNTING BRACKET

GENERAL NOTES:

A. ALL 150 watt HPS and 150 watt equivalent LED Luminaires

1. Luminaire locations, conduit and conductor sizes and routing are typical and diagrammatic only. See project layout sheets for specific details.
2. Conduit will be paid for under Item 618, "Conduit" and conductors will be paid for under Item 620, "Electrical Conductors," unless otherwise shown on the plans.
3. Adjust conduit in saddles to place fixture height and orientation as required. See fixture orientation detail and plans. Where practicable, place luminaires so the bottom of luminaire is above the bottom of the beam, maximum of 3 in. (See detail UNDERPASS LIGHTING ARM TYPE 2)
4. Except as noted, galvanize all structural steel and exposed bolts, nuts, and washers in accordance with Item 445 "Galvanizing".
5. Fabrication of brackets and support arms will not be paid for directly but is subsidiary to Item 610, "Roadway Illumination Assemblies."
6. Install a heavy duty NEMA 3R fused disconnect or breaker enclosure rated at 30 amps and 480 volts to switch underpass luminaires as shown on plans, with at least one per bridge circuit. Install 20 amp time-delay fuses or inverse-time circuit breakers. Mount disconnect or breaker enclosure 10 ft.(min) above grade on columns or bent caps as approved by the Department. Modify disconnect to allow padlocking in the "ON" and "OFF" positions. Padlocks and disconnect switches or circuit breakers for underpass fixtures will not be paid for directly but are subsidiary to the various bid items of the contract.
7. Conduit on columns, caps, and slab is shown surface mounted. For new columns and caps, embed PVC conduit in concrete. Bond and ground metal junction boxes and conduit.

B. TYPE 1

1. Provide 2 in. rigid metal conduit (2.375" O.D., 0.146" wall) for Type 1 arm shaft.
2. Use 3/8 in. stainless steel bolt or stud non-epoxy type expansion anchors for concrete for Type 1 mounting. Except as noted, provide an allowable 2650 lbs minimum pull-out force (after consideration of adjustment factors for edge distance and bolt spacing) for each anchor. Install each anchor to the embedment depth recommended by the manufacturer.
3. Attach conduit to plate with 4 saddles, four - 3/8 in. diameter bolts, nylon throat lock nuts, and lock washers.

C. TYPE 2

1. Provide 2 in. rigid metal conduit (2.375" O.D., 0.146" wall) or provide a combination of 2 1/2 in. (2.875" O.D., 0.193" wall) and 2 in. (2.375" O.D., 0.146" wall) rigid metal conduits with a reducing bushing as beam height stipulated for Type 2 arm shaft. Field cutting and threading will be permitted. Paint cut and threaded areas with zinc rich paint after conduit is connected to adjacent fitting.
2. Connecting conduit may be strapped to tapered section only of precast beams as shown. Anchor as approved by the Engineer. Maximum anchor depth is 1 in.
3. Indiscriminate drilling into precast concrete beams may result in reduced beam strength. Use drilling location and method as directed by the Engineer. See Location of Underpass Lighting Mounting Bracket detail. The locations shown in the table are such that reinforcing strands will not be damaged.

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS
(UNDERPASS LIGHT FIXTURES)

RID(3)-20

FILE:	rid3-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	May 2013	CONT	SECT	JOB	HIGHWAY
REVISIONS		0180	06	067	SH 35
2-14		DIST	COUNTY		SHEET NO.
7-17		CRP	SAN PAT.		358
12-20					

72C

UNDERPASS LIGHTING TYPE 2

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SHIPPING PARTS LIST - POLES AND LUMINAIRE ARMS

Nominal Mounting Ht. (ft)	Shoe Base Designation				Quantity	T-Base Designation				Quantity	CSB/SSCB Mounted Designation				Quantity
	Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire	
20	(Type SA 20 S - 4)			(150W EQ) LED		(Type SA 20 T - 4)			(150W EQ) LED						
	(Type SA 20 S - 4 - 4)			(150W EQ) LED		(Type SA 20 T - 4 - 4)			(150W EQ) LED						
30	(Type SA 30 S - 4)			(250W EQ) LED		(Type SA 30 T - 4)			(250W EQ) LED		(Type SP 28 S - 4)			(250W EQ) LED	
	(Type SA 30 S - 4 - 4)			(250W EQ) LED		(Type SA 30 T - 4 - 4)			(250W EQ) LED		(Type SP 28 S - 4 - 4)			(250W EQ) LED	
	(Type SA 30 S - 8)			(250W EQ) LED		(Type SA 30 T - 8)			(250W EQ) LED		(Type SP 28 S - 8)			(250W EQ) LED	
	(Type SA 30 S - 8 - 8)			(250W EQ) LED		(Type SA 30 T - 8 - 8)			(250W EQ) LED		(Type SP 28 S - 8 - 8)			(250W EQ) LED	
40	(Type SA 40 S - 4)			(250W EQ) LED		(Type SA 40 T - 4)			(250W EQ) LED		(Type SP 38 S - 4)			(250W EQ) LED	
	(Type SA 40 S - 4 - 4)			(250W EQ) LED		(Type SA 40 T - 4 - 4)			(250W EQ) LED		(Type SP 38 S - 4 - 4)			(250W EQ) LED	
	(Type SA 40 S - 8)			(250W EQ) LED		(Type SA 40 T - 8)			(250W EQ) LED	28	(Type SP 38 S - 8)			(250W EQ) LED	2
	(Type SA 40 S - 8 - 8)			(250W EQ) LED		(Type SA 40 T - 8 - 8)			(250W EQ) LED		(Type SP 38 S - 8 - 8)			(250W EQ) LED	
	(Type SA 40 S - 10)			(250W EQ) LED		(Type SA 40 T - 10)			(250W EQ) LED		(Type SP 38 S - 10)			(250W EQ) LED	
	(Type SA 40 S - 10 - 10)			(250W EQ) LED		(Type SA 40 T - 10 - 10)			(250W EQ) LED		(Type SP 38 S - 10 - 10)			(250W EQ) LED	
	(Type SA 40 S - 12)			(250W EQ) LED		(Type SA 40 T - 12)			(250W EQ) LED		(Type SP 38 S - 12)			(250W EQ) LED	
	(Type SA 40 S - 12 - 12)			(250W EQ) LED		(Type SA 40 T - 12 - 12)			(250W EQ) LED		(Type SP 38 S - 12 - 12)			(250W EQ) LED	
50	(Type SA 50 S - 4)			(400W EQ) LED		(Type SA 50 T - 4)			(400W EQ) LED		(Type SP 48 S - 4)			(400W EQ) LED	
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	(Type SA 50 S - 8)			(400W EQ) LED		(Type SA 50 T - 8)			(400W EQ) LED		(Type SP 48 S - 8)			(400W EQ) LED	
	(Type SA 50 S - 8 - 8)			(400W EQ) LED		(Type SA 50 T - 8 - 8)			(400W EQ) LED		(Type SP 48 S - 8 - 8)			(400W EQ) LED	
	(Type SA 50 S - 10)			(400W EQ) LED		(Type SA 50 T - 10)			(400W EQ) LED		(Type SP 48 S - 10)			(400W EQ) LED	
	(Type SA 50 S - 10 - 10)			(400W EQ) LED		(Type SA 50 T - 10 - 10)			(400W EQ) LED		(Type SP 48 S - 10 - 10)			(400W EQ) LED	
	(Type SA 50 S - 12)			(400W EQ) LED		(Type SA 50 T - 12)			(400W EQ) LED		(Type SP 48 S - 12)			(400W EQ) LED	
	(Type SA 50 S - 12 - 12)			(400W EQ) LED		(Type SA 50 T - 12 - 12)			(400W EQ) LED		(Type SP 48 S - 12 - 12)			(400W EQ) LED	

OTHER Designation				Quantity
Pole	A1	A2	Luminaire	

GENERAL NOTES:

1. All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the Department such warranties or guarantees.

2. The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.

3. Standard Steel Pole Designs. Steel poles fabricated in accordance with the details and dimensions shown herein, shall be considered standard designs. Submission of shop drawings and design calculations for standard designs is not required.

4. Optional Steel Pole Designs. Multi-sided steel poles may be allowed as optional designs, if steel poles are permitted or required, pending approval by the Department as outlined below.

   a. Shop Drawings. Optional designs require submission of shop drawings and design calculations bearing the seal of an engineer licensed in the State of Texas, in accordance with Item 441, "Steel Structures." The Department may elect to pre-approve some shop drawings for optionally designed poles. Submission of shop drawings and design calculations is not required for structures fabricated in accordance with the details of shop drawings on the pre-approved list maintained by the TxDOT Traffic Operations Division. Any deviation from the pre-approved shop drawings will require submission of shop drawings of the complete assembly and design calculations as described above.
   b. Structural Support Design for Luminaires. Lighting support structures shall be designed for a 25 year design life in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. All poles shall be designed for 110 mph 3-second gust wind speeds. The Gust Factor, G, and Wind Importance Factor, Ir, shall be applied as per the AASHTO Specifications assuming a 25-year design life. The design wind pressure for hurricane wind velocities greater than 100 mph shall not be less than the design wind pressure using 100 mph with the non-hurricane Wind Importance Factor, Ir, value. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. All transformer bases shall have been structurally tested to resist the theoretical plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.
   c. Mast Arm Attachments. All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 60-pound luminaire having an effective projected area of 1.6 square feet.
   d. Anchor Bolt Assembly. Anchor bolt assemblies for optionally designed poles shall be the same as those shown herein.

5. Aluminum Pole Designs. Aluminum pole designs may be allowed, if aluminum poles are permitted or required, pending approval by the Department as outlined below.

   a. Meet all of the requirements stated above for optional steel pole designs and the following:
      1. Aluminum poles shall be fabricated in accordance with "Structural Welding Code-Aluminum" AWS D1.2.
      2. Aluminum pole designs shall use the same anchor bolt assembly and be subject to the same geometric restraints and other requirements for steel poles specified herein.
      3. Aluminum poles shall be equipped with vibration mitigation devices, as approved by the engineer.
      4. Pole components shall be constructed using the following material:
         Shaft: ASTM B221 or B241 Alloy 6063-T6, ASTM B209 Alloy 5086-H34, ASTM B221 Alloy 6005-T5.
         Base Flange: ASTM B26 Alloy 356.0-T6 or ASTM B108 Alloy 356.0-T6 (Yield strength test required).
         Mast Arm Fitting: ASTM B209 Alloy 6061-T6 or ASTM B221 Alloy 6005-T5.
         Mast Arms: ASTM B241 Alloy 6061-T6 or Alloy 6063-T6.
         Pole Cap: ASTM B209 Alloy 5086-H32 or ASTM B108 or B26 Alloy 356.0-T6.
         Bolts: Stainless Steel AISI 300 series. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seez Compound, Permatex 133K or equal.

6. Special Designs. Poles with architectural treatments shall meet the requirements shown elsewhere in the plans.

7. Luminaire Mounting Height. Actual luminaire mounting height shall be the nominal mounting height given on RIP(2) for all pole-arm combinations except for poles with 4 ft. luminaire arms, which shall be 3'-0" lower than the nominal height, unless otherwise shown or directed.

EXPLANATION OF ROADWAY ILLUMINATION ASSEMBLY DESIGNATIONS

(TYPE SA 50 T - X - X) (400W EQ) LED

SA: Pole and mast arm may be steel or aluminum.
ST: Pole and mast arm must be steel.
AL: Pole and mast arm must be aluminum.
SP: Special (ovalized) steel or aluminum pole for installing on CSB or SSCB. See standard sheet CSB (4), or SSCB (4).

Two numerical digits denote nominal mounting height in feet.

Next letter denotes type of base, (S-Shoe Base, T-Transformer Base, or B-Bridge/Ret.Wall Mount)

First number denotes length of mast arm in feet.

Use of second mast arm is indicated by second dashed number which denotes length in feet.

Luminaire rating in watts (i.e. 400W). Equivalent wattage LED fixtures will include EQ (i.e. 400W EQ)

Last letters indicate light source (S - High Pressure Sodium; LED - LED luminaire)

STATE OF TEXAS
BILAL MUAHID KHAN
126859
LICENSED
PROFESSIONAL ENGINEER
4-27-21

SHEET 1 OF 4

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

RIP(1)-19

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		359

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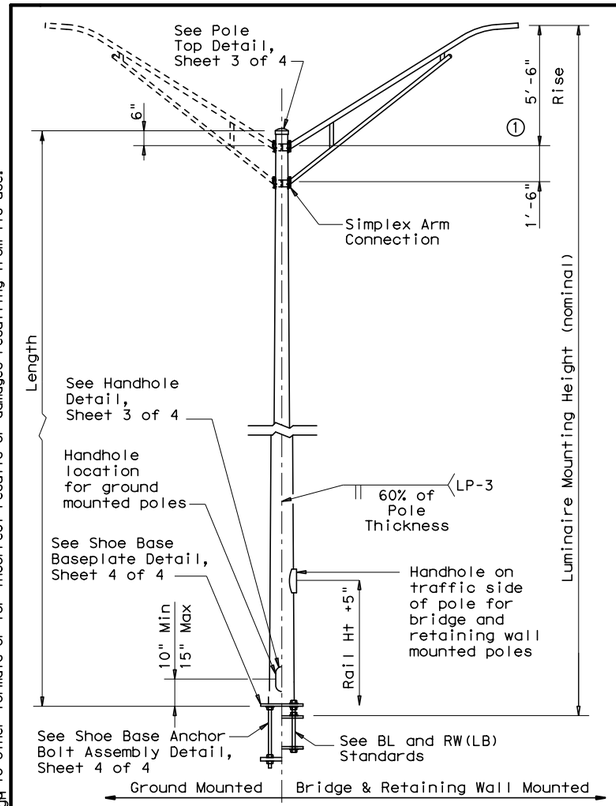
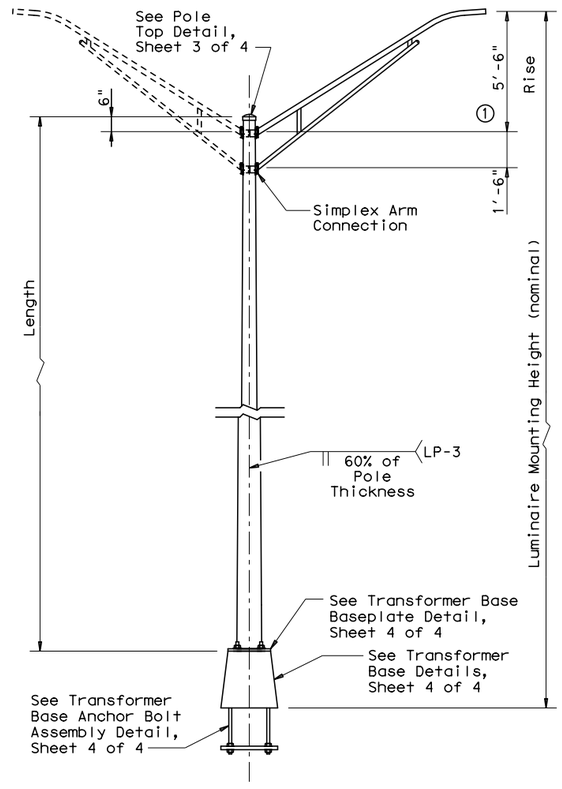


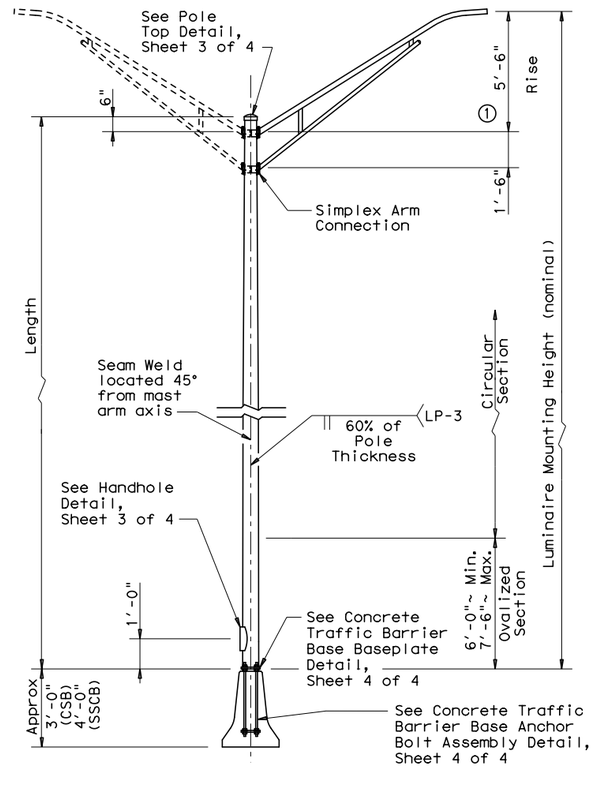
SHOE BASE POLE

SHOE BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	4.90	15.00	0.1196	7.1
30.00	7.50	4.00	25.00	0.1196	13.2
31.00-39.00	8.00	4.36-3.24	26.00-34.00	0.1196	20.7
40.00	8.50	3.60	35.00	0.1196	20.7
50.00	10.50	4.20	45.00	0.1196	30.3



TRANSFORMER BASE POLE

TRANSFORMER BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	5.11	13.50	0.1196	7.1
30.00	7.50	4.21	23.50	0.1196	13.2
31.00-39.00	8.00	4.57-3.45	24.50-32.50	0.1196	20.7
40.00	8.50	3.81	33.50	0.1196	20.7
50.00	10.00	3.91	43.50	0.1196	30.3



CONCRETE TRAFFIC BARRIER BASE POLE

CONCRETE TRAFFIC BARRIER BASE POLE (CSB/SSCB)						
Luminaire Mounting Height (Nominal) (ft)	Base ② Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)	
					About ℄ of Rail	Perp. to Rail
28.00	9.00	5.78	23.00	0.1196	10.3	13.2
38.00	9.00	4.38	33.00	0.1196	16.6	20.8
48.00	10.50	4.48	43.00	0.1345	25.1	30.5

MATERIAL DATA		
COMPONENT	ASTM DESIGNATION	MIN. YIELD (ksi)
Pole Shaft (0.14"/ft. Taper)	A572 Gr 50, A595 Gr A, A1011 HSLAS Gr 50 Cl 2 ③, or A1008 HSLAS Gr 50 Cl 2	50
Base Plate and Handhole Frame	A572 Gr.50, or A36	36
T-Base Connecting Bolts	F3125 Gr A325	92
Anchor Bolts		
Anchor Bolt Templates	A36	36
Heavy Hex (H.H.) Nuts	A194 Gr 2H, or A563 Gr DH	
Flat Washers	F436	

NOTES:

① 2'-6" rise for 4 ft. luminaire arms.

② Before ovalized as shown on Concrete Traffic Barrier Base Baseplate details, Sheet 4 of 4.

③ A1011 SS Gr 50 may be used instead of HSLAS, provided the material meets the elongation requirements for HSLAS.

POLE ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Shaft length	+1"
I.D. of outside piece of slip fitting pieces	+1/8", -1/16"
O.D. of inside piece of slip fitting pieces	+1/32", -1/8"
Shaft diameter: other	+3/16"
Out of "round"	1/4"
Straightness of shaft	±1/4" in 10 ft
Twist in multi-sided shaft	4° in 50 ft
Perpendicular to baseplate	1/8" in 24"
Pole centered on baseplate	±1/4"
Location of Attachments	±1/4"
Bolt hole spacing	±1/16"

GENERAL NOTES:

1. Designs conform to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals , 6th Edition (2013) and Interim Revisions thereto. Design 3-Second Gust Wind Speed equals 110 mph with a 1.14 gust factor. A wind importance factor of 0.80 is applied to adjust the wind speed to a 25 year recurrence interval. Design moments listed in tables assume base of pole is 25' above natural ground level.
2. Structures are designed to support two 12' luminaire mast arms and luminaires. Mast arms are designed to support a 60-pound luminaire having an effective projected area of 1.6 square feet.
3. Fabrication shall be in accordance with the Specifications and with the details, dimensions, and weld procedures shown herein. Do not submit shop drawings for roadway illumination pole assemblies fabricated in accordance with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of these sheets and the Specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
4. For mounting heights between values shown in the tables, use base diameter and thickness values for the larger height.
5. Unless otherwise noted, all steel parts shall be galvanized in accordance with Item 445, "Galvanizing."
6. Steel poles shall be fabricated in accordance with Item 441, "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with AWS D1.1, Structural Welding Code-Steel.
7. Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint.
8. Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
9. Lubricate and tighten anchor bolts, when erecting shoe base poles and concrete traffic barrier base poles, in accordance with Item 449, "Anchor Bolts."
10. All poles, except Transformer Base Poles, shall have hand holes with reinforcing frames and covers. For ground mounted shoe base poles, hand holes shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaire arms, all hand holes shall be on the same side of the barrier. For poles mounted on a bridge lighting bracket or a retaining wall lighting bracket, hand hole shall be on traffic side of the pole, at a height that will clear the barrier.
11. The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, and other damaged galvanized areas on poles and mast arms shall be repaired in accordance with Item 445, "Galvanizing."
12. Pole length is based on a 5'-6" luminaire arm rise. 4 ft. luminaire arms have a 2'-6" rise. A pole with 4 ft. luminaire arms will have an actual mounting height 3'-0" less than the nominal mounting height. Increasing the pole length to meet the nominal mounting height is allowed, but unnecessary unless otherwise directed by the engineer.
13. Erect transformer base poles in accordance with sheet RID(1).

Texas Department of Transportation

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ROADWAY ILLUMINATION POLES

RIP(2)-19

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
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	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		360

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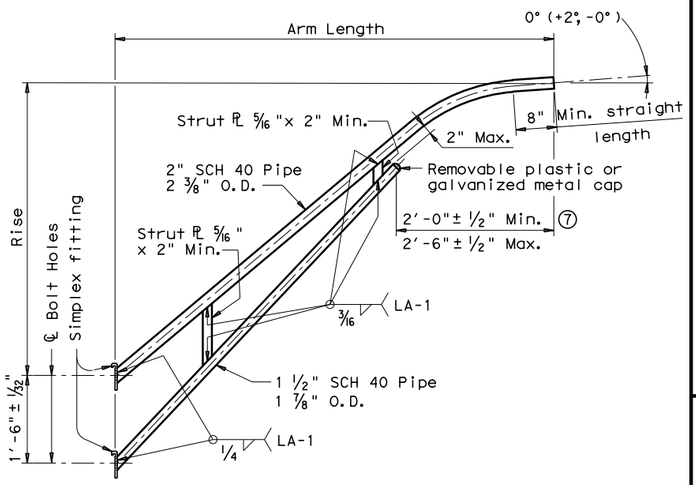
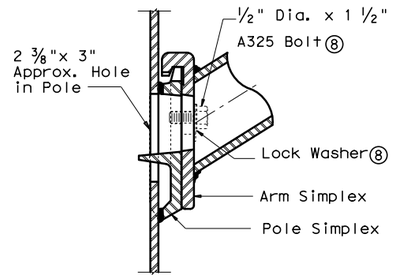


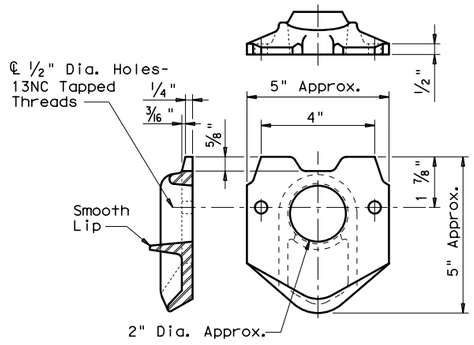
LUMINAIRE ARM

LUMINAIRE ARM DIMENSIONS		
Nominal Arm Length	Arm Length	Rise
4'-0"	3'-6"	2'-6"
6'-0"	5'-6"	5'-6"
8'-0"	7'-6"	5'-6"
10'-0"	9'-6"	5'-6"
12'-0"	11'-6"	5'-6"

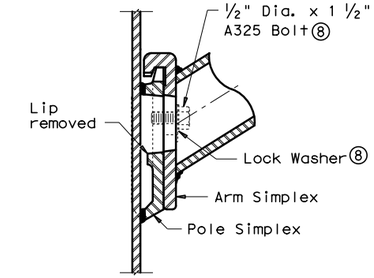
ARM ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Arm Length	±1"
Arm Rise	±1"
Deviation from flat	1/8" in 12"
Spacing between holes	±1/32"



UPPER SIMPLEX FITTING
(Gusset not shown for clarity)

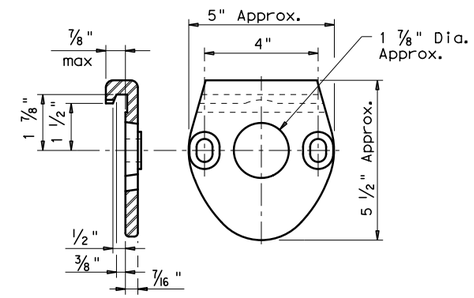


POLE SIMPLEX DETAIL ⑨



LOWER SIMPLEX FITTING
(Gusset not shown for clarity)

SECTION B-B



ARM SIMPLEX DETAIL ⑨

NOTES:

④ Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

⑤ A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

⑥ A572, A1008 HSLAS-F, and A1011 HSLAS-F materials may have higher yield strengths but shall not have less elongation than the grade indicated.

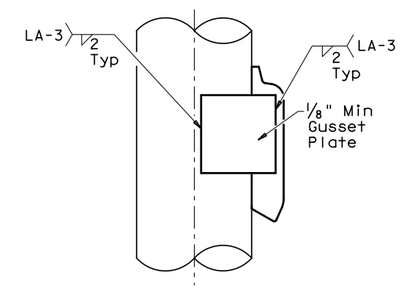
⑦ Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

⑧ Each pole simplex fitting shall be supplied with 2 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans.

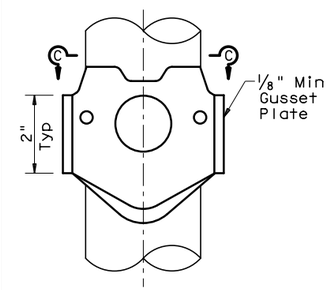
⑨ Proposed deviations in arm simplex dimensions or materials must be submitted to the Department for approval.

⑩ A welded handhole frame is permissible. Maximum of two (2) CJP weld splices is allowed.

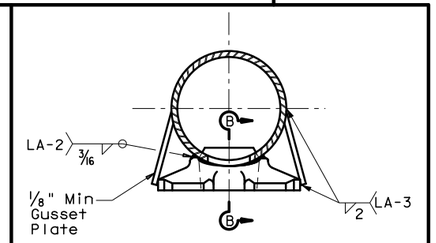
MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr 65-35 or Gr 70-36, A148 Gr 80-50, A576 Gr 1021 ⑤, or A36 (Arm only)
Arm Pipes	ASTM A53 Gr A or B, A500 Gr B, A501, A 1008 HSLAS-F Gr 50 ⑥, or A1011 HSLAS-F Gr 50 ⑥
Arm Struts and Gusset Plates ④	ASTM A36, A572 Gr 50 ⑥, or A588
Misc.	ASTM designations as noted



SIDE

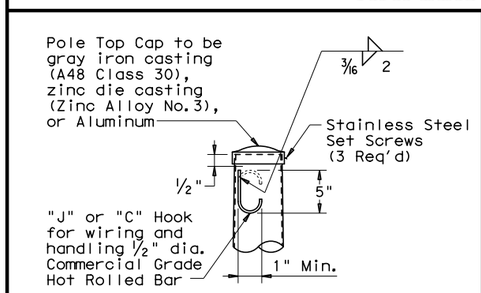


ELEVATION

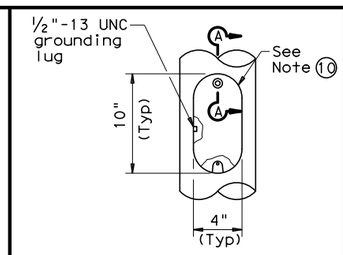


SECTION C-C

SIMPLEX ATTACHMENT DETAIL



POLE TOP



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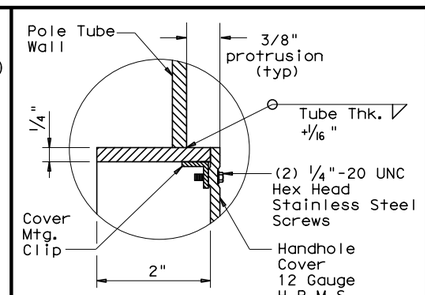

SECTION A-A

HANDHOLE

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

RIP(3)-19

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REVISIONS	0180	06	067	SH 35
7-17	DIST	COUNTY		SHEET NO.
12-19	CRP	SAN PAT.		361

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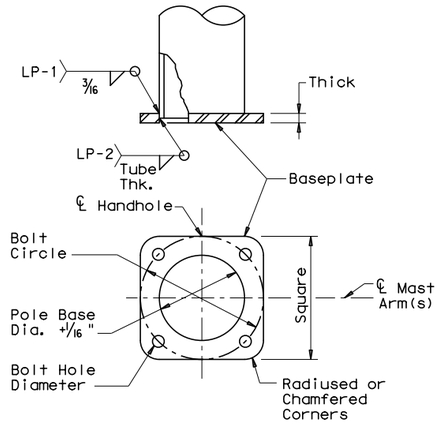
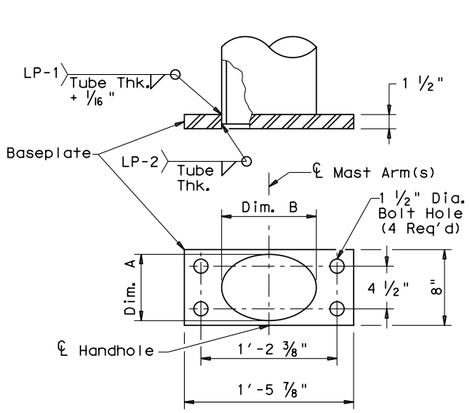


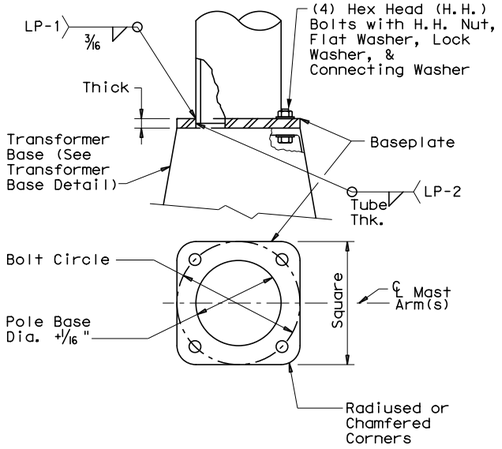
SHOE BASE BASEPLATE

SHOE BASE BASEPLATE TABLE				
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	BOLT HOLE DIAMETER
20′ - 39′	13"	13"	1 1/4"	1 1/4"
40′	15"	15"	1 1/4"	1 1/2"
50′	15"	15"	1 1/2"	1 1/2"



CONCRETE TRAFFIC BARRIER BASE BASEPLATE

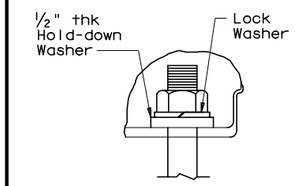
CONCRETE TRAFFIC BARRIER BASE BASEPLATE TABLE			
MOUNTING HEIGHTS (nominal)	POLE DIA.(12)	DIM. A	DIM. B
28′ - 38′	9"	7"± 1/4"	10"± 1/4"
48′	10 1/2"	7"± 1/4"	13"± 1/4"



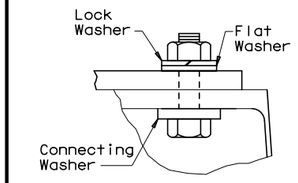
TRANSFORMER BASE BASEPLATE

TRANSFORMER BASE BASEPLATE TABLE						
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	CONNECTING BOLT DIA.	BOLT HOLE DIAMETER	TRANSFOMER BASE TYPE
20′ - 39′	13"	13"	1 1/4"	1"	1 1/4"	A
40′	15"	15"	1 1/4"	1 1/4"	1 1/2"	B
50′	15"	15"	1 1/2"	1 1/4"	1 1/2"	B

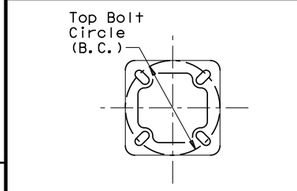
TRANSFORMER BASE TABLE		
TYPE	TOP B.C.	BTM. B.C.
A	13"	14"
B	15"	17 1/4"



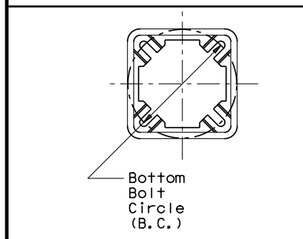
DETAIL A



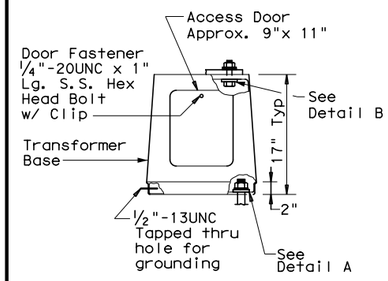
DETAIL B



TOP PLAN



BOTTOM PLAN



ELEVATION

TRANSFORMER BASE DETAILS

GENERAL NOTES:

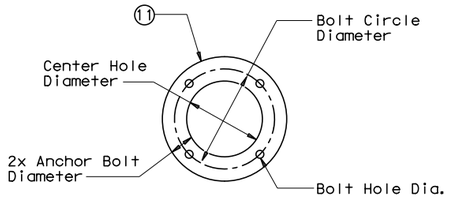
1. For mounting heights between those shown in the table, use the values in the table for the larger mounting height.
2. All breakaway bases shall meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
3. Transformer bases shall be cast from aluminum, ASTM B108 or B26 Alloy 356.0-T6, or other material approved by the Engineer. Four Hex Head (H.H.) bolts with four H.H. nuts, four lock washers, four flat washers, and connecting and hold-down washers as recommended by the manufacturer, galvanized to ASTM A153 Class C or D, or B695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A563 grade DH galvanized.
4. Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
5. Doors for transformer bases shall be made of plastic, fiberglass or other non-metallic material approved by the Engineer and shall be attached with stainless steel screws or bolts. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

NOTES:

(11) Anchor Bolt Templates do not need to be galvanized.

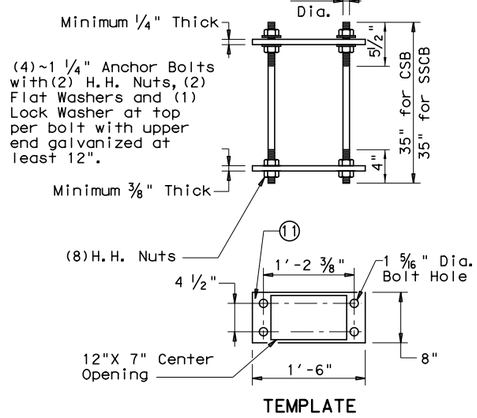
(12) Pole diameter before ovalized.

ANCHOR BOLT FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Length	± 1/2"
Threaded length	± 1/2"
Galvanized length (if required)	- 1/4"



SHOE BASE ANCHOR BOLT ASSEMBLY

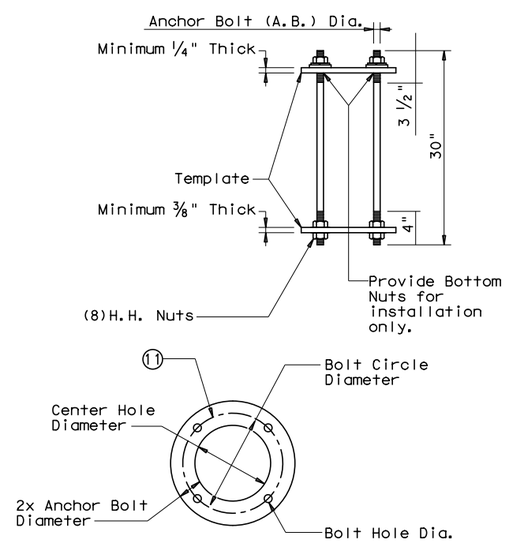
SHOE BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20′-39′	1"	13"	11"	1 1/16"
40′-50′	1 1/4"	15"	12 1/2"	1 5/16"



TEMPLATE

CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY

TRANSFORMER BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20′- 39′	1"	14"	12"	1 1/16"
40′- 50′	1 1/4"	17 1/4"	14 3/4"	1 5/16"



TRANSFORMER BASE ANCHOR BOLT ASSEMBLY

SHEET 4 OF 4

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

RIP(4)-19

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
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REVISIONS 7-17 12-19	0180	06	067	SH 35
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	CRP	SAN PAT.		362

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REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

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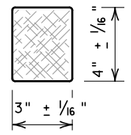
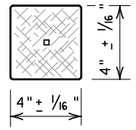
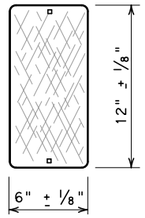
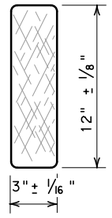
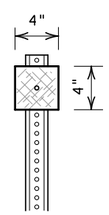
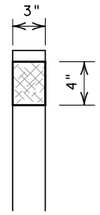
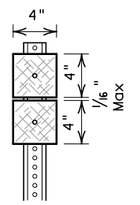
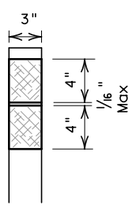
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

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

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

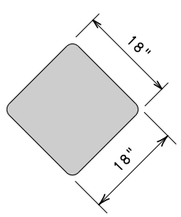
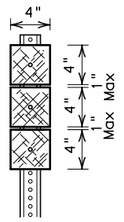
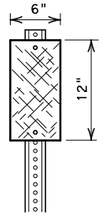
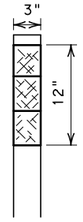
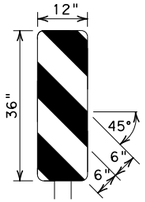
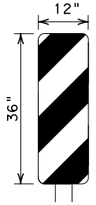
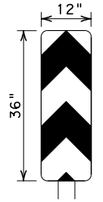
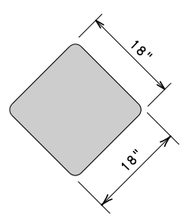
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

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

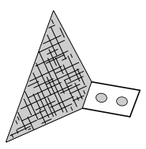
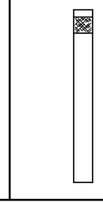
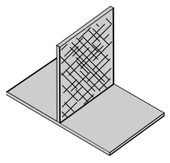
OBJECT MARKERS

	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

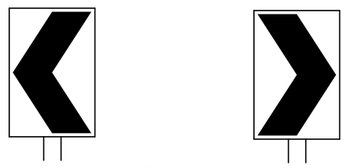
DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

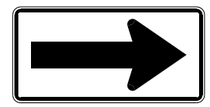
BARRIER REFLECTORS (BRF)

	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.

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DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

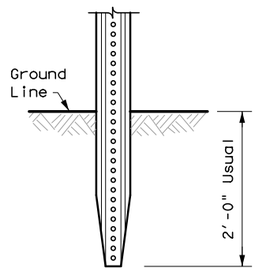
FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	CRP	SAN PAT.		363

20A

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

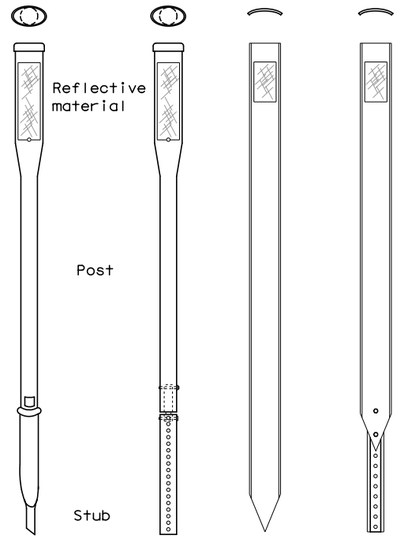


NOTES

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.

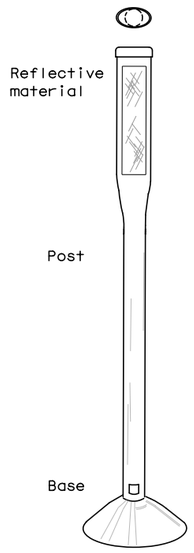
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



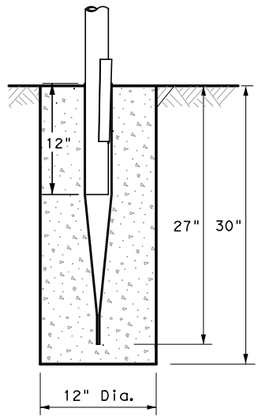
SURFACE MOUNT

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.

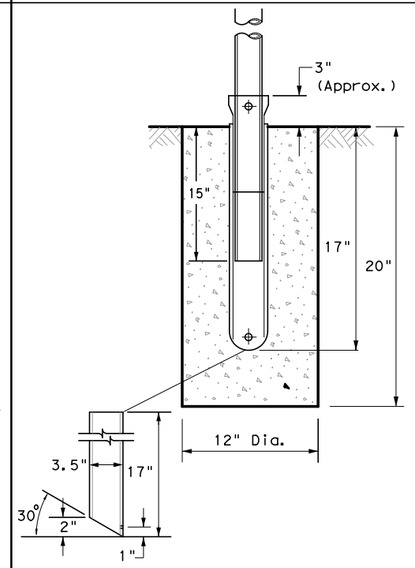
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

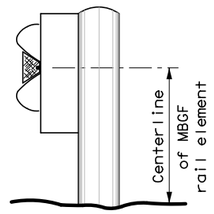
NOTE

1. Install per manufacturer's recommendations.

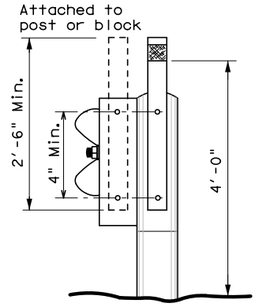
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

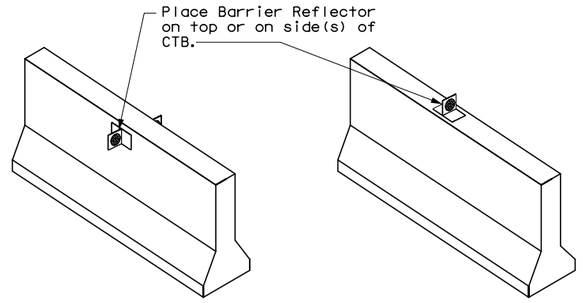
GF1



GF2



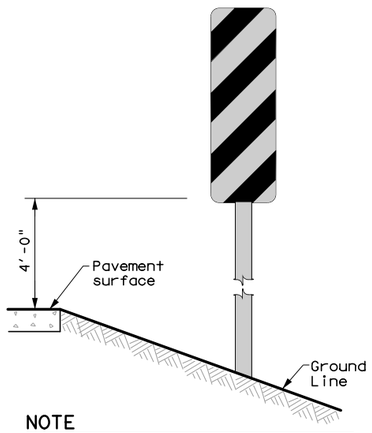
CONCRETE TRAFFIC BARRIER (CTB)



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.

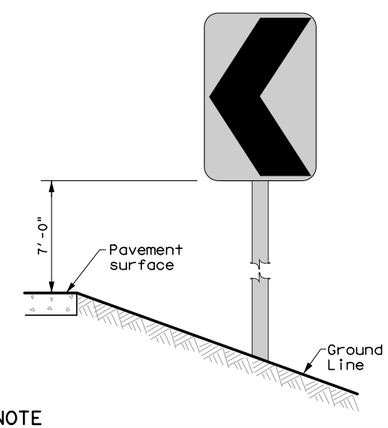
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



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)

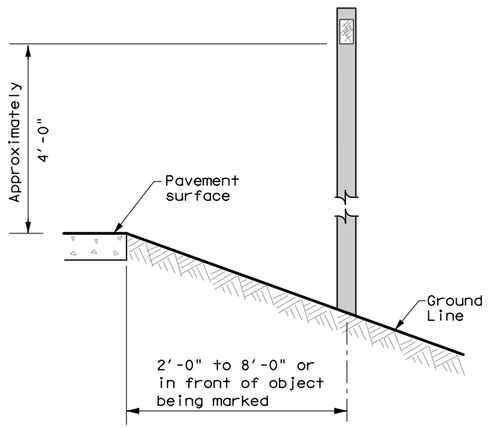
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



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.

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Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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REVISIONS	0180	06	067	SH 35
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	CRP	SAN PAT.		364

20B

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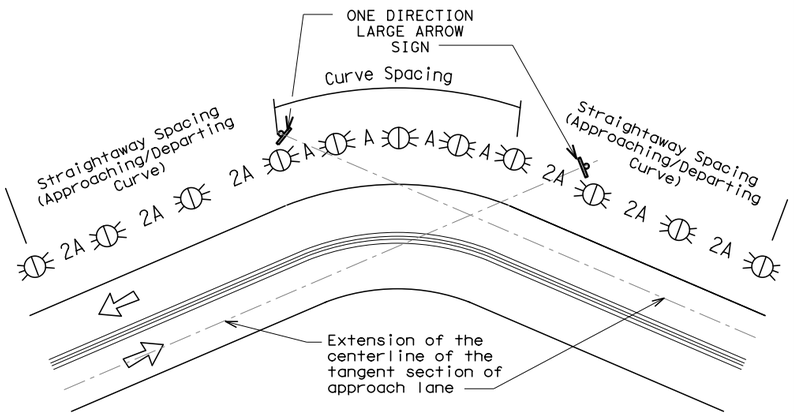
MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

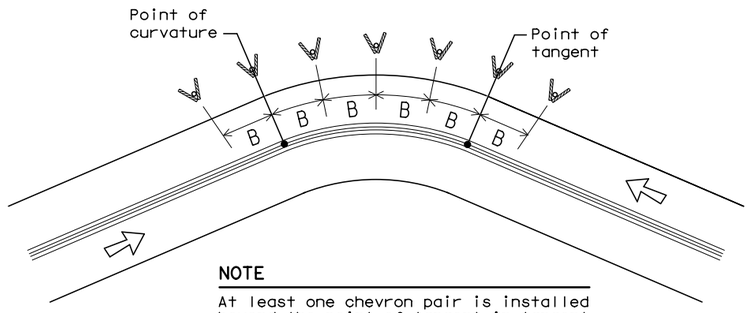
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	——
2	2865	160	320	——
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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REVISIONS	0180	06	067	SH 35
3-15 8-15	DIST	COUNTY		SHEET NO.
8-15 7-20	CRP	SAN PAT.		365

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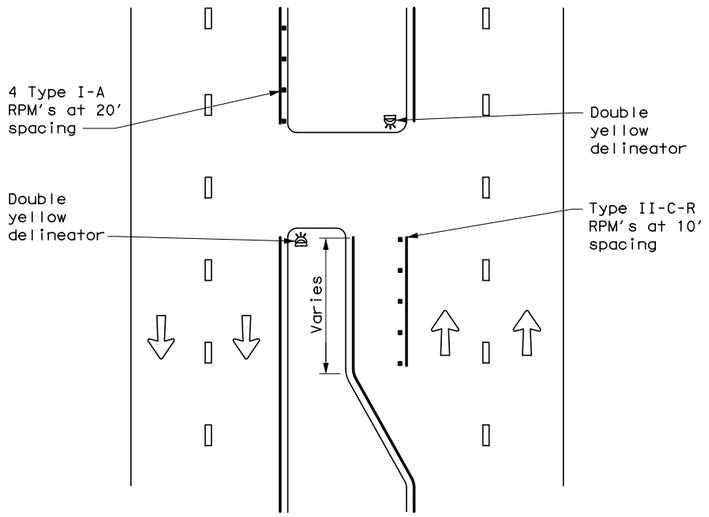
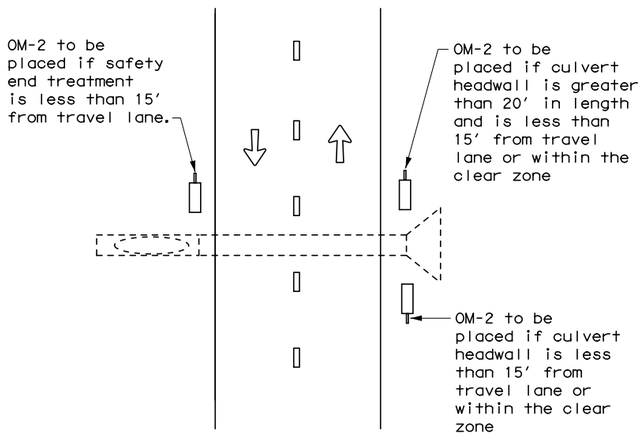
CROSSOVERS



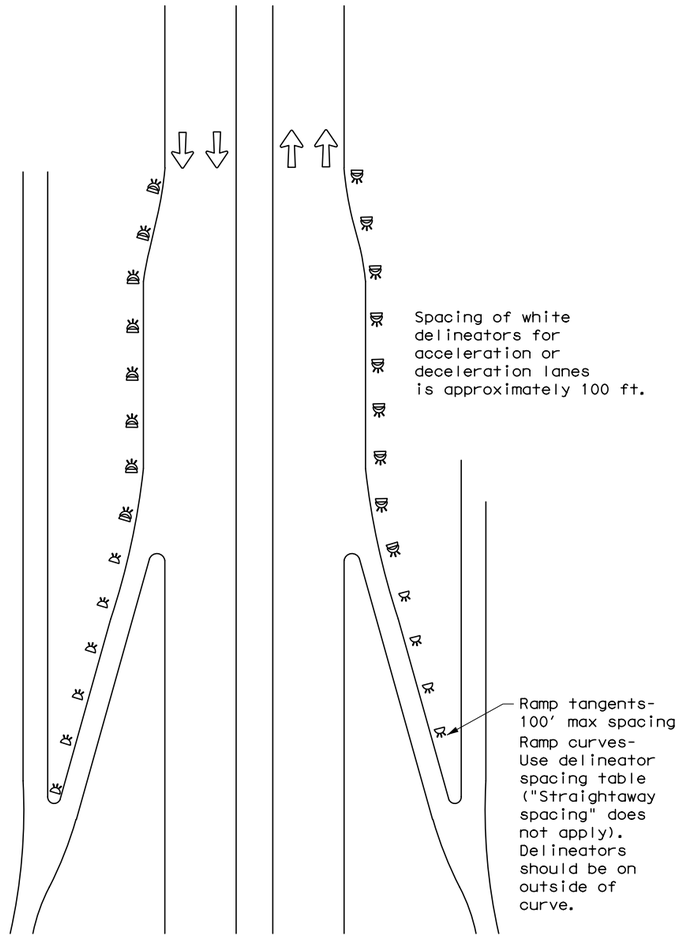
DETAIL 1

FOR CULVERTS WITH MBGF



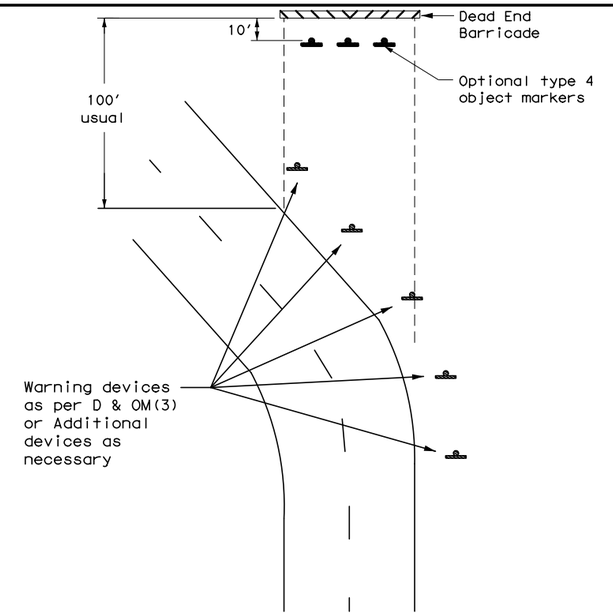
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



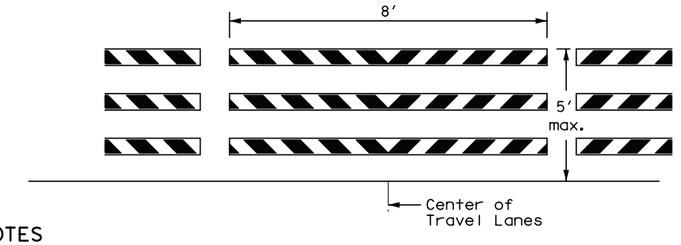
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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3-15	DIST	COUNTY		SHEET NO.
7-20	CRP	SAN PAT.		366

20D

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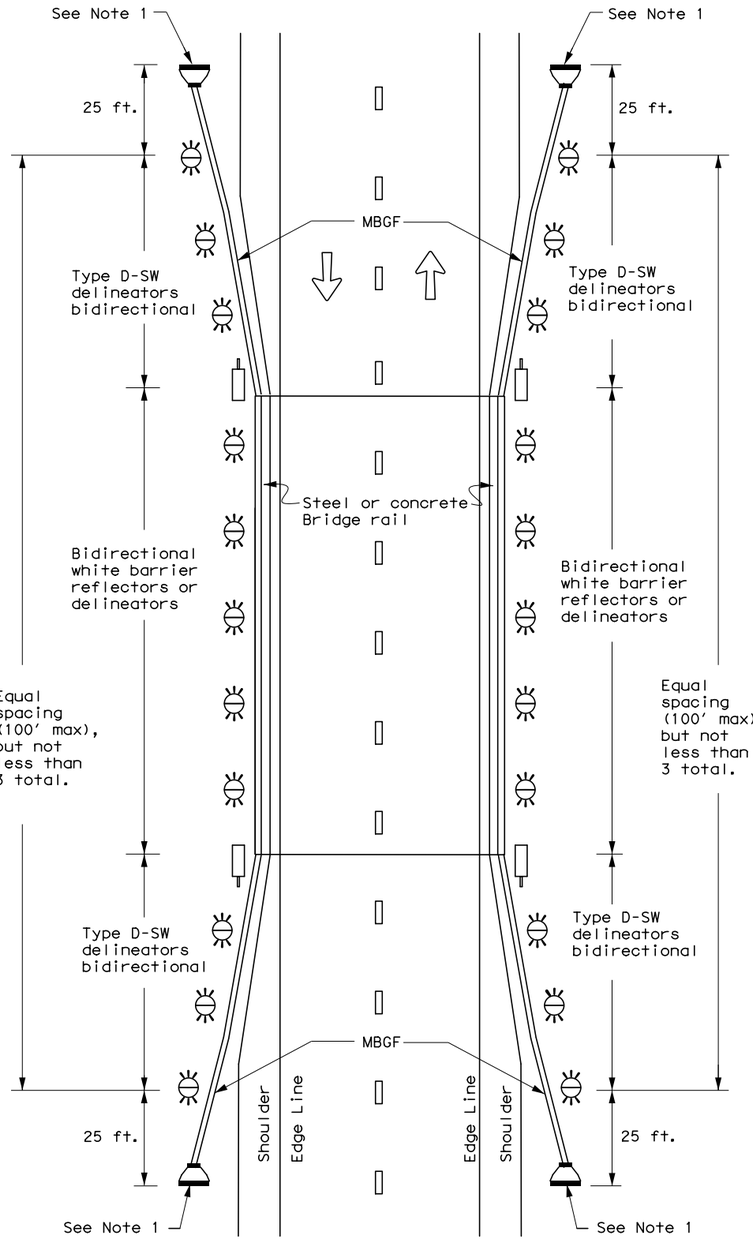
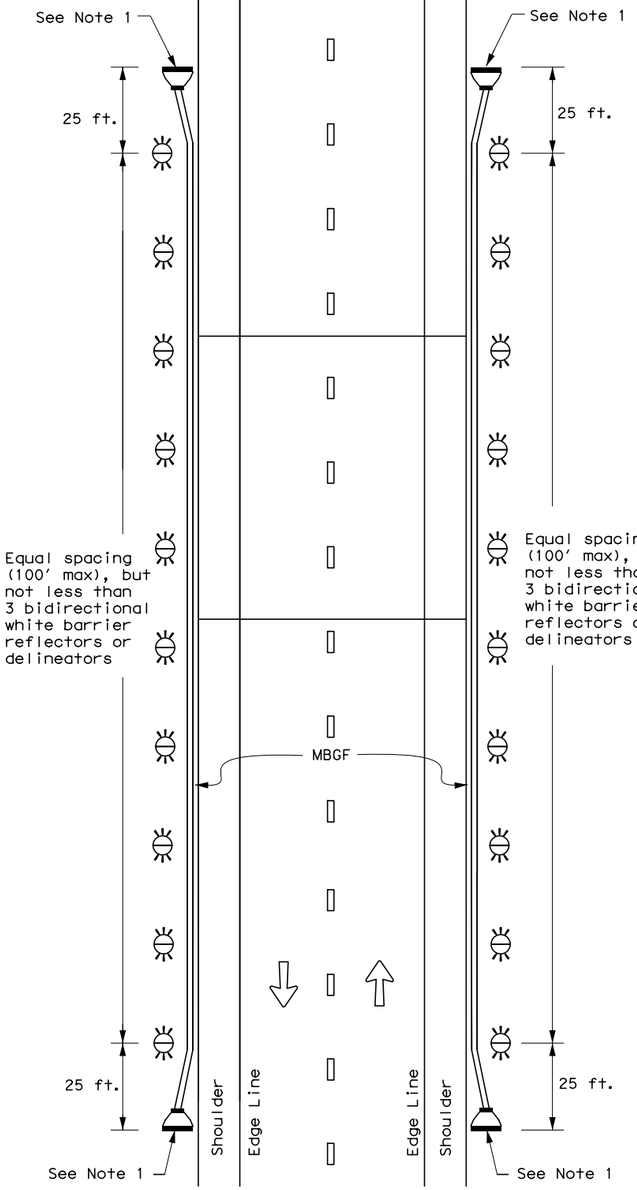
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

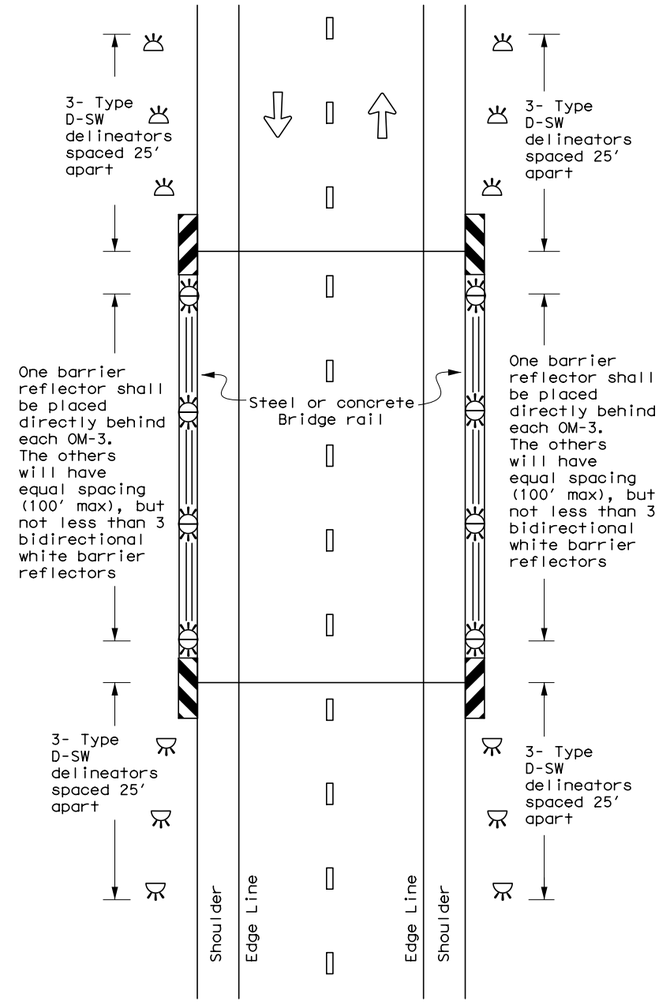
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

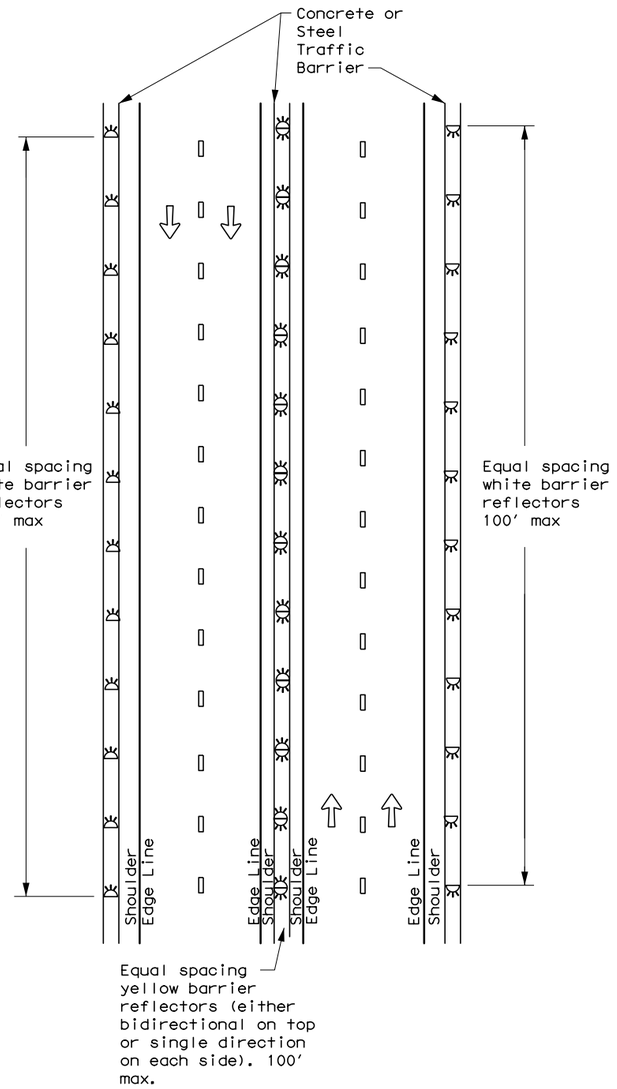
D & OM(5)-20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
7-20	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		367

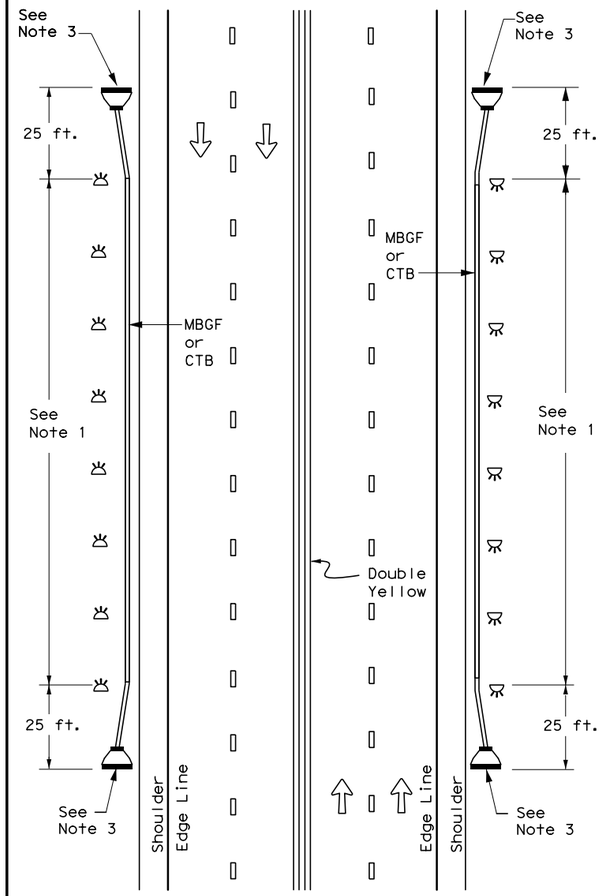
20E

DATE: 4/22/2021 12:25:30 PM
FILE: \\wsppw04ics01\ICS_pdf_work_dir\121872\182770_58\SH35_089_106-TRF-dom6-20.dgn

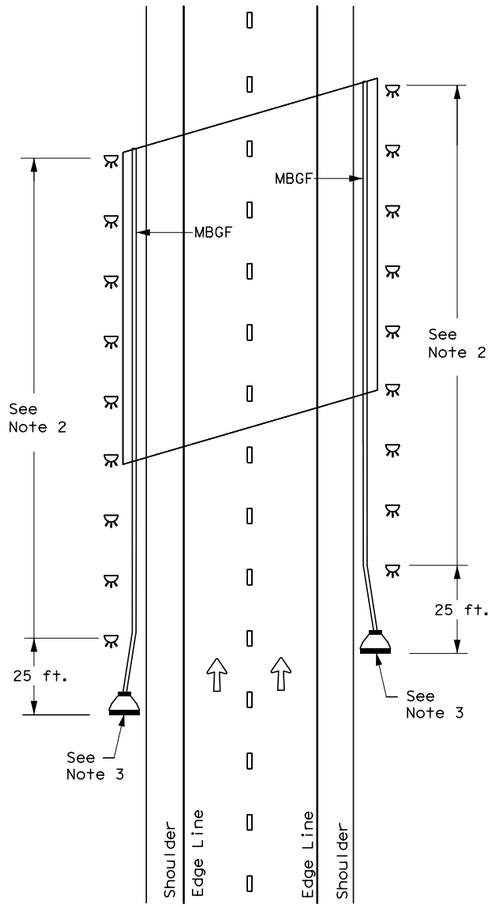
CONTINUOUS CONCRETE OR STEEL BARRIER



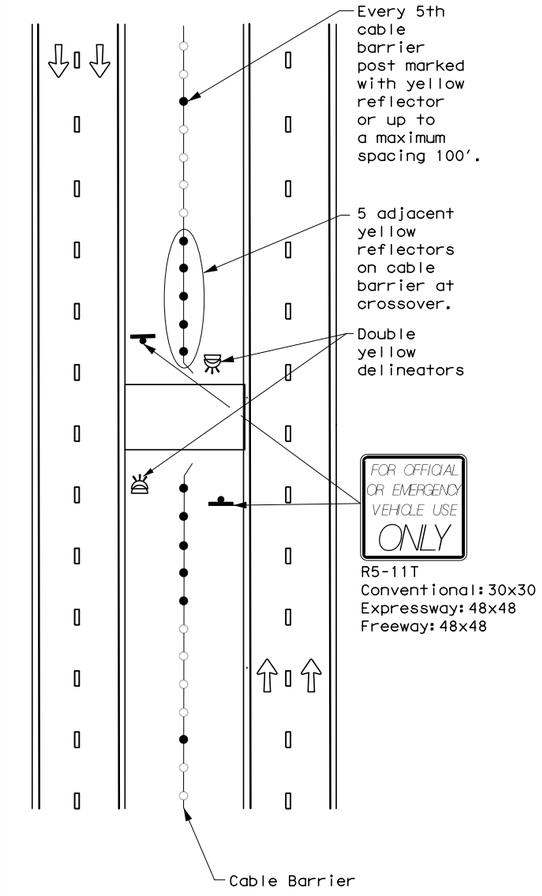
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



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
©TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
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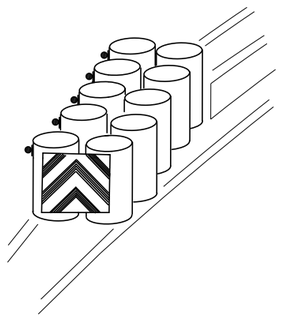
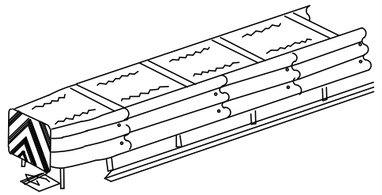
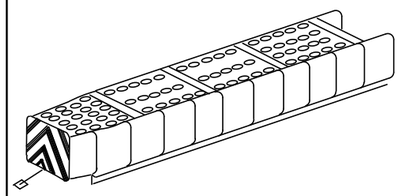
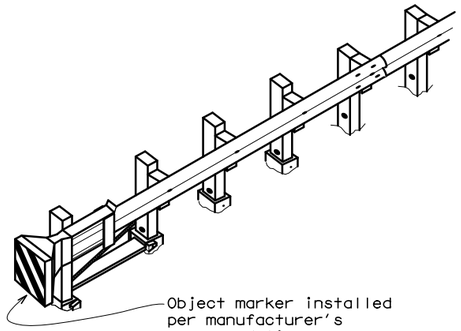
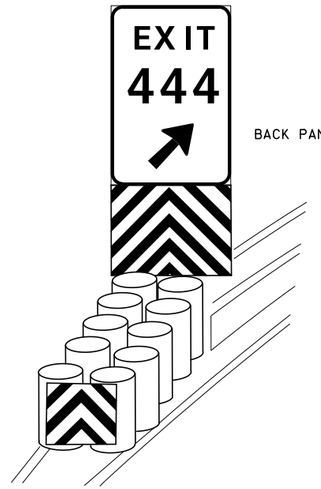
7-20	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		368

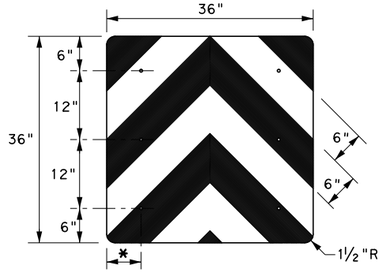


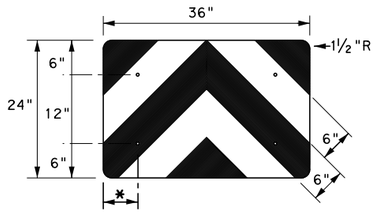




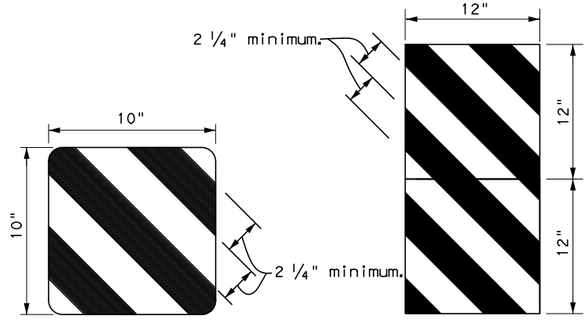




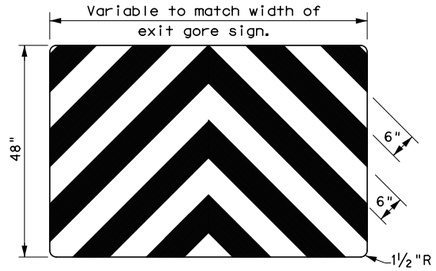


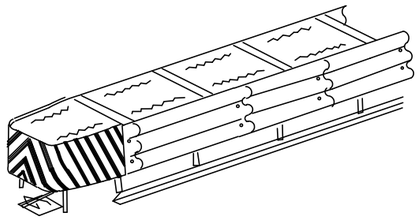


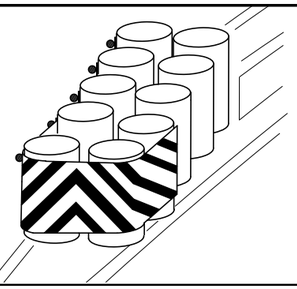
* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

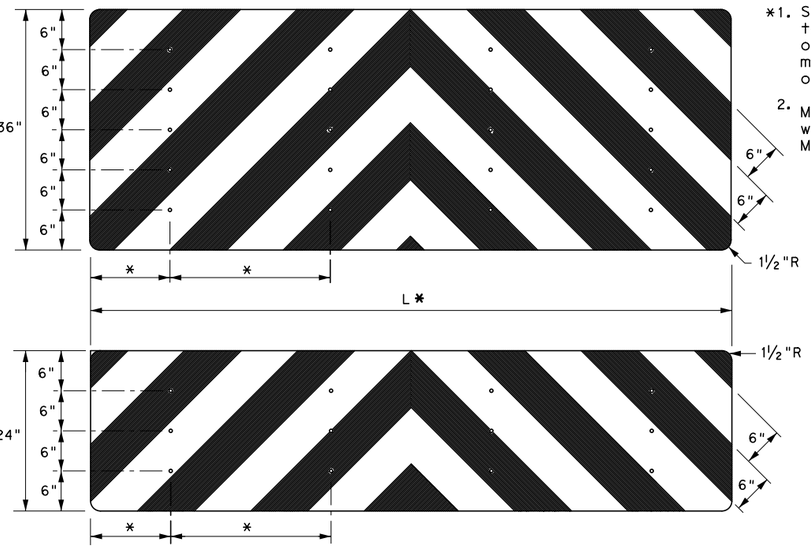


OBJECT MARKERS SMALLER THAN 3 FT^2









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	0180	06	067	SH 35
4-92 8-04	DIST	COUNTY		SHEET NO.
8-95 3-15	CRP	SAN PAT.		369
4-98 7-20				
20G				

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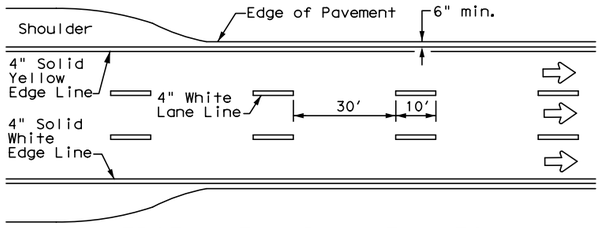
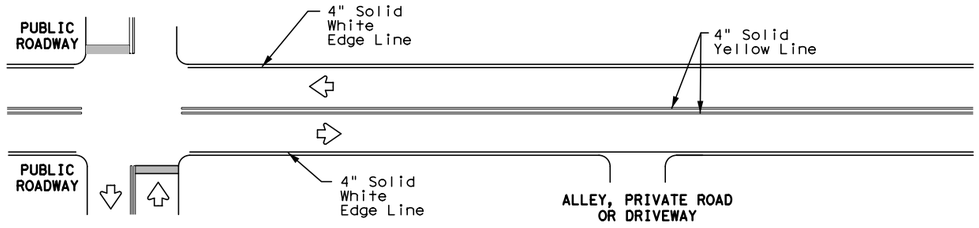
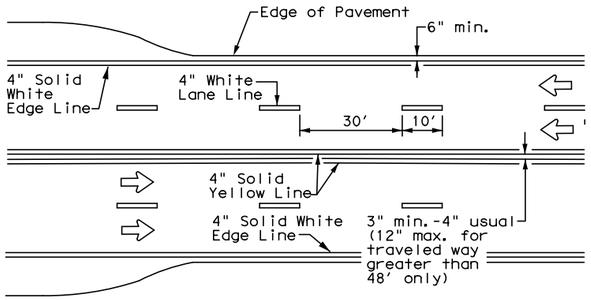


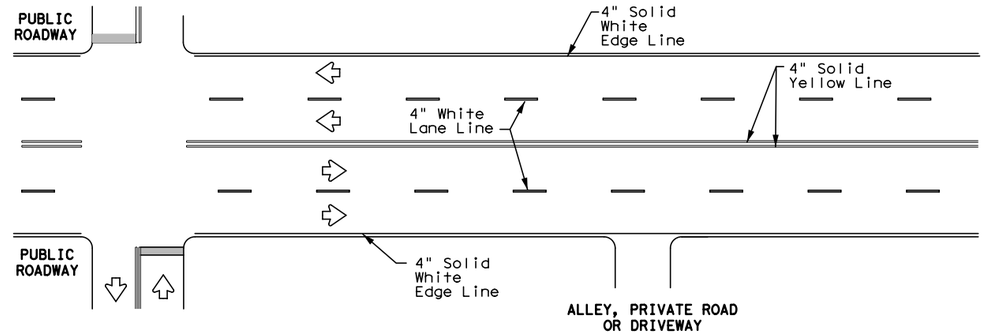
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



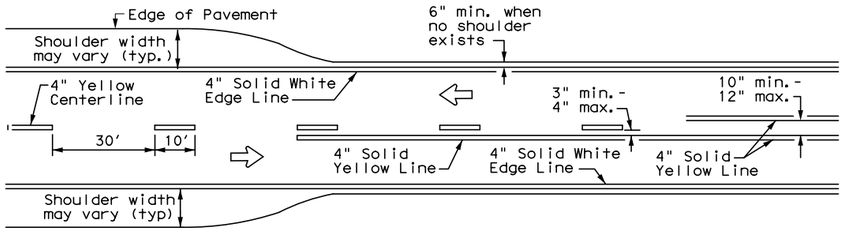
TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



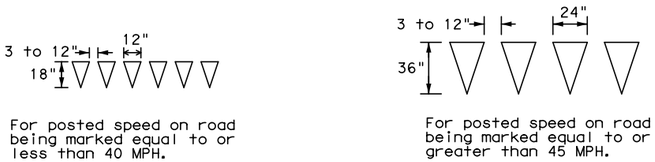
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



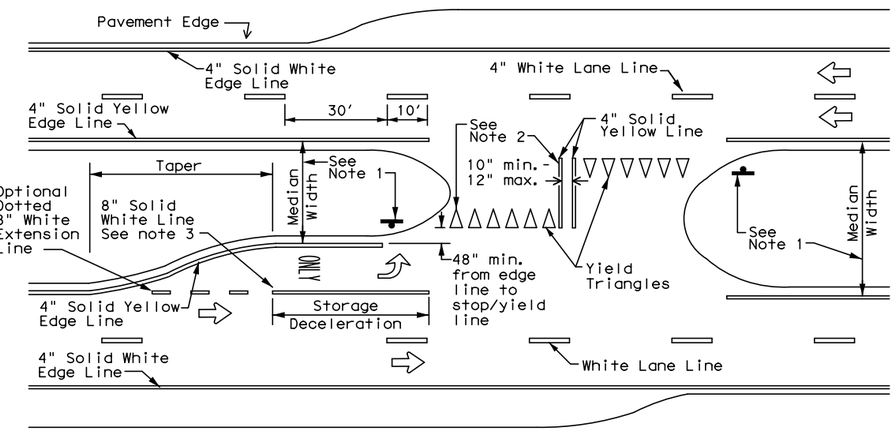
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



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.

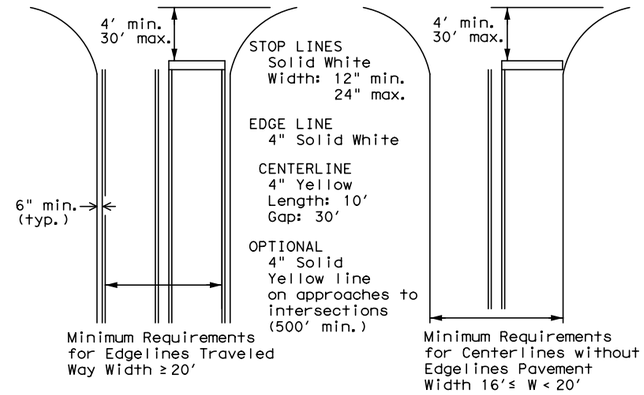
GENERAL NOTES

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	0180	06	067	SH 35
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	CRP	SAN PAT.		370

22B

DATE: 4/22/2021 12:25:26 PM
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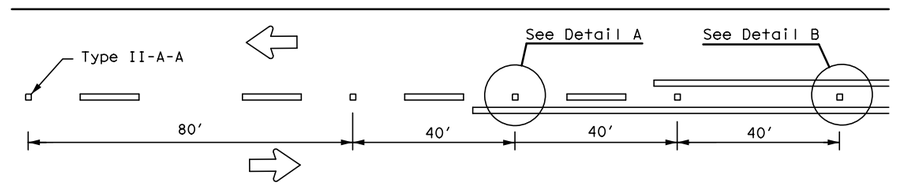
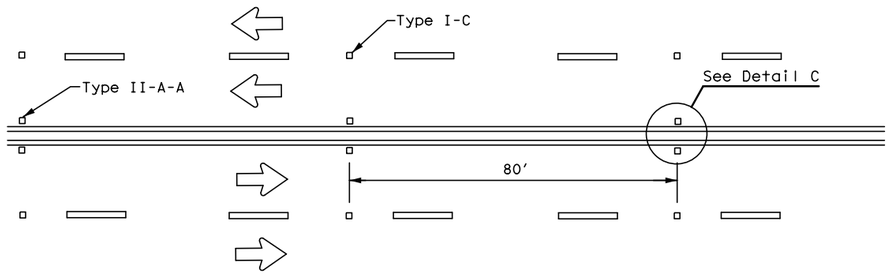
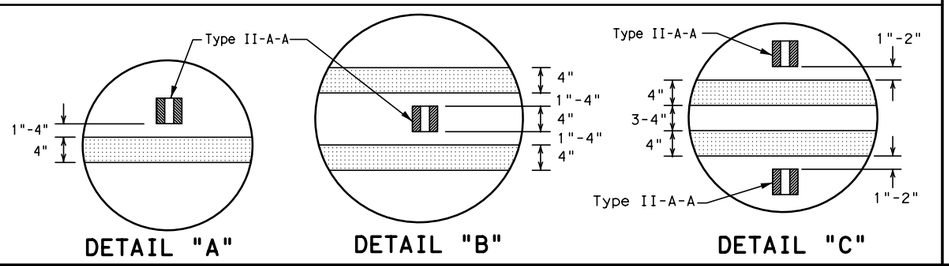
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



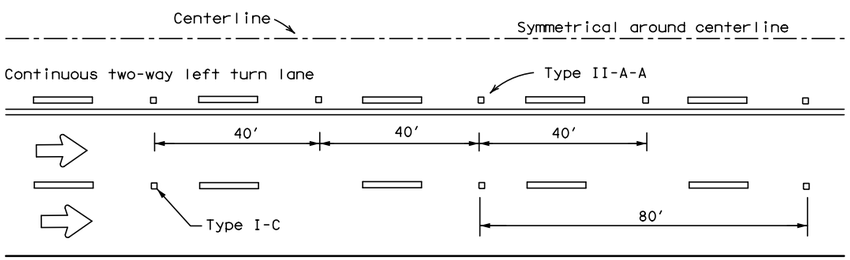
CENTERLINE FOR ALL TWO LANE ROADWAYS



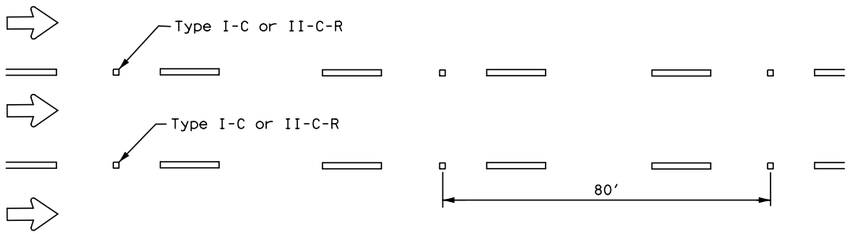
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS



DETAIL "A" **DETAIL "B"** **DETAIL "C"**

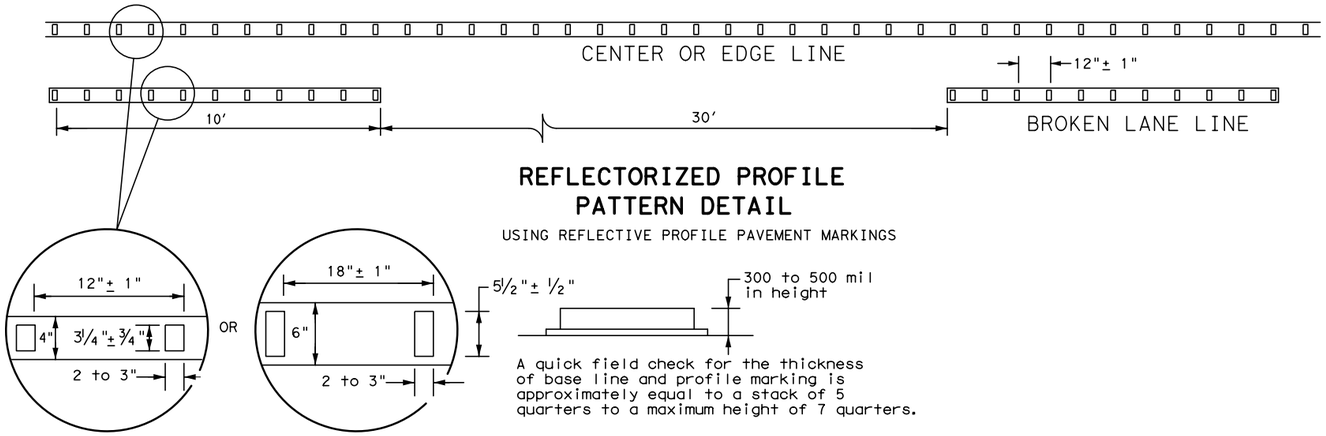


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



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

4" EDGE LINE, CENTER LINE OR LANE LINE

OPTIONAL 6" EDGE LINE, CENTER LINE OR LANE LINE

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.

NOTE

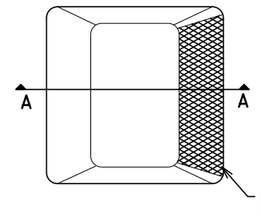
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

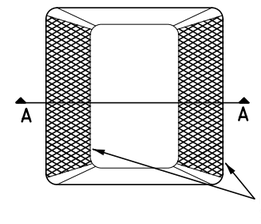
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

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

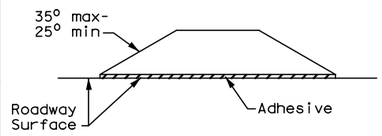
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



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

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©TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-92 2-10	0180	06	067	SH 35
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	CRP	SAN PAT.		371

22B

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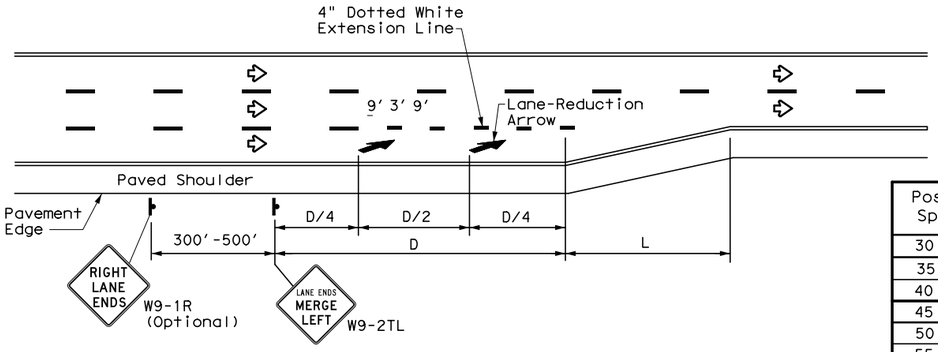
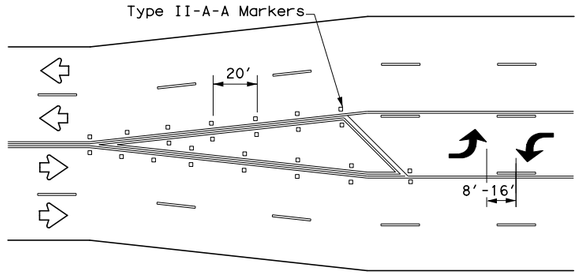


LANE REDUCTION

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.

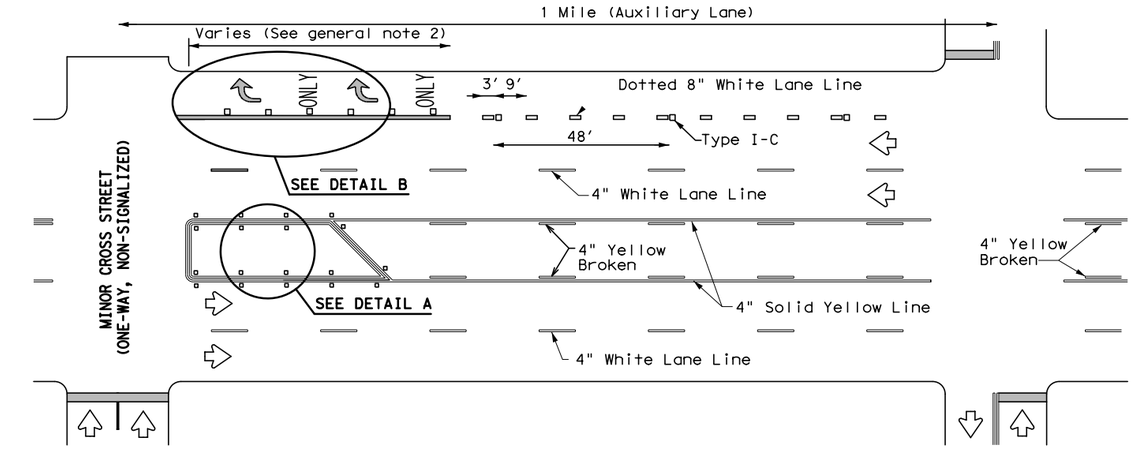
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

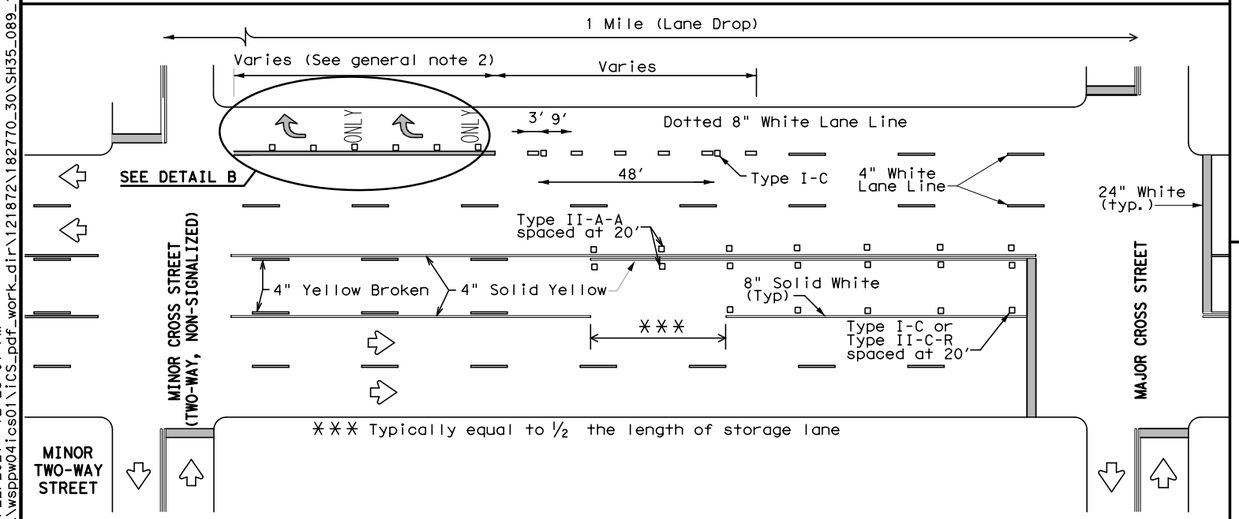
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn 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

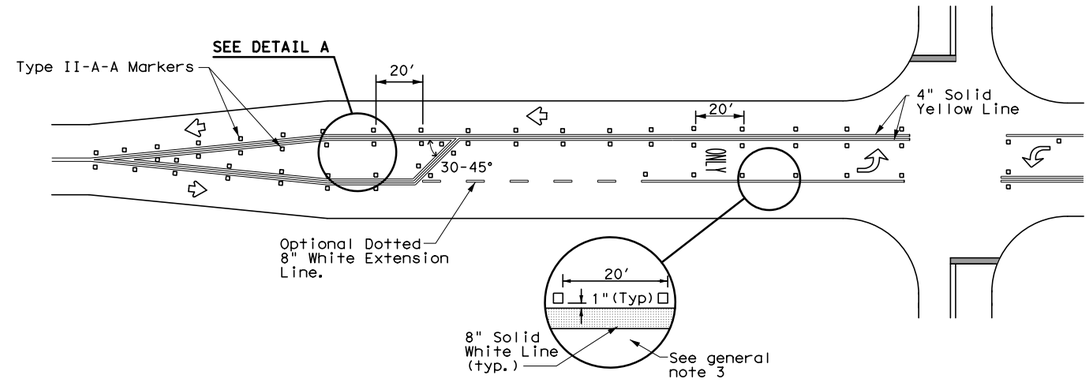
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



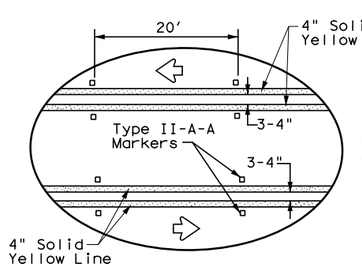
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



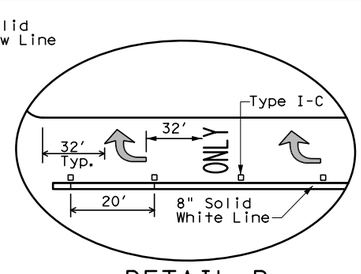
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A



DETAIL B

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	0180	06	067	SH 35
5-00 2-10	DIST	COUNTY		SHEET NO.
8-00 2-12	CRP	SAN PAT.		372
3-03 6-20				

22D

DATE: 4/29/2021 3:18:03 AM
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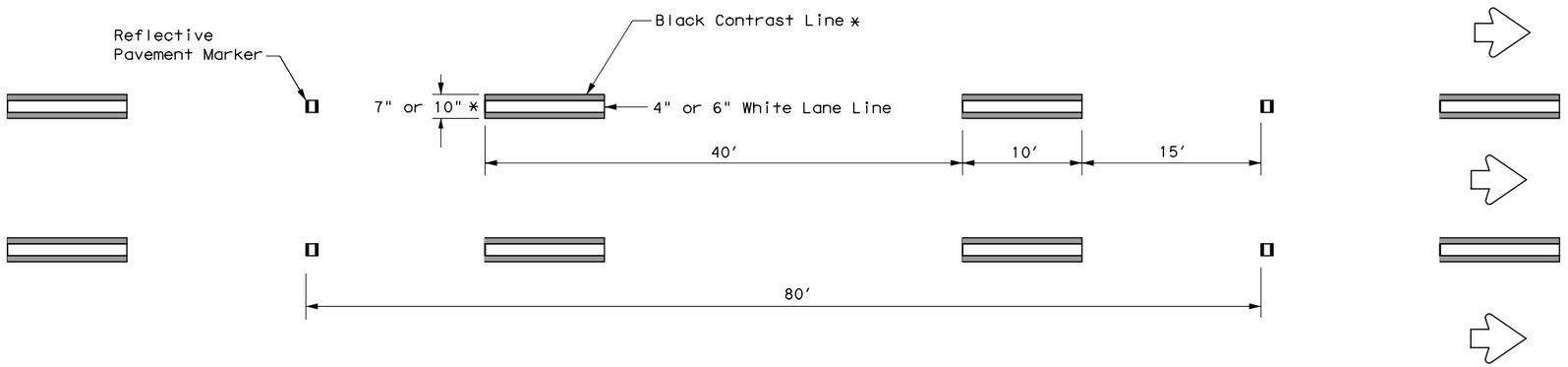
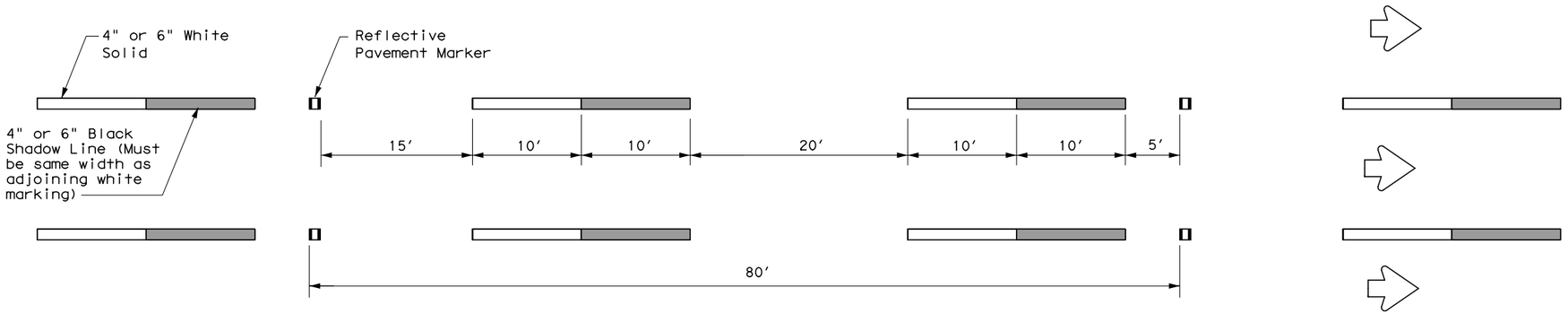


CONTRAST LANE LINE DESIGN

* See contrast line dimensions table for width of black line.

CONTRAST LINE DIMENSIONS		
White	Black (per side)	Total Width
4"	1.5"	7"
6"	2"	10"



SHADOW LANE LINE DESIGN

GENERAL NOTES

1. Contrast and Shadow markings may only be used on concrete pavements.
2. Contrast and Shadow markings shall not be used on edge lines.
3. Contrast lane lines shall be permanent prefabricated pavement markings meeting DMS 8240.
4. Shadow lane line designs shall be a liquid markings system approved by TxDOT.
5. All raised reflective pavement markers placed in broken lines shall be placed in line with and midway between the white stripes.
6. See PM(2) for raised reflective pavement markings installation details.

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.

Texas Department of Transportation

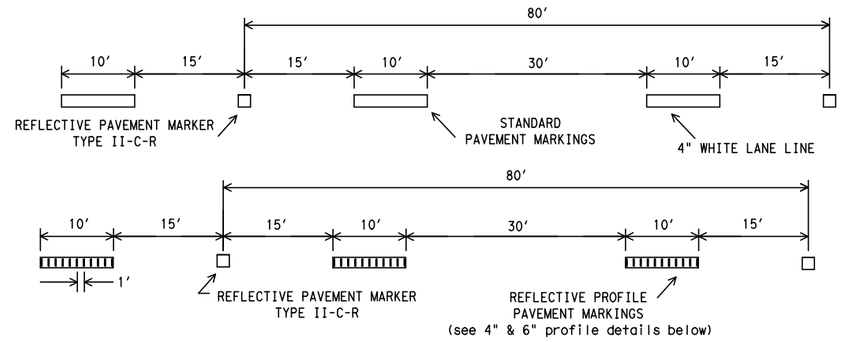
Traffic Operations Division Standard

CONTRAST AND SHADOW PAVEMENT MARKINGS

CPM(1)-14

FILE: CPM(1)14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		373

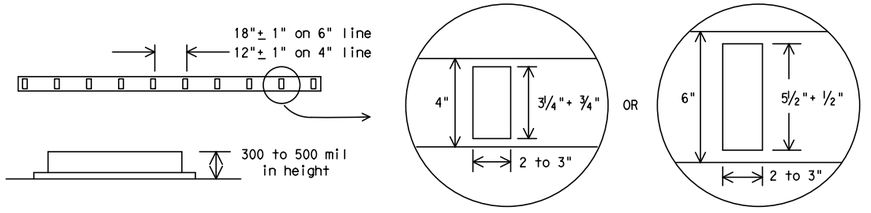
22N



PAVEMENT MARKERS (REFL) TYPE II-C-R SHALL BE SPACED ON 80' CENTERS WITH THE CLEAR FACE TOWARD NORMAL TRAFFIC AND THE RED FACE TOWARD WRONG WAY TRAFFIC.

TRAFFIC LANE LINES PAVEMENT MARKING DETAILS

EDGELINES SHOULD TYPICALLY BE 4" WIDE AND THE MATERIALS SHALL BE AS SPECIFIED IN THE PLANS.
IF RAISED PROFILE PAVEMENT MARKINGS ARE USED SEE DETAILS BELOW.

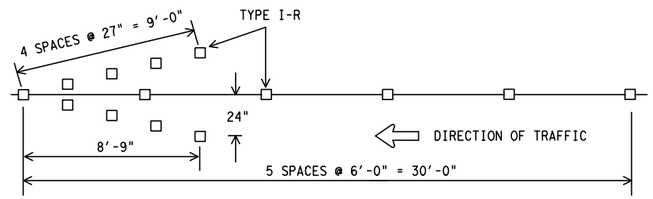


REFLECTIVE PROFILE PAVEMENT MARKINGS

STANDARD 4" PROFILE DETAIL

OPTIONAL 6" PROFILE DETAIL

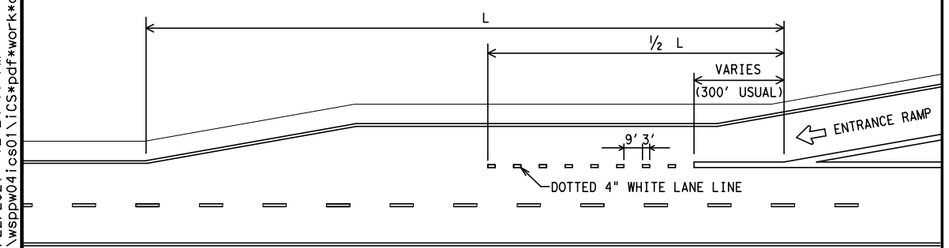
EDGELINE PAVEMENT MARKINGS



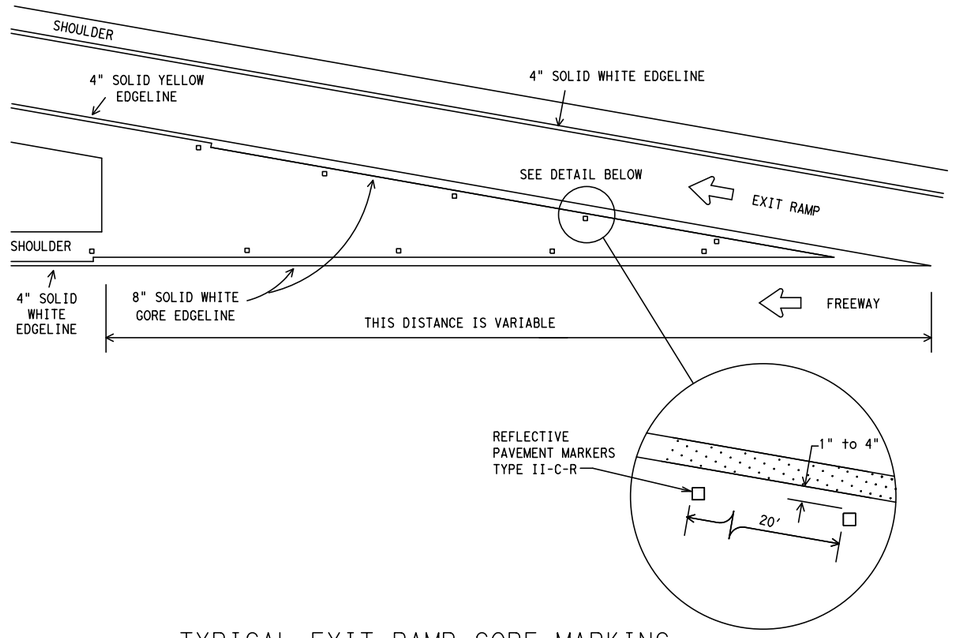
ALL RAISED MARKERS IN THE WRONG WAY ARROW SHALL BE TYPE I-R REFLECTORIZED PAVEMENT MARKERS WITH THE REFLECTORIZED SURFACE FACING THE WRONG WAY TRAFFIC. TYPE II-C-R SHALL NOT BE USED.

REFLECTORIZED WRONG WAY ARROWS, NOT TO EXCEED TWO, MAY BE PLACED ON EXIT RAMPS.
LOCATION OF THE ARROWS SHALL BE AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

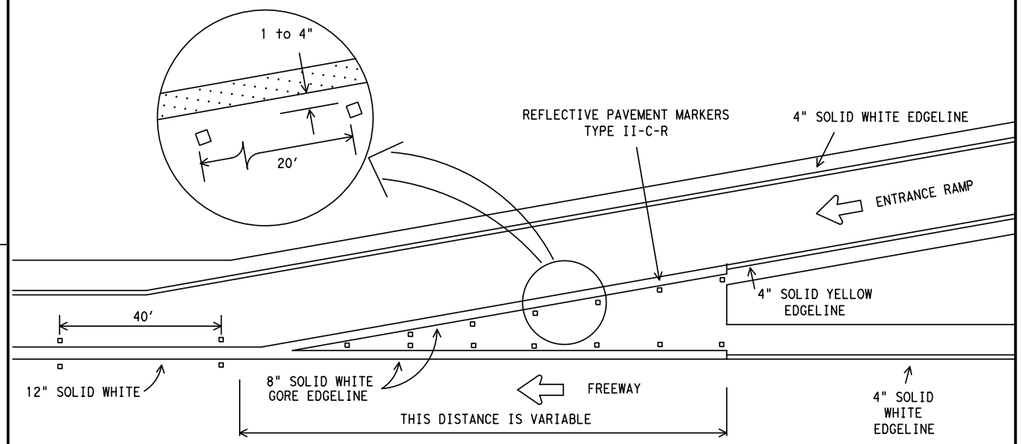
WRONG WAY ARROW DETAIL



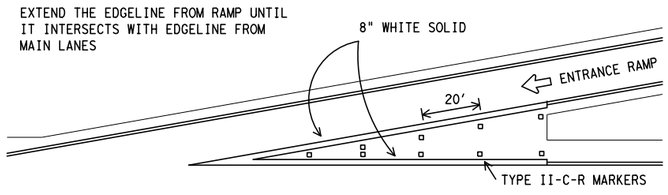
PARALLEL ACCELERATION LANE



TYPICAL EXIT RAMP GORE MARKING



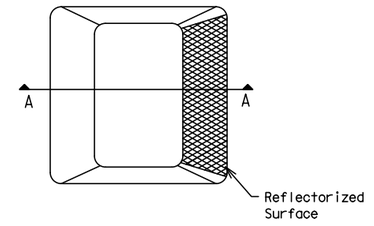
TYPICAL ENTRANCE RAMP GORE MARKING



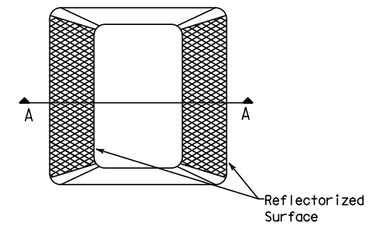
TAPERED ACCELERATION LANE

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

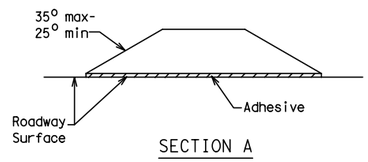
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS

FPM(1)-12

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
4-92 2-10
5-00 2-12
8-00
2-08

CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35
DIST	COUNTY		SHEET NO.
CRP	SAN PAT.		374

23A

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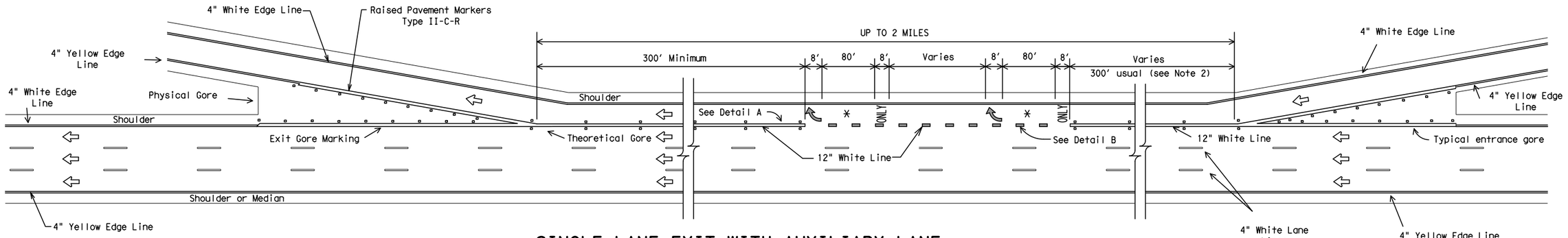
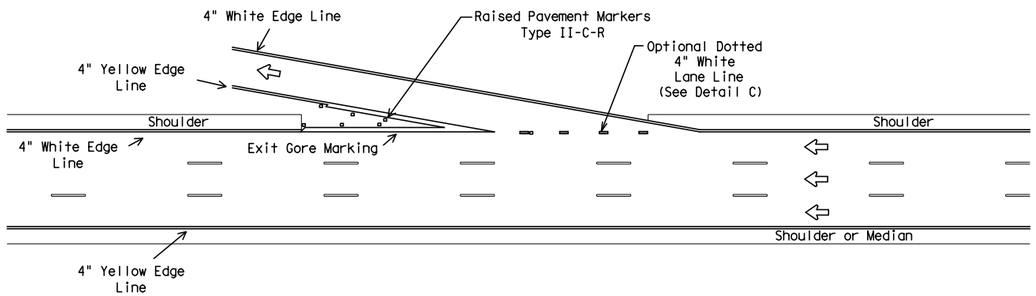
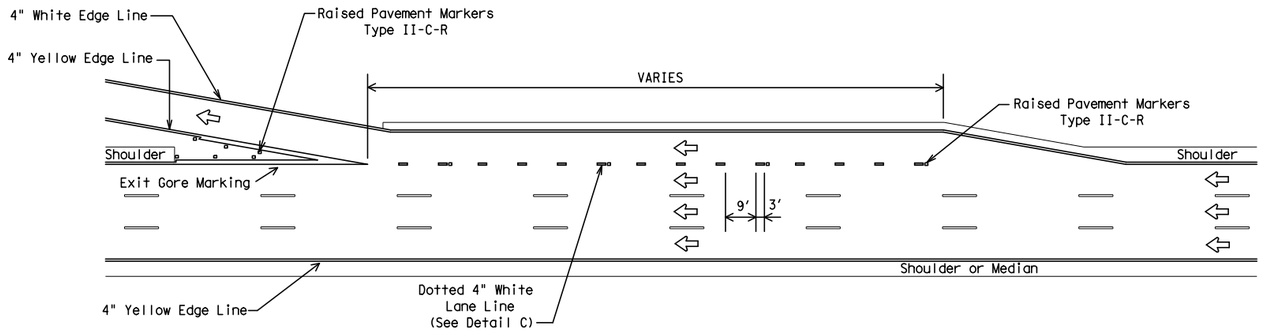


SINGLE LANE EXIT WITH AUXILIARY LANE

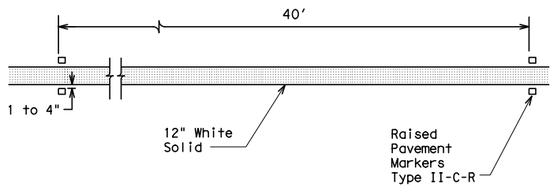
(See Note 2)



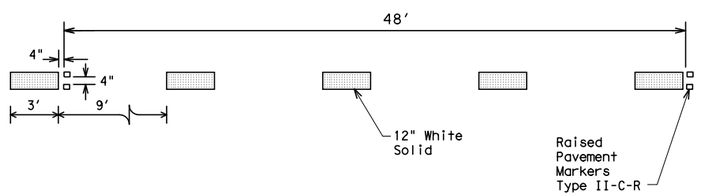
TAPERED DECELERATION LANE



PARALLEL DECELERATION LANE

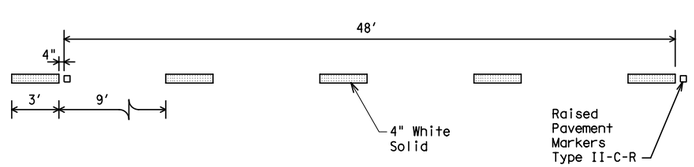


DETAIL A



DETAIL B

Wide (12") Dotted Lane Line (See Note 3)



DETAIL C

Normal (4") Dotted Lane Line (See Note 4)

GENERAL NOTES

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") Dotted Lane Line (See Detail B) is used to separate a through lane from a lane drop at normal exit ramp and from an auxiliary lane between an entrance and exit ramp.
4. Normal (4") Dotted Lane Line (See Detail C) is used at parallel acceleration and deceleration lanes.

LEGEND	
⇦	Denotes direction of traffic.
⬏	Pavement marking arrows (white)
✳	Arrow markings are optional, however "ONLY" is required if arrow is used

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.

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS ENTRANCE AND EXIT RAMPS

FPM(2)-12

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS		CONT	SECT	JOB	HIGHWAY
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8-95	2-12	DIST	COUNTY		SHEET NO.
5-00		CRP	SAN PAT.		375
8-00					

23B

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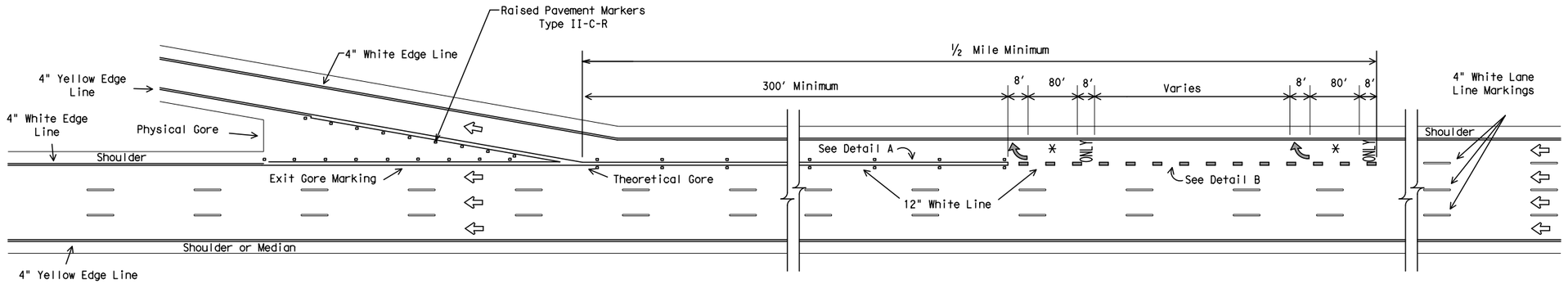
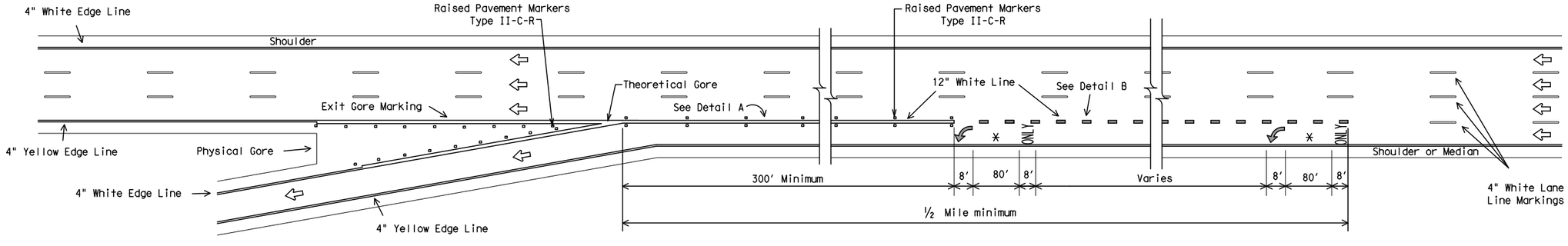


SINGLE LANE EXIT - LANE DROP OR EXIT ONLY

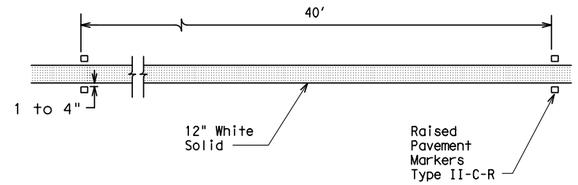


SINGLE LANE EXIT - LANE DROP OR EXIT ONLY (LEFTHAND)

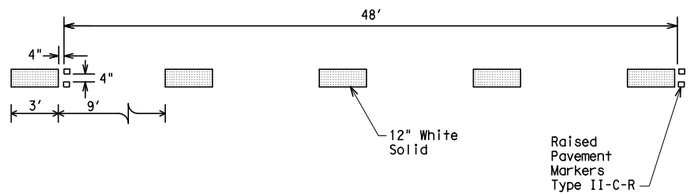
LEGEND	
⇦	Denotes direction of traffic.
↱	Pavement marking arrows (white)
✳	Arrow markings are optional, however "ONLY" is required if arrow is used

GENERAL NOTES

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") Dotted Lane Line (See Detail B) is used to separate a through lane from a lane drop at normal exit ramp and from an auxiliary lane between an entrance and exit ramp.



DETAIL A



DETAIL B

Wide (12") Dotted Lane Line (See Note 3)

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS LANE DROP (EXIT ONLY) EXIT RAMPS

FPM(3)-12

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
5-00
8-00
2-10
2-12

CONT	SECT	JOB	HIGHWAY
0180	06	087	SH 35

DIST	COUNTY	SHEET NO.
CRP	SAN PAT.	376

23C

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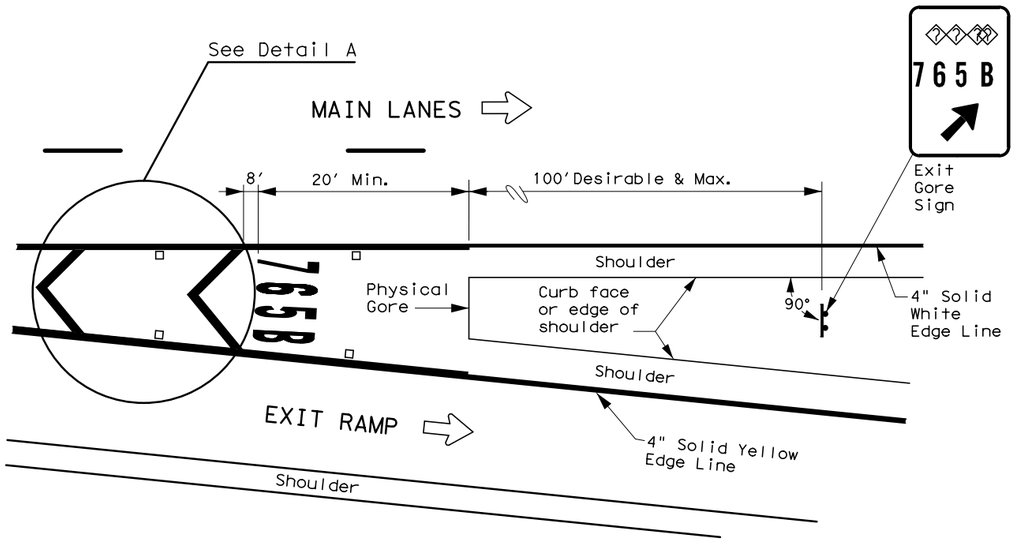
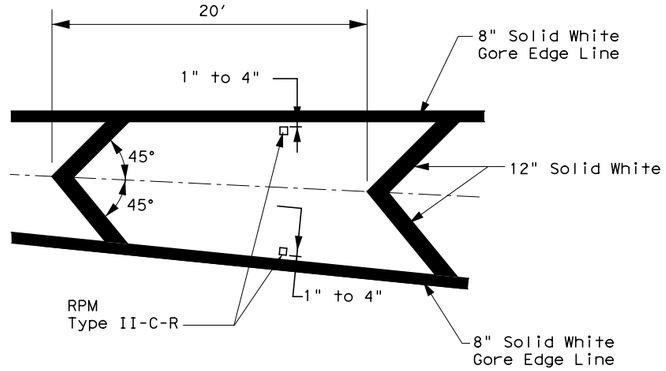
EXIT NUMBER PAVEMENT MARKING NOTES

1. Minimum 8 foot white markings should be used, unless otherwise noted.
2. Spacing between letters and numbers should be approximately 4 inches.
3. Pavement markings are to be located as specified elsewhere in the plans.
4. All pavement marking materials shall meet the required Departmental Material Specifications or as specified in these plans.
5. Numbers and Letters details can be found in the Standard Highway Design for Texas (SHSD) Chapter 12 at http://www.txdot.gov



MARKINGS WITH EXIT NUMBER



NOTES

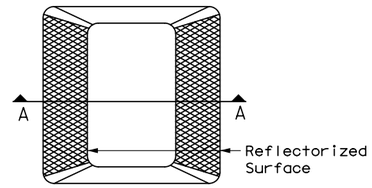
1. Raised pavement markers shall be centered between chevron or gore lines.
2. For more information, see Reflectorized Raised Pavement Marker Detail.

DETAIL A

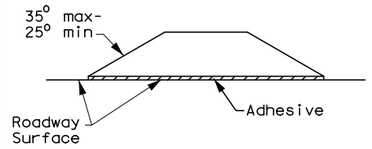
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

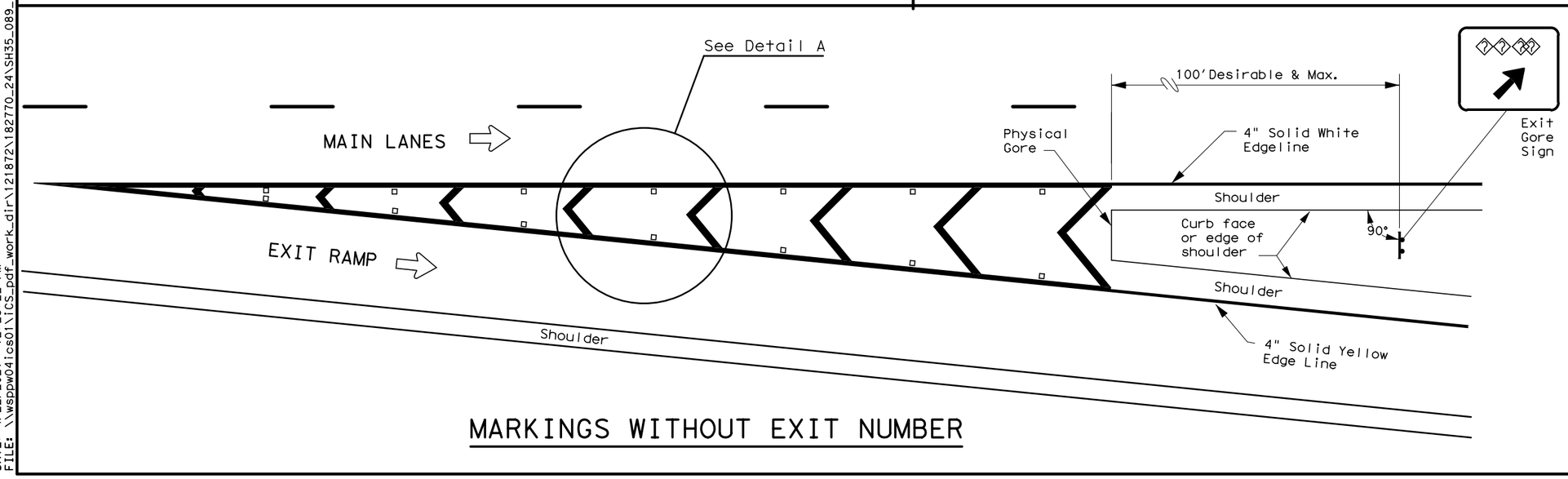
LEGEND	
⇦	Traffic flow
▫	Reflectorized Raised Markers (RPM) Type II-C-R



Type II (Top View)



SECTION A



MARKINGS WITHOUT EXIT NUMBER

REFLECTORIZED RAISED PAVEMENT MARKER (RPM)

Texas Department of Transportation

Traffic Safety Division Standard

EXIT GORE PAVEMENT MARKINGS

FPM(5)-19

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© TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		377

23F

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)

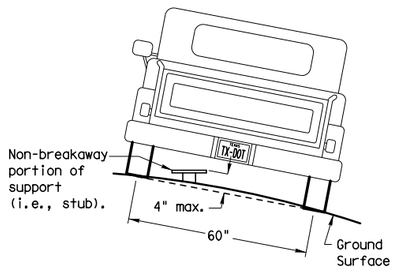
Anchor Type

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))

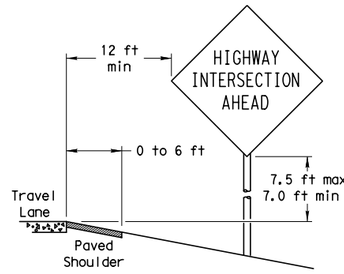
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

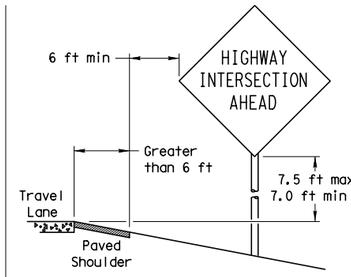
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

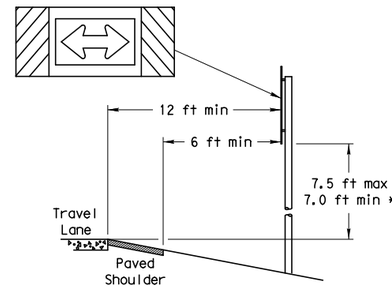
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



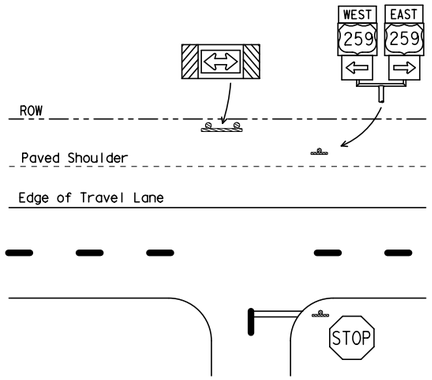
GREATER THAN 6 FT. WIDE

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.

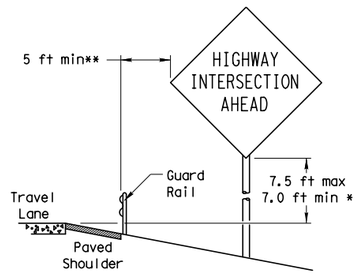
T-INTERSECTION



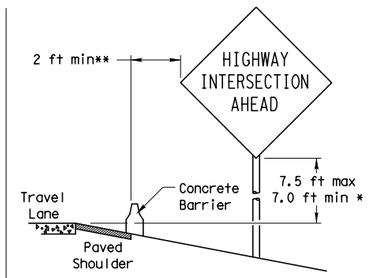
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



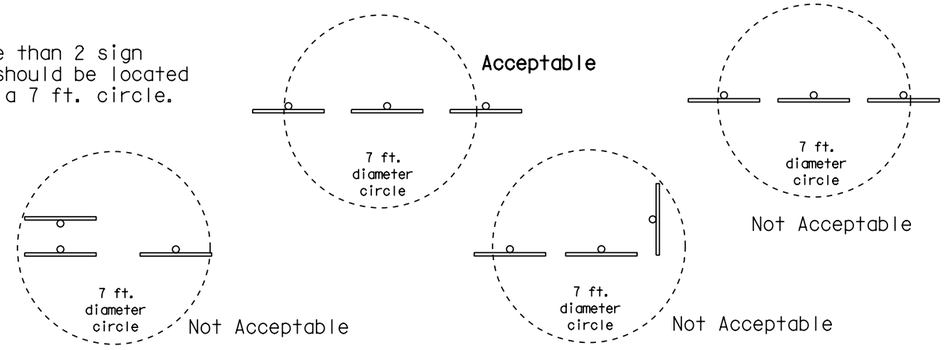
BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

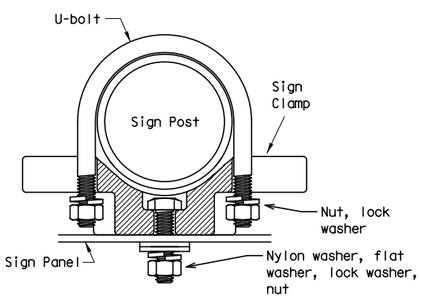
**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

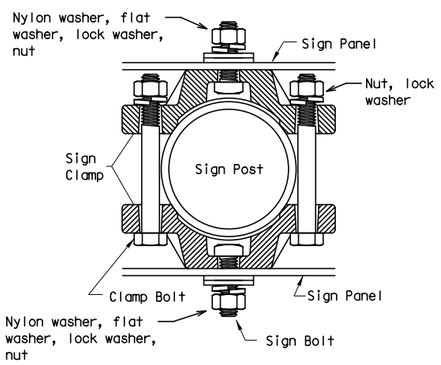


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

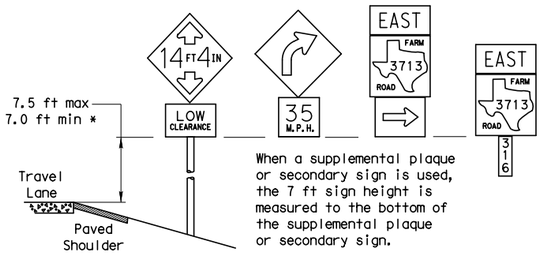
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



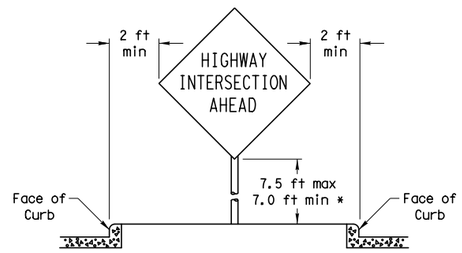
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



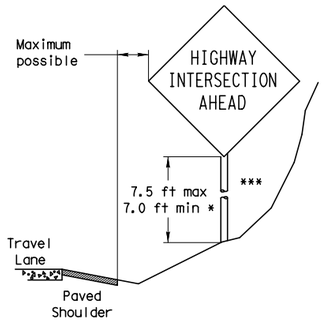
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

9-08 REVISIONS

CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35

DIST	COUNTY	SHEET NO.
CRP	SAN PAT.	378

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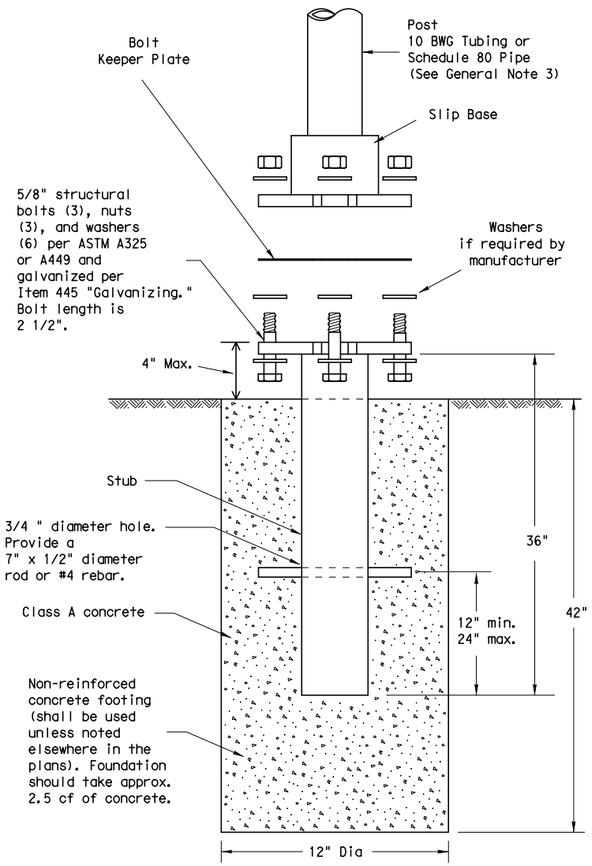
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

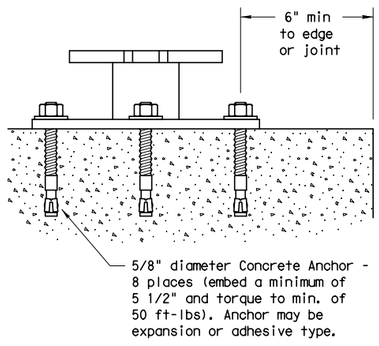
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



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

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS 9-08

CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35

DIST	COUNTY	SHEET NO.
CRP	SAN PAT.	379

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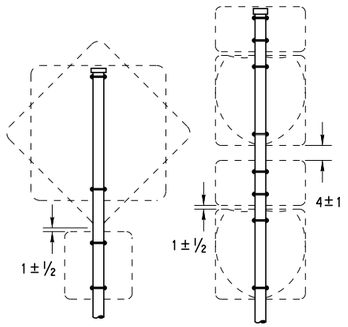
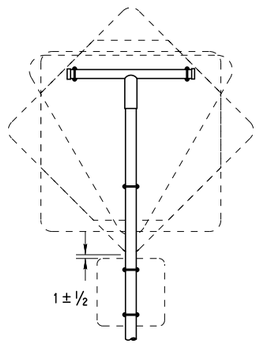


SM RD SGN ASSM TY XXXXX(1)XX(P)



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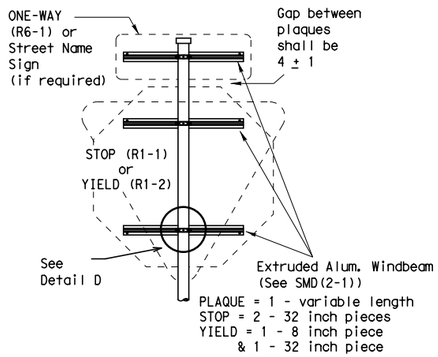
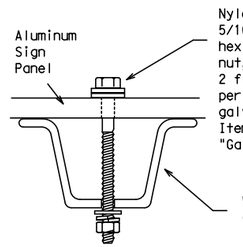
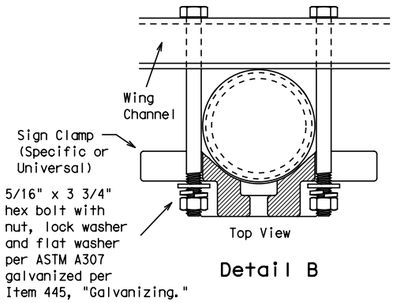


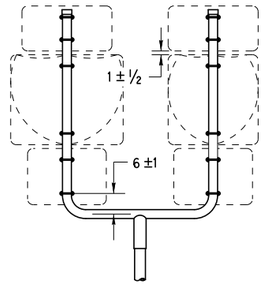
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



Detail A



Detail B



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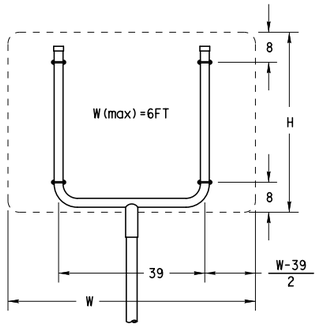
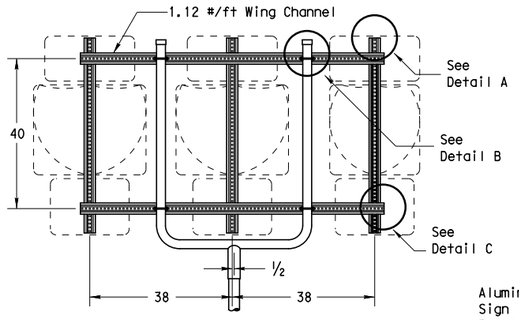
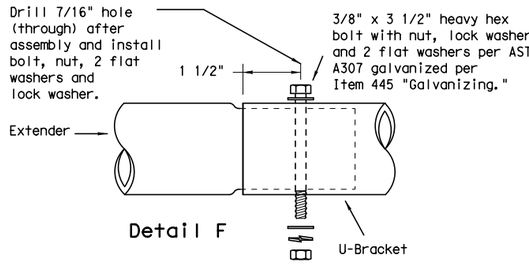


SM RD SGN ASSM TY XXXXX(1)XX(U)

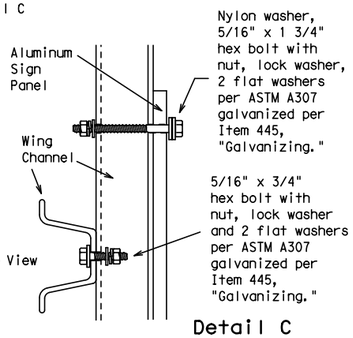


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

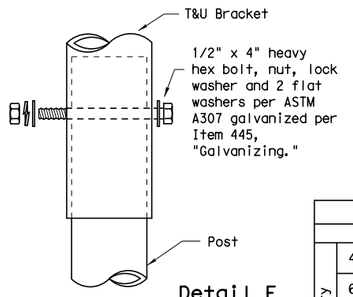


Detail F

Splices shall only be allowed behind the sign substrate.



Detail C



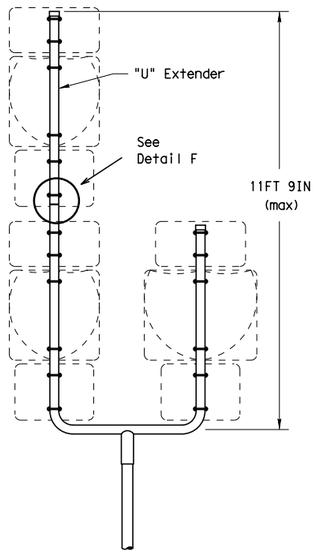
Detail E

GENERAL NOTES:

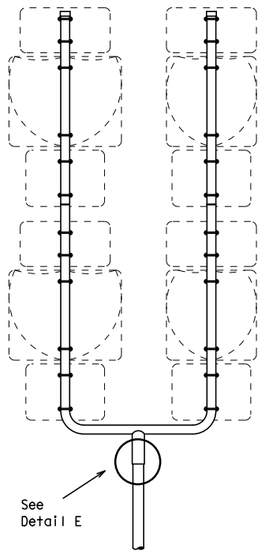
1.

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.



SM RD SGN ASSM TY S80(1)XX(U-1EXT)



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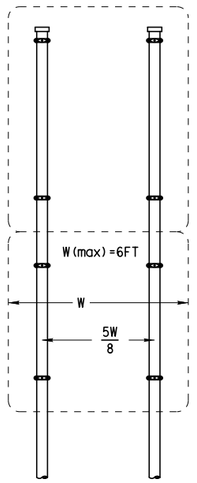
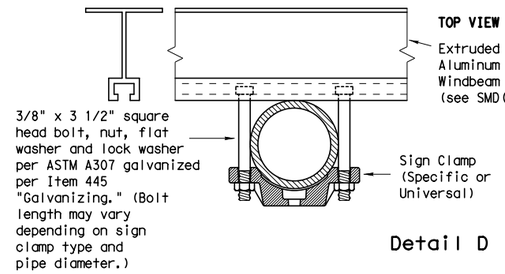
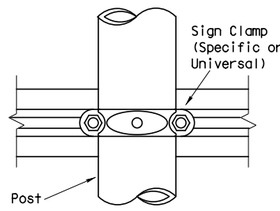


SM RD SGN ASSYM TY XXXXX(2)XX(P)

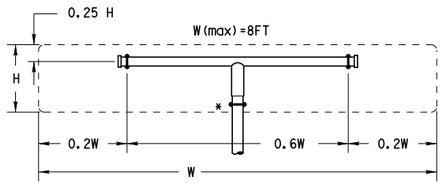
SIDE VIEW



Detail D



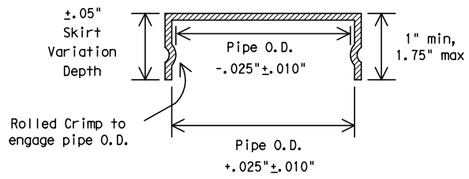
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	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)



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.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35

DIST	COUNTY	SHEET NO.
CRP	SAN PAT.	380

9-08 REVISIONS

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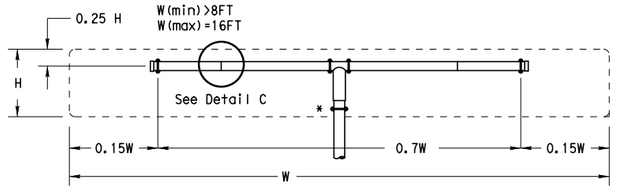
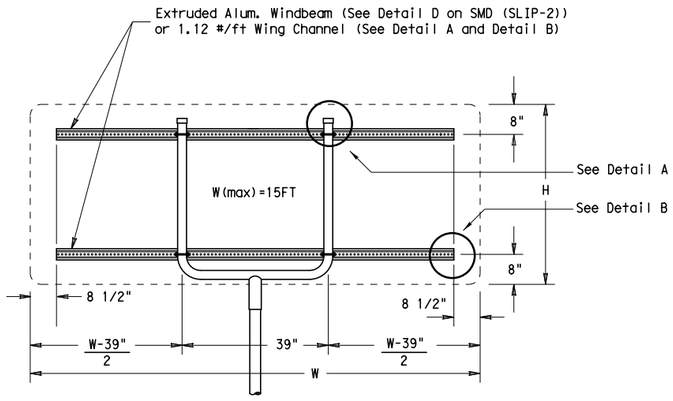
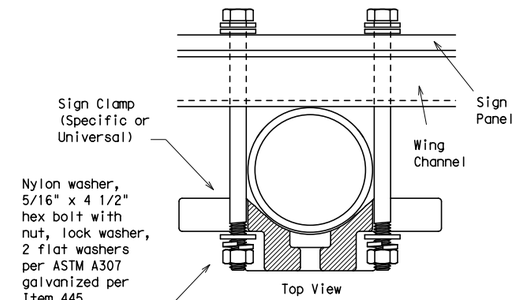


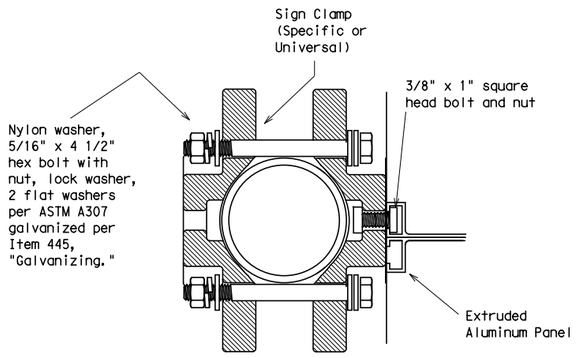
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



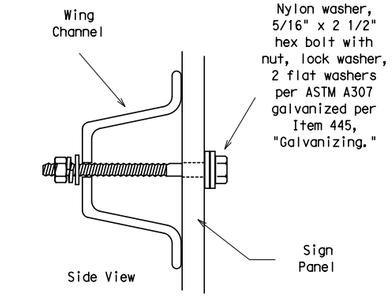
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



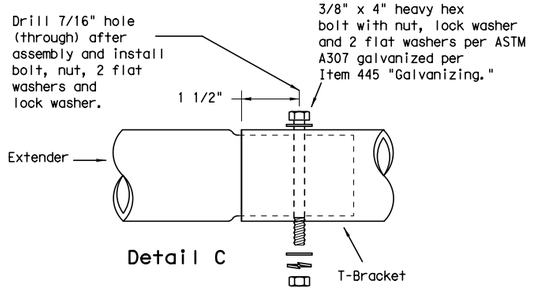
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

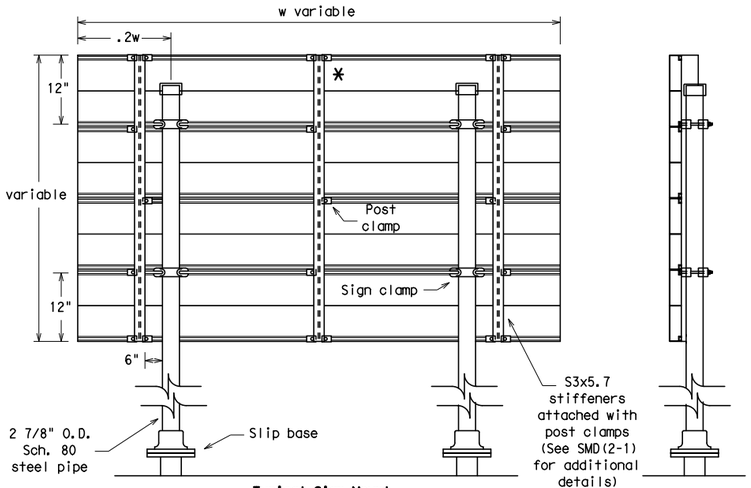


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

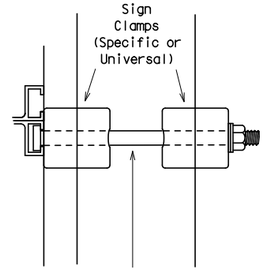


Typical Sign Mount

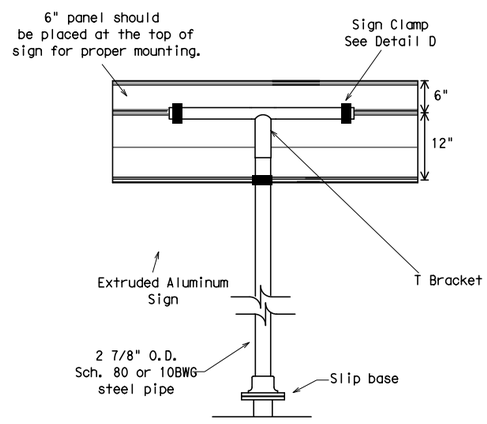
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

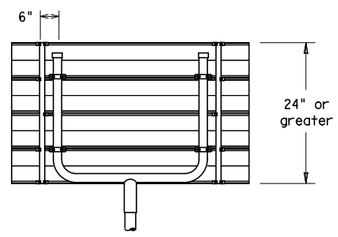
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

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. 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

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35

DIST	COUNTY	SHEET NO.
CRP	SAN PAT.	381

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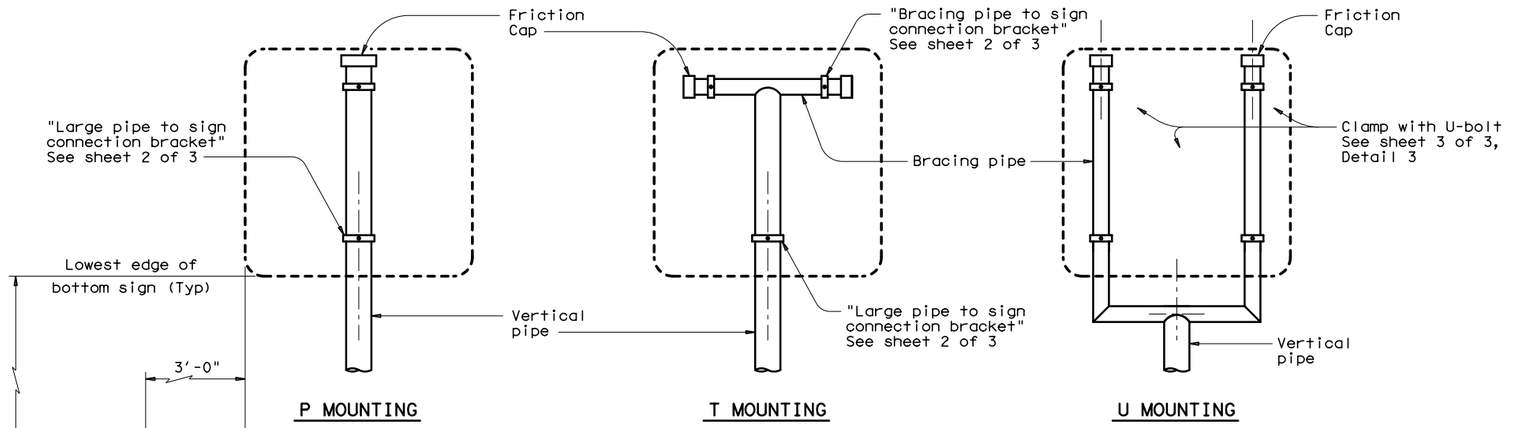
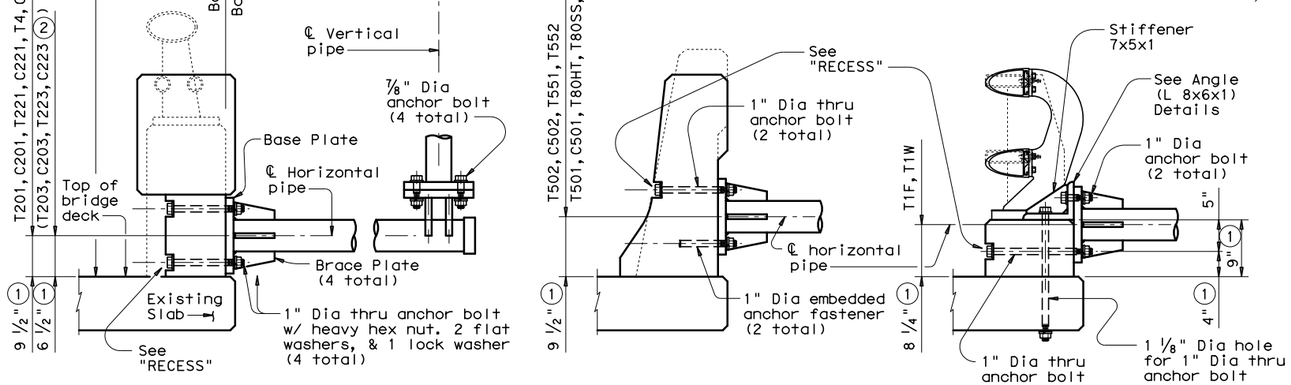


VARIOUS SIGN ATTACHMENTS

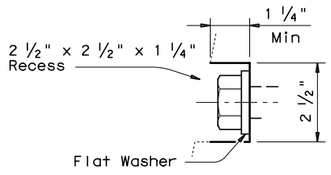
(Mounting NOT deviated from SHSD)



LONGITUDINAL SECTION THROUGH RAILING & SIGN MOUNT

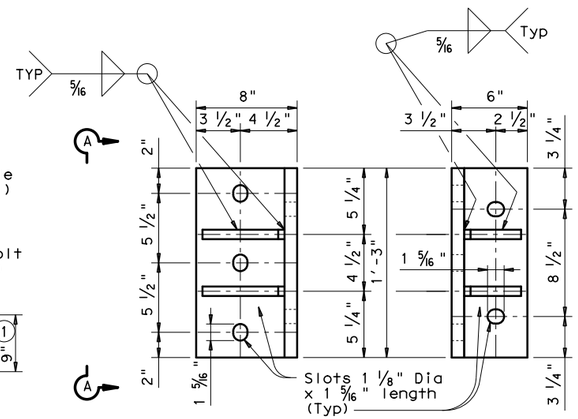
(1) Increase 2" for structure with overlay.

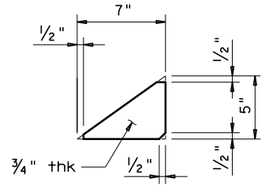
(2) Attached at ℄ post.



RECESS

PIPE SIZE AND THICKNESS			
Pipe Placement / Design Wind Speed	Horizontal	Vertical	Bracing
90 mph	5" X-Strong (.375")	4" X-Strong (.337")	2 ½" Standard (.203")
130 mph	6" X-Strong (.432")	5" X-Strong (.375")	3" X-Strong (.300")





STIFFENER

ANGLE (L 8x6x1) DETAILS

GENERAL NOTES:

Design conforms to 2013 AASHTO Standard Specifications for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design 3-second gust wind speeds of 90 mph and 130 mph with a 1.14 gust factor, and a wind importance factor of 1.0 (50-year mean recurrence interval) for the supporting structures. For mounting connection between sign panel and pipe, wind importance factors of 0.71 and 0.54, for 90 mph and 130 mph winds, respectively, are applied to adjust the wind speeds to a 10-year mean recurrence interval.

See standard sheet WV & IZ(LTS2013) for the boundaries of each design wind zone. All mounting shall be based on 130 mph wind speed design except when located in 90 mph wind zone. Maximum panel area is 30 sq. ft. Maximum design height is 50 ft, with design height defined as the distance between natural ground (average elevation of surrounding terrain) and the center of sign(s) at the mounting location.

Material for pipe shall be ASTM A53 Grade B, or A501. Structural steel plates shall be ASTM A36, A572 Grade 50, or A588. Bolts used to connect pipe and mounting bracket, and wind beam to sign panel shall be ASTM A307. Anchor bolts shall be ASTM A325 or A193 B7. Each anchor bolt shall be provided with 2 flat washers, 1 lock washer, and 1 heavy hex nut. All parts shall be galvanized in accordance with Standard Specifications Item 445, "Galvanizing".

Attach horizontal pipe at least 2'-0" from the edge of any nearby drain slot.

Contractor shall verify applicable field dimensions before fabrication. Holes drilled through the railing parapet wall shall be drilled with rotary (coring or masonry drill) type equipment. Percussion (star) drilling shall not be allowed. Anchorage for pipe attached to rail shall be placed using an anchoring system approved by the engineer. Installation of anchor fasteners including hole depth, diameter and material shall be in accordance with the manufacturers' recommendation.

Each embedded anchor fastener shall resist an allowable design loading (after applying the reduction factors of bolt spacing and bolt edge distance) of:

	130 mph	90 mph
Tension	12.5 kips	7.5 kips
Shear	9.0 kips	5.0 kips

Each anchoring system shall provide a capacity to resist the required tension and shear acting simultaneously.

For sign connection to mounting, shop drill holes on sign blank in accordance with the current Standard Highway Sign Designs for Texas (SHSD). Additional hole(s) needed to meet a stipulated-type mounting may be field drilled. For multi-sign or back-to-back signs mounting, the engineer shall determine the proper type which ensures each individual mounting meets requirements.

Refer to Standard sheets SMD(GEN), SMD(SLIP-2 and SMD(2-1) for details not covered here.

Texas Department of Transportation

Traffic Operations Division Standard

BRIDGE RAILING SIGN MOUNT DETAILS

SMD(BR-1)-14

FILE: smdbr-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 2014	CONT	SECT	JOB	HIGHWAY
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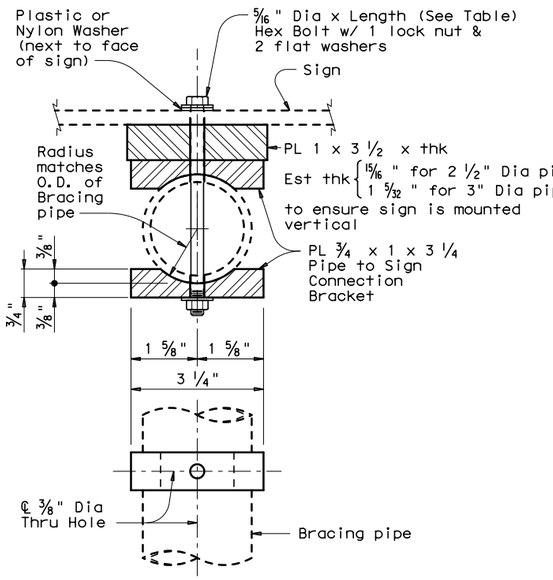
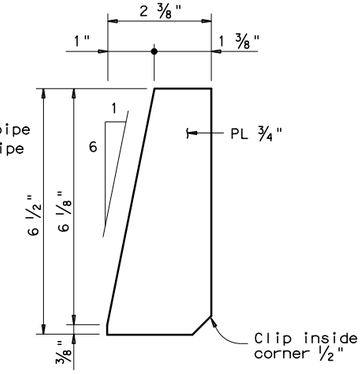
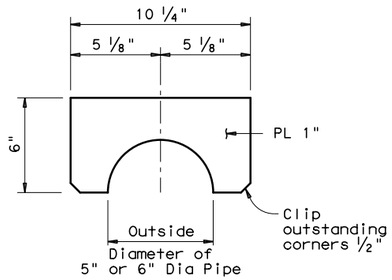


BRACING PIPE TO SIGN CONNECTION BRACKET DETAILS

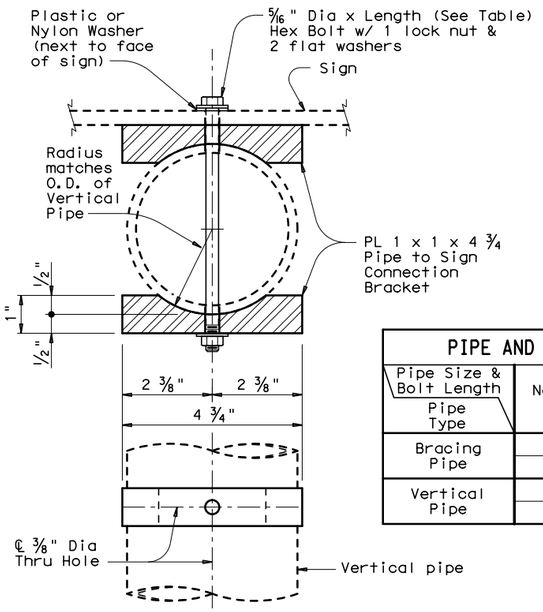
(Showing T Mounting)



BRACE PLATE DETAILS



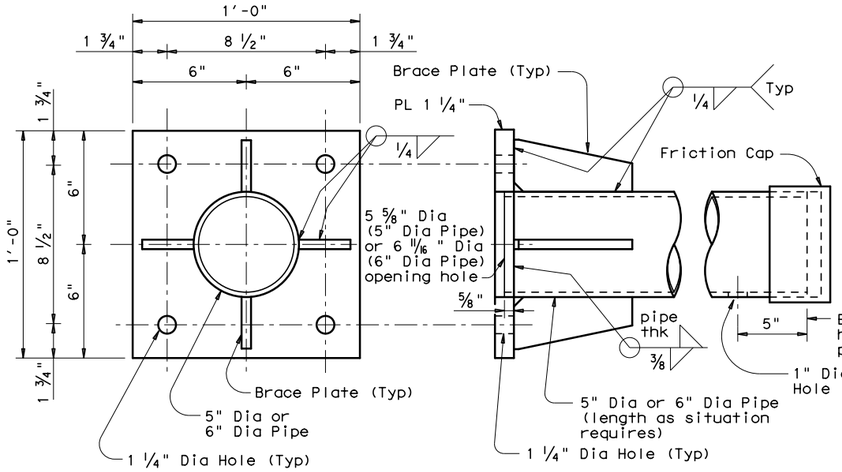
SIGN POLE SUPPORT PLATE BRACKET DETAILS



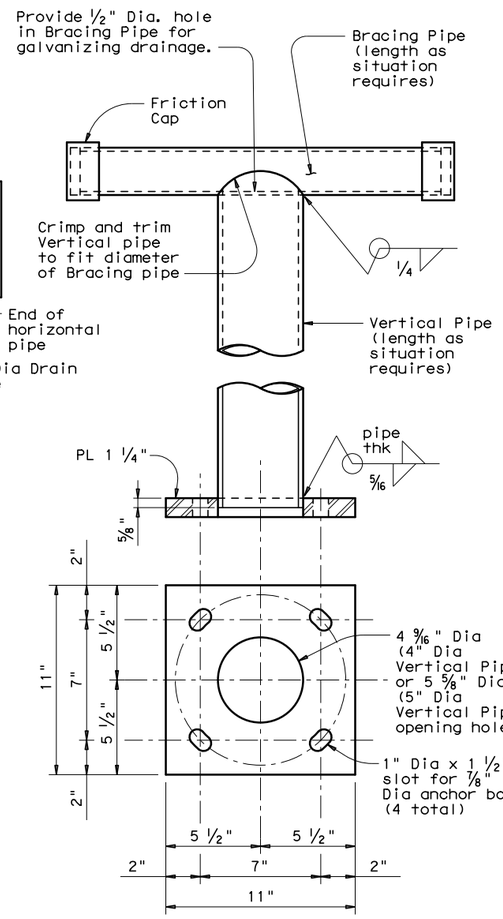
LARGE PIPE TO SIGN CONNECTION BRACKET DETAILS

(Showing P or T Mounting)

PIPE AND BOLT SPECIFICATIONS		
Pipe Size & Bolt Length / Pipe Type	Nominal Pipe Dia (in.)	Bolt Length (in.)
Bracing Pipe	2 1/2	6
	3	7
Vertical Pipe	4	7
	5	8



BASE PLATE DETAILS



SIGN POLE & POLE BASE PLATE DETAILS

(Showing only T Mounting)

SIGN POLE SUPPORT PLATE DETAILS

SHEET 2 OF 3

Texas Department of Transportation

Traffic Operations Division Standard

BRIDGE RAILING SIGN MOUNT DETAILS

SMD(BR-2)-14

FILE: smdbr-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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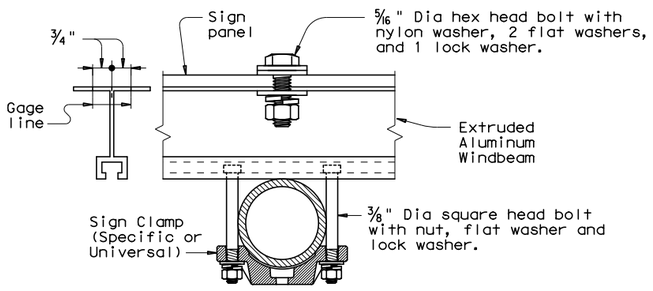
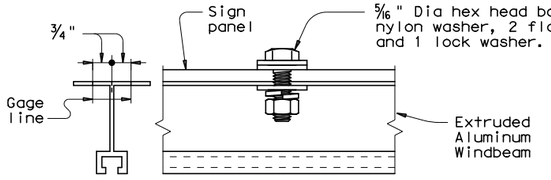
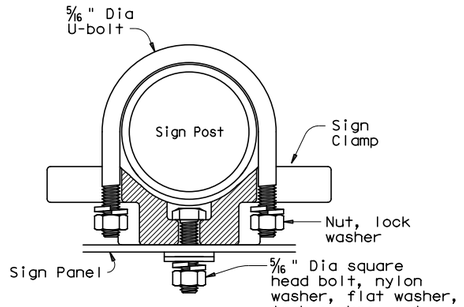


DETAIL 1



DETAIL 2

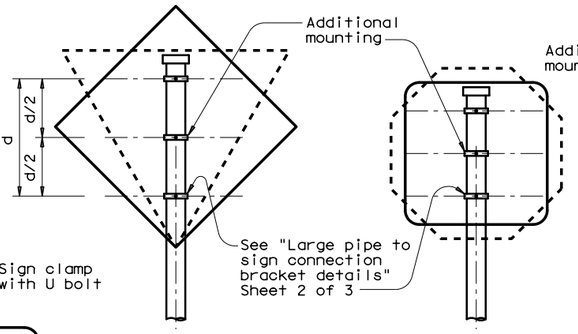


DETAIL 3

SIGN SHAPE	SQUARE			HORIZONTAL RECTANGLE			VERTICAL RECTANGLE			DIAMOND			OCTAGON			EQUILATERAL TRIANGLE			INTERSTATE SHIELD	PENTAGON (SCHOOL)	
Type of Sign Mounting on SHSD / Design Wind Speed	P	T	U	P	T	U	P	T	U	P	T	U	P	T	U	P	T	U	P	P	T
90 mph					(Type 23) 60"x48"	(Type 3) 72"x36" 78"x36"		(Type 2) 36"x48"			(Type 3) 60"x60"								(Type Special) 45"x36"		
								(Type 32) 36"x60" 36"x72" 42"x60" 48"x54" 48"x60" 48"x72"													
						(Type 23) 72"x30" 84"x24"		(Type 3) 48"x84"													
130 mph	(Type 1) 30"x30" 36"x36"	(Type 3) 48"x48"		(Type 1) 36"x24" 36"x30"	(Type 23) 48"x42" 54"x42" 60"x30" 66"x36" 84"x24"	(Type 3) 72"x36" 78"x36"	(Type 1) 30"x36" 30"x42"	(Type 3) 36"x48" 36"x60" 36"x72" 42"x60" 48"x54" 48"x60"	(Type 3) 48"x60"	(Type 1) 36"x36"	(Type 3) 48"x48" 60"x60"					(Type 1) 48"x48"			(Type Special) 36"x36" 45"x36"		
					(Type 3) 60"x48"	(Type 23) 72"x30" 84"x24"		(Type 4) 48"x72" 48"x84"													

Notes:
1. Drill holes in addition to the hole pattern of the Standard Highway Sign Designs for Texas (SHSD) at specified locations to meet a stipulated-type mounting indicated in the parenthesis ( ).
2. "Blank" in the above table indicates all other signs excluded from stipulated mounting shall be mounted in accordance with SHSD.

(1) In lieu of welding, the Fabricator may bend bracing pipe elbows if the following conditions are met:
a. Spacing between vertical bracing pipes is equal to or greater than 2'-6".
b. Bending radius is 12".
c. The distance between the lowest clamp and centerline of horizontal bent pipe is 13" max.



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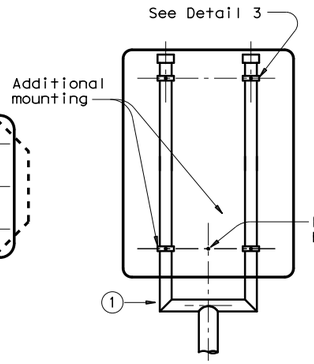

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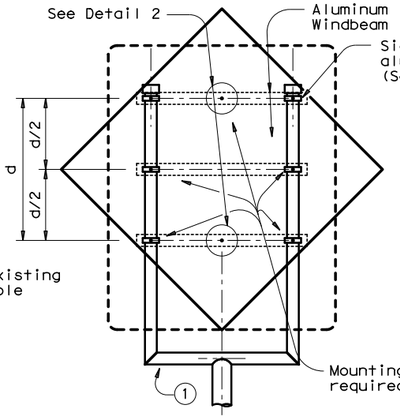

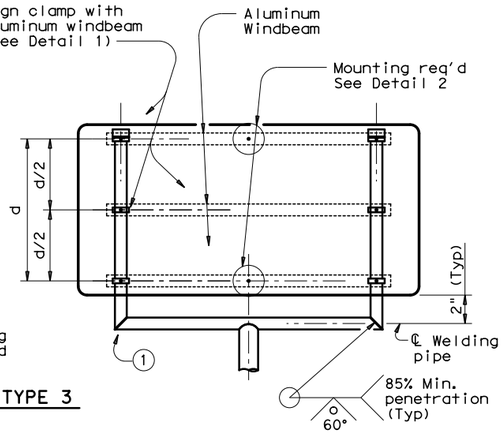

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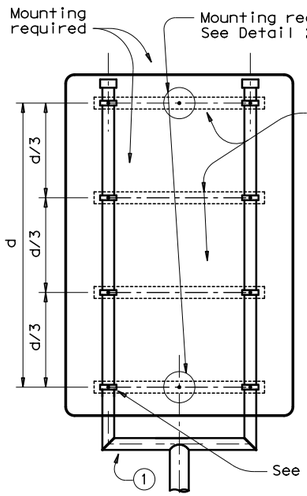

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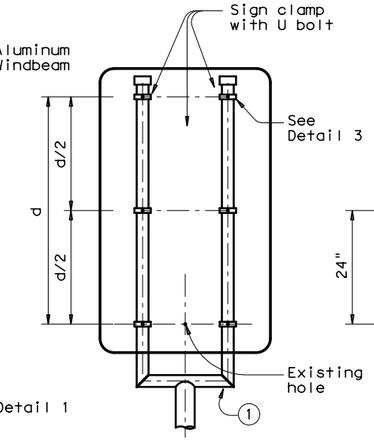
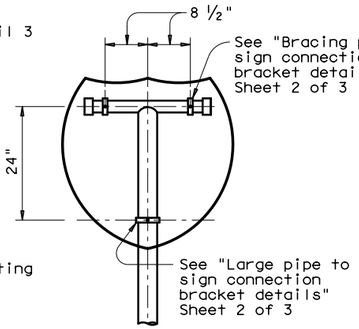


TYPE 32



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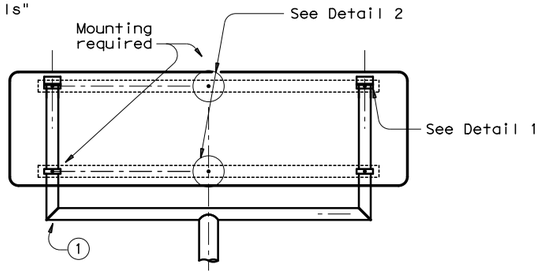

TYPE 23

SHEET 3 OF 3

Texas Department of Transportation

Traffic Operations Division Standard

BRIDGE RAILING SIGN MOUNT DETAILS

SMD(BR-3)-14

FILE: smdbr-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		384

DATE: 4/27/2021 8:04:22 PM
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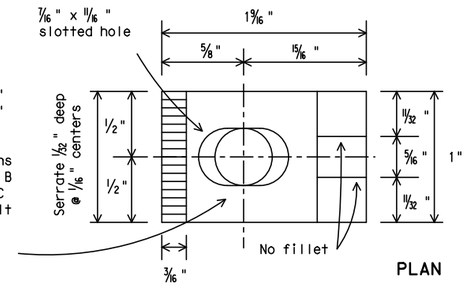
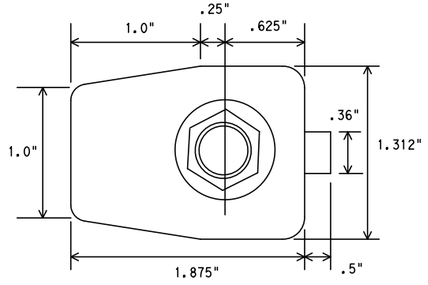
NOTE: centerline of hole for 3/8" diameter squarehead bolt x 2 1/4" long with a flat washer and self-locking nut, or lock washer and hex. nut. Bolt head dimensions shall be in accordance with ANSI B 18.2.1 as referred to in the AISC Manual of steel construction. Bolt assembly shall be galvanized.



PLAN



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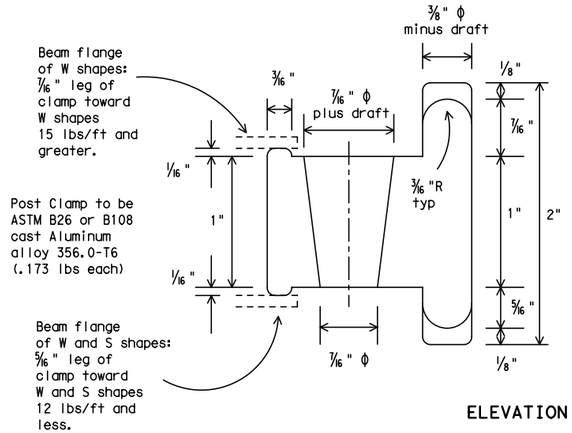
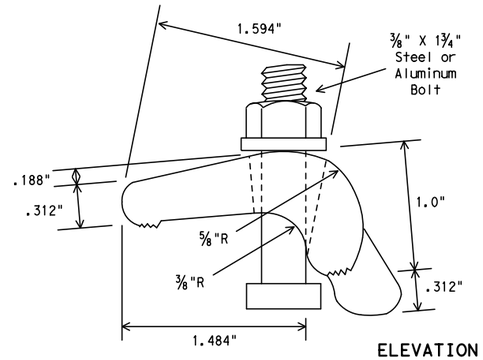


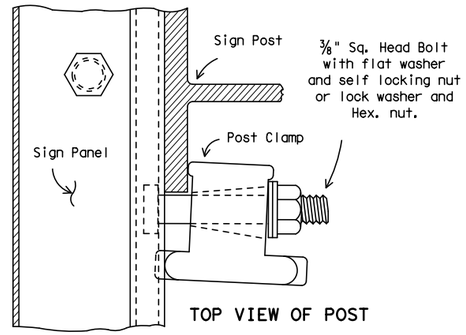
ELEVATION

POST CLAMP DETAIL

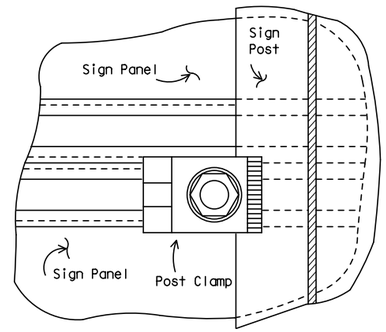


ELEVATION

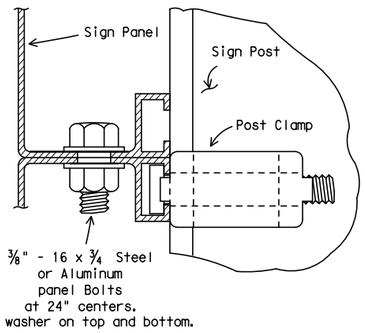
ALTERNATE POST CLAMP DETAIL



TOP VIEW OF POST



TOP VIEW OF CLAMP



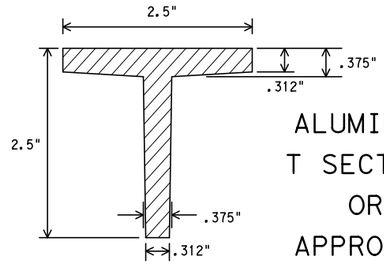
SIDE VIEW OF PANELS

CONNECTION DETAILS

DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN HARDWARE	DMS-7120

GENERAL NOTES:

1. Design conforms with AASHTO Specifications for the design and construction of structural supports for highway signs.
2. Materials and fabrication shall conform to the requirements of the Department material specifications.
3. Structural steel shall be "low-alloy steel" for non-bridge structures per Item 442, "Metal For Structures."
4. For fiberglass substrate connection details, see manufacturer's recommendations.

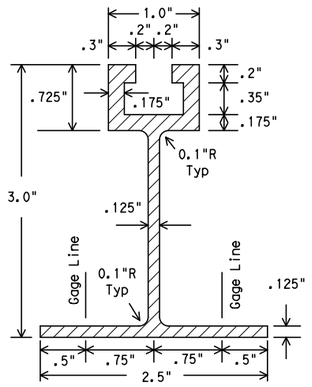


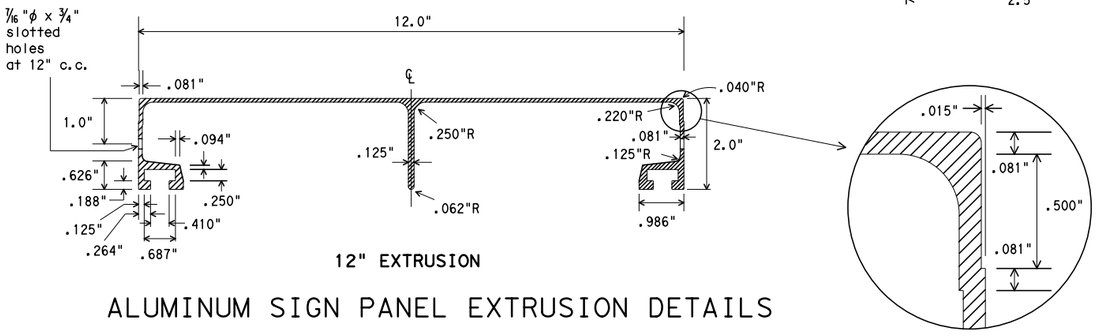
1.912 lbs/ft

ALUMINUM T SECTION OR APPROVED ALTERNATIVE

WINDBEAM CROSS SECTION

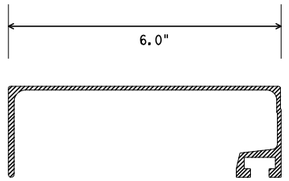
Windbeam to be extruded aluminum (1.175 lbs/ft) or approved alternative



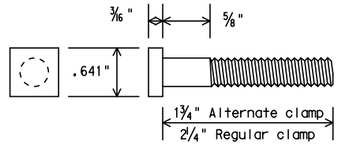


12" EXTRUSION

ALUMINUM SIGN PANEL EXTRUSION DETAILS



6" EXTRUSION



POST CLAMP BOLT DETAIL

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS- EXTRUDED ALUMINUM SIGN PANELS & HARDWARE

SMD(2-1)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	0180	06	067	SH 35

DIST	COUNTY	SHEET NO.
CRP	SAN PAT.	385

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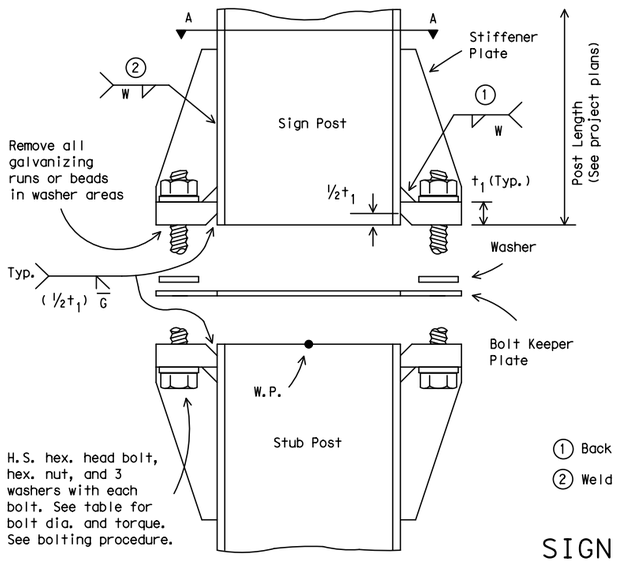
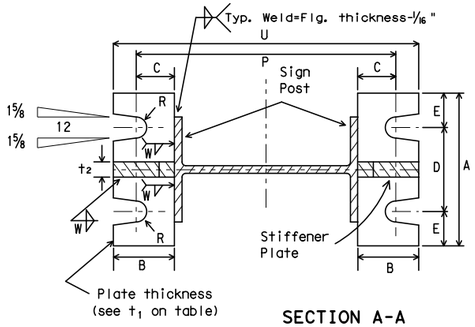
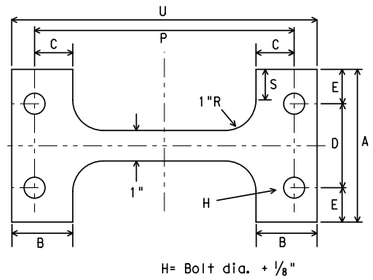


ELEVATION

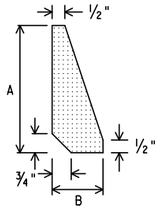


SECTION A-A



H= Bolt dia. + ⅛"

BOLT KEEPER PLATE
30 Ga galv. sheet steel

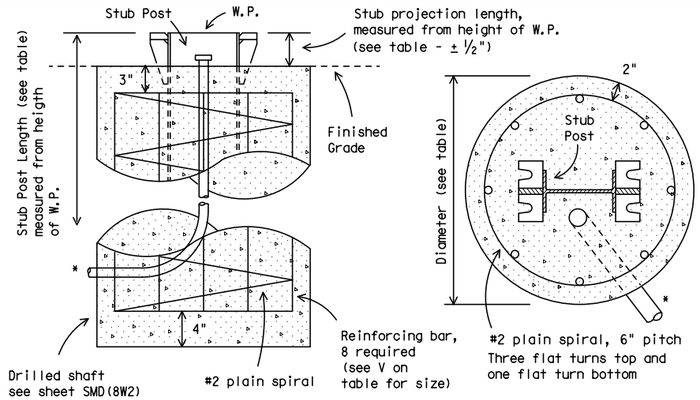


① Back up weld to be made before installing stiffener plate

② Weld W may be continued across clips to seal joint

SIGN POST AND STUB POST
(For W Shapes)

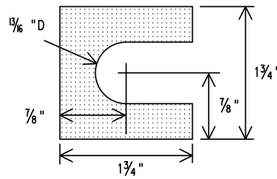
STIFFENER PLATE DETAIL
Steel Plate (thickness = t_2)
(See table for dimensions)



ELEVATION

PLAN

FOUNDATION DETAIL
*Note: For signs with electrical apparatus, see ED(10) for conduit required in founation.



SHIM DETAIL
Furnish two .012"+ thick and two .032"+ thick shims per post. Shims shall be fabricated from brass shim stock or strip conforming to ASTM B36.

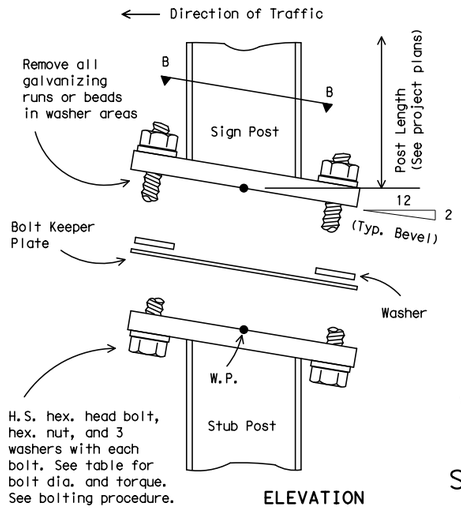
BOLTING PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:
1. Assemble sign post, BOLT KEEPER PLATE and stub post with bolts and three flat washers per bolt as shown.
2. Shim as required to plumb post.
3. Tighten all bolts the maximum possible with a 12 to 15 inch wrench to clean bolt threads and to bed washers and shims.
4. Loosen each bolt in sequence and retighten bolts in a systematic order to the prescribed torque. Do not overtighten.
5. To prevent nut loosening, burr threads of bolt at junction with nut using a center punch.

Dimensions / Post Size	Base Connection Data Table: Bolt Size & Torque	A	B	C	D	E	t_1	t_2	W	R
W6x9	⅝"ϕ x 2¾" 440-450 inch pounds 36-38 foot pounds	5"	2"	1¼"	2¾"	1⅛"	¾"	½"	¼"	11/32"
W6x12										
W6x15										
W8x18										
W8x21	¾"ϕ x 3½" 740-750 inch pounds 62-63 foot pounds	6"	2¼"	1⅜"	3½"	1¼"	1"	¾"	5/16"	13/32"
W10x22										
W10x26										
W12x26										
S3x5.7	½"ϕ x 2½" 440-450 inch pounds 36-38 foot pounds	See Detail Below								
S4x7.7										

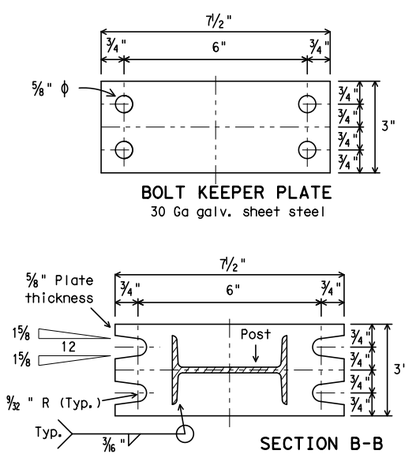
Perforated Fuse Plate Data Table												Bolt Keeper Data			Foundation Data			
F	G	J	K	M	d_1	d_2	t_3	Bolt Dia.	Wt. (ea.) (lbs.)	Bolt length		P	S	U	Stub length	Stub projection	Dr. Shaft diameter	Bar V Size
4¼"	2"	4"	2¼"	1"	9/16"	¾"	¼"	½"	1.01	1½"		8⅜"	1"	9⅞"	2'-0"	3"	24"	#5
												8½"		10"	2'-0"	3"		#5
5"	2½"	6"	3½"	1½"	11/16"	1¼"	⅜"	⅝"	2.51	2¼"		8½"		10"	2'-6"	3"		#6
5"	2½"	5¼"	2¾"	1¼"	11/16"	1 1/16"	⅜"	⅝"	2.26	2¼"		10⅝"		12⅛"	2'-6"	3"		#7
5½"	2½"	5¼"	2¾"	1¼"	13/16"	1"	½"	¾"	3.35	2¼"		11"	1½"	12¾"	3'-0"	2½"		#8
												12⅞"		14⅝"	3'-0"	2½"		#9
6"	3"	5¾"	2¾"	1⅜"	13/16"	1⅛"	½"	¾"	4.03	2¼"		13⅜"		14⅞"	3'-0"	2½"		#10
												15"		16¾"	3'-0"	2½"		#11
3¾"	1½"	2⅝"	1½"	⅝"	9/16"	⅜"	¼"	½"	0.60	1½"		See Detail Below			3'-3½"	3½"	12"	Non-reinforced ③

③ Foundation design shall be Type G Mount, see SMD (TY G).

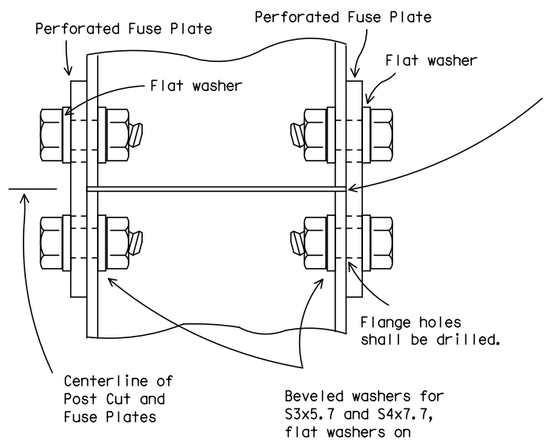
PERFORATED FUSE PLATE DETAIL
Use H.S. hex head bolts, hex head nut and bevel or flat washer (where req'd) under nut. All holes shall be drilled, sub-punched and reamed. All plate cuts shall preferably be saw cuts. However, flame cutting will be permitted provided all edges are ground. Metal projecting beyond the plane of the plate face will not be permitted. Steel fuse plates shall conform to the requirements of ASTM A36. ASTM A572 Grade 50 or ASTM A588 may be substituted for A36 at the option of the fabricator. Mill test reports shall be submitted for Fuse Plates. Steel used shall have an ultimate tensile strength not to exceed 80 KSI. For alternative Fuse Plate contact Traffic Operations Division.



ELEVATION



SIGN POST AND STUB POST
(For S4x7.7 and S3x5.7)



DETAIL "A"

Parts shall be saw cut either before galvanizing and the galvanized cut cleaned of zinc build-up, or saw cut after galvanizing and the cut surface repaired per Item 445, "Galvanizing."

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS-LARGE ROADSIDE SIGNS FOUNDATION & STUB

SMD(2-2)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
4-98	CONT	SECT	JOB	HIGHWAY
9-08	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		386

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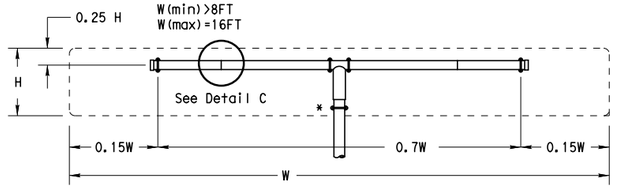
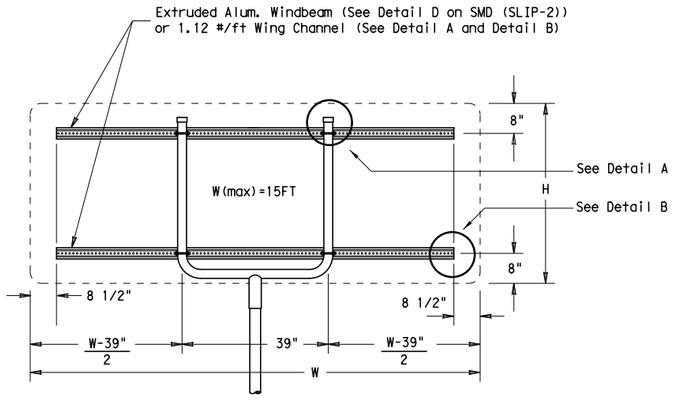


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



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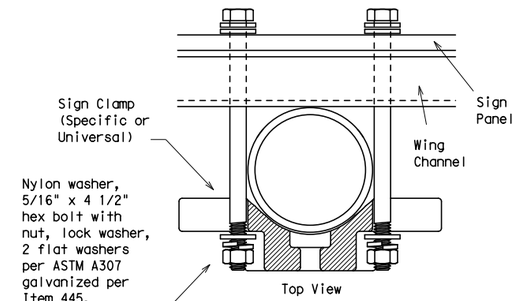
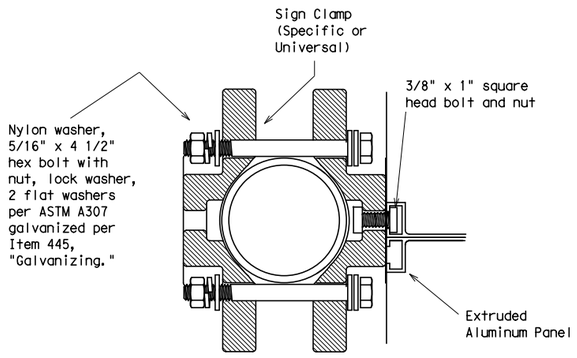
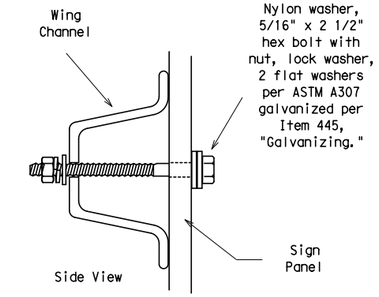


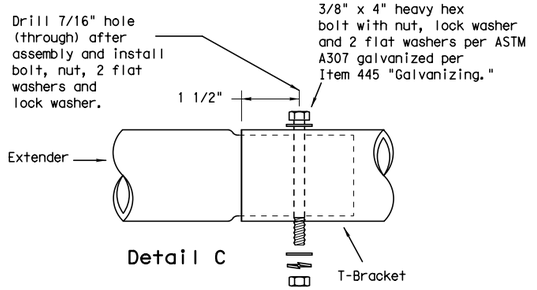
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

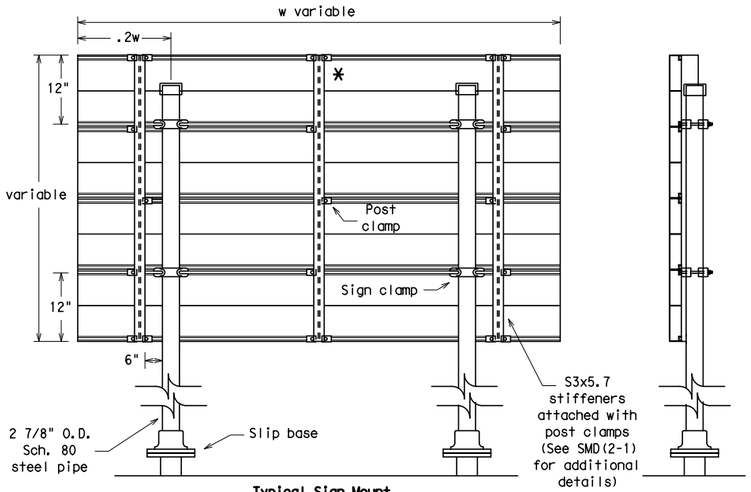


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

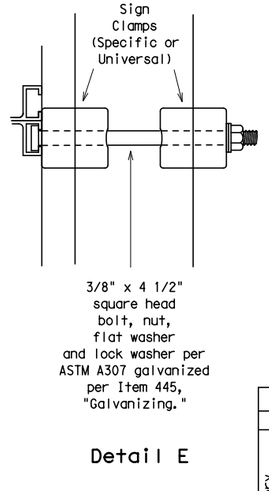


Typical Sign Mount

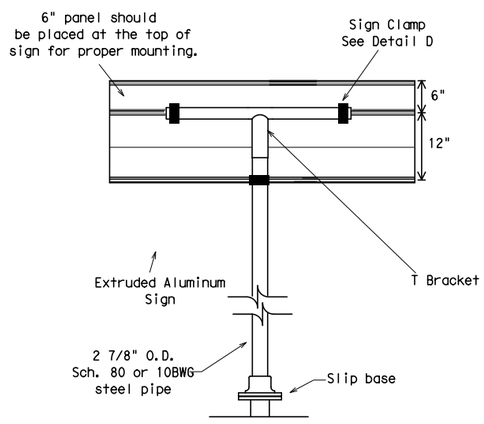
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

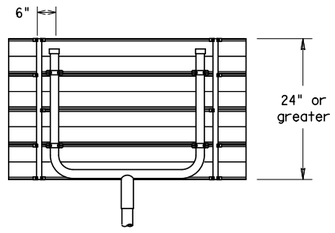
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

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. 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

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

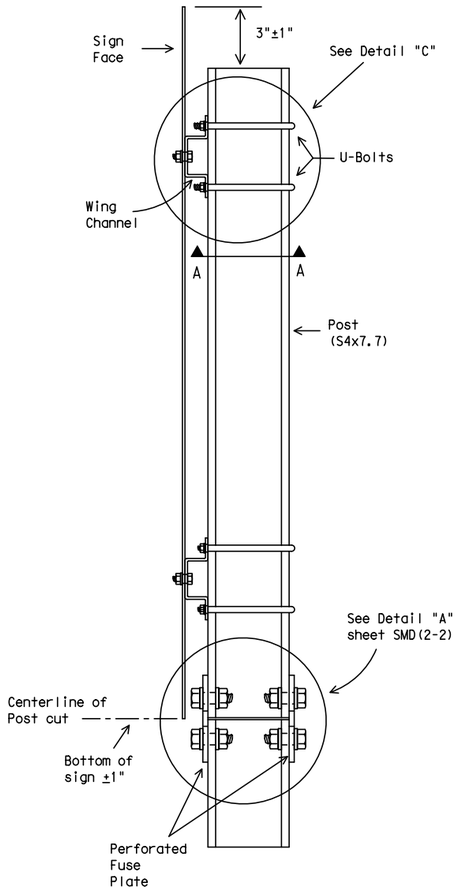
REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35

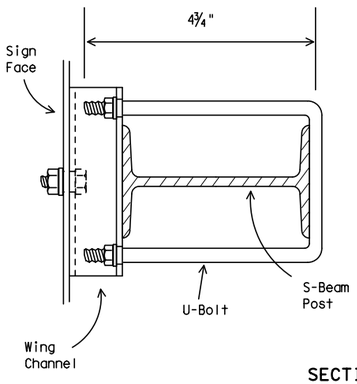
DIST	COUNTY	SHEET NO.
CRP	SAN PAT.	387

DATE: 4/27/2021 8:05:36 PM
FILE: \\wsppw04ios01\ICS*pdf*work*dir\123203\182770*52\SH35*089*125-TRF-smdtyg08.dgn

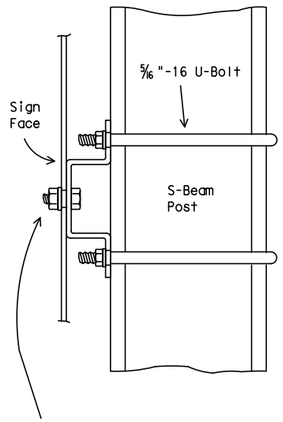
WING CHANNEL CLAMP DETAIL FOR TYPE G MOUNT



SIDE VIEW

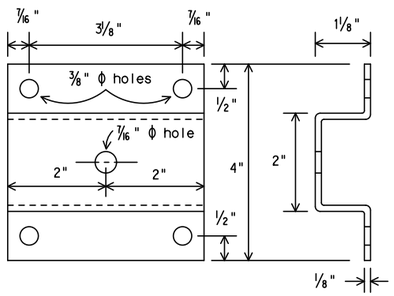


SECTION A-A



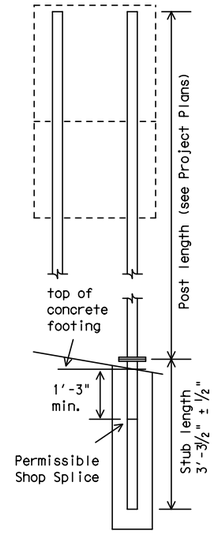
Galvanized steel or aluminum self-locking hex. head nut. 3/8 " - 16 x 3/4 " hex. head bolt for sheet metal. 3/8 " - 16 x 1 1/4 " hex. head bolt for plywood. 3/8 " galvanized medium washer.

DETAIL "C"

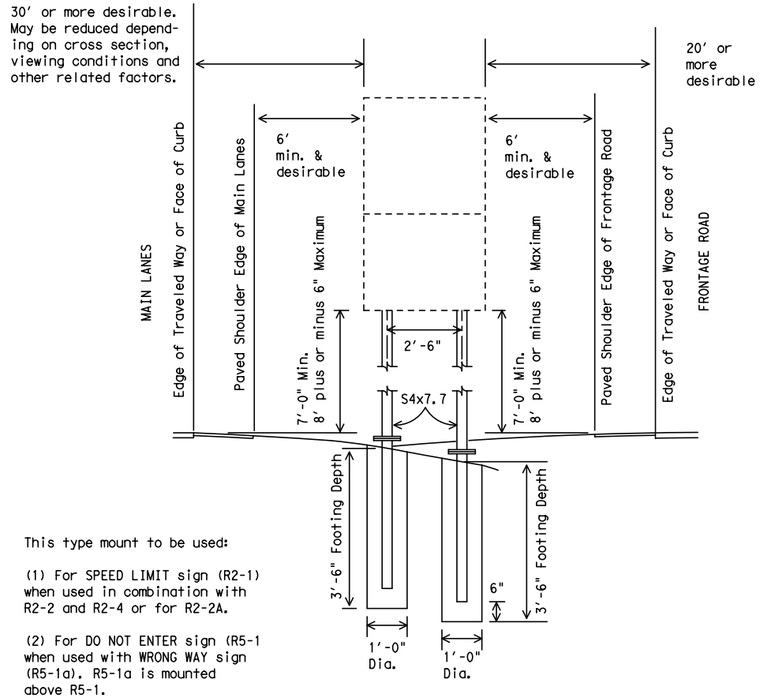


WING CHANNEL

Wing channel, 4" width x 1⅛" depth x ⅛" thickness, shall be aluminum (ASTM B221 6061-T6 or B308 6061-T6), galvanized steel (ASTM A36) or stainless steel (ASTM A167 type 304, No. 2B finish).



The weight of one S4x7.7 post is equal to 112.2 lbs. plus 7.7 lbs./ft x (post length in feet minus 10 ft). The weight of 112.2 lbs. includes 10 feet of post length, post foundation stub, related connection plates, friction fuse plate, and all high strength bolts, nuts and washers.



This type mount to be used:

(1) For SPEED LIMIT sign (R2-1) when used in combination with R2-2 and R2-4 or for R2-2A.

(2) For DO NOT ENTER sign (R5-1 when used with WRONG WAY sign (R5-1a). R5-1a is mounted above R5-1.

DEPARTMENTAL MATERIAL SPECIFICATIONS
SIGN HARDWARE DMS-7120

GENERAL NOTES:

1. Design conforms with AASHTO Specifications for the design and construction of structural supports for highway signs.
2. Materials and fabrication shall conform to the requirements of the Department material specifications.
3. Structural steel shall be "Low-Alloy Steel" for non-bridge structures per Item 442, "Metal For Structures."
4. Parts shall be saw cut either before galvanizing and the galvanized cut cleaned of zinc build-up, or saw cut after galvanizing and the cut surface repaired per Item 445, "Galvanizing." (Cut surface will not be treated until plate is installed and all bolts fully tightened.)

Texas Department of Transportation
Traffic Operations Division

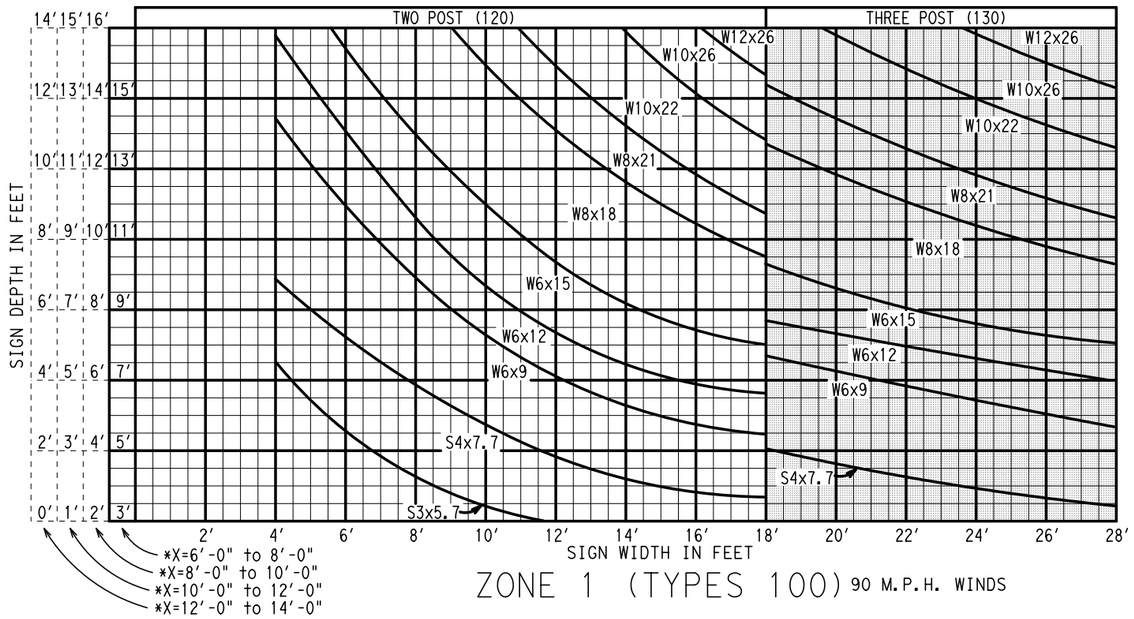
SIGN MOUNTING DETAILS, TYPE G SUPPORT

SMD(TY G)-08

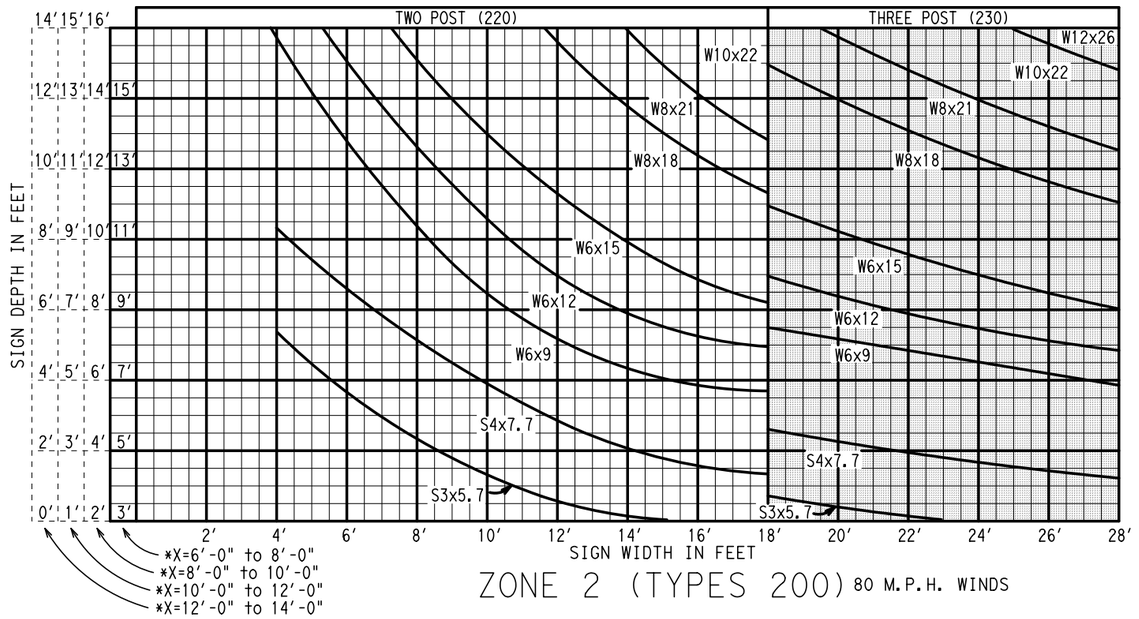
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
1-97
9-08

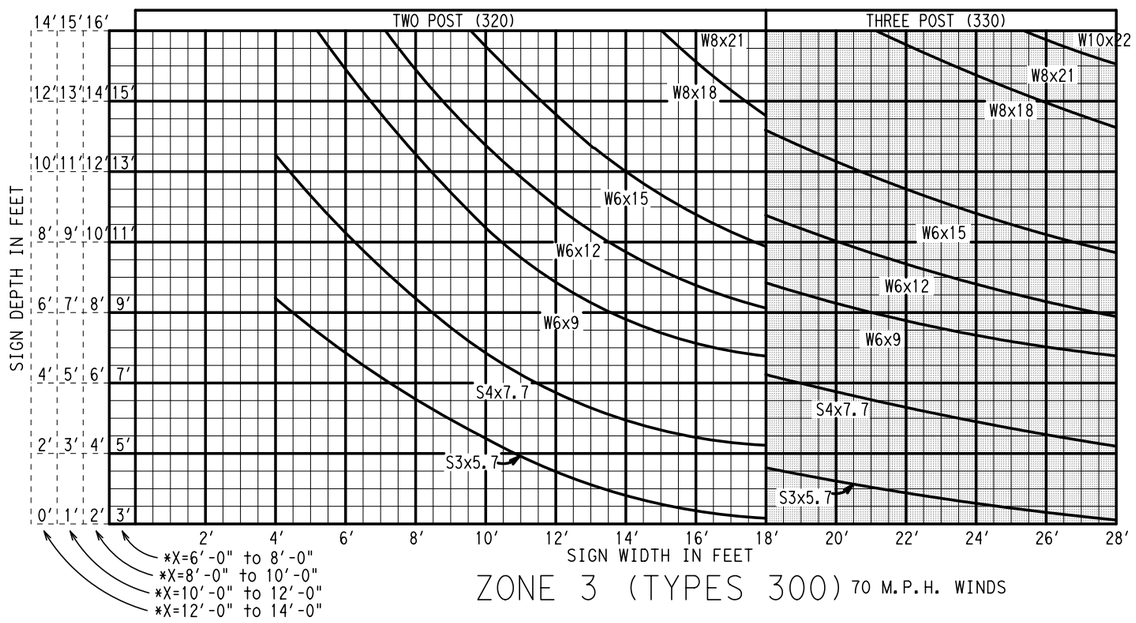
CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35
DIST	COUNTY		SHEET NO.
CRP	SAN PAT.		388



ZONE 1 (TYPES 100) 90 M.P.H. WINDS



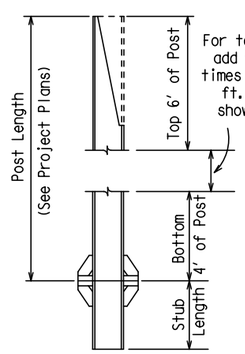
ZONE 2 (TYPES 200) 80 M.P.H. WINDS



ZONE 3 (TYPES 300) 70 M.P.H. WINDS

* NOTE: "X" EQUALS THE AVERAGE HEIGHT FROM THE GROUND LINE TO THE BOTTOM EDGE OF THE SIGN.

SHADED AREA DENOTES 3 POST SUPPORTS



POST WEIGHT DATA

POST SIZE	WEIGHT OF ONE POST (#)	WEIGHT OF TWO POSTS (#)	WEIGHT OF THREE POSTS (#)
W6x9*	123.2	246.4	369.6
W6x12*	160.3	320.6	480.9
W6x15*	167.8	335.6	503.4
W8x18*	201.8	403.6	605.4
W8x21*	254.7	509.4	764.1
W10x22*	266.0	532.0	798.0
W10x26*	308.0	616.0	924.0
W12x26*	308.6	617.2	925.8
S3x5.7*	85.9	171.8	257.7
S4x7.7*	112.2	224.4	336.6

*LAST FIGURES=POST WT. PER FT.

Weight Data is the weight of items shown for one, two or three posts - (includes top 6' of post, bottom 4' of post, post foundation stub, related base connection plates and stiffeners, friction fuse plate and all high strength bolts, nuts and washers).

SIGN TYPE

SIGN TYPE 1 3 0
- 1 — Wind Design Zone
- 3 — Series No.
- 0 — 0 Aluminum/Fiberglass, 1 Aluminum, 2 Fiberglass
- 0 — No. of Posts

Note: Footings for S3x5.7 and S4x7.7 post sizes shall be non-reinforced with Class A concrete, while footing for all other post sizes shall be reinforced with Class C concrete.

Texas Department of Transportation
Traffic Operations Division

LARGE ROADSIDE SIGN SUPPORTS POST SELECTION WORKSHEET

SMD(8W1)-08

REVISIONS
1-82
5-01
9-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35

DIST	COUNTY	SHEET NO.
CRP	SAN PAT.	389

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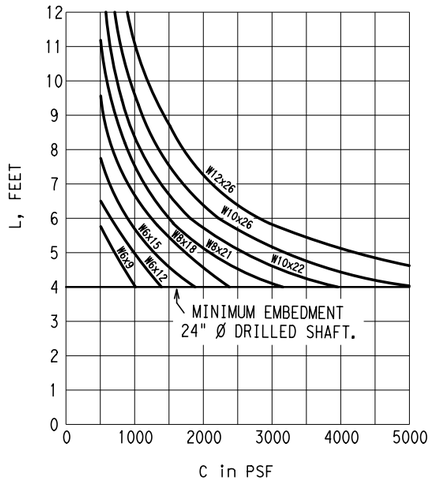
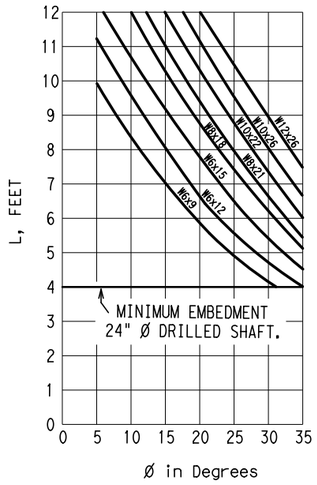
I



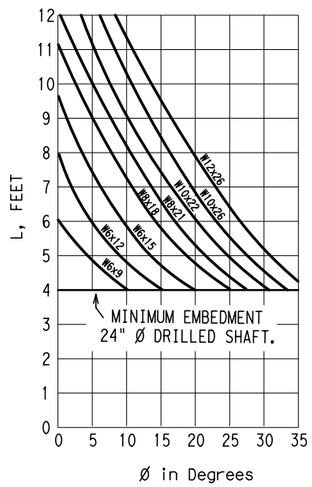
Ø = 0 Degrees

II



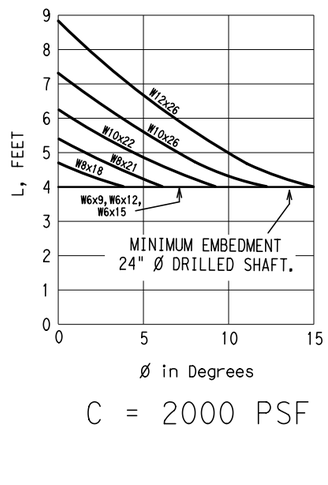
C = 0 PSF

III



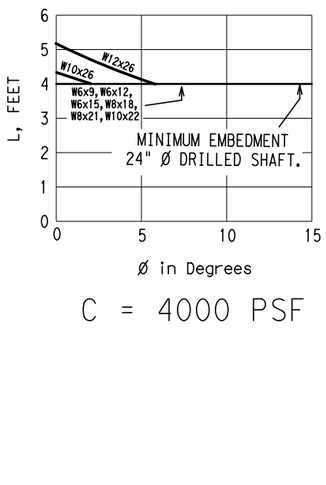
C = 500 PSF

IV



C = 2000 PSF

V



C = 4000 PSF

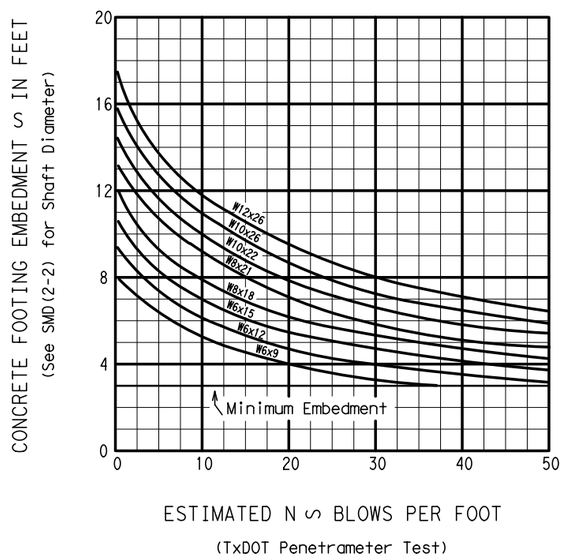
DRILLED CONCRETE FOOTING DEPTH CHART
(COHFRIC DESIGN)

NOTE: THESE CHARTS MAY BE USED AS AN ALTERNATE TO THE CHART BELOW, PROVIDED THAT SOIL COHESION AND INTERNAL FRICTION (COHFRIC) DATA ARE AVAILABLE.

LEGEND:

L = Required embedment of concrete drilled shaft, in feet
C = Cohesive shear strength of soil, in psf
Ø = Angle of internal friction of soil, in degrees

For values of C and Ø which are intermediate to those on the charts, embedments may be determined by straight - line interpolation.



DRILLED CONCRETE FOOTING DEPTH CHART
(TxDOT PENETROMETER DESIGN)

NOTE: ESTIMATED N SHOULD BE BASED AT APPROXIMATELY THE UPPER ONE-THIRD POINT OF THE DRILLED CONCRETE FOOTING BELOW THE GROUND LINE

Note:
1. Curves shown on this sheet are applicable for reinforced concrete footings only.

Texas Department of Transportation
Traffic Operations Division

LARGE ROADSIDE SIGN SUPPORTS FOUNDATION WORKSHEET
SMD(8W2)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
5-74
4-78
9-08

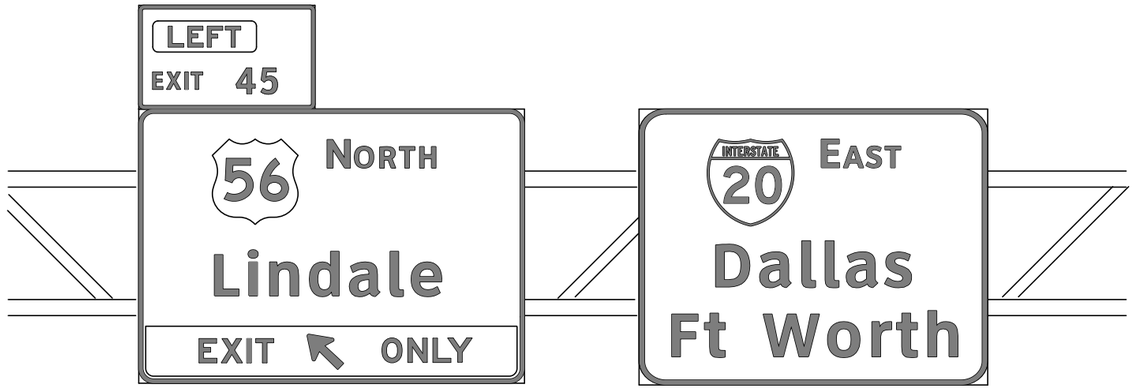
CONT	SECT	JOB	HIGHWAY
0180	06	067	SH 35

DIST	COUNTY	SHEET NO.
CRP	SAN PAT.	390

DATE: 4/22/2021 12:25:40 PM
FILE: \\wsppw041cs01\CS_pdf_work_dir\121872\182770_42\SH35_089_127-TRF-tsr1-tb.dgn

REQUIREMENTS FOR OVERHEAD AND LARGE GROUND-MOUNTED SIGNS

TYPICAL EXAMPLES



GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign summary sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Black legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod, or F).
   White legend shall use the Clearview Alphabet.
   The following Clearview fonts shall be used to replace the existing white FHWA lettering, 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. 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 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 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 need not be trimmed or rounded if fabricated from an extruded material.
7. Sign substrate for ground-mounted signs shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative. Sign substrate for overhead signs shall be any material that meets DMS-7110. Exit Number Panels attached above the parent sign shall be made with the same substrate and sheeting as the parent sign.
8. Mounting details of attachments to parent sign face are shown on Standard Plan Sheet TSR(5). Mounting details of exit number panels above parent sign are shown in the "SMD series" Standard Plan Sheets.
9. Background sheeting shall be applied to the substrate per sheeting manufacturer's recommendations. Sheeting will not be allowed to bridge the horizontal gap between panels.
10. Cut all legend, symbols, borders, and direct applied sign attachments at panel joints.

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/

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE B OR C SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(1)-13

FILE: tsr1-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	CRP	SAN PAT.		391

DATE: 4/22/2021 12:24:48 PM
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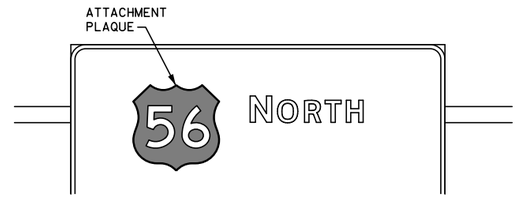
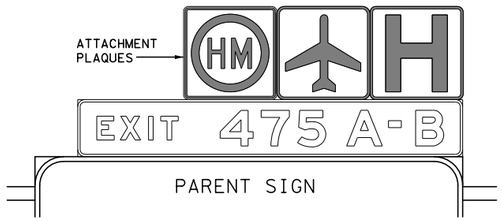
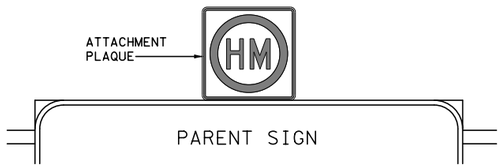
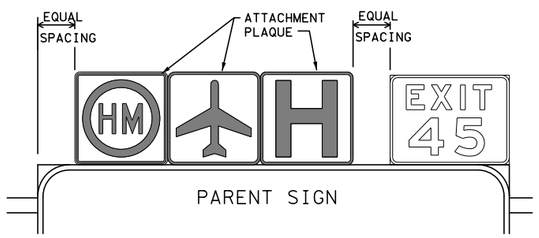
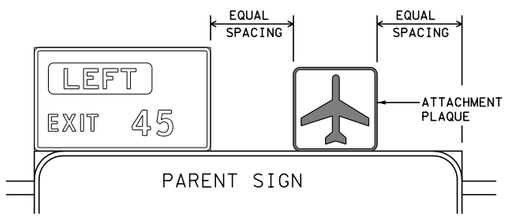
REQUIREMENTS FOR ATTACHMENTS TO OVERHEAD AND LARGE GROUND MOUNTED SIGNS











TYPICAL EXAMPLES

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B OR C SHEETING

GENERAL NOTES

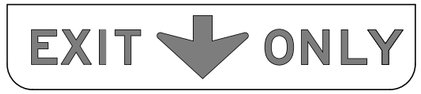
1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Route Marker legends (ie. IH, US, SH and FM shields) shall use the Federal 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 and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to white background sheeting, or combination thereof.
7. Route markers and other attachments within the parent sign face shall be direct applied unless otherwise specified in the plans. Attachments not direct applied shall use 0.063 inch thick one piece sheet aluminum signs (Type A).
8. General Service Plaques shall be 0.080 inch thick and Routing Plaques shall be 0.100 inch thick.
9. The priority for Routing Plaques shall be (left to right) Hazardous Material, Airport then Hospital. See examples for mounting location.
10. Mounting details of attachments to parent signs face are shown on Standard Plan Sheet TSR(5). Mounting details of sign plaque attachments above and below parent sign are shown in the "SMD series" Standard Plan Sheets.
11. Plaques shall be horizontally centered at the top of the parent sign. If an exit number panel exists, the plaque shall be centered between the edge of the parent sign and the edge of the exit number panel. The plaque may be placed above the exit number panel when there is insufficient space.

TYPICAL EXAMPLES

REQUIREMENTS FOR EXIT ONLY AND LEFT EXIT PANELS

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

SHEETING REQUIREMENTS FOR OVERHEAD EXIT PANELS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLUORESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND	BLACK	ACRYLIC NON-REFLECTIVE FILM



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). Individual panel sizes shown in the plans may be adjusted to fit actual parent sign sizes if necessary.
2. Exit Panel legend shall use the Federal Highway Administration (FHWA)Standard Highway Alphabets E Series.
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 shall be applied by screening process or cut-out acrylic non-reflective black film to yellow background sheeting, or combination thereof.
5. Exit Only and Left Exit panels within the parent sign face shall be direct applied unless otherwise specified in the plans. Panels not direct applied shall use 0.063 inch thick one piece sheet aluminum signs (Type A).
6. Mounting details of Exit Only and Left Exit panel attachments to parent signs face are shown on Standard Plan Sheet TSR(5).

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(2)-13

FILE: tsr2-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	CRP	SAN PAT.		392

2

DATE: 4/22/2021 12:26:08 PM
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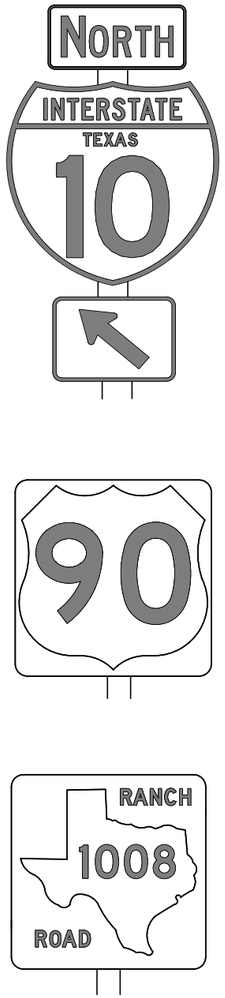
REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

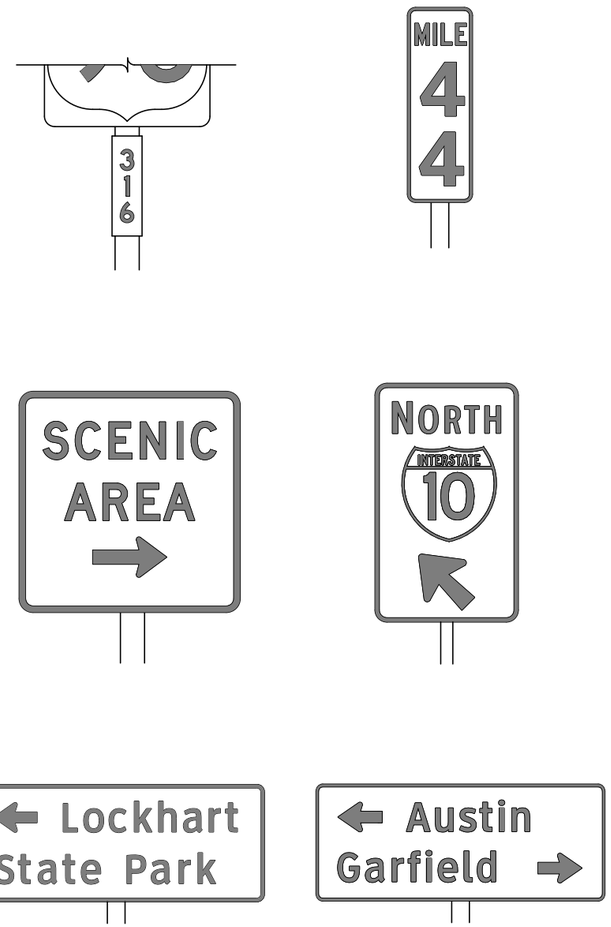
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).

2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).

4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.

5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.

6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

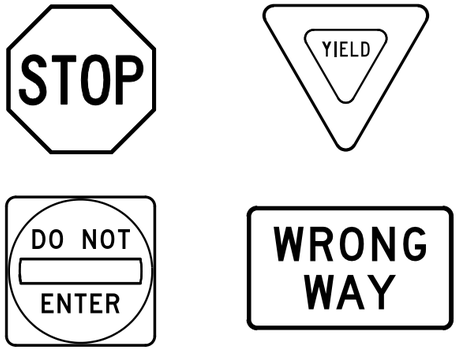
TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	CRP	SAN PAT.		393

DATE: 4/22/2021 12:25:11 PM
FILE: \\wspdw041cs01\ICS_pdf_work_dir\121872\182770_45\SH35_089_130-TRF-tsr4-13.dgn

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

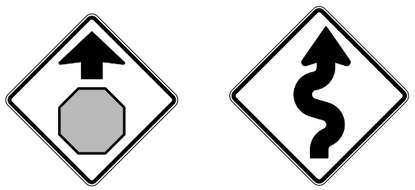
(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



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 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 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 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	0180	06	067	SH 35
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	CRP	SAN PAT.		394

4

DATE: 4/22/2021 12:26:11 PM
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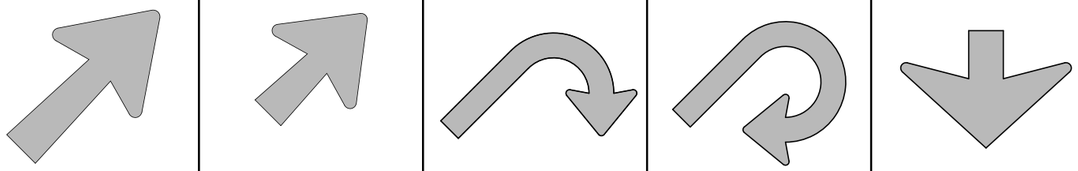
ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

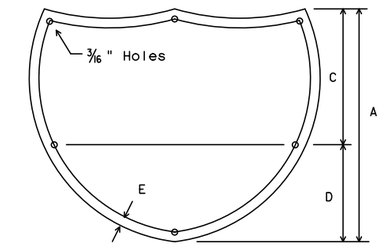
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

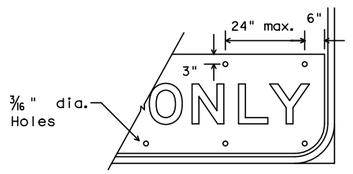
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

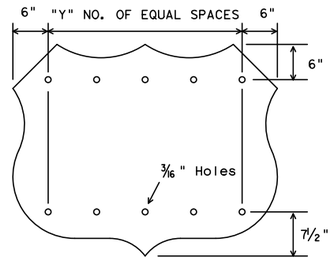


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4

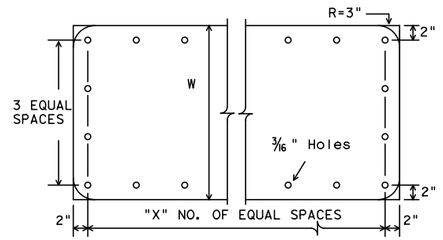


EXIT ONLY PANEL



U.S. ROUTE MARKERS

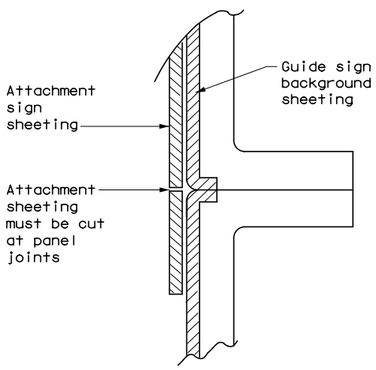
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



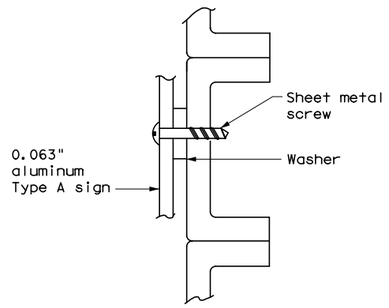
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

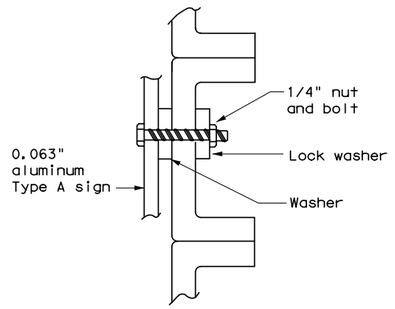
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



DIRECT APPLIED ATTACHMENT



SCREW ATTACHMENT



NUT/BOLT ATTACHMENT

NOTE:

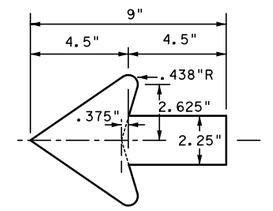
1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".

NOTE:

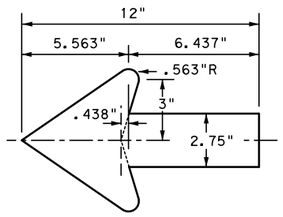
Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS

for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

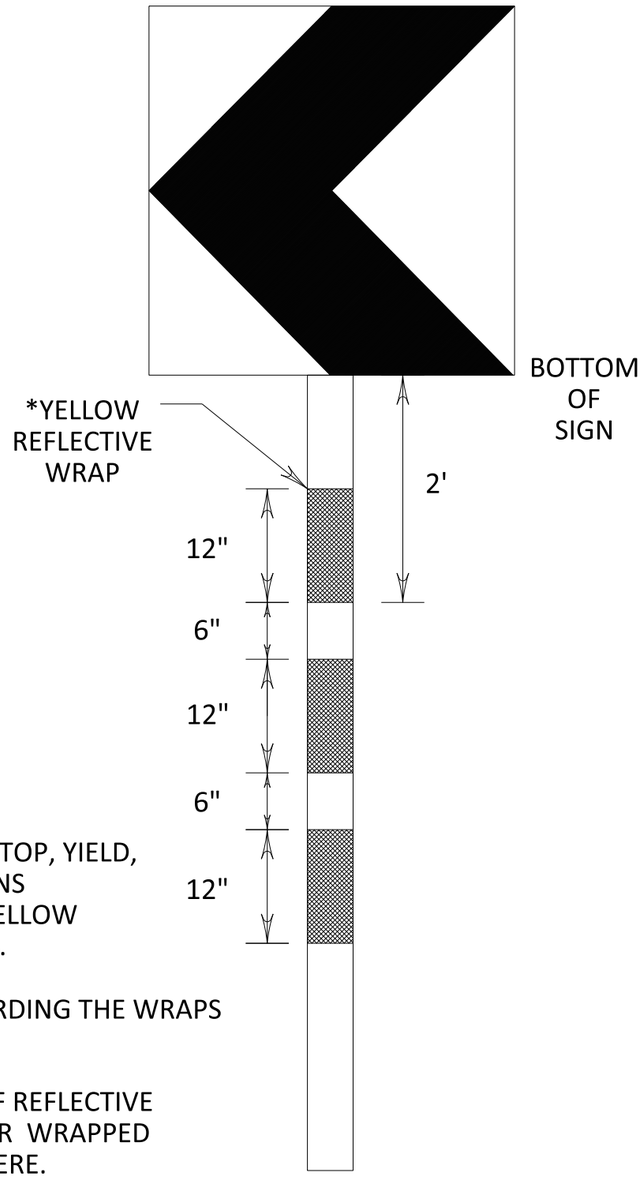
TSR(5)-13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	CRP	SAN PAT.		395

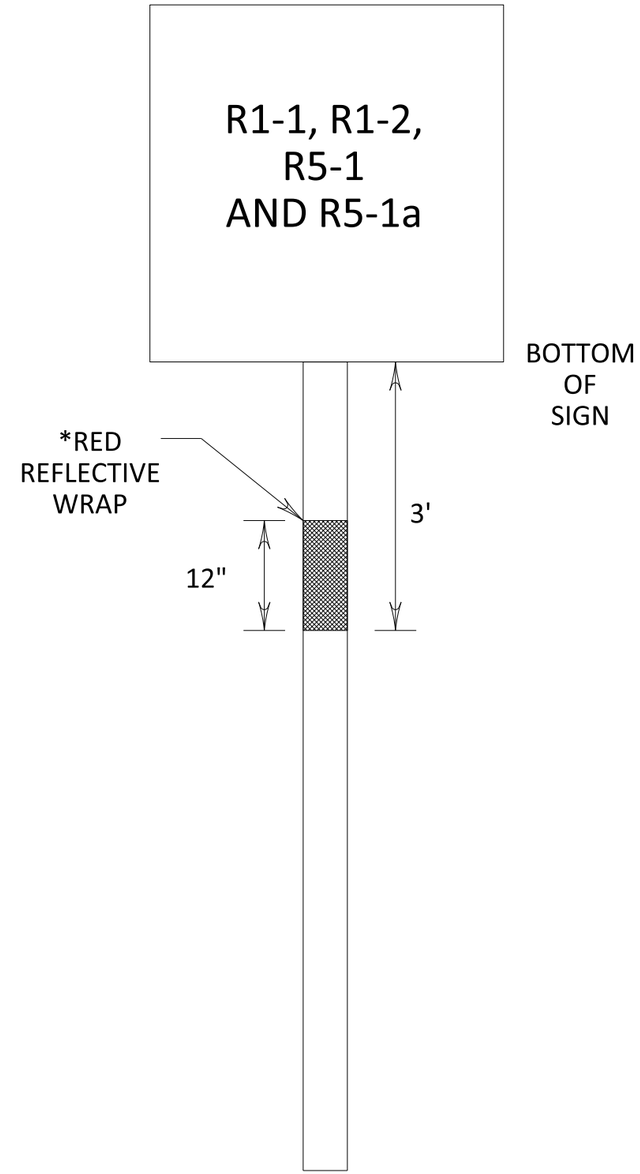
The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

W1-8



R1-1, R1-2, R5-1 AND R5-1a



APPLY RED REFLECTIVE WRAP TO ALL STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS (INDIVIDUAL SIGN MOUNTS). APPLY YELLOW REFLECTIVE WRAP TO CHEVRON SIGNS.

PLEASE DIRECT ANY QUESTIONS REGARDING THE WRAPS TO THE ENGINEER.

WRAP WILL CONSIST OF A 12" STRIP OF REFLECTIVE MATERIAL OF THE APPROPRIATE COLOR WRAPPED AROUND THE SIGN POST AS SHOWN HERE.

*SEE REFLECTIVE WRAP DETAIL FOR PLACEMENT.

WRAPS WILL BE FURNISHED BY THE CONTRACTOR AND SHALL BE SUBSIDIARY TO ITEM 644.

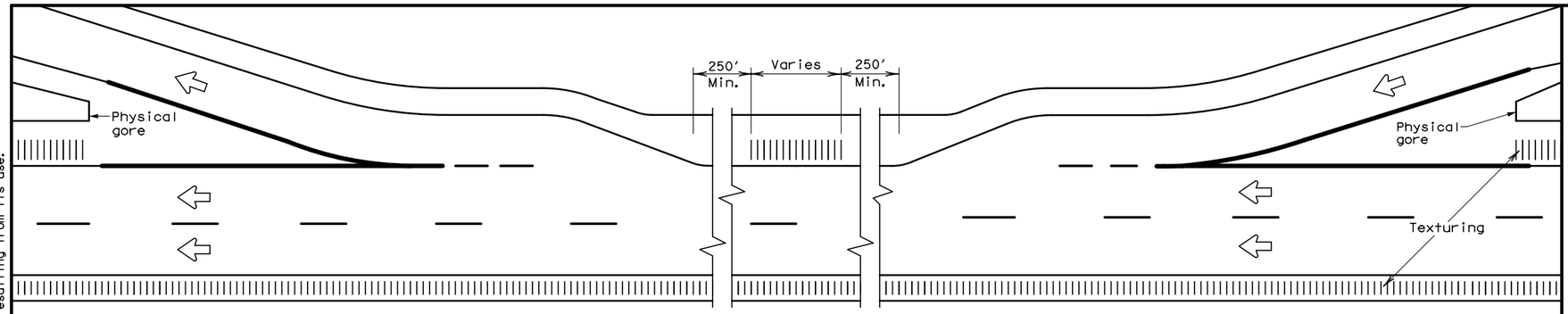
DATE: DATE TIME
FILE: DOCUMENT NAME

Texas Department of Transportation

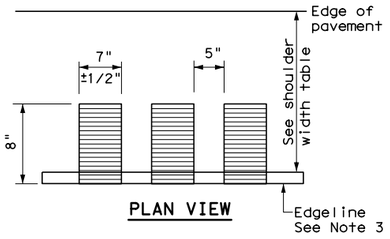
Corpus Christi District Standard

CORPUS CHRISTI DISTRICT REFLECTIVE WRAP DETAIL

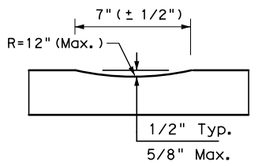
FILE: reflective wrap detail.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT Nov 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		396



TYPICAL RUMBLE STRIP PLACEMENT AT EXIT AND ENTRANCE RAMPS

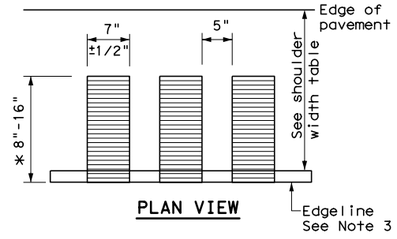


PLAN VIEW



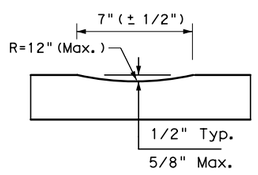
PROFILE VIEW
OPTION 1

CONTINUOUS MILLED DEPRESSIONS
(Rumble Stripes)



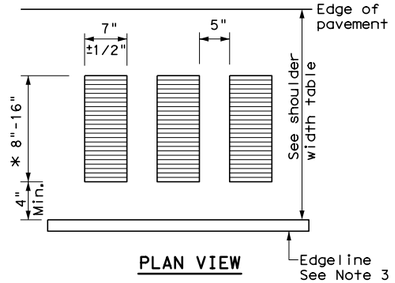
PLAN VIEW

* This distance may vary based on width of shoulder



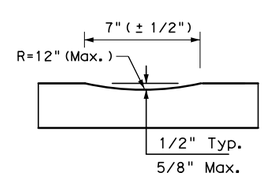
PROFILE VIEW
OPTION 2

CONTINUOUS MILLED DEPRESSIONS
(Rumble Stripes)



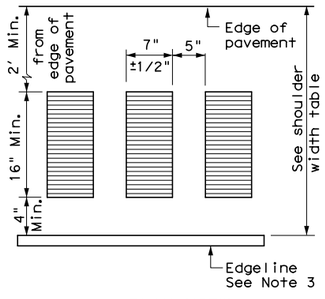
PLAN VIEW

* This distance may vary based on width of shoulder

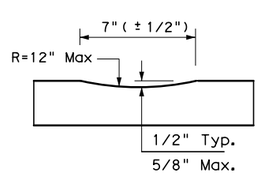


PROFILE VIEW
OPTION 3

CONTINUOUS MILLED DEPRESSIONS
(Rumble Strips)



PLAN VIEW



PROFILE VIEW
OPTION 4

CONTINUOUS MILLED DEPRESSIONS
(Rumble Strips)

GENERAL NOTES

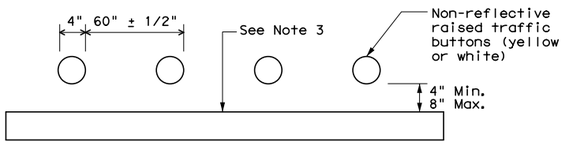
1. Rumble strips and profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
2. Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
3. Use Standard Sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings, and profile markings.
4. See the table below for determining what options may be used for edgeline rumble strips.

WHEN INSTALLING MILLED DEPRESSION EDGELINE RUMBLE STRIPS:

5. See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Operations Division.
6. Pavement markings can be applied over milled shoulder rumble strips to create an edgeline rumble stripe.
7. Breaks in edgeline 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 when installed on conventional highways.
8. Rumble strips shall not be placed across exit or entrance ramps, acceleration and deceleration lanes, crossovers, gore areas or intersections with other roadways.
9. Consideration should be given to noise levels when edgeline rumble strips are installed near residential areas, schools, churches, etc. A minimum of 3/8 inches depth of milled rumble strip may be considered in these areas.
10. On roadways with high bicycle activity, consideration should be given before the installation of edgeline rumble strips. Things to consider include size of rumble strips, rumble strip material and location of rumble strips on the shoulder. If the designer determines that gaps are needed in the rumble strips due to bicycle use of the road, then follow the requirement shown in FHWA Technical Advisory T5040.39, or latest version. A detail of the spacing shall be included in the plans.

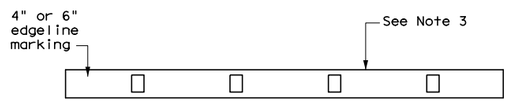
WHEN INSTALLING RAISED OR PROFILE EDGELINE RUMBLE STRIPS:

11. Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per the manufacturer's recommendations.
12. Non-reflective traffic buttons shall be placed adjacent to the pavement marking delineating the edgeline when used as a rumble strip. The color of the button should match the color of the adjacent edgeline marking (white or yellow). The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
13. Non-reflective traffic buttons shall not be placed across exit or entrance ramps, acceleration and deceleration lanes, crossovers, gore areas or intersections with other roadways.
14. Breaks in edgeline rumble strips using raised traffic buttons shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossing, intersections and driveways with high usage of large trucks when installed on conventional highways.
15. The minimum distance between the edgeline and the buttons should be used if the shoulder is less than 8 feet in width.
16. Raised profile thermoplastic markings used as edgelines may substitute for buttons.



PLAN VIEW
OPTION 5

RAISED EDGELINE RUMBLE STRIPS



PLAN VIEW
OPTION 6

PROFILE EDGELINE MARKINGS

SHOULDER WIDTH TABLE		
EQUAL TO OR LESS THAN 2 FEET	GREATER THAN 2 FEET LESS THAN 4 FEET	EQUAL TO OR GREATER THAN 4 FEET
Option 1, 5 OR 6	Option 1, 2, 3, 5 or 6	Option 2, 4, 5 OR 6

Texas Department of Transportation

Traffic Operations Division Standard

EDGELINE RUMBLE STRIPS ON FREEWAYS AND DIVIDED HIGHWAYS

RS(1)-13

FILE: rs(1)-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-10 10-13	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		397

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DATE: 4/26/2021 2:01:41 PM
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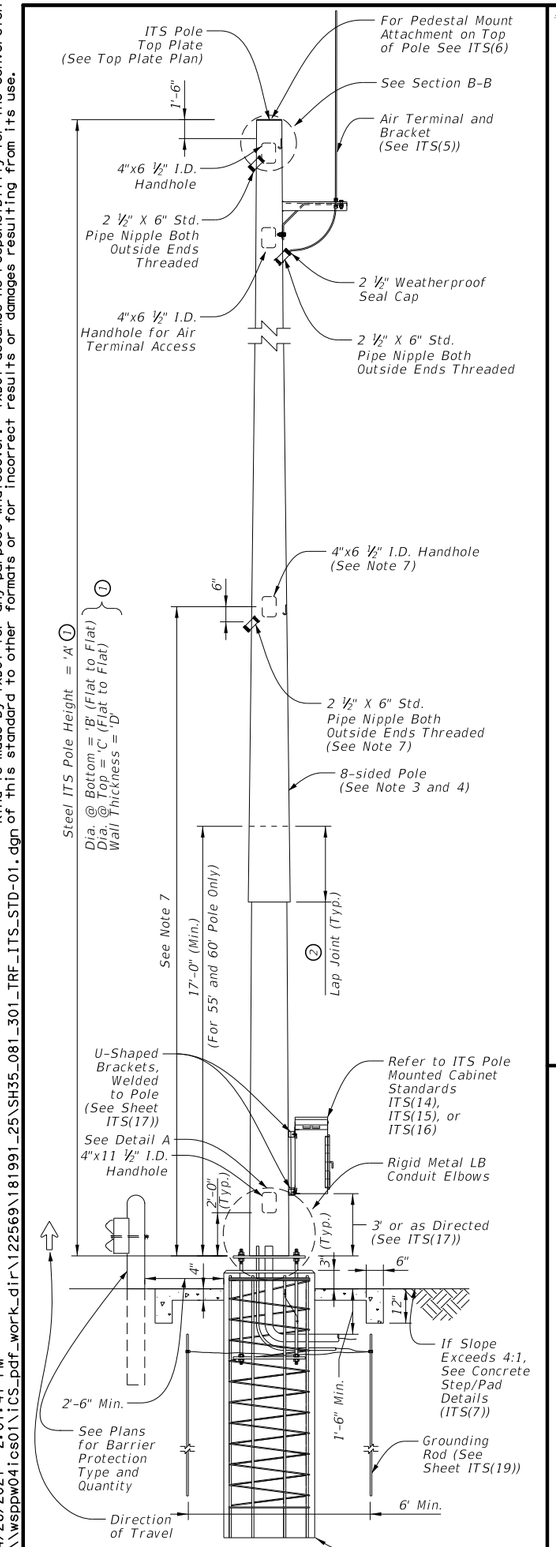
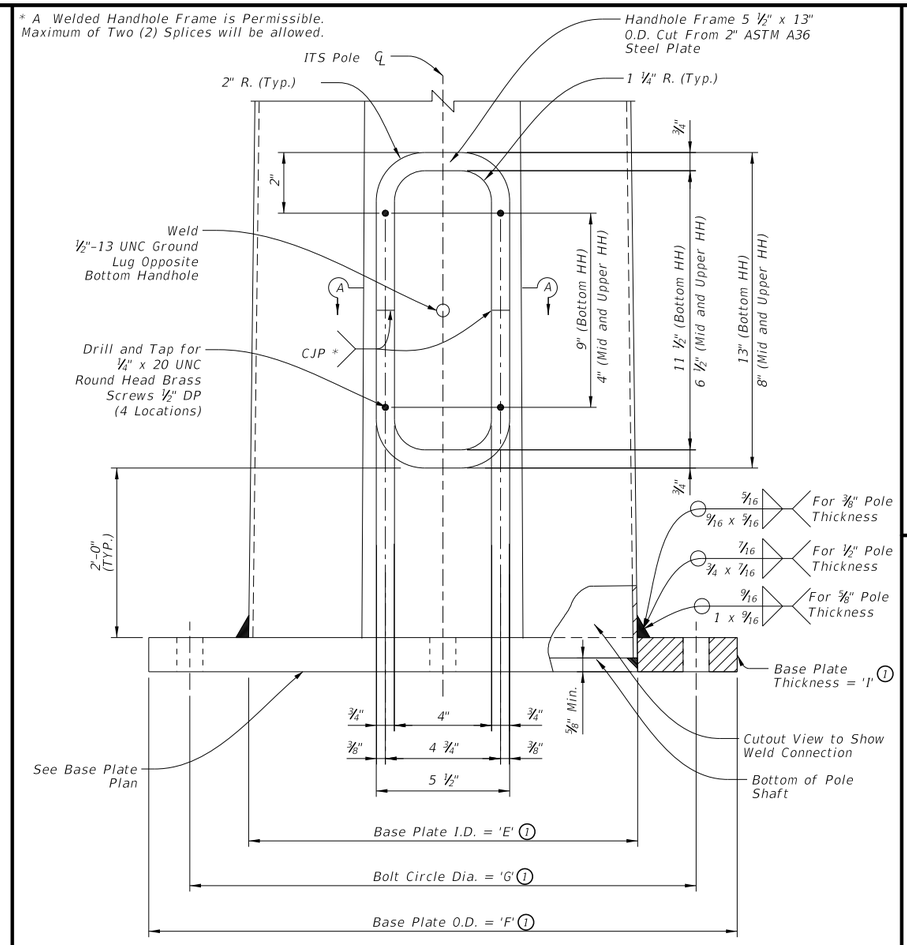
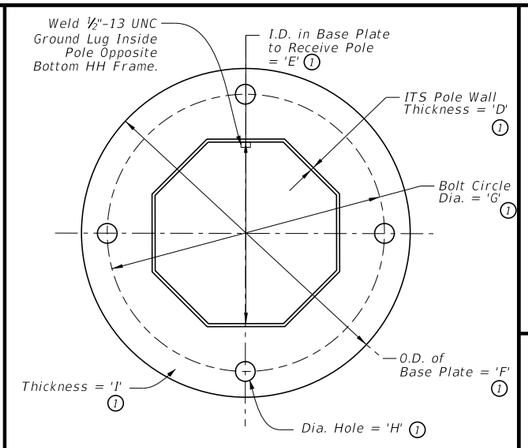


ITS Pole with Cabinet

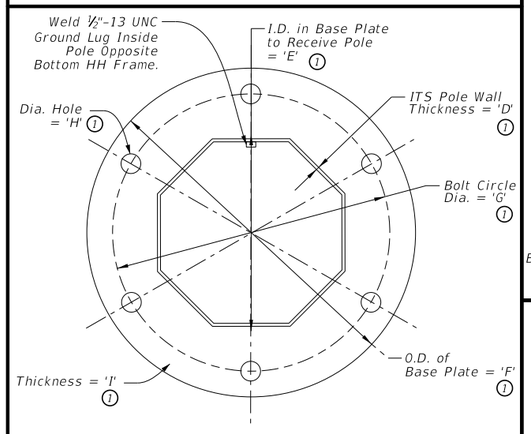


Detail A



Base Plate Plan

4 Bolt Base Plate (ASTM A36)

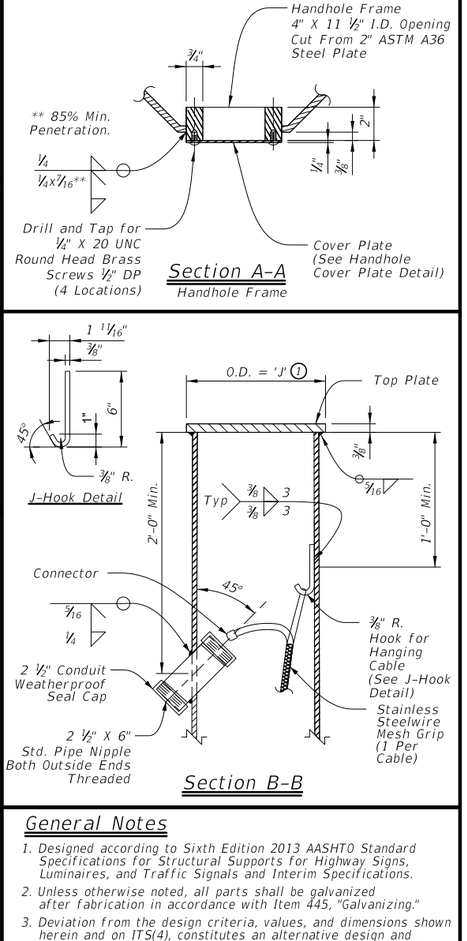


Base Plate Plan

6 Bolt Base Plate (ASTM A36)

Base Plate Plan

8 Bolt Base Plate (ASTM A36)



Section A-A

Handhole Frame

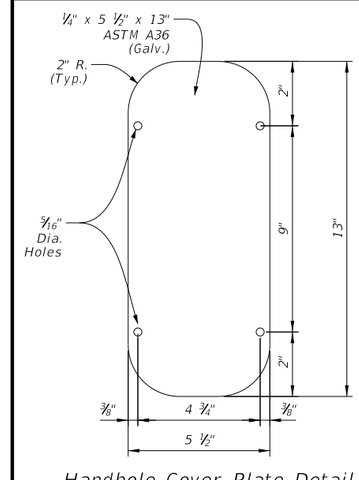
Section B-B

General Notes

1. Designed according to Sixth Edition 2013 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications.
2. Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."
3. Deviation from the design criteria, values, and dimensions shown herein and on ITS(4), constitutes an alternative design and will require submission of shop drawings and calculations for approval, sealed by a Texas Professional Engineer.
4. Direct substitution of twelve sided or round poles, matching the design criteria, values, and dimensions shown herein, require submission of shop drawings for approval to confirm design criteria and values on ITS(4) is met.
5. Locate handholes opposite of the direction of travel.
6. Appropriate number of anchor bolts for base plate determined by height of pole. See 'L' on sheet ITS(4).
7. Location for ITS equipment mount may vary by device. Locate mid span handhole and pipe nipple to accommodate location for ITS equipment as identified in the plans or per manufacturer recommendations. Identify location for mid span handhole and pipe nipple on shop drawings for approval.

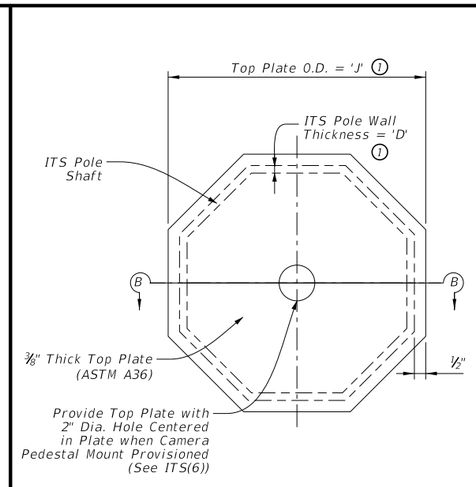
Reference Notes:

(1) See tables on Sheet ITS(4) for values of dimension variables.
(2) See lap joint note for 55' and 60' pole heights on ITS(4) at the bottom of each table.



Handhole Cover Plate Detail

(Bottom Handhole)



Top Plate Plan

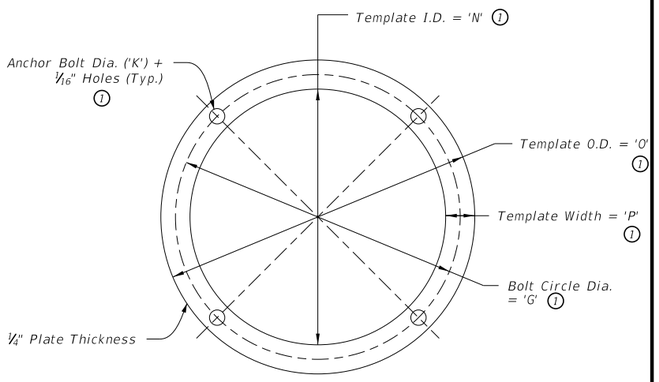
Texas Department of Transportation

Traffic Operations Division Standard

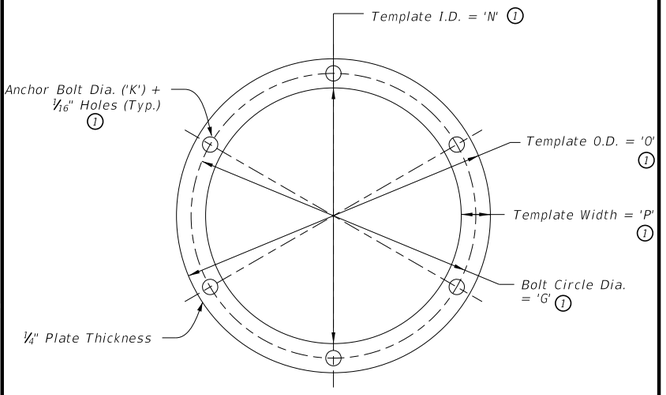
ITS POLE DETAILS OCTAGONAL POLE (EIGHT SIDED POLE)

ITS(1)-15

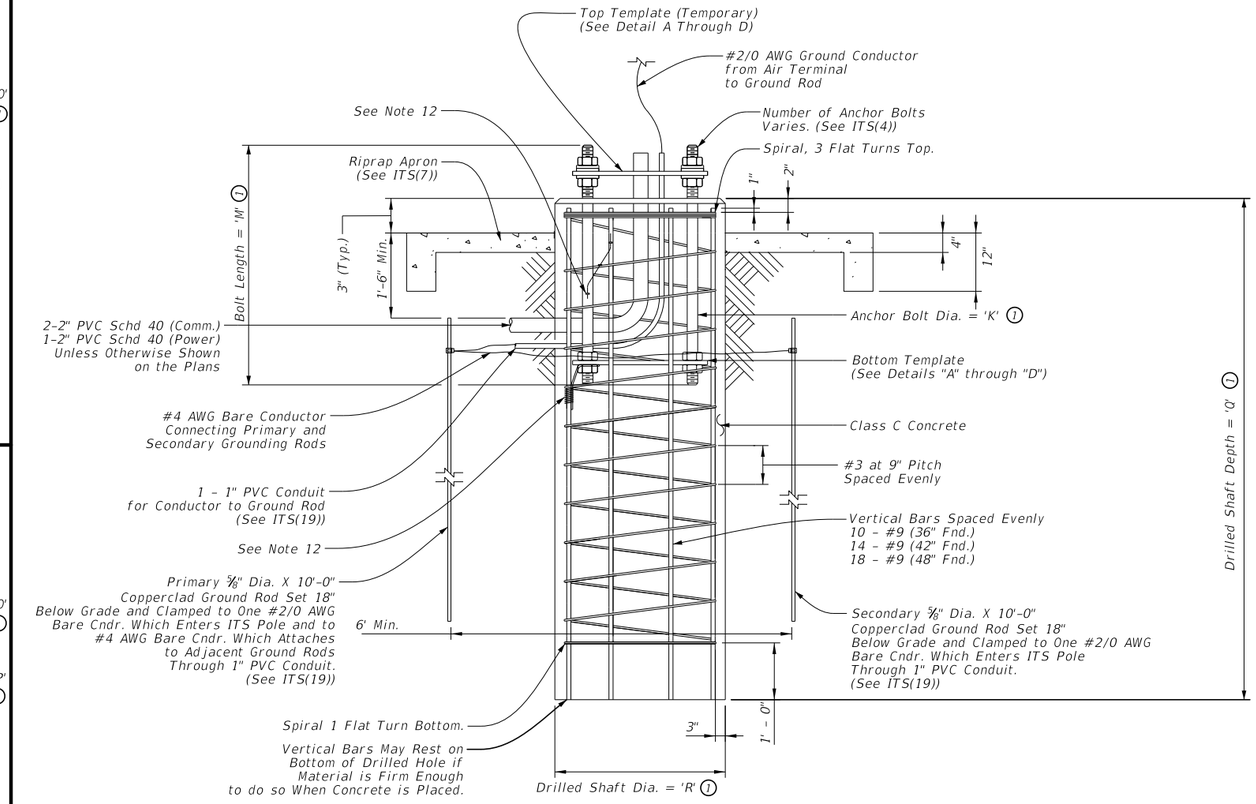
FILE: its(1)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		398



Top and Bottom Template (Four Bolt)
Detail A



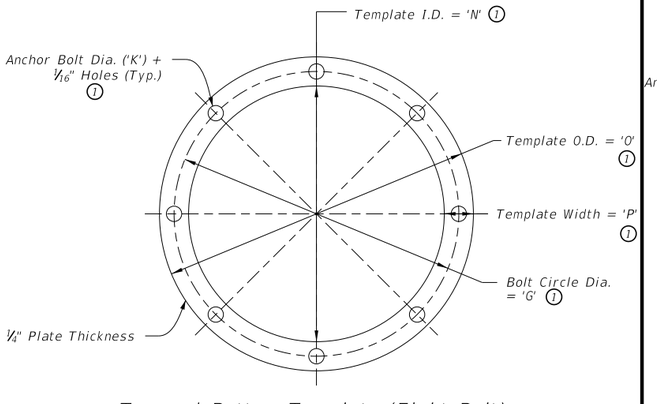
Top and Bottom Template (Six Bolt)
Detail B



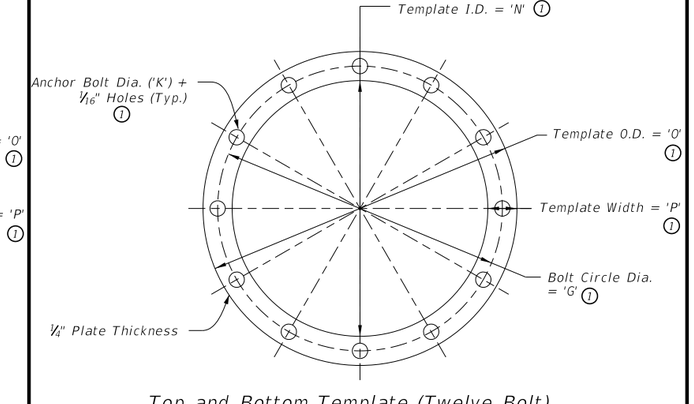
Foundation Details (Typical)
Elevation
Not to Scale

General Notes:

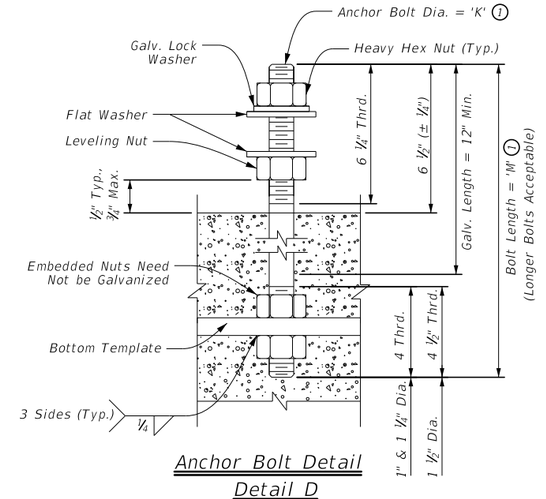
1. Drilled shaft concrete shall be Class "C" (f'c = 3,600 PSI) in accordance with Item 416, "Drilled Shaft Foundations."
2. Reinforcing bars shall be Grade 60 (Fy = 60 KSI) and conform to ASTM A-615. All reinforcing shall conform to Item 440, "Reinforcing Steel."
3. Provide ASTM A-36 steel for templates. Top and bottom templates need not be galvanized.
4. Anchor bolts shall be rigidly held in position during concrete placement using steel templates at the top and bottom. Top templates shall remain in place until the concrete has cured in place beyond initial set time.
5. Lubricate and tighten anchor bolts, when erecting pole, in accordance with Item 449, "Anchor Bolts."
6. Anchor bolts shall conform to ASTM F1554 Grade 55, or ASTM A193 B7 with ASTM A194 Grade 2H or A563 heavy hex nuts with F436 washers. Galvanize a minimum of the top end thread length plus 6 inches for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing."
7. All vertical reinforcement shall be carried to the bottom of the drilled shaft.
8. Place three flat turns of the spiral bar at the top and one flat turn at the bottom of the drilled shaft.
9. Drilled shaft shall be measured by the linear foot and paid under Item 416, "Drill Shaft Foundations."
10. If rock is encountered, the drilled shaft to extend a minimum of two diameters into solid rock.
11. Location for conduit entering foundation may vary. Orient conduit entering foundation to coincide with location of ground boxes and primary ground rod.
12. Bond anchor bolts to rebar with #2/0 AWG jumper and two mechanical connectors or by bending No. 3 bar on bottom template as shown and wire tightly with ten turns of No. 10 wire or one mechanical connector. Mechanical connectors shall be UL Listed for concrete encasement.



Top and Bottom Template (Eight Bolt)
Detail C



Top and Bottom Template (Twelve Bolt)
Detail D



Anchor Bolt Detail
Detail D

Reference Notes:

(1) See tables on Sheet ITS(4) for values of dimension variables.

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE FOUNDATION DETAILS

ITS(3)-16

FILE: its(3)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS April 2016	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		399

DATE: 4/26/2021 2:01:33 PM
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TABLE 1: ITS POLE – 90 MPH (W/ 2 SOLAR PANELS) (4)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1) (10)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH – TEXAS CONE PENETROMETER (N – BLOWS/FT.) (SEE NOTE 5)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
																	'Q'			
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	20	10	8	1/2	10-1/16	21	16	1-1/4	1-1/2	9	1	4	29	14	18	2	12	11	10	36
	30	13	9	1/2	13-1/16	24	19	1-9/16	1-1/2	10	1-1/4	4	35	16-1/2	21-1/2	2-1/2	15	13	10	36
	40	15	9	1/2	15-1/16	26	21	1-9/16	1-1/2	10	1-1/4	6	35	18-1/2	23-1/2	2-1/2	17	14	11	42
	45	16	10	1/2	16-1/16	27	22	1-9/16	1-1/2	11	1-1/4	6	35	19-1/2	24-1/2	2-1/2	18	16	12	42
	50	17	10	1/2	17-1/16	28	23	1-9/16	1-1/2	11	1-1/4	6	35	20-1/2	25-1/2	2-1/2	19	16	12	42
	55 (6) (7)	19	11	5/8	19-1/16	30	25	1-13/16	2	12	1-1/2	6	40	22	28	3	21	18	13	42
	60 (6) (7)	20	11	5/8	20-1/16	31	26	1-13/16	2	12	1-1/2	6	40	23	29	3	21	19	14	48

TABLE 2: ITS POLE – 110 MPH (W/ 2 SOLAR PANELS) (4)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1) (10)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH – TEXAS CONE PENETROMETER (N – BLOWS/FT.) (SEE NOTE 5)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
																	'Q'			
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	20	10	8	1/2	10-1/16	21	16	1-1/4	1-1/2	9	1	4	29	14	18	2	14	12	10	36
	30	13	9	1/2	13-1/16	24	19	1-9/16	1-3/4	10	1-1/4	6	35	16-1/2	21-1/2	2-1/2	18	15	11	36
	40	15	9	1/2	15-1/16	25	21	1-9/16	1-3/4	10	1-1/4	6	35	18-1/2	23-1/2	2-1/2	20	17	12	42
	45	16	10	1/2	17-1/16	27	22	1-9/16	1-3/4	11	1-1/4	8	35	19-1/2	24-1/2	2-1/2	21	18	13	42
	50	17	10	1/2	18-1/16	28	23	1-9/16	1-3/4	11	1-1/4	8	35	20-1/2	25-1/2	2-1/2	22	19	14	42
	55 (7)	19	11	5/8	19-1/16	30	25	1-9/16	2	12	1-1/4	8	35	22-1/2	27-1/2	2-1/2	24	20	14	42
	60 (7)	20	11	5/8	20-1/16	31	26	1-13/16	2	12	1-1/2	6	40	23	29	3	25	21	15	48

TABLE 3: ITS POLE – 130 MPH (W/ 1 SOLAR PANEL) (5)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1) (10)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH – TEXAS CONE PENETROMETER (N – BLOWS/FT.) (SEE NOTE 5)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
																	'Q'			
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	20	10	8	1/2	10-1/16	21	16	1-9/16	1-3/4	9	1-1/4	4	35	13-1/2	18-1/2	2-1/2	16	14	10	36
	30	13	9	1/2	15-1/16	24	19	1-9/16	1-3/4	10	1-1/4	6	35	16-1/2	21-1/2	2-1/2	18	16	11	36
	40	15	9	1/2	15-1/16	26	21	1-9/16	1-3/4	10	1-1/4	6	35	18-1/2	23-1/2	2-1/2	21	18	13	42
	45	16	10	1/2	16-1/16	27	22	1-9/16	1-3/4	11	1-1/4	8	35	19-1/2	24-1/2	2-1/2	23	19	14	42
	50	17	10	1/2	17-1/16	28	23	1-9/16	2	11	1-1/2	8	40	20	26	3	24	20	14	42
	55 (7)	19	11	5/8	19-1/16	30	25	1-13/16	2	12	1-1/2	8	40	22	28	3	27	22	15	42
	60 (7)	20	11	5/8	20-1/16	31	26	1-13/16	2	12	1-1/2	8	40	23	29	3	28	23	16	48

TABLE 4: ITS POLE WITH STIFFENERS – 90 MPH (W/ 4 SOLAR PANELS) (8)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH – TEXAS CONE PENETROMETER (N – BLOWS/FT.) (SEE NOTE 5)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
																	'Q'			
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	30	13	9	3/8	13-1/16	28	22	1-1/4	1-3/4	10	1	8	29	20	24	2	17	15	11	42
	40	15	9	1/2	15-1/16	30	24	1-1/4	2	10	1	8	29	22	26	2	20	17	12	42
	45	16	10	1/2	16-1/16	31	25	1-9/16	2	11	1-1/4	8	35	22-1/2	27-1/2	2-1/2	21	18	13	42
	50	17	10	1/2	17-1/16	32	26	1-9/16	2	11	1-1/4	8	35	23-1/2	28-1/2	2-1/2	21	18	13	42
12 sided	55 (7)	19	11	5/8	19-1/16	34	27	1-9/16	2	12	1-1/4	12	35	24-1/2	29-1/2	2-1/2	21	18	13	48
	60 (7)	20	12	5/8	20-1/16	35	28	1-9/16	2	13	1-1/4	12	35	25-1/2	30-1/2	2-1/2	22	19	14	48

TABLE 5: ITS POLE WITH STIFFENERS – 110 MPH (W/ 4 SOLAR PANELS) (8)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH – TEXAS CONE PENETROMETER (N – BLOWS/FT.) (SEE NOTE 5)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
																	'Q'			
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	30	13	9	1/2	13-1/16	28	22	1-9/16	2-1/4	10	1-1/4	8	35	19-1/2	24-1/2	2-1/2	20	17	12	42
	40	16	10	1/2	16-1/16	31	25	1-9/16	2-1/4	11	1-1/4	8	35	22-1/2	27-1/2	2-1/2	24	20	14	42
	45	17	11	1/2	17-1/16	32	26	1-9/16	2-1/4	12	1-1/4	8	35	23-1/2	28-1/2	2-1/2	25	21	15	42
	50	18	11	1/2	18-1/16	32	26	1-13/16	2-1/2	12	1-1/2	8	40	23	29	3	25	21	15	48
12 SIDED	55 (7)	19	11	5/8	19-1/16	34	27	1-9/16	2-1/4	12	1-1/4	12	35	24-1/2	29-1/2	2-1/2	24	21	15	48
	60 (7)	20	12	5/8	20-1/16	35	28	1-9/16	2-1/4	13	1-1/4	12	35	25-1/2	30-1/2	2-1/2	25	22	15	48

TABLE 6: ITS POLE WITH STIFFENERS – 130 MPH (W/ 3 SOLAR PANELS) (9)

POLE TYPE (1)	POLE HEIGHT (FT)	POLE SHAFT (1)			BASE PLATE (1)					TOP PLATE (2)	ANCHOR BOLT (3)						FOUNDATION (3)			
		BOTTOM OUTSIDE DIA. (IN)	TOP OUTSIDE DIA. (IN)	WALL THICKNESS (IN)	INSIDE DIA. (IN)	OUTSIDE DIA. (IN)	BOLT CIRCLE DIA. (IN)	BOLT HOLE DIA. (IN)	THICKNESS (IN)	OUTSIDE DIA. (IN)	DIA. (IN)	NO. OF BOLTS	LENGTH OF BOLT MIN. (IN)	TEMPLATE INSIDE DIA. (IN)	TEMPLATE OUTSIDE DIA. (IN)	TEMPLATE WIDTH (IN)	DRILL SHAFT DEPTH – TEXAS CONE PENETROMETER (N – BLOWS/FT.) (SEE NOTE 5)			DRILLED SHAFT DIA. (IN)
																	N = 10	N = 15	N = 40	
																	'Q'			
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'				'R'
8 SIDED	30	13	9	1/2	13-1/16	28	22	1-9/16	2-1/2	10	1-1/4	8	35	19-1/2	24-1/2	2-1/2	23	19	14	42
	40	16	10	1/2	16-1/16	31	25	1-9/16	2-1/2	11	1-1/2	8	40	22	28	3	25	21	14	42
	45	17	11	1/2	17-1/16	32	26	1-13/16	2-1/2	12	1-1/2	8	40	23	29	3	26	22	16	48
	50	18	11	1/2	18-1/16	33	27	1-13/16	2-1/2	12	1-1/2	8	40	24	30	3	27	23	16	48
12 SIDED	55 (7)	19	11	5/8	19-1/16	34	27	1-9/16	2-1/4	12	1-1/4	12	35	24-1/2	29-1/2	2-1/2	26	22	16	48
	60 (7)	20	12	5/8	20-1/16	35	28	1-9/16	2-1/4	13	1-1/4	12	35	25 1/2	30 1/2	2-1/2	27	23	16	48

General Notes:

1. Designed according to Sixth Edition 2013 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto.
2. Table 1 and Table 4 design wind speed equals 90 MPH (3-Second Wind Gusts) with a 1.14 gust factor. A wind importance factor of 1.00 is applied to adjust the wind speed to a 50 year recurrence interval at 33 FT above the ground for Exposure C category in accordance with TxDOT WV&IZ(LTS2013). Design values listed in the table allow the base of the pole to be elevated above the surrounding ground level no more than 20 FT.
3. Table 2 and Table 5 design wind speed equals 110 MPH (3-Second Wind Gusts) with a 1.14 gust factor. A wind importance factor of 1.00 is applied to adjust the wind speed to a 50 year recurrence interval at 33 FT above the ground for Exposure C category in accordance with TxDOT WV&IZ(LTS2013). Design values listed in the table allow the base of the pole to be elevated above the surrounding ground level no more than 20 FT.
4. Table 3 and Table 6 design wind speed equals 130 MPH (3-Second Wind Gusts) with a 1.14 gust factor. A wind importance factor of 1.00 is applied to adjust the wind speed to a 50 year recurrence interval at 33 FT above the ground for Exposure C category in accordance with TxDOT WV&IZ(LTS2013). Design values listed in the table allow the base of the pole to be elevated above the surrounding ground level no more than 20 FT.
5. Recommended embedment lengths are for information purposes only. Foundation embedment depth is based off Texas Cone Penetrometer Value N = 10 blows/ft. for soft soils and up to 40 blows/ft. for hard soils. Foundation lengths shall be as shown on the plans, or as directed by the Engineer. Foundations will be paid for under Item 416, "Drilled Shaft Foundations" unless otherwise shown on the plans.
6. Deviation from the design criteria and values contained in the tables above constitute and alternative design and will require submission of shop drawings and calculations for approval, sealed by a Texas Professional Engineer.
7. 12-sided or round poles as a direct substitution for 8-sided and round poles as a direct substitution for 12-sided poles, meeting the design criteria and values contained in the tables above, require submission of shop drawings for approval.

Reference Notes

(1) See the following ITS Pole Standard sheets:
- 8-sided Pole – ITS(1)
- 12-sided Pole – ITS(2)

(2) Provision for 2" Dia. opening in top plate for poles requiring cameras mounted on top.
- See ITS Pole Mounting Details – ITS(6)

(3) See ITS Pole Foundation Details – ITS(3)

(4) Designed to support the following:
- Two Type 3 ITS pole mounted cabinets (280 LBS/EA and EPA = 14.50 sq. ft. per cabinet). See ITS(16).
- Two 250 W (50 LBS/EA and EPA = 30.70 sq. ft. per panel) solar panels (see ITS(24) "Solar Panel Matrix Table")
- Combined ITS equipment dead load of 170 LBS with an EPA = 6 sq. ft.

(5) Designed to support the following:
- Two Type 3 ITS pole mounted cabinets (280 LBS/EA and EPA = 14.50 sq. ft. per cabinet). See ITS(16).
- One 250 W (50 LBS/EA and EPA = 30.70 sq. ft. per panel) solar panels (see ITS(24) "Solar Panel Matrix Table")
- Combined ITS equipment dead load of 170 LBS with an EPA = 6 sq. ft.

(6) Pole heights at 55 Ft. and 60 Ft. located in the AMA, CHS, and LBB Districts, will require special design and design values shown shall not be used. Submit shop drawings for pole design and supporting calculations for 55 Ft. and 60 Ft. pole heights signed and sealed by a Texas Professional Engineer for approval.

(7) Ensure minimum nominal splice length is 1.5 times the average pole diameter at the splice to the nearest inch. Ensure longitudinal seam welds that will be in contact at a slip joint splice are ground smooth for the length of splice plus a minimum of six inches. Ensure a 100% longitudinal seam weld for a length of 1.5 pole diameter plus a minimum of 6 inches in outer sections at splices and at base plate. Provide 85% penetration in longitudinal seam welds at other pole sections.

(8) Designed to support the following:
- Two Type 3 ITS pole mounted cabinets (280 LBS/EA and EPA = 14.50 sq. ft. per cabinet). See ITS(16).
- Four 250 W (50 LBS/EA and EPA = 30.70 sq. ft. per panel) solar panels (see ITS(24) "Solar Panel Matrix Table")
- Combined ITS equipment dead load of 170 LBS with an EPA = 6 sq. ft.

Refer to ITS(4A) for stiffening plate details at the pole to base plate connection.

(9) Designed to support the following:
- Two Type 3 ITS pole mounted cabinets (280 LBS/EA and EPA = 14.50 sq. ft. per cabinet). See ITS(16).
- Three 250 W (50 LBS/EA and EPA = 30.70 sq. ft. per panel) solar panels (see ITS(24) "Solar Panel Matrix Table")
- Combined ITS equipment dead load of 170 LBS with an EPA = 6 sq. ft.

Refer to ITS(4A) for stiffening plate details at the pole to base plate connection.

(10) When solar panels are not provisioned in the plans, ITS pole wall thickness may be reduced by 1/8".

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ITS POLE DESIGN DETAILS DATA LOOKUP TABLE

ITS(4)-15

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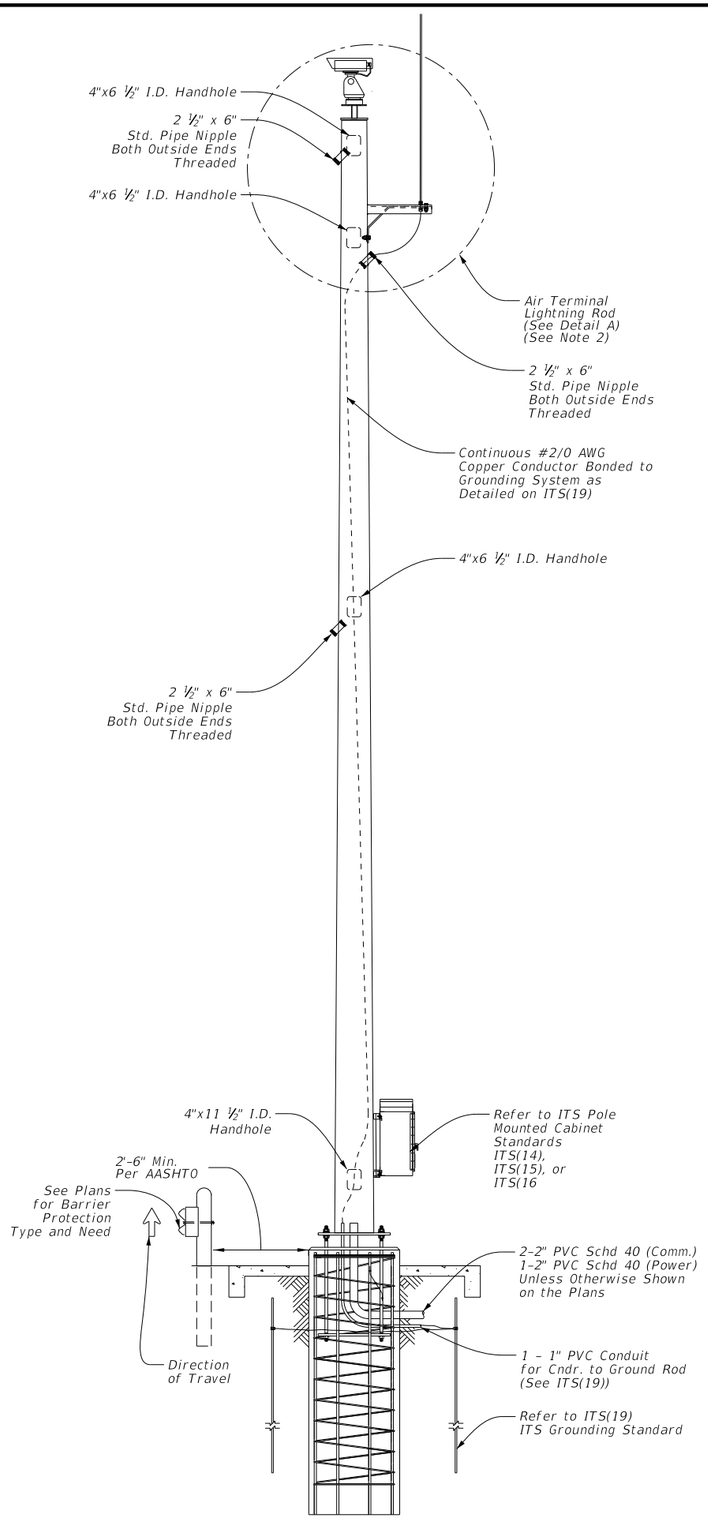
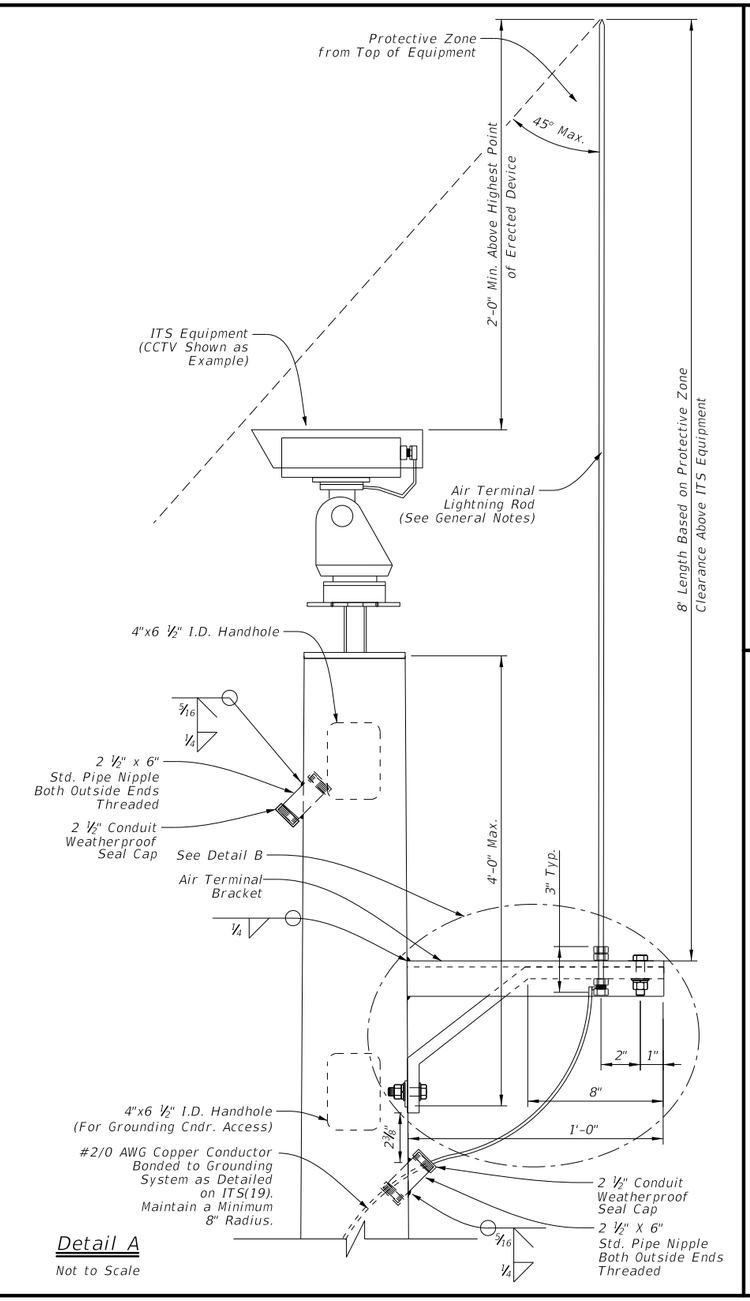
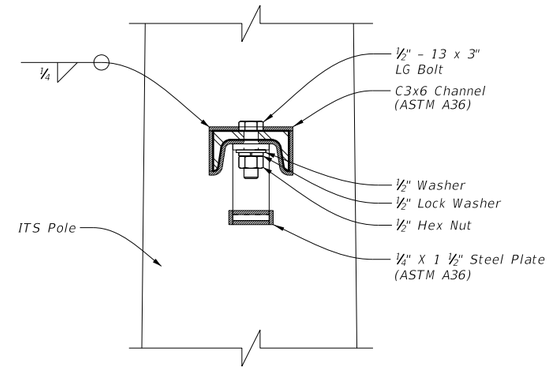


ITS Pole with Cabinet



Detail A

Not to Scale



Section A-A

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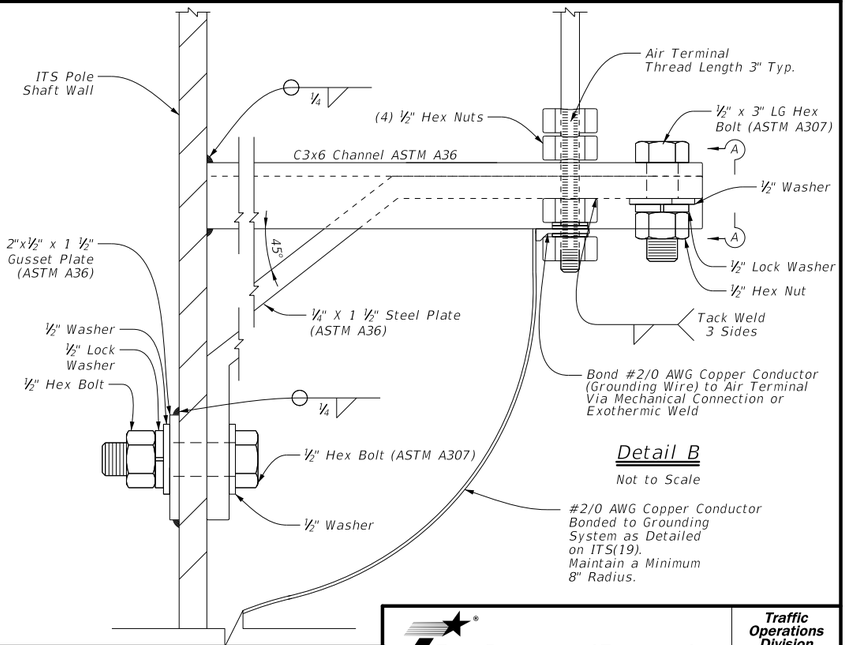

Detail B

Not to Scale

General Notes:

1. Provide lightning protection using air terminals on structures utilizing the rolling sphere method. Provide lightning protection system consisting of air terminals, down conductor, and grounding system installed in accordance with NFPA 780 and tested in accordance with IEEE 142. Meet the following requirements:
   - A. Position - in center of least utilized field of view.
   - B. Height - camera equipment to be within 45 degree protective zone of air terminal.
   - C. Material - ½" ETP alloy 110 copper air terminal (Class II)
   - D. Clearance - 24" minimum height above highest point of ITS equipment.
   - E. Bonding - attach air terminal to bracket by exothermic weld or with approved clamping.
   - F. Structure wind rating in accordance with TxDOT WV & IZ (LTS2013).
   - G. Galvanize air terminal bracket in accordance with Item 445, "Galvanizing."
2. Alternative orientation for air terminal and pole mounted cabinet due to project specific needs to be indicated on the plans and detailed in shop drawing submittal for approval.
3. Weld air terminal bracket to ITS pole in accordance with Item 448 "Structural Field Welding." Bracket may be welded by the fabricator in the shop prior to delivery. A bolted connection for the air terminal bracket is acceptable in lieu of a welded connection with approval by the Engineer and detailed in the shop drawings.

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ITS POLE AIR TERMINAL DETAILS

ITS(5)-15

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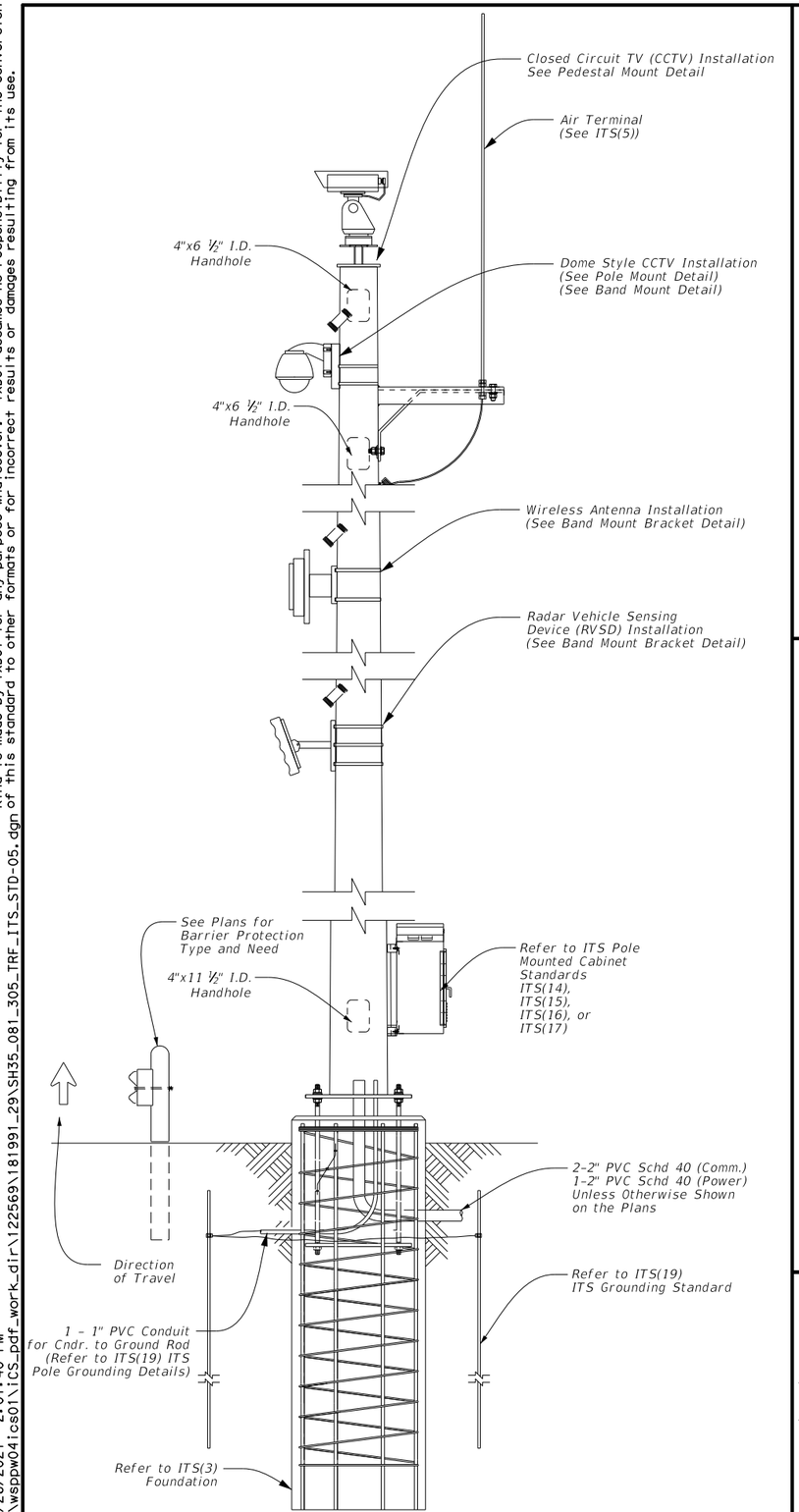
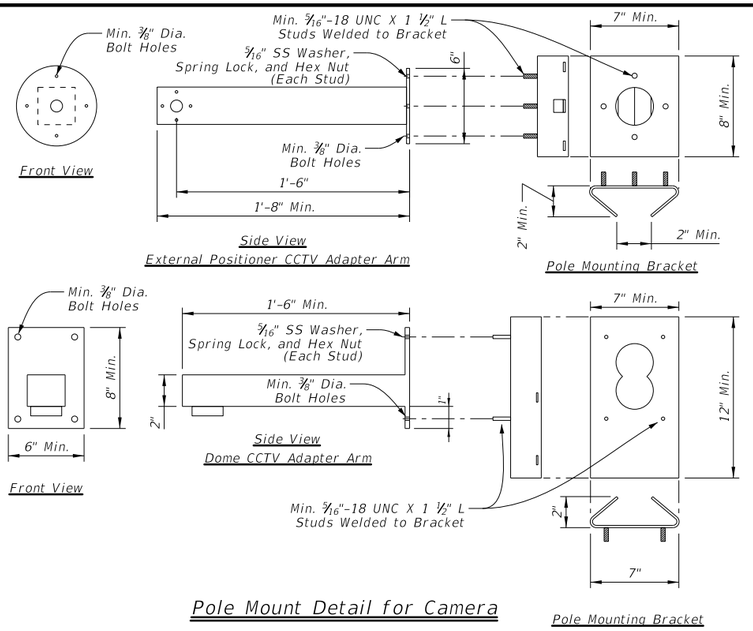
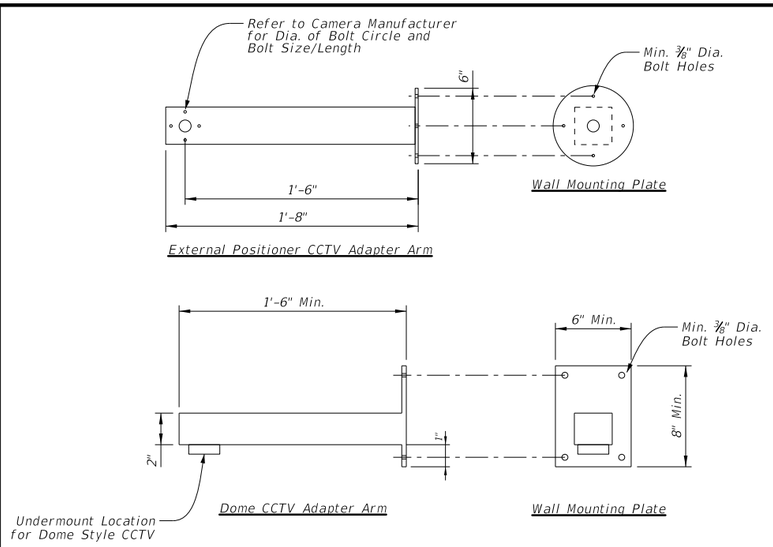


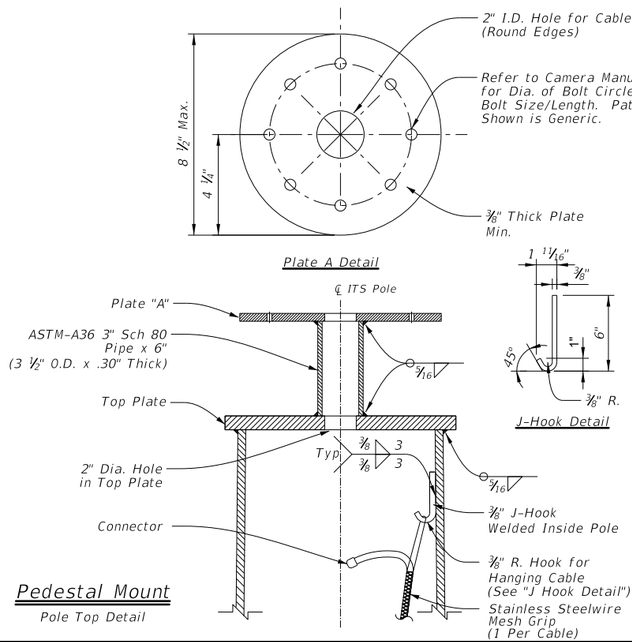
ITS Pole with Cabinet



Pole Mount Detail for Camera

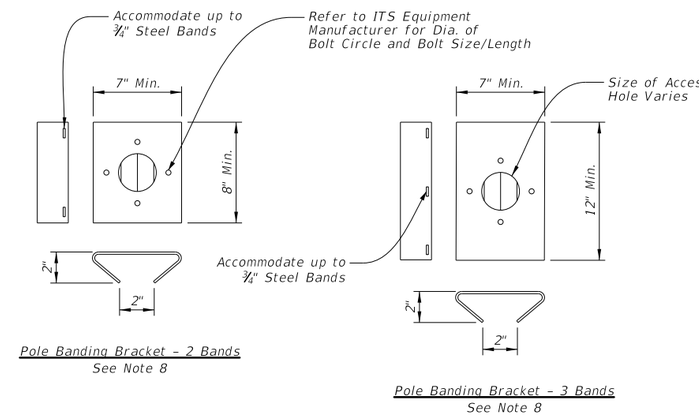


Wall Mount Detail



Pedestal Mount

Pole Top Detail



Band Mount Bracket Details

General Notes:

1. Designed according to Sixth Edition AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications.
2. Hang all cabling inside ITS pole structure with stainless steel wire mesh grips.
3. Bolt positioning in the pedestal top plate (Plate "A") for the pan/tilt base must be determined in the field per camera manufacturers recommendations. This will allow positioning of the camera to maximize coverage area. The Engineer will determine the camera's blind zone at each location.
4. Provide pedestal top plate and Plate "A" that conform to ASTM A36.
5. Make all welds conform to Item 441 and AWSD 1.1 (Structural Welding). Repair damaged galvanized coating per Item 445, "Galvanizing."
6. Galvanize parts in accordance with Item 445, "Galvanizing" unless otherwise noted.
7. The type of ITS equipment shown to be mounted to the ITS pole is intended to represent the most common ITS equipment applications and should not be treated as all inclusive. Other ITS equipment applications may exist that are project specific.
8. Mounting brackets are intended to be diagrammatic and for information only, and are not all inclusive. Contractor responsible for submitting mounting bracket design for approval by the Engineer prior to fabrication. Mounting bracket designed to support a maximum 35 Lbs. Off-the-shelf mounting brackets are acceptable and shall be submitted by shop drawing for approval.
9. Mounting heights to be determined in the field based on manufacturer recommendations.

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Traffic Operations Division Standard

ITS POLE EQUIPMENT MOUNTING DETAILS

ITS(6)-15

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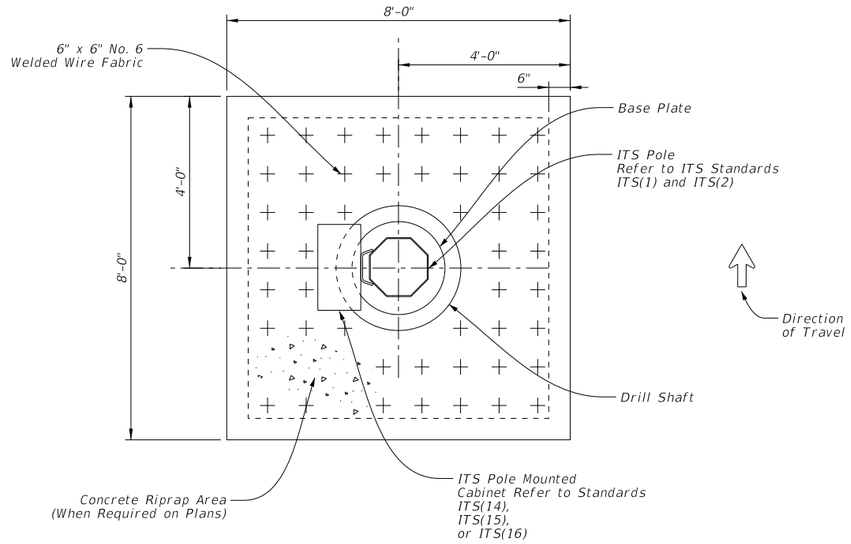
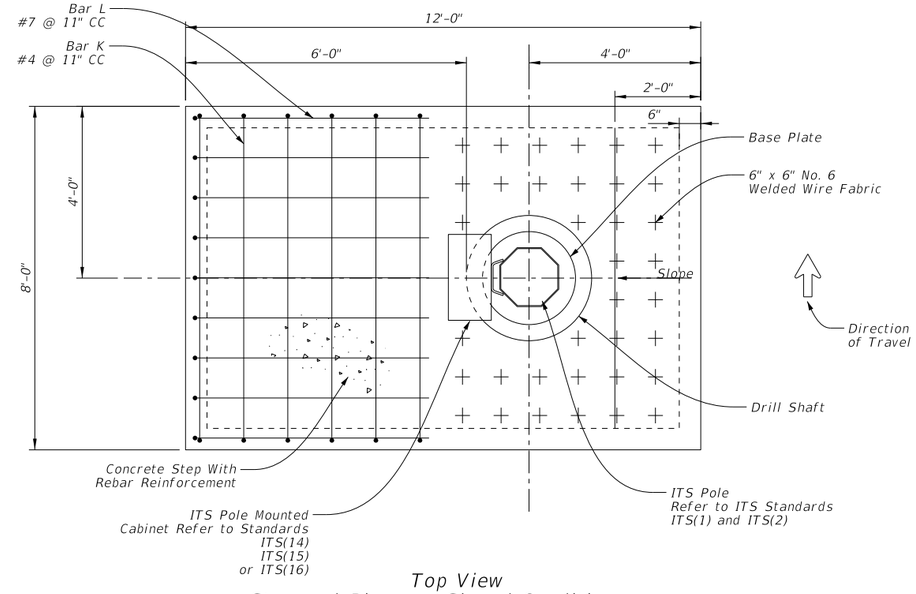


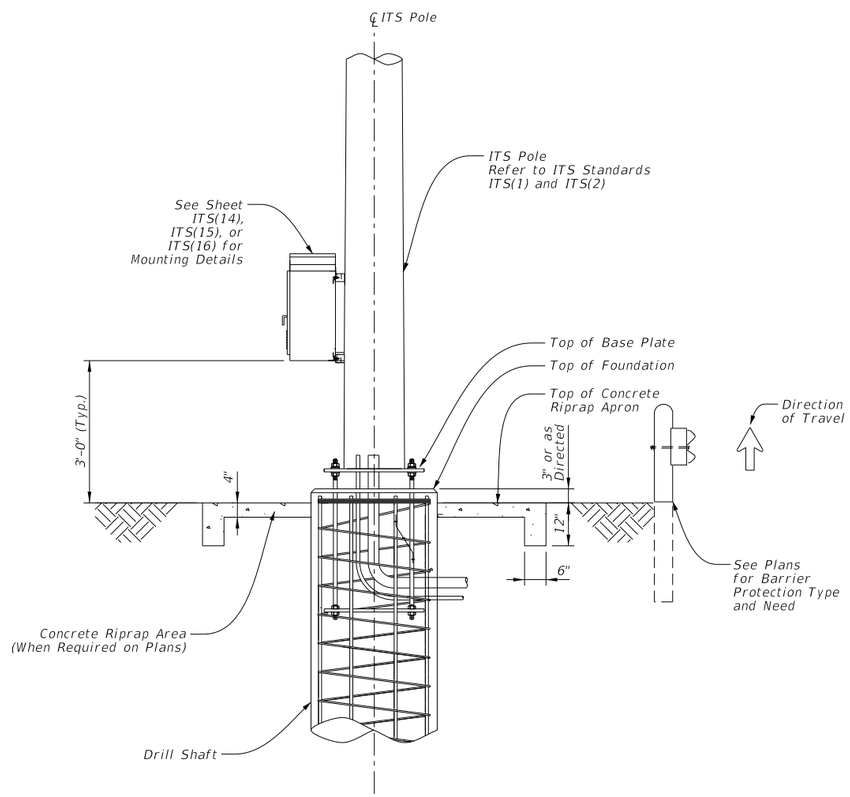
Top View
Riprap – Non-Sloped Conditions



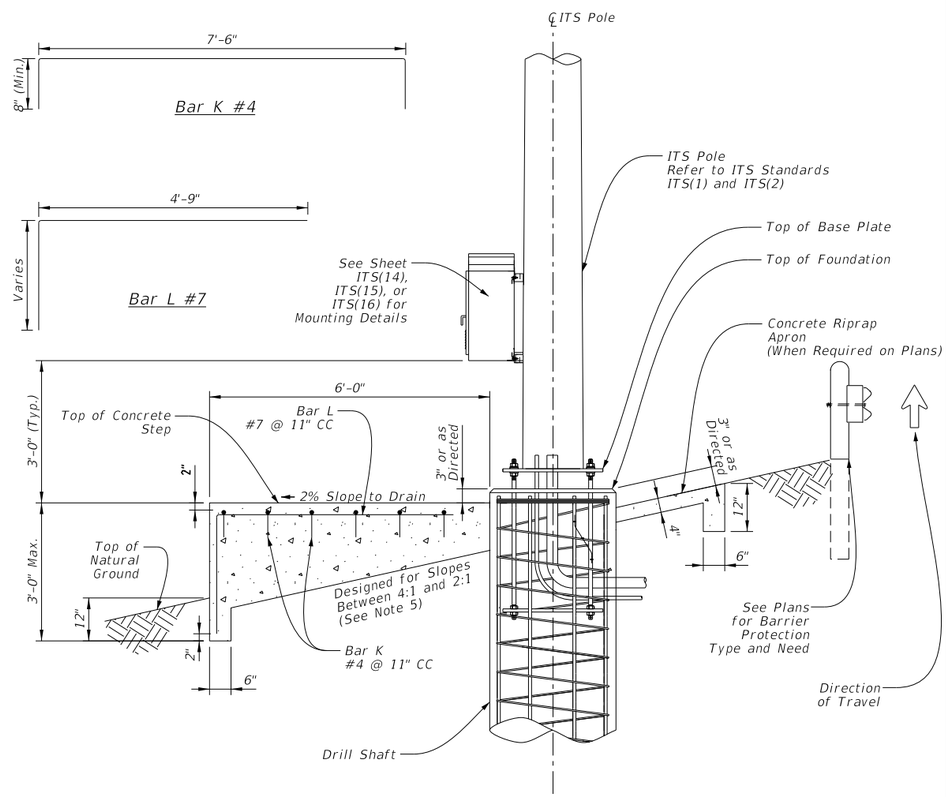
Top View
Step and Riprap – Sloped Conditions

General Notes:

1. For non-sloped grassy areas, an 8' x 8' concrete riprap apron shall be poured around ITS pole foundations (see detail on this sheet), estimated at 1.25 CY per site, paid for under Item 432 "Riprap."
2. For sloped grassy areas, a concrete "step" (for maintenance personnel to access cabinet) shall be poured as part of the riprap apron. The step shall vary in height depending on slope, but shall extend 6' horizontally from ITS pole drilled shaft foundation and be the same width as riprap apron (8'). Step shall be poured at same time as riprap apron (see detail on this sheet). Any additional concrete necessary to fabricate step (over and above the 1.25 CY) shall be considered subsidiary to the various bid items and no direct payment shall be made.
3. For sloped areas where riprap exists, a 6' (horizontal from drilled shaft foundation) x 4' wide step shall be installed (see detail this sheet). Concrete for step shall be considered subsidiary to the various bid items and no direct payment shall be made.
4. Cabinet orientation may vary depending on field conditions or project constraints. Accommodate configuration of platform according to cabinet orientation.
5. Slopes greater than a 2:1 or when 3'-0" Max. step wall height is exceeded, an alternative design with safety railing is required and shall be detailed in the shop drawings for approval.



Elevation View
Riprap Apron Detail – Non-Sloped Conditions



Elevation View
Riprap Apron/Step Detail – Sloped Conditions
(Slopes Exceeding 4:1)

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ITS POLE RIPRAP DETAILS

ITS(7)-15

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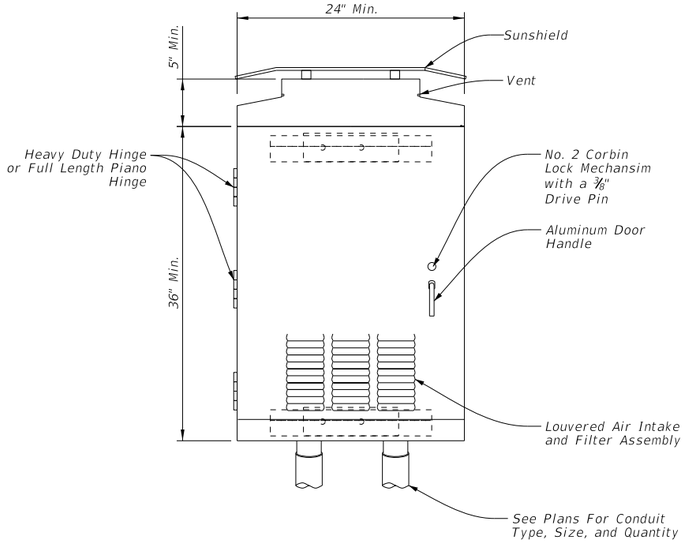
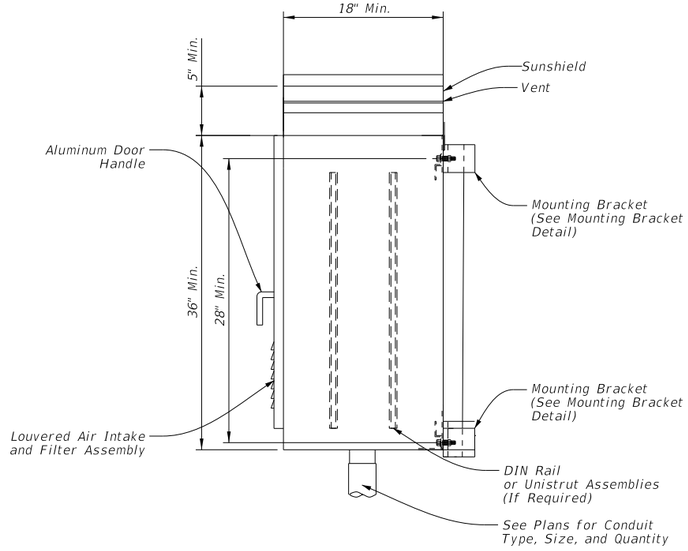


Pole Mounted Cabinet – Type 2 Front View

Not to Scale



Pole Mounted Cabinet – Type 2 Side View

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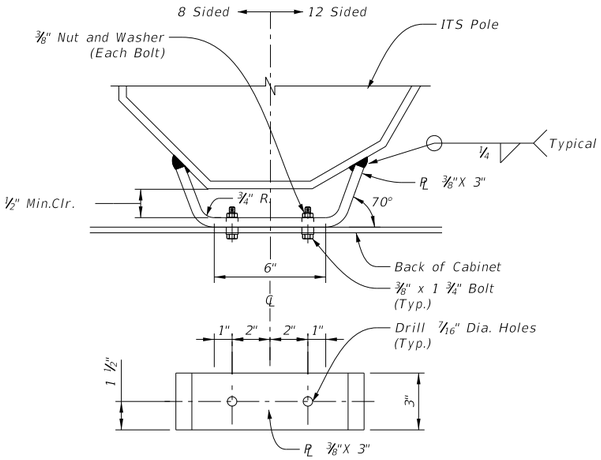
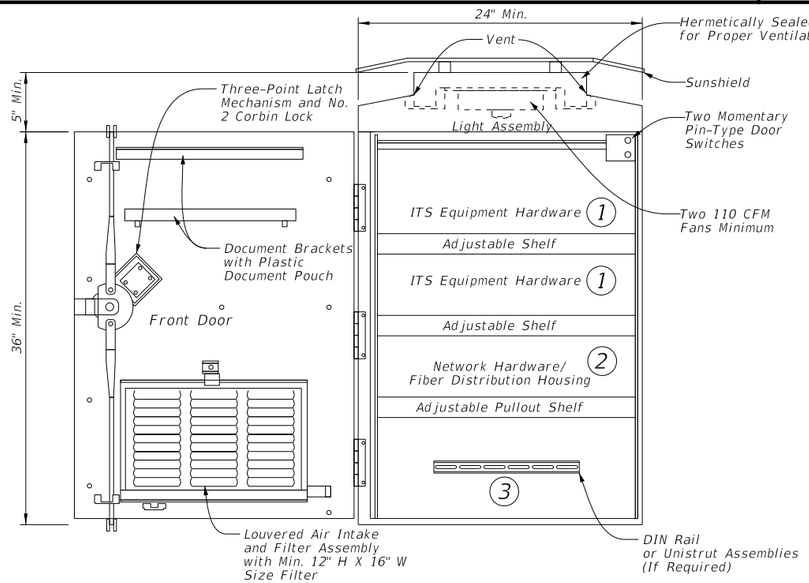


Note:
ITS Pole May be Round, Octagonal (8 Sided), or Dodecahedron (12 Sided).
See ITS(1), and ITS(2) for Details.

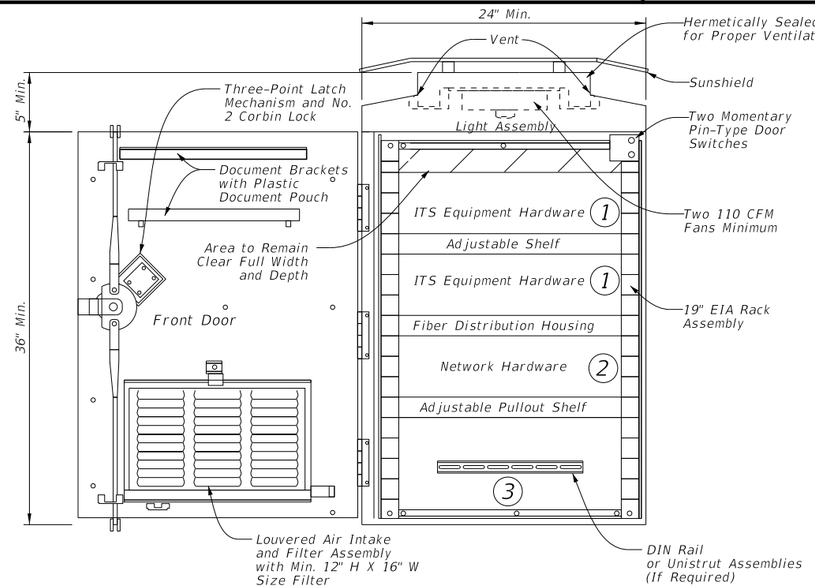
Mounting Bracket Detail

Not to Scale



Interior – Type 2 Without 19" EIA Rack – Front View

Not to Scale



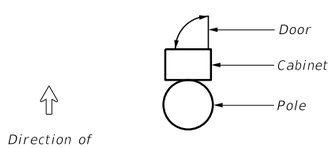
Interior – Type 2 With 19" EIA Rack – Front View

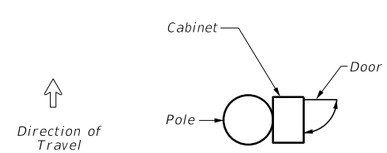
Not to Scale

Typical Equipment Layout Legend	
	Example Equipment
1	CCTV Interface Panel, Radar Vehicle Sensing Device (RVSD) Equipment, DMS/LCS Controller Environmental Sensor Station (ESS) Equipment, Bluetooth Equipment, or ITS Radio Equipment (See General Note 1)
2	Ethernet Switch, Video Encoder, Terminal Server, Fiber Optic Transceivers, or Media Conversion Equipment (See General Note 1)
3	Power Distribution Assembly, Service Entrance Breakers, Primary AC Power, Auxiliary Power Strip, Ground Bus Bar Surge Protection Equipment

General Notes:

1. Layout of hardware equipment and configuration shown is diagrammatic in nature and intended to represent a preferred Type 2 pole mounted cabinet setup. Hardware needed for each Type 2 cabinet varies and not all cabinet equipment may be shown. The contractor will be responsible for configuring cabinets with all appropriate ITS hardware and power supplies in accordance with the plans and specifications. The contractor may alter the cabinet configuration shown to maximize space and ensure easy access for maintenance.
2. Mount cabinet as detailed on ITS(15) or ITS(17). Orientation of cabinet on ITS pole may vary depending on field conditions. Mount the pole mounted cabinet to the backside of the ITS pole, to allow maintenance personnel to access the cabinet while being able to view oncoming traffic.
3. For ITS pole sites located on slopes greater than 4H:1V, mount the cabinet to the backside of the ITS pole as detailed on ITS(7). Mounting height to accommodate maintenance pad for easy access.
4. All dimensions are approximate and represent minimum cabinet dimensions.
5. Provide conduit entrances at the bottom of the cabinet.
6. Paid under Special Specification "ITS Pole with Cabinet" (Configuration 1) without 19" EIA rack. Paid under Special Specification "ITS Pole with Cabinet" (Configuration 2) with 19" EIA rack.





Orientation of Type 2 Cabinet on ITS Pole (Typical)

Not to Scale

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ITS POLE MOUNTED CABINET TYPE 2 DETAILS

ITS(15)-15

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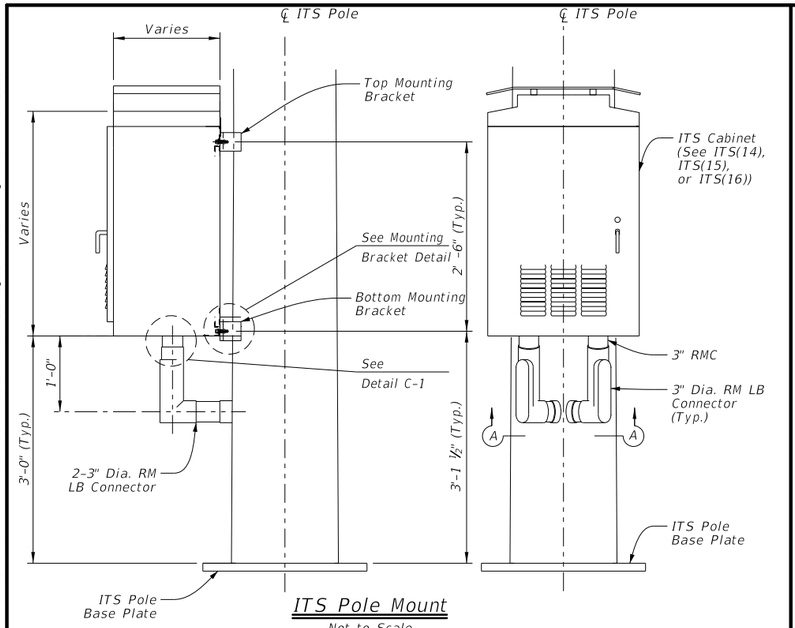

ITS Pole Mount

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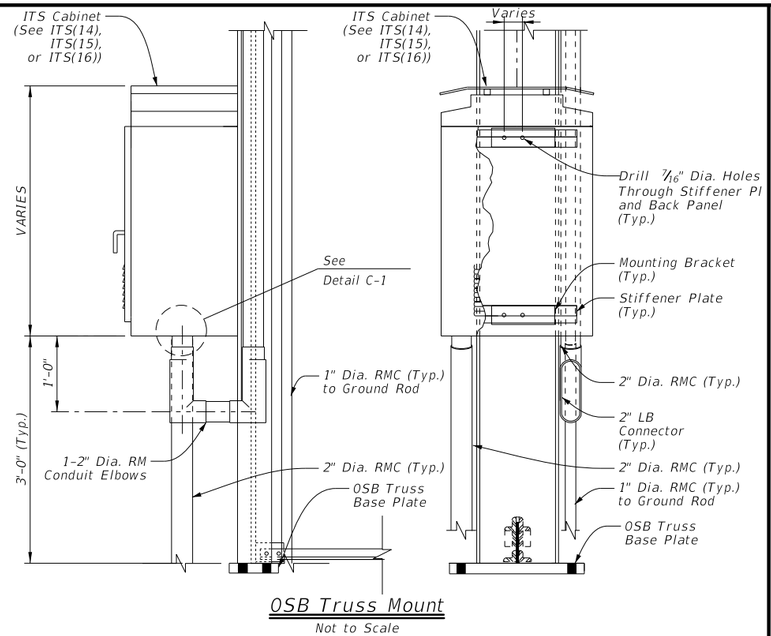

OSB Truss Mount

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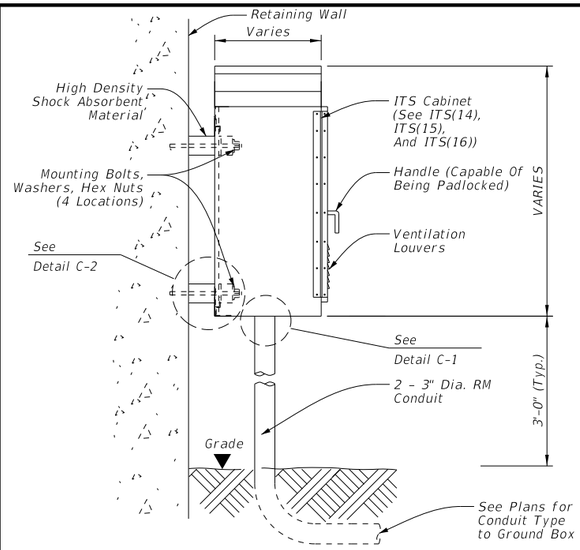

Retaining Wall Mount

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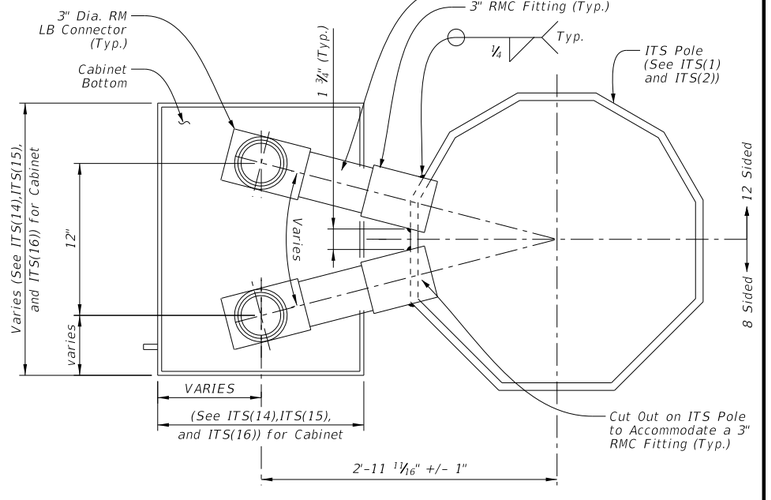

Section A-A

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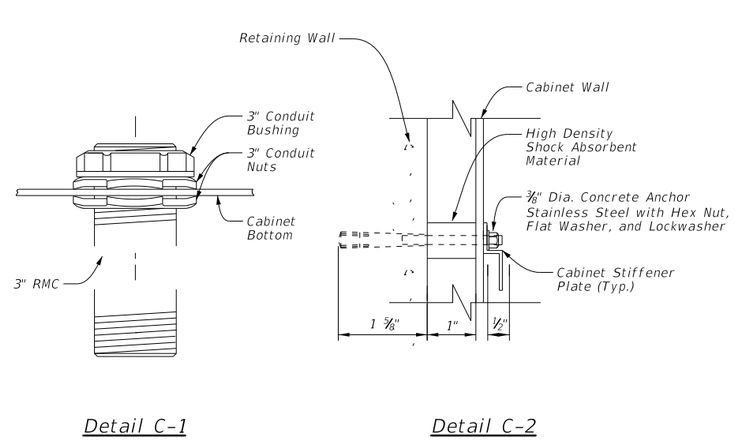

Detail C-1

Detail C-2

Detail C-1 and C-2

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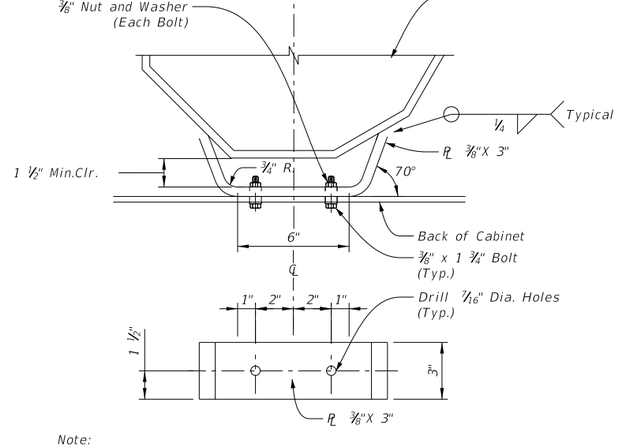

Note:
ITS Pole May be Round, Octagonal (8 Sided), or Dodecahedron (12 Sided).
See ITS(1), and ITS(2) for Details.

Mounting Bracket Detail

Not to Scale

General Notes:

1. Mount cabinet as detailed on ITS(14), ITS(15), ITS(16), or ITS(17). Orientation of cabinet on ITS pole may vary depending on field conditions. Mount the pole mounted cabinet to the backside of the ITS pole, to allow maintenance personnel to access the cabinet while being able to view oncoming traffic.
2. For ITS pole sites located on slopes greater than 4V:1H, mount the cabinet to the backside of the ITS pole as detailed on ITS(7). Mounting height to accommodate maintenance pad for easy access.
3. All dimensions are approximate and represent minimum dimensions.
4. Provide conduit entrances at the bottom of the cabinet.

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Traffic Operations Division Standard

ITS POLE MOUNTED CABINET MISC. MOUNTING DETAILS

ITS(17)-15

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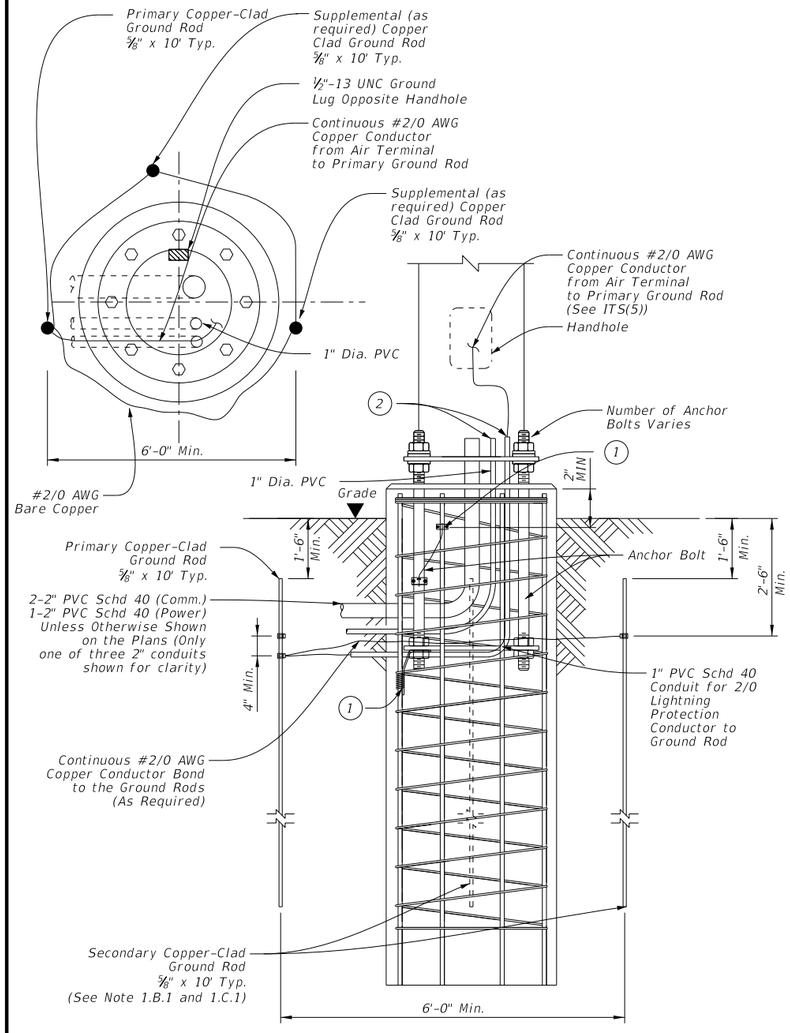
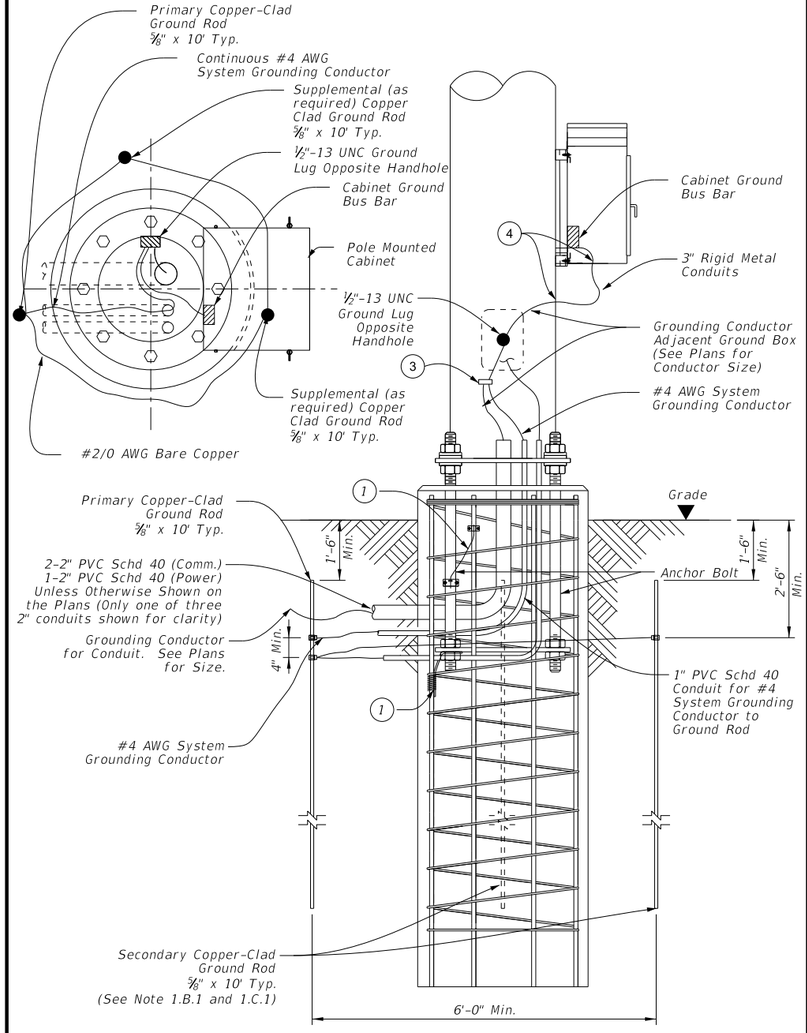
General Notes:

1. Grounding System:
   - A. Description:
     1. Provide ground system consisting of copper wires, ground rods, and concrete-encased grounding electrodes (Ufers), of the configuration shown to minimize potential gradient irregularities, drain leakage, and fault currents to earth.
   - B. Performance:
     1. Provide a grounding system, consisting of a minimum one ground rod, having a resistance not greater than 5 Ohms to ground. Provide up to 2 additional supplemental ground rods if necessary to achieve a resistance not greater than 5 Ohms to ground. If a total of 3 ground rods is needed then install as as part of a ground ring.
     2. If a ground ring is required, provide a minimum conductor length of 20 ft. placed at a minimum depth of 30 in..
   - C. Design Criteria:
     1. The grounding system of the ITS pole may be bonded below grade to the grounding systems of other nearby equipment to meet the specified grounding resistance. A minimum of one ground rod for the ITS pole is still required.
     2. Separately measure the grounding resistance of each system before bonding together below grade.
     3. Only provide UL-approved materials listed for grounding systems.
     4. Do not combine materials that can form an electrolytic couple that will accelerate corrosion in the presence of moisture, unless moisture is permanently excluded from the junction of such materials.
     5. Submit product data for the materials and products used to perform the work of this section.
   - D. Materials:
     1. Conductors:
        - a. Bare Ground Conductor:
          1) Provide prequalified copper conductors appearing on the Material Producers List according to Item 618.
     2. Ground Compression Connectors:
        - a. Provide molds, thermite packages, and other material for exothermic welding of grounding connections.
        - b. Provide listed compression connectors fully rated to carry 100% of the cable rating and that meet IEEE 837. Provide compression materials from a single manufacturer througout the project.
     3. Ground Rods:
        - a. Provide copper-clad steel ground rods conforming to the requirements specified in DMS 11040.
          1) Diameter: ⅝ in.
          2) Length: 10 ft.
2. Installation:
   - A. Install grounding components and systems in accordance with the requirements specified in IEEE 142.
   - B. System Grounding:
     1. Ground Rods:
        - a. Drive ground rods into the ground until the tops of the rods are a minimum of 18 in. below finished grade.
        - b. If multiple ground rods are needed to meet the minimum resistance of 5 Ohms, space ground rods as evenly as possible, at least 6 feet apart, so conductors will be connected below grade.
     2. Conductors:
        - a. Provide minimum No. 2/0 AWG ground wire for lightning protection from air terminal.
        - b. Provide minimum No. 4 AWG ground wire for system and equipment grounding.
        - c. Using suitable fasteners, securely attach exposed ground wires to structural supports at not more than 2 ft. intervals, where applicable.
        - d. Bends in ground wires greater than 45 degrees are unacceptable.
     3. Cable Connections:
        - a. Use exothermic-welded connections or listed compression connectors for conductor splices and connections between conductors and other components.
3. Testing:
   - A. Resistance Test:
     1. Test Procedure:
        - a. The ground-resistance measurements of each ground Rod shall be taken.
          1) The resistance to ground shall be measured in accordance with the fall-of-potential method specified in IEEE 81 and IEEE 142.
          2) Ground-resistance measurements shall be made in normally dry weather, not less than 48 hours after rainfall, and with the ground under test isolated from other grounds.
        - b. Test reports shall be prepared that indicate the location of the ground rod, the grounding system, and the resistance and soil conditions at the time the test was performed.
     2. Acceptance Criteria:
        - a. The grounding system must have a resistance not greater than 5 Ohms.
        - b. Do not energize any part of the electrical distribution system prior to the resistance testing of that system's ground rods and grounding system, and submission of the test results for approval.
     3. Inspections:
        - a. Prepare and submit as-built record drawings of the grounding system as installed and test reports for approval.



Grounding System

Not to Scale



Grounding System with Pole Mounted Cabinet

Not to Scale

Reference Notes:

1. Bond anchor bolts to rebar with #2/0 AWG jumper and two mechanical connectors or by bending No. 3 bar on bottom template as shown and wire tightly with ten turns of No. 10 wire or one mechanical connector. Mechanical connectors shall be UL Listed for concrete encasement.
2. Cut PVC approximately 1 in. above concrete and install bell or bushing. Align conduit as close as possible to point of attachment to base plate to minimize bends in #2/0 wire.
3. Bond grounding conductors via cadweld or mechanical connector, rated for size and number of conductors.
4. Provide and install a grounding type bushing on metal conduit terminations. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor.

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE GROUNDING DETAILS

ITS(19)-17

FILE: its(19)-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0180	06	067	SH 35
7-17	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		406

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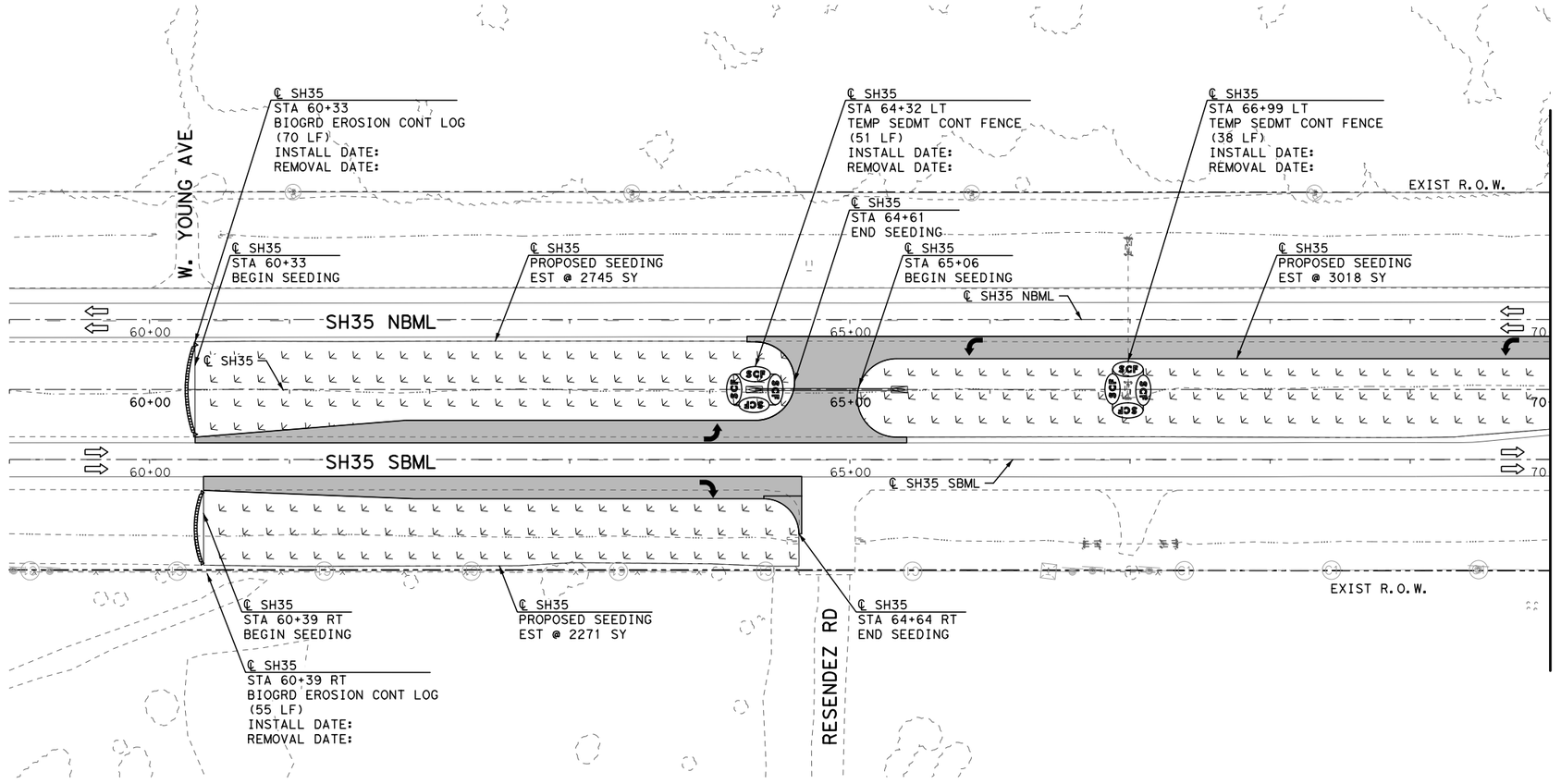

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SCALE IN FEET

SW3P PLAN LEGEND

- SCF — TEMP SEDIMENT CONTROL FENCE
- TEMP EROSION CONTROL LOG
- AREA TO BE SEEDED
- SOIL RETENTION BLANKETS
- PROP ROADWAY
- PROP DITCH
- DIRECTION OF TRAFFIC

NOTES:

1. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED BY CONTRACTOR

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
ALDO I. LOPEZ
126723
PROFESSIONAL ENGINEER
LICENSED
4/23/2021

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

SW3P LAYOUT
BEGIN TO STA 70+00

SHEET 1 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	407

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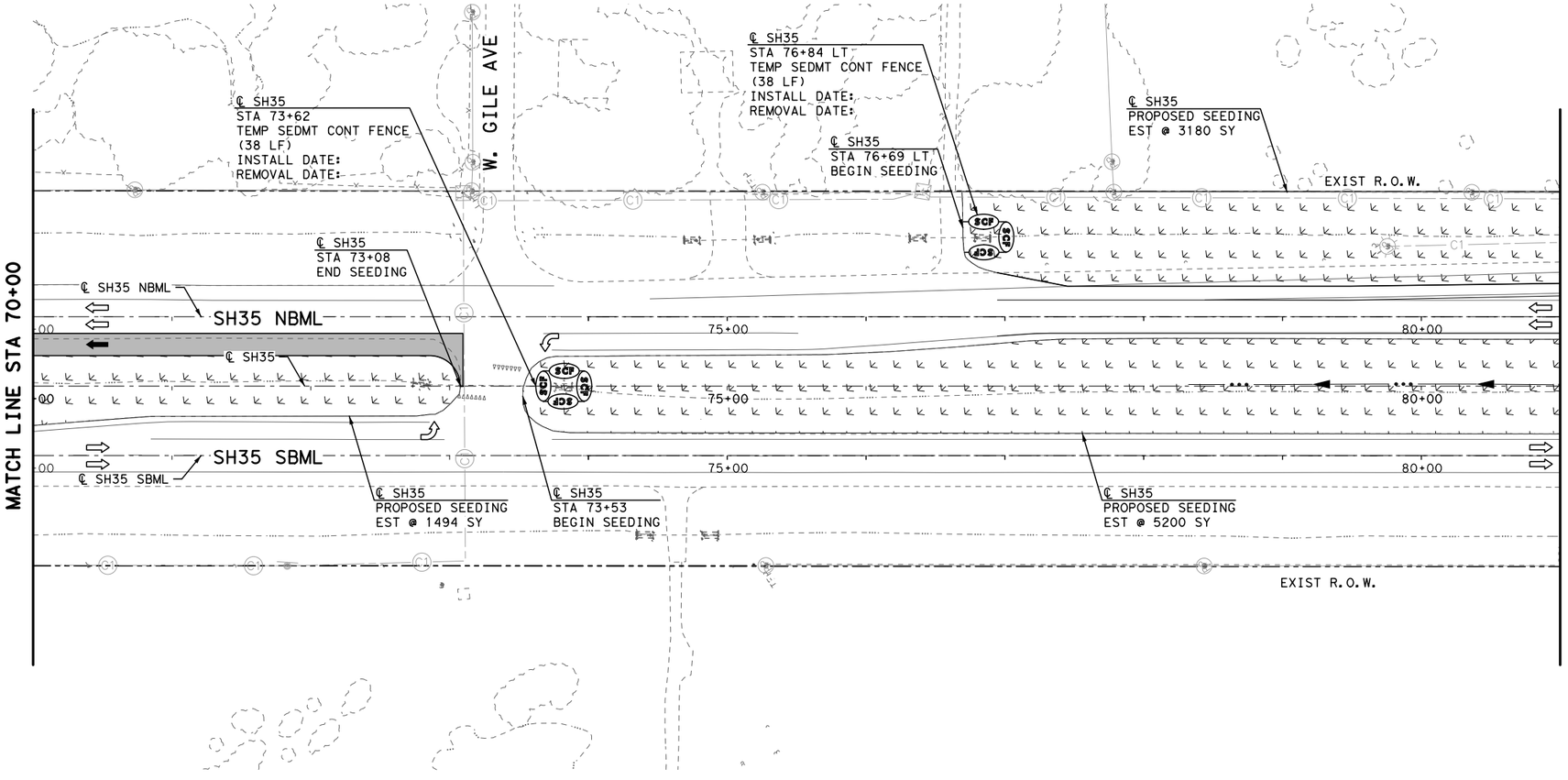
SCALE IN FEET

SW3P PLAN LEGEND

- TEMP SEDIMENT CONTROL FENCE
- TEMP EROSION CONTROL LOG
- AREA TO BE SEEDED
- SOIL RETENTION BLANKETS
- PROP ROADWAY
- PROP DITCH
- DIRECTION OF TRAFFIC



NOTES:

1. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED BY CONTRACTOR

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
ALDO I. LOPEZ
126723
LICENSED
PROFESSIONAL ENGINEER
4/23/2021

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

SW3P LAYOUT

STA 70+00 TO STA 81+00

SHEET 2 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	408

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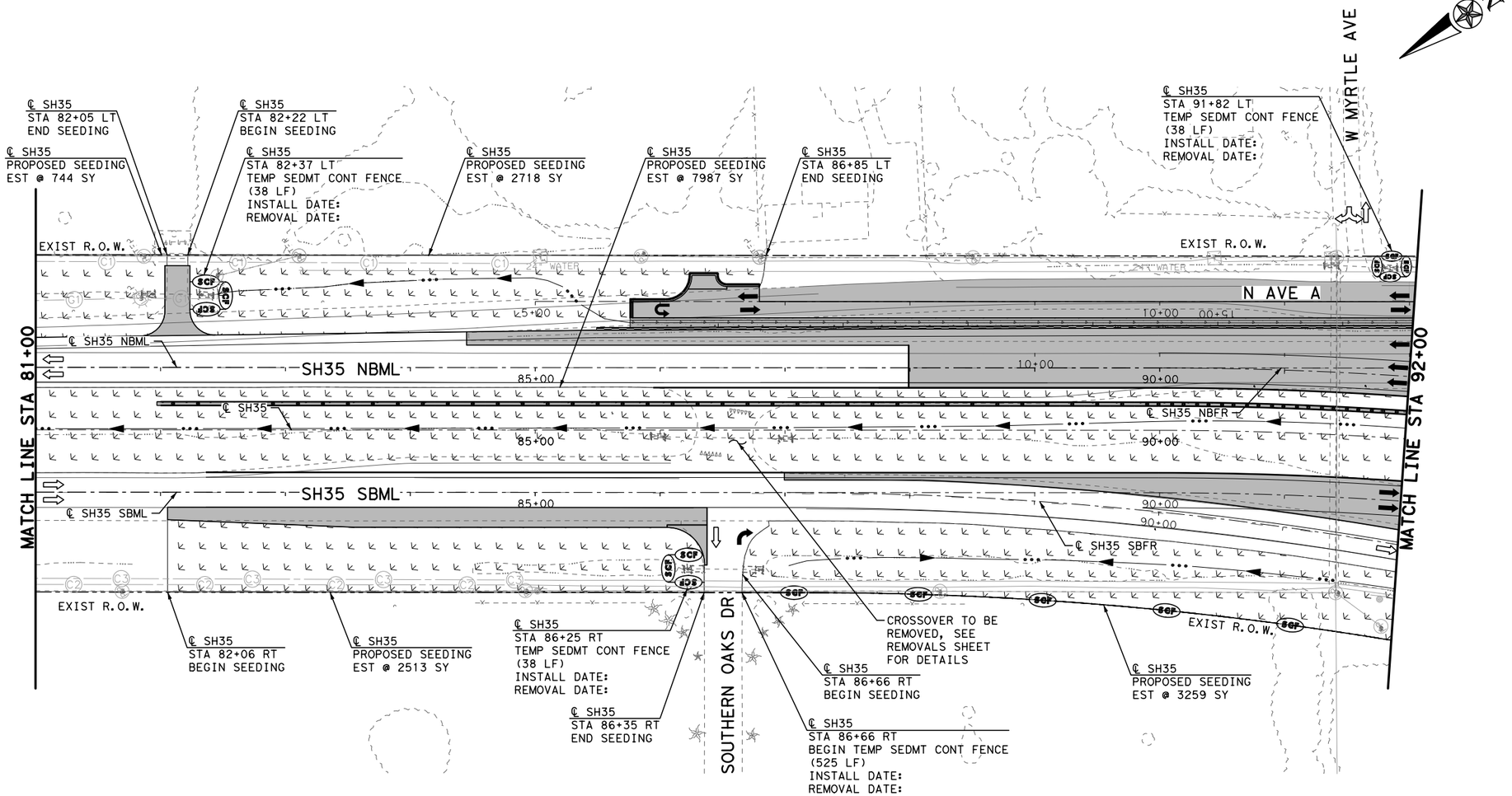
SCALE IN FEET

SW3P PLAN LEGEND

- TEMP SEDIMENT CONTROL FENCE
- TEMP EROSION CONTROL LOG
- AREA TO BE SEEDED
- SOIL RETENTION BLANKETS
- PROP ROADWAY
- PROP DITCH
- DIRECTION OF TRAFFIC

NOTES:

1. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED BY CONTRACTOR



REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
ALDO I. LOPEZ
126723
LICENSED
PROFESSIONAL ENGINEER
4/23/2021

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

SW3P LAYOUT

STA 81+00 TO STA 92+00

SHEET 3 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	409

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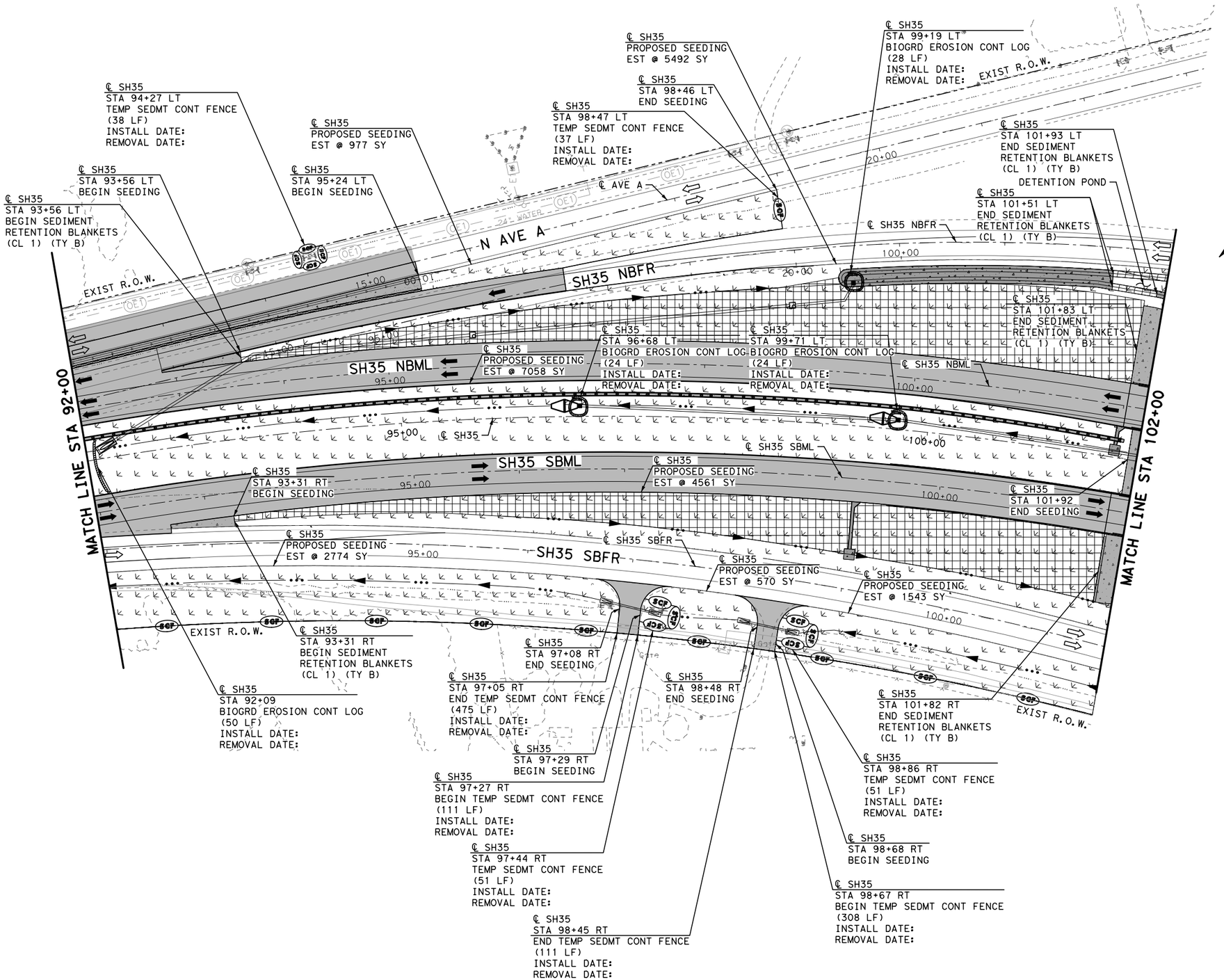
SCALE IN FEET

SW3P PLAN LEGEND

- TEMP SEDIMENT CONTROL FENCE (SCF)
- TEMP EROSION CONTROL LOG
- AREA TO BE SEEDED
- SOIL RETENTION BLANKETS
- PROP ROADWAY
- PROP DITCH
- DIRECTION OF TRAFFIC



NOTES:

1. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED BY CONTRACTOR

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
ALDO I. LOPEZ
126723
LICENSED
PROFESSIONAL ENGINEER
4/23/2021

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

SW3P LAYOUT
STA 92+00 TO STA 102+00

SHEET 4 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	410

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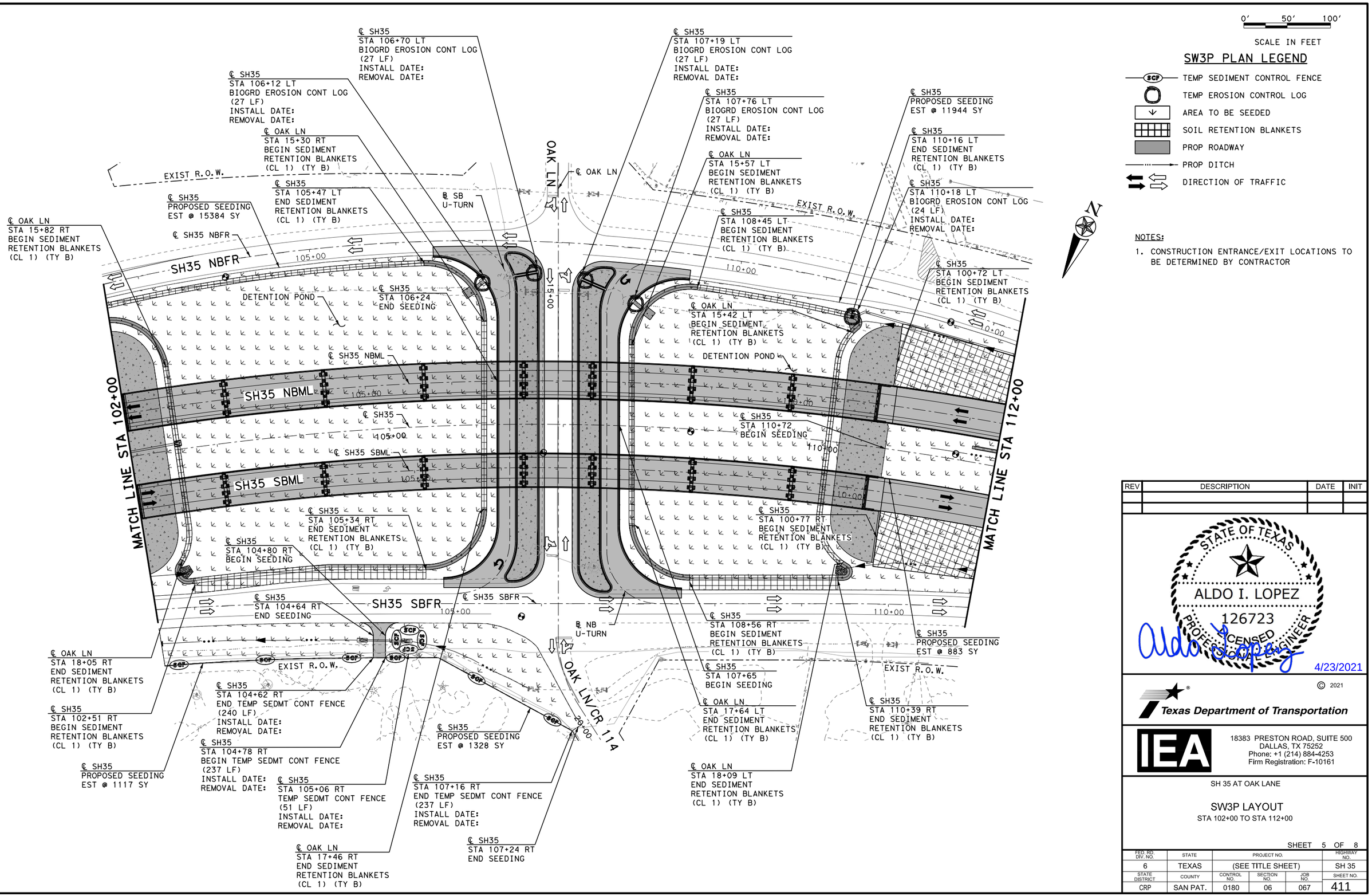

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
ALDO I. LOPEZ
126723
LICENSED
PROFESSIONAL ENGINEER
4/23/2021

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

SW3P LAYOUT

STA 102+00 TO STA 112+00

SHEET 5 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	411

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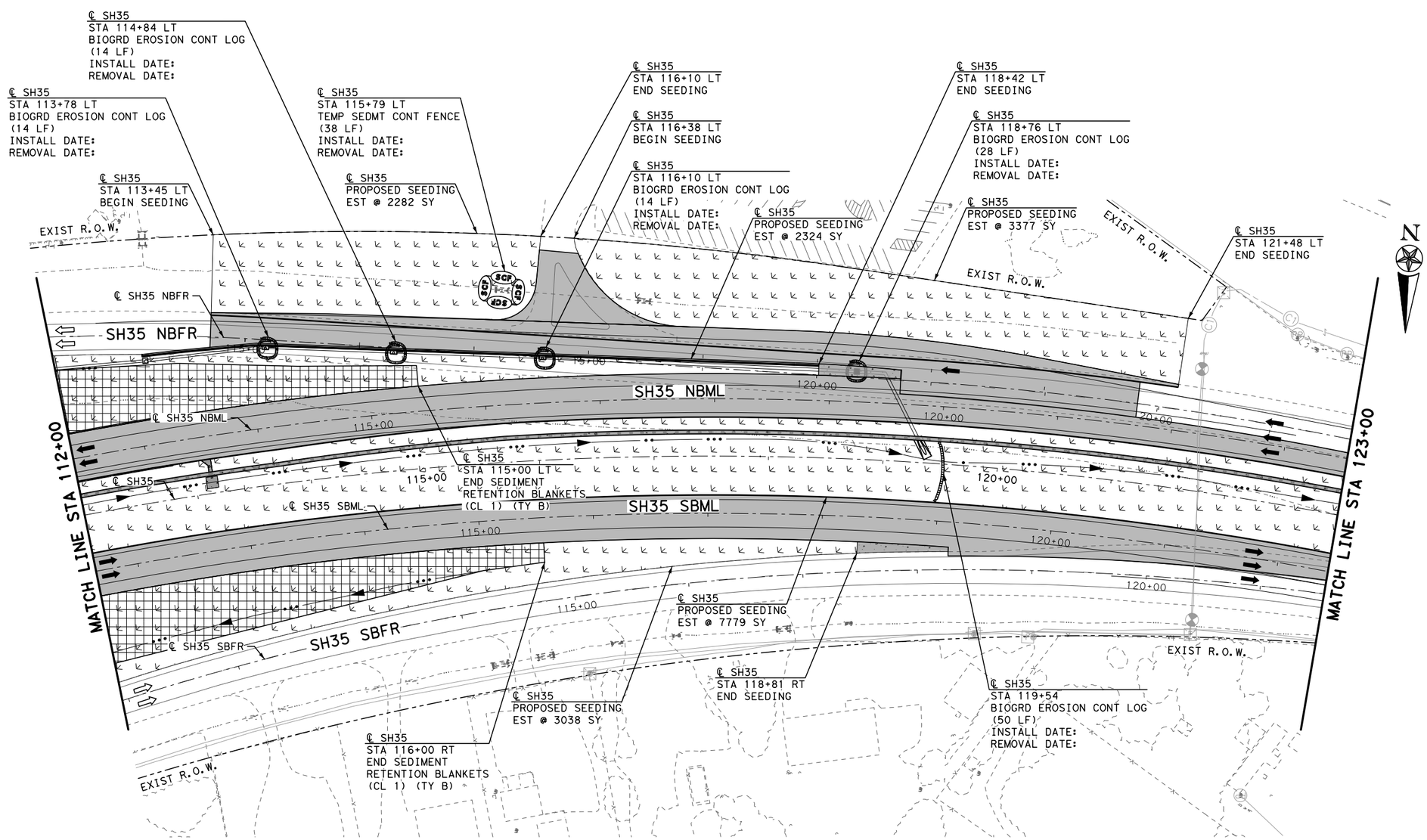

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SCALE IN FEET

SW3P PLAN LEGEND

- SCP — TEMP SEDIMENT CONTROL FENCE
- TEMP EROSION CONTROL LOG
- AREA TO BE SEEDED
- SOIL RETENTION BLANKETS
- PROP ROADWAY
- PROP DITCH
- DIRECTION OF TRAFFIC

NOTES:

1. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED BY CONTRACTOR

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
ALDO I. LOPEZ
126723
LICENSED
PROFESSIONAL ENGINEER
4/23/2021

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

SW3P LAYOUT

STA 112+00 TO STA 123+00

SHEET 6 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	412

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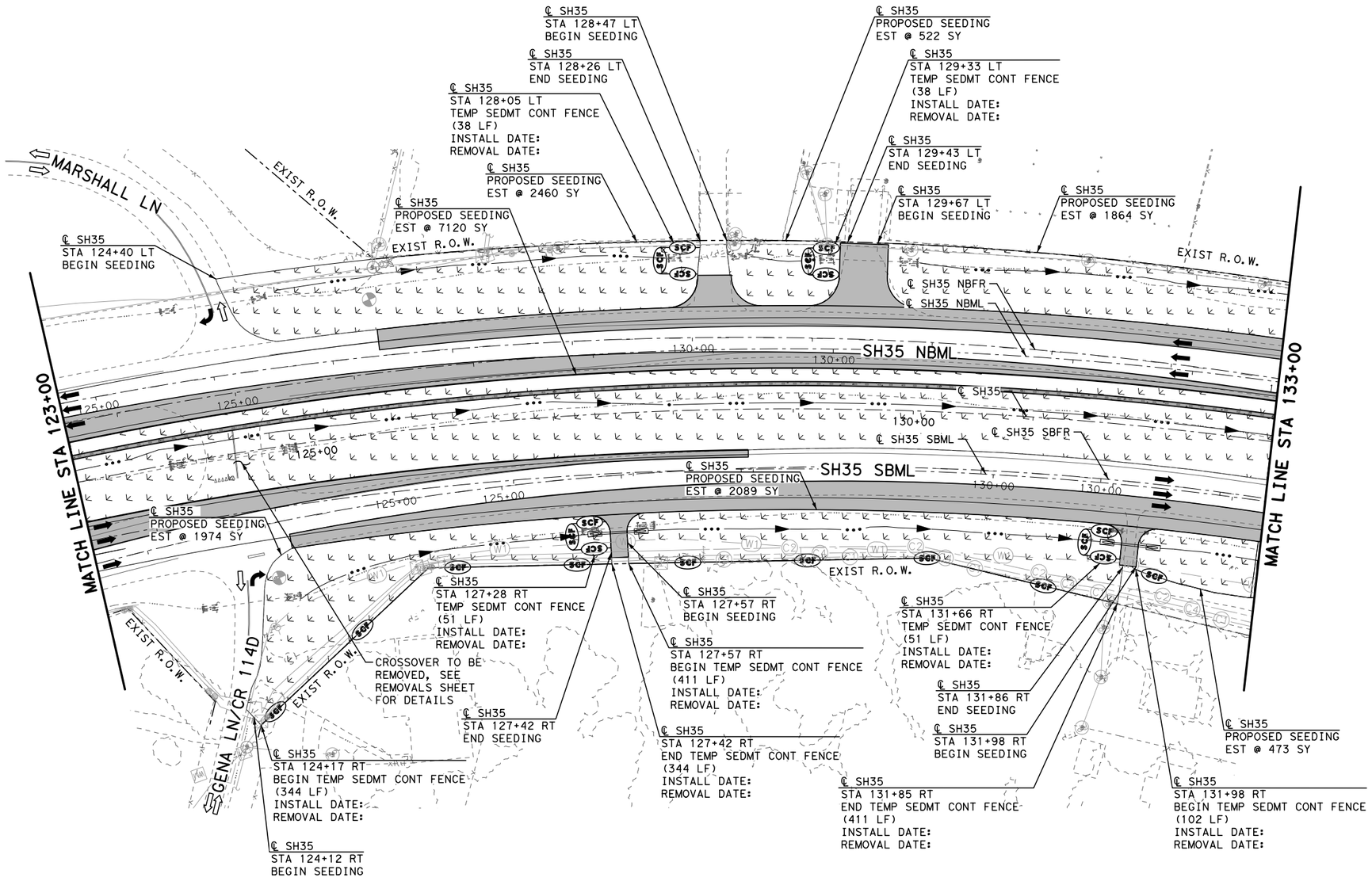

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SCALE IN FEET

SW3P PLAN LEGEND

- SCF — TEMP SEDIMENT CONTROL FENCE
- TEMP EROSION CONTROL LOG
- AREA TO BE SEEDED
- SOIL RETENTION BLANKETS
- PROP ROADWAY
- PROP DITCH
- DIRECTION OF TRAFFIC

N

NOTES:

1. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED BY CONTRACTOR

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
ALDO I. LOPEZ
126723
LICENSED
PROFESSIONAL ENGINEER
Aldo I. Lopez
4/23/2021

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

SW3P LAYOUT

STA 123+00 TO STA 133+00

SHEET 7 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	413

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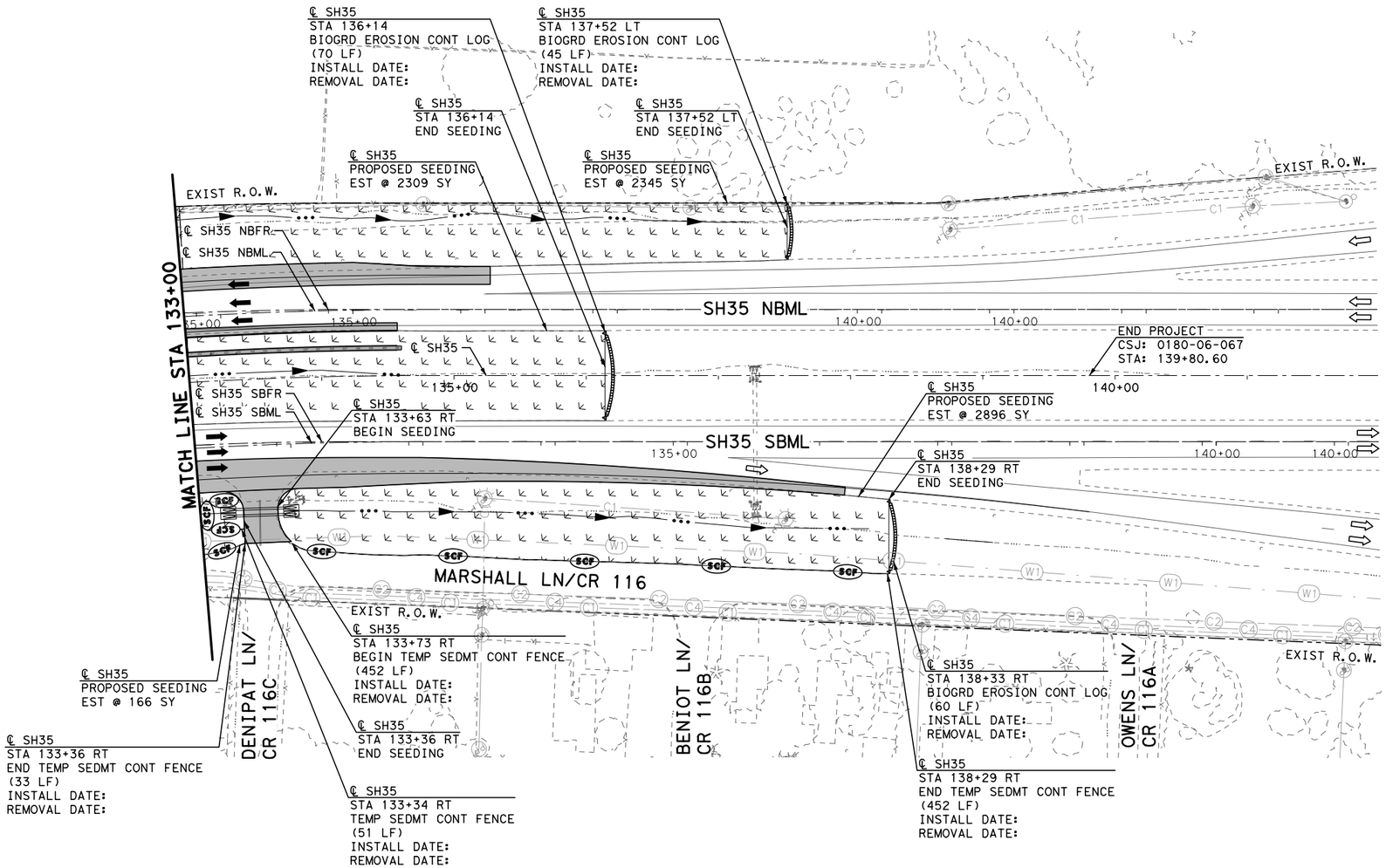

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SCALE IN FEET

SW3P PLAN LEGEND

- SCF — TEMP SEDIMENT CONTROL FENCE
- TEMP EROSION CONTROL LOG
- AREA TO BE SEEDED
- SOIL RETENTION BLANKETS
- PROP ROADWAY
- PROP DITCH
- DIRECTION OF TRAFFIC

N

NOTES:

1. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED BY CONTRACTOR

REV	DESCRIPTION	DATE	INIT

STATE OF TEXAS
ALDO I. LOPEZ
126723
LICENSED
PROFESSIONAL ENGINEER
4/23/2021

Texas Department of Transportation

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

SH 35 AT OAK LANE

SW3P LAYOUT

STA 133+00 TO PROJECT END

SHEET 8 OF 8

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS	(SEE TITLE SHEET)			SH 35
STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CRP	SAN PAT.	0180	06	067	414

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DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1.

2.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000

2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.

3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.

4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

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

☒ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP# _____

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

1.

2.

3.

4.

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

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
☒ Temporary Vegetation	☒ Silt Fence	☐ Vegetative Filter Strips
☒ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Grassy Swales

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

IV. VEGETATION RESOURCES

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

☒ No Action Required ☐ Required Action

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

☐ No Action Required ☒ Required Action

Action No.

1. Please be advised that the following species may be present within the project area: Black-spotted newt, sheep frog, Texas indigo snake, white-faced ibis, southern crawfish frog, South Texas siren (large form), Woodhouse's toad, Strecker's chorus frog, American bumblebee, banded wing grasshopper, thirteen-lined ground squirrel, plains spotted skunk, awnless leastdaisy, coastal gay-feather, Indianola beakrush, Jones' nailwort, seaside beebalm, Texas willkommia, threeflower broomweed, Traub's rainlily, and velvet spurge. Avoid harming these species if encountered. Ensure that SW3P and 401 BMPs are implemented and maintained during construction. Do not attempt to handle or catch any of these species. Report all sightings and/or impacts to the TxDOT Corpus Christi District Environmental Section.

2. Be advised of the potential occurrence of the black-spotted newt in the project area. This species prefers warm shallow watered areas with vegetative cover such as arroyos, canals, ditches, or even shallow depressions. During dry seasons the newt lays dormant underground.

3. Be advised of the potential occurrence of sheep frog in the project area. This species prefers subterranean burrows, such as those of pack rats. They will also burrow under fallen tree limbs. Minimize disturbance to burrows or downed woody debris.

4. Be advised of the potential occurrence of the South Texas siren (large form), Woodhouse's toad & Strecker's chorus frog in the project area. Minimize disturbance to burrows or downed woody debris.

5. Minimize impacts to wetland, temporary and permanent open water features, including depressions, and riverine habitats. Maintain hydrologic regime and connections between wetlands and other aquatic features. Use silt fencing (barrier) to direct animal movements away from construction activities and areas of potential wildlife-vehicle collisions in construction areas directly adjacent, or that may directly impact, potential habitat for the target species.

6. Consider applying hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.

LIST OF ABBREVIATIONS

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

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS. (CONT.)

7. Project Specific Locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features. When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and overwinter sites (e.g., brush and debris piles, crawfish burrows), where feasible. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter, which may be refugia for terrestrial amphibians, where feasible.

Terrestrial Reptiles

8. Be advised of the potential occurrence of Texas Indigo Snake in the project area. This species prefers lightly vegetated areas not far from permanent water sources and is active year-round. During severely dry weather, this species will retreat to dens/burrows left by other animals or brush piles. If encountered, avoid harming this species and allow to safely leave the project area.

9. If the construction of the project requires the use of open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.

10. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.

Birds

11. The Federal Migratory Bird Treaty Act (MBTA) states that it is unlawful to pursue, hunt, take, kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit. This project does not have a federal permit; therefore, in accordance with this regulation, the Contractor will avoid disturbing, destroying, removing, or relocating migratory birds and active nests found in trees, culverts, bridges, on the ground, etc. Typical breeding season occurs from March through August; therefore, tree trimming and other vegetation clearing activities that may disturb breeding birds should be done in the non-breeding season (September-February), when possible. If work must be performed during the breeding season, the Contractor shall have a qualified biologist conduct a survey of the right of way to determine if bird nests are present. In the event that active nests are encountered on-site during construction, the Contractor shall notify the Engineer and measures shall be taken to avoid disturbance of these birds, their occupied nest, eggs, and/or young, in accordance with the MBTA. Phasing of work during construction may be necessary to stay in compliance with the MBTA. The Contractor can discuss other preventative measures with the Project Engineer and/or District Environmental Staff.

12. Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed. Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season. Avoid the removal of unoccupied, inactive nests, as practicable. Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair. Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

Texas Department of Transportation

Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

SHEET 1 OF 2

FILE: epic.dgn	DN: TxDOT		CK: RG	DW: VP		CK: AR	
©TxDOT: February 2015	CONT	SECT	JOB		HIGHWAY		
REVISIONS 12-12-2011 (DS) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	0180	06	067		SH 35		
	DIST	COUNTY			SHEET NO.		
	CRP	SAN PAT.			415		

DATE:
FILE:

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS. (CONT.)

Mammals

13. Be advised of the potential occurrence of plains spotted skunk in the project area. This species prefers wooded, brushy areas and tall-grass prairies, but may also occur in open fields, farmyards, and along fence rows. Avoid unnecessary impacts to dens if encountered.

14. Be advised of the potential occurrence of thirteen-lined ground squirrel.

Water Quality

15. Minimize the use of equipment in streams and riparian areas during construction. When possible equipment access should be from banks, bridge decks, or barges.

16. When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.

Plants

17. Awnless leastdaisy, coastal gay-feather, Indianola beakrush, Jones' nailwort, seaside beebalm, Texas willkommia, threeflower broomweed, Traub's rainlily, and velvet spurge are identified by Texas Parks and Wildlife Department (TPWD) as plant Species of Greatest Conservation Need (SCGN). TxDOT will inform the contractor is any SGCN plants are present within the project area. Avoid impacting these plants if identified. Temporary barrier (construction) fencing must be placed around plants, or other material as approved by Engineer.

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

☐ Yes ☒ No

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

Are the results of the asbestos inspection positive (is asbestos present)?

☐ Yes ☒ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation

Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR		
	CONT	SECT	JOB		HIGHWAY	
REVISIONS 12-12-2011 (DS) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	0180	06	067		SH 35	
	DIST	COUNTY			SHEET NO.	
	CRP	SAN PAT.			416	

DESIGNER EH DATE 4/29/2021 FILE NAME \\wspow04tcs0NCS_pdf_work_dir\23895\8993_29\SH35_J03_J004SSN1.dgn

A. GENERAL SITE DATA

1. PROJECT LIMITS: *SH 35 FROM 0.4 (MI) NORTHEAST OF OAK LANE TO 0.4 (MI) SOUTHWEST OF OAK LANE*

Begin Project Coordinates : Latitude (N): 27.932975 Longitude (W): -97.151442
End Project Coordinates : Latitude (N): 27.924520 Longitude (W): -97.170110

2. PROJECT SITE MAPS:

- *Project Location Map: The Title Sheet*
- *Drainage Patterns: Drainage Area Maps*
- *Slopes Anticipated After Major Gradings or Areas of Soil Disturbance: Typical Sections*
- *Location of Erosion and Sediment Controls: SW3P Layout*
- *Surface Waters and Discharge Locations: Storm Sewer Plan and Profile*
- *Project Specific Location(s) (PSL): To be determined by the project Construction Personnel. Location(s) shown on SW3P Layout (if PSL location(s) is within one mile of project) and information located in project SW3P Binder (Reference Item #10 below).*

3. PROJECT DESCRIPTION:
FOR THE CONSTRUCTION OF INTERCHANGE AT OAK LANE CONSISTING OF: GRADING, BASE, SURFACING, AND STRUCTURES

4. MAJOR SOIL DISTURBING ACTIVITIES:
DISTURBANCE OF SOIL FOR THE CONSTRUCTION THE SH-35 INTERCHANGE AT OAK LANE CONSISTING OF GRADING, BASE, SURFACING, AND STRUCTURES.

5. EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:
SOILS LIKELY TO BE ENCOUNTERED:
GALVESTON-MUSTANG COMPLEX
DIETRICH LOAMY FINE SAND

VEGATATIVE COVER IN PROJECT AREA IS GRASS (100%)

6. TOTAL PROJECT AREA: *61.45* Acres

7. TOTAL AREA TO BE DISTURBED: *26.26* Acres *(43 %)*

8. WEIGHTED RUNOFF COEFFICIENT

BEFORE CONSTRUCTION: *0.43*
AFTER CONSTRUCTION: *0.61*

9. NAME OF RECEIVING WATERS:
MCCAMPBELL SLOUGH (ESTUARINE AND MARINE WETLAND)

10. PROJECT SW3P Binder:

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

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

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

B. EROSION AND SEDIMENT CONTROLS

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

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

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

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

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

3. STORM WATER MANAGEMENT:

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

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

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

BEFORE SOIL DISTURBANCE ACTIVITIES:
A. INSTALL INLET PROTECTION
B. INSTALL SILT FENCES
C. INSTALL CONSTRUCTION EXITS

AFTER SOIL DISTURBANCE:
A. FERTILIZE AND APPLY TEMPORARY SEEDING TO DISTURBED LIMITS AND MAINTAIN PER TXDOT SPECIFICATION ITEMS 164, 166, AND 169.

B. INSTALL SOIL RETENTION BLANKETS WHERE SHOWN ON PLANS OR WHERE DISTURBED 3:1 SLOPES AND STEEPER ARE PRESENT.

c. FERTILIZE AND APPLY PERMANENT SEEDING TO DISTURBED LIMITS AND MAINTAIN PER TXDOT SPECIFICATION ITEMS 164, 166, AND 169.

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

C. OTHER REQUIREMENTS & PRACTICES

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

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

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

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

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

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

7. MANAGEMENT PRACTICES:
A. Construct disposal areas, stockpiles, haul roads and PSL's in a manner that will minimize and control the amount of sediment that may enter receiving waters. Do not locate disposal areas in any wetland, waterbody or streambed.
B. Locate construction staging areas, vehicle maintenance and PSL's areas in a manner to minimize the runoff of pollutants.
C. When working in or near a wetland, install and maintain operating soil erosion and sediment controls at all times during construction and isolate the work from the wetland.
D. Clear all waterways as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are not a part of the finished work.
E. Procedures and/or practices should be taken to control dust.
F. Sediment to be removed from roadways daily or when work begins after weather events if construction activities have ceased due to weather event.

IEA
18383 PRESTON ROAD, SUITE 500
DALLAS, TX 75252
Phone: +1 (214) 884-4253
Firm Registration: F-10161

STATE OF TEXAS
ALDO I. LOPEZ
126723
LICENSED
PROFESSIONAL ENGINEER
Aldo Lopez
4/29/2021

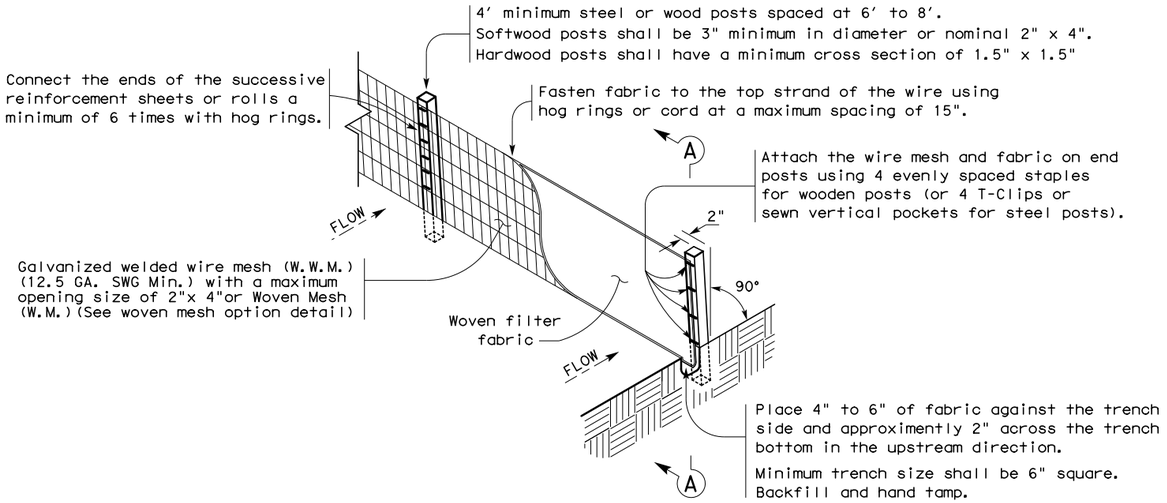
Texas Department of Transportation

SH35 AT OAK LANE

STORM WATER POLLUTION PREVENTION PLAN (SW3P)

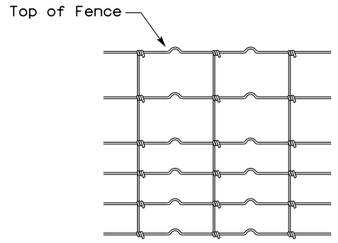
TEMPLATE REVISION DATE: 02/07/18

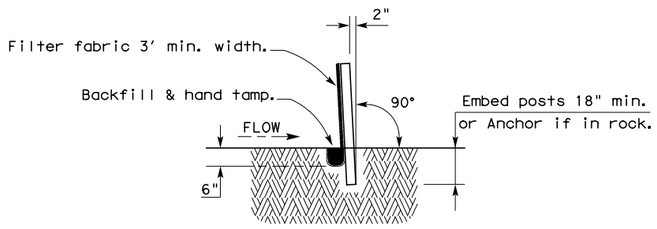
DESIGN	FED.RD. DIV.NO.	PROJECT NO.		HIGHWAY NO.
EH	6	(SEE TITLE SHEET)		SH 35
GRAPHICS DE	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK AL	TEXAS	CRP	SAN PAT.	
CHECK AL	CONTROL	SECTION	JOB	
	0180	06	067	417



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.

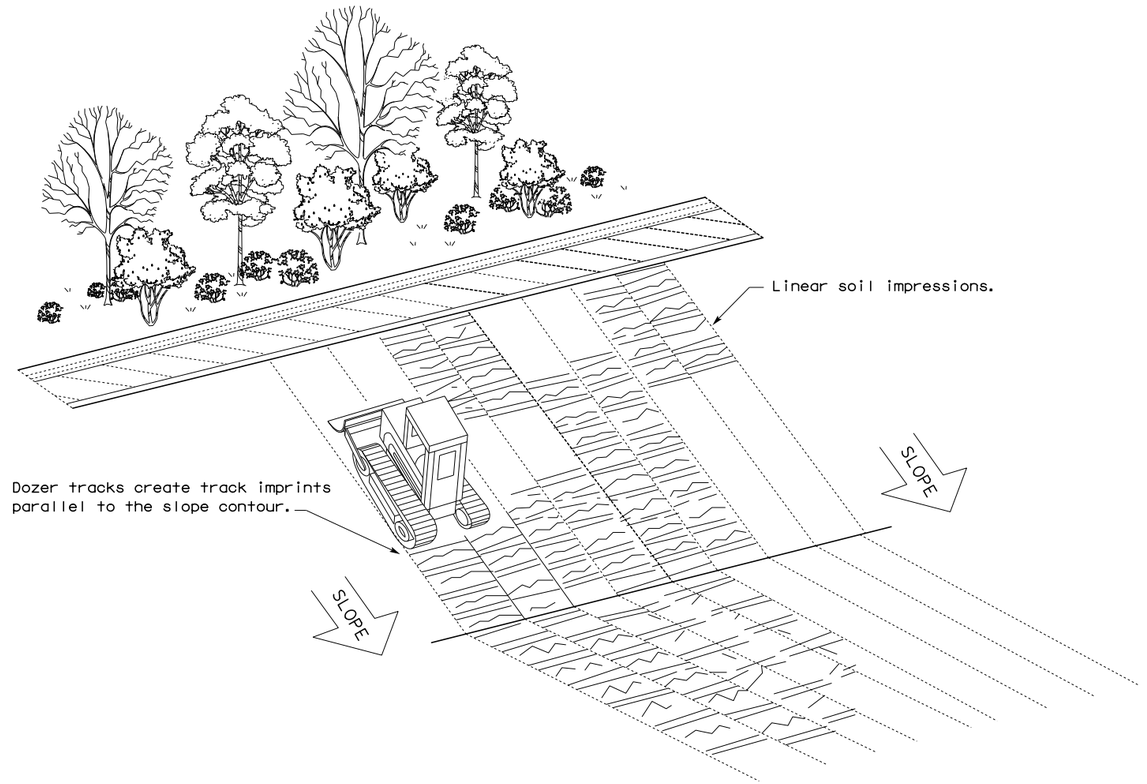
LEGEND

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
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	DIST	COUNTY			SHEET NO.	
	CRP	SAN PAT.			418	

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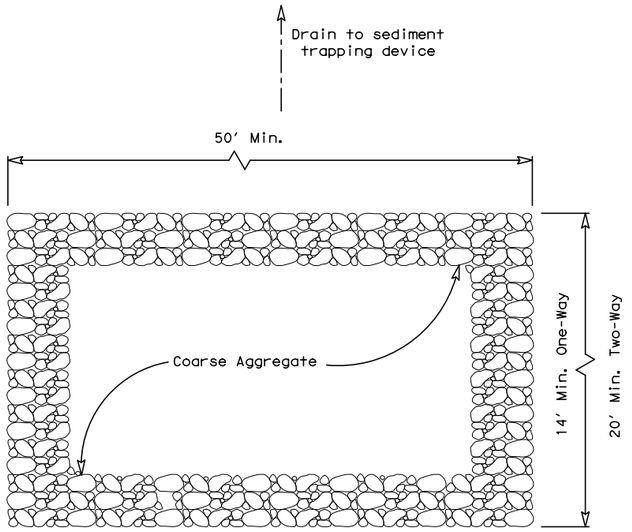
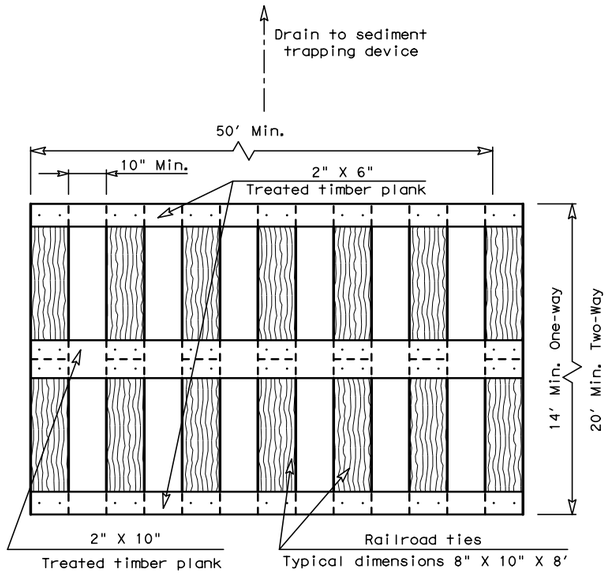


PLAN VIEW



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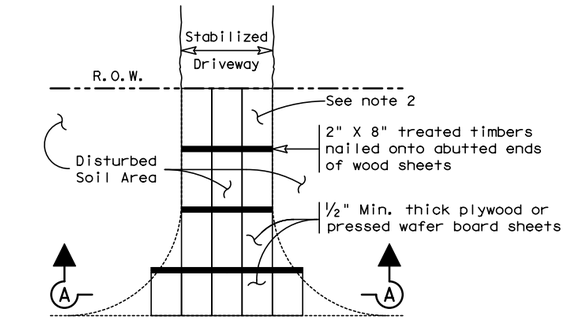

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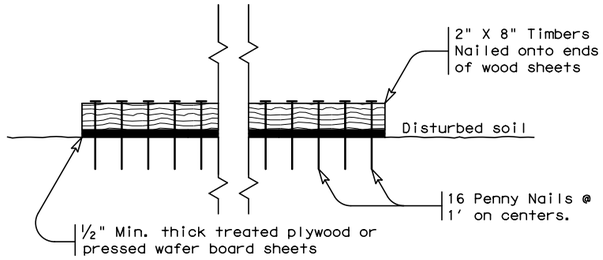
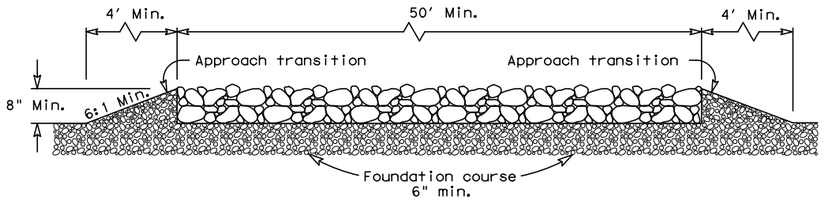


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

SHORT TERM



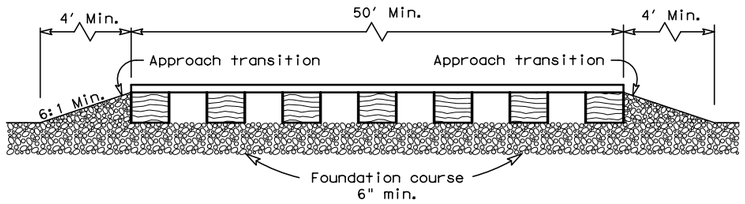
ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)

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.



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

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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REVISIONS	0180	06	067	SH 35
	DIST	COUNTY		SHEET NO.
	CRP	SAN PAT.		419

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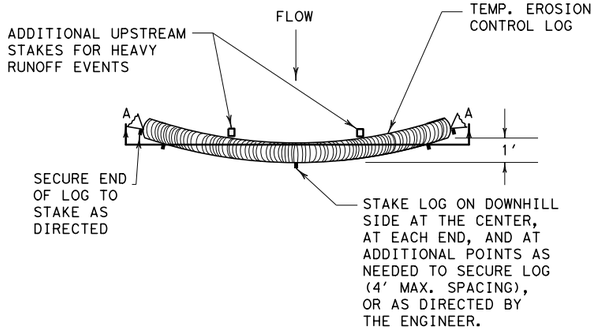
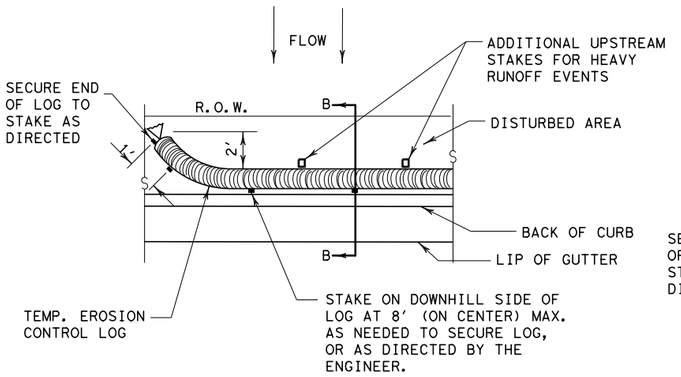


PLAN VIEW



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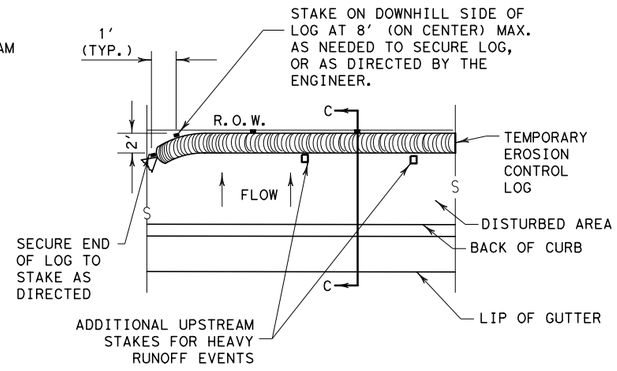

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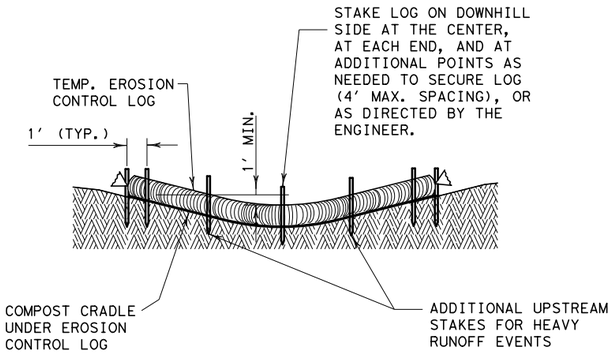
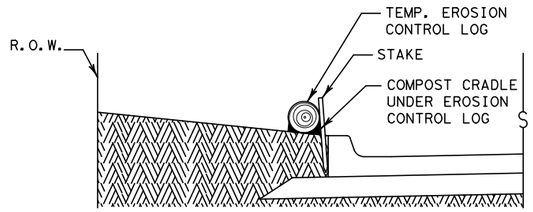


SECTION A-A

EROSION CONTROL LOG DAM

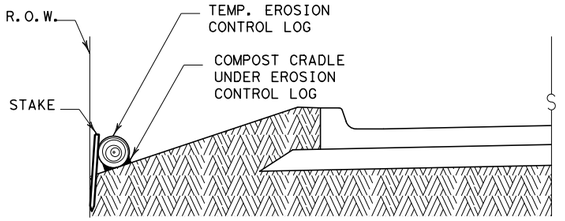
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

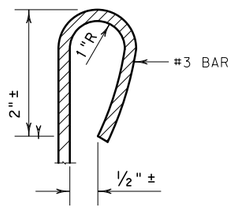
CL-BOC



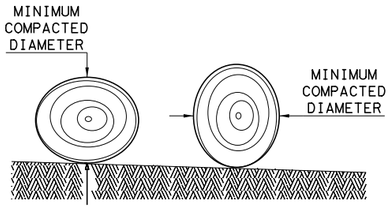
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

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.

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	0180	06	067		SH 35		
	DIST	COUNTY			SHEET NO.		
	CRP	SAN PAT.			420		

DATE:
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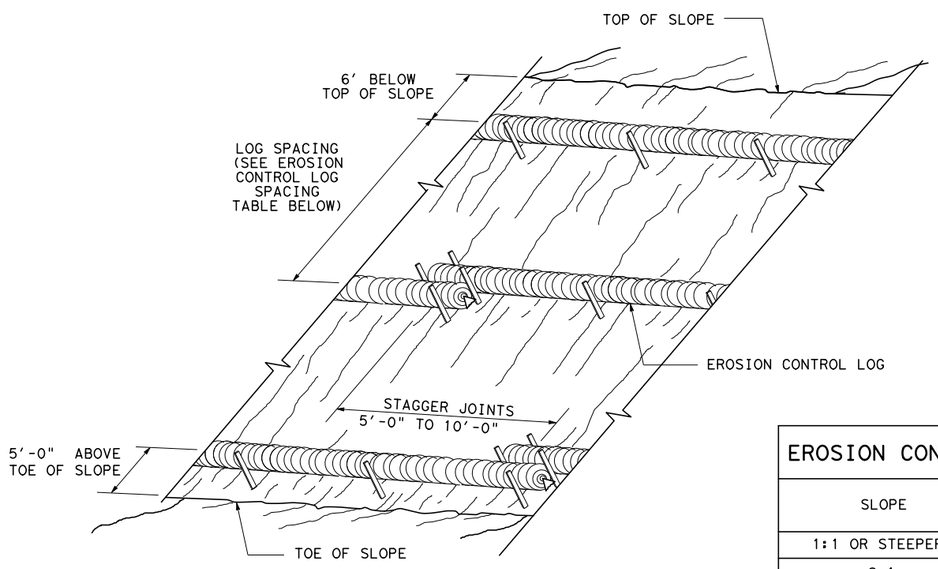
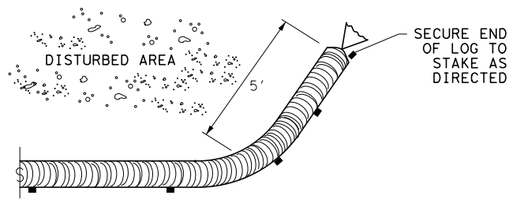


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

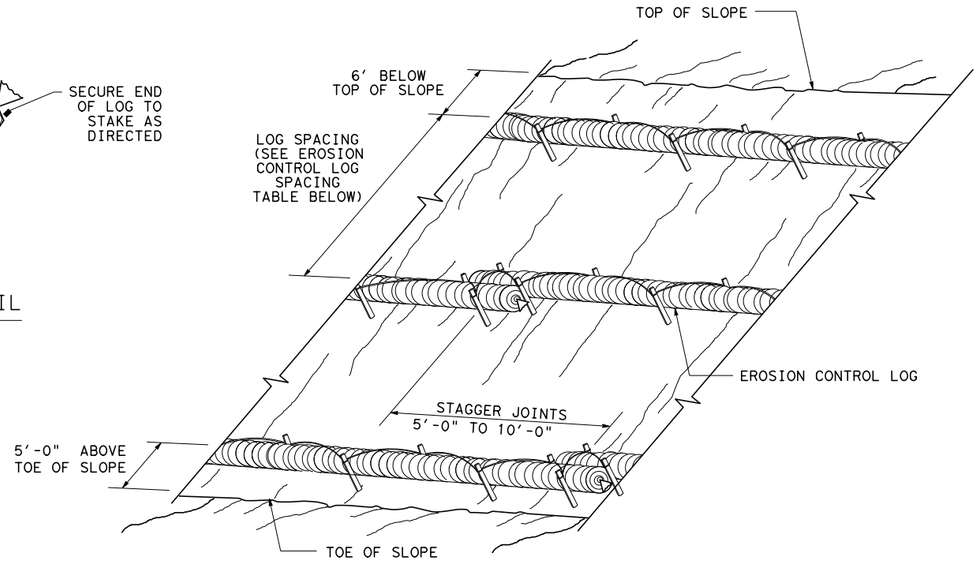
CL-SST



END SECTION RAP DETAIL

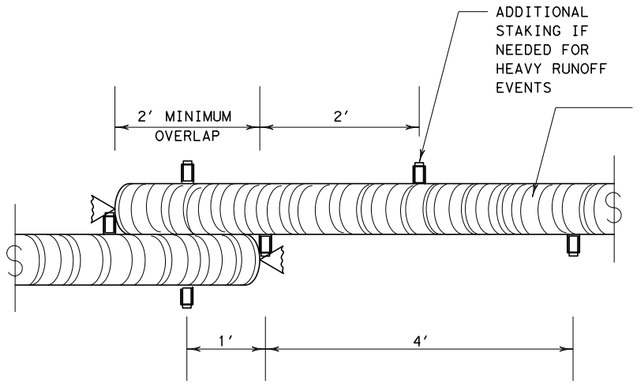
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5′	10′	15′	20′
2:1	10′	20′	30′	40′
3:1	15′	30′	45′	60′
4:1 OR FLATTER	20′	40′	60′	80′

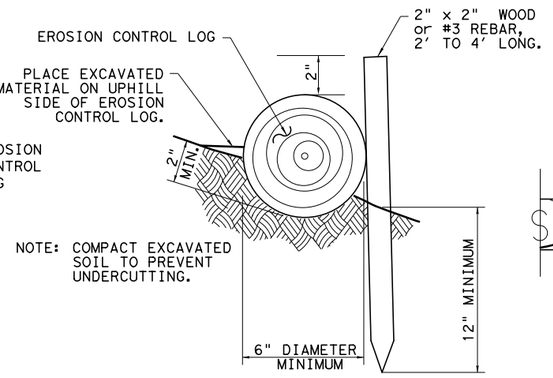
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

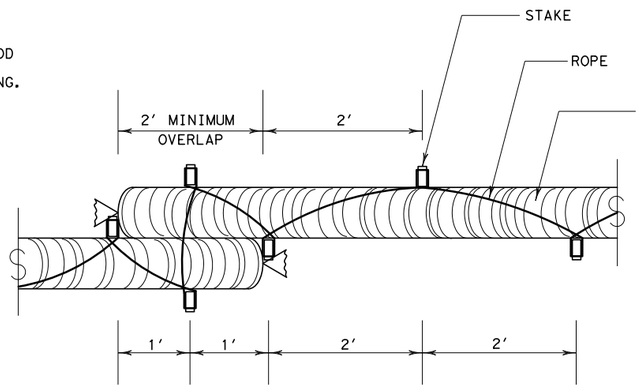


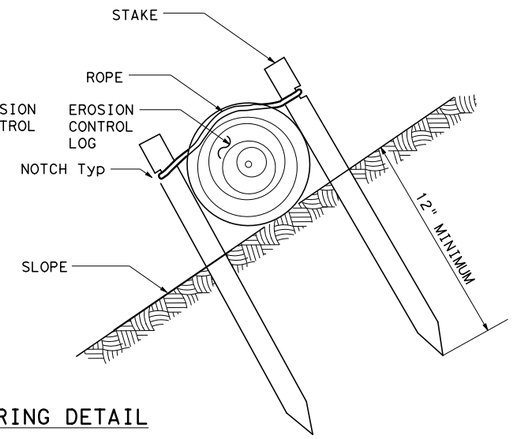


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

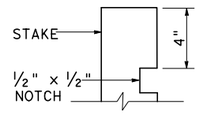
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation

Design Division Standard

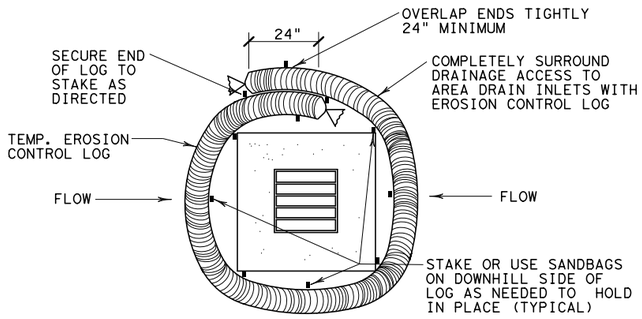
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

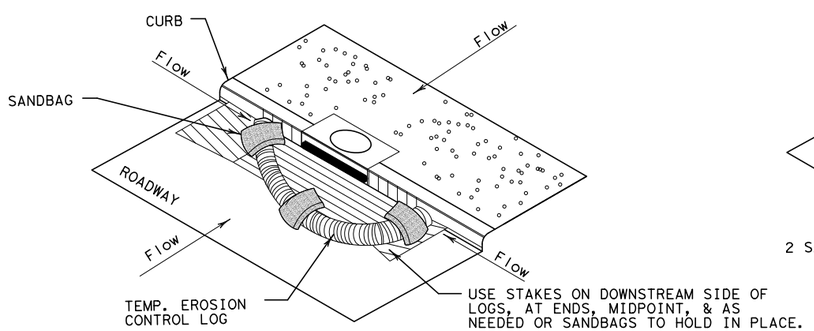
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0180	06	067	SH 35	
	DIST	COUNTY		SHEET NO.	
	CRP	SAN PAT.		421	

DATE:
FILE:



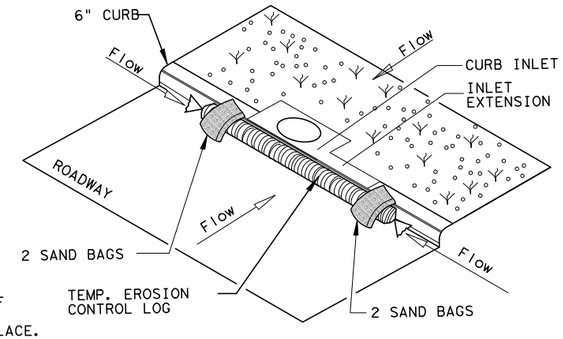
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

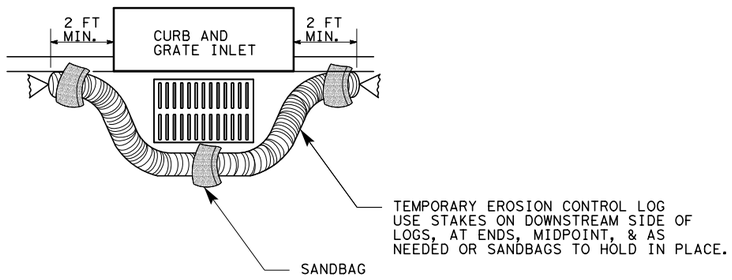
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

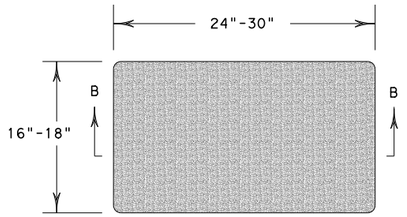
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



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

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REVISIONS	0180	06	067	SH 35		
	DIST	COUNTY		SHEET NO.		
	CRP	SAN PAT.		422		