FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2B24(141)VRU		1
STATE	STATE DIST.	COUNTY	
TEXAS	2	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0902	90	214, ETC.	

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT NO. STP 2B24(141)VRU

INDEX OF SHEETS

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL
DESIGN SPEED: 40 MPH
ADT 25,0.27 (2019)

SH 183 AT DEEN ROAD
FUNCTIONAL CLASSIFICATION: PRINCIPAL ARTERIAL
DESIGN SPEED: 40 MPH
ADT 34,341 (2019)

ACCESSIBILITY STANDARDS = PROWAG

REGISTERED ACCESSIBILITY SPECIALIST INSPECTION REQUIRED
WESTERN CENTER BOULEVARD AT NORTH BEACH STREET:
TDLR NO. TABS2024010148

SH 183 AT DEEN ROAD:
TDLR NO. TABS2024006992

TARRANT COUNTY

BEACH STREET, ETC
0902-90-214 WESTERN CENTER BOULEVARD AT NORTH BEACH STREET (0.177 MI)
0094-01-042 SH 183 AT DEEN ROAD (0.036 MI)
TOTAL PROJECT LENGTH: 0.213 MI

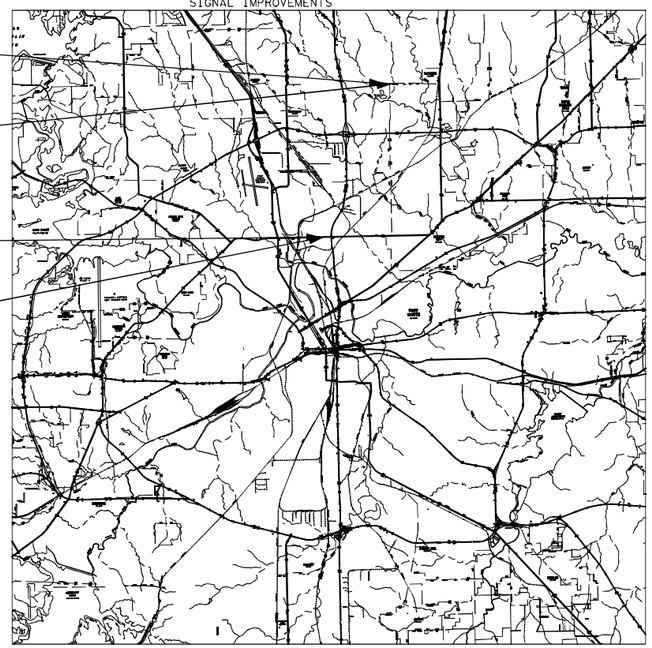
FOR WORK CONSISTING OF THE CONSTRUCTION OF SAFETY IMPROVEMENT PROJECT CONSISTING OF ROADWAY, SIDEWALK, PAVEMENT MARKINGS AND TRAFFIC SIGNAL IMPROVEMENTS

BEGIN PROJECT
CSJ # 0902-90-214
STA 13+62.83

END PROJECT
CSJ # 0902-90-214
STA 22+96.73

BEGIN PROJECT
CSJ # 0094-01-042
STA 3+11.66

END PROJECT
CSJ # 0094-01-042
STA 5+02.06



TARRANT COUNTY
SCALE: NTS
FORT WORTH DISTRICT

100% PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS ACCEPTED: _____

FINAL CONTRACT COST: $ _____

CONTRACTOR: _____

halff
TBPELS ENGINEERING FIRM #312

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED PROFESSIONAL ENGINEER
04/05/2024

TBPE Reg #F351

MICHAEL OWEN,
CITY OF FORT WORTH CITY ENGINEER

CHAD ALLEN,
CITY OF FORT WORTH PROGRAM MANAGER

SUBMITTED FOR LETTING
DocuSigned by:
4/11/2024
AREA ENGINEER

RECOMMENDED FOR LETTING
DocuSigned by:
4/16/2024
DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

APPROVED FOR LETTING
DocuSigned by:
4/16/2024
DISTRICT ENGINEER

EXCEPTIONS: NONE
EQUATIONS: NONE
R.R. CROSSINGS: NONE

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, OCTOBER 23, 2023)

FILE LOCATION AND NAME
T:\Engdata\Standards\Design\TITLESHEET-2014Specs.DGN

LEVELS DISPLAYED

COUNTY _____ PROJ. NO. _____
HWY. NO. _____ LETTING DATE _____
DATE ACCEPTED _____

SHEET NO.			DESCRIPTION
I. GENERAL			
1			TITLE SHEET
2			INDEX OF SHEETS
3			PROJECT LAYOUT AND SURVEY CONTROL - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
4			HORIZONTAL CONTROL - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
5			PROJECT LAYOUT AND SURVEY CONTROL - SH183 AT DEEN ROAD
6			RIGHT-OF-WAY MAP - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
7			RIGHT-OF-WAY MAP - SH183 AT DEEN ROAD
8			EXISTING TYPICAL SECTIONS - WESTERN CENTER BOULEVARD
9			EXISTING TYPICAL SECTIONS - NORTH BEACH STREET
10			EXISTING TYPICAL SECTIONS - SH183 / 28TH STREET
11			EXISTING TYPICAL SECTIONS - DEEN ROAD
12			PROPOSED TYPICAL SECTIONS - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
13 - 14			PROPOSED TYPICAL SECTIONS - SH183 AT DEEN ROAD
15 - 17			EXISTING UTILITY LAYOUT- WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
18			EXISTING WATER LINE LAYOUT- WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
19			EXISTING SANITARY SEWER LAYOUT- WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
20			S.U.E. SHEET PLAN - SH183 AT DEEN ROAD
21			GENERAL NOTES
22			ESTIMATE AND QUANTITY SHEET
23 - 25			SUMMARY OF QUANTITIES
II. TRAFFIC CONTROL PLAN			
26 - 29			TEMPORARY TRAFFIC CONTROL & SEQUENCE OF CONSTRUCTION - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
30 - 32			TEMPORARY TRAFFIC CONTROL & SEQUENCE OF CONSTRUCTION - SH183 AT DEEN ROAD
			STANDARDS
33 - 44	#	*	BC(1)-21 THRU BC(12)-21
45	#	*	TCP(1-4)-18
46	#	*	TSR(3)-13
47	#	*	TSR(4)-13
48 - 49	#	*	WZ(BTS-1)-13 &WZ(BTS-2)-13
III. ROADWAY			
50 - 51			REMOVAL PLAN - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
52			REMOVAL PLAN PAVING- SH183 AT DEEN ROAD
53			REMOVAL PLAN PAVEMENT MARKINGS AND SIGNAGE- SH183 AT DEEN ROAD
54			PAVING PLAN - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
55			PAVING PLAN - SH183 AT DEEN ROAD
56			CURB RAMP GRADING PLAN - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
57 - 59			CURB RAMP GRADING PLAN - SH183 AT DEEN ROAD
			STANDARDS
60 - 63	#	*	PED-18 - PEDESTRIAN FACILITIES-CURB RAMPS
64	#	*	CCCG-22 - CONCRETE CURB AND CURB AND GUTTER
65	#	*	CSWD (FTW) - CONCRETE SIDEWALK DETAILS
66	#	*	CP-TEP (FTW) - CONCRETE TIES TO EXISTING PAVEMENT
67 - 68	#	*	CRCP (1)-23 - CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
69 - 70	#	*	EDGECON-21 - TREATMENT FOR VARIOUS EDGE CONDITIONS

SHEET NO.			DESCRIPTION
VIII. TRAFFIC ITEMS			
71			SIGNING AND PAVEMENT MARKING LAYOUT - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
72			PROPOSED SIGNAL LAYOUT - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
73 - 76			PROPOSED SIGNAL LAYOUT DETAIL -WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
77			SIGNAL PHASING AND CHARTS - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
78			CHANNEL ASSIGNMENT DRAWING - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
79			SIGNING AND PAVEMENT MARKING LAYOUT - SH183 AT DEEN ROAD
80 - 81			TRAFFIC SIGNAL GENERAL NOTES - SH183 AT DEEN ROAD
82			PROPOSED TRAFFIC SIGNAL - SH183 AT DEEN ROAD
83			PROPOSED SIGNAL LAYOUT - SH183 AT DEEN ROAD
84 - 87			PROPOSED SIGNAL LAYOUT DETAIL - SH183 AT DEEN ROAD
88			SIGNAL SUMMARY - SH183 AT DEEN ROAD
89			CHANNEL ASSIGNMENT DRAWING - SH183 AT DEEN ROAD
			STANDARDS (TxDOT)
90			SUMMARY OF SMALL SIGNS - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
91			SUMMARY OF SMALL SIGNS - SH183 AT DEEN ROAD
92	#	*	PM(1)-22 - TYPICAL STANDARD PAVEMENT MARKINGS
93	#	*	PM(3)-22 - TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS AND LANE REDUCTION PAVEMENT MARKINGS
94	#	*	TS-CF-21 - TRAFFIC SIGNAL CONTROLLER FOUNDATION/BASE
95	#	*	MA-DPD-20 - MAST ARM DAMPING PLATE DETAILS
			STANDARDS (CITY)
96	#	*	D602 - TRAFFIC SIGNAL ELECTRICAL SERVICE DETAILS
97	#	*	D603 - TRAFFIC SIGNAL PEDESTAL SERVICE DETAIL
98	#	*	D604 - TRAFFIC SIGNAL WIRING CONNECTION DETAILS
99	#	*	D605 - TRAFFIC SIGNAL POLE FOUNDATION DETAILS
100	#	*	D605A - SPREAD FOOTING PEDESTAL POLE FOUNDATION
101	#	*	D606 - TRAFFIC SIGNAL TYPE 352i SINGLE GB FOUNDATION DETAIL
102	#	*	D607 - TRAFFIC SIGNAL MISCELLENEOUS DETAILS
103		*	D608 - TRAFFIC SIGNAL BACKPLATE DETAILS
104	#	*	D611 - TRAFFIC SIGNAL VIDEO DETECTION DETAILS
105	#	*	D612 - TRAFFIC SIGNAL STANDARD - OPTION 1 (1 OF 2)
106	#	*	D613 - TRAFFIC SIGNAL STANDARD - OPTION 1 (2 OF 2)
107	#	*	D620 - BATTERY BACK UP
108		*	D621 - STREET LUMINAIRE POLE AND FIXTURE DETAILS
109	#	*	D633 - METRO STREET NAME SIGNS
110 - 115	#	*	D642 - PAVEMENT MARKINGS DETAILS
116	#	*	D643 - CROSSWALKS, STOP BARS AND YIELD LINES
117	#	*	D673 - AUDIBLE PEDESTRIAN PUSHBUTTON STATION (APS) DETAILS (SHEET 1 OF 2)
118	#	*	D674 - AUDIBLE PEDESTRIAN PUSHBUTTON STATION (APS) DETAILS (SHEET 2 OF 2)
119	#	*	D686-350i CABINET FOUNDATION DETAILS

SHEET NO.			DESCRIPTION
IX. ENVIRONMENTAL			
120 - 121			STORMWATER POLLUTION PREVENTION PLAN - SW3P (FTW DISTRICT) - WESTERN CENTER BOULEVARD AT NORTH BEACH
122 - 123			STORMWATER POLLUTION PREVENTION PLAN - SW3P (FTW DISTRICT) - SH183 AT DEEN ROAD
124			ENVIRONMENTAL PERMITS & COMMENTS - EPIC
125			SW3P LAYOUT - WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
126			SW3P LAYOUT - SH183 AT DEEN ROAD
127			PARKS AND RECREATION DEPARTMENT NOTES
			STANDARDS
128 - 130	#	*	EC(9)-16 - TEMPORARY EROSION, CONTROL MEASURES (EROSION CONTROL LOG)

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

*THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE BY A * HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.*

Marie C. Wagner P.E. — 4/30/2024 DATE

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED PROFESSIONAL ENGINEER

*THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE BY A * HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.*

Eric A. Canales, P.E. P.E. — 4/30/2024 DATE

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

INDEX OF SHEETS

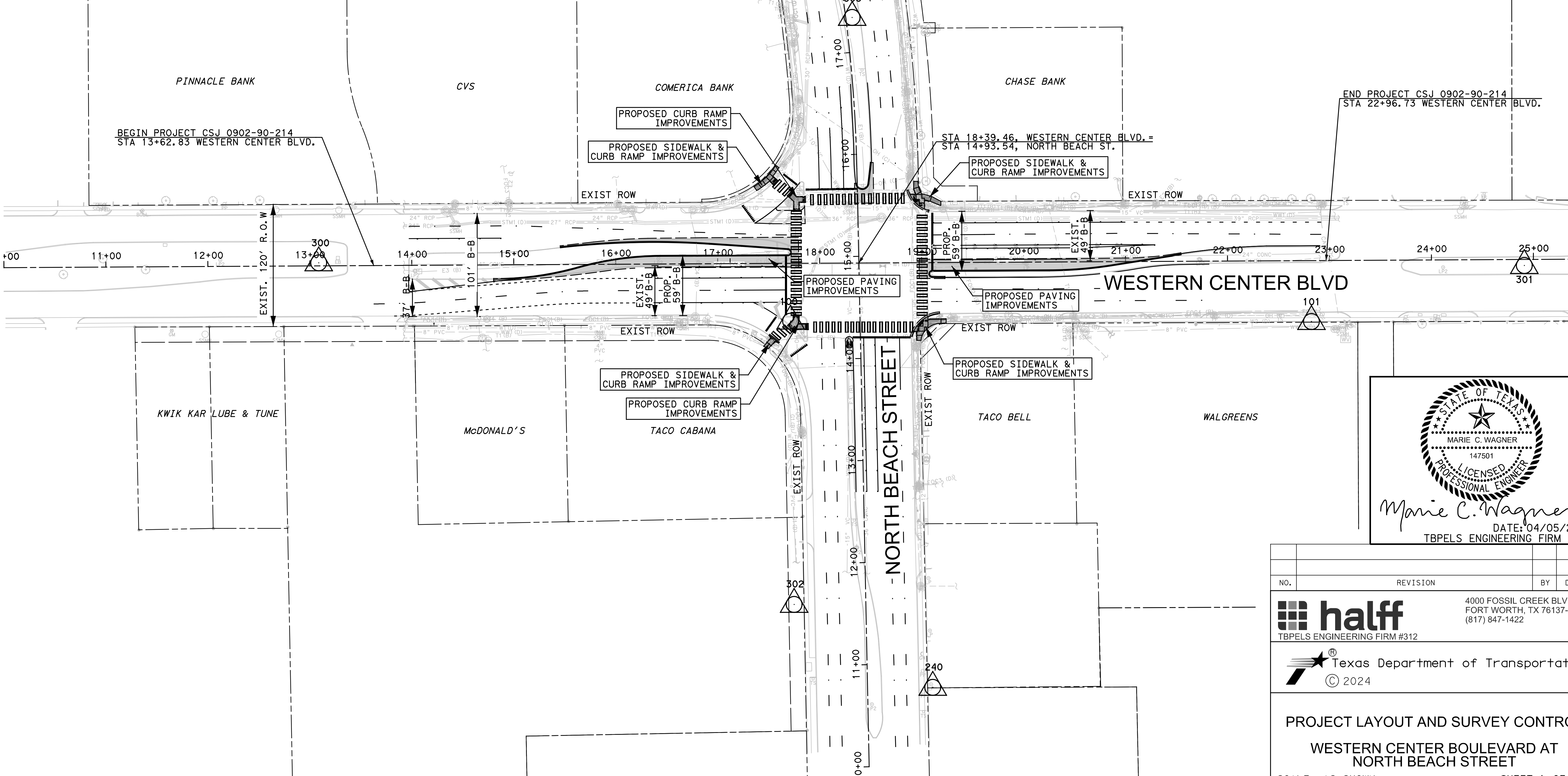
FORT WORTH INTERSECTIONS

SCALE: AS SHOWN — SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

CONTROL POINTS TABLE

CP#	NORTHING	EASTING	ELEVATION
100	6999124.4752	2340222.5199	602.2200
101	6999124.1131	2340733.3892	600.6800
240	6998765.6690	2340361.9540	600.8800
300	6999178.5505	2339759.6780	605.0700
301	6999178.9616	2340942.1877	600.4600
302	6998846.9170	2340226.0624	600.4600
303	6999421.9362	2340282.9209	600.4600



MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

Marie C. Wagner

DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

PROJECT LAYOUT AND SURVEY CONTROL

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
GRAPHICS	.	(SEE TITLE SHEET)		
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	
	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	3

FTW WAGNER-4219
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Beginning chain CL_BEACH description
Feature: Geom_Centerline
===============================================================================

Point 4              N   6,998,687.9493 E   2,340,299.6836 Sta      10+00.00

Course from 4 to 5 N 1° 10’ 54.7738" W Dist 493.5440

Point 5              N   6,999,181.3883 E   2,340,289.5037 Sta      14+93.54

Course from 5 to PC CL_BEACH_5 N 1° 10’ 54.7738" W Dist 92.4200

                                       Curve Data
                                      *----------*

Curve CL_BEACH_5
P.I.  Station             17+86.16  N      6,999,473.9464  E      2,340,283.4680
Delta        =     16° 16’ 34.5881" (LT)
Degree       =      4° 05’ 33.2004"
Tangent      =            200.2003
Length       =            397.7044
Radius       =          1,400.0000
External     =             14.2419
Long Chord   =            396.3685
Mid. Ord.    =             14.0985
P.C.  Station             15+85.96  N      6,999,273.7886  E      2,340,287.5974
P.T.  Station             19+83.67  N      6,999,664.9248  E      2,340,223.4061
C.C.                                N      6,999,244.9119  E      2,338,887.8952
Back         = N   1° 10’ 54.7738" W
Ahead        = N  17° 27’ 29.3619" W
Chord Bear   = N   9° 19’ 12.0678" W

===============================================================================
Ending chain CL_BEACH description

Beginning chain CL-WCB description
Feature: Geom_Centerline
===============================================================================
Point 1              N   6,999,176.8973 E   2,339,451.0278 Sta      10+00.00

Course from 1 to 2 N 89° 41’ 35.2262" E Dist 846.2950

Point 2              N   6,999,181.4301 E   2,340,297.3106 Sta      18+46.29

Course from 2 to 3 N 89° 41’ 35.2262" E Dist 915.0523

Point 3              N   6,999,186.3312 E   2,341,212.3499 Sta      27+61.35
===============================================================================

Ending chain CL-WCB description
```

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MARIE C. WAGNER
147501

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation®
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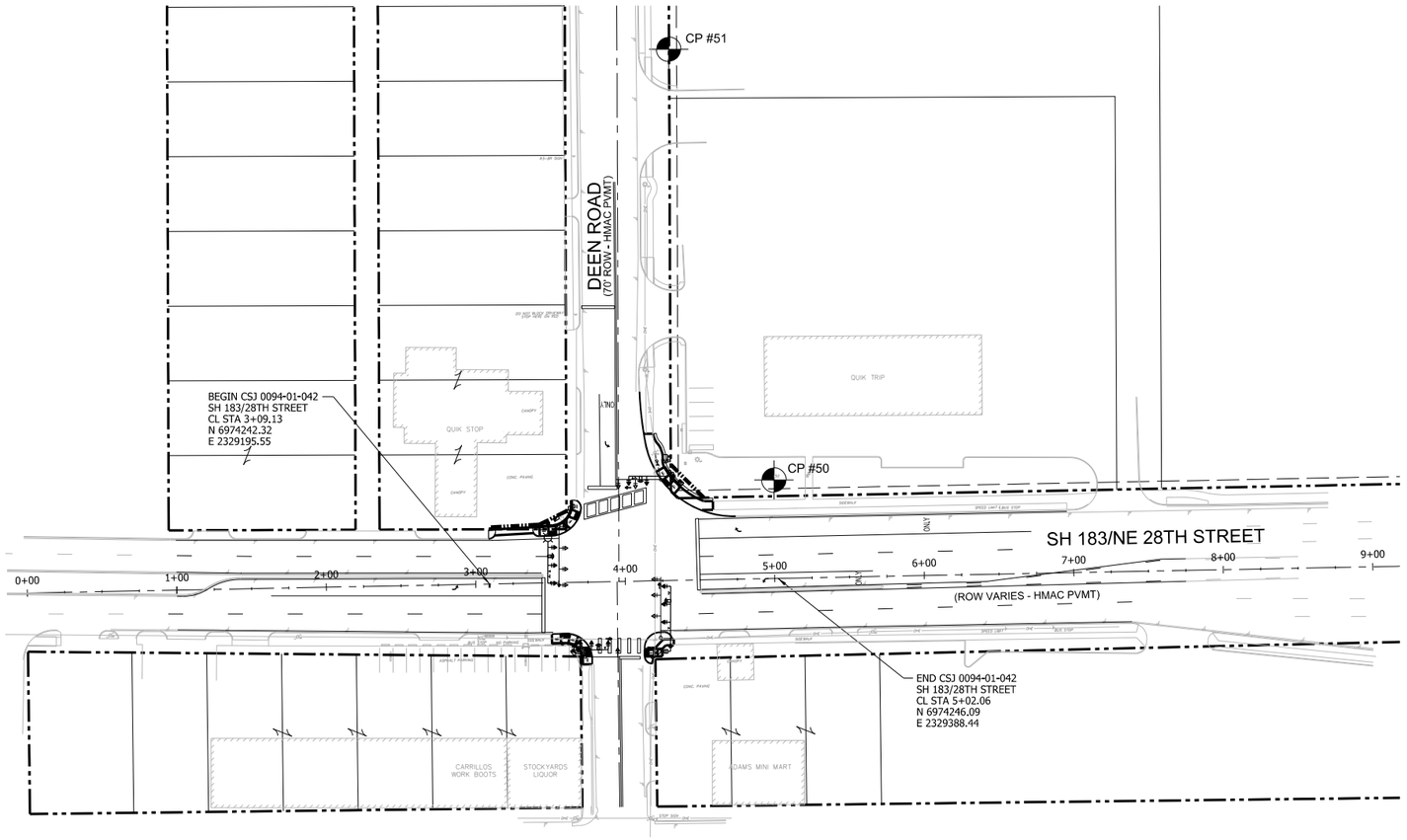
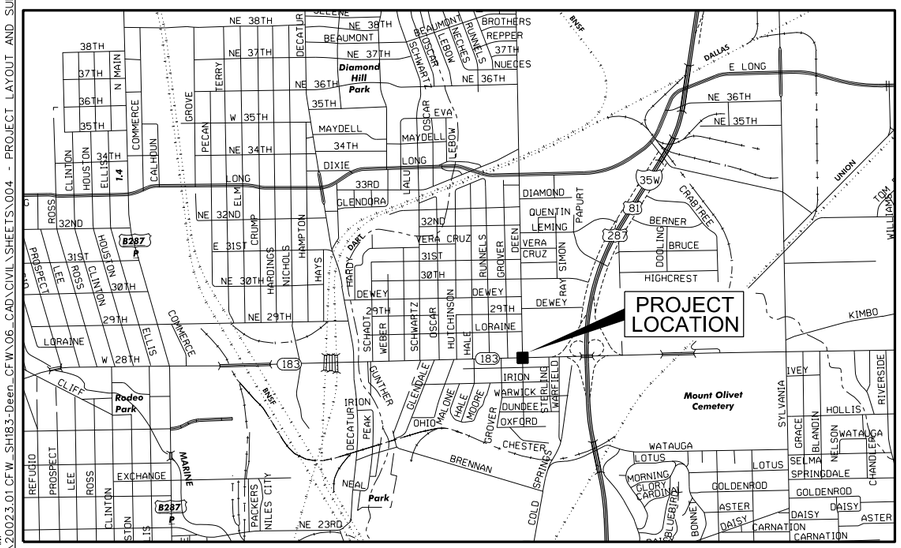
HORIZONTAL CONTROL

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

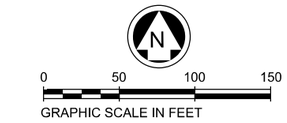
SCALE: AS SHOWN
SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	4
CHECK	0902	90	214, ETC.	





VICINITY MAP
NOT TO SCALE



PROJECT BENCHMARKS

CFW MON #6032

ON THE NORTH SIDE OF N.E. 28TH ST. (HWY 183) BETWEEN HUTCHINSON ST. & HALE ST. IN THE WEST END OF AN INLET
A CITY MON #6032 SET FLUSH IN INLET
N 6974267.12
E 2328059.33
ELEV = 596.98

CP #50

5/8" IRON ROD WITH CAP STAMPED "REFERENCE POINT" SET APPROX. +/- 75' EAST FROM A TRAFFIC SIGNAL FOUND IN THE NORTH R.O.W. OF N.E. 28TH ST. AND THE EAST R.O.W. OF DEEN RD.
N 6974311.93
E 2329385.81
ELEV = 616.54

CFW MON #88198

ON THE EAST CURB OF DEEN RD. 2.5' NORTH OF THE SOUTH CB OF LORAINE ST. IN THE NORTH END OF A 10' CURB INLET 1' OFF THE FACE OF THE CURB A CITY MON #88198 SET IN THE TOP OF THE CURB
N 6974747.396
E 2329294.857
ELEV = 619.29

CP #51

5/8" IRON ROD WITH CAP STAMPED "REFERENCE POINT" SET APPROX. +/- 313' NORTH OF THE INTERSECTION OF N.E. 28TH ST. AND DEEN RD. THEN +/- 25' EAST OF DEEN RD. BACK OF CURB
N 6974600.07
E 2329315.43
ELEV = 619.13

Horizontal Alignment Name: SH 183 / NE 28TH STREET

	STATION	NORTHING	EASTING
Element: Linear			
POB	0+00.00	6974236.2773	2328886.4794
EOT	9+43.52	6974254.7245	2329829.8148
Tangent Direction:	N 88^52'47" E		
Tangent Length:	943.52		

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS + ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F-351

Texas Department of Transportation

PROJECT LAYOUT AND SURVEY CONTROL SH183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GES	TEXAS	2	TARRANT	5
CHECK	CONTROL	SECTION	JOB	
EAC	0902	90	214 ETC	
CHECK				
EAC				

3/28/2024
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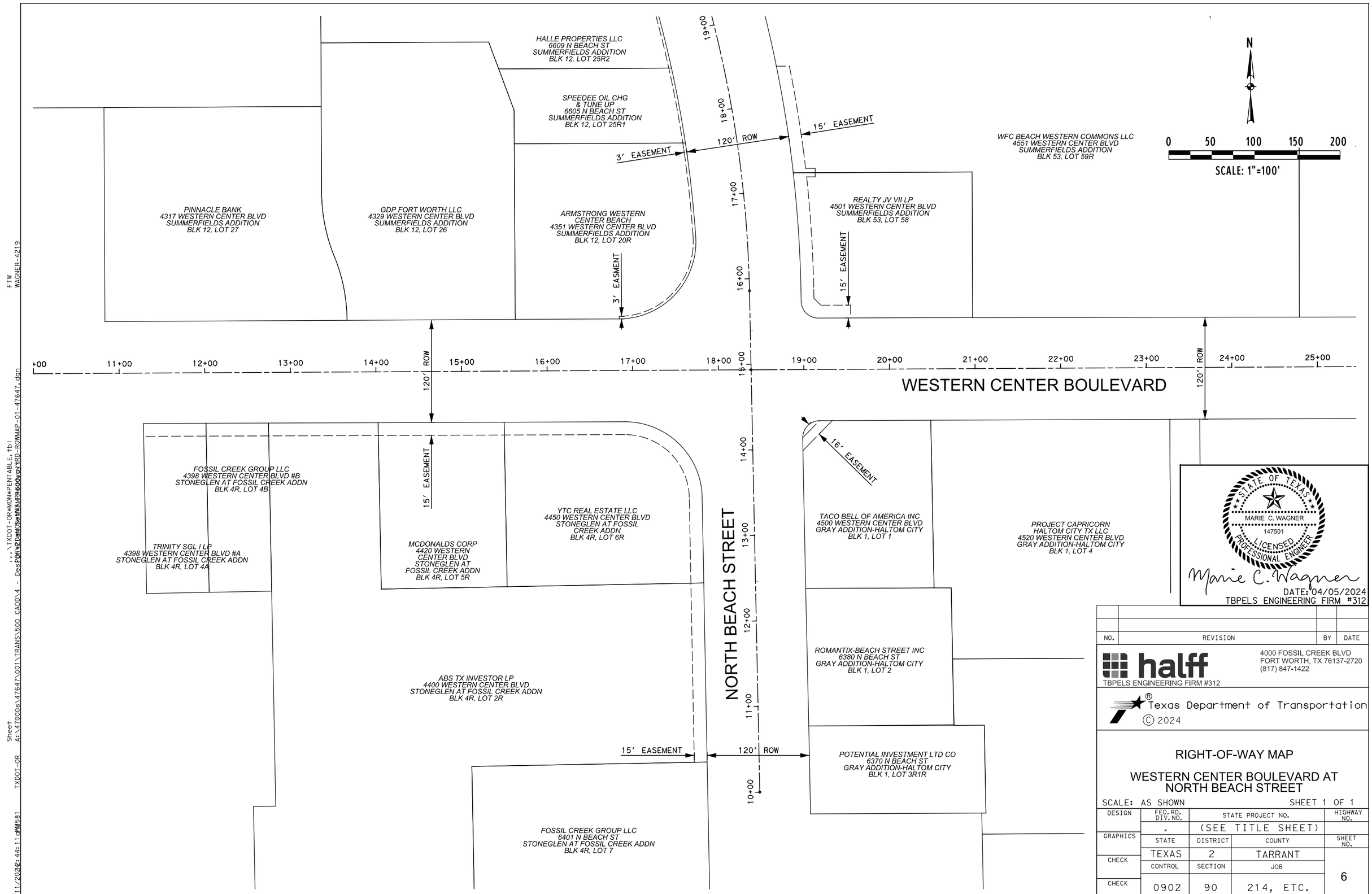


MARIE C. WAGNER
147501

Marie C. Wagner

DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312

4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

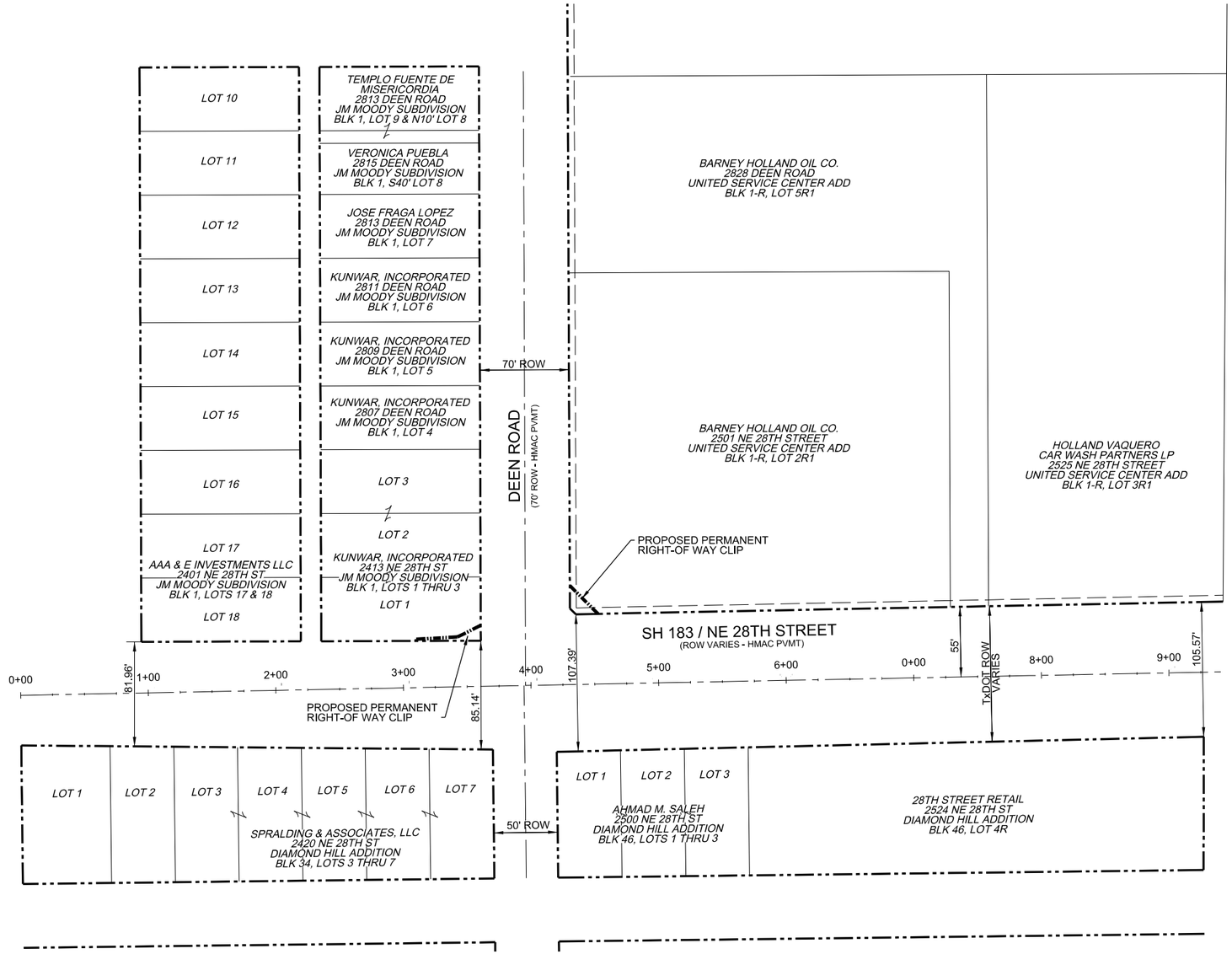
Texas Department of Transportation

RIGHT-OF-WAY MAP

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN
SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	6
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	



0 50 100 150

GRAPHIC SCALE IN FEET

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED
PROFESSIONAL ENGINEER
04/05/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS + ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

Texas Department of Transportation

RIGHT-OF-WAY MAP
SH183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GES	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
EAC	0902	90	214 ETC	7
CHECK				
EAC				

3/28/2024
8:20:28 AM
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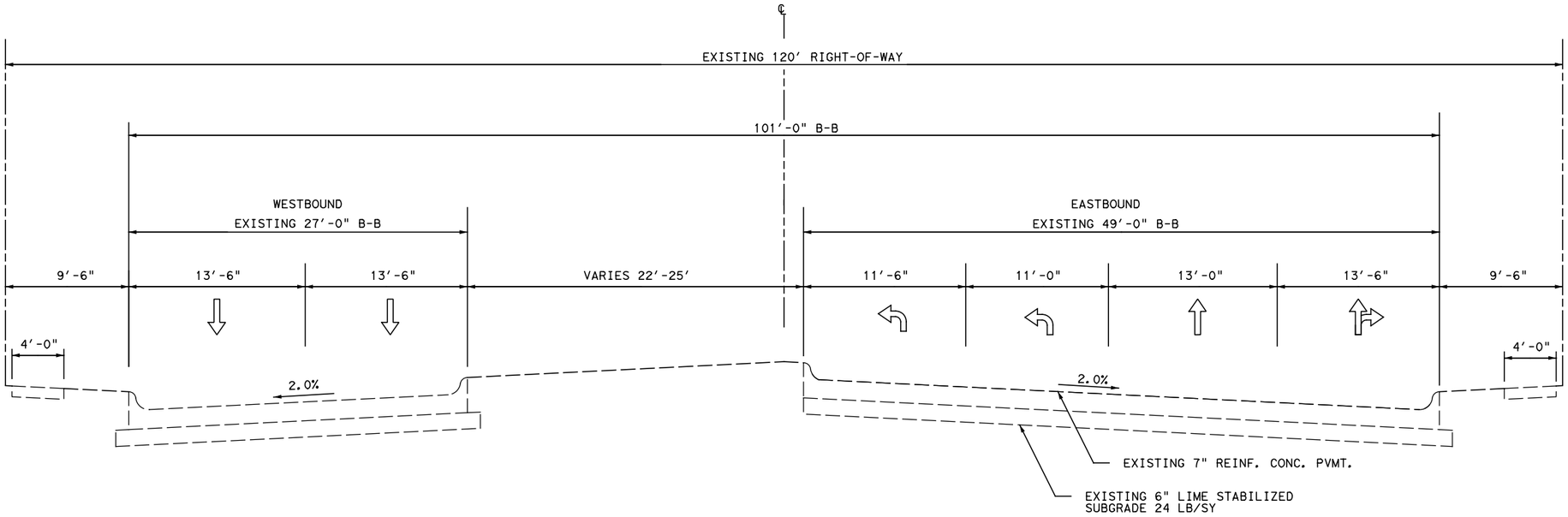
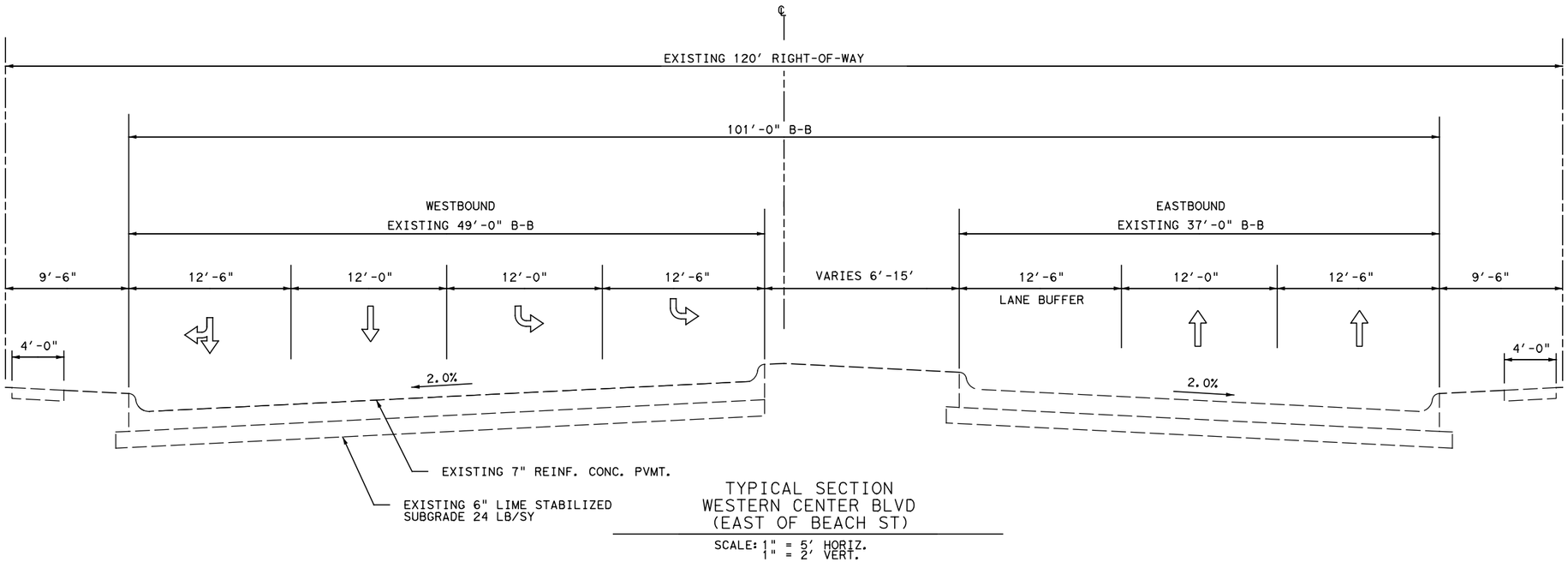
K:\2020\20023.01 CFW_SH183-Deen_CFW\06_CAD\CIVIL\SHEETS\006 - RIGHT-OF-WAY MAP - SH183 AT DEEN ROAD.dgn

NOTE:
1) EXISTING PAVEMENT DESIGN FROM CITY OF FORT WORTH AS-BUILTS.



TYPICAL SECTION
WESTERN CENTER BLVD
(WEST OF BEACH ST)

SCALE: 1" = 5' HORIZ.
1" = 2' VERT.



TYPICAL SECTION
WESTERN CENTER BLVD
(EAST OF BEACH ST)

SCALE: 1" = 5' HORIZ.
1" = 2' VERT.

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner

DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

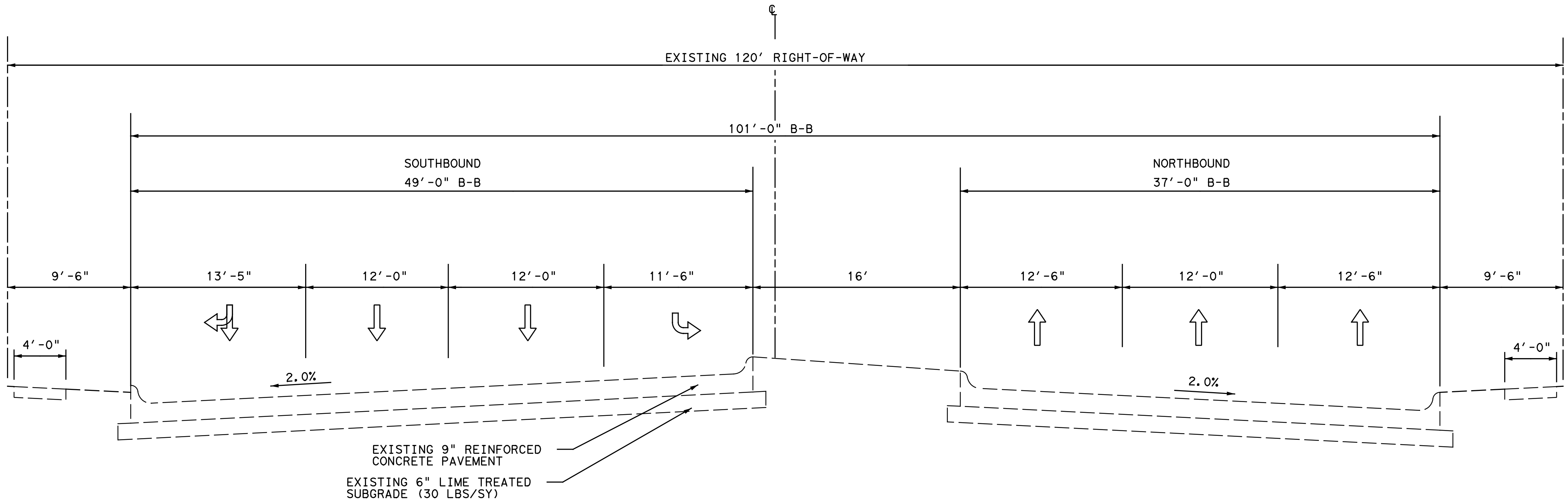
EXISTING TYPICAL SECTIONS
WESTERN CENTER BOULEVARD

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	8
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

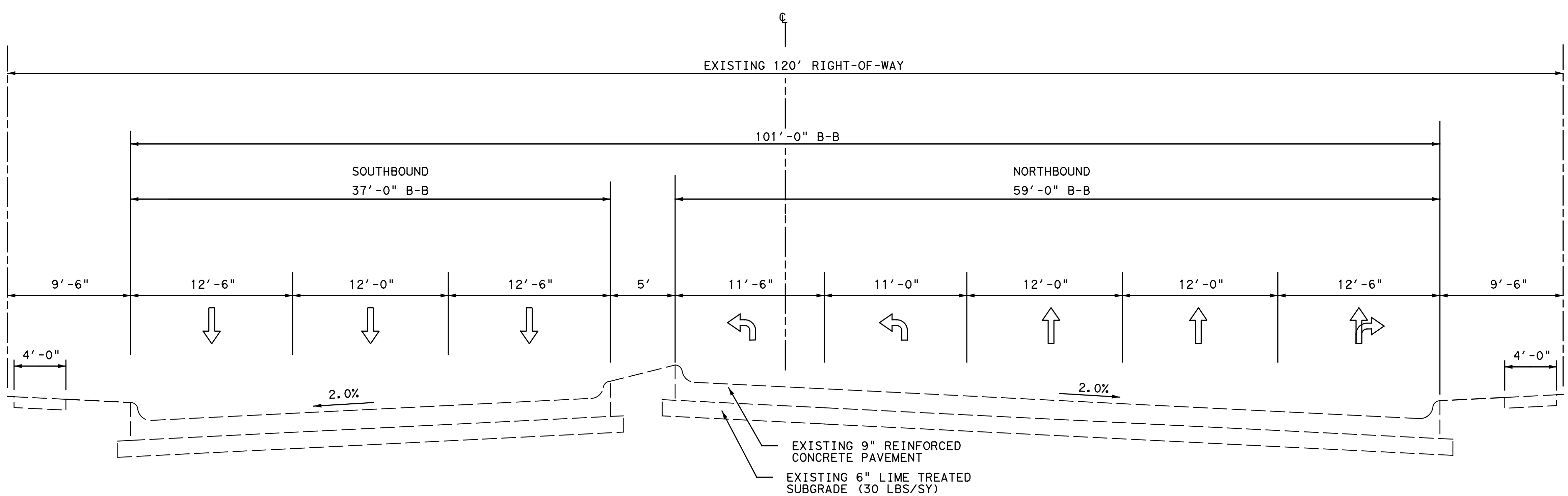
FTW
WAGNER-4219
...\TXDOT-OR*MON*PENTABLE.tbl
...\TXDOT-OR*MON*RD-TSEC-EXIST-47647.dgn
Sheet
TXDOT-OR
A:\47000s\47647\001\TRANS\500 CADD\4 - Des
4/11/2024 2:44:12 PM

NOTE:
1) EXISTING PAVEMENT DESIGN FROM CITY OF FORT WORTH AS-BUILTS.



TYPICAL SECTION
BEACH ST
(NORTH OF WESTERN CENTER BLVD)

SCALE: 1" = 5′ HORIZ.
1" = 2′ VERT.



TYPICAL SECTION
BEACH ST
(SOUTH OF WESTERN CENTER BLVD)

SCALE: 1" = 5′ HORIZ.
1" = 2′ VERT.

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

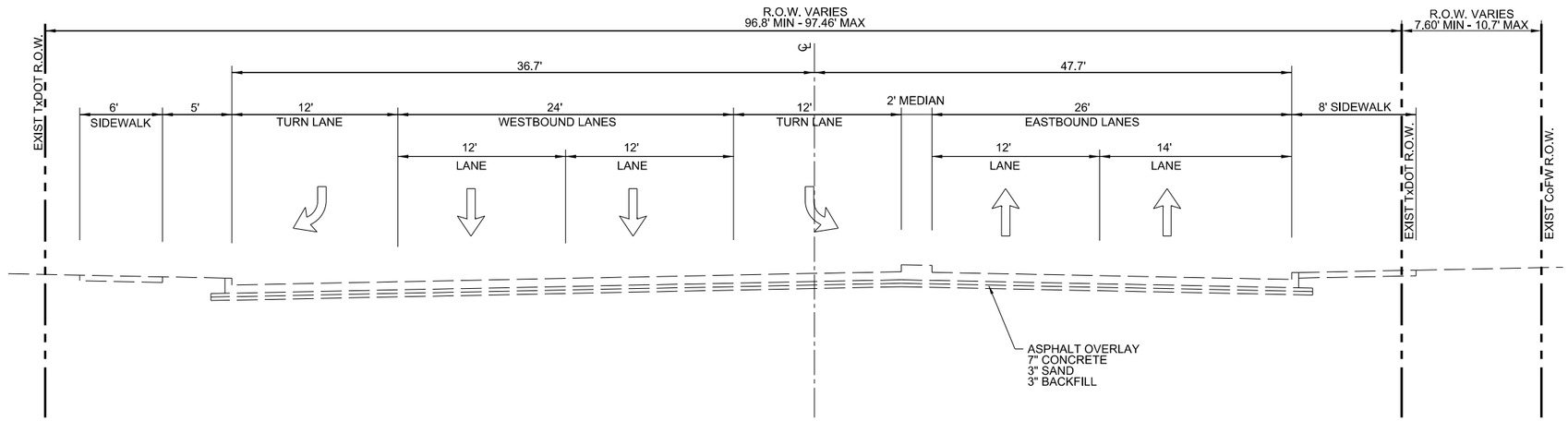
Texas Department of Transportation

EXISTING TYPICAL SECTIONS

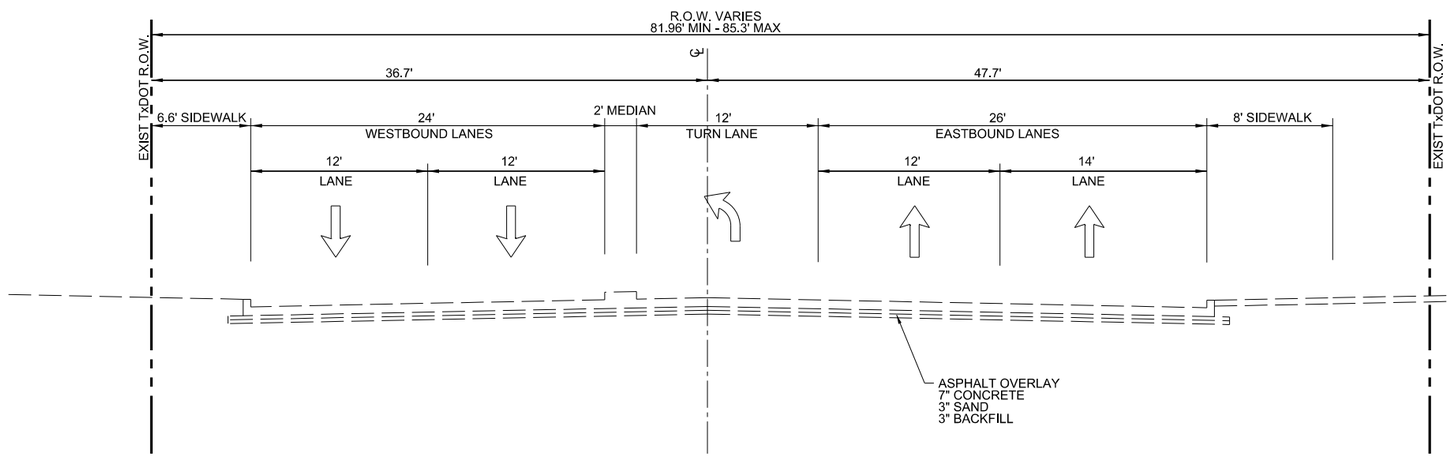
NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	9



SH 183 / NE 28TH STREET
STA 4+00 TO STA 8+00
EXISTING TYPICAL SECTION BASED ON
TxDOT U.S. PUBLIC WORKS
PROJECT N.R.M 634-A NO.15
DENTON AVENUE TO NORTH MAIN ST.
DATED FEBRUARY 1984



SH 183 / NE 28TH STREET
STA 0+00 TO STA 4+00
EXISTING TYPICAL SECTION BASED ON
TxDOT U.S. PUBLIC WORKS
PROJECT N.R.M 634-A NO.15
DENTON AVENUE TO NORTH MAIN ST.
DATED FEBRUARY 1984

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED
PROFESSIONAL ENGINEER
04/05/2024

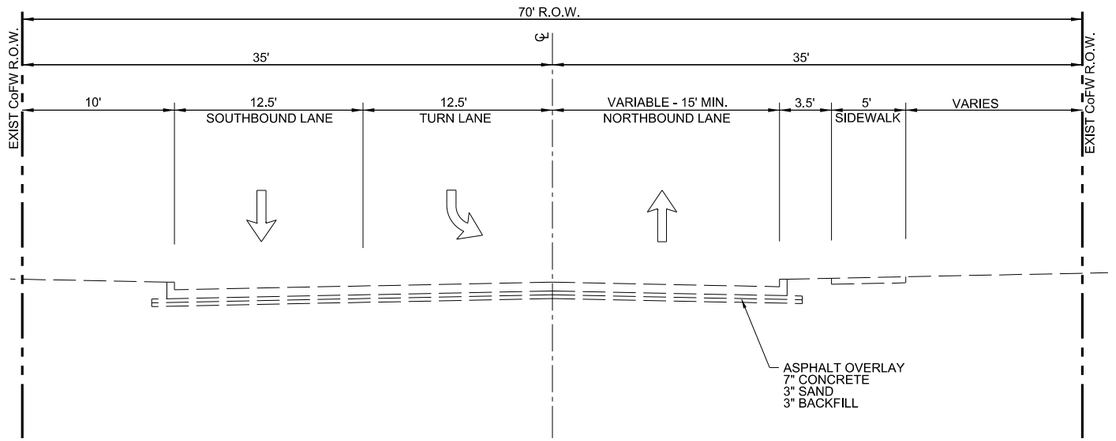
NO.	REVISION	BY	DATE

2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

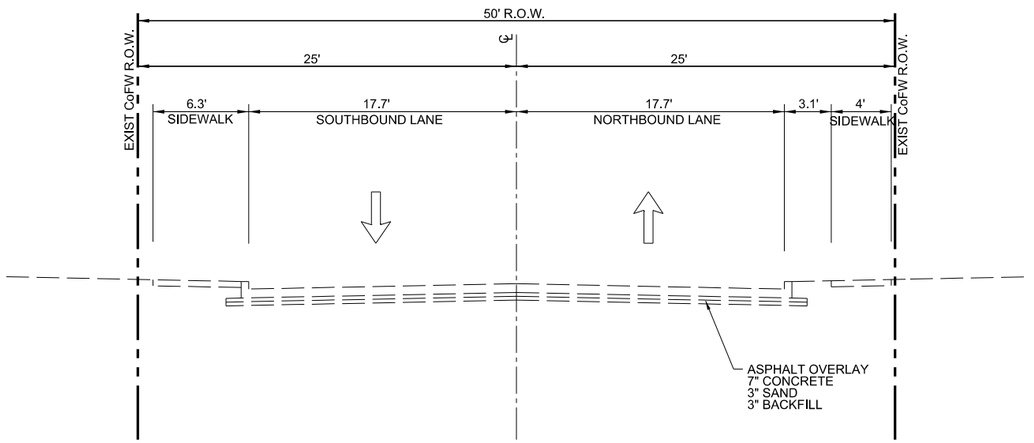
EXISTING TYPICAL SECTIONS SH183 / NE 28TH STREET

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GES	TEXAS	2	TARRANT	10
CHECK	CONTROL	SECTION	JOB	
EAC	0902	90	214 ETC	
CHECK				
EAC				



DEEN ROAD
NORTH OF SH 183 / NE 28TH STREET
EXISTING TYPICAL SECTION BASED ON
TxDOT U.S. PUBLIC WORKS
PROJECT N.R.M 634-A NO.15
DENTON AVENUE TO NORTH MAIN ST.
DATED FEBRUARY 1984



DEEN ROAD
SOUTH OF SH 183 / NE 28TH STREET
EXISTING TYPICAL SECTION BASED ON
TxDOT U.S. PUBLIC WORKS
PROJECT N.R.M 634-A NO.15
DENTON AVENUE TO NORTH MAIN ST.
DATED FEBRUARY 1984

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED
PROFESSIONAL ENGINEER
04/05/2024

NO.	REVISION	BY	DATE

2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

Texas Department of Transportation

EXISTING TYPICAL SECTIONS DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GES	TEXAS	2	TARRANT	11
CHECK	CONTROL	SECTION	JOB	
EAC	0902	90	214 ETC	
CHECK				
EAC				

3/28/2024
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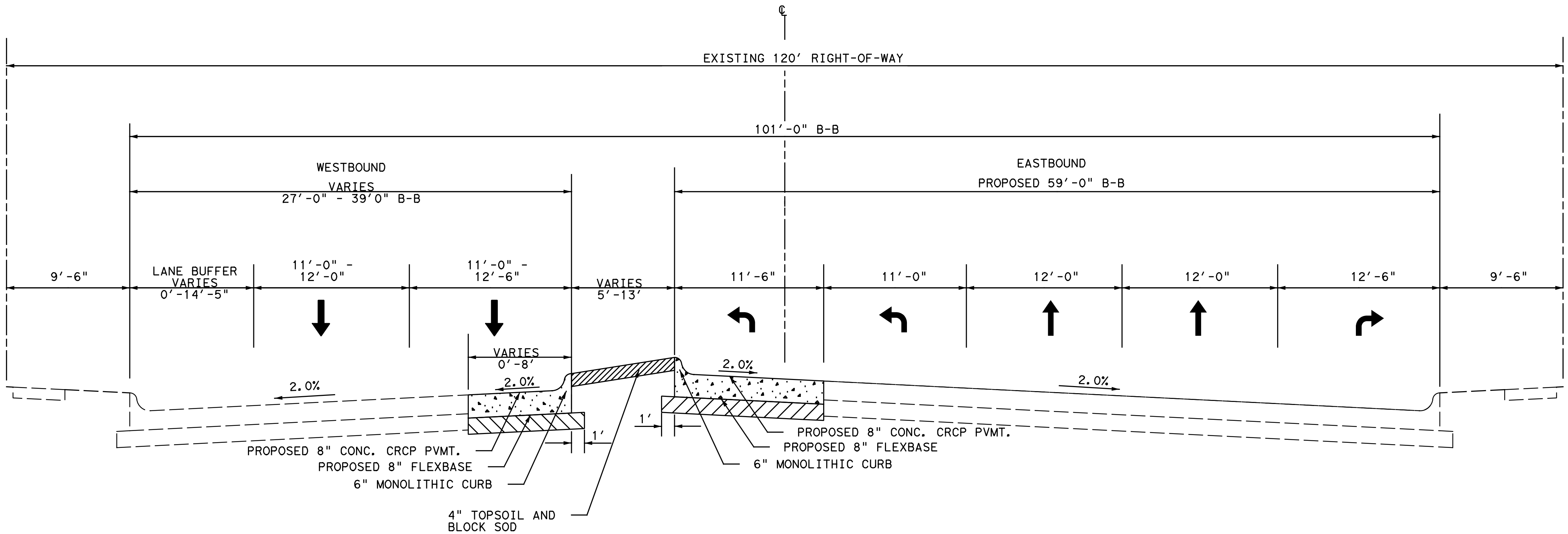
K:\2020\20023.01 CFW_SH183-Deen_CFW\06_CAD\CIVIL\SHEETS\010 - EXISTING TYPICAL SECTIONS - DEEN ROAD.dgn

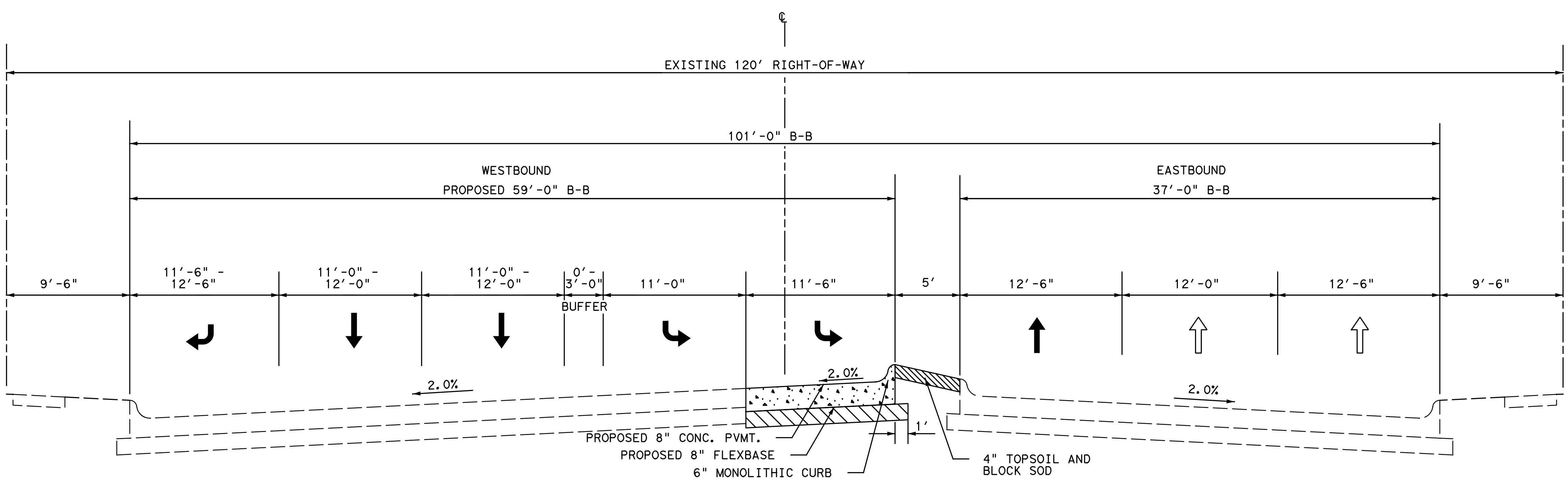
K:\2020\20023.01 CFW_SH183-Deen_CFW\06_CAD\CIVIL\SHEETS\010 - EXISTING TYPICAL SECTIONS - DEEN ROAD.dgn

NOTE:
1) PAVEMENT DESIGN APPROVED BY CITY OF FORT WORTH. GEOTECHNICAL ENGINEERING WAS NOT PERFORMED.



TYPICAL SECTION
WESTERN CENTER BLVD
(WEST OF BEACH ST)

SCALE: 1" = 5' HORIZ.
1" = 2' VERT.



TYPICAL SECTION
WESTERN CENTER BLVD
(EAST OF BEACH ST)

SCALE: 1" = 5' HORIZ.
1" = 2' VERT.

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

PROPOSED TYPICAL SECTIONS

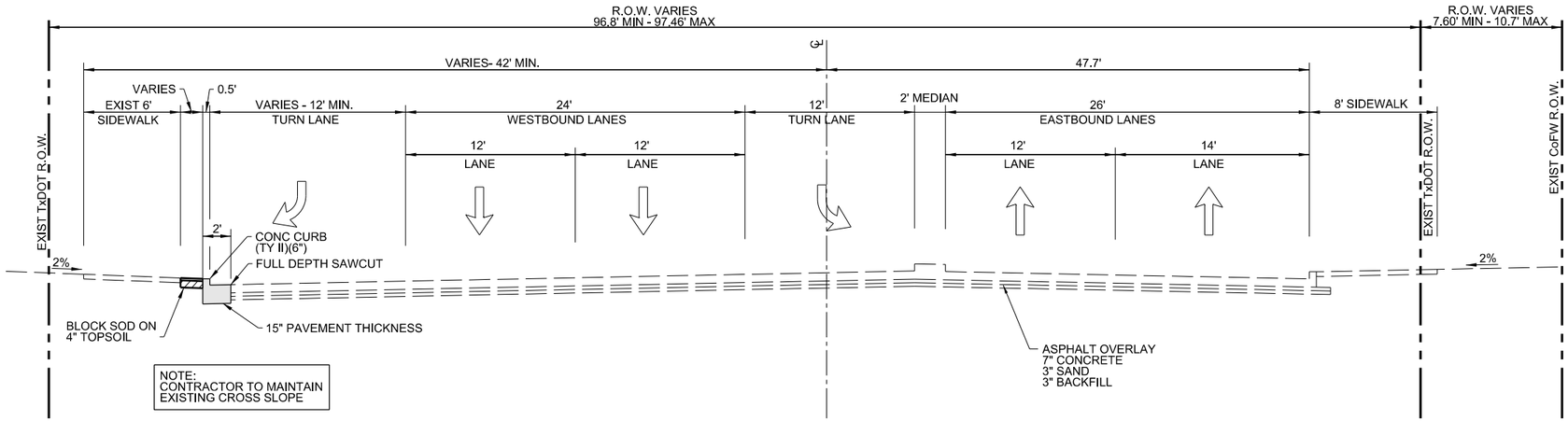
WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	12
CHECK	0902	90	214, ETC.	

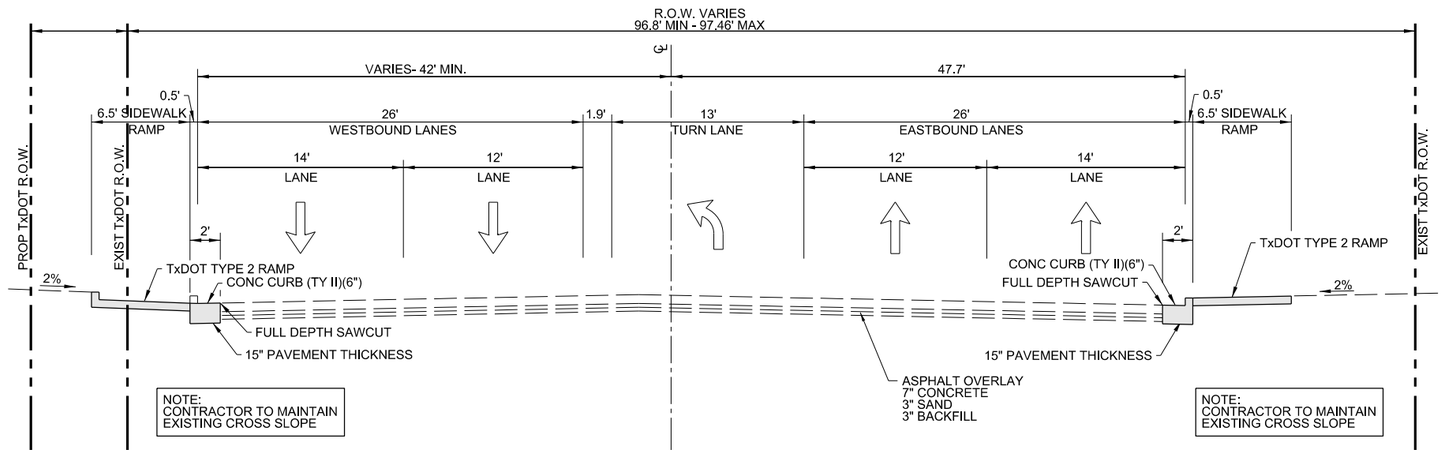
NOTE:

1. BLOCK SODDING AND TOP SOIL SHALL BE PER TxDOT ITEMS 162 AND 160, RESPECTIVELY.
2. CONTRACTOR IS TO PROTECT EXISTING SIDEWALK TO REMAIN AND IS RESPONSIBLE FOR REPAIRING DAMAGE AT NO ADDITIONAL COST.



SH 183 / NE 28TH STREET
STA 4+60

EXISTING TYPICAL SECTION BASED ON
TxDOT U.S. PUBLIC WORKS
PROJECT N.R.M 634-A NO.15
DENTON AVENUE TO NORTH MAIN ST.
DATED FEBRUARY 1984



SH 183 / NE 28TH STREET
STA 3+50

EXISTING TYPICAL SECTION BASED ON
TxDOT U.S. PUBLIC WORKS
PROJECT N.R.M 634-A NO.15
DENTON AVENUE TO NORTH MAIN ST.
DATED FEBRUARY 1984

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED
PROFESSIONAL ENGINEER
04/05/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS + ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

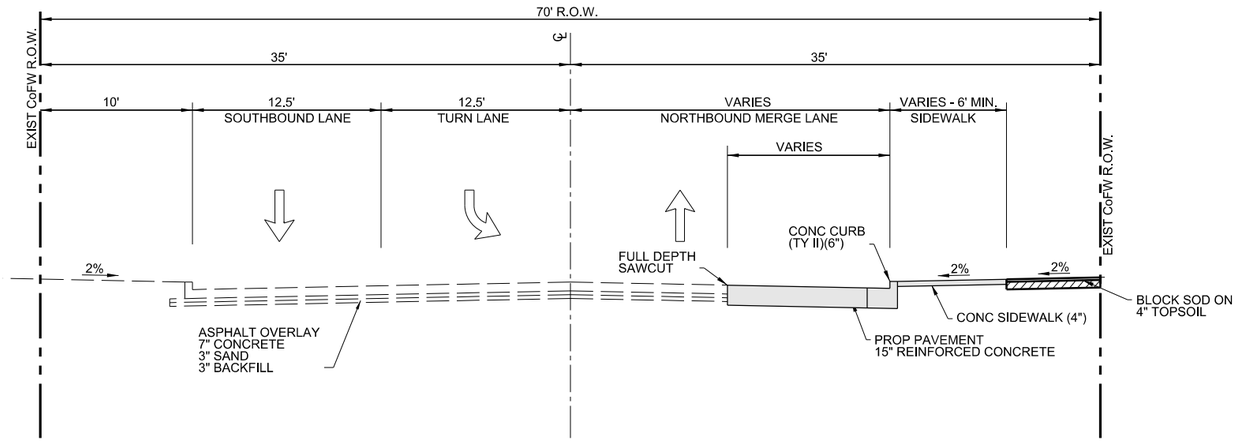
PROPOSED TYPICAL SECTIONS SH183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS GES	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	13
CHECK EAC	CONTROL	SECTION	JOB	
CHECK EAC	0902	90	214 ETC	

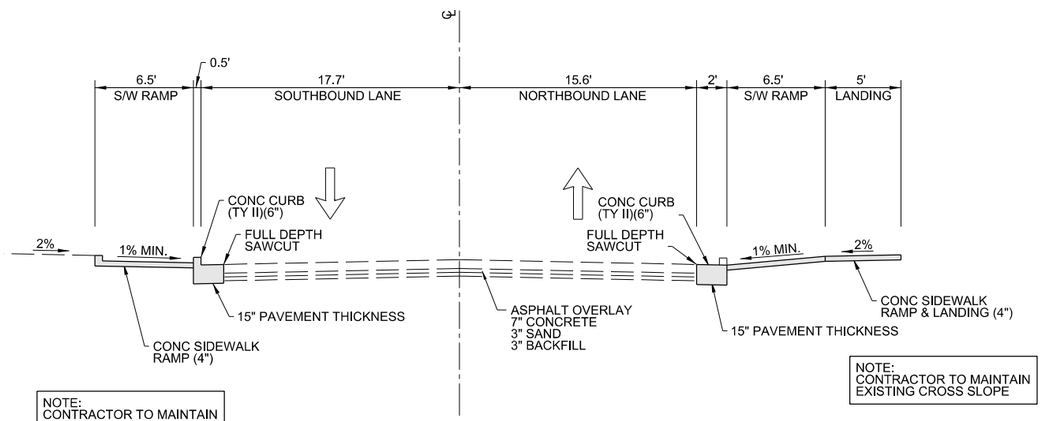
NOTE:

1. BLOCK SODDING AND TOP SOIL SHALL BE PER TXDOT ITEMS 162 AND 160, RESPECTIVELY.
2. CONTRACTOR IS TO PROTECT EXISTING SIDEWALK TO REMAIN AND IS RESPONSIBLE FOR REPAIRING DAMAGE AT NO ADDITIONAL COST.



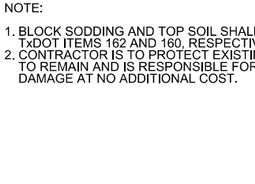
DEEN ROAD
80' NORTH OF SH 183 / NE 28TH STREET
EXISTING TYPICAL SECTION BASED ON
TXDOT U.S. PUBLIC WORKS
PROJECT N.R.M 634-A NO.15
DENTON AVENUE TO NORTH MAIN ST.
DATED FEBRUARY 1984

NOTE:
CONTRACTOR TO MAINTAIN
EXISTING CROSS SLOPE



NOTE:
CONTRACTOR TO MAINTAIN
EXISTING CROSS SLOPE

DEEN ROAD (50' ROW)
50' SOUTH OF SH 183 / NE 28TH STREET
EXISTING TYPICAL SECTION BASED ON
TxDOT U.S. PUBLIC WORKS
PROJECT N.R.M 634-A NO.15
DENTON AVENUE TO NORTH MAIN ST.
DATED FEBRUARY 1984



NO.	REVISION	BY	DATE

2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

PROPOSED TYPICAL SECTIONS SH183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GES	TEXAS	2	TARRANT	14
CHECK	CONTROL	SECTION	JOB	
EAC	0902	90	214 ETC	
CHECK				
EAC				

4/2/2024
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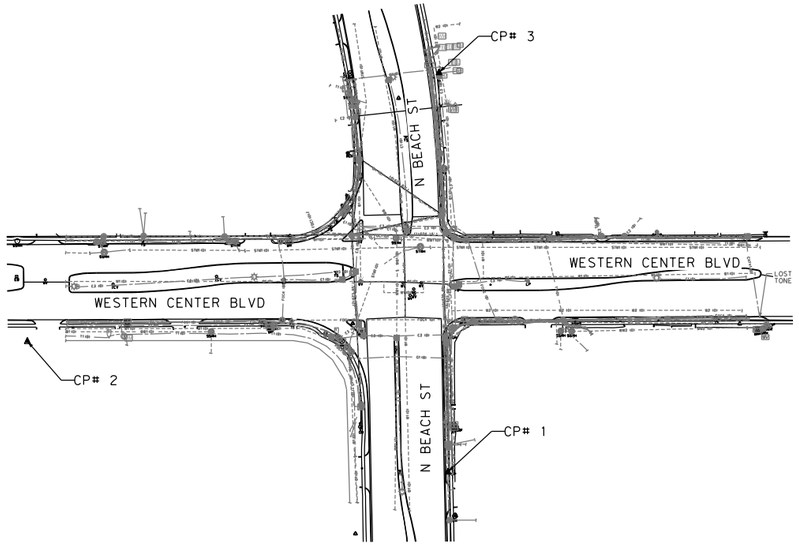


SHEET 4

CONTROL POINTS

ALL COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 (NAD 83, 2011), NORTH CENTRAL ZONE (4202).

THE UNIT OF MEASURE IS THE U.S. SURVEY FEET.

ALL COORDINATES AND DISTANCES ARE SURFACE VALUES AND CAN BE CONVERTED TO GRID VALUES BY DIVIDING BY THE PROJECT SURFACE ADJUSTMENT FACTOR OF 1.00012 (TARRANT COUNTY).

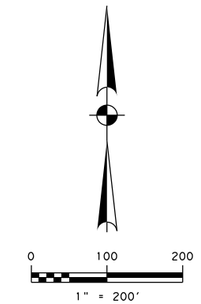
CP# 1
NORTHING: 6998928.923
EASTING: 2340348.116
ELEVATION: 601.31'

CP# 2
NORTHING: 6999101.264
EASTING: 2339792.574
ELEVATION: 603.99'

CP# 3
NORTHING: 6999456.308
EASTING: 2340334.774
ELEVATION: 603.36'

UTILITY CONTACT LIST

COMPANY	CONTACT	PHONE	EMAIL
AT&T	GARY TILORY	(817) 338-6202	GT1219@ATT.COM
ATMOS	CAMERON COPE	(945) 336-9274	CAMERON.COPE@ATMOSENERGY.COM
CITY OF FT WORTH	HOLLIE SMITH	(817)-392-8243	HOLLIE.SMITH@FORTWORTHTEXAS.GOV
CITY OF HALTOM CITY	PIA TOASE	(817)-332-2580	PIA@TOASE.COM
MCI	N/A	N/A	INVESTIGATIONS@ONE.VERIZON.COM
ONCOR	MARC CANTALINO	(817)-215-6139	MARC.CANTALINO@ONCOR.COM
SPECTRUM	LUKE WHITE	(903)-546-5650	FORCERELOS@KINETIC-ENG.COM
ZAYO	LOUISE JUDY	(817) 665-4702	LOUISE.JUDY@ZAYO.COM



INDEX

TOTAL QUANTITIES	
LEVEL "B" =	14,419'
LEVEL "C" =	0'
OVERHEAD =	2,665'
LEVEL "D" =	9,837'
TOTAL =	26,921'

12/05/2023

NO.	REVISIONS	BY	DATE

ARS ENGINEERS, INC.

Texas Department of Transportation © 2023

INTERSECTION OF NORTH BEACH STREET AND WESTERN CENTER BLVD

NORTH BEACH STREET AND WESTERN CENTER BLVD EXISTING UTILITY LAYOUT

DSN: --	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DRN: JC		TEXAS				
CK: JS	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
APRV: AMS		TARRANT				15

12/5/2023 2:12:56 PM

P:\22-043.03 Halff_City of Fort Worth_ North Beach St & Western Center Blvd\Utilities\DGN\LAYOUT SHEETS\2-LAYOUT, CONTROL-Beach&Western-STA_-_.dgn

P:\22-043.03 Halff_City of Fort Worth_ North Beach St & Western Center Blvd\Utilities\DGN\LAYOUT SHEETS\3-LEGEND SHEET - Beach&western-STA_-_.dgn

SUE LEGEND

OVERHEAD	OH	SEE OH LEGEND
ELECTRIC	E1 (B)	CITY OF FT WORTH
ELECTRIC	E2 (B)	ONCOR
ELECTRIC	E2 (D)	ONCOR
TELEPHONE	T1 (B)	AT&T
TELEPHONE	T1 (D)	AT&T
FIBER OPTIC	FOC1 (B)	AT&T
FIBER OPTIC	FOC1 (D)	AT&T
FIBER OPTIC	FOC2 (B)	MCI
FIBER OPTIC	FOC2 (D)	MCI
FIBER OPTIC	FOC3 (D)	SPECTRUM
FIBER OPTIC	FOC4 (B)	ZAYO
FIBER OPTIC	FOC4 (D)	ZAYO
CABLE	CATV1 (B)	SPECTRUM
GAS	G1 (B)	ATMOS
GAS	G1 (D)	ATMOS
WATER	W1 (D)	CITY OF FT WORTH
WATER	W2 (D)	HALTOM CITY
WASTEWATER	WW1 (B)	CITY OF FT WORTH
WASTEWATER	WW1 (D)	CITY OF FT WORTH
WASTEWATER	WW2 (B)	HALTOM CITY
WASTEWATER	WW2 (D)	HALTOM CITY
STORM	STM1 (B)	CITY OF FT WORTH
STORM	STM1 (D)	CITY OF FT WORTH

- TRANSMISSION TOWER
- CELL TOWER
- POWER POLE
- POWER POLE WITH LIGHT
- POWER MANHOLE
- PULL/TRANSFORMER BOX
- ELECTRIC METER
- UG ELECTRIC MARKER
- LIGHT POLE
- TRAFFIC SIGNAL POLE
- TRAFFIC SIGNAL CONTROL BOX
- SIGNAL PEDESTAL
- TELEPHONE HAND HOLE
- TELEPHONE PEDESTAL
- TELEPHONE MANHOLE
- CATV PEDESTAL
- UG TELEPHONE MARKER
- UG FIBER MARKER
- GAS MANHOLE
- GAS METER
- GAS APPURTENANCE
- UG GAS MARKER
- GAS VENT
- GAS TEST VALVE
- WATER VALVE
- FIRE HYDRANT
- WATER METER
- WATER MANHOLE
- WASTEWATER MANHOLE
- WASTEWATER CLEANOUT
- UG WASTEWATER MARKER
- STORM SEWER MANHOLE
- STORM OUTFALL
- STORM INLET
- CONTROL POINT
- CONTINUATION MARK

SUE QUALITY LEVEL LEGEND

T1 (B)	QUALITY LEVEL "B"
T1 (C)	QUALITY LEVEL "C"
T1 (D)	QUALITY LEVEL "D"

GENERAL NOTES

QUALITY LEVEL "D":

QUALITY LEVEL VALUE ASSIGNED TO A UTILITY SEGMENT OR UTILITY FEATURE AFTER A REVIEW AND COMPILATION OF DATA SOURCES SUCH AS EXISTING RECORDS, ORAL RECOLLECTIONS, ONE-CALL MARKINGS, AND DATA REPOSITORIES.

QUALITY LEVEL "C":

QUALITY LEVEL VALUE ASSIGNED TO A UTILITY SEGMENT OR UTILITY FEATURE AFTER SURVEYING ABOVEGROUND (I.E., VISIBLE) UTILITY FEATURES AND USING PROFESSIONAL JUDGMENT TO CORRELATE THE SURVEYED LOCATIONS OF THESE FEATURES WITH THOSE FROM EXISTING UTILITY RECORDS.

QUALITY LEVEL "B":

DESIGNATE: QUALITY LEVEL VALUE ASSIGNED TO A UTILITY SEGMENT OR SUBSURFACE UTILITY FEATURE WHOSE EXISTENCE AND POSITION IS BASED UPON APPROPRIATE SURFACE GEOPHYSICAL METHODS COMBINED WITH PROFESSIONAL JUDGMENT AND WHOSE LOCATION IS TIED TO THE PROJECT SURVEY DATUM. HORIZONTAL ACCURACY OF DESIGNATED UTILITIES IS WITHIN SEVERAL INCHES OF THE ACTUAL UTILITY SEGMENT, WHENEVER POSSIBLE.

QUALITY LEVEL "A":

QUALITY LEVEL VALUE ASSIGNED TO A PORTION (X, Y, AND Z GEOMETRY) OF A POINT OF A SUBSURFACE UTILITY FEATURE THAT IS DIRECTLY EXPOSED, MEASURED, AND WHOSE LOCATION AND DIMENSIONS ARE TIED TO THE PROJECT SURVEY DATUM.

NOTES:
SUBSURFACE UTILITY ENGINEERING (SUE) CERTIFICATION
THE ENGINEER'S SEAL HEREON IS TO CERTIFY THAT THE UTILITIES SHOWN HAVE BEEN INVESTIGATED IN ACCORDANCE WITH STANDARD SUE INDUSTRY PRACTICES. WHERE INDICATED UTILITY SIZES AND MATERIALS TAKEN FROM BEST AVAILABLE RECORDS. ALL OTHER INFORMATION HEREON HAS BEEN PROVIDED BY OTHERS AND IS NOT A PART OF THIS CERTIFICATION.

UTILITY LOCATIONS REPRESENTED IN THESE DRAWING ARE INTENDED FOR DESIGN PURPOSES AND NOT FOR CONSTRUCTION. CONTRACTORS MUST CALL TEXAS 811, 48 HOURS PRIOR TO EXCAVATION.

ARS ENGINEERS, INC. IS NOT RESPONSIBLE FOR REPRESENTING PROPOSED OR NEW UTILITY INSTALLATIONS, OR MODIFICATIONS AND ADJUSTMENTS TO EXISTING UTILITIES, AFTER THE SUE INVESTIGATION COMPLETION DATE.

ALL LOW WIRE CLEARANCE MEASUREMENTS ARE FROM SINGLE DAY, ON-SITE SURVEY VISITS AND WILL VARY BASED ON CHANGES IN TEMPERATURE, WEATHER CONDITIONS, OR ANY MAINTENANCE OR MODIFICATIONS OF THE UTILITIES THEMSELVES.

ELECTRONIC DEPTHS (ED) SHOWN ARE SUBJECT TO VARIABLE CONDITIONS AND ARE NOT RELIABLE FOR ACCURATE DEPTH DETERMINATIONS WITHOUT QUALITY LEVEL A TEST HOLES.

UTILITY LINE LIMITS DEPICTED HEREIN REPRESENT FIELD DESIGNATING LIMITS AND NOT END POINTS OF UTILITIES UNLESS OTHERWISE NOTED.

WITHOUT VISUAL VERIFICATION, UTILITIES LOCATED BY MEANS OF TRACER WIRE MAY NOT DEPICT THE ACTUAL LOCATION OF THE UTILITY AS THE TRACER WIRE MAY NOT BE DIRECTLY ON OR ABOVE THE UTILITY.

FLOWLINE INFORMATION SHOWN HEREIN IS BASED ON FIELD MEASURED DEPTHS AND IS APPROXIMATE.

UTILITY SERVICE LINES ARE NOT IDENTIFIED HEREIN UNLESS OTHERWISE DEPICTED.

IRRIGATION LINES ARE NOT IDENTIFIED HEREIN UNLESS OTHERWISE DEPICTED.

STATE OF TEXAS
ANEIL M. SANDHU
114532
LICENSED
PROFESSIONAL ENGINEER
12/05/2023

NO.	REVISIONS	BY	DATE

ARS ENGINEERS, INC.

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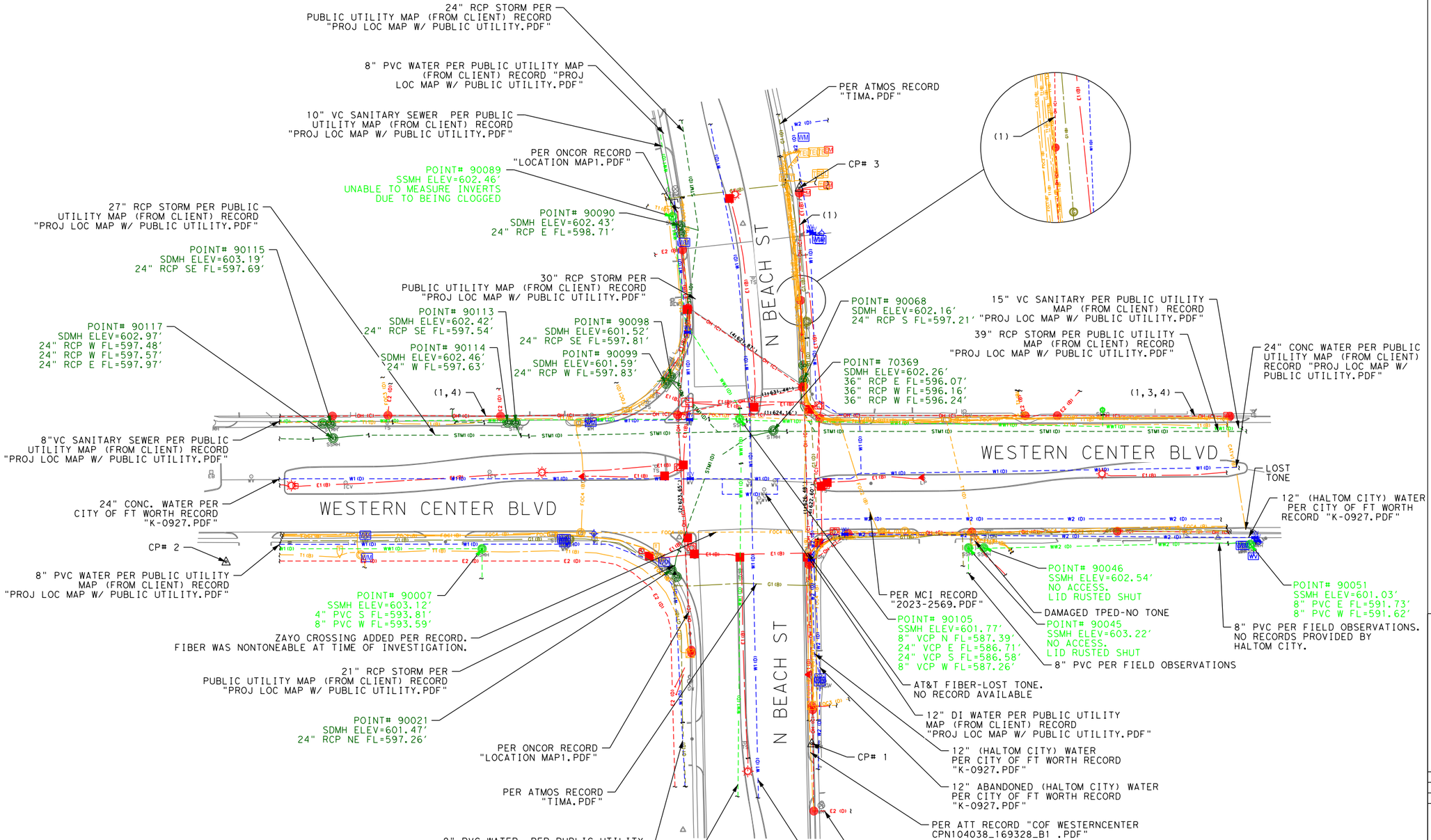
INTERSECTION OF NORTH BEACH STREET AND WESTERN CENTER BLVD

NORTH BEACH STREET AND WESTERN CENTER BLVD
EXISTING UTILITY LEGEND

DSN: --	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
DRN: JC		TEXAS					
CK: JS	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
APRV: AMS		TARRANT					16

12/5/2023 2:12:56 PM



0 50 100

1" = 100'

SUE QUANTITIES	
LEVEL "B"	14,419'
LEVEL "C"	0'
OVERHEAD	2,665'
LEVEL "D"	9,837'
TOTAL=	26,921'

QUALITY LEVEL LEGEND

QL "A"
T1 (B) QL "B"
T1 (C) QL "C"
T1 (D) QL "D"

OVERHEAD UTILITY LEGEND

NO.	UTILITY	OWNER
1	OH ELECTRIC	ONCOR
2	OH FIBER	AT&T
3	OH TELEPHONE	AT&T
4	OH FOC	SPECTRUM

STATE OF TEXAS
ANEIL M. SANDHU
114532
LICENSED
PROFESSIONAL ENGINEER

12/05/2023

NO.	REVISIONS	BY	DATE

ARS ENGINEERS, INC.

Texas Department of Transportation
© 2023

INTERSECTION OF NORTH BEACH STREET AND WESTERN CENTER BLVD

NORTH BEACH STREET AND WESTERN CENTER BLVD EXISTING UTILITY PLAN

DSN: --	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
DRN: JC		TEXAS				
CK: JS	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
APRV: AMS		TARRANT				17

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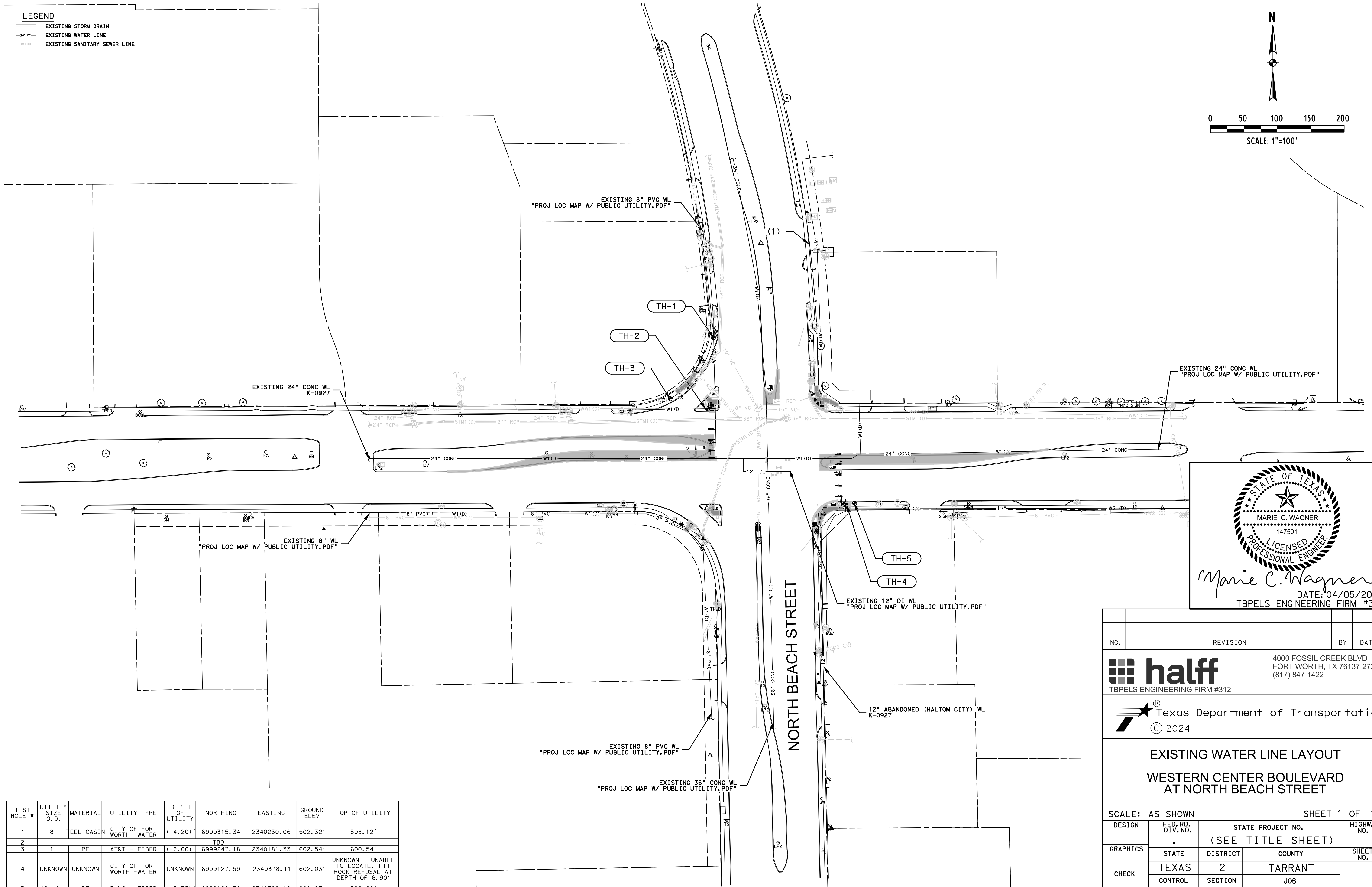

TEST HOLE #	UTILITY SIZE O.D.	MATERIAL	UTILITY TYPE	DEPTH OF UTILITY	NORTHING	EASTING	GROUND ELEV	TOP OF UTILITY
1	8"	TEEL CASIN	CITY OF FORT WORTH -WATER	(-4.20)'	6999315.34	2340230.06	602.32'	598.12'
2	TBD							
3	1"	PE	AT&T - FIBER	(-2.00)'	6999247.18	2340181.33	602.54'	600.54'
4	UNKNOWN	UNKNOWN	CITY OF FORT WORTH -WATER	UNKNOWN	6999127.59	2340378.11	602.03'	UNKNOWN - UNABLE TO LOCATE, HIT ROCK REFUSAL AT DEPTH OF 6.90'
5	(2)-2"	PE	ZAYO - FIBER	(-3.75)'	6999129.56	2340388.19	601.97'	598.22'

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

EXISTING WATER LINE LAYOUT

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.			HIGHWAY NO.
	.	(SEE TITLE SHEET)			
GRAPHICS	STATE	DISTRICT	COUNTY		SHEET NO.
	TEXAS	2	TARRANT		
CHECK	CONTROL	SECTION	JOB		18
CHECK	0902	90	214, ETC.		

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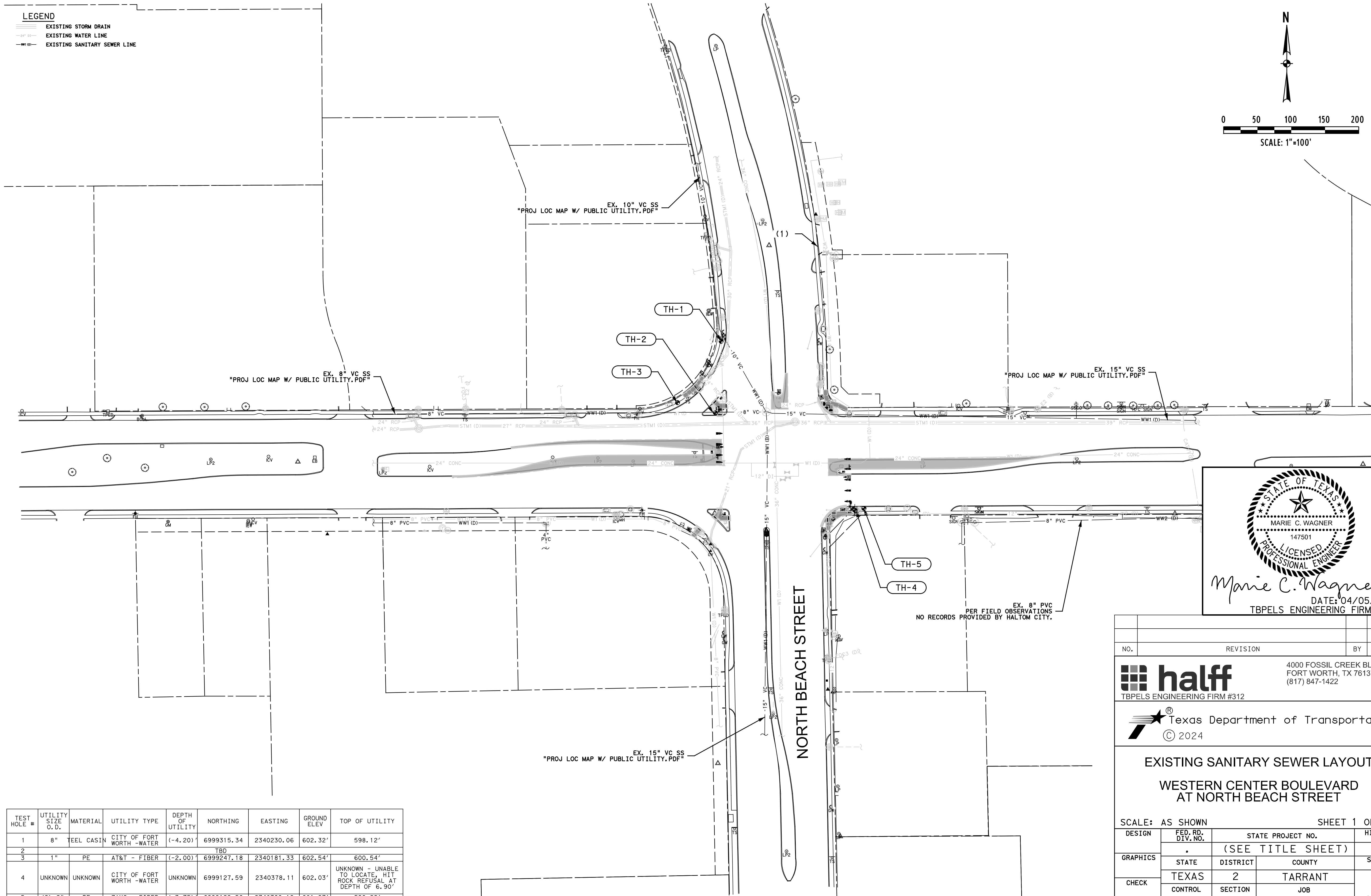

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STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

EXISTING SANITARY SEWER LAYOUT

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN

SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	19
	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

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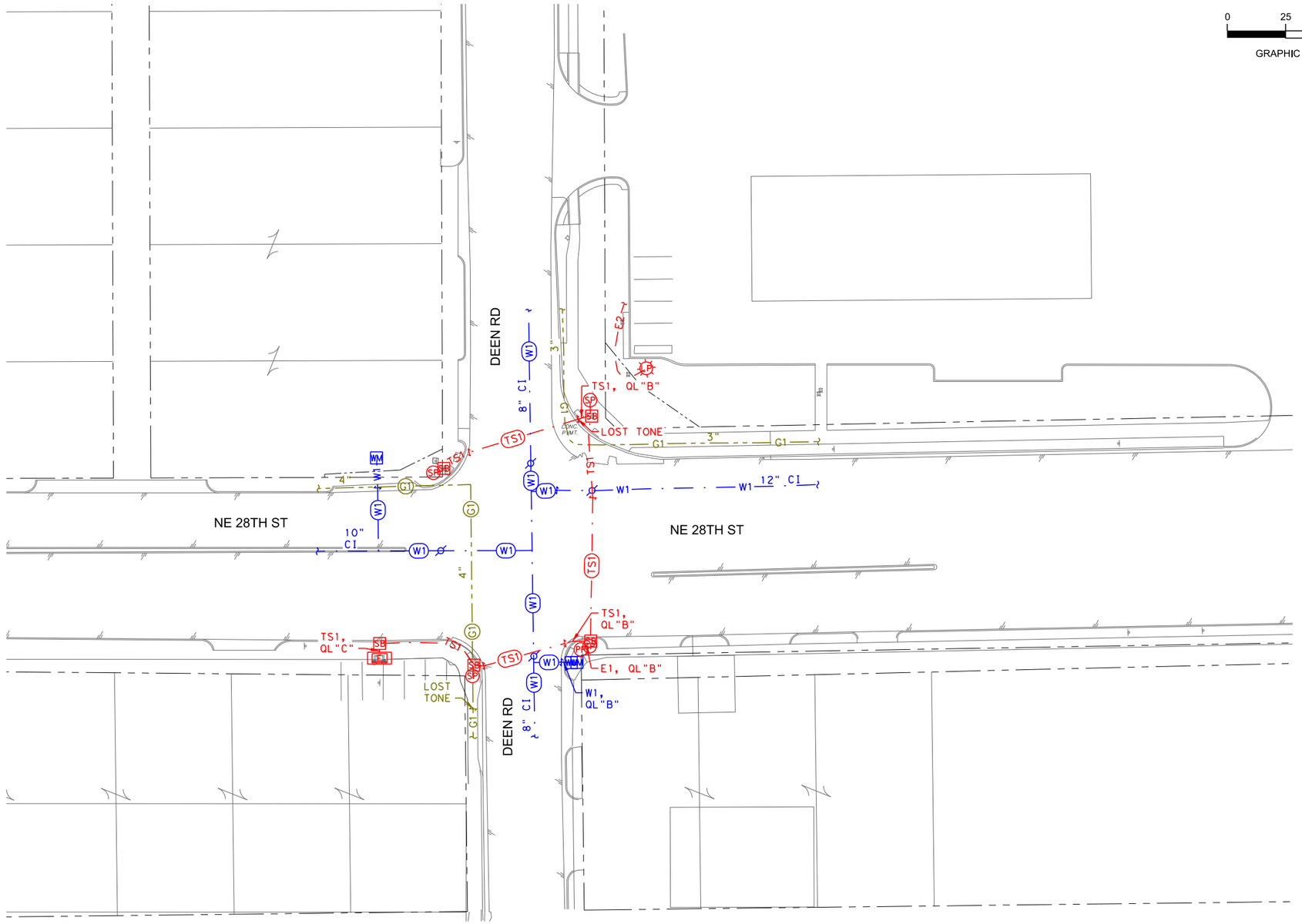

LEGEND OF UTILITY TYPES

ABANDONED UTILITY	—X—X—X—X—
PROPOSED UTILITY	———
UNKNOWN UTILITY	— — — — — —
ELECTRIC / POWER	
CITY OF FORT WORTH	QL "B" — E1 —
PRIVATE	— E2 —
CITY OF FORT WORTH	QL "C"/QL "D" — (E1) —
PRIVATE	— (E2) —
GAS / PETROLEUM	
ATMOS	QL "B" — G1 —
ATMOS	QL "C"/QL "D" — (G1) —
SANITARY SEWER	
CITY OF FORT WORTH	QL "B" — WW1 —
CITY OF FORT WORTH	QL "C"/QL "D" — (WW1) —
CITY OF FORT WORTH	QL "B" — W1 —
CITY OF FORT WORTH	QL "C"/QL "D" — (W1) —
TRAFFIC SIGNALS	
CITY OF FORT WORTH	QL "B" — TS1 —
CITY OF FORT WORTH	QL "C"/QL "D" — (TS1) —

LEGEND OF UTILITY SYMBOLS

END CAP	
QUALITY LEVEL CHANGE	
TEST HOLE	
UTILITY CONTINUATION	
CATV CABINET	LC
CATV HANDHOLE	C
CATV PEDESTAL	C
FIBER HANDHOLE	F
TELEPHONE CABINET	
TELEPHONE HANDHOLE (VAULT)	T
TELEPHONE MANHOLE	
TELEPHONE PEDESTAL	T
TELEPHONE POLE	TP
TELEPHONE POLE W/RISER	
ELECTRIC HANDHOLE	E
ELECTRIC JUNCTION BOX (CABINET)	E
ELECTRIC MANHOLE	
ELECTRIC POLE (POWER)	PP
ELECTRIC POLE W/RISER	
LIGHT POLE	LP
SIGNAL POLE	SP
SIGNAL HANDHOLE/BOX	SB
TRANSMISSION POLE	
GAS METER	GM
GAS TEST STATION	TS
GAS VALVE	
GAS VENT PIPE (GAS RISER)	
STORM INLET	INL
STORM OUTFALL	
STORM MANHOLE	
WASTE WATER CLEANOUT	
WASTE WATER MANHOLE	
FIRE HYDRANT	
WATER MANHOLE	WM
WATER METER	
WATER VALVE	W
WATER VAULT	

THE RIOS GROUP
SUBSURFACE UTILITY ENGINEERING
UTILITY COORDINATION
7400 Sand Street
Fort Worth, TX 76118

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS · ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

S.U.E. SHEET PLAN

SCALE: AS SHOWN

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
AWK	.	(SEE TITLE SHEET)		
GRAPHICS AWK	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SPC	TEXAS	2	TARRANT	20
CHECK SPC	CONTROL 0902	SECTION 90	JOB 214 ETC	

The Rios Group, Inc.
TBPE Firm # F-14595

STATE OF TEXAS
SEAN P. CUDNOSKI
93766
LICENSED
PROFESSIONAL ENGINEER

03-28-2024

9/22/2023
11:28 AM
MULT2301_00-CFW_INTERSECTION-SH183&DEEN_RD-SUE-WORKING

Control: 0902-90-214, ETC.

County: TARRANT

Highway: BEACH STREET, ETC.

Specification Data

Basis of Estimate

Item	Description	Rate	Unit
168	Vegetative Watering	169.400 gal./acre	1,000 gal.

Compaction Requirements for Base Courses

Item	Material	Course	Min. Density
247	Flex Base	All	100 %

(Minimum Density is the percentage of density required based on results of Tex-113-E, Tex-114-E, Tex-120-E, and/or Tex-121-E)

Special Notes

Electronic files containing answered pre-letting questions and other project related design information will be placed in the following FTP site periodically:

Index of /pub/txdot-info/Pre-Letting Responses (state.tx.us)

Check this site for new information. Notices of new postings will not be sent out by the Engineer.

The data located in these files is for non-construction purposes only and can be found at

Access is read-only.

All files in the FTP site are subject to the License Agreement shown on the FTP site.

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

Area Engineer's Email: Minh.Tran@txdot.gov
Assistant Area Engineer's Email: Alfredo.Luera@txdot.gov
Design Manager's Email: Sam.Yacoub@txdot.gov

Contractor questions will be accepted through email, phone, and in person by the above individuals.

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For Q&A's on Proposals navigate to https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors. Use the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

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.

Single lane closures, except as otherwise shown in the plans, will be restricted to off-peak hours as defined in the following table:

Peak Hours		Off-Peak Hours	
6 to 9 AM Monday through Friday	3 to 7 PM Monday through Friday	9 AM to 3 PM and 7 PM to 6 AM Monday through Friday	All day Saturday and Sunday

Work that requires closure of multiple travel lanes in the same direction, except as otherwise shown in the plans, are restricted to night hours between 9 PM and 6 AM.

Existing storm sewers and utilities are shown from the best available information. Verify the location of all underground facilities prior to starting work.

For dimensions of right-of-way not shown on the plans, see right-of-way map on file at the TxDOT District Office.

Modifications to Lane Closure / Work Restrictions:

Submit a request in writing for approval by the Engineer a minimum of 10 days in advance of implementing a change to lane closure restrictions.

When deemed necessary, the Engineer will lengthen, shorten, or otherwise modify lane closure restrictions as traffic conditions warrant.

When deemed necessary, the Engineer will modify the list of major events when new events develop, existing events are rescheduled, or when warranted.

Special Events/ Special Situations will be handled on a case-by-case basis. No work restricting lane closures is allowed from 3 PM a day before to 9 AM the day after the Special Event or Special Situation.

Provide all-weather surface for temporary ingress and egress to adjacent property, as directed. Materials, labor, equipment and incidentals necessary to provide temporary ingress and egress will not be paid for directly, but will be subsidiary to the various bid items.

On superelevated curves the shoulders will have the same cross-slope as the pavement, unless otherwise indicated.

Locations and lengths of all private entrances are approximate only. The actual locations, lengths, lines and grades are to be determined by the Engineer and shall conform to the regulations of The City of Fort Worth.

Do not discolor or damage existing curb and curb and gutter during construction operations. In the event of discoloration or damage, clean or repair as directed.

Provide temporary drain openings at all low points or other drainage structures, as required, at the Contractor's expense.

Remove any obstructions to existing drainage due to the contractor's operations, as required, at the Contractor's expense.

Install all required concrete riprap flumes immediately following the construction of ditches in which they are to be placed. In addition, apply all erosion control measures as shown on the plans or as directed, immediately following construction of channels to their required line, grade, and section.

Item 4 – Scope of Work

Reimbursement for project overhead will not be considered until project completion has extended beyond the original Contract Time.

Item 5. Control of the Work

When supplementary bridge plans, shop drawings, shop details, erection drawings, working drawings, forming plans, or other drawings are required, prepare and submit drawings on sheets 8-1/2 by 11 inches, 17 by 22 inches, or full size drawings reduced to half scale if completely legible. If, in the opinion of the Engineer, the drawings are not completely legible, prepare and submit on sheets 22 by 34 inches, with a 1-1/2 inch left margin, and 1/2 inch top, right, and bottom margins.

Submit all sheets with a title in the lower right hand corner. The title must include the sheet index data shown on the lower right corner of the project plans, name of the structure or element or stream, sheet numbering for the shop drawings, name of the fabricator and the name of the Contractor.

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Prior to contract letting, bidders may obtain a free computer diskette or a computerized transfer of files (from the Engineer's office) that contains the earthwork information in ASCII format, plain text files. If copies of the actual cross-sections are requested, in addition to, or instead of the diskette, they will be available at the Engineers office for borrowing by copying companies for the purpose of making copies for the bidder, at the bidder's expense.

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

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

Refer to the Buy America Material Classification Sheet for clarification on material categorization.

The Buy America Material Classification Sheet is located at the below link.

https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html for clarification on material categorization.

Item 7. Legal Relations and Responsibilities

This contract requires work to be done on railroad property. Cooperate with the railroads and comply with all of their requirements including obtaining any required training before performing work on railroad property.

Submit to the Engineer an original railroad liability insurance policy.

Do not initiate activities in a project specific location (PSL) associated with a U.S. Army Corps of Engineers (USACE) permit area that has not been previously evaluated by the USACE as part of the permit review of this project. Such activities include, but are not limited to haul roads, equipment staging areas, borrow and disposal sites. "Associated" as defined here means materials are delivered to or from the PSL. The permit area includes all waters of the U.S. or

associated wetlands affected by activities associated with this project. Special restrictions may be required for such work. The contractor will be responsible for all consultations with the USACE regarding activities, including project specific locations (PSLs) that have not been previously evaluated by the USACE. Provide the Department with a copy of all consultations or approvals from the USACE prior to initiating activities.

The Contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self-determination has been made that the PSL is non-jurisdictional or proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The contractor is solely responsible for documenting any determinations that their activities do not affect a USACE permit area. Maintain copies of these determinations for review by the Department or any regulatory agency.

Document and coordinate with the USACE, if required, prior to any excavation hauled from or embankment hauled into a USACE permit area by either (1) or (2) below.

(1) **Restricted Use of Materials for Previously Evaluated Permit Areas.** Document both the project specific location (PSL) and its authorization. Maintain copies for review by the Department or any regulatory agency. When an area within the project limits has been evaluated by the USACE as part of the permit process for this project:
   a. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in Item 110 is used for permanent or temporary fill (Item 132, Embankment) within a USACE permit area:
   b. Suitable embankment (Item 132) from within the USACE permit area is used as fill within a USACE evaluated area: and,
   c. Unsuitable excavation or excess excavation ["Waste"] (Item 110) that is disposed of at a location approved by the Engineer within a USACE evaluated area.

(2) **Contractor Materials from Areas Other than Previously Evaluated Areas.** Provide the Department with a copy of all USACE coordination or approvals prior to initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right of way locations used for the following, but not limited to haul roads, equipment staging areas, borrow and disposal sites:
   a. Item 132, Embankment, used for temporary or permanent fill within a USACE permit area; and,
   b. Unsuitable excavation or excess excavation ["Waste"] (Item 110, Excavation) that is disposed of outside a USACE evaluated area.

The total area disturbed for this project is 5 acres. The disturbed area in this project, all project locations in the Contract, and the 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

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shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the right of way. When the total area disturbed 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 right of way to the Engineer and to the local government that operates a separate storm sewer system.

When a bridge deck is milled, seal coated and overlaid, remove excess material. Do not just broom to the sides of the bridge, under guardrail, etc. Cover or protect all sealed expansion joints and rails on bridges and all railroad tracks encountered as approved. Clean and repair all of these features if they weren't properly protected at contractor's expense. This work is subsidiary work to applicable bid items.

Prevention of Migratory Bird Nesting

It is anticipated that migratory birds, a protected group of species, may try to nest on bridges, culverts, vegetation, or gravel substrate, at any time of the year. The preferred nesting season for migratory birds is from February 15 through October 1. When practicable, schedule construction operations outside of the preferred nesting season. Otherwise, avoid nests containing migratory birds and perform no work in the nesting areas until the young birds have fledged.

Structures

Do not begin bridge and culvert construction operations until swallow nesting prevention is implemented, until after October 1 if it's determined that swallow nesting is actively occurring, or until it's determined swallow nests have been abandoned. If the State installed nesting deterrent on the bridges and culverts, maintain the existing nesting deterrent to prevent swallow nesting until October 1 or completion of the bridge and culvert work, whichever occurs earlier. If new nests are built and occupied after the beginning of the work, do not perform work that can interfere with or discourage swallows from returning to their nests. Prevention of swallow nesting can be performed by one of the following methods:

1. By February 15 begin the removal of any existing mud nests and all other mud placed by swallows for the construction of nests on any portion of the bridge and culverts. The Engineer will inspect the bridges and culverts for nest building activity. If swallows begin nest building, scrape or wash down all nest sites. Perform these activities daily unless the Engineer determines the need to do this work more frequently. Remove nests and mud through October 1 or until bridge and culvert construction operations are completed.

2. By February 15 place a nesting deterrent (which prevents access to the bridge and culvert by swallows) on the entire bridge (except deck and railing) and culverts.

No extension of time or compensation payment will be granted for a delay or suspension of work caused by nesting swallows. This work is subsidiary to the various bid items.

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The following Holiday/Event lane closure restriction requirements apply to this project:
No work that restricts or interferes with traffic shall be allowed between 3 PM on the day preceding a Holiday or Event and 9 AM on the day after the Holiday or Event.

Holiday Lane Closure Restrictions	
New Year's Eve and New Year's Day (December 31 through January 1)	3 PM December 30 through 9 AM January 2
Easter Holiday Weekend (Friday through Sunday)	3PM Thursday through 9 AM Monday
Memorial Day Weekend (Friday through Monday)	3 PM Thursday through 9 AM Tuesday
Independence Day (July 3 through July 5)	3 PM July 2 through 9 AM July 6
Labor Day Weekend (Friday through Monday)	3 PM Thursday through 9 AM Tuesday
Thanksgiving Holiday (Wednesday through Sunday)	3 PM Tuesday through 9 AM Monday
Christmas Holiday (December 23 through December 26)	3 PM December 22 through 9 AM December 27

Plan work schedules around the appropriate dates above to ensure productive work is performed without lane closures.

Item 8. Prosecution and Progress

Working days will be computed and charged in accordance with Section 8.3.1.1. "Five-Day Workweek."
The number of working days for final acceptance will be 128 working days.

Item 100. Preparing Right of Way

Measurement for this item will be along the centerline of the project with the limits of measurements as shown on the plans.

Removal of existing concrete pavement will be in accordance with Item 104. "Removing Concrete" except that this work will not be paid for directly, but will be subsidiary to Item 100. "Preparing Right of Way."

Item 104. Removing Concrete

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Highway: BEACH STREET, ETC.

When associated with a structure to be removed, removal of riprap as required, approach slabs, and shoulder drains are to be included in the unit price bid for Item 496, "Removing Structures."

Item 162. Sodding for Erosion Control

Furnish and place Bermudagrass sod.

Item 168. Vegetative Watering

Furnish and install an approved rain gauge at the project site, as directed. Furnishing and installation of the rain gauge will not be paid for directly, but will be subsidiary to Item 168.

Apply vegetative watering for an establishment period of thirteen weeks following application of seed or installation of sod, at a rate of 1/2 inch of water depth per week (approximately 13,030 gallons per acre). During the first four weeks after seeding, apply water twice per week, on non-consecutive days, each at half the weekly application rate. For the remainder of the establishment period, apply vegetative watering once per week during the months of January through June or September through December, at the weekly application rate; apply watering twice per week, on non-consecutive days during the months of July and August, each at one-half the weekly application rate.

Average weekly rainfall rates for the District are:

January—0.39"	April—0.86"	July—0.48"	October—0.68"
February—0.46"	May—1.00"	August—0.47"	November—0.46"
March—0.48"	June—0.63"	September—0.74"	December—0.37"

Item 247. Flexible Base

Place material in two or more equal lifts unless otherwise directed.

Do not add field sand to modify the final material to meet the requirements.

Item 360. Concrete Pavement

When using the Hardy Chair-Lok to support reinforcing steel, chair spacing may be increased to 1.67 sq. yd. per chair, placed in a diamond or square pattern. Do not exceed 60" longitudinal spacing.

The provisions of Article 360.6.2, "Deficient Thickness Adjustment," will not be a requirement and the pavement will not be cored.

Include the approved mix design number on each delivery ticket.

Item 502. Barricades, Signs, and Traffic Handling

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 typically 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.

Permanent signs may be installed when construction in an area is complete and they will not conflict with the traffic control plan for the remainder of the job.

Existing signs are to remain as long as they do not interfere with construction and they do not conflict with the traffic control plan.

Any sign not detailed in the plans but called for in the layout will be as shown in the current "Standard Highway Sign Designs for Texas".

When traffic is obstructed, arrange warning devices in accordance with the latest edition of the "Texas Manual on Uniform Traffic Control Devices".

Cover or remove any work zone signs when work or condition referenced is not occurring.

Do not place barricades, signs, or any other traffic control devices where they interfere with sight distance at driveways or side streets. Provide access to all driveways during all phases of construction unless otherwise noted in the plans or as directed.

Item 506. Temporary Erosion, Sedimentation, and Environmental Controls

Remove accumulated sediment or replace SW3P controls when the capacity has been reduced by 50% or when the depth of sediment at the control structure exceeds one foot.

Items 530 And 531. Intersections, Driveways and Turnouts, and Sidewalks

The furnishing and installation of the sand cushion in proposed sidewalks, sidewalk ramps, and driveways will not be paid for directly but will be subsidiary to this bid item.

Item 666. Reflectorized Pavement Markings with Retroreflective Requirements

Collection of retroreflectivity readings using a mobile retroreflectometer is the preferred method. If retroreflectivity readings are collected using a portable or handheld unit, then measurement is

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County: TARRANT

Highway: BEACH STREET, ETC.

defined as a collective average of at least 20 readings taken along a 200-foot test section. A minimum of three measurements will be required per mile of roadway. Measurements collected on a centerline stripe will be averaged separately for stripe in each direction of travel. A TxDOT inspector must witness the calibration and collection of all retro-reflectivity data.

Item 6001. Portable Changeable Message Signs

Provide all portable changeable message signs and arrow panels with a photoelectric device to allow for automatic dimming of operations to approximately 50% of their normal brightness when ambient light drops to approximately five footcandles, and then increase back again for daytime operations.

1 electronic portable changeable message sign unit(s) will be required. Individual or collective use of signs will be required by the Engineer when deemed necessary to supplement the traffic control plan.

Each sign must have programmed in its permanent memory the following 15 messages:

1. Exit Closed Ahead
2. Use Other Routes
3. Right Lane
4. Left Lane
5. Closed Ahead
6. Two Lane
7. Detour Ahead
8. Thru Traffic
9. Prepare To Stop
10. Merging Traffic
11. Expect 15 Minute Delay
12. Max Speed ** MPH
13. Merge Right
14. Merge Left
15. No Exit Next ** Miles

Estimate & Quantity Sheet

Texas Department of Transportation

CONTROLLING PROJECT ID 0902-90-214 **DISTRICT** Fort Worth **COUNTY** Tarrant
HIGHWAY BEACH ST, SH 183

			CONTROL SECTION JOB		**0094-01-042**		**0902-90-214**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00178888**		**A00178845**			
			COUNTY		**Tarrant**		**Tarrant**			
			HIGHWAY		**SH 183**		**BEACH ST**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL		
	100-6002	PREPARING ROW		STA	5.000		8.000		13.000	
	104-6001	REMOVING CONC (PAV)		SY	75.000		113.000		188.000	
	104-6011	REMOVING CONC (MEDIANS)		SY			36.000		36.000	
	104-6029	REMOVING CONC (CURB OR CURB & GUTTER)		LF	285.000		856.000		1,141.000	
	104-6036	REMOVING CONC (SIDEWALK OR RAMP)		SY	168.000		71.000		239.000	
	110-6001	EXCAVATION (ROADWAY)		CY	23.000				23.000	
	160-6003	FURNISHING AND PLACING TOPSOIL (4")		SY	27.000		684.000		711.000	
	162-6002	BLOCK SODDING		SY	27.000		684.000		711.000	
	168-6001	VEGETATIVE WATERING		MG	0.860		24.000		24.860	
	170-6001	IRRIGATION SYSTEM		LS	1.000				1.000	
	247-6230	FL BS (CMP IN PLACE)(TY A GR 1-2)(8")		SY			864.000		864.000	
	360-6002	CONC PVMT (CONT REINF - CRCP) (8")		SY			747.000		747.000	
	360-6009	CONC PVMT (CONT REINF - CRCP) (15")		SY	154.000				154.000	
	360-6028	CONC PAV (JOINT REINF) (6")		SY	26.000				26.000	
	416-6002	DRILL SHAFT (24 IN)		LF			8.000		8.000	
	416-6030	DRILL SHAFT (TRF SIG POLE) (24 IN)		LF	24.000				24.000	
	416-6031	DRILL SHAFT (TRF SIG POLE) (30 IN)		LF	40.000				40.000	
	416-6032	DRILL SHAFT (TRF SIG POLE) (36 IN)		LF			26.000		26.000	
	432-6001	RIPRAP (CONC)(4 IN)		CY			0.300		0.300	
	500-6001	MOBILIZATION		LS			1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING		MO	6.000		6.000		12.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")		LF			80.000		80.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)		LF	35.000		80.000		115.000	
	506-6045	BIODEG EROSN CONT LOGS (INSTL) (6")		LF	35.000				35.000	
	529-6001	CONC CURB (TY I)		LF			32.000		32.000	
	529-6005	CONC CURB (MONO) (TY II)		LF			786.000		786.000	
	529-6008	CONC CURB & GUTTER (TY II)		LF	250.000				250.000	
	531-6001	CONC SIDEWALKS (4")		SY	50.000		49.000		99.000	
	531-6004	CURB RAMPS (TY 1)		EA	1.000		6.000		7.000	
	531-6005	CURB RAMPS (TY 2)		EA	5.000				5.000	
	531-6016	CURB RAMPS (TY 21)		EA			2.000		2.000	
	610-6102	REPLACE LUMINAIRE W/LED (250W EQ)		EA			1.000		1.000	
	618-6046	CONDT (PVC) (SCH 80) (2")		LF	40.000		250.000		290.000	
	618-6047	CONDT (PVC) (SCH 80) (2") (BORE)		LF	24.000		420.000		444.000	
	618-6053	CONDT (PVC) (SCH 80) (3")		LF	40.000		85.000		125.000	
	618-6054	CONDT (PVC) (SCH 80) (3") (BORE)		LF	355.000				355.000	
	618-6058	CONDT (PVC) (SCH 80) (4")		LF	5.000		55.000		60.000	

Estimate & Quantity Sheet

Texas Department of Transportation

CONTROLLING PROJECT ID 0902-90-214 **DISTRICT** Fort Worth **COUNTY** Tarrant
HIGHWAY BEACH ST, SH 183

				CONTROL SECTION JOB	0094-01-042		0902-90-214		TOTAL EST.	TOTAL FINAL
				PROJECT ID	A00178888		A00178845			
				COUNTY	Tarrant		Tarrant			
				HIGHWAY	SH 183		BEACH ST			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL			
	618-6059	CONDT (PVC) (SCH 80) (4") (BORE)	LF	373.000		690.000		1,063.000		
	620-6006	ELEC CONDR (NO.10) INSULATED	LF	585.000		830.000		1,415.000		
	620-6007	ELEC CONDR (NO.8) BARE	LF			1,105.000		1,105.000		
	620-6008	ELEC CONDR (NO.8) INSULATED	LF			100.000		100.000		
	620-6009	ELEC CONDR (NO.6) BARE	LF	837.000		180.000		1,017.000		
	620-6010	ELEC CONDR (NO.6) INSULATED	LF	964.000		360.000		1,324.000		
	624-6002	GROUND BOX TY A (122311)W/APRON	EA	1.000				1.000		
	624-6009	GROUND BOX TY D (162922)	EA			6.000		6.000		
	624-6010	GROUND BOX TY D (162922)W/APRON	EA	4.000		6.000		10.000		
	628-6185	ELC SRV TY D 120/240 070(NS)SS(E)GC(O)	EA	1.000				1.000		
	636-6001	ALUMINUM SIGNS (TY A)	SF	101.000		71.000		172.000		
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA			1.000		1.000		
	644-6075	RELOCATE SM RD SN SUP&AM(SIGN ONLY)	EA	2.000				2.000		
	644-6076	REMOVE SM RD SN SUP&AM	EA	1.000				1.000		
	647-6003	REMOVE LRSA	EA	1.000				1.000		
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF	84.000		809.000		893.000		
	666-6021	REFL PAV MRK TY I (W)6"(LNDP)(100MIL)	LF	360.000				360.000		
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	534.000		1,731.000		2,265.000		
	666-6039	REFL PAV MRK TY I (W)12"(LNDP)(100MIL)	LF			200.000		200.000		
	666-6045	REFL PAV MRK TY I (W)18"(SLD)(100MIL)	LF			152.000		152.000		
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	149.000		1,699.000		1,848.000		
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	8.000		16.000		24.000		
	666-6060	REFL PAV MRK TY I(W)(TPL ARRW)(100MIL)	EA	2.000				2.000		
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	6.000		10.000		16.000		
	666-6099	REF PAV MRK TY I(W)18"(YLD TRI)(100MIL)	EA			24.000		24.000		
	666-6144	REFL PAV MRK TY I (Y)18"(SLD)(100MIL)	LF	52.000				52.000		
	666-6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF			1,460.000		1,460.000		
	666-6174	REFL PAV MRK TY II (W) 6" (SLD)	LF	1,066.000				1,066.000		
	666-6208	REFL PAV MRK TY II (Y) 6" (BRK)	LF	40.000				40.000		
	666-6210	REFL PAV MRK TY II (Y) 6" (SLD)	LF	1,743.000				1,743.000		
	666-6225	PAVEMENT SEALER 6"	LF	3,293.000		3,524.000		6,817.000		
	666-6226	PAVEMENT SEALER 8"	LF	534.000		1,731.000		2,265.000		
	666-6228	PAVEMENT SEALER 12"	LF			200.000		200.000		
	666-6229	PAVEMENT SEALER 18"	LF	52.000		152.000		204.000		
	666-6230	PAVEMENT SEALER 24"	LF	149.000		1,699.000		1,848.000		
	666-6231	PAVEMENT SEALER (ARROW)	EA	8.000		16.000		24.000		
	666-6232	PAVEMENT SEALER (WORD)	EA	6.000		10.000		16.000		

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0902-90-214 **DISTRICT** Fort Worth **COUNTY** Tarrant
HIGHWAY BEACH ST, SH 183

				CONTROL SECTION JOB	0094-01-042		0902-90-214		TOTAL EST.	TOTAL FINAL
				PROJECT ID	A00178888		A00178845			
				COUNTY	Tarrant		Tarrant			
				HIGHWAY	SH 183		BEACH ST			
ALT	BID CODE	DESCRIPTION	UNIT		EST.	FINAL	EST.	FINAL		
	666-6235	PAVEMENT SEALER (TPL ARROW)	EA		2.000				2.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF				2,415.000		2,415.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF				300.000		300.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF				1,832.000		1,832.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA		31.000				31.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA		97.000		124.000		221.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF				1,445.000		1,445.000	
	677-6002	ELIM EXT PAV MRK & MRKS (6")	LF				548.000		548.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF		583.000		1,243.000		1,826.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF		242.000		230.000		472.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA		4.000		10.000		14.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA		3.000		6.000		9.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF		3,293.000				3,293.000	
	678-6004	PAV SURF PREP FOR MRK (8")	LF		534.000				534.000	
	678-6007	PAV SURF PREP FOR MRK (18")	LF		52.000				52.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF		149.000				149.000	
	678-6009	PAV SURF PREP FOR MRK (ARROW)	EA		8.000		16.000		24.000	
	678-6011	PAV SURF PREP FOR MRK (TPL ARROW)	EA		2.000				2.000	
	678-6016	PAV SURF PREP FOR MRK (WORD)	EA		6.000		10.000		16.000	
	680-6004	REMOVING TRAFFIC SIGNALS	EA		1.000		1.000		2.000	
	682-6001	VEH SIG SEC (12")LED(GRN)	EA		9.000		4.000		13.000	
	682-6002	VEH SIG SEC (12")LED(GRN ARW)	EA		4.000		6.000		10.000	
	682-6003	VEH SIG SEC (12")LED(YEL)	EA		9.000		4.000		13.000	
	682-6004	VEH SIG SEC (12")LED(YEL ARW)	EA		4.000		6.000		10.000	
	682-6005	VEH SIG SEC (12")LED(RED)	EA		9.000		6.000		15.000	
	682-6006	VEH SIG SEC (12")LED(RED ARW)	EA		2.000		4.000		6.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA		6.000		4.000		10.000	
	682-6054	BACKPLATE W/REF BRDR(3 SEC)(VENT)ALUM	EA		6.000		21.000		27.000	
	682-6055	BACKPLATE W/REF BRDR(4 SEC)(VENT)ALUM	EA		4.000				4.000	
	684-6029	TRF SIG CBL (TY A)(14 AWG)(3 CONDR)	LF		20.000		1,720.000		1,740.000	
	684-6031	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	LF		260.000		60.000		320.000	
	684-6033	TRF SIG CBL (TY A)(14 AWG)(7 CONDR)	LF		1,347.000		850.000		2,197.000	
	684-6046	TRF SIG CBL (TY A)(14 AWG)(20 CONDR)	LF		683.000		775.000		1,458.000	
	686-6021	INS TRF SIG PL AM (S)1 ARM(20')	EA		1.000				1.000	
	686-6025	INS TRF SIG PL AM (S)1 ARM(24')	EA		1.000				1.000	
	686-6041	INS TRF SIG PL AM(S)1 ARM(40')	EA		1.000				1.000	
	686-6043	INS TRF SIG PL AM(S)1 ARM(40')LUM	EA		1.000				1.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0902-90-214 **DISTRICT** Fort Worth **COUNTY** Tarrant
HIGHWAY BEACH ST, SH 183

				CONTROL SECTION JOB	0094-01-042		0902-90-214		TOTAL EST.	TOTAL FINAL
				PROJECT ID	A00178888		A00178845			
				COUNTY	Tarrant		Tarrant			
				HIGHWAY	SH 183		BEACH ST			
ALT	BID CODE	DESCRIPTION	UNIT		EST.	FINAL	EST.	FINAL		
	686-6061	INS TRF SIG PL AM(S)1 ARM(60')	EA				2.000		2.000	
	687-6001	PED POLE ASSEMBLY	EA		6.000				6.000	
	687-6002	PEDESTRIAN PUSH BUTTON POLE	EA		3.000		3.000		6.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA		6.000		8.000		14.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY				28.000		28.000	
	6058-6001	BBU SYSTEM (EXTERNAL BATT CABINET)	EA		1.000		1.000		2.000	
	6083-6001	VIDEO IMAGING AND RAD VEH DETECTION SYS	EA		4.000		1.000		5.000	
	6089-6001	ETHERNET CABLE AND CONNECTORS	LF		1,000.000				1,000.000	
	6089-6002	CAT 5 ETHERNET CABLE	LF				375.000		375.000	
	6292-6003	RVDS(PRESENCE AND ADVANCE DET)	EA		1.000				1.000	
	6365-6001	HIGHWAY TRAFFIC SIGNALS	EA		1.000		1.000		2.000	
	6396-6001	COFW EMR VEH (EV) PREEMPT (INST ONLY)	EA		4.000		4.000		8.000	
	6421-6001	COFW CELLULAR ROUTER (INSTALL ONLY)	EA		1.000				1.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS				1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS				1.000		1.000	

SUMMARY OF REMOVAL ITEMS

LOCATION	100 6002	104 6001	104 6011	104 6029	104 6036	110 6001	170 6001	647 6003	677 6001	677 6002	677 6003	677 6007	677 6008	677 6012
	PREPARING ROW	REMOVING CONC (PAV)	REMOVING CONC (MEDIANS)	REMOVING CONC (CURB OR CURB & GUTTER)	REMOVING CONC (SIDEWALK OR RAMP)	EXCAVATIO N (ROADWAY)	IRRIGATIO N SYSTEM	REMOVE LRSA	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (6")	ELIM EXT PAV MRK & MRKS (8")	ELIM EXT PAV MRK & MRKS (24")	ELIM EXT PAV MRK & MRKS (ARROW)	ELIM EXT PAV MRK & MRKS (WORD)
	STA	SY	SY	LF	SY	CY	LS	EA	LF	LF	LF	LF	EA	EA
CSJ: 0902-90-214	8	113	36	856	71	0	0	0	1445	548	1243	230	10	6
CSJ: 0094-01-042	5	75	0	285	168	23	1	1	0	0	583	242	4	3
PROJECT TOTALS	13	188	36	1141	239	23	1	1	1445	548	1826	472	14	9

SUMMARY OF ROADWAY ITEMS

LOCATION	247 6230	360 6002	360 6009	360 6028	432 6001	529 6001	529 6005	529 6008	531 6001	531 6004	531 6005	531 6016
	FL BS (CMP IN PLACE)(TY A GR 1-2)(8")	CONC PVMT (CONT REINF - CRCP) (8")	CONC PVMT (CONT REINF - CRCP) (15")	CONC PAV (JOINT REINF) (6")	RIPRAP (CONC)(4 IN)	CONC CURB (TY I)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC SIDEWALKS (4")	CURB RAMPS (TY 1)	CURB RAMPS (TY 2)	CURB RAMPS (TY 21)
	SY	SY	SY	SY	CY	LF	LF	LF	SY	EA	EA	EA
CSJ: 0902-90-214	864	747	0	0	0.3	32	786	0	49	6	0	2
CSJ: 0094-01-042	0	0	154	26	0	0	0	250	50	1	5	0
PROJECT TOTALS	864	747	154	26	0.3	32	786	250	99	7	5	2

SUMMARY OF EROSION CONTROL ITEMS

LOCATION	160 6003	162 6002	168 6001	506 6040	506 6043	506 6045
	FURNISHIN G AND PLACING TOPSOIL (4")	BLOCK SODDING	VEGETATIV E WATERING	BIODEG EROSN CONT LOGS (INSTL) (8")	BIODEG EROSN CONT LOGS (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (6")
	SY	SY	MG	LF	LF	LF
CSJ: 0902-90-214	684	684	24	80	80	0
CSJ: 0094-01-042	27	27	0.86	0	35	35
PROJECT TOTALS	711	711	24.86	80	115	35

SUMMARY OF ILLUMINATION ITEMS

LOCATION	416 6002	610 6102	618 6046	620 6007	620 6008
	DRILL SHAFT (24 IN)	REPLACE LUMINAIRE W/LED (250W EQ)	CONDT (PVC) (SCH 80) (2")	ELEC CONDR (NO.8) BARE	ELEC CONDR (NO.8) INSULATED
	LF	EA	LF	LF	LF
CSJ: 0902-90-214	8	1	50	50	100
CSJ: 0094-01-042	0	0	0	0	0
PROJECT TOTALS	8	1	50	50	100

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED
PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

FORT WORTH INTERSECTIONS QUANTITY SUMMARY

SCALE: AS SHOWN SHEET 1 OF 3

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	23
	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

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SUMMARY OF TRAFFIC SIGNAL ITEMS

LOCATION	416 6030	416 6031	416 6032	618 6046	618 6047	618 6053	618 6054	618 6058	618 6059	620 6006	620 6007	620 6009	620 6010	624 6002	624 6009	624 6010	628 6185	680 6004
	DRILL SHAFT (TRF SIG POLE) (24 IN)	DRILL SHAFT (TRF SIG POLE) (30 IN)	DRILL SHAFT (TRF SIG POLE) (36 IN)	CONDT (PVC) (SCH 80) (2")	CONDT (PVC) (SCH 80) (2") (BORE)	CONDT (PVC) (SCH 80) (3")	CONDT (PVC) (SCH 80) (3") (BORE)	CONDT (PVC) (SCH 80) (4")	CONDT (PVC) (SCH 80) (4") (BORE)	ELEC CONDR (NO.10) INSULATED	ELEC CONDR (NO.8) BARE	ELEC CONDR (NO.6) BARE	ELEC CONDR (NO.6) INSULATED	GROUND BOX TY A (122311) W/APRON	GROUND BOX TY D (162922)	GROUND BOX TY D (162922) W/APRON	ELC SRV TY D 120/240 070(NS)SS(E)GC(O)	REMOVING TRAFFIC SIGNALS
	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA
CSJ: 0902-90-214	0	0	26	200	420	85	0	55	690	830	1055	180	360	0	6	6	0	1
CSJ: 0094-01-042	24	40	0	40	24	40	355	5	373	585	0	837	964	1	0	3	1	1
PROJECT TOTALS	24	40	26	240	444	125	355	60	1063	1415	1055	1017	1324	1	6	9	1	2

SUMMARY OF TRAFFIC SIGNAL ITEMS

LOCATION	682 6001	682 6002	682 6003	682 6004	682 6005	682 6006	682 6018	682 6054	682 6055	684 6029	684 6031	684 6033	684 6046	686 6021	686 6025	686 6041	686 6043	686 6061
	VEH SIG SEC (12")LED (GRN)	VEH SIG SEC (12")LED (GRN ARW)	VEH SIG SEC (12")LED (YEL)	VEH SIG SEC (12")LED (YEL ARW)	VEH SIG SEC (12")LED (RED)	VEH SIG SEC (12")LED (RED ARW)	PED SIG SEC (LED)(COUNTDOWN)	BACKPLATE W/REF BRDR(3 SEC)(VENT)ALUM	BACKPLATE W/REF BRDR(4 SEC)(VENT)ALUM	TRF SIG CBL (TY A)(14 AWG)(3 CONDR)	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	TRF SIG CBL (TY A)(14 AWG)(7 CONDR)	TRF SIG CBL (TY A)(14 AWG)(20 CONDR)	INS TRF SIG PL AM(S)1 ARM(20')	INS TRF SIG PL AM(S)1 ARM(24')	INS TRF SIG PL AM(S)1 ARM(40')	INS TRF SIG PL AM(S)1 ARM(40') LUM	INS TRF SIG PL AM(S)1 ARM(60')
	EA	EA	EA	EA	EA	EA	EA	EA	EA	LF	LF	LF	LF	EA	EA	EA	EA	EA
CSJ: 0902-90-214	4	6	4	6	6	4	4	21	0	1720	60	850	775	0	0	0	0	2
CSJ: 0094-01-042	9	4	9	4	9	2	6	6	4	20	260	1347	683	1	1	1	1	0
PROJECT TOTALS	13	10	13	10	15	6	10	27	4	1740	320	2197	1458	1	1	1	1	2

SUMMARY OF TRAFFIC SIGNAL ITEMS

LOCATION	687 6001	687 6002	688 6001	6058 6001	6083 6001	6089 6001	6089 6002	6292 6003	6365 6001	6396 6001	6421 6001
	PED POLE ASSEMBLY	PEDESTRIAN PUSH BUTTON POLE	PED DETECT PUSH BUTTON (APS)	BBU SYSTEM (EXTERNAL BATT CABINET)	VIDEO IMAGING AND RAD VEH DETECTION SYS	ETHERNET CABLE AND CONNECTORS	CAT 5 ETHERNET CABLE	RVDS(PRESENCE AND ADVANCE DET)	HIGHWAY TRAFFIC SIGNALS (CITY OF FORT WORTH)	COFW EMR VEH (EV) PREEMPT (INST ONLY)	COFW CELLULAR ROUTER (INSTALL ONLY)
	EA	EA	EA	EA	EA	LF	LF	EA	EA	EA	EA
CSJ: 0902-90-214	0	3	8	1	1	0	375	0	1	4	0
CSJ: 0094-01-042	6	3	6	1	4	1000	0	1	1	4	1
PROJECT TOTALS	6	6	14	2	5	1000	375	1	2	8	1

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

FORT WORTH INTERSECTIONS QUANTITY SUMMARY

SCALE: AS SHOWN
SHEET 2 OF 3

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	24
CHECK	0902	90	214, ETC.	

SUMMARY OF SIGNING ITEMS

LOCATION	636 6001	644 6068	644 6075	644 6076
	ALUMINUM SIGNS (TY A)	RELOCATE SM RD SN SUP&AM TY 10BWG	RELOCATE SM RD SN SUP&AM(SIGN ONLY)	REMOVE SM RD SN SUP&AM
	SF	EA	EA	EA
CSJ: 0902-90-214	71	1	0	0
CSJ: 0094-01-042	101	0	2	1
PROJECT TOTALS	172	1	2	1

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

LOCATION	502 6001	6001 6001
	BARRICADES, SIGNS AND TRAFFIC HANDLING	PORTABLE CHANGEABLE MESSAGE SIGN
	MO	DAY
CSJ: 0902-90-214	6	28
CSJ: 0094-01-042	6	0
PROJECT TOTALS	12	28

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	666 6018	666 6021	666 6036	666 6039	666 6045	666 6048	666 6054	666 6060	666 6078
	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	REFL PAV MRK TY I (W)6"(LNDP)(100MIL)	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	REFL PAV MRK TY I (W)12"(LNDP)(100MIL)	REFL PAV MRK TY I (W)18"(SLD)(100MIL)	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	REFL PAV MRK TY I (W)(ARROW)(100MIL)	REFL PAV MRK TY I(W)(TPL ARRW)(100MIL)	REFL PAV MRK TY I (W)(WORD)(100MIL)
	LF	LF	LF	LF	LF	LF	EA	EA	EA
CSJ: 0902-90-214	809	0	1731	200	152	1699	16	0	10
CSJ: 0094-01-042	84	360	534	0	0	149	8	2	6
PROJECT TOTALS	893	360	2265	200	152	1848	24	2	16

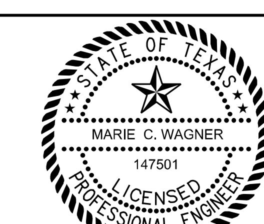
LOCATION	666 6099	666 6144	666 6162	666 6174	666 6208	666 6210	666 6225	666 6226	666 6228
	REF PAV MRK TY I(W)18"(YLD TRI)(100MIL)	REFL PAV MRK TY I (Y)18"(SLD)(100MIL)	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	REFL PAV MRK TY II (W) 6" (SLD)	REFL PAV MRK TY II (Y) 6" (BRK)	REFL PAV MRK TY II (Y) 6" (SLD)	PAVEMENT SEALER 6"	PAVEMENT SEALER 8"	PAVEMENT SEALER 12"
	EA	LF	LF	LF	LF	LF	LF	LF	LF
CSJ: 0902-90-214	24	0	1460	0	0	0	3524	1731	200
CSJ: 0094-01-042	0	52	0	1066	40	1743	3293	534	0
PROJECT TOTALS	24	52	1460	1066	40	1743	6817	2265	200

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	666 6229	666 6230	666 6231	666 6232	666 6235	666 6306	666 6309	666 6321	672 6009	672 6010	678 6002	678 6004	678 6007
	PAVEMENT SEALER 18"	PAVEMENT SEALER 24"	PAVEMENT SEALER (ARROW)	PAVEMENT SEALER (WORD)	PAVEMENT SEALER (TPL ARROW)	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	REFL PAV MRKR TY II-A-A	REFL PAV MRKR TY II-C-R	PAV SURF PREP FOR MRK (6")	PAV SURF PREP FOR MRK (8")	PAV SURF PREP FOR MRK (18")
	LF	LF	EA	EA	EA	LF	LF	LF	EA	EA	LF	LF	LF
CSJ: 0902-90-214	152	1699	16	10	0	2415	300	1832	0	124	0	0	0
CSJ: 0094-01-042	52	149	8	6	2	0	0	0	31	97	3293	534	52
PROJECT TOTALS	204	1848	24	16	2	2415	300	1832	31	221	3293	534	52

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	678 6008	678 6009	678 6011	678 6016
	PAV SURF PREP FOR MRK (24")	PAV SURF PREP FOR MRK (ARROW)	PAV SURF PREP FOR MRK (TPL ARROW)	PAV SURF PREP FOR MRK (WORD)
	LF	EA	EA	EA
CSJ: 0902-90-214	0	16	0	10
CSJ: 0094-01-042	149	8	2	6
PROJECT TOTALS	149	24	2	16



Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation
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FORT WORTH INTERSECTIONS QUANTITY SUMMARY

SCALE: AS SHOWN SHEET 3 OF 3

FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
.	(SEE TITLE SHEET)		
STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	2	TARRANT	
CONTROL	SECTION	JOB	
0902	90	214, ETC.	25

DESIGN GRAPHICS CHECK CHECK

FTW WAGNER-4219
TXDOT-OR

DETOURS, BARRICADES, WARNING SIGNS, SEQUENCE OF WORK, ETC.

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, 'LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC,' OF THE STANDARD SPECIFICATIONS. IN ADDITION TO THESE REQUIREMENTS, THE FOLLOWING PROVISIONS SHALL ALSO GOVERN ON THIS CONTRACT:

GENERAL

1. TRAFFIC MUST BE HANDLED THROUGHOUT THE PROJECT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SAFE AND COMFORTABLE PASSAGE FOR VEHICULAR AND PEDESTRIAN TRAFFIC WITH MINIMAL INCONVENIENCE TO THE PUBLIC, AS SHOWN IN THE PLANS OR AS DIRECTED/APPROVED BY THE ENGINEER.
2. THE CONTRACTOR MAY PROPOSE/RECOMMEND MODIFICATIONS TO THE SEQUENCE OF WORK FOR CONSIDERATION BY THE ENGINEER. ANY MAJOR RECOMMENDED MODIFICATION BY THE CONTRACTOR SHALL INCLUDE ANY CHANGES TO THE VARIOUS BID ITEMS, IMPACT TO TRAFFIC, EFFECT OF OVERALL PROJECT IN TIME AND COST, ETC. IF THIS PROPOSAL IS IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR INCLUSION WITH THE CHANGE ORDER. THE CONTRACTOR CANNOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE/SEQUENCE UNTIL WRITTEN APPROVAL IS OBTAINED FORM THE ENGINEER. IF AT ANY TIME DURING CONSTRUCTION THE CONTRACTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE AND COMFORTABLE MOVEMENT, THE CONTRACTOR WILL IMMEDIATELY CHANGE THEIR OPERATION TO CORRECT THE UNSATISFACTORY CONDITION.
3. DO NOT STORE ANY CONSTRUCTION MATERIAL OR EQUIPMENT AT ANY LOCATION THAT WILL CONSTITUTE A HAZARD AND WILL ENDANGER TRAFFIC.
4. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.
5. TEMPORARY DRAINAGE IS THE RESPONSIBILITY OF THE CONTRACTOR.
6. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EXISTING DRAINAGE PATTERNS DURING CONSTRUCTION.
7. LANE CLOSURES SHALL BE BETWEEN THE HOURS OF 9:00AM TO 3:00PM

SAFETY

1. THE CONTRACTOR WILL PROVIDE, CONSTRUCT AND MAINTAIN BARRICADES AND SIGN IN ACCORDANCE WITH STATE STANDARDS BC (1-12)-21. ANY SIGNS REQUIRED THAT ARE NOT DETAILED IN THE STANDARD SHEETS SHALL BE IN THE CONFORMANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS"AND "THE STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS."
2. BARRICADES AND WARNING SIGNS SHALL BE PLACED AS INDICATED ON THE PLANS. THIS SHALL BE CONSIDERED THE MINIMUM REQUIRED TO PROVIDE FOR THE SAFETY OF TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN OTHER SUCH BARRICADES AND SIGN DEEMED NECESSARY BY THE ENGINEER OR AS DIRECTED BY FIELD CONDITIONS, TO PROVIDE FOR THE PASSAGE OF TRAFFIC IN SAFETY AT ALL TIMES.
3. THE CONTRACTOR SHALL KEEP THE ROADWAY CLEAN AND FREE OF DIRT OR OTHER MATERIALS DURING HAULING OPERATIONS. IF THE CONTRACTOR DOES NOT MAINTAIN A CLEAN ROADWAY, THEY SHALL CEASE ALL CONSTRUCTION OPERATIONS, WHEN DIRECTED BY THE ENGINEER, TO CLEAN THE ROADWAY TO THE SATISFACTION OF THE ENGINEER.

HAULING EQUIPMENT

1. THE USE OF RUBBER-TIRED EQUIPMENT WILL BE REQUIRED FOR MOVING DIRT OR OTHER MATERIALS ALONG OR ACROSS PAVEMENTED SURFACES. WHERE THE CONTRACTOR DESIRES TO MOVE ANY EQUIPMENT NOT LICENSED FOR OPERATION ON PUBLIC HIGHWAYS, ON OR ACROSS PAVEMENT. THEY SHALL PROTECT THE PAVEMENT FROM DAMAGE AS DIRECTED/APPROVED BY THE ENGINEER.

FINAL CLEAN UP

1. UPON COMPLETION OF THE WORK AND BEFORE FINAL ACCEPTANCE AND FINAL PAYMENT IS MADE, THE CONTRACTOR SHALL CLEAR AND REMOVE FROM THE SITE ALL SURPLUS AND DISCARDED MATERIALS AND DEBRIS OF EVERY KIND AND LEAVE THE ENTIRE PROJECT IN A SMOOTH, NEAT AND SIGHTLY CONDITION.

PAYMENT

1. ALL BARRICADES, SIGNS, AND FLAGGERS SHALL BE SUBSIDIARY TO ITEM 502 BARRICADES, SIGNS AND TRAFFIC HANDLING. ALL EROSION AND SEDIMENT CONTROL DEVICES WILL BE PAID FOR UNDER ITEM 506 TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS. ALL OTHER WORK AND MATERIALS SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS UNLESS OTHERWISE INDICATED IN THE PLANS.

SEQUENCE OF WORK

PHASE 1A AND 1B
1. INSTALL TRAFFIC CONTROL DEVICES, INCLUDING PROJECT LIMIT AND WORKZONE SIGNAGE AS SHOWN ON TRAFFIC CONTROL PLAN SHEET AND STANDARD DETAILS IN PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER.
2. INSTALL EROSION CONTROL DEVICES AS SHOWN IN SW3P SHEET AND STANDARD DETAILS IN PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER.
3. PERFORM PHASE 1A WORK. RECONSTRUCT SOUTHEAST CURB RAMPS, SIDEWALKS, AND INSTALL PROPOSED TRAFFIC SIGNAL.
4. OPEN WESTBOUND WESTERN CENTER BOULEVARD TO TRAFFIC.
5. PERFORM PHASE 1B WORK. RECONSTRUCT NORTHEAST CURB RAMPS AND SIDEWALKS.
6. OPEN NORTHBOUND NORTH BEACH STREET TO TRAFFIC.

PHASE 2
1. INSTALL TRAFFIC CONTROL DEVICES, INCLUDING PROJECT LIMIT AND WORKZONE SIGNAGE AS SHOWN ON TRAFFIC CONTROL PLAN SHEET AND STANDARD DETAILS IN PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER.
2. INSTALL EROSION CONTROL DEVICES AS SHOWN IN SW3P SHEET AND STANDARD DETAILS IN PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER.
3. PERFORM PHASE 2A WORK. RECONSTRUCT NORTHWEST CURB RAMPS, SIDEWALKS, AND INSTALL PROPOSED TRAFFIC SIGNAL.
4. PERFORM PHASE 2B WORK. RECONSTRUCT SOUTHWEST CURB RAMPS AND SIDEWALKS.
5. OPEN SOUTHBOUND NORTH BEACH STREET TO TRAFFIC.
6. OPEN WESTBOUND AND EASTBOUND WESTERN CENTER BOULEVARD TO TRAFFIC.

PHASE 3
1. INSTALL TRAFFIC CONTROL DEVICES, INCLUDING PROJECT LIMIT AND WORKZONE SIGNAGE AS SHOWN ON TRAFFIC CONTROL PLAN SHEET AND STANDARD DETAILS IN PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER.
2. INSTALL EROSION CONTROL DEVICES AS SHOWN IN SW3P SHEET AND STANDARD DETAILS IN PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER.
3. PERFORM PHASE 3 WORK. RECONSTRUCT MEDIANS ON WESTERN CENTER BOULEVARD.
4. ACTIVATE PROPOSED SIGNALS AND REMOVE EXISTING SIGNALS PER PLANS.
5. OPEN EASTBOUND AND WESTBOUND WESTERN CENTER BOULEVARD TO TRAFFIC.

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

TRAFFIC CONTROL AND SEQUENCE OF CONSTRUCTION

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	26
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

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LEGEND

- PHASE 1 WORK ZONE
- PREVIOUS PHASE CONSTRUCTION
- TRAFFIC FLOW ARROW
- PLASTIC DRUMS
- SIGN
- TRAILER MOUNTED FLASHING ARROW BOARD

THRU TRAFFIC MERGE LEFT
CW4-1aTL
48x48

RIGHT LANE CLOSED AHEAD
CW20-5R
48x48

SIGNAL WORK AHEAD
CW20SG-1
48x48

RIGHT LANE MUST TURN RIGHT
R3-7R
48x48

SIDEWALK CLOSED
R9-9
24x12

END ROAD WORK
G20-2
36x18

N

WESTERN CENTER BLVD

N BEACH ST

COMERICA BANK

CHASE BANK

TACO CABANA

TACO BELL

G20-2
CW20SG-1
R9-9
EXIST SIGNAL
PROP SIGNAL
CW20-5R
CW4-1aT
R3-7R
240'
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
26+00

NO.	REVISION	BY	DATE

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4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

TEMPORARY TRAFFIC CONTROL & SEQUENCE OF CONSTRUCTION PHASE 1A AND 1B

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	27

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

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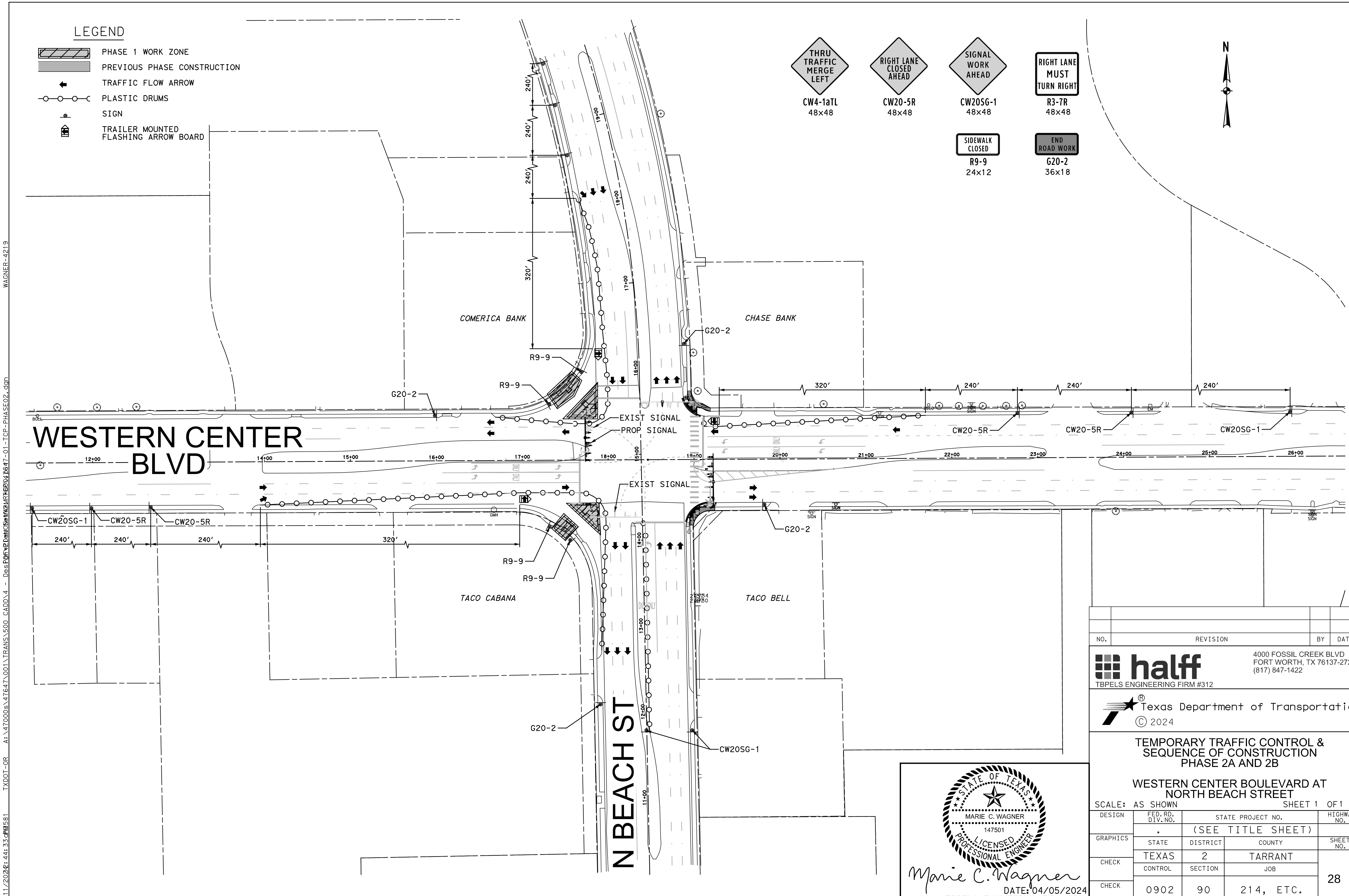

LEGEND
PHASE 1 WORK ZONE
PREVIOUS PHASE CONSTRUCTION
TRAFFIC FLOW ARROW
PLASTIC DRUMS
SIGN
TRAILER MOUNTED FLASHING ARROW BOARD
THRU TRAFFIC MERGE LEFT
CW4-1aTL
48x48
RIGHT LANE CLOSED AHEAD
CW20-5R
48x48
SIGNAL WORK AHEAD
CW20SG-1
48x48
RIGHT LANE MUST TURN RIGHT
R3-7R
48x48
SIDEWALK CLOSED
R9-9
24x12
END ROAD WORK
G20-2
36x18
N
WESTERN CENTER BLVD
N BEACH ST
COMERICA BANK
CHASE BANK
TACO CABANA
TACO BELL
EXIST SIGNAL
PROP SIGNAL
EXIST SIGNAL
R9-9
G20-2
CW20SG-1
CW20-5R
240'
320'

NO.	REVISION	BY	DATE

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FORT WORTH, TX 76137-2720
(817) 847-1422

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TEMPORARY TRAFFIC CONTROL &
SEQUENCE OF CONSTRUCTION
PHASE 2A AND 2B

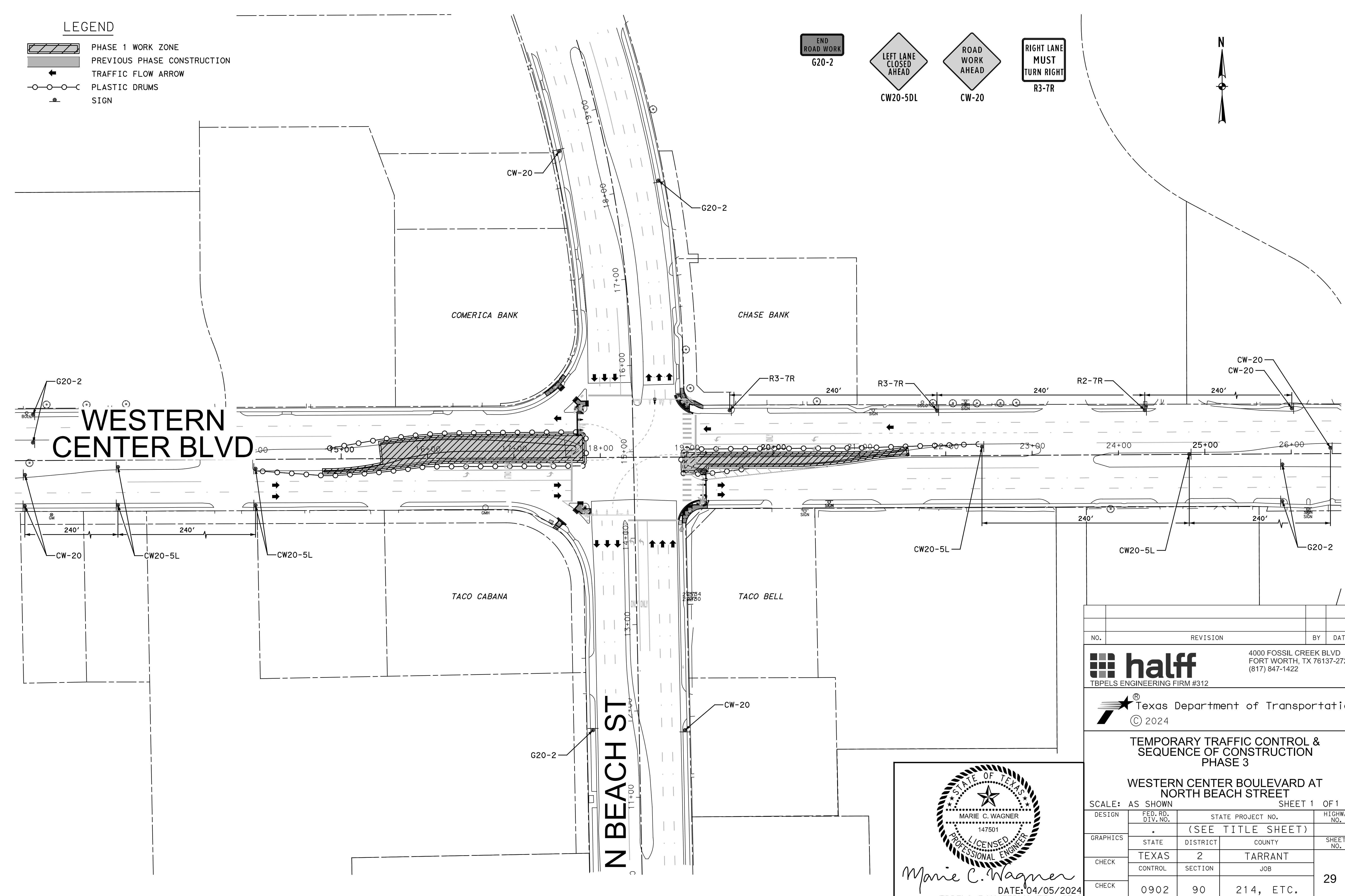
WESTERN CENTER BOULEVARD AT
NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
GRAPHICS	.	(SEE TITLE SHEET)		
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	
	CONTROL	SECTION	JOB	28
CHECK	0902	90	214, ETC.	

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312



NO.	REVISION	BY	DATE

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4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

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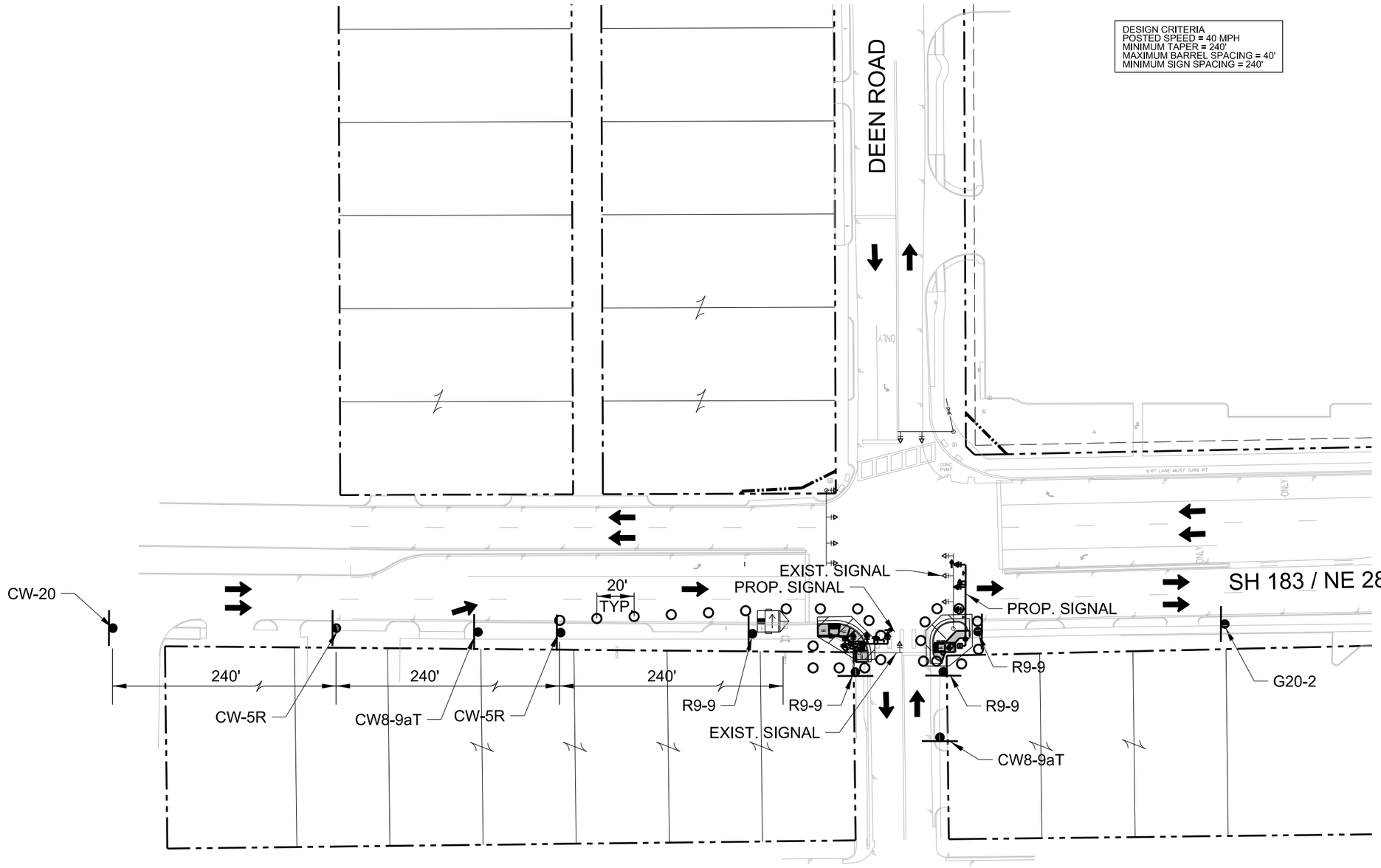
TEMPORARY TRAFFIC CONTROL & SEQUENCE OF CONSTRUCTION PHASE 3

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	
	CONTROL	SECTION	JOB	29
CHECK	0902	90	214, ETC.	



PHASE 1A & 1B
1. INSTALL TEMPORARY EROSION CONTROL DEVICES.
2. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN
3. MAINTAIN A MINIMUM 10' TRAFFIC LANE IN EACH DIRECTION ON DEEN ROAD.
4. MERGE EAST BOUND SH183 / NE 28TH STREET RIGHT LANE TO LEFT LANE.
5. PERFORM PHASE 1A WORK.
6. INSTALL PROTECTED TRAFFIC SIGNAL.
7. PERFORM PHASE 1B WORK.
8. INSTALL PROTECTED TRAFFIC SIGNAL.
8. INSTALL PROTECTED TRAFFIC SIGNAL.
9. OPEN EAST BOUND SH183 / NE 28TH STREET TO TRAFFIC.
10. OPEN DEEN ROAD TO TRAFFIC.

SUMMARY OF ITEMS				
ITEM NO.	DESCRIPTION	EST QTY	FINAL QTY	UNIT
502-6001	BARRICADES, SIGNS AND TRAFFIC HANDELING	2.5		MO

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED PROFESSIONAL ENGINEER
04/05/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS • ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

TEMPORARY TRAFFIC CONTROL & SEQUENCE OF CONSTRUCTION PHASE 1A & 1B SH183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS GES	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	30
CHECK EAC	CONTROL	SECTION	JOB	
CHECK EAC	0902	90	214 ETC	

3/28/2024
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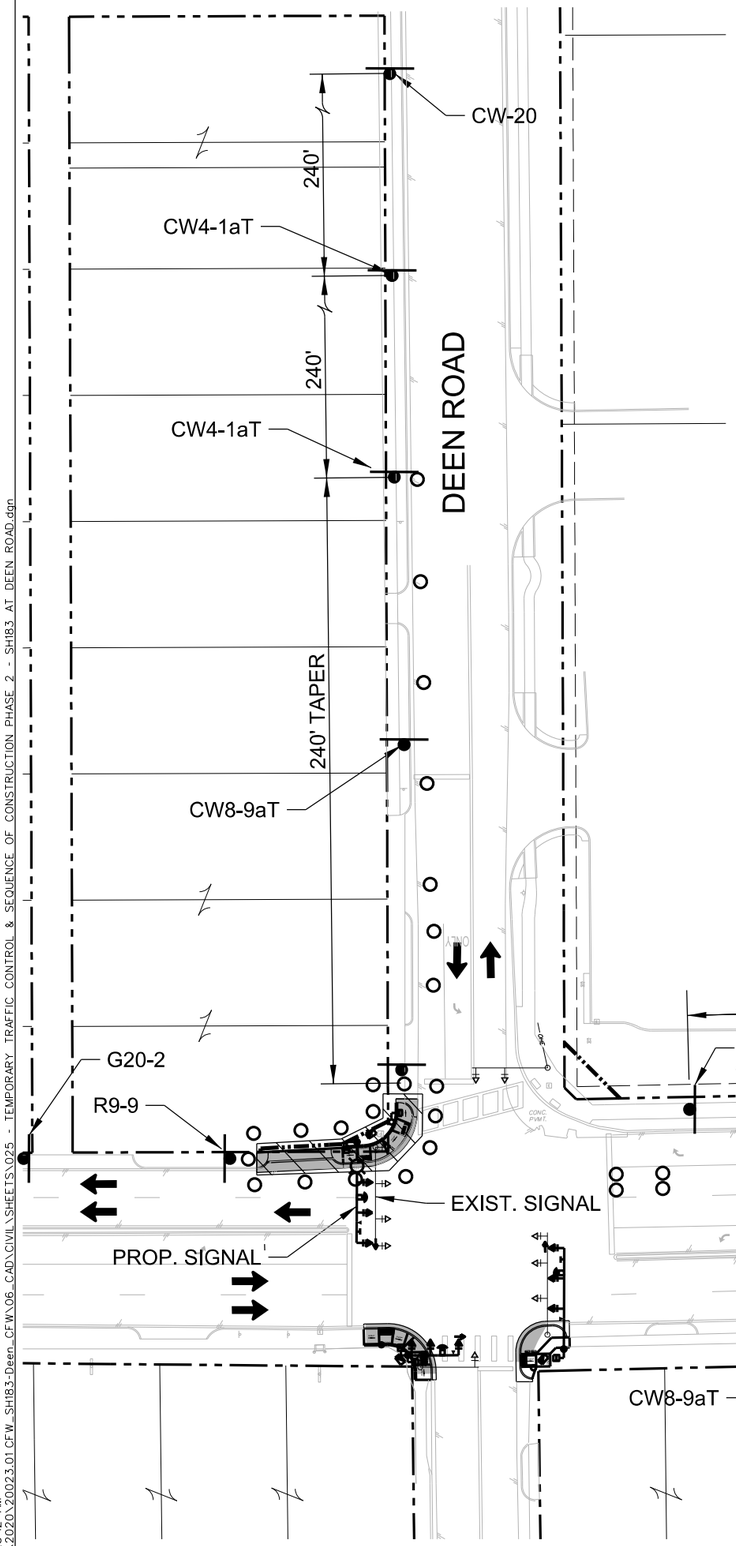
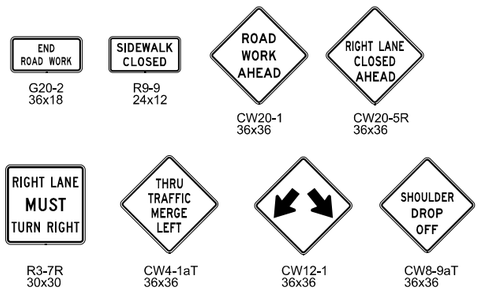
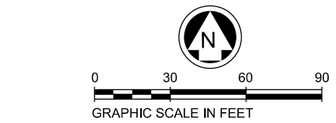
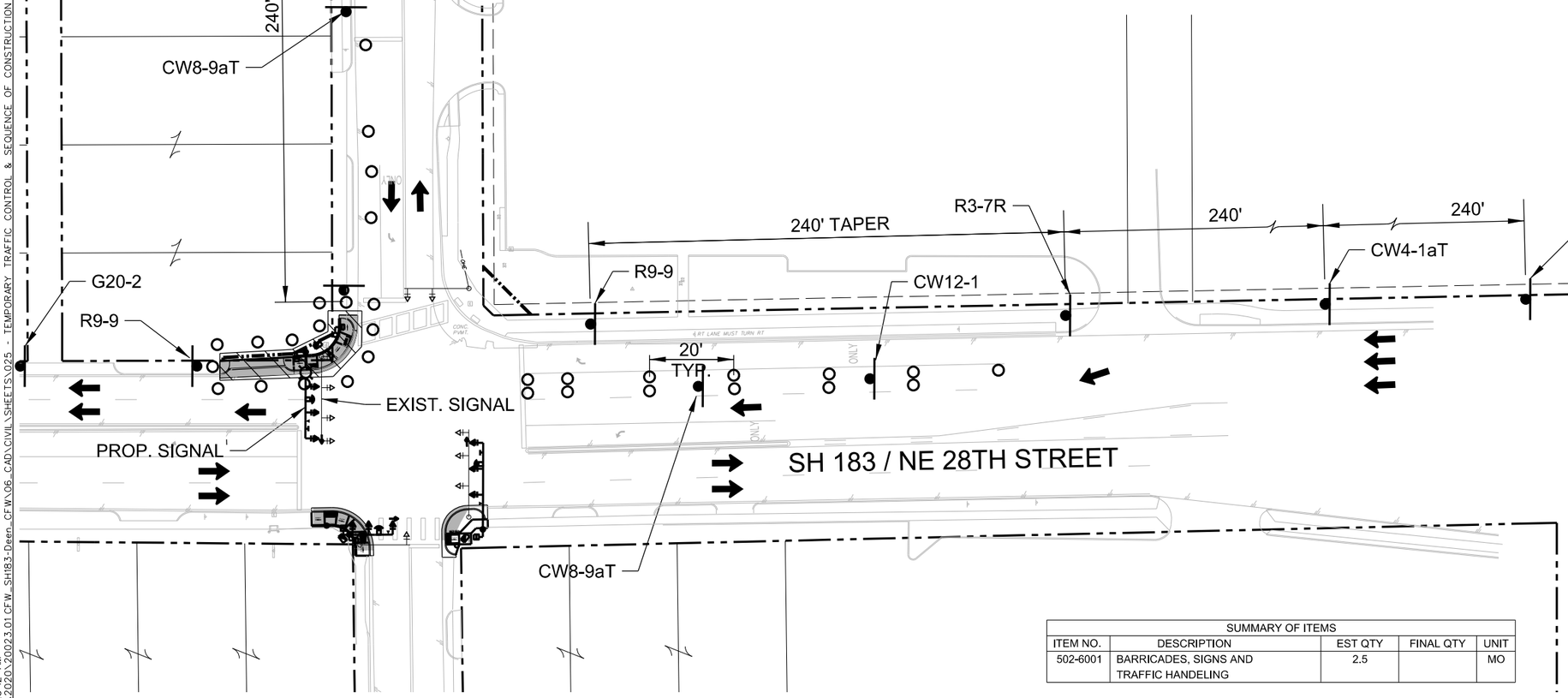


PHASE 2 -

1. INSTALL TEMPORARY EROSION CONTROL DEVICES.
2. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN
3. MAINTAIN A MINIMUM 10' TRAFFIC LANE IN EACH DIRECTION ON DEEN ROAD.
4. MERGE WEST BOUND SH183 / NE 28TH STREET RIGHT LANES TO LEFT LANE
5. MAINTAIN EAST BOUND SH183 / NE 28TH STREET DEDICATED RIGHT TURN LANE.
6. MERGE SOUTH BOUND DEEN ROAD RIGHT LANE TO LEFT LANE.
7. PERFORM PHASE 2 WORK.
8. INSTALL PROTECTED TRAFFIC SIGNAL.
9. OPEN WEST BOUND SH183 / NE 28TH STREET TO TRAFFIC.
10. OPEN DEEN ROAD TO TRAFFIC.







SUMMARY OF ITEMS				
ITEM NO.	DESCRIPTION	EST QTY	FINAL QTY	UNIT
502-6001	BARRICADES, SIGNS AND TRAFFIC HANDELING	2.5		MO

NO.	REVISION	BY	DATE

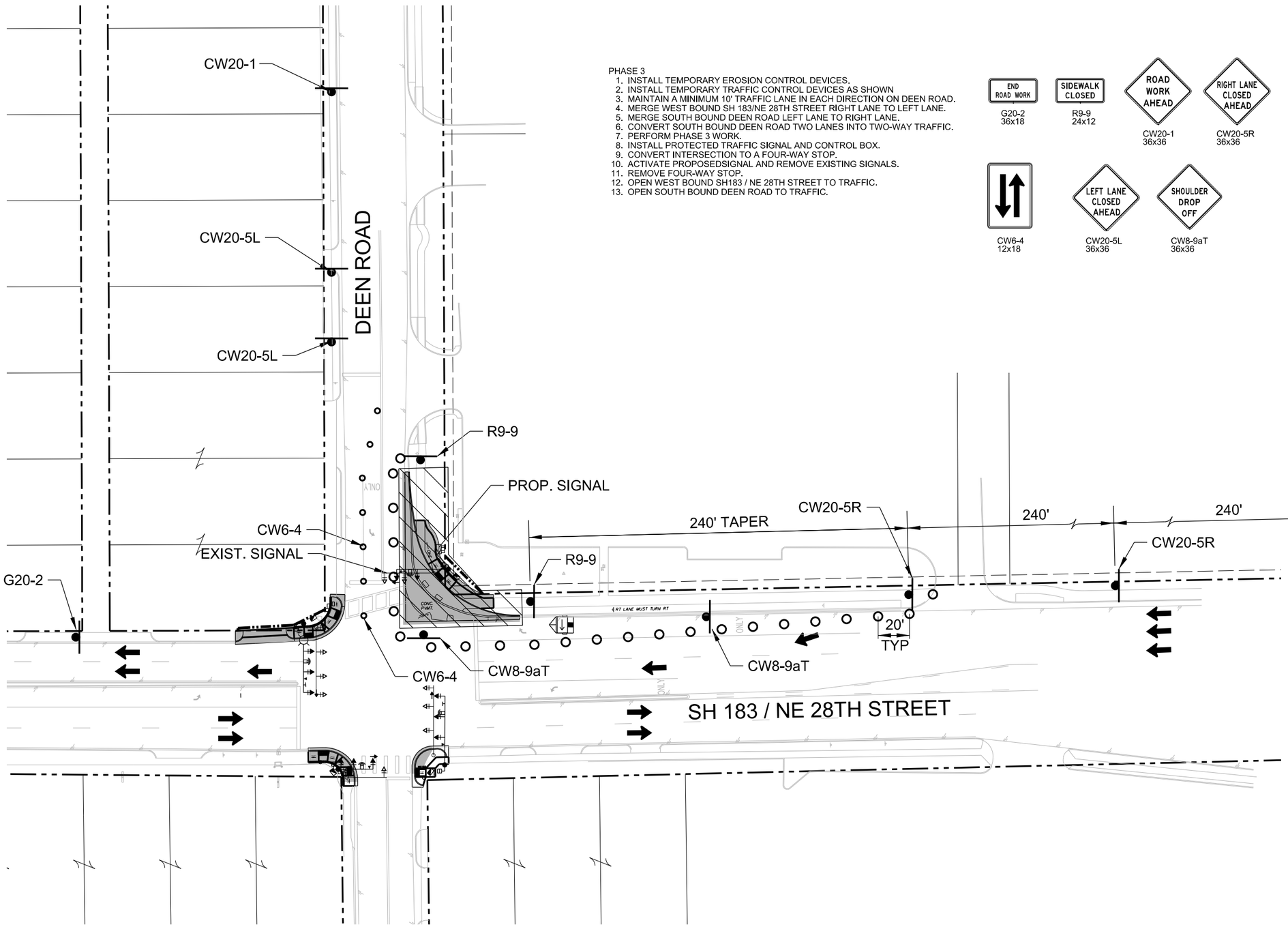
MULTATECH ARCHITECTS • ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-0571
TBPE Reg #F351

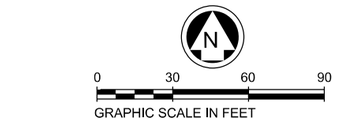
TEMPORARY TRAFFIC CONTROL & SEQUENCE OF CONSTRUCTION PHASE 2 SH183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS GES	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	31
CHECK EAC	CONTROL	SECTION	JOB	
CHECK EAC	0902	90	214 ETC	

PHASE 3
1. INSTALL TEMPORARY EROSION CONTROL DEVICES.
2. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN
3. MAINTAIN A MINIMUM 10' TRAFFIC LANE IN EACH DIRECTION ON DEEN ROAD.
4. MERGE WEST BOUND SH 183/NE 28TH STREET RIGHT LANE TO LEFT LANE.
5. MERGE SOUTH BOUND DEEN ROAD LEFT LANE TO RIGHT LANE.
6. CONVERT SOUTH BOUND DEEN ROAD TWO LANES INTO TWO-WAY TRAFFIC.
7. PERFORM PHASE 3 WORK.
8. INSTALL PROTECTED TRAFFIC SIGNAL AND CONTROL BOX.
9. CONVERT INTERSECTION TO A FOUR-WAY STOP.
10. ACTIVATE PROPOSEDSIGNAL AND REMOVE EXISTING SIGNALS.
11. REMOVE FOUR-WAY STOP.
12. OPEN WEST BOUND SH183 / NE 28TH STREET TO TRAFFIC.
13. OPEN SOUTH BOUND DEEN ROAD TO TRAFFIC.





DESIGN CRITERIA
POSTED SPEED = 40 MPH
MINIMUM TAPER = 240'
MAXIMUM BARREL SPACING = 40'
MINIMUM SIGN SPACING = 240'

LEGEND
- PHASE 3 WORK ZONE
- PREVIOUS PHASE CONSTRUCTION
- TRAFFIC FLOW DIRECTION
- PLASTIC DRUMS
- SIGN
- TRAILER MOUNTED FLASHING ARROW BOARD
- TYPE I BARRICADE

SUMMARY OF ITEMS				
ITEM NO.	DESCRIPTION	EST QTY	FINAL QTY	UNIT
502-6001	BARRICADES, SIGNS AND TRAFFIC HANDELING	2.5		MO

NO.	REVISION	BY	DATE

2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

TEMPORARY TRAFFIC CONTROL & SEQUENCE OF CONSTRUCTION PHASE 3 SH183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS GES	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	32
CHECK EAC	CONTROL	SECTION	JOB	
CHECK EAC	0902	90	214 ETC	

DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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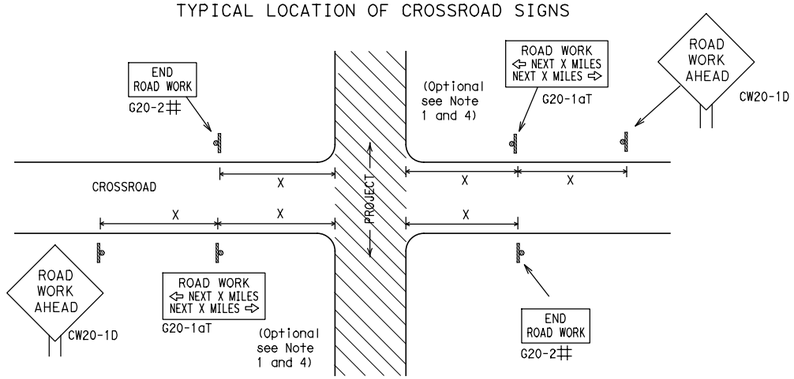
REVISIONS 4-03 7-13 9-07 8-14 5-10 5-21	DIST	COUNTY		SHEET NO. 33

DATE:
FILE:

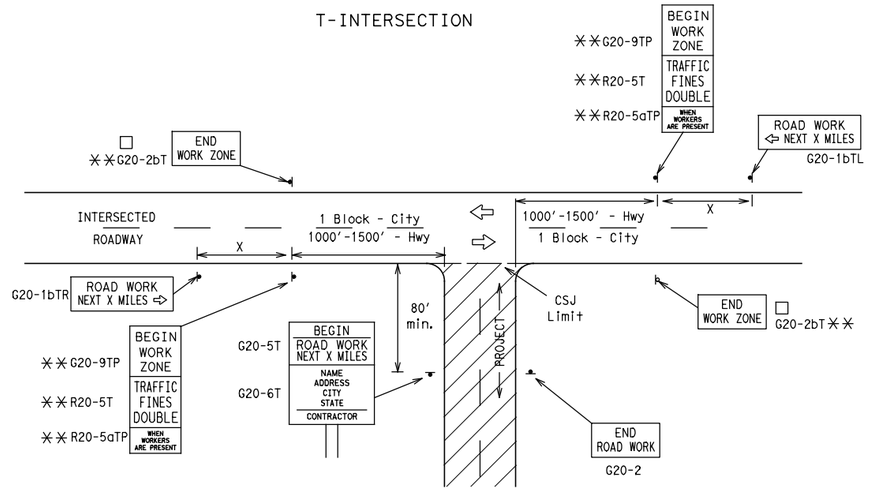
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

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

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

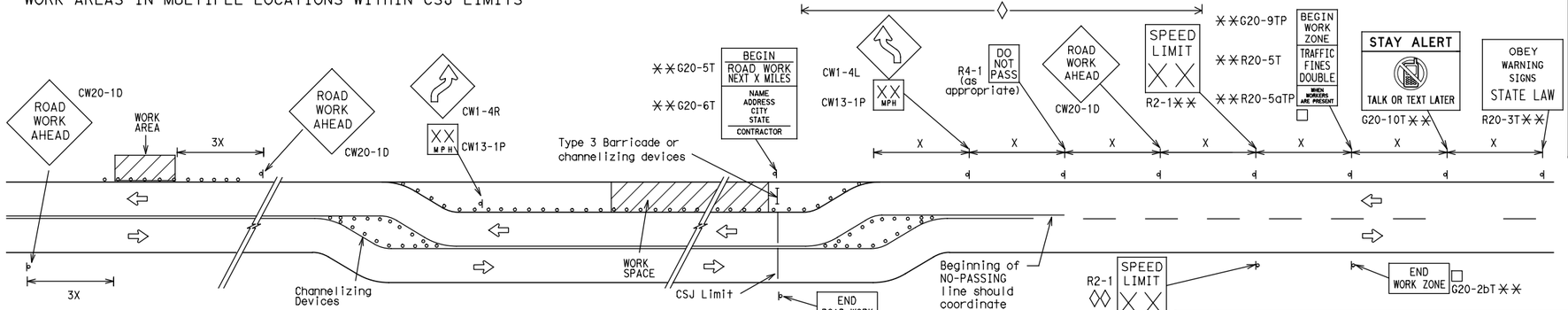
GENERAL NOTES

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

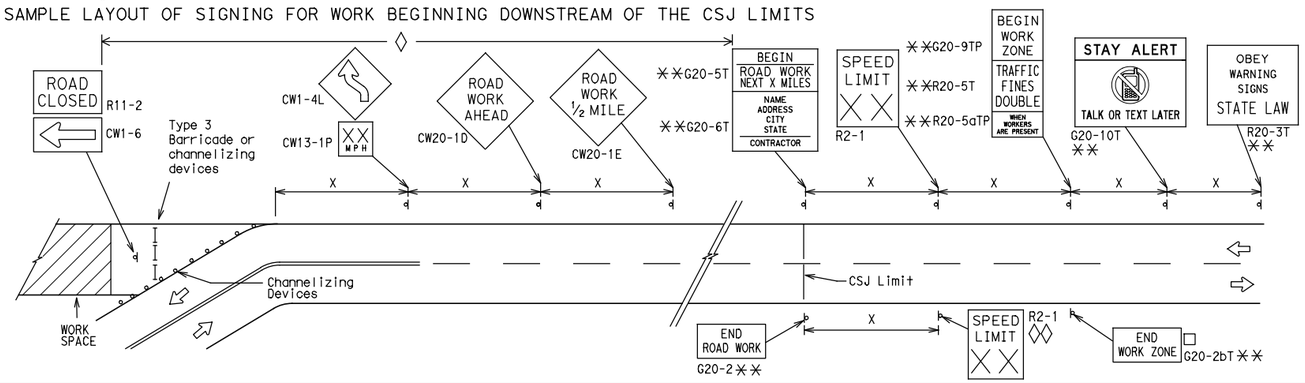
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING 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.

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				34

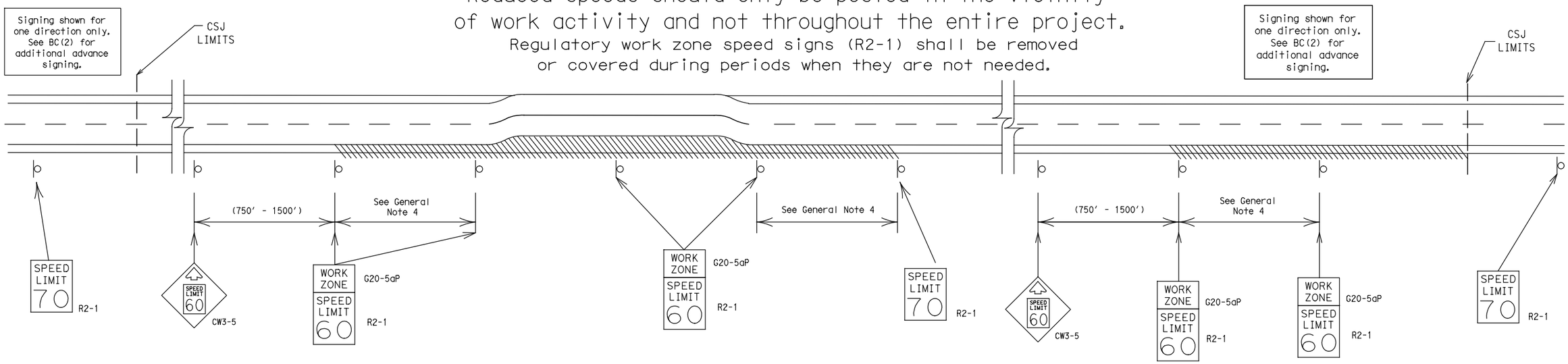
DATE:
FILE:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.

Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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REVISIONS 9-07 8-14 7-13 5-21	DIST	COUNTY		SHEET NO. 35

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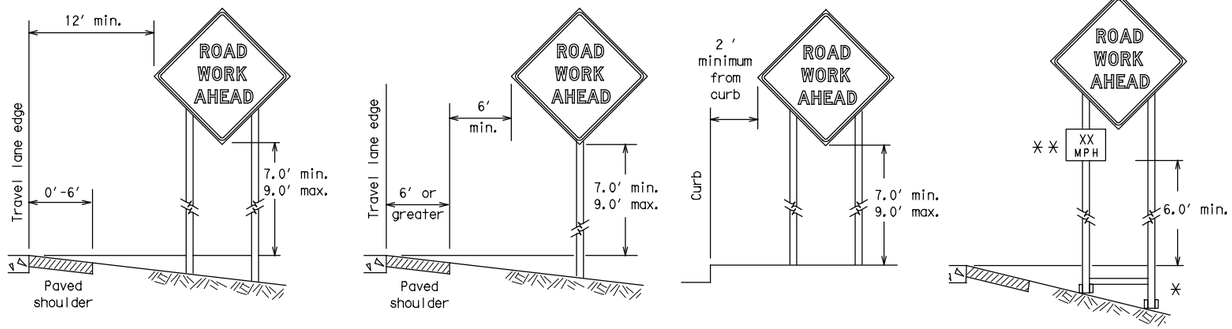
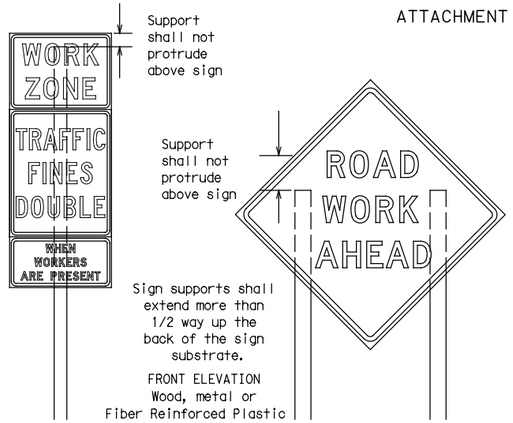
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

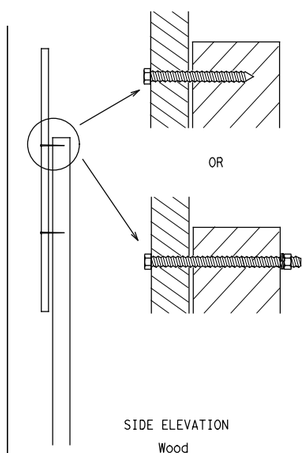


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





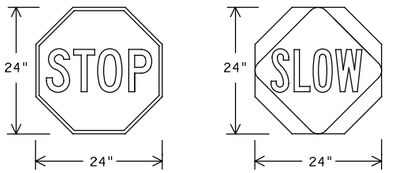
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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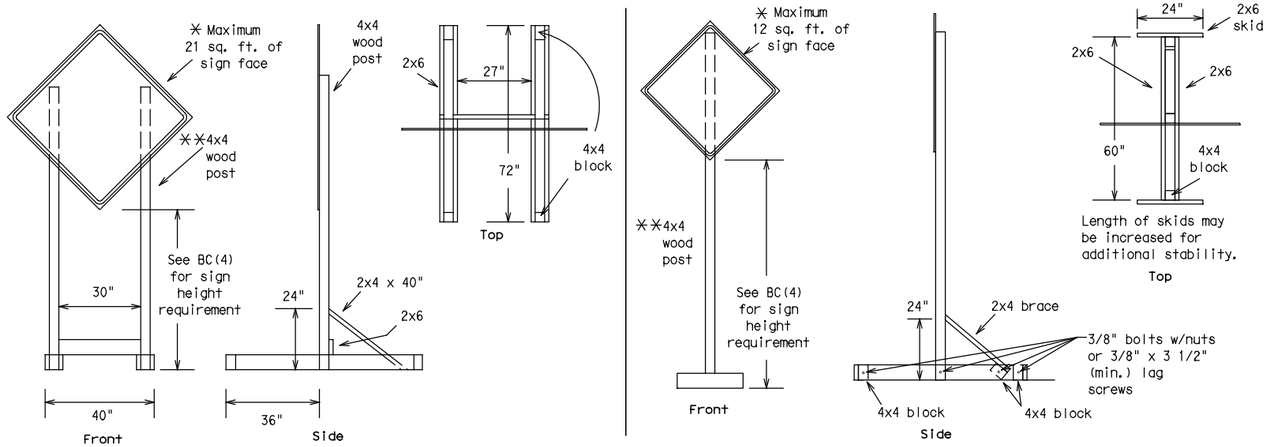
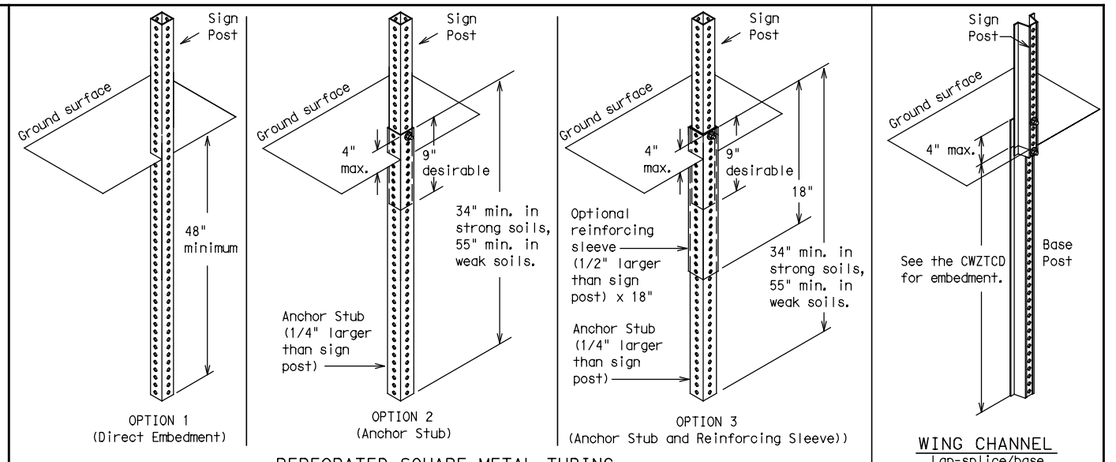


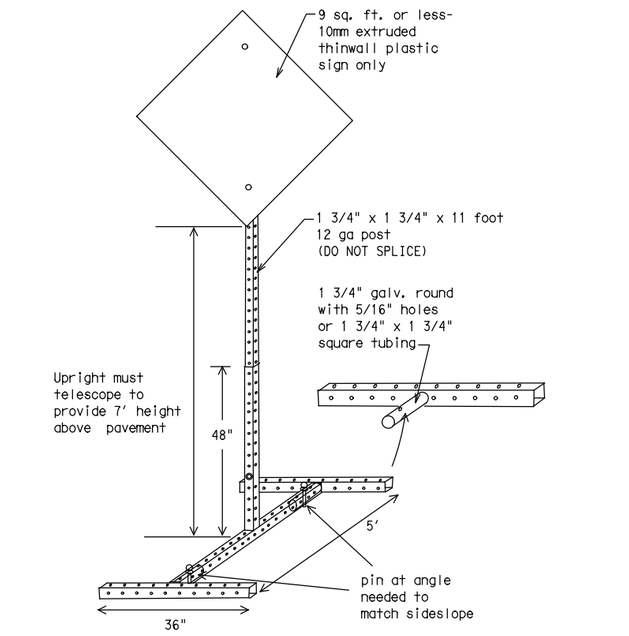
SKID MOUNTED WOOD SIGN SUPPORTS

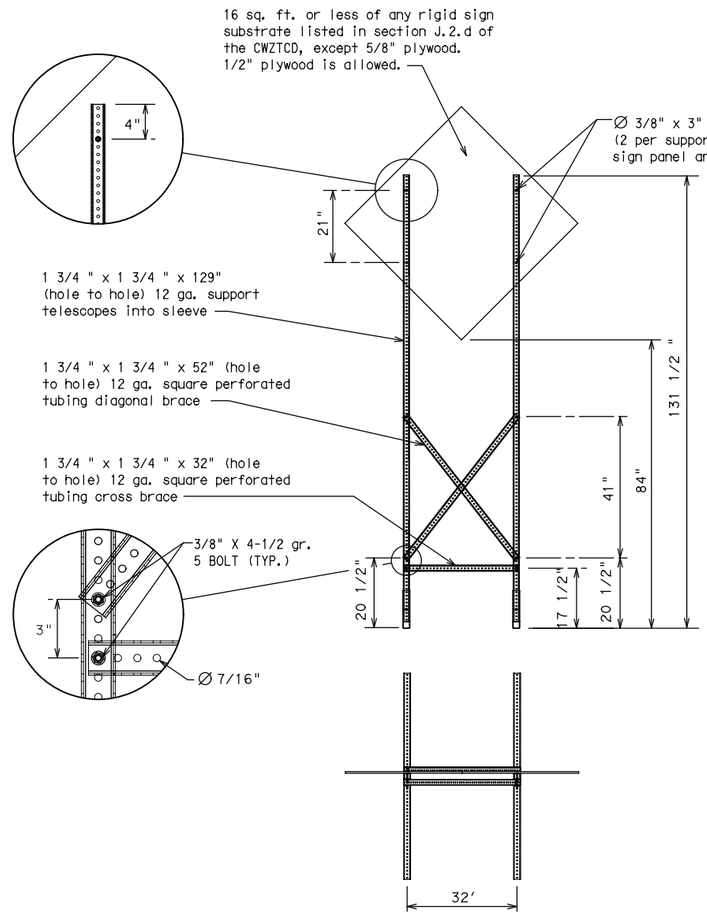
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

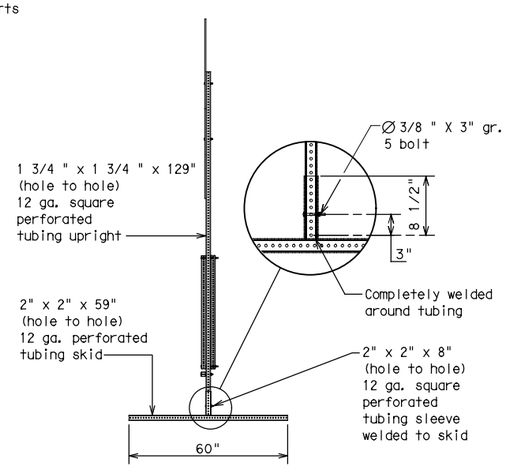


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

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BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

WORD OR PHRASE	ABBREVIATION
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

✳✳ Advance Notice List

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

✳✳ See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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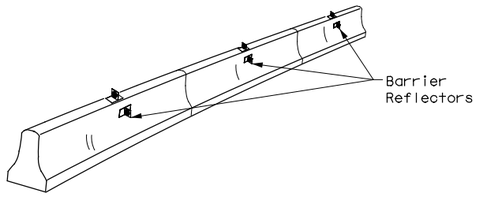
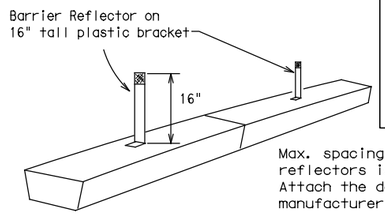
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



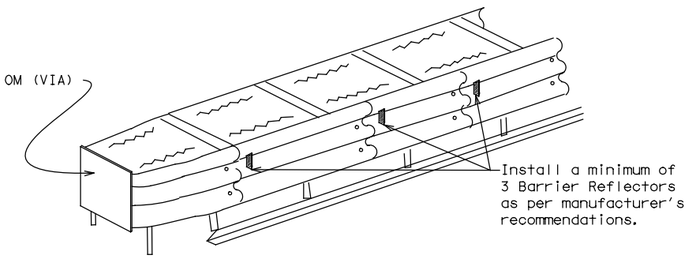
CONCRETE TRAFFIC BARRIER (CTB)

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



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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

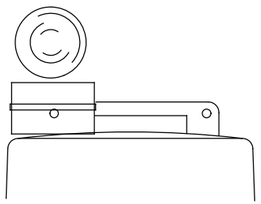
LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

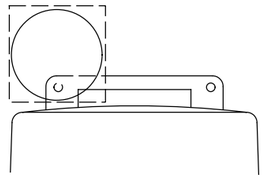
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

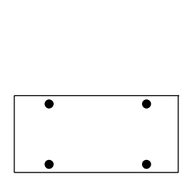
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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.

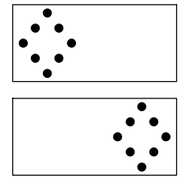
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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:

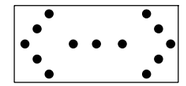


4 CORNER CAUTION

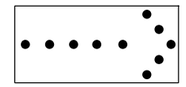
OR



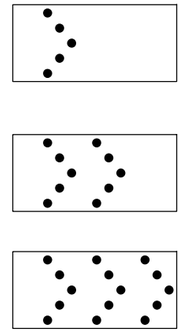
ALTERNATING DIAMOND CAUTION



DOUBLE ARROW



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



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

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

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

ATTENTION
Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

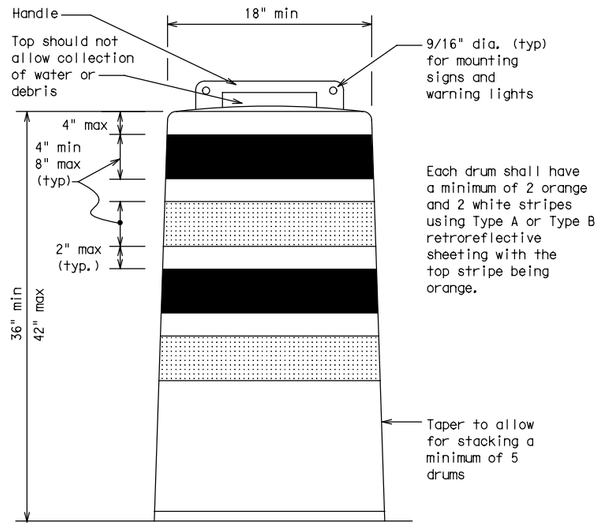
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

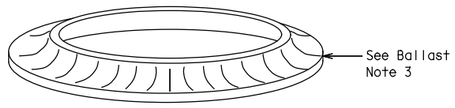
RETROREFLECTIVE SHEETING

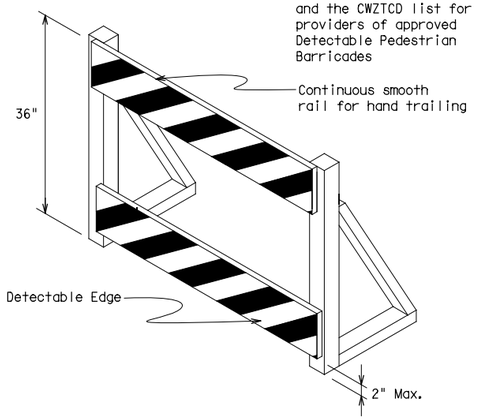
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

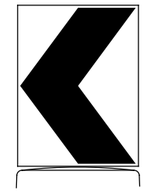




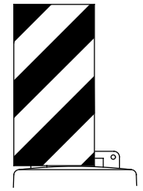


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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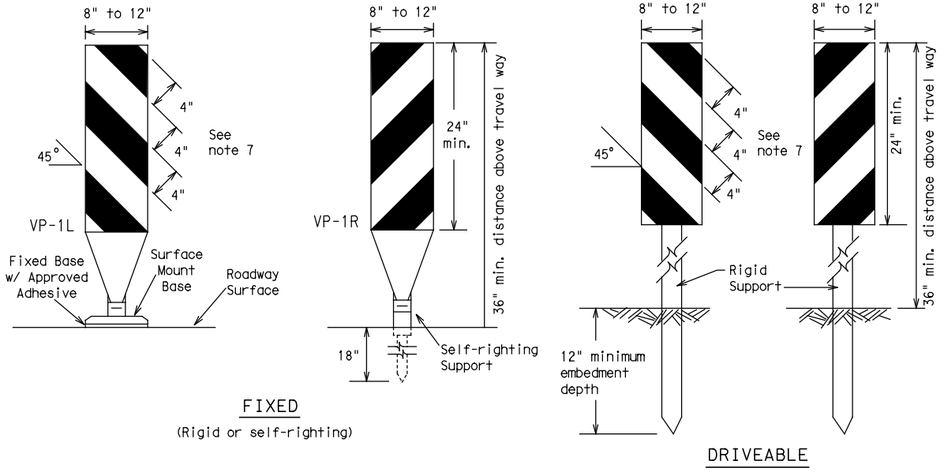
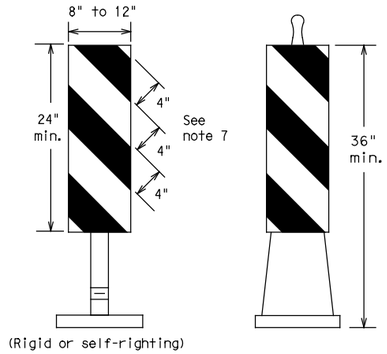
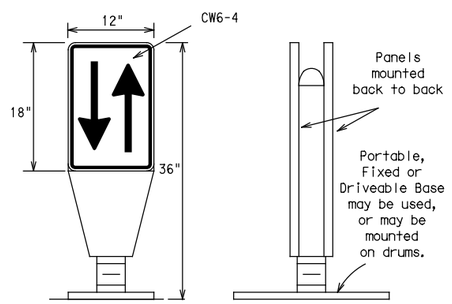




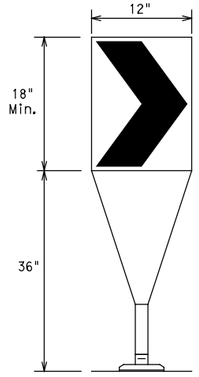
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



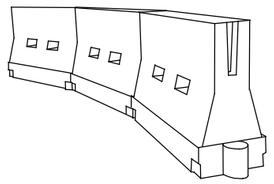
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

Posted Speed	Formula	Minimum Desirable Taper Lengths ✻✻			Suggested Maximum Spacing of Channelizing Devices	
		10′ Offset	11′ Offset	12′ Offset	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

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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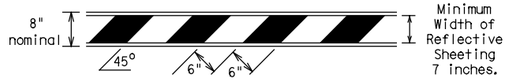
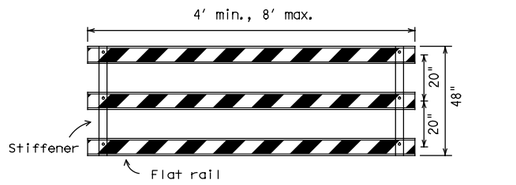
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



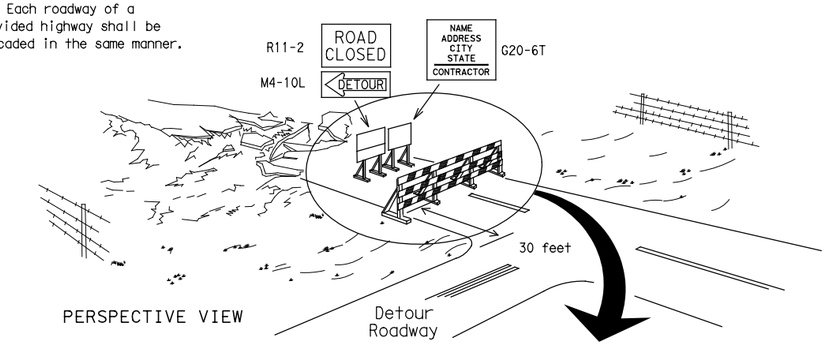
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

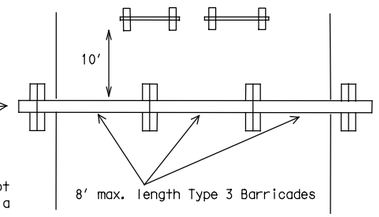
TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

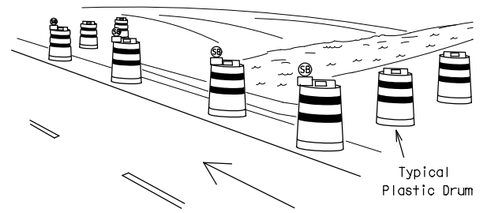
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

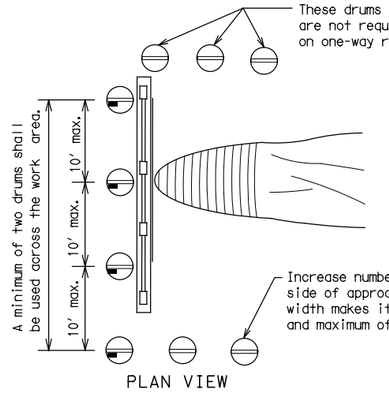
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

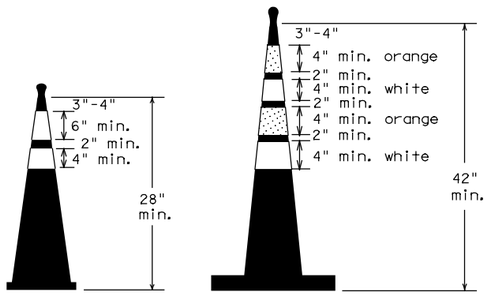
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



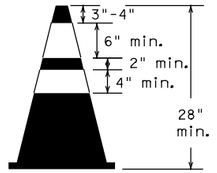
PLAN VIEW

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

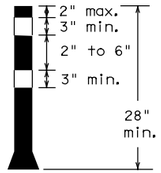
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

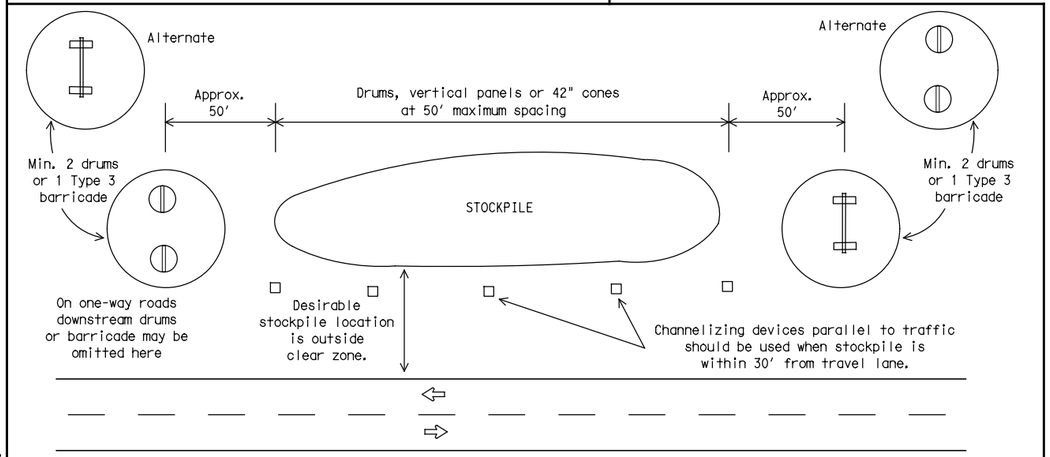


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

DATE:
FILE:

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 9-07 8-14 7-13 5-21	DIST	COUNTY		SHEET NO. 42

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

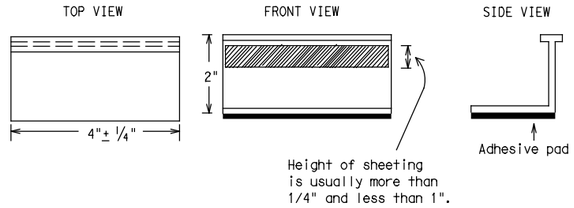
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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1-02 7-13	DIST	COUNTY		SHEET NO.
11-02 8-14				43

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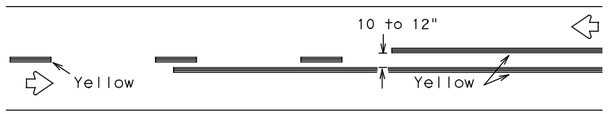
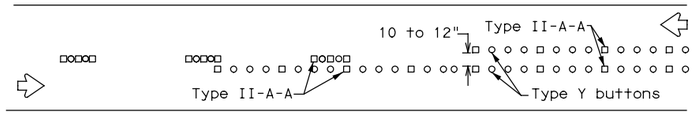
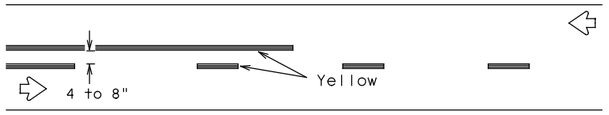
PAVEMENT MARKING PATTERNS



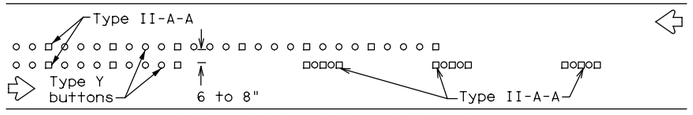
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



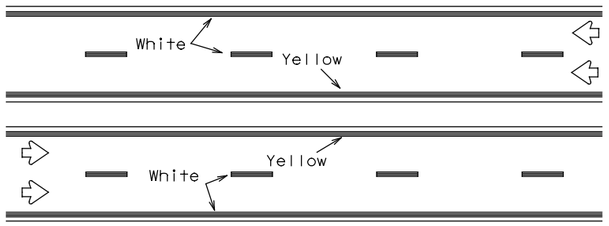
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



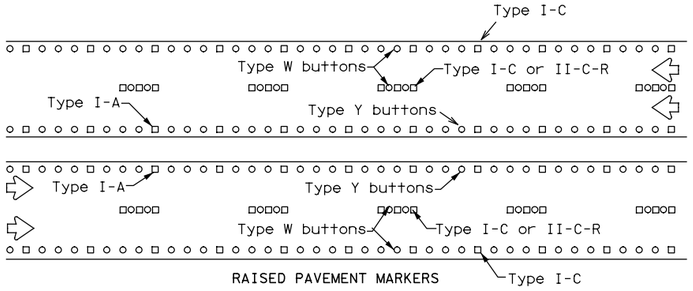
RAISED PAVEMENT MARKERS - PATTERN B

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

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



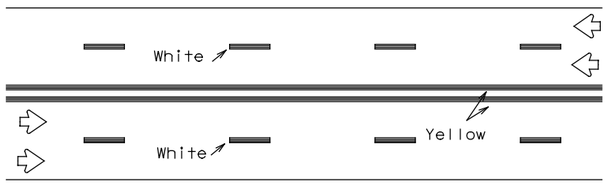
REFLECTORIZED PAVEMENT MARKINGS



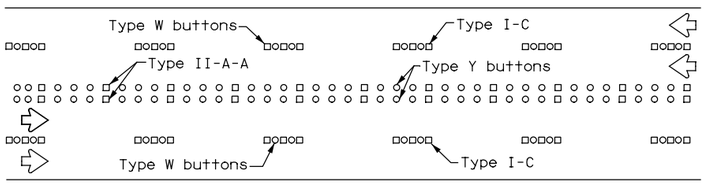
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



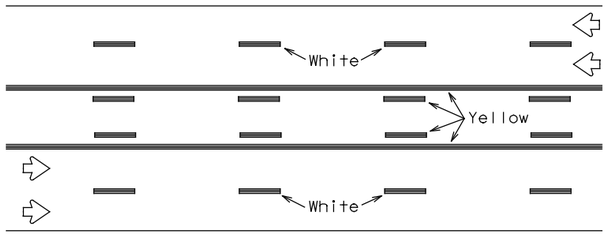
REFLECTORIZED PAVEMENT MARKINGS



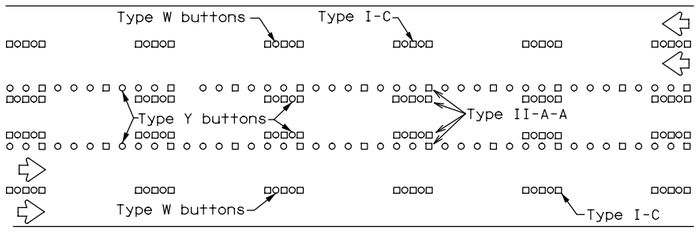
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

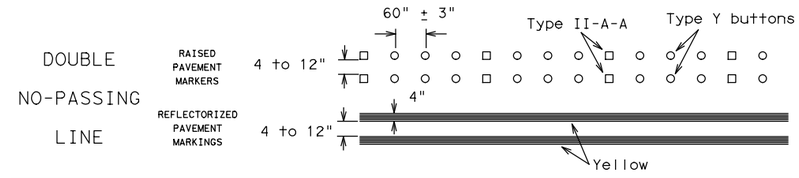
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

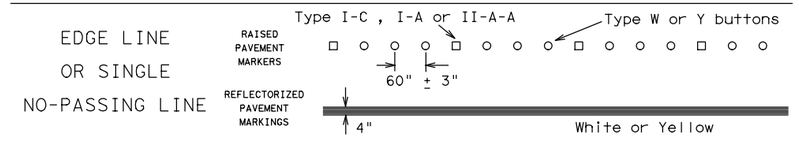
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

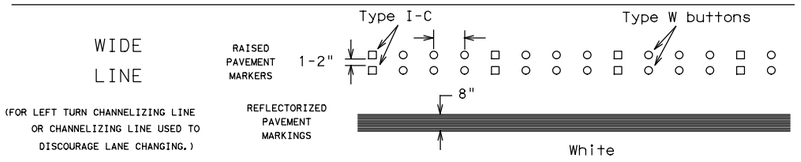


EDGE LINE OR SINGLE NO-PASSING LINE



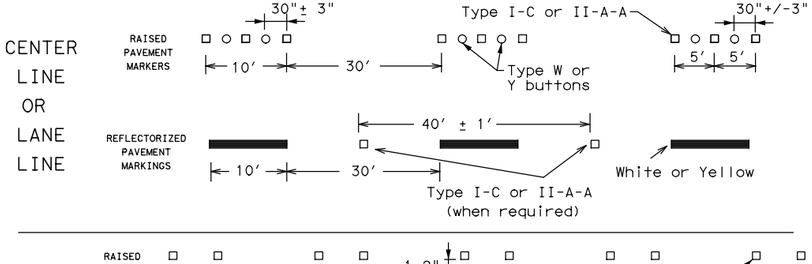
WIDE LINE

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

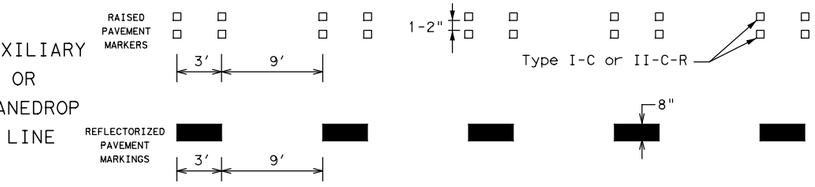


BROKEN LINES

CENTER LINE OR LANE LINE

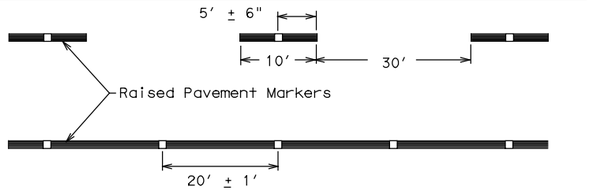


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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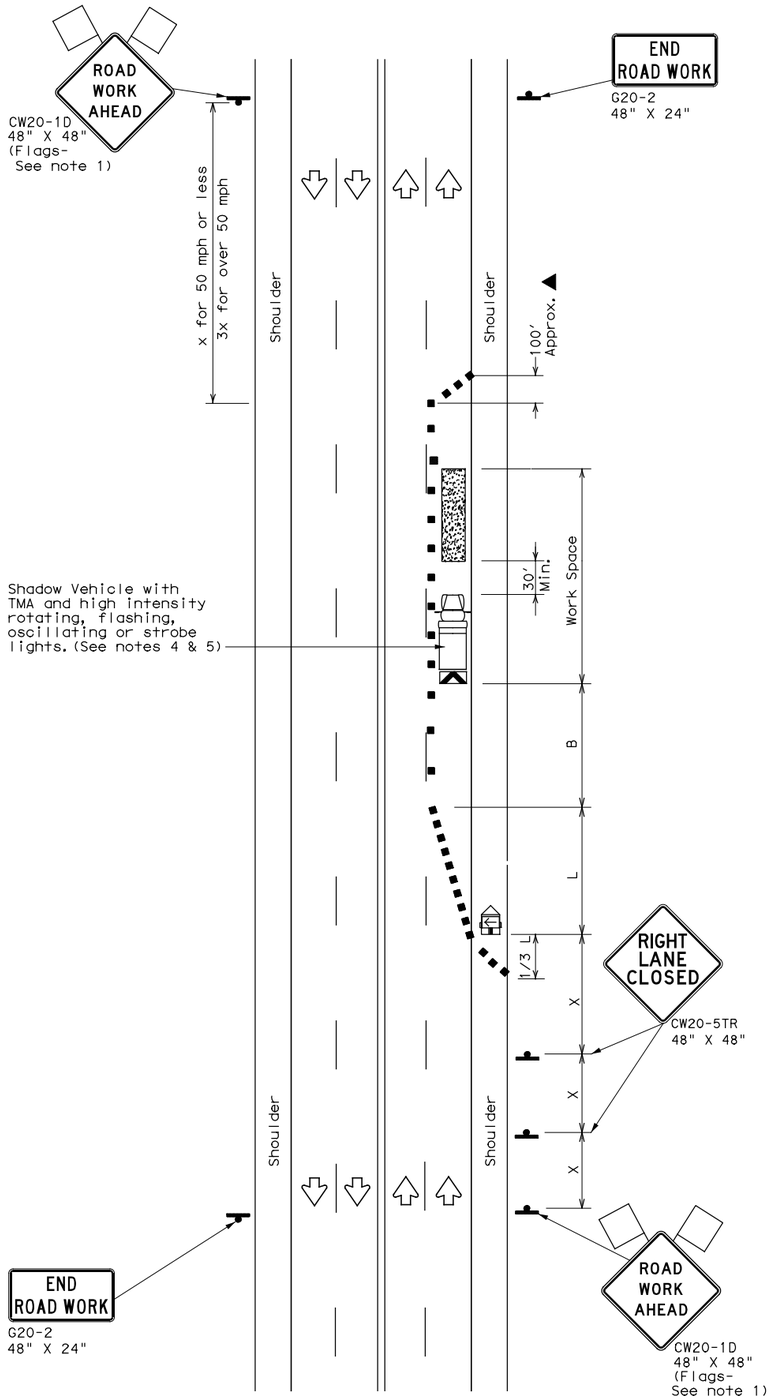
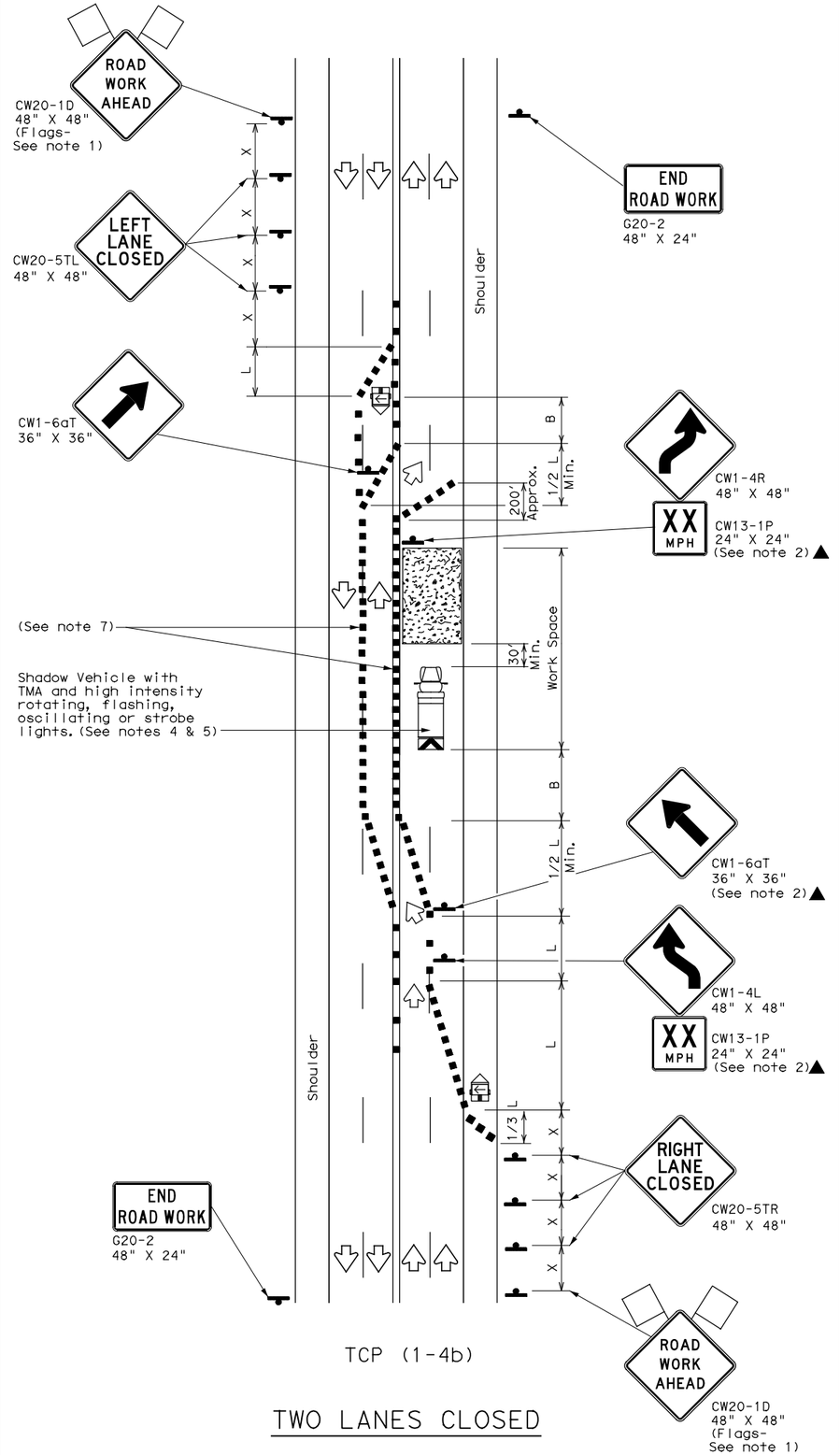


TCP (1-4a)

ONE LANE CLOSED



TCP (1-4b)

TWO LANES CLOSED

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

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-4a)

6. If this TCP is used for a left lane closure , CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

TCP (1-4b)

7. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(1-4)-18

FILE: tcp1-4-18.dgn	DN:	CK:	DW:	CK:
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8-95 2-12				45
1-97 2-18				

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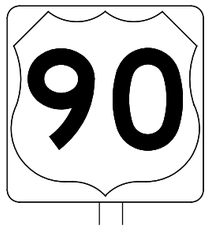
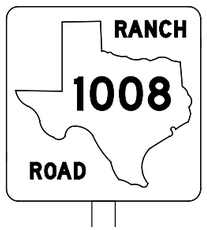
REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

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

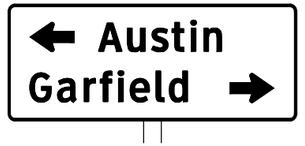




TYPICAL EXAMPLES

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
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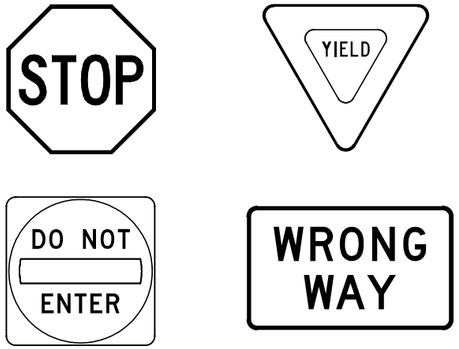
REVISIONS				
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08				46

3

DATE:
FILE:

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS
(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

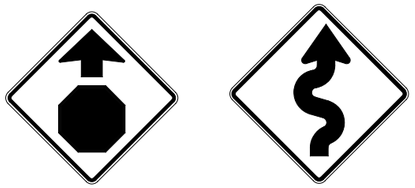
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

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

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS				
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08				47

4

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DATE:
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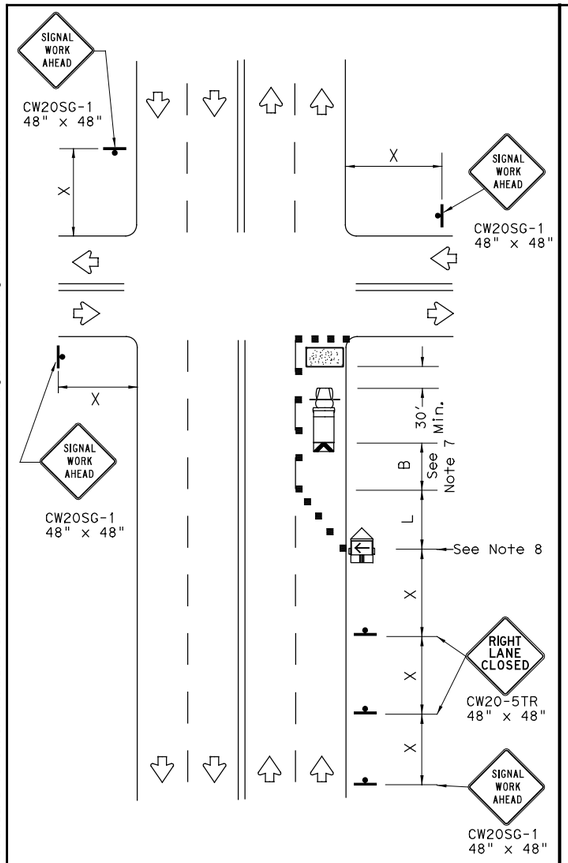
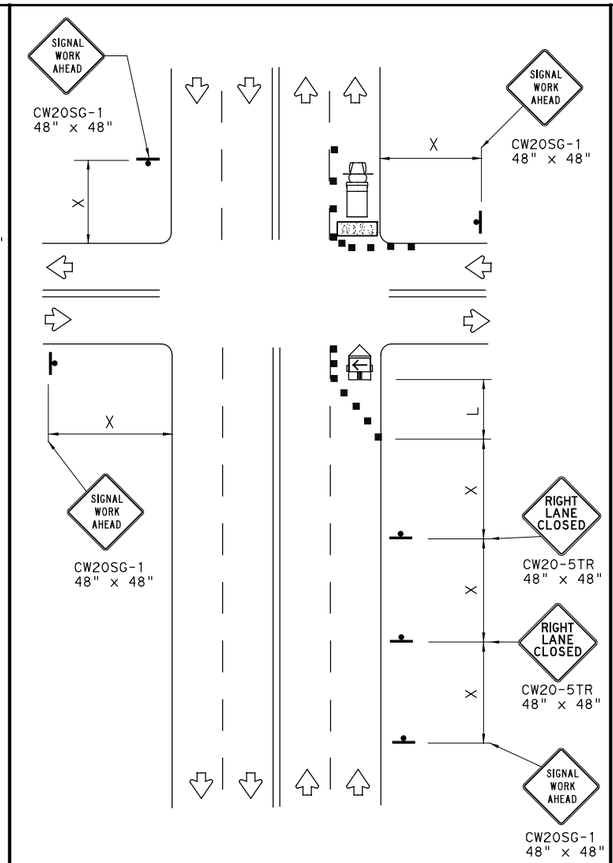


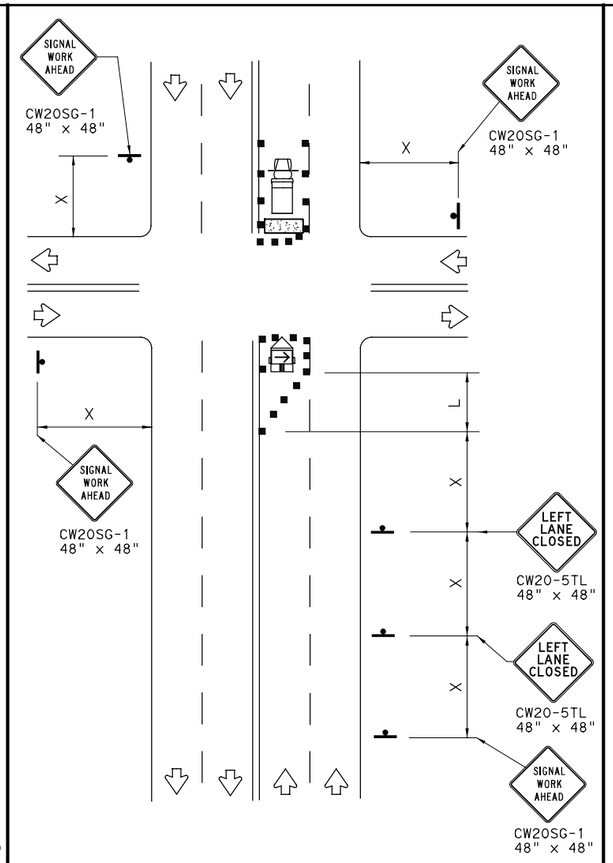
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



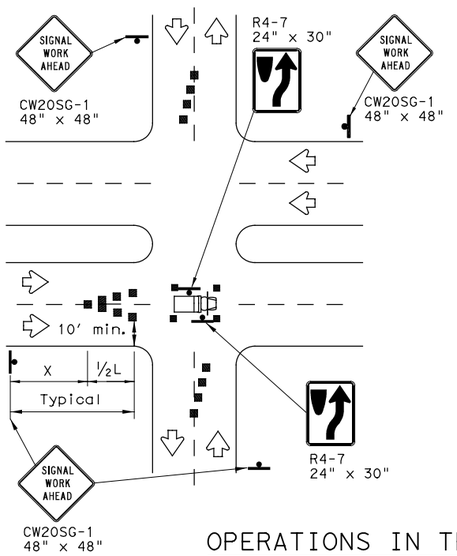
FAR SIDE RIGHT LANE CLOSURE

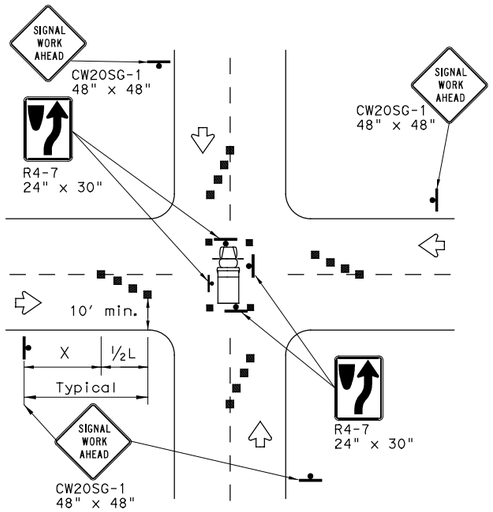
SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY





OPERATIONS IN THE INTERSECTION

SHORT DURATION

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

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

* Conventional Roads Only

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

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.

GENERAL NOTES

1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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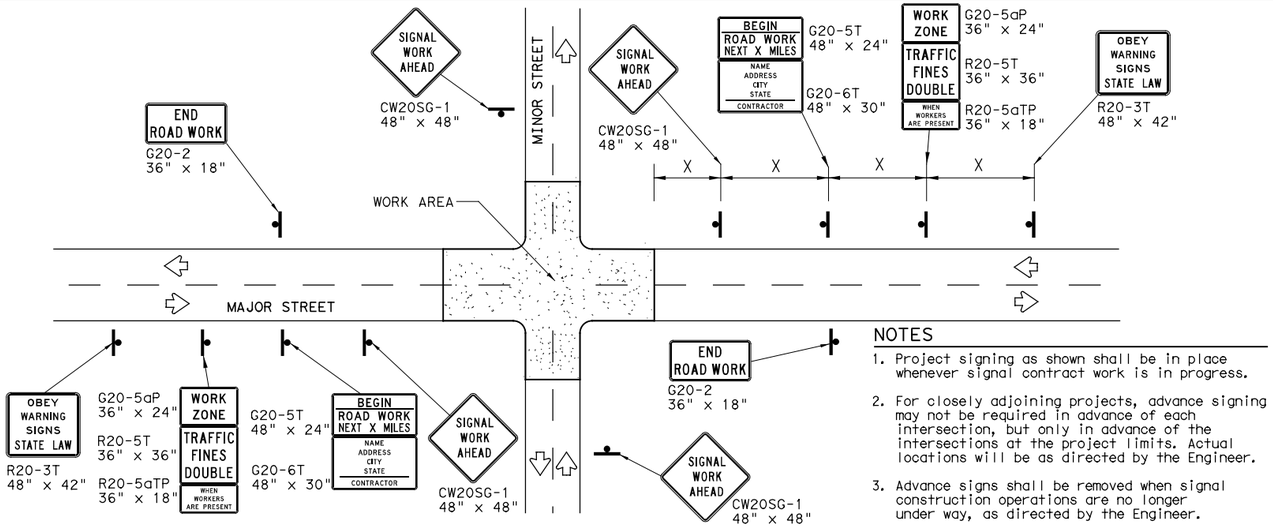
REVISIONS				
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03				48



TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

1. Project signing as shown shall be in place whenever signal contract work is in progress.
2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
4. Warning sign spacing shown is typical for both directions.
5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night without damaging the sign sheeting. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

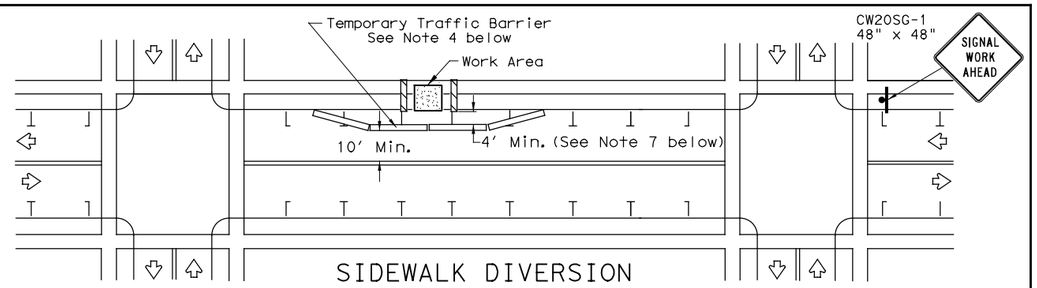
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

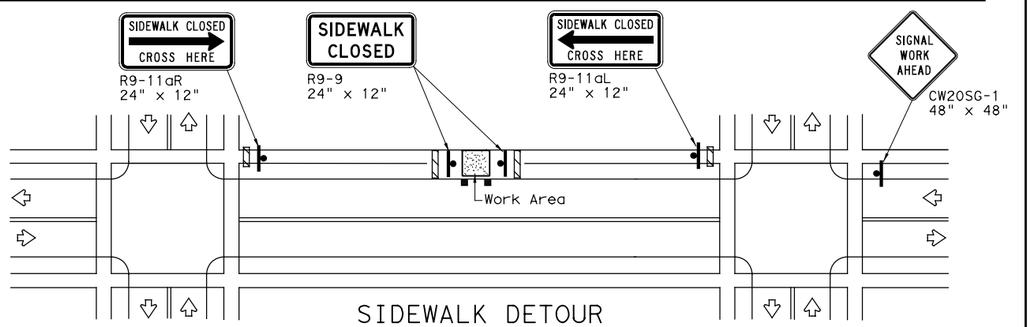
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

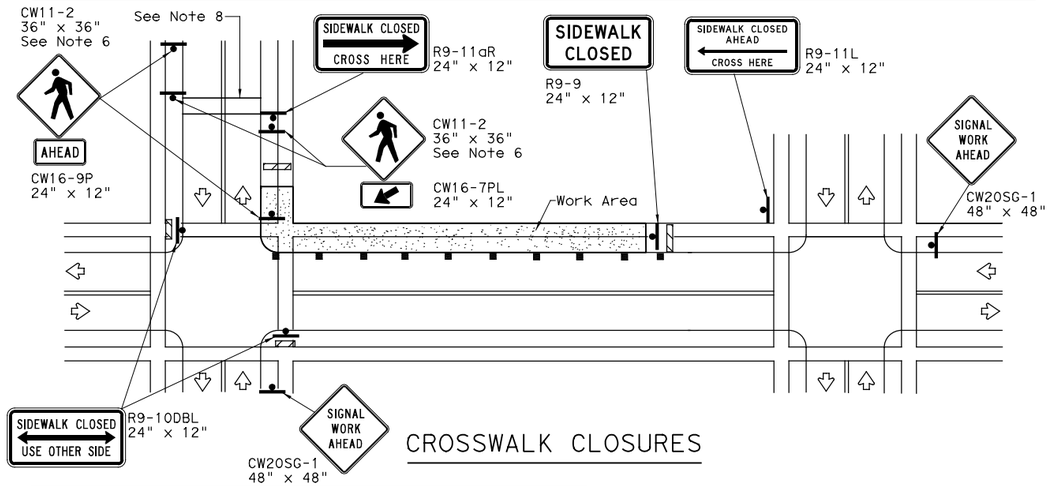
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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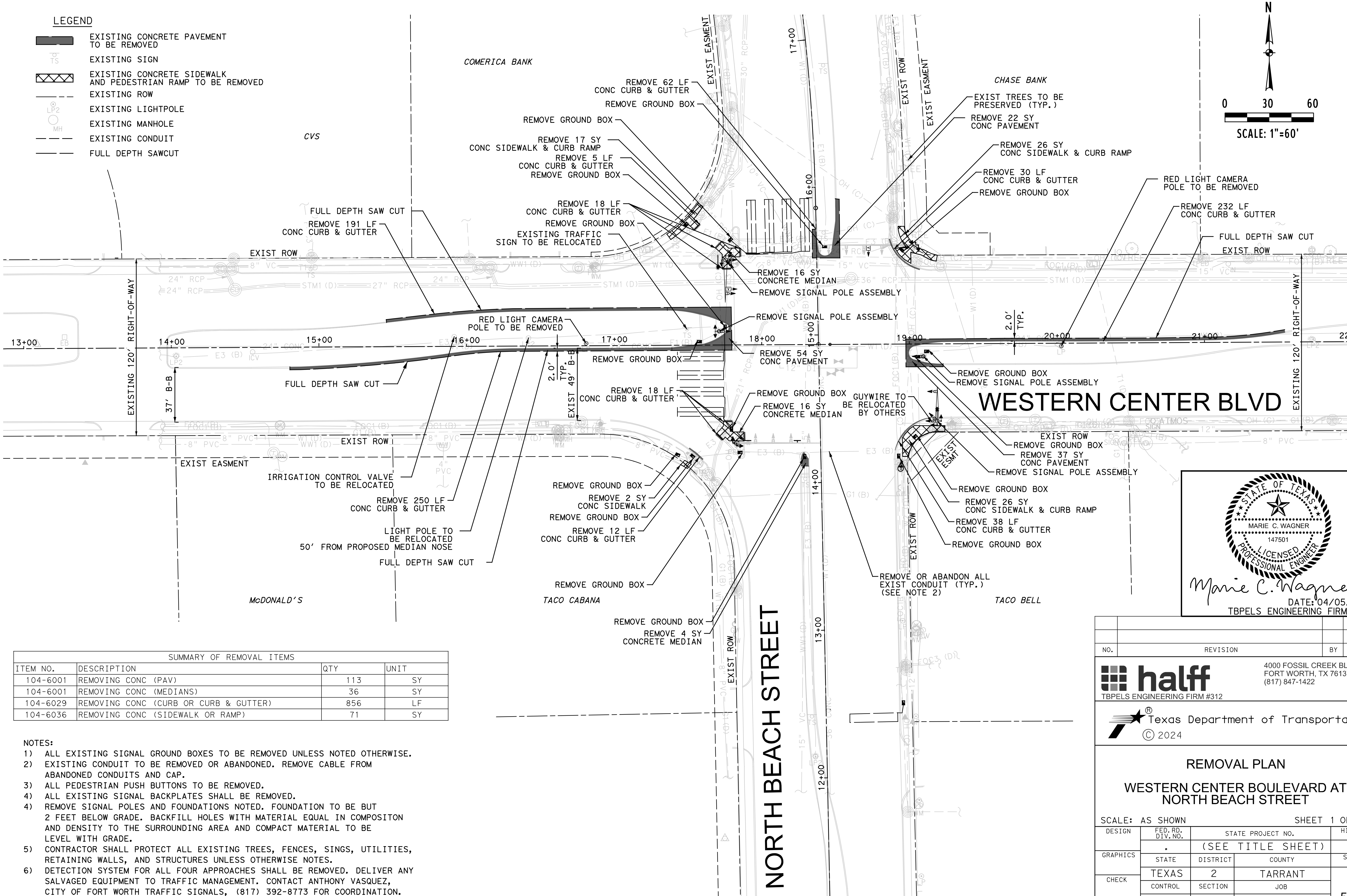
REVISIONS				
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03				49

DATE:
FILE:



LEGEND

- EXISTING CONCRETE PAVEMENT TO BE REMOVED
- EXISTING SIGN
- EXISTING CONCRETE SIDEWALK AND PEDESTRIAN RAMP TO BE REMOVED
- EXISTING ROW
- EXISTING LIGHTPOLE
- EXISTING MANHOLE
- EXISTING CONDUIT
- FULL DEPTH SAWCUT

SUMMARY OF REMOVAL ITEMS

ITEM NO.	DESCRIPTION	QTY	UNIT
104-6001	REMOVING CONC (PAV)	113	SY
104-6001	REMOVING CONC (MEDIANS)	36	SY
104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	856	LF
104-6036	REMOVING CONC (SIDEWALK OR RAMP)	71	SY

NOTES:

1) ALL EXISTING SIGNAL GROUND BOXES TO BE REMOVED UNLESS NOTED OTHERWISE.
2) EXISTING CONDUIT TO BE REMOVED OR ABANDONED. REMOVE CABLE FROM ABANDONED CONDUITS AND CAP.
3) ALL PEDESTRIAN PUSH BUTTONS TO BE REMOVED.
4) ALL EXISTING SIGNAL BACKPLATES SHALL BE REMOVED.
4) REMOVE SIGNAL POLES AND FOUNDATIONS NOTED. FOUNDATION TO BE BUT 2 FEET BELOW GRADE. BACKFILL HOLES WITH MATERIAL EQUAL IN COMPOSITON AND DENSITY TO THE SURROUNDING AREA AND COMPACT MATERIAL TO BE LEVEL WITH GRADE.
5) CONTRACTOR SHALL PROTECT ALL EXISTING TREES, FENCES, SINGS, UTILITIES, RETAINING WALLS, AND STRUCTURES UNLESS OTHERWISE NOTES.
6) DETECTION SYSTEM FOR ALL FOUR APPROACHES SHALL BE REMOVED. DELIVER ANY SALVAGED EQUIPMENT TO TRAFFIC MANAGEMENT. CONTACT ANTHONY VASQUEZ, CITY OF FORT WORTH TRAFFIC SIGNALS, (817) 392-8773 FOR COORDINATION.

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation
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REMOVAL PLAN

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN — SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	50
CHECK	0902	90	214, ETC.	

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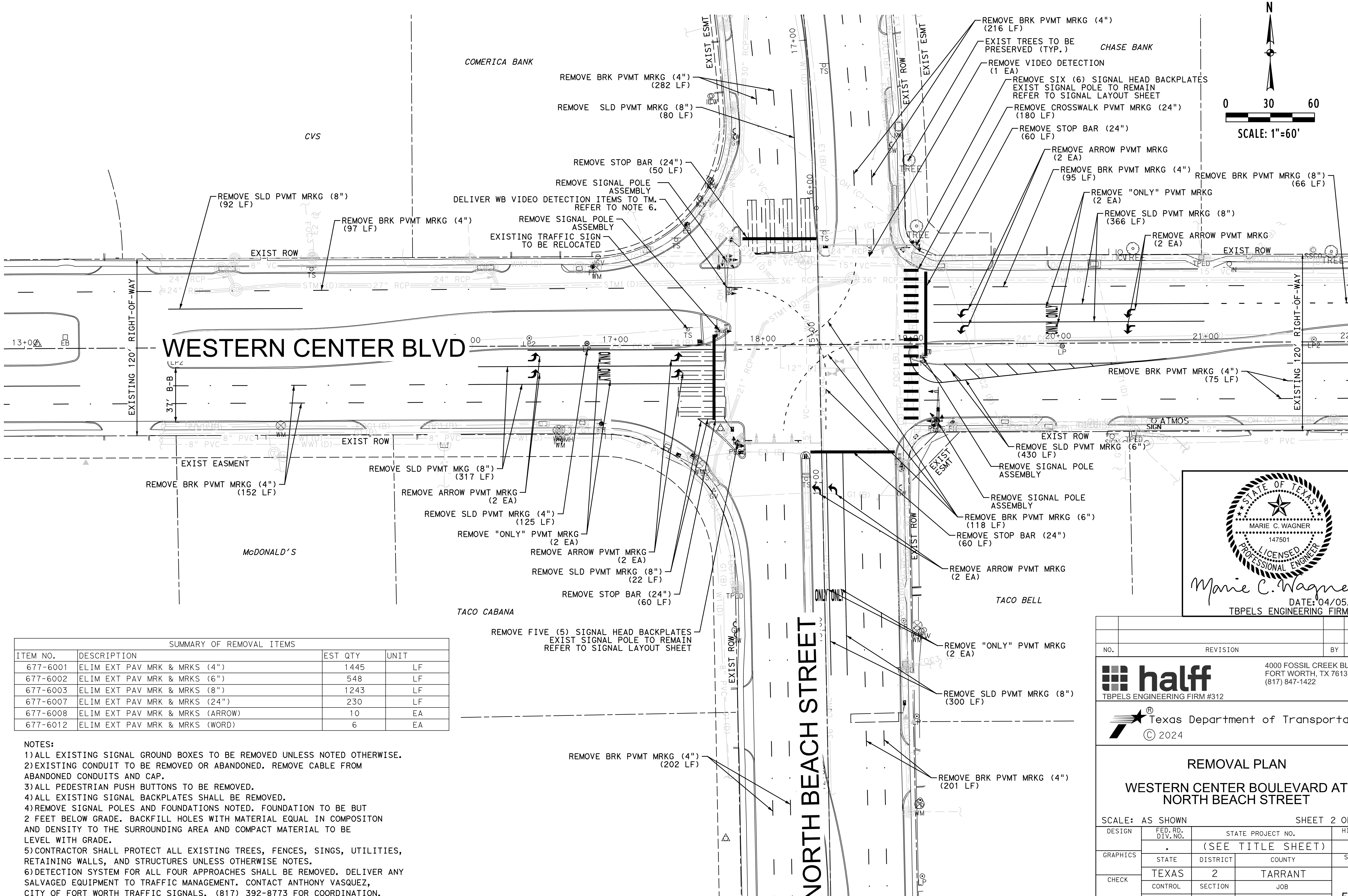


SUMMARY OF REMOVAL ITEMS			
ITEM NO.	DESCRIPTION	EST QTY	UNIT
677-6001	ELIM EXT PAV MRK & MRKS (4")	1445	LF
677-6002	ELIM EXT PAV MRK & MRKS (6")	548	LF
677-6003	ELIM EXT PAV MRK & MRKS (8")	1243	LF
677-6007	ELIM EXT PAV MRK & MRKS (24")	230	LF
677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	10	EA
677-6012	ELIM EXT PAV MRK & MRKS (WORD)	6	EA

NOTES:
1) ALL EXISTING SIGNAL GROUND BOXES TO BE REMOVED UNLESS NOTED OTHERWISE.
2) EXISTING CONDUIT TO BE REMOVED OR ABANDONED. REMOVE CABLE FROM ABANDONED CONDUITS AND CAP.
3) ALL PEDESTRIAN PUSH BUTTONS TO BE REMOVED.
4) ALL EXISTING SIGNAL BACKPLATES SHALL BE REMOVED.
5) REMOVE SIGNAL POLES AND FOUNDATIONS NOTED. FOUNDATION TO BE BUT 2 FEET BELOW GRADE. BACKFILL HOLES WITH MATERIAL EQUAL IN COMPOSITON AND DENSITY TO THE SURROUNDING AREA AND COMPACT MATERIAL TO BE LEVEL WITH GRADE.
5) CONTRACTOR SHALL PROTECT ALL EXISTING TREES, FENCES, SINGS, UTILITIES, RETAINING WALLS, AND STRUCTURES UNLESS OTHERWISE NOTES.
6) DETECTION SYSTEM FOR ALL FOUR APPROACHES SHALL BE REMOVED. DELIVER ANY SALVAGED EQUIPMENT TO TRAFFIC MANAGEMENT. CONTACT ANTHONY VASQUEZ, CITY OF FORT WORTH TRAFFIC SIGNALS, (817) 392-8773 FOR COORDINATION.

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

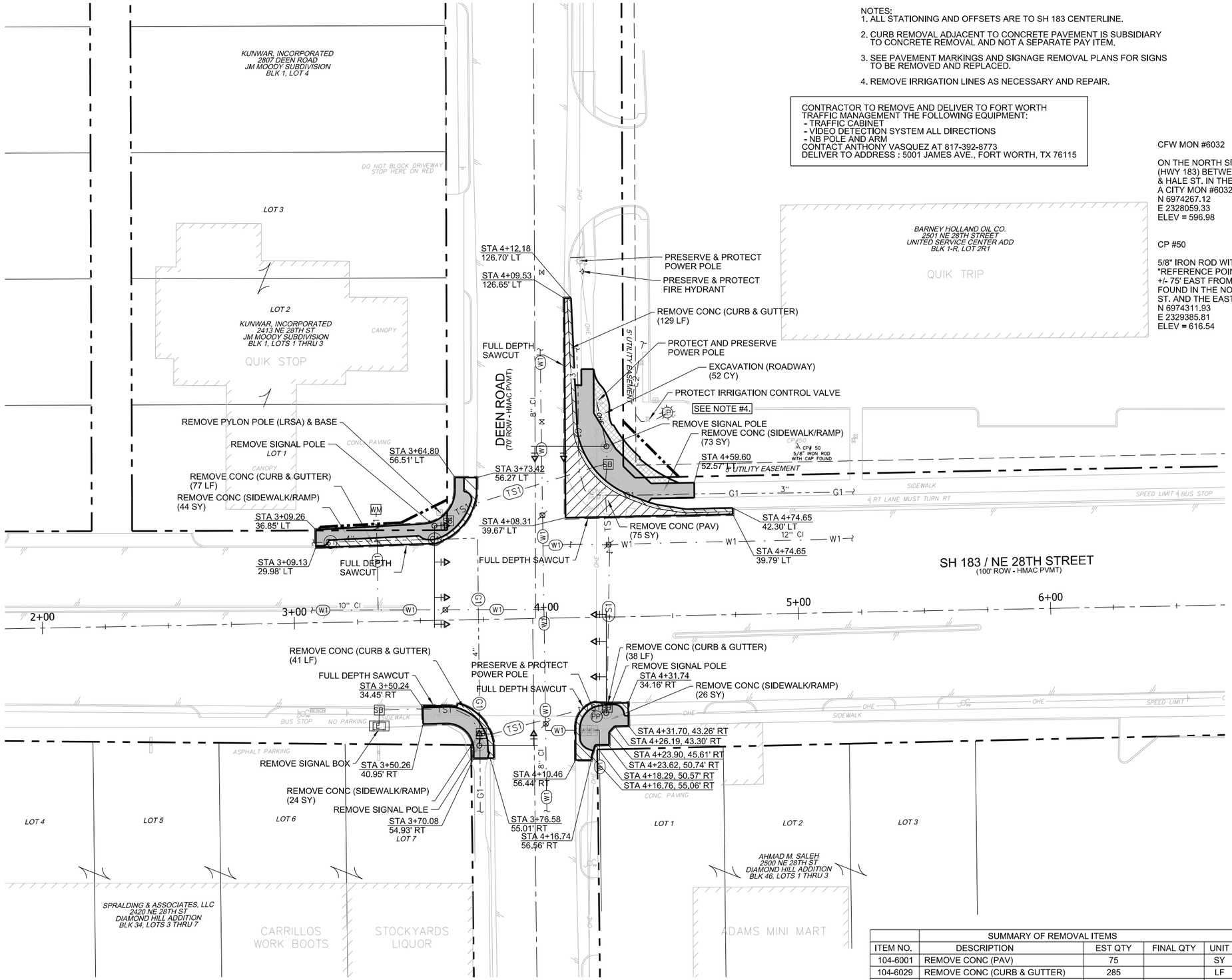
Texas Department of Transportation

REMOVAL PLAN

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN — SHEET 2 OF 2

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	51
CHECK	0902	90	214, ETC.	



NOTES:
1. ALL STATIONING AND OFFSETS ARE TO SH 183 CENTERLINE.
2. CURB REMOVAL ADJACENT TO CONCRETE PAVEMENT IS SUBSIDIARY TO CONCRETE REMOVAL AND NOT A SEPARATE PAY ITEM.
3. SEE PAVEMENT MARKINGS AND SIGNAGE REMOVAL PLANS FOR SIGNS TO BE REMOVED AND REPLACED.
4. REMOVE IRRIGATION LINES AS NECESSARY AND REPAIR.

CONTRACTOR TO REMOVE AND DELIVER TO FORT WORTH TRAFFIC MANAGEMENT THE FOLLOWING EQUIPMENT:
- TRAFFIC CABINET
- VIDEO DETECTION SYSTEM ALL DIRECTIONS
- NB POLE AND ARM

CONTACT ANTHONY VASQUEZ AT 817-392-8773
DELIVER TO ADDRESS : 5001 JAMES AVE., FORT WORTH, TX 76115

0 20 40 60
GRAPHIC SCALE IN FEET

PROJECT BENCHMARKS

CFW MON #6032

ON THE NORTH SIDE OF N.E. 28TH ST. (HWY 183) BETWEEN HUTCHINSON ST. & HALE ST. IN THE WEST END OF AN INLET
A CITY MON #6032 SET FLUSH IN INLET
N 6974267.12
E 2328059.33
ELEV = 596.98

CP #50

5/8" IRON ROD WITH CAP STAMPED "REFERENCE POINT" SET APPROX. +/- 75' EAST FROM A TRAFFIC SIGNAL FOUND IN THE NORTH R.O.W. OF N.E. 28TH ST. AND THE EAST R.O.W. OF DEEN RD.
N 6974311.93
E 2329385.81
ELEV = 616.54

CFW MON #88198

ON THE EAST CURB OF DEEN RD. 2.5' NORTH OF THE SOUTH CB OF LORAINE ST. IN THE NORTH END OF A 10' CURB INLET 1' OFF THE FACE OF THE CURB A CITY MON #88198 SET IN THE TOP OF THE CURB
N 6974747.396
E 2329294.857
ELEV = 619.29

CP #51

5/8" IRON ROD WITH CAP STAMPED "REFERENCE POINT" SET APPROX. +/- 313' NORTH OF THE INTERSECTION OF N.E. 28TH ST. AND DEEN RD. THEN +/- 25' EAST OF DEEN RD. BACK OF CURB
N 6974600.07
E 2329315.43
ELEV = 619.13

LEGEND

- CONCRETE W/ ASPHALT OVERLAY PAVEMENT REMOVAL
- CONCRETE CURB & GUTTER REMOVAL
- CONCRETE SIDEWALK/RAMP REMOVAL
- UNCLASSIFIED EXCAVATION

NOTE:
CONTRACTOR TO CONTACT CITY OF FORT WORTH WATER DEPARTMENT FIELD OPERATIONS 48 HOURS PRIOR TO CONSTRUCTION.
817-392-8296

SUMMARY OF REMOVAL ITEMS

ITEM NO.	DESCRIPTION	EST QTY	FINAL QTY	UNIT
104-6001	REMOVE CONC (PAV)	75		SY
104-6029	REMOVE CONC (CURB & GUTTER)	285		LF
104-6036	REMOVE CONC (SIDEWALK/RAMP)	168		SY
110-6001	EXCAVATION (ROADWAY)	23		CY
170-6001	IRRIGATION SYSTEM	1		LS
647-6003	REMOVE LRSA	1		EA
680-6004	REMOVING TRAFFIC SIGNALS	1		EA

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED PROFESSIONAL ENGINEER
04/05/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS + ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

REMOVAL PLAN PAVING
SH183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GES	TEXAS	2	TARRANT	52
CHECK	CONTROL	SECTION	JOB	
EAC	0902	90	214 ETC	
CHECK				
EAC				

3/28/2024
9:44:11 AM
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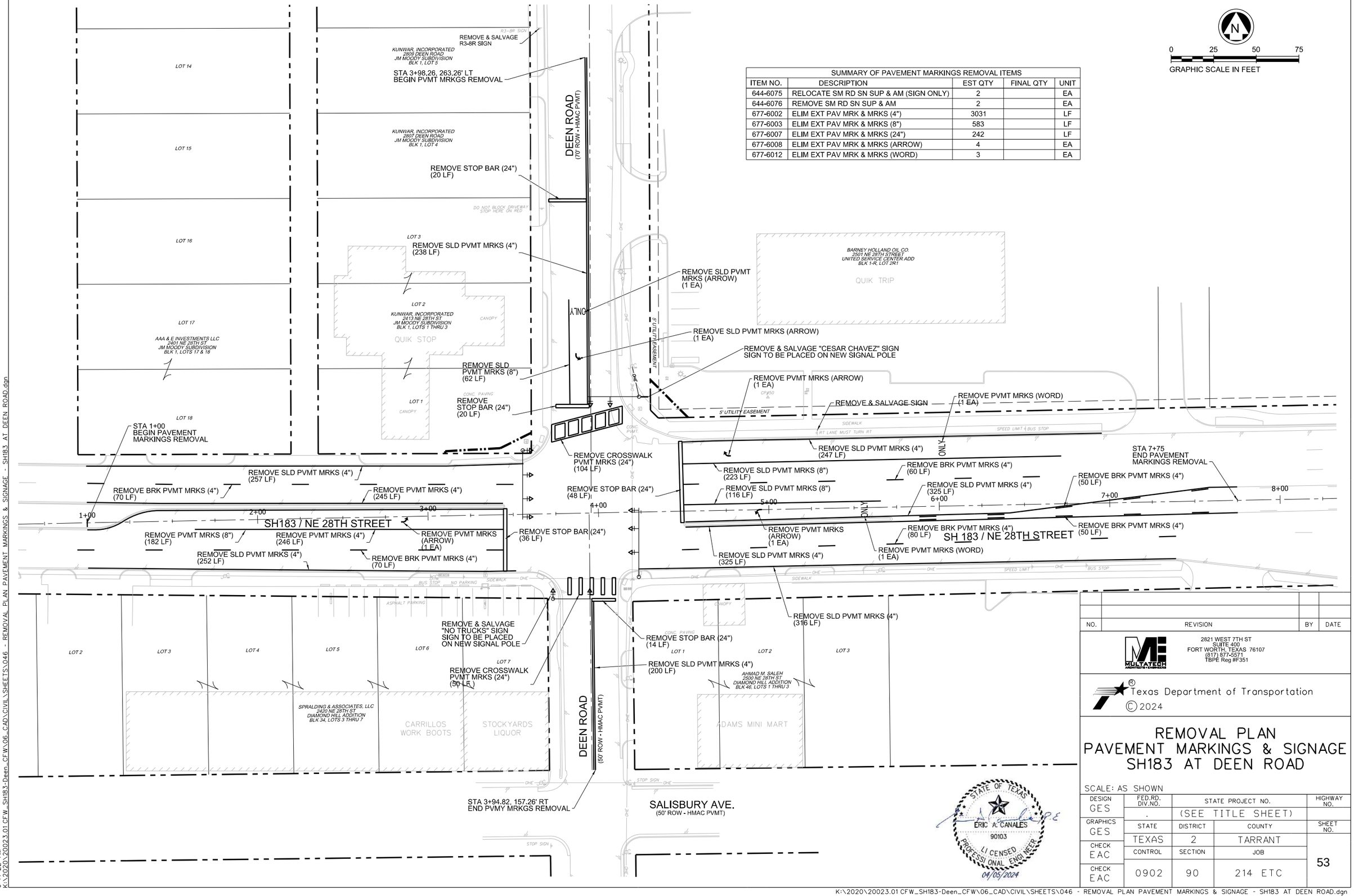

SUMMARY OF PAVEMENT MARKINGS REMOVAL ITEMS				
ITEM NO.	DESCRIPTION	EST QTY	FINAL QTY	UNIT
644-6075	RELOCATE SM RD SN SUP & AM (SIGN ONLY)	2		EA
644-6076	REMOVE SM RD SN SUP & AM	2		EA
677-6002	ELIM EXT PAV MRK & MRKS (4")	3031		LF
677-6003	ELIM EXT PAV MRK & MRKS (8")	583		LF
677-6007	ELIM EXT PAV MRK & MRKS (24")	242		LF
677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	4		EA
677-6012	ELIM EXT PAV MRK & MRKS (WORD)	3		EA

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

Texas Department of Transportation

REMOVAL PLAN
PAVEMENT MARKINGS & SIGNAGE
SH183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GES	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
EAC				53
CHECK	0902	90	214 ETC	
EAC				

STATE OF TEXAS
ERIC A CANALES
90103
LICENSED
PROFESSIONAL ENGINEER
04/05/2024

3/28/2024
9:47:22 AM
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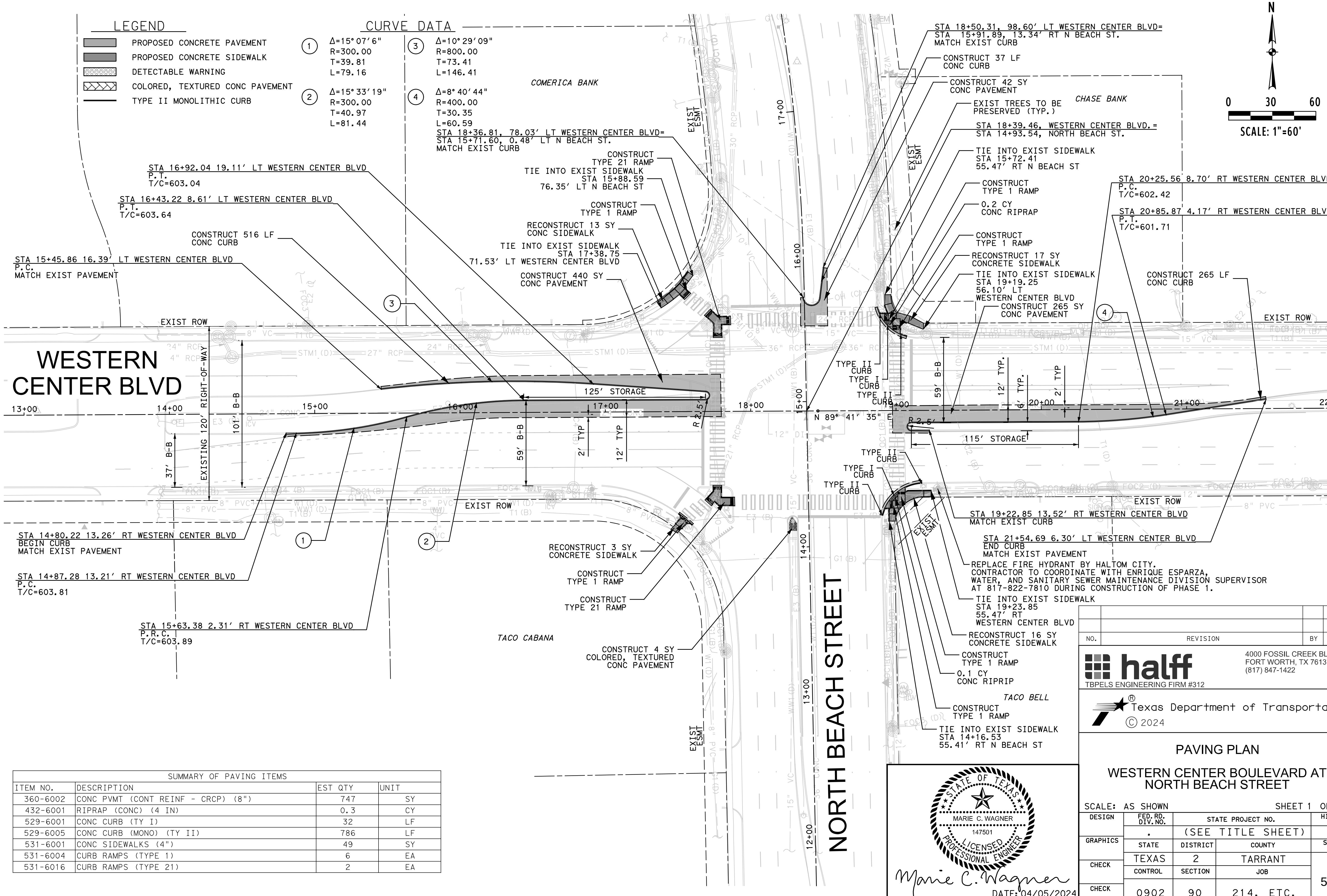
K:\2020\20023.01 CFW_SH183-Deen_CFW\06_CAD\CIVIL\SHEETS\046 - REMOVAL PLAN PAVEMENT MARKINGS & SIGNAGE - SH183 AT DEEN ROAD.dgn

LEGEND

(dark fill)	PROPOSED CONCRETE PAVEMENT
(dark fill)	PROPOSED CONCRETE SIDEWALK
(dotted fill)	DETECTABLE WARNING
(hatched fill)	COLORED, TEXTURED CONC PAVEMENT
(line)	TYPE II MONOLITHIC CURB

CURVE DATA

1	Δ=15°07′6″ R=300.00 T=39.81 L=79.16	3	Δ=10°29′09″ R=800.00 T=73.41 L=146.41
2	Δ=15°33′19″ R=300.00 T=40.97 L=81.44	4	Δ=8°40′44″ R=400.00 T=30.35 L=60.59



COMERICA BANK
CHASE BANK
TACO CABANA
TACO BELL
WESTERN CENTER BLVD
NORTH BEACH STREET
N
0 30 60
SCALE: 1"=60'
EXIST ROW
EXISTING 120′ RIGHT-OF-WAY
101′ B-B
37′ B-B
59′ B-B
2′ TYP
12′ TYP
6′ TYP.
125′ STORAGE
115′ STORAGE
N 89° 41′ 35″ E
R 2.5′
13+00
14+00
15+00
16+00
17+00
18+00
20+00
21+00
22+
12+00
13+00
14+00
15+00
16+00
17+00
EXIST ESMT
STA 18+50.31, 98.60′ LT WESTERN CENTER BLVD= STA 15+91.89, 13.34′ RT N BEACH ST. MATCH EXIST CURB
CONSTRUCT 37 LF CONC CURB
CONSTRUCT 42 SY CONC PAVEMENT
EXIST TREES TO BE PRESERVED (TYP.)
STA 18+39.46, WESTERN CENTER BLVD.= STA 14+93.54, NORTH BEACH ST.
TIE INTO EXIST SIDEWALK STA 15+72.41 55.47′ RT N BEACH ST
CONSTRUCT TYPE 1 RAMP
0.2 CY CONC RIPRAP
CONSTRUCT TYPE 1 RAMP
RECONSTRUCT 17 SY CONCRETE SIDEWALK
TIE INTO EXIST SIDEWALK STA 19+19.25 56.10′ LT WESTERN CENTER BLVD
CONSTRUCT 265 SY CONC PAVEMENT
STA 20+25.56 8.70′ RT WESTERN CENTER BLVD P.C. T/C=602.42
STA 20+85.87 4.17′ RT WESTERN CENTER BLVD P.T. T/C=601.71
CONSTRUCT 265 LF CONC CURB
STA 18+36.81, 78.03′ LT WESTERN CENTER BLVD= STA 15+71.60, 0.48′ LT N BEACH ST. MATCH EXIST CURB
CONSTRUCT TYPE 21 RAMP
TIE INTO EXIST SIDEWALK STA 15+88.59 76.35′ LT N BEACH ST
CONSTRUCT TYPE 1 RAMP
RECONSTRUCT 13 SY CONC SIDEWALK
TIE INTO EXIST SIDEWALK STA 17+38.75 71.53′ LT WESTERN CENTER BLVD
CONSTRUCT 440 SY CONC PAVEMENT
STA 16+92.04 19.11′ LT WESTERN CENTER BLVD P.T. T/C=603.04
STA 16+43.22 8.61′ LT WESTERN CENTER BLVD P.T. T/C=603.64
CONSTRUCT 516 LF CONC CURB
STA 15+45.86 16.39′ LT WESTERN CENTER BLVD P.C. MATCH EXIST PAVEMENT
TYPE II CURB
TYPE I CURB
TYPE II CURB
STA 14+80.22 13.26′ RT WESTERN CENTER BLVD BEGIN CURB MATCH EXIST PAVEMENT
STA 14+87.28 13.21′ RT WESTERN CENTER BLVD P.C. T/C=603.81
STA 15+63.38 2.31′ RT WESTERN CENTER BLVD P.R.C. T/C=603.89
RECONSTRUCT 3 SY CONCRETE SIDEWALK
CONSTRUCT TYPE 1 RAMP
CONSTRUCT TYPE 21 RAMP
CONSTRUCT 4 SY COLORED, TEXTURED CONC PAVEMENT
STA 19+22.85 13.52′ RT WESTERN CENTER BLVD MATCH EXIST CURB
STA 21+54.69 6.30′ LT WESTERN CENTER BLVD END CURB MATCH EXIST PAVEMENT
REPLACE FIRE HYDRANT BY HALTOM CITY. CONTRACTOR TO COORDINATE WITH ENRIQUE ESPARZA, WATER, AND SANITARY SEWER MAINTENANCE DIVISION SUPERVISOR AT 817-822-7810 DURING CONSTRUCTION OF PHASE 1.
TIE INTO EXIST SIDEWALK STA 19+23.85 55.47′ RT WESTERN CENTER BLVD
RECONSTRUCT 16 SY CONCRETE SIDEWALK
CONSTRUCT TYPE 1 RAMP
0.1 CY CONC RIPRAP
CONSTRUCT TYPE 1 RAMP
TIE INTO EXIST SIDEWALK STA 14+16.53 55.41′ RT N BEACH ST

SUMMARY OF PAVING ITEMS

ITEM NO.	DESCRIPTION	EST QTY	UNIT
360-6002	CONC PVMT (CONT REINF - CRCP) (8″)	747	SY
432-6001	RIPRAP (CONC) (4 IN)	0.3	CY
529-6001	CONC CURB (TY I)	32	LF
529-6005	CONC CURB (MONO) (TY II)	786	LF
531-6001	CONC SIDEWALKS (4″)	49	SY
531-6004	CURB RAMPS (TYPE 1)	6	EA
531-6016	CURB RAMPS (TYPE 21)	2	EA

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

PAVING PLAN

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
GRAPHICS	.	(SEE TITLE SHEET)		
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	54
	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

FTW WAGNER-4219
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ROW AND MEDIANS

1. CONTRACTOR WILL USE CLEAN TOP SOIL WITH NO ROCKS TO BACK FILL BEFORE LAYING SOD OR HYDRO SEEDING.
2. ROCKS LARGER THAN 1" SHALL BE REMOVED IN AREAS TO BE GRASSES, IF EXISTING TOP SOIL SHALL BE USED.
3. ALL DIRT MOUNDS SHALL BE REMOVED FROM ROWS, CORNER CLIPS AND TRAFFIC DIVIDERS PRIOR TO SEEDING AFTER CONSTRUCTION IS COMPLETE.
4. ANY ROWS, CORNER CLIPS AND TRAFIC DIVIDERS THAT WERE DISTURBED DURING CONSTRUCTION WILL BE PUT BACK IN THEIR ORIGINAL STATE OR BETTER.
5. IN THE EVENT GRASS HAS BEEN DISTURBED IN THE ROWS, CORNER CLIPS OR TRAFFIC DIVIDERS, CONTRACTOR WILL RESTORE GRASS. GRASS WILL BE ESTABLISHED AT 100% BY THE CONTRACTOR.
6. ROWS, CORNER CLIPS AND TRAFFIC DIVIDERS WILL BE MAINTAINED AND MOWED BY THE CONTRACTOR FOR HIGH GRASS AND WEEDS EVERY 14 DAYS.

(THE DEPARTMENT OF PARK AND RECREATION SHALL HAVE JURISDICTION AUTHORITY, CONTROL AND SUPERVISION OVER ALL TREES, PLANTS AND SHRUBS PLANTED OR GROWING IN OR UPON THE PUBLIC HIGHWAYS AND PUBLIC PLACES IN THE CITY, AND THE PLANTING, REMOVAL, CARE, MAINTENANCE AND PROTECTION THEREOF) (CODE 1964, 36-1) (ORD. 11541, 1(c), PASSED 4-12-1994)

0 20 40 60

GRAPHIC SCALE IN FEET

PROJECT BENCHMARKS

CFW MON #6032

ON THE NORTH SIDE OF N.E. 28TH ST. (HWY 183) BETWEEN HUTCHINSON ST. & HALE ST. IN THE WEST END OF AN INLET
A CITY MON #6032 SET FLUSH IN INLET
N 6974267.12
E 2328059.33
ELEV = 596.98

CP #50

5/8" IRON ROD WITH CAP STAMPED "REFERENCE POINT" SET APPROX. +/- 75' EAST FROM A TRAFFIC SIGNAL FOUND IN THE NORTH R.O.W. OF N.E. 28TH ST. AND THE EAST R.O.W. OF DEEN RD.
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E 2329385.81
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E 2329294.857
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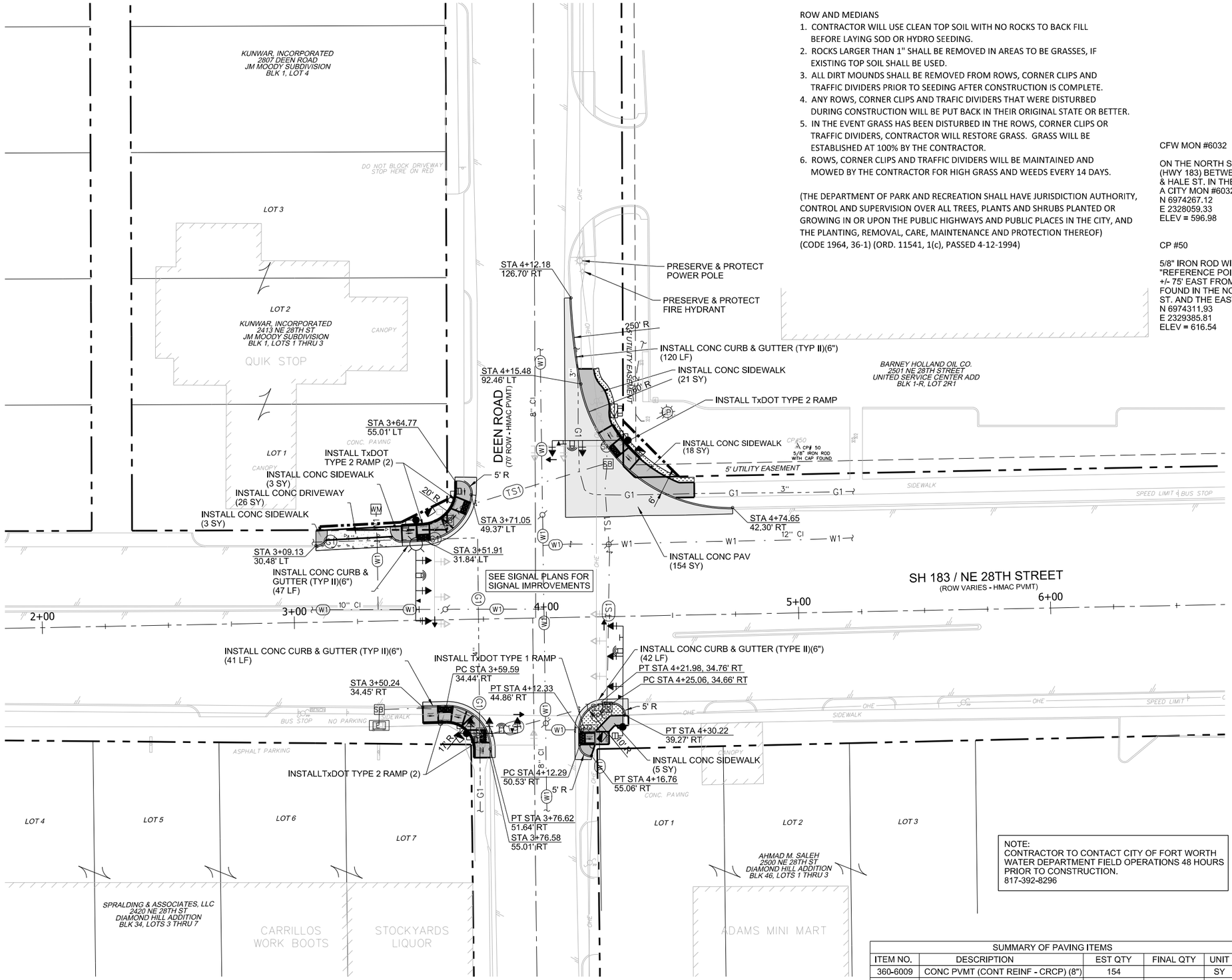
N 6974600.07
E 2329315.43
ELEV = 619.13

LEGEND

- CONCRETE PAVEMENT
- CONCRETE SIDEWALK/RAMP PAVEMENT
- CONCRETE DRIVEWAY
- CURB & GUTTER (TYPE II)(6")
- BLOCK SODDING



NOTE:
CONTRACTOR TO CONTACT CITY OF FORT WORTH WATER DEPARTMENT FIELD OPERATIONS 48 HOURS PRIOR TO CONSTRUCTION.
817-392-8296

SUMMARY OF PAVING ITEMS

ITEM NO.	DESCRIPTION	EST QTY	FINAL QTY	UNIT
360-6009	CONC PVMT (CONT REINF - CRCP) (8")	154		SY
360-6028	CONC PVMT (DRIVEWAY)(6")	26		SY
529-6008	CONC CURB & GUTTER (TYP II)(6")	250		LF
531-6001	CONC SIDEWALKS (4")	50		SY
531-6004	CURB RAMPS (TYPE 1)	1		EA
531-6005	CURB RAMPS (TYPE 2)	5		SY

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED
PROFESSIONAL ENGINEER
04/05/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS • ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

PAVING PLAN
SH183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GES	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	55
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CHECK				
EAC				

4/2/2024
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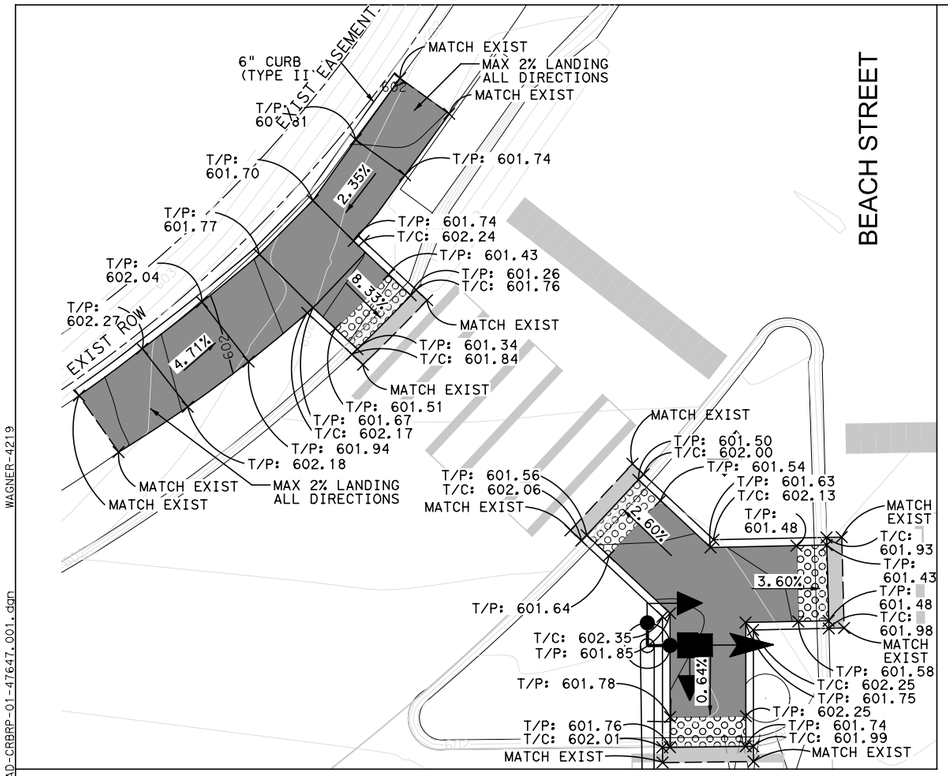
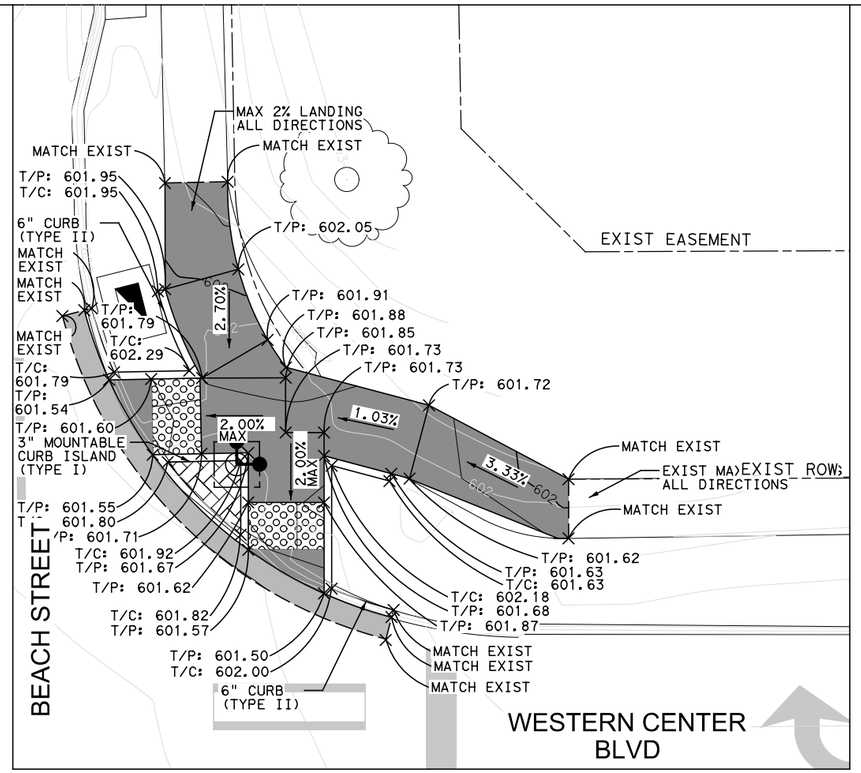
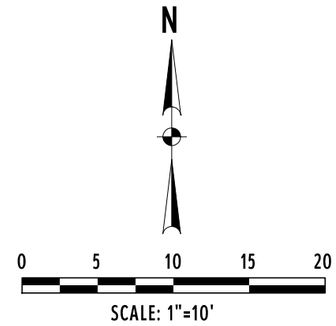
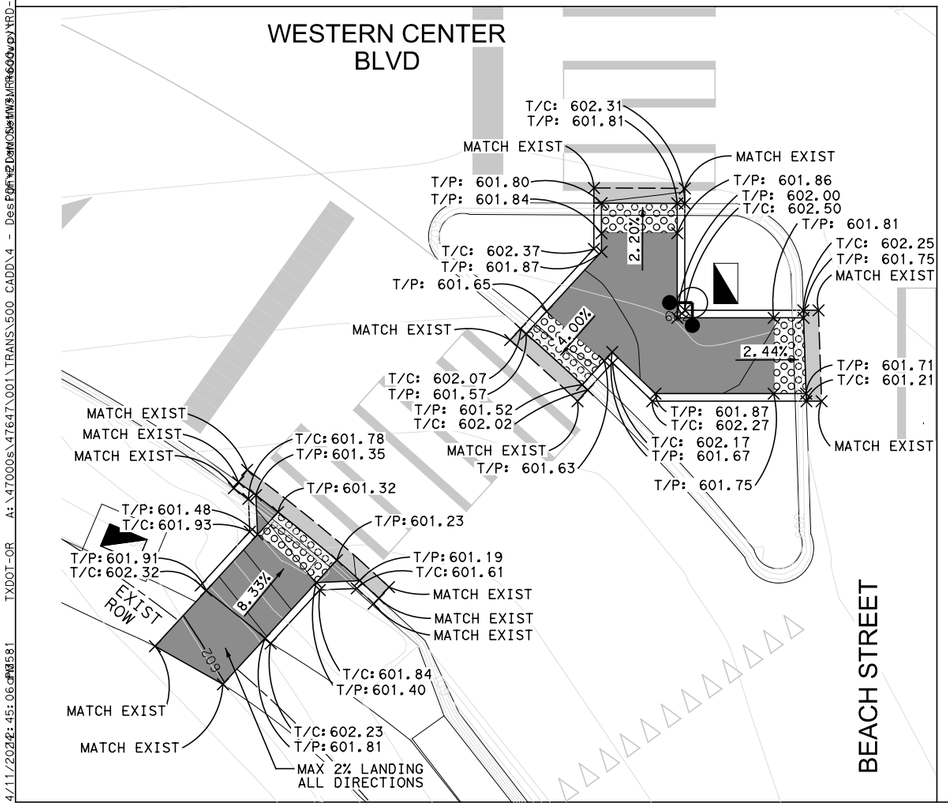


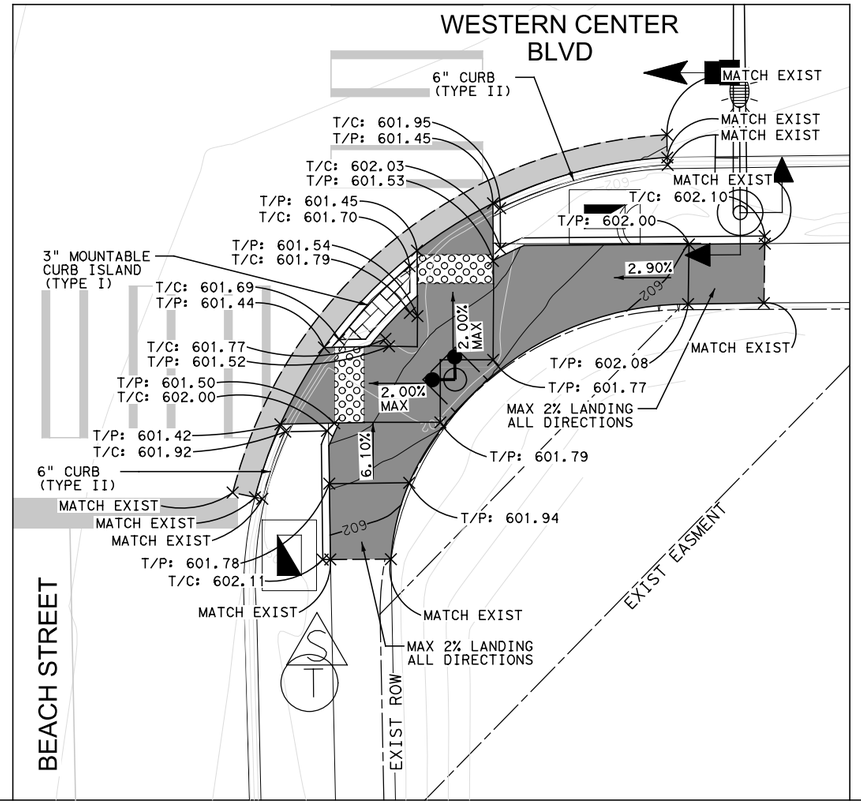


LEGEND

- PROPOSED CONCRETE SIDEWALK
- DETECTABLE WARNING
- COLORED, TEXTURED CONC PAVEMENT
- CURB AND GUTTER
- T/C 595.00 PROPOSED TOP OF CURB ELEVATION
- T/P 595.00 PROPOSED TOP OF PAVEMENT ELEVATION
- 2.0% DIRECTION SLOPE INDICATION







STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner

DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

CURB RAMP GRADING PLAN

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	56
	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

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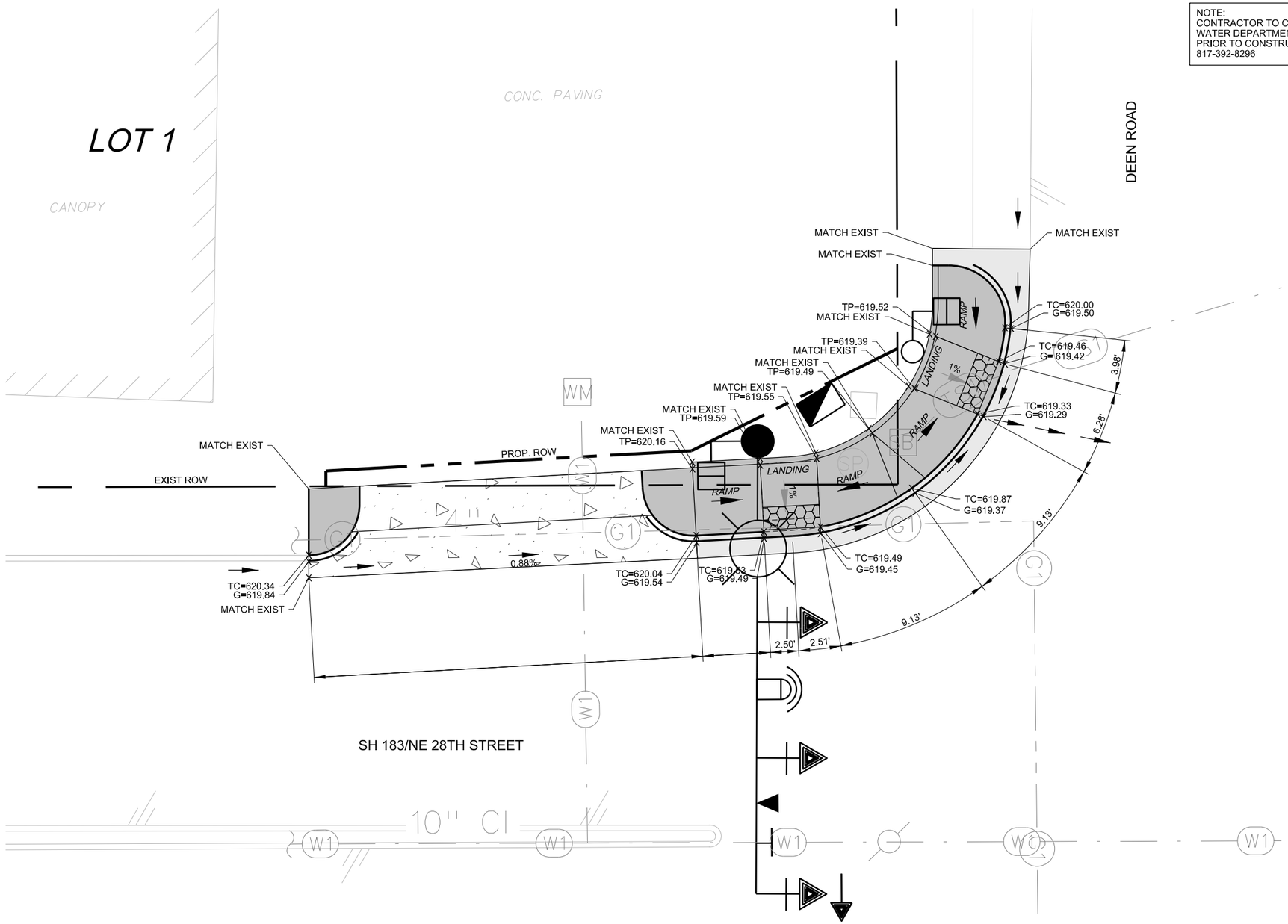

NOTE:
CONTRACTOR TO CONTACT CITY OF FORT WORTH WATER DEPARTMENT FIELD OPERATIONS 48 HOURS PRIOR TO CONSTRUCTION.
817-392-8296

0 5 10 15
GRAPHIC SCALE IN FEET

PROJECT BENCHMARKS

CFW MON #88198

ON THE EAST CURB OF DEEN RD. 2.5' NORTH OF THE SOUTH CB OF LORAINE ST. IN THE NORTH END OF A 10' CURB INLET 1' OFF THE FACE OF THE CURB A CITY MON #88198
SET IN THE TOP OF THE CURB
N 6974747.396
E 2329294.857
ELEV = 619.29

CP #51

5/8" IRON ROD WITH CAP STAMPED "REFERENCE POINT" SET APPROX. +/- 313' NORTH OF THE INTERSECTION OF N.E. 28TH ST. AND DEEN RD. THEN +/- 25' EAST OF DEEN RD. BACK OF CURB
N 6974600.07
E 2329315.43
ELEV = 619.13

LEGEND

- CONCRETE PAVEMENT
- CONCRETE SIDEWALK/RAMP PAVEMENT
- CONCRETE DRIVEWAY
- CURB & GUTTER (TYPE II)(6")
- BLOCK SODDING

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED
PROFESSIONAL ENGINEER
04/05/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS + ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

CURB RAMP GRADING PLAN
SH183 AT DEEN ROAD
NW CORNER

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS GES	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK EAC	CONTROL	SECTION	JOB	
CHECK EAC	0902	90	214 ETC	57

3/28/2024
9:49:41 AM
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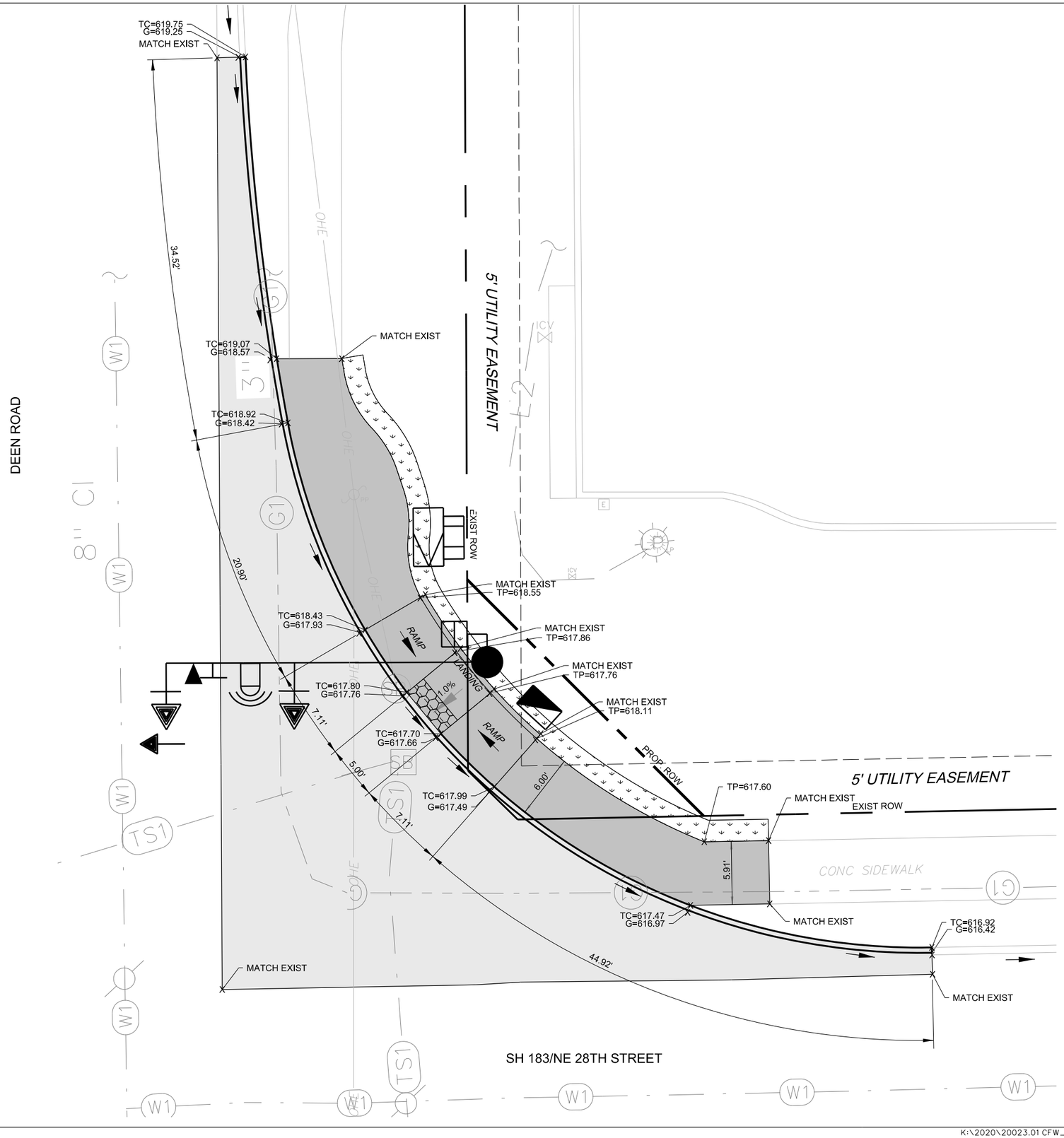

0 5 10 15

GRAPHIC SCALE IN FEET

PROJECT BENCHMARKS

CFW MON #6032

ON THE NORTH SIDE OF N.E. 28TH ST. (HWY 183) BETWEEN HUTCHINSON ST. & HALE ST. IN THE WEST END OF AN INLET A CITY MON #6032 SET FLUSH IN INLET
N 6974267.12
E 2328059.33
ELEV = 596.98

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ON THE EAST CURB OF DEEN RD. 2.5' NORTH OF THE SOUTH CB OF LORAINE ST. IN THE NORTH END OF A 10' CURB INLET 1' OFF THE FACE OF THE CURB A CITY MON #88198 SET IN THE TOP OF THE CURB
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CP #50

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ELEV = 616.54

CP #51

5/8" IRON ROD WITH CAP STAMPED "REFERENCE POINT" SET APPROX. +/- 313' NORTH OF THE INTERSECTION OF N.E. 28TH ST. AND DEEN RD. THEN +/- 25' EAST OF DEEN RD. BACK OF CURB
N 6974600.07
E 2329315.43
ELEV = 619.13

LEGEND

- CONCRETE PAVEMENT
- CONCRETE SIDEWALK/RAMP PAVEMENT
- CURB & GUTTER (TYPE II)(6")
- BLOCK SODDING

NOTE:
CONTRACTOR TO CONTACT CITY OF FORT WORTH WATER DEPARTMENT FIELD OPERATIONS 48 HOURS PRIOR TO CONSTRUCTION.
817-392-8296

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED PROFESSIONAL ENGINEER
04/05/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS • ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

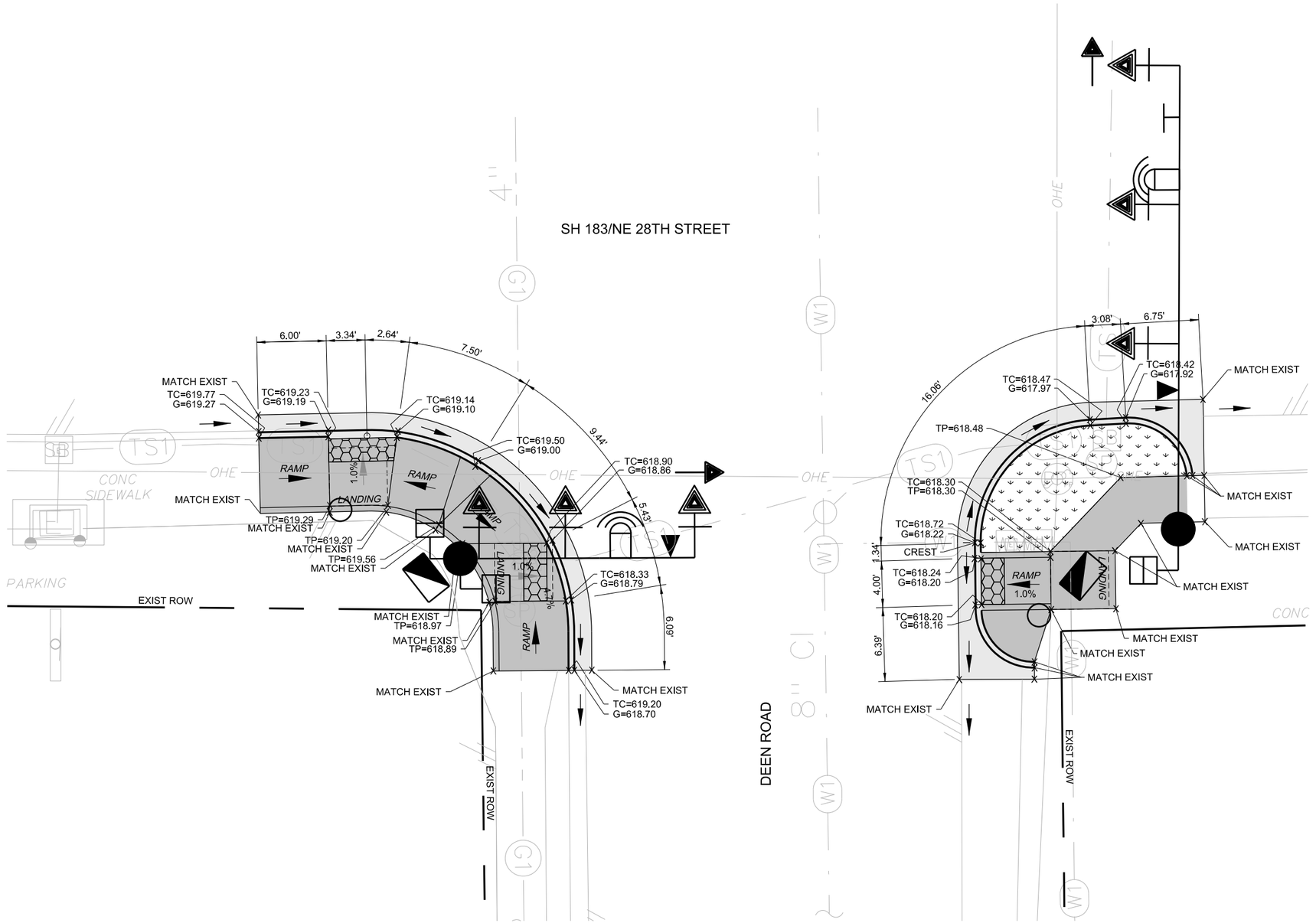
CURB RAMP GRADING PLAN SH183 AT DEEN ROAD NE CORNER

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GES	TEXAS	2	TARRANT	58
CHECK	CONTROL	SECTION	JOB	
EAC	0902	90	214 ETC	
CHECK				
EAC				

3/28/2024
9:53:05 AM
K:\2020\20023.01 CFW_SH183-Deen_CFW\06_CAD\CIVIL\SHEETS\051 - CURB RAMP GRADING PLAN - SH183 AT DEEN ROAD NE CORNER.dgn

K:\2020\20023.01 CFW_SH183-Deen_CFW\06_CAD\CIVIL\SHEETS\051 - CURB RAMP GRADING PLAN - SH183 AT DEEN ROAD NE CORNER.dgn



0 5 10 15

GRAPHIC SCALE IN FEET

PROJECT BENCHMARKS

CFW MON #6032

ON THE NORTH SIDE OF N.E. 28TH ST. (HWY 183) BETWEEN HUTCHINSON ST. & HALE ST. IN THE WEST END OF AN INLET
A CITY MON #6032 SET FLUSH IN INLET
N 6974267.12
E 2328059.33
ELEV = 596.98

CFW MON #88198

ON THE EAST CURB OF DEEN RD. 2.5' NORTH OF THE SOUTH CB OF LORAINE ST. IN THE NORTH END OF A 10' CURB INLET 1' OFF THE FACE OF THE CURB A CITY MON #88198 SET IN THE TOP OF THE CURB
N 6974747.396
E 2329294.857
ELEV = 619.29

CP #50

5/8" IRON ROD WITH CAP STAMPED "REFERENCE POINT" SET APPROX. +/- 75' EAST FROM A TRAFFIC SIGNAL FOUND IN THE NORTH R.O.W. OF N.E. 28TH ST. AND THE EAST R.O.W. OF DEEN RD.
N 6974311.93
E 2329385.81
ELEV = 616.54

CP #51

5/8" IRON ROD WITH CAP STAMPED "REFERENCE POINT" SET APPROX. +/- 313' NORTH OF THE INTERSECTION OF N.E. 28TH ST. AND DEEN RD. THEN +/- 25' EAST OF DEEN RD. BACK OF CURB
N 6974600.07
E 2329315.43
ELEV = 619.13

LEGEND

- CONCRETE PAVEMENT
- CONCRETE SIDEWALK/RAMP PAVEMENT
- CURB & GUTTER (TYPE II)(6")
- BLOCK SODDING

NOTE:
CONTRACTOR TO CONTACT CITY OF FORT WORTH WATER DEPARTMENT FIELD OPERATIONS 48 HOURS PRIOR TO CONSTRUCTION.
817-392-8296

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED PROFESSIONAL ENGINEER
04/05/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS + ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

CURB RAMP GRADING PLAN SH183 AT DEEN ROAD SW AND SE CORNERS

SCALE: AS SHOWN

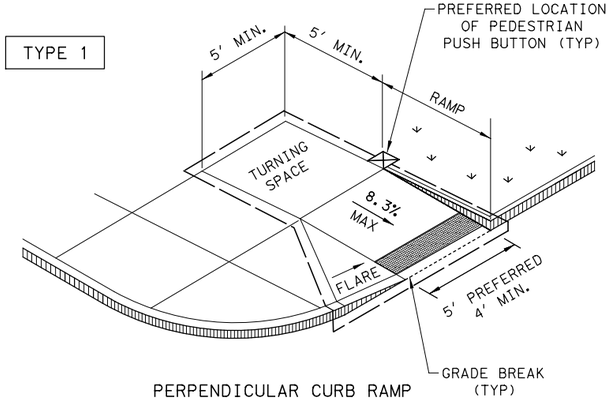
DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS GES	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK EAC	CONTROL	SECTION	JOB	59
CHECK EAC	0902	90	214 ETC	

3/28/2024
10:00:33 AM
K:\2020\20023.01 CFW_SH183-Deen_CFW\06_CAD\CIVIL\SHEETS\052 - CURB RAMP GRADING PLAN - SH183 AT DEEN ROAD SW AND SE CORNERS.dgn

K:\2020\20023.01 CFW_SH183-Deen_CFW\06_CAD\CIVIL\SHEETS\052 - CURB RAMP GRADING PLAN - SH183 AT DEEN ROAD SW AND SE CORNERS.dgn

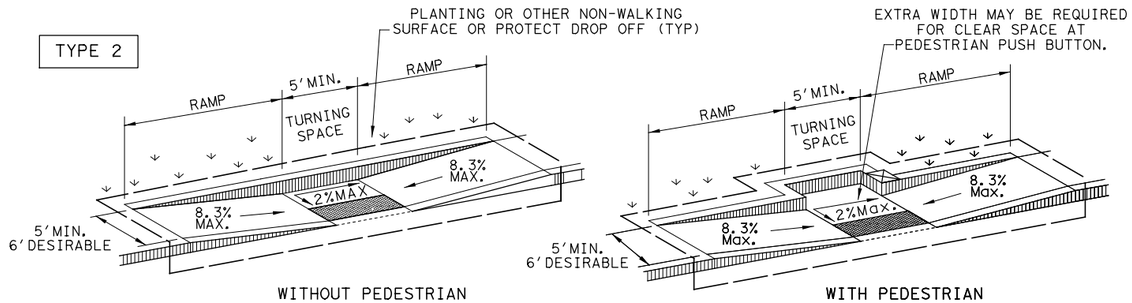
DATE:
FILE:

TYPE 1



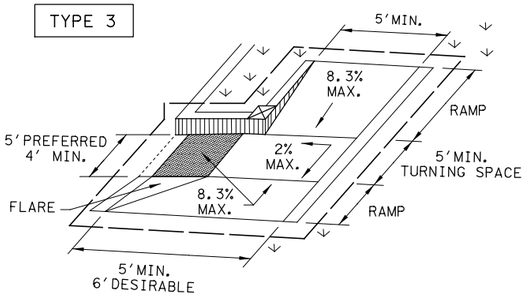
PERPENDICULAR CURB RAMP

TYPE 2

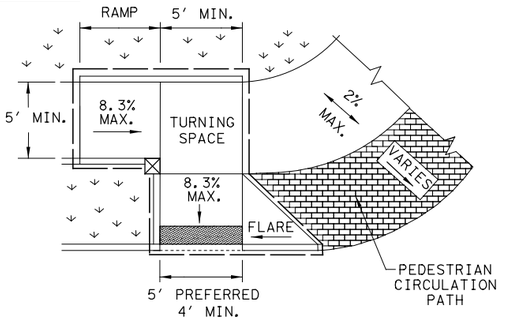


PARALLEL CURB RAMP

TYPE 3

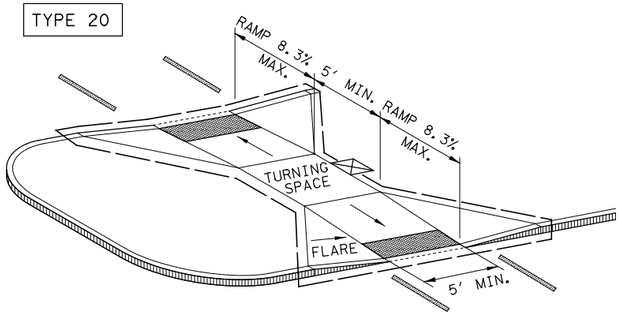


TYPE 6



COMBINATION CURB RAMPS

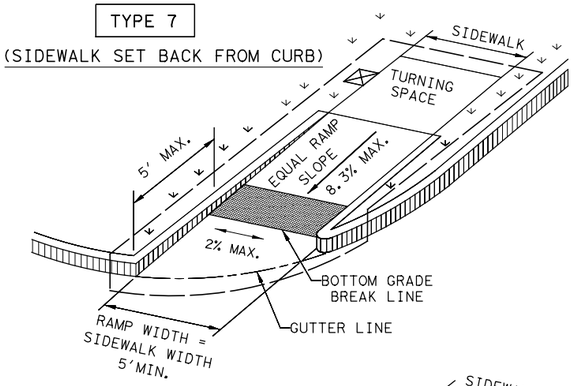
TYPE 20



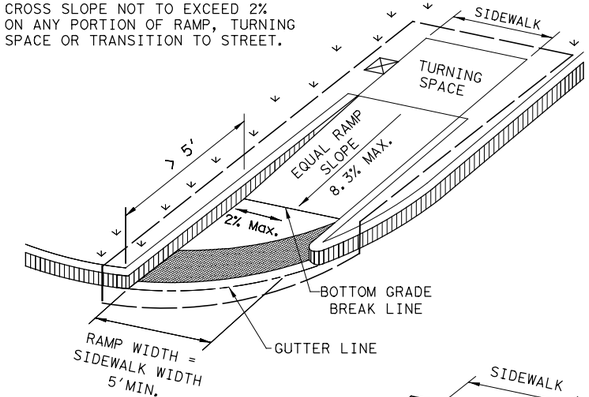
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

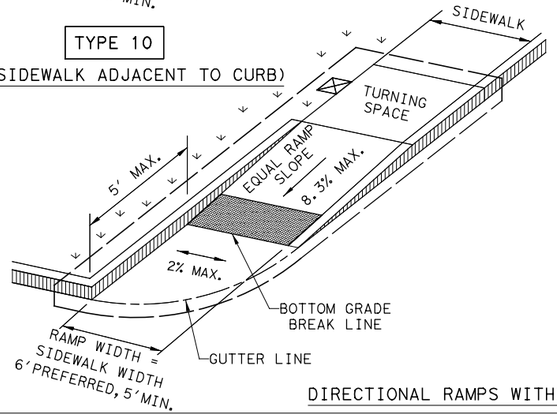


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

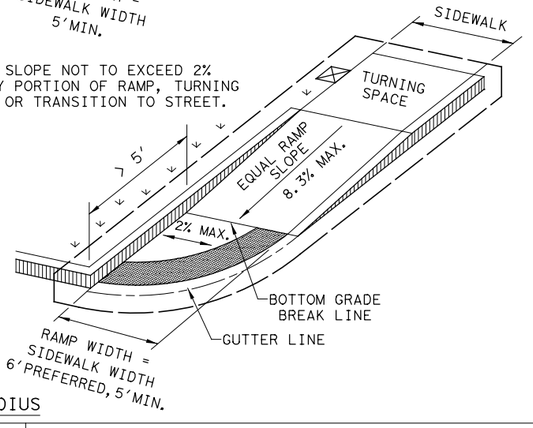


TYPE 10

(SIDEWALK ADJACENT TO CURB)

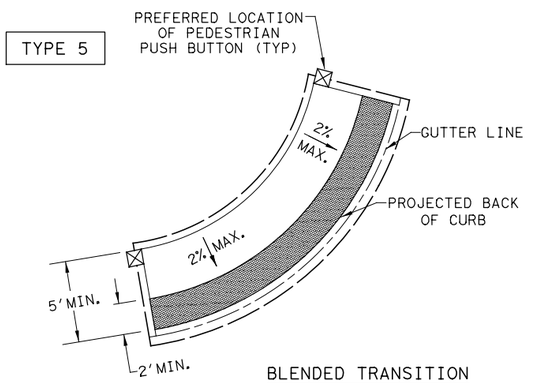


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

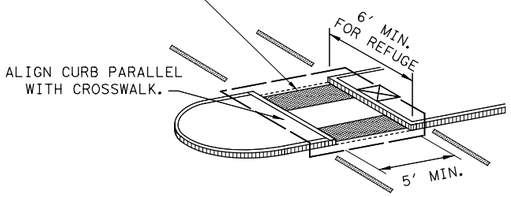
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

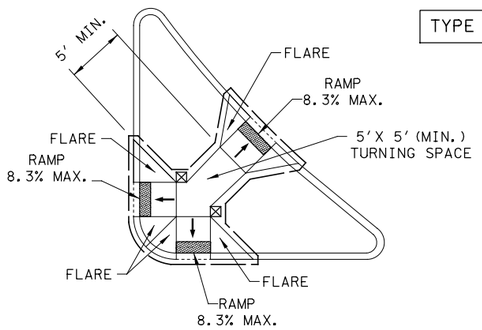
TYPE 21

INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.



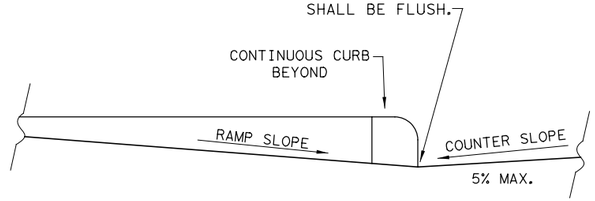
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED 08,2005 REVISED 06,2012 REVISED 01,2018				
	DIST	COUNTY		SHEET NO.
				60

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5′. Where the sidewalk is adjacent to the back of curb, a 6′ sidewalk width is desirable. Where a 5′ sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4′ for short distances. 5′x 5′ passing areas at intervals not to exceed 200′ are required.
5. Turning Spaces shall be 5′x 5′ minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4′x 4′ wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6′ wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5′x 5′ landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicaible standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

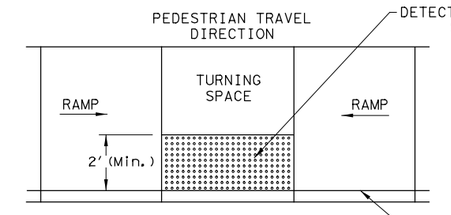
DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

SIDEWALKS

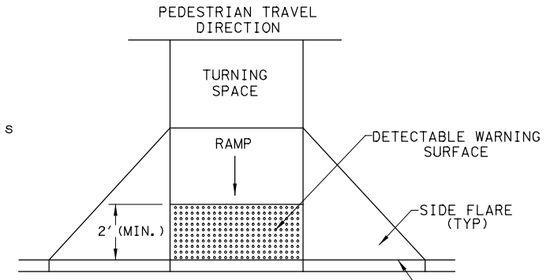
27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

DETECTABLE WARNING SURFACE DETAILS



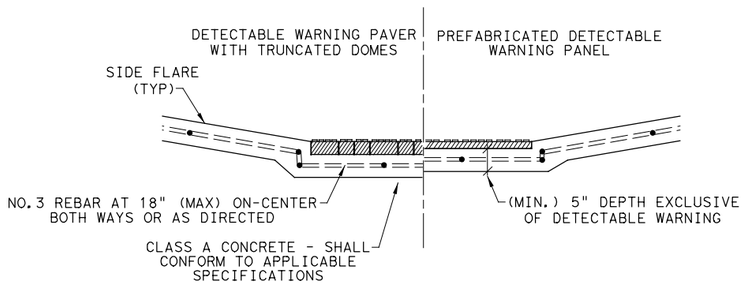
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



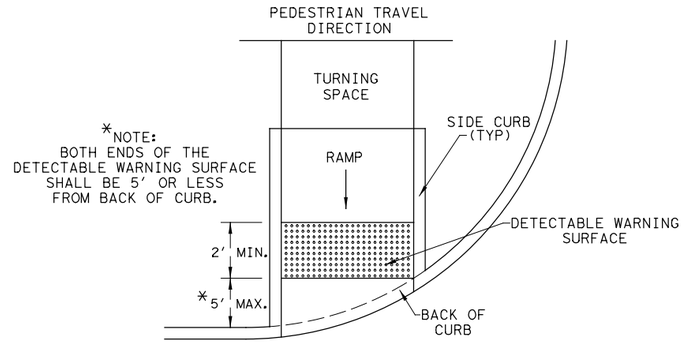
PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



SECTION VIEW DETAIL

CURB RAMP AT DETECTIBLE WARNINGS



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

SHEET 2 OF 4

Texas Department of Transportation

Design Division Standard

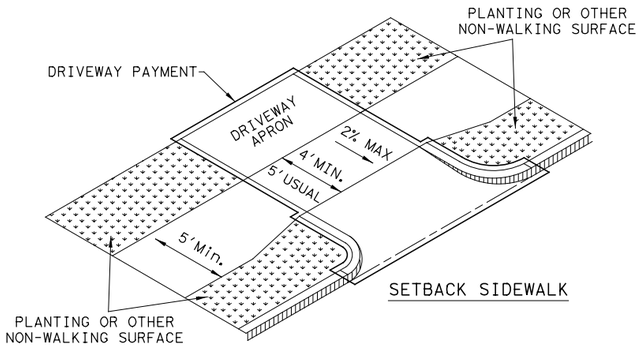
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

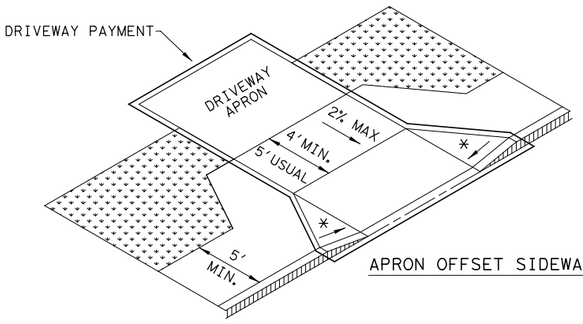
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
				61

DATE:
FILE:

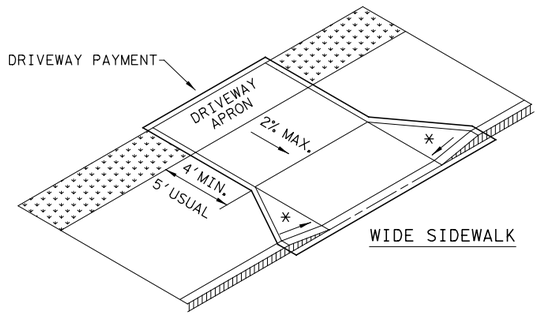
SIDEWALK TREATMENT AT DRIVEWAYS



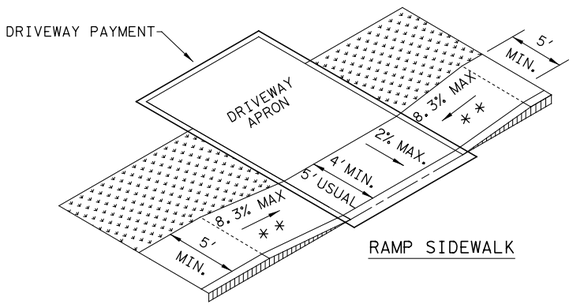
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

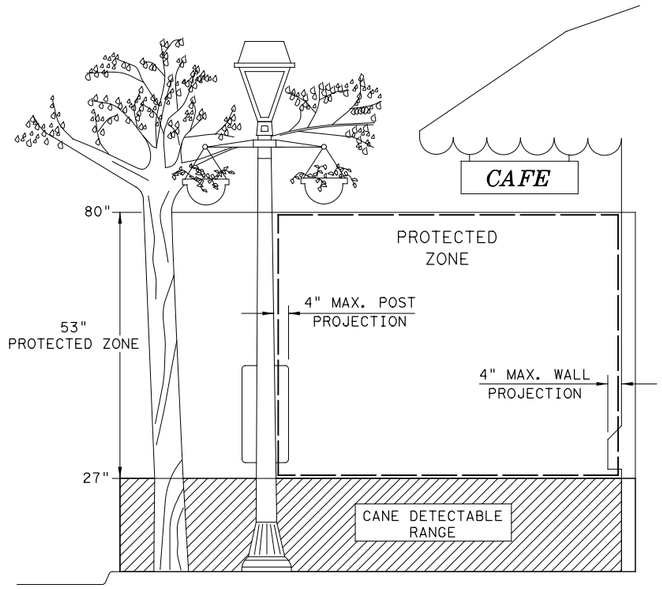


RAMP SIDEWALK

NOTES:

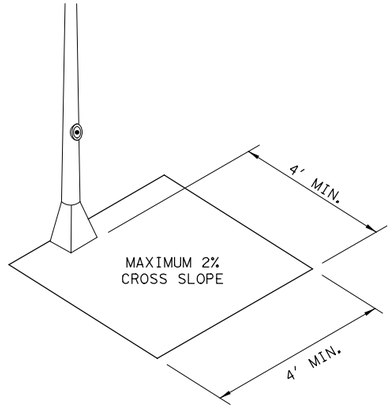
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

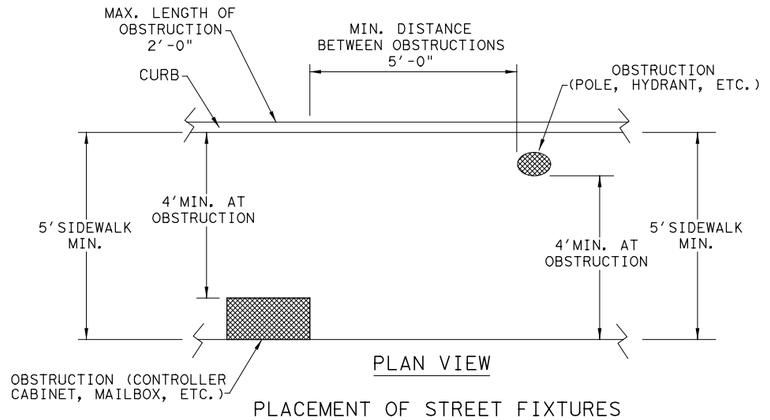


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



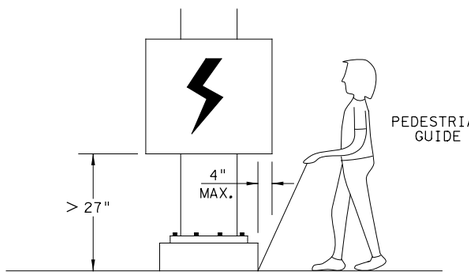
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



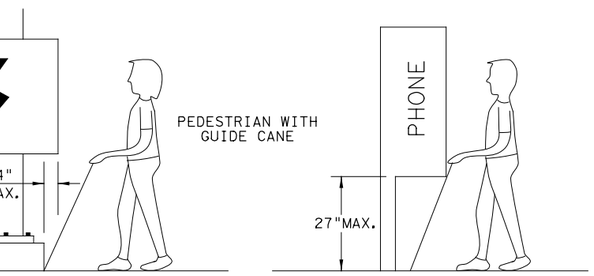
PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.



PROTRUDING OBJECTS OF A HEIGHT ≤ 27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

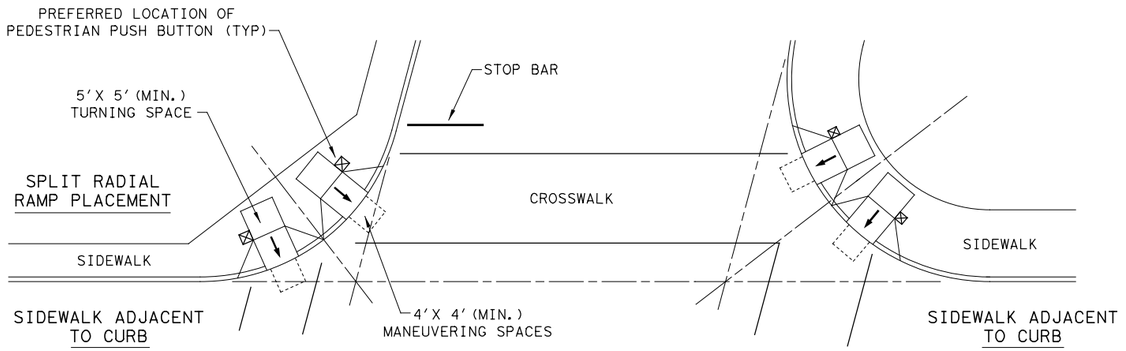
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.	
				62	

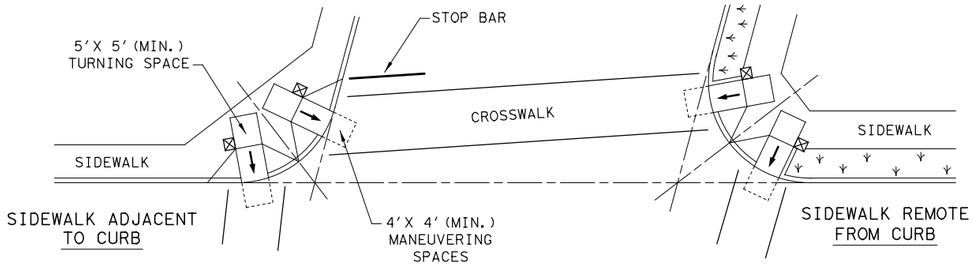
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

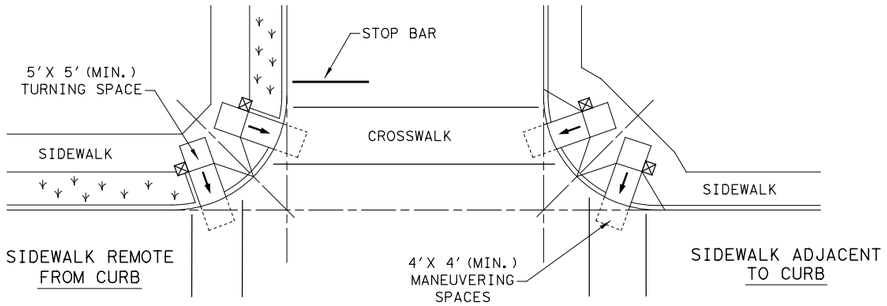
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



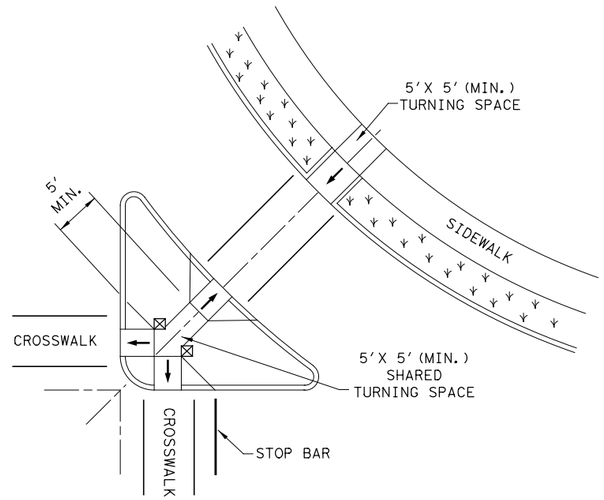
SKEWED INTERSECTION WITH "LARGE" RADIUS



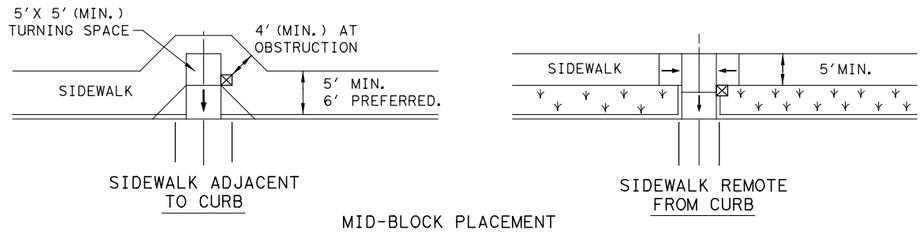
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ⊠

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

Texas Department of Transportation

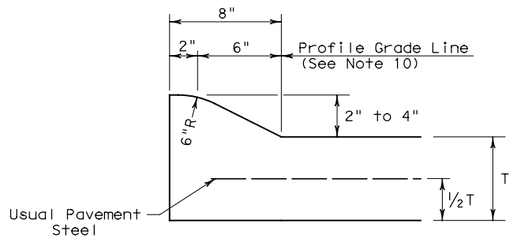
Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

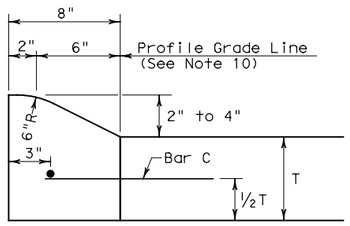
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
				63

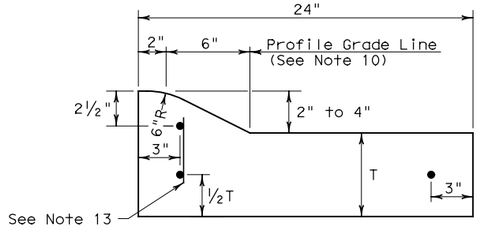
DATE:
FILE:



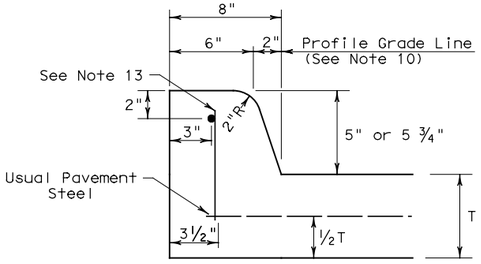
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



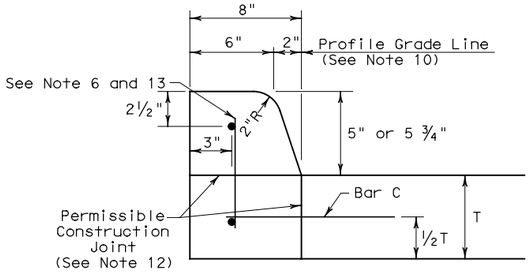
TYPE I CURB
2" - 4" HEIGHT



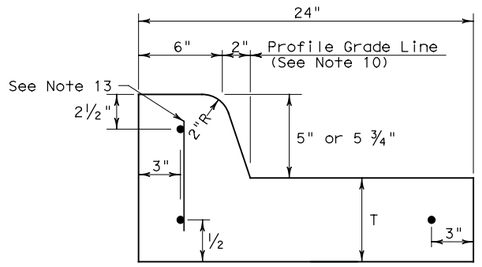
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



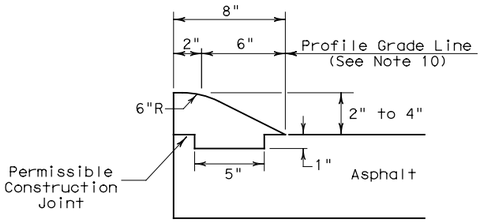
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



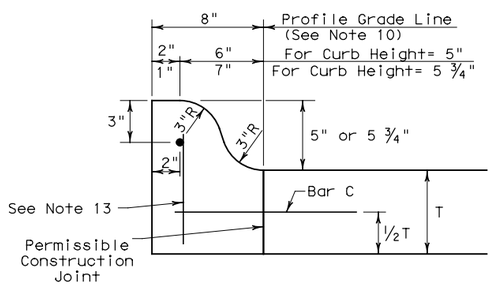
TYPE II CURB
5" - 5 ¾" HEIGHT



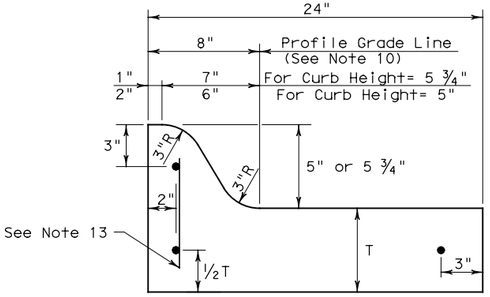
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



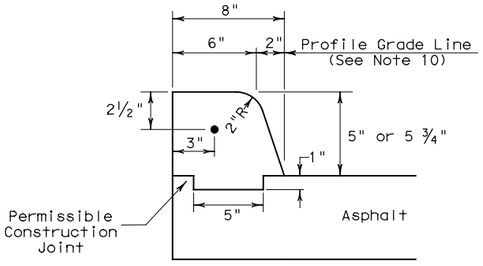
TYPE III CURB (KEYED)
2" - 4" HEIGHT



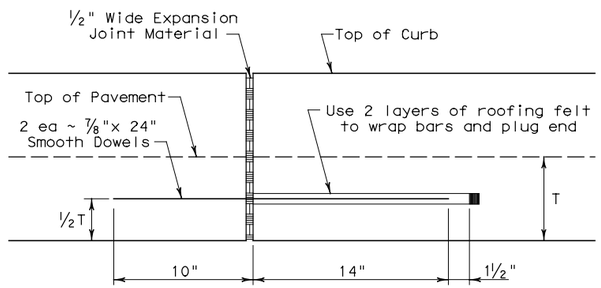
TYPE IIa CURB
5" - 5 ¾" HEIGHT



TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT

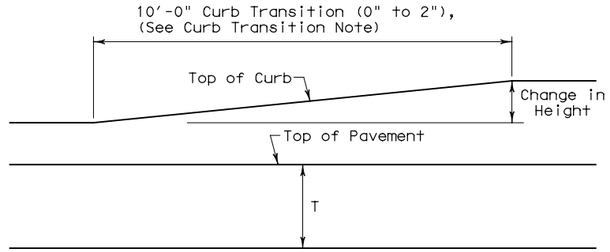


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

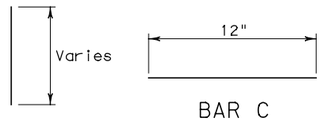
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



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 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 placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B

BAR C

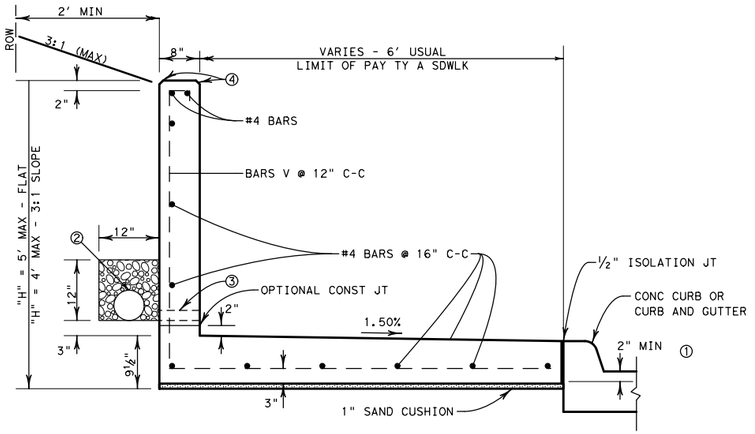
Texas Department of Transportation

Design Division Standard

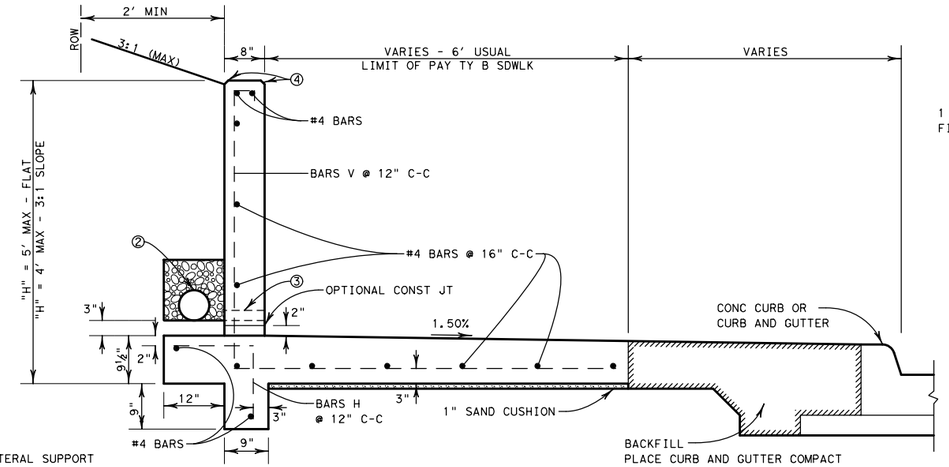
CONCRETE CURB AND CURB AND GUTTER

CCCG-22

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM	
©TxDOT: JUNE 2022 REVISIONS	CONT	SECT	JOB	HIGHWAY	
	DIST	COUNTY		SHEET NO.	
				64	

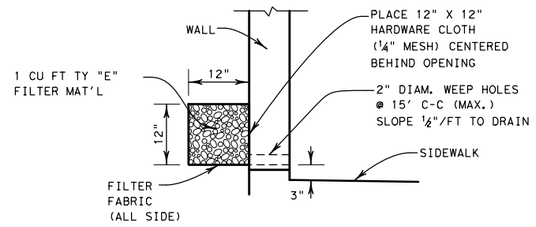


TYPE A SIDEWALK-ADJACENT TO CURB



① 2" MINIMUM REQUIRED FOR LATERAL SUPPORT
② INSTALL 6" PIPE UNDERDRAIN (TY. 5, 6, 7, OR 8) ENTIRE LENGTH OF WALL. USE TY. "E" FILTER MATERIAL. SLOPE TO DRAIN AND CONNECT TO STORM DRAIN.
⑤ IF, IN THE OPINION OF THE ENGINEER, USE OF UNDERDRAIN IS IMPRACTICAL, INSTALL WEEP HOLES AS SHOWN.
④ ¾" CHAMFER

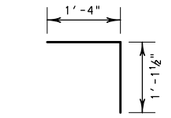
TYPE B SIDEWALK-REMOTE FROM CURB



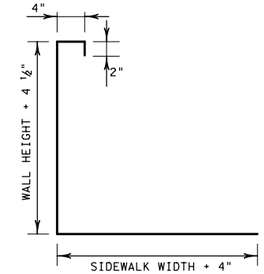
WEEP HOLE DETAIL

SPECIAL CONCRETE SIDEWALK w/ INTEGRATED RETAINING WALL

N. T. S.

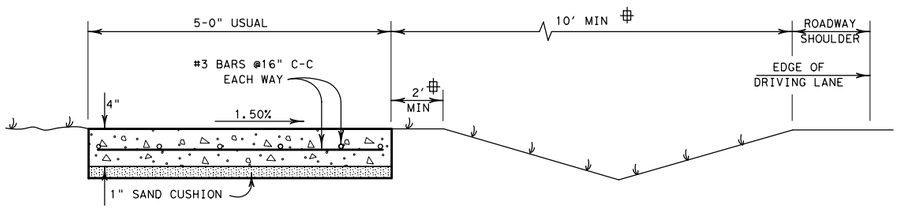


#4 BARS H @ 12" C-C



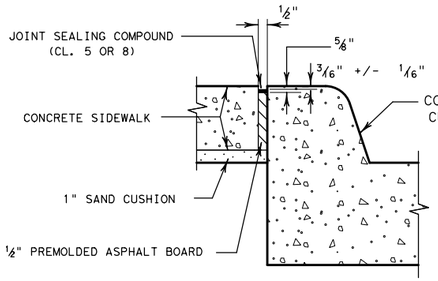
#4 BARS V @ 12" C-C

REINFORCING STEEL DETAILS



SIDEWALK TO BE 10' MIN. FROM EDGE OF SHOULDER OR 2' MIN. FROM TOP OF DITCH BACK SLOPE, WHICHEVER IS GREATER (10' MIN. FROM EDGE OF SHOULDER IF NO DITCH.)

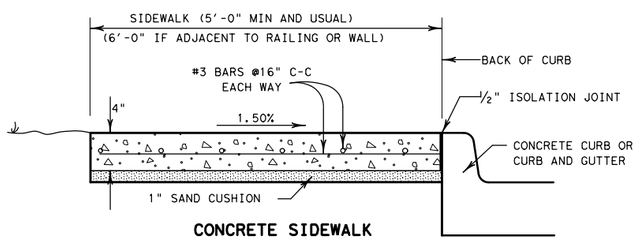
CONCRETE SIDEWALK
(ROADWAY W/O CURB)



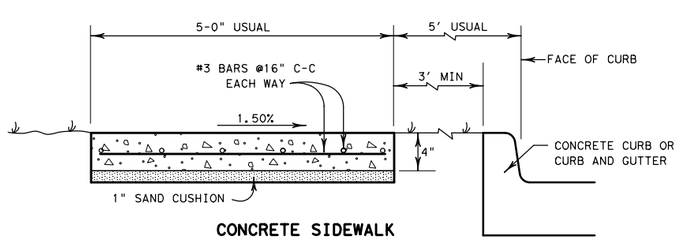
1/2" ISOLATION JOINT
(SIDEWALK ADJACENT TO CURB)

GENERAL NOTES:

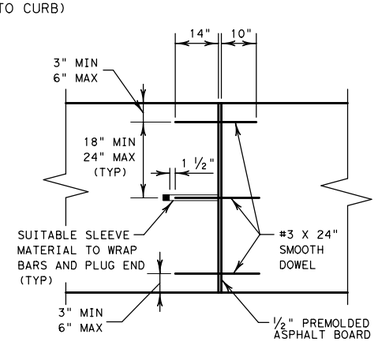
1. ALL CONCRETE SHALL BE CLASS "C".
2. ALL REINFORCING STEEL SHALL BE GRADE 60, # 4 BARS UNLESS OTHERWISE INDICATED.
3. SEE PLAN SHEETS FOR LOCATIONS OF SIDEWALKS AND RETAINING WALLS.
4. LONGITUDINAL SLOPE OF SIDEWALKS SHALL NOT EXCEED 5% EXCEPT IN CASES WHERE THE ADJACENT ROADWAY SLOPE EXCEEDS 5%. IF ROADWAY SLOPE EXCEEDS 5%, LONGITUDINAL SLOPE OF SIDEWALK MAY MATCH THAT OF ROADWAY.
5. IF SIDEWALK WIDTH IS LESS THAN 5', PROVIDE 5' X 5' PASSING AREAS AT INTERVALS NOT TO EXCEED 200' SPACING.
6. RETAINING WALL WILL BE SUBSIDIARY TO THE ITEM, "CONC SIDEWALKS (SPECIAL) (TYPE A)" OR "CONC SIDEWALKS (SPECIAL)(TYPE B)", WITH LIMITS OF PAY AS SHOWN.
7. SURFACE TREATMENT OF RETAINING WALL FACE DETAILED ELSEWHERE IN THE PLANS.
8. SEE PED STANDARDS FOR TREATMENT AT INTERSECTIONS AND CROSSWALKS.



CONCRETE SIDEWALK
(ADJACENT TO CURB)



CONCRETE SIDEWALK
(REMOTE FROM CURB)



TRANSVERSE EXPANSION JOINT

CONCRETE SIDEWALK DETAILS

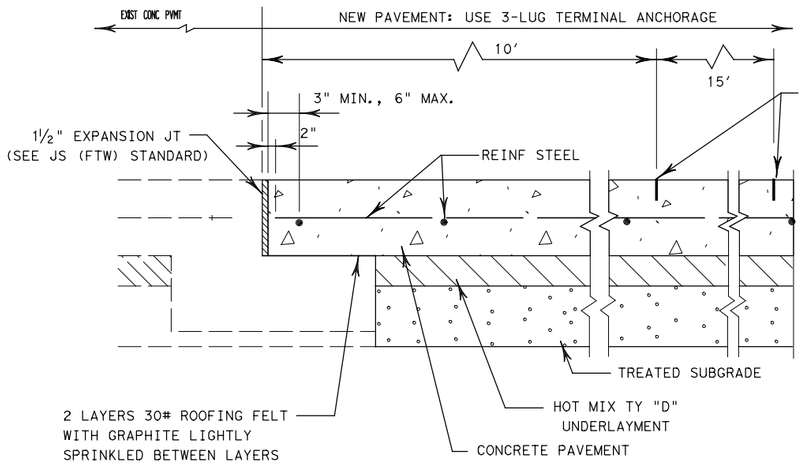
N. T. S.

Texas Department of Transportation

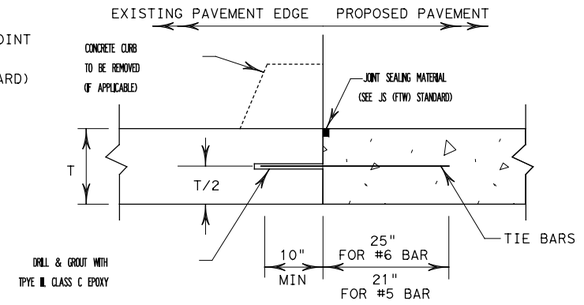
Fort Worth District Standard

CONCRETE SIDEWALK DETAILS
CSWD (FTW)

ORIGINAL DRAWING: 05/2019	cswd-ftw.dgn	PROJECT NO.		SHEET NO.
DATE	REVISIONS			
05/2019	NEW STANDARD	STATE	STATE DIST. NO.	COUNTY
11/2020	REVISE JOINT NOMENCLATURE, REVISE ALLOWABLE SEALANT TYPES	TEXAS	FTW	
		CONT.	SECT.	JOB / HIGHWAY NO.
				65

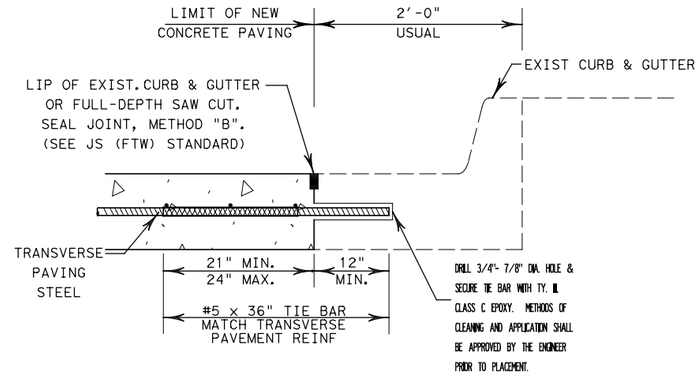


TIE TO EXIST. CONCRETE PAVEMENT
(TRANSVERSE JOINTS W/EXISTING "SLEEPER" SLAB)
N.T.S.



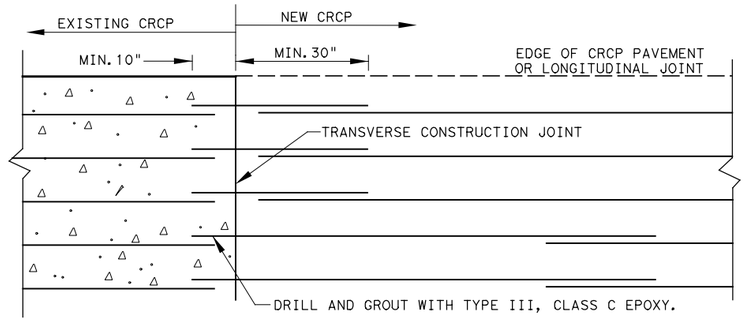
1. BEFORE WIDENING WORK, DEMONSTRATE THAT THE BOND STRENGTH OF THE EPOXY-GROUTED TIE BARS MEETS THE REQUIRMENTS OF PULL-OUT TEST SPECIFIED IN ITEM 361.
2. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER SLABS, USE #5 TIE BARS FOR LESS THAN 8" THICK SLABS.

LONGITUDINAL WIDENING JOINT DETAIL
N.T.S.



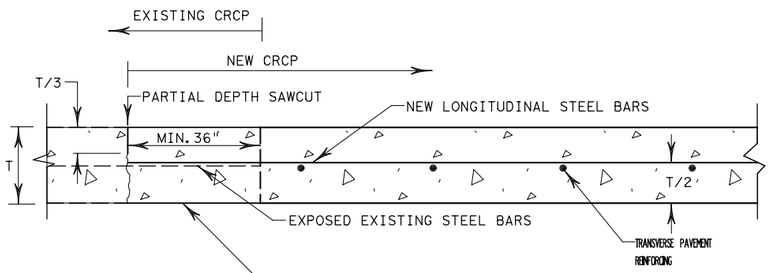
TIE TO EXIST. CONC. CURB & GUTTER
N.T.S.

NOTE:
SAWING OF PAVEMENT AND REMOVAL OF EXISTING CONC. WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.

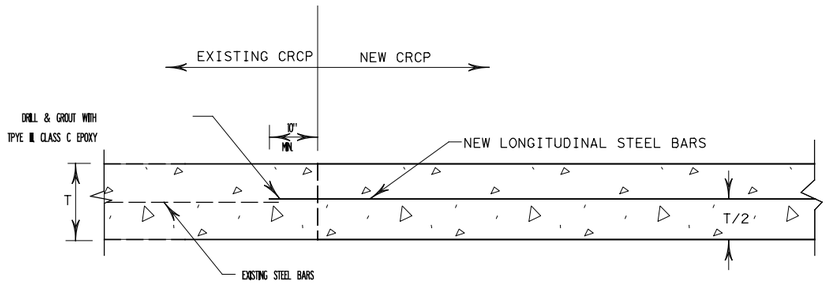


NOTE:
TIE BAR SIZE AND SPACING TO MATCH LONGITUDINAL REINFORCING. FOR LONGITUDINAL BAR SIZE AND SPACING, REFER TO CONCRETE PAVEMENT STANDARDS.

IF, IN THE OPINION OF THE ENGINEER, THE LENGTH OF AREA OF NEW PAVEMENT DOES NOT WARRANT STAGGERED LAPPING AS SHOWN, THIS REQUIREMENT MAY BE WAIVED.



TIED TRANSVERSE CONSTRUCTION JOINT DETAIL
EXISTING CRCP TO NEW CRCP
BREAKBACK AND LAP
N.T.S.



TIED TRANSVERSE CONSTRUCTION JOINT DETAIL
EXISTING CRCP TO NEW CRCP
DRILL AND EPOXY
N.T.S.

GENERAL NOTES

TIE BARS SHALL BE SECURED INTO THE EXISTING CONCRETE THE MINIMUM LENGTHS SHOWN, USING TY III EPOXY, CLASS "C" AND MUST MEET THE REQUIREMENTS OF THE PULL-OUT TEST SPECIFIED IN ITEM 361.

ALL HOLES FOR TIE BARS OR CONCRETE ANCHORS SHALL BE DRILLED WITH A CORE OR ROTARY DRILL. THE USE OF HAMMER DRILLS WILL NOT BE PERMITTED.

SEE JS (FTW) STANDARD FOR JOINT DETAILS.

SEE CONCRETE PAVEMENT STANDARD FOR ADDITIONAL INFORMATION

Texas Department of Transportation

Fort Worth District Standard

CONCRETE PAVEMENT TIES TO EXISTING PAVEMENT

CP-TEP (FTW)

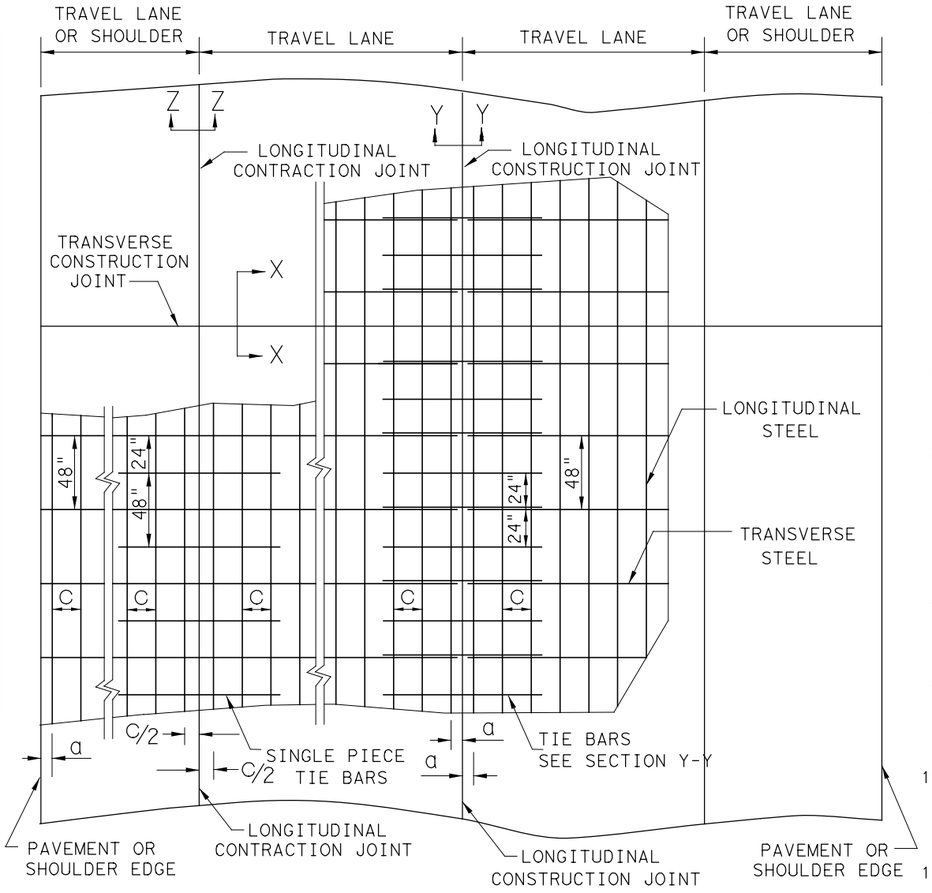
ORIGINAL DRAWING: 05/2019	cptep-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
DATE	REVISIONS	6			
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY	
06/2020	ADD LONGITUDINAL AND TRAVERSE JOINTS	TEXAS	FTW		
11/2020	ADD DRILL AND EPOXY TRANSVERSE JOINT DETAIL, REVISED JOINT NOMENCLATURE, ADD REFERENCE TO CONC PAVING STANDARDS	CONT.	SECT.	JOB	HIGHWAY NO.
					66

DATE:
FILE:

TABLE NO. 1 LONGITUDINAL STEEL				
SLAB THICKNESS AND BAR SIZE		LONGITUDINAL STEEL BARS	FIRST SPACING AT EDGE OR JOINT	LONG. STEEL VERTICAL POSITION FROM BOTTOM OF PAVEMENT
T (IN.)	BAR SIZE	SPACING C (IN.)	SPACING **a** (IN.)	T1 (IN.)
7.0	#5	6.5	3 TO 4	3.5
7.5	#5	6.0	3 TO 4	3.75
8.0	#6	9.0	3 TO 4	4.0
8.5	#6	8.5	3 TO 4	4.25
9.0	#6	8.0	3 TO 4	4.5
9.5	#6	7.5	3 TO 4	4.75
10.0	#6	7.0	3 TO 4	5.0
10.5	#6	6.75	3 TO 4	5.5
11.0	#6	6.5	3 TO 4	6.0
11.5	#6	6.25	3 TO 4	6.5
12.0	#6	6.0	3 TO 4	7.0
12.5	#6	5.75	3 TO 4	7.5
13.0	#6	5.5	3 TO 4	8.0

TABLE NO. 2 TRANSVERSE STEEL AND TIE BARS						
SLAB THICKNESS (IN.)	TRANSVERSE STEEL		TIE BARS AT LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z)		TIE BARS AT LONGITUDINAL CONSTRUCTION JOINT (SECTION Y-Y)	
	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)	BAR SIZE	SPACING (IN.)
7.0 - 7.5	#5*	48	#5*	48	#5*	24
8.0 - 13.0	#5*	48	#6	48	#6	24

*CONTRACTOR MAY USE #6 REINFORCING STEEL INSTEAD OF #5 REINFORCING STEEL OR COMBINATION OF EACH SIZE

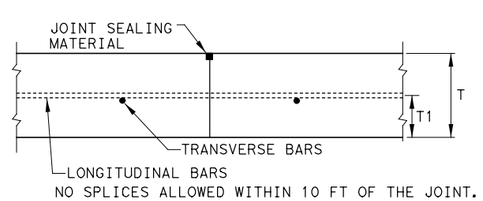


TYPICAL PAVEMENT LAYOUT

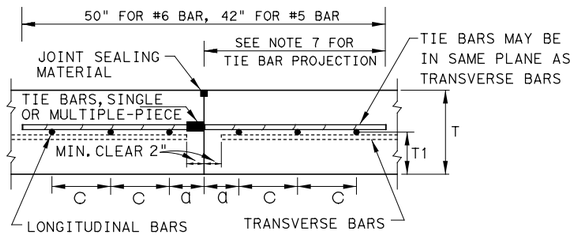
PLAN VIEW (NOT TO SCALE)

GENERAL NOTES

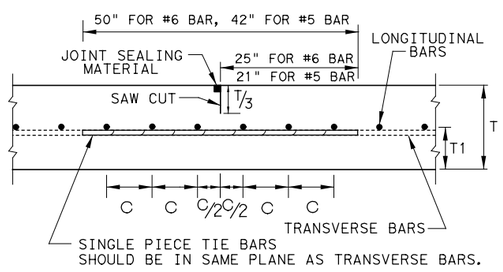
1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. FOR PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT, ADDITIONAL DETAIL MAY BE SHOWN ELSEWHERE IN THE PLANS.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (CoTE) OF NOT MORE THAN 5.5 X 10^{-6} IN/IN/ °F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO.1 AND TABLE NO.2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1 IN. HORIZONTALLY AND +/- 0.5 IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS) SHALL CONFORM TO TABLE NO.1.
5. ADJUST REINFORCING STEEL VERTICALLY USING SHIMS OR OTHER METHODS, AS APPROVED, TO MEET VERTICAL TOLERANCES PRIOR TO CONCRETE PLACEMENT.
6. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
7. THE MINIMUM PROJECTION OF TIE BARS INTO THE ADJACENT PLACEMENT IS 22.5 IN. for #6 BARS AND 18.5 IN. FOR #5 BARS.
8. SEE STANDARD SHEET "CONCRETE CURB AND CURB AND GUTTER," FOR DETAILS WHEN TYING CONCRETE CURB OR CURB GUTTER AT A LONGITUDINAL JOINT.
9. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN.10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
10. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."



TRANSVERSE CONSTRUCTION JOINT
SECTION X - X



LONGITUDINAL CONSTRUCTION JOINT
SECTION Y - Y



LONGITUDINAL CONTRACTION JOINT
SECTION Z - Z

SHEET 1 OF 2

Texas Department of Transportation

Design Division Standard

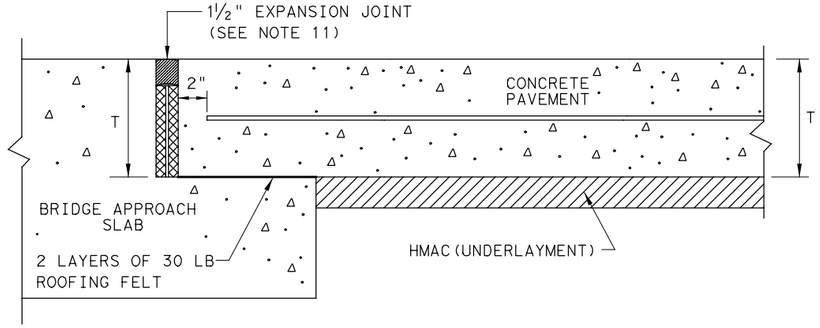
CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

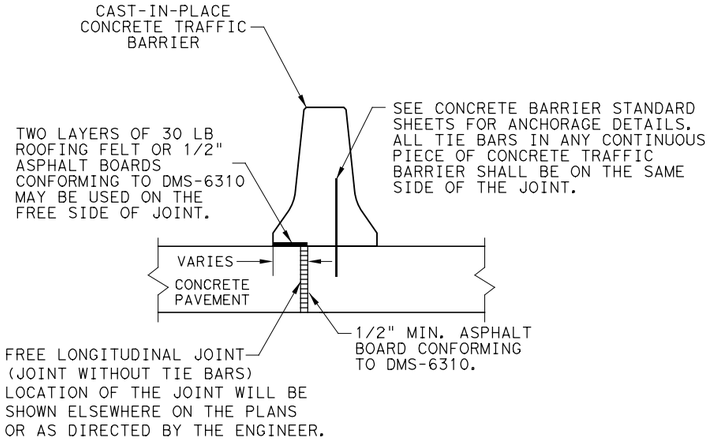
CRCP(1)-23

FILE: crcp123.dgn	DN: TxDOT	CK: KM	DW: CES	CK:
©TxDOT: APRIL 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS				
APRIL 2023: REVISED LONG. STEEL VERTICAL LOCATION REMOVED ADDITIONAL TIEBAR AT TRANSVERSE CONSTRUCTION JOINTS	DIST	COUNTY		SHEET NO.
				67

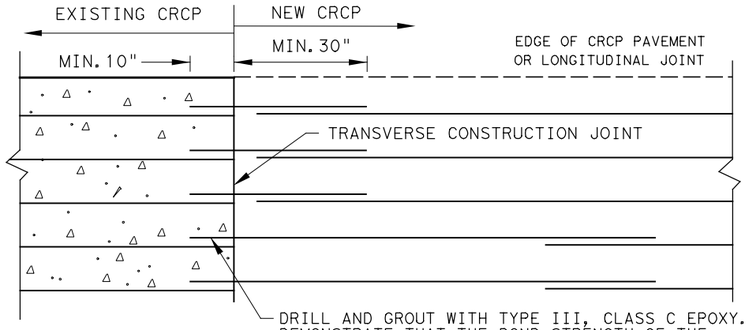
DATE:
FILE:



TRANSVERSE EXPANSION JOINT DETAIL
AT BRIDGE APPROACH



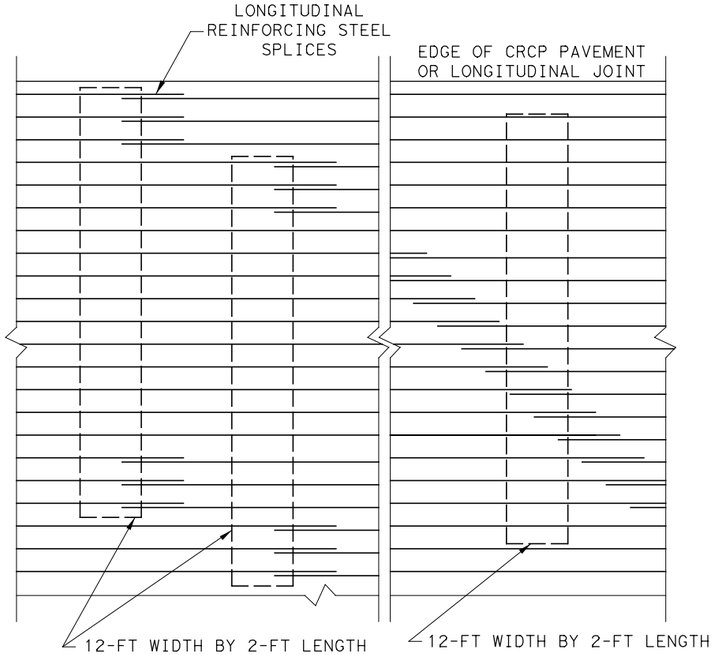
CENTERLINE FREE LONGITUDINAL JOINT DETAIL



OPTION A: DRILL AND EPOXY
PLAN VIEW (NOT TO SCALE)

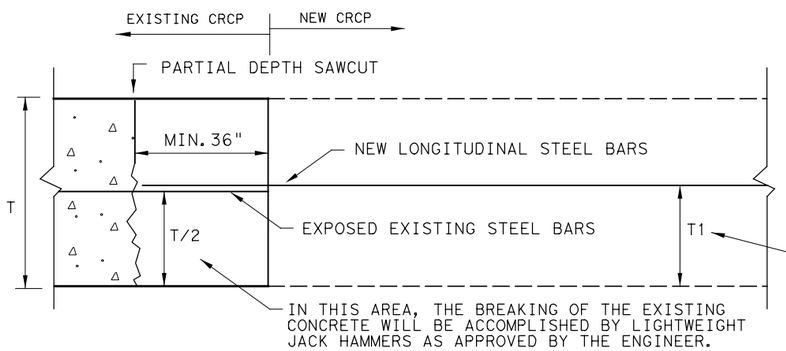
1. BEFORE CONCRETE PLACEMENT, PERFORM PULL-OUT TESTS ON EPOXY-GROUTED TIE BARS IN ACCORDANCE WITH ITEM 360.
2. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER PAVEMENTS, USE #5 TIE BARS FOR LESS THAN 8" THICK PAVEMENTS.

LONGITUDINAL WIDENING JOINT DETAIL



STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

EXAMPLES OF LAP CONFIGURATION
PLAN VIEW (NOT TO SCALE)



OPTION B: BREAKBACK AND LAP

TRANSVERSE TIE JOINT DETAIL
NEW CRCP TO EXISTING CRCP

Texas Department of Transportation

Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

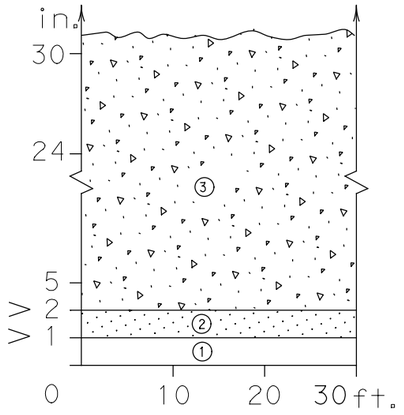
ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

CRCP(1)-23

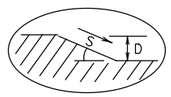
FILE: crcp123.dgn	DN: TxDOT	CK: KM	DW: CES	CK:
©TxDOT: APRIL 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS				
APRIL 2023: MODIFIED EXPANSION JOINT DETAIL AT BRIDGE APPROACH SLAB	DIST	COUNTY		SHEET NO.
				68

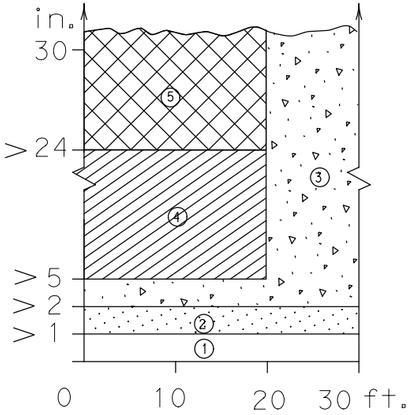
DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

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

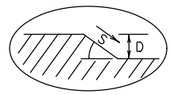


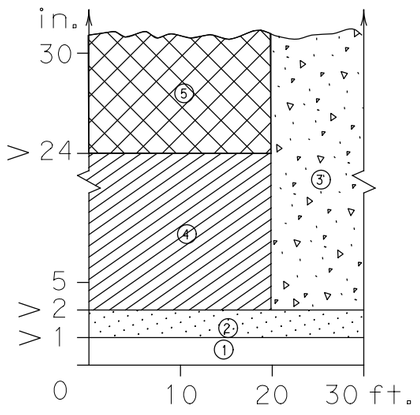
Edge Condition I
S = (3:1) (or flatter)



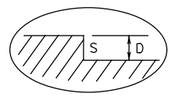


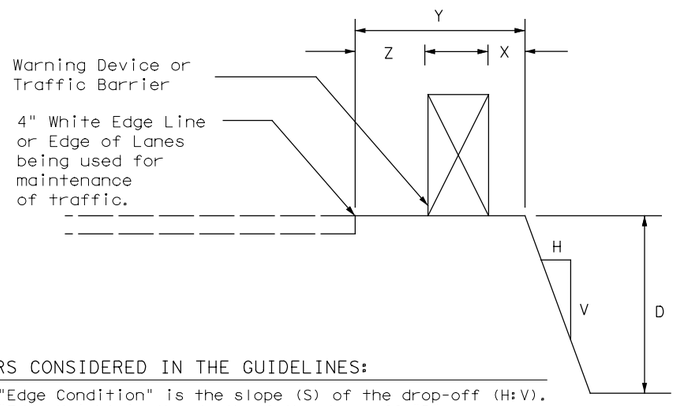
Edge Condition II
S = ((2.99):1) to (1:1)





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





FACTORS CONSIDERED IN THE GUIDELINES:

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

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

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

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

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

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

Edge Condition Notes:

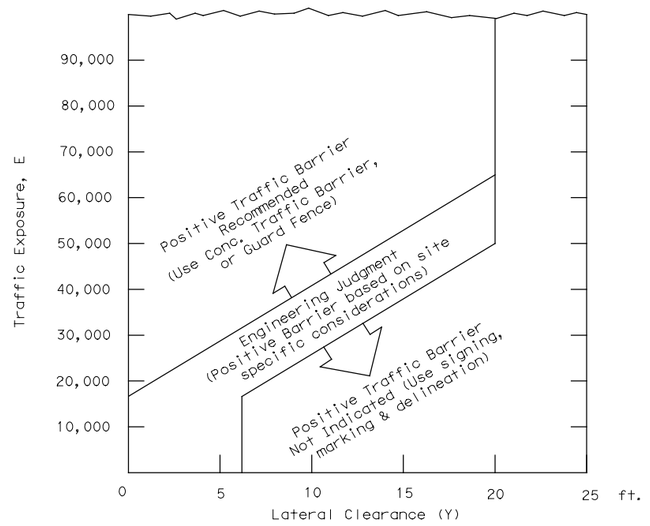
1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.

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

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

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

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



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

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

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

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

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Marie Wagner, PE #147501 on 04/05/2024. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act. TBPELS #312

Texas Department of Transportation

Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

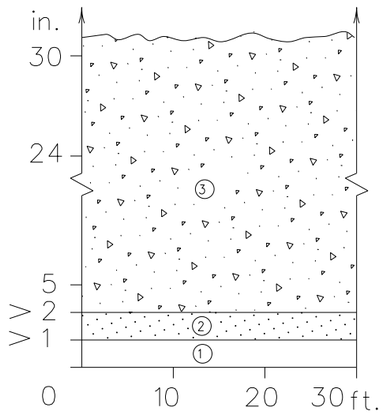
FILE: edgecon.dgn	DN:	CK:	DW:	CK:
©TxDOT August 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS				
03-01 08-01 9-21	DIST	COUNTY		SHEET NO.
				69

DATE:
FILE:

DATE:
FILE:

DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

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



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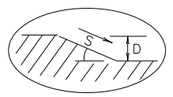

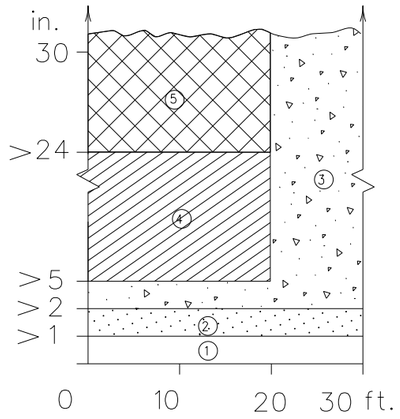

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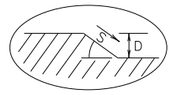

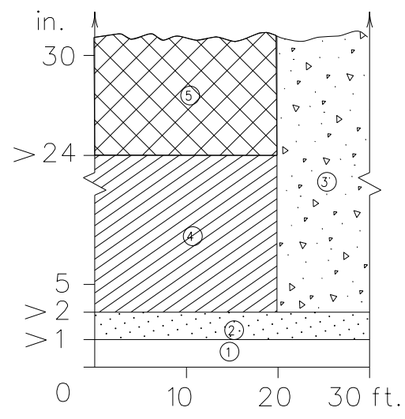

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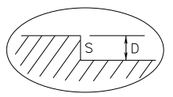

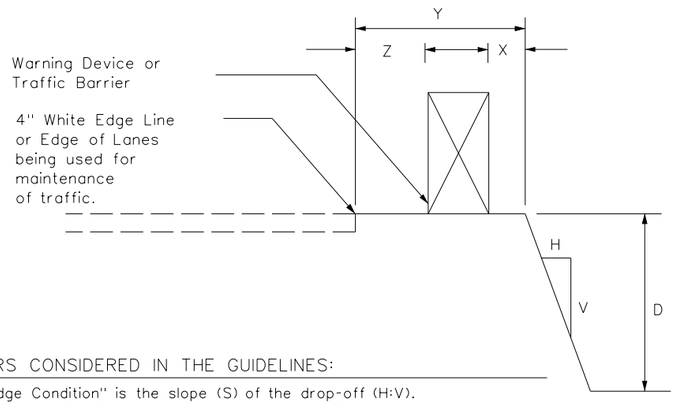

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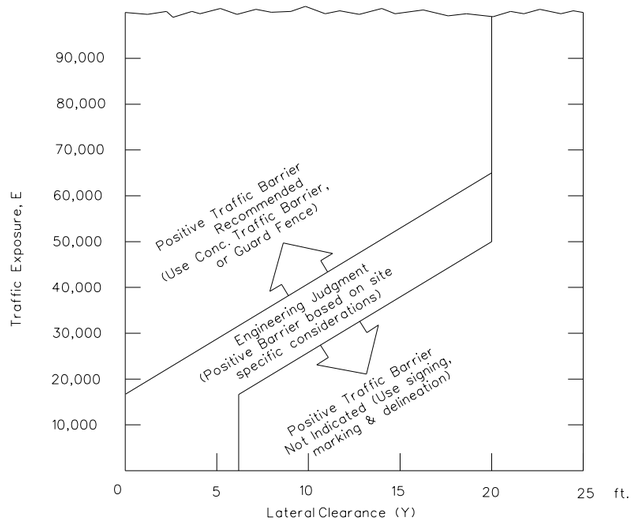
FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5 ( )



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

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

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Engineer's Seal

Date _____

Texas Department of Transportation

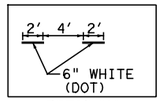
Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

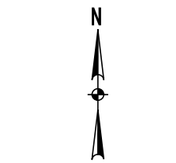
FILE: edgecon.dgn	DN:	CK:	DW:	CK:
© TxDOT August 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	214 ETC	SH 183
03-01 08-01 9-21	DIST	COUNTY		SHEET NO.
	2	TARRANT		70

LEGEND

- (A) 6" DASHED WHITE
- (B) 8" SOLID WHITE
- (C) 18" SOLID WHITE
- (D) 24" CONTRAST CROSSWALK
- (E) 24" STOP BAR
- (F) 6" DOTTED GUIDE LINE (WHITE)
- (G) 12" DOTTED LANE DROP LINE (WHITE)
- (H) TY II C-R PAVEMENT MARKER
- (I) 18" YIELD TRIANGLE WHITE
- (J) 6" SOLID WHITE



DETAIL "A"



SCALE: 1"=60'

COMERICA BANK

CHASE BANK

TACO CABANA

TACO BELL

WESTERN CENTER BLVD

NORTH BEACH STREET

EXISTING 120' RIGHT-OF-WAY

EXIST ROW

EXIST ESMT

STA 14+88.34 38.24' LT WESTERN CENTER BLVD
P.T.

STA 13+97.69 38.31' LT WESTERN CENTER BLVD
P.C.

STA 17+70.40 27.92' LT WESTERN CENTER BLVD
P.T.

STA 17+38.14 28.60' LT WESTERN CENTER BLVD
P.C.

STA 14+23.91 35.33' RT WESTERN CENTER BLVD
P.T.

STA 13+62.83 37.52' RT WESTERN CENTER BLVD
P.C.

STA 15+21.65 28.07' RT WESTERN CENTER BLVD
P.C.

STA 15+82.01 25.84' RT WESTERN CENTER BLVD
P.T.

INSTALL LEFT TURN ARROW MARKING

INSTALL "ONLY" MARKING

INSTALL NEW SIGN

INSTALL LEFT TURN ARROW MARKING (2)

INSTALL RIGHT TURN ARROW MARKING (1)

INSTALL "ONLY" MARKING (3)

INSTALL RIGHT TURN ARROW MARKING

INSTALL LEFT TURN ARROW MARKING (2)

INSTALL "ONLY" MARKING (2)

INSTALL NEW SIGN OFF SHEET STA 22+80.00

SEE DETAIL "A"

220' TRANSITION

R 800'

R 65' (TYP.)

SUMMARY OF PAVEMENT MARKING ITEMS

ITEM NO.	DESCRIPTION	EST QTY	UNIT
666-6018	REFL PAV MRK TY I (W) 6" (DOT) (100 MIL)	809	LF
666-6036	REFL PAVE MRK TY I (W) 8" (SLD) (100 MIL)	1731	LF
666-6039	REFL PAV MRK TY I (W) 12" (LNDP) (100 MIL)	200	LF
666-6045	REFL PAV MRK TY I (W) 18" (SLD) (100 MIL)	152	LF
666-6048	REFL PAV MRK TY I (W) 24" (SLD) (100 MIL)	1699	LF
666-6054	REFL PAV MRK TY I (W)(ARROW) (100 MIL)	16	EA
666-6078	REFL PAV MRK TY I (W) (WORD) (100 MIL)	10	EA
666-6099	REF PAV MRK TY I (W) 18" (YLD TRI) (100 MIL)	24	EA
666-6162	RE PV MRK TY I (BLACK) 6" (SHADOW) (100 MIL)	1460	LF
666-6306	RE PM W/RET REQ TY I (W) 6" (BRK) (100 MIL)	2415	LF
666-6309	RE PM W/RET REQ TY I (W) 6" (SLD) (100 MIL)	300	LF
666-6321	RE PM W/RET REQ TY I (Y) 6" (SLD) (100 MIL)	1832	EA
672-6010	REFL PAV MRK TY II-C-R	124	EA

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

SIGNING AND PAVEMENT MARKING LAYOUT

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	71
CHECK	0902	90	214, ETC.	

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

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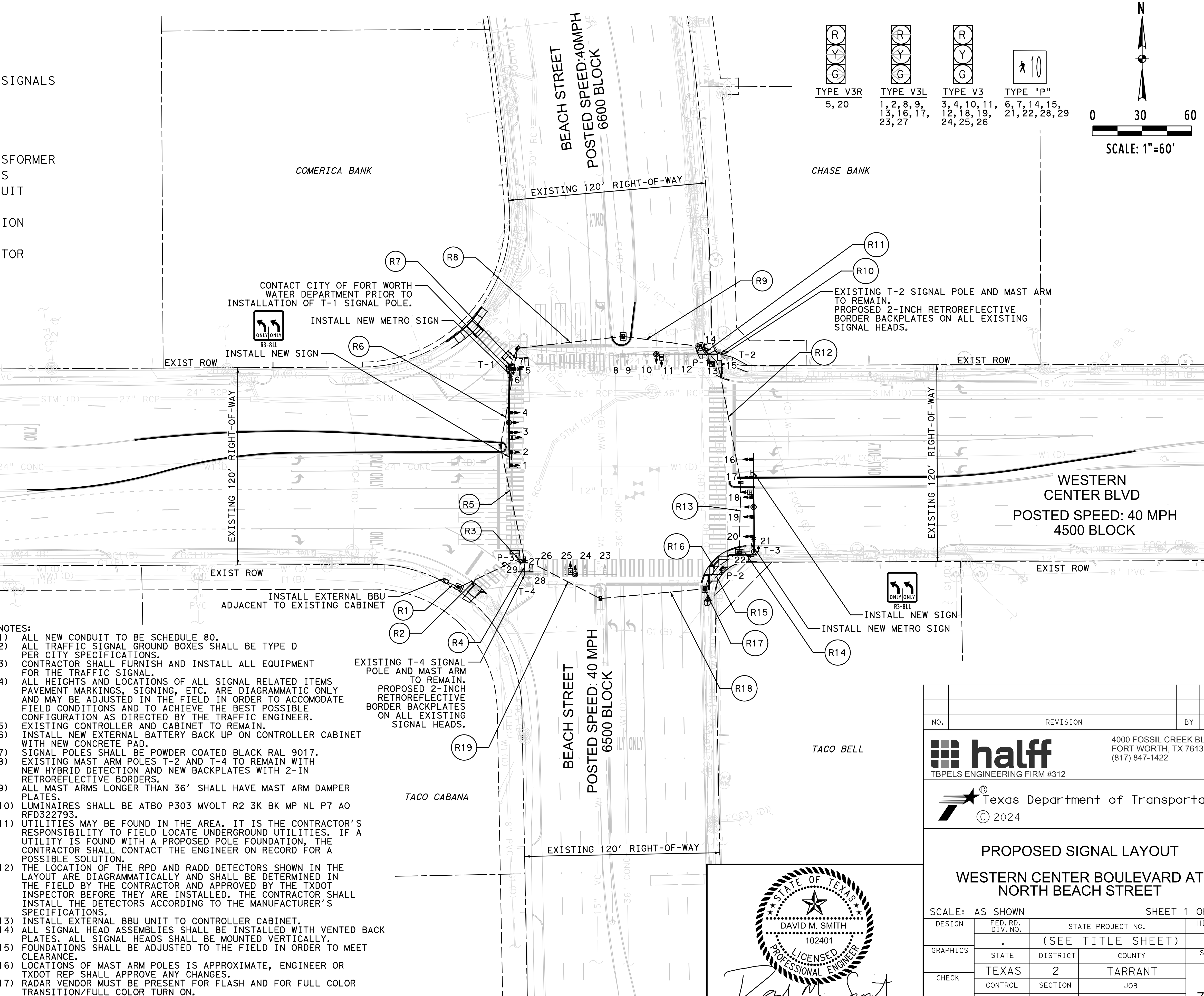
LEGEND

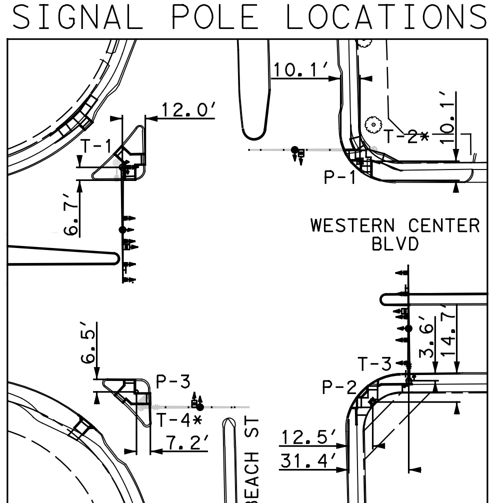
- METAL POLE
- MAST ARM/PED SIGNALS
- SIGNAL HEAD
- PED POLES
- CONTROLLER
- GROUND BOX
- ELECTRIC TRANSFORMER
- LOOP DETECTORS
- ELECTRIC CONDUIT
- LUMINAIRE
- HYBRID DETECTION
- PTZ CAMERA
- OPTICOM DETECTOR

TYPE V3R	TYPE V3L	TYPE V3	TYPE "P"
5, 20	1, 2, 8, 9, 13, 16, 17, 23, 27	3, 4, 10, 11, 12, 18, 19, 24, 25, 26	6, 7, 14, 15, 21, 22, 28, 29

SCALE: 1"=60'



SIGNAL POLE LOCATIONS



ALL DIMENSIONS ARE MEASURED FROM PROJECTED BACK OF CURB

CONTRACTOR SHALL VERIFY PROPOSED SIGNAL POLE LOCATION DOES NOT CONFLICT WITH EXISTING UTILITES. LOCATIONS MAY NEED TO BE ADJUSTED AS NEEDED TO AVOID DAMAGE THERETO.

*T-2 AND T-4 EXISTING SIGNAL POLES TO REMAIN

NOTES:

1) ALL NEW CONDUIT TO BE SCHEDULE 80.
2) ALL TRAFFIC SIGNAL GROUND BOXES SHALL BE TYPE D PER CITY SPECIFICATIONS.
3) CONTRACTOR SHALL FURNISH AND INSTALL ALL EQUIPMENT FOR THE TRAFFIC SIGNAL.
4) ALL HEIGHTS AND LOCATIONS OF ALL SIGNAL RELATED ITEMS PAVEMENT MARKINGS, SIGNING, ETC. ARE DIAGRAMMATIC ONLY AND MAY BE ADJUSTED IN THE FIELD IN ORDER TO ACCOMODATE FIELD CONDITIONS AND TO ACHIEVE THE BEST POSSIBLE CONFIGURATION AS DIRECTED BY THE TRAFFIC ENGINEER.
5) EXISTING CONTROLLER AND CABINET TO REMAIN.
6) INSTALL NEW EXTERNAL BATTERY BACK UP ON CONTROLLER CABINET WITH NEW CONCRETE PAD.
7) SIGNAL POLES SHALL BE POWDER COATED BLACK RAL 9017.
8) EXISTING MAST ARM POLES T-2 AND T-4 TO REMAIN WITH NEW HYBRID DETECTION AND NEW BACKPLATES WITH 2-IN RETROREFLECTIVE BORDERS.
9) ALL MAST ARMS LONGER THAN 36' SHALL HAVE MAST ARM DAMPER PLATES.
10) LUMINAIRES SHALL BE ATBO P303 MVOLT R2 3K BK MP NL P7 AO RFD322793.
11) UTILITIES MAY BE FOUND IN THE AREA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD LOCATE UNDERGROUND UTILITIES. IF A UTILITY IS FOUND WITH A PROPOSED POLE FOUNDATION, THE CONTRACTOR SHALL CONTACT THE ENGINEER ON RECORD FOR A POSSIBLE SOLUTION.
12) THE LOCATION OF THE RPD AND RADD DETECTORS SHOWN IN THE LAYOUT ARE DIAGRAMMATICALLY AND SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR AND APPROVED BY THE TXDOT INSPECTOR BEFORE THEY ARE INSTALLED. THE CONTRACTOR SHALL INSTALL THE DETECTORS ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.
13) INSTALL EXTERNAL BBU UNIT TO CONTROLLER CABINET.
14) ALL SIGNAL HEAD ASSEMBLIES SHALL BE INSTALLED WITH VENTED BACK PLATES. ALL SIGNAL HEADS SHALL BE MOUNTED VERTICALLY.
15) FOUNDATIONS SHALL BE ADJUSTED TO THE FIELD IN ORDER TO MEET CLEARANCE.
16) LOCATIONS OF MAST ARM POLES IS APPROXIMATE, ENGINEER OR TXDOT REP SHALL APPROVE ANY CHANGES.
17) RADAR VENDOR MUST BE PRESENT FOR FLASH AND FOR FULL COLOR TRANSITION/FULL COLOR TURN ON.

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER

DATE: 1/25/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

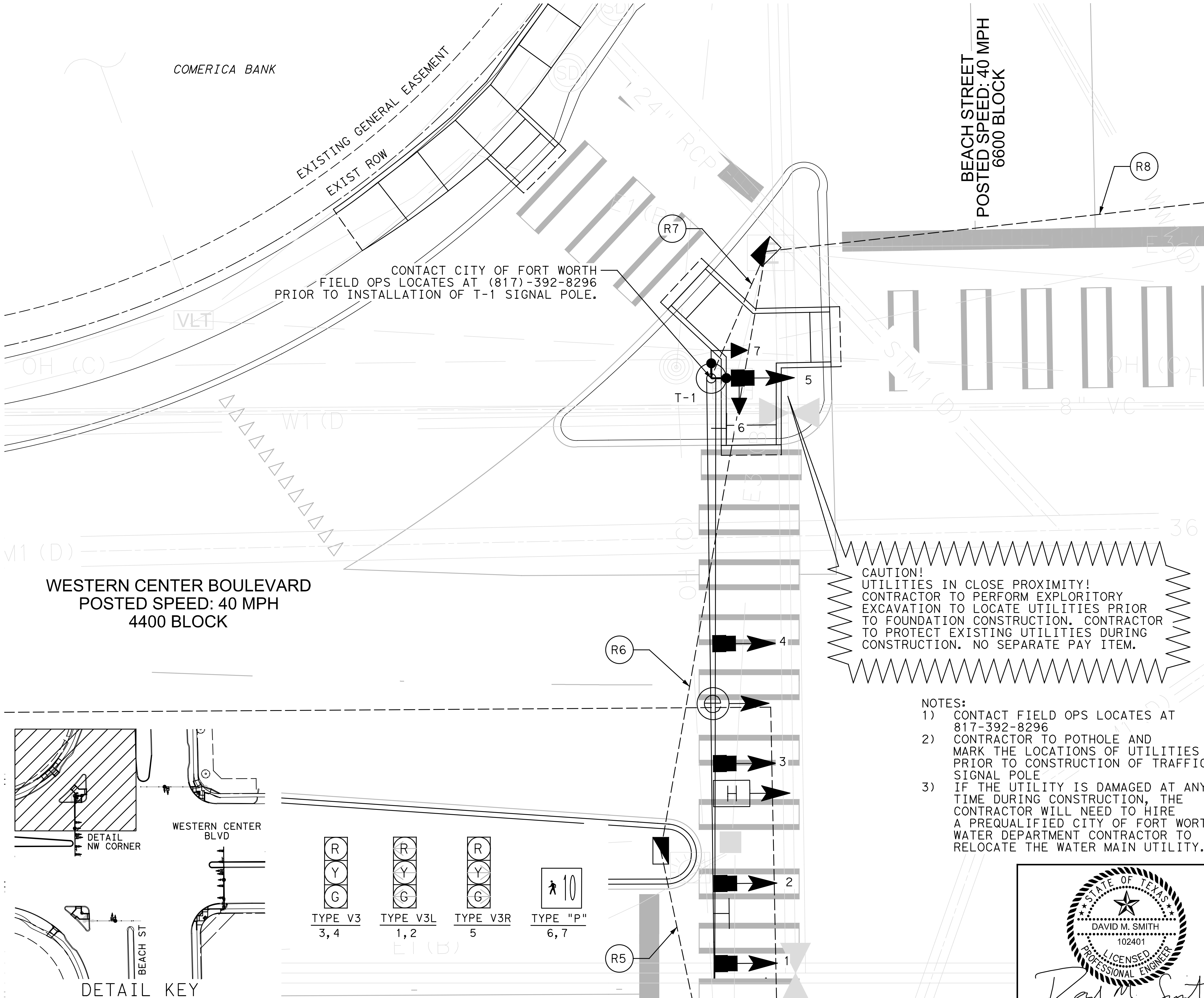
Texas Department of Transportation

PROPOSED SIGNAL LAYOUT

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 5

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
GRAPHICS	.	(SEE TITLE SHEET)		
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	
	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	72



CAUTION!
UTILITIES IN CLOSE PROXIMITY!
CONTRACTOR TO PERFORM EXPLORATORY EXCAVATION TO LOCATE UTILITIES PRIOR TO FOUNDATION CONSTRUCTION. CONTRACTOR TO PROTECT EXISTING UTILITIES DURING CONSTRUCTION. NO SEPARATE PAY ITEM.

NOTES:
1) CONTACT FIELD OPS LOCATES AT 817-392-8296
2) CONTRACTOR TO POTHOLE AND MARK THE LOCATIONS OF UTILITIES PRIOR TO CONSTRUCTION OF TRAFFIC SIGNAL POLE
3) IF THE UTILITY IS DAMAGED AT ANY TIME DURING CONSTRUCTION, THE CONTRACTOR WILL NEED TO HIRE A PREQUALIFIED CITY OF FORT WORTH WATER DEPARTMENT CONTRACTOR TO RELOCATE THE WATER MAIN UTILITY.

LEGEND
- METAL POLE
- MAST ARM/PED SIGNALS
- SIGNAL HEAD & NO.
- PED POLES
- PED SIGNAL HEAD & NO.
- CONTROLLER
- TYPE D GROUND BOX
- TYPE D GROUND BOX W/ APRON
- ELECTRIC TRANSFORMER
- ELECTRIC CONDUIT
- R1 CONDUIT RUN LABEL
- LUMINAIRE
- HYBRID DETECTION
- PTZ CAMERA
- OPTICOM DETECTOR

N

0 5 10 15 20
SCALE: 1"=10'

NO.	REVISION	BY	DATE

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4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

PROPOSED SIGNAL LAYOUT DETAIL

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
NORTHWEST CORNER

SCALE: AS SHOWN SHEET 2 OF 5

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER
DATE: 1/25/2024
TBPELS ENGINEERING FIRM #312

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
GRAPHICS	.	(SEE TITLE SHEET)		
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	
	CONTROL	SECTION	JOB	73
CHECK	0902	90	214, ETC.	

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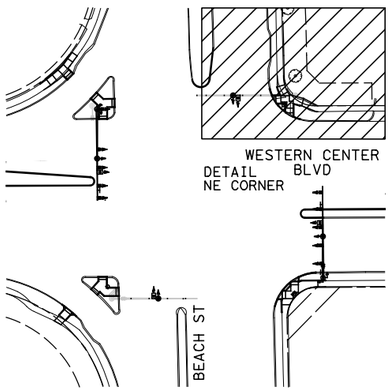

EXISTING TRAFFIC POLE & MAST ARM TO REMAIN REPLACE LUMINAIRE W/ LED FIXTURE

REMOVE EXISTING SIGNAL HEAD BACKPLATES. PROPOSED 2-INCH RETROREFLECTIVE BORDER BACKPLATES ON ALL EXISTING HEADS 8-13

LEGEND

◎	METAL POLE
	MAST ARM/PED SIGNALS
1	SIGNAL HEAD & NO.
	PED POLES
1	PED SIGNAL HEAD & NO.
	CONTROLLER
	TYPE D GROUND BOX
	TYPE D GROUND BOX W/ APRON
Ⓣ	ELECTRIC TRANSFORMER
	ELECTRIC CONDUIT
R1	CONDUIT RUN LABEL
	LUMINAIRE
H	HYBRID DETECTION
	PTZ CAMERA
Ⓔ	OPTICOM DETECTOR

NO.	REVISION	BY	DATE

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4000 FOSSIL CREEK BLVD
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PROPOSED SIGNAL LAYOUT DETAIL

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
NORTHEAST CORNER

SCALE: AS SHOWN SHEET 3 OF 5

DAVID M. SMITH
102401
David M. Smith
DATE: 1/25/2024
TBPELS ENGINEERING FIRM #312

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	74
CHECK	0902	90	214, ETC.	

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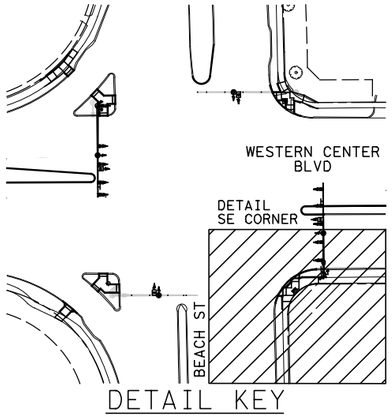

LEGEND

◎	METAL POLE
	MAST ARM/PED SIGNALS
1	SIGNAL HEAD & NO.
	PED POLES
1	PED SIGNAL HEAD & NO.
	CONTROLLER
	TYPE D GROUND BOX
	TYPE D GROUND BOX W/ APRON
T	ELECTRIC TRANSFORMER
– – – –	ELECTRIC CONDUIT
R1	CONDUIT RUN LABEL
	LUMINAIRE
H	HYBRID DETECTION
	PTZ CAMERA
e	OPTICOM DETECTOR

SCALE: 1"=10'

STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED PROFESSIONAL ENGINEER
DATE: 1/25/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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PROPOSED SIGNAL LAYOUT DETAIL

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET
SOUTHEAST CORNER

SCALE: AS SHOWN
SHEET 4 OF 5

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	75
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

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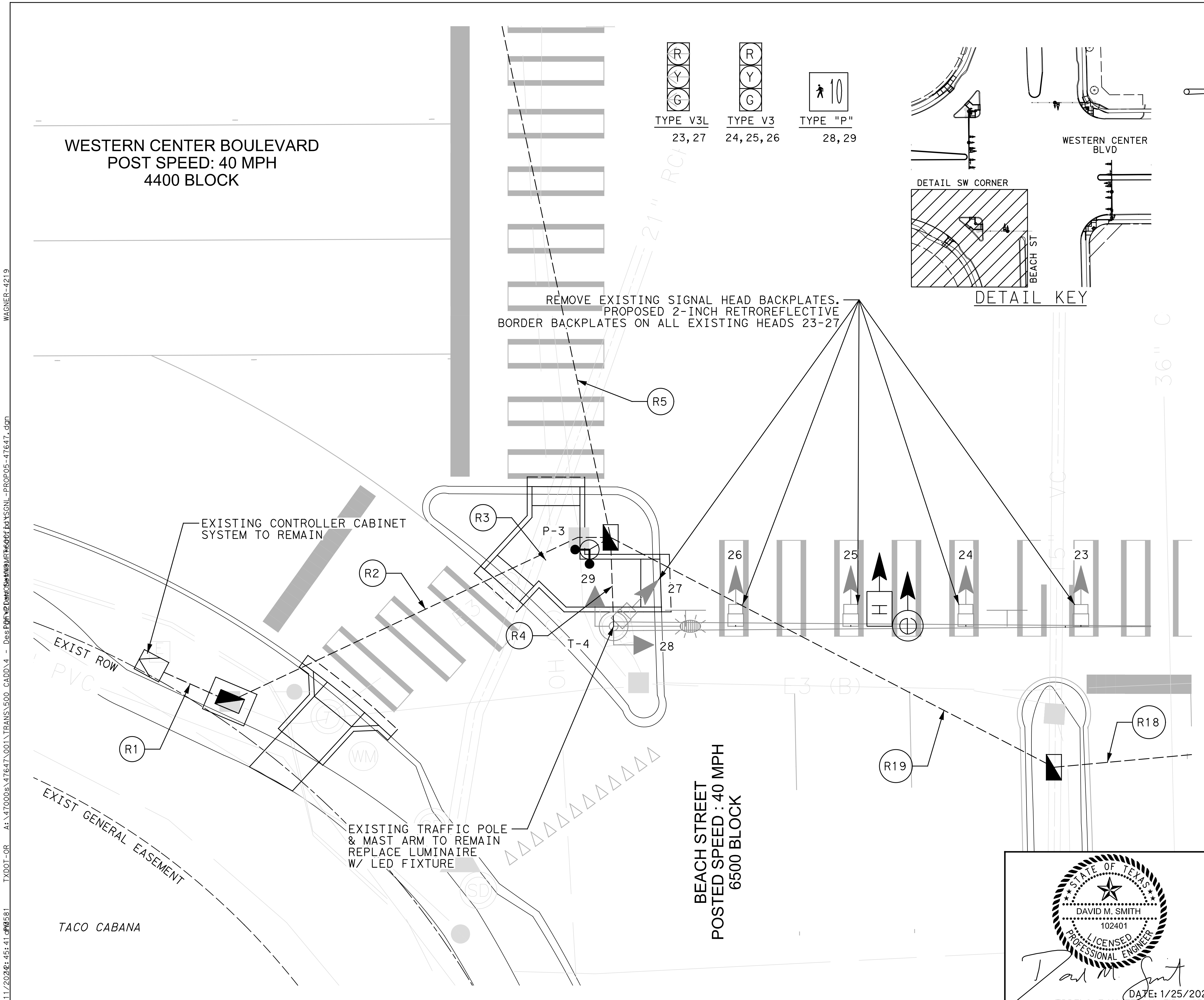

WESTERN CENTER BOULEVARD
POST SPEED: 40 MPH
4400 BLOCK
TYPE V3L
23,27
TYPE V3
24,25,26
TYPE "P"
28,29
WESTERN CENTER BLVD
DETAIL SW CORNER
BEACH ST
DETAIL KEY
REMOVE EXISTING SIGNAL HEAD BACKPLATES.
PROPOSED 2-INCH RETROREFLECTIVE
BORDER BACKPLATES ON ALL EXISTING HEADS 23-27
R5
R3
P-3
29
27
EXISTING CONTROLLER CABINET
SYSTEM TO REMAIN
R2
R4
T-4
28
26
25
24
23
EXIST ROW
R1
EXIST GENERAL EASEMENT
EXISTING TRAFFIC POLE
& MAST ARM TO REMAIN
REPLACE LUMINAIRE
W/ LED FIXTURE
BEACH STREET
POSTED SPEED : 40 MPH
6500 BLOCK
R19
R18
TACO CABANA
N
0 5 10 15 20
SCALE: 1"=10'
STATE OF TEXAS
DAVID M. SMITH
102401
LICENSED
PROFESSIONAL ENGINEER
DATE: 1/25/2024
TBPELS ENGINEERING FIRM #312

LEGEND

- METAL POLE
- MAST ARM/PED SIGNALS
- SIGNAL HEAD & NO.
- PED POLES
- PED SIGNAL HEAD & NO.
- CONTROLLER
- TYPE D GROUND BOX
- TYPE D GROUND BOX W/ APRON
- ELECTRIC TRANSFORMER
- ELECTRIC CONDUIT
- CONDUIT RUN LABEL
- LUMINAIRE
- HYBRID DETECTION
- PTZ CAMERA
- OPTICOM DETECTOR

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4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

PROPOSED SIGNAL LAYOUT DETAIL

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SOUTHWEST CORNER

SCALE: AS SHOWN — SHEET 5 OF 5

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
GRAPHICS	.	(SEE TITLE SHEET)		
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	76
	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

POLE NUMBER	T-1							EXISTING T-2								P-1	T-3							P-2	EXISTING T-4							P-3
SIGNAL ARM LENGTH	60′							60′								PED	60′							PED	56′							PED
POLE/FOUNDATION	TYPE 46/36" TYPE 5							TYPE 45/36" TYPE 5								5′ PED/ SPREAD	TYPE 45/36" TYPE 5							5′ PED/ SPREAD	TYPE 43/36" TYPE 5							5′ PED/ 24" TYPE 1
LUMINAIRES	NO							YES								NO	YES							NO	YES							NO
SIZE OF LENS	12"					X	X	12"						X	X		12"					X	X		12"					X	X	
SIGNAL TYPE	V3L	V3L	V3	V3	V3R	P	P	V3L	V3L	V3	V3	V3	V3L	P	P		V3L	V3L	V3	V3	V3R	P	P		V3L	V3	V3	V3	V3L	P	P	
SIGNAL FACE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22		23	24	25	26	27	28	29	
SIGNAL INDICATIONS	R<-	R<-	R	R	R	DW	DW	R<-	R<-	R	R	R	R<-	DW	DW		R<-	R<-	R	R	R	DW	DW		R<-	R	R	R	R<-	DW	DW	
	Y<-	Y<-	Y	Y	Y->	W	W	Y<-	Y<-	Y	Y	Y	Y<-	W	W		Y<-	Y<-	Y	Y	Y->	W	W		Y<-	Y	Y	Y	Y<-	W	W	
	G<-	G<-	G	G	G->			G<-	G<-	G	G	G	G<-				G<-	G<-	G	G	G->				G<-	G	G	G	G<-			
NEW APS PED BUTTONS	2							0								2	0							2	0							2

SUMMARY OF CONDUIT AND CABLES

RUN NO.	CONDUIT					20 COND. #14	5 COND. #14	3 COND. #14	#6 BARE GROUND	#6 XHHW BLACK/WHITE	#8 BARE GROUND	#10 XHHW BLACK/WHITE	OPITCOM CABLE	HYBRID DETECTOR CABLE (CAT5E)	PTZ CAMERA CABLE (CAT5E)
	QTY/SIZE			LENGTH (LF)	BORE (B) TRENCH (T)										
	2"	3"	4"												
1A	1			10	T				1	2					
1B			2	10	T	4		8			2		4	4	1
2A			2	45	B	4		8			2		4	4	1
2B	1			45	B				1	2					
3		1		5	T			2			1				
4A		1		10	T	1					1		1	1	1
4B	1			10	T						1	2			
5			1	70	B	1		2			1		1	1	
6			1	60	B	1		2			1		1	1	
7		1		15	T	1		2			1		1	1	
8			1	65	B						1				
9			1	50	B						1				
10A		1		15	T	1					1		1	1	
10B	1			15	T						1	2			
11		1		15	T			2			1				
12A			1	90	B	1		2			1		1	1	
12B	1			90	B						1	2			
13A			1	45	B	1		2			1		1	1	
13B	1			45	B						1	2			
14A		1		10	T	1					1		1	1	
14B	1			10	T						1	2			
15		1		15	T			2			1				
16A			1	35	T	2		2			1		2	2	
16B	1			35	T						1	4			
17	2			5	T				1	2		6			
18A			1	65	B	2		4			1		2	2	
18B	2			65	B				1	2	1	2			
19A			1	55	B	2		4			1		2	2	
19B	2			55	B				1	2	1	2			
CABLE TOTALS (CONDUIT ONLY)						845	0	1620	180	360	1055	750	845	845	65

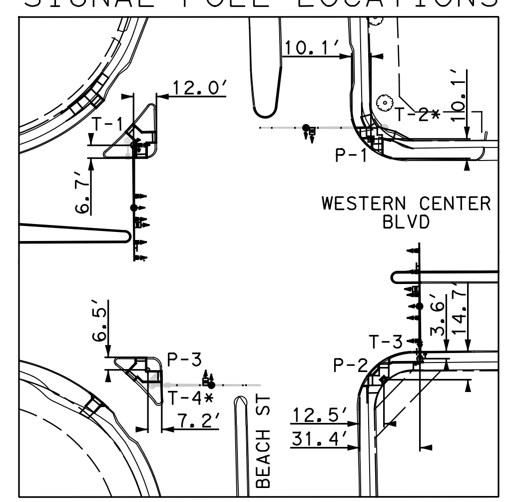
CONDUIT TOTALS	
2" TRENCH	90
2" BORE	420
3" TRENCH	85
3" BORE	0
4" TRENCH	55
4" BORE	590

Notes:
Cable totals do not reflect the quantities of cable inside the pole and mast arm.
T = Trench, B = Bore, EX = Existing, OH = Overhead, RM = Rigid Metal

CABLE/WIRE INSIDE POLE (FEET)

POLE NUMBER	3 CNDR 14 AWG	5 CNDR 14 AWG	7 CNDR 14 AWG	NO. 10 XHHW	OPTICOM CABLE	HYBRID DETECTOR CABLE (CAT5E)	VIDEO DETECTOR CABLE (CAT5E)	PTZ CAMERA CABLE (CAT5E)
T-1	20	30	425		85	85		
T-2					85	85		
P-1	20							
T-3		30	425	80	65	85		
P-2	20							
T-4					85	85		35
P-3	20							
TOTAL	80	60	850	80	320	340	0	35

SIGNAL POLE LOCATIONS



ALL DIMENSIONS ARE MEASURED FROM PROJECTED BACK OF CURB

CONTRACTOR SHALL VERIFY PROPOSED SIGNAL POLE LOCATION DOES NOT CONFLICT WITH EXISTING UTILITES. LOCATIONS MAY NEED TO BE ADJUSTED AS NEEDED TO AVOID DAMAGE THERETO.

*T-2 AND T-4 EXISTING SIGNAL POLES TO REMAIN

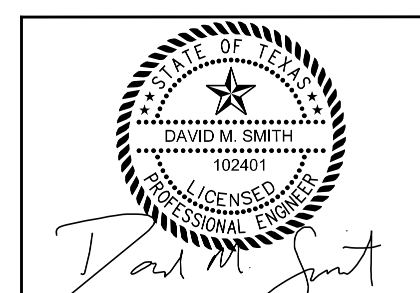
GROUND BOX SUMMARY

TYPE	UNIT	QTY
D W/O APRON	EA	5
D W/ APRON	EA	5

MINIMUM PEDESTRIAN TIMING

PED PHASE	SIGNAL HEAD NUMBERS	WALK TIME (SEC)	FLASH DON′T WALK TIME (SEC)	TOTAL (SEC)
2	4, 24	7	21	28
6	12, 16	7	25	32
4	5, 6, 7, 11	7	38	45
8	7, 18, 19,	7	36	43

NOTES:
1) ALL PROPOSED AND EXISTING SIGNAL HEADS SHALL HAVE BLACK, ALUMINUM, VENTED BACKPLATES WITH 2-INCH RETRO-REFLECTIVE BORDERS.
2) ALL PEDESTRIAN SIGNALS SHALL BE COUNTDOWN TYPE.



DATE: 1/25/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

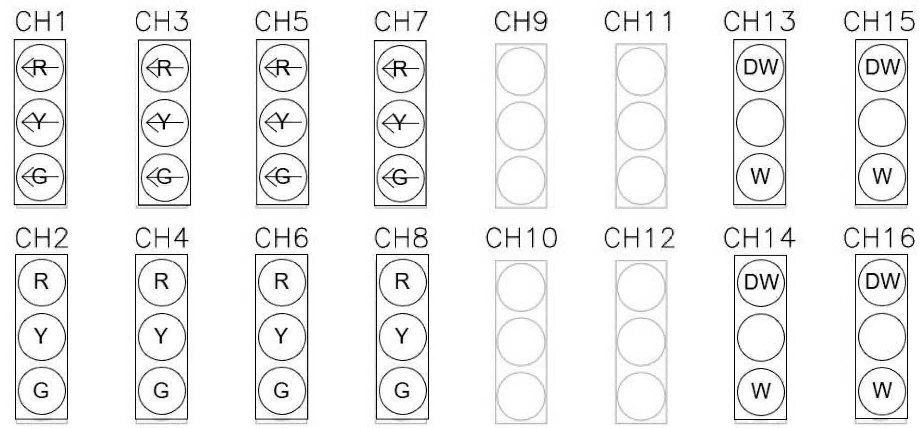
SIGNAL PHASING AND CHARTS

WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

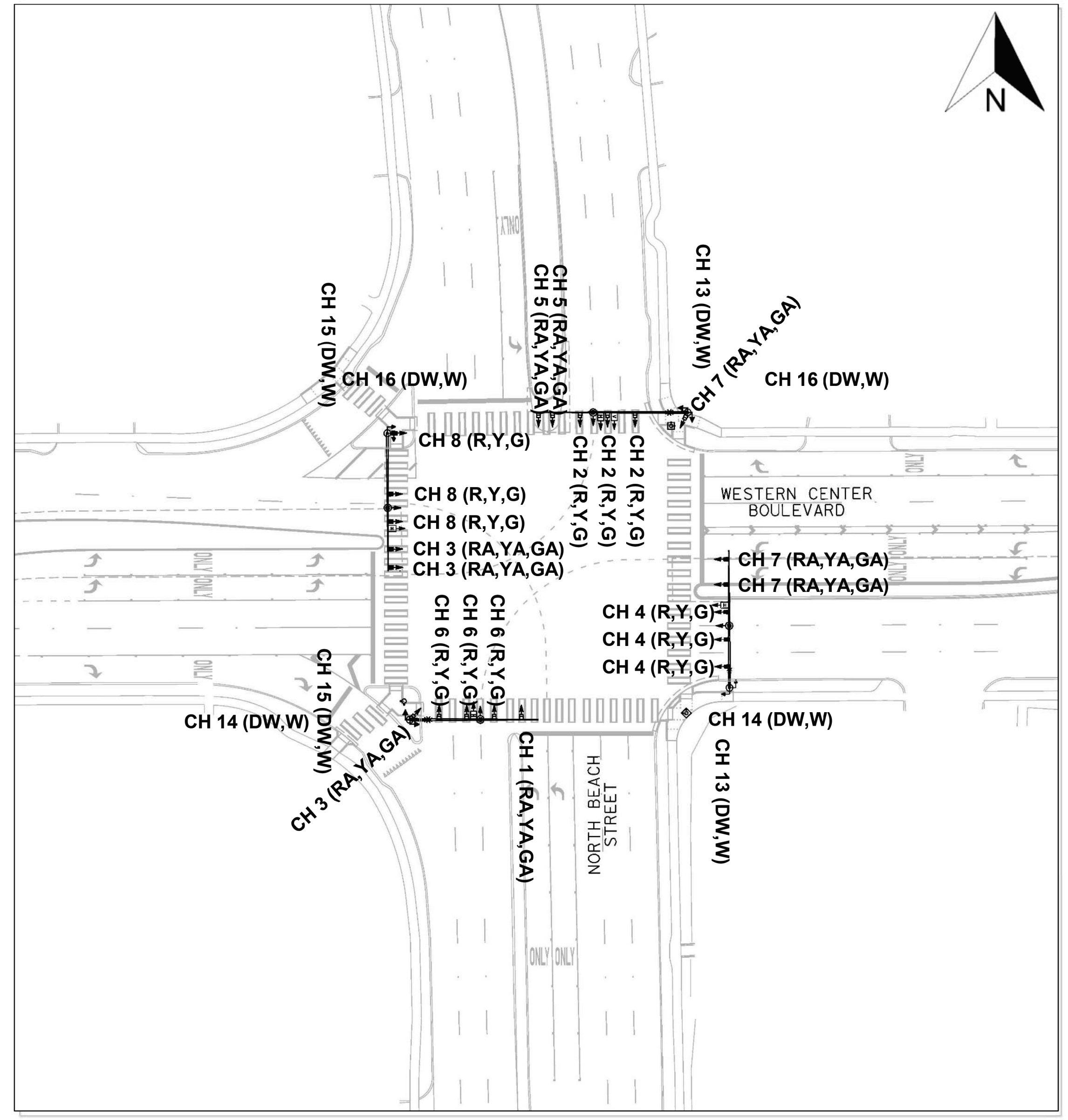
DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	77
	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

LOAD SWITCH OUTPUT ASSIGNMENT



SIGNAL DETECTOR ATTRIBUTE / CHANNEL												
	1	2	3	4	5	6	7	8	9	10	11	12
352i ATC							PED 2 DET 13	PED 6 DET 15			PRE EMPT NB DET 21	PRE EMPT WB DET 23
							PED 4 DET 14	PED 8 DET 16			PRE EMPT SB DET 22	PRE EMPT EB DET 24

ALL VEHICULAR DETECTION SHALL BE THROUGH SDLC



FORT WORTH

5001 JAMES AVENUE
FORT WORTH, TX 76115

PHONE: (817) 392-8656
FAX: (817) 392-2533

LEGEND

- SIGNAL HEAD
- PED HEAD
- PED POLE
- MAST ARM

STATE OF TEXAS
MOHAMMAD AZIZUR RAHMAN
118252
LICENSED PROFESSIONAL ENGINEER
03-08-24

CITY OF FORT WORTH

DEPARTMENT OF TRANSPORATION AND PUBLIC WORKS
TRAFFIC MANAGEMENT DIVISION

N BEACH ST AND WESTERN CENTER BLVD

CHANNEL ASSIGNMENT DRAWING

NOTES	NAME	DATE
DESIGN BY	Sagar M	3/8/2024
ENGINEER	Sagar M	3/8/2024
APPROVED	Aziz R	3/8/2024
SHEET No.	1	

NO.	REVISION	BY	DATE

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TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

CHANNEL ASSIGNMENT DRAWING

WESTERN CENTER BLVD
AT N BEACH ST

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.			HIGHWAY NO.
	.	(SEE TITLE SHEET)			
GRAPHICS	STATE	DISTRICT	COUNTY		SHEET NO.
	TEXAS	2	TARRANT		
CHECK	CONTROL	SECTION	JOB		78
CHECK	0902	90	214, ETC.		

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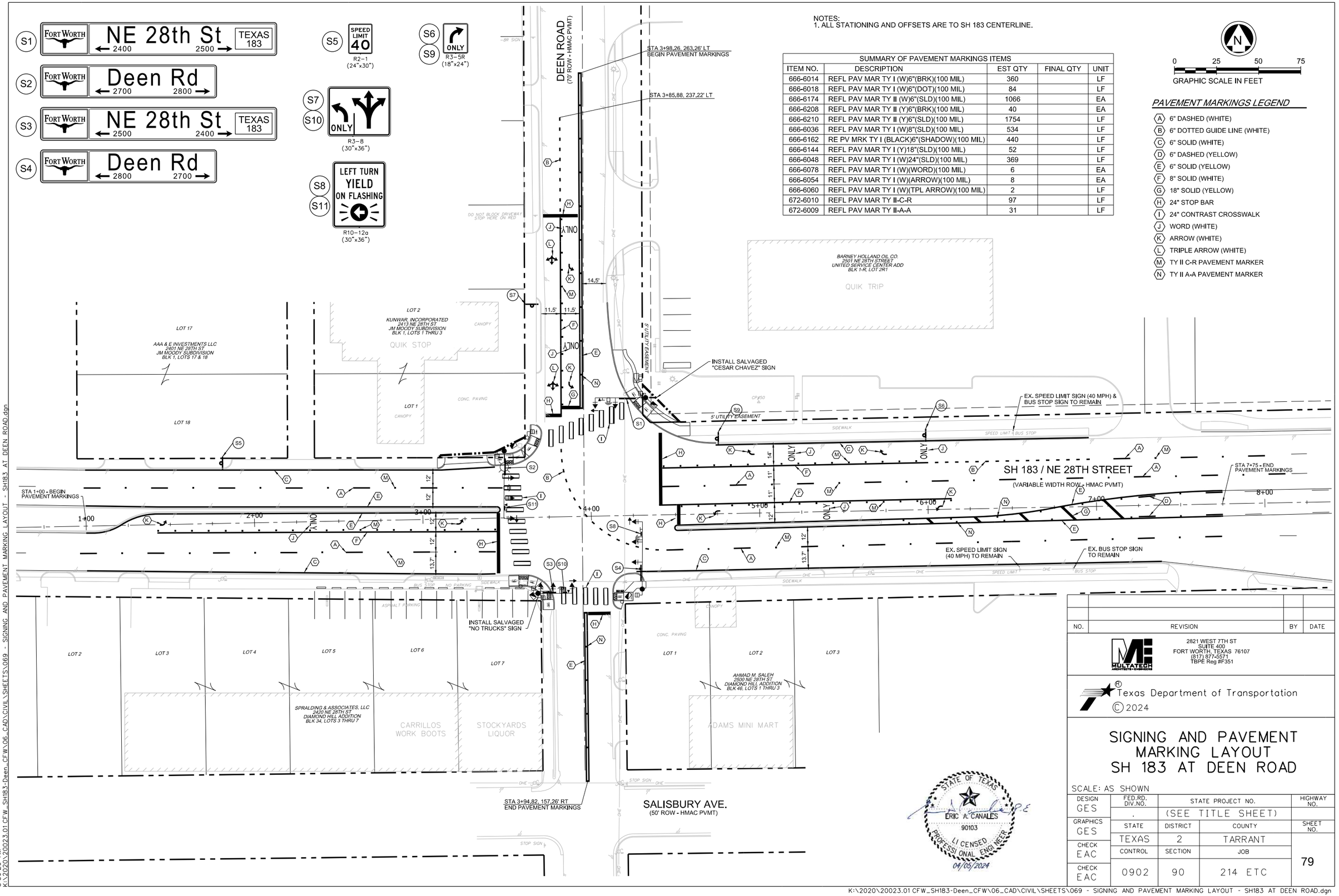

NOTES:
1. ALL STATIONING AND OFFSETS ARE TO SH 183 CENTERLINE.

SUMMARY OF PAVEMENT MARKINGS ITEMS

ITEM NO.	DESCRIPTION	EST QTY	FINAL QTY	UNIT
666-6014	REFL PAV MAR TY I (W)6"(BRK)(100 MIL)	360		LF
666-6018	REFL PAV MAR TY I (W)6"(DOT)(100 MIL)	84		LF
666-6174	REFL PAV MAR TY II (W)6"(SLD)(100 MIL)	1066		EA
666-6208	REFL PAV MAR TY II (Y)6"(BRK)(100 MIL)	40		EA
666-6210	REFL PAV MAR TY II (Y)6"(SLD)(100 MIL)	1754		LF
666-6036	REFL PAV MAR TY I (W)8"(SLD)(100 MIL)	534		LF
666-6162	RE PV MRK TY I (BLACK)6"(SHADOW)(100 MIL)	440		LF
666-6144	REFL PAV MAR TY I (Y)18"(SLD)(100 MIL)	52		LF
666-6048	REFL PAV MAR TY I (W)24"(SLD)(100 MIL)	369		LF
666-6078	REFL PAV MAR TY I (W)(WORD)(100 MIL)	6		EA
666-6054	REFL PAV MAR TY I (W)(ARROW)(100 MIL)	8		EA
666-6060	REFL PAV MAR TY I (W)(TPL ARROW)(100 MIL)	2		LF
672-6010	REFL PAV MAR TY II-C-R	97		LF
672-6009	REFL PAV MAR TY II-A-A	31		LF

0 25 50 75
GRAPHIC SCALE IN FEET

PAVEMENT MARKINGS LEGEND

- (A) 6" DASHED (WHITE)
- (B) 6" DOTTED GUIDE LINE (WHITE)
- (C) 6" SOLID (WHITE)
- (D) 6" DASHED (YELLOW)
- (E) 6" SOLID (YELLOW)
- (F) 8" SOLID (WHITE)
- (G) 18" SOLID (YELLOW)
- (H) 24" STOP BAR
- (I) 24" CONTRAST CROSSWALK
- (J) WORD (WHITE)
- (K) ARROW (WHITE)
- (L) TRIPLE ARROW (WHITE)
- (M) TY II C-R PAVEMENT MARKER
- (N) TY II A-A PAVEMENT MARKER

NO.	REVISION	BY	DATE

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TBPE Reg #F351

Texas Department of Transportation

SIGNING AND PAVEMENT MARKING LAYOUT SH 183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS GES	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK EAC	CONTROL	SECTION	JOB	79
CHECK EAC	0902	90	214 ETC	

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED PROFESSIONAL ENGINEER
04/05/2024

4/2/2024
8:56:20 AM
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General Notes

Division 34 - Transportation

Traffic Signals:

1. Prior to activating traffic signals with new or revised signal timing, the contractor shall e-mail Aziz Rahman, Professional Engineer, at aziz.rahman@fortworthtexas.gov at least three (3) weeks in advance to schedule that.
2. If new cabinets and controllers are being installed and the controllers need to be programmed and tested by City Forces; the contractor shall deliver them to the City of Fort Worth, Signal Shop at 5001 James Ave., at least three (3) weeks in advance to schedule that. If a cellular modem is being installed, the contractor shall also deliver the modem with the cabinet to the City of Fort Worth Signal Shop so the modem can be activated prior to installation.
3. Unless there is a compelling reason with approval by the Traffic Signal Engineering Group, a new traffic signal will be put on flash on Thursdays and working colors the following Tuesday.
4. Switching from old traffic signal to a new one, this shall be done between Tuesday and Thursdays only.
5. Notify Traffic Management Division (817-392-7738) Project Representative at least 24-hours in advance of all concrete pours. Inspector must be present when concrete is placed on the project site.
6. If applicable, equipment supplied by the City will be available for pick up from the Transportation/Public Works (T/PW) Warehouse at 5001 James Avenue. The Project Representative must authorize all equipment pickups.
7. Contractor shall provide a 5-year manufacturer warranty on APS systems. The warranty documentation shall include the start date (when material is delivered to job site) and the end date of the warranty and the serial number of the equipment.
8. The City will not provide traffic signal cabinet or traffic signal controller to the Contractor. The cost for these items must be included in the City project budget, or for all privately funded projects, the cost must be included in the bid package for purchase from the vendor.
9. The Contractor shall provide all materials needed to construct a fully operational traffic signal as called out for in the plans and specifications.
10. All existing signal equipment shall remain in place and operating until new equipment is in place and ready to operate.
11. The Contractor shall contact Anthony Vasquez, TPW Superintendent, at 817-392-8773 or anthony.vasquez@fortworthtexas.gov at least one (1) week in advance of any disposal of material to coordinate any material that the city may need salvaged. The Contractor is responsible for hauling and properly disposing of salvaged material from the job site to a disposal site of their choosing. The Contractor will not be allowed to drop off salvaged materials at the City yards unless otherwise directed by TPW Superintendent for the specified material only.

Foundations:

1. Dimensions shown on plans for locations of signal foundations, conduit, and other items may vary in order to meet local conditions. All locations of foundations, conduit, and ground boxes shall be approved by City Traffic Signal Engineer.
2. Contractor shall contact the City traffic signal inspector prior to pouring cabinet foundation to be sure that template and bolt patterns are correct for type of cabinet being supplied. Foundation shall be installed per City Specification and City Detail.
3. Pier Foundations shall be poured together in one piece.
4. No signal poles shall be placed on foundations prior to five (5) calendar days following pouring of concrete.
5. Contractor shall clean up and remove all loose material resulting from construction operations each day prior to the work is being suspended.
6. Controller cabinet concrete apron shall be subsidiary to the bid item for the controller cabinet foundation. Cabinet foundation and apron shall be poured together in one piece.

Controller and Cabinet:

1. Contractor shall install controller cabinet and connect all associated field wiring.
2. Ethernet cable shall be provided to connect controller to communication device. Material and installation shall be subsidiary to install of controller or controller cabinet bid item.
3. City will install signal timing and program controller.

Conduit:

1. A continuous grounded system shall be provided in PVC conduit by running 1 No. 8 bare copper stranded ground wire in conduit between foundations and grounding at each foundation ground rod.
2. Grounding shall not exceed 25 ohms at each ground rod.
3. All conduits shall be Schedule 80 PVC.

Signal Heads:

1. All signal heads shall be either McCain™, Econolite™, or approved equivalent style and dimensions.
2. All signal heads shall be covered with burlap or other approved material from the time of installation until the signal is placed in operation.
3. All signal head attachments shall be designed such that the wiring to each signal head shall pass from the mast arm through a rain tight connector to the signal head bracing or attachment hardware to the signal head. A small amount of exposed signal cable shall form a drip loop.
4. All LED signal indications shall be General Electric (GE) Gelcore™ or equivalent and shall meet the latest ITE standards.
5. Signal heads (all displays) and pedestrian Walk and Don't Walk heads with countdown displays shall have LED inserts.
6. Clam-Shell mounting assemblies shall be used for pedestrian indications.
7. All LED signals shall be of the incandescent appearance.
8. All signal heads shall have black aluminum, louvered, single piece back plates compatible with McCain™, Econolite™, or approved equivalent signal head housings.

Traffic Signs and Pavement Markings:

1. All traffic signs and mounting hardware shown on the plans will be furnished and installed by the contractor including the metro street name signs. The contractor shall provide a detail sheet for the metro street name signs with block numbers to the City for approval prior to fabrication and installation.
2. Existing stop signs and posts will be removed by the contractor upon, or before, the signal turn-on.

Detection System:

1. The Contractor shall furnish and install the detection system and cable unless otherwise called out in the plans.
2. Ethernet cable shall be provided connecting the detection central control unit to the communication device. Material and installation shall be subsidiary to the installation detection system bid item.
3. The Contractor shall install, aim and program all detectors as per City Standard Specifications and City Details. The Contractor shall refer to City Standard Details and project plans for detection zones placement.

Emergency Vehicle Preemption Equipment (EVP):

1. The Contractor shall furnish and install the Opticom™ EVP (detectors, cable, and discriminator units) unless otherwise called out in the plans. The Contractor shall install the EVP detectors on the mast arm as shown on the plans and appropriate City Detail, and run one continuous EVP cable from the detector to the cabinet. Installation of the EVP system will be paid for per bid item.

STATE OF TEXAS
OGBONNA IBEJI ABARIKWU
95267
LICENSED
PROFESSIONAL ENGINEER
04/03/2024

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SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

Texas Department of Transportation

TRAFFIC SIGNAL GENERAL NOTES SH183 AT DEEN ROAD

SCALE: AS SHOWN SHEET OF

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
AITC	.	(SEE TITLE SHEET)		
GRAPHICS JP	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK RH	CONTROL	SECTION	JOB	80
CHECK OIA	0902	90	214	

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Phone: (602) 482-5884
Fax: (817) 545-8701
ckdallas@theckgroup.com

Traffic Control:
1. The Contractor shall submit a Work Schedule, Traffic Control Plan, and acquire a Street-use Permit from TPW Department, at 200 Texas Street. Contact Chuck McLure (817-392-7219).
2. The Contractor shall be responsible for the safety of pedestrians and motorists in the area of the traffic signal construction site.
3. Roads and streets shall be kept open to traffic at all times. Contractor shall arrange construction so as to close only one lane of a roadway at a time.
4. All construction operations shall be conducted to provide minimal interference to traffic. All traffic signal equipment installations shall be arranged so as to permit continuous movement of traffic in all directions at all times.
5. Contractor shall be responsible for any signage necessary during construction.
6. Unless otherwise noted, it is the contractor's responsibility to ensure that signal indications and timing are adjusted and maintained to ensure safety in work zone at all times.
7. Any traffic signal modifications during construction are subsidiary to traffic control plan (TCP) pay item.
8. Any traffic signal modifications shall be in compliance with the latest version of the Texas Manual on Uniform Traffic Control Devices (TMUTCD) and the City of Fort Worth Standards.
9. The contractor shall submit any proposed traffic signal modifications to the Traffic Signal Engineering Section for their approval ten (10) days prior to any changes.
10. Two-way traffic must be maintained at all times. One lane of traffic around construction operations in progress with adequate safeguards will be acceptable on minor streets only, unless otherwise directed by the Engineer.

Electric Service:
1. Install the required electric services and obtain an electrical service permit in each instance, cost of which will be paid by the Contractor.
2. The electrical service shall comply with City Lighting Standards, Specifications and Details as applicable per plans.

Luminaires:
1. The pre-qualified lighting contractor shall submit a contractor material package along with a copy of applicable plan sheets of the project to the Transportation Public Works, Street Light Department for review and approval before purchasing any lighting material for said project. All materials located within the City lighting system shall be an approved product.
2. The City will not furnish lighting system material to the contractor. The pre-qualified lighting contractor shall furnish and install lighting system in accordance with the latest City Standard Specifications, City Details, and plans.
3. The lighting system must follow the current City Lighting Standards, Specifications, and Details. Contact the City Street Light Section for direction on light pole types allowed and design requirements.

Accessible Pedestrian Signal (APS):
1. APS units with audible message shall be installed on all TxDOT locations or as called out in the plans.
2. Ethernet cable shall be connected from APS central control unit to communication device. Material and installation shall be subsidiary to installation of APS bid item.
3. APS units shall comply with the latest version of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).
4. APS units shall be installed per City Standard Specification and City Detail.
5. APS units shall be programmed by the Contractor.

Powder Coating and Paint:
1. All new signal poles, pedestrian poles, and mast arms shall be powder coated black (RAL 9017). If called outs in the plans, all existing signal poles, pedestrian poles, and mast arms shall be painted black (RAL 9017).

Battery Backup:
1. If called out for in the plans, battery backup units supplied shall be Alpha or approved equivalent. Installation shall be completed per City Standard Specifications and City Detail.
2. Ethernet cable shall be provided for BBUs connecting BBU to the communication device. When mounting an external BBU, ensure cable is routed into the cabinet. Ethernet cable shall be subsidiary to the installation of BBU bid item.

PTZ Camera:
1. If called out for in the plans, PTZ Camera units shall comply with the City Standard Specifications.
2. Power supply and ethernet cable material and installation shall be subsidiary to installation of PTZ camera bid item.

Cellular Modem:

Antenna, ethernet cable, power supply, and unmanaged network switch material and installation shall be subsidiary to installation of Cellular Modem bid item

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95267
LICENSED
PROFESSIONAL ENGINEER
04/03/2024

NO.	REVISION	BY	DATE

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SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

TRAFFIC SIGNAL GENERAL NOTES SH183 AT DEEN ROAD

SCALE: AS SHOWN SHEET OF

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
AITC	.	(SEE TITLE SHEET)		
GRAPHICS JP	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	81
CHECK RH	CONTROL	SECTION	JOB	
CHECK OIA	0902	90	214	

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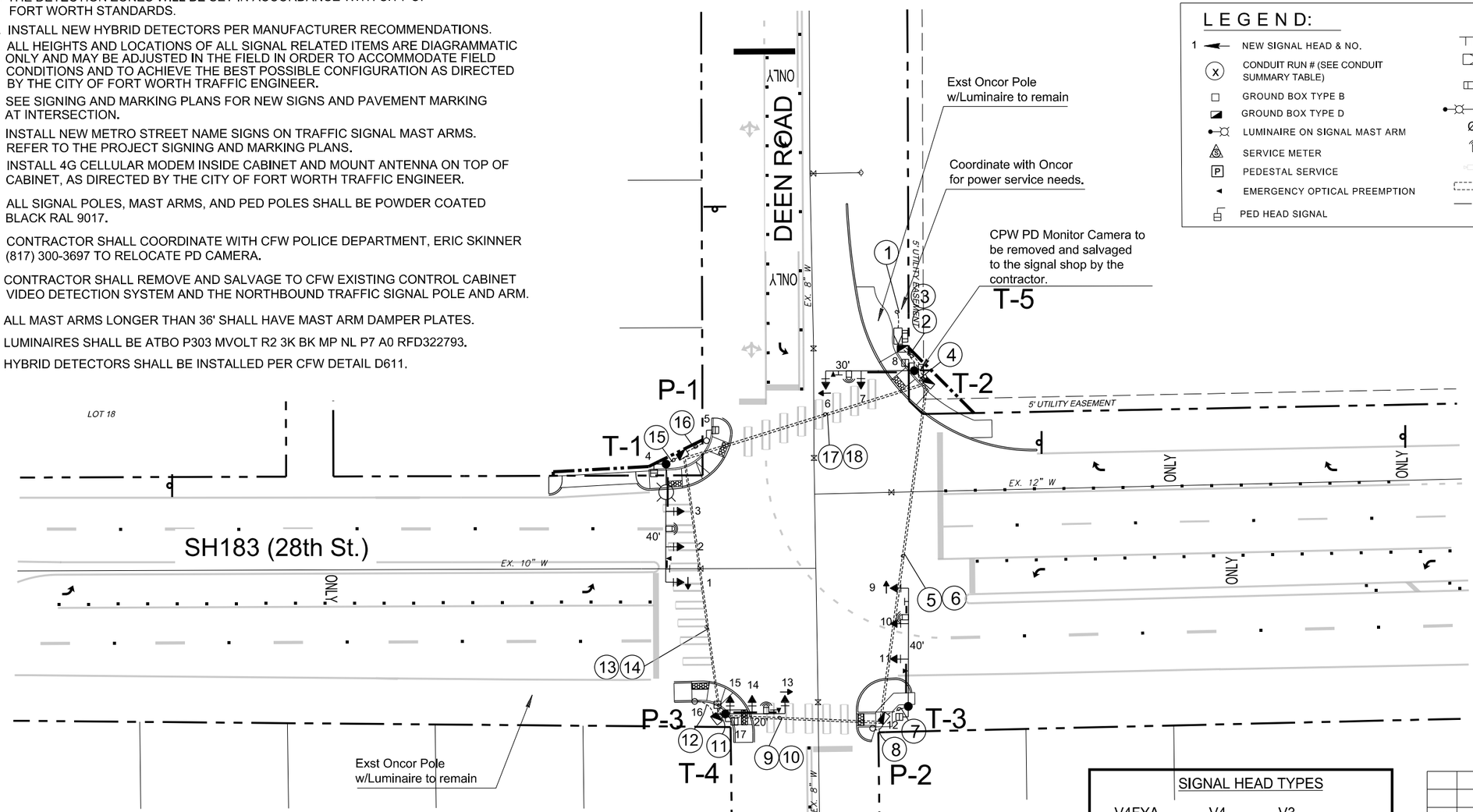
NOTES:

1. INCISE ALL FOUNDATIONS WHERE THE CONDUIT LEAVES THE FOUNDATION.
2. THE DETECTION ZONES WILL BE SET IN ACCORDANCE WITH CITY OF FORT WORTH STANDARDS.
3. INSTALL NEW HYBRID DETECTORS PER MANUFACTURER RECOMMENDATIONS.
4. ALL HEIGHTS AND LOCATIONS OF ALL SIGNAL RELATED ITEMS ARE DIAGRAMMATIC ONLY AND MAY BE ADJUSTED IN THE FIELD IN ORDER TO ACCOMMODATE FIELD CONDITIONS AND TO ACHIEVE THE BEST POSSIBLE CONFIGURATION AS DIRECTED BY THE CITY OF FORT WORTH TRAFFIC ENGINEER.
5. SEE SIGNING AND MARKING PLANS FOR NEW SIGNS AND PAVEMENT MARKING AT INTERSECTION.
6. INSTALL NEW METRO STREET NAME SIGNS ON TRAFFIC SIGNAL MAST ARMS. REFER TO THE PROJECT SIGNING AND MARKING PLANS.
7. INSTALL 4G CELLULAR MODEM INSIDE CABINET AND MOUNT ANTENNA ON TOP OF CABINET, AS DIRECTED BY THE CITY OF FORT WORTH TRAFFIC ENGINEER.
8. ALL SIGNAL POLES, MAST ARMS, AND PED POLES SHALL BE POWDER COATED BLACK RAL 9017.
9. CONTRACTOR SHALL COORDINATE WITH CFW POLICE DEPARTMENT, ERIC SKINNER (817) 300-3697 TO RELOCATE PD CAMERA.
10. CONTRACTOR SHALL REMOVE AND SALVAGE TO CFW EXISTING CONTROL CABINET VIDEO DETECTION SYSTEM AND THE NORTHBOUND TRAFFIC SIGNAL POLE AND ARM.
11. ALL MAST ARMS LONGER THAN 36' SHALL HAVE MAST ARM DAMPER PLATES.
12. LUMINAIRES SHALL BE ATBO P303 MVOLT R2 3K BK MP NL P7 A0 RFD322793.
13. HYBRID DETECTORS SHALL BE INSTALLED PER CFW DETAIL D611.



LEGEND:

- NEW SIGNAL HEAD & NO.
- CONDUIT RUN # (SEE CONDUIT SUMMARY TABLE)
- GROUND BOX TYPE B
- GROUND BOX TYPE D
- LUMINAIRE ON SIGNAL MAST ARM
- SERVICE METER
- PEDESTAL SERVICE
- EMERGENCY OPTICAL PREEMPTION
- PED HEAD SIGNAL
- SIGN ON MAST ARM
- 352i CABINET /CONTROLLER
- BATTERY BACKUP
- SIGNAL POLE & MAST ARM
- ØX PHASE NUMBER
- HYBRID DETECTOR
- PTZ CAMERA
- VIVDS DETECTION ZONE
- PROPOSED CONDUIT RUN

0 20 40
SCALE: 1"=20'

ADDITIONAL NOTES:

1. ALL HEIGHTS, LOCATIONS OF ALL SIGNAL RELATED ITEMS, PAVEMENT MARKINGS, SIGNING, ETC, ARE DIAGRAMMATIC ONLY AND MAY BE ADJUSTED IN THE FIELD IN ORDER TO ACCOMMODATE FIELD CONDITIONS AND TO ACHIEVE THE BEST POSSIBLE CONFIGURATION AS DIRECTED BY THE TXDOT INSPECTOR.

2. UTILITIES MAY BE FOUND IN THE AREA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD LOCATE UNDERGROUND UTILITIES. IF A UTILITY IS FOUND WITH A PROPOSED POLE FOUNDATION, THE CONTRACTOR SHALL CONTACT THE ENGINEER ON RECORD FOR A POSSIBLE SOLUTION.

3. THE LOCATION OF THE RPD AND RADD DETECTORS SHOWN IN THE LAYOUT ARE DIAGRAMMATICAL AND SHALL BE DETERMINED IN THE FIELD BY THE CONSTRUCTOR AND APPROVED BY THE TXDOT INSPECTOR BEFORE THEY ARE INSTALLED. THE CONTRACTOR SHALL INSTALL THE DETECTORS ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

4. INSTALL EXTERNAL BBU UNIT TO CONTROLLER CABINET.

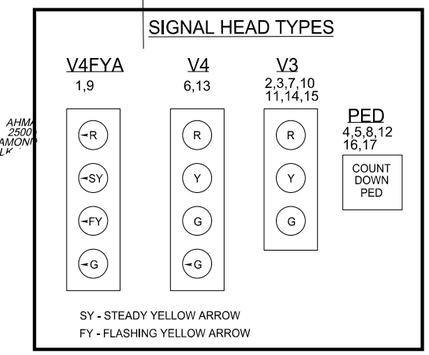
5. ALL SIGNAL HEAD ASSEMBLIES SHALL BE INSTALLED WITH VENTED BACK PLATES. ALL SIGNAL HEADS SHALL BE MOUNTED HORIZONTALLY.

6. FOUNDATIONS SHALL BE ADJUSTED TO THE FIELD IN ORDER TO MEET CLEARANCE.

7. LOCATION OF MAST ARM POLES IS APPROXIMATE, ENGINEER OR TXDOT REP SHALL APPROVE ANY CHANGES.

8. RADAR VENDOR MUST BE PRESENT FOR FLACH AND FOR FULL COLOR TRANSITION/FULL COLOR TURN ON.

SIGNAL HEAD TYPES



STATE OF TEXAS
OGBONNA IBEJI ABARIKWU
95267
LICENSED
PROFESSIONAL ENGINEER
04/03/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS & ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F-351

Texas Department of Transportation

PROPOSED TRAFFIC SIGNAL SH183 AT DEEN ROAD

SCALE: AS SHOWN SHEET OF

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
AITC	.	(SEE TITLE SHEET)		
GRAPHICS JP	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK RH	TEXAS	2	TARRANT	82
CHECK OIA	CONTROL 0902	SECTION 90	JOB 214	

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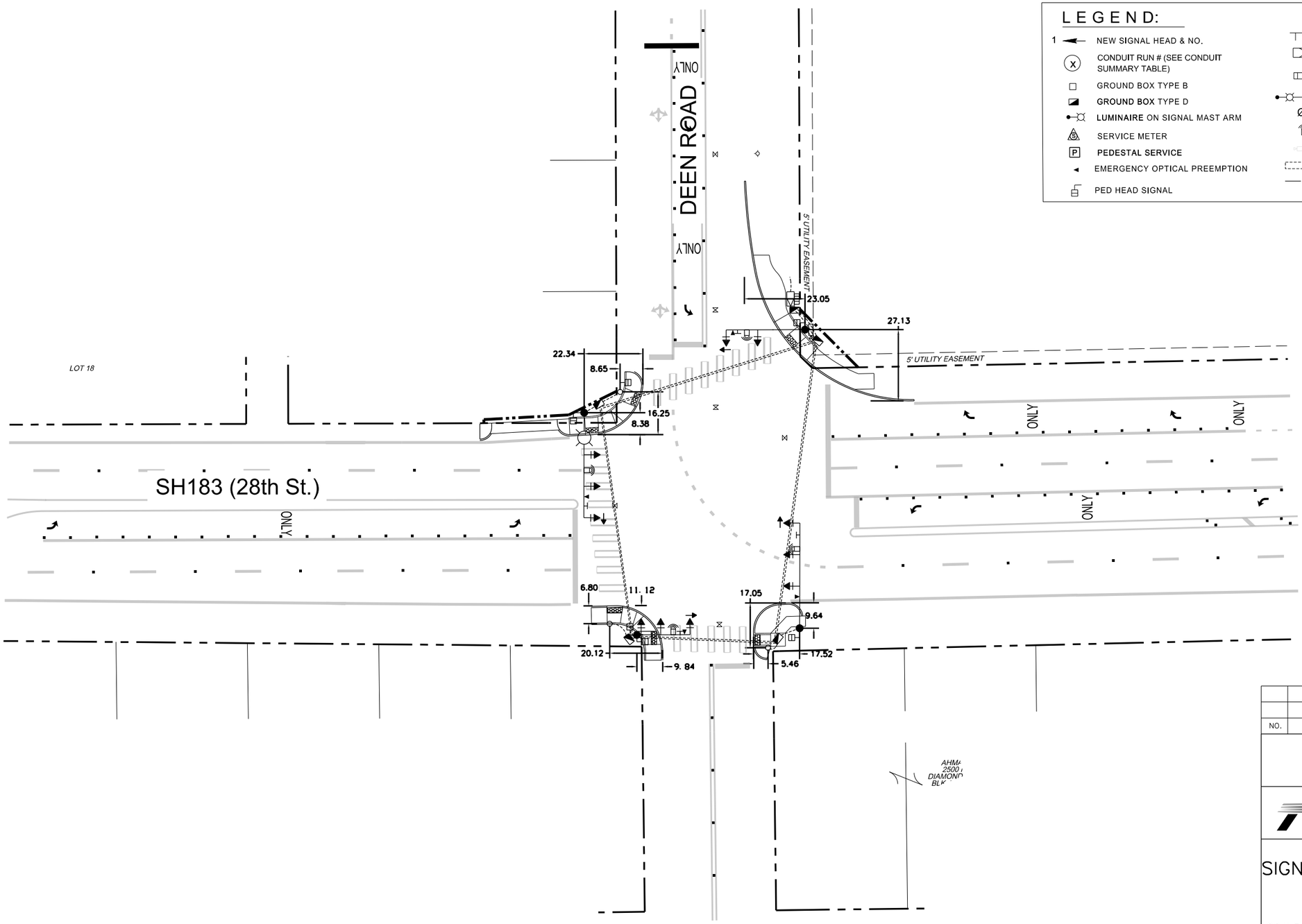

LEGEND:

- 1 — NEW SIGNAL HEAD & NO.
- (X) — CONDUIT RUN # (SEE CONDUIT SUMMARY TABLE)
- GROUND BOX TYPE B
- GROUND BOX TYPE D
- LUMINAIRE ON SIGNAL MAST ARM
- SERVICE METER
- P — PEDESTAL SERVICE
- EMERGENCY OPTICAL PREEMPTION
- PED HEAD SIGNAL
- SIGN ON MAST ARM
- 352i CABINET /CONTROLLER
- BATTERY BACKUP
- SIGNAL POLE & MAST ARM
- ØX — PHASE NUMBER
- HYBRID DETECTOR
- PTZ CAMERA
- VIVDS DETECTION ZONE
- PROPOSED CONDUIT RUN

N

0 20 40

SCALE: 1"=20'

STATE OF TEXAS
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SIGNAL POLE LOCATIONS LAYOUT SH183 AT DEEN ROAD

SCALE: AS SHOWN SHEET OF

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
AITC	.	(SEE TITLE SHEET)		
GRAPHICS JP	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK RH	CONTROL	SECTION	JOB	83
CHECK OIA	0902	90	214	

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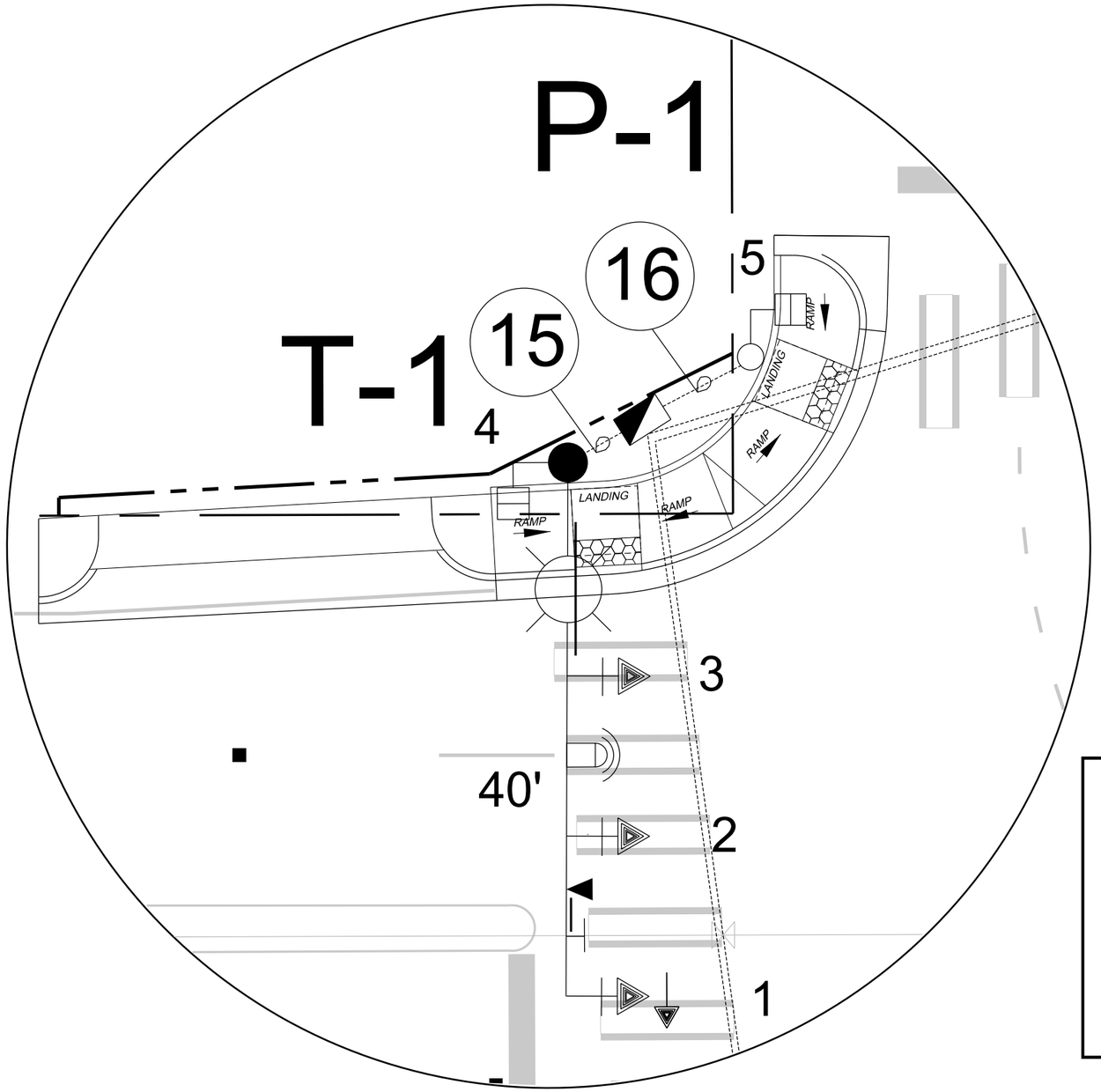
NORTHWEST CORNER



LEGEND:

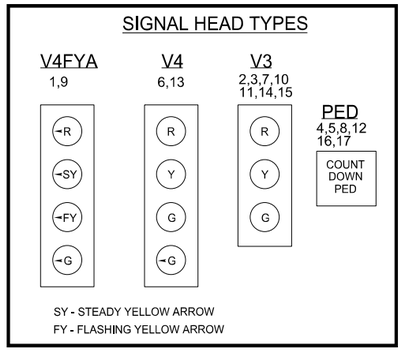
- NEW SIGNAL HEAD & NO.
- CONDUIT RUN # (SEE CONDUIT SUMMARY TABLE)
- GROUND BOX TYPE B
- GROUND BOX TYPE D
- LUMINAIRE ON SIGNAL MAST ARM
- SERVICE METER
- PEDESTAL SERVICE
- EMERGENCY OPTICAL PREEMPTION
- PED HEAD SIGNAL
- SIGN ON MAST ARM
- CONTROLLER
- BATTERY BACKUP
- SIGNAL POLE & MAST ARM
- ØX PHASE NUMBER
- HYBRID DETECTOR
- PTZ CAMERA
- VIVDS DETECTION ZONE
- PROPOSED CONDUIT RUN

N

0 10 20

SCALE: 1"=20'

SIGNAL HEAD TYPES



SY - STEADY YELLOW ARROW
FY - FLASHING YELLOW ARROW

STATE OF TEXAS
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PROFESSIONAL ENGINEER
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TBPE Reg #F351

Texas Department of Transportation

PROPOSED SIGNAL DETAIL AT SH183 AND DEEN ROAD

SCALE: AS SHOWN SHEET OF

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
AITC	.	(SEE TITLE SHEET)		
GRAPHICS JP	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK RH	CONTROL	SECTION	JOB	84
CHECK OIA	0902	90	214	

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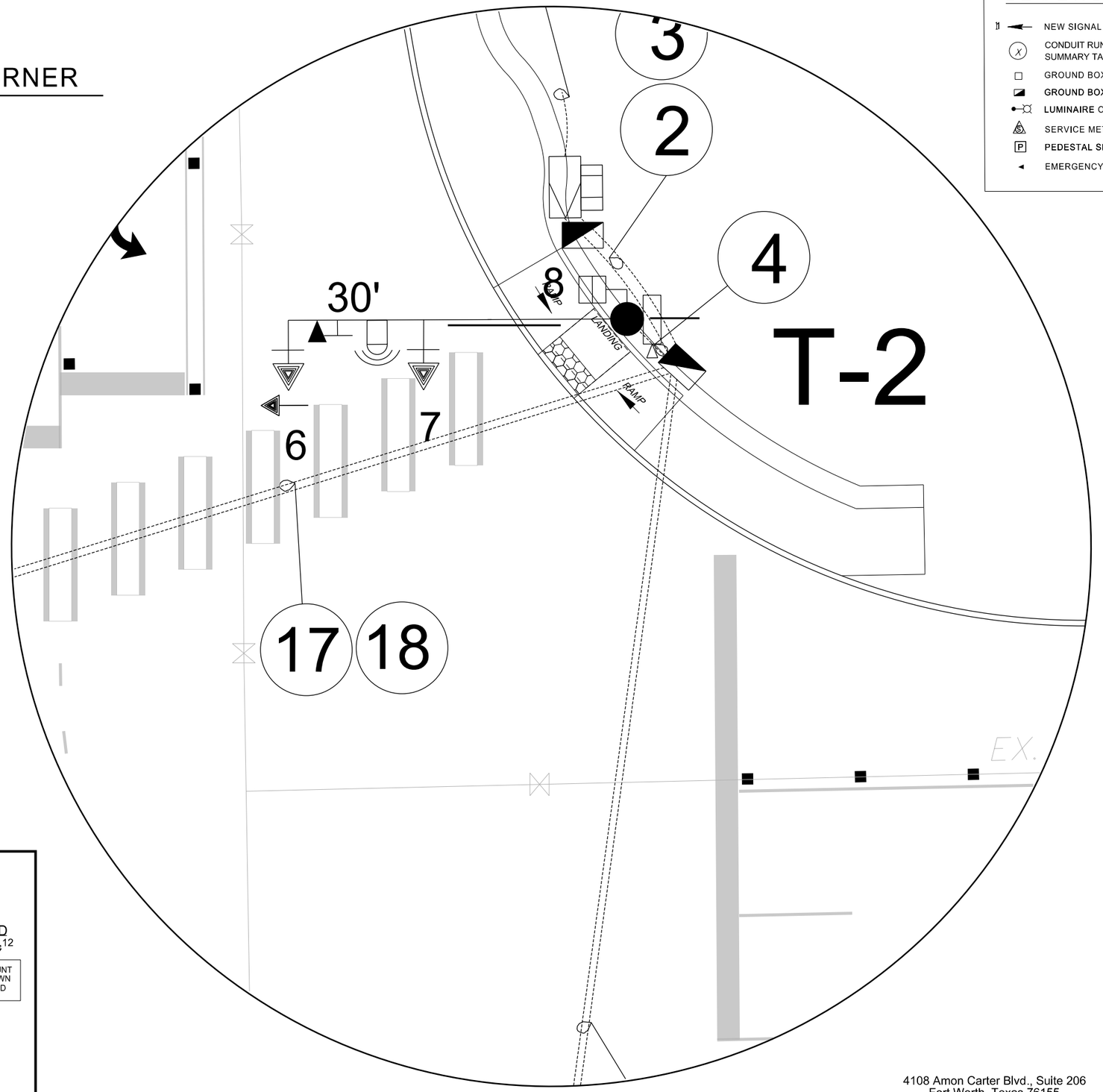
NORTHEAST CORNER



LEGEND:

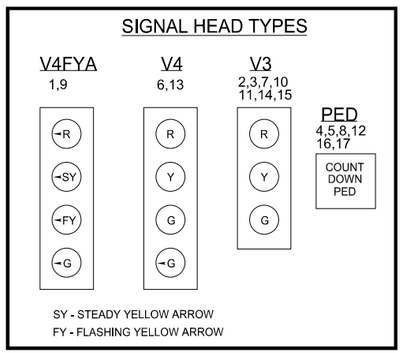
- NEW SIGNAL HEAD & NO.
- CONDUIT RUN # (SEE CONDUIT SUMMARY TABLE)
- GROUND BOX TYPE B
- GROUND BOX TYPE D
- LUMINAIRE ON SIGNAL MAST ARM
- SERVICE METER
- PEDESTAL SERVICE
- EMERGENCY OPTICAL PREEMPTION
- PED HEAD SIGNAL
- SIGN ON MAST ARM
- CONTROLLER
- BATTERY BACKUP
- SIGNAL POLE & MAST ARM
- ØX PHASE NUMBER
- HYBRID DETECTOR
- PTZ CAMERA
- VIVDS DETECTION ZONE
- PROPOSED CONDUIT RUN

N

0 10 20

SCALE: 1"=20'

SIGNAL HEAD TYPES



SY - STEADY YELLOW ARROW
FY - FLASHING YELLOW ARROW

STATE OF TEXAS
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95267
LICENSED
PROFESSIONAL ENGINEER
04/03/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS+ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F351

Texas Department of Transportation

PROPOSED SIGNAL DETAIL AT SH183 AND DEEN ROAD

SCALE: AS SHOWN SHEET OF

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
AITC	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JP	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
RH				85
CHECK	0902	90	214	
OIA				

4108 Amon Carter Blvd., Suite 206
Fort Worth, Texas 76155
Phone: (602) 482-5884
Fax: (817) 545-8701
ckdallas@theckgroup.com

4/4/2024
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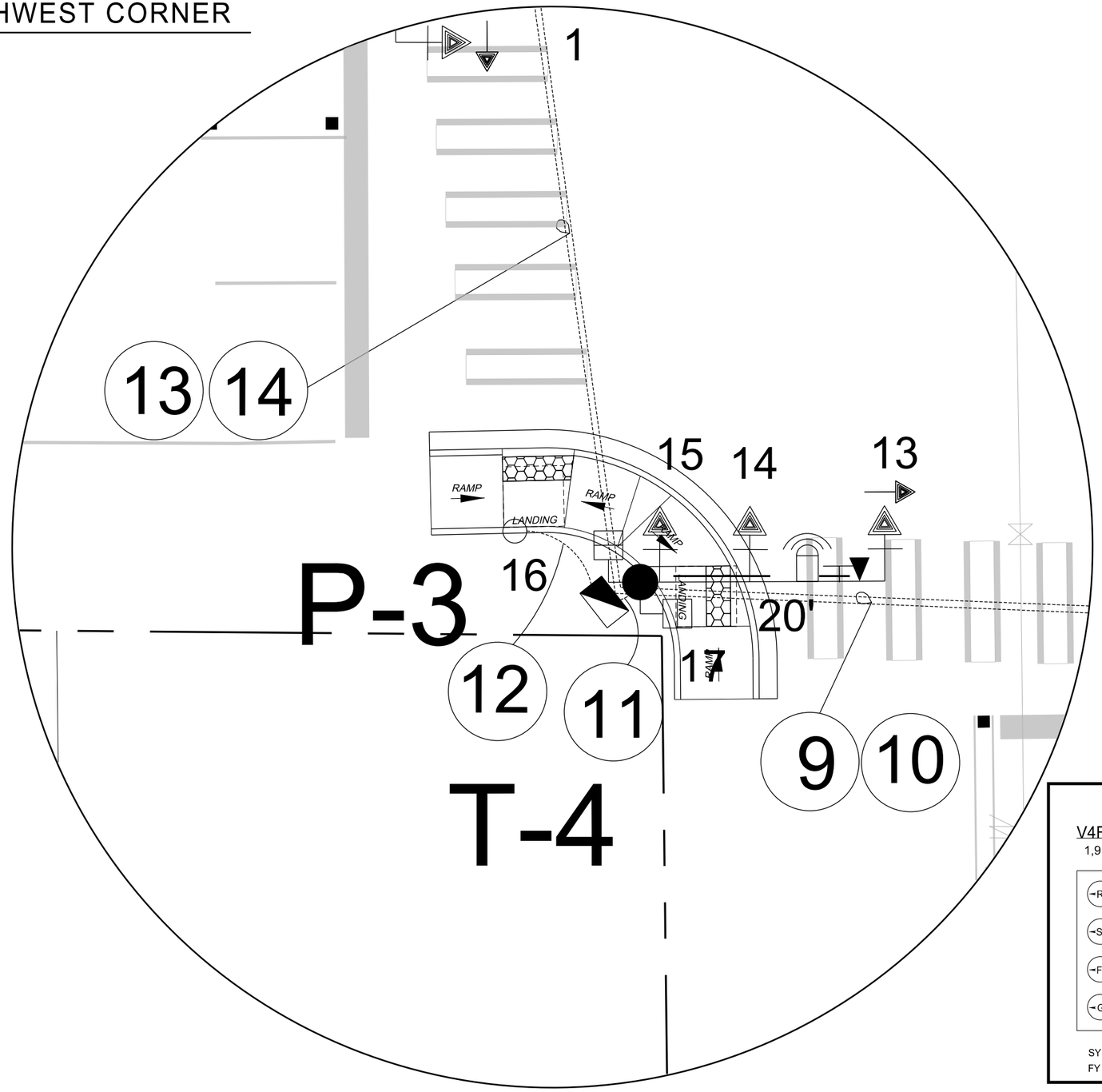
SOUTHWEST CORNER



LEGEND:

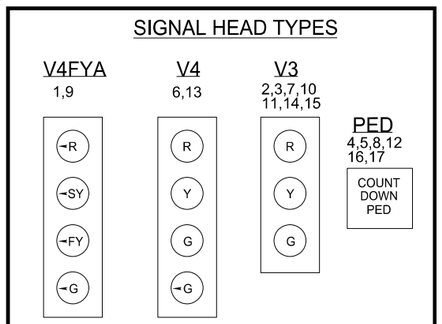
- NEW SIGNAL HEAD & NO.
- CONDUIT RUN # (SEE CONDUIT SUMMARY TABLE)
- GROUND BOX TYPE B
- GROUND BOX TYPE D
- LUMINAIRE ON SIGNAL MAST ARM
- SERVICE METER
- PEDESTAL SERVICE
- EMERGENCY OPTICAL PREEMPTION
- PED HEAD SIGNAL
- SIGN ON MAST ARM
- CONTROLLER
- BATTERY BACKUP
- SIGNAL POLE & MAST ARM
- ØX PHASE NUMBER
- HYBRID DETECTOR
- PTZ CAMERA
- VIVDS DETECTION ZONE
- PROPOSED CONDUIT RUN

N

0 10 20

SCALE: 1"=20'

SIGNAL HEAD TYPES



SY - STEADY YELLOW ARROW
FY - FLASHING YELLOW ARROW

STATE OF TEXAS
OGBONNA IBEJI ABARIKWU
95267
LICENSED
PROFESSIONAL ENGINEER
04/03/2024

NO.	REVISION	BY	DATE

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AITC	.	(SEE TITLE SHEET)		
GRAPHICS JP	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	86
CHECK RH	CONTROL	SECTION	JOB	
CHECK OIA	0902	90	214	

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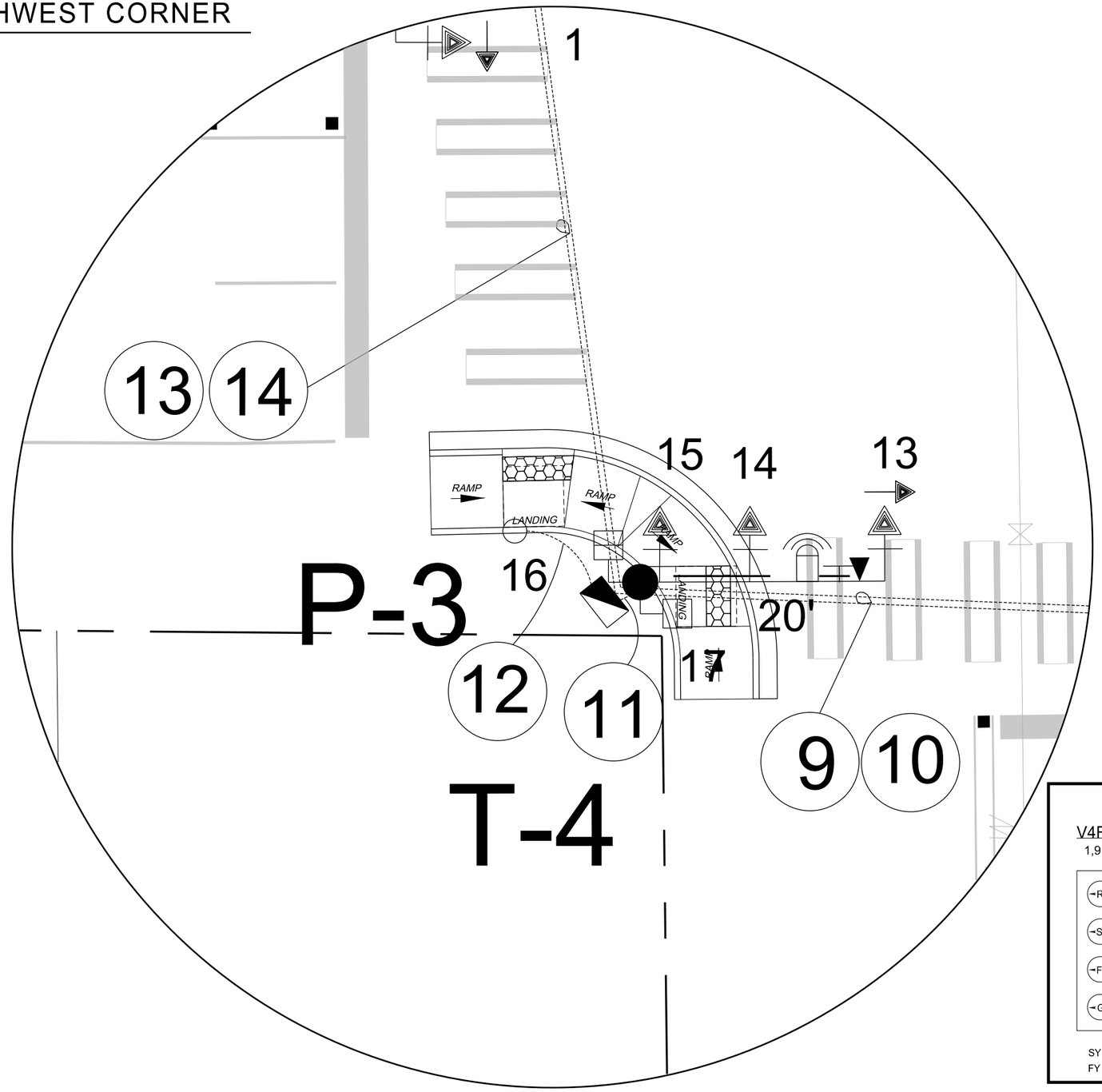
SOUTHWEST CORNER



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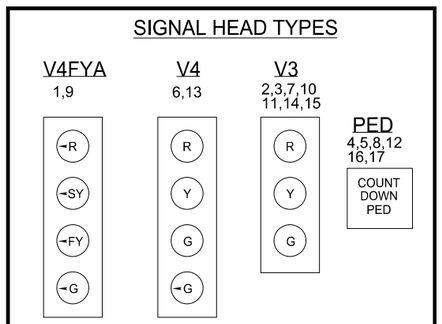
- HYBRID DETECTOR
- PTZ CAMERA
- VIVDS DETECTION ZONE
- PROPOSED CONDUIT RUN

N

0 10 20

SCALE: 1"=20'

SIGNAL HEAD TYPES



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04/03/2024

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PROPOSED SIGNAL DETAIL AT SH183 AND DEEN ROAD

SCALE: AS SHOWN SHEET OF

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
AITC	.	(SEE TITLE SHEET)		
GRAPHICS JP	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	87
CHECK RH	CONTROL	SECTION	JOB	
CHECK OIA	0902	90	214	

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SUMMARY OF CONDUIT AND CABLES

RUN NO	SIZE PROP.	LENGTH	BORE(B) TRENCH(T) RIGID METAL (RM)	20 CNDR CABLE 14 AWG	7 CNDR CABLE 14 AWG	5 CNDR CABLE 14 AWG	3 CNDR CABLE 14 AWG	#10 XHHW BLACK	#10 XHHW WHITE	#10 XHHW GREEN (INSULATED)	#8 BARE GROUND	#6 XHHW BLACK	#6 XHHW WHITE	#6 BARE GROUND	HYBRID DET.	OPTICOM CABLE	CAT5e PTZ
1	2"	*	RM	CONDUCTORS TO BE INSTALLED BY ONCOR													
2	2"		T									1	1	1			
3	3"		T	4	6					1		1	1	1	1	1	1
4	4"		T		1							1	1	1	1	1	1
5	4"		B	1	4							1	1	1			
6	3"		B	2										1	1	1	1
7	4"		B	1	1							1	1	1	1	1	1
8	3"		B		1							1	1	1			
9	4"		B	1	2							1	1	1			
10	3"		B											1	1	1	1
11	4"		B	1	1							1	1	1	1	1	1
12	3"		B		1							1	1	1			
13	4"		B									1	1	1			
14	3"		B											1			
15	4"		B	1	1			1	1	1		1	1	1	1	1	1
16	3"		B		1							1	1	1			
17	4"		B	1	2							1	1	1			
18	2"		B					1	1	1				1	1	1	1

1. TOTALS DO NOT INCLUDE QUANTITIES IN SIGNAL POLE

SIGNAL POLE CHART

POLE NUMBER	T-1				P-1	T-2			T-3			P-2	T-4				P-3
MAST ARM LENGTH	40'				PED	20'			40'			PED	24'				PED
POLE/FOUNDATION	41/3				10'/1	41/3			41/3			10'/1	41/3				10'/1
WITH LUMINAIRES	YES				NO	YES			YES			NO	YES				NO
WITH HYBRID DETECTOR	YES				NO	YES			YES			NO	YES				NO
WITH EVP	YES				NO	YES			YES			NO	YES				NO
SIZE OF LENS	12"					12"			12"				12"				
SIGNAL TYPE	V4FYA	V3	V3	P	P	V4	V3	P	V4FYA	V3	V3	P	V4	V3	V3	P	P
SIGNAL FACE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
LED SIGNAL INDICATIONS	~~R~~	R	R	DW	DW	R	R	DW	~~R~~	R	R	DW	R	R	R	DW	DW
	~~SY~~	Y	Y	W	W	Y	Y	W	~~SY~~	Y	Y	W	Y	Y	Y	W	W
	~~FY~~	G	G			G	G		~~FY~~	G	G		G	G	G		
	~~G~~					~~G~~			~~G~~				~~G~~				

ALL SIGNAL HEADS SHALL HAVE BLACK ALUMINUM, VENTED BACK PLATES WITH 2" RETROFLECTIVE BORDER
PEDESTRIAN SIGNAL HEADS SHALL BE COUNTDOWN TYPE

CABLE INSIDE POLE (FEET)

POLE NUMBER	7 CNDR CABLE 14 AWG	5 CNDR CABLE 14 AWG	3 CNDR CABLE 14 AWG	NO. 10 XHHW	OPTICOM CABLE	CAT5e PTZ CABLE	CAT5e HYBRID DETECTION	
T-1	75	65	5	75	35		50	
T-2	70	60	5	75	30		45	
T-3	70	50		75	30	50	45	
T-4	75	65		75	35		50	
P-1		10	5					
P-2		10	5					
P-3		10	5					
TOTAL (FT)	290	260	20	300	130	50	190	

ELECTRICAL SERVICE DESCRIPTION

ELEC SERVICE TABLE

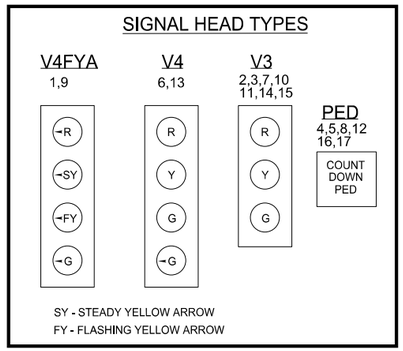
SERVICE CONDUIT SIZE (RMC)	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CIRCUIT BREAKER POLE/AMP	TWO-POLE CONTACTOR AMPS	PANELBD./ LOADCENTER AMP RATING	CIRCUIT NO.	BRANCH CIRCUIT BREAKER POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
2"	3/#4	N/A	2P/100	30	100	T.S. LIGHT.	1P/50 2P/20	40 10	< 7.1

GROUND BOX SUMMARY

TYPE	UNIT	QTY
B	EA	1
D	EA	5

PULL BOXES SHALL BE INSTALLED PER COFW DETAIL D601

SIGNAL HEAD TYPES



SY - STEADY YELLOW ARROW
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NO.	REVISION	BY	DATE

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SIGNAL SUMMARY
SH183 ADN DEEN ROAD

SCALE: AS SHOWN SHEET OF

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
AITC	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
JP	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
RH				88
CHECK	0902	90	214	
OIA				

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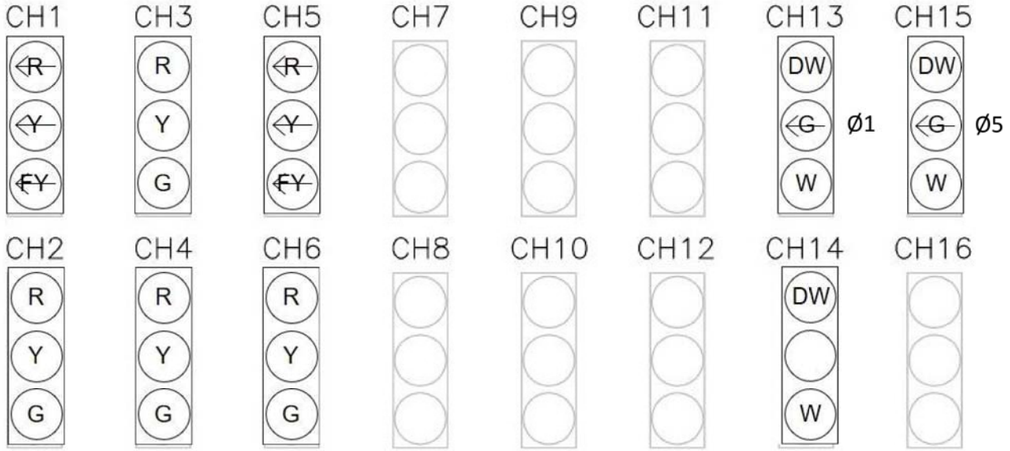
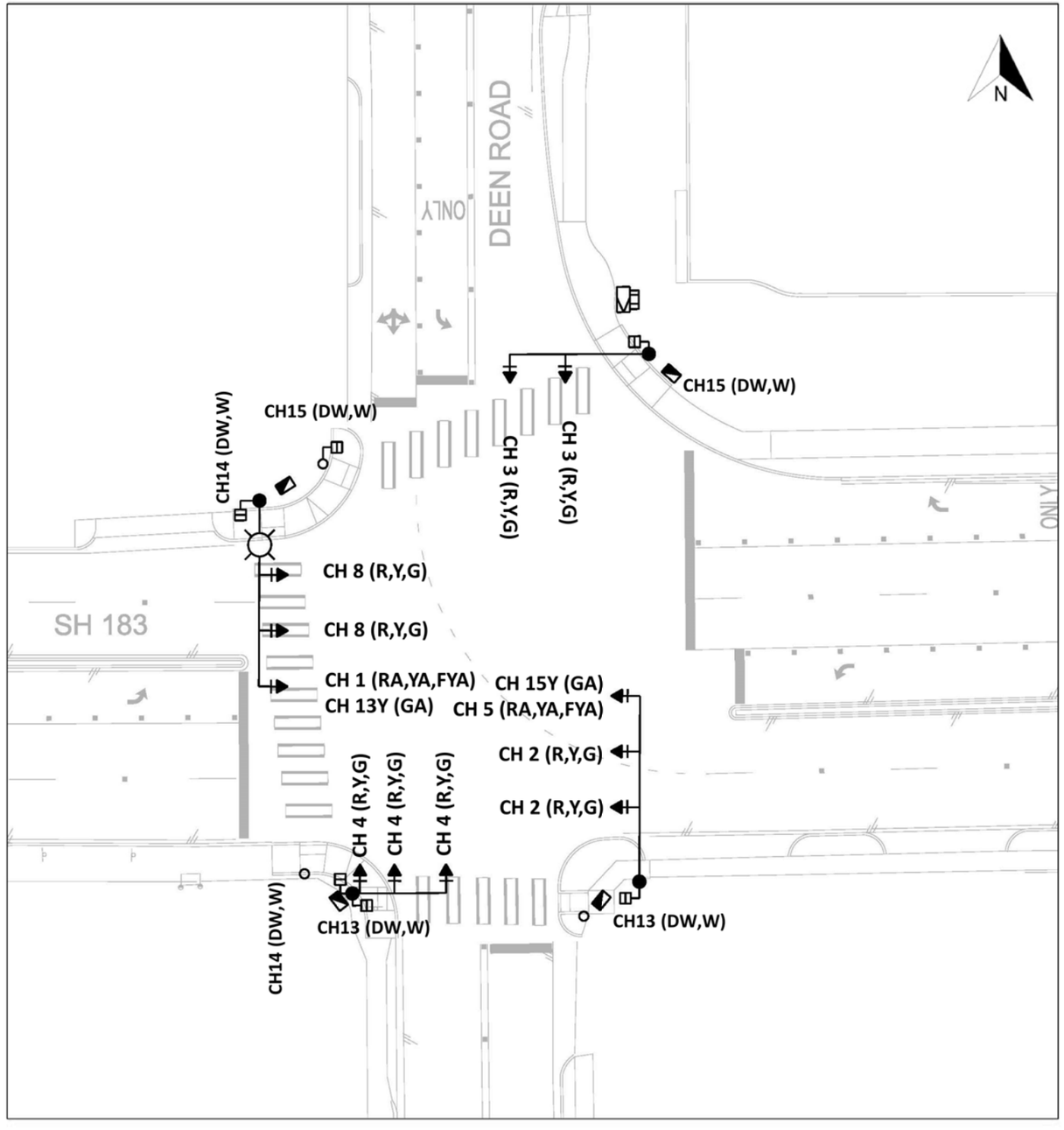
LOAD SWITCH OUTPUT ASSIGNMENT



SIGNAL DETECTOR ATTRIBUTE / CHANNEL												
	1	2	3	4	5	6	7	8	9	10	11	12
352i ATC							PED 2 DET 13	PED 6 DET 15			PRE EMPT EB DET 21	PRE EMPT SB DET 23
							PED 4 DET 14				PRE EMPT WB DET 22	PRE EMPT NB DET 24

ALL VEHICULAR DETECTION SHALL BE ON SDLC



FORT WORTH

5001 JAMES AVENUE
FORT WORTH, TX 76115

PHONE: (817) 392-8656
FAX: (817) 392-2533

LEGEND

- SIGNAL HEAD
- PED POLE
- PED HEAD
- MAST ARM

STATE OF TEXAS
MOHAMMAD AZIZUR RAHMAN
118252
LICENSED
PROFESSIONAL ENGINEER
03-08-24

CITY OF FORT WORTH

DEPARTMENT OF TRANSPORATION AND PUBLIC WORKS
TRAFFIC MANAGEMENT DIVISION

SH 183 / 28TH ST AND DEEN ROAD

CHANNEL ASSIGNMENT DRAWING

NOTES	NAME	DATE
DESIGN BY	Sagar M	3/7/2024
ENGINEER	Sagar M	3/7/2024
APPROVED	Aziz R	3/8/2024
SHEET No.		

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DATE:
FILE:

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
57	1	R1-5b L		36X36	X		10 BWG	1	SA	P		
57	2	R1-5b L		36X36	X		10 BWG	1	SA	P		
57	3	R3-8LL		36X30	X		10 BWG	1	SA	P		
57	4	R3-8LL		36X30	X		10 BWG	1	SA	P		
57	5	R3-5R		30X36	X		10 BWG	1	SA	P		
57	6	R3-5R		30X36	X		10 BWG	1	SA	P		
57	6	R3-5R		30X36	X		10 BWG	1	SA	P		
60	6	R3-8LL		36X30	X		MAST ARM					
60	6	R3-8LL		36X30	X		MAST ARM					

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	0902	90	207, ETC.	HULEN ST
4-16 8-16	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		90

18

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION PREFABRICATED	MOUNTING DESIGNATION 1EXT or 2EXT	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	TY N TY S
64	S1		FORT WORTH NE 28th St TEXAS 183 ← 2400 2500 →	20"X120"			MOUNT ON MAST ARM					
64	S2		FORT WORTH Deen Rd ← 2700 2800 →	20"X90"			MOUNT ON MAST ARM					
64	S3		FORT WORTH NE 28th St TEXAS 183 ← 2500 2400 →	20"X120"			MOUNT ON MAST ARM					
64	S4		FORT WORTH Deen Rd ← 2800 2700 →	20"X90"			MOUNT ON MAST ARM					
64	S5	R2-1	SPEED LIMIT 40	24"x30"			10BWG	1	SA	P		
64	S6	R3-5R	ONLY	18"x24"			10BWG	1	SA	P		
64	S7	R3-8	ONLY	30"X36"			10BWG	1	SA	P		
64	S8	R10-12a	LEFT TURN YIELD ON FLASHING	30"X36"			MOUNT ON MAST ARM					
64	S9	R3-5R	ONLY	18"x24"			10BWG	1	SA	P		
64	S10	R3-8	ONLY	30"X36"			MOUNT ON MAST ARM					
64	S11	R10-12a	LEFT TURN YIELD ON FLASHING	30"X36"			MOUNT ON MAST ARM					

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

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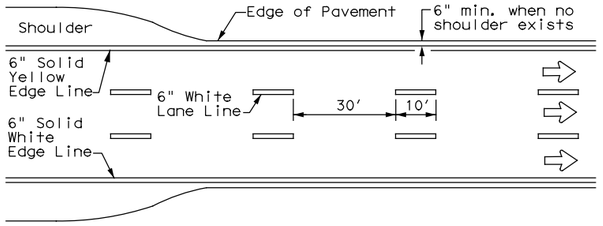
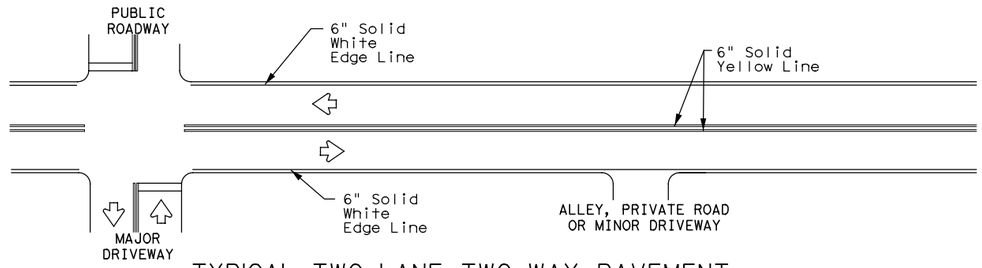
FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0902	90	214 ETC	SH 183
4-16 8-16	DIST	COUNTY		SHEET NO.
	2	TARRANT		91

18

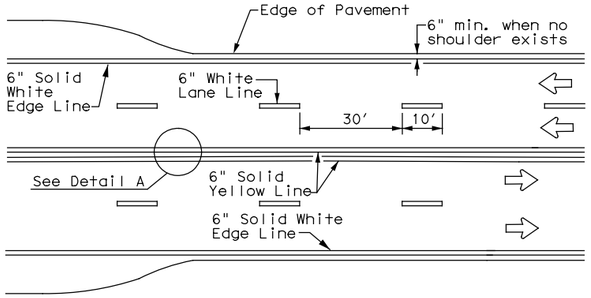
DATE:
FILE:

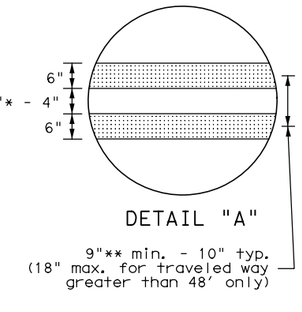


EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS

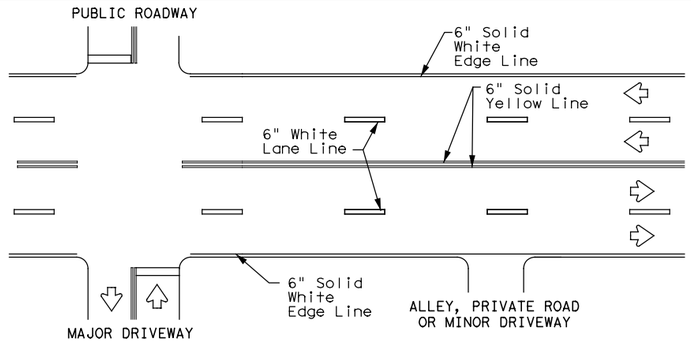




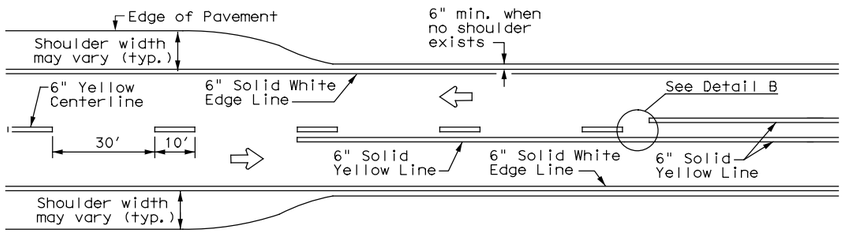
CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS

* 2" minimum for restripe projects when approved by the Engineer.

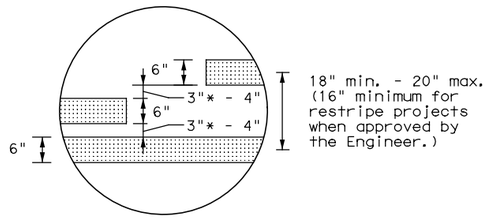
** 8" minimum for restripe projects when approved by the Engineer.



TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS

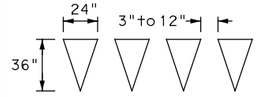


TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



DETAIL "B"

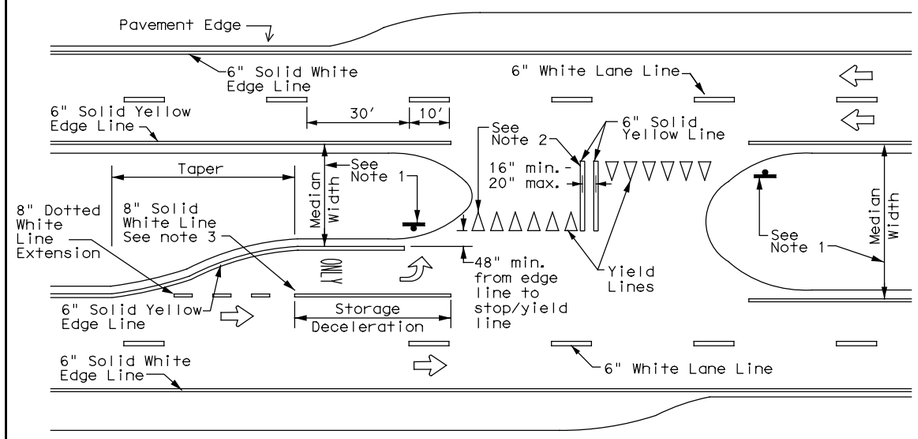
* 2" minimum for restripe projects when approved by the Engineer.



For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES

For posted speed on road being marked equal to or less than 40 MPH.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.

2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.

3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

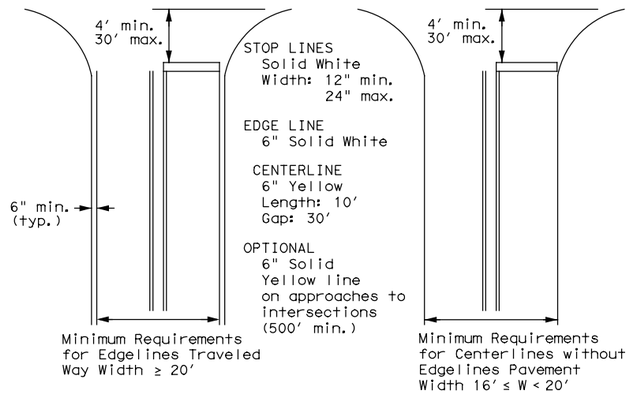
GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.

2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE
Based on Traveled Way and Pavement Widths
for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

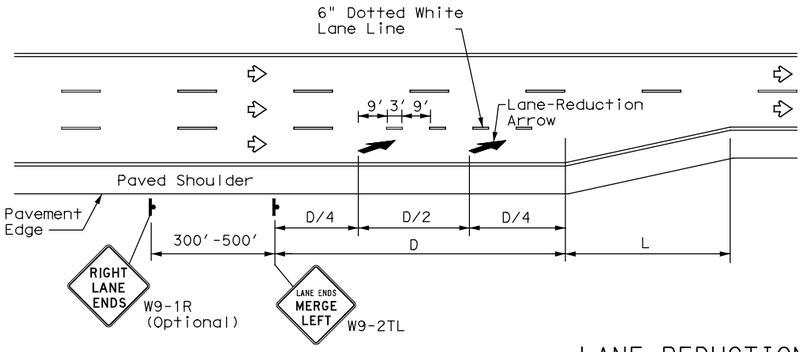
TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20 8-95 3-03 12-22 5-00 2-12	DIST	COUNTY		SHEET NO. 92

22A

DATE:
FILE:

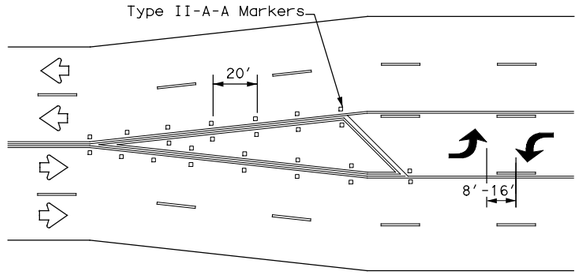


LANE REDUCTION

NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



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.

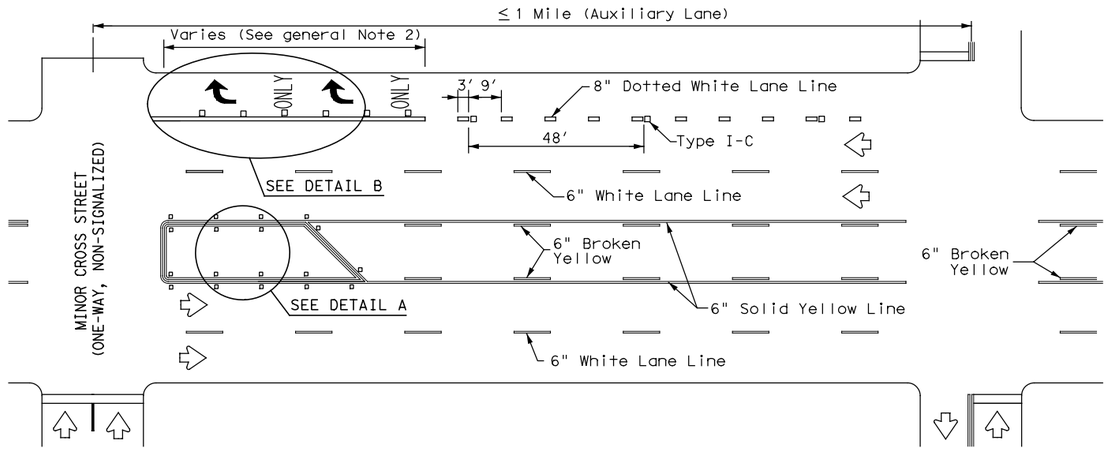
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

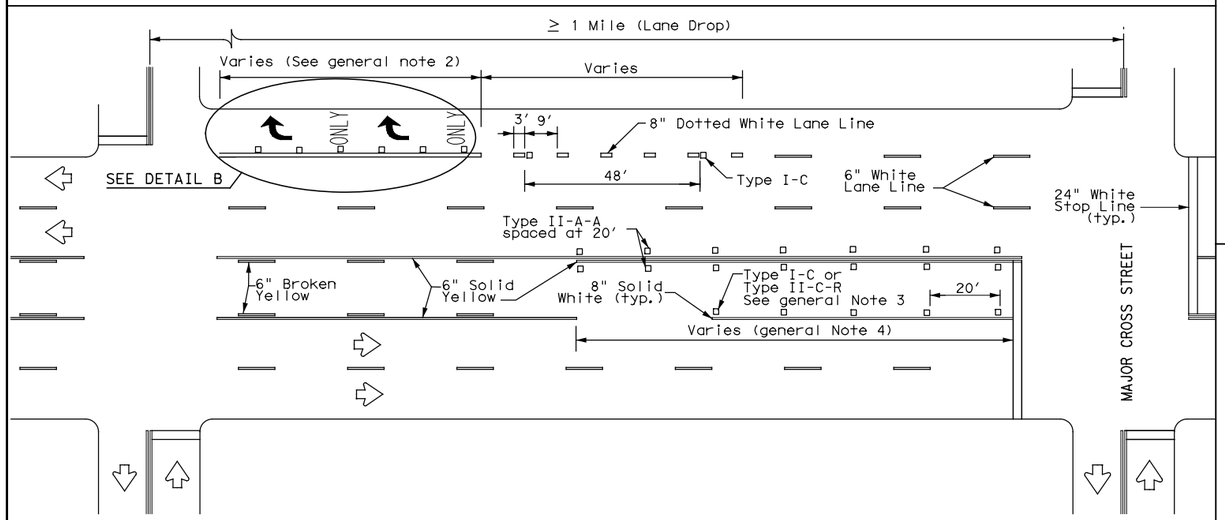
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn 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. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

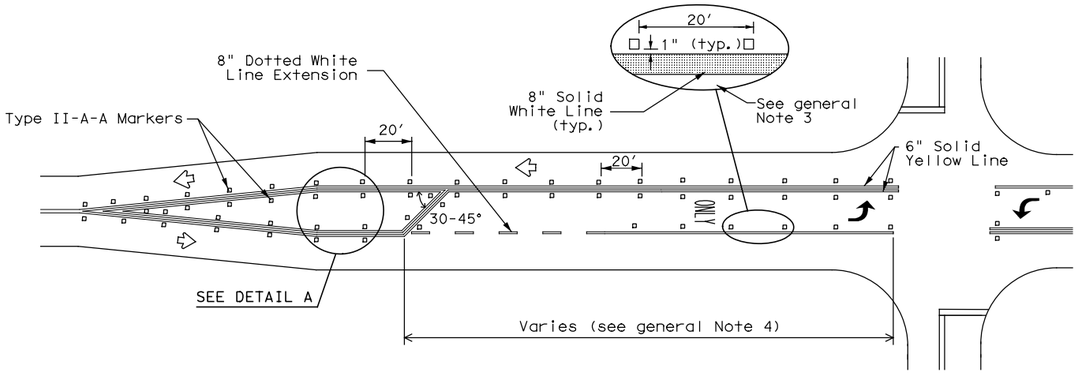
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



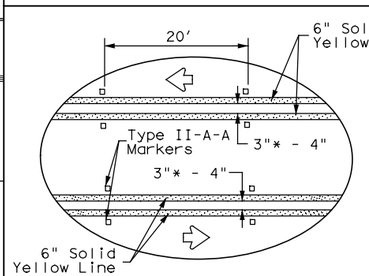
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



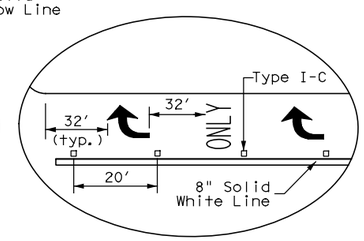
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A



DETAIL B

* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	DIST	COUNTY		SHEET NO. 93

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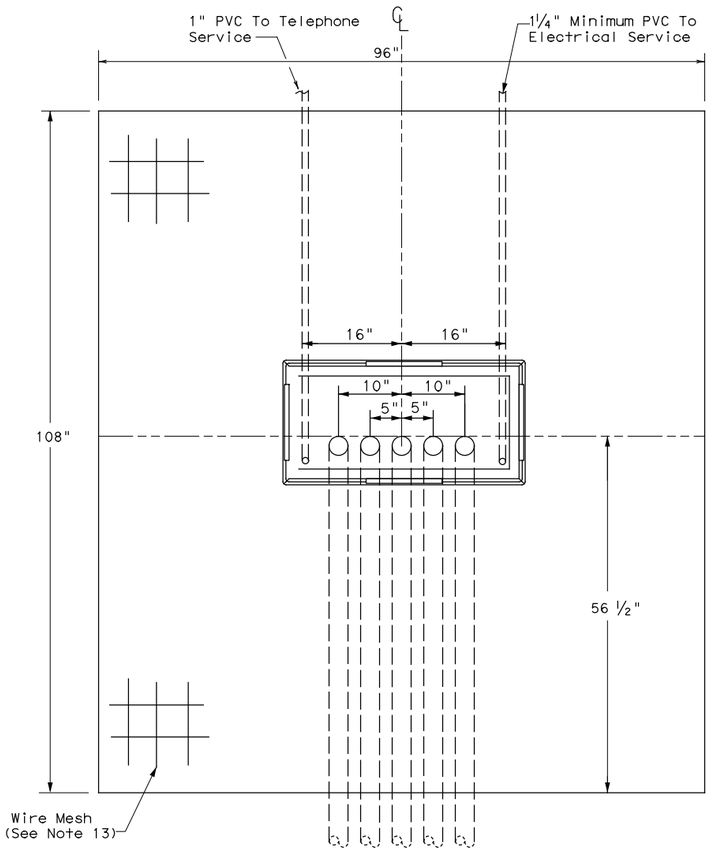
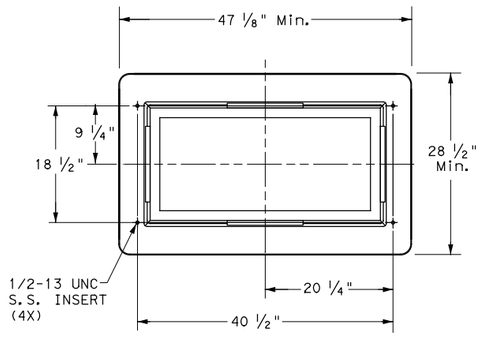
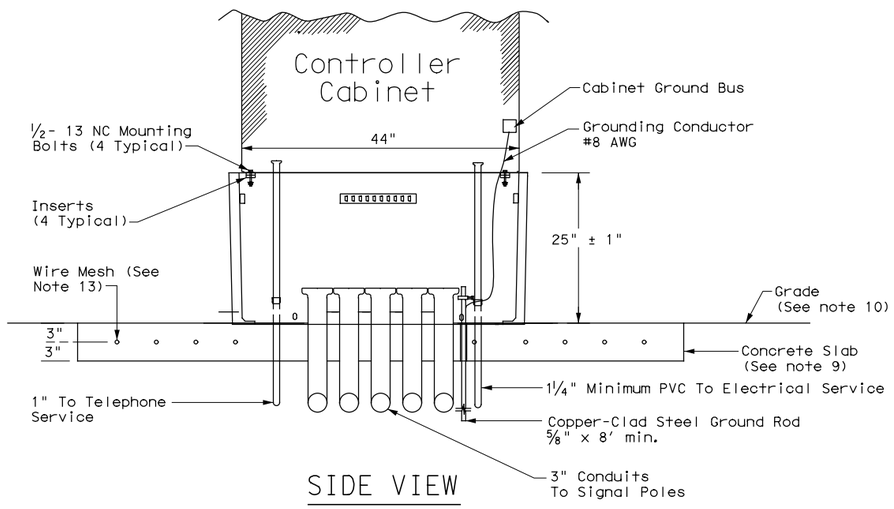


TOP VIEW



CABINET BASE



SIDE VIEW

TRAFFIC SIGNAL CONTROLLER BASE:

1. Provide a traffic signal controller base (cabinet base) manufactured of polymer concrete material consisting of calcareous and siliceous stone; glass fibers and thermoset polyester resin. The polymer concrete cabinet base must be reinforced on the inside of the cabinet base with fiberglass matting. Provide one of the following bases: Armorcast Part # A6001848X24, Quazite Model # PG3048Z709, or other as approved by TxDOT Traffic Safety Division.
2. The polymer concrete material must have a minimum compressive strength of 10,300 pounds per square inch (psi), minimum flexural strength of 3600 psi, and minimum shear strength of 3600 psi.
3. The polymer concrete cabinet base must conform to the dimensions shown and must accommodate a standard TxDOT basemount cabinet.
4. Supply the cabinet base with four 1#2"-13 UNC stainless steel inserts for attachment of the cabinet to the base. Inserts must withstand a minimum torque of 50 ft-lb and a minimum straight pull out strength of 750 lbs.
5. Provide the cabinet base with 4 cable racks mounted one on each side of the base 2" to 7 " from the top edge of the base. Unless approved otherwise, cable racks must be 1-1/2 x 9#16x 3#16inch steel channel with eight T-slots spaced at 1-1/2 inches. The cable racks must easily accommodate the insertion of tie wraps to attach field wiring to the racks to serve as strain relief. Secure cable racks to the base using 1#2"-13 UNC stainless steel screws and inserts.
6. The cabinet base, when secured to the concrete slab with controller cabinet attached, must withstand a minimum wind load of 125 mph or a 850 lb force applied at 49" above the bottom of the base without causing the base or cabinet to come out of their anchored position or cause any permanent deformation. The manufacturer must supply certification by an independent testing laboratory or sealed by a Texas Licensed Professional Engineer. Provide the cabinet base with hardware for attachment to a concrete slab.
7. The traffic signal base must be permanently marked either by impress or by permanent ink with the manufacturer's model number and name or logo.
8. Seal the base to the concrete with a silicone caulk bead and fastened to the slab per manufacturer's instructions.

CONCRETE SLAB:

9. Traffic signal controller pad must be a portland cement concrete slab poured in place, must conform to the dimensions shown, and must be level.
10. Grade earthwork such that it is flush with the concrete pad on all four sides, unless otherwise shown on the plans. Subsidiary to ITEM 680, four inch rip rap may be used in lieu of earthwork. Slopes shall gradually contour to match plans.
11. Bond a #8 AWG copper ground wire and an 8 ft ground rod bonded to the reinforcing mesh by a suitable UL Listed clamp and terminated to the cabinet grounding bus for the purpose of providing a local ground for the electrical grounding conductor. The electrical grounding conductor specified in Item 680-3.A.4 is required and must be terminated to the cabinet ground bus.
12. Install a PVC sleeve to prevent the ground rod from direct embedment in the slab.
13. Provide welded wire mesh 6X6-W2.9 X W2.9 for reinforcement. Provide joints and splices in the mesh with a minimum 6-inch overlap. Center the mesh between top and bottom and provide a minimum 3 inch cover on the edges.
14. Provide Class B concrete minimum for the slab in accordance with Item 421. Construct the slab in accordance with Item 531.

CONDUITS:

15. Stub up and run 3-inch conduits through the slab to the various traffic signal poles and ground boxes as shown on the layouts. Install the number of conduits as shown on layouts plus two additional 3 inch conduits for future use. Terminate the conduits with a bushing between 2 and 4-inches above the slab.
16. Extend conduits for future use at least 18-inches from the edge of the slab, terminate underground with a coupling, and cap and seal so that the seal can be removed without damaging the coupling. This must also apply to unused telephone conduit.
17. Stub up two separate conduits through the slab from the electrical and telephone services. Run the conduit for the electrical feed directly to the electrical service enclosure. Run the conduit for the telephone line directly to the telephone service, usually located on the same pole as the electrical service. Telephone must not under any circumstance share a conduit with any other function.
18. Terminate electric and telephone conduits above the slab with a coupling. After the base is installed, extend the conduits above the top of the base and secure to the base using a steel one-hole strap or similar suitable substitute.

CONTROLLER CABINET:

19. Anchor the controller cabinet to the base using four stainless steel 1/2-13 NC bolts.
20. The silicone caulk bead specified in Item 680.3.B must be RTV 133.

PAYMENT:

21. Bid TS-CF as subsidiary to Item 680.

Texas Department of Transportation

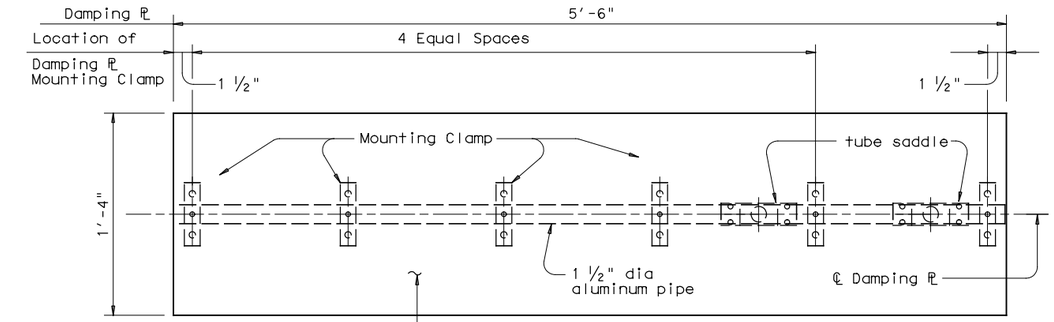
Traffic Safety Division Standard

TRAFFIC SIGNAL CONTROLLER CABINET BASE AND PAD

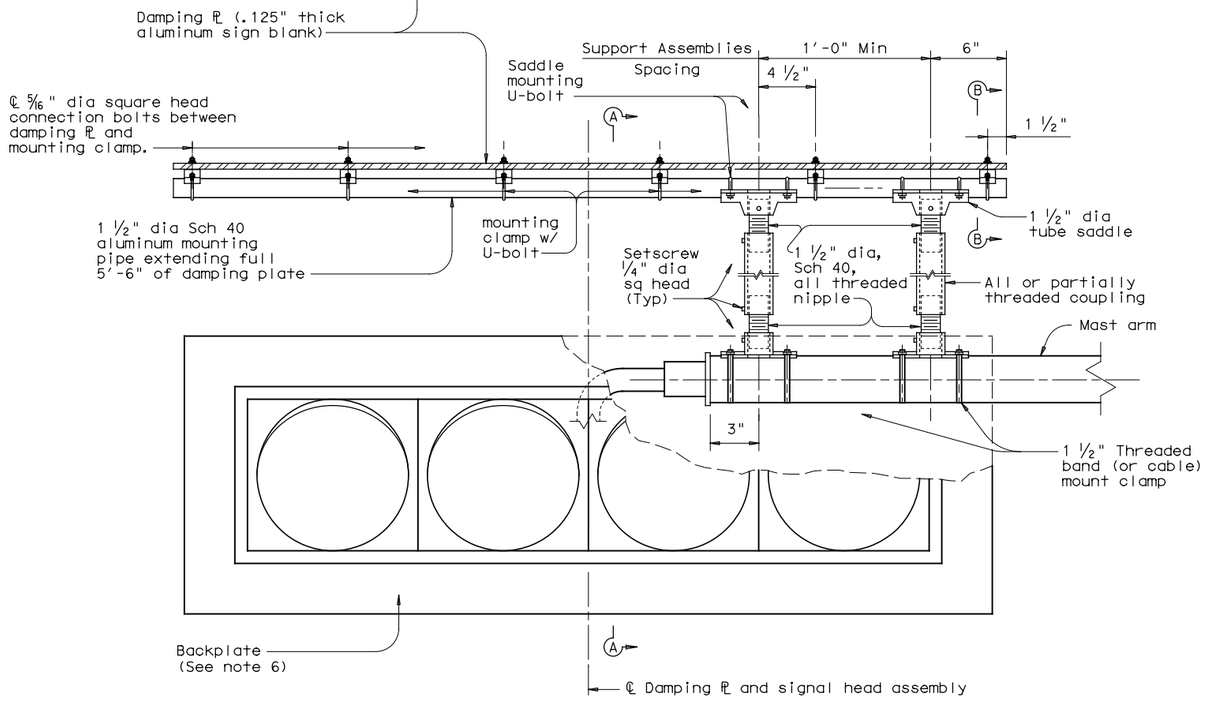
TS-CF-21

FILE: ts-cf-21.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS				
12-04	DIST	COUNTY		SHEET NO.
2-21				94

DATE:
FILE:



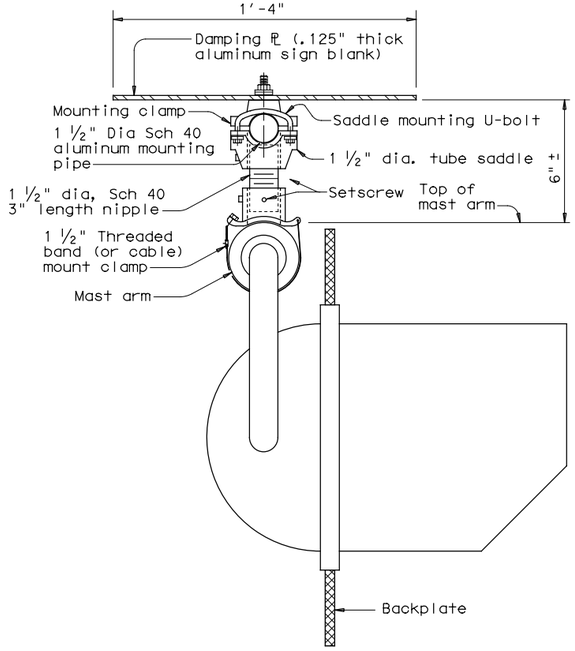
PLAN



ELEVATION

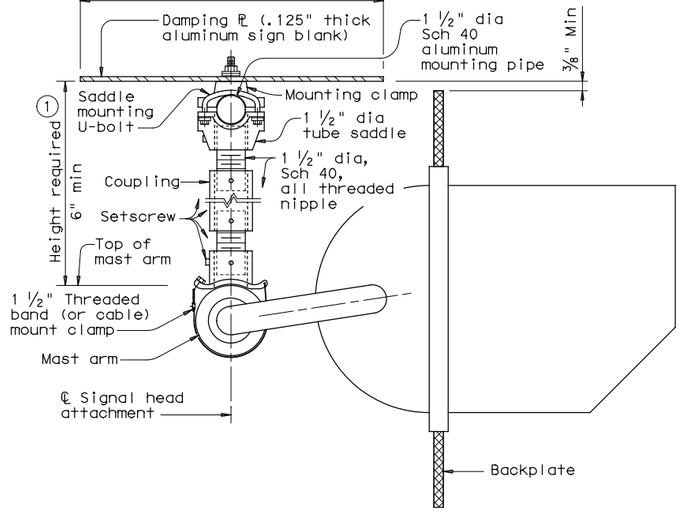
DAMPING PLATE MOUNTING DETAILS

(Showing alternate placement of signal head)



SECTION A-A

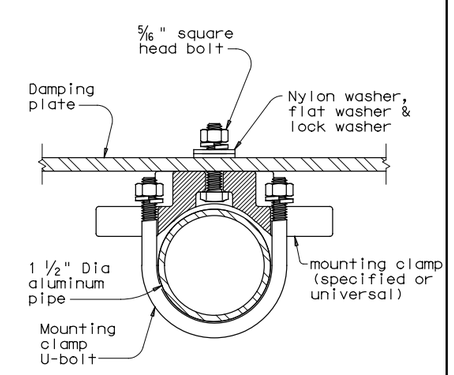
(Showing standard placement of signal head)
(Mounting clamp U-bolt is not shown for clarity)



SECTION A-A

(Showing alternate placement of signal head)
(Mounting clamp U-bolt is not shown for clarity)

① Recommended supporting assemblies to achieve required height for horizontal section heads			
Height required	One nipple each length	Two nipples each length plus	One coupling each length
6"-6 ¾"	3"	-	-
7"-8 ½"	4"	-	-
9"-10 ½"	6"	-	-
11"-15 ½"	-	4"	5"
16"-24"	-	6"	10"



SECTION B-B

(Showing damping plate attachment)

GENERAL NOTES:

1. In accordance with the findings of TxDOT sponsored research, the installation of a damping plate in accordance with the details shown here at the end of signal mast arms of SMA and DMA standard structures reduces excessive harmonic vertical vibration, and thus fatigue damage. Any deviation from these details may reduce the effectiveness of this damping device.
2. Aluminum sign blank for damping plate will conform to Departmental Material Specifications DMS-7110. Materials for mast arm mounting clamp and tube saddle will be aluminum castings or aluminum alloys as in accordance with manufacturers' stipulations. Mounting pipe, pipe nipple and coupling will be aluminum alloy 6061-T6 or 6063-T6. Damping plate mounting clamp and u-bolt assemblies will conform to Standard sheet SMD(GEN). U-bolts for saddle mounting will have a minimum yield strength of 36 ksi.
3. Damping plate will be mounted horizontally. Position centerline of damping plate to align with centerline of mast arm or horizontal signal head assembly. Vertical clearance between signal head (with or without backing plate) and bottom of damping plate will be maintained as shown. The attachments shown here are examples only, other supporting details which meet both alignment and vertical clearance requirements are also acceptable.
4. Unless stipulated by the manufacturers, all steel parts will be galvanized finish in accordance with Standard Specification Item 445, "Galvanizing".
5. Contractor will verify applicable field dimensions before the installation.
6. Backplates are optional for traffic signals. When backplates are used, Backplates will have a 2-inch fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 "Sign Face Materials." See Sheet TS-BP-20 for backplate details.

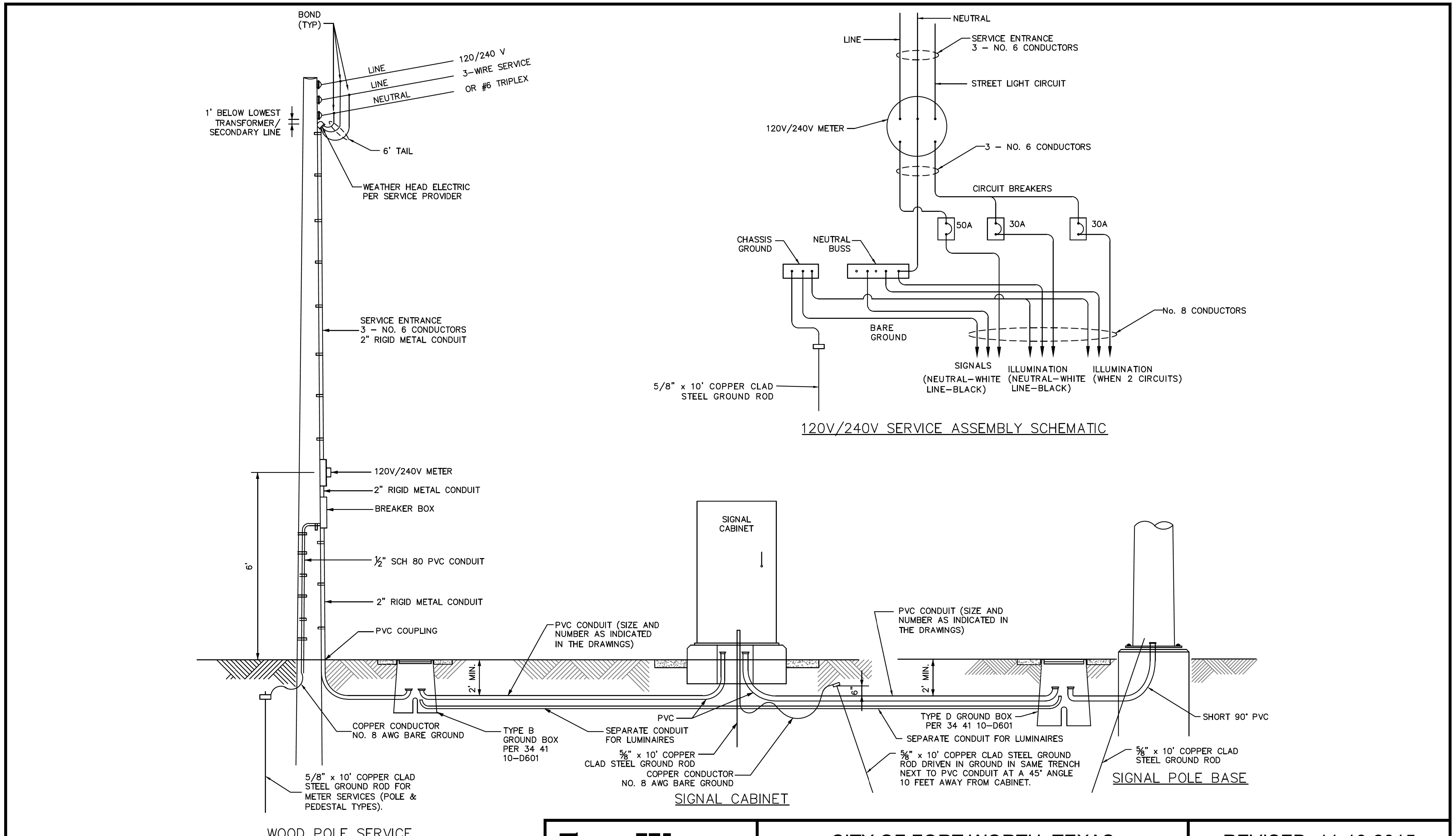
Texas Department of Transportation

Traffic Safety Division Standard

MAST ARM DAMPING PLATE DETAILS

MA-DPD-20

FILE: ma-dpd-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS				
6-20	DIST	COUNTY		SHEET NO.
				95



FORT WORTH

CITY OF FORT WORTH, TEXAS

TRAFFIC SIGNAL ELECTRICAL SERVICE DETAILS

REVISED: 11-19-2015

34 41 10-D602

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

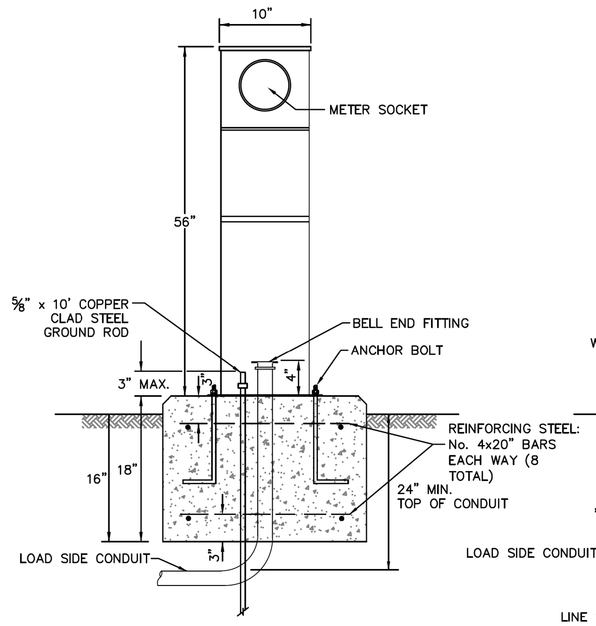
halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

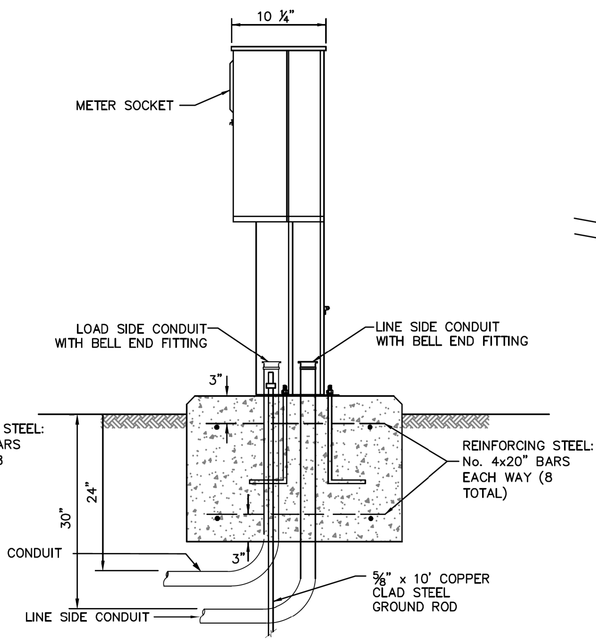
CITY OF FORT WORTH
D602 - TRAFFIC SIGNAL ELECTRICAL SERVICE DETAILS

SCALE: AS SHOWN   SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	96
CHECK	0902	90	214, ETC.	



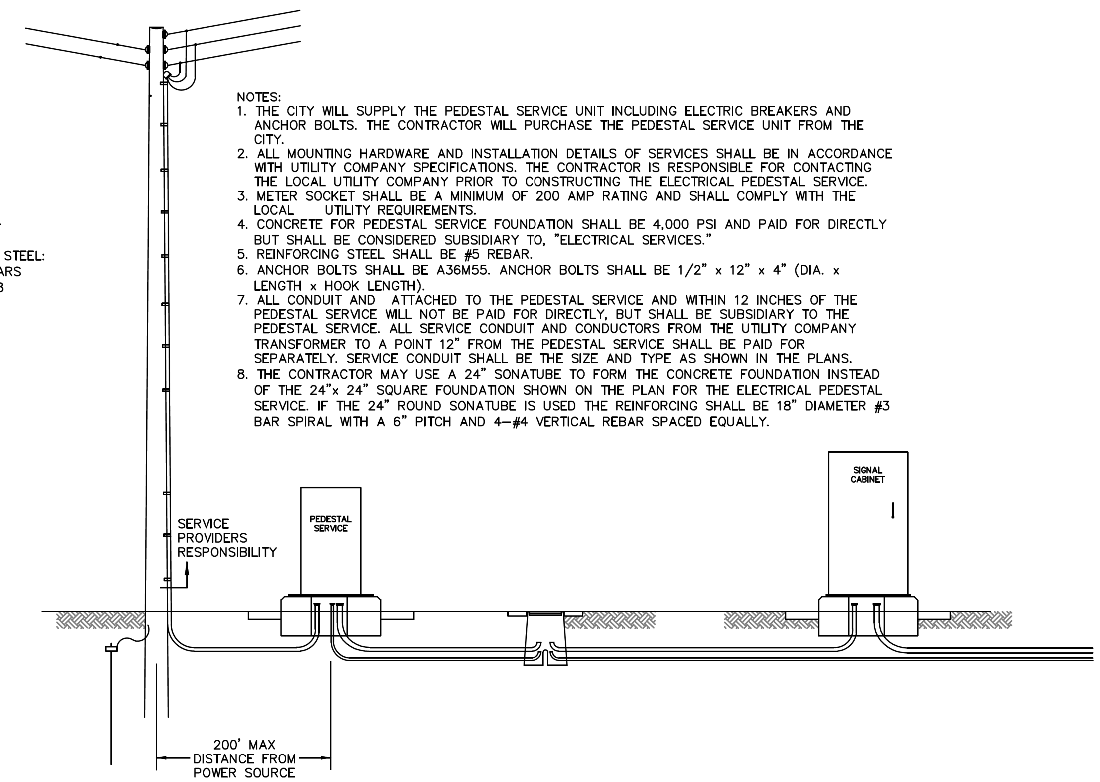
FRONT VIEW

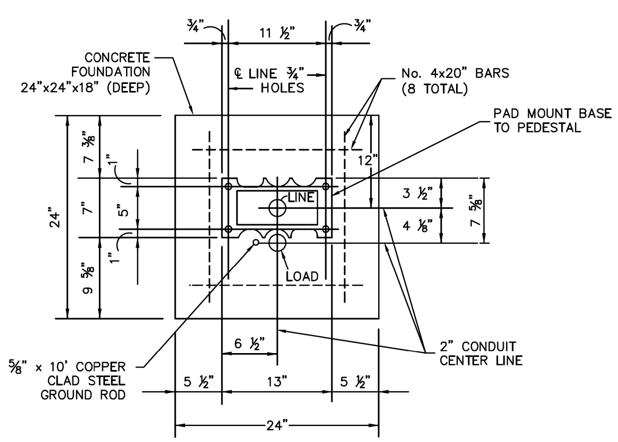


SIDE VIEW

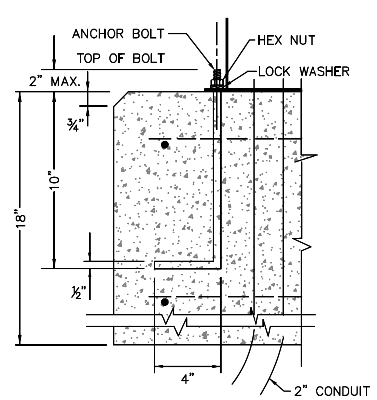
NOTES:

1. THE CITY WILL SUPPLY THE PEDESTAL SERVICE UNIT INCLUDING ELECTRIC BREAKERS AND ANCHOR BOLTS. THE CONTRACTOR WILL PURCHASE THE PEDESTAL SERVICE UNIT FROM THE CITY.
2. ALL MOUNTING HARDWARE AND INSTALLATION DETAILS OF SERVICES SHALL BE IN ACCORDANCE WITH UTILITY COMPANY SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTING THE ELECTRICAL PEDESTAL SERVICE.
3. METER SOCKET SHALL BE A MINIMUM OF 200 AMP RATING AND SHALL COMPLY WITH THE LOCAL UTILITY REQUIREMENTS.
4. CONCRETE FOR PEDESTAL SERVICE FOUNDATION SHALL BE 4,000 PSI AND PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO, "ELECTRICAL SERVICES."
5. REINFORCING STEEL SHALL BE #5 REBAR.
6. ANCHOR BOLTS SHALL BE A36M55. ANCHOR BOLTS SHALL BE 1/2" x 12" x 4" (DIA. x LENGTH x HOOK LENGTH).
7. ALL CONDUIT AND ATTACHED TO THE PEDESTAL SERVICE AND WITHIN 12 INCHES OF THE PEDESTAL SERVICE WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE PEDESTAL SERVICE. ALL SERVICE CONDUIT AND CONDUCTORS FROM THE UTILITY COMPANY TRANSFORMER TO A POINT 12" FROM THE PEDESTAL SERVICE SHALL BE PAID FOR SEPARATELY. SERVICE CONDUIT SHALL BE THE SIZE AND TYPE AS SHOWN IN THE PLANS.
8. THE CONTRACTOR MAY USE A 24" SONATUBE TO FORM THE CONCRETE FOUNDATION INSTEAD OF THE 24"x 24" SQUARE FOUNDATION SHOWN ON THE PLAN FOR THE ELECTRICAL PEDESTAL SERVICE. IF THE 24" ROUND SONATUBE IS USED THE REINFORCING SHALL BE 18" DIAMETER #3 BAR SPIRAL WITH A 6" PITCH AND 4–#4 VERTICAL REBAR SPACED EQUALLY.





FOUNDATION PLAN



ANCHOR BOLT DETAIL

FORT WORTH

CITY OF FORT WORTH, TEXAS

TRAFFIC SIGNAL PEDESTAL SERVICE DETAIL

REVISED: 11-19-2015

34 41 10-D603

Marie C. Wagner

DATE: 04/05/2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff

TBPELS ENGINEERING FIRM #312

4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation

CITY OF FORT WORTH
D603 - TRAFFIC SIGNAL
PEDESTAL SERVICE DETAIL

SCALE: AS SHOWN — SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	97
CHECK	0902	90	214, ETC.	

TXDOT-OR Default
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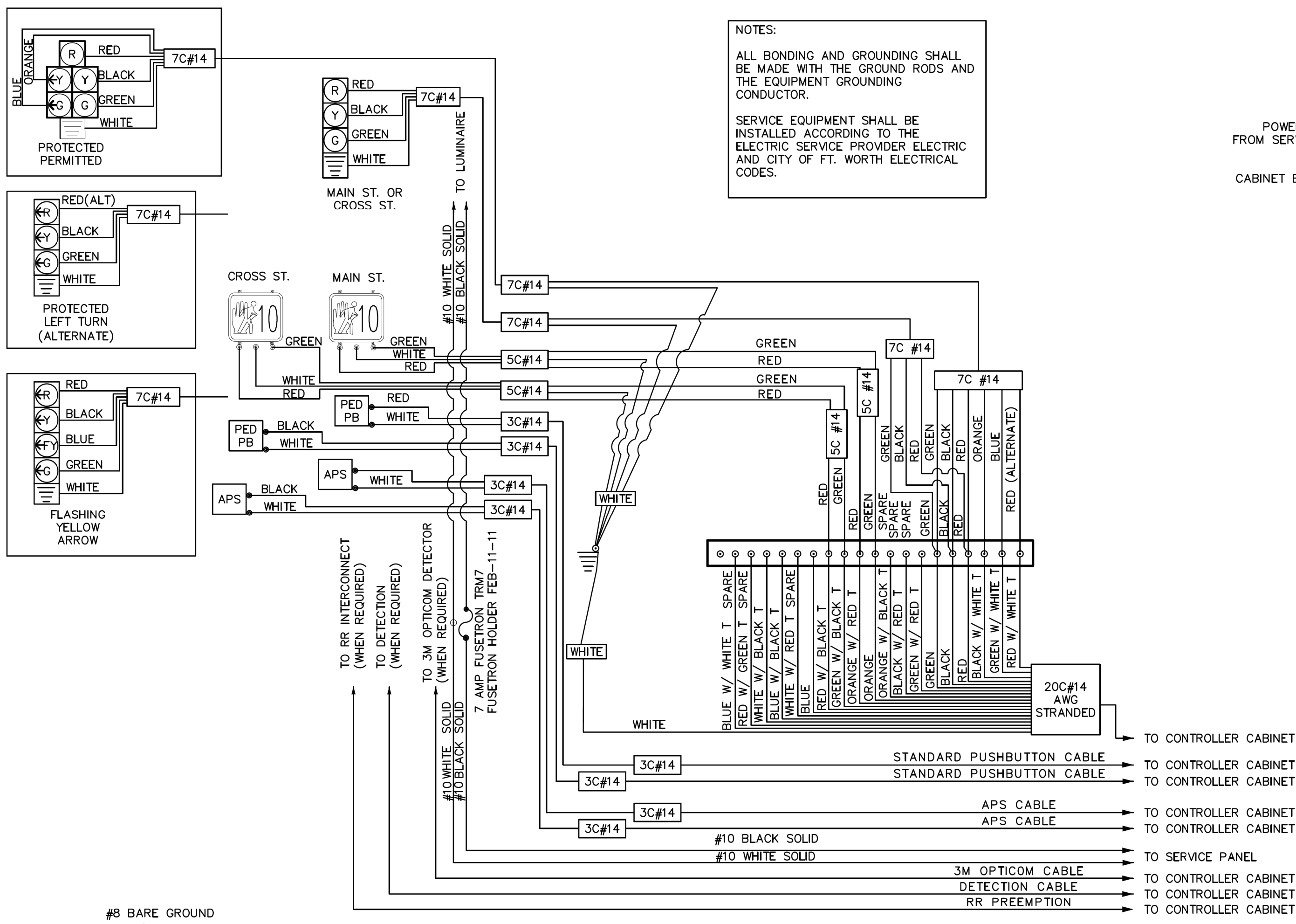
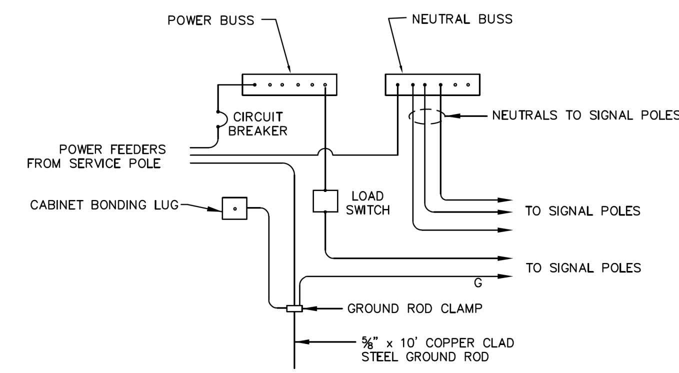


TYPICAL POLE WIRING SCHEMATIC

NOTES:

ALL BONDING AND GROUNDING SHALL BE MADE WITH THE GROUND RODS AND THE EQUIPMENT GROUNDING CONDUCTOR.

SERVICE EQUIPMENT SHALL BE INSTALLED ACCORDING TO THE ELECTRIC SERVICE PROVIDER ELECTRIC AND CITY OF FT. WORTH ELECTRICAL CODES.



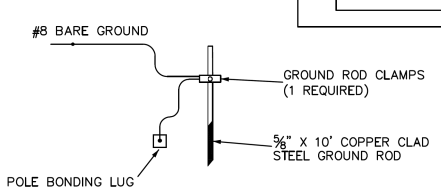
CONNECTIONS AT SIGNAL CABINETS

POLE TO CABINET WIRING COLOR CHART FOR 20 CONDUCTOR CABLE

SIGNAL NEUTRAL	WHITE
MAIN ST. OR CROSS ST. – RED	RED
MAIN ST. OR CROSS ST. – YELLOW	BLACK
MAIN ST. OR CROSS ST. – GREEN	GREEN
MAIN ST. OR CROSS ST. – LEFT TURN RED	RED/WHITE
MAIN ST. OR CROSS ST. – LEFT TURN YELLOW ARROW	BLACK/WHITE
MAIN ST. OR CROSS ST. – LEFT TURN GREEN ARROW	GREEN/WHITE
DW – MAIN ST.	ORANGE/RED
W – MAIN ST.	ORANGE
DW – CROSS ST.	RED/BLACK
W – CROSS ST.	GREEN/BLACK
SPARE RED NEAR SIDE HEAD	RED/GREEN
SPARE YELLOW	BLACK/RED
SPARE GREEN	GREEN/RED
SPARE	ORANGE/BLACK
SPARE FLASHING YELLOW ARROW	BLUE/WHITE

NOTE:

WRAP COLORED ELECTRICAL TAPE ON BOTH ENDS OF EACH 20 CONDUCTOR CABLE (AT CABINET AND AT SIGNAL POLE) AS FOLLOWS:
NORTH BOUND = GREEN,
SOUTH BOUND = RED,
WEST BOUND = BLUE AND
EAST BOUND = YELLOW.



CONNECTIONS AT POLE BASE

NOTE:
1. ALL WIRING CABLES SHALL BE AS SHOWN UNLESS NOTED OTHERWISE IN THE DRAWINGS.
2. USE 2C#12 AWG FOR APS PUSH BUTTON FOR LARGER LENGTHS BETWEEN PUSH BUTTONS AND CONTROLLER TO MINIMIZE VOLTAGE DROP.

NO SPLICES ARE ALLOWED

FORT WORTH

CITY OF FORT WORTH, TEXAS
TRAFFIC SIGNAL WIRING CONNECTION DETAILS

REVISED: 03-07-2022

34 41 10-D604

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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(817) 847-1422

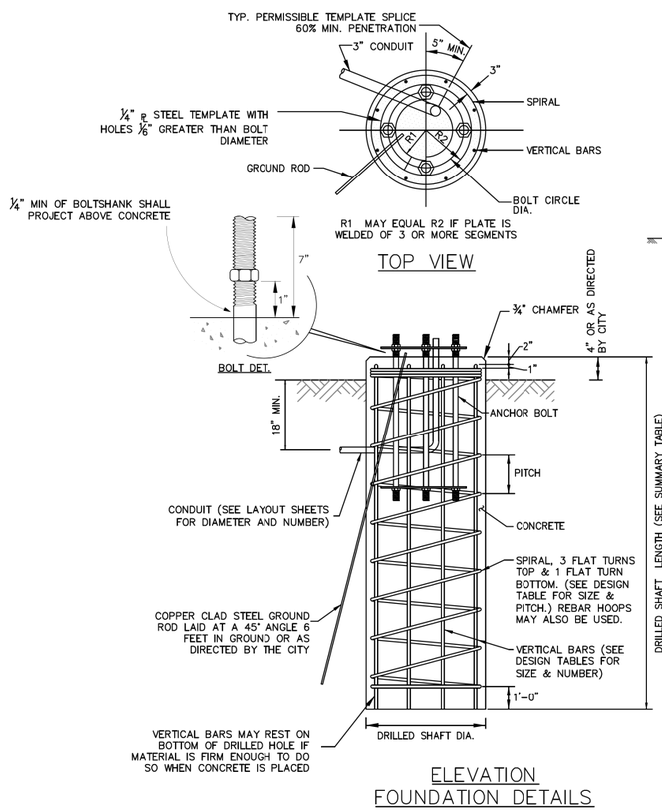
Texas Department of Transportation

CITY OF FORT WORTH
D604 - TRAFFIC SIGNAL
WIRING CONNECTION DETAILS

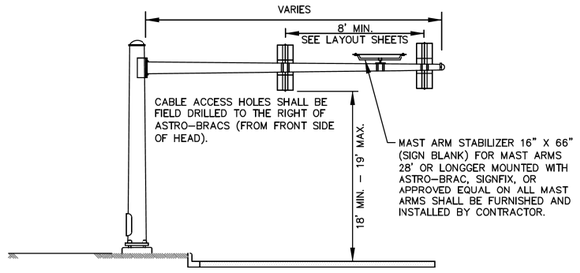
SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.	HIGHWAY NO.
	.	(SEE TITLE SHEET)	
GRAPHICS	STATE	DISTRICT	COUNTY
	TEXAS	2	TARRANT
CHECK	CONTROL	SECTION	JOB
CHECK	0902	90	214, ETC.

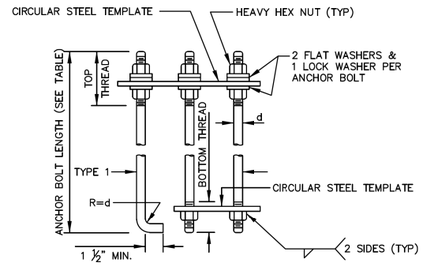
SHEET NO. 98



ELEVATION
FOUNDATION DETAILS



TYPICAL MAST ARM SIGNAL HEAD INSTALLATION
(REAR VIEW OF MAST ARM)



HOOCKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY

INSTALLATION PROCEDURE:
1. THREADS OF ANCHOR BOLTS SHALL BE COATED WITH PIPE JOINT COMPOUND PRIOR TO INSTALLATION OF UPPER NUTS WHEN ERECTING POLE. AFTER POLE IS PLUMBED AND IN PERMANENT ALIGNMENT, THE EXPOSED THREADS OF PAINTED BOLTS SHALL BE CLEANED AND AN ADDITIONAL COATING OF ZINC-RICH PAINT APPLIED TO SEAL THE BOLT THREAD-NUT JOINT. ANCHOR BOLT THREADS SHALL BE TAPED PRIOR TO POURING CONCRETE.

ANCHOR BOLT AND TEMPLATE SIZES						
BOLT DIA.	*BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	---	14 ⅛"	7 ⅛"	5 ⅝"
1 ½"	4'-6"	8"	2 ½"	15"	8"	6 ½"
1 ¾"	4'-6"	8"	2 ½"	17"	10"	7"
2"	4'-6"	8"	2 ½"	21"	12 ½"	8 ½"

* MINIMUM DIMENSIONS GIVEN, LONGER BOLTS ARE ACCEPTABLE

NOTES:
1. ANCHOR BOLT DESIGN DEVELOPS THE FOUNDATION CAPACITY GIVEN UNDER FOUNDATION DESIGN LOADS.
2. FOUNDATION DESIGN LOADS ARE THE ALLOWABLE MOMENTS AND SHEARS AT THE BASE OF THE STRUCTURE.
3. IF ROCK IS ENCOUNTERED, THE DRILL SHAFT SHALL EXTEND A MINIMUM OF TWO DIAMETERS INTO SOLID ROCK AND HAVE A MINIMUM DEPTH OF 8'-0".

FOUNDATION DESIGN TABLE														
FDN. TYPE	POLE TYPE	DRILLED SHAFT DIAMETER	REINFORCING STEEL		DRILLED SHAFT LENGTH (ft)	GROUND ROD SIZE	ANCHOR BOLT DESIGN (1)				FOUNDATION DESIGN LOAD (2)		APPLICATION	POLE HEIGHT (FT.)
			VERT BARS	SPIRAL & PITCH			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips		
1	5'/10'/14'	24"	4-#5	#2 @ 12"	5.0	⅝" x 10'	¾"	N.A.	14 ⅛"	1	N.A.	N.A.	PUSH BUTTON/ PEDESTAL POLES	5/10/14
2*	8	24"	4-#5	#3 @ 6"	6.0	⅝" x 8'	1"	N.A.	11"	1	N.A.	N.A.	STREET LIGHT POLES	27.5
3	41	30"	8-#9	#3 @ 6"	10.0	⅝" x 10'	1 ½"	55	15"	2	87	3	16' TO 36' MAST ARM POLES	27.5
	42													21
4	43	36"	10-#9	#3 @ 6"	12.0	⅝" x 10'	1 ¾"	55	17"	2	131	5	40' TO 48' MAST ARM POLES	27.5
	44													21
5	45	36"	12-#9	#3 @ 6"	13.0	⅝" x 10'	2 "	55	21"	2	190	7	52' TO 60' MAST ARM POLES	27.5
	46													21

NOTE: TYPES 41, 43, AND 45 HAVE ILLUMINATION
* SEE STREET LUMINAIRE POLE FOUNDATION DETAILS.

NOTE:

1. CONCRETE MIX DESIGN SHALL BE IN ACCORDANCE WITH CITY OF FORTH WORTH STANDARD SPECIFICATIONS DIVISION 03 30 00, CAST-IN-PLACE CONCRETE. CONTRACTOR SHALL USE A PRE-APPROVED CONCRETE MIX DESIGN OR SUBMIT PROPOSED MIX DESIGN FOR APPROVAL PRIOR TO CONSTRUCTION. CONCRETE FOR STRUCTURES SHALL BE CLASS S AND HAVE A MINIMUM 28-DAY COMPRESSION STRENGTH OF 3,600 PSI.

FORT WORTH

CITY OF FORT WORTH, TEXAS
TRAFFIC SIGNAL POLE FOUNDATION DETAILS

REVISED: 07-26-2021

34 41 10-D605

STATE OF TEXAS
MARIE C. WAGNER
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LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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Texas Department of Transportation

CITY OF FORT WORTH
D605 - TRAFFIC SIGNAL POLE FOUNDATION DETAILS

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	99
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

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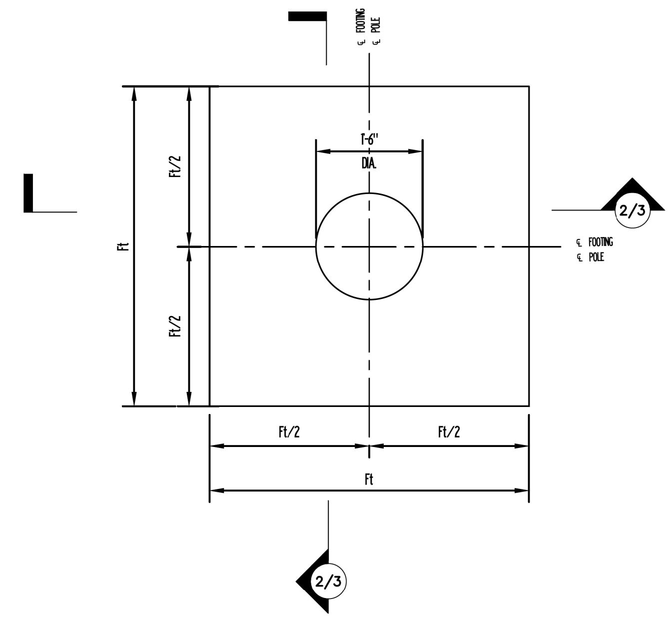
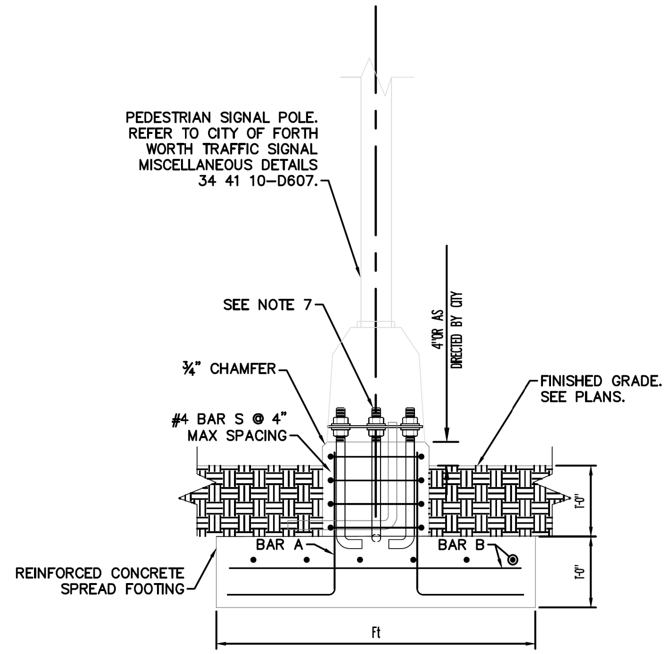


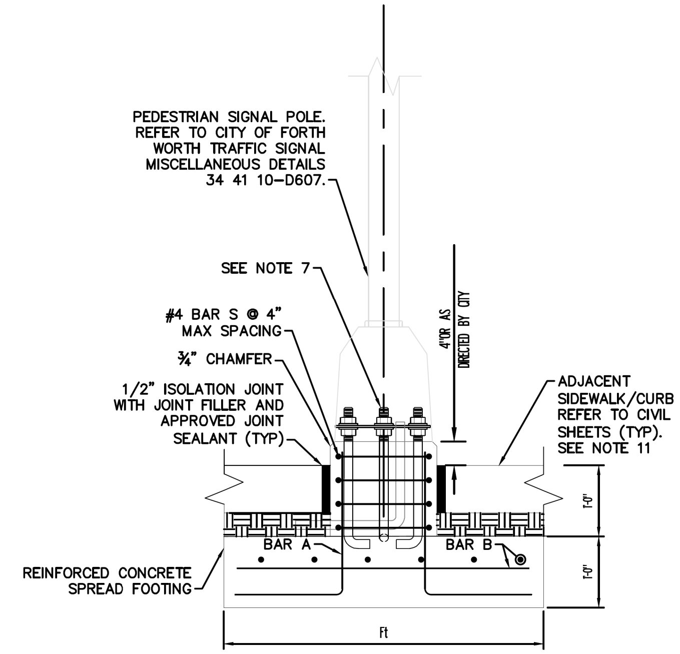
1 FOUNDATION PEDESTAL POLE DETAIL

SCALE: 1/2"=1'-0"



2 SECTION CUT

SCALE: 1/2"=1'-0"



3 ISOLATION JOINT DETAIL

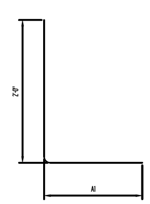
SCALE: 1/2"=1'-0"

PEDESTRIAN POLE				
DESCRIPTION	Ft*	BAR A	"A1"	BAR B
10/14 FOOT POLE	5'-0"	#5 @ 9"	1'-9"	#4 @ 6"
5 FOOT POLE	3'-0"	#5 @ 9"	0'-9"	#4 @ 6"

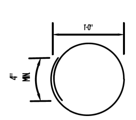
* Ft DIMENSION SHALL APPLY TO LENGTH AND WIDTH. FOUNDATION SHALL BE SQUARE.

NOTE:

1. FOUNDATION IS DESIGNED IN ACCORDANCE WITH 2013 EDITION OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.
2. CONCRETE SHALL BE CAST AGAINST UNDISTURBED, IN-SITU MATERIAL. EXCAVATION, COMPACTION, AND BACKFILL SHALL BE IN ACCORDANCE WITH CITY OF FORT WORTH STANDARD SPECIFICATIONS.
3. ALL CONCRETE SHALL BE DESIGNED, MIXED, TRANSPORTED, AND PLACED IN ACCORDANCE WITH CITY OF FORT WORTH STANDARD SPECIFICATIONS FOR ALL CONSTRUCTION PROJECTS, AND THE LATEST EDITION OF ACI-318.
4. CONCRETE MIX DESIGN SHALL BE IN ACCORDANCE WITH CITY OF FORTH WORTH STANDARD SPECIFICATIONS DIVISION 03 30 00, CAST-IN-PLACE CONCRETE. CONTRACTOR SHALL USE A PRE-APPROVED CONCRETE MIX DESIGN OR SUBMIT PROPOSED MIX DESIGN FOR APPROVAL PRIOR TO CONSTRUCTION. CONCRETE FOR STRUCTURES SHALL BE CLASS S AND HAVE A MINIMUM 28-DAY COMPRESSION STRENGTH OF 3,600 PSI.
5. ALL REINFORCING STEEL SHALL BE ASTM A-615 GRADE 60 IN ACCORDANCE WITH CITY OF FORTH WORTH STANDARD SPECIFICATIONS DIVISION 03 30 00, CAST-IN-PLACE CONCRETE. CONTRACTOR SHALL SUBMIT CERTIFICATION FOR REINFORCING STEEL. REINFORCING PLACEMENT SHALL BE IN ACCORDANCE WITH ACI-318.
6. ALL REINFORCING DIMENSIONS ARE TO OUTSIDE OF BAR UNLESS OTHERWISE NOTED.
7. SEE CITY OF FORTH WORTH STANDARD 34 41 10-D605 "TRAFFIC SIGNAL POLE FOUNDATION DETAILS" ANCHOR BOLT ASSEMBLY DETAIL (HOOKED ANCHOR TYPE 1) FOR DETAILS RELATED TO THE ANCHORAGE OF THE PEDESTAL POLE TO THE FOUNDATION.
8. JOINT SEALERS AND FILLERS SHALL BE IN ACCORDANCE WITH TXDOT ITEM 438 "CLEANING AND SEALING JOINTS." SUBMIT PRODUCT DATA FOR ALL JOINTS AND SEALANTS FOR APPROVAL.
9. ALL CLEAR COVER FOR REINFORCING SHALL BE 2" WHERE FORMED AND 3" WHERE CAST AGAINST EARTH, UNLESS OTHERWISE NOTED ON THE PLANS.
10. DESIGN IS BASED ON THE FOLLOWING GEOTECHNICAL ASSUMPTIONS. GEOTECHNICAL ENGINEER SHALL VERIFY THE FOLLOWING ASSUMED PARAMETERS PRIOR TO CONSTRUCTION.
   - 10.A. MINIMUM GROSS ALLOWABLE BEARING PRESSURE = 1.5 KSF
   - 10.B. MINIMUM ANGLE OF INTERNAL FRICTION = 20°
   - 10.C. MINIMUM COEFFICIENT OF BASE FRICTION = 0.30
11. IF PAVEMENT ABOVE FOOTING IS PLACED DIRECTLY ON FOOTING, APPLY A BOND BREAKER TO THE TOP OF FOOTING IN ACCORDANCE WITH CITY OF FORT WORTH STANDARD SPECIFICATION SECTION 32 13 73 "CONCRETE PAVING JOINT SEALANTS".



BAR A



BAR S

FORT WORTH

CITY OF FORT WORTH, TEXAS

SPREAD FOOTING PEDESTAL POLE FOUNDATION

REVISED: 07-26-2021

34 41 10-D605A

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner

DATE: 04/05/2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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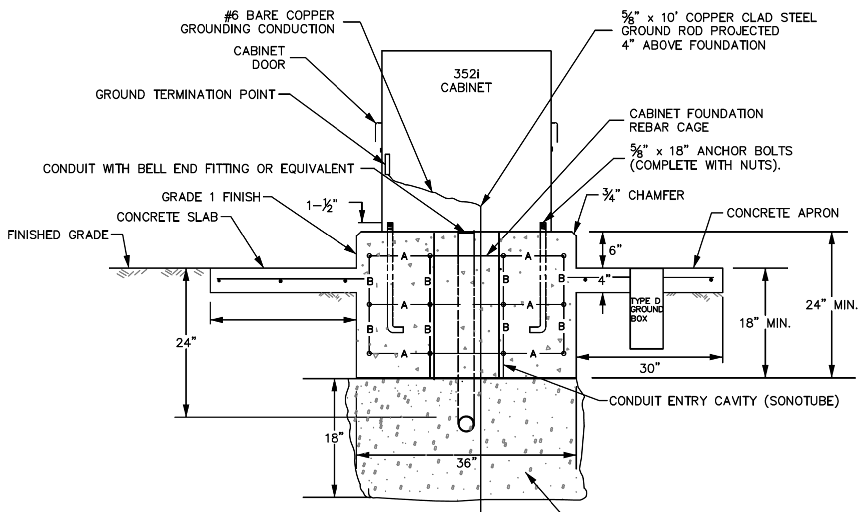
(817) 847-1422

Texas Department of Transportation

CITY OF FORT WORTH
D605A - SPREAD FOOTING PEDESTAL POLE FOUNDATION

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	100



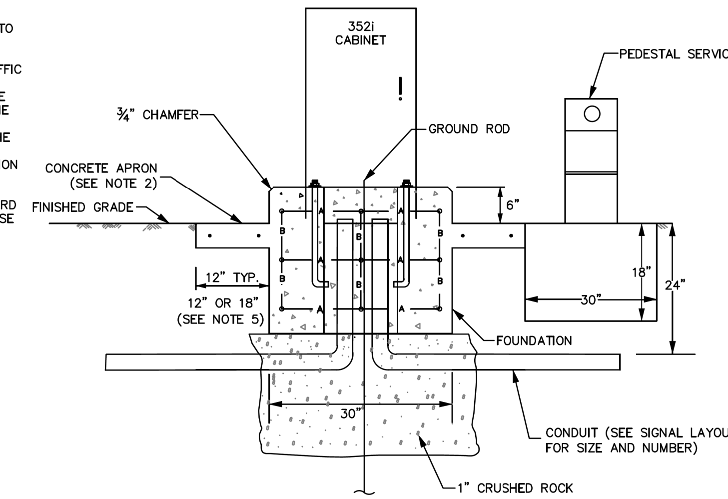
SIDE VIEW

NOTES:
1. ANCHOR BOLT THREADS SHALL BE TAPED PRIOR TO POURING CONCRETE.
2. ALL OR PART OF CONCRETE APRON MAY BE REQUIRED DEPENDING ON THE PLACEMENT OF CABINET FOUNDATION IN RELATION TO EXISTING CONDITIONS.
3. CAVITY IN FOUNDATION (SONOTUBE) ALLOWS FOR FUTURE PLACEMENT OF CONDUIT. CAVITY EXTENDS FROM TOP TO BOTTOM OF FOUNDATION. PLACE 1" CRUSHED STONE IN CAVITY TO WITHIN 4" FROM THE TOP OF THE FOUNDATION.
4. CONTROLLER FOUNDATION APRON SHALL BE CONSTRUCTED OF CLASS B CONCRETE RIP-RAP AND SHALL BE SUBSIDIARY TO THE CONTROLLER FOUNDATION.
5. CABINET FOUNDATION SHALL BE 8' x 5.5' IF A BATTERY BACK-UP UNIT IS ATTACHED TO THE CABINET.
6. FIELD TERMINATIONS SIDE OF CABINET SHALL FACE TOWARDS INTERSECTION.
7. INSTALL TYPE B GROUND BOX FOR ILLUMINATION CIRCUIT AS DETERMINED BY CITY TRAFFIC ENGINEER.
8. INSTALL PEDESTAL SERVICE ON THE SAME PAD AS CABINET FOUNDATION UNLESS THERE ARE OTHER SITE CONSTRAINTS. THE PEDESTAL SERVICE SHALL NOT BE LOCATED ON THE FRONT AND BACK SIDE OF SIGNAL CABINET DOOR. IF THE PEDESTAL IS INSTALLED ON SAME PAD AS CABINET FOUNDATION, THE CONTRACTOR SHALL GET APPROVAL FROM THE CITY ON THE LOCATION ON PEDESTAL FOUNDATION PRIOR TO PORING FOUNDATION.
9. PEDESTAL SERVICE SHALL BE AT LEAST 4 FEET AWAY FORM SIGNAL CABINET FOUNDATION IF IT IS INSTALL SEPARATELY. LOCATION OF TYPE D GROUND BOX IN CONCRETE APRON WILL BE DETERMINED BY CITY TRAFFIC ENGINEER.
10. CONCRETE MIX DESIGN SHALL BE IN ACCORDANCE WITH CITY OF FORTH WORTH STANDARD SPECIFICATIONS DIVISION 03 30 00, CAST-IN-PLACE CONCRETE. CONTRACTOR SHALL USE A PRE-APPROVED CONCRETE MIX DESIGN OR SUBMIT PROPOSED MIX DESIGN FOR APPROVAL PRIOR TO CONSTRUCTION. CONCRETE FOR STRUCTURES SHALL BE CLASS S AND HAVE A MINIMUM 28-DAY COMPRESSION STRENGTH OF 3,600 PSI.

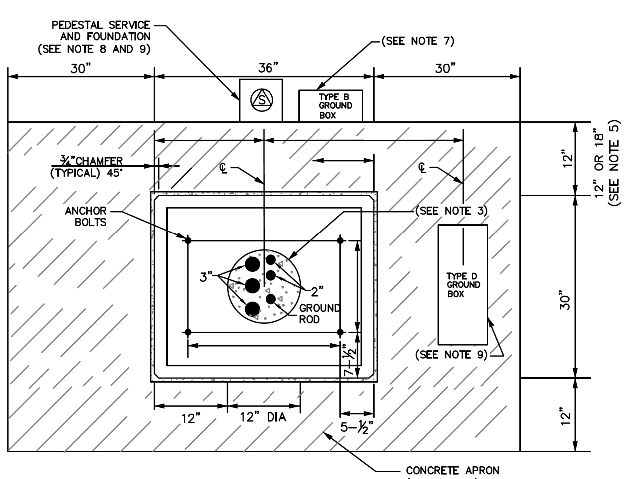
STEEL SUMMARY TABLE

BAR	NO. BARS	SIZE	LENGTH	SPACING
A	3	5	9'-8"	8" C.C.
B	10	5	2'-2"	VAR.
*C	6	3	1'- 8"	8.5" C.C.
**D	6	3	4'-0"	10" C.C.
E	6	3	0'-8"	10" C.C.
F	4	3	6'-8"	8" C.C.

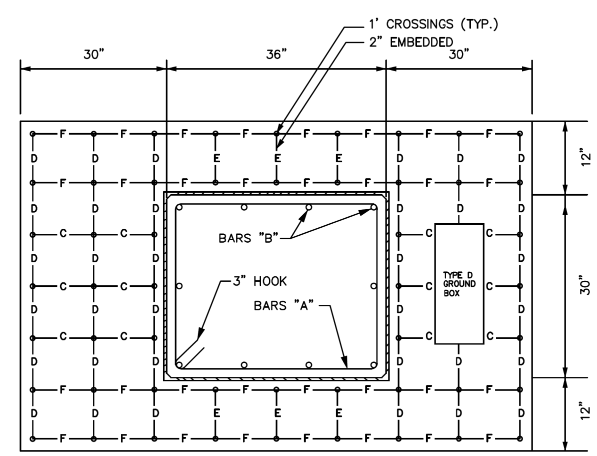
PROVIDE 2" MIN. COVER FOR TOP AND SIDES
* ADJUST THREE "C" BAR LENGTHS TO 9"-11" FOR GROUND BOX INSTALLATION
** ADJUST ONE "D" BAR LENGTH TO 14"-16" FOR GROUND BOX INSTALLATION



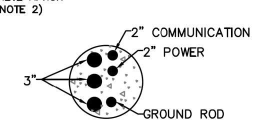
FRONT VIEW



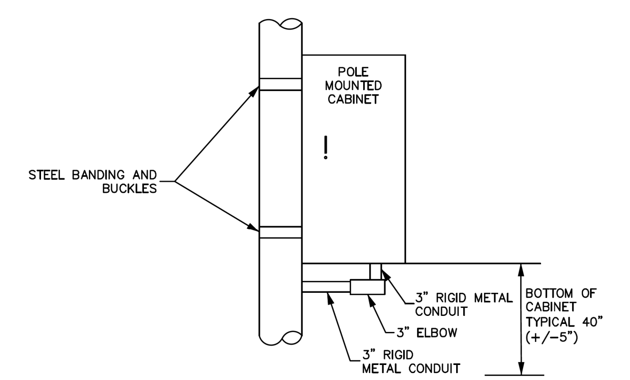
SIDEWALK / STREET SIDE
TOP VIEW
30" X 36" CABINET FOUNDATION WITH APRON



TOP VIEW
CONCRETE EMBEDDED REBAR AND CAGE DETAIL



CONDUIT DETAIL



POLE MOUNTED CABINET
(CABINET IS BANDED TO POLE)
FOR CABINETS MOUNTED TO TIMBER POLES, USE ATTACHMENT METHODS APPROVED BY ENGINER

FORT WORTH	CITY OF FORT WORTH, TEXAS **TRAFFIC SIGNAL TYPE 352i SINGLE GROUND BOX FOUNDATION DETAIL**	REVISED: 11-03-2021 **34 41 10-D606**

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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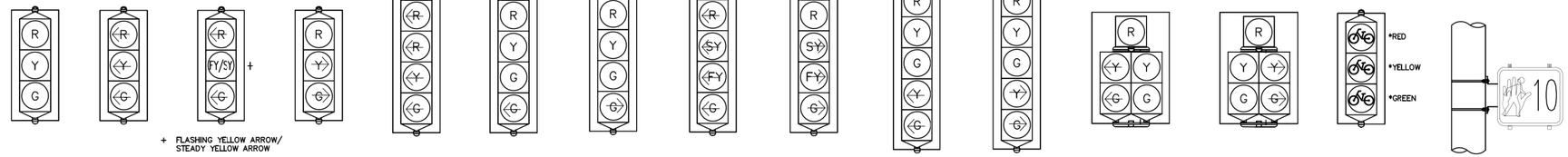
Texas Department of Transportation

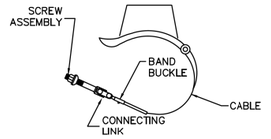
CITY OF FORT WORTH
D606 - TRAFFIC SIGNAL TYPE 352i SINGLE GROUND BOX FOUNDATION DETAIL

SCALE: AS SHOWN SHEET 1 OF 1

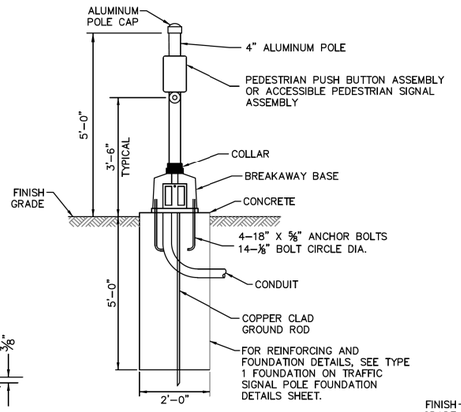
DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	101



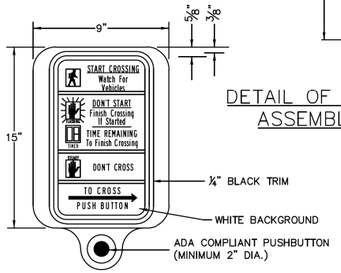
TRAFFIC SIGNAL HEADS



ASTRO BRAC ASSEMBLY

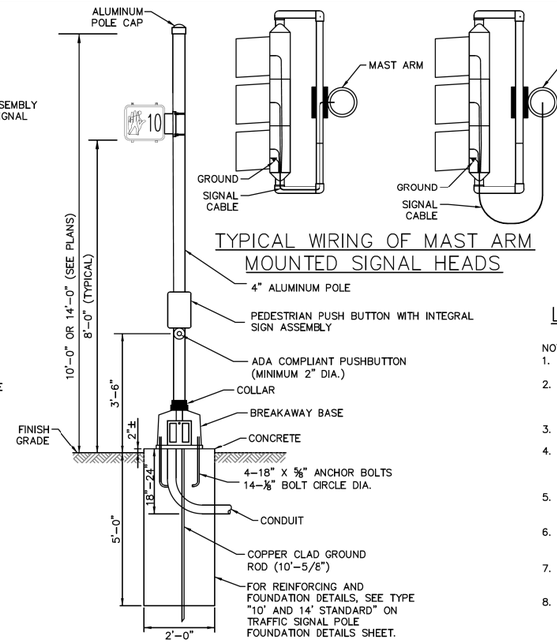


DETAIL OF 5' PUSH BUTTON POLE ASSEMBLY AND FOUNDATION



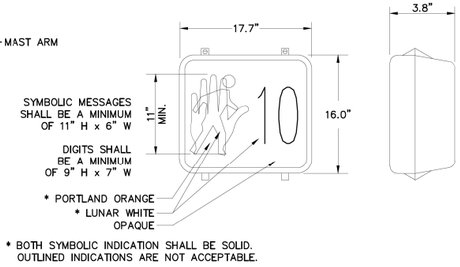
THE SIGN SHOWN SHALL BE USED ON MAST ARM POLES AND ON PEDESTAL POLES. THE PUSH BUTTON SHALL BE INSTALLED 3'-6" ABOVE GROUND LEVEL.

PEDESTRIAN PUSH BUTTON SIGN DETAILS R10-3e



DETAIL OF PEDESTAL POLE ASSEMBLY (10'/14') AND FOUNDATION

TYPICAL WIRING OF MAST ARM MOUNTED SIGNAL HEADS



* BOTH SYMBOLIC INDICATION SHALL BE SOLID. OUTLINED INDICATIONS ARE NOT ACCEPTABLE.

LED COUNTDOWN PEDESTRIAN SIGNAL HEAD

NOTES:

1. ALL SIGNAL HEAD LENSES SHALL BE 12" IN DIAMETER UNLESS OTHERWISE SHOWN.
2. VEHICLE SIGNAL HEADS SHALL BE MOUNTED WITH "ASTRO BRACS" AND APPROPRIATE TUBING. ALL SIGNAL HEADS SHALL BE ALUMINUM, PAINTED FEDERAL YELLOW AND HAVE LED DISPLAYS MEETING THE LATEST I.T.E. STANDARDS.
3. ALL VISORS SHALL BE TUNNEL VISORS, UNLESS OTHERWISE SPECIFIED.
4. ALL POLE MOUNTED VEHICLE AND PEDESTRIAN SIGNAL HEADS SHALL BE INSTALLED ON THE AWAY-FROM-TRAFFIC SIDE OF THE PEDESTAL OR MAST ARM POLE UNLESS ENGINEER APROVES OTHERWISE.
5. PEDESTRIAN SIGNAL HEADS SHALL BE MOUNTED WITH "CLAM-SHELL" MOUNTING BRACKET.
6. THE PEDESTAL POLE TRANSFORMER BASE SHALL BE BREAKAWAY DESIGN (PELCO PART No. PB-5335 OR EQUAL) AND SHALL CONFORM TO ASTM B241 STANDARDS.
7. THE ADA COMPLIANT PUSHBUTTON (MINIMUM 2" DIA.) SHALL BE POLARA ENGINEERING, INC. PART No. BDLM2-Y OR EQUIVALANT.
8. ALL SIGNAL HEADS SHALL HAVE ALUMINUM, ONE-PIECE BLACK VENTED BACK PLATES.

FORT WORTH

CITY OF FORT WORTH, TEXAS

TRAFFIC SIGNAL MISCELLANEOUS DETAILS

REVISED: 07-26-2021

34 41 10-D607

STATE OF TEXAS
MARIE C. WAGNER
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LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner

DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

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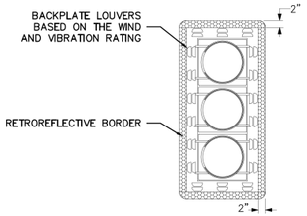
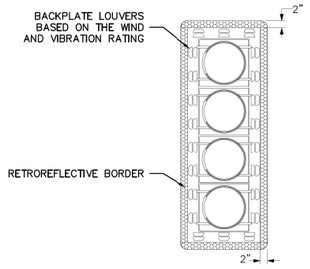
CITY OF FORT WORTH
D607 - TRAFFIC SIGNAL
MISCELLANEOUS DETAILS

SCALE: AS SHOWN — SHEET 1 OF 1

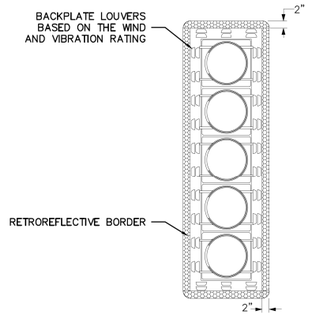
DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	102
CHECK	0902	90	214, ETC.	



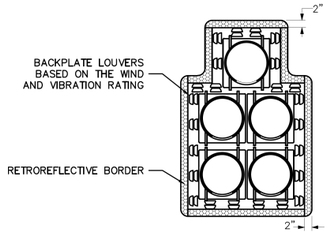
THREE–SECTION HEAD BACKPLATE
WITH VENTED RETROREFLECTIVE BORDER



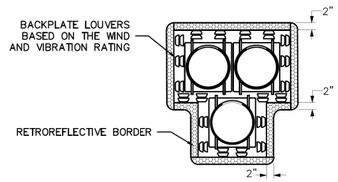
FOUR–SECTION HEAD BACKPLATE
WITH VENTED RETROREFLECTIVE BORDER



FIVE–SECTION HEAD BACKPLATE
WITH VENTED RETROREFLECTIVE BORDER



FIVE–SECTION (DOGHOUSE) HEAD BACKPLATE
WITH VENTED RETROREFLECTIVE BORDER



PEDESTRIAN HYBRID BEACON BACKPLATE
WITH VENTED RETROREFLECTIVE BORDER

NOTES:
1. ALL BACKPTES SHALL BE INSTALLED VERTICAL UNLESS OTHERWISE APPROVED BY THE CITY.
2. ALL BACKPLATES SHALL BE VENTED.
3. A 2 INCH WIDE FLUORESCENT YELLOW AASHTO TYPE B_{FL} OR C_{FL} RETROREFLECTIVE BORDER IS REQUIRED.
4. THE CONTRACTOR SHALL VERIFY SIGNAL HEAD AND BACKPLATE COMPATIBILITY PRIOR TO INSTALLATION.
5. RETROREFLECTIVE BORDERS SHALL NOT BE PLACED OVER THE LOUVERS.
6. BACKPLATES ARE REQUIRED FOR ALL SIGNALS HEADS, INCLUDING BUT NOT LIMITED TO:
   - POLE MOUNTED SIGNAL HEADS
   - OVERHEAD MOUNTED SIGNAL HEADS
   - SPAN WIRE MOUNTED SIGNAL HEADS (UNLESS OTHERWISE APPROVED BY THE CITY)
   - VERTICAL SIGNAL HEADS
   - HORIZONTAL SIGNAL HEADS
   - DOGHOUSE
   - PEDESTRIAN HYBRID BEACONS
   - OTHER FLASHING SIGNALS
7. THE COST FOR INSTALLATION OF BACKPLATES WILL BE INCLUDED ON THE COST OF RESPECTIVE SIGNAL HEADS INSTALLED. SEPARATE PAYMENT IS ONLY ALLOWED WHEN INSTALLING NEW BACKPLATES ON EXISTING SIGNAL HEADS.
8. RETROFLECTIVE BORDERS MAY BE WAVED FROM THE BACKPLATE BASED ON PROJECT NEED IF APPROVED BY THE TRANSPORTATION MANAGEMENT DIVISION.

FORT WORTH

CITY OF FORT WORTH, TEXAS

TRAFFIC SIGNAL BACKPLATE DETAILS

REVISED: 03-09-2022

34 41 10-D608

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

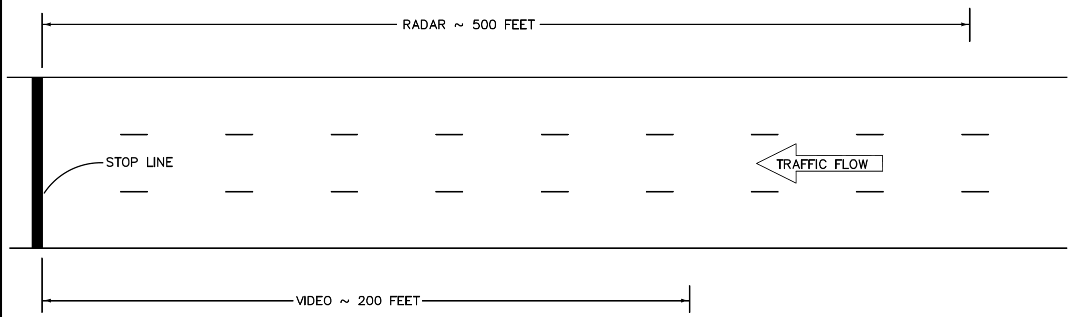
halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

CITY OF FORT WORTH
D608 - TRAFFIC SIGNAL
BACKPLATE DETAILS

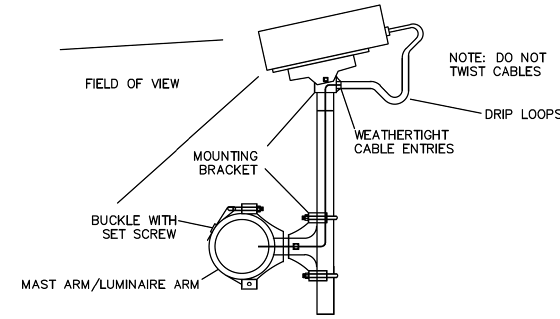
SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	103
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	

4/11/2024 2:48:01 PM
TXDOT-OR
Default
...\TXDOT-OR*MON*PENTABLE.tbl
A:\47000s\47647\001\TRANS\500_CADD\v4 - Design\D608-TRAFFIC SIGNAL BACKPLATE DETAILS\D608-TRAFFIC SIGNAL BACKPLATE DETAILS.dgn
FTW



DETECTION LIMITS



TYPICAL WIRING OF VIDEO VEHICLE DETECTION CAMERAS

NOTES:

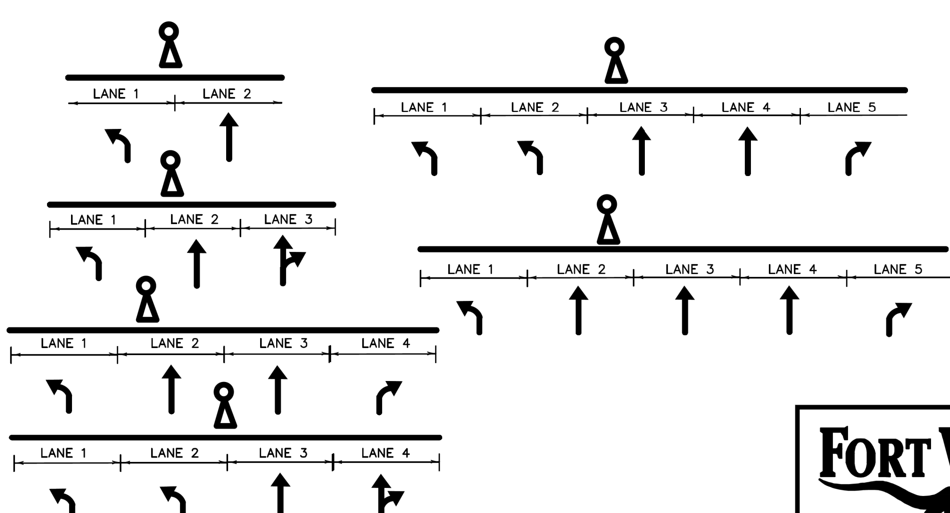
1. THE CAMERA IS REQUIRED TO BE PLACED IN CENTER TO THE VEHICLE APPROACH AS MUCH AS POSSIBLE OR PER DIRECTION OF ENGINEER.
2. THE MAST ARM MOUNTING WOULD END UP WITH A CAMERA HEIGHT OF ABOUT 25 FEET WHEN USING A 5 FOOT EXTENSION WITH BRACKET.
3. THE CAMERA SHOULD BE ZOOMED IN UNTIL A MINIMUM OF 4 LANES ARE VISIBLE.
4. THE HORIZON SHOULD NOT BE INCLUDED AS PART OF THE FIELD OF VIEW.
5. THE ZONES SHOULD BE DRAWN WITHIN THE LANE LINES AND SHOULD BE THE SIZE OF A MEDIUM VEHICLE.
6. THE AREA BETWEEN THE STOP BAR AND THE BOTTOM OF THE SCREEN WILL NOT BE 40% OR LESS THAN THE TOTAL COVERAGE AREA.
7. THE CAMERA SUN SHIELD (VISOR) BE PLACED ENOUGH FORWARD TO GIVE THE CAMERA MAXIMUM PROTECTION FROM THE SUN.
8. USE ASTRO-BRAC TYPE MOUNTING BRACKET TO THE DESIRED LOCATION.
9. MANUFACTURER REPRESENTATIVE SHALL BE ON-SITE DURING INSTALLATION AND SETUP.
10. A SELF MOUNT OR RACK MOUNT DETECTION CONTROL UNIT WITH FOUR PORTS FOR ETHERNET CONNECTIVITY WILL BE REQUIRED.
11. THE DETECTION CONTROL UNIT WILL COMMUNICATE WITH CONTROLLERS VIA SDLC.
12. APPROACH WITH SPEED LIMIT 35MPH OR HIGHER USUALLY NEED VANTAGE VECTOR IN NEXT CAMERA.
13. INSTALL PTZ CAMERA ON POLE AS DIRECTED BY CITY.
14. ANY DETECTION OR PTZ CAMERA THAT USES CAT5E CABLES SHALL USE SHIELDED, GEL FILLED, AND UV RESISTANT CAT5E CABLES.

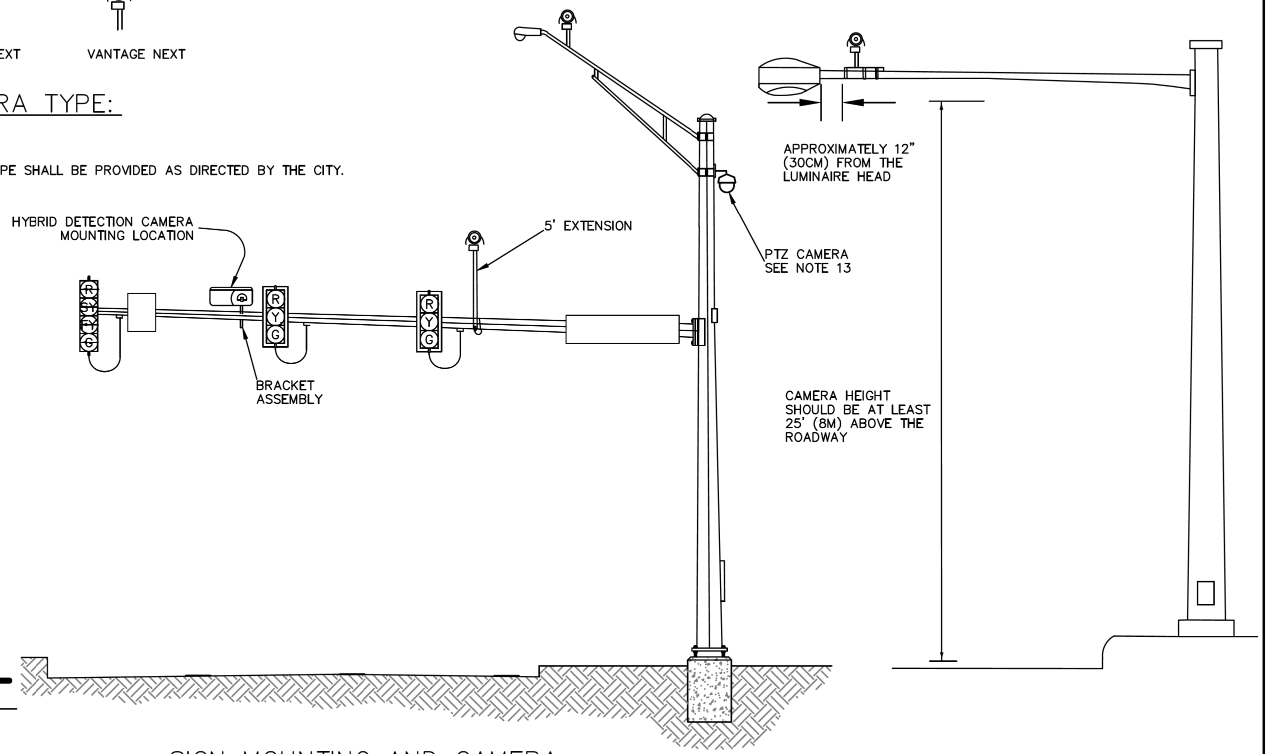
CAMERA TYPE:

NOTE:

CAMERA TYPE SHALL BE PROVIDED AS DIRECTED BY THE CITY.

CAMERA PLACEMENT BASED ON LANE GEOMETRY





SIGN MOUNTING AND CAMERA MOUNTING LOCATION ON MAST ARM

FORT WORTH

CITY OF FORT WORTH, TEXAS

TRAFFIC SIGNAL VIDEO/ HYBRID DETECTION DETAILS

REVISED: 07-26-2021

34 41 10-D611

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner

DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

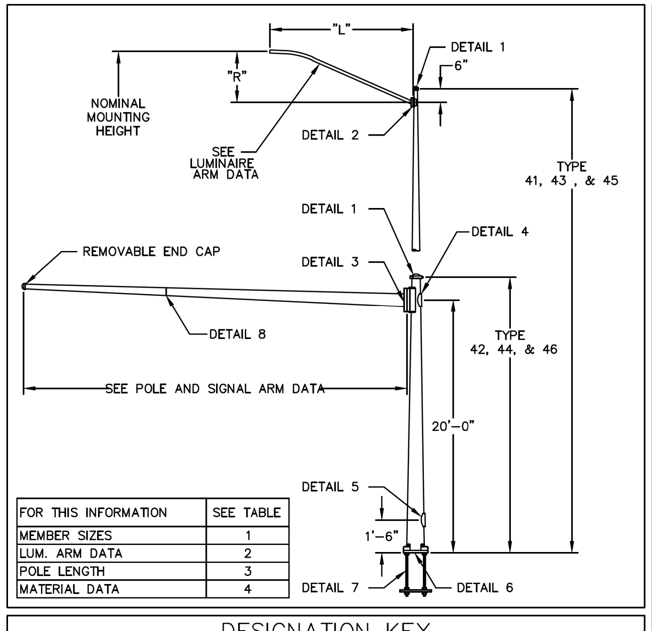
Texas Department of Transportation

CITY OF FORT WORTH
D611 - TRAFFIC SIGNAL VIDEO/
HYBRID DETECTION DETAILS

SCALE: AS SHOWN SHEET 1 OF 1

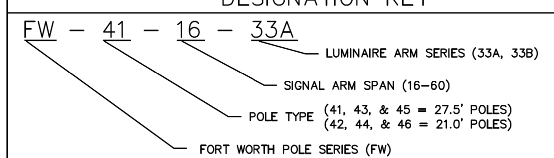
DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	104
CHECK	0902	90	214, ETC.	

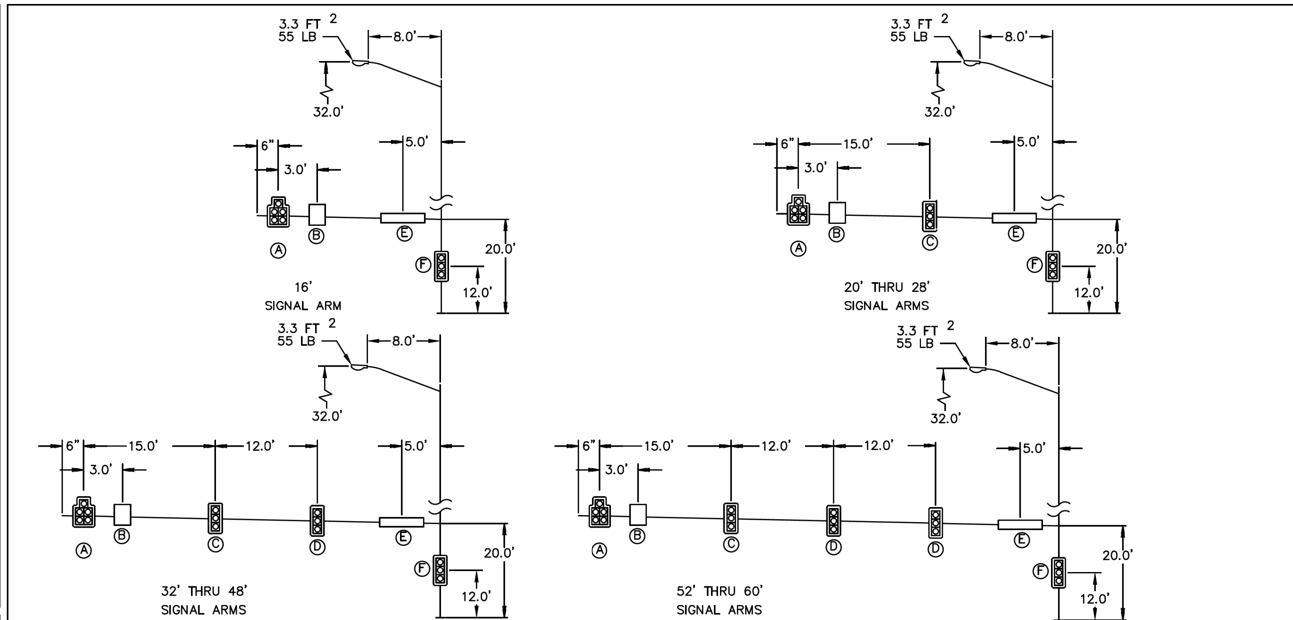
FTW
...\TXDOT-OR*MON*PENTABLE.tbl
TXDOT-OR Default



FOR THIS INFORMATION	SEE TABLE
MEMBER SIZES	1
LUM. ARM DATA	2
POLE LENGTH	3
MATERIAL DATA	4

DESIGNATION KEY





DEVICE	DESCRIPTION	PROJ.AREA (FT^2)	WEIGHT (LBS)
Ⓐ	12"–5 SEC. SIGNAL WITH BACKPLATES	13.33	85
Ⓑ	REGULATORY SIGN 30" X 30"	6.25	15
Ⓒ&Ⓓ&Ⓕ	12"–3 SEC. SIGNAL WITH BACKPLATES	8.67	60
Ⓔ	STREET NAME SIGN 18" X 84"	10.50	35

DESIGN CRITERIA:
1994 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS.

WIND VELOCITY:
80 MPH ISOTACH.

MAX. LOADING INFORMATION

TABLE 1: POLE AND SIGNAL ARM DATA

DESIGNATION KEY				POLE TUBE				POLE BASE				ANCHOR BOLT				SIGNAL ARM TUBE			
POLE SERIES	POLE TYPE	SIGNAL ARM SPAN (FT)	LUM. ARM SERIES	BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	GAUGE OR THK. (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	THREAD LENGTH "U" (IN)	THREAD LENGTH "W" (IN)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GAUGE	SPAN (FT)
FW	41,42	16.00	33A,33B	11.00	SEE TABLE 3	SEE TABLE 3	3	16.00	15.00	1.50	1.75	1.50	54.00	8.00	2.50	6.00	3.76	7	16.00
		20.00	33A,33B	11.00			3	16.00	15.00	1.50	1.75	1.50	54.00	8.00	2.50	6.00	3.50	7	20.00
		24.00	33A,33B	11.00			3	16.00	15.00	1.50	1.75	1.50	54.00	8.00	2.50	7.00	3.60	7	24.00
		28.00	33A,33B	11.00			3	16.00	15.00	1.50	1.75	1.50	54.00	8.00	2.50	7.00	3.08	7	28.00
		32.00	33A,33B	11.00			3	16.00	15.00	1.50	1.75	1.50	54.00	8.00	2.50	8.00	3.52	7	32.00
		36.00	33A,33B	11.00			3	16.00	15.00	1.50	1.75	1.50	54.00	8.00	2.50	9.00	3.96	7	36.00
FW	43,44	40.00	33A,33B	13.00			3	18.00	17.00	1.75	2.00	1.75	54.00	8.00	2.50	10.00	4.40	7	40.00
		44.00	33A,33B	13.00			3	18.00	17.00	1.75	2.00	1.75	54.00	8.00	2.50	10.00	3.84	7	44.00
		48.00	33A,33B	13.00			3	18.00	17.00	1.75	2.00	1.75	54.00	8.00	2.50	10.50	3.78	7	48.00
FW	45,46	52.00	33A,33B	15.25			0.250	20.00	21.00	1.75	2.25	2.00	54.00	8.00	2.50	12.00	4.72	7/7	52.00
		56.00	33A,33B	15.25			0.250	20.00	21.00	1.75	2.25	2.00	54.00	8.00	2.50	12.00	4.10	5/7	56.00
		60.00	33A,33B	15.25			0.250	20.00	21.00	1.75	2.25	2.00	54.00	8.00	2.50	12.50	4.04	5/7	60.00

TABLE 2: LUM.ARM DATA

LUMINAIRE ARM SERIES	ARM SPAN "L"	RISE HEIGHT "R"	NOMINAL MOUNTING HEIGHT
33A	8'–0"	5'–0"	32'–0"
33B	8'–0"	3'–0"	30'–0"

TABLE 3: POLE LENGTH

POLE TYPE	41	42	43	44	45	46
LENGTH (FT)	27.50	21.00	27.50	21.00	27.50	21.00
TOP DIA (IN)	7.15	8.06	9.15	10.06	11.40	12.31

TABLE 4: MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
TAPERED TUBES	A595 GR.A OR A572	55	LUM, PIPE ARM	2" SCHED.40	35
			LUM. ARM ATTACHMENT	A27 GR.65–35 OR A36	35
BASE PLATE	A36	36	LUM. ARM BOLTS	SAE GR.5	92
ANCHOR BOLTS	F1554 GR.55	55	GALVANIZING–TUBES	A123	
SIGNAL ARM ATTACHMENT	A36	36	GALVANIZING–HARDWARE	F2329	
SIGNAL ARM BOLTS	A325	92			

NOTES:

1. INSTALLATION OF DUAL MAST ARMS SHALL BE IN ACCORDANCE WITH TXDOT STANDARDS.
2. INSTALLATION OF 65' MAST ARM SHALL BE IN ACCORDANCE WITH TXDOT STANDARDS.
3. REFER TO STANDARD D690 FOR INSTALLATION OF CANTILEVER ARM FOR METRO SIGN.
4. ALL SIGNAL POLES AND MAST ARMS SHALL BE POWDER COATED BLACK OR OTHER CITY APPROVED COLOR.

FORT WORTH

CITY OF FORT WORTH, TEXAS
TRAFFIC SIGNAL STRUCTURES STANDARD - OPTION 1 (1 OF 2)

DATE: 07-26-2021

34 41 10-D612

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

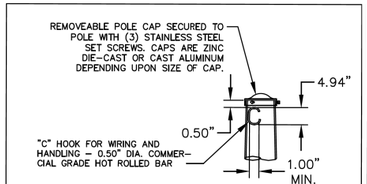
NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

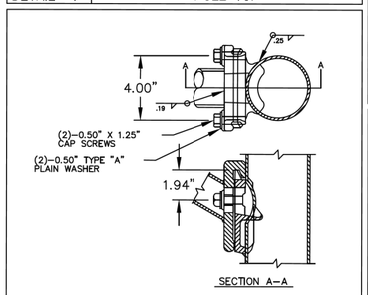
CITY OF FORT WORTH
D612 - TRAFFIC SIGNAL STRUCTURES
STANDARD - OPTION 1 (1 OF 2)

SCALE: AS SHOWN
SHEET 1 OF 2

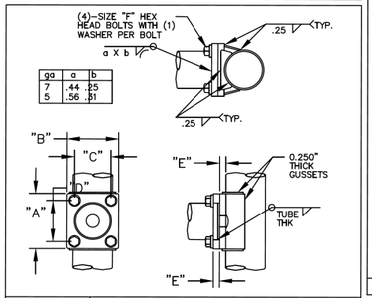
DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GRAPHICS	.	(SEE TITLE SHEET)		
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	
	CONTROL	SECTION	JOB	105
CHECK	0902	90	214, ETC.	



DETAIL 1 | POLE TOP



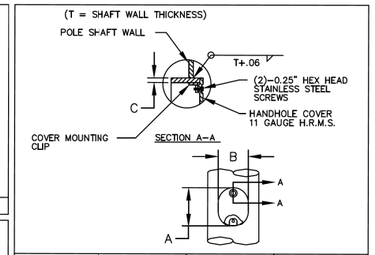
DETAIL 2 | LUMINAIRE ARM ATTACHMENT



DETAIL 3 | SIGNAL ARM ATTACHMENT

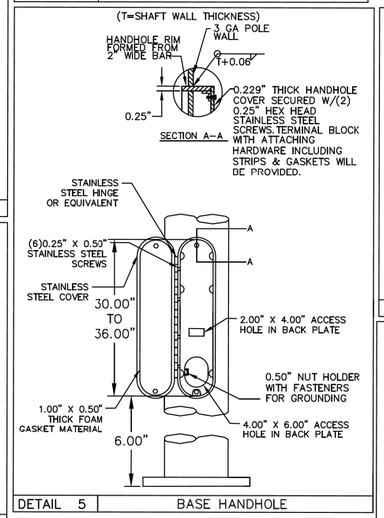
SIGNAL ARM ATTACHMENT DATA

POLE BASE DIA.	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (IN)
11.00"	12.25	10.75	7.75	9.25	1.25	1.25 X 3.25
13.00"	16.25	15.00	11.00	12.25	1.50	1.50 X 3.50
15.25"	18.75	17.50	13.50	14.75	2.00	1.50 X 4.50

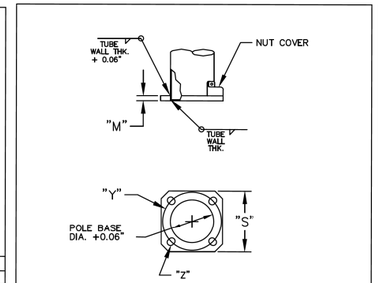


POLE WALL	A	B	C
3 GA	7.56"	5.19"	0.280"
0.25"	7.31"	5.63"	0.432"

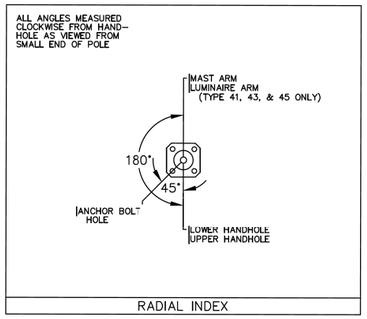
DETAIL 4 | HANDHOLE



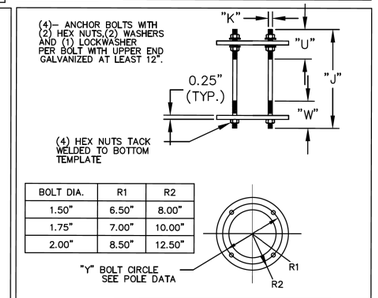
DETAIL 5 | BASE HANDHOLE



DETAIL 6 | POLE BASE

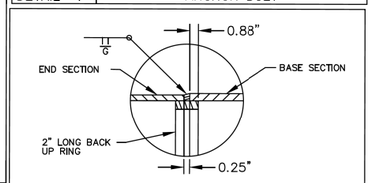


RADIAL INDEX



BOLT DIA.	R1	R2
1.50"	6.50"	8.00"
1.75"	7.00"	10.00"
2.00"	8.50"	12.50"

DETAIL 7 | ANCHOR BOLT



ARM SECTION DATA

SPAN	BASE SECTION LENGTH	BASE SECTION GAUGE	END SECTION LENGTH	END SECTION GAUGE
52.00'	30.00'	7	22.00'	7
56.00'	30.00'	5	26.00'	7
60.00'	21.00'	5	39.00'	7

DETAIL 8 | WELDED SIGNAL ARM SPLICE

NOTES:

1. TERMINAL BLOCKS SHALL BE INSTALLED IN EACH POLE.
2. TERMINAL BLOCKS SHALL BE 12 POINT, 7 ⅜" LONG, STACKED WHEN NEEDED.
3. SHALL USE FEED-THROUGH TYPE TERMINAL BLOCK.
4. BASE HANDHOLE AND COVER SHALL BE PREASSEMBLED ON THE POLE BY MANUFACTURER.

FORT WORTH

CITY OF FORT WORTH, TEXAS

TRAFFIC SIGNAL STRUCTURES STANDARD - OPTION 1 (2 OF 2)

DATE: 03-09-2022

34 41 10-D613

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation
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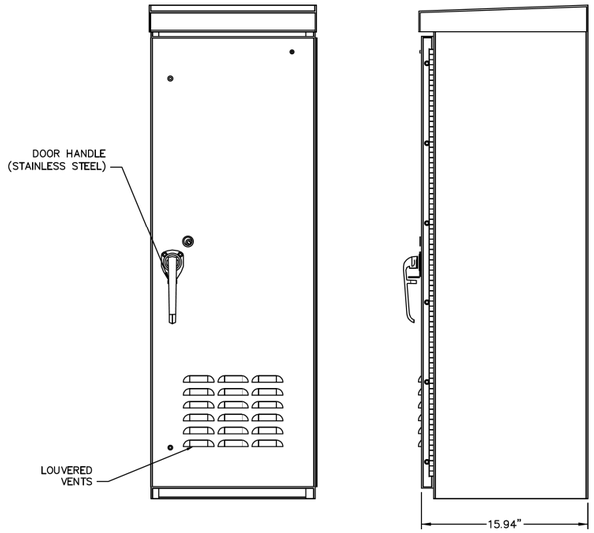
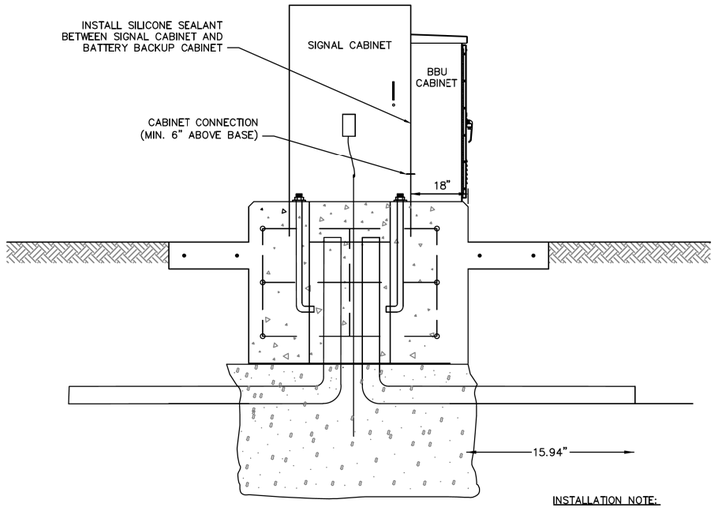
CITY OF FORT WORTH
D613 - TRAFFIC SIGNAL STRUCTURES
STANDARD - OPTION 1 (3 OF 2)

SCALE: AS SHOWN SHEET 2 OF 2

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	106
CHECK	0902	90	214, ETC.	



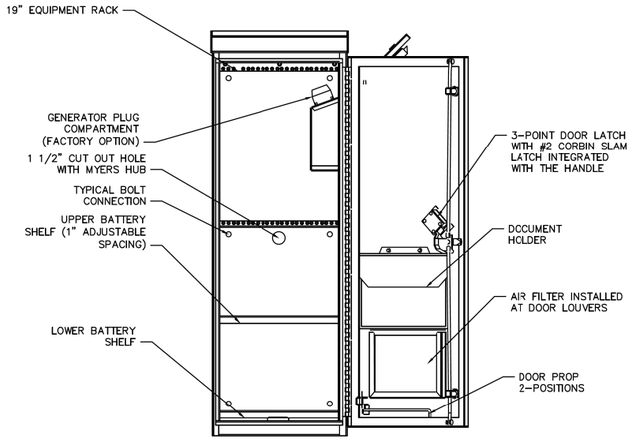
FRONT AND SIDE VIEW



CABINET MOUNTED TO TRAFFIC
SIGNAL CONTROLLER CABINET

INSTALLATION NOTE:

1. MOUNTING HOLES MUST BE DRILLED ON SITE AND MOUNTED WITH 6 SETS OF 1/4"–20 18–8 STAINLESS STEEL HEX HEAD BOLTS AND NUTS ASSEMBLY (SUPPLIED WITH SYSTEM).
2. BOLT SPACING SHOWN IN FRONT VIEW SHOWS TYPICAL LOCATIONS. LOCATION OF BOLTS MAY VARY TO ACCOMMODATE CONFLICTS.
3. INSPECTOR MUST APPROVE MOUNTING PRIOR TO INSTALLATION TO ENSURE PEDESTRIAN PATHWAYS ARE NOT BLOCKED AND THE MINIMUM CLEARANCE FROM FACE OF CURB OR EDGE OF PAVEMENT IS MET.
4. REFER TO DETAIL D606 FOR CABINET FOUNDATION DETAILS.
5. INSTALL 3" HOLE SAW CUT WITH THREADED NIPPLE ON EACH SIDE FOR CONNECTION BETWEEN CABINETS. CONNECTION POITN SHALL BE A MINIMUM OF 6" ABOVE BOTTOM OF CABINET.



FRONT VIEW
(SHOWN WITH DOOR OPENED)

NOTE:
INTERNAL BATTERY BACK UP SHALL BE ZINC 5 OR APPROVED EQUIVALENT. COORDINATE WITH CITY ON THE TYPE OF BATTERY BACK UP TO UTILIZE.

FORT WORTH

CITY OF FORT WORTH, TEXAS

TRAFFIC SIGNAL
BATTERY BACK UP DETAIL

DATE: 07-26-2021

34 41 10-D620

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED
PROFESSIONAL ENGINEER

Marie C. Wagner

DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

CITY OF FORT WORTH
D620 - TRAFFIC SIGNAL
BATTERY BACK UP DETAIL

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	107
CHECK	0902	90	214, ETC.	

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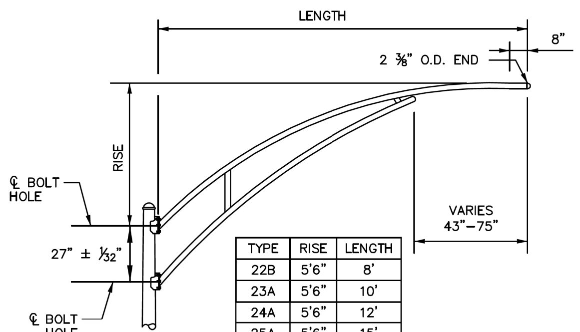
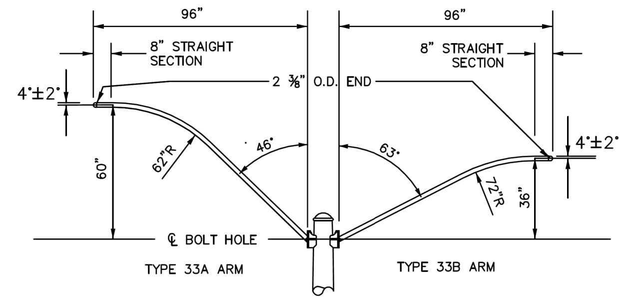
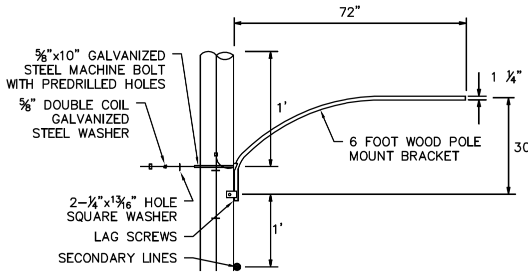


TYPE	RISE	LENGTH
22B	5'6"	8'
23A	5'6"	10'
24A	5'6"	12'
25A	5'6"	15'
25	3'	15'

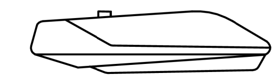
TRUSS TYPE LUMINAIRE SUPPORT ARM



SINGLE MEMBER LUMINAIRE SUPPORT ARM



WOOD POLE ARM MOUNTING DETAIL



LED LUMINAIRE HEAD FIXTURE DETAIL

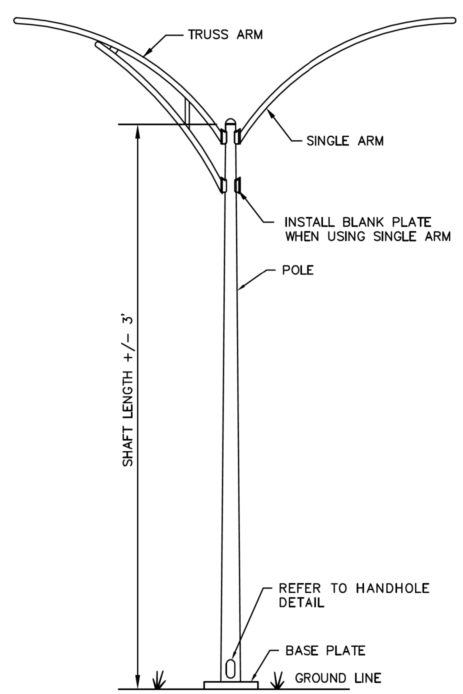
NOTE:
1. LED LUMINAIRE TO MEET SPECIFICATIONS AS SHOWN FOR ARTERIAL OR RESIDENTIAL APPLICATIONS. REFERENCE BUZZSAW FOR LATEST SPECIFICATIONS.
2. LED LUMINAIRE TO MEET 10 YEAR STANDARD WARRANTY
3. LED LUMINAIRE TO BE LABELED WITH WATTAGE PER ANSI STANDARDS.
4. LED LUMINAIRE TO BE APPROVED BY T/PW STREET LIGHTS PRIOR TO INSTALLATION.

SINGLE PIECE STEEL POLE					
POLE TYPE	SHAFT LENGTH	SHAFT DIAMETER BOTTOM	SHAFT DIAMETER TOP	GAUGE	DRILLED SHAFT FOUNDATION
11	24.0'	7.0"	3.5"	11	*TYPE 1
8	27.5'	8.0"	3.5"	11	*TYPE 2
18	33.5'	8.5"	3.38"	11	*TYPE 3
18A	46'	10.0"	5.74"	11	*TYPE 6
19	27.5'	11.0"	7.15"	7	*TYPE 8

* PER 34 41 20–D622

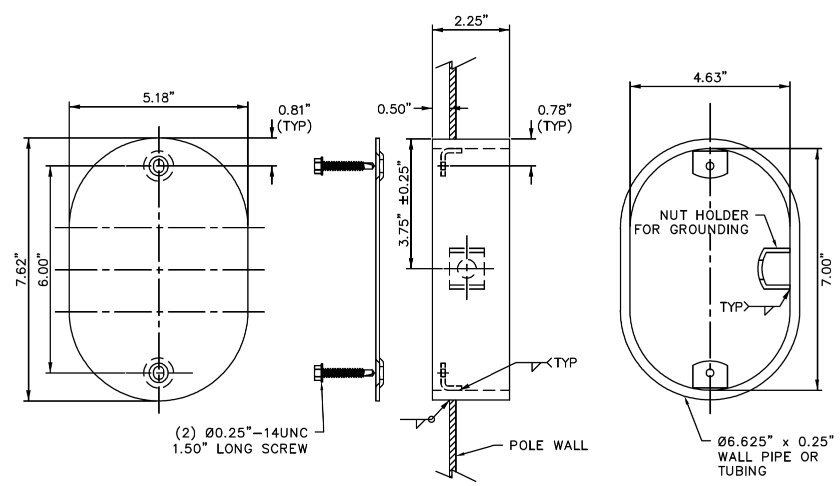
SINGLE PIECE DAVIT POLE					
TYPE NUMBER	MOUNTING HEIGHT FT.	MINIMUM SHAFT SIZE AT BASE	SPAN	GAUGE (MIN.)	DRILLED SHAFT FOUNDATION TYPE
D25–6	25	7.5"	6'	#11	*TYPE 4
D30–6	30	8.0"	6'	#11	*TYPE 2
40 FT. DAVIT STANDARD					
D40–9	40	9.5"	9'	#11	*TYPE 5
DOUBLE DAVIT ARM					
D40–9T	N/A	N/A	9'	#11	N/A

* PER 34 41 20–D622

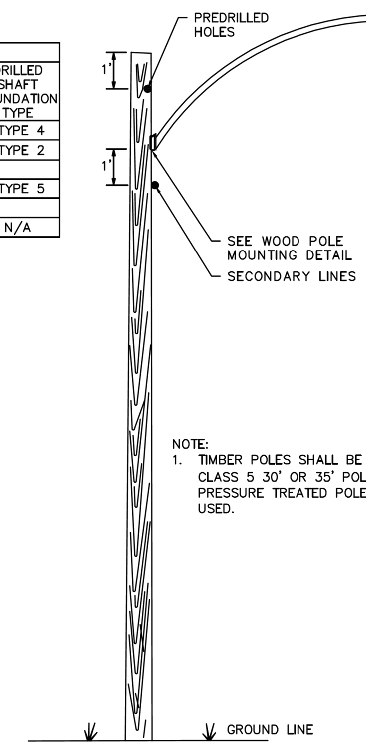


SINGLE PIECE STEEL POLE SHAFT

FOR POLE TYPE No's 8, 11, 18, 18A & 19

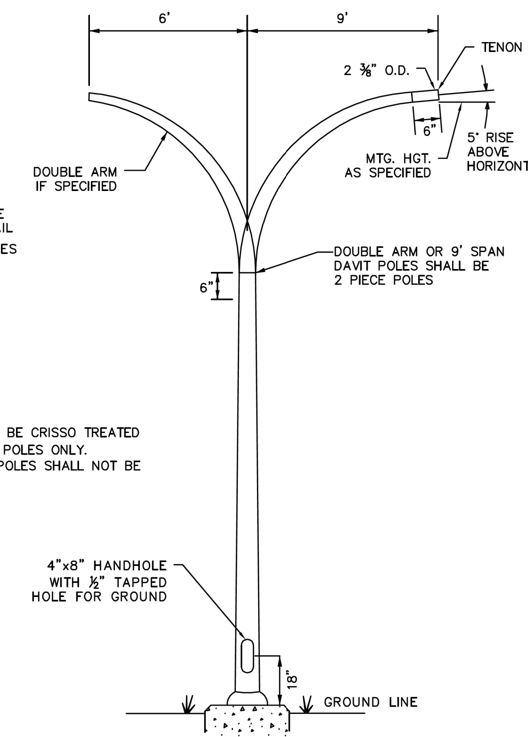


HANDHOLE DETAIL



NOTE:
1. TIMBER POLES SHALL BE CRISSO TREATED CLASS 5 30' OR 35' POLES ONLY. PRESSURE TREATED POLES SHALL NOT BE USED.

TIMBER POLE



DAVIT POLE

FORT WORTH

CITY OF FORT WORTH, TEXAS
STREET LUMINAIRE
POLE AND FIXTURE DETAILS

REVISED: 07-09-2014

34 41 20-D621

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
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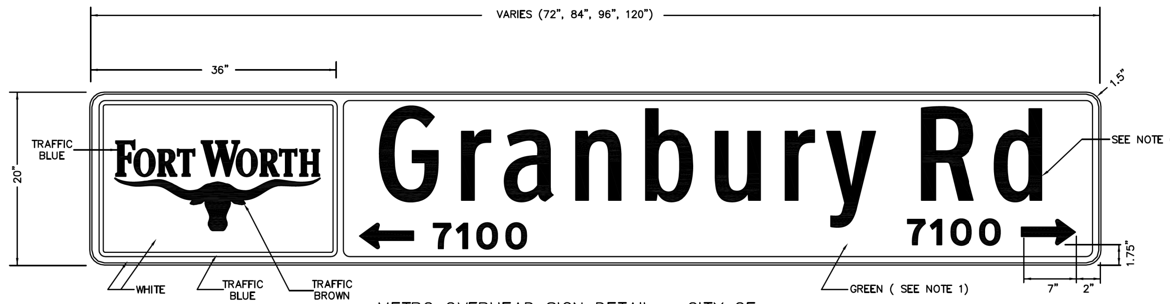
Texas Department of Transportation

CITY OF FORT WORTH
D621 - STREET LUMINAIRE POLE AND FIXTURE DETAILS

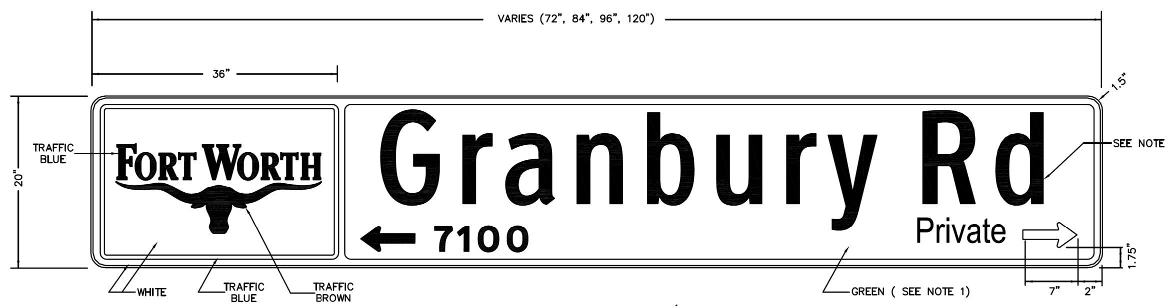
SCALE: AS SHOWN — SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	108



METRO OVERHEAD SIGN DETAIL – CITY OF FORT WORTH

UPPERCASE: 11" CLEARVIEW 3W
LOWERCASE: 10" CLEARVIEW 3W
BLOCK NUMBER: 3" CLEARVIEW 4W

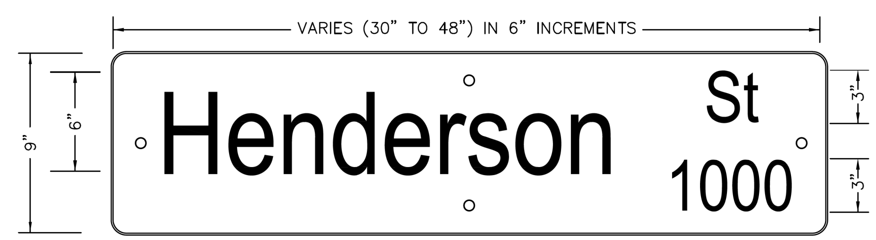


METRO OVERHEAD SIGN DETAIL (PRIVATE STREET) – CITY OF FORT WORTH

UPPERCASE: 11" CLEARVIEW 3W
LOWERCASE: 10" CLEARVIEW 3W
BLOCK NUMBER: 3" CLEARVIEW 4W

NOTES:

1. METRO SIGN SHEETING SHALL BE WHITE 3M DIAMOND GRADE CUBED (DG3) WITH GREEN ELECTRO-CUT (EC) TRANSPARENT FILM AS AN OVERLAY OR APPROVED EQUAL BY TRAFFIC MANAGEMENT.
2. FONT: HIGHWAY GOTHIC 'C' OR 'B' (DEPENDING ON LENGTH OF NAME)
3. SIGN BLANK FOR 2 INCH POST INSTALL: 0.08 FEDERAL SPEC. ALUM. (LP/SP INSTALL 0.125 UNDRILLED)
4. SIGNS LONGER THAN 10'-0" FOR STREET NAME METROS OR 4'-0" FOR STREET NAME BLADES SHALL HAVE TRAFFIC MANAGEMENT APPROVAL.



STREET NAME BLADE DETAIL

FORT WORTH	CITY OF FORT WORTH, TEXAS **STREET NAME SIGN DETAILS**	DATE: 6-11-2015 **34 41 30-D633**

MARIE C. WAGNER
147501
STATE OF TEXAS
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

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CITY OF FORT WORTH
D633 - METRO STREET NAME SIGNS

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	
	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	109

FTW WAGNER-4219
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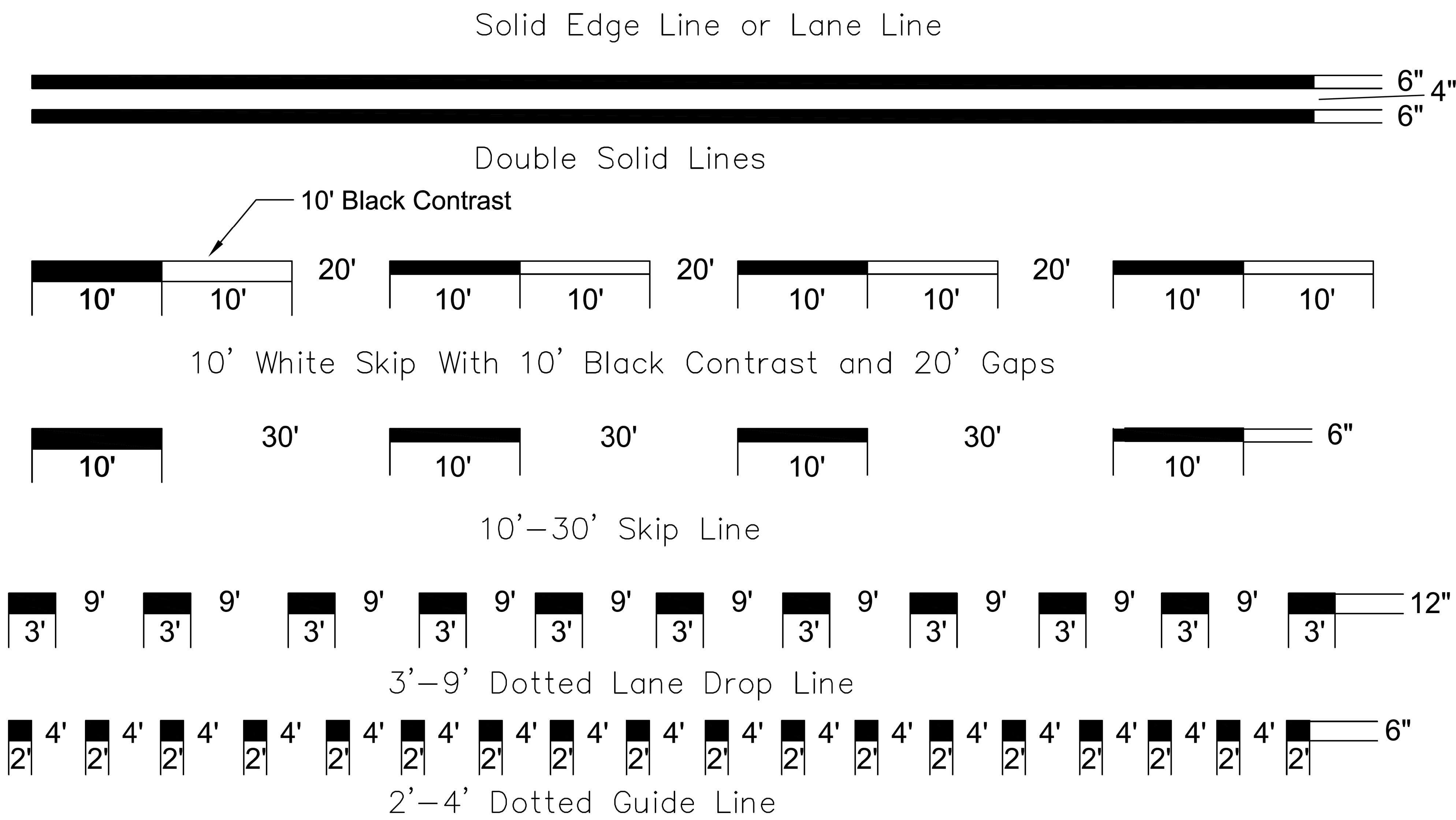
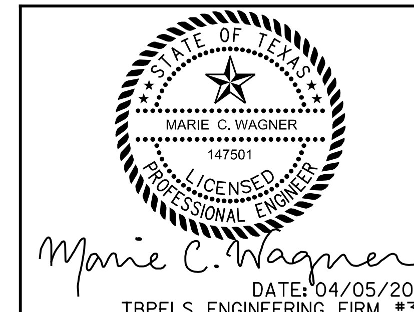


FORT WORTH

CITY OF FORT WORTH, TEXAS
PAVEMENT MARKINGS DETAILS
SHEET 1 of 6

REVISED: 12-18-2020

32 17 23-D642



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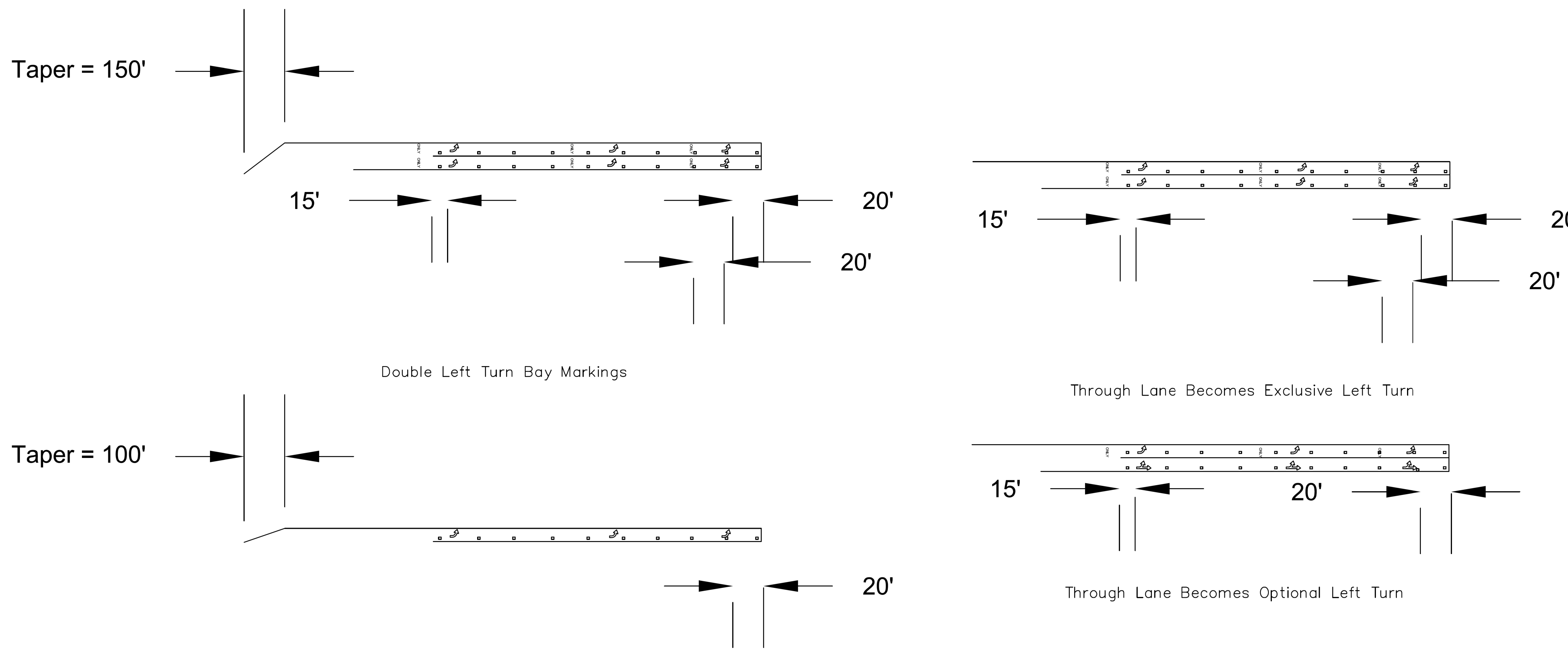
CITY OF FORT WORTH
D642 - PAVEMENT MARKINGS DETAILS

SCALE: AS SHOWN SHEET 1 OF 6

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	110



FORT WORTH

CITY OF FORT WORTH, TEXAS

PAVEMENT MARKINGS DETAILS

SHEET 2 of 6

REVISED: 12-18-2020

32 17 23-D642

STATE OF TEXAS
MARIE C. WAGNER
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DATE: 04/05/2024

TBPELS ENGINEERING FIRM #312

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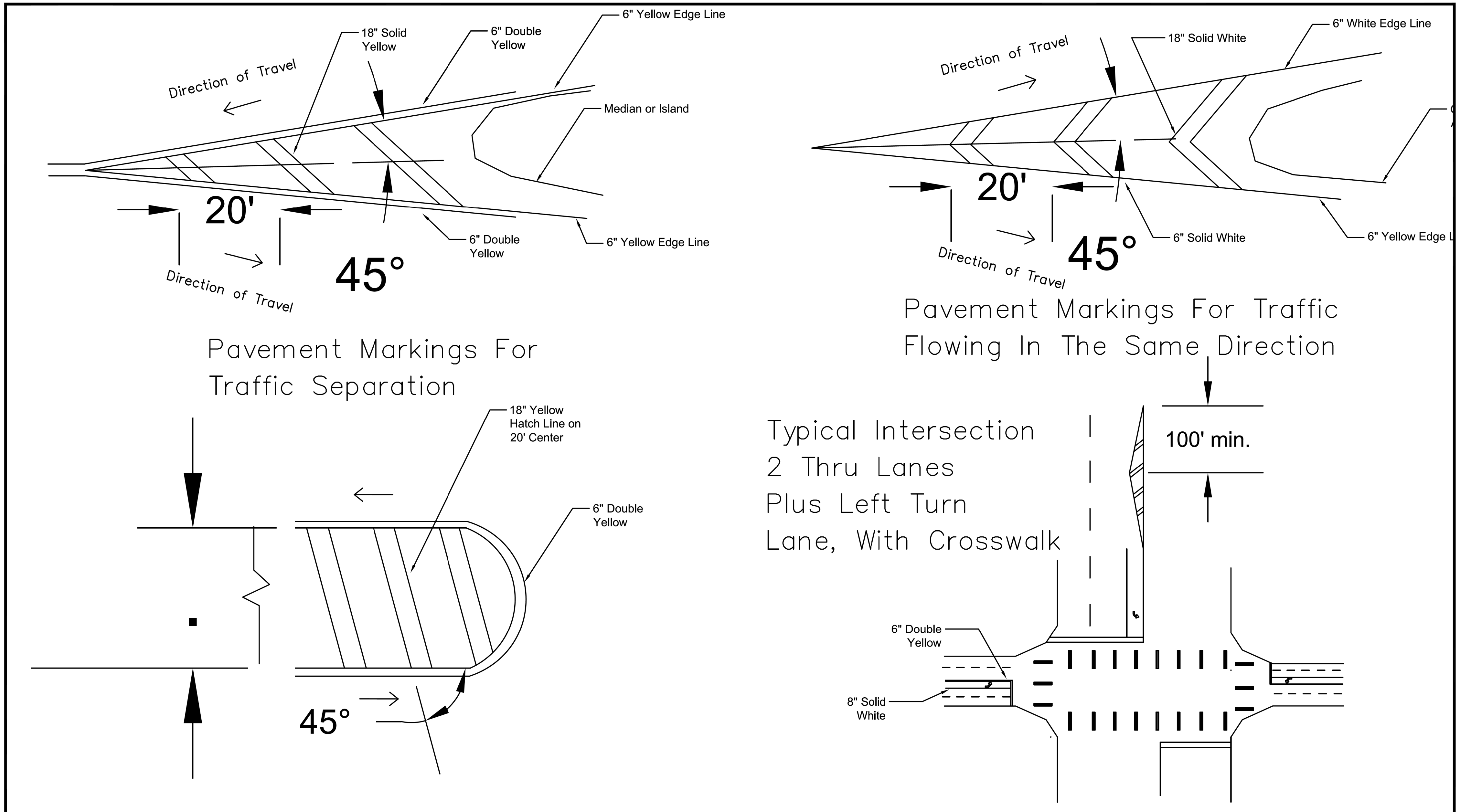
CITY OF FORT WORTH
D642 - PAVEMENT MARKINGS
DETAILS

SCALE: AS SHOWN

SHEET 2 OF 6

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	111
CHECK	0902	90	214, ETC.	



Pavement Markings For Traffic Separation

Pavement Markings For Traffic Flowing In The Same Direction

Median Extension

Typical Intersection 2 Thru Lanes Plus Left Turn Lane, With Crosswalk

FORT WORTH	CITY OF FORT WORTH, TEXAS **PAVEMENT MARKINGS DETAILS** **SHEET 3 of 6**	REVISED: 12-18-2020 **32 17 23-D642**

STATE OF TEXAS
MARIE C. WAGNER
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DATE: 04/05/2024
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NO.	REVISION	BY	DATE

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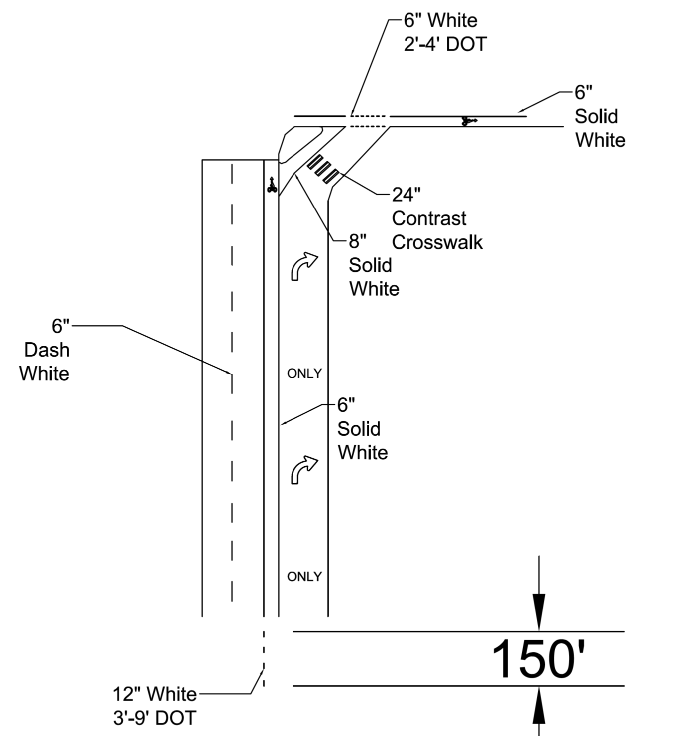
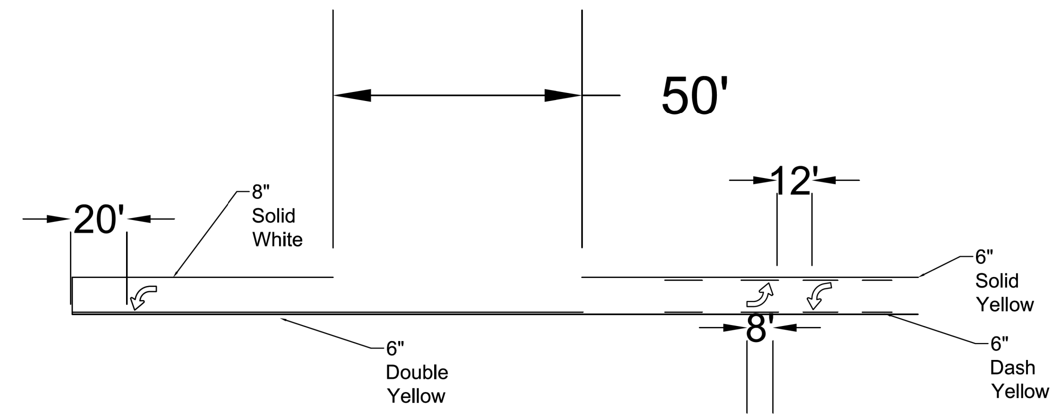
CITY OF FORT WORTH
D642 - PAVEMENT MARKINGS DETAILS

SCALE: AS SHOWN SHEET 3 OF 6

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	112
CHECK	0902	90	214, ETC.	



Right Turn Lane Drop And Island
Left Turn Lane Drop Is A Mirror Image



Two Way Left Turn Lane

FORT WORTH	CITY OF FORT WORTH, TEXAS **PAVEMENT MARKINGS DETAILS** **SHEET 4 of 6**	REVISED: 12-18-2020 **32 17 23-D642**

STATE OF TEXAS
MARIE C. WAGNER
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LICENSED
PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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CITY OF FORT WORTH
D642 - PAVEMENT MARKINGS
DETAILS

SCALE: AS SHOWN — SHEET 4 OF 6

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	113

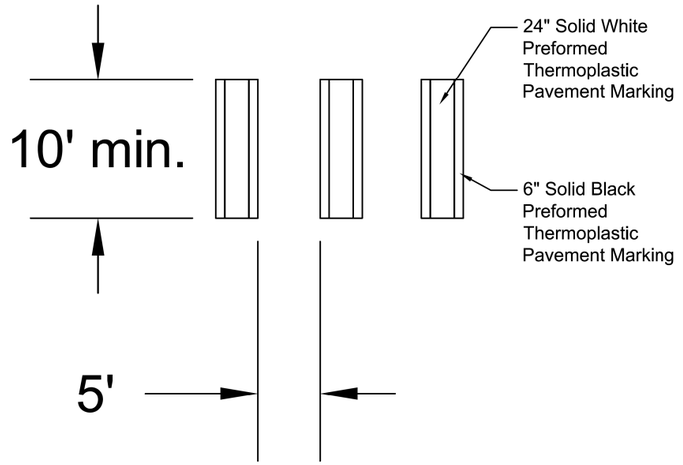
CONTRAST CROSSWALK

NOTES:

1. CROSSWALKS AND STOP BARS SHALL BE WHITE.

2. PREFORMED THERMOPLASTIC SHALL BE USED FOR ALL CROSSWALK PAVEMENT MARKINGS.

3. PREFORMED THERMOPLASTIC MATERIAL SHALL BE SUPPLIED BY A MANUFACTURER LISTED ON TxDOT'S MATERIAL PRODUCER LIST (MPL).



FORT WORTH

CITY OF FORT WORTH, TEXAS
PAVEMENT MARKINGS DETAILS
SHEET 5 of 6

REVISED: 12-18-2020

32 17 23-D642

MARIE C. WAGNER
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STATE OF TEXAS
Marie C. Wagner
DATE: 04/05/2024
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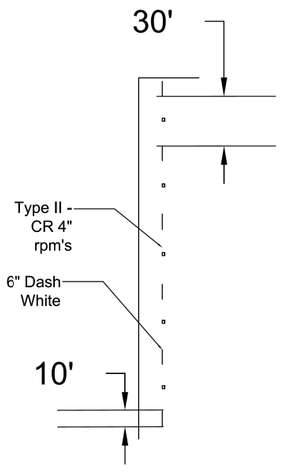
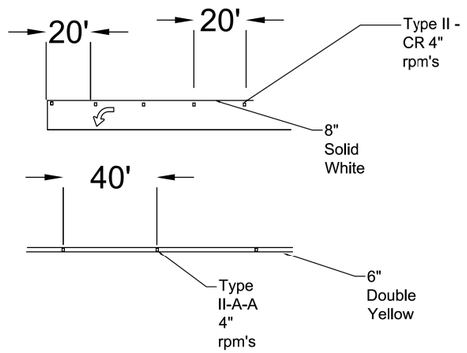
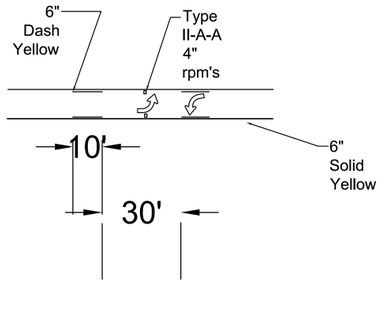
CITY OF FORT WORTH
D642 - PAVEMENT MARKINGS DETAILS

SCALE: AS SHOWN SHEET 5 OF 6

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	114







Reflector Placement

FORT WORTH	CITY OF FORT WORTH, TEXAS **PAVEMENT MARKINGS DETAILS** **SHEET 6 of 6**	REVISED: 12-18-2020 **32 17 23-D642**

STATE OF TEXAS
MARIE C. WAGNER
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Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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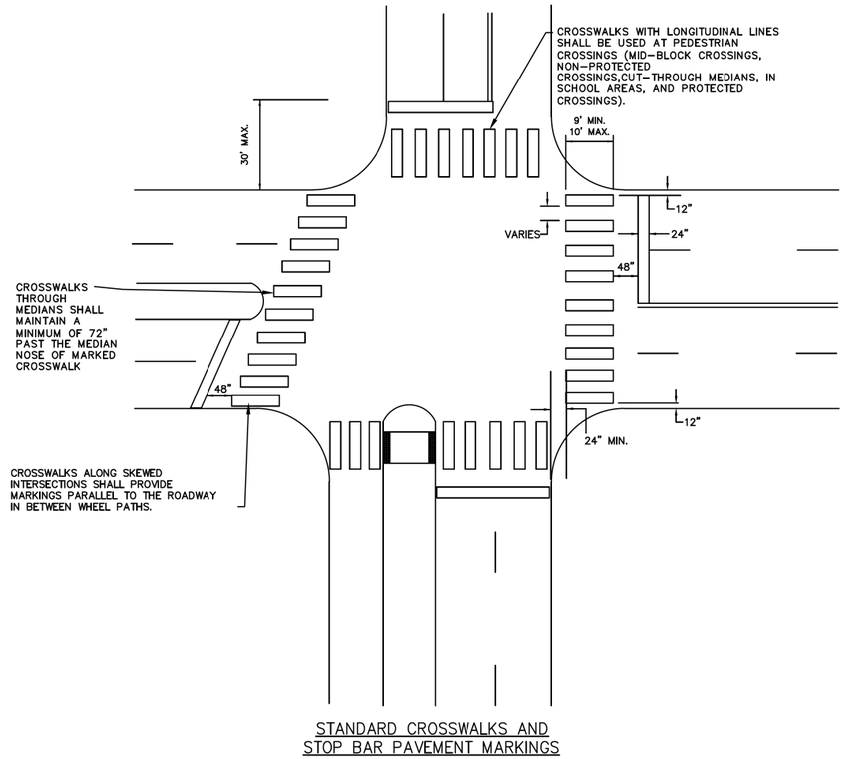
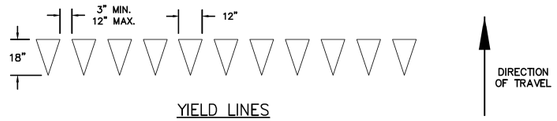
CITY OF FORT WORTH
D642 - PAVEMENT MARKINGS DETAILS

SCALE: AS SHOWN SHEET 6 OF 6

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	115
CHECK	0902	90	214, ETC.	



STANDARD CROSSWALKS AND STOP BAR PAVEMENT MARKINGS



YIELD LINES

NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE INSTALLED ACCORDING TO THE CURRENT TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND MEET CURRENT CITY OF FORT WORTH SPECIFICATIONS.
2. CROSSWALK MARKINGS SHALL ALIGN WITH THE CURB RAMPS, IN ACCORDANCE WITH THE CURRENT TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
3. THE CROSS AND RUNNING SLOPES WITHIN A MARKED CROSSWALK SHALL COMPLY WITH THE LATEST EDITION OF THE TEXAS ACCESSIBILITY STANDARDS (TAS).
4. **LONGITUDINAL CROSSWALK LINES SHALL NOT BE PLACED IN WHEEL PATHS.**
5. FOR TxDOT MAINTAINED FACILITIES, REFER TO TxDOT PAVEMENT MARKING STANDARDS.
6. CROSSWALK SPACING ASSUMES A 12 FOOT LANE WIDTH. REFER TO NOTE #4 IF LANE WIDTH IS NOT 12 FEET.
7. CONTRACTOR SHALL NOTIFY THE CITY 48 HOURS PRIOR TO THE INSTALLATION OF PAVEMENT MARKINGS. CITY SHALL APPROVE PAVEMENT MARKINGS LAYOUTS AND LOCATIONS PRIOR TO INSTALLATION.
8. MARKINGS SHALL BE PLACED ONLY WHEN THE AMBIENT AIR AND PAVEMENT TEMPERATURE ARE A MINIMUM OF 60° FAHRENHEIT.
9. PREFABRICATED MARKINGS SHALL NOT BE USED.
10. TRANSVERSE LINES MAY BE USED AS DIRECTED FOR BRICK PAVER CROSSWALKS TO LEGALLY MARK THE CROSSWALK. TRANSVERSE LINES SHALL BE A MINIMUM OF 6' APART TO MEET CURRENT TRANSPORTATION CODE REQUIREMENTS.
11. MID-BLOCK CROSSWALKS WITH OR WITHOUT DECORATIVE PAVERS SHALL BE MARKED TO MEET CURRENT TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

FORT WORTH

CITY OF FORT WORTH, TEXAS

CROSSWALKS, STOP BARS AND YIELD LINES

REVISED: 07-26-2021

32 17 23-D643

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner

DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

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CITY OF FORT WORTH
D643 - CROSSWALKS, STOP BARS AND YIELD LINES

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	116

AUDIBLE PEDESTRIAN PUSHBUTTON STATION (APS) NOTES:

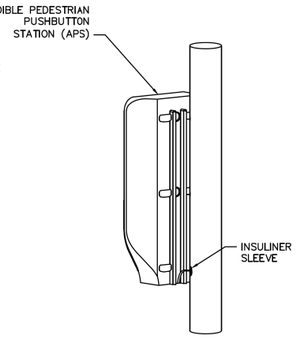
1. APS PUSHBUTTON STATIONS SHOULD BE LOCATED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 4E.08 OF THE TEXAS MUTCD
2. APS PUSHBUTTON STATIONS SHALL COMPLY WITH THE US ACCESS BOARD'S "DRAFT GUIDELINES FOR ACCESSIBLE PUBLIC RIGHTS OF WAY" (PROWAG) SECTION R 306.
3. APS PUSHBUTTON STATIONS INCLUDE A PEDESTRIAN SIGN, A PUSHBUTTON, VIBROTACTILE ARROW AND AN AUDIBLE SPEAKER CONTAINED IN ONE UNIT WITH THE FOLLOWING FEATURES:
   - 3.1. VIBRATING TACTILE ARROW WITH HIGH VISUAL CONTRAST
   - 3.2. PUSHBUTTON LOCATOR TONE
   - 3.3. SPEECH WALK MESSAGE FOR THE WALKING PERSON INDICATION
   - 3.4. SPEECH PUSHBUTTON INFORMATION MESSAGE
   - 3.5. 9" X 15" PEDESTRIAN SIGN
   - 3.6. AUDIBLE TONE WALK INDICATIONS
   - 3.7. AUTOMATIC TONE WALK INDICATIONS
   - 3.8. AUTOMATIC VOLUME ADJUSTMENT
   - 3.9. PUSHBUTTON MUST BE ADA COMPLIANT AND ACTIVATE BOTH THE WALK INTERVAL AND ACCESSIBLE PEDESTRIAN SIGNAL.
   - 3.10. ACTUATION INDICATOR–TONE AND LIGHT
   - 3.11. EXTENDED BUTTON PRESS WHICH CAN BE USED TO REQUEST A LOUDER WALK SIGNAL AND LOCATOR TONE
   - 3.12. WEATHER–RESISTANT SPEAKER PROTECTED BY A VANDAL RESISTANT SCREEN

KEY:

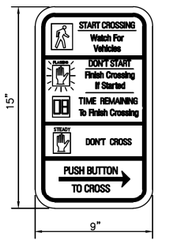
① FACE PLATE
② 1/4"–20 X 3/8" LONG STAINLESS STEEL SCREW
③ 1/4"–20 STAINLESS STEEL SCREWS
④ PUSHBUTTON FRAME ADAPTER
⑤ 1/4"–20 STAINLESS STEEL BOLT W/ WASHER AND LOCK WASHER
⑥ PUSHBUTTON STATION
⑦ DRILL AND TAP SHAFT FOR 1/4" DIAM. BOLT
⑧ DRILL AND TAP SHAFT FOR 5/8" WIRE GUIDE HOLE – ADD INSULINER

APS UNIT PROGRAMMING SETTING WHEN AT LEAST 10' APART	
REGULAR PUSH SPEECH MESSAGE	"WAIT"
COUNTDOWN SPEECH MESSAGE	OFF
EXTENDED PUSH SPEECH MESSAGE	"WAIT TO CROSS (STREET BEING CROSSED) AT (CROSS SIDE STREET NAME)"

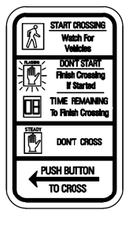
APS UNIT PROGRAMMING SETTING WHEN LESS THAN 10' APART	
REGULAR PUSH SPEECH MESSAGE	"WAIT"
WALK INDICATION SPEECH MESSAGE	"(STREET NAME BEING CROSSED), WALK SIGN IS ON TO (STREET NAME BEING CROSSED)"
COUNTDOWN SPEECH MESSAGE	OFF
EXTENDED PUSH SPEECH MESSAGE	"WAIT TO CROSS (STREET BEING CROSSED) AT (CROSS SIDE STREET NAME)"



WIRE ROUTING
PERSPECTIVE VIEW



R10–3e (RIGHT)



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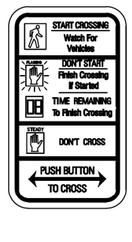
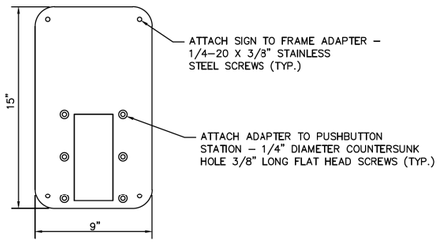
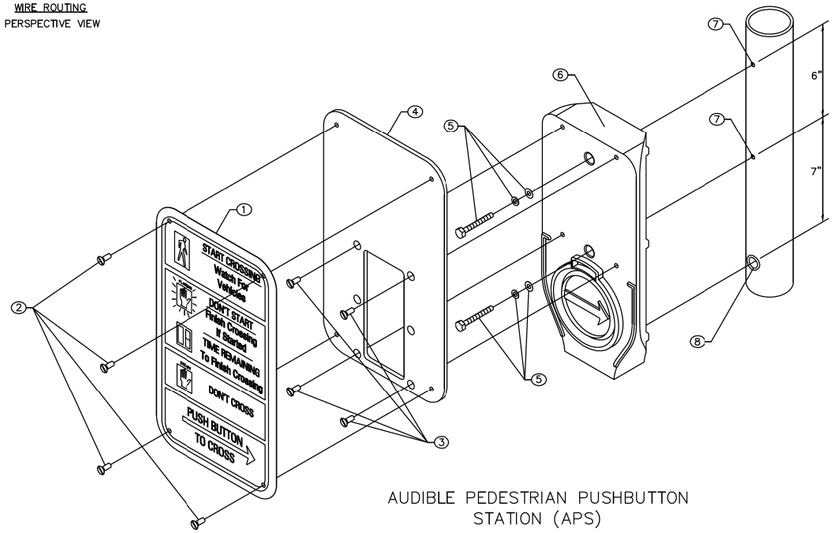


R10–3e (MOD.)

PEDESTRIAN PUSHBUTTON INSTRUCTIONAL SIGN



PEDESTRIAN PUSHBUTTON FRAME ADAPTER



AUDIBLE PEDESTRIAN PUSHBUTTON STATION (APS)
METAL POLE INSTALLATION

ISOMETRIC VIEW
(5' PUSH BUTTON POLE SHOWN)

FORT WORTH

CITY OF FORT WORTH, TEXAS
AUDIBLE PEDESTRIAN PUSHBUTTON STATION (APS) DETAILS
SHEET 1 OF 2

DATE: 07-26-2021

34 41 10-D673

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner

DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

CITY OF FORT WORTH
D673 - AUDIBLE PEDESTRIAN PUSHBUTTON STATION (APS) DETAILS

SCALE: AS SHOWN — SHEET 1 OF 1

DESIGN	FED.RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	117

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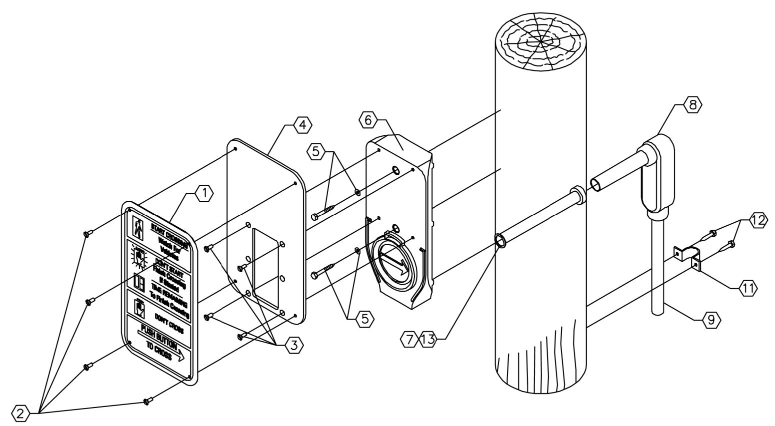
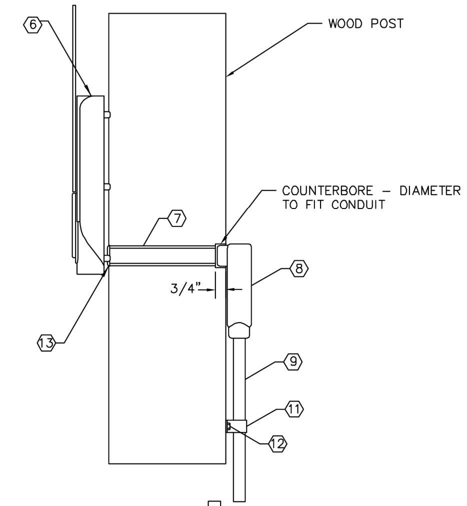
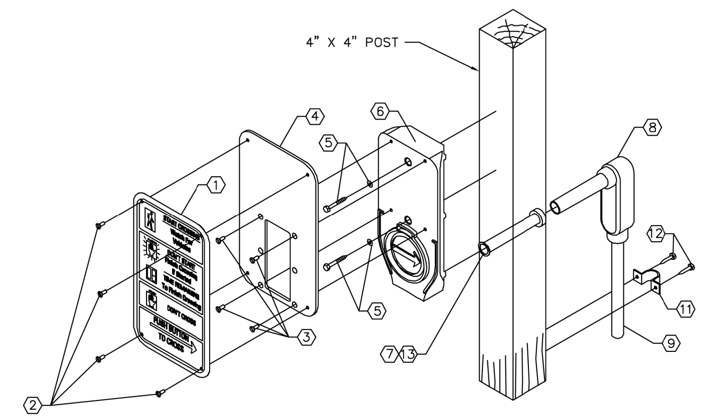


WOOD POLE INSTALLATION
ALTERNATIVE 1

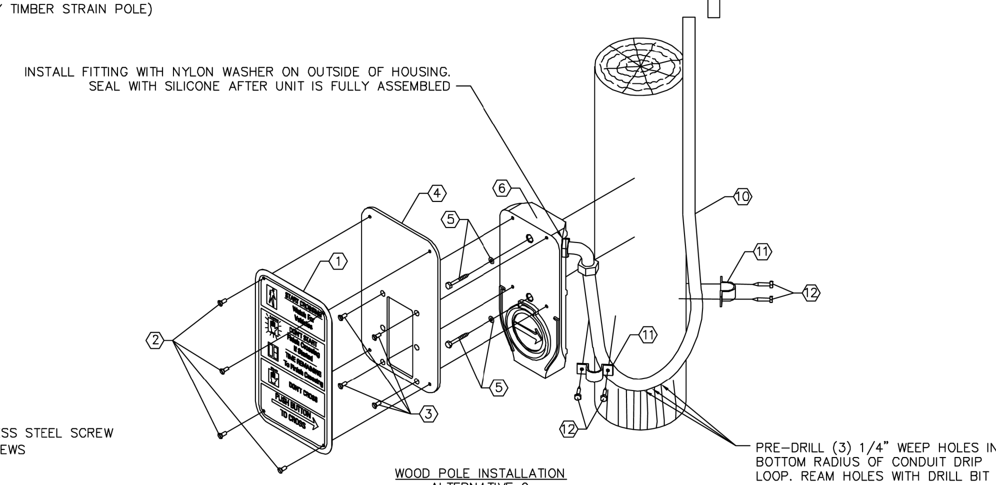
(AUDIBLE PEDESTRIAN PUSHBUTTON
STATION (APS) – TEMPORARY TIMBER STRAIN POLE)





WOOD POLE INSTALLATION
ALTERNATIVE 3

(AUDIBLE PEDESTRIAN PUSHBUTTON
STATION (APS) – TEMPORARY TIMBER POLE)



WOOD POLE INSTALLATION
ALTERNATIVE 2

(AUDIBLE PEDESTRIAN PUSHBUTTON
STATION (APS) – TEMPORARY TIMBER POLE)

KEY:

1. FACE PLATE
2. 1/4"-20 X 3/8" LONG STAINLESS STEEL SCREW
3. 1/4"-20 STAINLESS STEEL SCREWS
4. PUSHBUTTON FRAME ADAPTER
5. LAG BOLT WITH WASHER
6. PUSHBUTTON STATION
7. CONDUIT DIAMETER + 1/8" HOLE THRU POLE
8. CONDULET
9. 3/4" CONDUIT
10. 3/4" LIQUID-TITE FLEX CONDUIT
11. ONE PIECE TWO HOLE CLAMP
12. LAG BOLT
13. INSULINER SLEEVE

AUDIBLE PEDESTRIAN PUSHBUTTON STATION (APS)

FORT WORTH	CITY OF FORT WORTH, TEXAS **AUDIBLE PEDESTRIAN PUSHBUTTON STATION (APS) DETAILS SHEET 2 OF 2**	DATE: 11-11-2013 **34 41 10-D674**

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED
PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

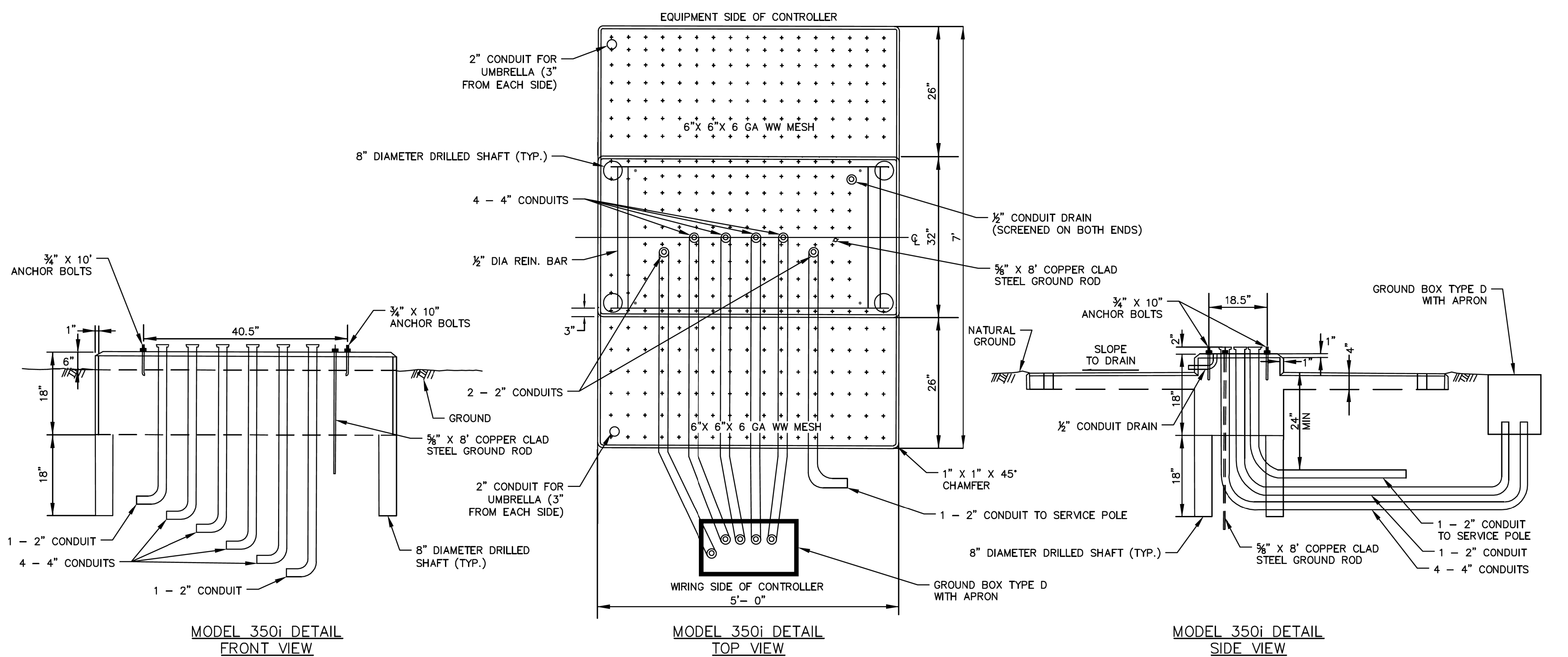
halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

Texas Department of Transportation
© 2024

CITY OF FORT WORTH
D674 - AUDIBLE PEDESTRIAN PUSHBUTTON
STATION (APS) DETAILS

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	118
CHECK	0902	90	214, ETC.	



CONTROLLER FOUNDATION NOTES:

1. ALL CONCRETE TO BE IN ACCORDANCE WITH CITY OF FORT WORTH SPECIFICATION SECTION 03 30 00, CAST–IN–PLACE CONCRETE.
2. SET THE TOP OF THE STEP OF THE CONTROLLER FOUNDATION NO LOWER THAN THE LEVEL OF THE PAVEMENT SURFACE. ANY NECESSARY ADJUSTMENT SHALL BE APPROVED BY THE ENGINEER.
3. CENTER THE CABINET ON THE FOUNDATION.
4. THE FOUNDATION SHALL BE SUPPORTED BY UNDISTURBED SOIL OR BY SOIL THAT HAS BEEN COMPACTED TO 90% PROCTOR DENSITY IN 6" LIFTS.

FORT WORTH

CITY OF FORT WORTH, TEXAS

TRAFFIC SIGNAL

350i CABINET FOUNDATION DETAILS

DATE: 11-19-2015

34 41 10-D686

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner

DATE: 04/05/2024

TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

CITY OF FORT WORTH
D686 - 350i CABINET FOUNDATION DETAILS

SCALE: AS SHOWN — SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	119
CHECK	0902	90	214, ETC.	

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

This SWP3 is consistent with requirements specified in applicable stormwater plans, and the project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0902-90-214, ETC.

1.2 PROJECT LIMITS:

From: 475 FT WEST OF NORTH BEACH STREET

To: 450 EAST OF NORTH BEACH STREET

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 32°51'39.6" ,(Long) (-)97°17'30"

END: (Lat) 32°51'39.8" ,(Long) (-)97°17'18.3"

1.4 TOTAL PROJECT AREA (Acres): 2.68

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0.33

1.6 NATURE OF CONSTRUCTION ACTIVITY:

CONSTRUCTION OF TURN LANES AND PEDESTRIAN CURB RAMPS
PAVEMENT MARKINGS AND TRAFFIC SIGNAL IMPROVEMENTS

1.7 MAJOR SOIL TYPES:

Soil Type	Description

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- ☐ PSLs determined during preconstruction meeting
- ☐ PSLs determined during construction
- ☒ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.3.)

- ☒ Mobilization
- ☒ Install sediment and erosion controls
- ☐ Blade existing topsoil into windrows, prep ROW, clear and grub
- ☒ Remove existing pavement
- ☒ Grading operations, excavation, and embankment
- ☒ Excavate and prepare subgrade for proposed pavement widening
- ☐ Remove existing culverts, safety end treatments (SETs)
- ☐ Remove existing metal beam guard fence (MBGF), bridge rail
- ☒ Install proposed pavement per plans
- ☐ Install culverts, culvert extensions, SETs
- ☐ Install mow strip, MBGF, bridge rail
- ☒ Place flex base
- ☐ Rework slopes, grade ditches
- ☐ Blade windrowed material back across slopes
- ☐ Revegetation of unpaved areas
- ☐ Achieve site stabilization and remove sediment and erosion control measures
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☐ Sediment laden stormwater from stormwater conveyance over disturbed area
- ☒ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ☒ Solvents, paints, adhesives, etc. from various construction activities
- ☐ Transported soils from offsite vehicle tracking
- ☒ Construction debris and waste from various construction activities
- ☒ Contaminated water from excavation or dewatering pump-out water
- ☐ Sanitary waste from onsite restroom facilities
- ☒ Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☒
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- ☒ Development of plans and specifications
- ☒ Perform SWP3 inspections
- ☒ Maintain SWP3 records and update to reflect daily operations
- ☐ Other: _____
- ☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- ☒ Day To Day Operational Control
- ☒ Maintain schedule of major construction activities
- ☒ Install, maintain and modify BMPs
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 1 of 2

Texas Department of Transportation

STATE OF TEXAS · MARIE C. WAGNER · 147591 · LICENSED · PROFESSIONAL ENGINEER
Marie C. Wagner
DATED 04/05/2024
TBPELS ENGINEERING FIRM #3120

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	(SEE TITLE SHEET)		
STATE	STATE DIST.	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0902	90	214ETC.	120

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ ☒ Permanent Planting, Sodding or Seeding
- ☐ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- ☒ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☒ ☐ Inlet Protection
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- ☐ ☐ Sediment Control Fence
- ☐ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☐ Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- ☐ Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☒ Chemical Management
- ☒ Concrete and Materials Waste Management
- ☒ Debris and Trash Management
- ☒ Dust Control
- ☐ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- ☒ Fire hydrant flushings
- ☒ Irrigation drainage
- ☒ Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- ☒ Potable water sources
- ☒ Springs
- ☒ Uncontaminated groundwater
- ☒ Water used to wash vehicles or control dust
- ☒ Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3 .

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

Texas Department of Transportation

STATE OF TEXAS · MARIE C. WAGNER · 147094 · LICENSED · PROFESSIONAL ENGINEER

Marie C. Wagner

DATED 04/05/2024
TBPELS ENGINEERING FIRM #3121

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	(SEE TITLE SHEET)		
STATE	STATE DIST.	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0902	90	214, ETC.	121

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

This SWP3 is consistent with requirements specified in applicable stormwater plans, and the project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0902-90-214 ETC (SUBCSJ 0094-01-042)

1.2 PROJECT LIMITS:
From: 100 FT WEST OF DEEN ROAD

To: 110 FT EAST OF DEEN ROAD

1.3 PROJECT COORDINATES:
BEGIN: (Lat) 32.7952° ,(Long) 97.3261°

END: (Lat) 32.7952° ,(Long) 97.3256°

1.4 TOTAL PROJECT AREA (Acres): 0.0739

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0.0030

1.6 NATURE OF CONSTRUCTION ACTIVITY:
CONSTRUCTION OF TURN LANE AND PEDESTRIAN CURB RAMPS, PAVEMENT MARKINGS, AND TRAFFIC SIGNAL IMPROVEMENTS

1.7 MAJOR SOIL TYPES:

Soil Type	Description

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- ☐ PSLs determined during preconstruction meeting
- ☐ PSLs determined during construction
- ■ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.3.)

- ■ Mobilization
- ■ Install sediment and erosion controls
- ☐ Blade existing topsoil into windrows, prep ROW, clear and grub
- ■ Remove existing pavement
- ■ Grading operations, excavation, and embankment
- ■ Excavate and prepare subgrade for proposed pavement widening
- ☐ Remove existing culverts, safety end treatments (SETs)
- ☐ Remove existing metal beam guard fence (MBGF), bridge rail
- ■ Install proposed pavement per plans
- ☐ Install culverts, culvert extensions, SETs
- ☐ Install mow strip, MBGF, bridge rail
- ■ Place flex base
- ☐ Rework slopes, grade ditches
- ☐ Blade windrowed material back across slopes
- ■ Revegetation of unpaved areas
- ■ Achieve site stabilization and remove sediment and erosion control measures
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☐ Sediment laden stormwater from stormwater conveyance over disturbed area
- ■ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ■ Solvents, paints, adhesives, etc. from various construction activities
- ☐ Transported soils from offsite vehicle tracking
- ■ Construction debris and waste from various construction activities
- ■ Contaminated water from excavation or dewatering pump-out water
- ☐ Sanitary waste from onsite restroom facilities
- ■ Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☐
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- X Development of plans and specifications
- X Perform SWP3 inspections
- X Maintain SWP3 records and update to reflect daily operations
- ☐ Other: _____
- ☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- X Day To Day Operational Control
- X Maintain schedule of major construction activities
- X Install, maintain and modify BMPs
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED
PROFESSIONAL ENGINEER
04/05/2024

TBPE Reg #F351

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	(SEE TITLE SHEET)		
STATE	STATE DIST.	COUNTY	
TEXAS	2	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0902	90	214 ETC	

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ■ ☐ Permanent Planting, Sodding or Seeding
- ☐ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- ■ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ■ ☐ Inlet Protection
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- ☐ ☐ Sediment Control Fence
- ☐ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☐ Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- ☐ Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ■ Chemical Management
- ■ Concrete and Materials Waste Management
- ■ Debris and Trash Management
- ■ Dust Control
- ☐ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- ☒ Fire hydrant flushings
- ☒ Irrigation drainage
- ☒ Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- ☒ Potable water sources
- ☒ Springs
- ☒ Uncontaminated groundwater
- ☒ Water used to wash vehicles or control dust
- ☒ Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3 .

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3.

TBPE Reg #F351

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	(SEE TITLE SHEET)		
STATE	STATE DIST.	COUNTY	
TEXAS	2	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0902	90	214 ETC	

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. City of Fort Worth
2. City of Haltom City

☐ No Action Required ☒ Required Action

Action 1:
The project disturbs more than one acre but less than five acres of surface area. The contractor is responsible for the PSL as defined in the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (2004 Edition, Section 7.19.F, Page 55). The total disturbed acreage is the combined acreage to be disturbed on the project and the contractor's PSL.
This EPIC must be updated if the disturbed area increases to five or more acres during the course of construction (refer to following this section). It may become necessary to post a site notice and NOI for the project and/or PSL.
Identify all MS4 Permit holders that may be impacted by the project.
Commitment 1:
Comply with TPDES CGP. TxDOT must post a Small Site Notice and send a copy to any non-TxDOT MS4 operator that receives discharge from the project. Refer to the SW3P Plan Sheet, BMPs, and Detail.
Commitment 2:
The contractor must stabilize the project site as stated in the SW3P.

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

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

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

☒ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP# _____

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

1.

2.

3.

4.

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

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
☐ Temporary Vegetation	☐ Silt Fence	☐ Vegetative Filter Strips
☐ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Grassy Swales

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

☒ No Action Required ☐ Required Action

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

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.

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

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

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

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

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

☐ Yes ☒ No

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

Are the results of the asbestos inspection positive (is asbestos present)?

☐ Yes ☐ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

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

☐ No Action Required ☒ Required Action

Action No.

1. Contractor shall minimize particulate matter emissions from construction sites by using fugitive dust control measures such as covering or treating disturbed areas with dust suppression techniques, sprinkling, covering loaded trucks, and other dust abatement controls, as appropriate.

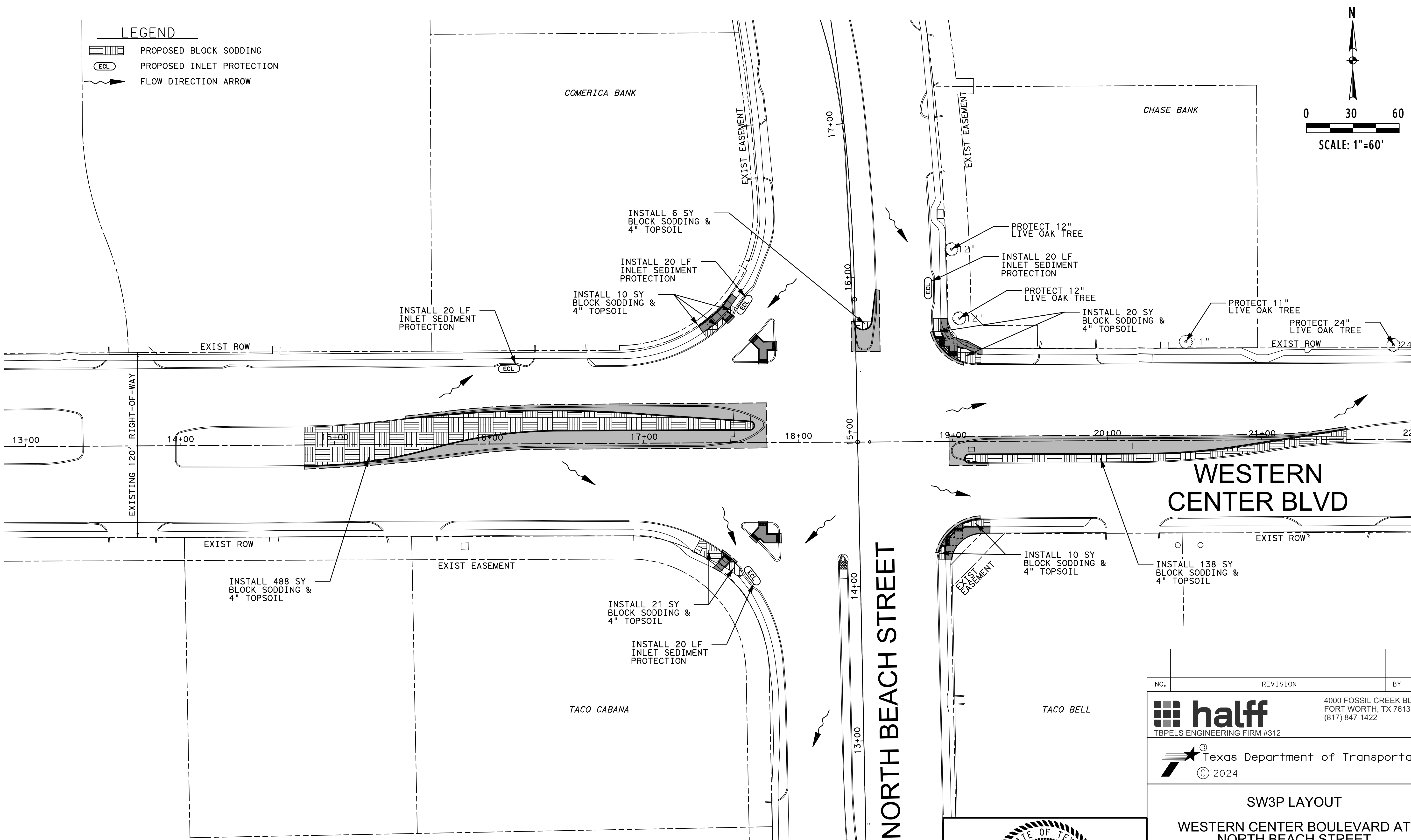
2. Contractor shall make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-12-2011 (DS)	0902	90	214	WESTERN CENTER
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY		SHEET NO.
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	FTW	TARRANT		124



SUMMARY OF EROSION CONTROL ITEMS				
ITEM NO.	DESCRIPTION	EST QTY	FINAL QTY	UNIT
160-6003	FURNISHING AND PLACING TOTPSOIL (4")	684		SY
162-6002	BLOCK SODDING	684		SY
168-6001	VEGETATIVE WATERING	24		MG
506-6040	TEMP SDMT CONT FENCE (INLET PROTECTION	80		LF

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER

Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

SW3P LAYOUT

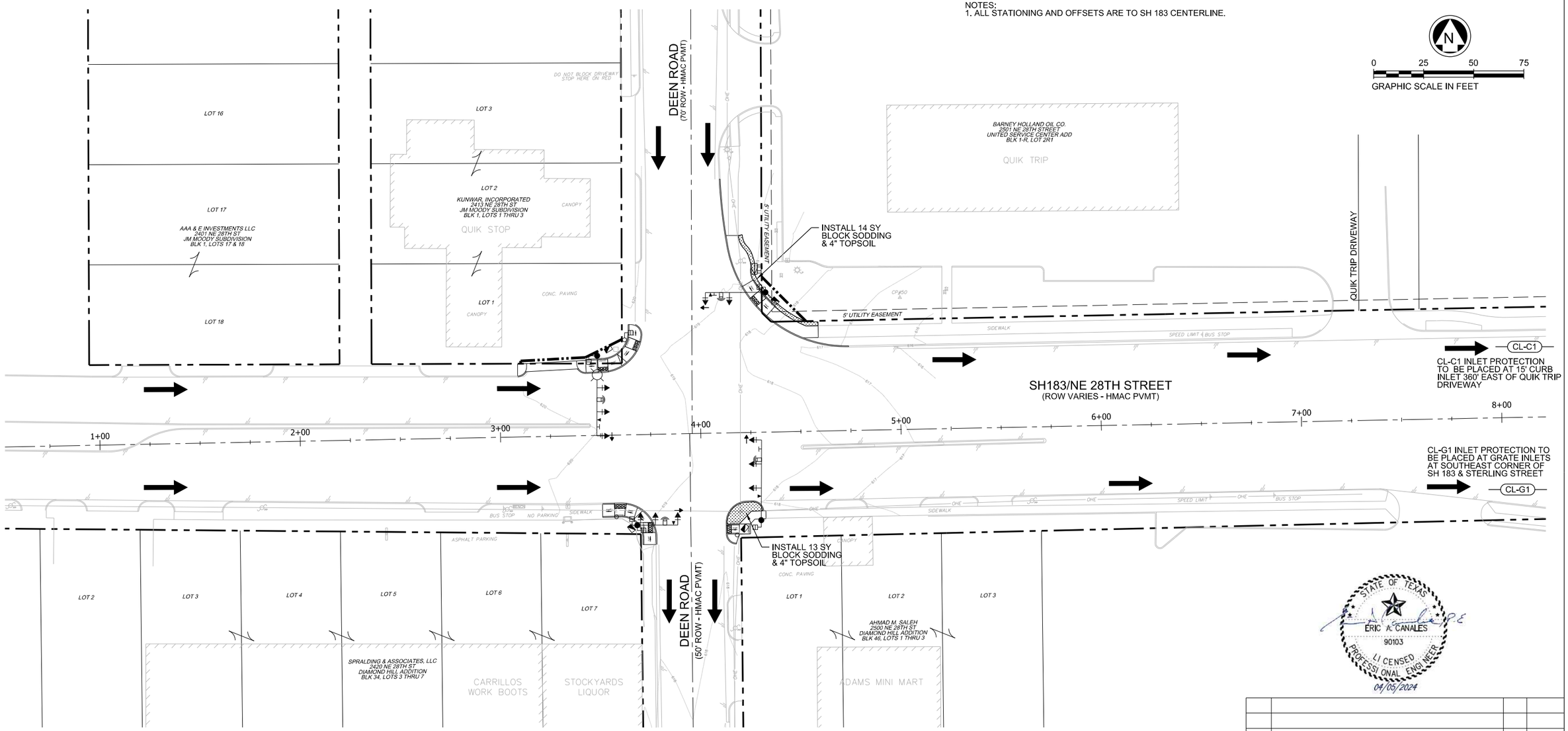
WESTERN CENTER BOULEVARD AT NORTH BEACH STREET

SCALE: AS SHOWN SHEET 1 OF 1

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	2	TARRANT	
	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	125

FTW WAGNER-4219
Sheet TXDOT-OR

NOTES:
1. ALL STATIONING AND OFFSETS ARE TO SH 183 CENTERLINE.



LEGEND

CL-C1 / CL-G1 — INLET PROTECTION

FLOW ARROW

PROP. BLOCK SODDING

SUMMARY OF SWPPP ITEMS				
ITEM NO.	DESCRIPTION	EST QTY	FINAL QTY	UNIT
160-6003	FURNISHING & INSTALLING TOP SOIL (4")	27		SY
162-6007	BLOCK SODDING	27		SY
168-6001	VEGETATIVE WATERING	0.86		MG
506-6043	BIODEG EROSION LOGS (REMOVE)	35		LF
506-6045	BIODEG EROSION LOGS (INSTL)(6")	35		LF

STATE OF TEXAS
ERIC A. CANALES
90103
LICENSED
PROFESSIONAL ENGINEER
04/05/2024

NO.	REVISION	BY	DATE

MULTATECH ARCHITECTS + ENGINEERS
2821 WEST 7TH ST
SUITE 400
FORT WORTH, TEXAS 76107
(817) 877-5571
TBPE Reg #F-351

Texas Department of Transportation

SWPPP
SH 183 AT DEEN ROAD

SCALE: AS SHOWN

DESIGN	FED.RD. DIV.NO.	STATE PROJECT NO.		HIGHWAY NO.
GES	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GES	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
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CHECK				
EAC				

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Park & Recreation Department (PARD) Notes: Pertains to all work in and through City parkland, land managed and maintained by PARD including right-of-way, medians, roundabouts, corner cuts, parkways, and may pertain to work adjacent to City parkland

City Trees (Contact City Forester 817-392-5738):

1. Per Chapter 33, Park & Recreation-Forestry Section (PARD-Forestry) has jurisdiction over trees on city-owned property including right-of-way. Approval of plans does not constitute approval to proceed with work until corresponding permit has been issued. Permits for removal, planting or pruning of city-owned trees shall be obtained from PARD-Forestry. Pruning required for preconstruction purposes requires the utilization of an ISA-Certified Arborist, as stated in the permit, at no expense to PARD. Contact PARD-Forestry: www.fortworthtexas.gov/departments/parks/services/forestry or CityTreePermits@fortworthtexas.gov or 817/392-5738 or 817/392-5729.
   a. Tree protection shall be put in place before grading/construction begins, be inspected by City Forester and remain until completion of the project.
      i. 4-foot tall, chain link fencing installed at the tree dripline with bilingual sign on protective fencing in English and Spanish that reads, "Keep Out, Tree Protection Area" ("No Entre, !rea de Protecci*n de !rboles").
      ii. No entry, grading, excavation, parking or storing of equipment or supplies inside the protective tree fencing without City Forester approval.
      iii. All work inside protective tree fencing to be done by hand, unless prior approval given by City Forester.
      iv. Roots 2-inch or larger shall not be cut without City Forester approval. Roots shall be clean cut with a saw.
      v. All cuts on oak trees, including roots, shall be painted with general purpose spray paint within 30 minutes of exposure to prevent oak wilt spread.
   b. Assessment of Damages to Trees
      i. The Contractor will check trees in the contract area before contract work begins, any damage will be noted and reported to the Contract Administrator.
      ii. The Contract Administrator will conduct random checks of the trees during the contract period.
      iii. A check of all trees may be made at the end of the contract period. City Forester, Contract Administrator, and Contractor will attend the inspection.
      iv. Damages shall be documented by memo to the City Forester with copy to contract file and the Contractor.
      v. Contractor may have the option of replacement or payment for severely damaged trees at a location to be designated by PARD. Replacement shall be made on a caliper inch per caliper inch basis with a minimum size of replacement tree of 2-inch in caliper for trees damaged or removed which are less than 30-inch DBH and 2-inch per inch for trees which are 30-inch DBH or greater. The Contractor shall be responsible for the planting, watering, mulching and maintenance of replacement trees for a period of not less than 2-years. Any tree that does not survive the 2-year establishment period shall be compensated for by the Contractor to Tree Fund at a rate of $200 per caliper inch.
      vi. Slight damage shall be defined, in the opinion of the City Forester, as damage that may compartmentalize. Examples include but are not limited to: scarring of the trunk into the cambial layer Y ' to 2-inch in width, but less than 1 /3 trunk circumference; or breaking of limbs less than 2-inch in diameter or limbs less than 1 /3 trunk caliper, whichever is less. Slight damage shall also include: removal or laying down of protective tree fencing prior to end of construction; storing equipment or supplies within the critical root zone (CRZ); or disposing of paint or concrete within the CRZ, but not closer to the trunk than 50% radius of the CRZ. Slight damage to trees shall be assessed at a rate of $100.00 for each instance. Each day tree fencing is not properly placed, equipment or supplies are stored within CRZ, or fill is stored within the CRZ shall be considered one instance.
      vii. Moderate damage shall be defined, in the opinion of the City Forester, as damage that contributes to the poor health and reduced longevity of the tree. Examples include, but are not limited to: scarring of the trunk into the cambial layer greater than 2-inch, but less than 1 /3 the trunk circumference; or breaking of limbs more than 2-inch in diameter, but less than 1/3 trunk caliper. Moderate damage shall also include: compaction of soil; grading or filling in 20% of the CRZ on 1 of 4 sides, but outside the 50% radius of the CRZ; or disposing of paint or concrete within 50% radius of the CRZ. Moderate damages shall be calculated at a rate of % the assessed value of the tree per each instance of damage.
      viii. Severe damage or removal of trees is subject to penalty of $200 per diameter inch of trees removed or damaged for trees less than 30-inch DBH or $400 per diameter inch for trees 30-inch DBH or greater. Severe damage or removal shall include, but is not limited to: scarring of the trunk to the cambial layer greater than 1/3 the trunk circumference; uprooting or causing a tree to lean; or damage to a scaffolding branch or any branch greater than 1/3 of trunk caliper. Severe damage shall also include: compaction of soil, grading or filling more than 20% of the CRZ, or within 50% radius of the CRZ, or on more than one of 4 sides. Cutting 1 /3 of the buttress roots within 3 times the distance of the DBH of the trunk, or cutting 4 roots 4-inch or greater in diameter within 4-feet of the trunk shall also be considered severe damage.
      ix. Branches shall be measured at the point of attachment or at the lateral to which the branch would be pruned back to according to ANSI standards. Trees caliper shall be measured according to accepted industry standards. Trees greater than 6-inch in caliper shall be measured using diameter at breast height (DBH). Trees that must be removed due to damage caused by the Contractor shall be removed by the Forestry Section's tree removal contractor at the Contractor's expense.
      x. All damages shall be paid to the City Tree Fund. Failure to replace or pay for damaged trees shall result in a breach of contract and the Contractor will be automatically assessed damages. Damages as described herein shall be deduced from payments otherwise due the Contractor.

Landscaping and Irrigation (Contact Park Planner 817-392-5479):

2. All planting material shall be warrantied for a period of two years. A Maintenance bond shall be posted for all landscaping materials (hardscapes, irrigation, plantings).
3. All plant identification tags must remain on plant materials for PARD inspection. Contact PARD 72-hours in advance for inspection of tree and landscape plantings.
4. Irrigation systems must comply with Texas Commission on Environmental Quality (TCEQ) Title 30, Texas Administrative Code (TAC) Chapter 344, Rules for Landscape Irrigation and City of Fort Worth Texas Ordinance number 18444-01-2009. Any irrigation system that is connected to a public or private potable water supply must be connected through an approved backflow prevention assembly, and must be tested upon installation, or repair by a licensed Backflow Prevention Assembly Tester (BPAT) who is registered with the City of Fort Worth Water Department. For additional information regarding permitting, contact Development Services Customer Services 817-392-2222.
   a. Once irrigation lines have been inspected, approved and green tag has been supplied, trees and planting materials can be installed.
   b. If existing median is altered, contact PARD 72 hours in advance for inspection of all irrigation lines, depth, and pressure PRIOR to backfilling. Contact 817-392-5479.

Right-of-Way including parkways, medians, corner clips, roundabouts maintained by PARD (Contact Park Planner 817-392-5479):

5. Sod shall be replaced in all areas disturbed by construction. Sod shall match existing grasses.
6. Soil shall be free of construction debris and rocks greater than 1-inch. Backfill with clean soil prior to seeding or sodding.
7. Upon request, the contractor shall provide to PARD a copy of certifications on soil, sod, seeding, and hydromulching prior to installation; along with the delivery ticket.
8. All disturbance to existing soil, vegetation, or irrigation must be repaired or replaced to existing pre-construction conditions or better at no additional cost to PARD.
9. Construction equipment and/or staging, materials storage, and materials testing may not occur on existing medians maintained by PARD without prior written approval from PARD.
10. Pre-existing medians/ROWs within construction confines shall be maintained by Contractor for high grass and weeds every 14 days until construction complete and City acceptance after Final.
11. New Medians/ROWs shall be watered, mowed, and maintained by Contractor until grass coverage is established prior to City acceptance after Final.

NO.	REVISION	BY	DATE

halff
TBPELS ENGINEERING FIRM #312
4000 FOSSIL CREEK BLVD
FORT WORTH, TX 76137-2720
(817) 847-1422

PARKS AND RECREATION DEPARTMENT NOTES

SCALE: AS SHOWN SHEET OF

DESIGN	FED. RD. DIV. NO.	STATE PROJECT NO.		HIGHWAY NO.
	.	(SEE TITLE SHEET)		
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	2	TARRANT	
CHECK	CONTROL	SECTION	JOB	
CHECK	0902	90	214, ETC.	127

STATE OF TEXAS
MARIE C. WAGNER
147501
LICENSED PROFESSIONAL ENGINEER
Marie C. Wagner
DATE: 04/05/2024
TBPELS ENGINEERING FIRM #312

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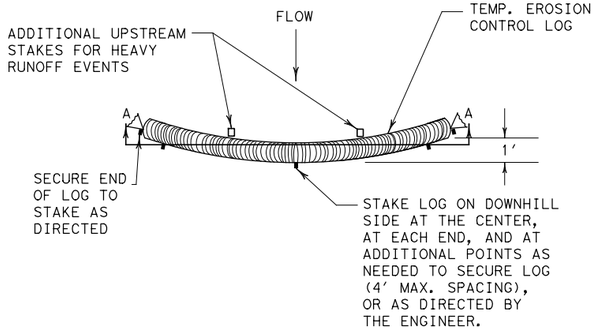
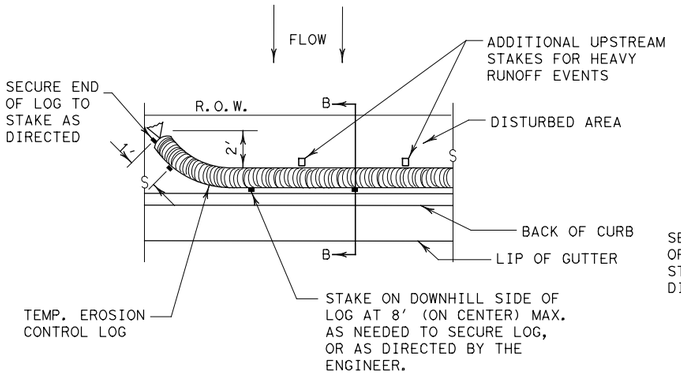
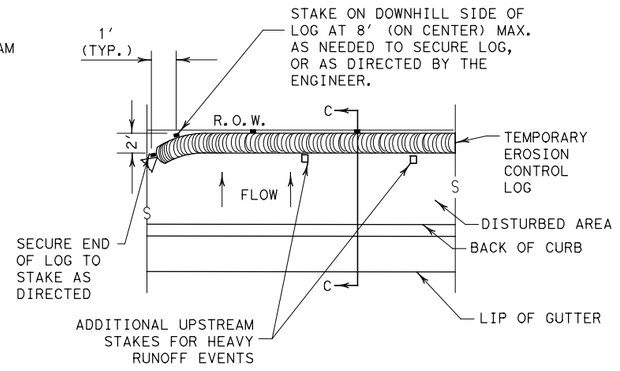


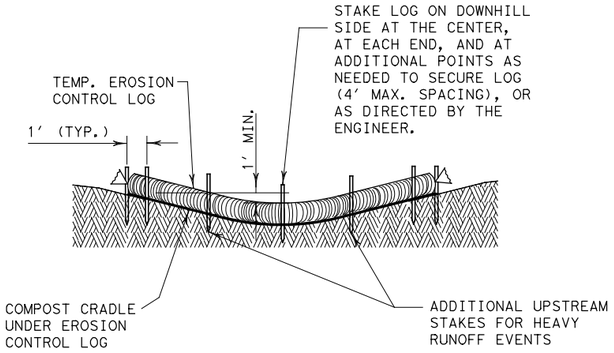
PLAN VIEW



PLAN VIEW



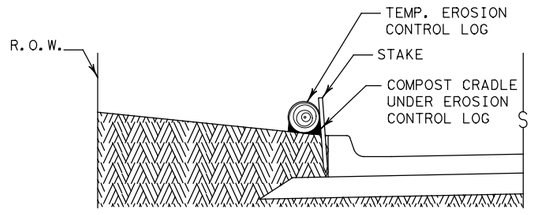
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

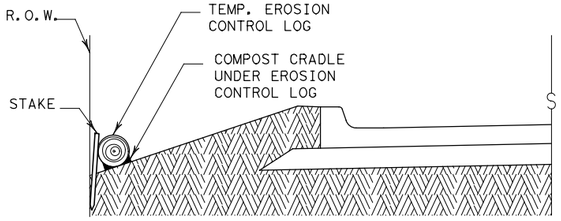
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



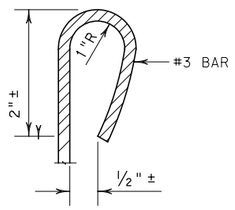
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW

LEGEND

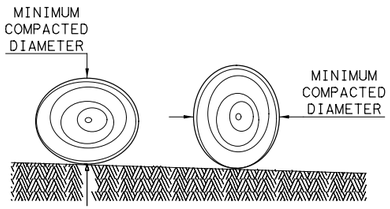
- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET



REBAR STAKE DETAIL

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

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

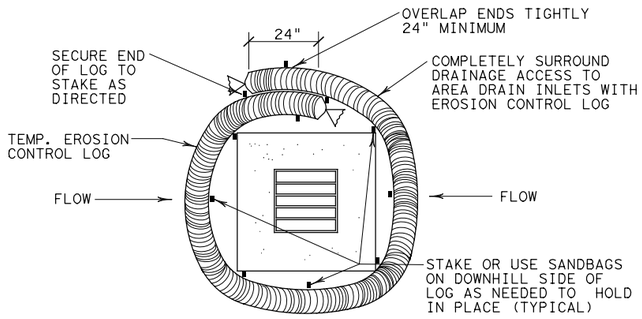
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

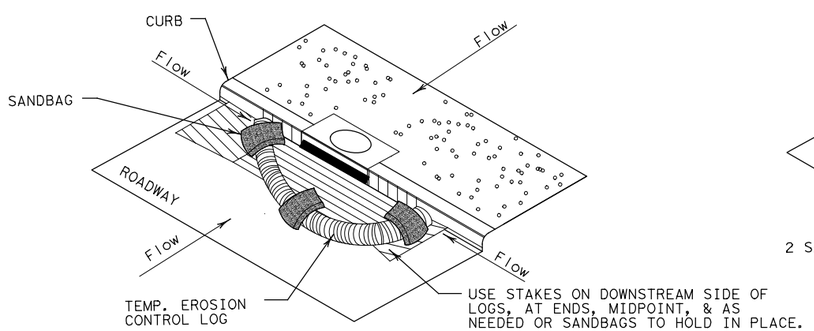
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				128

DATE:
FILE:



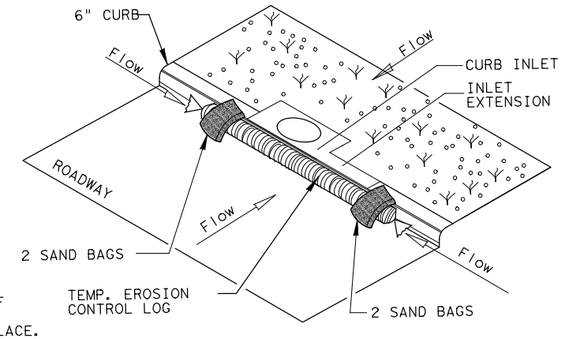
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

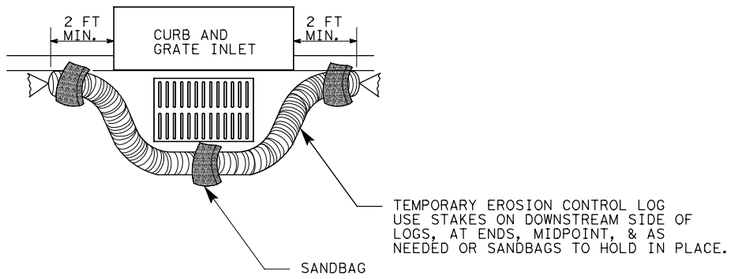
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

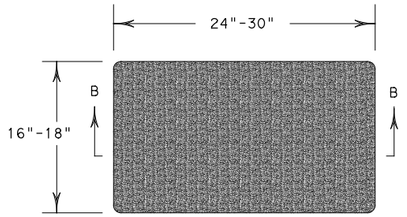
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



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

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
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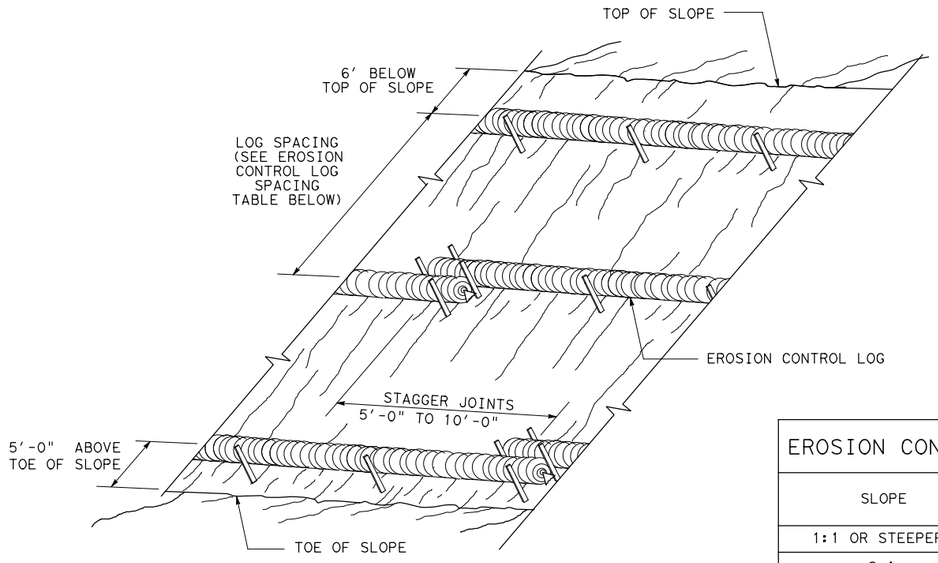
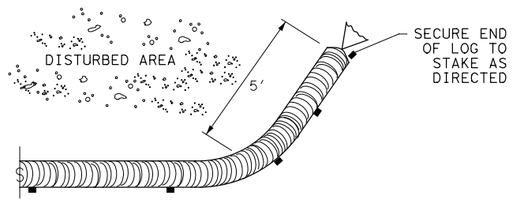
REVISIONS					
	DIST	COUNTY		SHEET NO.	
				129	

DATE:
FILE:



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

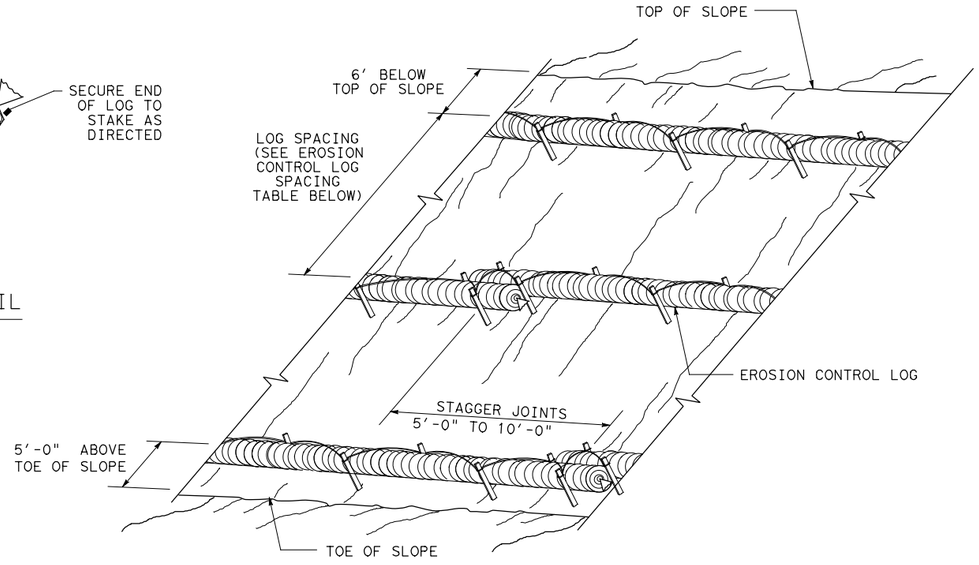
CL-SST



END SECTION RAP DETAIL

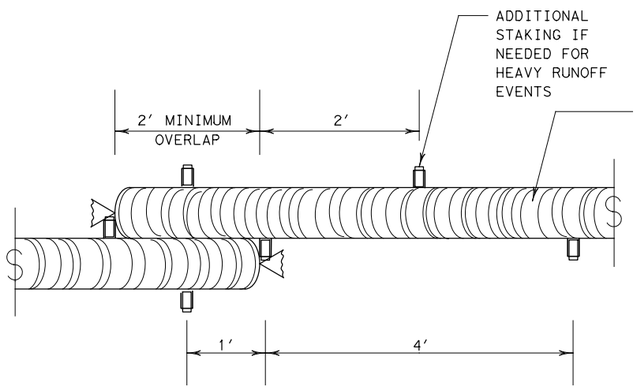
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5′	10′	15′	20′
2:1	10′	20′	30′	40′
3:1	15′	30′	45′	60′
4:1 OR FLATTER	20′	40′	60′	80′

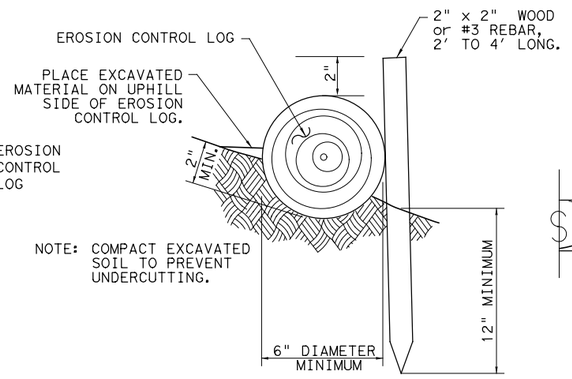
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

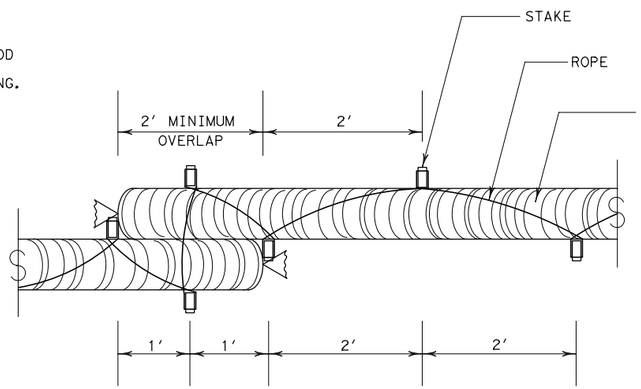


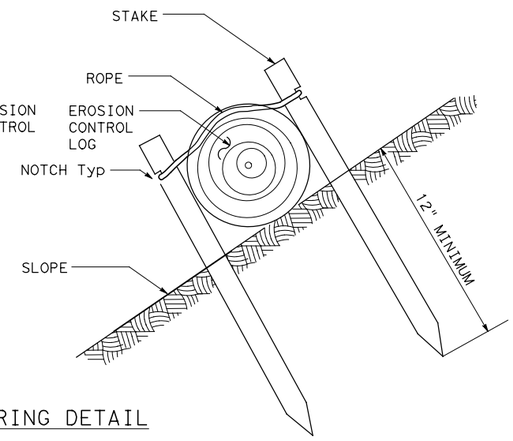


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

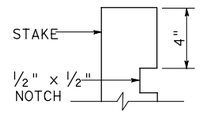
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





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

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REVISIONS				
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				130