CONT	SECT	JOB	HIGHWAY
0921	06	269,Etc.	VARIOUS
DIST	COUNTY		SHEET NO.
21	CAMERON,Etc.		1

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
SEAL COAT IMPROVEMENTS
CAMERON COUNTY

STATE PROJECT NO.: C 921- 6-269, Etc.

RESACA DE LA PALMA, ETC.
CSJ: 0921-06-269, ETC.
LIMITS: PARK ENTRANCE, PARKING LOT, TRAM TRAIL WITHIN RESACA DE LA PALMA

COASTAL FISHERIES FIELD STATION
CSJ: 0921-06-268
LIMITS: ROADWAY, PARKING LOT, WITHIN COASTAL FISHERIES FIELD STATION

LAS PALOMAS WMA ARROYO COLORADO UNIT
CSJ: 0921-06-267
LIMITS: ROADWAY, PARKING LOT, WITHIN LAS PALOMAS WMA ARROYO COLORADO UNIT

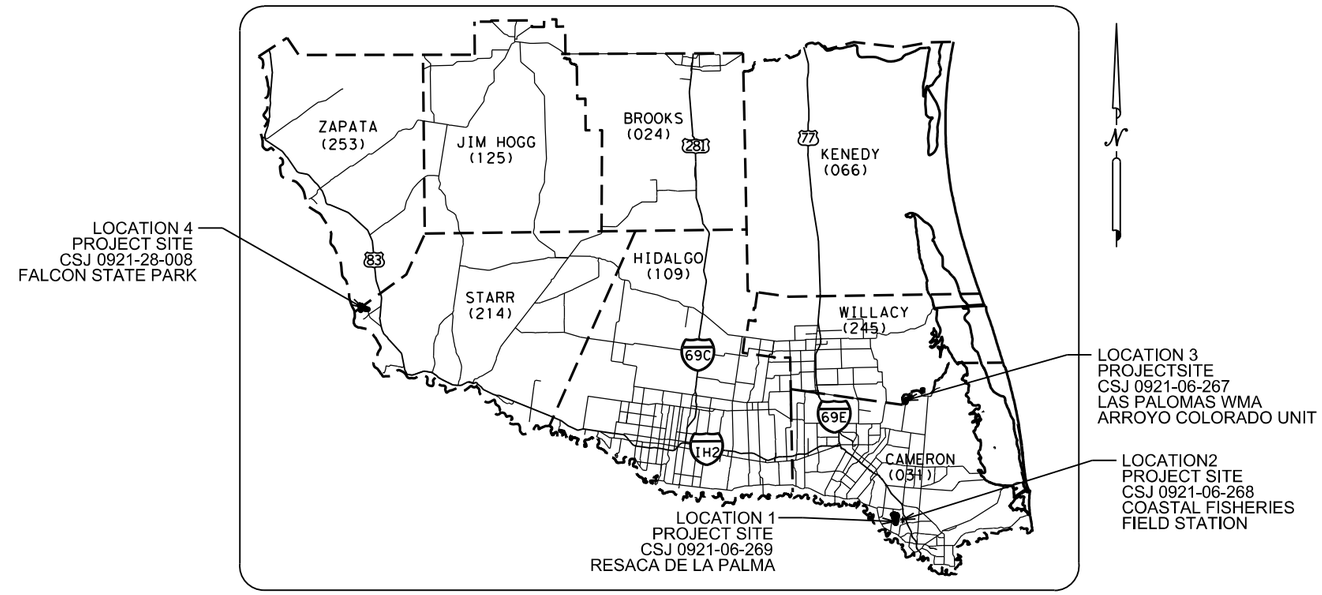
STARR & ZAPATA COUNTY

FALCON STATE PARK
CSJ: 0921-28-008
LIMITS: CAMPING LOOPS, PARKING LOT, WITHIN FALCON STATE PARK

PROJECT DESCRIPTION:

SEAL COAT CONSISTING OF SEAL COAT SURFACE TREATMENT, AND PAVEMENT MARKINGS.

INDEX OF SHEETS
SEE SHEET NO. 2



LOCATION MAP NOT TO SCALE

FINAL PLANS

DATE OF LETTING: _____

DATE WORK BEGAN: _____

DATE WORK COMPLETED: _____

DATE WORK ACCEPTED: _____

FINAL CONTRACT COST: _____

CONTRACTOR: _____

LIST OF APPROVED FIELD CHANGES, CHANGE ORDERS & SUPPLEMENTAL AGREEMENTS:

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

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

FRANCISCO J. CANTU, P.E., P.M.P. — DATE
ROMA AREA ENGINEER

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH BC (1)-21 THRU BC (12)-21 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

T.D.L.R. Inspection Not Required

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

RECOMMENDED FOR LETTING: DATE: 6/22/2023

DocuSigned by: Pedro R. Alvarez EABA336C2DAA48C...
DISTRICT ENGINEER

SUBMITTED FOR LETTING: DATE: 6/22/2023

DocuSigned by: Romualdo Mena Jr 8D395A956F70440...
DISTRICT CENTRAL DESIGN SUPERVISOR

SHEET NO. DESCRIPTION

LEGEND:

[S] STATE STANDARDS

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

X

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

TEXAS DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						2
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc.	0921	06	269, Etc.	VARIOUS

2014 SPECS GENERAL NOTES:

****

General Requirements and Covenants to ITEMS 1 thru 9:
For all pits or quarries, comply with the "Texas Aggregate Quarry and Pit Safety Act."

Provide on a weekly basis a list of equipment, including idle equipment, utilized on the project that week.

The 1-800 call services for utility locations do not include TxDOT facilities. Contact the Pharr District Signal Section (956-702-6225) for coordination regarding TxDOT underground lines.

ITEM 2: Instructions to Bidders
Contractor questions on this project are to be addressed to the following individual(s):

For Locations #1, #2, & #3:
Andres Espinoza, P.E., San Benito Area Engineer; Andres.Espinoza@txdot.gov
Gabriel Villareal, P.E., Assist. Area Engineer; Gabriel.Villarreal@txdot.gov

For Location #4:
Francisco Cantu, P.E., Roma Area Engineer; Francisco.J.Cantu@txdot.gov
Danny Flores, P.E., Transportation Engineer; Danny.Flores@txdot.gov

Contractor questions will be accepted through email, phone, and in person by the above individuals. Questions may also be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:

https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors

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

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

Information found on TxDOT's FTP server will be considered for informational purposes only.
(Index of /pub/txdot-info/Pre-Letting Responses/Pharr District/21-Pharr District (Construction) (state.tx.us))

ITEM 5: Control of the Work
The responsibility for the construction surveying on this contract will be in accordance with Article 5.9.3., "Method C."

ITEM 7: Legal Relations and Responsibilities
No significant traffic generator events identified.

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

- National Holidays
- The day before a National Holiday
- During emergency events such as natural disasters or as directed by the Engineer

ITEM 8: Prosecution and Progress
Working days will be computed and charged in accordance with Article 8.3.1.4. Standard Workweek.

The earliest roadway-state-work date and beginning of time charges is September 1$_{st}$. These days may be extended as directed by the Engineer.

Prepare progress schedules as a Bar Chart.

A 60-day delay is included for Contractor Convenience.

ITEM 251: Reworking Base Courses
Quantities of Flexible Base to be salvaged, shown on the typical sections, are for estimating purposes only. All acceptable base material encountered in existing base is to be salvaged as directed by the Engineer regardless of the quantities involved.

Salvaged base shall be used in the bottom course on any of the proposed roadway and/or turnout sections.

Salvaged base may be used on any of the proposed driveway sections.

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

ITEM 275: Cement Treatment (Road-Mixed)
The percent of density as determined by Tex-120-E for the new and salvage Flexible Base shall be a minimum of 98% for all courses.

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

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

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

ITEM 301: Asphalt Antistripping Agents
Hydrated Lime shall be added as an Antistripping additive between the rates of 1% minimum and 2.0% maximum by weight for Items 292, 3076, 3077, and 3080. If the Hamburg Wheel Test cannot be met within these limits, Liquid Antistripping agents as approved by the Engineer may be used in conjunction with lime for Items 3076, 3077, and 3080.

ITEM 302: Aggregates for Surface Treatments

Loc.	County	CSJ	Highway	Binder	SAC
1	CAMERON	0921-06-269	Resaca De Las Palmas	SPG 79-13	B
2	CAMERON	0921-06-268	Brownsville Field Station	SPG 79-13	B
3	CAMERON	0921-06-267	Las Palomas WMA Arroyo Colorado Unit	SPG 79-13	B
4	ZAPATA	0921-28-008	Falcon State Park	SPG 79-13	B

* Crushed gravel will not be allowed on the above locations noted with (*).

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

Project Number:

County: Cameron, Etc. **Control:** 0921-06-269, Etc.

Highway: Various

ITEM 310: Prime Coat
The Contractor shall exercise diligence in the application of asphalt by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

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

Do not apply subsequent courses over the initial prime coat no earlier than 12 hours after the prime coat was applied, unless otherwise authorized or directed by the Engineer.

ITEM 316: Seal Coat
In addition to cleaning by brooming of paved surfaces to be sealed as required by this Item, blading may also be necessary to clean dirt and grass from edges of the pavement and/or turnout areas. The cost of this blading will not be paid for directly but will be considered subsidiary to the various bid Items of the project.

When applying surface treatment at railroad crossings, a strip of paper shall be placed over the rail and flange areas across the pavement.

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

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

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

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

ITEM 3076: Dense-Graded Hot-Mix Asphalt
The Contractor shall exercise diligence in the application of "Bonding Course" by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

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

RAP (recycled asphalt pavement) to be recycled will be stockpiled separately from other project sources and Contractor owned RAP. Each stockpile will be clearly marked by the Contractor indicating project source.

The Contractor shall exercise diligence during milling operations in order to avoid contamination. The RAP stockpiles are subjected to PI and decantation requirements as specified under this Item.

Recycled asphaltic pavement to be salvaged as shown in plans will be available for use as RAP in the hot mix for this project.

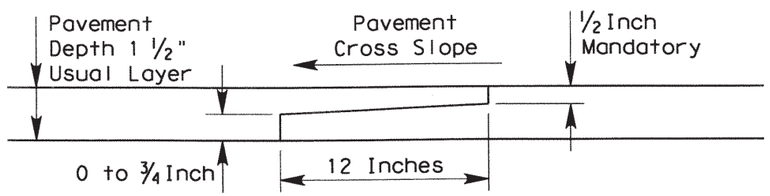
A portion of RAP generated from this project will remain the property of the State. This quantity can be found on the Estimate and Quantity Tables under Item 305 or Item 354.

The following State-owned RAP stockpiles are available for this project:

Stockpile Location	Approximate Quantity (Ton)
Roma Area Engineer & Maintenance Facility	2366.45

Level-up will be placed before the surface course. An asphaltic concrete spreading and finishing machine and/or motor graders; when approved by the Engineer may be used to place the ACP level-up.

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



NOTCHED WEDGE JOINT

The engineer may allow for variances to the dimensions shown.

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

Design mixture using a Superpave Gyratory Compactor.

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

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

When SAC B aggregate is used, material properties are required to be 10 or less on the magnesium sulfate soundness test and 20 or less on the Micro-Deval test.

ITEM 354: Planing and Texturing Pavement

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

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

For full width planing/milling locations, Contractor is to place seal coat or ACP layer(s) as indicated on the plans within 2-calendar days of the planing/milling operation unless otherwise directed by the Engineer. Contractor will not be allowed to move onto the next planing/milling location or seal coat/ACP overlay location until the exposed area is covered as per above. Contractor cannot get paid for the planing/milling operation until exposed area is covered as per above.

All planing/milling material; RAP (recycled asphalt pavement) from this project will remain the property of the State unless otherwise noted in the plans and/or as directed by the Engineer. Stockpile 1353 SY (specified quantity on E&Q sheets) of material generated from the project at designated site located at Roma Area Engineer & Maintenance Facility (location address).

ITEM 421: Hydraulic Cement Concrete

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

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

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

Submit to the Engineer for approval the project locations for all Portland Cement concrete washout areas prior to starting any concrete work.
Fiber Reinforced Concrete is not permitted.

ITEM 432: Riprap
Provide Class "A" concrete minimum for riprap aprons placed around all box culvert and pipe safety end treatments. Provide ¼-inch thick dummy joints at least every 15-ft for riprap aprons placed around box and pipe culverts.

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

ITEM 502: Barricades, Signs, and Traffic Handling
Shadow vehicles equipped with Truck-Mounted Attenuators are required for traffic handling. See notes for Item 6185: Truck Mounted Attenuator/Trailer Attenuator, for additional references pertaining to the TMAs.

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

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

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

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

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

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

Remove and dispose of all litter, debris, objectionable material, excess materials that accumulate at the base of all traffic control devices as directed by the Engineer.

ITEM 506: Temporary Erosion, Sedimentation, and Environmental Controls
Due to the nature of this project, it is unlikely a significant amount of soil will be disturbed. However, if erosion control logs are needed; it shall be placed as directed by the Engineer.

Before starting each phase of construction, review with the Engineer the SW3P used for temporary erosion control as outlined on the plans. Before construction, place the temporary erosion and sedimentation control features as shown on the SW3P. Location of Construction Exits are to be approved by the Engineer. After completing earthwork operations, restore and reseed the disturbed areas in accordance with the Department's specifications for permanent or temporary erosion control. Before starting grading operations and during the project duration, place the temporary or permanent erosion control measures to prevent sediment from leaving the right of way.

The Contractor Force Account "Erosion Control Maintenance" that has been established for this project is intended to be utilized for work zone Best Management Practice (BMP) maintenance, to improve the effectiveness of the Environmental Controls that may need maintenance attention and/or require replacement while the project is still under the construction stage. These procedures will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent BMP management reviews on the project. The "Erosion Control Maintenance" is not intended to be used in lieu of bid Items established by the contract.

ITEMS 662 and 666: Work Zone Pavement Markings and Retroreflectorized Pavement Markings
All permanent pavement markings for this project under this item shall be 0.100 inches (100 mil) thick thermoplastic.

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

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

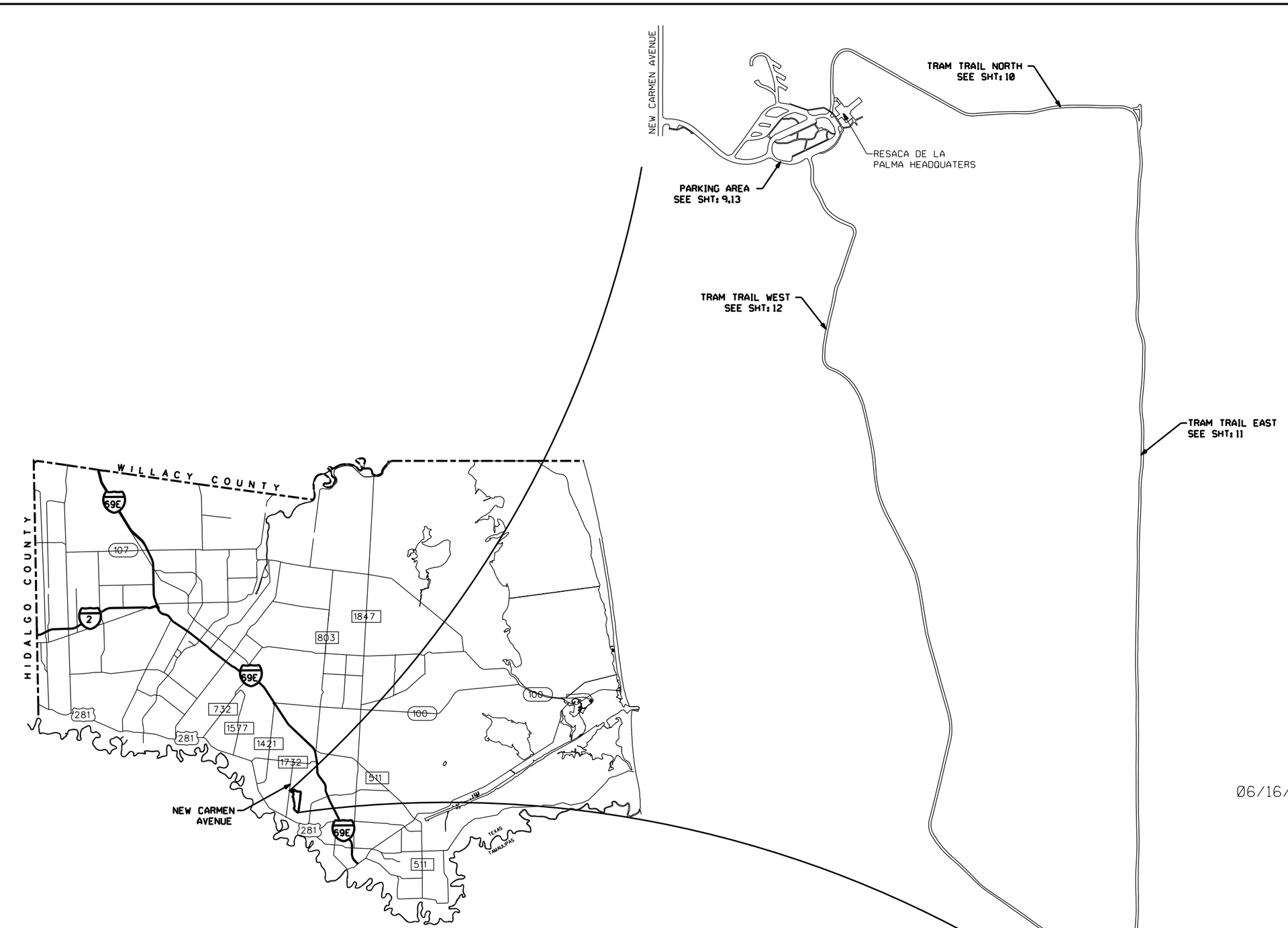
The beads used on this project shall meet the requirements of Departmental Materials Specification DMS-8290, Glass Traffic Beads Texas Type II & III. Use a 50% Type II/ 50% Type III mix utilizing a double drop system with Type III beads dropped first.

Project Number: **Sheet 6A**

County: Cameron, Etc. **Control:** 0921-06-269, Etc.

Highway: Various

General Notes



STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

06/16/2023

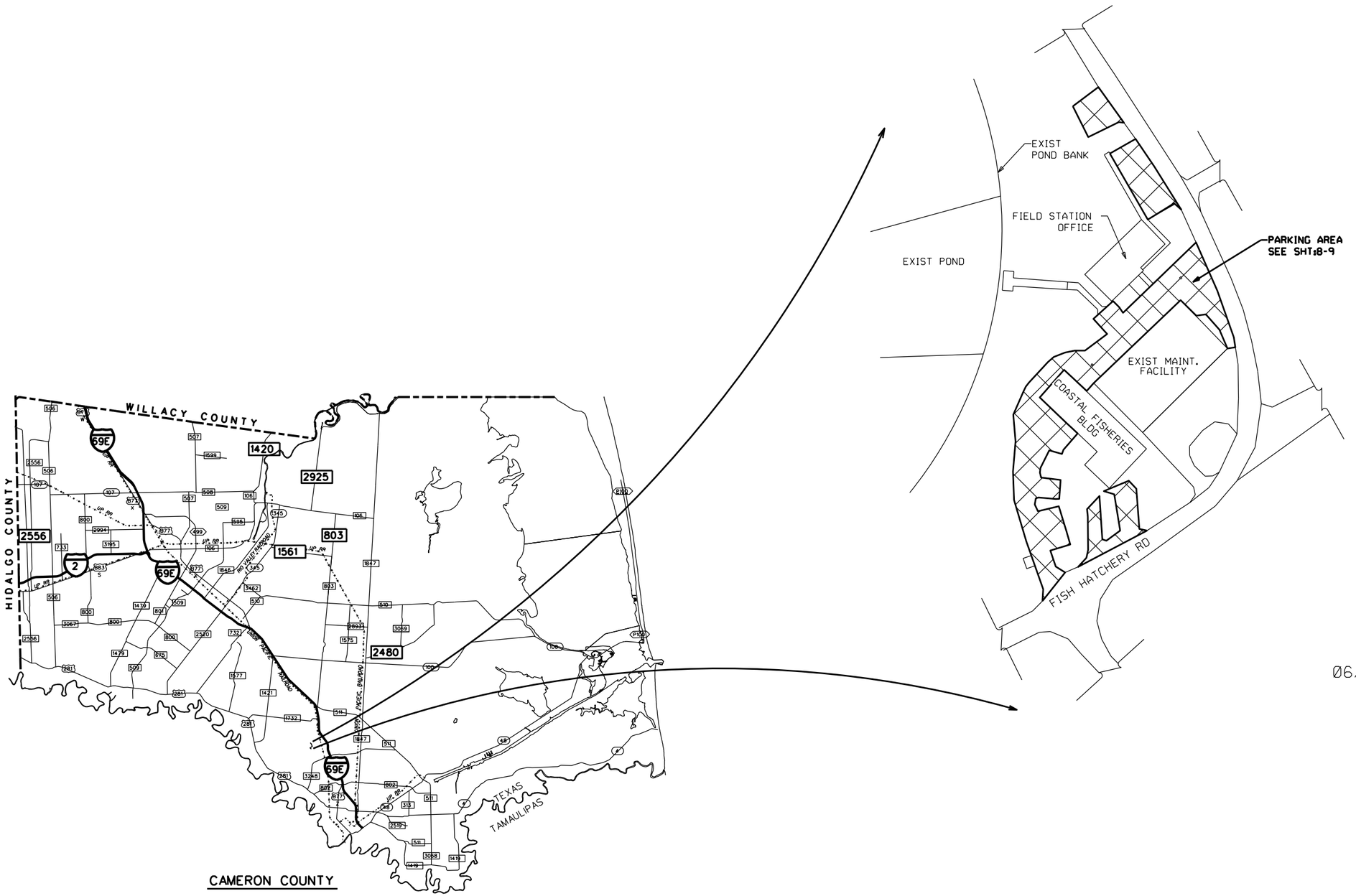
Agustin Ramirez, P.E.

SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

RESACA DE LA PALMA SEAL COAT PROJECT LOCATION MAP

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						7
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS



LEGEND:

PROP. SEAL COAT

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

06/16/2023

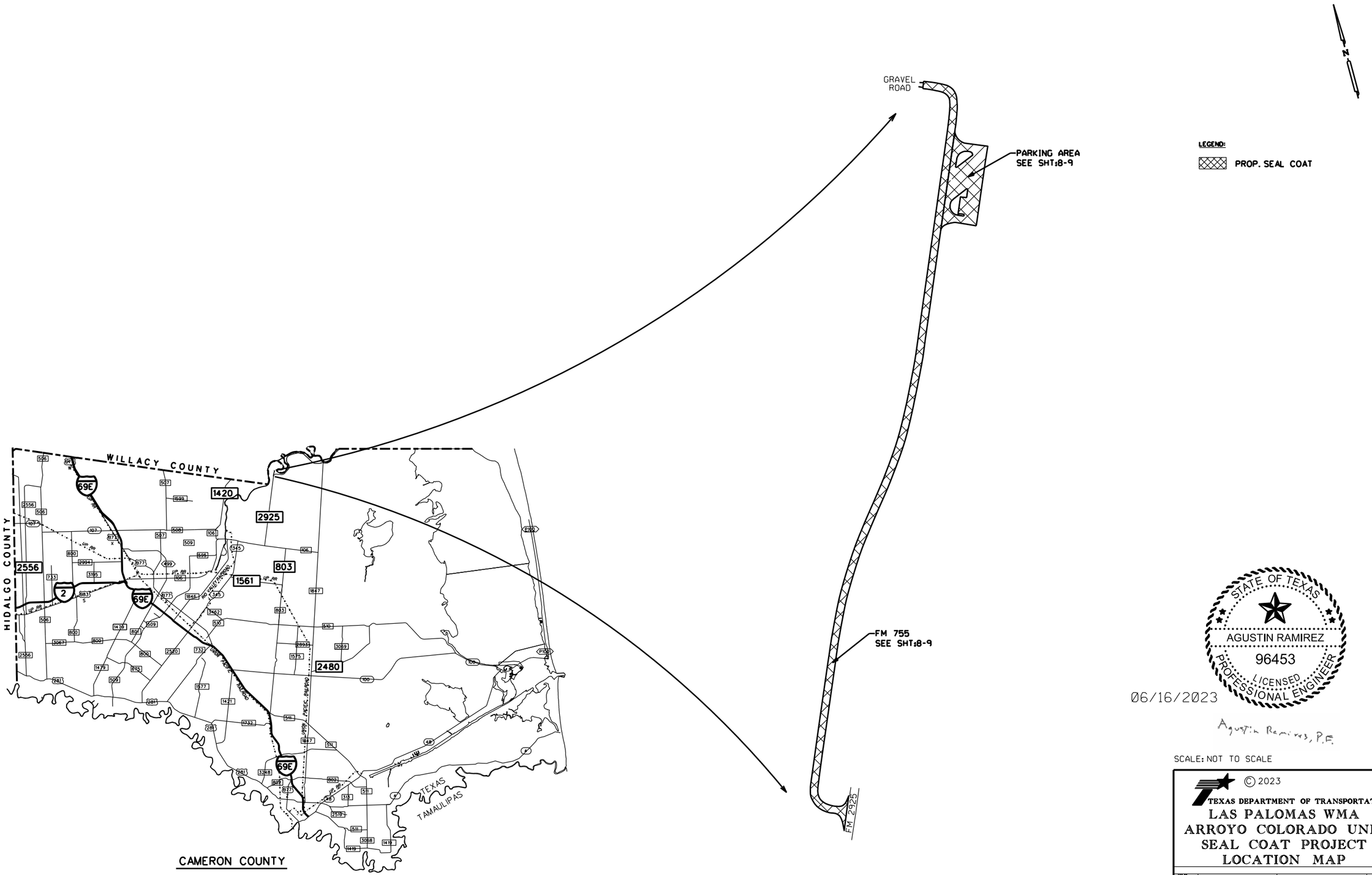
Agustin Ramirez, P.E.

SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

COASTAL FIELD STATION SEAL COAT PROJECT LOCATION MAP

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						8
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HW NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS



STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

06/16/2023

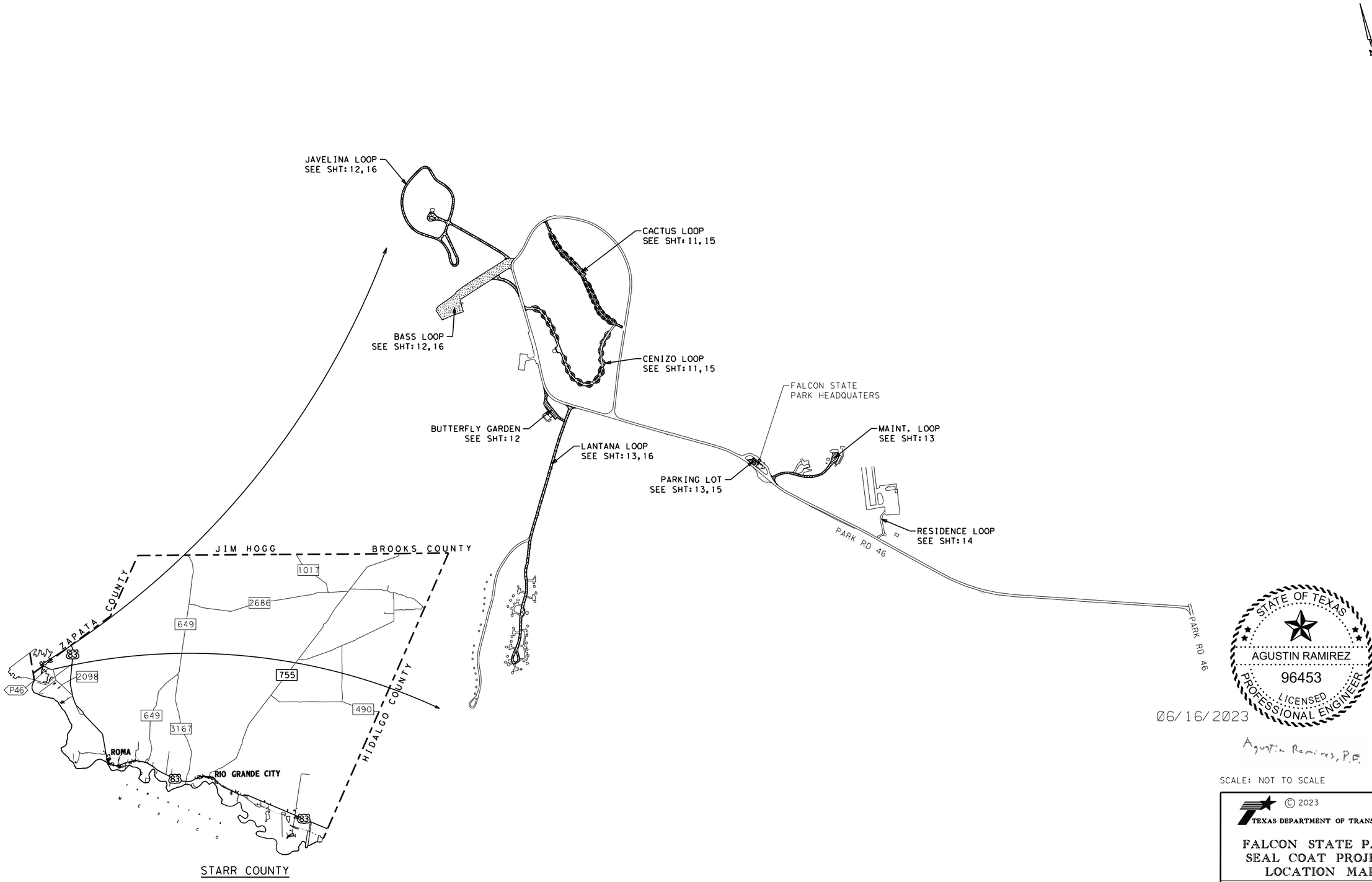
Agustin Ramirez, P.E

SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

LAS PALOMAS WMA
ARROYO COLORADO UNIT
SEAL COAT PROJECT
LOCATION MAP

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						9
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HW NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS



STATE OF TEXAS
AGUSTIN RAMIREZ
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PROFESSIONAL ENGINEER

06/16/2023

Agustin Ramirez, P.E.

SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

FALCON STATE PARK SEAL COAT PROJECT LOCATION MAP

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						10
STATE	STATE DIST. NO.	COUNTY	CONTROL	SECTION	JOB	HI NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS

BASIS OF ESTIMATE
LOCATION RESACA DE LA PALMA

CONTROL: 0921-06-269 COUNTY: CAMERON
PROJECT: HIGHWAY: NA

TYPE: SEALCOAT
LIMITS: RESACA DE LA PALMA
PARK ENTRANCE, PARKING & MAINT. AREA

EXCEPTIONS: NONE
EQUATIONS: NONE

	AREA(SY)*
ENTRANCE AND PARKING LOT	13,835
TOTAL	13,835

ITEM	DESC. CODE	DESCRIPTION	AMOUNT	UNITS
310	6009	PRIME COAT (MC-30)(0.20GAL/SY)	2767	GAL
316	6508	ASPH (SPG 79-13) (0.32 GAL/SY)	4,427	GAL
316	6462	AGGR (TY-PD GR-4P)(SAC-B)(1 CY/120 SY)	115	CY
500	6001	MOBILIZATION	0.25	LS
502	6001	BARRICADES, SIGNS AND TRAF HANDLE	1	MO
506	6038	TEMP EROSION CONT FENCE (INSTALL)	8	LF
506	6039	TEMP EROSION CONT FENCE (REMOVE)	8	LF
644	6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	1	EA
666	6042	REFL PAV MRK TY I(W) 12" (SLD)(100MIL)	542	LF
666	6138	REFL PAV MRK TY I(W) 8"(SLD)(100MIL)	155	LF
666	6303	RE PM W/RET REQ TY I(W) 4"(SLD)(100MIL)	3,003	LF
666	6315	RE PM W/RET REQ TY I(Y) 4"(SLD)(100MIL)	1,502	LF
668	6077	PREFAB PAV MRK TY C (W)(ARROW)	4	EA
668	6078	PREFAB PAV MRK TY C (W)(DBL ARROW)	2	EA
668	6085	PREFAB PAV MRK TY C (W)(WORD)	10	EA
668	6113	PRE PM TY C(ACC PRK)(BL&WH)(W/BORDR)LG	7	EA
5160	6001	FRNISH AND INSTALL PRECAST CONC WHEEL STOPS	1	EA
5163	6001	MOVE AND RESET PRECAST CONC WHEEL STOPS	60	EA
		CONTRACTOR FORCE ACCOUNT WORK (PART) EROSION CONTROL MAINTENANCE	1	LS
		CONTRACTOR FORCE ACCOUNT WORK (PART) SAFETY CONTINGENCY	1	LS

*FOR CONTRACTORS INFORMATION ONLY

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

TEXAS DEPARTMENT OF TRANSPORTATION

BASIS OF ESTIMATE
PARK ENTRANCE,
PARKING & MAINT. AREA
LOCATION 1 1 OF 2

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						11
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIS NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS

BASIS OF ESTIMATE
LOCATION RESACA DE LA PALMA

CONTROL: 0921-06-269 — COUNTY: CAMERON
PROJECT: — HIGHWAY: NA

TYPE: SEALCOAT
LIMITS: RESACA DE LA PALMA
TRAM TRAIL

STATION LIMITS: 09+65.75 TO 151+35.01 = 14,169 Ft. 2.68 Mi.

EXCEPTIONS: NONE
EQUATIONS: NONE

STA	TO	STA	WIDTH(FT)		LENGTH(FT)=	AREA(SY)=
9+65.75		34+76.35	VARIES 14-16	TRAM TRAIL NORTH	2,511	4,289
34+76.35		90+63.60	VARIES 14-16	TRAM TRAIL EAST	5,587	9,035
90+63.60		151+35.01	VARIES 14-16	TRAM TRAIL WEST	6,071	9,965
				TOTAL=	14,169	23,289

STA	TO	STA	WIDTH(FT)		LENGTH(FT)=	AREA(SY)=
65+22.71		66+02.71	VARIES 14-16	LEVEL UP	80	124
132+64.00		137+00.00	VARIES 14-16	LEVEL UP	436	693
				TOTAL=	516	817

ITEM	DESC. CODE	DESCRIPTION		AMOUNT	UNITS
310	6009	PRIME COAT (MC-30)(0.20 GAL/SY)	=	4,658	GAL
316	6508	ASPH (SPG 79-13) (0.32 GAL/SY)	=	7,452	GAL
316	6462	AGGR (TY-PD GR-4P)(SAC-B)(1 CY/120 SY)	=	194	CY
3076	6051	D-GR HMA(SQ) TY-D PG76-22 (LEVEL UP)(114LBS/SY/IN)(1TON/2000LBS)(1IN)	=	47	TON
506	6038	TEMP EROSION CONT FENCE (INSTALL)	=	500	LF
506	6039	TEMP EROSION CONT FENCE (REMOVE)	=	500	LF

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

TEXAS DEPARTMENT OF TRANSPORTATION

BASIS OF ESTIMATE
TRAM TRAIL
LOCATION 1

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						12
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS

BASIS OF ESTIMATE
LOCATION COASTAL FISHERIES FIELD STATION

CONTROL: 0921-06-268 COUNTY: CAMERON
PROJECT: HIGHWAY: NA

TYPE: SEAL COAT
LIMITS: COASTAL FISHERIES FIELD STATION
PARKING AREA

EXCEPTIONS: NONE
EQUATIONS: NONE

	AREA(SY)*
PARKING AREA	1,996

ITEM	DESC. CODE	DESCRIPTION		AMOUNT	UNITS
310	6009	PRIME COAT (MC-30)(0.20GAL/SY)	*	399	GAL
316	6508	ASPH (SPG 79-13) (0.32 GAL/SY)	*	639	GAL
316	6462	AGGR (TY-PD GR-4P)(SAC-B)(1 CY/120 SY)	*	17	CY
432	6002	RIPRAP (CONC)(5 IN)	*	1.2	CY
500	6001	MOBILIZATION	*	0.25	LS
502	6001	BARRICADES, SIGNS AND TRAF HANDLING	*	1	MO
506	6038	TEMP EROSION CONT FENCE (INSTALL)	*	420	LF
506	6039	TEMP EROSION CONT FENCE (REMOVE)	*	420	LF
506	6041	BIODEG EROSN CONT LOGS (INSTL)(12")	*	16	LF
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	*	16	LF
644	6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	*	1	EA
666	6303	RE PM W/RET REQ TY I(W) 4"(SLD)(100MIL)	*	846	LF
668	6085	PREFAB PAV MRK TY C (W)(WORD)	*	2	EA
668	6113	PRE PM TY C(ACC PRK)(BL&WH)(W/BORDR)LG	*	1	EA
5160	6001	FRNISH AND INSTALL PRECAST CONC WHEEL STOPS	*	7	EA
5163	6001	MOVE AND RESET PRECAST CONC WHEEL STOPS	*	1	EA

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

TEXAS DEPARTMENT OF TRANSPORTATION
BASIS OF ESTIMATE
COATAL FIELD STATION
PARKING AREA
LOCATION 2

FED. ROAD DIV. NO.	STATE PROJECT NO.					SHEET NO.
6						13
STATE	STATE DIST. NO.	COUNTY	CONTROL	SECTION	JOB	HW NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS

BASIS OF ESTIMATE
LOCATION LAS PALOMAS WMA ARROYO COLORADO UNIT

CONTROL: 0921-06-267 COUNTY: CAMERON
PROJECT: HIGHWAY: NA

TYPE: SEAL COAT
LIMITS: LAS PALOMAS WMA ARROYO COLORADO UNIT
FM 755 & PARKING AREA

EXCEPTIONS: NONE
EQUATIONS: NONE

	WIDTH(FT)	LENGTH(FT)	AREA(SY)*
FM 755	24	2,565	6,840
PARKING AREA	N/A	N/A	2,890

ITEM	DESC. CODE	DESCRIPTION		AMOUNT	UNITS
310	6009	PRIME COAT (MC-30)(0.20GAL/SY)	*	1946	GAL
316	6508	ASPH (SPG 79-13) (0.32 gal/sy)	*	3,114	GAL
316	6462	AGGR (TY-PD GR-4P)(SAC-B)(1 CY/120 SY)	*	81	CY
500	6001	MOBILIZATION	*	0.25	LS
502	6001	BARRICADES, SIGNS AND TRAF HANDLING	*	1	MO
506	6038	TEMP EROSION CONT FENCE (INSTALL)	*	56	LF
506	6039	TEMP EROSION CONT FENCE (REMOVE)	*	56	LF
506	6041	BIODEG EROSN CONT LOGS (INSTL)(12")	*	45	LF
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	*	45	LF
644	6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	*	1	EA
666	6042	REFL PAV MRK TY I(W) 12" (SLD)(100MIL)	*	11	LF
666	6303	RE PM W/RET REQ TY I(W) 4"(SLD)(100MIL)	*	1,412	LF
666	6309	RE PM W/RET REQ TY I(W) 6"(SLD)(100MIL)	*	4,722	LF
666	6315	RE PM W/RET REQ TY I(Y) 4"(SLD)(100MIL)	*	5,044	LF
668	6085	PREFAB PAV MRK TY C (W)(WORD)	*	4	EA
668	6113	PRE PM TY C(ACC PRK)(BL&WH)(W/BORDR)LG	*	3	EA
5160	6001	FRNISH AND INSTALL PRECAST CONC WHEEL STOPS	*	1	EA
5163	6001	MOVE AND RESET PRECAST CONC WHEEL STOPS	*	30	EA

STATE OF TEXAS
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07/14/2023

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TEXAS DEPARTMENT OF TRANSPORTATION

BASIS OF ESTIMATE
FM 755 &
PARKING AREA
LOCATION 3

1 OF 1

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						14
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HW NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS

BASIS OF ESTIMATE

LOCATION FALCON STATE PARK

CONTROL: 0921-28-008
PROJECT:

COUNTY: STARR / ZAPATA
HIGHWAY: NA

TYPE: SEAL COAT
LIMITS: FALCON STATE PARK CAMPING LOOPS
CACTUS LOOP & CENIZO LOOP

EXCEPTIONS: NONE
EQUATIONS: NONE

	AREA(SY)*
CACTUS LOOP	6,734
CENIZO LOOP	7,687
ENTRANCE (CACTUS LOOP)	54
PARKING LOT (LEVEL UP)	210

ITEM	DESC. CODE	DESCRIPTION		AMOUNT	UNITS
251	6079	REWRK BS MTL (TY D) (SURF) (ORD COMP)	-	61	SY
310	6009	PRIME COAT (MC-30) (0.20GAL/SY)	-	12	GAL
316	6508	ASPH (SPG 79-13) (0.32 GAL/SY)	-	4,682	GAL
316	6224	AGGR (TY-PB GR-4)(SAC-B)(1 CY/120 SY)	-	122	CY
354	6041	PLANE ASPH CONC PAV (1.5")	-	654	SY
354	6051	PLANE ASPH CONC PAV (0" TO 1.5")	-	308	SY
3076	6049	D-GR HMA(SQ) TY-D SAC-A PG76-22 (114 LBS/SY/IN)(1 TON/2000LBS)(2IN)	-	6	TON
3076	6051	D-GR HMA(SQ) TY-D PG 76-22 (LEVEL UP)(114LBS/SY/IN)(1 TON/2000LBS)(1 IN)	-	12	TON
500	6001	MOBILIZATION	-	0.25	LS
502	6001	BARRICADES, SIGNS AND TRAF HANDLING	-	1	MO
506	6038	TEMP EROSION CONT FENCE (INSTALL)	-	24	LF
506	6039	TEMP EROSION CONT FENCE (REMOVE)	-	24	LF
644	6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	-	2	EA
666	6303	RE PM W/RET REQ TY I(W) 4"(SLD)(100MIL)	-	585	LF
668	6085	PREFAB PAV MRK TY C (W)(WORD)	-	4	EA
668	6113	PRE PM TY C(ACC PRK)(BL&WH)(W/BORDR)LG	-	2	EA
5160	6001	FRNISH AND INSTALL PRECAST CONC WHEEL STOPS	-	3	EA
5163	6001	MOVE AND RESET PRECAST CONC WHEEL STOPS	-	5	EA

STATE OF TEXAS
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07/14/2023

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TEXAS DEPARTMENT OF TRANSPORTATION

BASIS OF ESTIMATE
CACTUS LOOP &
CENIZO LOOP
LOCATION 4

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						15
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIS NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS

BASIS OF ESTIMATE
LOCATION FALCON STATE PARK

CONTROL: 0921-28-008
PROJECT:

COUNTY: STARR / ZAPATA
HIGHWAY: NA

TYPE: SEAL COAT
LIMITS: FALCON STATE PARK CAMPING LOOPS
JAVELINA LOOP, BASS LOOP & BUTTERFLY GARDEN

EXCEPTIONS: NONE
EQUATIONS: NONE

	AREA(SY)*
JAVELINA LOOP	8,599
BASS LOOP	13,518
BUTTERFLY GARDEN PARKING	1,643
PARKING AREA (LEVEL UP)	692

ITEM	DESC. CODE	DESCRIPTION		AMOUNT	UNITS
316	6508	ASPH (SPG 79-13) (0.32 gal/sy)	-	7,825	GAL
316	6224	AGGR (TY-PB GR-4)(SAC-B)(1 CY/120 SY)	-	204	CY
354	6041	PLAN ASPH CONC PAV (1 1/2")	-	12,572	SY
3076	6051	D-GR HMA(SQ) TY-D PG 76-22 (LEVEL UP)(114LBS/SY/IN)(1 TON/2000LBS)(1 IN)	-	39	TON
506	6038	TEMP EROSION CONT FENCE (INSTALL)	-	24	LF
506	6039	TEMP EROSION CONT FENCE (REMOVE)	-	24	LF
644	6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	-	2	EA
666	6303	RE PM W/RET REQ TY I(W) 4"(SLD)(100MIL)	-	4,175	LF
666	6315	RE PM W/RET REQ TY I(Y) 4"(SLD)(100MIL)	-	8,738	LF
668	6085	PREFAB PAV MRK TY C (W)(WORD)	-	4	EA
668	6113	PRE PM TY C (ACC PRK)(BL&WH)(W/BORDR)LG	-	3	EA

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07/14/2023

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TEXAS DEPARTMENT OF TRANSPORTATION
BASIS OF ESTIMATE
JAVELINA, BASS LOOP
& BUTTERFLY GARDEN
LOCATION 4

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						16
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS

BASIS OF ESTIMATE
LOCATION FALCON STATE PARK

CONTROL: 0921-28-008 COUNTY: STARR / ZAPATA
PROJECT: HIGHWAY: NA

TYPE: SEALCOAT
LIMITS: FALCON STATE PARK CAMPING LOOPS
LANTANA LOOP, MAINTENANCE LOOP & HQ PARKING

EXCEPTIONS: NONE
EQUATIONS: NONE

	AREA(SY)
LANTANA LOOP	7,347
MAINTENANCE LOOP	2,370
HQ PARKING	361
TOTAL	10,078

ITEM	DESC. CODE	DESCRIPTION	AMOUNT	UNITS
316	6508	ASPH (SPG 79-13) (0.32 gal/sy)	3,225	GAL
316	6224	AGGR (TY-PB GR-4)(SAC-B)(1 CY/120 SY)	84	CY
506	6038	TEMP EROSION CONT FENCE (INSTALL)	8	LF
506	6039	TEMP EROSION CONT FENCE (REMOVE)	8	LF
644	6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	2	EA
666	6303	RE PM W/RET REQ TY I(W) 4"(SLD)(100MIL)	597	LF
666	6315	RE PM W/RET REQ TY I(Y) 4"(SLD)(100MIL)	2,535	LF
668	6085	PREFAB PAV MRK TY C (W)(WORD)	4	EA
668	6113	PRE PM TY C(ACC PRK)(BL&WH)(W/BORDR)LG	2	EA
5163	6001	MOVE AND RESET PRECAST CONC WHELL STOP	2	EA

STATE OF TEXAS
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07/14/2023

Agustin Ramirez, P.E.

TEXAS DEPARTMENT OF TRANSPORTATION
BASIS OF ESTIMATE
LANTANA LOOP, MAINT. LOOP & HQ PARKING
LOCATION 4

FEDERAL DIVISION	STATE PROJECT NO.					SHEET NO.
6						17
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc.	0921	28	269,Etc.	VARIOUS

BASIS OF ESTIMATE
LOCATION FALCON STATE PARK

CONTROL: 0921-28-008
PROJECT:

COUNTY: STARR / ZAPATA
HIGHWAY: NA

TYPE: SEALCOAT
LIMITS: FALCON STATE PARK CAMPING LOOPS
RESIDENCE LOOP

EXCEPTIONS: NONE
EQUATIONS: NONE

	WIDTH(FT)	LENGTH(FT)	AREA(SY)*
REMOVE EXISTING STAB BASE AND PAV	20	330	733
CEMENT TREAT NEW BASE	20	330	733
ROADWAY	18	330	660

ITEM	DESC. CODE	DESCRIPTION		AMOUNT	UNITS
105	6008	REMOVING STAB BASE AND ASPH PAV (6")	*	733	SY
275	6003	CEMENT TREAT (NEW BASE) (6")	*	733	SY
316	6508	ASPH (SPG 73-13)(0.32 GAL/SY)	*	211	GAL
316	6224	AGGR (TY-PB GR-4)(SAC-B)(1CY/120SY)	*	6	CY
506	6038	TEMP EROSION CONT FENCE (INSTALL)	*	588	LF
506	6039	TEMP EROSION CONT FENCE (REMOVE)	*	588	LF

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

06/16/2023

Agustin Ramirez, P.E.

TEXAS DEPARTMENT OF TRANSPORTATION

BASIS OF ESTIMATE
RESIDENCE LOOP
LOCATION 4

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						18
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0921-06-269 **DISTRICT** Pharr **COUNTY** Cameron, Zapata
HIGHWAY Various

			CONTROL SECTION JOB	**0921-06-267**		**0921-06-268**		**0921-06-269**		**0921-28-008**		TOTAL EST.	TOTAL FINAL
			PROJECT ID	**A00105710**		**A00105711**		**A00105712**		**A00106121**			
			COUNTY	**Cameron**		**Cameron**		**Cameron**		**Zapata**			
			HIGHWAY	**Various**		**Various**		**Various**		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	105-6008	REMOVING STAB BASE AND ASPH PAV (6")	SY							733.000		733.000	
	251-6079	REWORK BS MTL (TY D)(SURF)(ORD COMP)	SY							61.000		61.000	
	275-6003	CEMENT TREAT (NEW BASE) (6")	SY							733.000		733.000	
	310-6009	PRIME COAT (MC-30)	GAL	1,946.000		399.000		7,425.000		12.000		9,782.000	
	316-6224	AGGR(TY-PB GR-4 SAC-B)	CY							416.000		416.000	
	316-6462	AGGR (TY-PD GR-4P)(SAC-B)	CY	81.000		17.000		309.000				407.000	
	316-6508	ASPH (SPG 79-13)	GAL	3,114.000		639.000		11,879.000		15,943.000		31,575.000	
	354-6041	PLANE ASPH CONC PAV (1.5")	SY							13,226.000		13,226.000	
	354-6051	PLANE ASPH CONC PAV (0" TO 1 1/2")	SY							308.000		308.000	
	432-6002	RIPRAP (CONC)(5 IN)	CY			1.200						1.200	
	500-6001	MOBILIZATION	LS	0.250		0.250		0.250		0.250		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1.000		1.000		1.000		1.000		4.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	56.000		420.000		508.000		644.000		1,628.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	56.000		420.000		508.000		644.000		1,628.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	45.000		16.000						61.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	45.000		16.000						61.000	
	644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	1.000		1.000		1.000		6.000		9.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	11.000				542.000				553.000	
	666-6138	REFL PAV MRK TY I (Y)8"(SLD)(100MIL)	LF					155.000				155.000	
	666-6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	LF	1,412.000		846.000		3,003.000		5,357.000		10,618.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	4,722.000								4,722.000	
	666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	5,044.000				1,502.000		11,273.000		17,819.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA					4.000				4.000	
	668-6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA					2.000				2.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	4.000		2.000		10.000		12.000		28.000	
	668-6113	PRE PM TY C(ACC PRK)(BL&WH)(W/BORDR)LG	EA	3.000		1.000		7.000		7.000		18.000	
	3076-6049	D-GR HMA TY-D SAC-A PG76-22	TON							6.000		6.000	
	3076-6051	D-GR HMA TY-D PG76-22 (LEVEL-UP)	TON					47.000		51.000		98.000	
	5160-6001	FRNISH & INSTAL PRECST CONC WHEEL STOPS	EA	1.000		7.000		1.000		3.000		12.000	
	5163-6001	MOVE AND RESET PRECAST CONC WHEEL STOP	EA	30.000		1.000		60.000		7.000		98.000	
	08	CONTRACTOR FORCE ACCOUNT EROSION CONTROL MAINTENANCE (NON-PARTICIPATING)	LS					1.000				1.000	
		CONTRACTOR FORCE ACCOUNT SAFETY CONTINGENCY (NON-PARTICIPATING)	LS					1.000				1.000	

ESTIMATED QUANTITIES

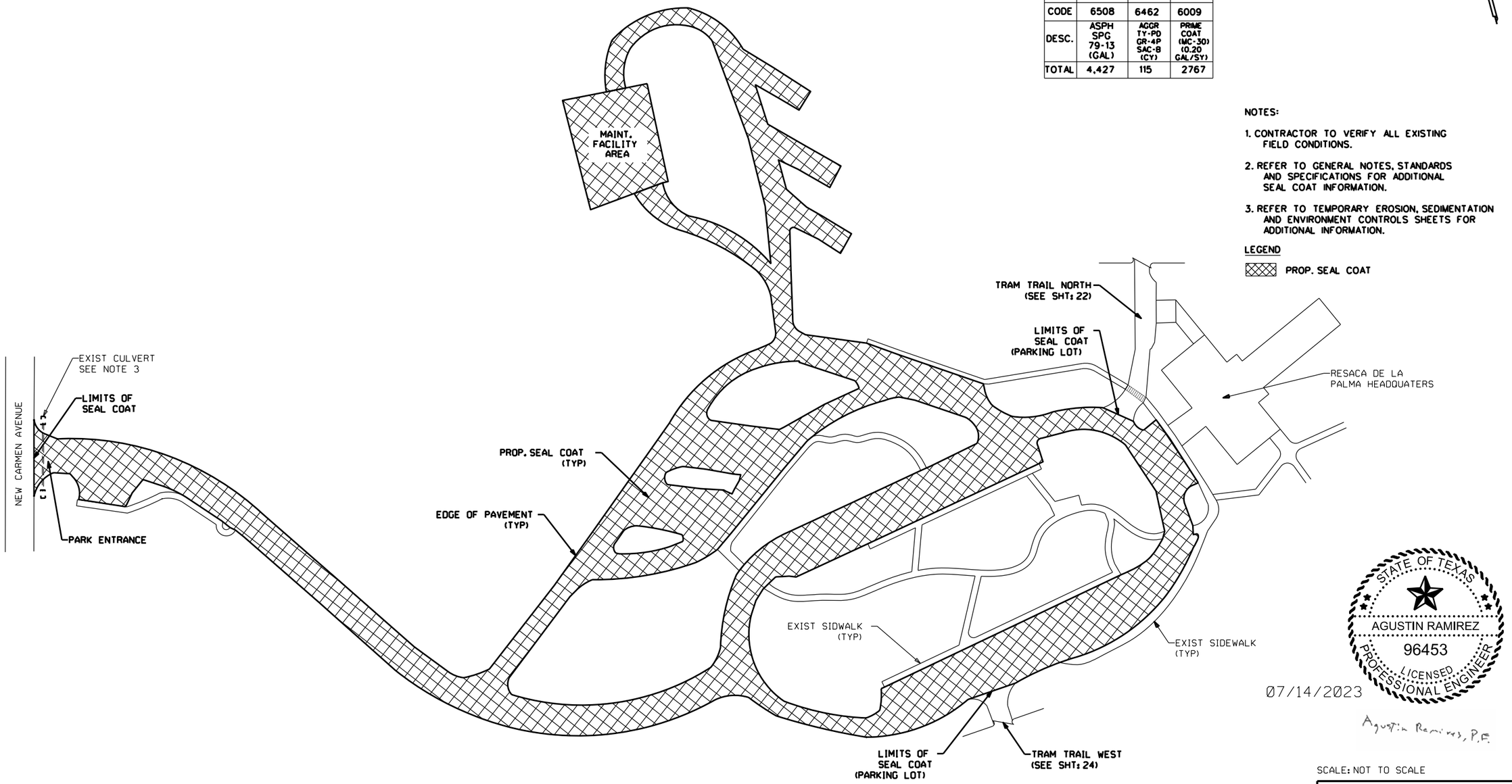
ITEM	316	316	310
CODE	6508	6462	6009
DESC.	ASPH SPG 79-13 (GAL)	AGGR TY-PD GR-4P SAC-B (CY)	PRIME COAT (MC-30) (0.20 GAL/SY)
TOTAL	4,427	115	2767

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO GENERAL NOTES, STANDARDS AND SPECIFICATIONS FOR ADDITIONAL SEAL COAT INFORMATION.
3. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS SHEETS FOR ADDITIONAL INFORMATION.

LEGEND

PROP. SEAL COAT



STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

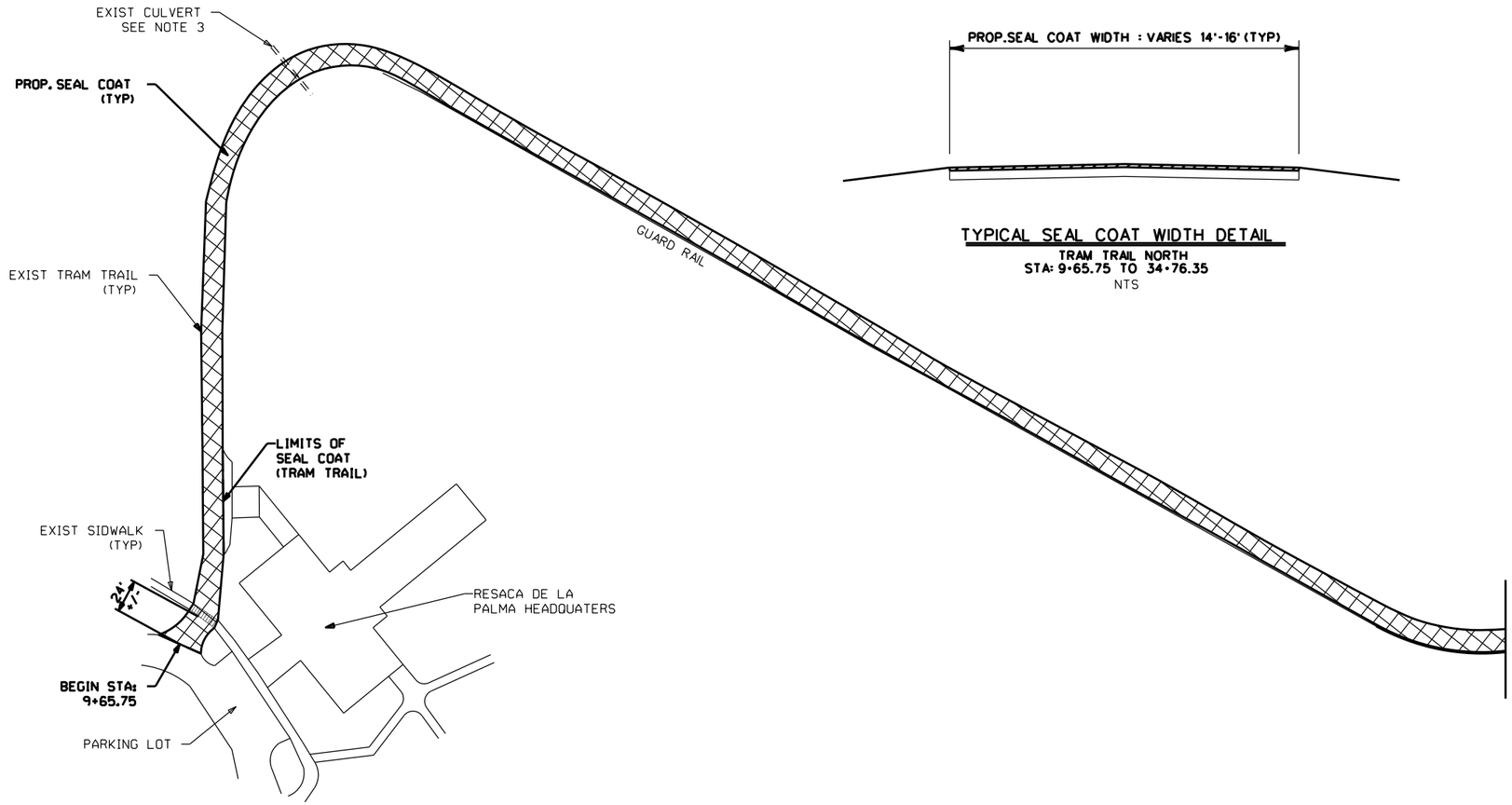
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

RESACA DE LA PALMA SEAL COAT: ENTRANCE, PARKING & MAINT. AREA LOCATION 1

1 OF 4

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						20
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS



TYPICAL SEAL COAT WIDTH DETAIL
TRAM TRAIL NORTH
STA: 9+65.75 TO 34+76.35
NTS

ESTIMATED QUANTITIES

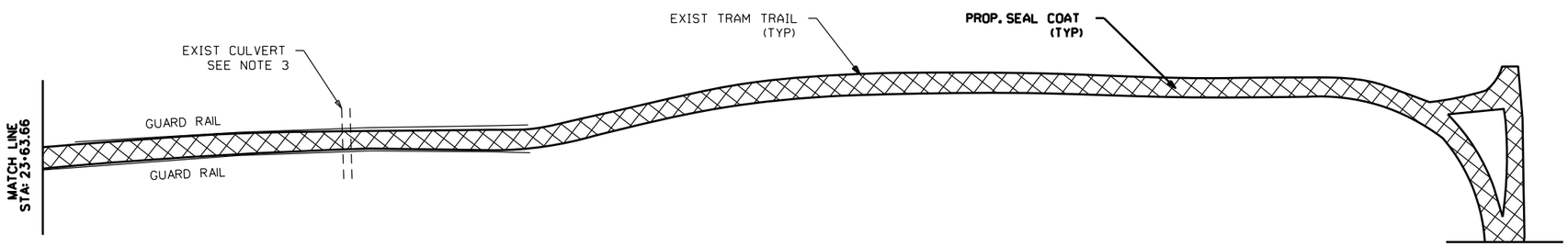
ITEM	316	316	310
CODE	6508	6462	6009
DESC.	ASPH SPG 79-13 (GAL)	AGGR (TY-PD) GR-4P) (SAC-B) (CY)	PRIME COAT (MC-30) (0.20 GAL/SY)
TOTAL	1,372	36	857.8

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO GENERAL NOTES, STANDARDS AND SPECIFICATIONS FOR ADDITIONAL SEAL COAT INFORMATION.
3. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS SHEETS FOR ADDITIONAL INFORMATION.

LEGEND

PROP. SEAL COAT



STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

07/14/2023

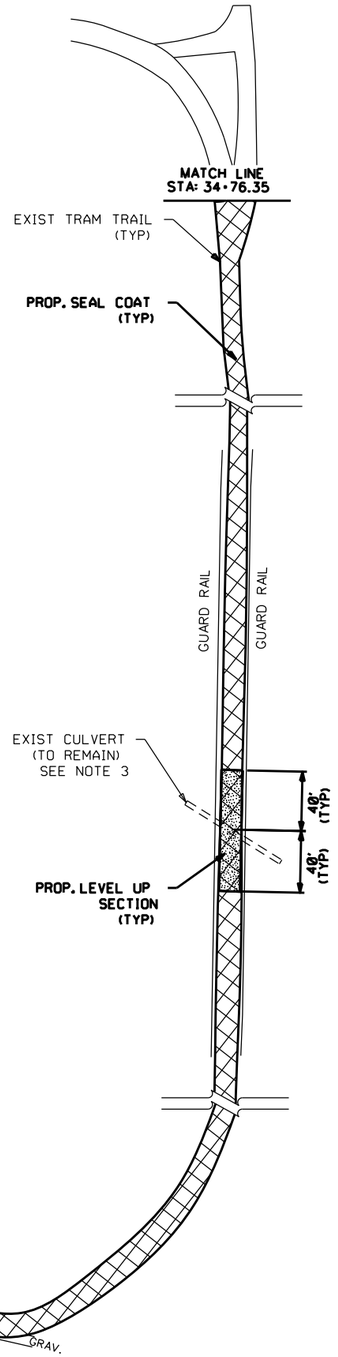
Agustin Ramirez, P.E

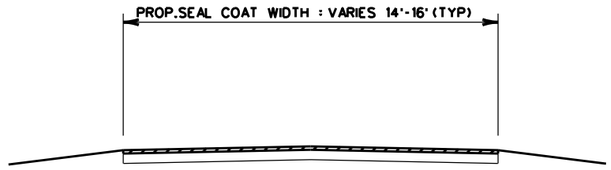
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

RESACA DE LA PALMA SEAL COAT TRAM TRAIL NORTH LOCATION 1

FEDERAL DIV.NO.	STATE PROJECT NO.						SHEET NO.
6							21
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HWY NO.	
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS	





TYPICAL SEAL COAT WIDTH DETAIL

TRAM TRAIL EAST
STA: 34+76.35 TO 90+60.58
NTS

ESTIMATED QUANTITIES

ITEM	310	316	316	3076
CODE	6009	6508	6462	6051
DESC.	PRIME COAT (MC-30) (0.20 GAL/SY)	ASPH (SPG 79-13) (GAL)	AGGR (TY-PD GR-4P) (SAC-B) (CY)	D-GR HMA TY-D PG76-22 (LEVEL UP) (TON)
TOTAL	1807	2,891	75	7

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO GENERAL NOTES, STANDARDS AND SPECIFICATIONS FOR ADDITIONAL SEAL COAT AND LEVEL UP INFORMATION.
3. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS SHEETS FOR ADDITIONAL INFORMATION.

LEGEND

PROP. SEAL COAT

PROP. LEVEL UP

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

07/14/2023

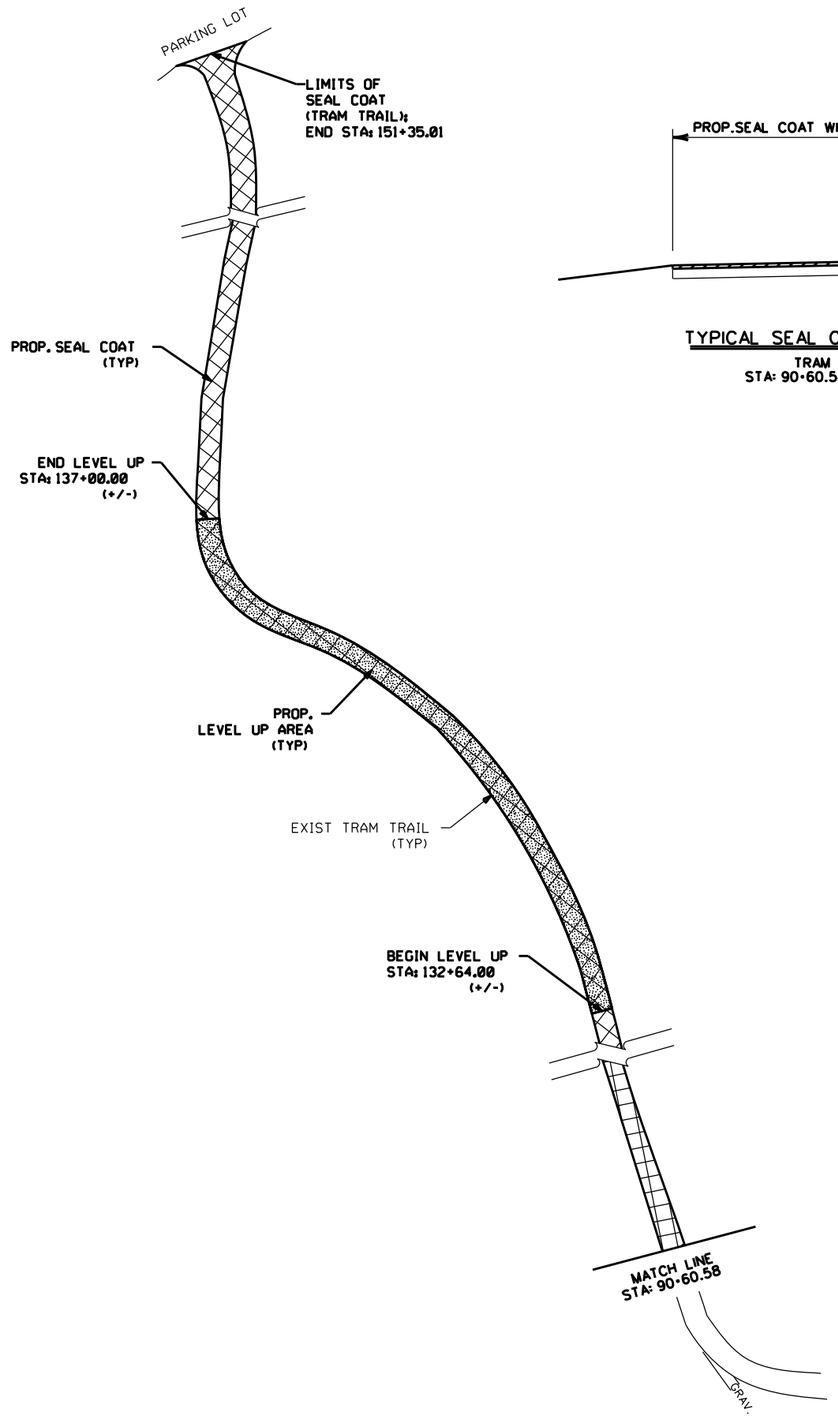
Agustin Ramirez, P.E.

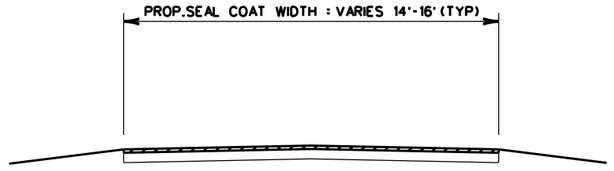
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

RESACA DE LA PALMA
SEAL COAT
TRAM TRAIL EAST
LOCATION 1

FEDERAL DIV. NO.	STATE PROJECT NO.					SHEET NO.
6						22
STATE	STATE DIST. NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS





TYPICAL SEAL COAT WIDTH DETAIL

TRAM TRAIL WEST
STA: 90+60.58 TO 151+35.01
NTS

ESTIMATED QUANTITIES

ITEM	310	316	316	3076
CODE	6009	6508	6462	3051
DESC.	PRIME COAT (MC-30) (0.20 GAL/SY)	ASPH (SPG 79-13) (GAL)	AGGR (TY-PD GR-4P) (SAC-B) (CY)	D-GR HMA TY-D PG76-22 (LEVEL UP) (TON)
TOTAL	1993	3,189	83	40

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO GENERAL NOTES, STANDARDS AND SPECIFICATIONS FOR ADDITIONAL SEAL COAT AND LEVEL UP INFORMATION.

LEGEND

PROP. SEAL COAT

PROP. LEVEL UP

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

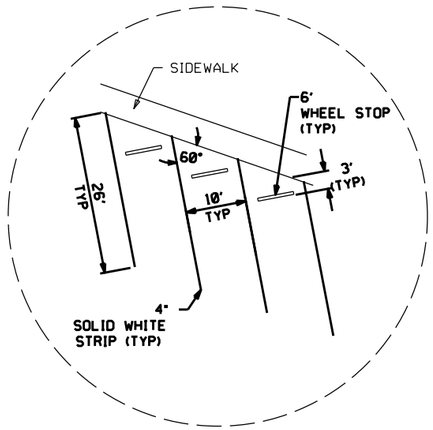
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

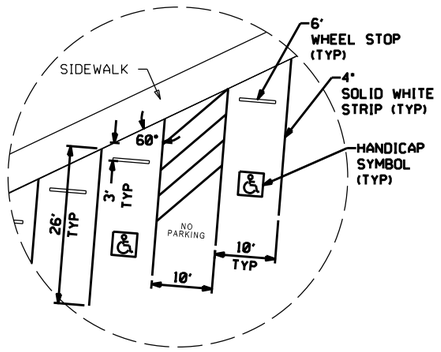
RESACA DE LA PALMA SEAL COAT TRAM TRAIL WEST LOCATION 1

4 OF 4

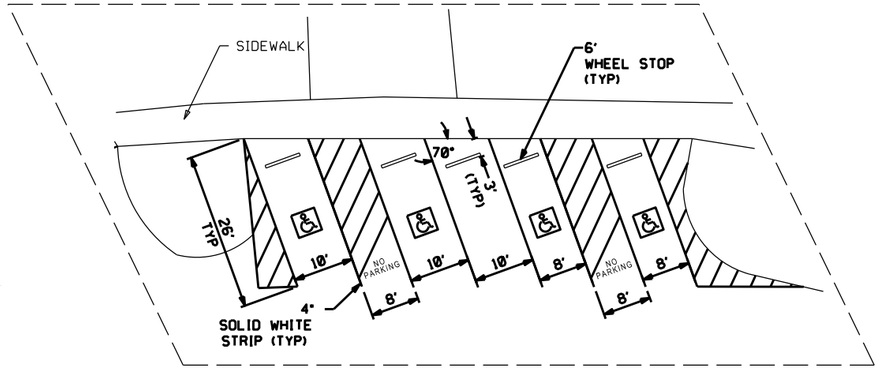
FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						23
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIS NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS



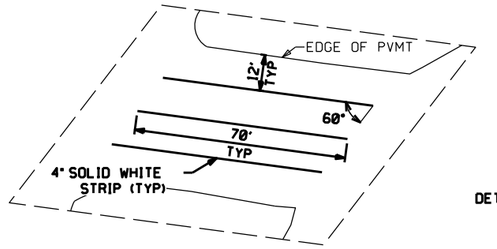
DETL D



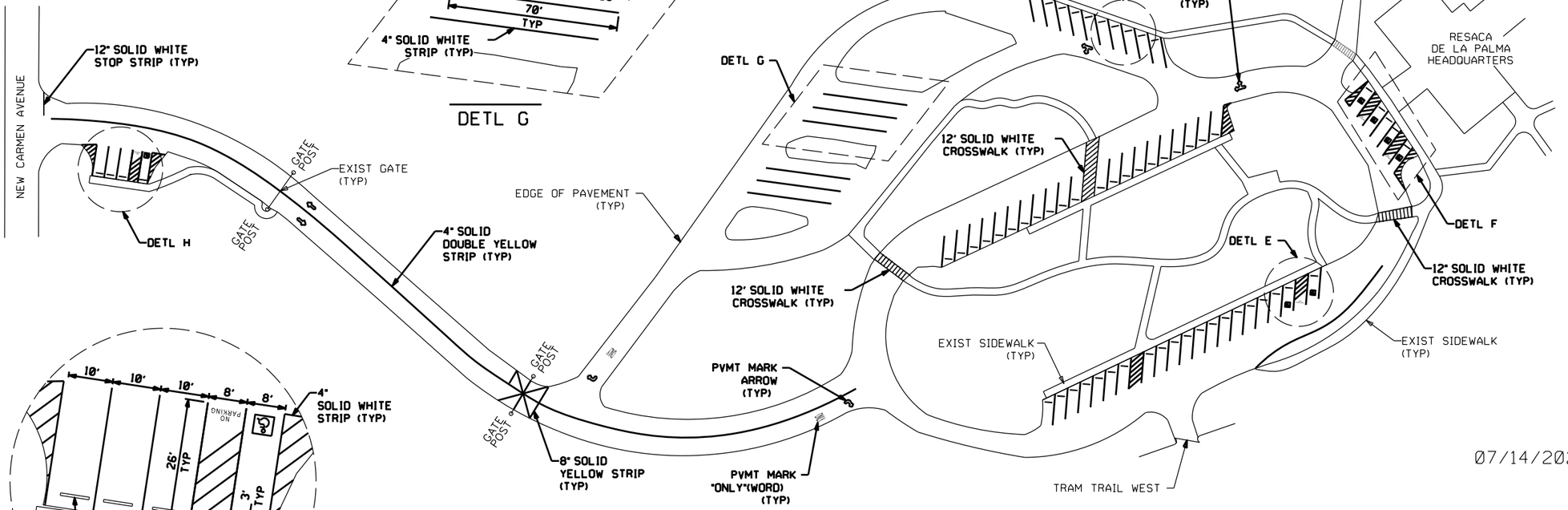
DETL E

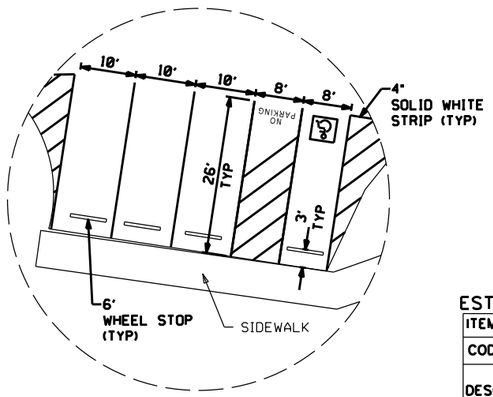


DETL F



DETL G





DETL H

GENERAL NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO TPWD FOR ADDITIONAL PARKING LOT STANARDS AND DETAILS.
3. SEE STANDARD DETAILS FOR ADDITIONAL PAVEMENT MARKING INFORMATION.
4. CONTRACTOR TO DOCUMENT GENERAL PARKING LOT CONFIGURATION AND ROADWAY PAVEMENT MARKINGS: TO BE RE-STRIPED TO EXISTING UNLESS OTHERWISE SHOWN ON PLANS.
5. BID ITEM 644 6027 WILL BE R7-8T SIGN AS PER THE TMUTCD.

ESTIMATED QUANTITIES

ITEM	644	666	666	666	666	668	668	668	668	5160	5163
CODE	6027	6042	6138	6303	6315	6077	6078	6085	6113	6001	6001
DESC.	IN SM RD SN SUP&AM TYS80(1)SA(P) (EA)	REFL PAV MRK TY I(W)12" (SLD)(100MIL) (LF)	REFL PAV MRK TY I(Y)8" (SLD)(100MIL) (LF)	RE PM W/RET REQ TY I(W)4" (SLD)(100MIL) (LF)	RE PM W/RET REQ TY I(Y)4" (SLD)(100MIL) (LF)	PRFAB PAV MRK TY C (W)(ARROW) (EA)	PRFAB PAV MRK TY C (W) (DBL ARROW) (EA)	PRFAB PAV MRK TY C (W)(WORD) (EA)	PRE PM TY C (ACC PRK)(BL&WH) (W/BORDR)LG (EA)	FRNISH INSTL PRECAST CONC WHEEL STOPS (EA)	MOVE AND RESET PRECAST CONC WHEEL STOP (EA)
TOTAL	1	542	155	3,003	1,502	4	2	10	7	1	60

• REFERENCE NOTE 5 FOR BID ITEM 644 6027

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

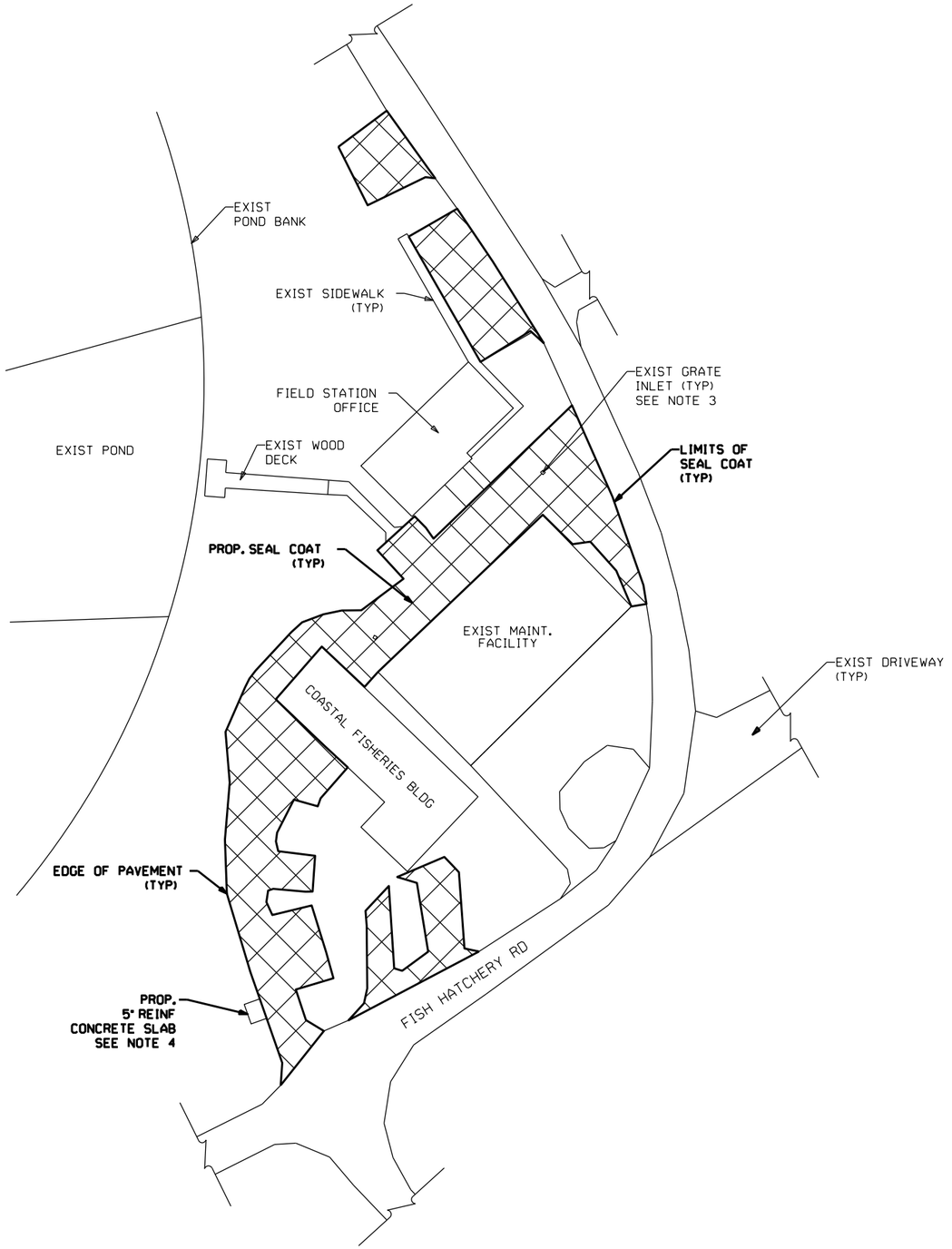
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

RESACA DE LA PALMA PARKING LOT PROP. PAVEMENT MARKINGS LOCATION 1

1 OF 1

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						24
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIS NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS



ESTIMATED QUANTITIES

ITEM	310	316	316	432
CODE	6009	6508	6462	6002
DESC.	PRIME COAT (MC-30) (0.02 GAL/SY)	ASPH (SPG 79-13) (GAL)	AGGR (TY-PD GR-4P) (SAC-B) (CY)	RIPRAP (CONC) (5 IN) (CY)
TOTAL	399	639	17	1.2

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO GENERAL NOTES, STANDARDS AND SPECIFICATIONS FOR ADDITIONAL SEAL COAT INFORMATION.
3. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS GENERAL NOTES FOR ADDITIONAL INFORMATION.
4. GENERAL LOCATION SHOWN FOR 10' X 8' REINFORCED CONCRETE SLAB FOR GARBAGE DUMPSTER. FINAL LOCATION TO BE DETERMINED ON FIELD BY TPWD PERSONNEL. CONCRETE SLAB TO BE PAID AS PER ITEM 432-6002 (RIPRAP).

LEGEND

PROP. SEAL COAT

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

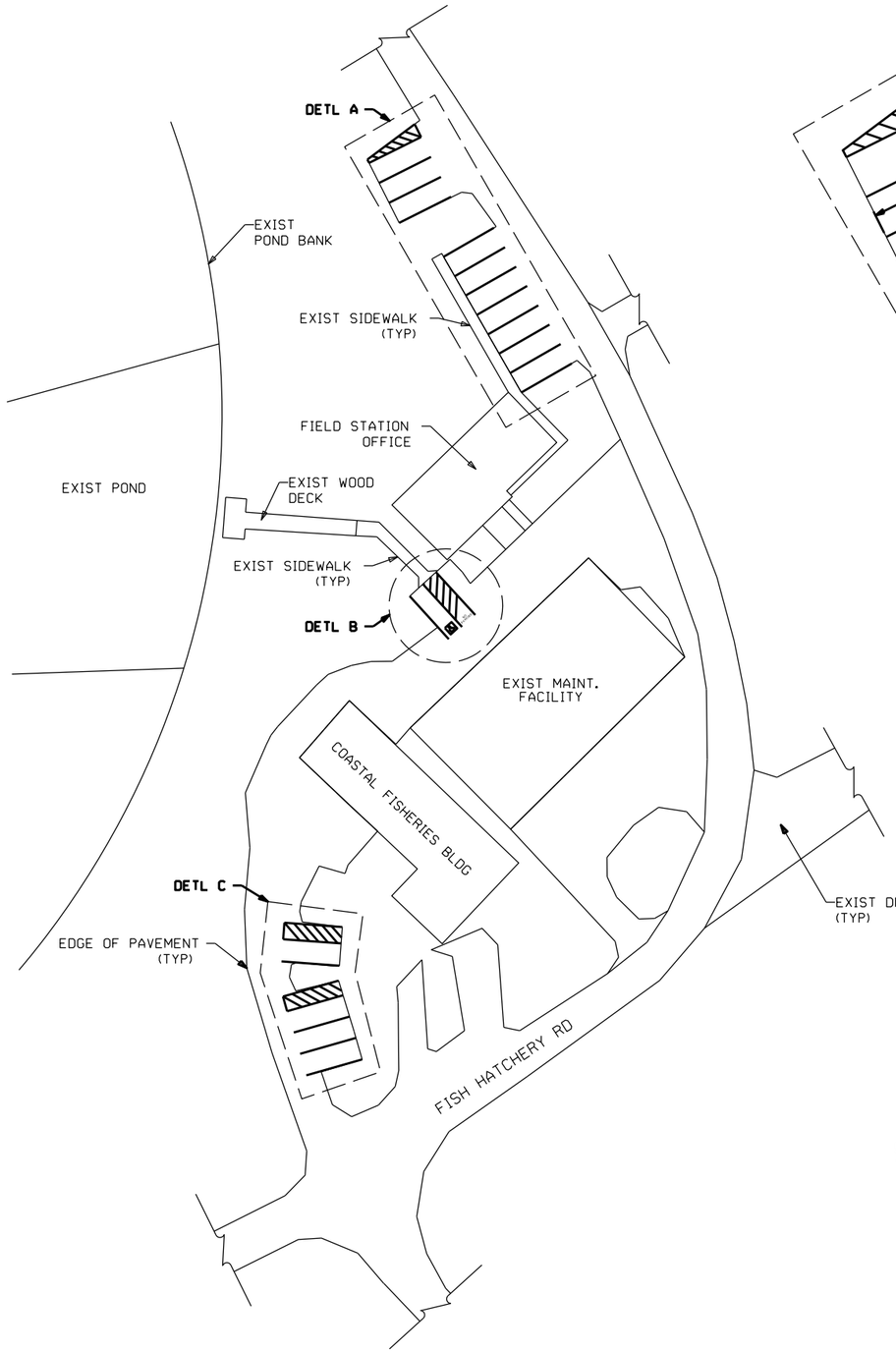
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

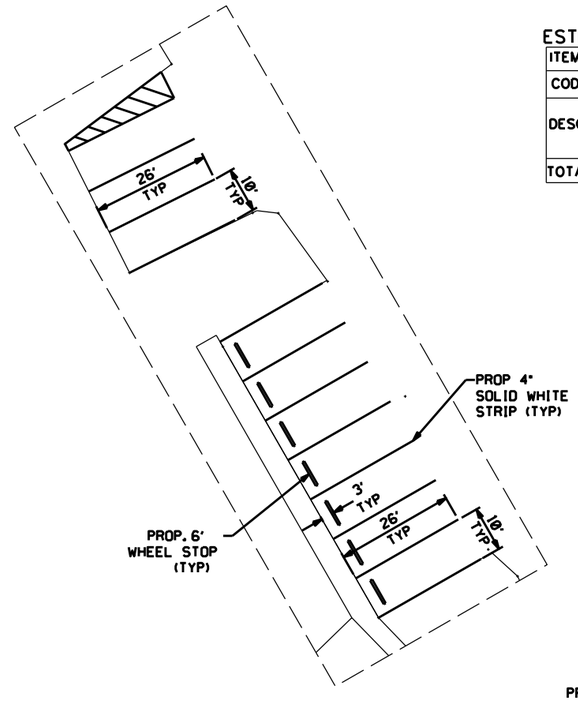
COASTAL FIELD STATION SEAL COAT PARKING AREA LOCATION 2

1 OF 1

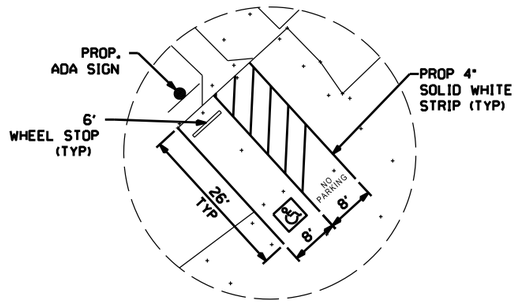
FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						25
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HW NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS



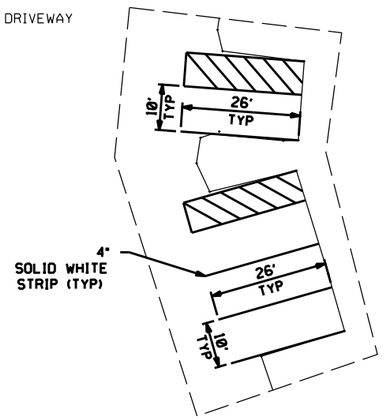
TPWD DIVISION COASTAL FISHERIES FIELD STATION



DETL A



DETL B



DETL C

ESTIMATED QUANTITIES

ITEM	644	666	668	668	5160	5163
CODE	6027	6303	6085	6113	6001	6001
DESC.	IN SM RD SN SUP&AM TYS80 (1) SA(P) (EA)	RE PM W/RET REQ TY I(W) 4"(SLD)(100MIL) (LF)	PREFAB PAV MRK TY C (W) (WORD) (EA)	PRE PM TY C(ACC PRK)(BL&WH) (W/BORDR)LG (EA)	FRNISH INSTL PRECAST CONC WHEEL STOPS (EA)	MOVE AND RESET PRECAST CONC WHEEL STOP (EA)
TOTAL	1	846	2	1	7	1

* REFER TO NOTE 5 FOR BID ITEM 644 6027

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO TPWD FOR ADDITIONAL PARKING LOT STANDARDS AND DETAILS.
3. SEE STANDARDS DETAILS FOR ADDITIONAL PARKING LOT INFORMATION.
4. CONTRACTOR TO DOCUMENT GENERAL PARKING LOT CONFIGURATION: TO BE RE-STRIPED TO EXISTING UNLESS OTHERWISE SHOWN ON PLANS.
5. BID ITEM 644 6027 WILL BE R7-8T SIGN AS PER THE TMUTCD.

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

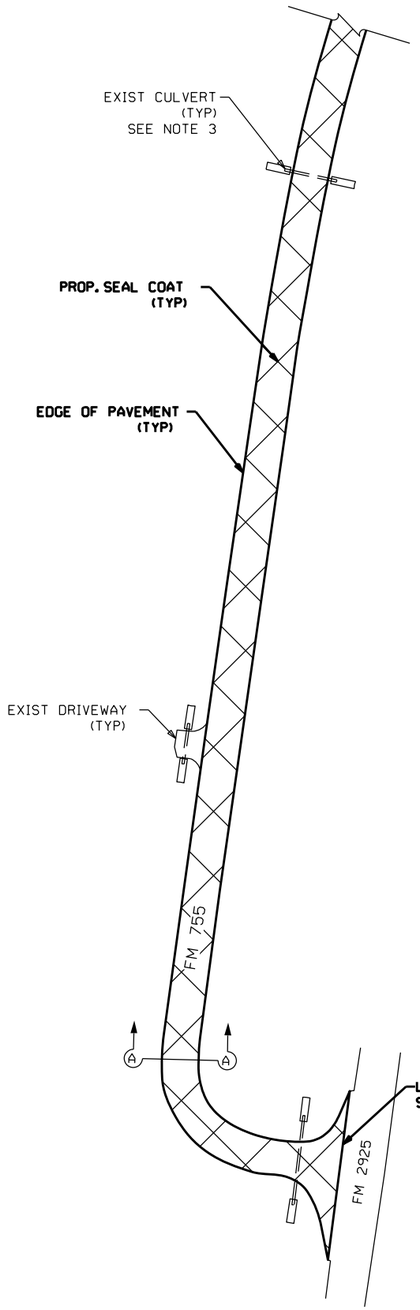
SCALE: NOT TO SCALE

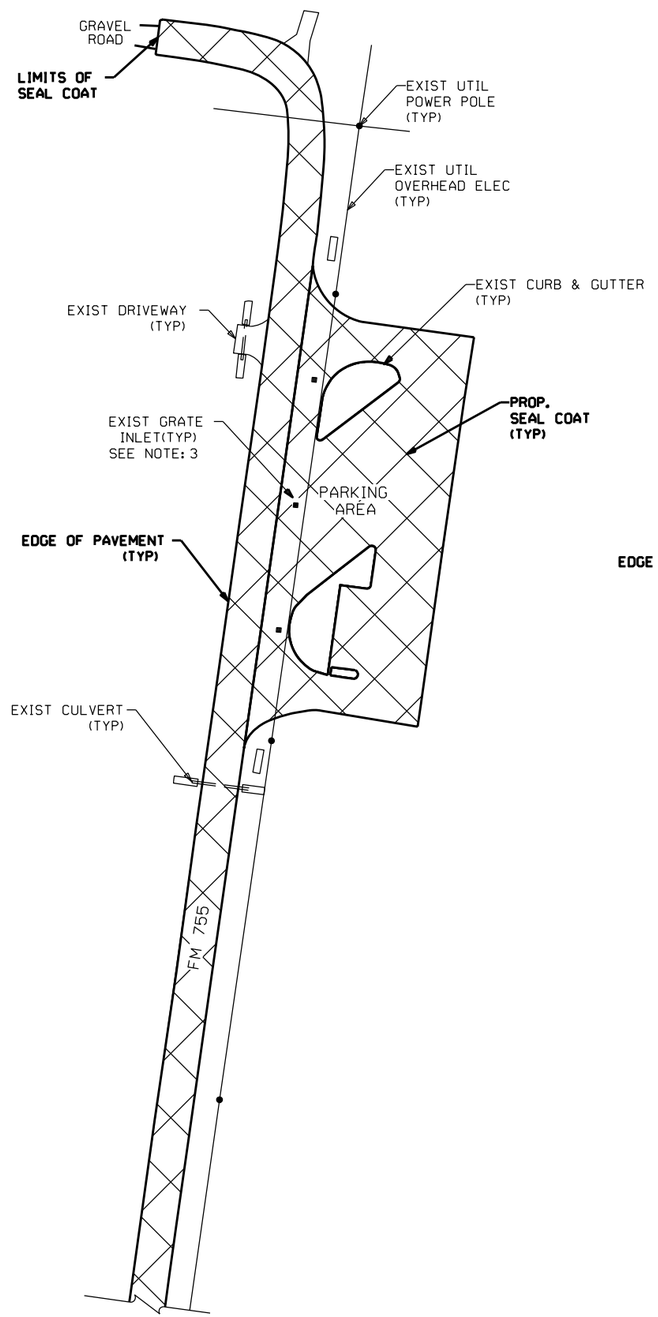
TEXAS DEPARTMENT OF TRANSPORTATION

COASTAL FIELD STATION PAVEMENT MARKINGS PARKING AREA LOCATION 2

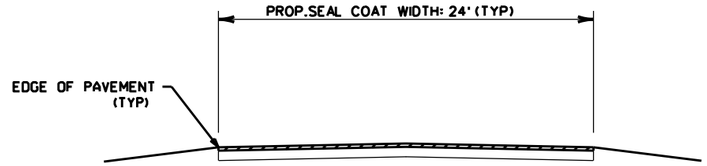
1 OF 1

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						26
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HW NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS





FM 755 & PARKING AREA



TYPICAL SEAL COAT WIDTH DETAIL A-A

LOCATION: FM 755

NTS

ESTIMATED QUANTITIES

ITEM	316	316	310
CODE	6508	6462	6009
DESC.	ASPH (SPG 79-13) (GAL)	AGGR (TY-PD GR-4P) (SAC-B) (CY)	PRIME COAT (MC-30) (0.20 GAL/SY)
TOTAL	3,114	81	1946

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO GENERAL NOTES, STANDARDS AND SPECIFICATIONS FOR ADDITIONAL SEAL COAT INFORMATION.
3. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS GENERAL NOTES FOR ADDITIONAL INFORMATION.

LEGEND

PROP. SEAL COAT

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

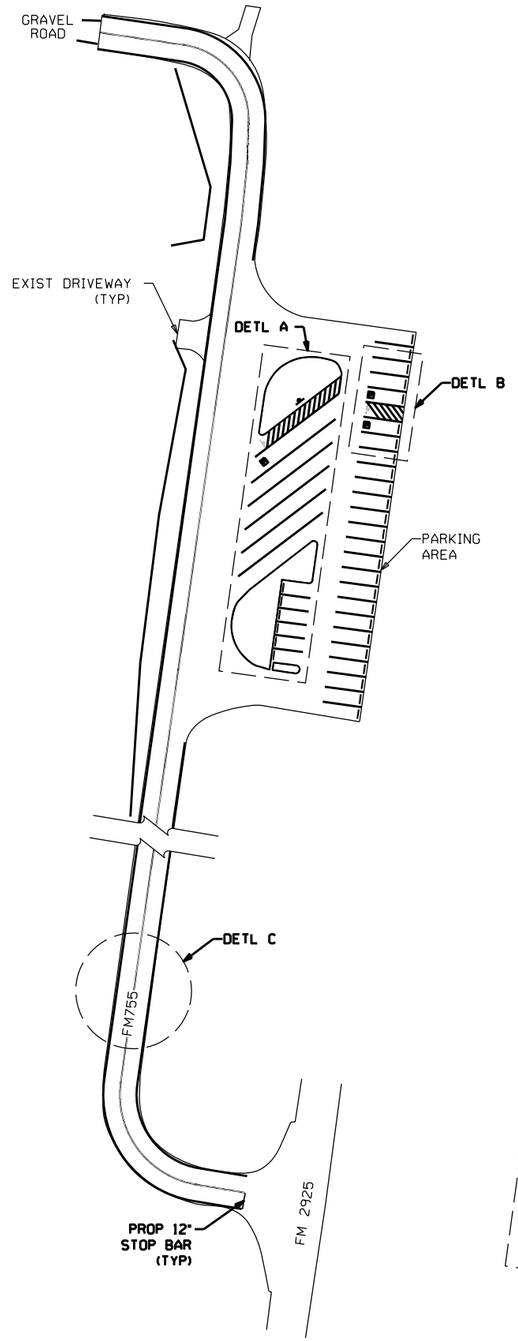
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

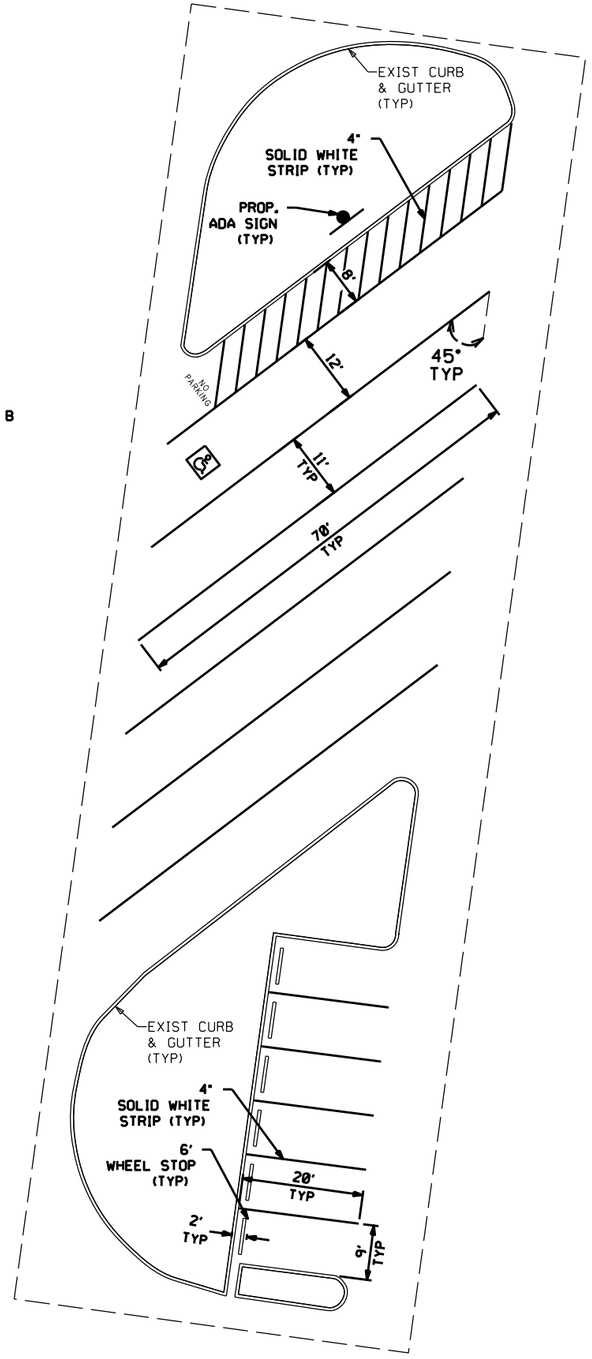
LAS PALOMAS WMA
ARROYO COLORADO UNIT
SEAL COAT: FM755 &
PARKING AREA
LOCATION 3

1 OF 1

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						27
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HW NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS



FM 755 & PARKING AREA



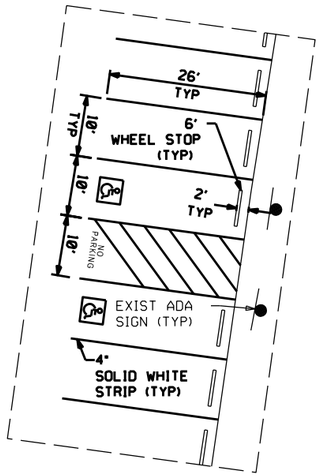
DETL A

ESTIMATED QUANTITIES

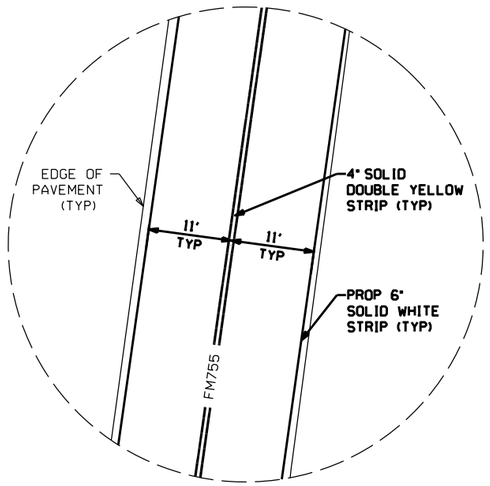
ITEM	666	666	666	666	668	668	5160	5163
CODE	6042	6303	6309	6315	6085	6113	6001	6001
DESC.	REFL PAV MRK TY I(W)12" (SLD)(100MIL) (LF)	RE PM W/RET REQ TY I(W) 4"(SLD)(100MIL) (LF)	RE PM W/RET REQ TY I(W) 6"(SLD)(100MIL) (LF)	RE PM W/RET REQ TY I(Y) 4"(SLD)(100MIL) (LF)	PREFAB PAV MRK TY C (W) (WORD) (EA)	PRE PM TY C(ACC PRK) (BL&WH)(W/BORDR)LG (EA)	FRNISH INSTL PRECAST CONC WHEEL STOPS (EA)	MOVE RESET PRECAST CONC WHEEL STOPS (EA)
TOTAL	11	1412	4,722	5,044	4	3	1	30

• REFER TO NOTE 5 FOR BID ITEM 644 6027

ITEM	644
CODE	6027
DESC.	IN SM RD SN SUP&AM TYS80 (1) SA(P) (EA)
TOTAL	1



DETL B



DETL C: FM 755 TYP SECTION

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO TPWD FOR ADDITIONAL PARKING LOT STANDARDS AND DETAILS.
3. SEE STANDARDS DETAILS FOR ADDITIONAL PAVEMENT MARKING INFORMATION.
4. CONTRACTOR TO DOCUMENT GENERAL PARKING LOT CONFIGURATION: TO BE RE -STRIPED TO EXISTING UNLESS OTHERWISE SHOWN ON PLANS.
5. BID ITEM 644 6027 WILL BE R7-8T SIGN AS PER THE TMUTCD.

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

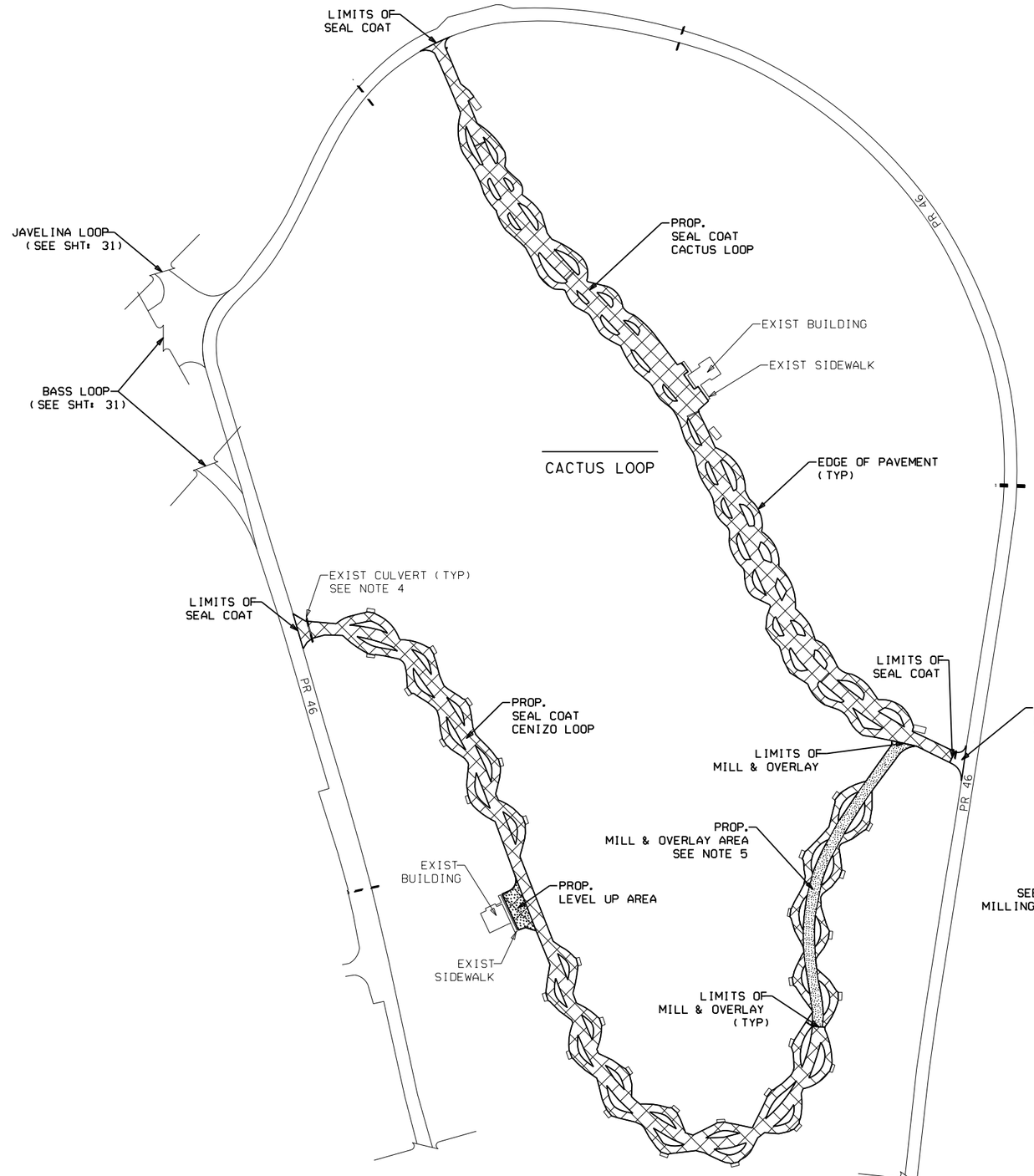
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

LAS PALOMAS WMA
ARROYO COLORADO UNIT
PAVEMENT MARKINGS
LOCATION 3

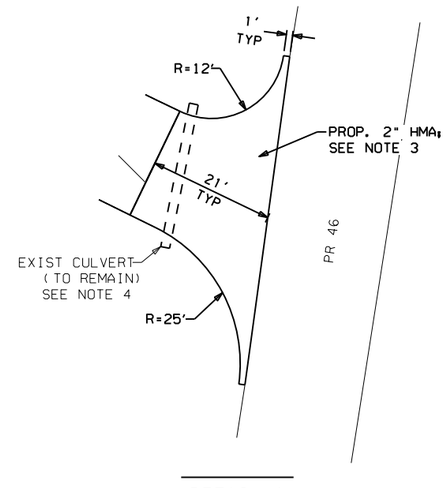
1 OF 1

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						28
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS



ESTIMATED QUANTITIES

ITEM	251	310	316	316	354	354	3076	3076
CODE	6079	6009	6508	6224	6041	6051	6049	6051
DESC.	REWRK BS MTL (TY D) (SURF) (ORD COMP) (SY)	PRIME COAT (MC-30) (0.20GAL/SY) (GAL)	ASPH (SPG 79-13) (GAL)	AGGR (TY-PB GR-4P) (SAC-B) (CY)	PLANE ASPH CONC PAV (1.5") (SY)	PLANE ASPH CONC PAV (0" TO 1 1/2") (SY)	D-GR HMA(SQ) TY-D SAC-A PG76-22 (114LBS/SY/IN) (2IN) (TON)	D-GR HMA TY-D PG76-22 (LEVEL UP) (TON)
TOTAL	61	12	4,682	122	654	308	6	12



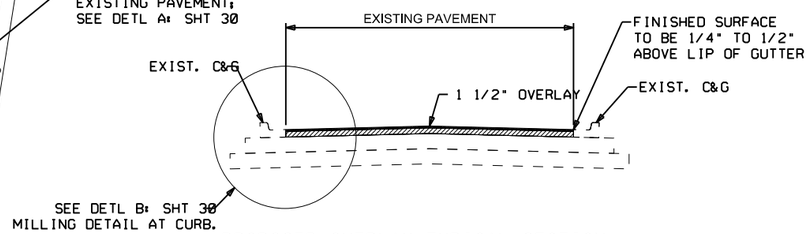
DETAIL A

NOTES:

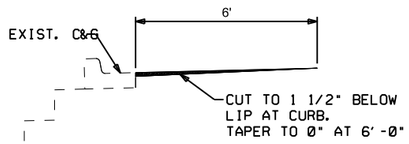
1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO GENERAL NOTES, STANDARDS AND SPECIFICATIONS FOR ADDITIONAL SEAL COAT AND LEVEL UP INFORMATION.
3. EXISTING ASPHALT TO BE REWORKED INTO EXISTING FLEX BASE IN ACCORDANCE WITH ITEM 251. FLEX BASE WORK TO BE AS PER ITEM 251-6079. SEE DETAIL A: SHT 30.
4. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS GENERAL NOTES FOR ADDITIONAL INFORMATION.
5. PROPOSED MILL & OVERLAY WORK ON CENIZO LOOP TO BE DONE ON ROADWAY ONLY (SEE DETAIL B: SHT 30). CAMPING ENTRANCES AND PARKING AREAS TO BE SEAL COATED AS SHOWN.

LEGEND

- PROP. MILL AND OVERLAY
- PROP. SEAL COAT
- PROP. LEVEL UP



PROPOSED OVERLAY TYPICAL SECTION



MILLING DETAIL AT CURB

DETAIL B

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

06/16/2023

Agustin Ramirez, P.E.

SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

FALCON STATE PARK SEAL COAT CACTUS & CENIZO LOOP LOCATION 4

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						29
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIB NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS

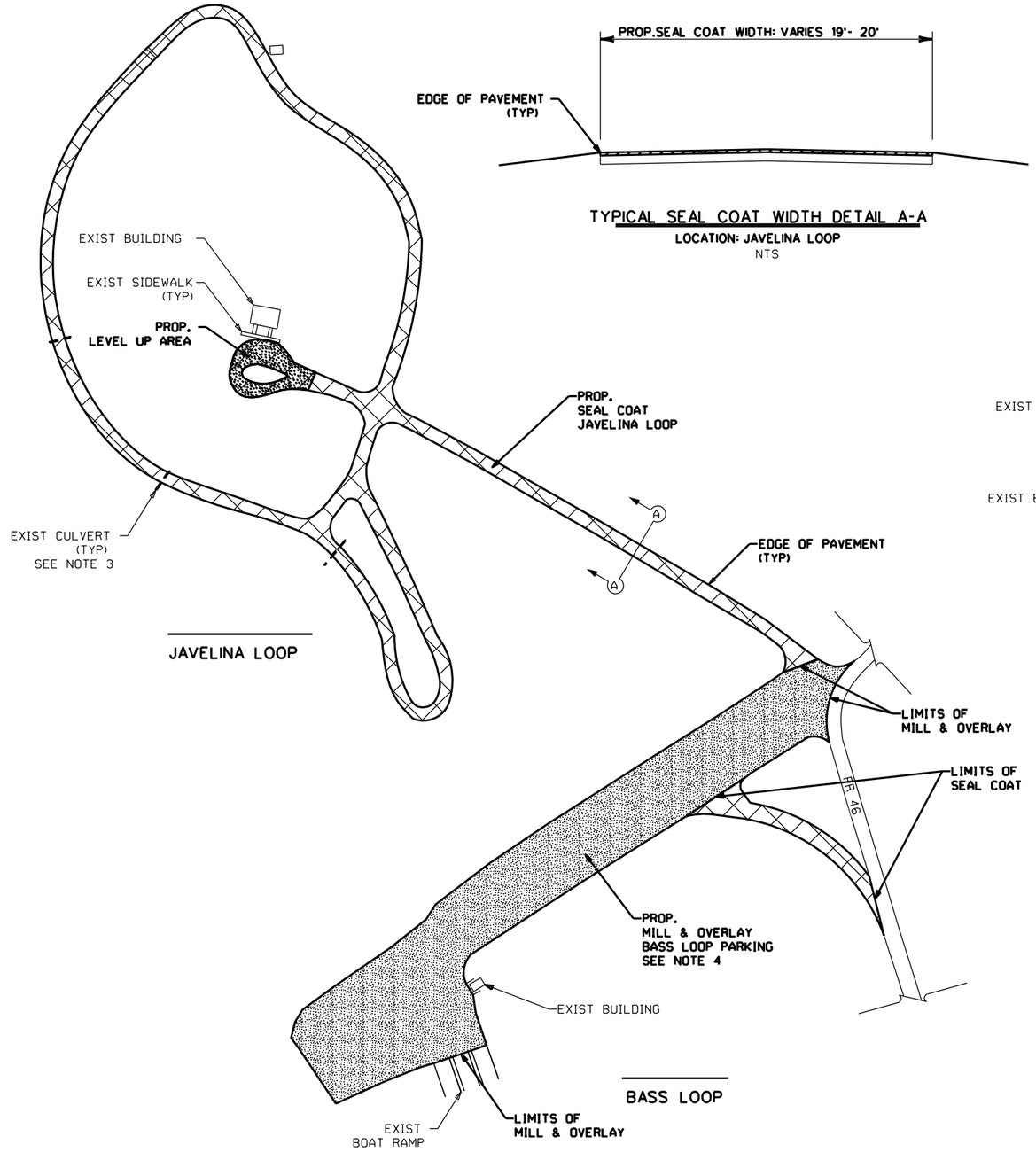
ESTIMATED QUANTITIES

ITEM	316	316	354	3076
CODE	6508	6224	6041	6051
DESC.	ASPH SPG 79-13 (GAL)	AGGR TY-PB GR-4 SAC-B (CY)	PLANE ASPH CONC PAV (1 1/2") (SY)	D-GR HMA TY-D PG76-22 LEVEL UP (TON)
TOTAL	7,825	204	12572	39

TYPICAL SEAL COAT WIDTH DETAIL A-A

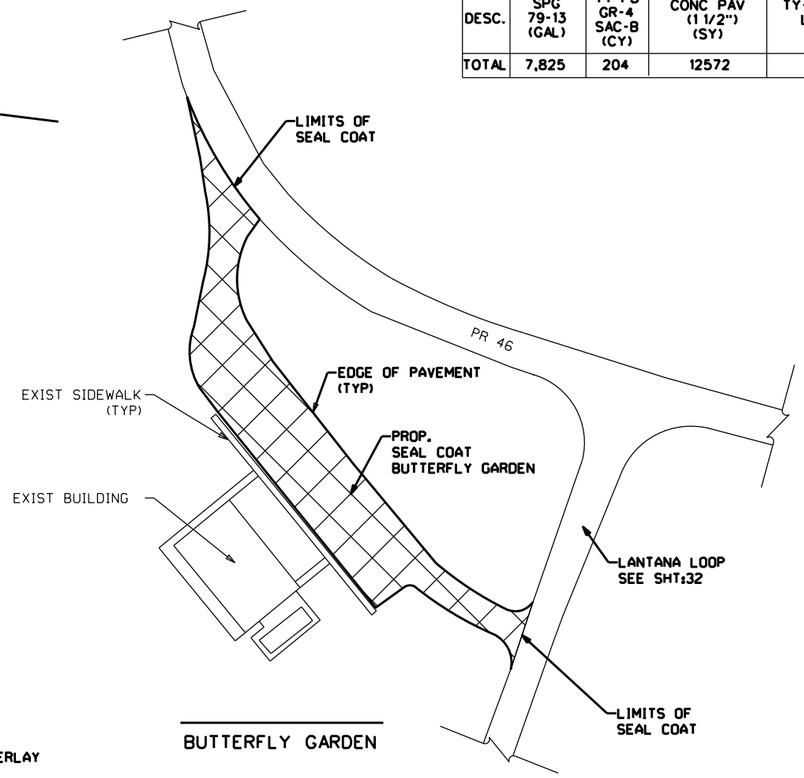
LOCATION: JAVELINA LOOP

NTS



JAVELINA LOOP

BASS LOOP



BUTTERFLY GARDEN

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO GENERAL NOTES STANDARDS AND SPECIFICATIONS FOR ADDITIONAL SEAL COAT AND LEVEL UP INFORMATION.
3. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS SHEETS FOR ADDITIONAL INFORMATION.
4. PROPOSED MILL & OVERLAY ON BASS LOOP PARKING AREA ONLY SEE DETAIL B: SHT 30. SOUTH EXIT TO BE SEAL COATED AS SHOWN.

PROP. MILL AND OVERLAY

PROP. SEAL COAT

PROP. LEVEL UP

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

06/16/2023

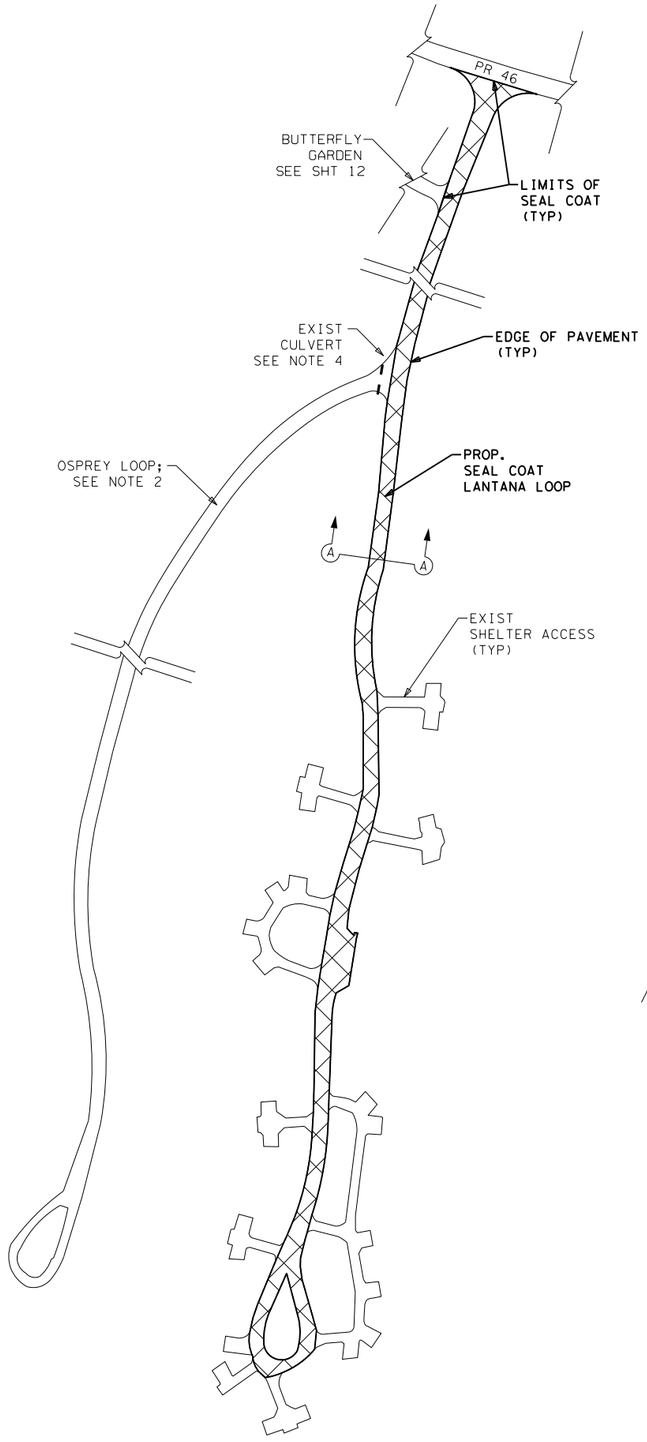
Agustin Ramirez, P.E.

SCALE: NOT TO SCALE

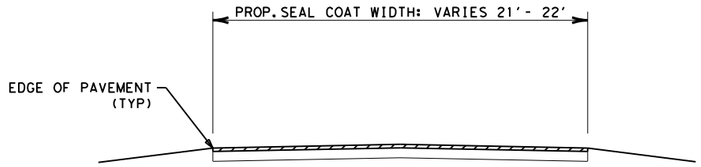
TEXAS DEPARTMENT OF TRANSPORTATION

FALCON STATE PARK
SEAL COAT
JAVELINA LOOP, BASS LOOP & BUTTERFLY GARDEN
LOCATION 4

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						30
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIW NO.
TX	21	CAMERON,Etc.	0921	06	269,Etc.	VARIOUS

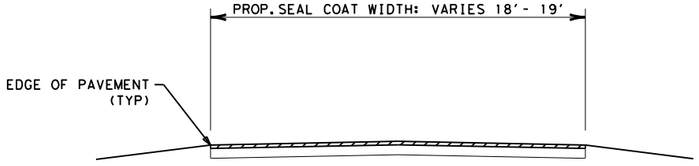


LANTANA LOOP



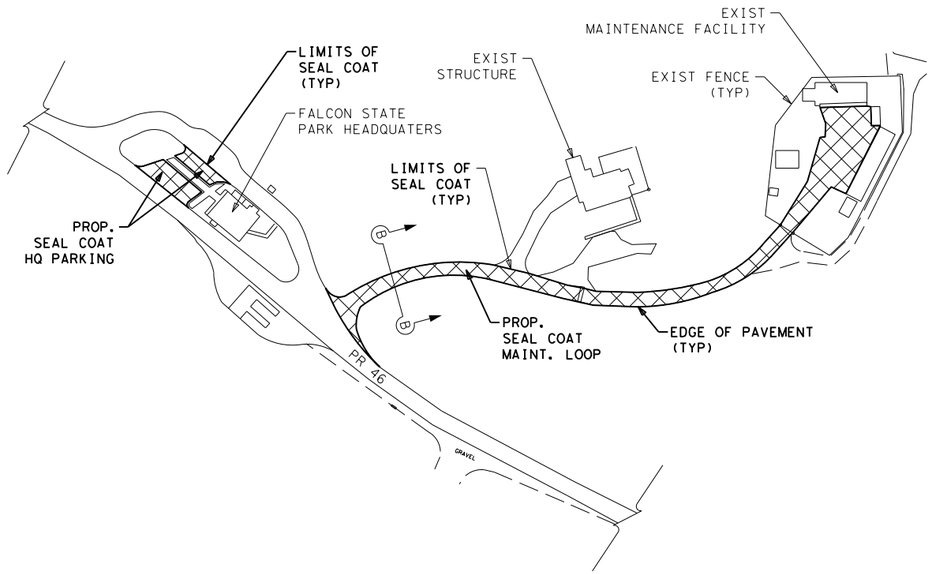
TYPICAL SEAL COAT WIDTH DETAIL A-A

LOCATION: LANTANA LOOP



TYPICAL SEAL COAT WIDTH DETAIL B-B

LOCATION: MAINTENANCE LOOP



HQ PARKING & MAINTENANCE LOOP

ESTIMATED QUANTITIES

ITEM	316	316
CODE	6508	6224
DESC.	ASPH (SPG 79-13) (GAL)	AGGR (TY-PB GR-4) (SAC-B) (CY)
TOTAL	3,225	84

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. OSPREY LOOP NOT INCLUDED IN THIS CONTRACT.
3. REFER TO GENERAL NOTES, STANDARDS AND SPECIFICATIONS FOR ADDITIONAL SEAL COAT INFORMATION.
4. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS GENERAL NOTES FOR ADDITIONAL INFORMATION.

LEGEND

PROP. SEAL COAT

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

06/16/2023

Agustin Ramirez, P.E.

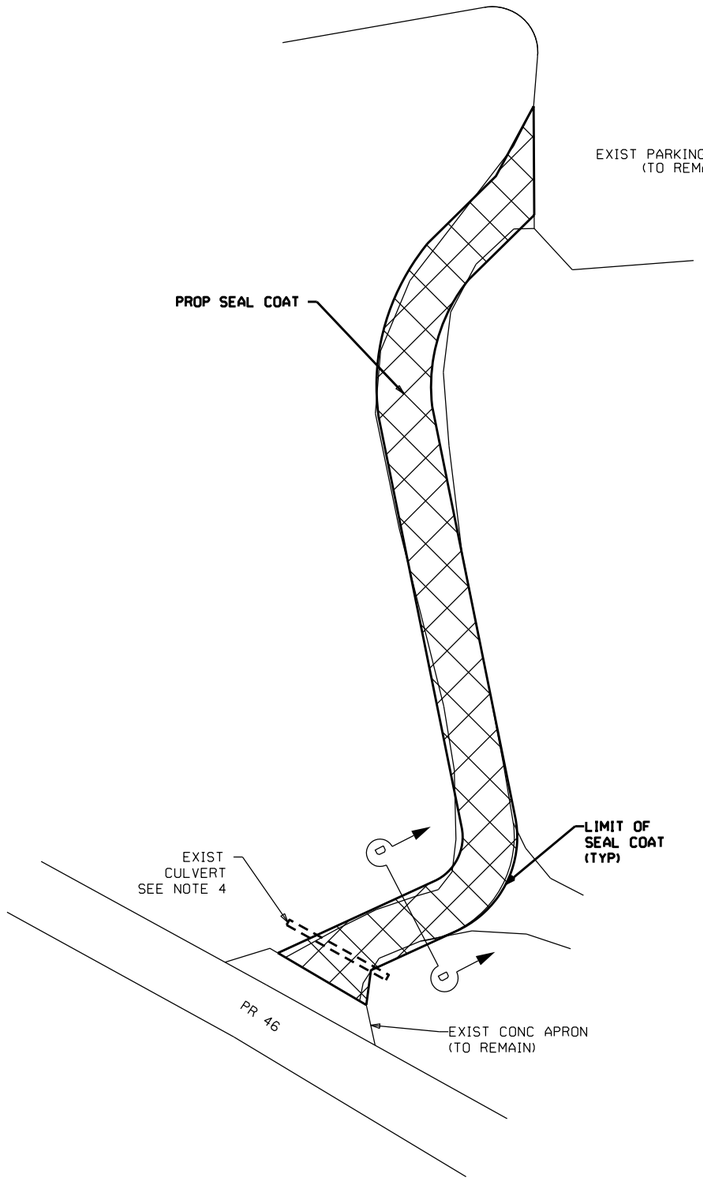
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

FALCON STATE PARK SEAL COAT LANTANA, MAINTENANCE LOOP & HQ PARKING LOCATION 4

3 OF 3

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						31
STATE	STATE DIST. NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS



ESTIMATED QUANTITIES

ITEM	105	275	316	316
CODE	6008	6003	6508	6224
DESC.	REMOV STAB BASE&PAV (6") (SY)	CEMENT TREAT (NEW BASE) (6") (SY)	ASPH (SPG 79-13) (GAL)	AGGR (TY-PB GR-4) (SAC-B) (CY)
TOTAL	733	733	211	6

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REMOVE EXISTING ASPHALT AND BASE MATERIAL AS PER ITEM 105-6008. CEMENT TREAT (NEW BASE) AS PER ITEM 275-6003. ROADWAY TO FOLLOW EXISTING HORIZONTAL AND VERTICAL ALIGNMENT.
3. REFER TO GENERAL NOTES, STANDARDS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
4. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS GENERAL NOTES FOR ADDITIONAL INFORMATION.

LEGEND

PROP. SEAL COAT

TYPICAL ROADWAY DETAIL D-D

LOCATION: RESIDENCE LOOP
NTS

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

07/14/2023

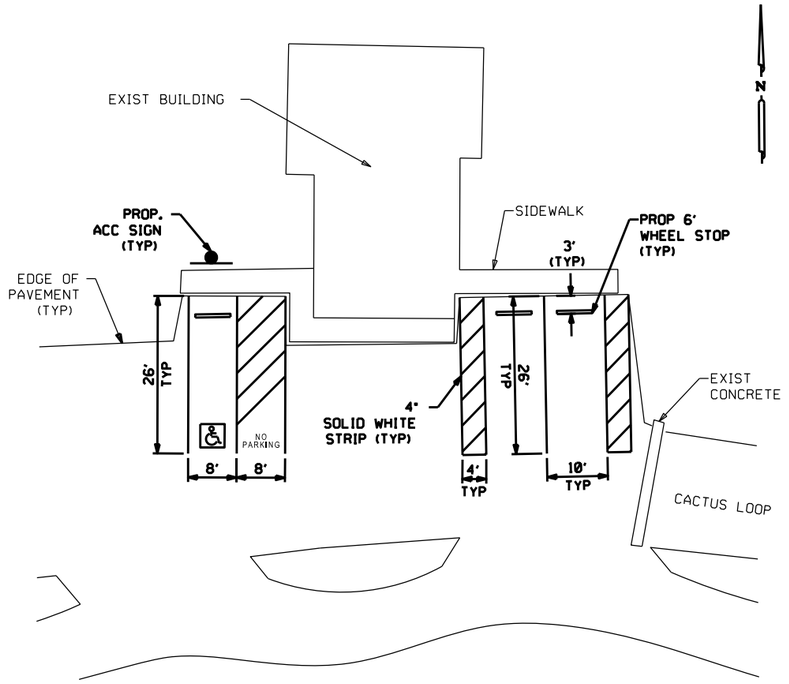
Agustin Ramirez, P.E.

SCALE: NOT TO SCALE

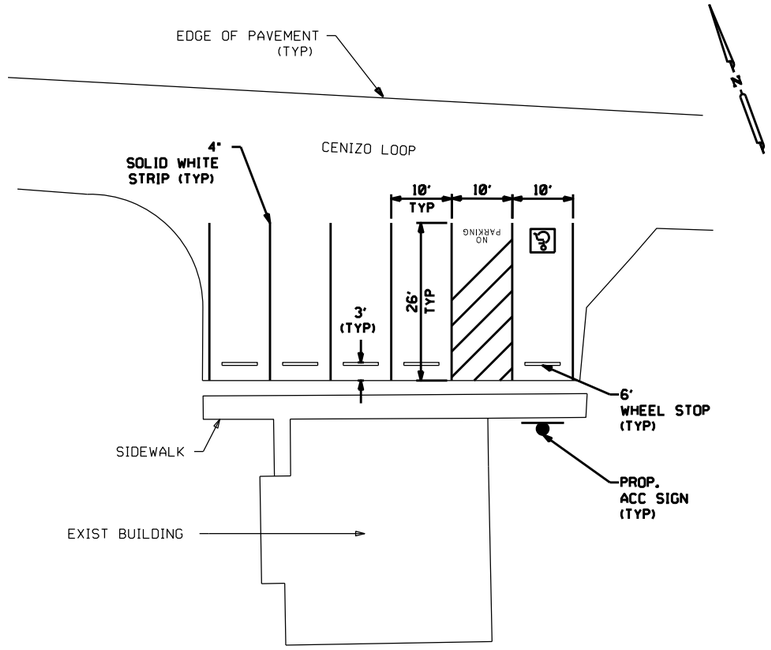
TEXAS DEPARTMENT OF TRANSPORTATION

FALCON STATE PARK
PROP ROADWAY
RESIDENCE LOOP
LOCATION 4

FEDERAL PROJ. NO.	STATE PROJECT NO.					SHEET NO.
6						32
STATE	STATE DIST. NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS



CACTUS LOOP PARKING LOT



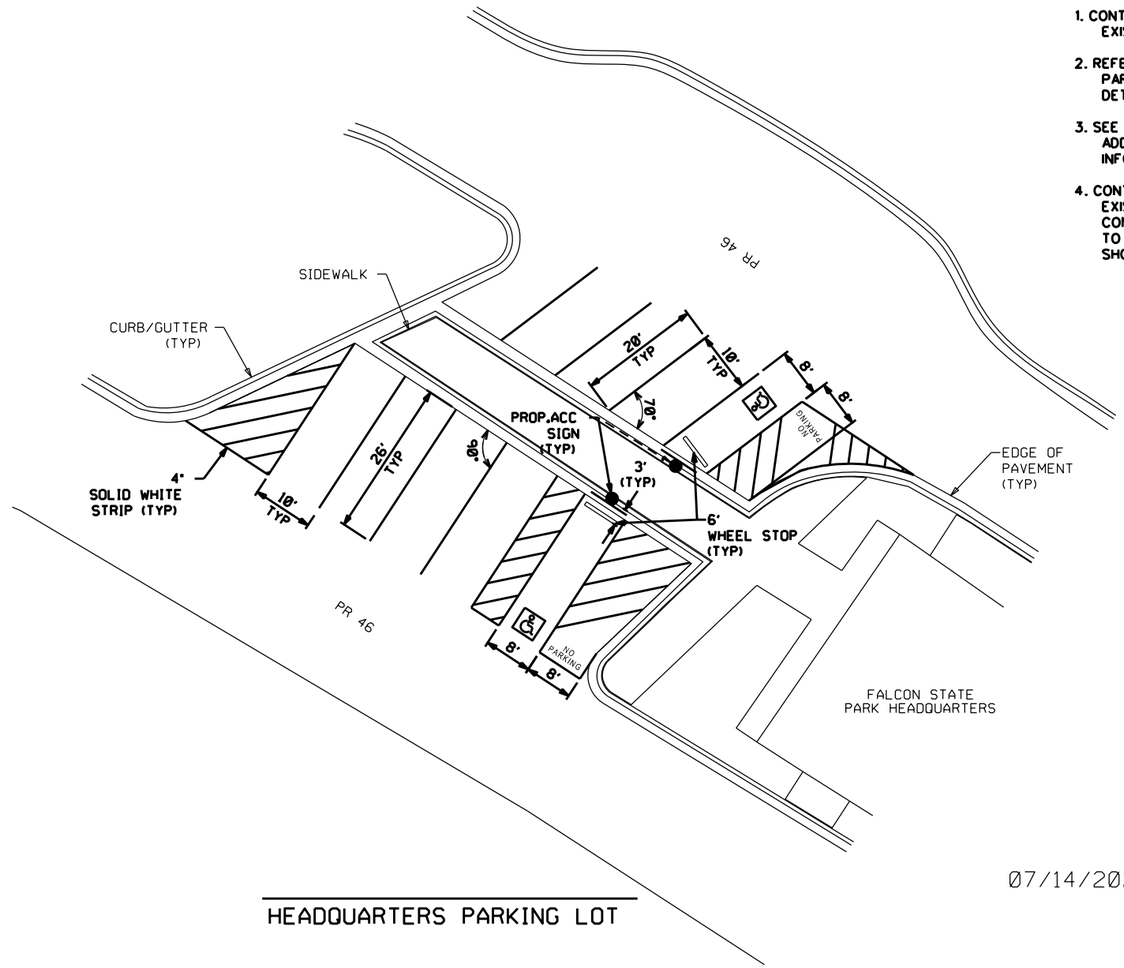
CENIZO LOOP PARKING LOT

ESTIMATED QUANTITIES

ITEM	644	666	668	668	5160	5163
CODE	6027	6303	6085	6113	6001	6001
DESC.	IN SM RD SN SUP&AM TYS80 (1) SA(P) (EA)	RE PM W/RET REQ TY I(W)4" (SLD)(100MIL) (EA)	PRFAB PAV MRK TY C (W)(WORD) (EA)	PRE PM TY C(ACC PRK) (BL&WH)(W/BORDR) (EA)	FRNISH INSTL PRECAST CONC WHEEL STOPS (EA)	MOVE AND RESET PRECAST CONC WHEEL STOP (EA)
TOTAL	4	1,182	8	4	3	7

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO TPWD FOR ADDITIONAL PARKING LOT STANDARDS AND DETAILS.
3. SEE STANDARDS DETAILS FOR ADDITIONAL PAVEMENT MARKING INFORMATION.
4. CONTRACTOR TO DOCUMENT GENERAL EXISTING PARKING LOT CONFIGURATION; TO BE RE -STRIPED TO EXISTING UNLESS OTHERWISE SHOWN ON PLANS.



HEADQUARTERS PARKING LOT

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

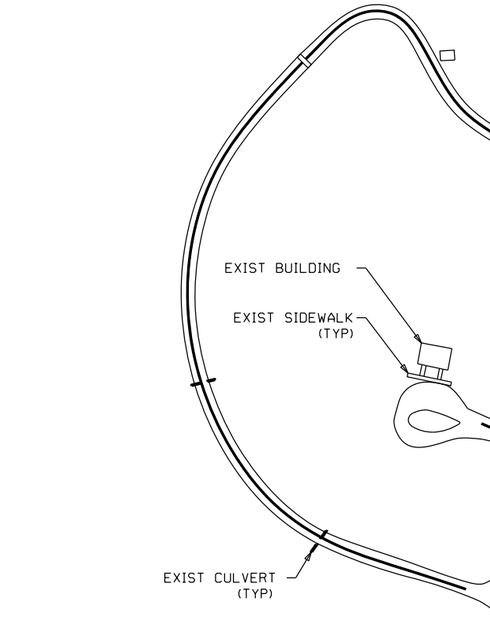
SCALE: NOT TO SCALE

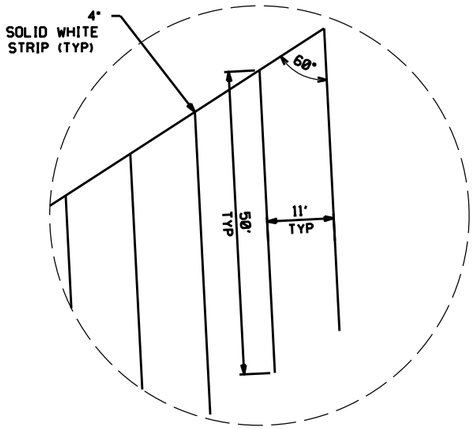
TEXAS DEPARTMENT OF TRANSPORTATION

FALCON STATE PARK
PVMT MARKING
CACTUS, CENIZO LOOP
& HQ PARKING
LOCATION 4

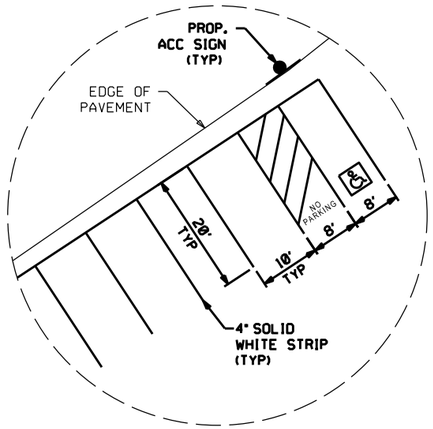
1 OF 2

FEDERAL DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						33
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HIS NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS

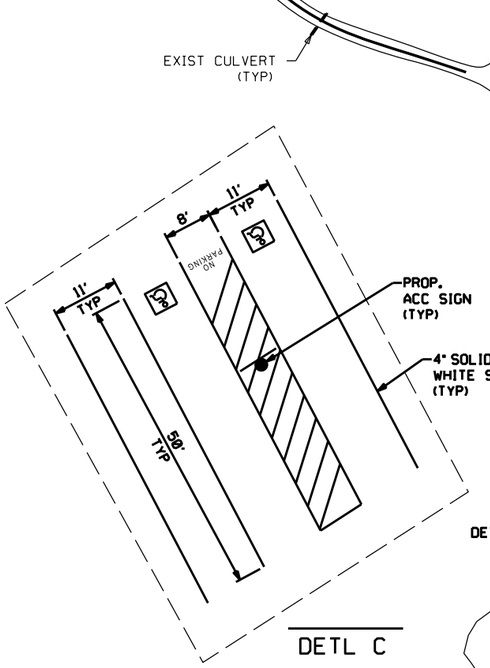




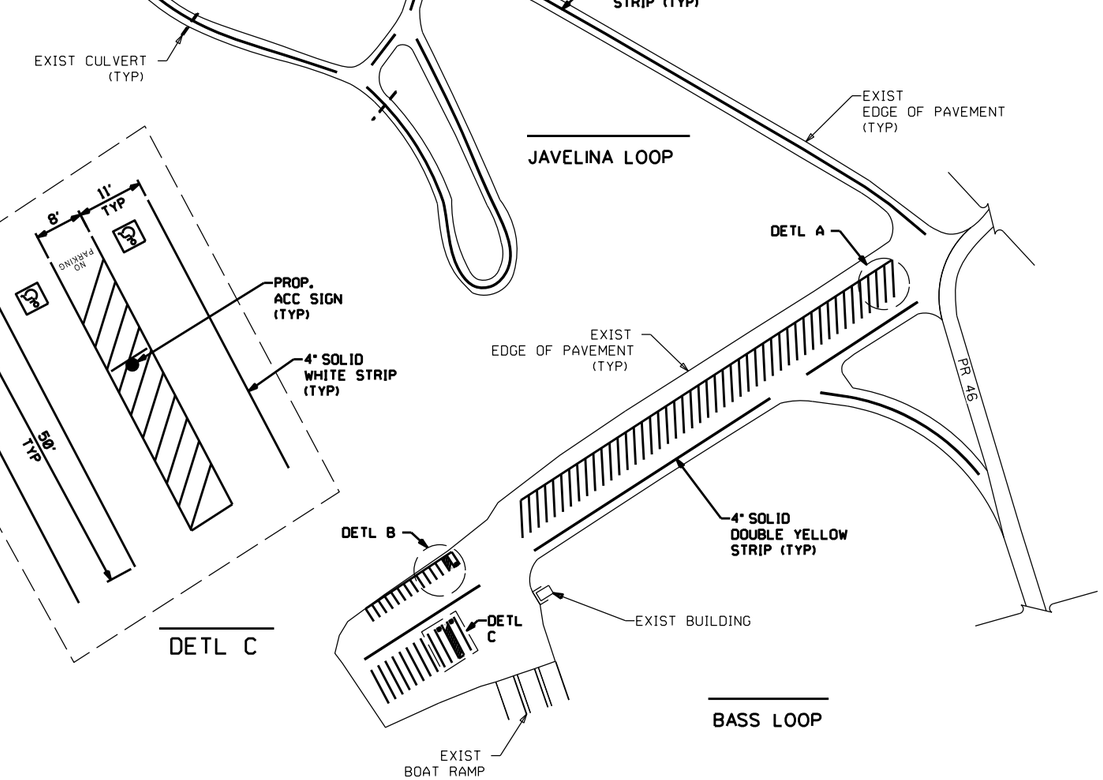
DETL A



DETL B

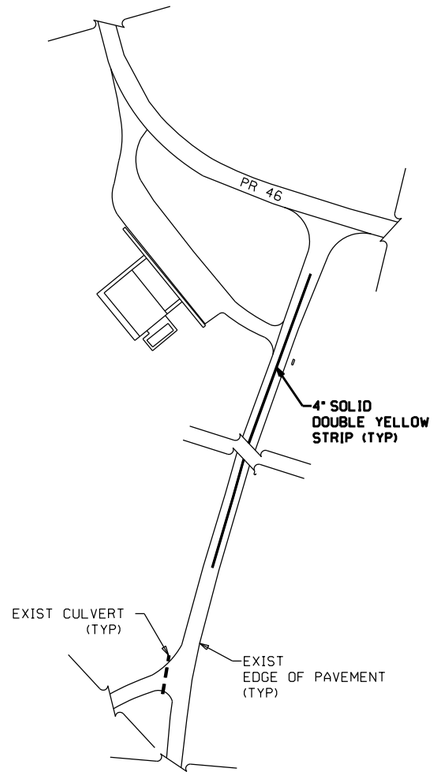


DETL C



JAVELINA LOOP

BASS LOOP



LANTANA LOOP

N

ESTIMATED QUANTITIES

ITEM	666	666	668	668
CODE	6303	6315	6085	6113
DESC.	RE PM W/RET REQ TY I(W) 4"(SLD)(100MIL) (LF)	RE PM W/RET REQ TY I(Y) 4"(SLD)(100MIL) (LF)	PREFAB PAV MRK TY C (W) (WORD) (EA)	PRE PM TY C(ACC PRK) (BL&WH)(W/BORDR)LG (EA)
TOTAL	4,175	11,273	4	3

ITEM	644
CODE	6027
DESC.	IN SM RD SN SUP&AM TYS80 (1) SA(P) (EA)
TOTAL	2

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO TPWD FOR ADDITIONAL PARKING LOT STANDARDS AND DETAILS.
3. SEE STANDARDS DETAILS FOR ADDITIONAL PAVEMENT MARKING INFORMATION.
4. CONTRACTOR TO DOCUMENT GENERAL EXISTING PARKING LOT CONFIGURATION: TO BE RE -STRIPED TO EXISTING UNLESS OTHERWISE SHOWN ON PLANS.

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED PROFESSIONAL ENGINEER

07/14/2023

Agustin Ramirez, P.E.

SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

FALCON STATE PARK PVMT MARKING: JAVELINA, BASS & LANTANA LOOP LOCATION 4

2 OF 2

FEDERAL PROJ.NO.	STATE PROJECT NO.					SHEET NO.
6						34
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HWY NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS

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
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc.	VARIOUS
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	PHR	CAMERON,Etc.		35
5-10 5-21				

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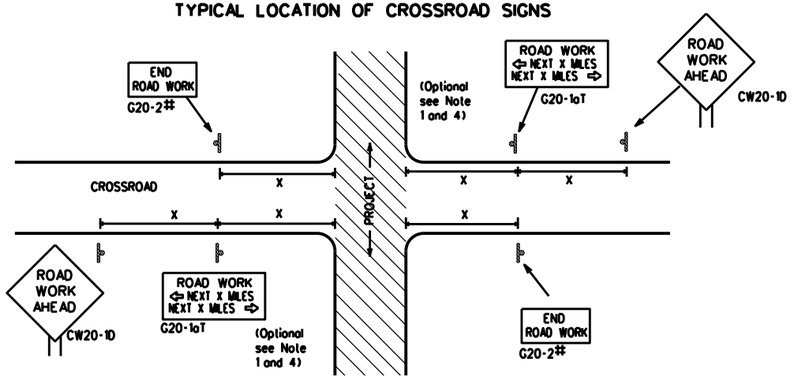
DATE:
FILE:

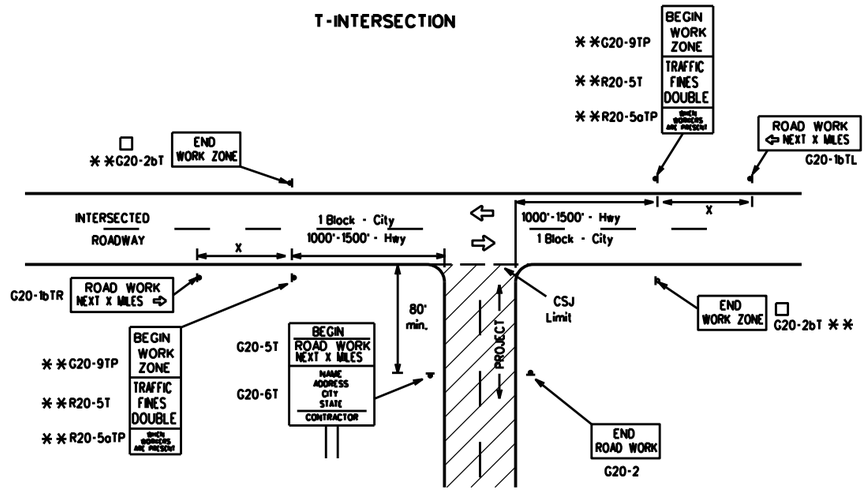
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

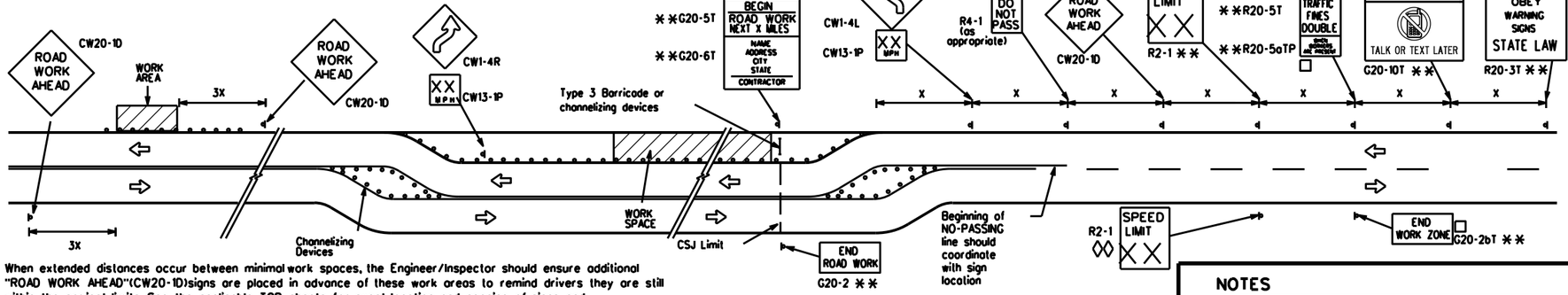
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

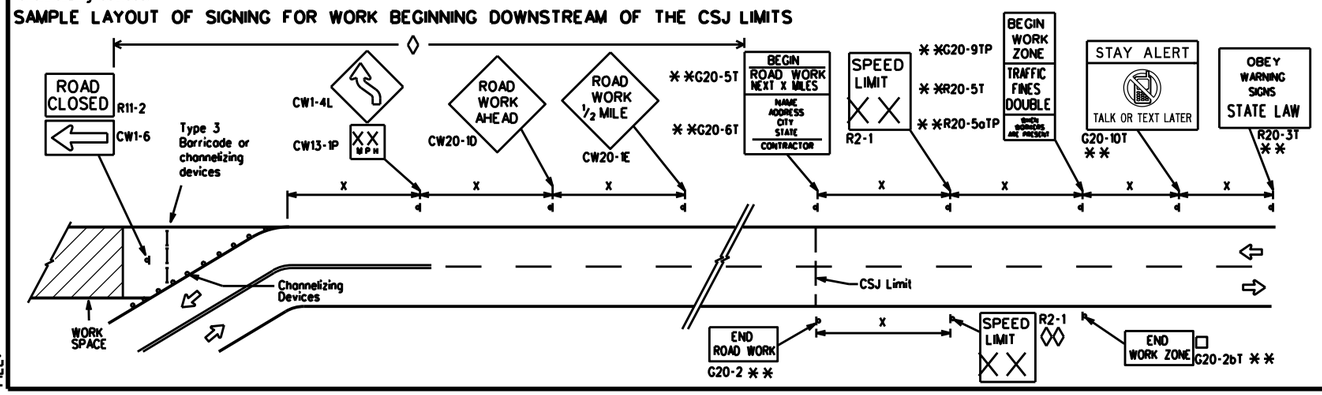
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may 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 DOWNSTREAM OF THE CSJ LIMITS



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

NOTES

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

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

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

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

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

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

SHEET 2 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON,Etc.		36

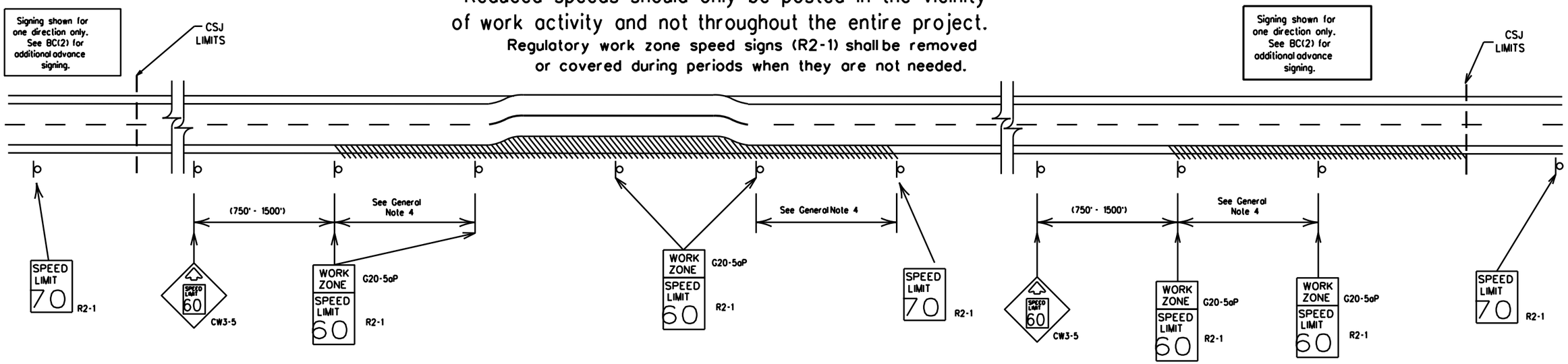
96

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

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0921	06	269,Etc.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON,Etc.		37

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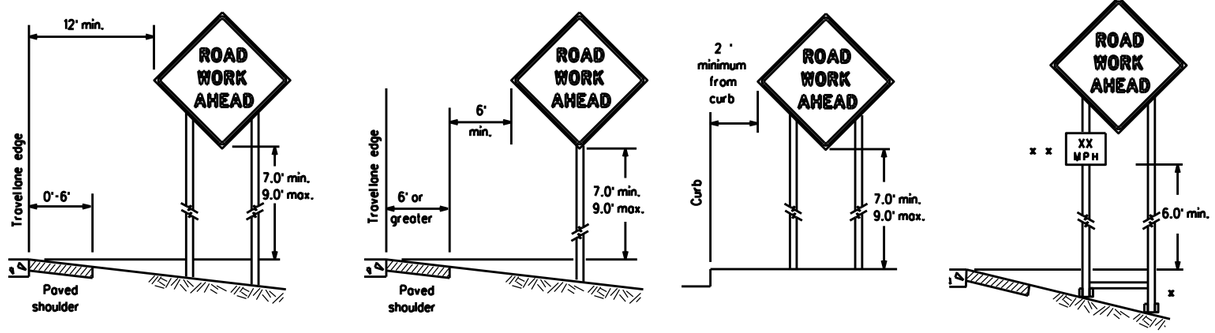
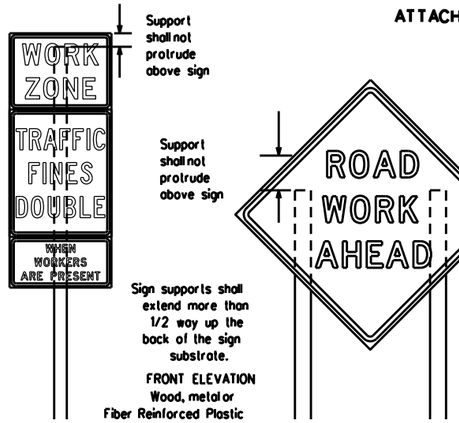
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



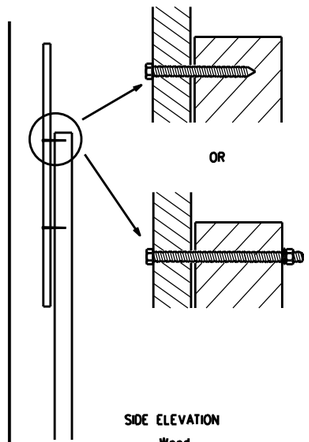
x When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



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

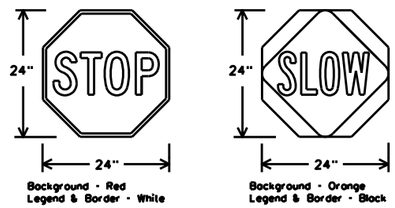


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the lightness 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 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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REVISIONS	0921	06	269,Etc.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
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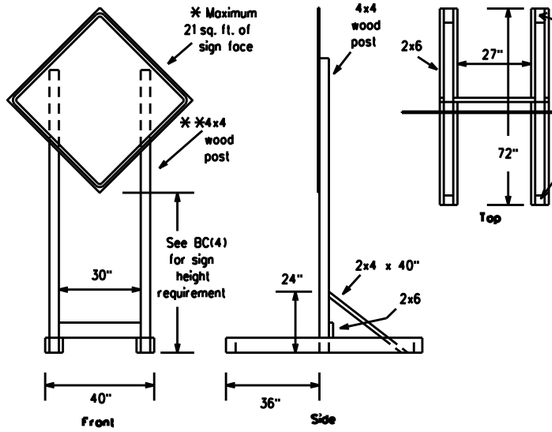
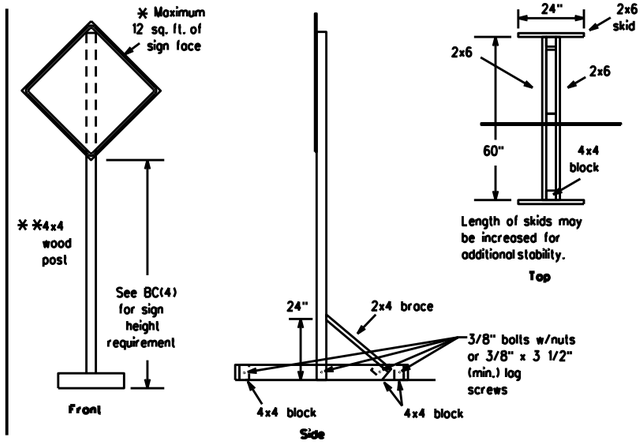
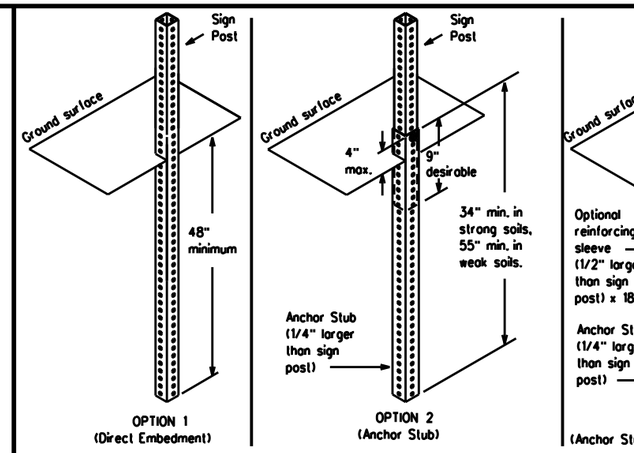
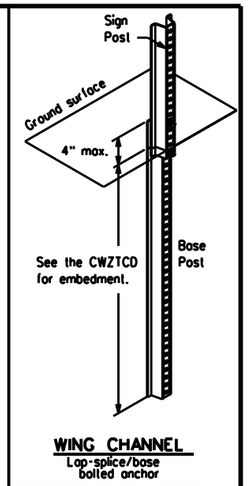




SKID MOUNTED WOOD SIGN SUPPORTS

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



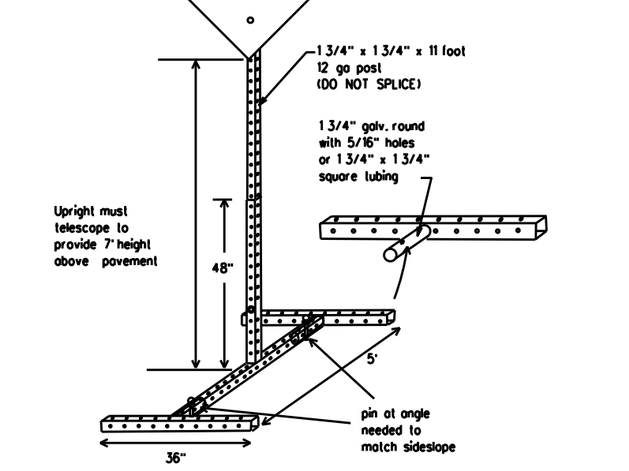


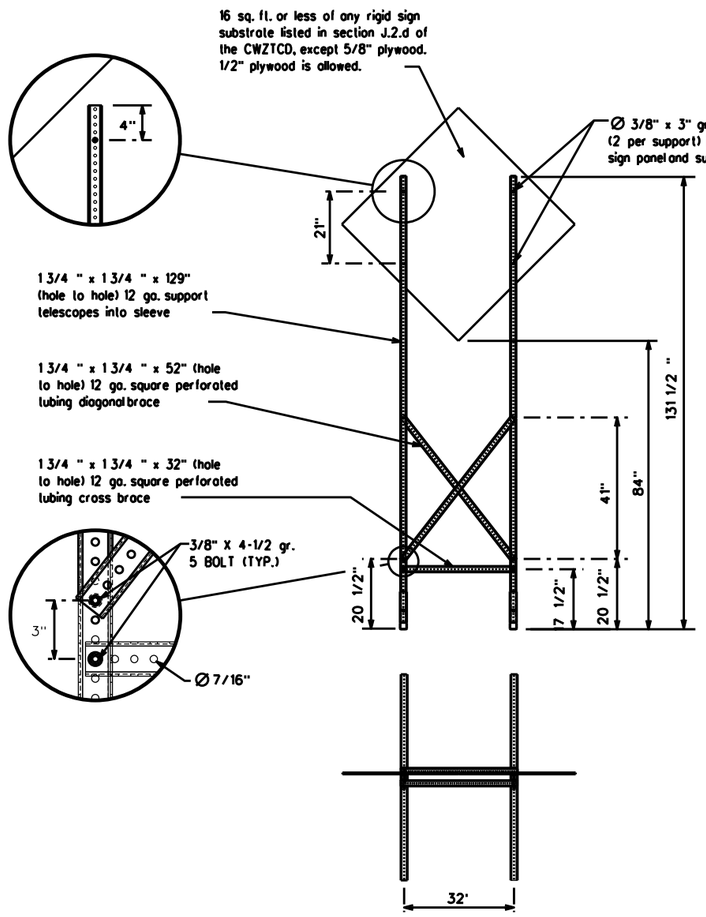
PERFORATED SQUARE METAL TUBING

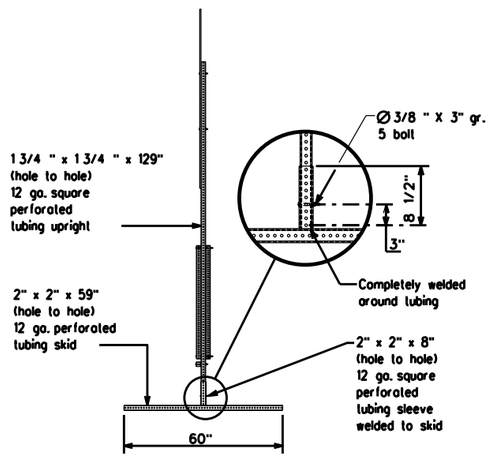
WING CHANNEL
Lap-splice/base bolted anchor

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

SHEET 6 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON,Etc.		40

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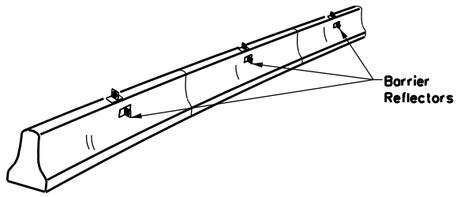
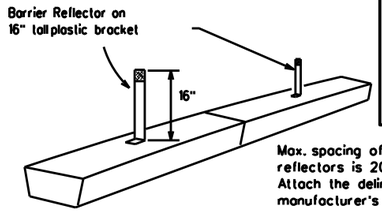
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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

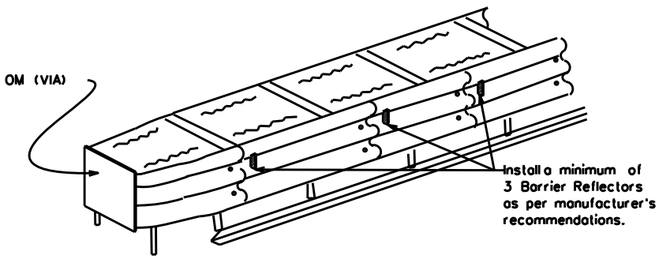


Max. spacing of barrier reflectors is 20 feet.
Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) 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.

LOW PROFILE CONCRETE BARRIER (LPCB)

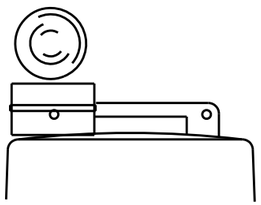


DELINEATION OF END TREATMENTS

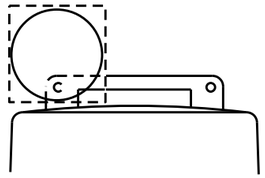
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

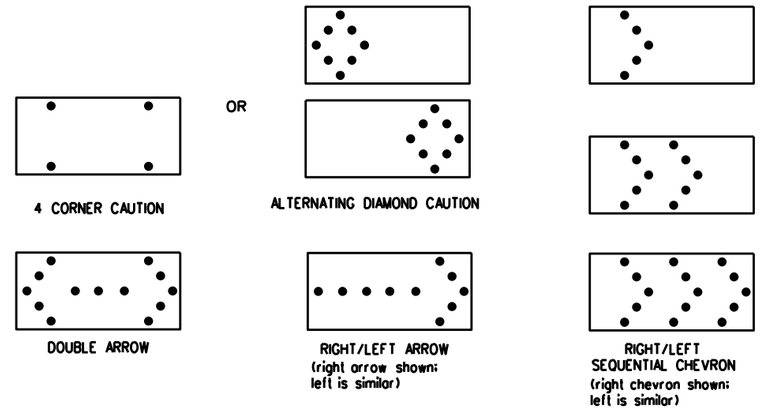
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

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

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the 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 on extended distance from the TMA.

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON,Etc.		41

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DATE:
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

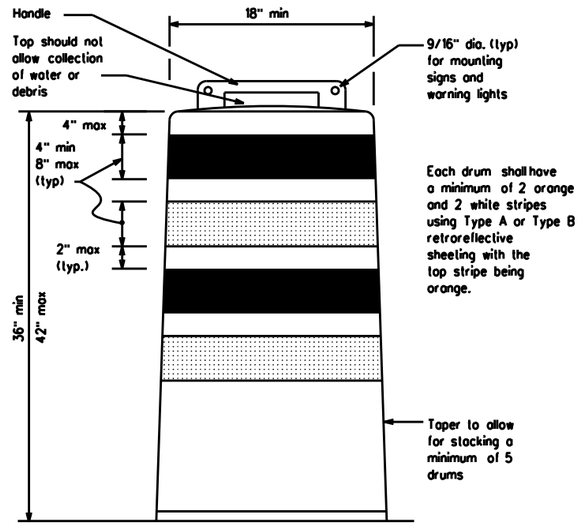
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

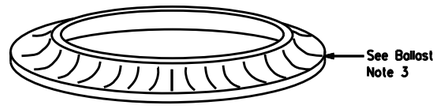
RETROREFLECTIVE SHEETING

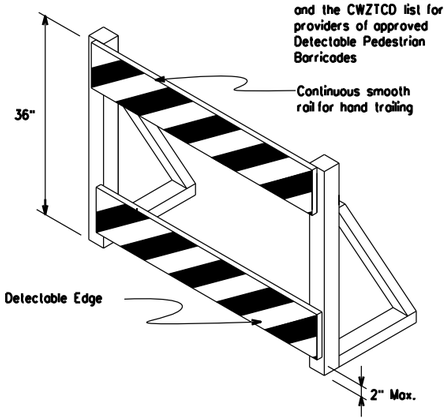
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

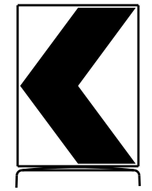




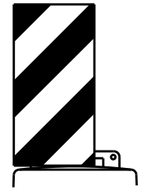


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc.	VARIOUS
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	PHR	CAMERON,Etc.		42
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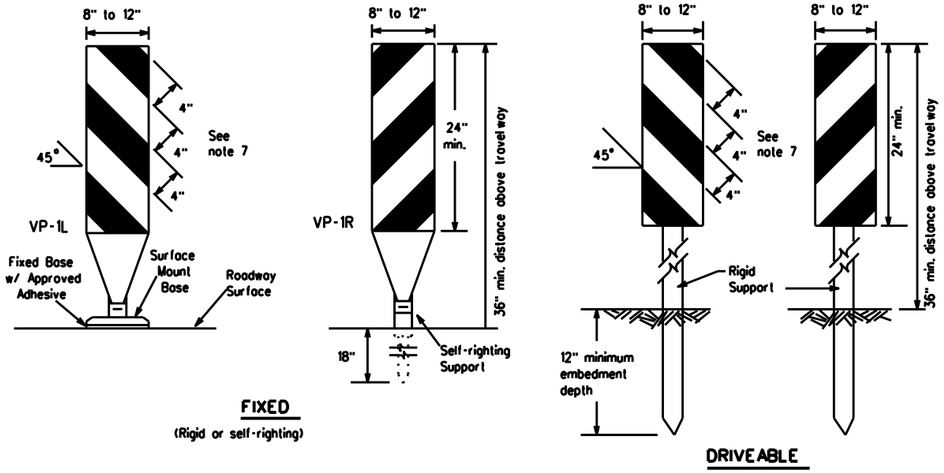
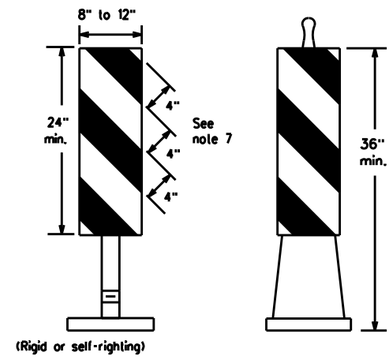
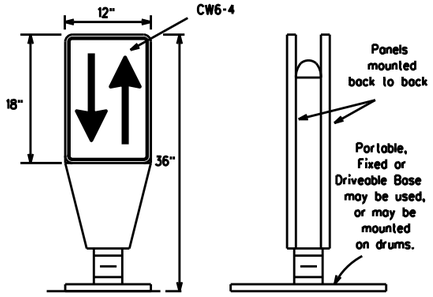




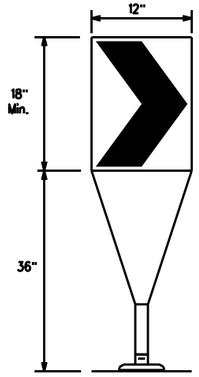
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is 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 or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



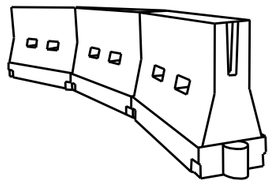
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

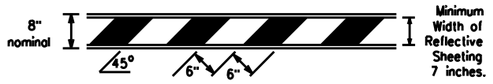
BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON,Etc.		43

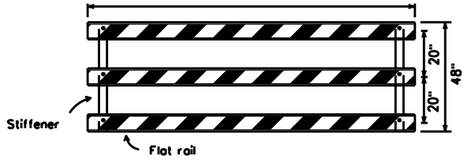
TYPE 3 BARRICADES

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.



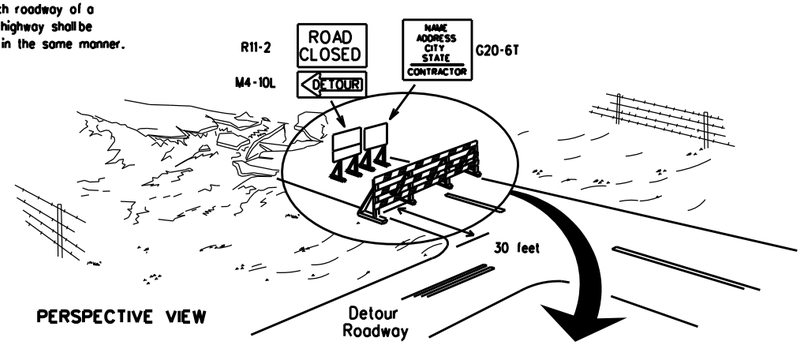
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

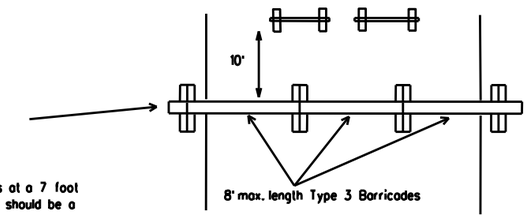
Each roadway of a divided highway shall be barricaded in the same manner.



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.

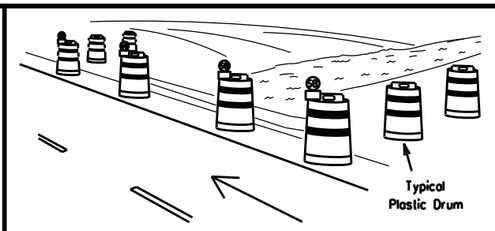
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

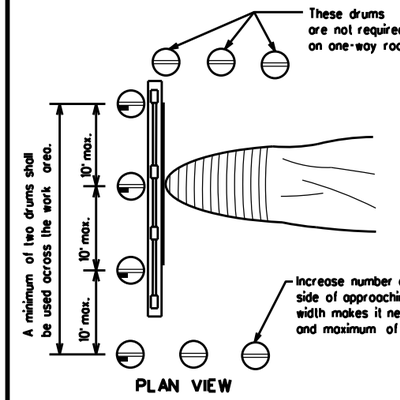
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

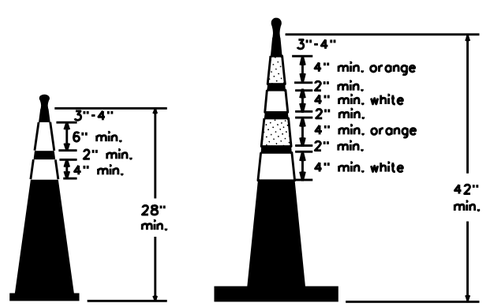
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



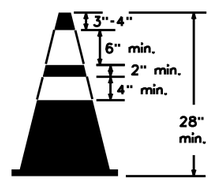
PLAN VIEW

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

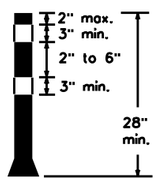
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

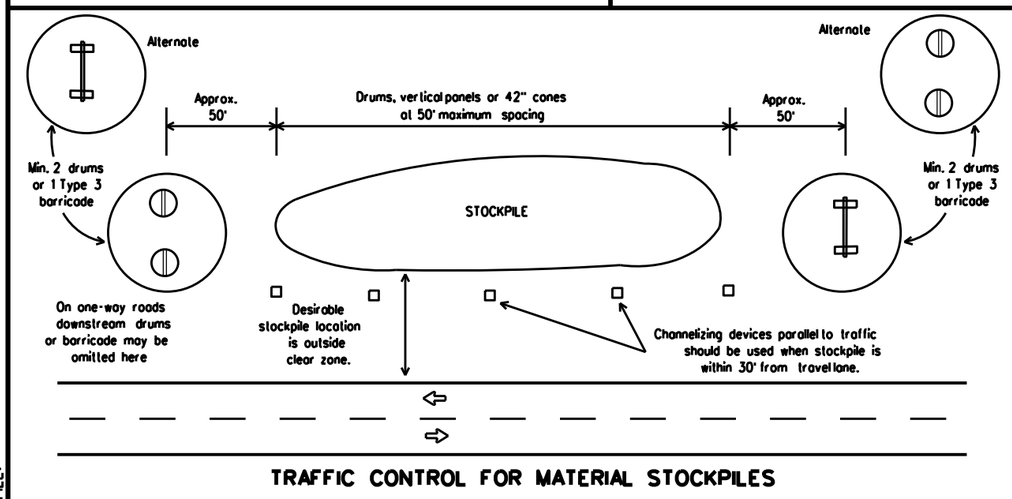


Tubular Marker

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

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	0921	06	269,Etc.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON,Etc.		44

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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.

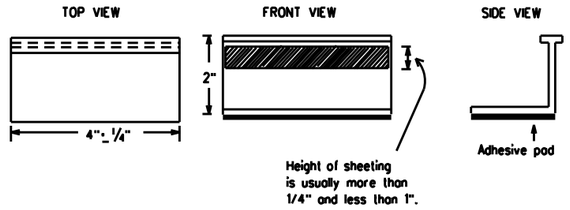
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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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REVISIONS	0921	06	269,Etc.	VARIOUS
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	PHR	CAMERON,Etc.		45
11-02 8-14				

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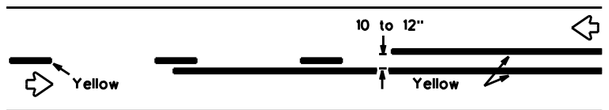
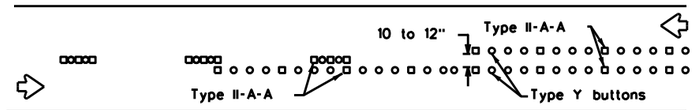
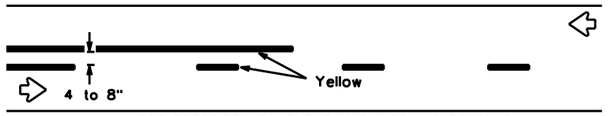
PAVEMENT MARKING PATTERNS



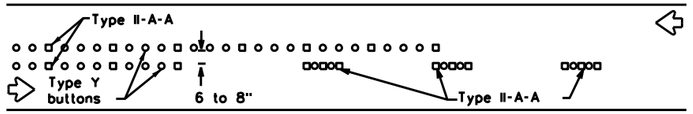
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



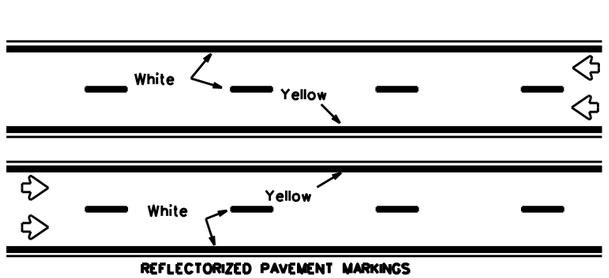
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



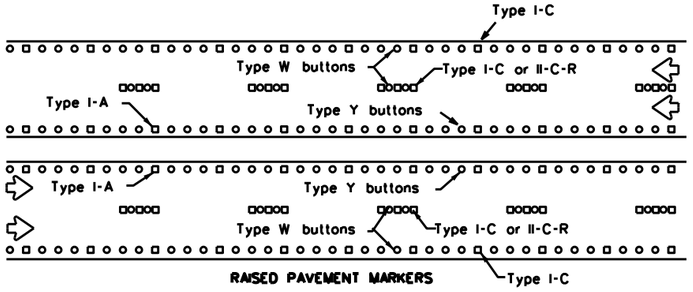
RAISED PAVEMENT MARKERS - PATTERN B

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

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



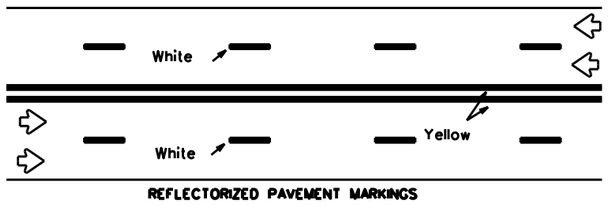
REFLECTORIZED PAVEMENT MARKINGS



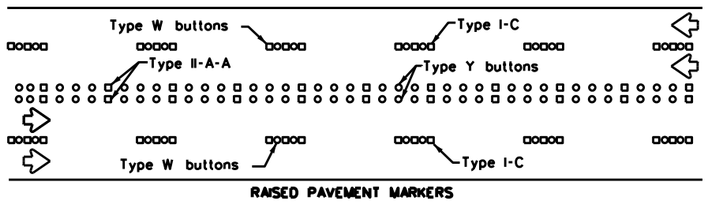
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



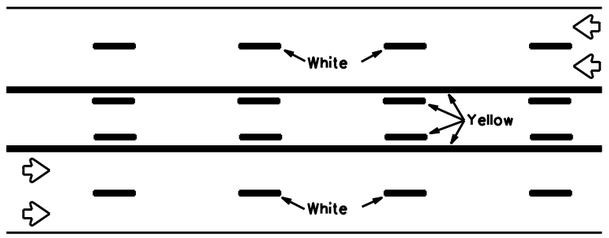
REFLECTORIZED PAVEMENT MARKINGS



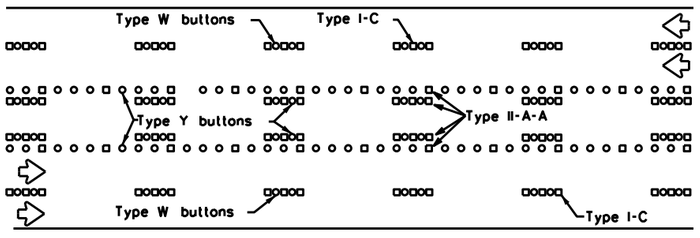
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

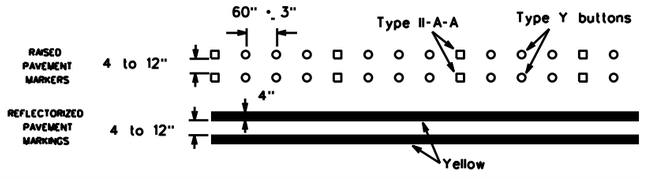
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

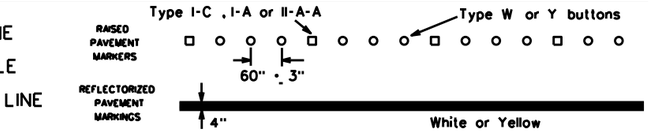
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

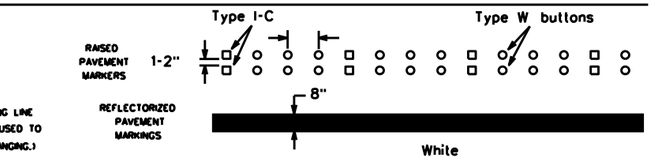


EDGE LINE OR SINGLE NO-PASSING LINE



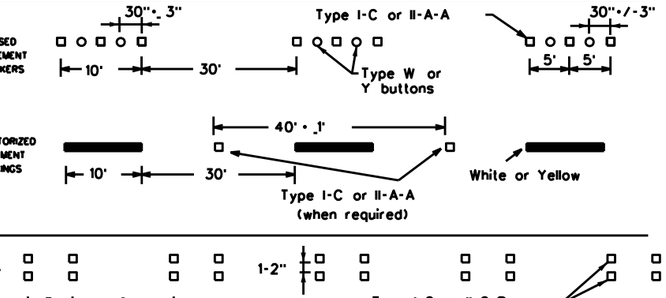
WIDE LINE

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

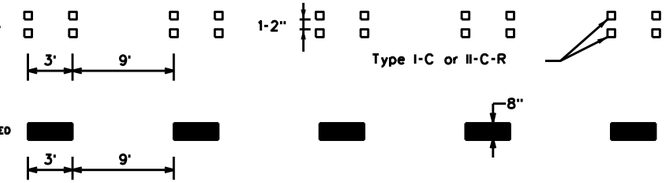


BROKEN LINES

CENTER LINE OR LANE LINE

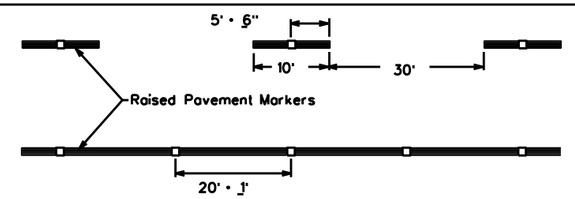


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

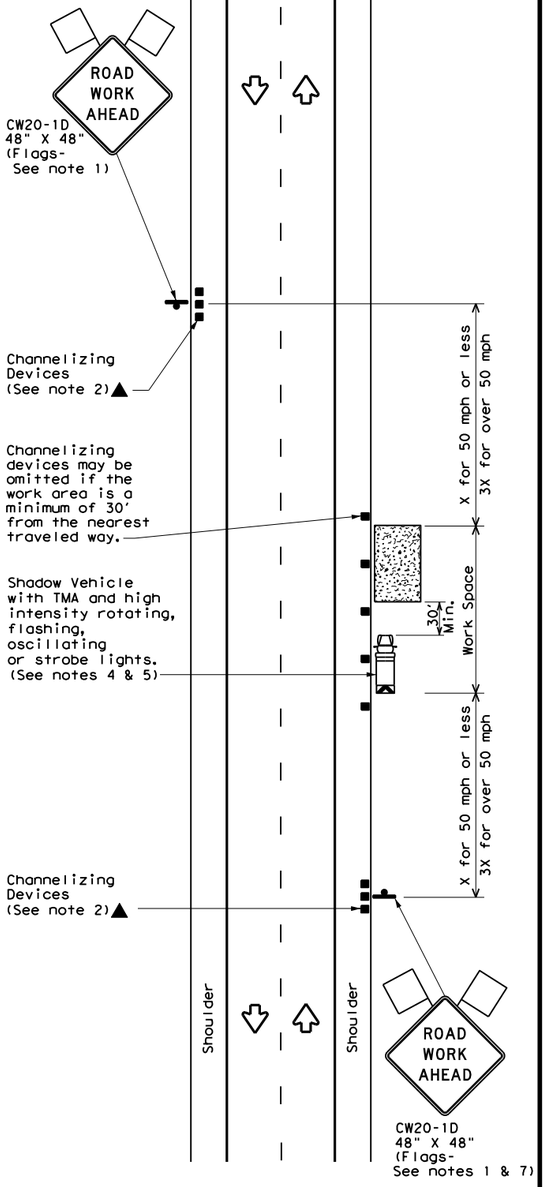
BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0921	06	269,Etc.	VARIOUS
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON,Etc.		46

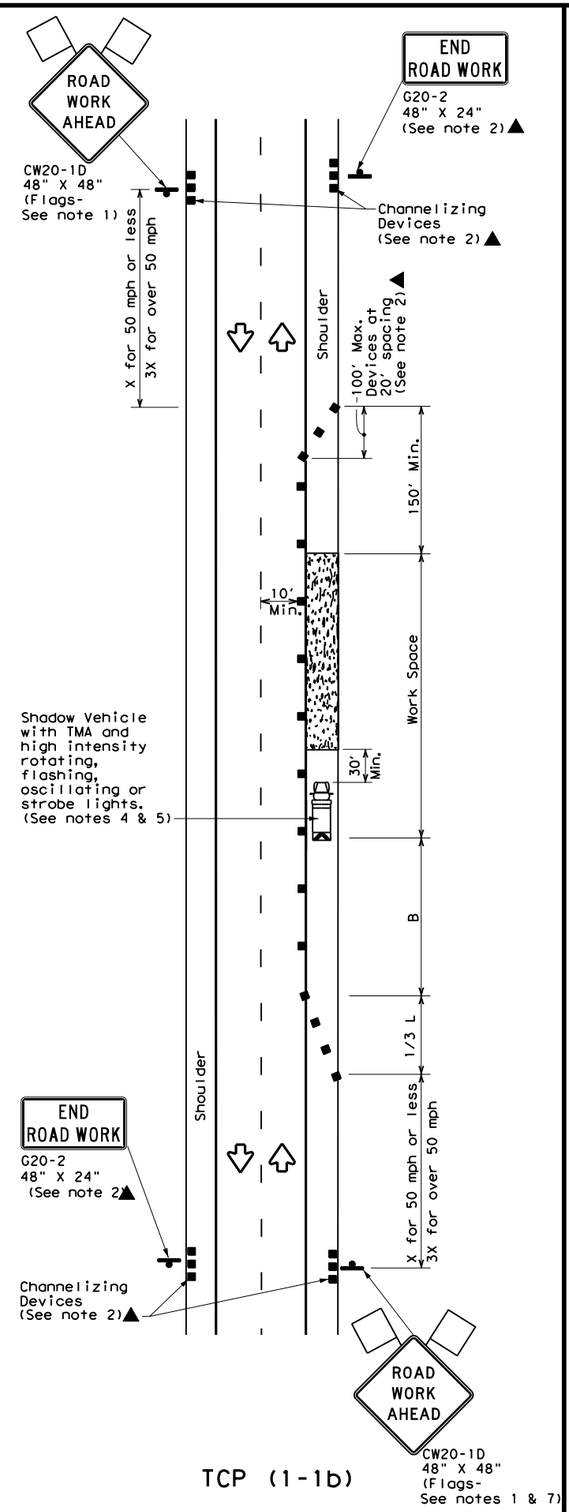
106

DATE:
FILE:



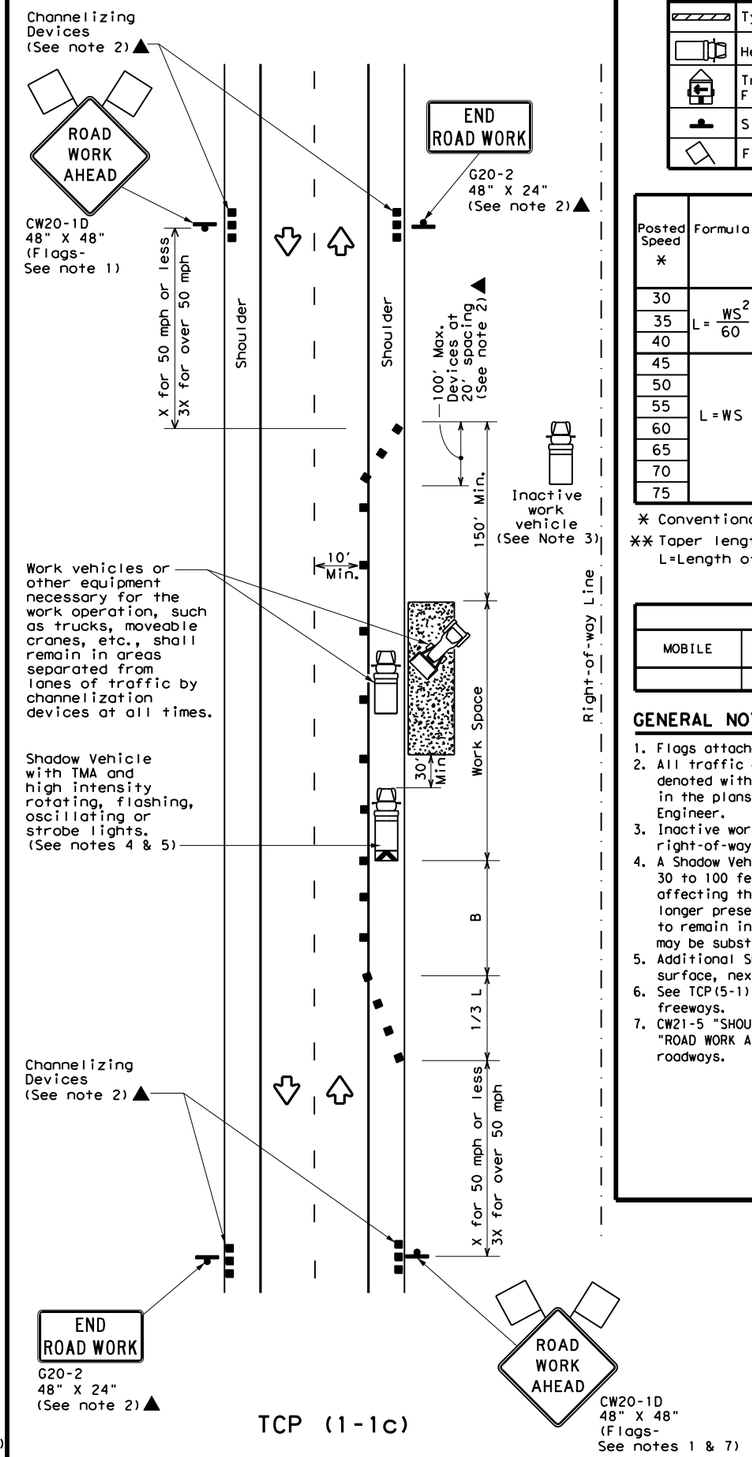
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

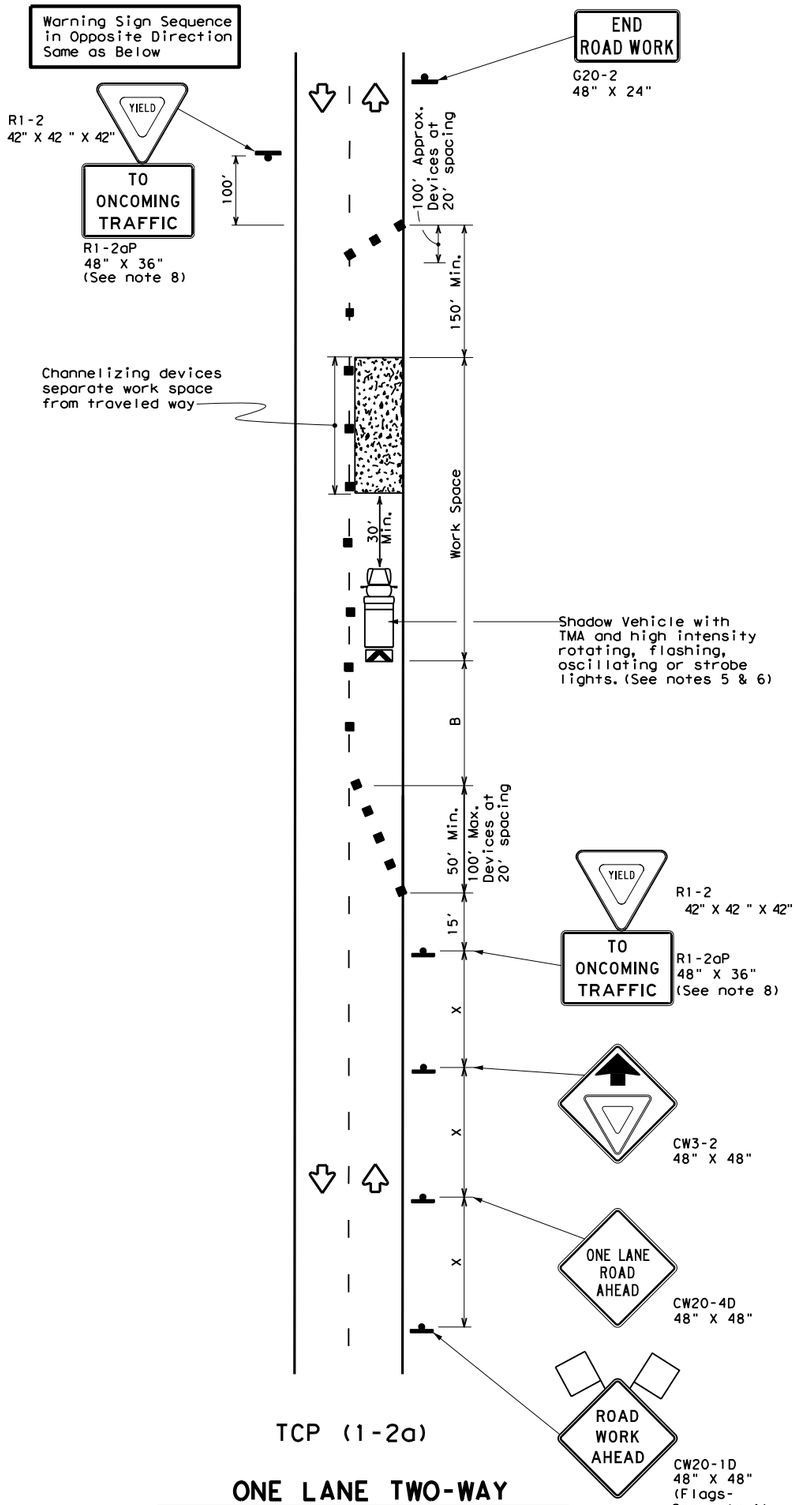
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(1-1)-18

FILE: tcp1-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	0921	06	269,Etc	VARIOUS
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON,Etc		47

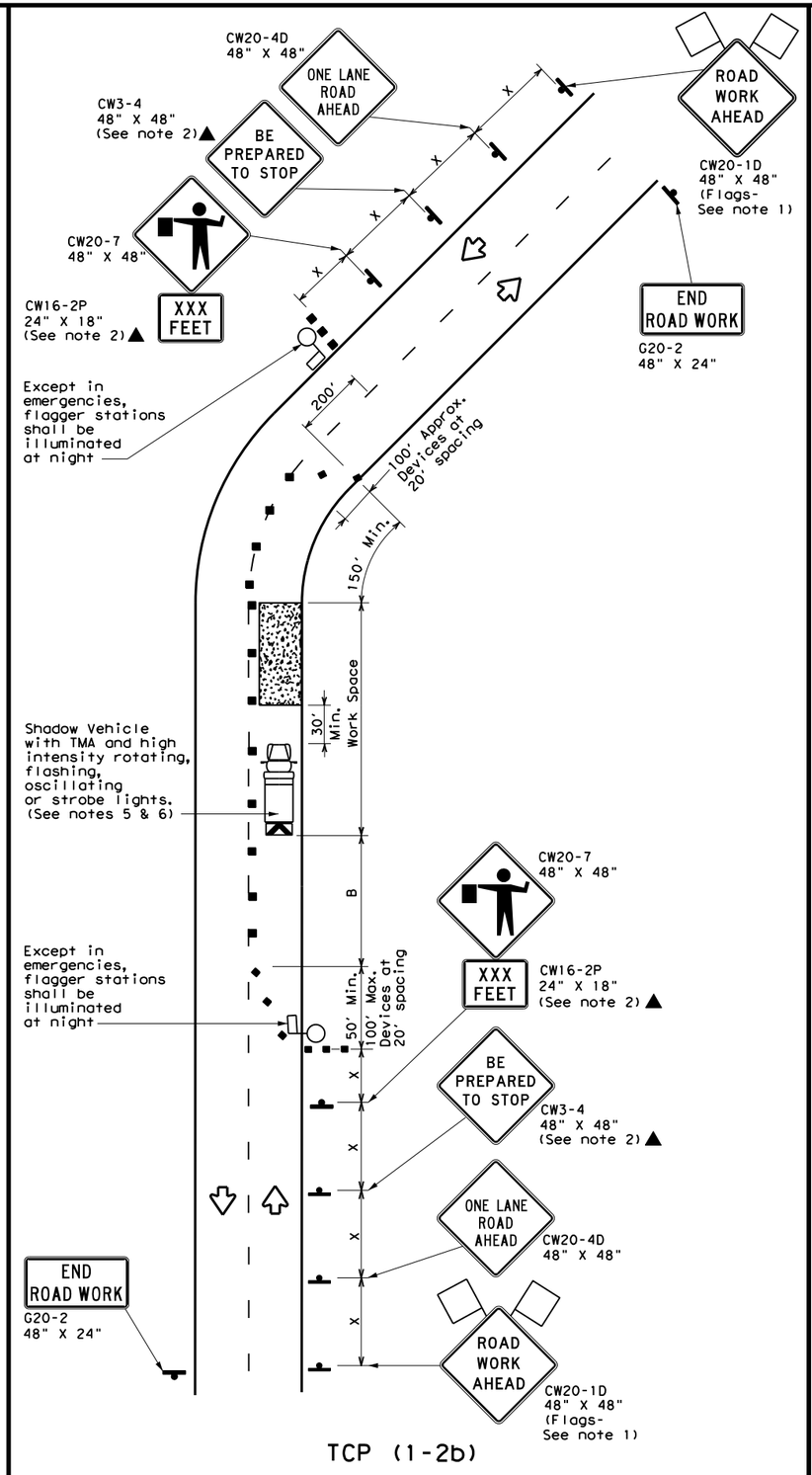
DATE:
FILE:



TCP (1-2a)

ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY CONTROL WITH FLAGGERS

LEGEND

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

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

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

TYPICAL USAGE

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

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

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation

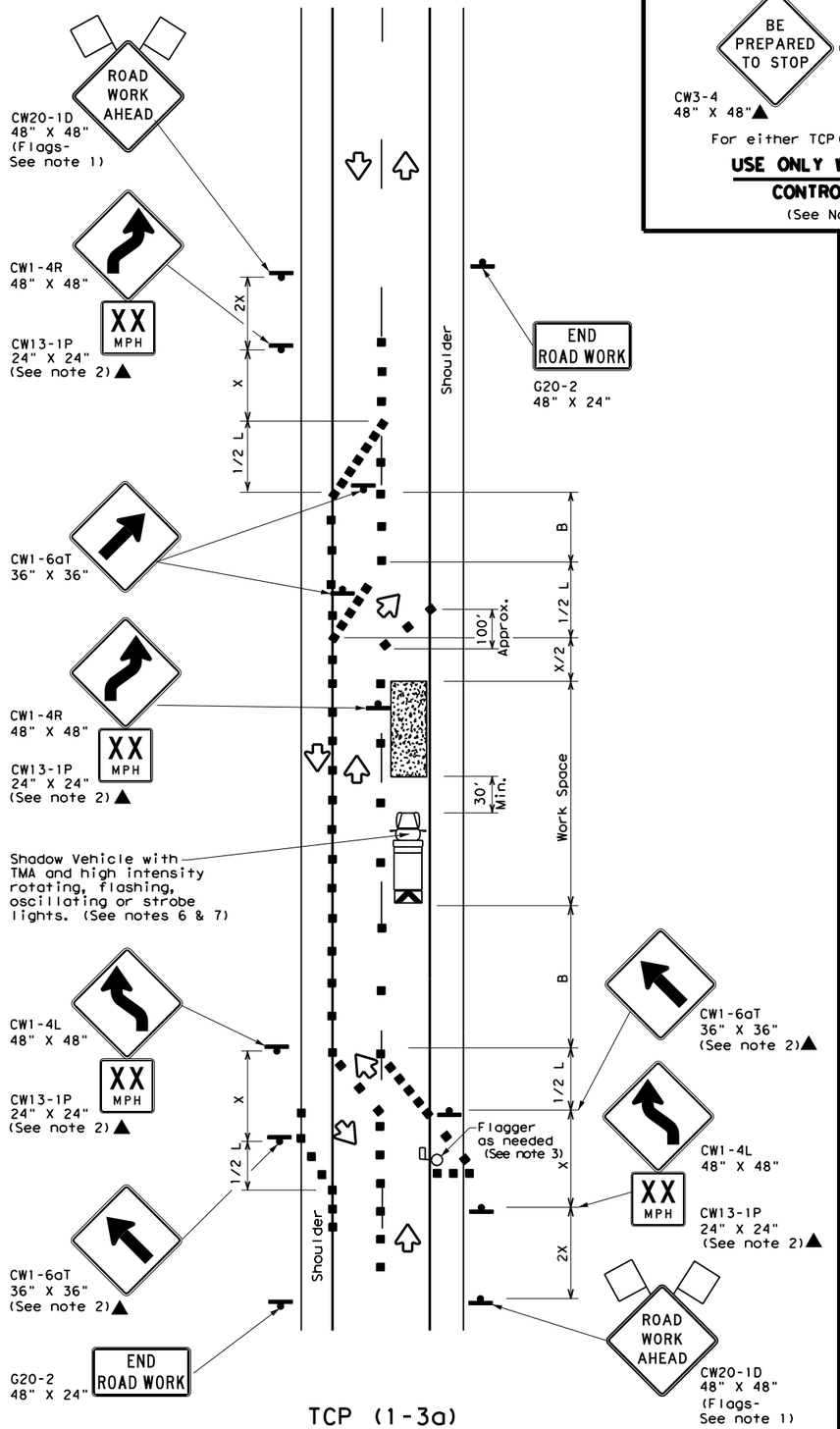
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98 2-94 2-12 1-97 2-18	0921	06	269, Etc	VARIOUS
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON, Etc		48

DATE:
FILE:



TCP (1-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

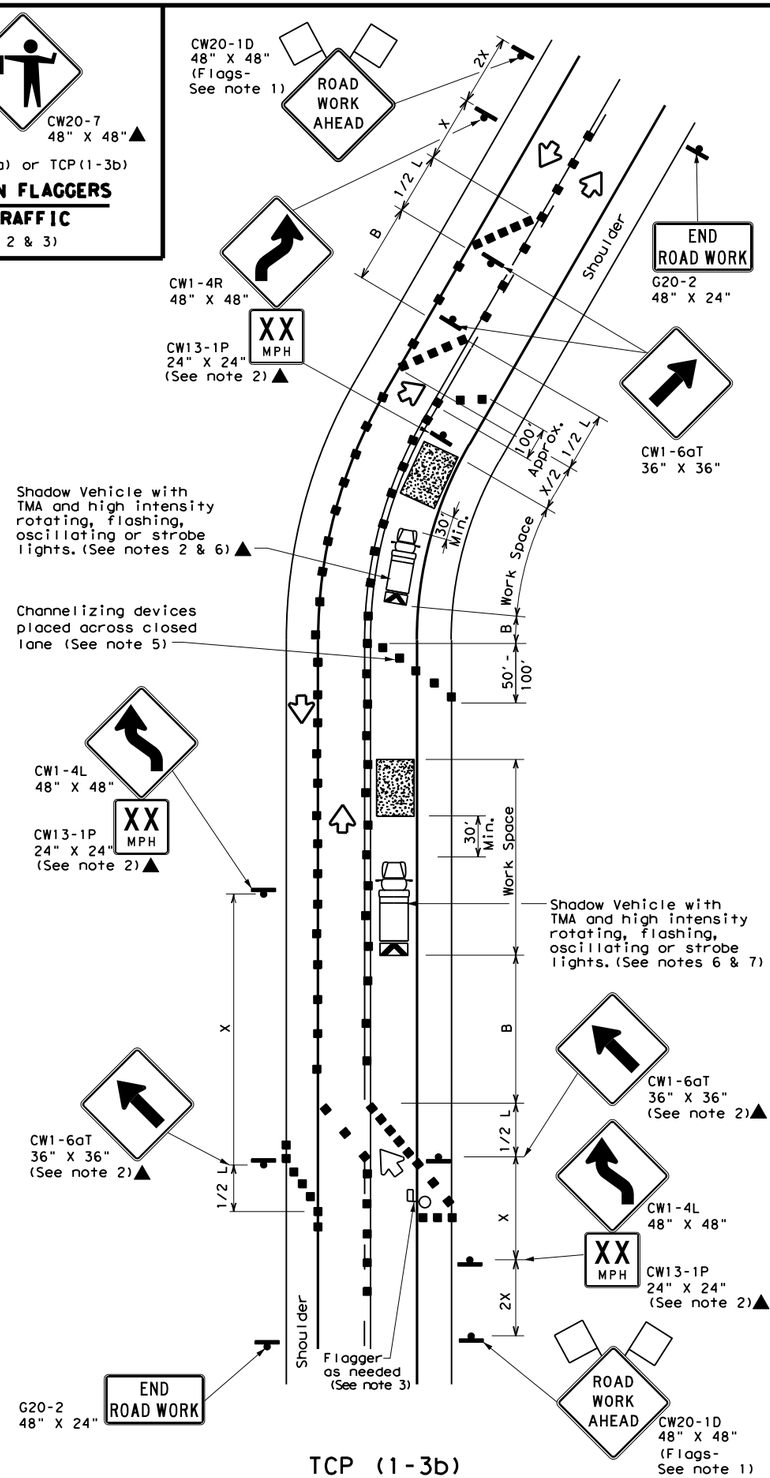
ONE LANE CLOSED
ADEQUATE FIELD OF VIEW

BE PREPARED TO STOP
CW3-4 48" X 48"
CW20-7 48" X 48"

For either TCP(1-3a) or TCP(1-3b)

USE ONLY WHEN FLAGGERS CONTROL TRAFFIC

(See Notes 2 & 3)



TCP (1-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	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. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
4. DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
5. When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
8. 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 speed 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 area of conflicting markings not the entire work zone.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON TWO LANE ROADS

TCP(1-3)-18

FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc	VARIOUS
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	PHR	CAMERON,Etc		49
1-97 2-18				

DATE:
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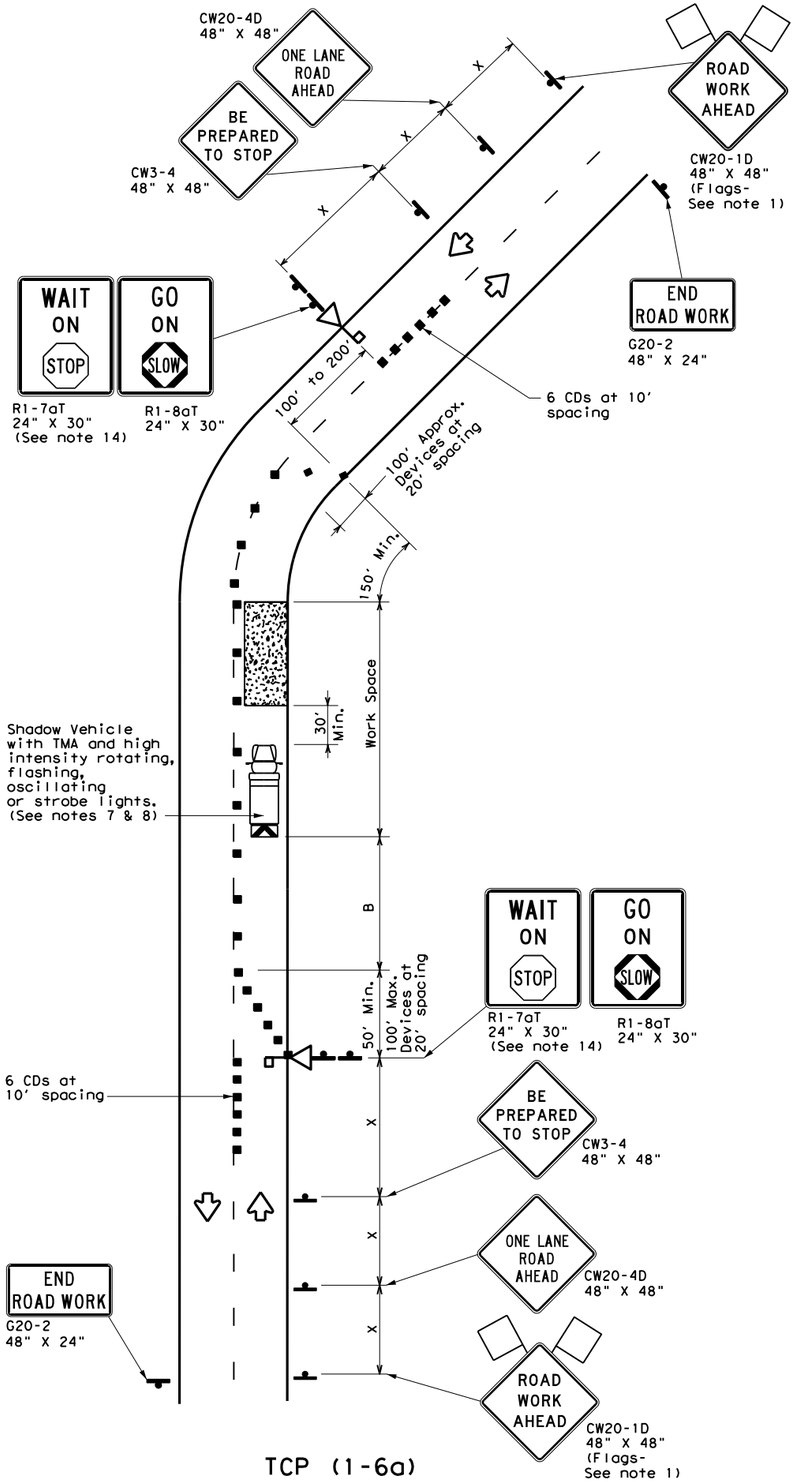
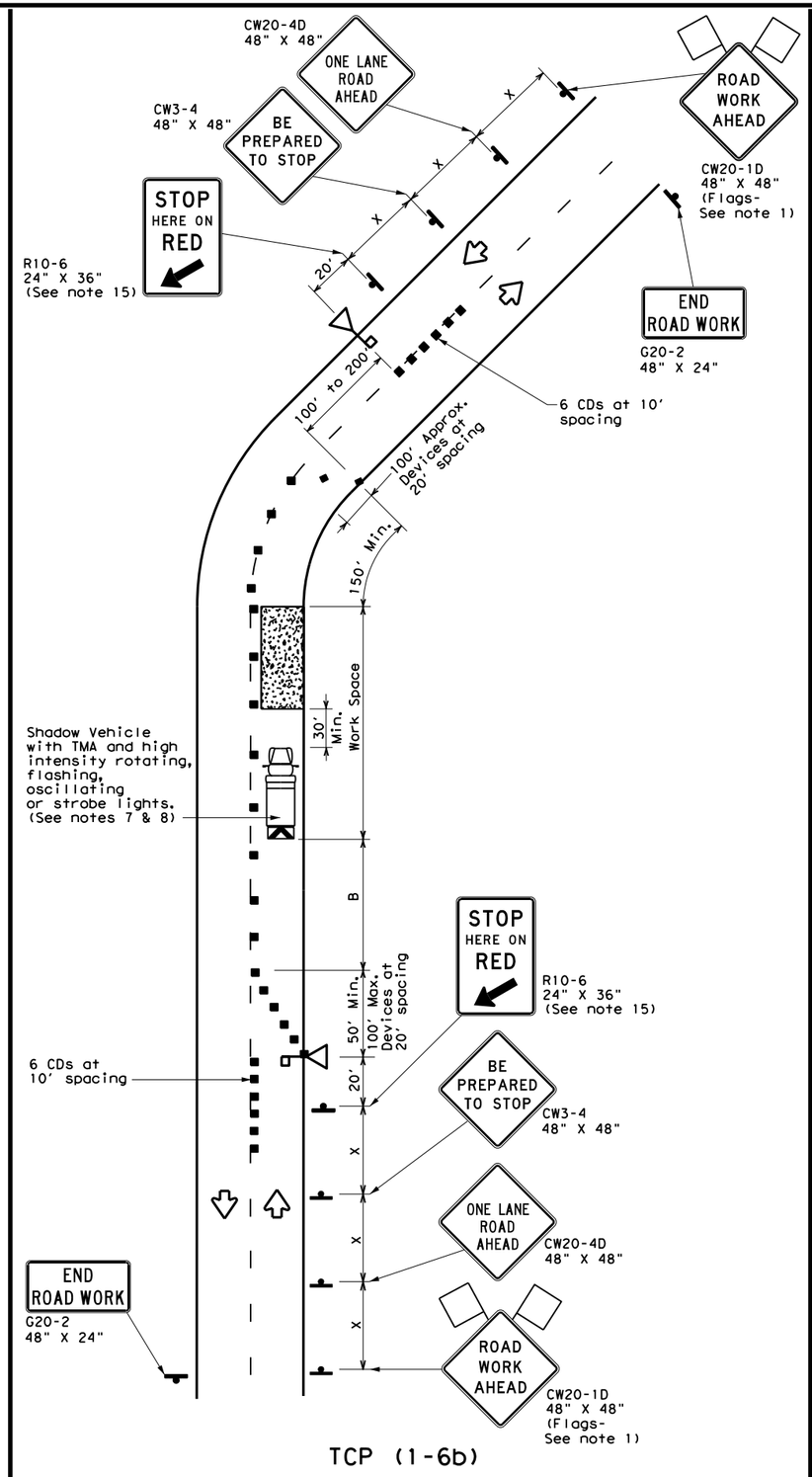


TCP (1-6a)

ONE LANE TWO-WAY CONTROL WITH STOP/SLOW AFADs



TCP (1-6b)

ONE LANE TWO-WAY CONTROL WITH RED/YELLOW LENS AFADs

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Automated Flagger Assistance Device (AFAD)	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. AFADs shall only be used in situations where there is one lane of approaching traffic in the direction to be controlled.
3. Adequate stopping sight distance must be provided to each AFAD location for approaching traffic. (See table above).
4. Each AFAD shall be operated by a qualified/certified flagger. Flaggers operating AFADs shall not leave them unattended while they are in use.
5. One flagger may operate two AFADs only when the flagger has an unobstructed view of both AFADs and of the approaching traffic in both directions.
6. When pilot cars are used, a flagger controlling traffic shall be located on each approach. AFADs shall not be operated by the pilot car operator.
7. All AFADs shall be equipped with gate arms with an orange or fluorescent red-orange flag attached to the end of the gate arm. The flag shall be a minimum of 16" square.
8. 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.
9. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
10. Flaggers should use two-way radios or other methods of communication to control traffic.
11. Length of work space should be based on the ability of flaggers to communicate.
12. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the AFAD.
13. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
14. The R1-7aT "WAIT ON STOP" sign and the R1-8aT "GO ON SLOW" sign shall be installed at the AFAD location on separate supports or they may be fabricated as one 48" x 30" sign. They shall not obscure the face of the STOP/SLOW AFAD.
15. The R10-6 "STOP HERE ON RED" arrow sign shall be offset so as not to obscure the lenses of the AFAD.

Texas Department of Transportation

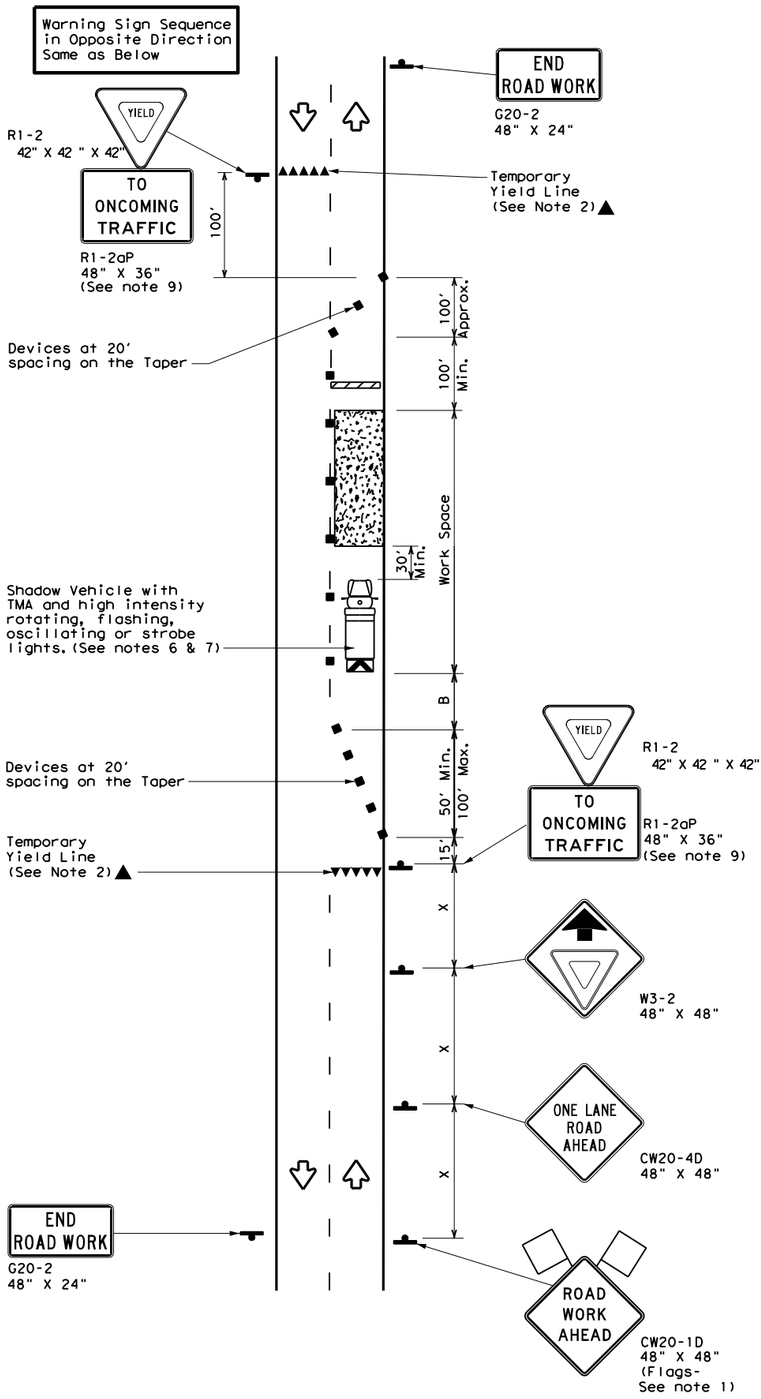
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
AUTOMATED FLAGGER ASSISTANCE DEVICES (AFADS)

TCP(1-6)-18

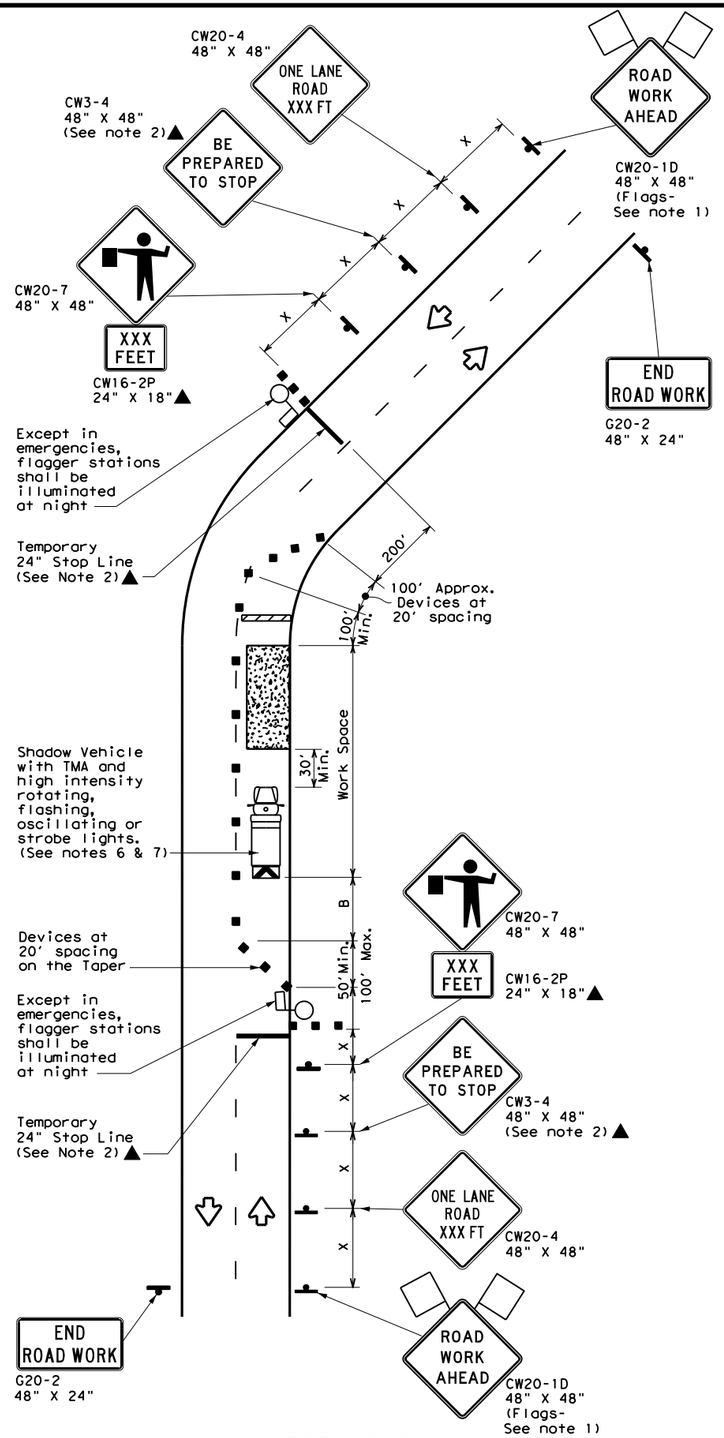
FILE: tcp1-6-18.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-18	0921	06	269,Etc	VARIOUS
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON,Etc		50

DATE:
FILE:



TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



TCP (2-2b)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND

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

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

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

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

GENERAL NOTES

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

TCP (2-2a)

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

TCP (2-2b)

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

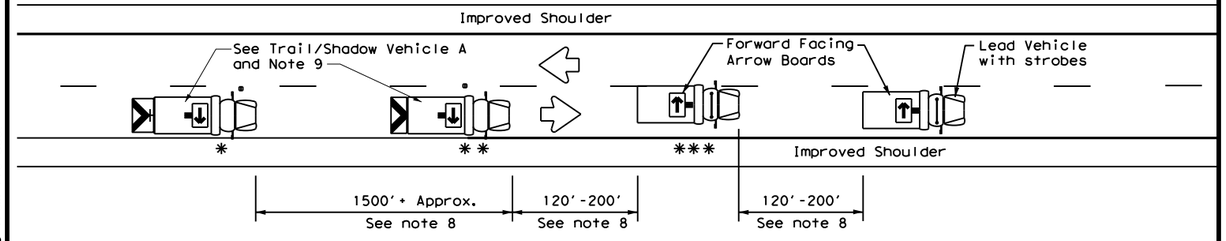
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

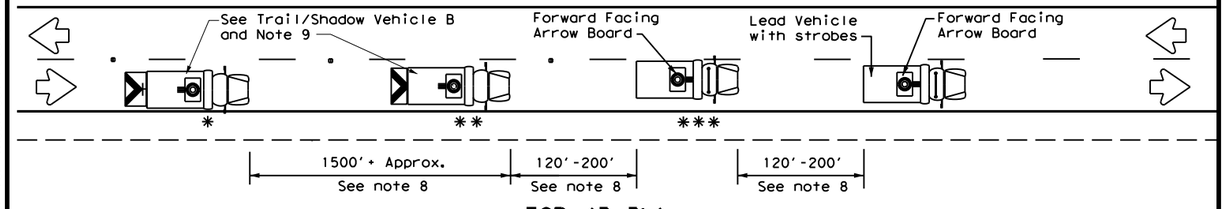
TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03 1-97 2-12 4-98 2-18	0921	06	269,Etc	VARIOUS
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON,Etc		51



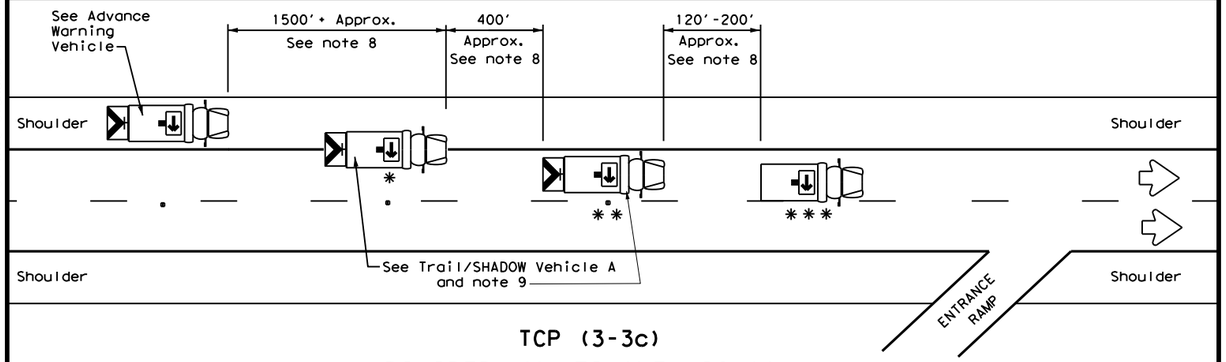
TCP (3-3a)

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



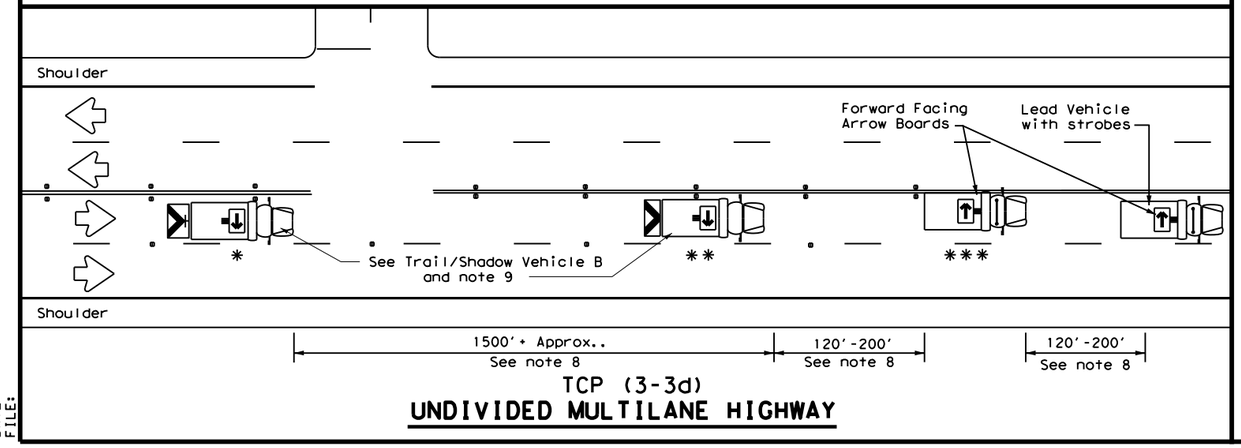
TCP (3-3b)

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



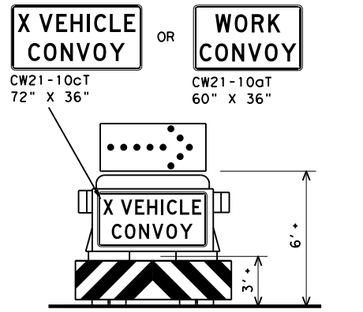
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



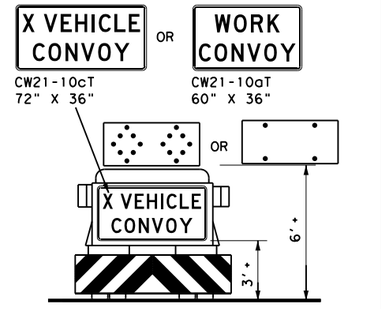
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



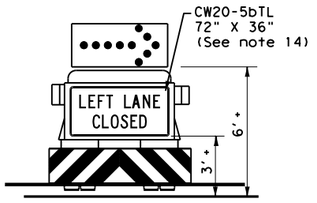
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

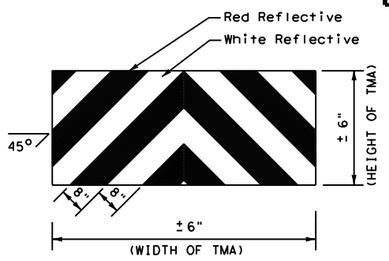


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL

TCP(3-3)-14

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	PHR	CAMERON,Etc		52
1-97 7-14				

DATE:
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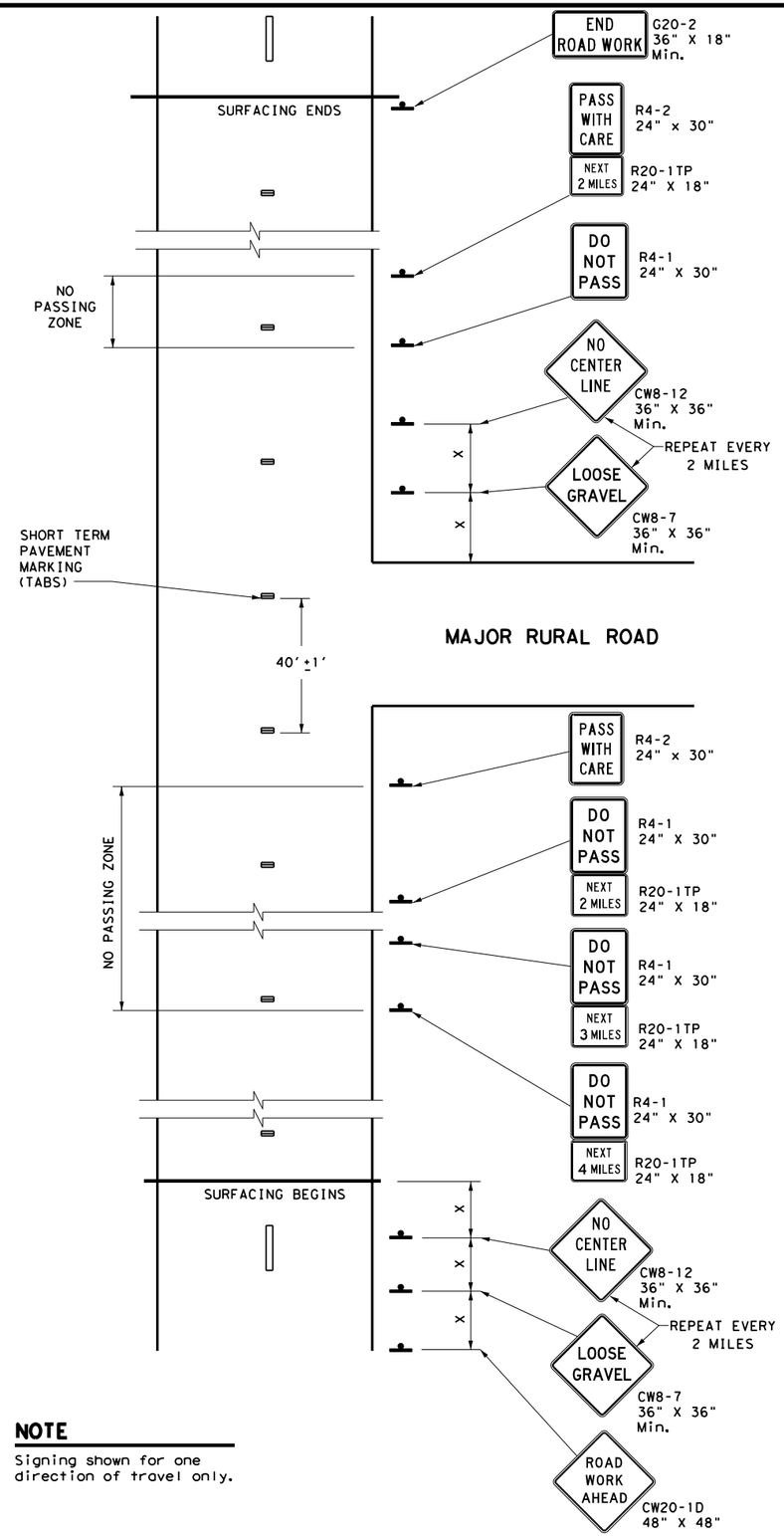
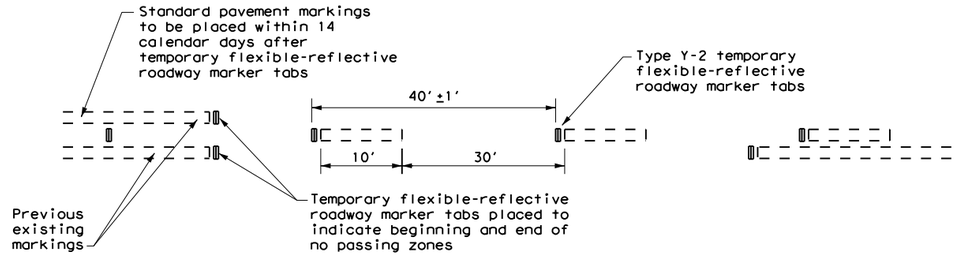


NOTE

Signing shown for one direction of travel only.

NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS



TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS

For seal coat, micro-surface or similar operations

"DO NOT PASS" SIGN (R4-1) and NO-PASSING ZONES

A. Prior to the beginning of construction, all currently striped no-passing zones shall be signed with the DO NOT PASS (R4-1) signs and PASS WITH CARE (R4-2) signs placed at the beginning and end of each zone for each direction of travel except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.

B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES (R20-1TP) plaque may be used at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where there is considerable distance between no-passing zones, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.

C. Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshield and lights. The DO NOT PASS sign and NEXT XX MILES plaque should be used and repeated as often as necessary for this purpose. Where several existing zones are to be combined into one individual no-passing zone, the sign at the beginning of the zone should be covered until the surfacing operation has passed this location so as not to have the DO NOT PASS sign conflict with the existing pavement markings. Also, unless one days operation completes the entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zones where the surfacing operation has stopped for the day.

D. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

"NO CENTER LINE" SIGN (CW8-12)

A. Center line markings are yellow pavement markings that delineate the separation of travel lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.

B. At the time construction activity obliterates the existing center line markings(low volume roads may not have an existing centerline), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately 2 mile intervals within the work area, beyond major intersections and other locations deemed necessary by the Engineer.

C. The NO CENTER LINE signs are to remain in place until standard pavement markings are installed.

"LOOSE GRAVEL" SIGN (CW8-7)

A. When construction begins, a LOOSE GRAVEL (CW8-7) sign should be erected at each end of the work area and repeated at intervals of approximately 2 miles in rural areas and closer in urban areas.

B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

PAVEMENT MARKINGS

A. Temporary markings for surfacing projects shall be Temporary Flexible-reflective Roadway Marker Tabs unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement
no more than two (2) days before the surfacing is applied. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.

B. Tabs shall not be used to simulate edge lines.

C. Tab placement for overlay/inlay operations shall be as shown on the WZ(STPM) standard sheet.

COORDINATION OF SIGN LOCATIONS

A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.

B. Where possible the ROAD WORK AHEAD (CW20-1D), LOOSE GRAVEL (CW8-7), and NO CENTER LINE (CW8-12) signs should be placed in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) and the TRAFFIC FINES DOUBLE (R20-5T) sign, and one "X" sign spacing prior to the CONTRACTOR (G20-6T)sign typically located at or near the limits of surfacing. LOOSE GRAVEL and NO CENTER LINE signs will then be repeated as described above.

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

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

GENERAL NOTES

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.
2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.
3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Long-Term / Intermediate-Term Work Zone Sign Supports.
4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".
5. Signs on divided highways, freeways and expressways will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS

TCP(7-1)-13

FILE: tcp7-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 1991	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc	VARIOUS
4-92 4-98	DIST	COUNTY		SHEET NO.
1-97 7-13	PHR	CAMERON,Etc		53

210

DATE:
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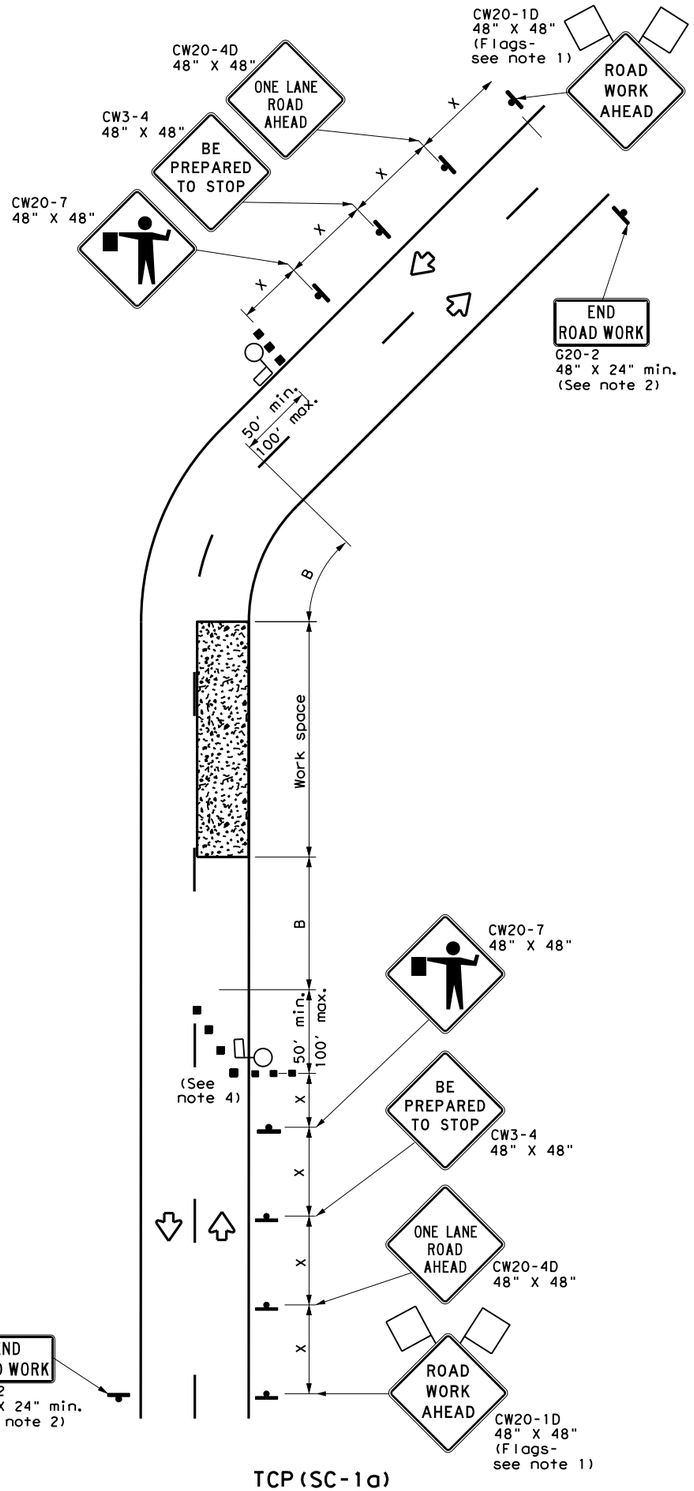
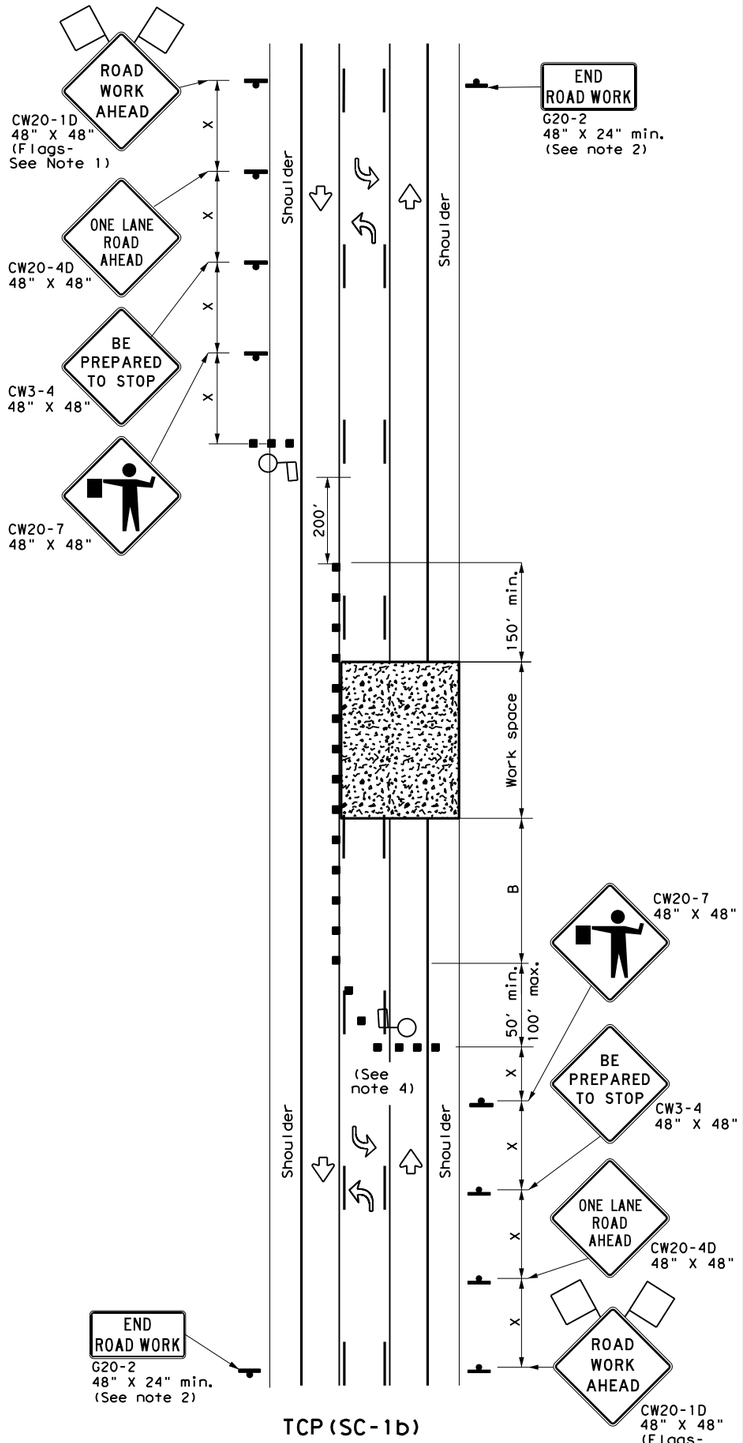


TCP(SC-1a)

ONE LANE TWO-WAY (TWO LANES) CONTROL WITH PILOT VEHICLE



TCP(SC-1b)

ONE LANE TWO-WAY (THREE LANES) CONTROL WITH PILOT VEHICLE AND CHANNELIZING DEVICES

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 Distance "X"	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only

** Taper lengths have been rounded off.

L = Length of Taper (FT) W = Width of Offset (FT) S = Posted Speed (MPH)

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except: if project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
3. Sign spacing may be increased or an additional ROAD WORK AHEAD (CW20-1D) sign may be used if advance warning ahead of the flagger sign is less than 1500 feet.
4. Flaggers should use two-way radios or other methods of communication at all times for traffic control coordination.
5. Flaggers should use 24" STOP (CW20-8) / SLOW (CW20-8aT) paddles to control traffic. Flags should be limited to emergency situations.
6. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
7. If the seal coat operation crosses intersections, traffic in these areas must be controlled. Care must be taken to prevent vehicles from crossing the asphalt before the aggregate is placed. This may require positioning additional traffic control personnel (flaggers) at the intersection.
8. Temporary rumble strips are not required on seal coat operations.
9. The pilot car is used to guide vehicles through traffic control zone. The pilot car shall have an identification name displayed and PILOT CAR, FOLLOW ME (G20-4) sign or message board mounted in a conspicuous position on rear.

TCP (SC-1a)

1. Channelizing devices on the centerline are not required when a pilot car is leading traffic, unless directed by the Engineer.

Texas Department of Transportation — Traffic Safety Division Standard

TRAFFIC CONTROL PLAN SEAL COAT OPERATIONS ONE-LANE TWO-WAY

TCP(SC-1)-22

FILE: tcpsc-1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	PHR	CAMERON,Etc		54

DATE:
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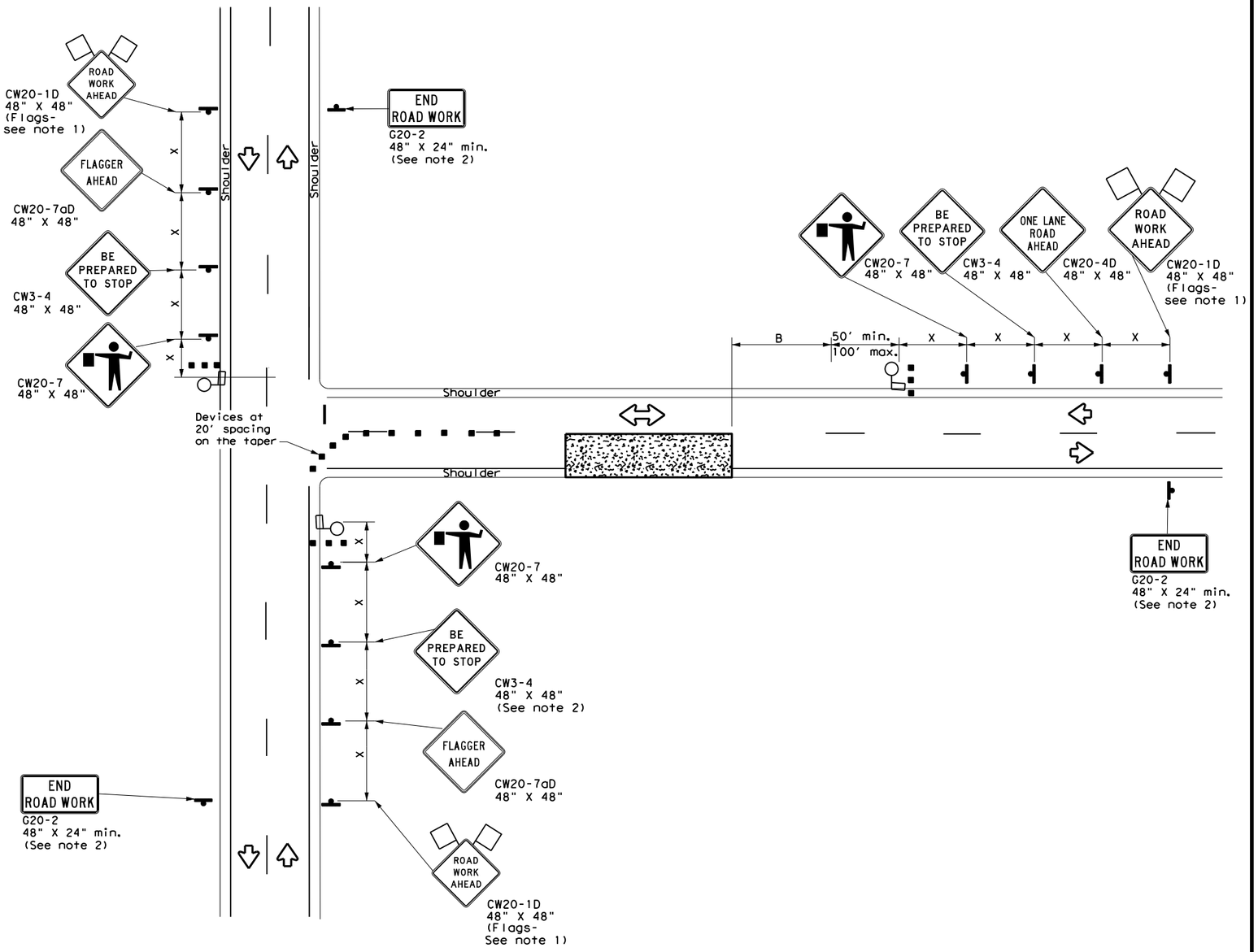

ONE LANE TWO-WAY (T-INTERSECTION) CONTROL WITH PILOT VEHICLE

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 Distance "X"	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only

** Taper lengths have been rounded off.

L = Length of Taper (FT) W = Width of Offset (FT) S = Posted Speed (MPH)

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except: if project signing is present, END ROAD WORK (G20-2) sign is optional with approval by the Engineer.
3. Flaggers should use two-way radios or other methods of communication at all times for traffic control coordination.
4. Flaggers should use 24" STOP (CW20-8) / SLOW (CW20-8aT) paddles to control traffic. Flags should be limited to emergency situations.
5. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
6. Temporary rumble strips are not required on seal coat operations.
7. The pilot car is used to guide vehicles through traffic control zone. The pilot car shall have an identification name displayed and PILOT CAR, FOLLOW ME (G20-4) sign or message board mounted in a conspicuous position on rear.

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC CONTROL PLAN SEAL COAT OPERATIONS NEAR INTERSECTION

TCP(SC-4)-22

FILE: tcpsc-4-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-21 10-22	0921	06	269,Etc	VARIOUS
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	PHR	CAMERON,Etc		55

220

DATE:
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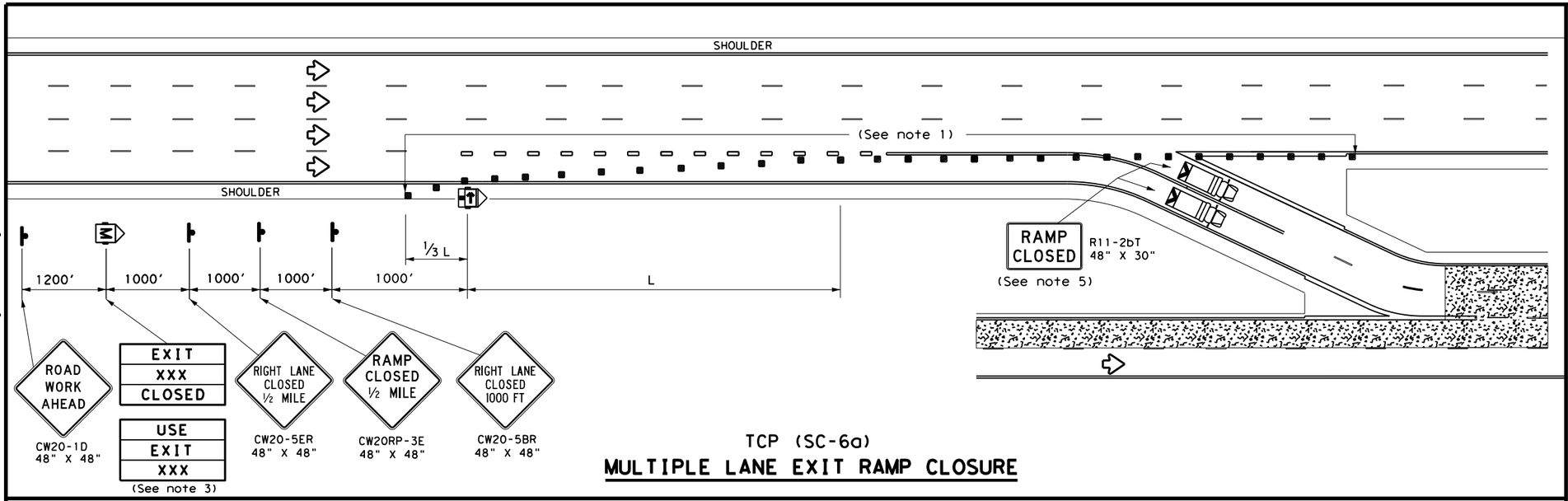
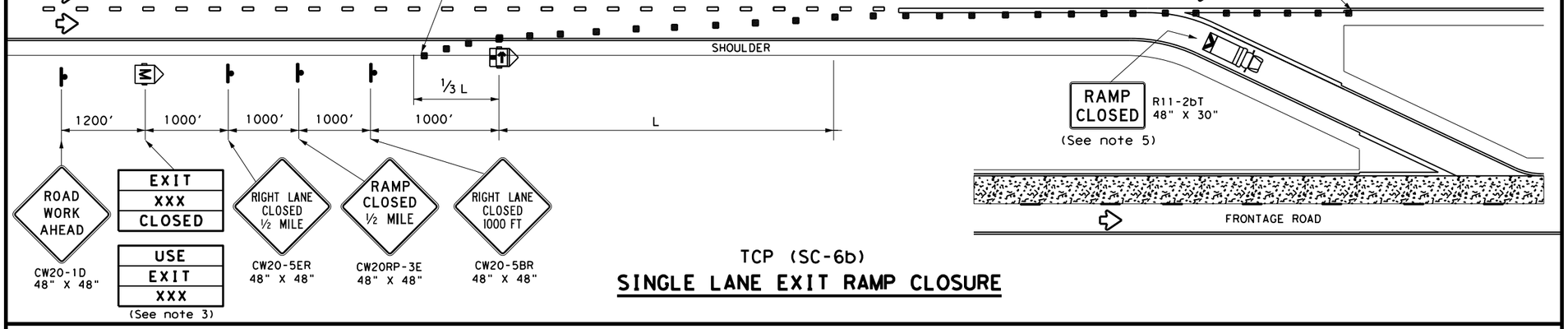


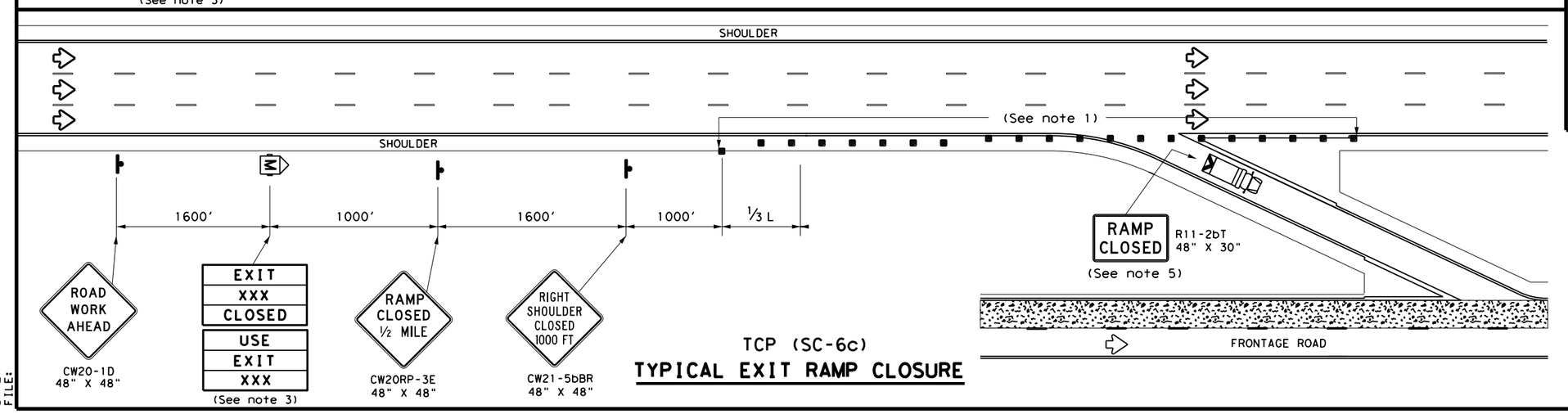
TCP (SC-6a)

MULTIPLE LANE EXIT RAMP CLOSURE



TCP (SC-6b)

SINGLE LANE EXIT RAMP CLOSURE



TCP (SC-6c)

TYPICAL EXIT RAMP CLOSURE

LEGEND

	Type 3 Barricade		Channelizing Devices (CDs)
	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 "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'
85		850'	935'	1020'	85'	170'	695'

** 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. Place channelizing devices at 20' spacings. Tighter spacing allowed as necessary to address field conditions or observed driver behavior.
2. See the Standard Highway Sign Design for Texas (SHSD) for sign details.
3. The PCMS may be omitted if replaced with a RAMP CLOSED AHEAD (CW20RP-3D) sign or when a permanent Dynamic Message Sign (DMS) is available in an appropriate location to display a similar message as called for on the PCMS.
4. When it is determined that a through lane should be closed in addition to the exit ramp, refer to TCP(6-4) for traffic control details.
5. A Truck Mounted Attenuator (TMA), where shown, is REQUIRED and shall have a RAMP CLOSED (R11-2bT) sign mounted on the rear of the truck.

Texas Department of Transportation | Traffic Safety Division Standard

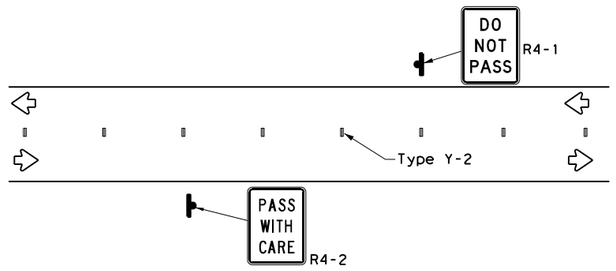
TRAFFIC CONTROL PLAN SEAL COAT OPERATIONS DIVIDED HIGHWAYS

TCP(SC-6)-22

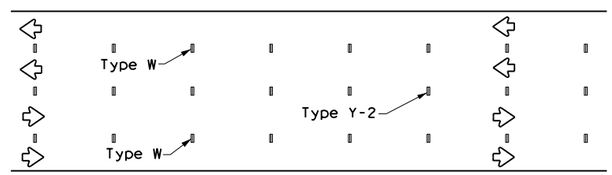
FILE: tcpsc-6-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 10-22	0921	06	269, Etc	VARIOUS
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON, Etc		56

DATE:
FILE:

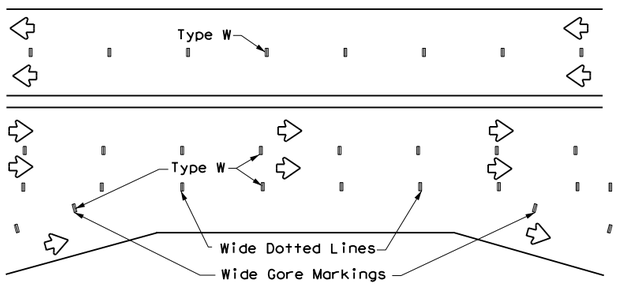
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS (TABS)



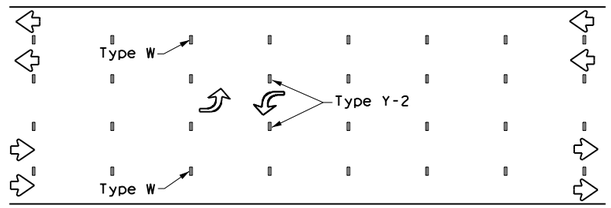
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS

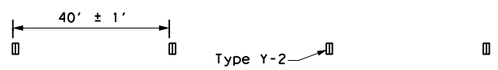
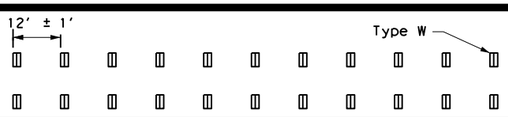


LANE LINES FOR DIVIDED HIGHWAY

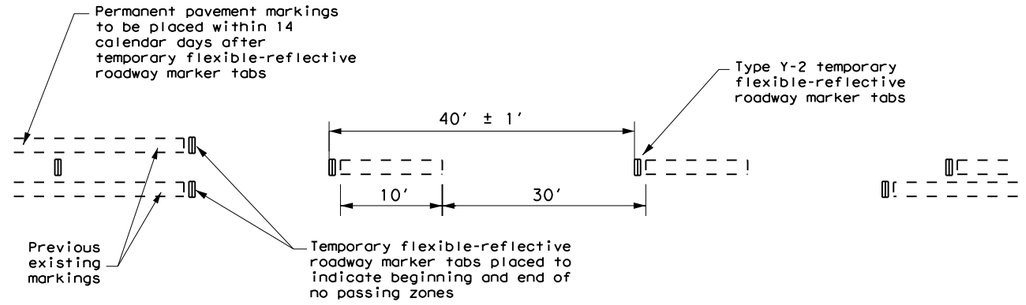


TWO-WAY LEFT TURN LANE

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS (TABS)

SOLID LINES	DOUBLE NO-PASSING LINE	
	SINGLE NO-PASSING LINE or CHANNELIZATION LINE	
	8" WIDE SOLID LINE	
BROKEN LINES (FOR CENTER LINE OR LANE LINE)		
WIDE DOTTED LINES (FOR LANE DROP LINES)		
WIDE GORE MARKINGS		

TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS



TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS

1. Temporary markings for surfacing projects shall be Temporary Flexible-Reflective Roadway Marker Tabs with protective cover unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement no more than two days before the surfacing is applied. After the surfacing is rolled and swept, the protective cover over the reflective strip shall be removed.
2. Temporary Flexible-Reflective Roadway Marker Tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with a yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
3. Temporary Flexible-Reflective Roadway Marker Tabs will require normal maintenance replacement when used on roadways with an Average Daily Traffic (ADT) per lane of up to 7500 vehicles with no more than 10% truck mix. When roadway volumes exceed these values, additional maintenance replacement of these devices should be planned for.
4. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low- beam head light at night, unless sight distance is restricted by roadway geometrics.
5. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 4.
6. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
7. Tabs shall NOT be used to simulate edge lines.

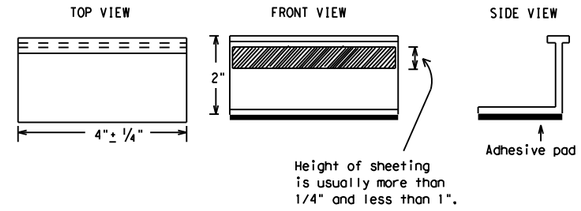
NOTES:

1. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
2. For exit gores where a lane is being dropped, place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are NOT acceptable.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.

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

1. DMSs referenced above may be found along with embedded links to their respective MPLs at the following website: http://www.txdot.gov

TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS



Texas Department of Transportation

Traffic Safety Division Standard

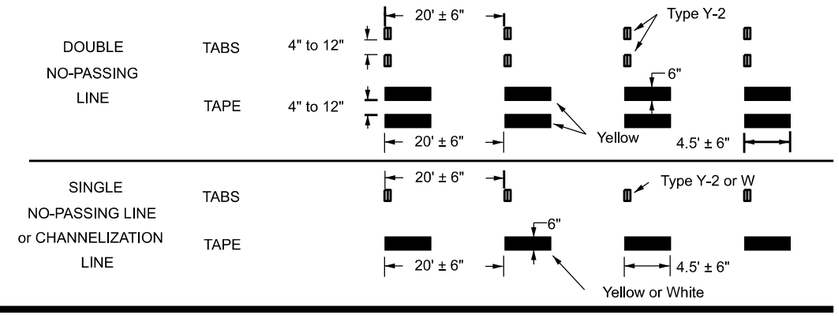
TEMPORARY PAVEMENT MARKINGS FOR SEAL COAT OPERATIONS

TCP(SC-7)-22

FILE: tcpsc-7-22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc	VARIOUS
4-21	DIST	COUNTY		SHEET NO.
10-22	PHR	CAMERON,Etc		57

223

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



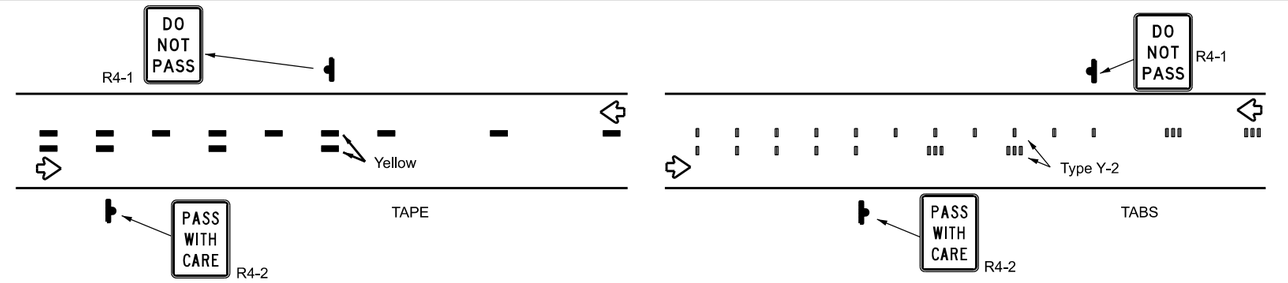
NOTES:

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

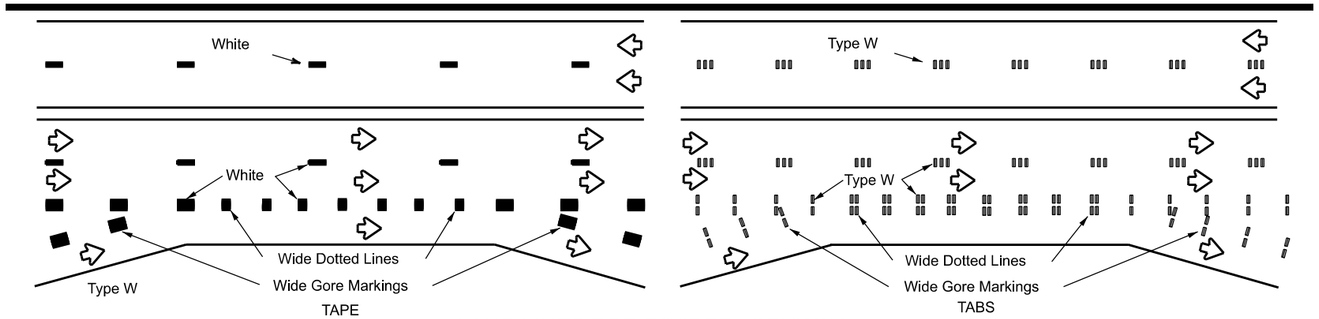
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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

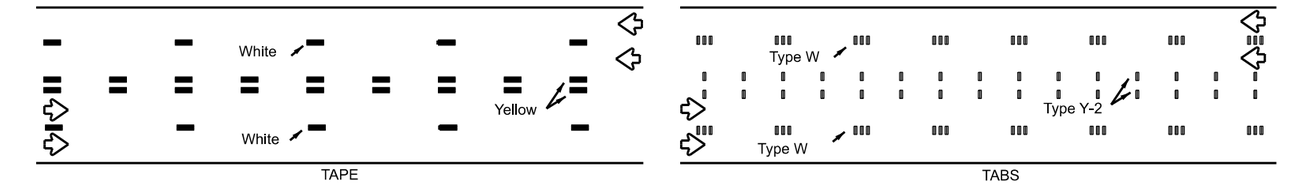
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



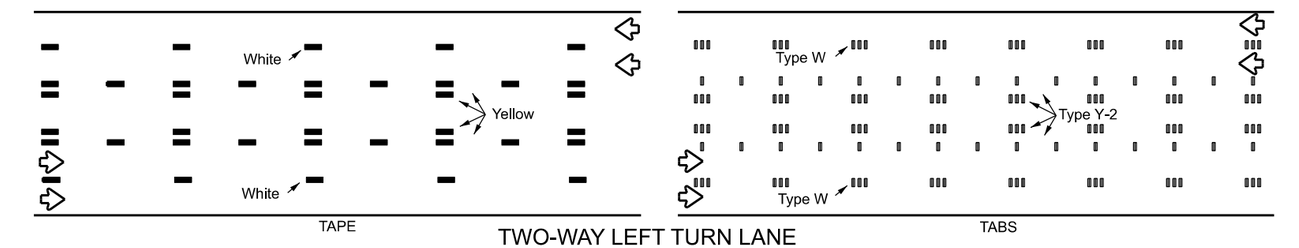
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



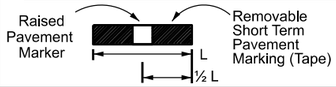
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



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

PREFABRICATED PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-23

FILE: wzstpm-23.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-92 7-13 1-97 2-23 3-03	0921	06	269,ETC	VARIOUS
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON,Etc		58

111

DATE: DATE TIME
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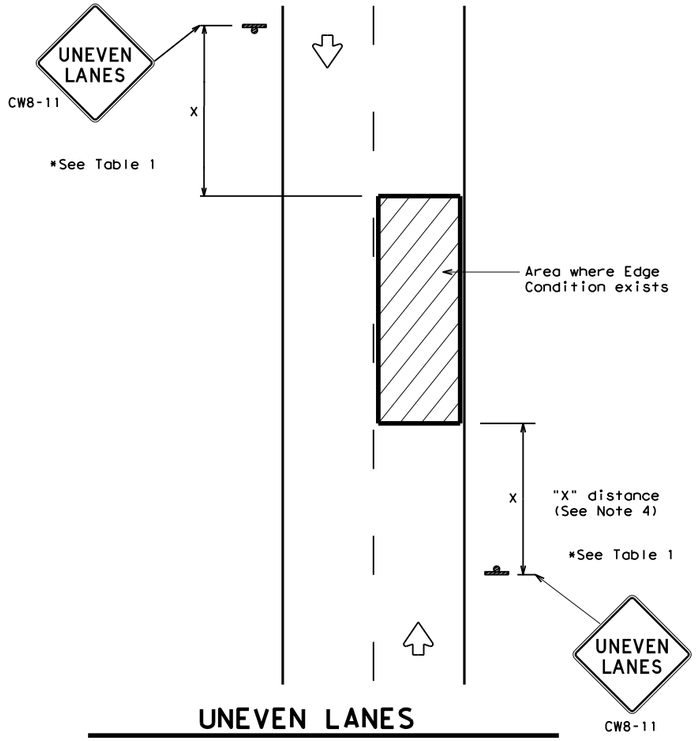
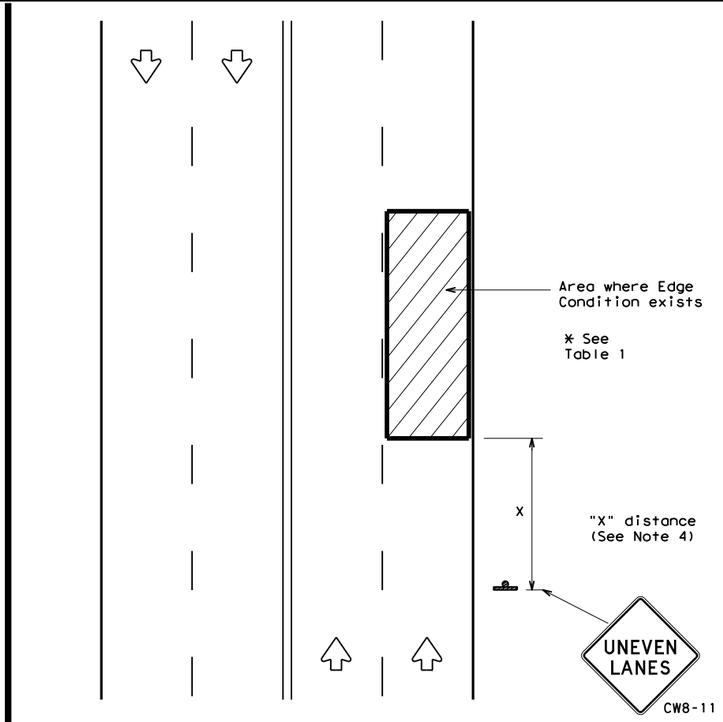
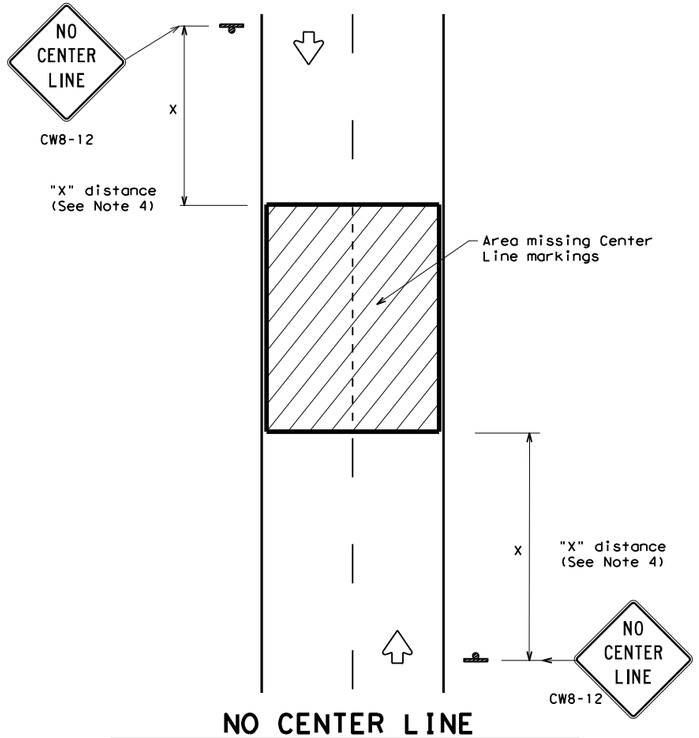
DATE:
FILE:



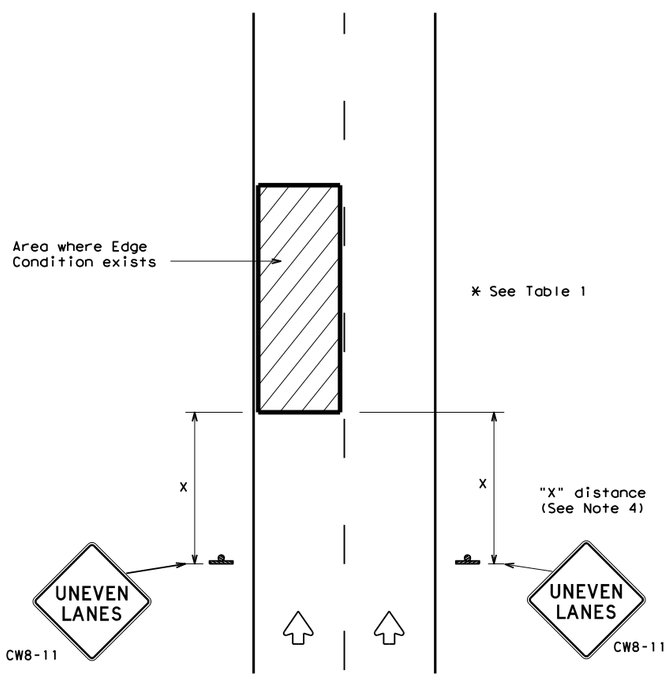
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

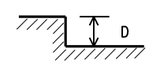
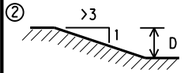
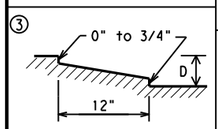
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

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

TABLE 1

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

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

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

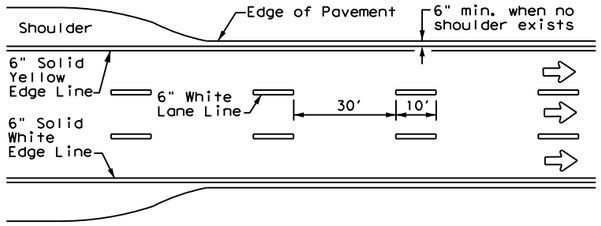
Texas Department of Transportation

Traffic Operations Division Standard

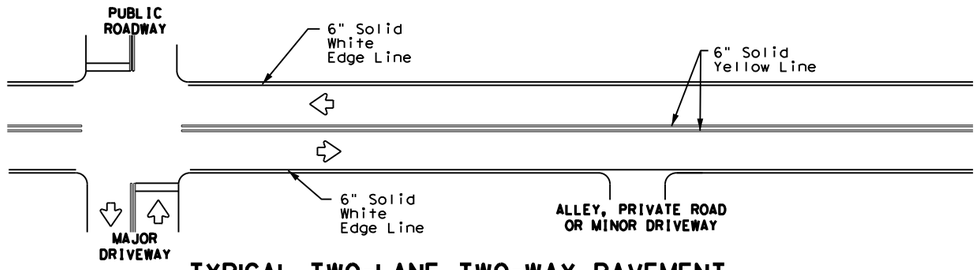
SIGNING FOR UNEVEN LANES

WZ(UL)-13

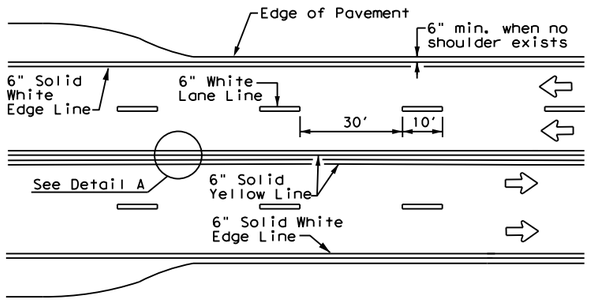
FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc	VARIOUS
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	PHR	CAMERON,Etc		59

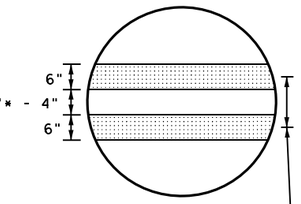


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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

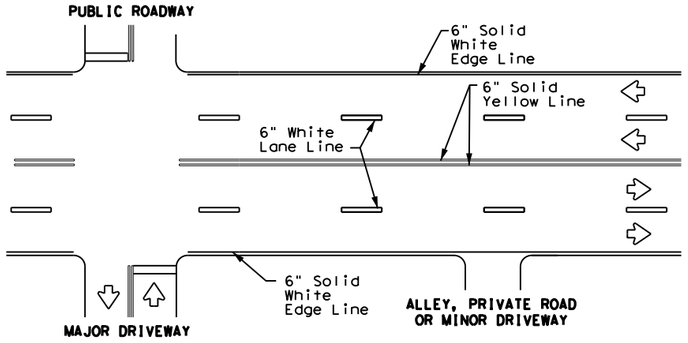




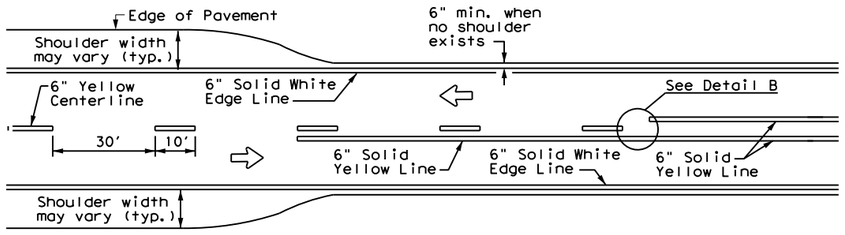
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

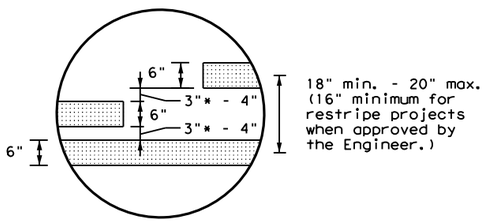
** 8" minimum for restripe projects when approved by the Engineer.



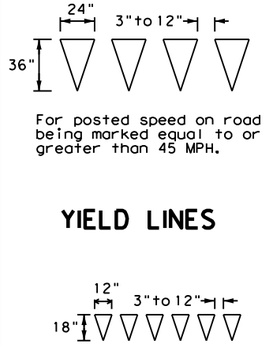
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

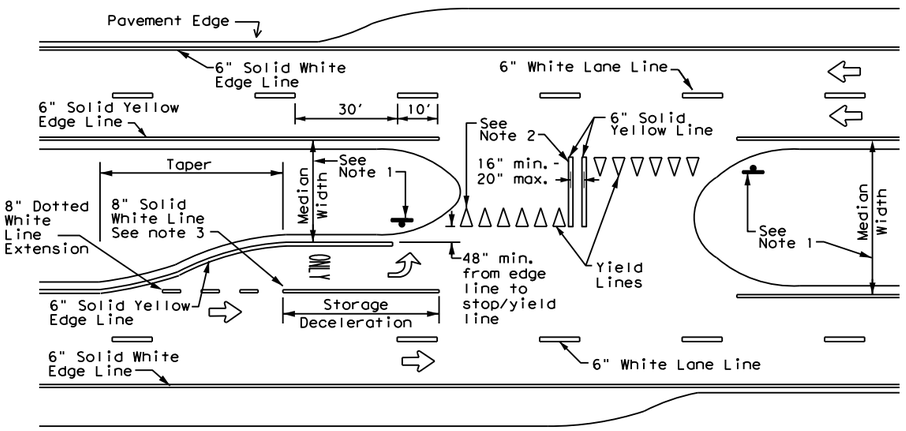


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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





FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

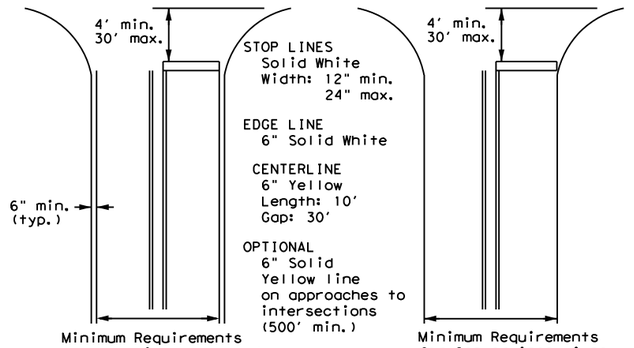
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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

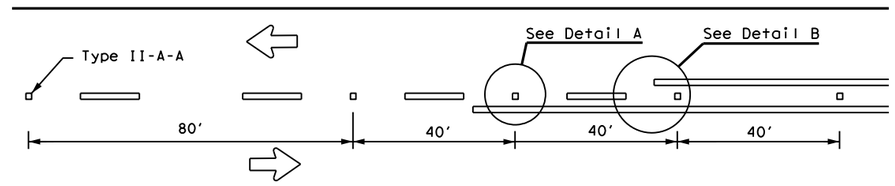
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20	0921	06	269, Etc	VARIOUS
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	PHR	CAMERON, Etc		60

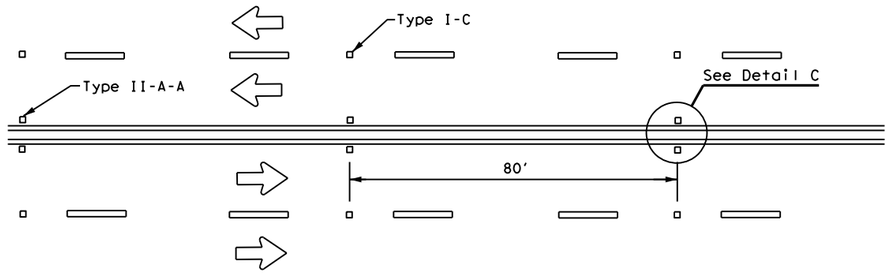
22A

DATE:
FILE:

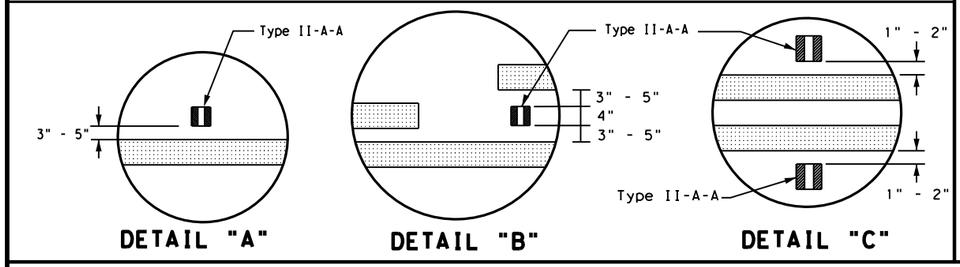
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

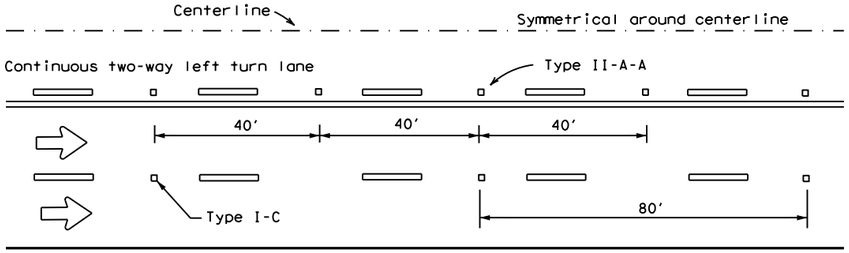


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

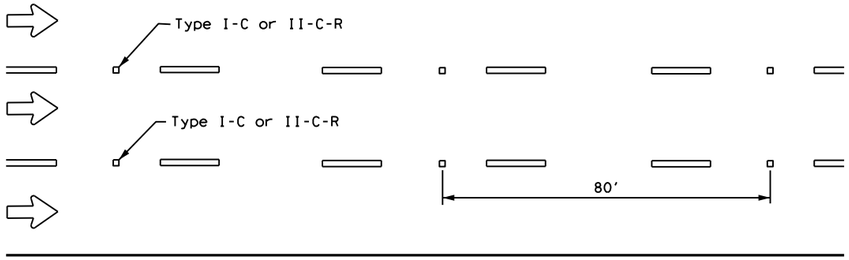


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



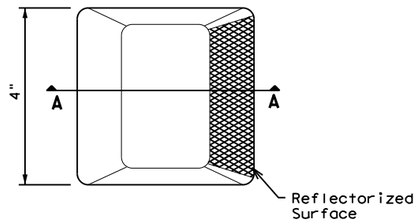
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

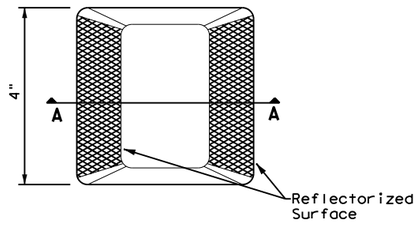
See Note 3.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

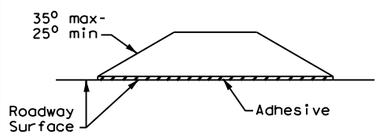
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

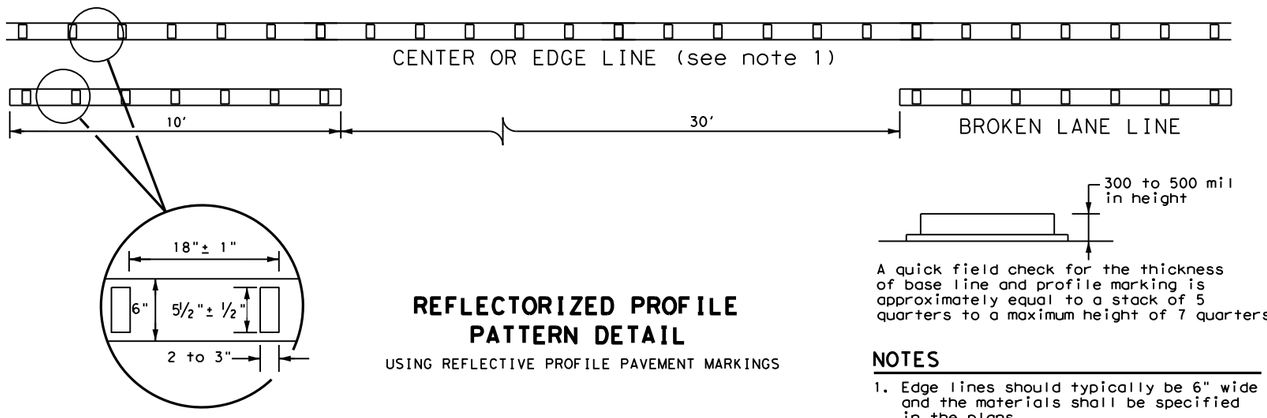


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



6" EDGE LINE, 6" CENTERLINE OR 6" LANE LINE

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTES

1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

Texas Department of Transportation

Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	0921	06	269,Etc	VARIOUS
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON,Etc		61

22B

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

During the planning phase of project development, the following Environmental Permits, Issues and Commitments have been developed during coordination with resource agencies, local governmental entities and the general public. Any change orders and/or deviations from the final design must be reported to the Engineer prior to the commencement of construction activities as additional environmental clearances may be required.

I. Clean Water Act, Section 402; Stormwater Pollution Prevention

Action Items Required : ☐ No Action Required

1. ☒ The contractor must implement the SW3P by installing Best Management Practices (BMPs) as indicated in the construction plans and maintained appropriately throughout construction. BMPs must be in place prior to the start of construction. The SW3P may need to be revised as necessary as construction progresses.

2. ☒ For all construction PSL's off the ROW, the contractor must certify compliance with all applicable laws, rules and regulations pertaining to the preservation of cultural resources, natural resources and the environment.

3. ☒ Based on the acreage of impact, select the appropriate box below:

   ☒ This project will disturb less than 1 acre of soil and is not part of a larger common plan of development; therefore, a NOI and TPDES Site Notice are not required for this project.

   or

   ☐ This project will disturb equal to or more than 1 acre of soil but less than 5 acres; therefore a NOI is not required but a TPDES Site Notice is required. The Construction Site Notice (CSN) is required to be posted at the construction site in a publicly accessible location for review by the public, TCEQ, EPA and other Inspectors.

   or

   ☐ This project will disturb equal to or more than 5 acres of soil and will require a NOI and TPDES Site Notice. The NOI and Site Notice are required to be posted at the construction site in a publicly accessible location.

4. ☒ Need to address MS4 requirements (Cameron & Hidalgo Counties only) ☐ MS4 requirements not needed

II. Clean Water Act, Sections 401 and 404 Compliance

Action Items Rquired : ☐ No Action Required

1. ☒ Filling, dredging or excavating in any water bodies, rivers, creeks, streams, wetlands or wet areas is prohibited unless specified in the USACE permit and approved by the Engineer. The contractor shall adhere to all agreements, mitigation plans, and BMPs required by the NWP as regulated by the USACE.

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

   ☒ No Permit Required

   ☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

   ☐ Nationwide Permit 14 - PCN Required (1/10th to <1/2 acre, 1/3 in tidal waters)

   ☐ Individual 404 Permit Required

   ☐ Other Nationwide Permit Required: NWP#_____

2. ☒ The contractor is responsible for obtaining new or revised Section 404 permit(s) for Contractor initiated changes in construction methods that change Impacts To Waters Of The U.S., including wetlands. The Contractor will ensure that the water quality of the State will be maintained and not degraded.

3. ☒ Best Management Practices for applicable Section 401 General Conditions:

General Condition 12 - Categories I and II BMPs required

Category I (Erosion Control)

☐ Temporary Vegetation	☐ Interceptor Swale	☐ Mulch Filter Berms and/or Socks
☐ Blankets, Matting	☐ Diversion Dike	☒ Compost Filter Berms and/or Socks
☐ Mulch	☐ Erosion Control Compost	☐ Compost Blankets
☐ Sodding		

Category II (Sedimentation Control)

☐ Silt Fence	☐ Hay (Straw) Bale Dike	☐ Mulch Filter Berms and/or Socks
☐ Rock Berm	☐ Brush Berms	☒ Compost Filter Berms and/or Socks
☐ Triangular Filter Dike	☐ Sediment Basins	☐ Stone Outlet Sediment Traps
☐ Sand Bag Berm	☐ Erosion Control Compost	

General Condition 21 - Category III BMPs required

Category III (Post-Construction TSS Control)

☐ Vegetative Filter Strips	☐ Wet Basins	☐ Mulch Filter Berms and/or Socks
☐ Retention/Irrigation	☐ Grassy Swales	☒ Compost Filter Berms and/or Socks
☐ Extended Detention Basin	☐ Vegetation-Lined Ditches	☐ Sand Filter Systems
☐ Constructed Wetlands	☐ Erosion Control Compost	☐ Sedimentation Chambers

II. Clean Water Act, Sections 401 and 404 Compliance - Continued:

4. ☒ The Contractor's designated and qualified Contractor Responsible Person Environmental (CRPe) will monitor the project site daily to ensue compliance with SW3P and TPDES General Permit TXR 150000. Daily Monitoring Reports shall be provided to TxDOT within 48 hours, in accordance with Item 506.3.1.

5. ☒ Other Project Specific Actions:

   1. Biodegradable erosion socks will be used to prevent road aggregate from entering water bodies (Resaca De Las Palma

III. Cultural Resources

Action Items Required : ☐ No Action Required

1. ☒ Refer to the 2014 TxDOT Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges, Item 7.7.1., in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

2. ☒ Other Project Specific Actions:

   1. Should archaeological materials be encountered, please halt work and contact TxDOT and TPWD immediately.

IV. Vegetation Resources

Action Items Required : ☐ No Action Required

1. ☐ In accordance with the 2014 TxDOT Standard Specifications; Item 164 - Seeding For Erosion Control; provide and install temporary or permanent seeding for erosion control as shown on the plans or as directed by the Engineer for all seeding and replanting of right of way where possible. (Required for Urban Settings)

2. ☐ In accordance with Executive Order 13112 on invasive species and the Executive Memorandum on Beneficial Landscaping, native species of plants shall be used for all seeding and replanting of right of way where possible for rural roadways. (Required for Rural Settings)

3. ☒ Preserve vegetation where possible throughout the project and minimize clearing, grubbing and excavation within stream banks, bed and approach sections.

4. ☐ Other Project Specific Actions:

Pharr District Contact No. 956-702-6100 Revised 01/30/2017

List of Abbreviations

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

Texas Department of Transportation

PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			VARIOUS
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON, Etc	SHEET NO.
CONTROL	SECTION	JOB	
0921	06	269, Etc	62

V. Federal Listed, and Proposed Threatened and Endangered Species, Critical Habitat, State Listed Species, Candidate Species and Migratory Birds

Action Items Required : ☐ No Action Required

1. ☒ Under the Migratory Bird Treaty Act (MBTA) of 1918, codified at 16 U.S.C. § 703-712 and as enforced by the USFWS, the proposed construction work will not remove active nests from bridges, trees, ground and other structures during migratory bird nesting season, (February 1st. through October 1st.). If the Contractor needs to perform work within the right of way during nesting season, a qualified Biologist shall conduct a survey to determine if active nests are present. If present, the Contractor shall maintain a buffer zone around the nest(s) as directed by the Biologist. The buffer zone will be protected from clearing and disturbance until such time as the Biologist has determined that the nest(s) is no longer active. Prior to the nesting season, existing bridges and culverts should be treated against migratory bird nesting by utilizing Bird Exclusion Methods. Bird Exclusion Methods should be monitored and maintained throughout the nesting season. Refer to Standard Bird Exclusion Details.

2. ☒ There is the potential for the presence of state-listed species & species of concern in the project area and state law prohibits the taking (incidental or otherwise) of state-listed species. Taking is defined as the collection, hooking, hunting, netting, shooting, or share by any means or devices. If any listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately.

3. ☒ Other Project Specific Actions:

   1. Federal & State Listed Species: Ocelot (Leopardus paradalis), Jaguarundi (Herpailurus yagourundi), South Texas Siren (Siren sp.), Black-Spotted Newt (Notophthalmus meridionalis), Sheep Frog (Hypopachus variolosus), Texas Tortoise (Gopherus berlandieri), Texas Horned Lizard (Phynosoma cornutum), Texas Indigo Snake (Drymarchon melanurus erebennus), Texas Ayenia (Ayenia limitaris), Mexican Mud-plantain (Heteranthera mexicana)

VI. Hazardous Materials on Contamination Issues

Action Items Required : ☐ No Action Required

General (applies to all projects):

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

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the HCA.

Maintain an adequate supply of on-site spill response materials as indicated in the MSDS. In the event of a spill, take immediate action to mitigate the spill as indicated in the MSDS and in accordance with safe work practices. Contact the TxDOT Pharr District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- Dead or distressed vegetation (identified as not normal)
- Trash piles, drums, canisters, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of contaminant substances

Any other evidence indicating possible hazardous materials or contamination discovered on site.

1. ☒ If potentially hazardous material and/or contaminated media (i.e.: soil, groundwater, surface water, sediment, building materials) are unexpectedly encountered during construction, assure that such materials and contamination are handled according to applicable federal and state regulations, cease work in the immediate area and contact the Engineer immediately.

VI. Hazardous Materials on Contamination Issues - Continued:

2. Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

   ☐ Yes ☒ No

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

3. Are the results of the asbestos inspection positive (is asbestos present)?

   ☐ Yes ☐ No

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

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

4. ☐ The Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and an Asbestos Consultant in order to minimize construction delays and subsequent claims.

VII. Other Environmental Issues

Action Items Required : ☐ No Action Required

1. ☒ Noise

   Contractor shall make every reasonable effort to minimize construction noise through abatement measures such as work hour controls and proper maintenance of equipment mufflers.

2. ☒ Air

   Contractor shall practice common dust control techniques such as surface chemical treatment or watering of unpaved road surfaces and vehicle speed reduction shall be implemented to minimize and prevent airborne dust during construction.

   Contractor should minimize MSAT by utilizing measures to encourage use of EPA required cleaner diesel fuels, limits on idling, increase use of cleaner burning diesel engines, and other emission limitation techniques, as appropriate.

Pharr District Contact No. 956-702-6100 Revised 01/30/2017

List of Abbreviations

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CGP: Construction General Permit	PCN: Pre-Construction Notification
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Texas Department of Transportation

PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			VARIOUS
STATE	DISTRICT	COUNTY	
TEXAS	PHR	CAMERON, Etc	SHEET NO.
CONTROL	SECTION	JOB	
0921	06	269, Etc	63

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0921-06-269, ECT.

1.2 PROJECT LIMITS:
From: WITHIN BIRDING CENTER, WITHIN BROWNSVILLE FIELD STATION, WITHIN LAS PALOMAS WMA, WITHIN FALCON STATE PARK

To: RESACA DE LAS PALMAS, ARROYO COLORADO UNIT

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 25°59'46.26"N ,(Long) 97°34'20.26"W

END: (Lat) 25°58'52.21"N ,(Long) 97°33'57.00"W

1.4 TOTAL PROJECT AREA (Acres): 19.90 AC

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0 AC

1.6 NATURE OF CONSTRUCTION ACTIVITY:

SEAL COAT PARK ROADS, ENTRANCE, AND PARKING LOT, REHABILITATE PARKING LOT

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Laredo silty clay loam	0 to 1 percent slopes, rarely flooded
Olmito silty clay	
Tiocano clay	0 to 1 percent slopes, occasionally ponded

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- ☐ PSLs determined during preconstruction meeting
- ☒ PSLs determined during construction
- ☐ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

- ☒ Mobilization
- ☒ Install sediment and erosion controls
- ☐ Blade existing topsoil into windrows, prep ROW, clear and grub
- ☒ Remove existing pavement
- ☐ Grading operations, excavation, and embankment
- ☐ Excavate and prepare subgrade for proposed pavement widening
- ☐ Remove existing culverts, safety end treatments (SETs)
- ☐ Remove existing metal beam guard fence (MBGF), bridge rail
- ☒ Install proposed pavement per plans
- ☐ Install culverts, culvert extensions, SETs
- ☐ Install mow strip, MBGF, bridge rail
- ☒ Place flex base
- ☐ Rework slopes, grade ditches
- ☐ Blade windrowed material back across slopes
- ☐ Revegetation of unpaved areas
- ☐ Achieve site stabilization and remove sediment and erosion control measures
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☒ Sediment laden stormwater from stormwater conveyance over disturbed area
- ☒ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ☒ Solvents, paints, adhesives, etc. from various construction activities
- ☒ Transported soils from offsite vehicle tracking
- ☒ Construction debris and waste from various construction activities
- ☐ Contaminated water from excavation or dewatering pump-out water
- ☒ Sanitary waste from onsite restroom facilities
- ☒ Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☐ 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
Resaca de la Palma	Unclassified
Fish Hatchery Waters	Unclassified

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- ☒ Development of plans and specifications
- ☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- ☒ Post Construction Site Notice
- ☒ Submit NOI/CSN to local MS4
- ☒ Perform SWP3 inspections
- ☒ Maintain SWP3 records and update to reflect daily operations
- ☒ Complete and submit Notice of Termination to TCEQ
- ☒ Maintain SWP3 records for 3 years
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- ☒ Day To Day Operational Control
- ☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- ☒ Post Construction Site Notice
- ☒ Submit NOI/CSN to local MS4
- ☒ Maintain schedule of major construction activities
- ☒ Install, maintain and modify BMPs
- ☒ Complete and submit Notice of Termination to TCEQ
- ☒ Maintain SWP3 records for 3 years
- ☐ Other: _____
- ☐ Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity
Cameron County
Starr County

1.3 PROJECT COORDINATES CONTINUED:

CSJ 0921-06-268

BEGIN: (Lat) 25°59'5.82"N ,(Long) 97°31'51.00"W

END: (Lat) 25°59'10.37"N ,(Long) 97°31'50.64"W

CSJ 0921-06-267

BEGIN: (Lat) 26°18'23.51"N ,(Long) 97°31'12.99"W

END: (Lat) 26°18'46.79"N ,(Long) 97°31'10.03"W

CSJ 0921-28-008

BEGIN: (Lat) 26°34'43.27"N ,(Long) 97°07'43.77"W

END: (Lat) 26°35'27.40"N ,(Long) 99°09'15.67"W

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

06/16/2023

Agustin Ramirez, P.E.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			64
STATE	STATE DIST.	COUNTY	
TEXAS	PHR	CAMERON, Etc	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	06	269, Etc	VARIOUS

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ X Protection of Existing Vegetation
- X ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ ☐ Permanent Planting, Sodding or Seeding
- X ☐ 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

- X ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☐ ☐ Inlet Protection
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- X ☐ Sediment Control Fence
- ☐ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- X ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- ☐ ☐ Sedimentation Basin
  - ☐ Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- X Excess dirt/mud on road removed daily
- X Haul roads dampened for dust control
- X Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☐ Chemical Management
- ☐ Concrete and Materials Waste Management
- X Debris and Trash Management
- X Dust Control
- ☐ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To
Vegetative Buffer Next to Resaca De La Palma	9+65.75	151+35.01
Vegetative Buffer Next to Fish Hatchery Waters		

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 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

2.9 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STATE OF TEXAS
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96453
LICENSED PROFESSIONAL ENGINEER

06/16/2023

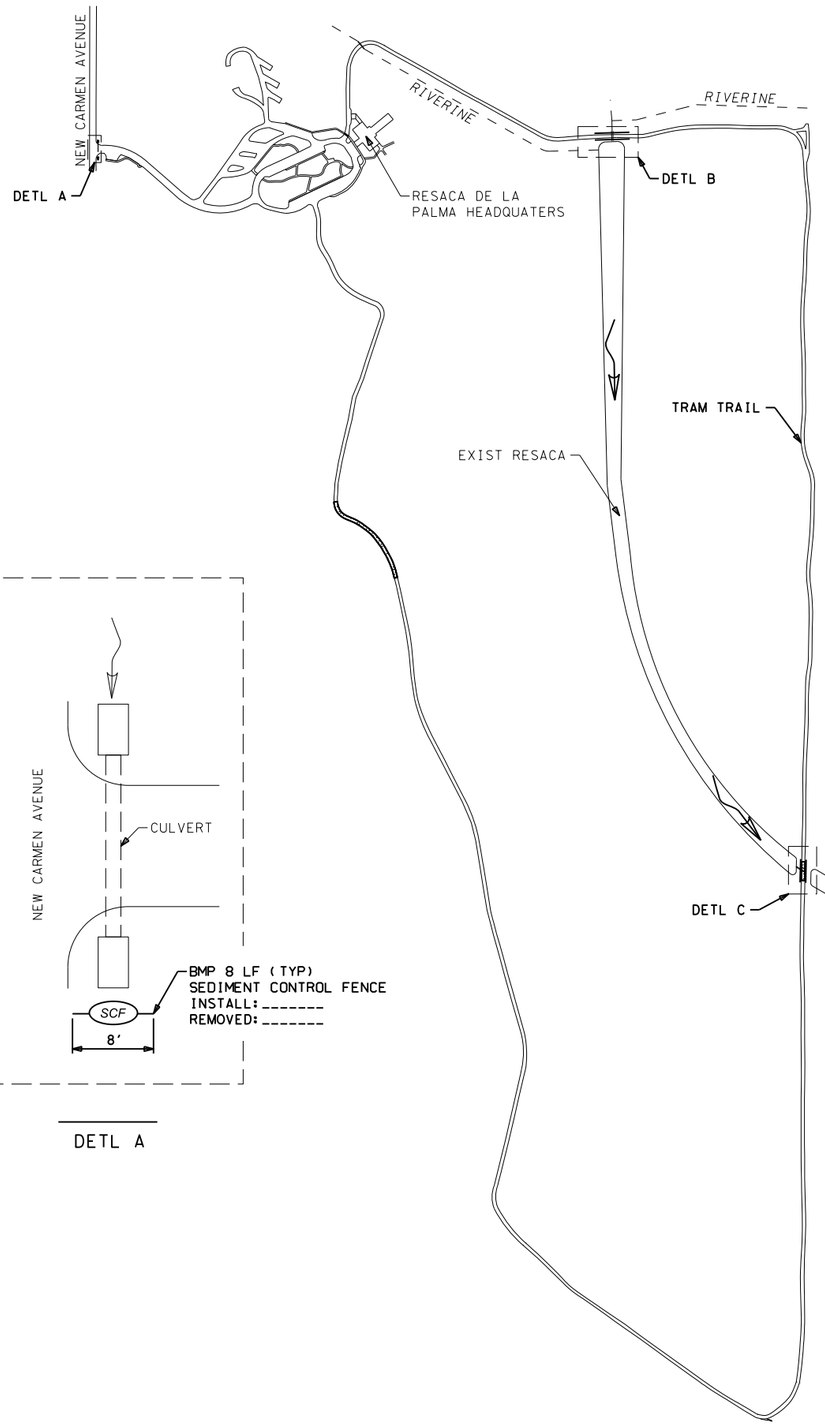
Agustin Ramirez, P.E.

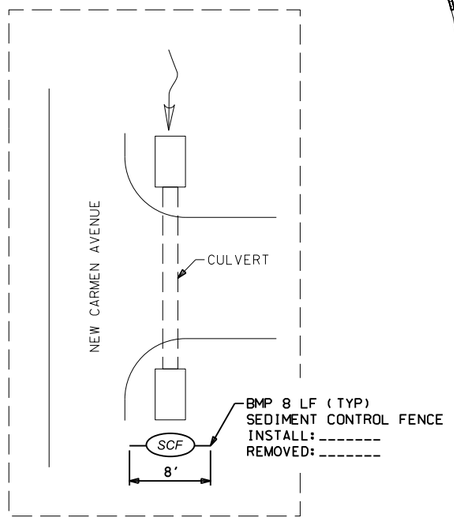
STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Sheet 2 of 2

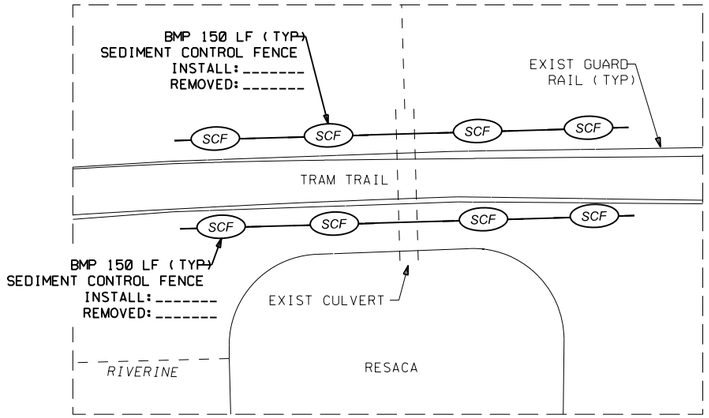
Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			65
STATE	STATE DIST.	COUNTY	
TEXAS	PHR	CAMERON, Etc	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	06	269, Etc	VARIOUS





DETL A



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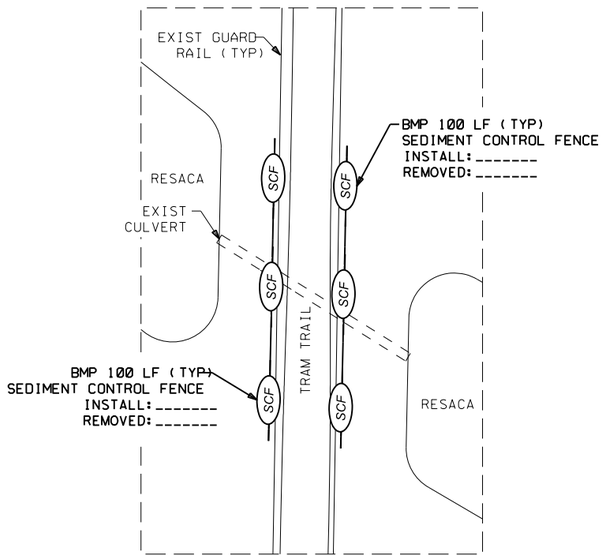

DETL C

N

LEGEND:

SCF — SEDIMENT CONTROL FENCE

WATER FLOW

ESTIMATED QUANTITIES

ITEM	506	506
CODE	6038	6039
DESC.	TEMP SEDMT CONT FENCE (INSTALL) (LF)	TEMP SEDMT CONT FENCE (REMOVE) (LF)
TOTAL	508	508

NOTES:

1. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS GENERAL NOTES FOR ADDITIONAL INFORMATION.
2. GENERAL LOCATION OF SEDIMENT CONTROL FENCE SHOWN. PLACEMENT TO BE APPROVED BY ENGINEER BASED ON EXISTING FIELD CONDITIONS.

STATE OF TEXAS
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06/16/2023

Agustin Ramirez, P.E

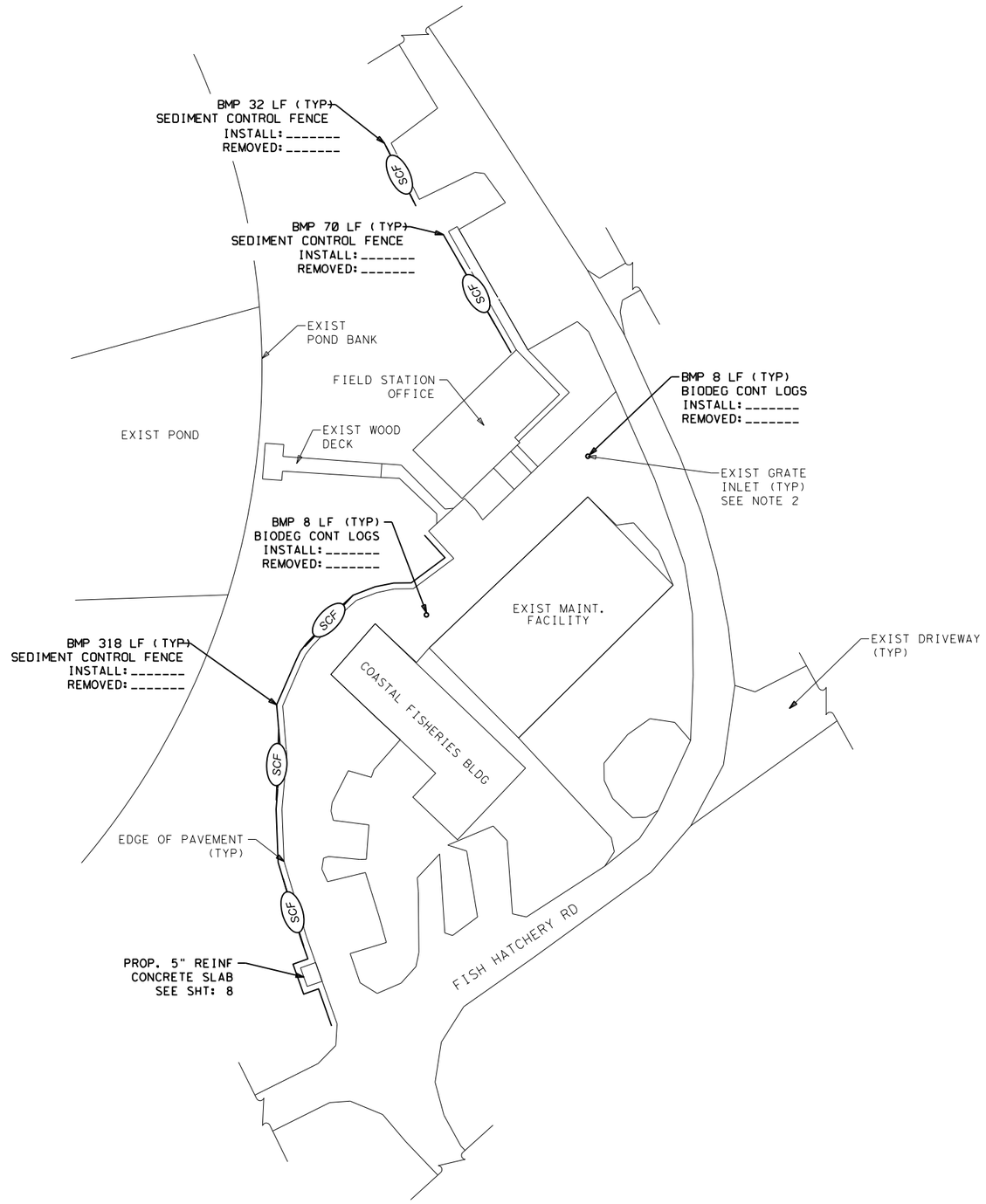
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

RESACA DE LA PALMA SW3P LAYOUT LOCATION 1

1 OF 1

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						66
STATE	STATE DIST. NO.	COUNTY	CONTROL	SECTION	JOB	HP NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS



N

ESTIMATED QUANTITIES

ITEM	506	506	506	506
CODE	6038	6039	6041	6043
DESC.	TEMP SEDMT CONT FENCE (INSTALL) (LF)	TEMP SEDMT CONT FENCE (REMOVE) (LF)	BIODEG EROSN LOGS INSTAL (12") (LF)	BIODEG EROSN LOGS (REMOVE) (LF)
TOTAL	420	420	16	16

LEGEND:

SCF — SEDIMENT CONTROL FENCE

BIODEG CONT LOGS

NOTES:

1. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS GENERAL NOTES FOR ADDITIONAL INFORMATION.
2. CONTRACTOR TO COVER EXISTING GRATE INLETS PRIOR TO SEAL COAT ACTIVITIES; REMOVE COVERS AND PLACE BIODEG CONT LOGS UPON COMPLETION OF SEAL COAT ACTIVITIES.

STATE OF TEXAS
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06/16/2023

Agustin Ramirez, P.E.

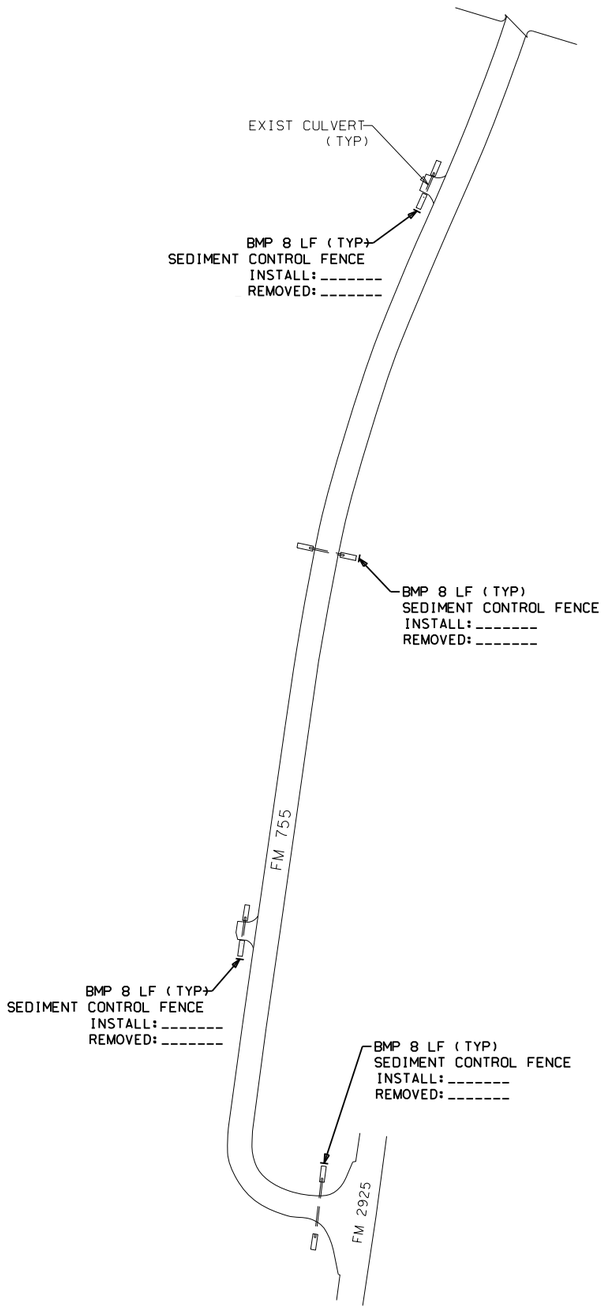
SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

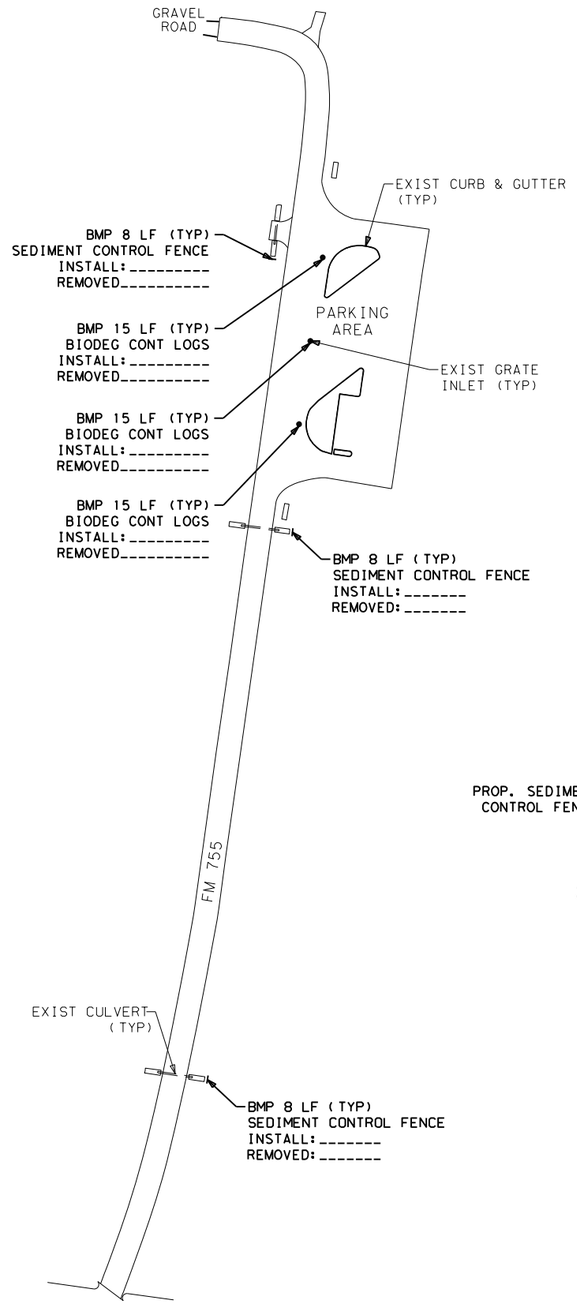
COASTAL FIELD STATION SW3P LAYOUT LOCATION 2

1 OF 1

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						67
STATE	STATE DIST.NO.	COUNTY	CONTROL	SECTION	JOB	HW NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS



FM 755 & PARKING AREA



ESTIMATED QUANTITIES

ITEM	506	506	506	506
CODE	6038	6039	6041	6043
DESC.	TEMP SEDMT CONT FENCE (INSTALL) (LF)	TEMP SEDMT CONT FENCE (REMOVE) (LF)	BIODEG EROSN LOGS INSTAL (12") (LF)	BIODEG EROSN LOGS (REMOVE) (LF)
TOTAL	56	56	45	45

LEGEND:

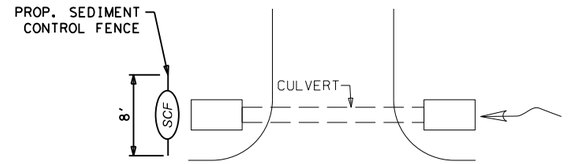
SCF — SEDIMENT CONTROL FENCE

WATER FLOW

BIODEG CONT LOGS

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING FIELD CONDITIONS.
2. REFER TO GENERAL NOTES, STANDARDS AND SPECIFICATIONS FOR ADDITIONAL SEAL COAT INFORMATION.
3. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS GENERAL NOTES FOR ADDITIONAL INFORMATION.



TYPICAL CROSS DRAIN DETAIL
SEDIMENT CONTROL FENCE
NTS

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

06/16/2023

Agustin Ramirez, P.E.

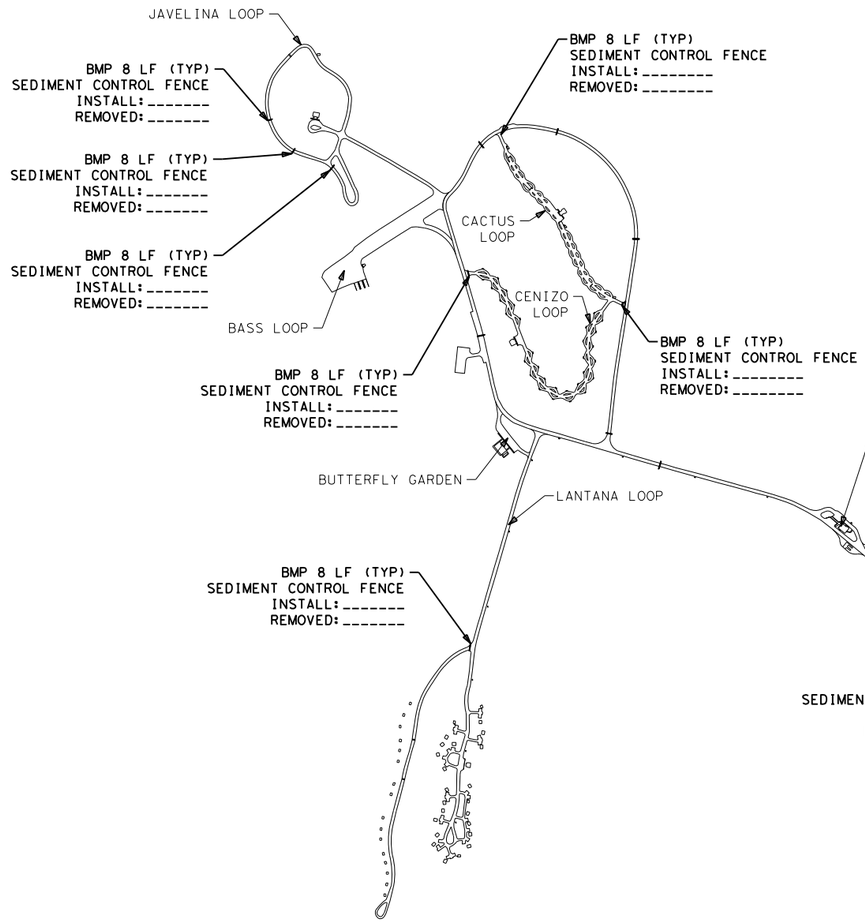
SCALE: NOT TO SCALE

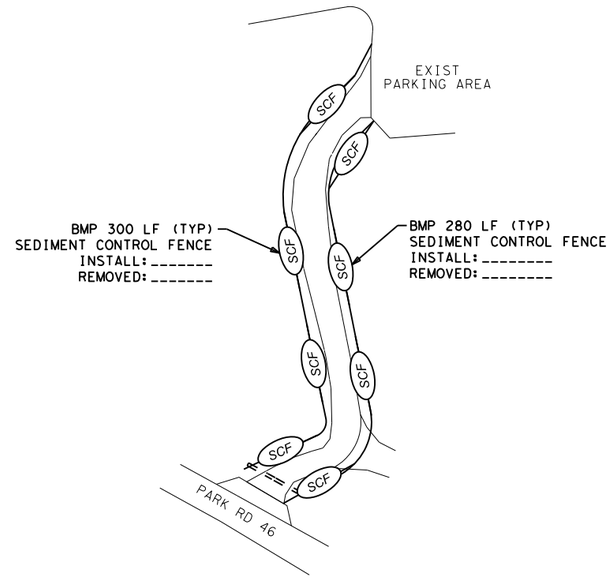
TEXAS DEPARTMENT OF TRANSPORTATION

LAS PALOMAS WMA
ARROYO COLORADO UNIT
SW3P LAYOUT
LOCATION 3

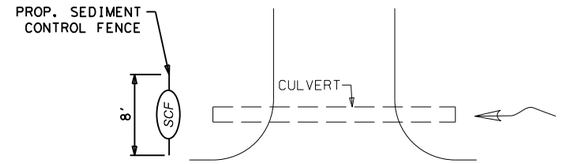
1 OF 1

FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						68
STATE	STATE DIST. NO.	COUNTY	CONTROL	SECTION	JOB	HW NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS





DETL A



PARK LOOP

TYPICAL CROSS DRAIN DETAIL
SEDIMENT CONTROL FENCE
NTS

LEGEND:

SCF — SEDIMENT CONTROL FENCE

WATER FLOW

ESTIMATED QUANTITIES

ITEM	506	506
CODE	6038	6039
DESC.	TEMP SEDMT CONT FENCE (INSTALL) (LF)	TEMP SEDMT CONT FENCE (REMOVE) (LF)
TOTAL	644	644

NOTES:

1. REFER TO TEMPORARY EROSION, SEDIMENTATION AND ENVIRONMENT CONTROLS GENERAL NOTES FOR ADDITIONAL INFORMATION.
2. GENERAL LOCATION OF SEDIMENT CONTROL FENCE SHOWN. PLACEMENT TO BE APPROVED BY ENGINEER BASED ON EXISTING FIELD CONDITIONS.

STATE OF TEXAS
AGUSTIN RAMIREZ
96453
LICENSED
PROFESSIONAL ENGINEER

06/16/2023

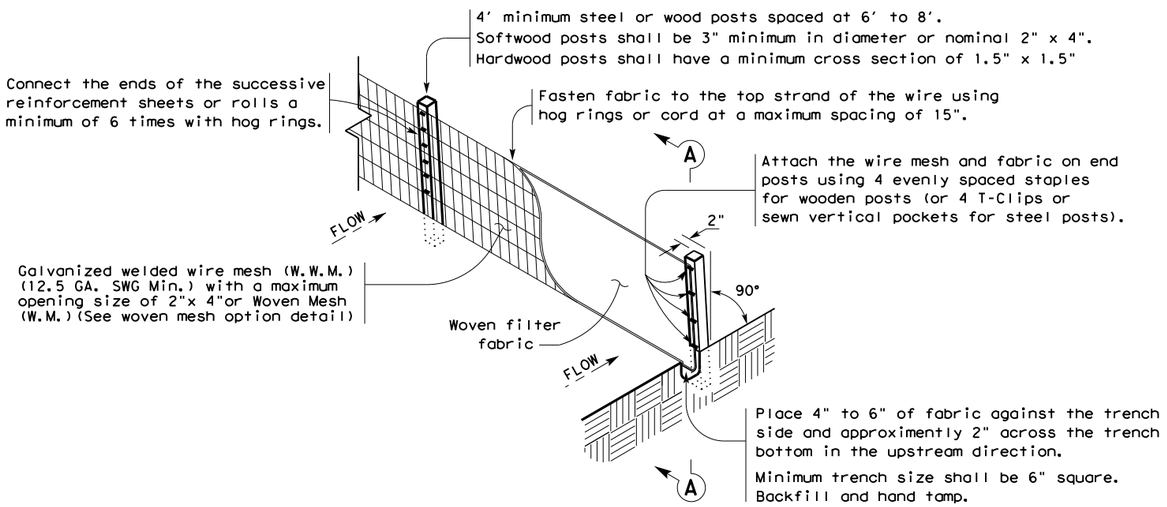
Agustin Ramirez, P.E.

SCALE: NOT TO SCALE

TEXAS DEPARTMENT OF TRANSPORTATION

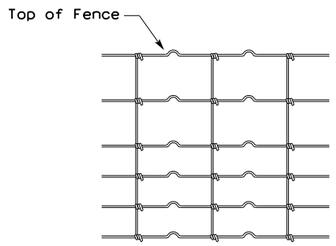
FALCON STATE PARK
SW3P LAYOUT
LOCATION 4

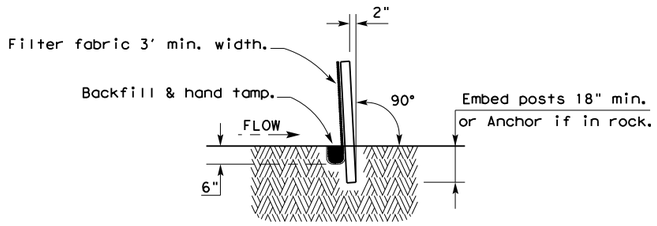
FED.RD. DIV.NO.	STATE PROJECT NO.					SHEET NO.
6						69
STATE	STATE DIST. NO.	COUNTY	CONTROL	SECTION	JOB	HIGHWAY NO.
TX	21	CAMERON,Etc	0921	06	269,Etc	VARIOUS



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

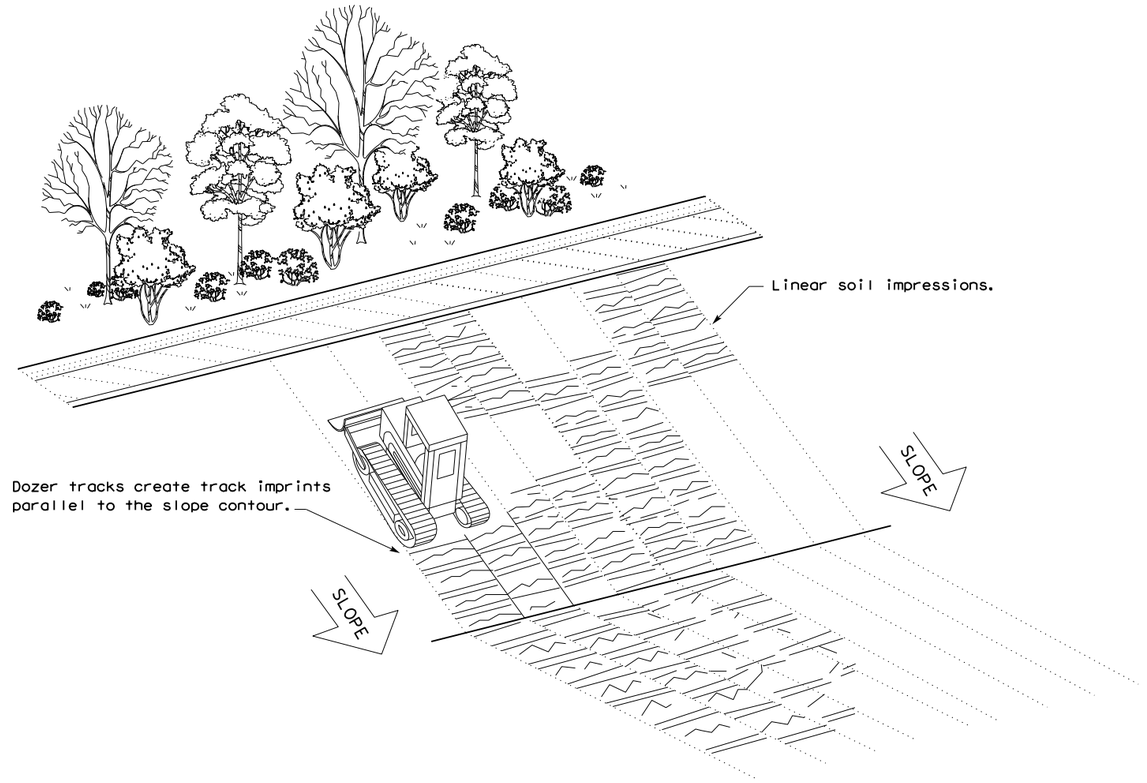
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

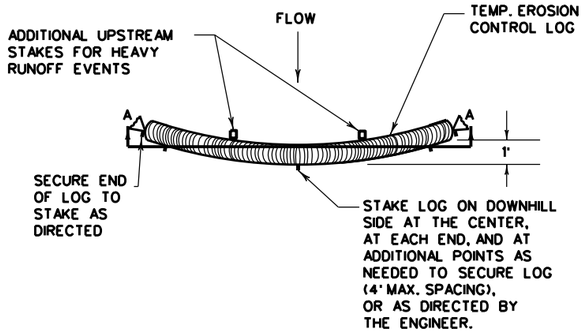
FENCE & VERTICAL TRACKING

EC(1)-16

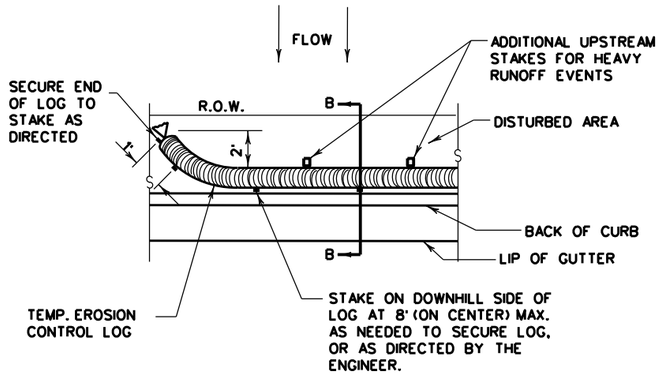
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269, Etc	VARIOUS
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON, Etc		71

DATE
FILE

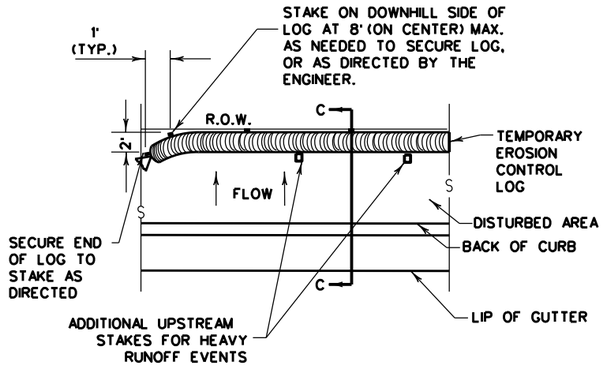
DATE:
FILE:



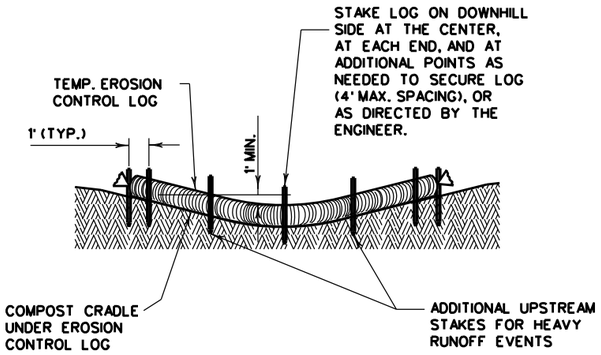
PLAN VIEW



PLAN VIEW



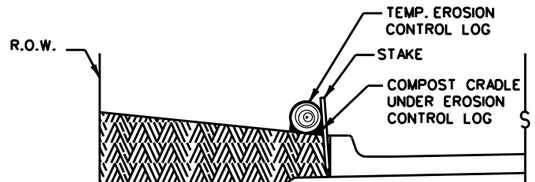
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

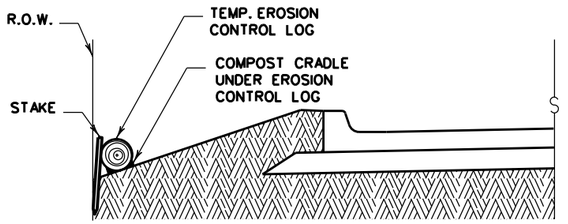
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

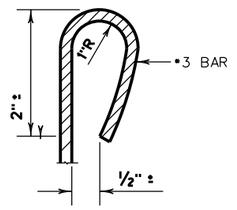
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR •3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

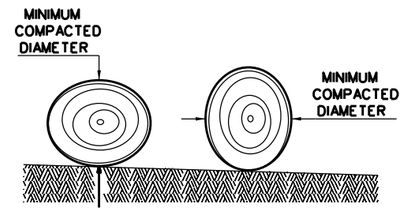
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SHEET 1 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		
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY		
REVISIONS	0921	06	269,Etc	VARIOUS		
	DIST	COUNTY		SHEET NO.		
	PHR	CAMERON,Etc		72		

DATE:
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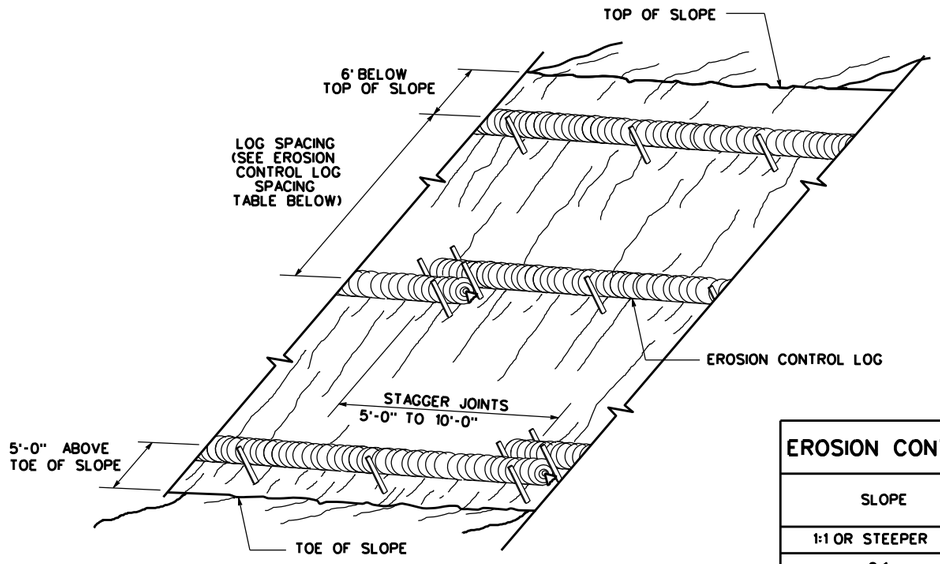
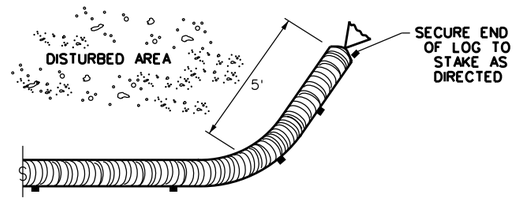


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

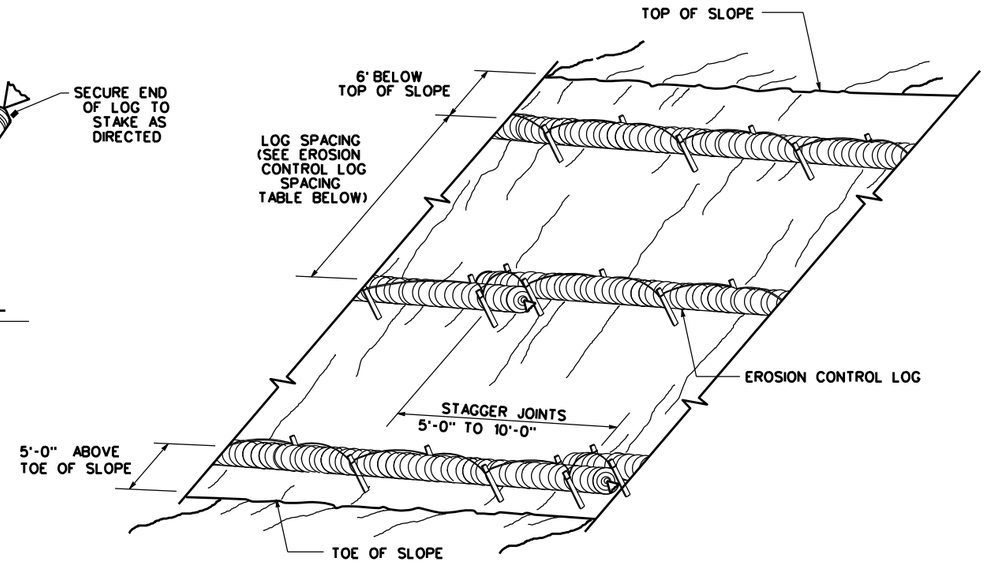
CL-SST



END SECTION RAP DETAIL

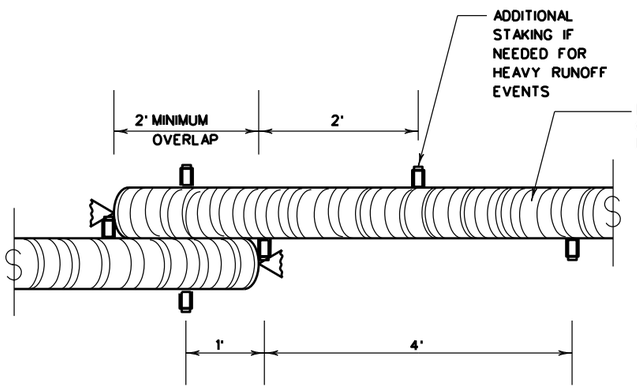
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

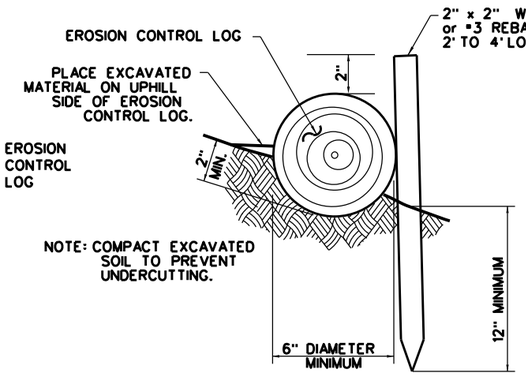
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER:
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

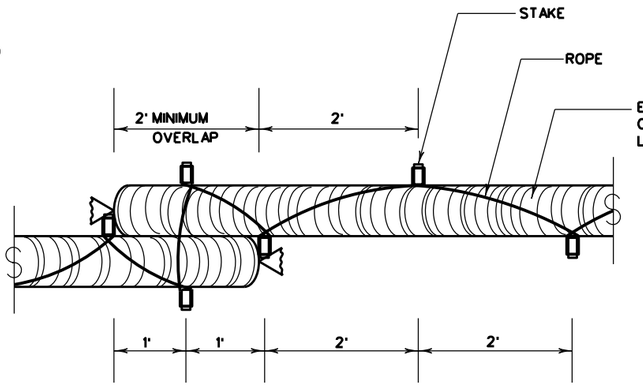


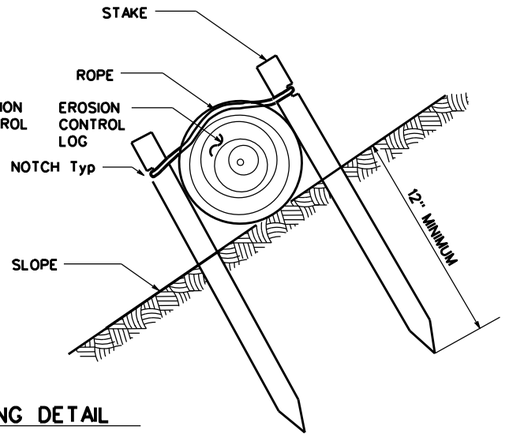


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

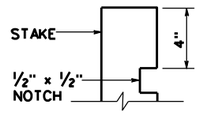
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	269,Etc	VARIOUS
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON,Etc		73

DATE:
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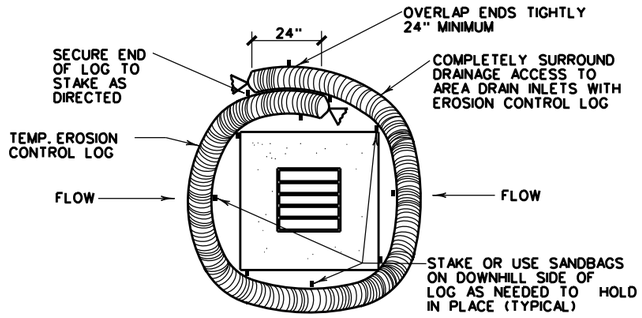
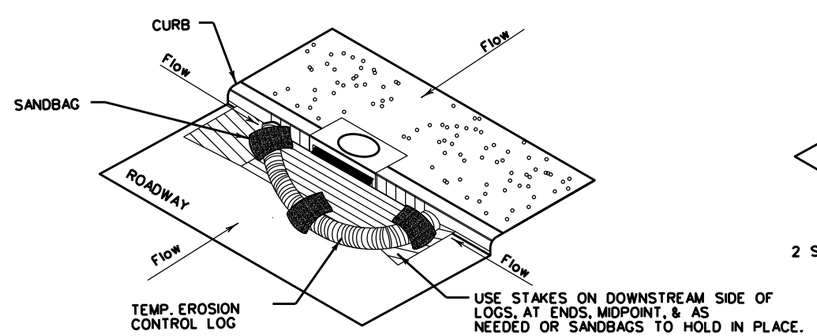


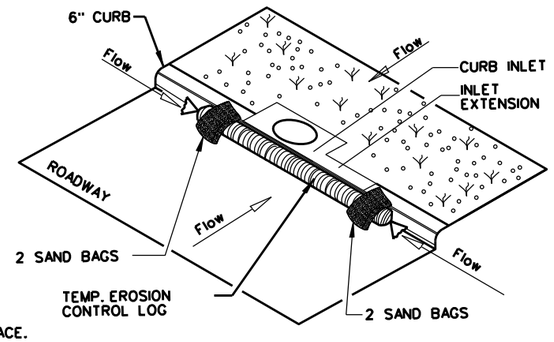
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

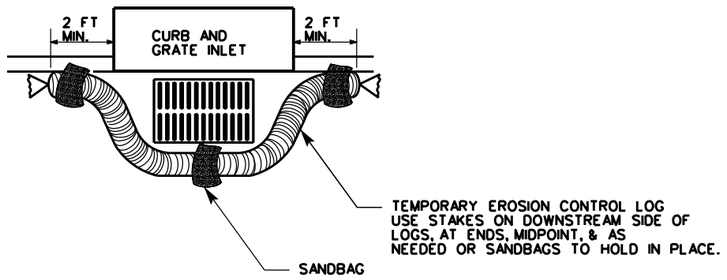
CL-CI



EROSION CONTROL LOG AT CURB INLET

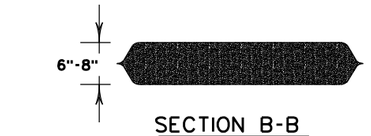
CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.

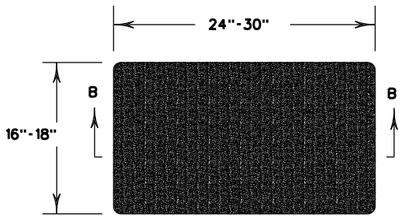


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

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	DIST	COUNTY		SHEET NO.		
	PHR	CAMERON,Etc		74		