474A5EE0-1B9A-489C-8473-8AE83A0D8B2B

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2023 (955)VRUG		1
STATE	STATE DIST.	COUNTY	
TEXAS	SAT	BEXAR	
CONT.	SECT.	JOB	HIGHWAY NO.
0915	12	758	VARIOUS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS

SEE SHEET 2 FOR INDEX OF SHEETS

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

PROJECT NO. STP 2023
(955)VRUG

CSJ:0915-12-758

BEXAR
HWY:VARIOUS

LIMITS: VARIOUS LOCATIONS DISTRICT WIDE

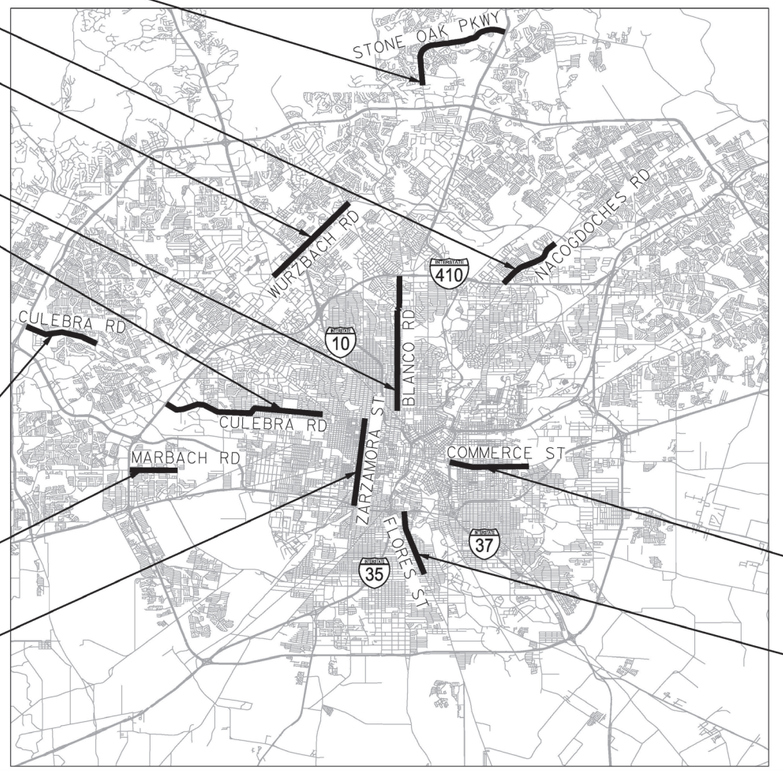
DESIGN SPEED = N/A
AREA OF DISTURBED SOIL = < 1 Acre
ADT: N/A

ACCESSIBILITY STANDARDS = PROWAG

NET LENGTH OF ROADWAY = 0 FT = 0 MI
NET LENGTH OF BRIDGE = 0 FT = 0 MI
NET LENGTH OF PROJECT = 0 FT = 0 MI

FOR WORK CONSISTING OF TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 10
LOCATION 9
LOCATION 1
LOCATION 8
LOCATION 3
LOCATION 2
LOCATION 4
LOCATION 5



EXCEPTIONS: N/A
EQUATIONS: N/A
R.R. CROSSINGS: N/A

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, SEPTEMBER 1, 2024 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 23, 2023)

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

LEVELS DISPLAYED
1

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

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS ACCEPTED: _____

FINAL CONTRACT COST: $ _____

CONTRACTOR: _____

FINAL PLANS STATEMENT:

THE CONSTRUCTION WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS.

_____ P.E. _____
AREA ENGINEER DATE

TEXAS DEPARTMENT OF TRANSPORTATION

ATION 6

ATION 7

SUBMITTED FOR LETTING 8/27/2024
DocuSigned by: Orlando Gallegos, P.E.
446D458C802A437...
PROJECT TRANSPORTATION ENGINEER SUPERVISOR

RECOMMENDED FOR LETTING 8/28/2024
DocuSigned by: Richard L De La Cruz PE
FA652A800DA344...
DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

REVIEWED FOR LETTING 8/27/2024
DocuSigned by: DRogers, P.E.
129108AA5084B9...
DISTRICT Design Director

APPROVED FOR LETTING 8/28/2024
DocuSigned by: Charles Benavides
7B0BA8580ACF41C...
DISTRICT ENGINEER

INDEX OF SHEETS

NOTES:

1: (**) INDICATES SAN ANTONIO DISTRICT STANDARDS
2: (*) INDICATES STATE STANDARDS

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

REV	DATE	BY	REVISION

NOT TO SCALE

STATE OF TEXAS
LASARO L. PICASSO
128068
LICENSED
PROFESSIONAL ENGINEER
8/23/2024

Lasaro Picasso, P.E.

WSP USA Inc
9311 San Pedro St., Suite 700
San Antonio, TX 78216
TEL: 210-247-4360
TBPE F-2263

Texas Department of Transportation

TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

INDEX OF SHEETS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	12	758	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		2

DATE: 8/23/2024 11:28:38 AM
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**********GENERAL NOTES**********
2024 Specification Book

--General--

Contact the Engineer or the City when construction operations are within 400 feet of a signalized intersection to determine/verify the location of loop detectors, conduit, ground-boxes, etc. Repair or replace any signal equipment damaged by construction operations. The method of repair or replacement shall be pre-approved and inspected. Depending on the type and extent of the damage, the Engineer reserves the right to perform the repair or replacement work and the Contractor will be billed for this work.

City of San Antonio: (210) 207-8642
City of New Braunfels: (830) 221-4049

Any materials removed and not reused and determined to be salvageable shall be stored within the project limits at an approved location or delivered undamaged to the storage yard as directed. Deface traffic signs so that they will not reappear in public as signs.

Any sign panels that are adjusted or removed and replaced, shall be done the same workday unless otherwise approved. This work shall be considered subsidiary to Item 502.

Notify the Engineer at least two weeks prior to a proposed traffic pattern change(s) that will require a revision to traffic signals.

Hurricane Evacuation

Hurricane Season is from June 1 thru November 30. As the closest metropolitan city inland from the Texas Coast, the City of San Antonio is a major shelter destination during mandatory hurricane evacuations. As such, planned work zone lane or road closures may be restricted and/or suspended during mandatory hurricane evacuation operations. The District will coordinate these restrictions at a minimum H-120 from any projected impact to the Texas Coast.

No time charges will be made if the Engineer determines that work on the project was impacted by the hurricane.

The Engineer may order changes in the Traffic Control Plan to accommodate evacuation traffic, and may suspend the work, all or in part, to ensure timely completion of this work. All work to implement changes in the Traffic Control Plan will be paid through existing bid prices or through Item 9.5, Force Account. However, the Department will not entertain any request for delay damages, loss of efficiency that may be attributed to the restriction or suspension of road or lane closures, or to changes in the Traffic Control Plan.

If a sanitary sewer overflow (SSO) occurs:

1. Attempt to eliminate the source of the SSO.
2. Contain sewage from the SSO to the extent possible to prevent contamination of waterways.
3. Call SAWS at (210) 233-2015.

Submit locate request for SAWS water and sewer to TXDOTlocates@saws.org.

In accordance with the Underground Facility Damage Prevention Act (One Call Bill) the phone number for a utility locator is 811. It is the Contractor's responsibility to plan for utility locators as needed.

Underground utilities owned by the Texas Department of Transportation may be present within the Right-Of-Way. Call or email the TxDOT offices listed below for locates a minimum of 48 hours in advance of excavation. If city or town owned irrigation facilities are present, call the appropriate department of the local city or town a minimum of 48 hours in advance of excavation. The Contractor is liable for all damages incurred to the above-mentioned utilities when working without having the utilities located prior to excavation.

For signal and ITS locates call TransGuide at 210-731-5136 or email sat_its_locates@txdot.gov for ITS locates and signal.request@txdot.gov for signal locates.

Contractor questions on this project are to be addressed to the following individual(s):
Orlando Gallegos, P.E. Orlando.Gallegos@txdot.gov
Marc Jacobson, P.E., PTOE Marc.Jacobson@sanantonio.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.

--Item 5--

A horizontal boom or equivalent equipment is required for construction in the vicinity of the CPS Energy electric lines to provide vertical clearance of equipment during construction. Contact CPS Energy Utility Coordination Group sixteen (16) week in anticipation of pole bracing. The estimated duration for pole bracing is 6 to 10 weeks (or longer if temporary construction easements are required) after invoice is paid. For de-energizing or sleeving of the overhead electrical lines depicted on the plans, please contact CPS Energy Utility Coordination Group sixteen (16) week in anticipation of needed de-energization. The estimated duration for de-energizing is approximately 4 to 6 weeks (after invoice is paid) but could vary on system scenario and back feed requirements. De-energizing may not be possible in all instances or may be restricted during specific periods of time due to load demand. Contractor will be reimbursed for the invoice cost for pole bracing and/or de-energizing or sleeving through force account.

Prevention of Migratory Bird Nesting

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

Structures

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

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

2. By February 15 place a nesting deterrent (which prevents access to the bridge and culvert by swallows) on the entire bridge (except deck and railing) and culverts. This work is subsidiary to the various bid items.

No extension of time or compensation payment will be granted for a delay or suspension of work caused by nesting swallows.

Provide a non-intrusive back-up alarm system on all heavy equipment used in close proximity to residential areas. This item is subsidiary to various bid items.

Excavation within 5 feet of an existing CPS Energy pole will require pole bracing. Contact CPS Energy utility coordination to request pole bracing (Customer Engineering 210-353-4050). The estimated duration for the pole bracing process is approximately 10 to 15 weeks.

--Item 6--
Show the stockpile lot and/or sub lot numbers on all tickets for all materials.

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

--Item 7--

The total disturbed area within the project is anticipated at less than one (1) acre. Due to this type of construction, the project qualifies for exclusion under the Construction General Permit (CGP) issued by the Texas Commission on Environmental Quality (TCEQ). However, should the sum of the Engineer's anticipated disturbances and the Contractor's (On ROW and off ROW) PSL's equal or exceed the one (1) acre threshold; both TxDOT and the Contractor have project responsibilities under the CGP that reverts to non-exclusion status. Obtain approval for all non-depicted areas of disturbance that increases the initial soil and vegetation disturbed area estimates before work starts at these locations.

Notify the Engineer of the disturbed acreage within one (1) mile of the project limits. Obtain authorization from the TCEQ for Contractor PSL's for construction support activities on or off ROW.

Roadway closures during the following key dates and/or special event are prohibited.
See the general notes under Item 502 for these dates.

Law Enforcement patrol vehicles must be marked as "Police".

--Item 8--
Working days will be computed and charged in accordance with Article 8.3.1.4: Standard work week.

A Special Provision to Item 8 for a delayed authorized date to begin work has been included in the contract. The reason for including the Special Provision is for material processing or contractor mobilization.

Create and maintain a Bar Chart schedule.

--Item 9--
When approved, provide uniformed, off-duty law enforcement officers with marked vehicles during work that requires a lane closure. The officer in marked vehicles shall be located as approved to monitor or direct traffic during the closure. The method used to direct traffic at signalized intersections shall be as approved. Additional officers and vehicles may be provided when approved or directed.

Complete the daily tracking form provided by the department and submit invoices that agree with the tracking form for payment at the end of each month approved services were provided.

Show proof of certification by the Texas Commission on Law Enforcement Standards.

All law enforcement personnel used in Work Zone Traffic Control shall be trained for performing duties in work zones and are required to take “Safe and Effective Use of Law Enforcement Personnel in Work Zones” (Course #133119) which can be found online at the following site: www.nhi.fhwa.dot.gov
Certificates of completion should be available to all who finish the course. These should be kept by the officers to substantiate completion when reporting to the work site.

Minimums, scheduling fees, etc. will not be paid; TxDOT will consider paying cancellation fees on a case-by-case basis.

--Item 500--
"Materials on Hand" payments will not be considered in determining percentages for mobilization payments.

--Item 502--
General

In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have an employee available to respond on the project for emergencies and for taking corrective measures within 2 hours or within a reasonable time frame as specified by the Engineer.

Avoid placing stockpiles, equipment, and other construction materials within the roadway’s horizontal clear zone or at any location that will constitute a hazard and will endanger traffic. If a stockpile is placed within the clear zone, address in accordance with the TMUTCD.

If Nighttime work is required and work is not behind positive barrier then full Class 3 reflective gear is required to be worn by all workers, hard hat halos are required to be worn by the flaggers at flagging stations, TY III barricades are required to be spaced at 500 ft, and a mandatory night work meeting is required.

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

Access to adjoining property must be maintained at all times.

Barricades, Signs, and Traffic Control Devices

When advanced warning flashing arrow panels and/or changeable message sign is specified, have one standby unit in good condition at the job site. Standby time shall be considered subsidiary to the bid item.

After written notification, the time frame is provided on the Form 599 to provide properly maintained signs and barricades before considered in non-compliance with this item.

Moving an existing sign to a temporary location is subsidiary to Item 502. Installations with permanent supports at permanent locations will be paid for under the applicable bid item(s).

Cover permanent signs if not used. This is subsidiary to Item 502.

Lane and Ramp Closures and Detours

Notify the Engineer in writing 10 business days in advance of any temporary or permanent lane, ramp, connector, etc. closures/detours, restrictions to lane widths, alterations to vertical clearances, or modifications to radii. Any other modifications to the roadway that may adversely affect the mobility of oversized/overweight trucks also require 10 business days advance written notice to the Engineer. At least one lane must always remain open.

For closures not listed in the TCP; the lane closures are limited to between the hours of 9am to 4pm, and at least one lane must remain open at all times.

At no time shall two consecutive intersecting roadways be closed at one time during construction.

At no time shall two consecutive ramps be closed at one time during construction or overlay operations.

Unless otherwise noted in the plans and/or as directed by the Engineer, daily lane closures shall be limited according to the following restrictions:

Nighttime: As directed by the Engineer.
(With uniformed off duty law enforcement officers)

Weekend closures when approved by the Engineer: As directed by the Engineer.

No lane closures will be permitted for the following dates and/or special events:
Between December 15 and January 1
Fiesta Week and Sales Tax Holidays (Bexar County Only)
Wednesday before Thanksgiving thru the Sunday after Thanksgiving
Saturday and Sunday before Memorial Day and Labor Day
Saturday or Sunday when July 4 falls on a Friday or Monday
Election days (Bexar County Only)
During major events at the Frost Bank Center (Spurs home games, Rodeo, concerts, etc.)
Alamodome, and/or Convention Center (Bexar County Only)
Easter Weekend April 18 to April 20

Traffic Signals

There are traffic signals at all project locations. Always keep the signals in operation except when necessary for specific installation operations, including any modifications to existing signal heads to always maintain clear visibility. Adjustment of any signal head will be subsidiary to Item 502. When it is necessary for a signal to be turned off, or when left-turn lanes are closed, hire off duty police officers to control the traffic until the signals are back in satisfactory condition.

Moving or adjustment of traffic signal heads, VIVDS, and radar detection for the purpose of alignment with the shifting of lanes in conjunction with the traffic control plan will be subsidiary to various bid items.

Coordinate with the appropriate entity (City of San Antonio, City of New Braunfels, etc.) or TxDOT when left-turn lanes are closed and/or for signal timing revisions as necessary.

Hauling

The use of rubber-tired equipment will be required for moving dirt or other materials along or across pavement surfaces. Where the contractor desires to move any equipment not licensed for operation on public highways, on or across pavement, they shall protect the pavement from damage as directed/approved by the Engineer.

Throughout construction operations, the Contractor will be required to conduct their hauling operations in a manner such that vehicles will not haul over previously recompacted subgrade or compacted base material, except in short sections for dumping manipulations.
The Contractor shall keep the roadway clean and free of dirt or other materials during hauling operations. If the Contractor does not maintain a clean roadway, they shall cease all construction operations, when directed by the Engineer, to clean the roadway to the satisfaction of the Engineer.

--Item 505--
One shadow vehicle with TMA will be required for this project. The TMA's will be measured and paid for by the DAY for each TMA/TA set up and operational on the worksite. The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMA's needed for the project. See TMA and TA Summary sheet in the plans.

--Item 506--
The Storm Water Pollution Prevention Plan (SWP3) consists of temporary erosion control measures needed and provided for under this Item. The disturbed area is less than one acre and use of erosion control measures is not anticipated. If physical conditions encountered at the job site require necessary controls, BMP installation, maintenance, and removal will be paid as extra work on a force account basis per Articles 4.4 and 9.7. An Inspector will perform a regularly scheduled SW3P inspection every 7 calendar days if erosion control measures are installed.

Failure to address items noted on the SW3P inspection report within two report cycles may result in the Department stopping all construction operations, exclusive of time charges, or withholding that month's estimate until the SW3P deficiencies are corrected unless the Engineer determines that the area is too wet to correct SW3P deficiencies.

Failure to correctly maintain daily monitoring reports and submitting to TxDOT on a daily/weekly basis may result in the monthly estimate being withheld.

--Item 680--
Furnish and install all required materials and equipment necessary for the complete and operating traffic signal installation at all project locations.

The locations shown on the plans for signal pole foundations, controller foundations, conduit and other items may be adjusted to better fit field conditions as approved.

County: Bexar

Highway: Various

Once final punch list is complete, contractor is allowed to begin flashing signal operations. Signal shall flash for a minimum of 7 days prior to full operation, unless otherwise approved by the Engineer.

Use LED lamps from the prequalified material producer lists as shown on the Texas Department of Transportation (TxDOT) – Construction Division's (CST) material producer list. Category is "Roadway Illumination and Electrical Supplies." under item 610. No substitutions will be allowed for materials found on this list.

Demonstrate that the field wiring is properly installed. Install the electrical equipment in a neat and workmanlike manner.

Use the following wiring sequence when connecting signal sections to the cabinet:

Conductor No.	Base Color	Tracer Color	Signal Face
1	Black		Yellow Ball
2	White		Neutral
3	Red		Red Ball
4	Green		Green Ball
5	Orange		Yellow Arrow
6	Blue		Green Arrow
7	White	Black	Spare

Salvageable material shall be determined by the City of San Antonio and delivered to the Traffic Operations Facility located at 6939 W. Loop 1604 N., Building 2, San Antonio, TX 78254. The contractor shall contact the City Maintenance Superintendent, at (210) 207-7769, to determine salvageable material and shall contact the Services and Supply Superintendent, at (210) 207-7771, seven (7) days prior to delivery of the salvaged material. The contractor shall become the owner and dispose of unsalvageable material in accordance with Federal, State, and Local regulations.

Use qualified personnel to respond to and diagnose all trouble calls during the thirty-day test period. Repair any malfunction to Contractor-supplied signal equipment. Provide to the Engineer a local telephone number, not subject to frequent changes and available on a 24-hour basis, for reporting trouble calls. Response time to reported calls must be less than 2 hours.

Control: 0915-12-758

County: Bexar

Highway: Various

Make appropriate repairs within 24 hours. Place a logbook in the controller cabinet and keep a record of each trouble call reported. Notify the Engineer of each trouble call. Do not clear the error log in the conflict monitor or MMU during the thirty-day test period without approval.

--Item 682--

Cover all signal faces until placed in operation. This work is subsidiary to various bid items.

All mounting attachments shall be constructed of steel pipe and mounted as shown on the plans.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0915-12-758 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY Various

		CONTROL SECTION JOB		**0915-12-758**		TOTAL EST.	TOTAL FINAL
		PROJECT ID		**A00190025**			
		COUNTY		**Bexar**			
		HIGHWAY		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	500-7001	MOBILIZATION	LS	1.000		1.000	
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	13.000		13.000	
	503-7001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	212.000		212.000	
	505-7001	TMA (STATIONARY)	DAY	212.000		212.000	
	680-7011	INSTALL HWY TRF SIG (UPGRADE)	EA	106.000		106.000	
	682-7001	VEH SIG SEC (12")LED(GRN)	EA	797.000		797.000	
	682-7002	VEH SIG SEC (12")LED(GRN ARW)	EA	182.000		182.000	
	682-7003	VEH SIG SEC (12")LED(YEL)	EA	800.000		800.000	
	682-7004	VEH SIG SEC (12")LED(YEL ARW)	EA	248.000		248.000	
	682-7005	VEH SIG SEC (12")LED(RED)	EA	805.000		805.000	
	682-7006	VEH SIG SEC (12")LED(RED ARW)	EA	140.000		140.000	
	682-7037	BACKPLATE W/REFL BRDR(4 SEC)	EA	113.000		113.000	
	682-7038	BACKPLATE W/REFL BRDR(5 SEC)	EA	20.000		20.000	
	682-7054	BACKPLATE W/REFL BRDR(3 SEC)	EA	805.000		805.000	
	690-7024	REMOVAL OF SIGNAL HEAD ASSM	EA	934.000		934.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	

LOCATION ID.	COUNTY	SIGNAL HEAD IMPROVEMENTS										
		680	682									690
		7011	7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
		INSTALL HWY TRF SIG UPGRADE	VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3	BACKPLATE W/REFL BRDR(4	BACKPLATE W/REFL BRDR(5	REMOVAL OF SIGNAL HEAD
		EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
LOCATION 1	BEXAR	9	72	24	72	36	72	20	71	18	1	90
LOCATION 2	BEXAR	6	45	22	45	29	45	18	48	15	0	63
LOCATION 3	BEXAR	13	98	31	98	54	98	29	100	27	0	127
LOCATION 4	BEXAR	6	44	9	44	11	44	7	46	4	1	51
LOCATION 5	BEXAR	16	116	8	120	13	124	6	118	7	1	122
LOCATION 6	BEXAR	9	70	5	70	5	70	2	67	4	1	72
LOCATION 7	BEXAR	10	69	5	69	6	69	1	65	1	4	70
LOCATION 8	BEXAR	19	145	21	145	30	145	17	144	14	3	161
LOCATION 9	BEXAR	10	71	14	71	25	71	11	68	11	3	82
LOCATION 10	BEXAR	8	67	43	66	39	67	29	78	12	6	96
PROJECT TOTALS		106	797	182	800	248	805	140	805	113	20	934

DATE: 8/23/2024 11:29:48 AM
FILE: T:\30900734I COSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\30900734I_SIGNAL SUMMARY TOTAL.dgn

REV	DATE	BY	REVISION

WSP USA Inc
9311 San Pedro St., Suite 700
San Antonio, TX 78216
TEL: 210-247-4360
TBPE F-2263

Texas Department of Transportation

TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY TOTAL

SHEET 1 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		5

ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
580000	LOCATION 1	INT 1	BEXAR	WURZBACH RD. AT GARDENDALE ST.	8	2	8	4	8	2	8	2	0	10
580100	LOCATION 1	INT 2	BEXAR	WURZBACH RD. AT DATAPOINT DR.	6	1	6	2	6	1	6	1	0	7
580200	LOCATION 1	INT 3	BEXAR	WURZBACH RD. AT BLUEMEL RD.	8	4	8	8	8	4	8	4	0	12
580400	LOCATION 1	INT 4	BEXAR	WURZBACH RD. AT COLONNADE MALL	10	2	10	3	10	2	11	1	0	12
580500	LOCATION 1	INT 5	BEXAR	WURZBACH RD. AT IRONSIDE DR.	10	4	10	5	10	2	6	3	1	10
580600	LOCATION 1	INT 6	BEXAR	WURZBACH RD. AT TIOGA ST.	8	2	8	4	8	2	8	2	0	10
580700	LOCATION 1	INT 7	BEXAR	WURZBACH RD. AT VANCE JACKSON RD.	8	4	8	5	8	4	11	1	0	12
580800	LOCATION 1	INT 8	BEXAR	WURZBACH RD. AT WHISPER SOUND	6	1	6	1	6	1	7	0	0	7
580900	LOCATION 1	INT 9	BEXAR	WURZBACH RD. AT ELM CREEK RD.	8	4	8	4	8	2	6	4	0	10
LOCATION SUBTOTALS					72	24	72	36	72	20	71	18	1	90

REV	DATE	BY	REVISION

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Texas Department of Transportation

TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY
LOCATION 1

SHEET 2 OF 12

CONT	SECT	JOB	HIGHWAY
0915	12	758	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		6

DATE: 8/23/2024 11:30:09 AM
FILE: T:\309007341 CoSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\309007341_SIGNAL SUMMARY 1.dgn

ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
465000	LOCATION 2	INT 1	BEXAR	CULEBRA RD. AT NUECES CANYON - VILLAGE PARK	8	2	8	4	8	2	8	2	0	10
465100	LOCATION 2	INT 2	BEXAR	CULEBRA RD. AT CLIFFBRIER DR.	5	2	5	3	5	2	6	1	0	7
465200	LOCATION 2	INT 3	BEXAR	CULEBRA RD. AT LES HARRISON DR.	8	4	8	8	8	4	8	4	0	12
465300	LOCATION 2	INT 4	BEXAR	CULEBRA RD. AT ROGERS RD.	8	4	8	4	8	2	6	4	0	10
465900	LOCATION 2	INT 5	BEXAR	CULEBRA RD. AT WALMART	8	4	8	4	8	2	6	4	0	10
476200	LOCATION 2	INT 6	BEXAR	CULEBRA RD. AT GRISSOM RD. - TEZEL RD.	8	6	8	6	8	6	14	0	0	14
LOCATION SUBTOTALS					45	22	45	29	45	18	48	15	0	63

DATE: 8/23/2024 11:30:30 AM
FILE: T:\309007341 CoSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\309007341_SIGNAL SUMMARY 2.dgn

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY
LOCATION 2

SHEET 3 OF 12

CONT	SECT	JOB	HIGHWAY
0915	12	758	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		7

ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
110000	LOCATION 3	INT 1	BEXAR	CULEBRA RD. AT NORTHSIDE ISD FACILITY	9	2	9	4	9	2	9	2	0	11
110100	LOCATION 3	INT 2	BEXAR	CULEBRA RD. AT ALAMO DOWNS PKWY.	6	0	6	0	6	0	6	0	0	6
110200	LOCATION 3	INT 3	BEXAR	CULEBRA RD. AT OAKHILL DR. - TOM SLICK AVE.	8	4	8	4	8	2	6	4	0	10
110300	LOCATION 3	INT 4	BEXAR	CULEBRA RD. AT CALLAGHAN RD.	8	6	8	8	8	6	12	2	0	14
110400	LOCATION 3	INT 5	BEXAR	CULEBRA RD. AT EL CENTRO DR.	6	1	6	2	6	1	6	1	0	7
110500	LOCATION 3	INT 6	BEXAR	CULEBRA RD. AT BENRUS BLVD.	8	2	8	4	8	2	8	2	0	10
110600	LOCATION 3	INT 7	BEXAR	CULEBRA RD. AT ALICIA AVE.	9	2	9	4	9	2	9	2	0	11
110700	LOCATION 3	INT 8	BEXAR	CULEBRA RD. AT 38TH ST.	6	1	6	2	6	1	6	1	0	7
110800	LOCATION 3	INT 9	BEXAR	CULEBRA RD. AT 36TH ST.-ESMERELDA DR.	8	4	8	8	8	4	8	4	0	12
110900	LOCATION 3	INT 10	BEXAR	CULEBRA RD. AT MEMORIAL ST.	8	2	8	4	8	2	8	2	0	10
111000	LOCATION 3	INT 11	BEXAR	CULEBRA RD. AT CAMINO SANTA MARIA	8	2	8	4	8	2	8	2	0	10
111100	LOCATION 3	INT 12	BEXAR	CULEBRA RD. AT SAN FELIPE ST.	6	1	6	2	6	1	6	1	0	7
111200	LOCATION 3	INT 13	BEXAR	CULEBRA RD. AT GEN MCMULLEN DR.	8	4	8	8	8	4	8	4	0	12
LOCATION SUBTOTALS					98	31	98	54	98	29	100	27	0	127

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY
LOCATION 3

SHEET 4 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		8

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FILE: T:\309007341 CoSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\309007341_SIGNAL SUMMARY 3.dgn

ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
715500	LOCATION 4	INT 1	BEXAR	MARBACH RD. AT HARNESS LN	8	2	8	4	8	2	8	2	0	10
715600	LOCATION 4	INT 2	BEXAR	MARBACH RD. AT MEADOW WAY DR.	6	2	6	2	6	1	5	2	0	7
715700	LOCATION 4	INT 3	BEXAR	MARBACH RD. AT JOHN JAY HS	8	0	8	0	8	0	8	0	0	8
720500	LOCATION 4	INT 4	BEXAR	MARBACH RD. AT MILITARY DR.	8	5	8	5	8	4	11	0	1	12
720600	LOCATION 4	INT 5	BEXAR	MARBACH RD. AT WESTEDGE DR.	8	0	8	0	8	0	8	0	0	8
720700	LOCATION 4	INT 6	BEXAR	MARBACH RD. AT PINN RD.	6	0	6	0	6	0	6	0	0	6
LOCATION SUBTOTALS					44	9	44	11	44	7	46	4	1	51

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY
LOCATION 4

SHEET 5 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		9

DATE: 8/23/2024 11:31:15 AM
FILE: T:\3090073411 CoSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\3090073411_SIGNAL SUMMARY 4.dgn

ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
70500	LOCATION 5	INT 1	BEXAR	ZARZAMORA ST. AT COMMERCE ST.	7	0	7	0	7	0	7	0	0	7
70600	LOCATION 5	INT 2	BEXAR	ZARZAMORA ST. AT BUENA VISTA ST.	7	0	7	0	7	0	7	0	0	7
71600	LOCATION 5	INT 3	BEXAR	ZARZAMORA ST. AT SAN JUAN HOMES ℄ (HAWK)	0	0	4	0	8	0	4	0	0	0
71700	LOCATION 5	INT 4	BEXAR	ZARZAMORA ST. AT BRADY BLVD.	8	2	8	4	8	2	8	2	0	10
71800	LOCATION 5	INT 5	BEXAR	ZARZAMORA ST. AT CERALVO ST.	8	2	8	4	8	2	8	2	0	10
71900	LOCATION 5	INT 6	BEXAR	ZARZAMORA ST. AT MERIDA ST.	8	0	8	0	8	0	8	0	0	8
72000	LOCATION 5	INT 7	BEXAR	ZARZAMORA ST. AT PRODUCE TERMINAL	8	0	8	0	8	0	8	0	0	8
72100	LOCATION 5	INT 8	BEXAR	ZARZAMORA ST. AT LAREDO ST.	8	2	8	4	8	2	8	2	0	10
72200	LOCATION 5	INT 9	BEXAR	ZARZAMORA ST. AT CHIHUAHUA ST.	8	0	8	0	8	0	8	0	0	8
72300	LOCATION 5	INT 10	BEXAR	ZARZAMORA ST. AT VERA CRUZ ST.	8	0	8	0	8	0	8	0	0	8
72400	LOCATION 5	INT 11	BEXAR	ZARZAMORA ST. AT GUADALUPE ST.	8	1	8	1	8	0	7	0	1	8
72500	LOCATION 5	INT 12	BEXAR	ZARZAMORA ST. AT CESAR E. CHAVEZ BLVD.	8	0	8	0	8	0	8	0	0	8
72600	LOCATION 5	INT 13	BEXAR	ZARZAMORA ST. AT MARTIN ST.	8	0	8	0	8	0	8	0	0	8
72700	LOCATION 5	INT 14	BEXAR	ZARZAMORA ST. AT RUIZ ST.	8	0	8	0	8	0	8	0	0	8
72800	LOCATION 5	INT 15	BEXAR	ZARZAMORA ST. AT POPLAR ST.	8	0	8	0	8	0	8	0	0	8
72900	LOCATION 5	INT 16	BEXAR	ZARZAMORA ST. AT SAN FERNANDO ST.	6	1	6	0	6	0	5	1	0	6
LOCATION SUBTOTALS					116	8	120	13	124	6	118	7	1	122

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Texas Department of Transportation

TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY
LOCATION 5

SHEET 6 OF 12

CONT	SECT	JOB	HIGHWAY
0915	12	758	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		10

ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
3400	LOCATION 6	INT 1	BEXAR	COMMERCE ST. AT HOEFGEN AVE.	8	0	8	0	8	0	8	0	0	8
3500	LOCATION 6	INT 2	BEXAR	COMMERCE ST. AT CHERRY ST.	8	1	8	1	8	0	7	0	1	8
272300	LOCATION 6	INT 3	BEXAR	COMMERCE ST. AT HACKBERRY ST.	8	0	8	0	8	0	8	0	0	8
272400	LOCATION 6	INT 4	BEXAR	COMMERCE ST. AT NEW BRAUNFELS AVE.	8	4	8	4	8	2	6	4	0	10
272500	LOCATION 6	INT 5	BEXAR	COMMERCE ST. AT GEVERS ST.	8	0	8	0	8	0	8	0	0	8
272600	LOCATION 6	INT 6	BEXAR	COMMERCE ST. AT WALTERS ST.	8	0	8	0	8	0	8	0	0	8
272700	LOCATION 6	INT 7	BEXAR	COMMERCE ST. AT MEL WAITERS WAY	8	0	8	0	8	0	8	0	0	8
272800	LOCATION 6	INT 8	BEXAR	COMMERCE ST. AT SPRIGGSDALE AVE.	6	0	6	0	6	0	6	0	0	6
274600	LOCATION 6	INT 9	BEXAR	COMMERCE ST. AT COCA-COLA PL.	8	0	8	0	8	0	8	0	0	8
LOCATION SUBTOTALS					70	5	70	5	70	2	67	4	1	72

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY
LOCATION 6

SHEET 7 OF 12

CONT	SECT	JOB	HIGHWAY
0915	12	758	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		11

ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
350400	LOCATION 7	INT 1	BEXAR	FLORES ST. AT MITCHELL ST.	6	1	6	1	6	0	5	0	1	6
375700	LOCATION 7	INT 2	BEXAR	FLORES ST. AT PYRON AVE.	8	0	8	0	8	0	8	0	0	8
375800	LOCATION 7	INT 3	BEXAR	FLORES ST. AT SOUTHCROSS BLVD.	8	3	8	3	8	0	5	0	3	8
375900	LOCATION 7	INT 4	BEXAR	FLORES ST. AT SAYERS AVE.	8	0	8	0	8	0	8	0	0	8
376000	LOCATION 7	INT 5	BEXAR	FLORES ST. AT DIVISION AVE.	6	0	6	0	6	0	6	0	0	6
376100	LOCATION 7	INT 6	BEXAR	FLORES ST. AT OCTAVIA PL.	4	0	4	0	4	0	4	0	0	4
376200	LOCATION 7	INT 7	BEXAR	FLORES ST. AT NEAL AVE. - PROBANDT ST.	9	1	9	2	9	1	9	1	0	10
376300	LOCATION 7	INT 8	BEXAR	FLORES ST. AT PLEASANTON RD.	6	0	6	0	6	0	6	0	0	6
376400	LOCATION 7	INT 9	BEXAR	FLORES ST. AT MALONE AVE.	7	0	7	0	7	0	7	0	0	7
376500	LOCATION 7	INT 10	BEXAR	FLORES ST. AT THEO AVE.	7	0	7	0	7	0	7	0	0	7
LOCATION SUBTOTALS					69	5	69	6	69	1	65	1	4	70

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY
LOCATION 7

SHEET 8 OF 12

CONT	SECT	JOB	HIGHWAY
0915	12	758	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		12

ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
165200	LOCATION 8	INT 1	BEXAR	BLANCO RD. AT GRAMERCY PL.	6	0	6	0	6	0	6	0	0	6
165300	LOCATION 8	INT 2	BEXAR	BLANCO RD. AT SUMMIT AVE.	8	0	8	0	8	0	8	0	0	8
165400	LOCATION 8	INT 3	BEXAR	BLANCO RD. AT WOODLAWN AVE.	8	0	8	0	8	0	8	0	0	8
165500	LOCATION 8	INT 4	BEXAR	BLANCO RD. AT ASHBY PL.	8	0	8	0	8	0	8	0	0	8
160000	LOCATION 8	INT 5	BEXAR	BLANCO RD. AT HILDEBRAND AVE.	8	4	8	8	8	4	8	4	0	12
160100	LOCATION 8	INT 6	BEXAR	BLANCO RD. AT SANTA MONICA ST.	8	0	8	0	8	0	8	0	0	8
160200	LOCATION 8	INT 7	BEXAR	BLANCO RD. AT FRESNO ST.	8	3	8	4	8	3	7	2	1	10
160400	LOCATION 8	INT 8	BEXAR	BLANCO RD. AT WILDWOOD DR.	8	0	8	0	8	0	8	0	0	8
160500	LOCATION 8	INT 9	BEXAR	BLANCO RD. AT LOVERA BLVD.	6	1	6	0	6	0	5	1	0	6
160600	LOCATION 8	INT 10	BEXAR	BLANCO RD. AT BASSE RD.	8	4	8	8	8	4	8	4	0	12

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY
LOCATION 8-1

SHEET 9 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		13

DATE: 8/23/2024 11:32:45 AM
FILE: T:\309007341 CoSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\309007341_SIGNAL SUMMARY 8-1.dgn

ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
160700	LOCATION 8	INT 11	BEXAR	BLANCO RD. AT WEIZMANN BLVD.	6	0	6	0	6	0	6	0	0	6
160800	LOCATION 8	INT 12	BEXAR	BLANCO RD. AT BURWOOD LN.	8	0	8	0	8	0	8	0	0	8
160900	LOCATION 8	INT 13	BEXAR	BLANCO RD. AT DRESDEN DR.	8	0	8	0	8	0	8	0	0	8
161000	LOCATION 8	INT 14	BEXAR	BLANCO RD. AT NIMITZ SCHOOL	6	1	6	0	6	0	5	1	0	6
161100	LOCATION 8	INT 15	BEXAR	BLANCO RD. AT JACKSON KELLER RD.	8	4	8	4	8	4	12	0	0	12
161200	LOCATION 8	INT 16	BEXAR	BLANCO RD. AT OBLATE DR.	8	1	8	1	8	0	7	0	1	8
557500	LOCATION 8	INT 17	BEXAR	BLANCO RD. AT CAS HILL DR. - LANGTON	8	0	8	0	8	0	8	0	0	8
557600	LOCATION 8	INT 18	BEXAR	BLANCO RD. AT BLANCO PLAZA	9	1	9	1	9	0	8	0	1	9
557700	LOCATION 8	INT 19	BEXAR	BLANCO RD. AT RECTOR DR.	8	2	8	4	8	2	8	2	0	10
LOCATION SUBTOTALS					145	21	145	30	145	17	144	14	3	161

DATE: 8/23/2024 11:33:05 AM
FILE: T:\309007341 CoSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\309007341_SIGNAL SUMMARY 8-2.dgn

REV	DATE	BY	REVISION

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY LOCATION 8-2

SHEET 10 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		14

ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
620100	LOCATION 9	INT 1	BEXAR	NACOGDOCHES RD. AT CHEEVER BLVD.	6	2	6	4	6	2	6	2	0	8
620200	LOCATION 9	INT 2	BEXAR	NACOGDOCHES RD. AT BLOSSOM DR. - WAGON WHEEL ST.	8	2	8	4	8	2	8	2	0	10
620300	LOCATION 9	INT 3	BEXAR	NACOGDOCHES RD. AT DANBURY DR.	8	2	8	4	8	2	8	2	0	10
620400	LOCATION 9	INT 4	BEXAR	NACOGDOCHES RD. AT LOVELACE BLVD.	6	1	6	1	6	0	5	0	1	6
620500	LOCATION 9	INT 5	BEXAR	NACOGDOCHES RD. AT FOREST OAK DR. - MACARTHUR VIEW	6	3	6	5	6	2	5	2	1	8
620600	LOCATION 9	INT 6	BEXAR	NACOGDOCHES RD. AT ASTRONAUT DR.	8	2	8	4	8	2	8	2	0	10
620700	LOCATION 9	INT 7	BEXAR	NACOGDOCHES RD. AT TITAN DR.	8	0	8	0	8	0	8	0	0	8
620800	LOCATION 9	INT 8	BEXAR	NACOGDOCHES RD. AT WAYWARD DR.	7	0	7	0	7	0	7	0	0	7
620900	LOCATION 9	INT 9	BEXAR	NACOGDOCHES RD. AT STARCREST DR.	6	1	6	2	6	1	6	1	0	7
621000	LOCATION 9	INT 10	BEXAR	NACOGDOCHES RD. AT HILLPOINT DR.	8	1	8	1	8	0	7	0	1	8
LOCATION SUBTOTALS					71	14	71	25	71	11	68	11	3	82

REV	DATE	BY	REVISION

WSP USA Inc
9311 San Pedro St., Suite 700
San Antonio, TX 78216
TEL: 210-247-4360
TBPE F-2263

Texas Department of Transportation

TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY
LOCATION 9

SHEET 11 OF 12

CONT	SECT	JOB	HIGHWAY
0915	12	758	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		15

DATE: 8/23/2024 11:33:29 AM
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ID	INTERSECTION ID.		COUNTY	INTERSECTION	SIGNAL HEAD IMPROVEMENTS									
					682									690
					7001	7002	7003	7004	7005	7006	7054	7037	7038	7024
					VEH SIG SEC (12") LED(GRN)	VEH SIG SEC (12") LED(GRN ARW)	VEH SIG SEC (12") LED(YEL)	VEH SIG SEC (12") LED(YEL ARW)	VEH SIG SEC (12") LED(RED)	VEH SIG SEC (12") LED(RED ARW)	BACKPLATE W/REFL BRDR(3 SEC)	BACKPLATE W/REFL BRDR(4 SEC)	BACKPLATE W/REFL BRDR(5 SEC)	REMOVAL OF SIGNAL HEAD ASSM
					EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
810100	LOCATION 10	INT 1	BEXAR	STONE OAK PKWY. AT MADISON OAK DR.	6	1	6	1	6	1	7	0	0	7
810200	LOCATION 10	INT 2	BEXAR	STONE OAK PKWY. AT HUEBNER RD.	9	8	9	7	9	5	11	1	2	14
810300	LOCATION 10	INT 3	BEXAR	STONE OAK PKWY. AT KNIGHTS CROSS DR.	8	6	8	4	8	3	8	2	1	11
810400	LOCATION 10	INT 4	BEXAR	STONE OAK PKWY. AT HARDY OAK BLVD.	9	7	9	6	9	5	12	1	1	14
810500	LOCATION 10	INT 5	BEXAR	STONE OAK PKWY. AT EVANS RD. W - CANYON GOLF RD.	9	9	8	7	9	5	10	2	2	14
810800	LOCATION 10	INT 6	BEXAR	STONE OAK PKWY. AT ARROW HILL	8	2	8	2	8	2	10	0	0	10
840000	LOCATION 10	INT 7	BEXAR	STONE OAK PKWY. AT CANYON RIDGE ELEMENTARY SCH.	10	6	10	6	10	4	10	4	0	14
841000	LOCATION 10	INT 8	BEXAR	STONE OAK PKWY. AT VIA PARK AND RIDE	8	4	8	6	8	4	10	2	0	12
LOCATION SUBTOTALS					67	43	66	39	67	29	78	12	6	96

DATE: 8/23/2024 11:33:52 AM
FILE: T:\309007341 CoSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\309007341_SIGNAL SUMMARY 10.dgn

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Texas Department of Transportation

TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

QUANTITY SUMMARY
LOCATION 10

SHEET 12 OF 12

CONT	SECT	JOB	HIGHWAY
0915	12	758	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		16

TRAFFIC CONTROL PLAN SEQUENCE OF WORK

(1) THIS PROJECT WILL BE CONSTRUCTED IN (1) PHASE. BEFORE THE COMMENCEMENT OF EACH PHASE, INSTALL ADVANCE WARNING SIGNS, TEMPORARY SIGNS AND BARRICADES AS SHOWN ON THE PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER. DAILY LANE CLOSURES WILL BE USED IN ACCORDANCE WITH STATE TCP STANDARDS. DROP OFF CONDITIONS OF GREATER THAN 2" MUST HAVE A 3:1 SLOPE AT THE END OF EACH DAY, AS WELL AS THROUGHOUT THE PROJECT WHERE ACCESS TO ADJACENT PROPERTIES IS ALLOWED TO DRIVEWAYS AND SIDE STREETS.

(2) PREPARING ROW / REMOVAL OF EXISTING ITEMS TO BE DONE ONLY IN AREAS WHERE WORK IS OCCURING, AS PER THE PHASES NOTED BELOW.

(3) PLANING, SURFACE TREATMENTS AND OVERLAYS SHALL BE PERFORMED IN THE DIRECTION OF TRAFFIC. BEGIN SURFACE CONSTRUCTION ON HIGH SIDE OF ROAD TO AVOID WATER PONDING ISSUES.

(4) THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC" AND ITEM 502, "BARRICADES, SIGNS, AND TRAFFIC HANDLING", OF THE STANADARD SPECIFICATIONS, AND TO THE GENERAL NOTES

(5) A BRIEF DESCRIPTION OF THESE PHASES ARE AS FOLLOWS:

PHASE 1

THE INTENT OF THIS PHASE IS TO COMPLETE INSTALLATION OF SIGNAL HEADS AND BACKPLATES TO VARIOUS INTERSECTONS CITYWIDE.

(1) IMPLEMENT TRAFFIC CONTROL AS PER STATE AND DISTRICT STANDARDS AT EACH LOCATION.

(2) REPLACE SIGNAL HEADS AND BACKPLATES USING WZ(BTS-1)-13 AND LAW ENFORCEMENT OFFICERS OR AS DIRECTED BY THE ENGINEER.

(3) PERFORM CLEAN UP AND REMOVAL OF TEMPORARY TRAFFIC CONTROL ITEMS; CLEAN UP OF EACH LOCATION SHALL OCCUR BEFORE STARTING WORK ON A NEW LOCATION.

REV	DATE	BY	REVISION

NOT TO SCALE

STATE OF TEXAS
LASARO L. PICASSO
128068
LICENSED PROFESSIONAL ENGINEER
8/23/2024

L. Picasso, P.E.

WSP USA Inc
9311 San Pedro St., Suite 700
San Antonio, TX 78216
TEL: 210-247-4360
TBPE F-2263

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

TCP NARRATIVE

SHEET 1 OF 1

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		17

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FILE: T:\30900734\ COSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\08.09_Sig_Standards\Backplate_TCP NARRATIVE.dgn

LOC NO.	TCP PHASE	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET					6185 6002
			FURNISH TMA/TA	RELOCATE/REUSE TMA/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		SHEET NUMBER	EA	EA	EA	DAYS PER TMA/TA USE	DAY
LOCATION 1	1	WZ(BTS-1)-13	1		1	18	18
LOCATION 2	2	WZ(BTS-1)-13		1	1	12	12
LOCATION 3	3	WZ(BTS-1)-13		1	1	26	26
LOCATION 4	4	WZ(BTS-1)-13		1	1	12	12
LOCATION 5	5	WZ(BTS-1)-13		1	1	32	32
LOCATION 6	6	WZ(BTS-1)-13		1	1	18	18
LOCATION 7	7	WZ(BTS-1)-13		1	1	20	20
LOCATION 8	8	WZ(BTS-1)-13		1	1	38	38
LOCATION 9	9	WZ(BTS-1)-13		1	1	20	20
LOCATION 10	10	WZ(BTS-1)-13		1	1	16	16
		TOTALS	1	9	10	212	212

NOTE.
FURNISH TMA/TA - THE NUMBER OF ATTENUATORS BEING FURNISHED FOR THE SPECIFIC TCP.
RELOCATE/REUSE TMA/TA - THE NUMBER OF ATTENUATORS BEING REUSED FROM A PREVIOUS TCP FOR THE SPECIFIC TCP.
TOTAL TMA/TA PER SET UP = (FURNISH TMA/TA) + (RELOCATE/REUSE TMA/TA)
DURATION OF TMA/TA SET UP - THE NUMBER OF DAYS THE ATTENTUATORS WILL BE USED FOR THE SPECIFIC TCP.
TMA/TA (STATIONARY) = (TOTAL TMA/TA PER SET UP) X (THE DURATION OF TMA/TA SET UP)
TMA/TA (MOBILE OPERATION) = (TOTAL TMA/TA PER SET UP) X (THE DURATION OF TMA/TA SET UP)

TRUCK MOUNTED ATTENUATOR (TMA) AND TRAILER ATTENUATOR (TA) SUMMARY SHEET

FILE: tma.dgn	DN: TxDOT	CK:		CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS 3/2018	0915	12	758.	VARIOUS
	DIST	COUNTY		
	SAT	BEXAR		
	FEDERAL AID PROJECT			SHEET NO.
				18

DATE: 8/23/2024 11:35:07 AM
FILE: T:\3090073411 CoSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\08.09_Sig_Standards\BC(1)-21.dgn

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	12	758.	VARIOUS
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	SAT	BEXAR		19
5-10 5-21				

DATE: 8/23/2024 11:35:51 AM
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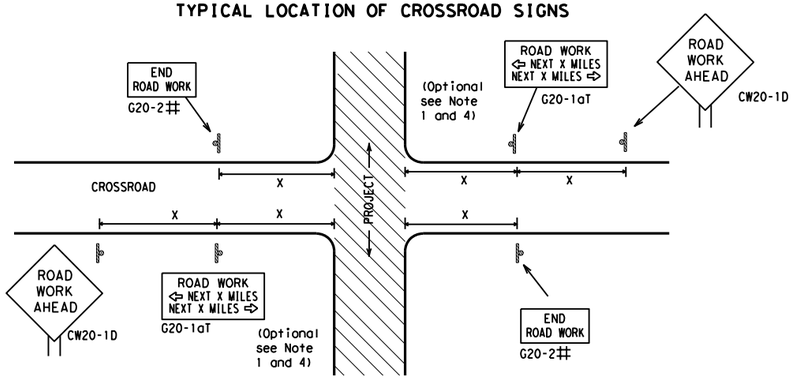
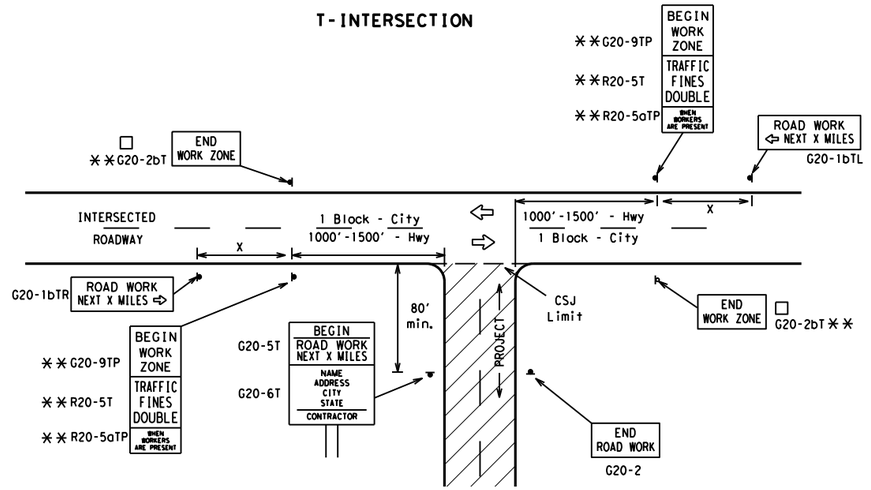
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

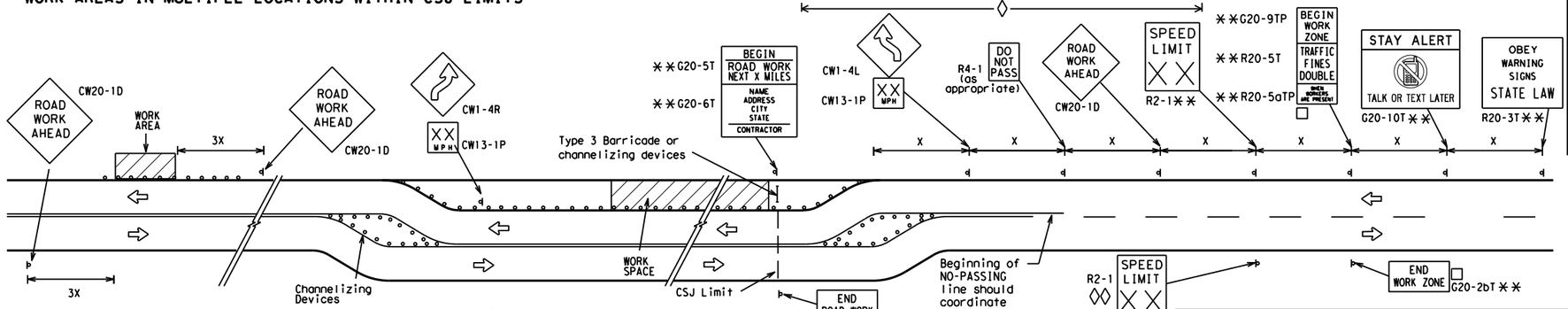
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

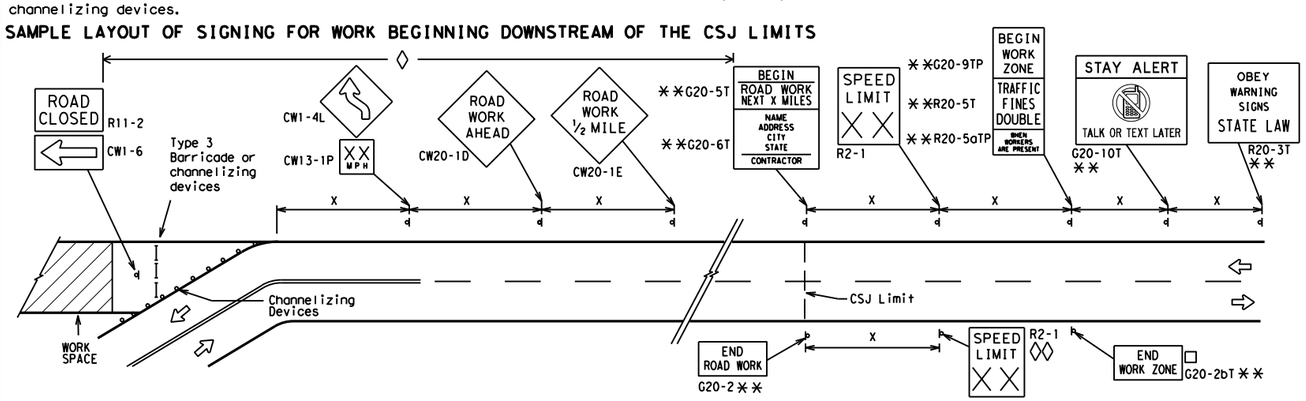
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

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

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

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

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

LEGEND

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	12	758.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		20

DATE: 8/23/2024 11:36:11 AM
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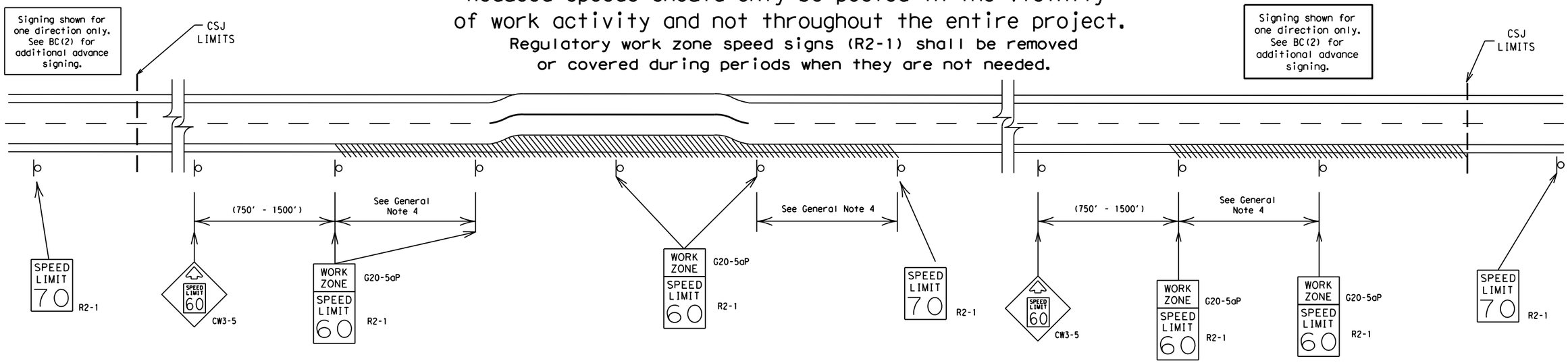
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

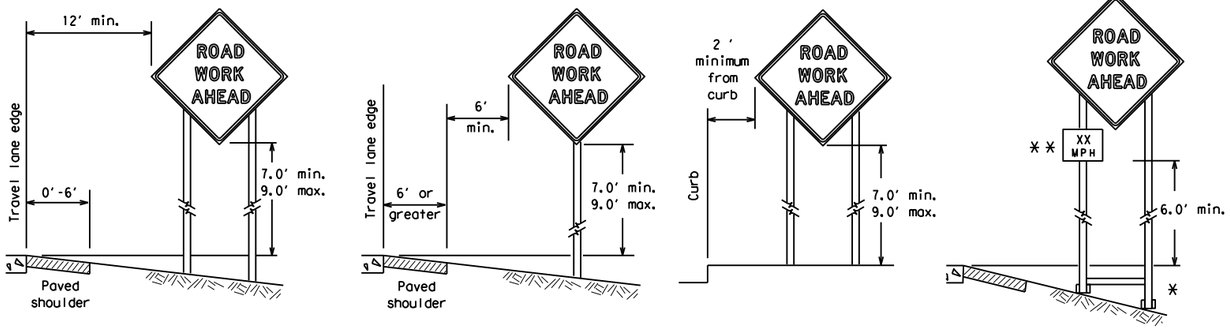
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	12	758.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		21

DATE: 8/23/2024 11:36:34 AM
FILE: T:\3090073411 CoSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\08.09_Sig_Standards_BC(4)-21.dgn

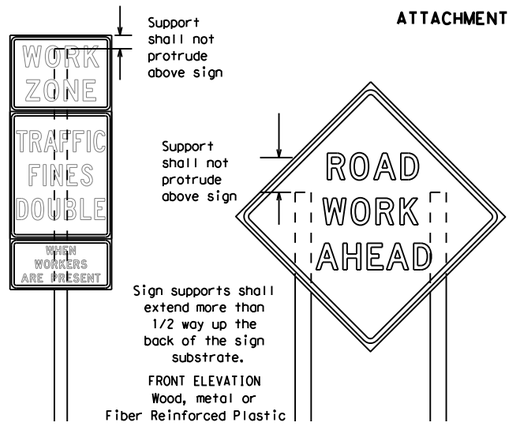
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

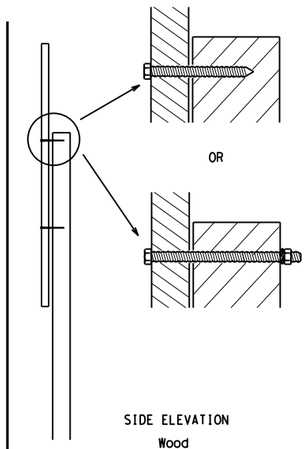


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





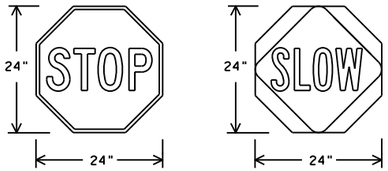
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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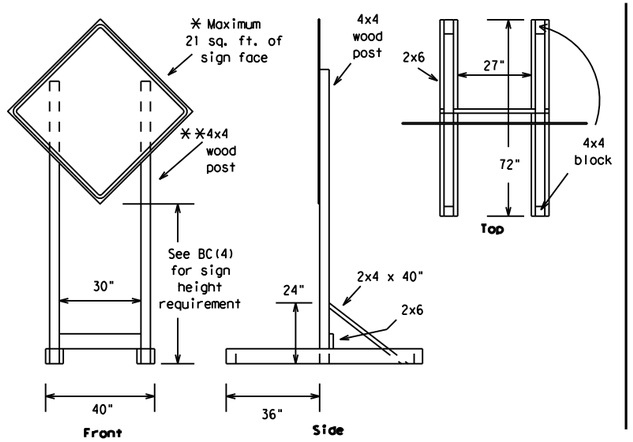
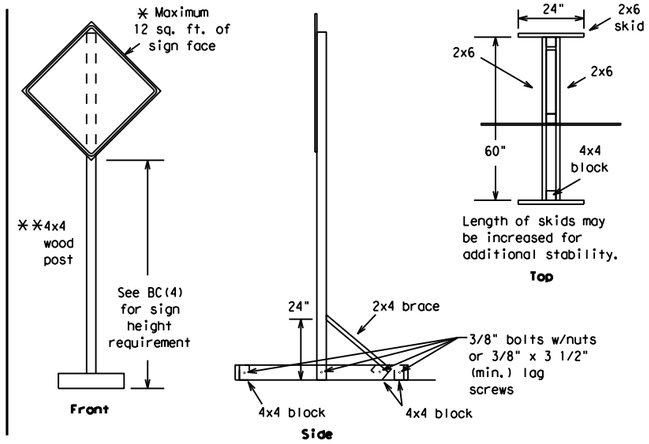
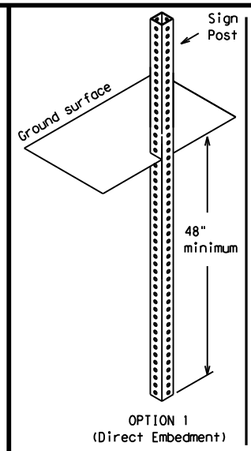
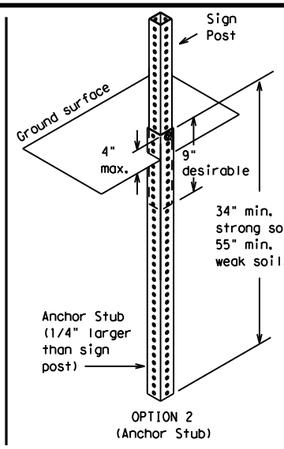


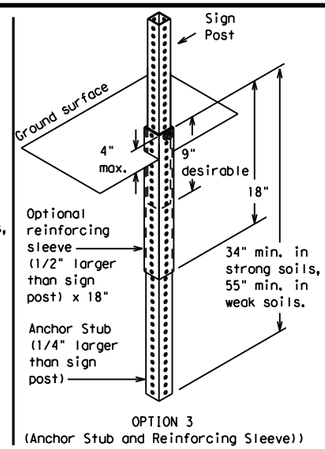


SKID MOUNTED WOOD SIGN SUPPORTS

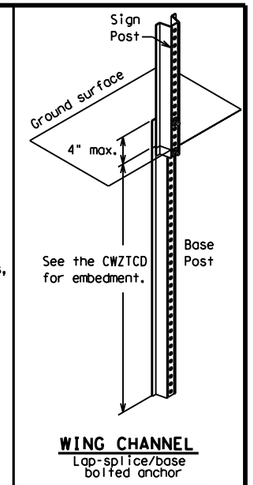
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS







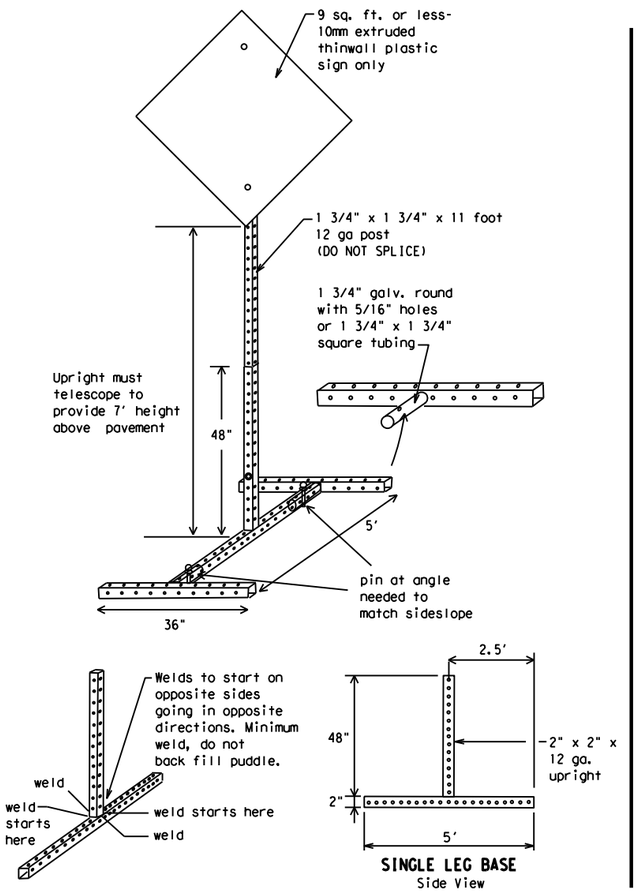
PERFORATED SQUARE METAL TUBING

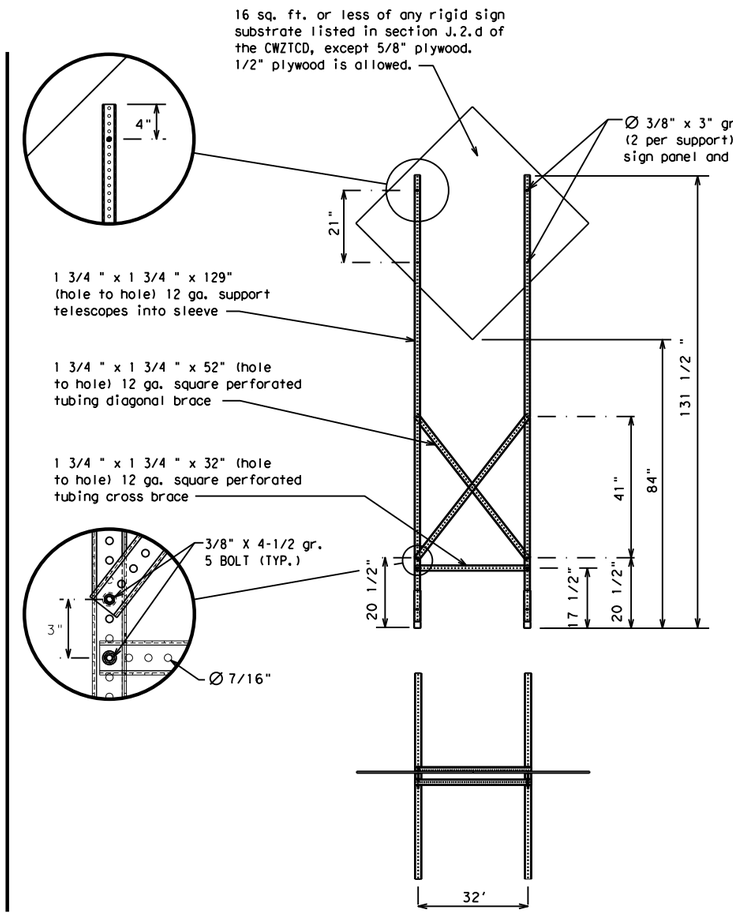


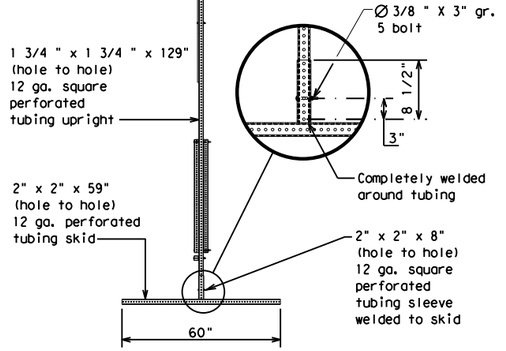
WING CHANNEL
Lap-splice/base bolted anchor

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.

SHEET 5 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		0915	12	758.	VARIOUS
9-07 8-14		DIST	COUNTY		SHEET NO.
7-13 5-21		SAT	BEXAR		24

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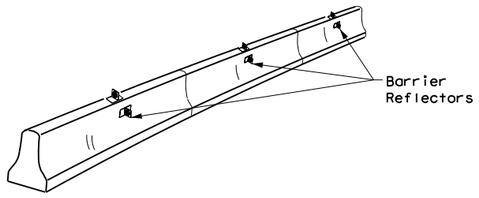
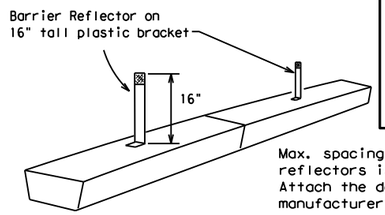
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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

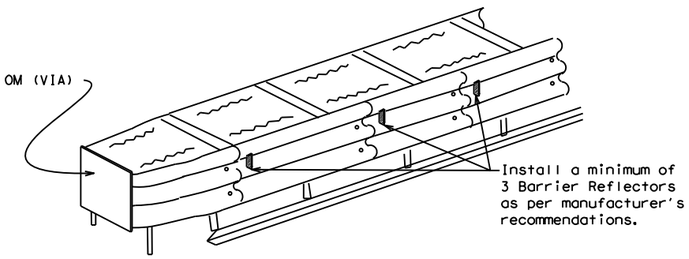


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

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)

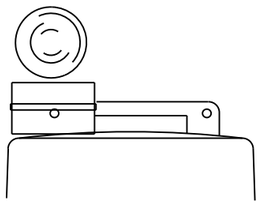


DELINEATION OF END TREATMENTS

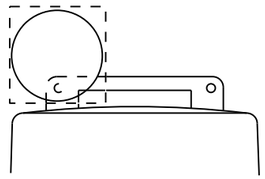
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

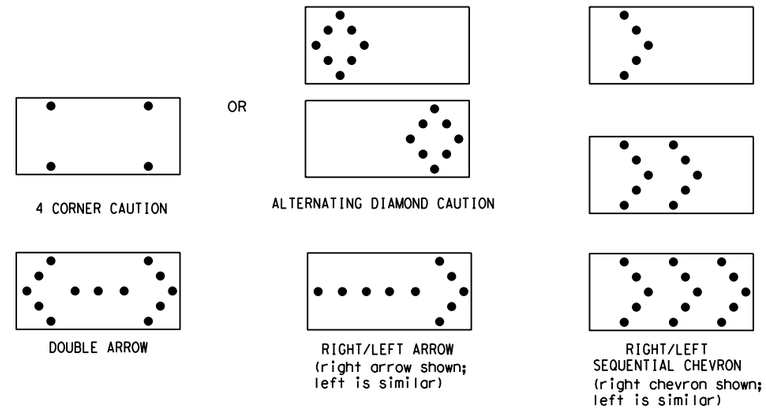
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	12	758.	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		25

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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:

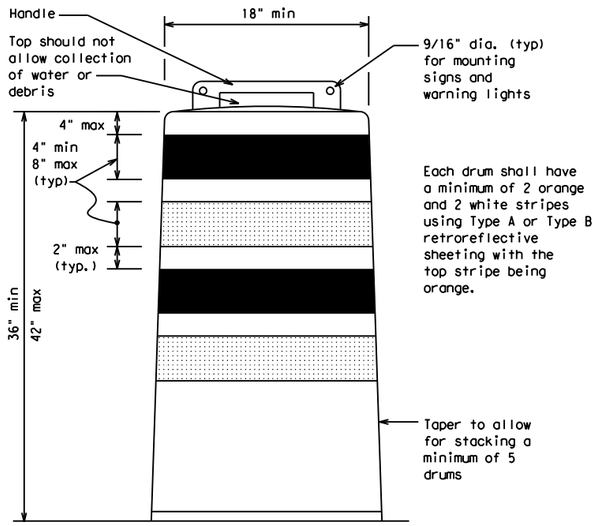
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

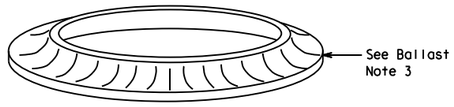
RETROREFLECTIVE SHEETING

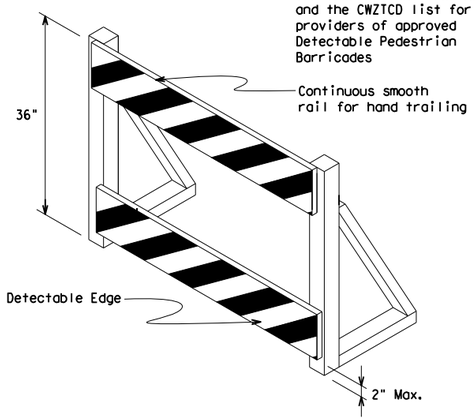
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall 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.

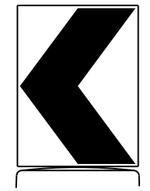




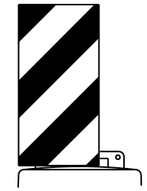


DETECTABLE PEDESTRIAN BARRICADES

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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9-07 5-21	SAT	BEXAR		26
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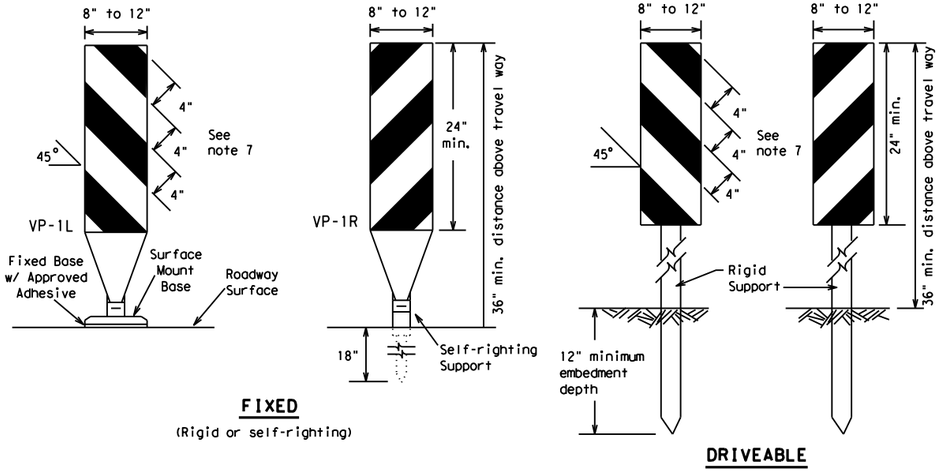
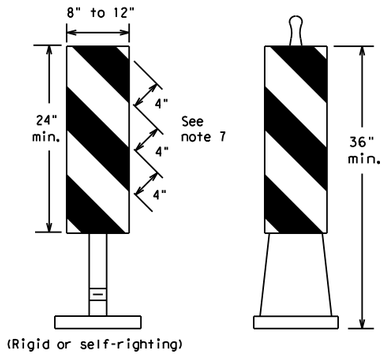


FIXED
(Rigid or self-righting)

DRIVEABLE

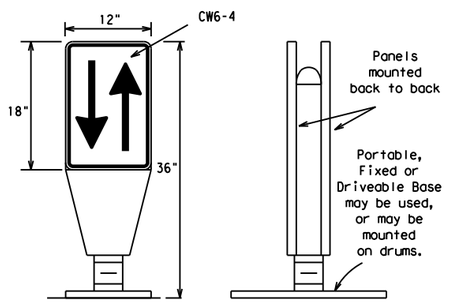


(Rigid or self-righting)

PORTABLE

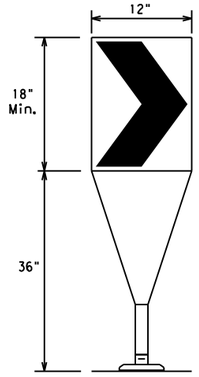
VERTICAL PANELS (VPs)

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.



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

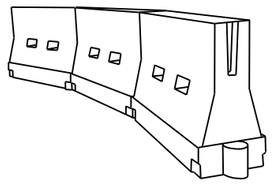
1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The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



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

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

CHEVRONS



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

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.

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
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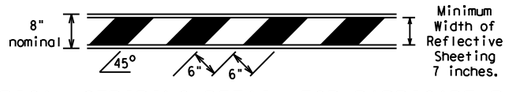
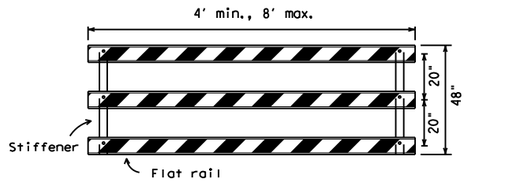
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



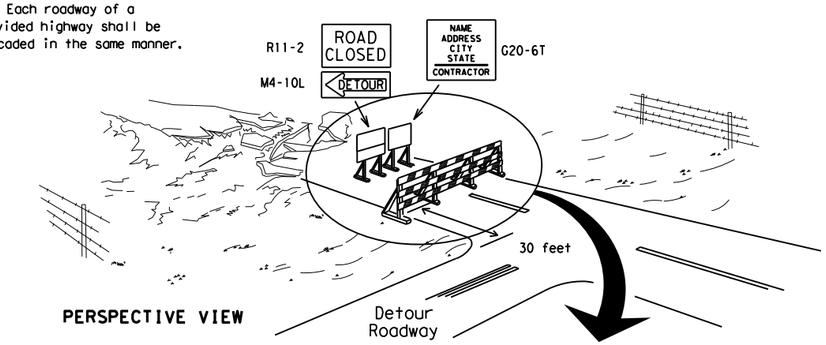
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

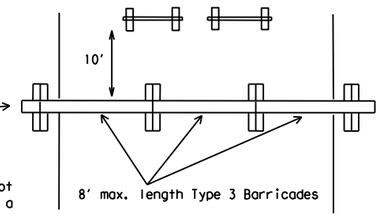
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

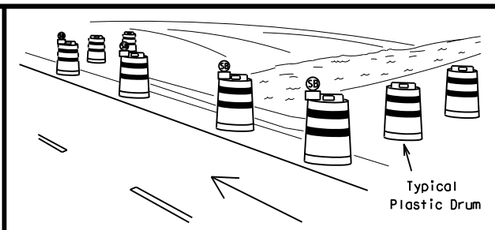
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

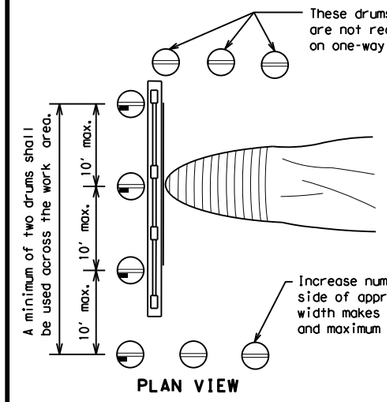
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

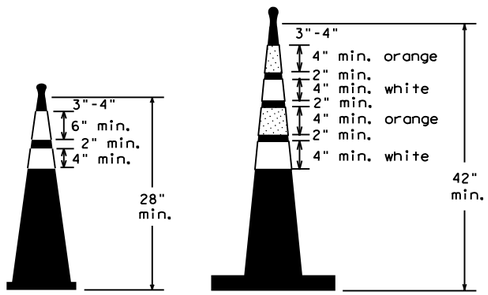
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



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

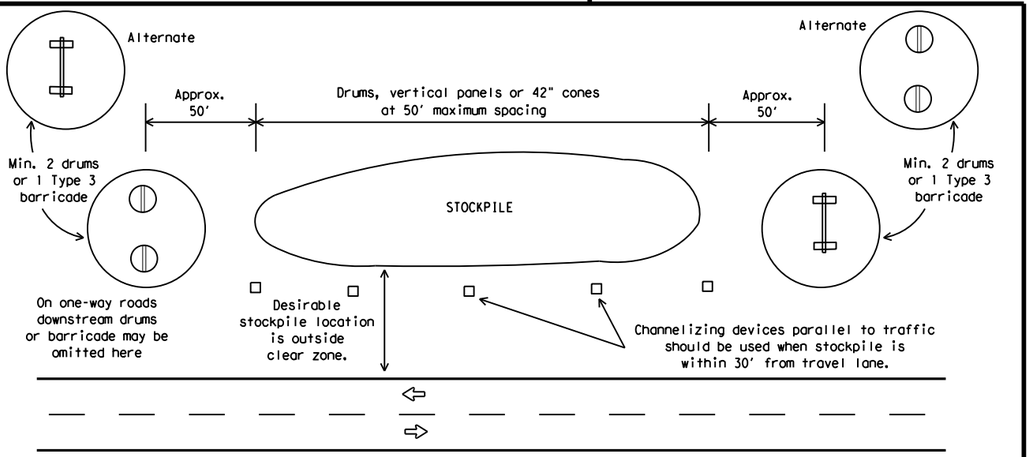
PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



28" Cones shall have a minimum weight of 9 1/2 lbs.
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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

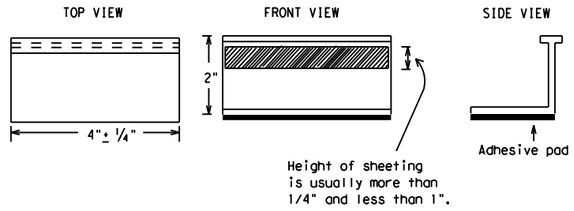
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

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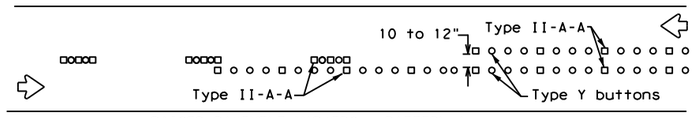
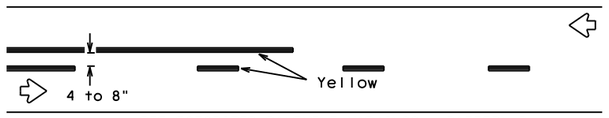
PAVEMENT MARKING PATTERNS

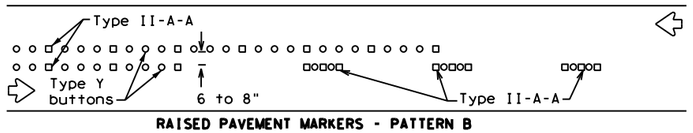
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



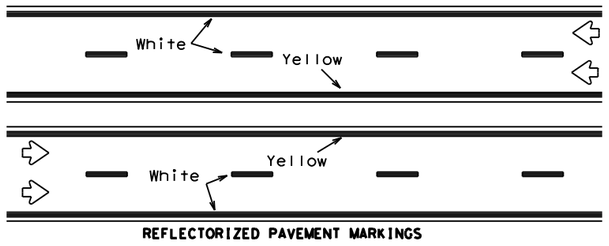
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



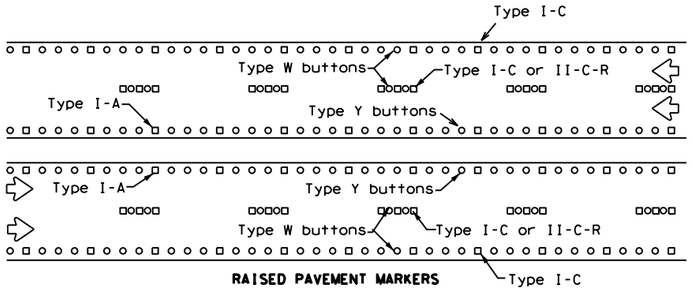
RAISED PAVEMENT MARKERS - PATTERN B

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

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



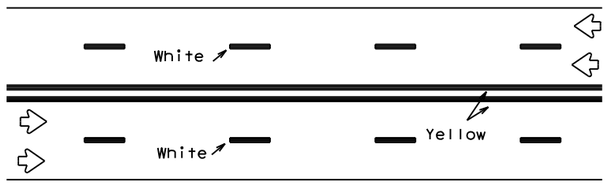
REFLECTORIZED PAVEMENT MARKINGS



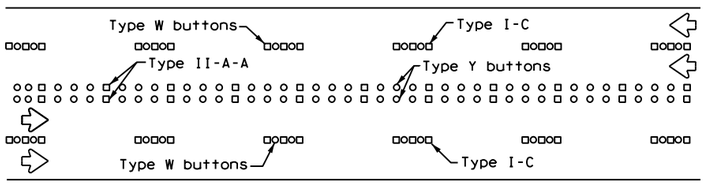
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



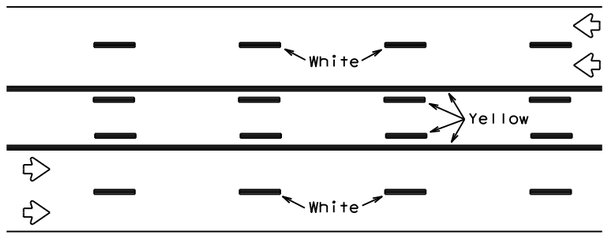
REFLECTORIZED PAVEMENT MARKINGS



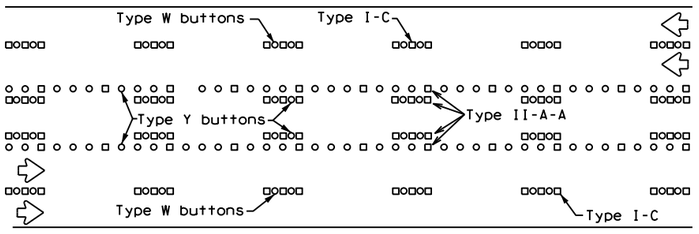
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

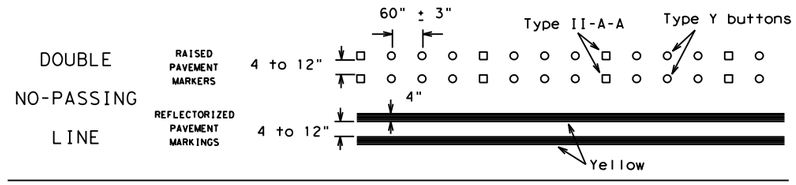
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

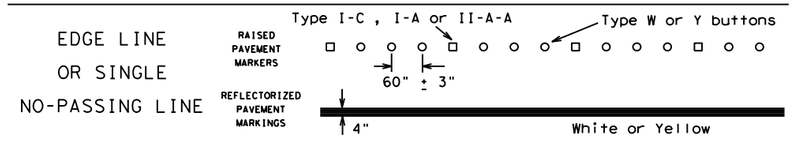
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

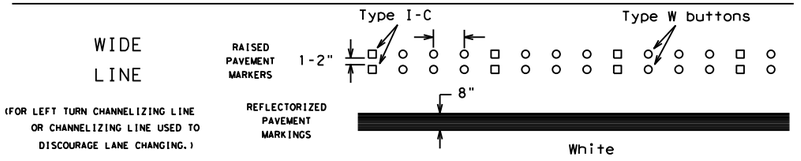


EDGE LINE OR SINGLE NO-PASSING LINE



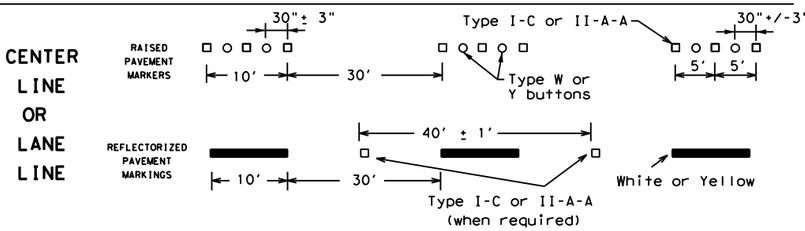
WIDE LINE

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

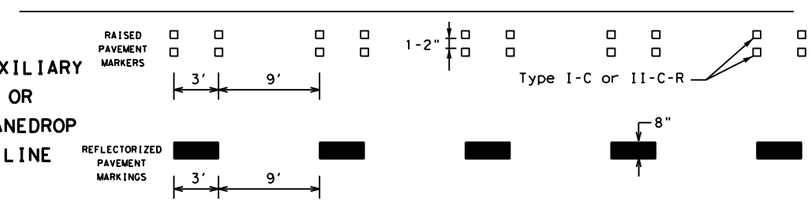


BROKEN LINES

CENTER LINE OR LANE LINE

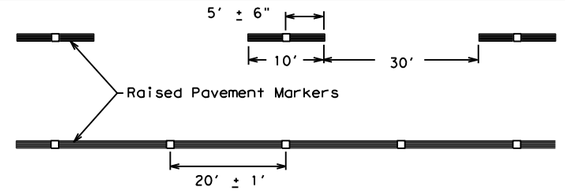


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0915	12	758.	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		30

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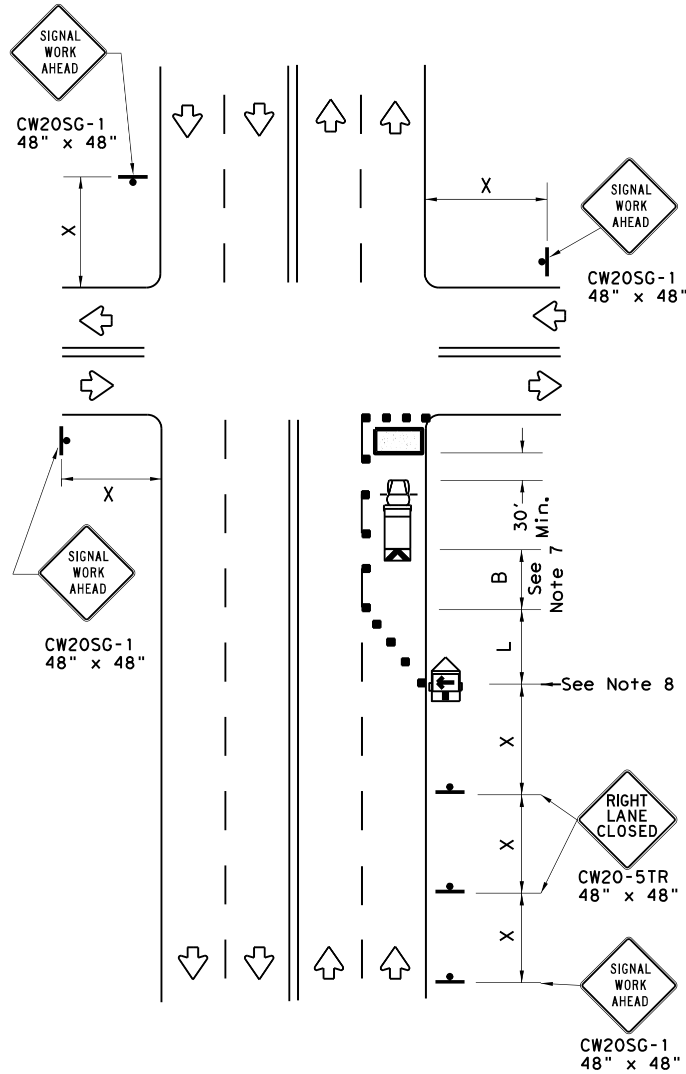
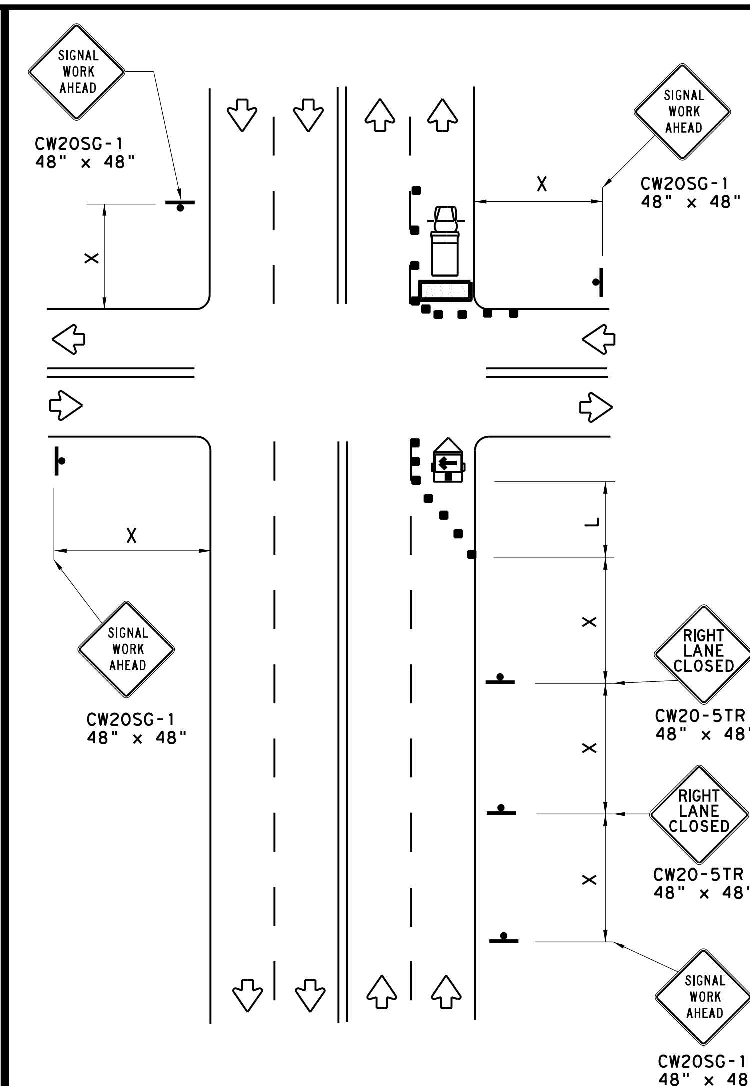


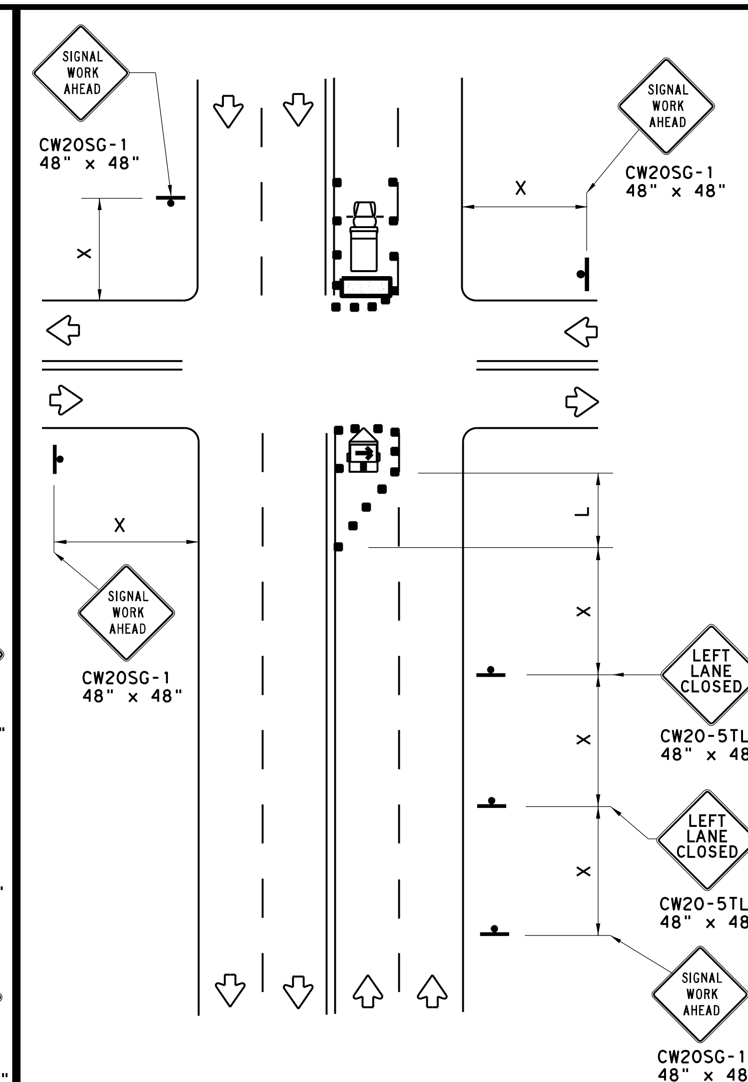
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE RIGHT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY

LEGEND

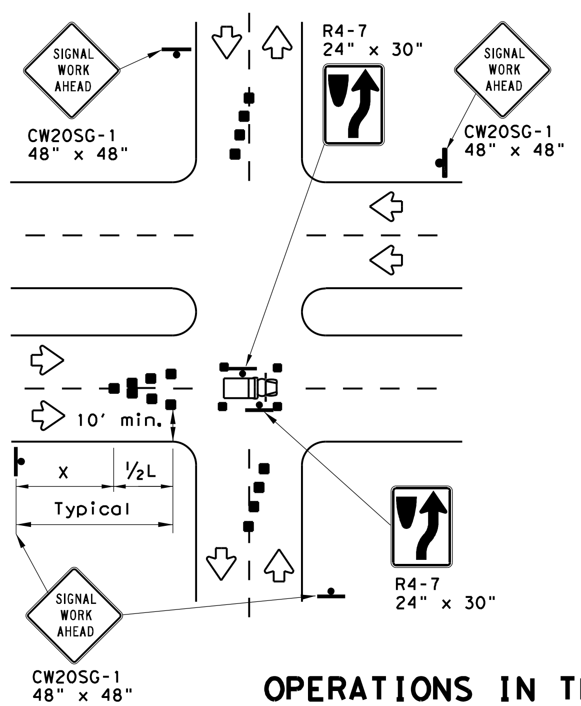
(symbol)	Type 3 Barricade	(symbol)	Channelizing Devices
(symbol)	Heavy Work Vehicle	(symbol)	Truck Mounted Attenuator (TMA)
(symbol)	Trailer Mounted Flashing Arrow Board	(symbol)	Portable Changeable Message Sign (PCMS)
(symbol)	Sign	(symbol)	Traffic Flow
(symbol)	Flag	(symbol)	Flagger

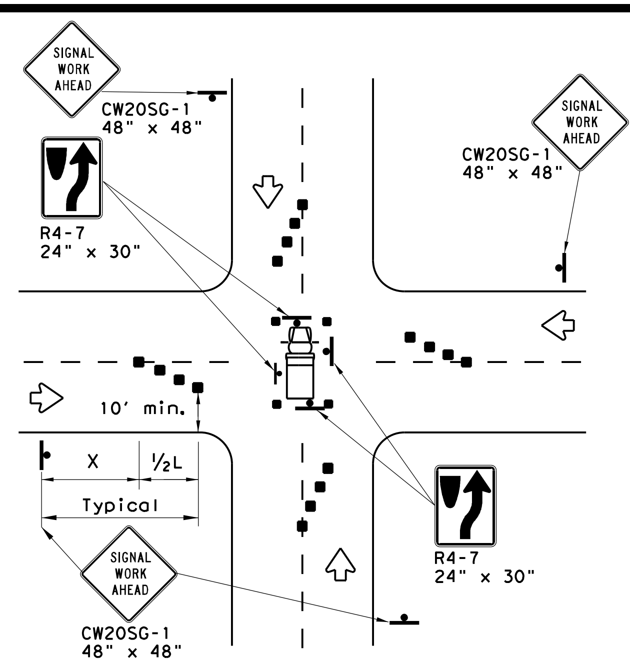
Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'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

* Conventional Roads Only

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

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





OPERATIONS IN THE INTERSECTION

SHORT DURATION

GENERAL NOTES

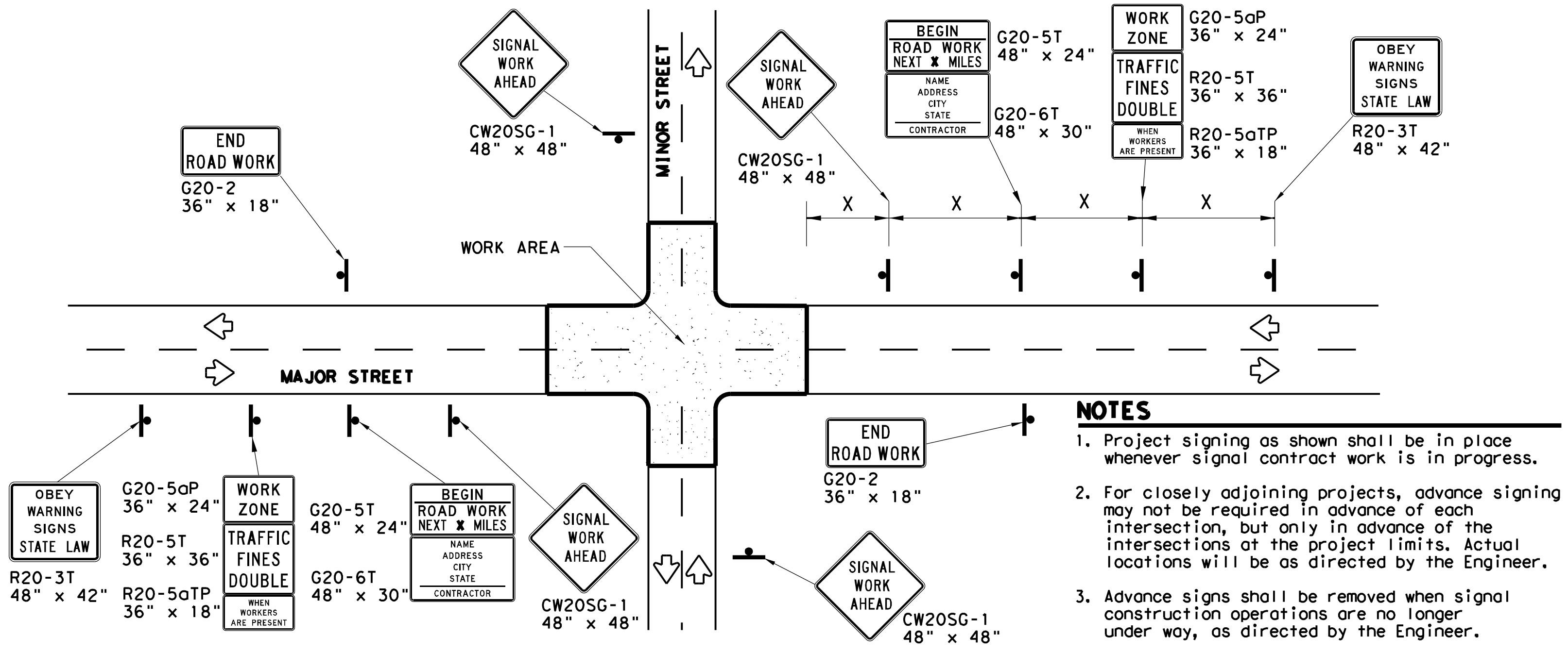
1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger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

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

FILE: wzbts-13.dgn		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT		
©TxDOT April 1992		CONT	SECT	JOB	HIGHWAY		
REVISIONS		0915	12	758.	VARIOUS		
2-98 10-99 7-13		DIST	COUNTY		SHEET NO.		
4-98 3-03		SAT	BEXAR		31		



TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

DURATION OF WORK

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

SIGN MOUNTING HEIGHT

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

REMOVING OR COVERING

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

REFLECTIVE SHEETING

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

SIGN SUPPORT WEIGHTS

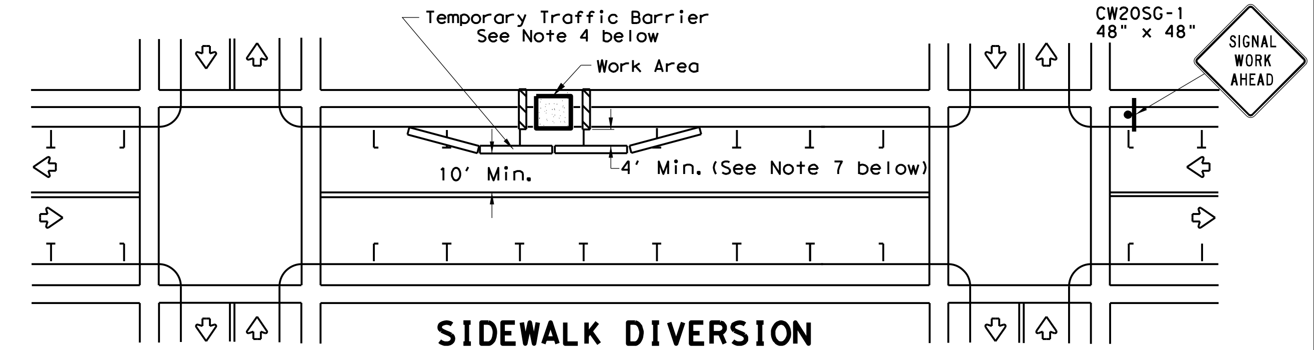
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

LEGEND	
(symbol)	Sign
(symbol)	Channelizing Devices
(symbol)	Type 3 Barricade

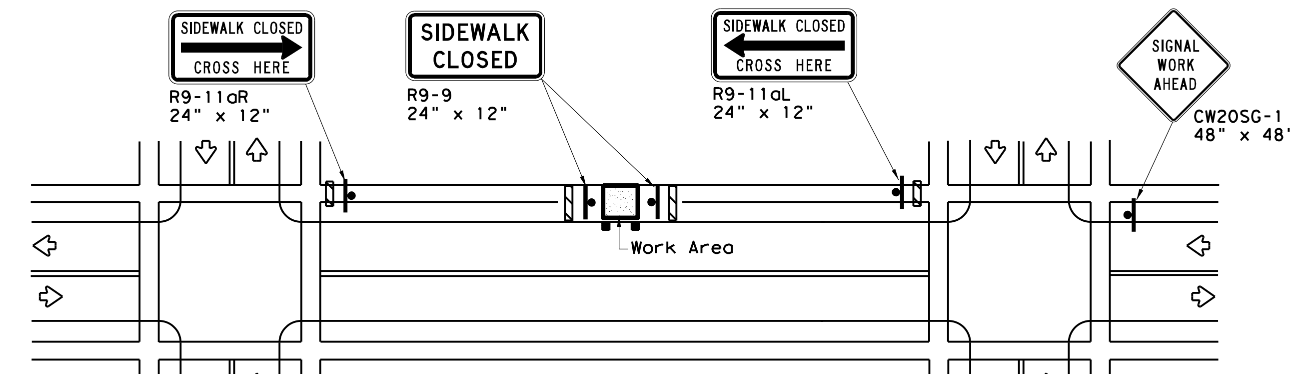
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

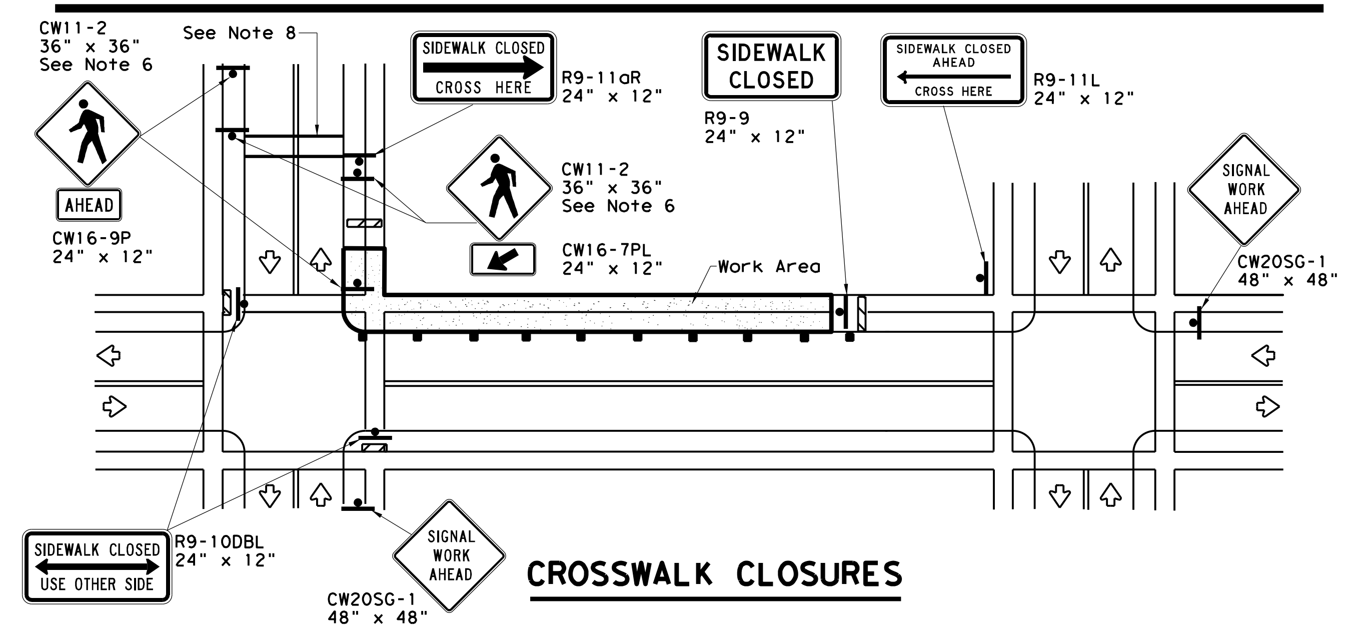
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

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

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
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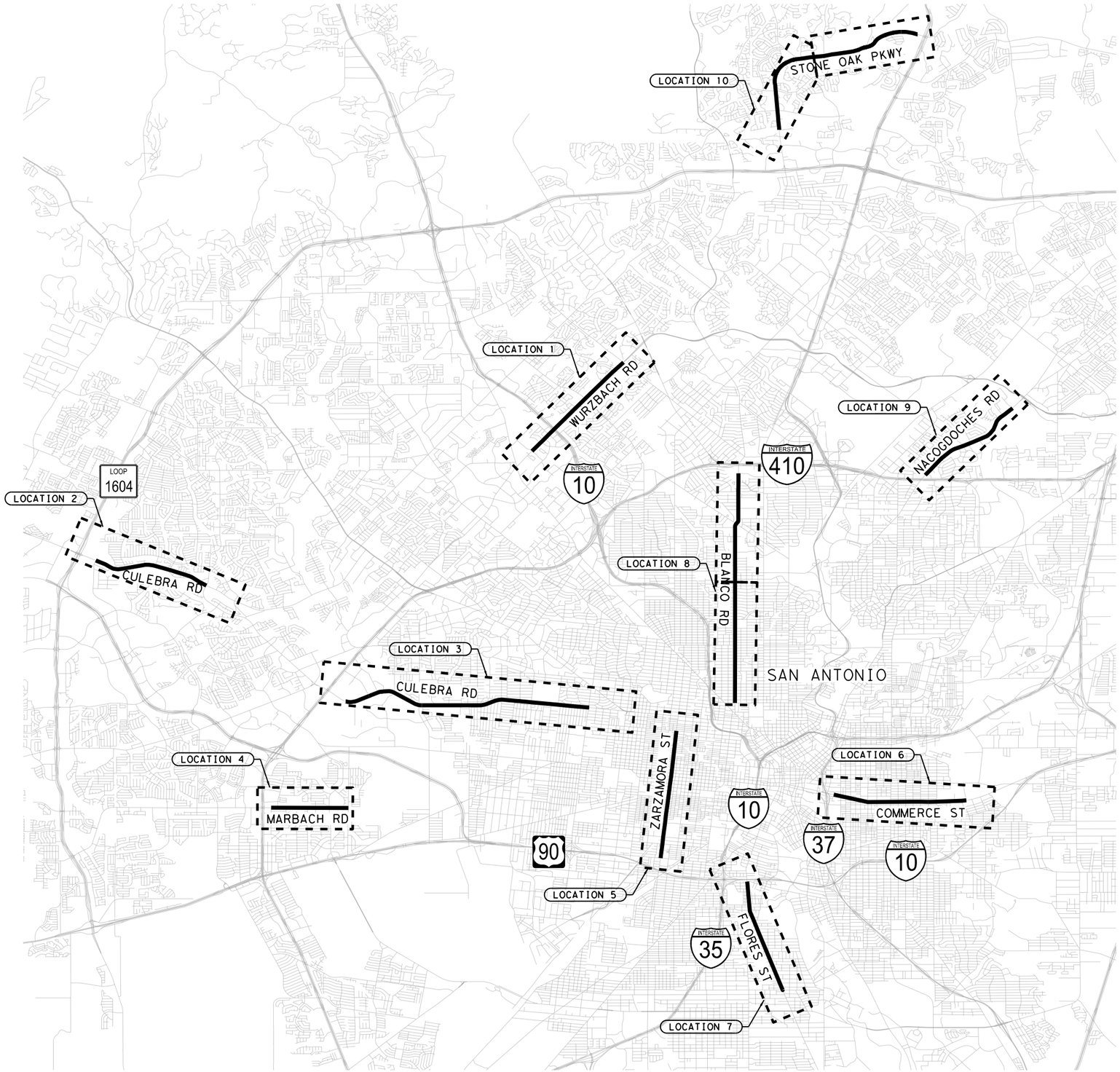
2-98 10-99 7-13	DIST		COUNTY	SHEET NO.
4-98 3-03	SAT		BEXAR	32



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STATE OF TEXAS
LASARO L. PICASSO
128068
LICENSED
PROFESSIONAL ENGINEER
8/23/2024

WSP USA Inc
9311 San Pedro St., Suite 700
San Antonio, Tx 78216
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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

KEY MAP

SHEET 1 OF 1

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	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		33

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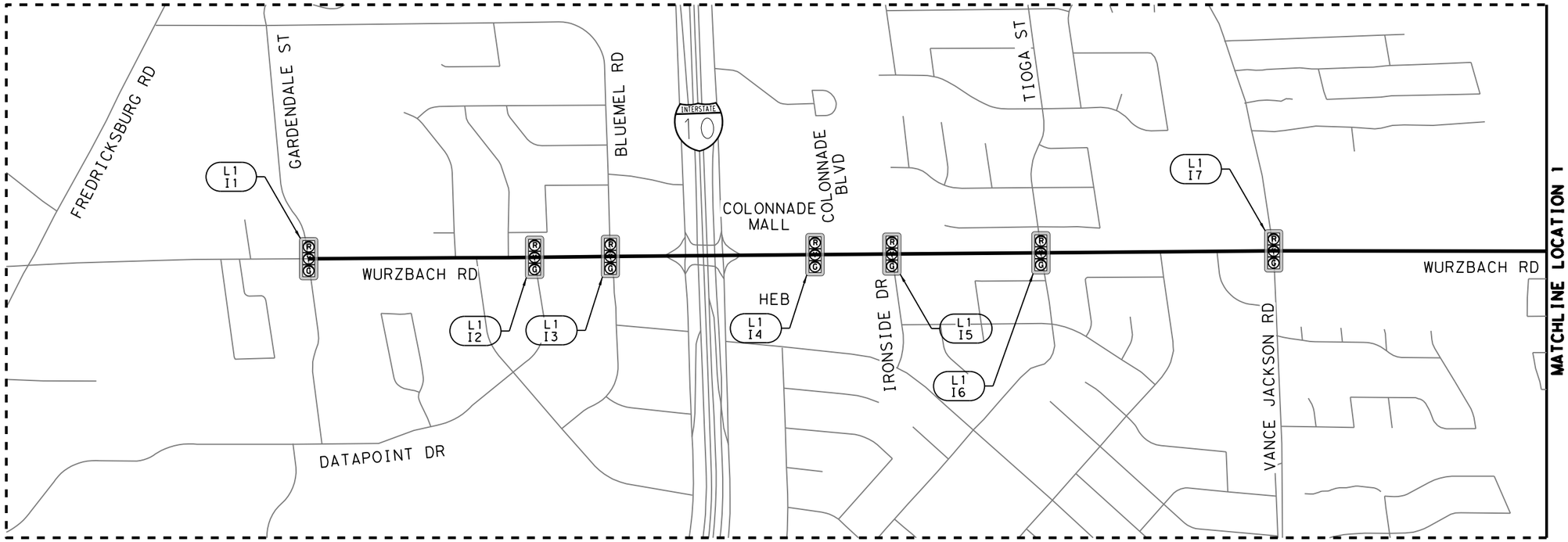
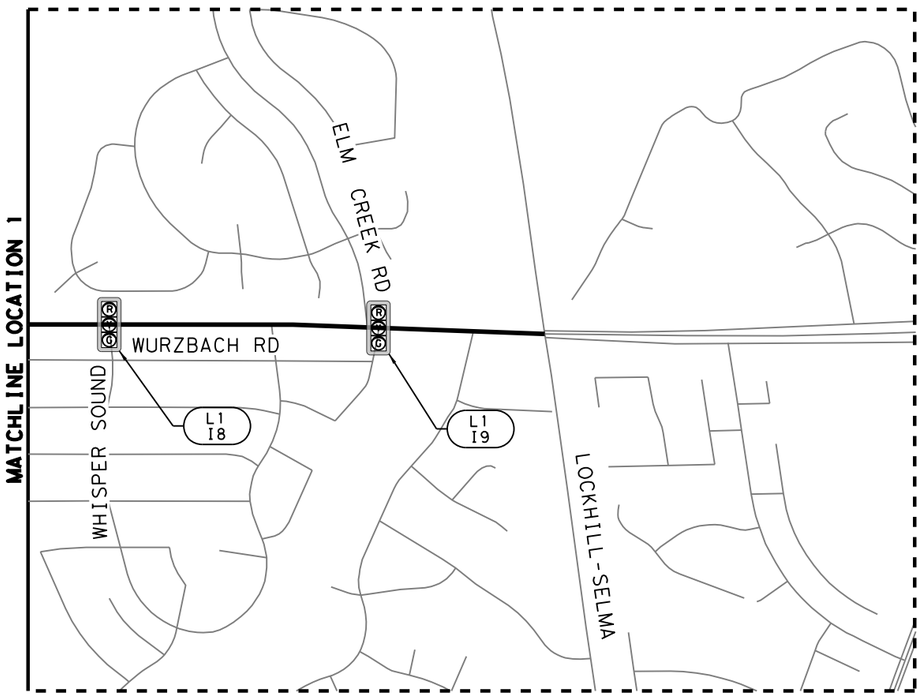




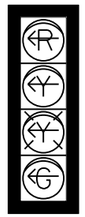
LEGEND

INTERSECTION LOCATION

L_ I_ — INTERSECTION ID (L = LOCATION, I = INTERSECTION)

LOCATION 1 INTERSECTION 5 SB LED TRAFFIC SIGNAL HEAD

REMOVE EXISTING AND REPLACE WITH PROPOSED AS SHOWN



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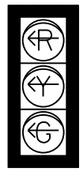

PROPOSED

INTERSECTION ID		INTERSECTION
LOCATION 1	INT 1	WURZBACH RD. AT GARDENDALE ST.
LOCATION 1	INT 2	WURZBACH RD. AT DATAPOINT DR.
LOCATION 1	INT 3	WURZBACH RD. AT BLUEMEL RD.
LOCATION 1	INT 4	WURZBACH RD. AT COLONNADE MALL
LOCATION 1	INT 5	WURZBACH RD. AT IRONSIDE DR.
LOCATION 1	INT 6	WURZBACH RD. AT TIOGA ST.
LOCATION 1	INT 7	WURZBACH RD. AT VANCE JACKSON RD.
LOCATION 1	INT 8	WURZBACH RD. AT WHISPER SOUND
LOCATION 1	INT 9	WURZBACH RD. AT ELM CREEK RD.

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 1 LAYOUT

SHEET 1 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		34

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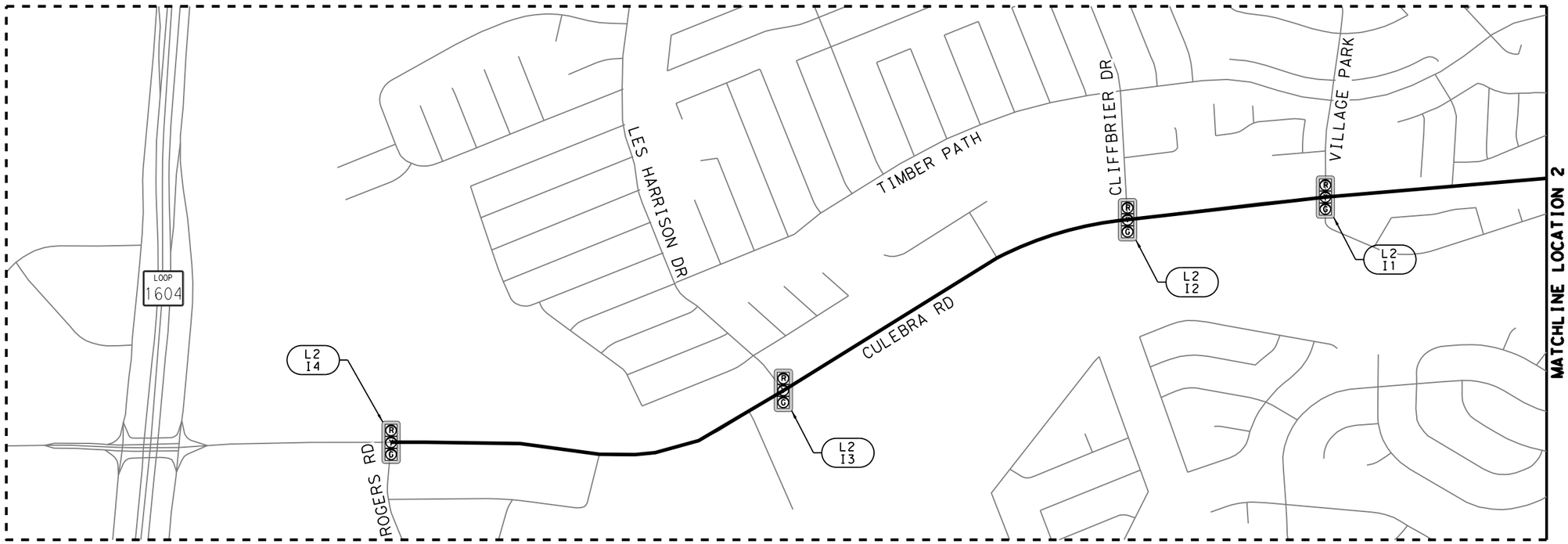

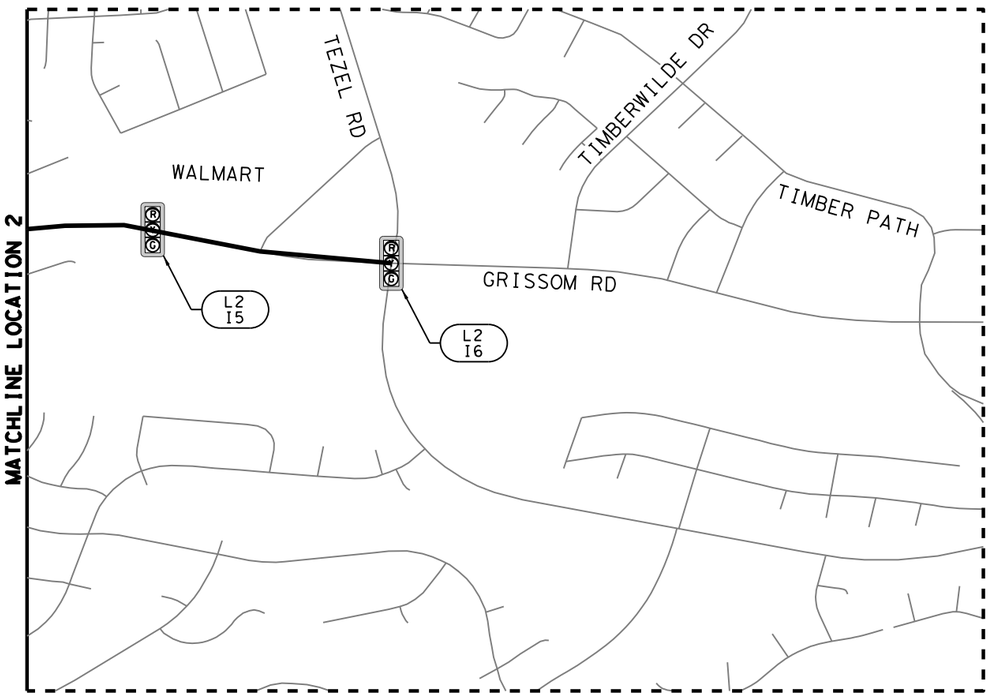

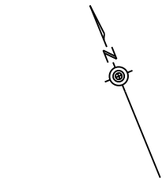

LEGEND

INTERSECTION LOCATION

L_ I_ — INTERSECTION ID (L = LOCATION, I = INTERSECTION)

INTERSECTION ID		INTERSECTION
LOCATION 2	INT 1	CULEBRA RD. AT NUECES CANYON - VILLAGE PARK
LOCATION 2	INT 2	CULEBRA RD. AT CLIFFBRIER DR.
LOCATION 2	INT 3	CULEBRA RD. AT LES HARRISON DR.
LOCATION 2	INT 4	CULEBRA RD. AT ROGERS RD.
LOCATION 2	INT 5	CULEBRA RD. AT WALMART
LOCATION 2	INT 6	CULEBRA RD. AT GRISSOM RD. - TEZEL RD.

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 2 LAYOUT

SHEET 2 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		35

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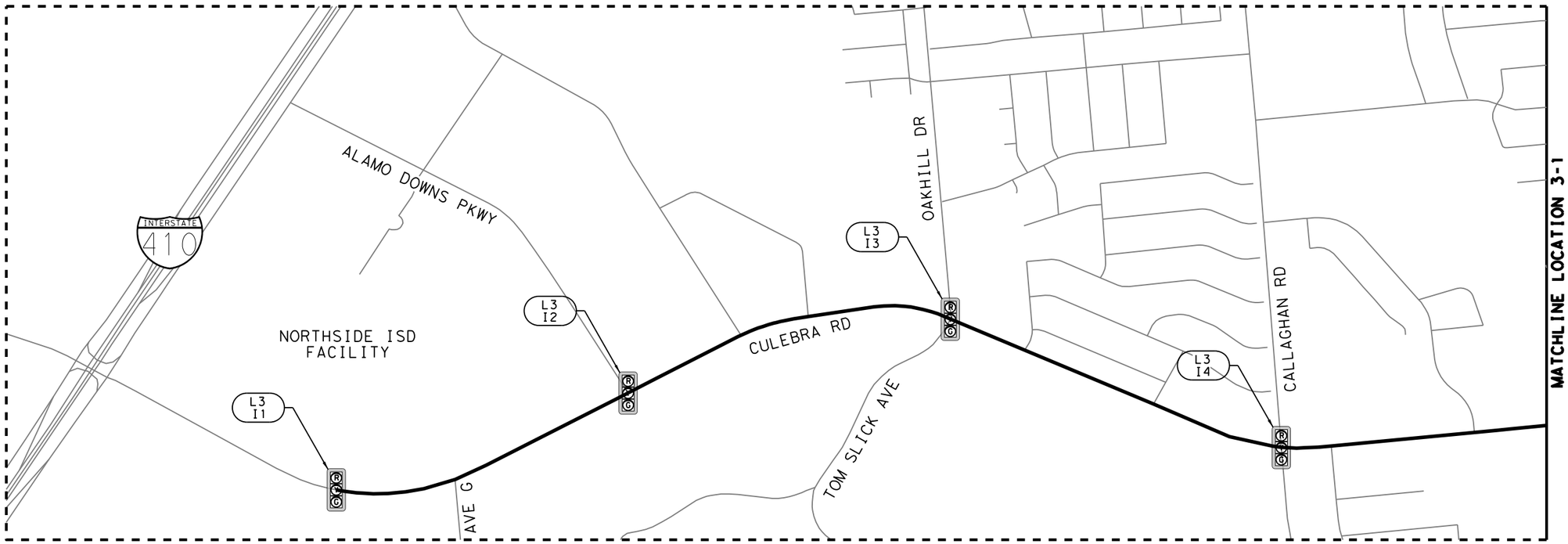

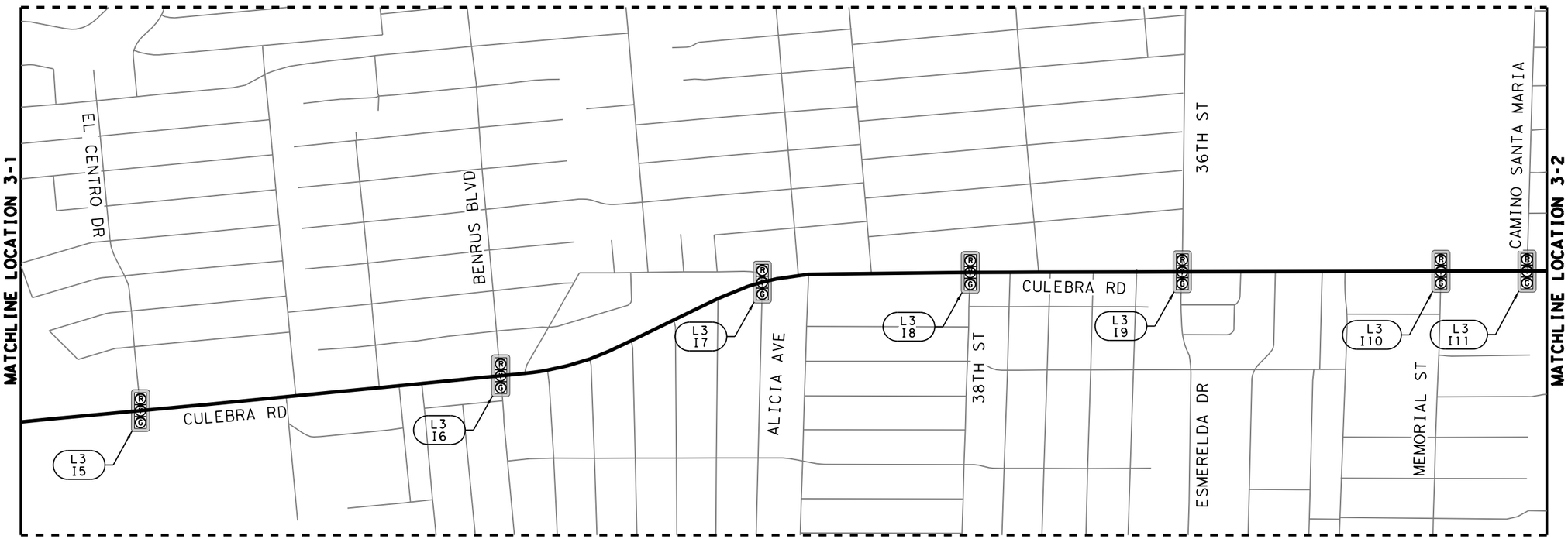

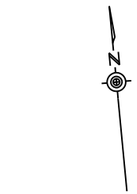

LEGEND

R G Y — INTERSECTION LOCATION

L_ I_ — INTERSECTION ID (L = LOCATION, I = INTERSECTION)

REV	DATE	BY	REVISION

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 3 LAYOUT

SHEET 3 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		36

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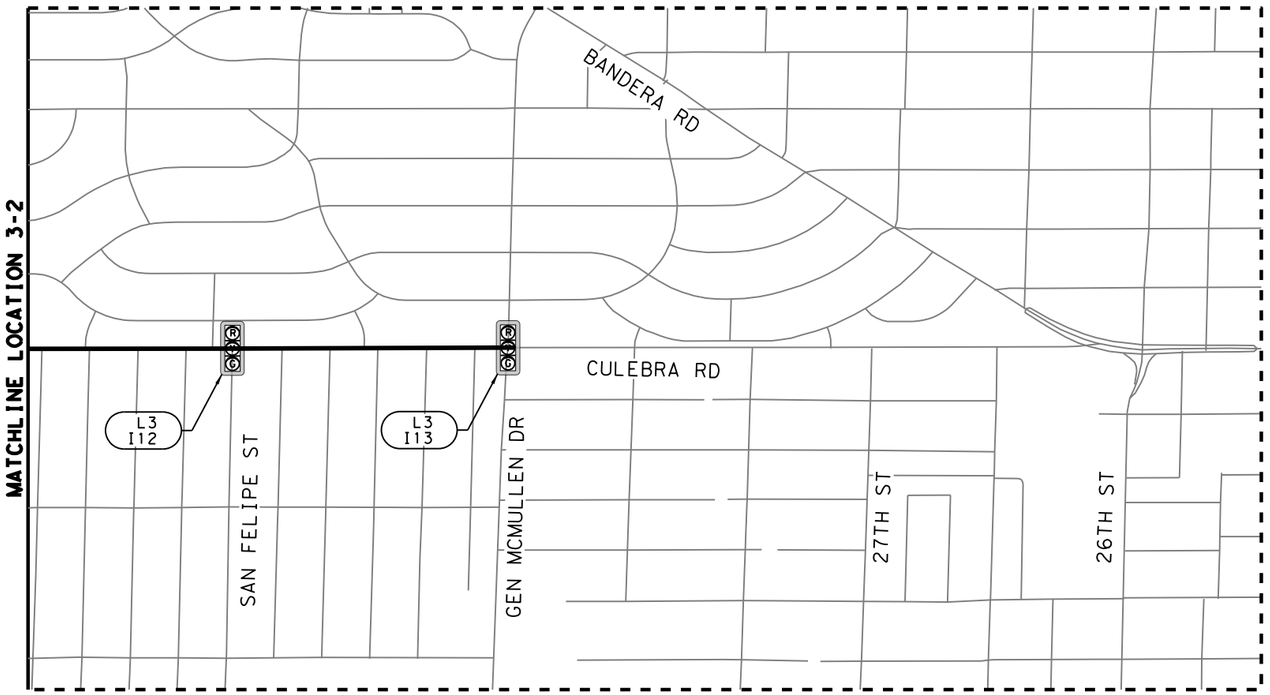

LEGEND

INTERSECTION LOCATION

L_ I_ INTERSECTION ID (L = LOCATION I = INTERSECTION)

INTERSECTION ID		INTERSECTION
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LOCATION 3	INT 2	CULEBRA RD. AT ALAMO DOWNS PKWY.
LOCATION 3	INT 3	CULEBRA RD. AT OAKHILL DR. - TOM SLICK AVE.
LOCATION 3	INT 4	CULEBRA RD. AT CALLAGHAN RD.
LOCATION 3	INT 5	CULEBRA RD. AT EL CENTRO DR.
LOCATION 3	INT 6	CULEBRA RD. AT BENRUS BLVD.
LOCATION 3	INT 7	CULEBRA RD. AT ALICIA AVE.
LOCATION 3	INT 8	CULEBRA RD. AT 38TH ST.
LOCATION 3	INT 9	CULEBRA RD. AT 36TH ST.-ESMERELDA DR.
LOCATION 3	INT 10	CULEBRA RD. AT MEMORIAL ST.
LOCATION 3	INT 11	CULEBRA RD. AT CAMINO SANTA MARIA
LOCATION 3	INT 12	CULEBRA RD. AT SAN FELIPE ST.
LOCATION 3	INT 13	CULEBRA RD. AT GEN MCMULLEN DR.

REV	DATE	BY	REVISION

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STATE OF TEXAS
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8/23/2024

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 3 LAYOUT

SHEET 4 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		37

DATE: 8/23/2024 11:42:37 AM
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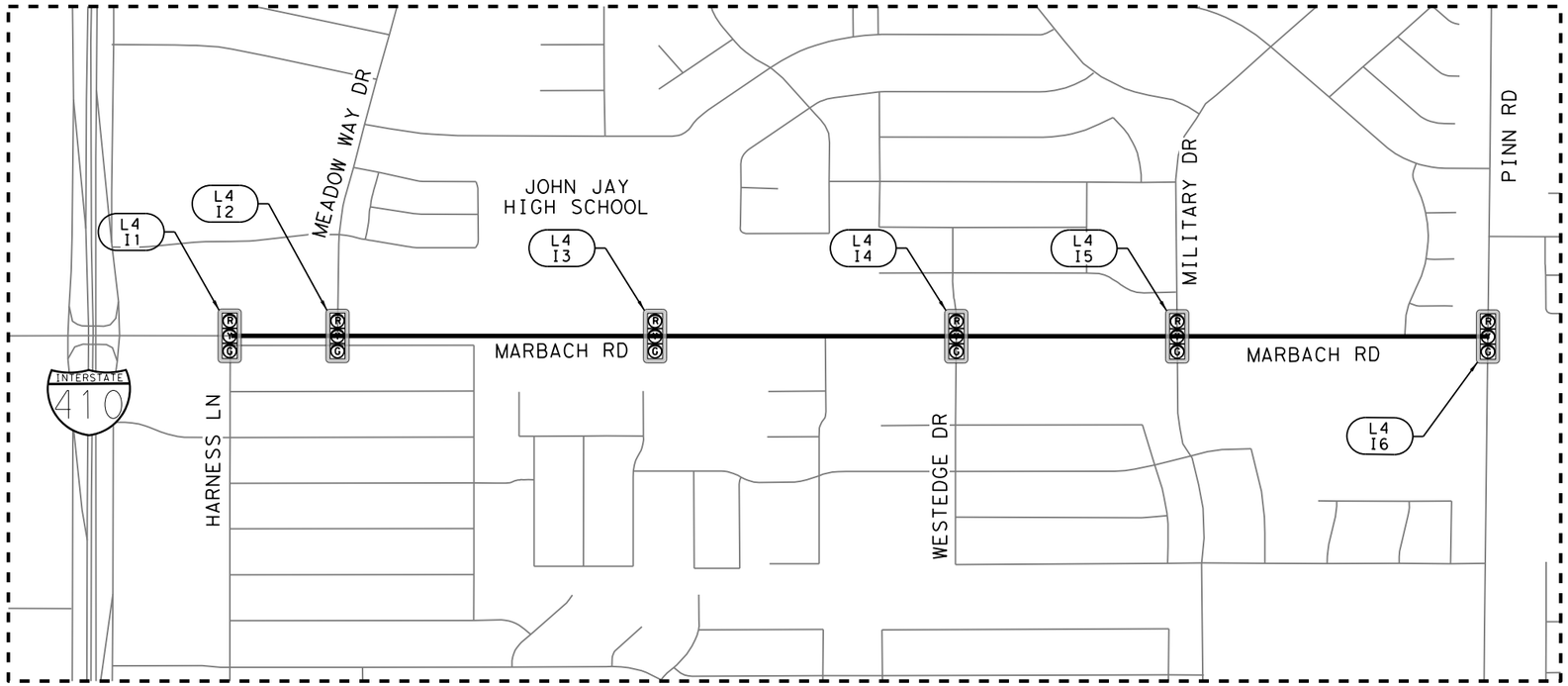

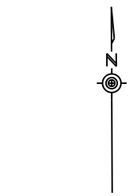

LEGEND

INTERSECTION LOCATION

L_ I_ INTERSECTION ID (L = LOCATION I = INTERSECTION)

INTERSECTION ID		INTERSECTION
LOCATION 4	INT 1	MARBACH RD. AT HARNESS LN
LOCATION 4	INT 2	MARBACH RD. AT MEADOW WAY DR.
LOCATION 4	INT 3	MARBACH RD. AT JOHN JAY HS
LOCATION 4	INT 4	MARBACH RD. AT MILITARY DR.
LOCATION 4	INT 5	MARBACH RD. AT WESTEDGE DR.
LOCATION 4	INT 6	MARBACH RD. AT PINN RD.

REV	DATE	BY	REVISION

NOT TO SCALE

STATE OF TEXAS
LASARO L. PICASSO
128068
LICENSED
PROFESSIONAL ENGINEER
8/23/2024

WSP USA Inc
9311 San Pedro St., Suite 700
San Antonio, TX 78216
TEL: 210-247-4360
TBPE F-2263

Texas Department of Transportation

TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 4 LAYOUT

SHEET 5 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		38

DATE: 8/23/2024 11:43:01 AM
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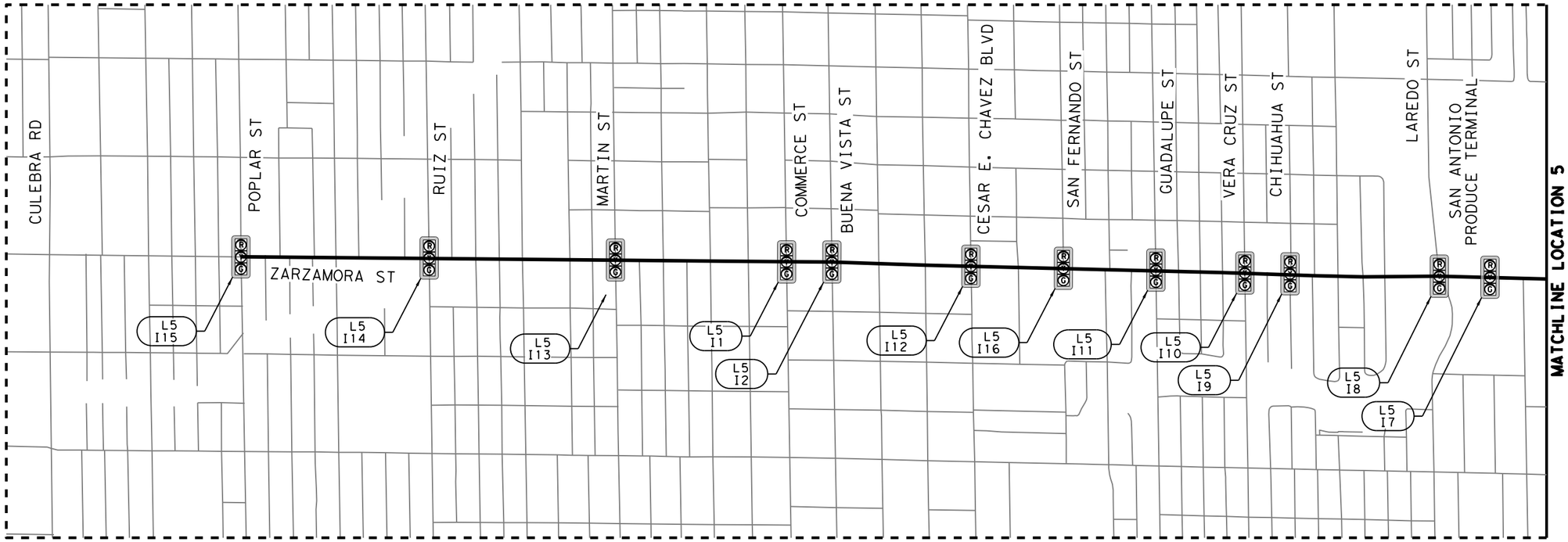

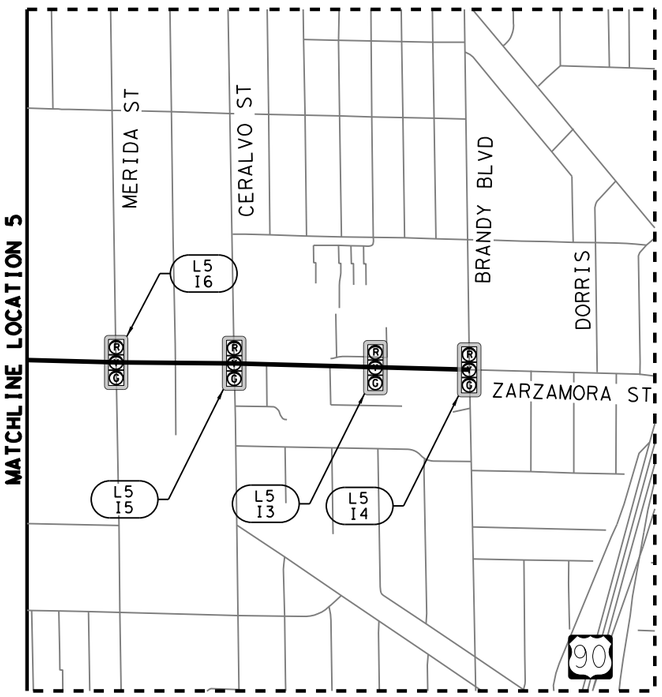

LEGEND

INTERSECTION LOCATION

L_ I_ INTERSECTION ID (L = LOCATION I = INTERSECTION)

INTERSECTION ID		INTERSECTION
LOCATION 5	INT 1	ZARZAMORA ST. AT COMMERCE ST.
LOCATION 5	INT 2	ZARZAMORA ST. AT BUENA VISTA ST.
LOCATION 5	INT 3	ZARZAMORA ST. AT SAN JUAN HOMES ℄ (HAWK)
LOCATION 5	INT 4	ZARZAMORA ST. AT BRADY BLVD.
LOCATION 5	INT 5	ZARZAMORA ST. AT CERALVO ST.
LOCATION 5	INT 6	ZARZAMORA ST. AT MERIDA ST.
LOCATION 5	INT 7	ZARZAMORA ST. AT PRODUCE TERMINAL
LOCATION 5	INT 8	ZARZAMORA ST. AT LAREDO ST.

INTERSECTION ID		INTERSECTION
LOCATION 5	INT 9	ZARZAMORA ST. AT CHIHUAHUA ST.
LOCATION 5	INT 10	ZARZAMORA ST. AT VERA CRUZ ST.
LOCATION 5	INT 11	ZARZAMORA ST. AT GUADALUPE ST.
LOCATION 5	INT 12	ZARZAMORA ST. AT CESAR E. CHAVEZ BLVD.
LOCATION 5	INT 13	ZARZAMORA ST. AT MARTIN ST.
LOCATION 5	INT 14	ZARZAMORA ST. AT RUIZ ST.
LOCATION 5	INT 15	ZARZAMORA ST. AT POPLAR ST.
LOCATION 5	INT 16	ZARZAMORA ST. AT SAN FERNANDO ST.

REV	DATE	BY	REVISION

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 5 LAYOUT

SHEET 6 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		39

DATE: 8/23/2024 11:43:26 AM
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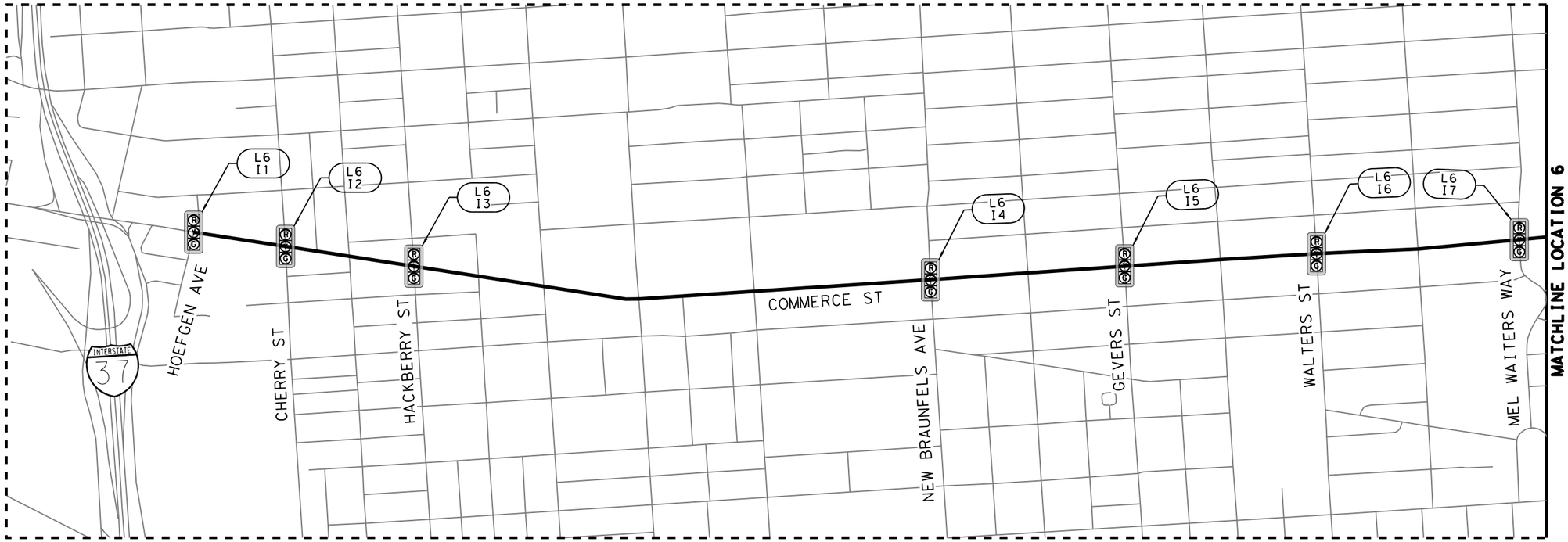

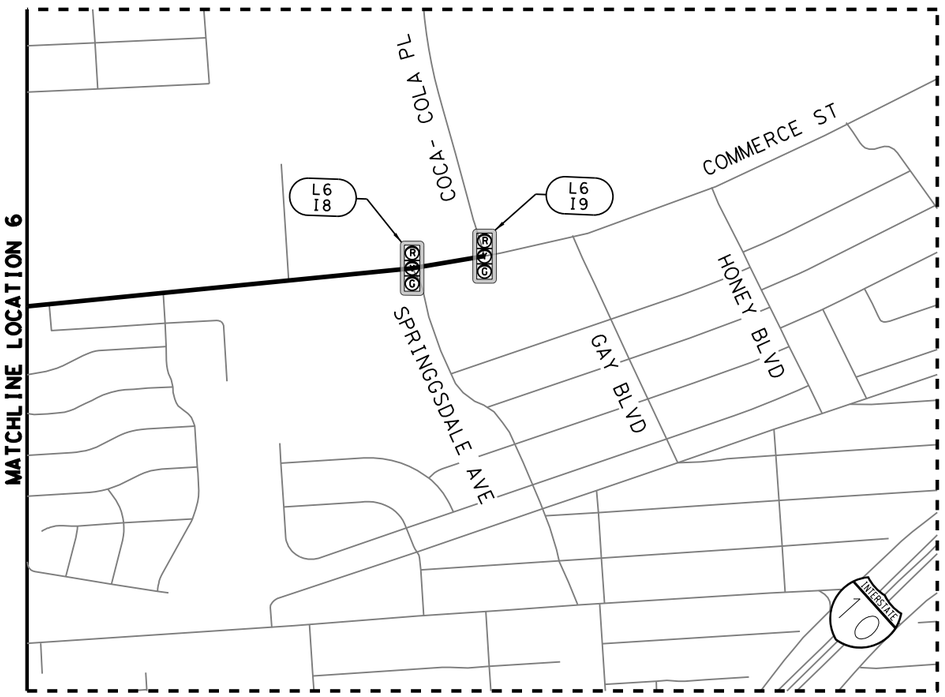

LEGEND

INTERSECTION LOCATION

L_ I_ — INTERSECTION ID (L = LOCATION, I = INTERSECTION)

INTERSECTION ID		INTERSECTION
LOCATION 6	INT 1	COMMERCE ST. AT HOEFGEN AVE.
LOCATION 6	INT 2	COMMERCE ST. AT CHERRY ST.
LOCATION 6	INT 3	COMMERCE ST. AT HACKBERRY ST.
LOCATION 6	INT 4	COMMERCE ST. AT NEW BRAUNFELS AVE.
LOCATION 6	INT 5	COMMERCE ST. AT GEVERS ST.
LOCATION 6	INT 6	COMMERCE ST. AT WALTERS ST.
LOCATION 6	INT 7	COMMERCE ST. AT MEL WAITERS WAY
LOCATION 6	INT 8	COMMERCE ST. AT SPRIGGSDALE AVE.
LOCATION 6	INT 9	COMMERCE ST. AT COCA-COLA PL.

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 6 LAYOUT

SHEET 7 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		40

DATE: 8/23/2024 11:43:56 AM
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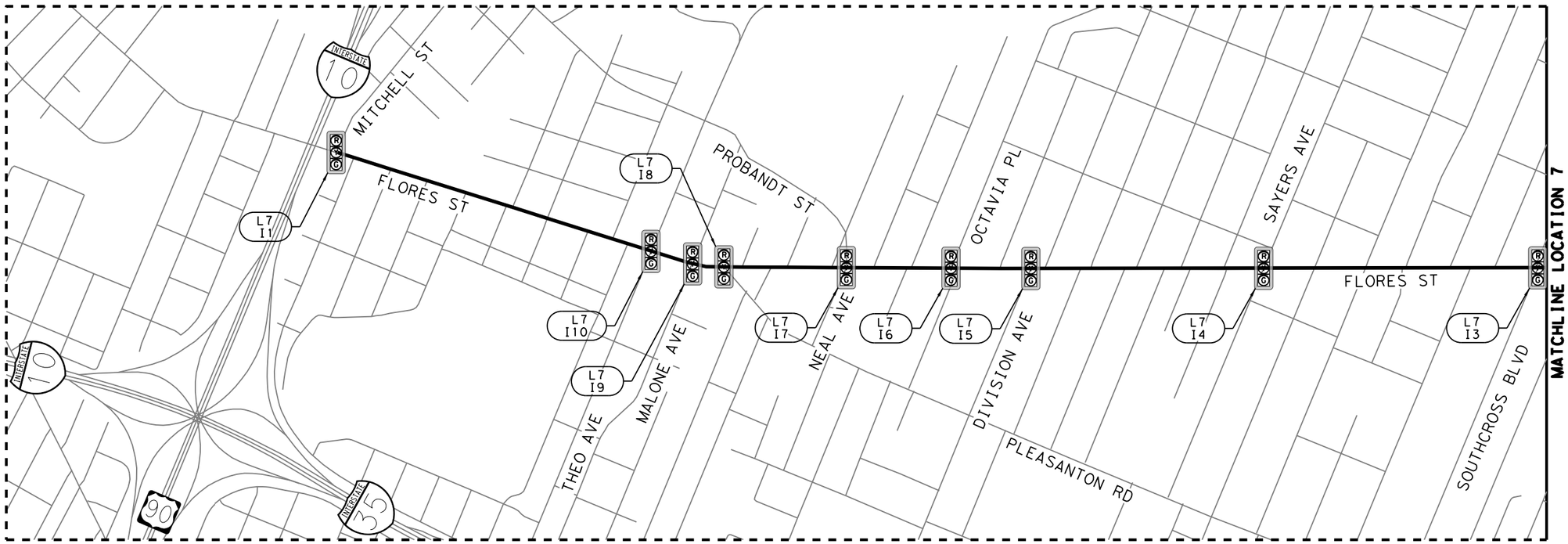

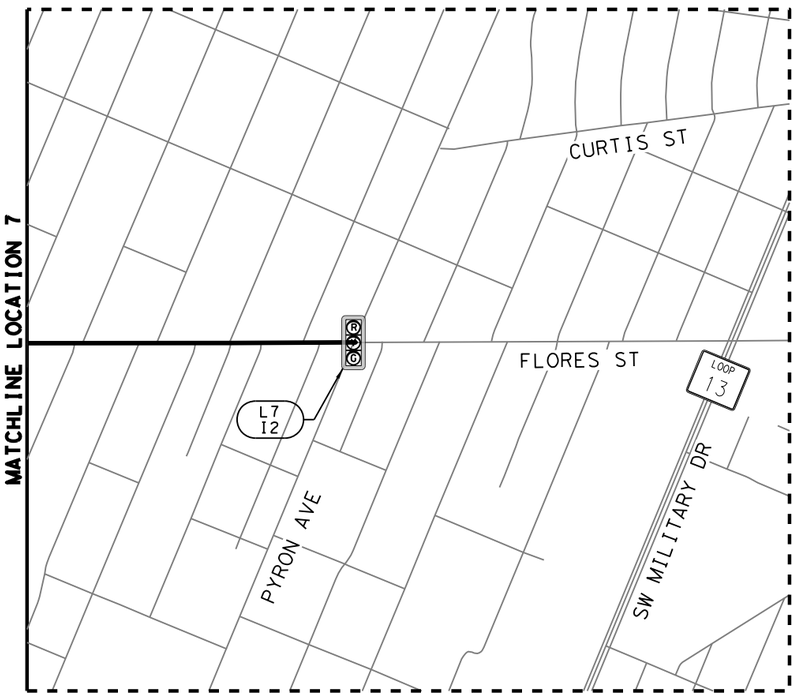

LEGEND

INTERSECTION LOCATION

L_ I_ — INTERSECTION ID (L = LOCATION, I = INTERSECTION)

INTERSECTION ID		INTERSECTION
LOCATION 7	INT 1	FLORES ST. AT MITCHELL ST.
LOCATION 7	INT 2	FLORES ST. AT PYRON AVE.
LOCATION 7	INT 3	FLORES ST. AT SOUTHCROSS BLVD.
LOCATION 7	INT 4	FLORES ST. AT SAYERS AVE.
LOCATION 7	INT 5	FLORES ST. AT DIVISION AVE.
LOCATION 7	INT 6	FLORES ST. AT OCTAVIA PL.
LOCATION 7	INT 7	FLORES ST. AT NEAL AVE. - PROBANDT ST.
LOCATION 7	INT 8	FLORES ST. AT PLEASANTON RD.
LOCATION 7	INT 9	FLORES ST. AT MALONE AVE.
LOCATION 7	INT 10	FLORES ST. AT THEO AVE.

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 7 LAYOUT

SHEET 8 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		41

DATE: 8/23/2024 11:44:24 AM
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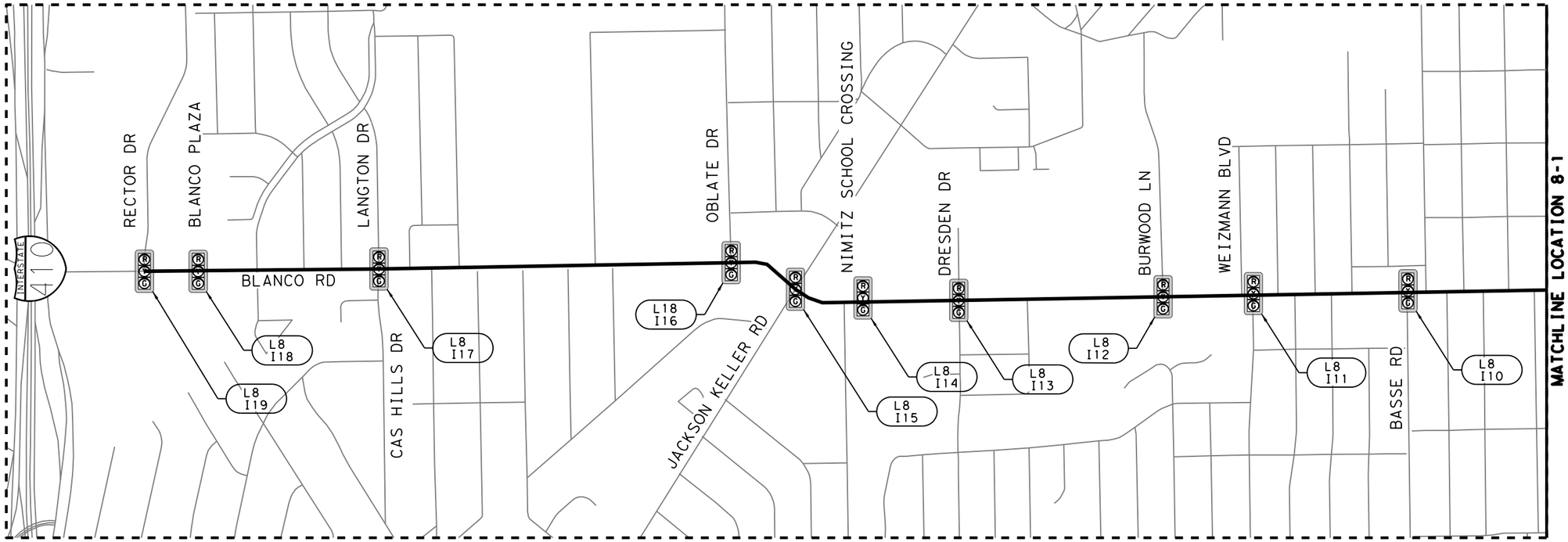

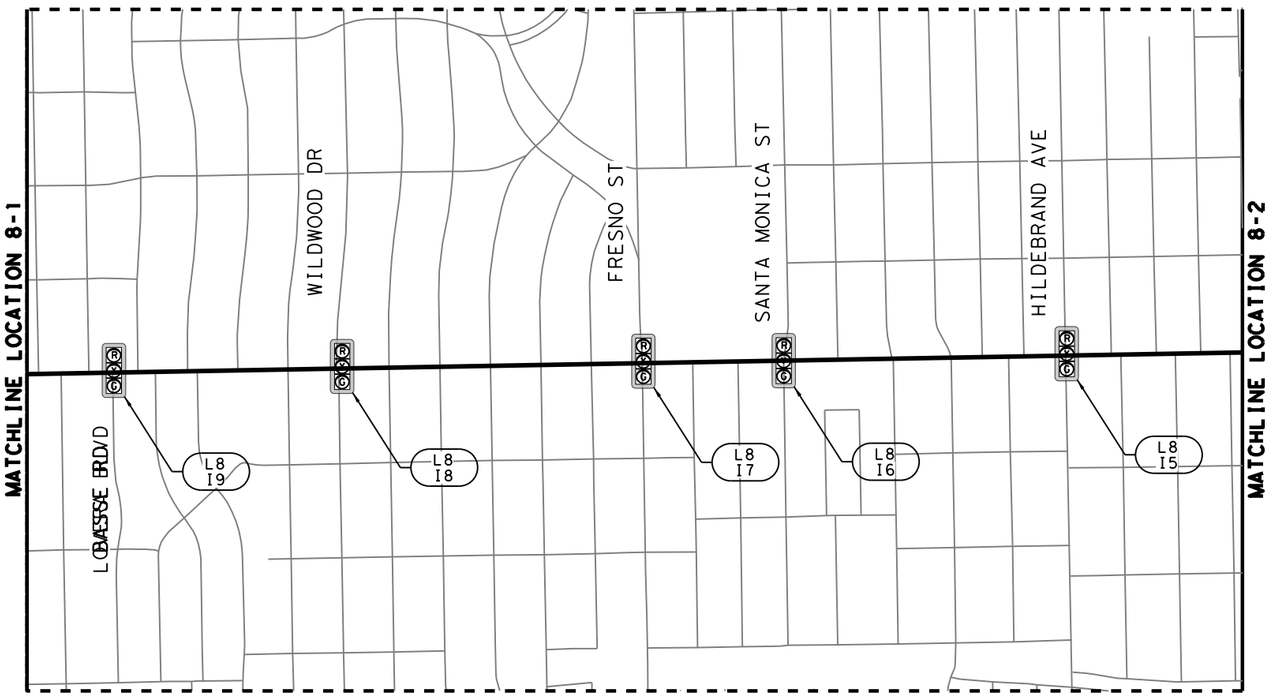

LEGEND

INTERSECTION LOCATION

L_ I_ INTERSECTION ID (L = LOCATION I = INTERSECTION)

NOT TO SCALE

REV	DATE	BY	REVISION

STATE OF TEXAS
LASARO L. PICASSO
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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 8 LAYOUT

SHEET 9 OF 12

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	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		42

DATE: 8/23/2024 11:44:52 AM
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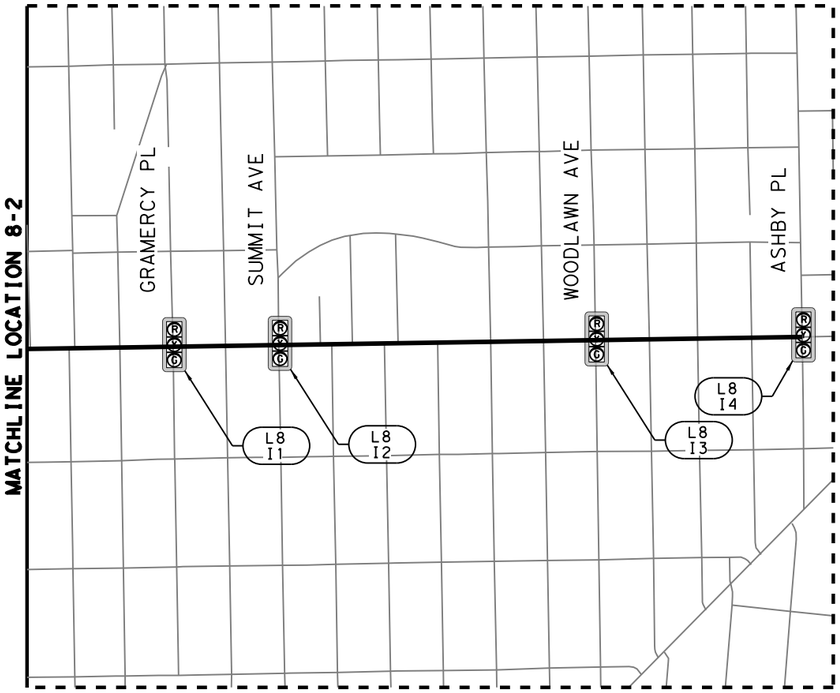

LEGEND

INTERSECTION LOCATION

L_ I_ INTERSECTION ID (L = LOCATION I = INTERSECTION)

INTERSECTION ID		INTERSECTION
LOCATION 8	INT 1	BLANCO RD. AT GRAMERCY PL.
LOCATION 8	INT 2	BLANCO RD. AT SUMMIT AVE.
LOCATION 8	INT 3	BLANCO RD. AT WOODLAWN AVE.
LOCATION 8	INT 4	BLANCO RD. AT ASHBY PL.
LOCATION 8	INT 5	BLANCO RD. AT HILDEBRAND AVE.
LOCATION 8	INT 6	BLANCO RD. AT SANTA MONICA ST.
LOCATION 8	INT 7	BLANCO RD. AT FRESNO ST.
LOCATION 8	INT 8	BLANCO RD. AT WILDWOOD DR.
LOCATION 8	INT 9	BLANCO RD. AT LOVERA BLVD.
LOCATION 8	INT 10	BLANCO RD. AT BASSE RD.

INTERSECTION ID		INTERSECTION
LOCATION 8	INT 11	BLANCO RD. AT WEIZMANN BLVD.
LOCATION 8	INT 12	BLANCO RD. AT BURWOOD LN.
LOCATION 8	INT 13	BLANCO RD. AT DRESDEN DR.
LOCATION 8	INT 14	BLANCO RD. AT NIMITZ SCHOOL CROSSING
LOCATION 8	INT 15	BLANCO RD. AT JACKSON KELLER RD.
LOCATION 8	INT 16	BLANCO RD. AT OBLATE DR.
LOCATION 8	INT 17	BLANCO RD. AT CAS HILL DR. - LANGTON
LOCATION 8	INT 18	BLANCO RD. AT BLANCO PLAZA
LOCATION 8	INT 19	BLANCO RD. AT RECTOR DR.

REV	DATE	BY	REVISION

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 8 LAYOUT

SHEET 10 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		43

DATE: 8/23/2024 11:45:20 AM
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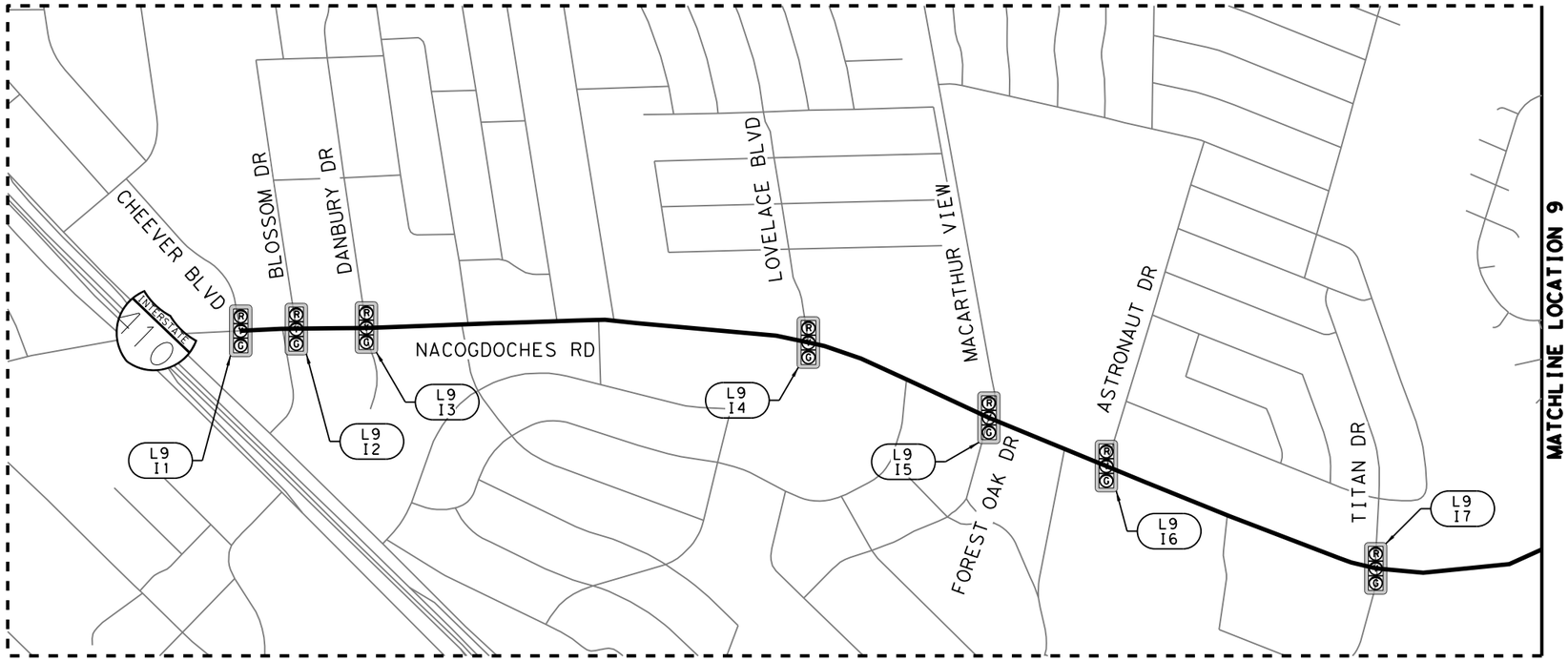

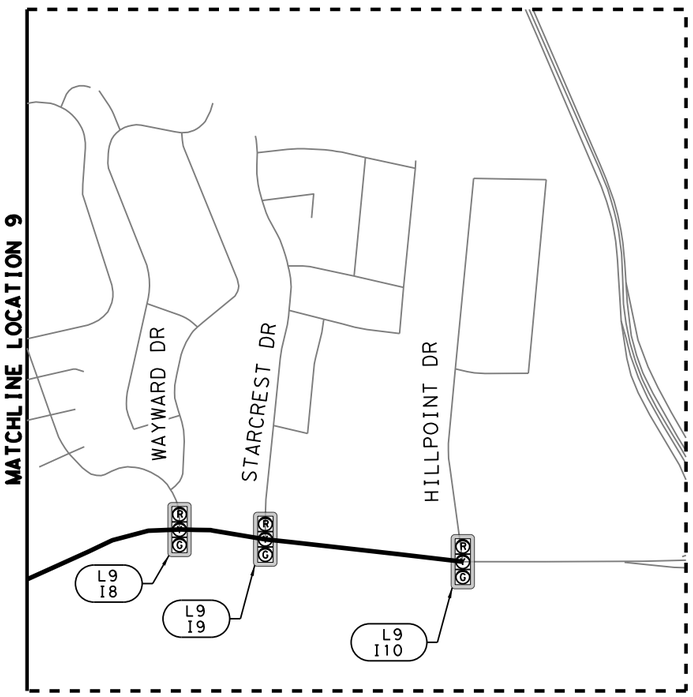

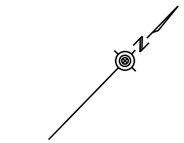

LEGEND

INTERSECTION LOCATION

L_ I_ INTERSECTION ID (L = LOCATION I = INTERSECTION)

INTERSECTION ID		INTERSECTION
LOCATION 9	INT 1	NACOGDOCHES RD. AT CHEEVER BLVD.
LOCATION 9	INT 2	NACOGDOCHES RD. AT BLOSSOM DR. - WAGON WHEEL ST.
LOCATION 9	INT 3	NACOGDOCHES RD. AT DANBURY DR.
LOCATION 9	INT 4	NACOGDOCHES RD. AT LOVELACE BLVD.
LOCATION 9	INT 5	NACOGDOCHES RD. AT FOREST OAK DR. - MACARTHUR VIEW
LOCATION 9	INT 6	NACOGDOCHES RD. AT ASTRONAUT DR.
LOCATION 9	INT 7	NACOGDOCHES RD. AT TITAN DR.
LOCATION 9	INT 8	NACOGDOCHES RD. AT WAYWARD DR.
LOCATION 9	INT 9	NACOGDOCHES RD. AT STARCREST DR.
LOCATION 9	INT 10	NACOGDOCHES RD. AT HILLPOINT DR.

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STATE OF TEXAS
LASARO L. PICASSO
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8/23/2024

Lasaro Picasso, P.E.

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 9 LAYOUT

SHEET 11 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		44

DATE: 8/23/2024 11:45:44 AM
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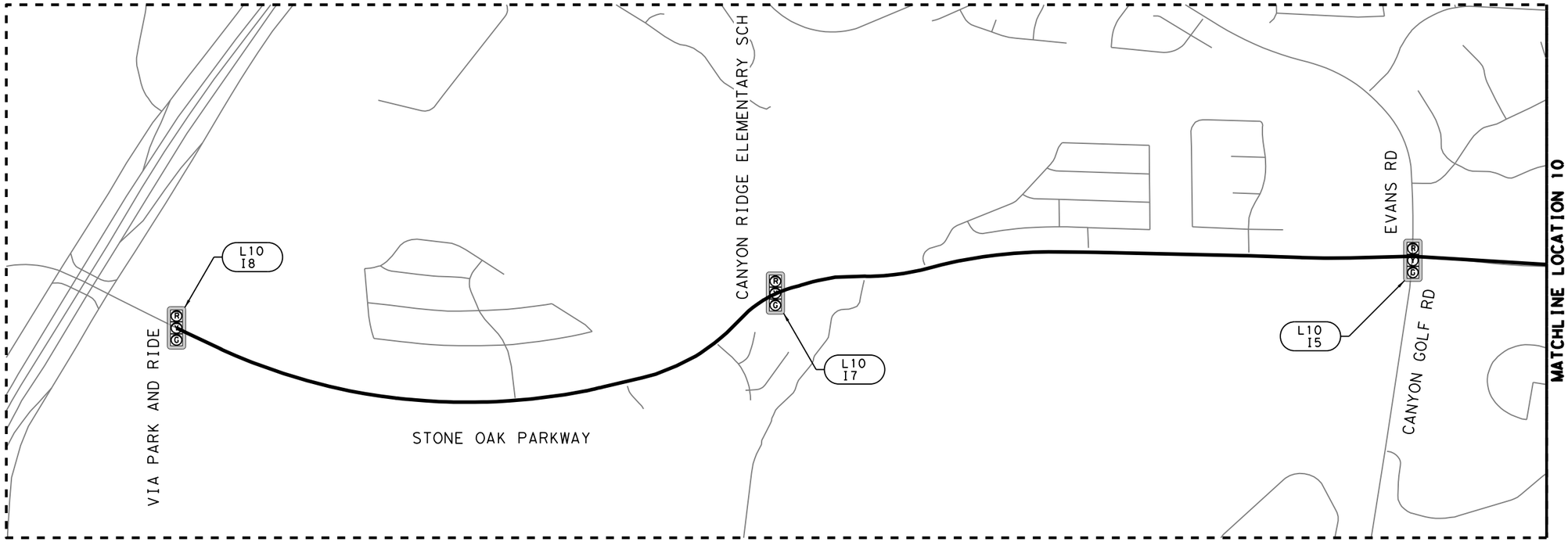

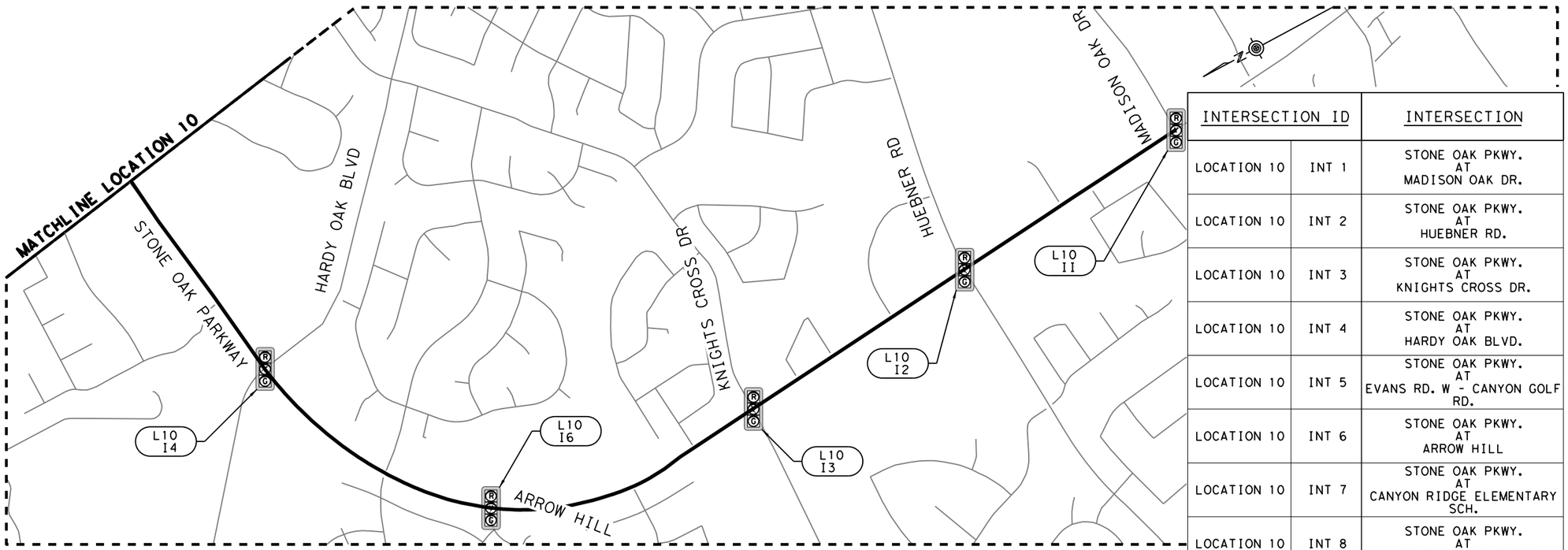

LEGEND

INTERSECTION LOCATION

L_ I_ — INTERSECTION ID (L = LOCATION, I = INTERSECTION)

INTERSECTION ID		INTERSECTION
LOCATION 10	INT 1	STONE OAK PKWY. AT MADISON OAK DR.
LOCATION 10	INT 2	STONE OAK PKWY. AT HUEBNER RD.
LOCATION 10	INT 3	STONE OAK PKWY. AT KNIGHTS CROSS DR.
LOCATION 10	INT 4	STONE OAK PKWY. AT HARDY OAK BLVD.
LOCATION 10	INT 5	STONE OAK PKWY. AT EVANS RD. W - CANYON GOLF RD.
LOCATION 10	INT 6	STONE OAK PKWY. AT ARROW HILL
LOCATION 10	INT 7	STONE OAK PKWY. AT CANYON RIDGE ELEMENTARY SCH.
LOCATION 10	INT 8	STONE OAK PKWY. AT VIA PARK AND RIDE

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TRAFFIC SIGNAL BACKPLATE REPLACEMENTS

LOCATION 10 LAYOUT

SHEET 12 OF 12

© 2024	CONT	SECT	JOB	HIGHWAY
	0915	12	758	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		45

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DATE: 8/23/2024 11:46:32 AM
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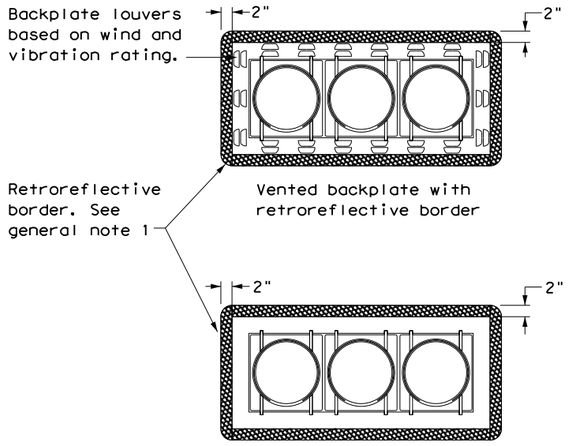
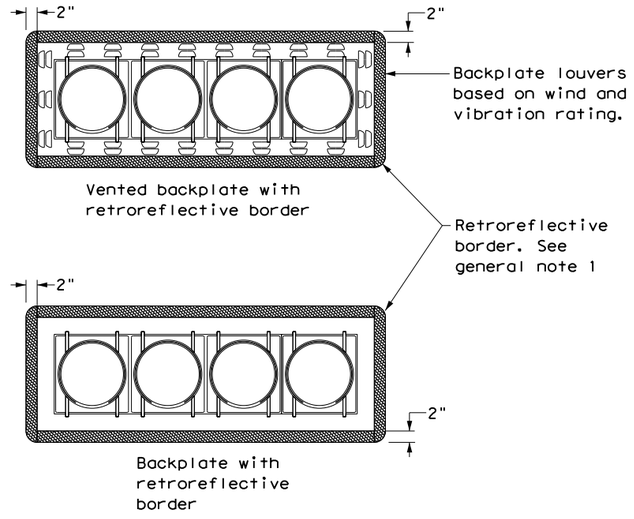
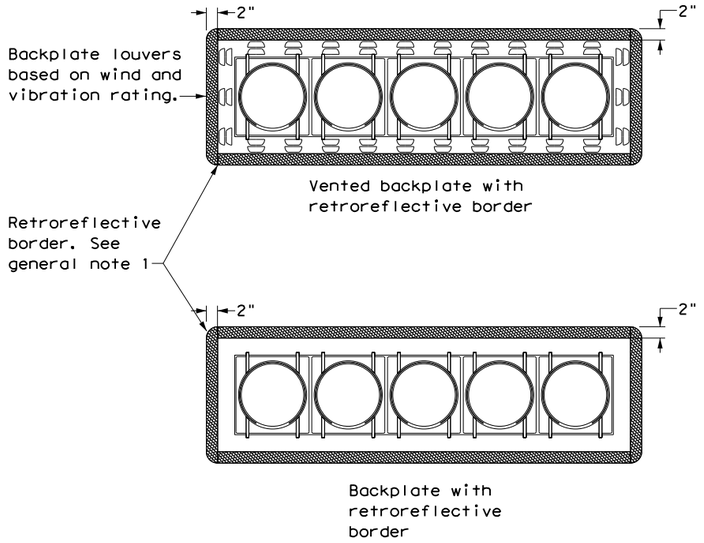


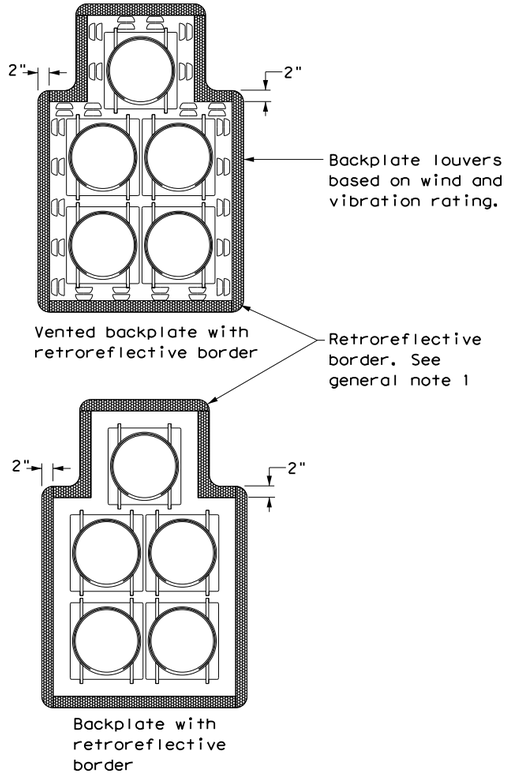
THREE-SECTION HEAD
HORIZONTAL OR VERTICAL



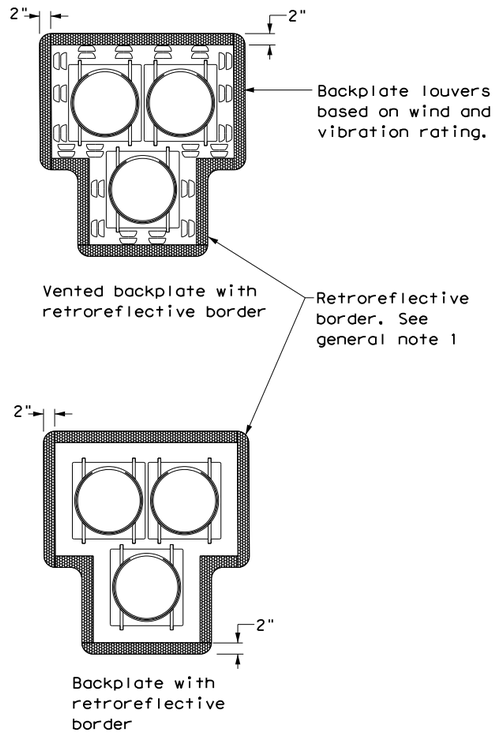
FOUR-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
CLUSTER



PEDESTRIAN HYBRID
BEACON

GENERAL NOTES:

1. Backplates are optional for traffic signals and pedestrian hybrid beacons. When backplates are used, a 2-inch wide fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 is required. Place on all approaches when used.
2. Signal head and backplate compatability must be verified by the contractor prior to installation.
3. When using backplates on signal heads, venting is preferred to reduce cyclic vibration stress.
4. When a vented backplate is used, the retroreflective border must not be placed over the louvers.
5. This standard sheet applies to all signal heads with backplates, including but not limited to:
   - Pole mounted
   - Overhead mounted
   - Span wire mounted
   - Mast arm mounted
   - Vertical signal heads
   - Horizontal signal heads
   - Clustered signal heads
   - Pedestrian hybrid beacons

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC SIGNAL HEAD WITH BACKPLATE
TS-BP-20

FILE: ts-bp-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	12	758.	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		46

DATE: 8/23/2024
FILE: T:\309007341 CoSA_HSIP Backplate\08.0_CADD\Sheets\08.0_Signal\08.09_Sig_Standards\epic.dgn

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1.

2.

☐ No Action Required ☐ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

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

☐ No Permit Required
☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
☐ Individual 404 Permit Required
☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1.

2.

3.

4.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
☐ Temporary Vegetation	☐ Silt Fence	☐ Vegetative Filter Strips
☐ Blankets/Matting	☐ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Grassy Swales

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

☐ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.
Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

☐ No Action Required ☐ Required Action

Action No.

1.

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4.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

☐ No Action Required ☐ Required Action

Action No.

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If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

Contact the Engineer if any of the following are detected:
* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

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

☐ Yes ☐ No

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

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

☐ Yes ☐ No

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

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

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

☐ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☐ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-12-2011 (DS) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	0915	12	758.	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		47