STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT

PROJECT NO. STP 2025(004)HES

CSJ: 0024-05-102

MEDINA, ETC.

LIMITS FROM: VARIOUS LOCATIONS ON US 90

LIMITS TO: FROM CASTRO ST TO VETERANS BLVD

FOR WORK CONSISTING OF INSTALLING SIGNAL BACKPLATES AND SIGNAL HEADS AT VARIOUS INTERSECTIONS

FED. RD. DIV. NO.	STATE	PROJECT NO.		HIGHWAY	
6	TEXAS	STP 2025 (004) HES		US 90	
STATE DISTRICT	COUNTY	CONTROL	SECTION	JOB	SHEET NO.
SAT	MEDINA, ETC.	0024	05	102	1

DESIGN SPEED = VARIOUS

AREA OF DISTURBED SOIL = N/A

ADT: VARIOUS

ACCESSIBILITY STANDARDS: N/A

NET LENGTH OF ROADWAY = N/A

NET LENGTH OF BRIDGE = N/A

NET LENGTH OF PROJECT = N/A

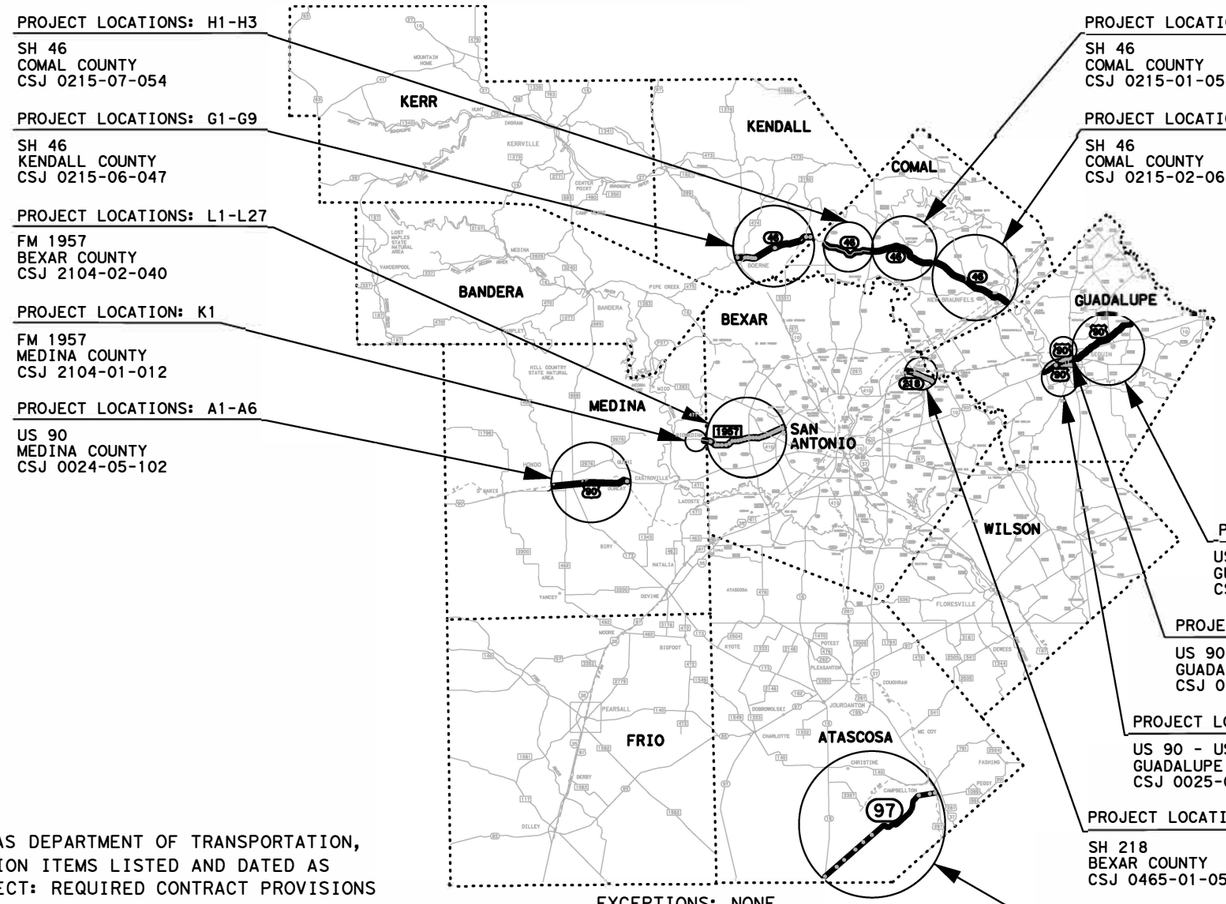
PROJECT LOCATIONS: H1-H3
SH 46
COMAL COUNTY
CSJ 0215-07-054

PROJECT LOCATIONS: G1-G9
SH 46
KENDALL COUNTY
CSJ 0215-06-047

PROJECT LOCATIONS: L1-L27
FM 1957
BEXAR COUNTY
CSJ 2104-02-040

PROJECT LOCATION: K1
FM 1957
MEDINA COUNTY
CSJ 2104-01-012

PROJECT LOCATIONS: A1-A6
US 90
MEDINA COUNTY
CSJ 0024-05-102



PROJECT LOCATIONS: E1-E5
SH 46
COMAL COUNTY
CSJ 0215-01-057

PROJECT LOCATIONS: F1-F10
SH 46
COMAL COUNTY
CSJ 0215-02-061

PROJECT LOCATIONS: D1-D3
US 90
GUADALUPE COUNTY
CSJ 0029-02-057

PROJECT LOCATIONS: C1-C4
US 90
GUADALUPE COUNTY
CSJ 0029-01-030

PROJECT LOCATIONS: B1-B3
US 90 - US 90A
GUADALUPE COUNTY
CSJ 0025-03-104

PROJECT LOCATIONS: J1-J19
SH 218
BEXAR COUNTY
CSJ 0465-01-058

PROJECT LOCATIONS: I1-I10
SH 97
ATASCOSA COUNTY
CSJ 0328-04-048

EXCEPTIONS: NONE

EQUATIONS: NONE

RR CROSSINGS: YES

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

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

FILE LOCATION AND NAME
T:\Engdata\Standards\Mlse\TITLESHT.DGN

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

LEVELS DISPLAYED

NOTES:

1. 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).

2. FOR BARRICADES AND SIGNING AT INDIVIDUAL INTERSECTIONS UNDER SIGNAL CONSTRUCTION, REFER TO STANDARD SHEETS, WZ(BTS-1)-13 & WZ(BTS-2)-13.

SUBMITTED FOR LETTING 6/20/2024
DocuSigned by: Orlando Gallegos
TRANSPORTATION ENGINEER SUPERVISOR

RECOMMENDED FOR LETTING 6/24/2024
DocuSigned by: Richard L De La Cruz, P.E.
DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

REVIEWED FOR LETTING 6/21/2024
DocuSigned by: D.Reyes, P.E.
TRANSPORTATION ENGINEER SUPERVISOR

APPROVED FOR LETTING 6/25/2024
DocuSigned by: Charles Benavidez
DISTRICT ENGINEER

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		GENERAL
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		TRAFFIC CONTROL PLAN
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11		TRAFFIC CONTROL PLAN NARRATIVE
12		TRAFFIC SIGNAL NOTES
		TRAFFIC CONTROL PLAN STANDARDS
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THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE (*) HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/17/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

INDEX OF SHEETS

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6	SEE TITLE SHEET		2
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

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...\Sheets\INDEX OF SHEETS.dgn

**********GENERAL NOTES**********
2014 Specification Book (Revised March 1, 2024)

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.

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, District Traffic Engineer, orlando.gallegos@txdot.gov

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

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

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

--Item 5--

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.

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

--Item 6—

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

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

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

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

--Item 7—

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. Monday :_Friday_- Standard work week.

Control: 0024-05-102

County: Medina, Etc.

Highway: US 90, Etc.

--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

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.

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 9:00AM and 3:00PM, 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.

Control: 0024-05-102

County: Medina, Etc.

Highway: US 90, Etc.

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

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 AT&T Center (Spurs home games, Rodeo, concerts, etc.)
Alamodome, and/or Convention Center (Bexar County Only)
Easter Weekend April 19 – 20, 2025

Traffic Signals

There are traffic signals at various locations (refer to title sheet for 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—

__2_ shadow vehicles 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 610—

Ballast/capacitors removed from the light assembly, will remain the property of the State. Assume all ballast/capacitors contain Polychlorinated Biphenyl (PCB), unless a notation appears on the outside of the unit that specifies it does not contain PCB's. All ballast/capacitors with PCB's shall be placed in 55 gallon open top drum in accordance with Department of Transportation (DOT) specifications. Place six (6) inches of sawdust or other absorbent material in the bottom of the drum. Furnish and place a DOT approved PCB warning label on the outside of the drum. Do not fill a drum more than ¾ of capacity. Avoid rupturing the ballast/capacitor(s). If a ballast/capacitor is ruptured, use proper procedures, specialist trained staff and personal protective equipment for the clean-up operations.

The lamps in light fixtures may contain hazardous levels of mercury, halide, and sodium vapors. Observe and comply with all federal, state, and local laws, ordinances, and regulations regarding

Control: 0024-05-102

County: Medina, Etc.

Highway: US 90, Etc.

the management of these lamps. Prevent the breakage of the lamps. At a minimum, package all lamps removed from the light fixture(s) in a container that minimizes the breakage of the lamps. Broken lamps shall be collected in a sealed plastic bag (i.e. Ziploc). Broken lamps shall be stored in separate containers from unbroken lamps. Furnish a suitable container and attach a label stating "Universal Waste Lamps" on the container. Write the date the first lamp was placed in the container on the "Universal Waste Lamp" label. Within one (1) week after the first lamp is placed in a container, notify the Engineer. The lamps and PCB containing ballast/capacitors, placed in properly labeled containers, will remain the property of the State. Place the container in an area where it is protected from damage and the elements. The Engineer will plan to collect, transport, and dispose/recycle the container. The ballast/capacitor and lamp's removal and storage are subsidiary to this item.

Stencil each illumination assembly with the circuit, light and relay service in black paint on the roadway side of the pole at a 45-degree angle. The numbers shall be in 3" tall and begin 6' from the top of the foundation. This work will be considered subsidiary to this item.

--Item 680—

Furnish and install all required materials and equipment necessary for the complete and operating traffic signal installation at the following intersections:

Connect all field wiring to the controller assembly into the polyphaser. The Signal Shop representative will assist in determining how the detection cables are to be connected, and will also program the controller for operation, hook up the malfunction management unit (MMU) or conflict monitor, detector units, and other equipment, and turn on the controller. Have a qualified technician on the project site to place the traffic signals in operation.

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.

County: Medina, Etc.

Highway: US 90, Etc.

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

All existing signal equipment with the exception of the signal controller and related equipment become the property of the Contractor. Deliver the controller and related equipment to the Signal shop, located at 4615 NW Loop 410 (corner of IH 410 and Callaghan Road) in San Antonio, Texas or to the Area Office as directed.

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. 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.

--Item 684—

Provide an extra 10’ for each cable terminating in the controller cabinet. All cables must be continuous without splices from terminal point to terminal point. All proposed signal cable must be #12 AWG stranded copper, unless otherwise noted in the plan set.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0024-05-102 **DISTRICT** San Antonio **COUNTY** Atascosa, Bexar, Comal, Guadalupe, Kendall, Medina
HIGHWAY FM 1957, SH 218, SH 46, SH 97, US 90

			CONTROL SECTION JOB	**0024-05-102**		**0025-03-104**		**0029-01-030**		**0029-02-057**		**0215-01-057**		**0215-02-061**	
			PROJECT ID	**A00184331**		**A00184301**		**A00184302**		**A00184307**		**A00184321**		**A00184323**	
			COUNTY	**Medina**		**Guadalupe**		**Guadalupe**		**Guadalupe**		**Comal**		**Comal**	
			HIGHWAY	**US 90**		**US 90**		**US 90**		**US 90**		**SH 46**		**SH 46**	
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
	500-7001	MOBILIZATION	LS	1.000											
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	12.000											
	505-7001	TMA (STATIONARY)	DAY	12.000		6.000		8.000		6.000		10.000		20.000	
	610-7012	REPLACE LUMINAIRE W/(250W EQ) LED	EA			3.000								9.000	
	680-7011	INSTALL HWY TRF SIG (UPGRADE)	EA	6.000				2.000						3.000	
	682-7001	VEH SIG SEC (12")LED(GRN)	EA	44.000		26.000		32.000		8.000		7.000		83.000	
	682-7002	VEH SIG SEC (12")LED(GRN ARW)	EA	14.000		6.000		10.000		2.000		1.000		21.000	
	682-7003	VEH SIG SEC (12")LED(YEL)	EA	44.000		26.000		32.000		24.000		39.000		83.000	
	682-7004	VEH SIG SEC (12")LED(YEL ARW)	EA	20.000		8.000		10.000		4.000		2.000		22.000	
	682-7005	VEH SIG SEC (12")LED(RED)	EA	44.000		26.000		32.000		16.000		27.000		83.000	
	682-7006	VEH SIG SEC (12")LED(RED ARW)	EA	10.000		4.000		6.000		2.000		1.000		17.000	
	682-7007	VEH SIG SEC (12")LED(GRN U-TURN ARW)	EA												
	682-7008	VEH SIG SEC (12")LED(YEL U-TURN ARW)	EA												
	682-7009	VEH SIG SEC (12")LED(RED U-TURN ARW)	EA												
	682-7042	BACKPLATE W/REF BRDR(3 SEC)(VENT)ALUM	EA	40.000		24.000		30.000		8.000		7.000		91.000	
	682-7043	BACKPLATE W/REF BRDR(4 SEC)(VENT)ALUM	EA	14.000		6.000		8.000		2.000		1.000		9.000	
	682-7044	BACKPLATE W/REF BRDR(5 SEC)(VENT)ALUM	EA												
	682-7050	BACKPLATE W/REFL BRDR (1SEC)(WENT)ALUM	EA							24.000		52.000			
	684-7009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF							5,230.000		6,135.000			
	684-7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	5,310.000		3,885.000		3,140.000		530.000		2,105.000		17,480.000	
	684-7035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF												
	690-7009	REMOVAL OF CABLES	LF	5,310.000		3,885.000		3,140.000		5,760.000		8,240.000		17,480.000	
	690-7024	REMOVAL OF SIGNAL HEAD ASSM	EA	54.000		30.000		38.000		34.000		60.000		100.000	
	690-7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	27.000		10.000		10.000		5.000		3.000		30.000	
	690-7029	INSTALL OF SIGNAL RELATED SIGNS	EA	36.000		16.000		20.000		6.000		4.000		42.000	
	18	LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000											
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000											
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000											

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0024-05-102 **DISTRICT** San Antonio **COUNTY** Atascosa, Bexar, Comal, Guadalupe, Kendall, Medina
HIGHWAY FM 1957, SH 218, SH 46, SH 97, US 90

			CONTROL SECTION JOB	**0215-06-047**		**0215-07-054**		**0328-04-048**		**0465-01-058**		**2104-01-012**		**2104-02-040**	
			PROJECT ID	**A00184308**		**A00184320**		**A00184326**		**A00184294**		**A00184295**		**A00184300**	
			COUNTY	**Kendall**		**Comal**		**Atascosa**		**Bexar**		**Medina**		**Bexar**	
			HIGHWAY	**SH 46**		**SH 46**		**SH 97**		**SH 218**		**FM 1957**		**FM 1957**	
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
	500-7001	MOBILIZATION	LS												
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO												
	505-7001	TMA (STATIONARY)	DAY	18.000		6.000		20.000		38.000		2.000		54.000	
	610-7012	REPLACE LUMINAIRE W/(250W EQ) LED	EA	2.000		6.000		7.000		6.000		2.000		31.000	
	680-7011	INSTALL HWY TRF SIG (UPGRADE)	EA	1.000				6.000							
	682-7001	VEH SIG SEC (12")LED(GRN)	EA	57.000		18.000		71.000		151.000		8.000		219.000	
	682-7002	VEH SIG SEC (12")LED(GRN ARW)	EA	21.000		2.000		28.000		55.000		4.000		104.000	
	682-7003	VEH SIG SEC (12")LED(YEL)	EA	65.000		26.000		79.000		151.000		8.000		219.000	
	682-7004	VEH SIG SEC (12")LED(YEL ARW)	EA	30.000		2.000		33.000		87.000		7.000		150.000	
	682-7005	VEH SIG SEC (12")LED(RED)	EA	61.000		22.000		79.000		151.000		8.000		219.000	
	682-7006	VEH SIG SEC (12")LED(RED ARW)	EA	18.000		2.000		20.000		48.000		3.000		77.000	
	682-7007	VEH SIG SEC (12")LED(GRN U-TURN ARW)	EA											2.000	
	682-7008	VEH SIG SEC (12")LED(YEL U-TURN ARW)	EA											2.000	
	682-7009	VEH SIG SEC (12")LED(RED U-TURN ARW)	EA											2.000	
	682-7042	BACKPLATE W/REF BRDR(3 SEC)(VENT)ALUM	EA	63.000		20.000		71.000		153.000		7.000		240.000	
	682-7043	BACKPLATE W/REF BRDR(4 SEC)(VENT)ALUM	EA	9.000				19.000		46.000		3.000		80.000	
	682-7044	BACKPLATE W/REF BRDR(5 SEC)(VENT)ALUM	EA	3.000				1.000				1.000		7.000	
	682-7050	BACKPLATE W/REFL BRDR (1SEC)(WENT)ALUM	EA	12.000		12.000		16.000							
	684-7009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	980.000		1,385.000		965.000							
	684-7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	7,045.000		3,145.000		8,280.000		13,225.000		2,105.000		10,265.000	
	684-7035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF											13,400.000	
	690-7009	REMOVAL OF CABLES	LF	8,025.000		4,530.000		9,245.000		13,225.000		2,105.000		23,665.000	
	690-7024	REMOVAL OF SIGNAL HEAD ASSM	EA	87.000		32.000		107.000		199.000		11.000		327.000	
	690-7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	37.000		8.000		47.000		89.000		4.000		171.000	
	690-7029	INSTALL OF SIGNAL RELATED SIGNS	EA	42.000		7.000		51.000		126.000		8.000		186.000	
	18	LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS												
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS												
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS												

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0024-05-102

DISTRICT San Antonio
HIGHWAY FM 1957, SH 218, SH 46, SH 97, US 90

COUNTY Atascosa, Bexar, Comal, Guadalupe, Kendall, Medina

CONTROL SECTION JOB / PROJECT ID / COUNTY / HIGHWAY				TOTAL EST.	TOTAL FINAL
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**		
	500-7001	MOBILIZATION	LS	1.000	
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	12.000	
	505-7001	TMA (STATIONARY)	DAY	200.000	
	610-7012	REPLACE LUMINAIRE W/(250W EQ) LED	EA	66.000	
	680-7011	INSTALL HWY TRF SIG (UPGRADE)	EA	18.000	
	682-7001	VEH SIG SEC (12")LED(GRN)	EA	724.000	
	682-7002	VEH SIG SEC (12")LED(GRN ARW)	EA	268.000	
	682-7003	VEH SIG SEC (12")LED(YEL)	EA	796.000	
	682-7004	VEH SIG SEC (12")LED(YEL ARW)	EA	375.000	
	682-7005	VEH SIG SEC (12")LED(RED)	EA	768.000	
	682-7006	VEH SIG SEC (12")LED(RED ARW)	EA	208.000	
	682-7007	VEH SIG SEC (12")LED(GRN U-TURN ARW)	EA	2.000	
	682-7008	VEH SIG SEC (12")LED(YEL U-TURN ARW)	EA	2.000	
	682-7009	VEH SIG SEC (12")LED(RED U-TURN ARW)	EA	2.000	
	682-7042	BACKPLATE W/REF BRDR(3 SEC)(VENT)ALUM	EA	754.000	
	682-7043	BACKPLATE W/REF BRDR(4 SEC)(VENT)ALUM	EA	197.000	
	682-7044	BACKPLATE W/REF BRDR(5 SEC)(VENT)ALUM	EA	12.000	
	682-7050	BACKPLATE W/REFL BRDR (1SEC)(WENT)ALUM	EA	116.000	
	684-7009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	14,695.000	
	684-7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	76,515.000	
	684-7035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	13,400.000	
	690-7009	REMOVAL OF CABLES	LF	104,610.000	
	690-7024	REMOVAL OF SIGNAL HEAD ASSM	EA	1,079.000	
	690-7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	441.000	
	690-7029	INSTALL OF SIGNAL RELATED SIGNS	EA	544.000	
	18	LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000	

Bid Item Information				Control Sections											
Item No.	Desc. Code	Description	Unit	0024-05-102	0025-03-104	0029-01-030	0029-02-057	0215-01-057	0215-02-061	0215-06-047	0215-07-054	0328-04-048	0465-01-058	2104-01-012	2104-02-040	TOTALS
500	7001	MOBILIZATION	LS	1												**1**
502	7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	12												**12**
505	7001	TMA (STATIONARY)	DAY	12	6	8	6	10	20	18	6	20	38	2	54	**200**
610	7012	REPLACE LUMINAIRE W/LED (250W EQ)	EA		3				9	2	6	7	6	2	31	**66**
680	7011	INSTALL HWY TRF SIG (UPGRADE)	EA	6		2			3	1		6				**18**
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	44	26	32	8	7	83	57	18	71	151	8	219	**724**
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	14	6	10	2	1	21	21	2	28	55	4	104	**268**
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	44	26	32	24	39	83	65	26	79	151	8	219	**796**
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	20	8	10	4	2	22	30	2	33	87	7	150	**375**
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	44	26	32	16	27	83	61	22	79	151	8	219	**768**
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	10	4	6	2	1	17	18	2	20	48	3	77	**208**
682	7007	VEH SIG SEC (12 IN) LED (GRN U-TURN ARW)	EA												2	**2**
682	7008	VEH SIG SEC (12 IN) LED (YEL U-TURN ARW)	EA												2	**2**
682	7009	VEH SIG SEC (12 IN) LED (RED U-TURN ARW)	EA												2	**2**
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	40	24	30	8	7	91	63	20	71	153	7	240	**754**
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	14	6	8	2	1	9	9		19	46	3	80	**197**
682	7044	BACKPLATE W/REF BRDR (5 SEC) (VENT) ALUM	EA							1						**1**
682	7044	BACKPLATE W/REF BRDR (5 SEC) (VENT) ALUM "DOGHOUSE"	EA							2		1		1	7	**11**
682	7050	BACKPLATE W/REF BRDR (1 SEC) (VENT) ALUM	EA				24	52		12	12	16				**116**
684	7009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF				5230	6135		980	1385	965				**14695**
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	5310	3885	3140	530	2105	17480	7045	3145	8280	13225	2105	10265	**76515**
684	7035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF												13400	**13400**
690	7009	REMOVAL OF CABLES	LF	5310	3885	3140	5760	8240	17480	8025	4530	9245	13225	2105	23665	**104610**
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	54	30	38	34	60	100	87	32	107	199	11	327	**1079**
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	27	10	10	5	3	30	37	8	47	89	4	171	**441**
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	36	16	20	6	4	42	42	7	51	126	8	186	**544**

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.		REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

ESTIMATE & QUANTITY SUMMARY

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	5

STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

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LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 0024-05-102				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
A1	US 90 (19th St)	Castro Ave	1		1	2	2
A2	US 90 (19th St)	FM 541		1	1	2	2
A3	US 90 (19th St)	FM 462 (Ave M)		1	1	2	2
A4	US 90 (19th St)	Ave K		1	1	2	2
A5	US 90 (19th St)	FM 462 (Ave E)		1	1	2	2
A6	US 90 (19th St)	Veterans Blvd		1	1	2	2
	US 90 (19th St)	LOCATION A TOTALS	1	5	6	12	12

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 0025-03-104				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
B1	US 90	FM 725		1	1	2	2
B2	US 90	FM 464		1	1	2	2
B3	US 90A (W Court St)	SH 46		1	1	2	2
	US 90	LOCATION B TOTALS	0	3	3	6	6

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 0029-01-030				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
C1	US 90 (W Kingsbury St)	SH 46		1	1	2	2
C2	US 90 (W Kingsbury St)	Hidalgo St		1	1	2	2
C3	US 90 (W Kingsbury St)	Guadalupe St		1	1	2	2
C4	US 90 (W Kingsbury St)	SH 123 (N Austin St)		1	1	2	2
	US 90 (W Kingsbury St)	TOTALS	0	4	4	8	8

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.		REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

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

SUMMARY SHEET 1 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		6
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 9:44:30 AM
...\TMA SUMMARY SHEETS (1).dgn

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 0029-02-057				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
D1	US90 (E Kingsbury St)	N San Marcos St		1	1	2	2
D2	US90	SH 130 Exit S		1	1	2	2
D3	US90	SH 130 Entry N / Private Driveway		1	1	2	2
	US90	TOTALS	0	3	3	6	6

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 0215-01-057				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
E1	SH 46	FM 311		1	1	2	2
E2	SH 46	FM 3009		1	1	2	2
E3	SH 46	Meyer Pkwy		1	1	2	2
E4	SH 46	Herbelin Rd		1	1	2	2
E5	SH 46	S Cranes Mill Rd		1	1	2	2
	SH 46	TOTALS	0	5	5	10	10

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 0215-02-061				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
F1	SH 46	Vintage Way		1	1	2	2
F2	SH 46	FM1863/Alyssa Way		1	1	2	2
F3	SH 46	Oak Run Pkwy		1	1	2	2
F4	SH 46	Independence Dr		1	1	2	2
F5	SH 46	SH 336 Frontage South		1	1	2	2
F6	SH 46	SH 336 Frontage North		1	1	2	2
F7	SH 46 (N Walnut Ave)	SH 46 (Landa St)		1	1	2	2
F8	SH 46 (Landa St)	Fredricksburg Rd		1	1	2	2
F9	SH 46 (Landa St)	Landa Park Dr		1	1	2	2
F10	SH 46 (N Seguin Ave)	W Mill St		1	1	2	2
	SH 46	TOTALS	0	10	10	20	20

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.		REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

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

SUMMARY SHEET 2 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		7
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 9:41:33 AM
...\TMA SUMMARY SHEETS (1).dgn

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 0215-06-047				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
G1	SH 46	S Main St		1	1	2	2
G2	SH 46 (River Rd)	S Esser Rd/Herff Rd		1	1	2	2
G3	SH 46	Charger Blvd / Woods of Boerne Blvd		1	1	2	2
G4	SH 46	Herff Ranch Blvd		1	1	2	2
G5	SH 46	Copper Creek Blvd / Esperanza Blvd		1	1	2	2
G6	SH 46	Ammann Rd		1	1	2	2
G7	SH 46	Joe Klar Rd		1	1	2	2
G8	SH 46	FM 3351		1	1	2	2
G9	SH 46	Voss Parkway		1	1	2	2
	SH 46	TOTALS	0	9	9	18	18

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 0328-04-048				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
i1	SH 97 (Oak St)	SH 16		1	1	2	2
i2	SH 97 (Oak St)	Simmons Ave		1	1	2	2
i3	SH 97 (Oak St)	Cantrell Ave		1	1	2	2
i4	SH 97	CR 431		1	1	2	2
i5	SH 97	FM 3510		1	1	2	2
i6	SH 97	Wheeler Dr		1	1	2	2
i7	SH 97	Jr Blvd		1	1	2	2
i8	SH 97	S Bryant St		1	1	2	2
i9	SH 97	Reed St		1	1	2	2
i10	SH 97	US 281/S Main St		1	1	2	2
	SH 97	TOTALS	0	10	10	20	20

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 0215-07-054				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
H1	SH 46	Blanco Rd		1	1	2	2
H2	SH 46	Lobo Pk		1	1	2	2
H3	SH 46	Spring Branch Rd		1	1	2	2
	SH 46	TOTALS	0	3	3	6	6

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

SUMMARY SHEET 3 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		8
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 9:44:37 AM
...\TMA SUMMARY SHEETS (1).dgn

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 0465-01-058				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
J1	SH 218	I 35 Frontage Rd S		1	1	2	2
J2	SH 218	I 35 Frontage Rd N		1	1	2	2
J3	SH 218	Live Oak Xing		1	1	2	2
J4	SH 218	Vintage Oak Dr		1	1	2	2
J5	SH 218	SH 1604 Frontage Road S		1	1	2	2
J6	SH 218	SH 1604 Frontage Road N		1	1	2	2
J7	SH 218	Athenian		1	1	2	2
J8	SH 218	Buckingham Village St		1	1	2	2
J9	SH 218	Coronado Blvd		1	1	2	2
J10	SH 218	Universal City Blvd		1	1	2	2
J11	SH 218	Rose Garden Dr / Private Driveway		1	1	2	2
J12	SH 218	Kitty Hawk Rd		1	1	2	2
J13	SH 218	Villa Dr/Private Driveway		1	1	2	2
J14	SH 218	Northview Dr/Stonegate Dr		1	1	2	2
J15	SH 218	Randolph Plaza Dr		1	1	2	2
J16	SH 218	National Blvd		1	1	2	2
J17	SH 218	W Byrd Blvd		1	1	2	2
J18	SH 218	W Aviation Blvd		1	1	2	2
J19	SH 218	FM 78		1	1	2	2
	SH 218	TOTALS	0	19	19	38	38

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 2104-01-012				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
K1	FM 1957	FM 381		1	1	2	2
	FM 1957	TOTALS	0	1	1	2	2

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

SUMMARY SHEET 4 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		9
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 9:44:41 AM
...\TMA SUMMARY SHEETS (1).dgn

LOC NO.	HIGHWAY	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	CSJ 2104-02-040				505 7001
			FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)
		INTERSECTION	EA	EA	EA	DAYS PER TMA/TA USE	DAY
L1	FM 1957	Holliman Pkwy/Blue Larkspur		1	1	2	2
L2	FM 1957	Sebastian Farm/Redbird Chase		1	1	2	2
L3	FM 1957 (Potranco Rd)	Stevens Pkwy		1	1	2	2
L4	FM 1957 (Potranco Rd)	Acadia Path/Bella Vista Pl		1	1	2	2
L5	FM 1957 (Potranco Rd)	S Rolling Oaks Ln		1	1	2	2
L6	FM 1957 (Potranco Rd)	Reid Ranch/Talley Rd		1	1	2	2
L7	FM 1957 (Potranco Rd)	Grosenbacher Rd		1	1	2	2
L8	FM 1957 (Potranco Rd)	American Lotus / Private Driveway		1	1	2	2
L9	FM 1957 (Potranco Rd)	Empresario Dr		1	1	2	2
L10	FM 1957 (Potranco Rd)	Waterstone Pl		1	1	2	2
L11	FM 1957 (Potranco Rd)	W Loop 1604 N Access Rd SB		1	1	2	2
L12	FM 1957 (Potranco Rd)	W Loop 1604 N Access Rd NB		1	1	2	2
L13	FM 1957 (Potranco Rd)	Rousseau Rd		1	1	2	2
L14	FM 1957 (Potranco Rd)	10700 Potranco Rd		1	1	2	2
L15	FM 1957 (Potranco Rd)	Seascape		1	1	2	2
L16	FM 1957 (Potranco Rd)	Clover Creek		1	1	2	2
L17	FM 1957 (Potranco Rd)	Fillmore Dr		1	1	2	2
L18	FM 1957 (Potranco Rd)	Ellison Dr		1	1	2	2
L19	FM 1957 (Potranco Rd)	Dugas		1	1	2	2
L20	FM 1957 (Potranco Rd)	Hunt Ln		1	1	2	2
L21	FM 1957 (Potranco Rd)	SH 151 Access Rd SB		1	1	2	2
L22	FM 1957 (Potranco Rd)	SH 151 Access Rd NB		1	1	2	2
L23	FM 1957 (Potranco Rd)	Richmond Hills		1	1	2	2
L24	FM 1957 (Potranco Rd)	Ingram Rd		1	1	2	2
L25	FM 1957 (Potranco Rd)	Military Dr		1	1	2	2
L26	FM 1957 (Potranco Rd)	Micron Dr		1	1	2	2
L27	FM 1957 (Potranco Rd)	Culebra		1	1	2	2
		TOTAL	**0**	**27**	**27**	**54**	**54**

CSJ	LOC NO.	HIGHWAY	FURNISH TMA/TA	RELOCATE/REUSE TAM/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	505 7001 TMA (STATIONARY)
			EA	EA	EA	DAYS PER TMA/TA USE	DAY
0024-05-102	A	US 90 (19th St)	1	5	6	12	12
0025-03-104	B	US 90	0	3	3	6	6
0029-01-030	C	US 90 (W Kingsbury St)	0	4	4	8	8
0029-02-057	D	US 90	0	3	3	6	6
0215-01-057	E	SH 46	0	5	5	10	10
0215-02-061	F	SH 46	0	10	10	20	20
0215-06-061	G	SH 46	0	9	9	18	18
0215-07-054	H	SH 46	0	3	3	6	6
0328-04-048	i	SH 97	0	10	10	20	20
0465-01-058	J	SH 218	0	19	19	38	38
2104-01-012	K	FM 1957	0	1	1	2	2
2104-02-040	L	FM 1957	0	27	27	54	54
TOTALS			1	99	100	200	200

STATE OF TEXAS
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TRUCK MOUNTED ATTENUATOR (TMA) AND TRAILER ATTENUATOR (TA)

SUMMARY SHEET 5 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		10
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 9:41:44 AM
...\TMA SUMMARY SHEETS (1).dgn

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.

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

(3) 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 STANDARD SPECIFICATIONS, AND TO THE GENERAL NOTES.

(4) CONTRACTOR IS NOT PERMITTED TO WORK IN AREAS WITH ONGOING UTILITY RELOCATION OR ROW ACQUISITION.

(5) PRIOR TO BEGINNING WORK AT ANY INTERSECTION, CONTRACTOR SHALL VISUALLY INSPECT EXISTING TRAFFIC SIGNAL. IF UPON THIS VISUAL INSPECTION, THE CONTRACTOR BELIEVES BACKPLATES AND/OR OTHER SIGNAL ELEMENTS WERE RECENTLY UPGRADED, THE CONTRACTOR SHOULD NOTIFY AND COORDINATE WITH TXDOT AND/OR ENGINEER TO DETERMINE SIGNAL ELEMENTS STILL IN NEED OF UPGRADE.

(6) BRIEF DESCRIPTION OF THESE PHASES ARE AS FOLLOWS:

PHASE 1

THE INTENT OF THIS PHASE IS TO COMPLETE INSTALLATION OF SIGNAL HEADS, BACKPLATES, LUMINAIRES, AND STREET NAME SIGNS ATTACHED TO MAST ARMS AND/OR SPAN WIRE AT VARIOUS ROADWAY INTERSECTIONS WITHIN THE SAN ANTONIO DISTRICT.

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

(2) REPLACE SIGNAL HEADS, BACKPLATES, LUMINAIRES AND STREET NAME SIGNS USING WZ(BTS-1)-13 THRU WZ(BTS-2)-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.

(4) THE REPLACEMENT OF SIGNAL BACKPLATES IN BEXAR COUNTY WILL BE PERFORMED AT NIGHT BETWEEN 9:00 PM SUNDAY AND 5:00 AM FRIDAY MORNING. THESE INCLUDE THE FOLLOWING PROJECT LOCATIONS:
SH 218 CSJ 0465-01-058 – CORRIDOR J
FM 1957 CSJ 2104-02-040 – CORRIDOR L

THE LANE CLOSURE ASSESSMENT FEE IS SHOWN IN THE FOLLOWING TABLE. THIS FEE APPLIES TO THE CONTRACTOR FOR CLOSURES OR OBSTRUCTIONS THAT OVERLAP INTO RESTRICTED HOUR TRAFFIC FOR EACH HOUR OR PORTION THEREOF, PER LANE, REGARDLESS OF THE LENGTH OF LANE CLOSURE OR OBSTRUCTION. FOR RESTRICTED HOURS SUBJECT TO LANE ASSESSMENT FEE REFER TO THE ITEM, "BARRICADES, SIGNS, AND TRAFFIC HANDLING." THE TIME INCREMENT FOR THE LANE CLOSURE ASSESSMENT FEE FOR THIS PROJECT IS ONE HOUR.

Lane Closure Assessment Fee Table

Roadway (County)	Lane Assessment Fee
US 90 (Corridor A)	$400
US 90 (Corridor B)	$200
US 90 (Corridor C)	$300
US 90 (Corridor D)	$300
SH 46 (Corridor E)	$300
SH 46 (Corridor F)	$500
SH 46 (Corridor G)	$300
SH 46 (Corridor H)	$500
SH 97 (Corridor I)	$400
SH 218 (Corridor J)	$500
FM 1957 (Corridor K)	$200
FM 1957 (Corridor L)	$1000

STATE OF TEXAS
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TRAFFIC CONTROL PLAN NARRATIVE

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		11
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

7/12/2024 2:26:14 PM
...\TCP NARRATIVE - SIG HEADS.dgn

NOTES FOR PERMANENT TRAFFIC SIGNAL(S):

GENERAL

1. ALL WORK MUST BE PERFORMED WITHIN TXDOT ROW.

2. THE LOCATION OF THE SIGNAL POLES, SIGNAL HEADS, CONDUIT, AND CONDUCTORS ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMMODATE FIELD CONDITIONS.

3. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE UTILITIES WHETHER UNDERGROUND, ABOVE GROUND OR OVERHEAD; KNOWN OR UNKNOWN; PRIVATE OR PUBLIC (INCLUDING TXDOT OWNED).

4. THE CONTRACTOR SHALL CONTACT THE TXDOT SIGNAL SHOP AND AREA OFFICE PRIOR TO STARTING THIS WORK TO EMSURE A SMOOTH TRAFFIC MOVEMENT FOR ALL MOTORISTS DURING THIS TRANSITION.

5. CONTRACTOR IS REQUIRED TO WORK WITH TXDOT, CONSULTANT, AND COSA IN GETTING EACH INTERSECTION UP AND RUNNING.

6. CONTRACTOR IS TO BE ON-SITE TO ASSIST TXDOT, CONSULTANT, AND COSA WHEN THE CONTROLLER IS BEING REPROGRAMED.

7. PRIOR TO BEGINNING WORK AT ANY INTERSECTION, CONTRACTOR SHALL VISUALLY INSPECT EXISTING TRAFFIC SIGNAL. IF UPON THIS VISUAL INSPECTION, THE CONTRACTOR BEVIEVES BACKPLATES AND/OR OTHER SIGNAL ELEMENTS WERE RECENTLY UPGRADED, THE CONTRACTOR SHOULD NOTIFY AND COORDINATE WITH TXDOT AND/OR ENGINEER TO DETERMINE SIGNAL ELEMENTS STILL IN NEED OF UPGRADE.

SIGNAL HEADS

8. FURNISH BLACK HOUSING FOR VEHICLE AND PEDESTRIAN SIGNALS. FURNISH BLACK VEHICLE SIGNAL HEAD BACK PLATES WITH 2 IN. RETROFLECTIVE YELLOW BORDER AS SHOWN IN THE PLANS.

9. FURNISH VEHICLE SIGNALS WITH LIGHT EMITTING DIODE (LED) SIGNAL LAMP UNITS.

10. DO NOT PLACE SIGNAL HEADS OVER THE ROADWAY UNTIL ALL NECESSARY MATERIALS ARE ON HAND AS APPROVED

11. INSTALL TWO SET SCREWS ON ALL VEHICLE SIGNAL HEAD MOUNTING HARDWARE FITTINGS.

12. REFER TO TXDOT'S WEBSITE FOR PREQUALIFIED PRODUCTS LIST REGARDING VEHICLE LED TRAFFIC SIGNAL LAMP UNIT. CHECK THE WEBSITE PERIODICALLY FOR CURRENT UPDATES.

13. CONTRACTOR TO ADJUST SIGNAL HEAD ALIGNMENT, AS NEEDED, USING ARTICULATING SIGNAL BRACKET ASSEMBLIES WITH A MINIMUM OF THREE ADJUSTABLE AXES. THIS IS SUBSIDIARY TO ITEM 682

SIGNAL HEAD ORIENTATION AND CLEARANCE

14. THE CONTRACTOR SHALL REMOVE AND REPLACE EXISTING SIGNAL HEADS WITH SIGNAL HEADS AS SHOWN ON THE PLANS AND SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SURFACE.

15. IF EXISTING SIGNAL HEADS ARE IN THE HORIZONTAL ORIENTATION, THE CONTRACTOR SHALL FURNISH ALL MATERIALS NECESSARY TO INSTALL NEW SIGNAL HEADS IN THE VERTICAL ORIENTATION. THE CONTRACTOR SHALL CONTACT TXDOT OR THE ENGINEER PRIOR TO WORK IF CHANGING SIGNAL HEAD ORIENTATION PREVENTS THE ACHIEVEMENT OF THE 18.5 FEET CLEARANCE MINIMUM.

FLASHING YELLOW ARROW SIGNAL HEAD

16. FOR A TXDOT MAINTAINED SIGNAL AND NEW INSTALLATION, CONTRACTOR SHALL FURNISH ALL MATERIALS REQUIRED TO INSTALL FLASHING YELLOW ARROWS. SUPPLY THE CONTROLLER WITH DETECTION PHASE SEQUENCE, DETECTOR UNITS, DETECTOR CARDS, DETECTOR CARD RACK, AND POWER SUPPLY, TO THE DEPARTMENT'S SIGNAL SHOP, 4615 NORTHWEST LOOP 410, SAN ANTONIO, TX 78229 FORTY FIVE (45) DAYS IN ADVANCE FOR INSPECTION, SET UP, AND TESTING. CONTACT MR. ROBERT STEIGLEDER, IN WRITING, AT LEAST FIFTEEN (15) WORKING DAYS PRIOR TO PICKING UP THE MATERIALS.

    ADDRESS: TEXAS DEPARTMENT OF TRANSPORTATION
    4615 NORTHWEST LOOP 410,
    SAN ANTONIO, TX 78229

17. FOR A CITY OF SAN ANTONIO (COSA) MAINTAINED SIGNAL AND NEW INSTALLATION, CONTRACTOR SHALL FURNISH ALL MATERIALS REQUIRED TO INSTALL FLASHING YELLOW ARROWS. SUPPLY THE CONTROLLER WITH DETECTION PHASE SEQUENCE, DETECTOR UNITS, DETECTOR CARDS, DETECTOR CARD RACK, AND POWER SUPPLY. THE CONTRACTOR SHALL BAG HEAD AND MEET A TXDOT REPRESENTATIVE THE FOLLOWING MORNING TO COORDINATE PROGRAMMING FROM COSA. CONTACT MR. ROBERT STEIGLEDER, IN WRITING, AT LEAST FIFTEEN (15) WORKING DAYS PRIOR TO INSTALLING NEW FLASHING YELLOW ARROW SIGNAL HEADS.

18. FOR EXISTING FLASHING YELLOW ARROW REPLACEMENTS, NO COORDINATION WITH TXDOT IS NECESSARY PRIOR TO INSTALLING REPLACEMENT HEADS AND BACKPLATES.

SIGNS

19. ASSUME OWNERSHIP OF THE REMOVED EXISTING SIGNS. CONDUCTOR, CONDUIT, AND POLES

CONDUCTOR, CONDUIT, AND POLES

20. SEAL ENDS OF ALL CONDUITS WITH DUCT SEAL, EXPANDABLE FOAM, OR BY OTHER METHODS APPROVED BY THE ENGINEER. SEAL CONDUIT IMMEDIATELY AFTER COMPLETION OF CONDUCTOR INSTALLATION AND PULL TESTS. DO NOT USE DUCT TAPE AS PERMANENT CONDUIT SEALANT. DO NOT USE SILICON CAULK AS A CONDUIT SEALANT.

21. CAP SPARE CONDUITS INSTALLED IN POLE FOUNDATIONS AND GROUND BOXES USING APPROVED CAPPING DEVICES.

22. INSTALL A CLOSE NIPPLE WITH LOCK NUT AND BUSHING (SIZE AS REQUIRED) WHERE THE CABLE ENTERS THE UPPER PORTION OF THE SIGNAL POLE.

23. FOR ALL CITY OF SAN ANTONIO MAINTAINED SIGNALS, CONTRACTOR SHALL FURNISH AND INSTALL 9C/#14 OR AS DIRECTED BY THE ENGINEER.

24. CONDUCTORS SHALL RUN FROM EACH SIGNAL HEAD TO TERMINAL BLOCK/STRIP UNLESS USED FOR A NEW FLASHING YELLOW ARROW SIGNAL HEAD INSTALLATION, SPAN WIRE ASSEMBLY, OR AS DETERMINED BY TXDOT OR THE ENGINEER.

25. REMOVAL OF EXISTING CONDUCTORS WITHIN MAST ARM, POLE, OR THOSE ATTACHED TO SPAN WIRE ASSEMBLIES ARE SUBSIDIARY TO ITEM 690.

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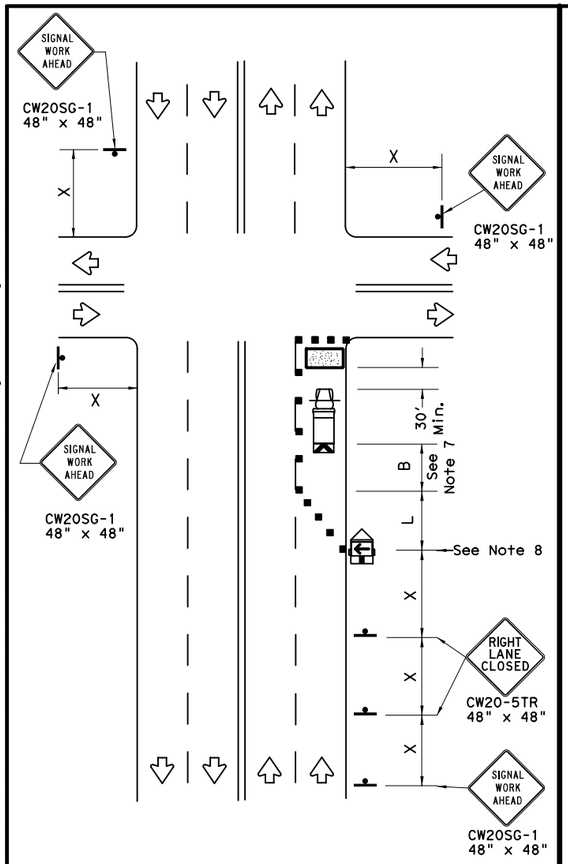
US 90 SIGNAL UPGRADE TRAFFIC SIGNAL NOTES

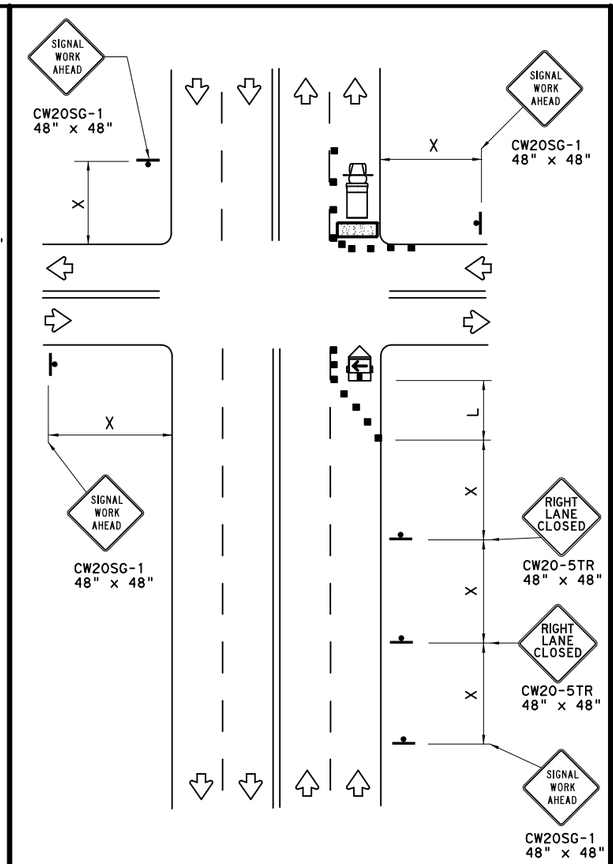
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		12
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

7/12/2024 2:24:30 PM
...\TRAFFIC SIGNAL NOTES.dgn



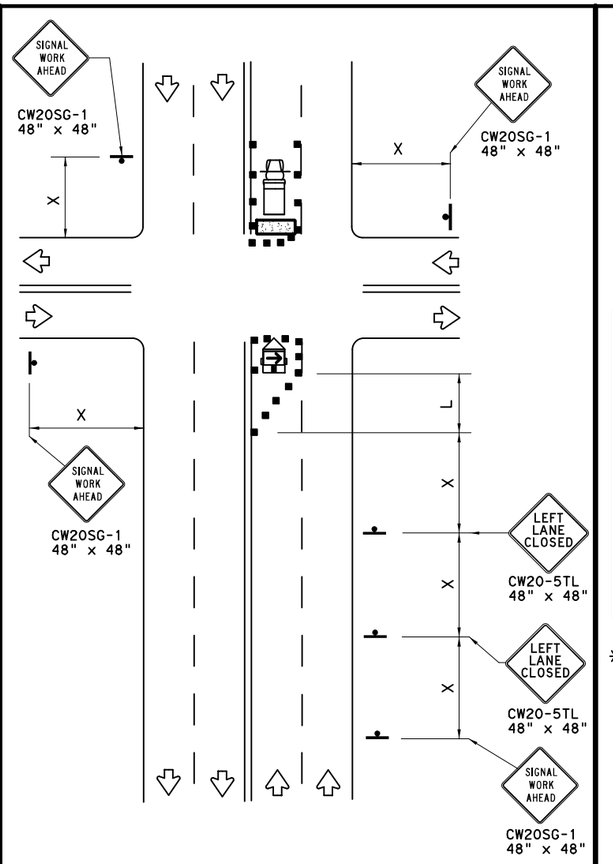
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE RIGHT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY

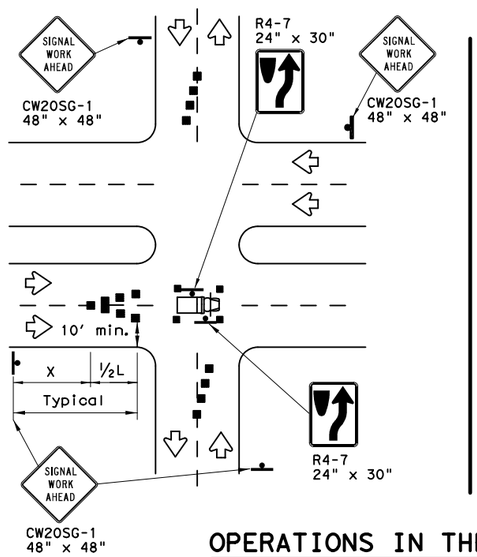
LEGEND			
	Type 3 Barricade	■ ■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

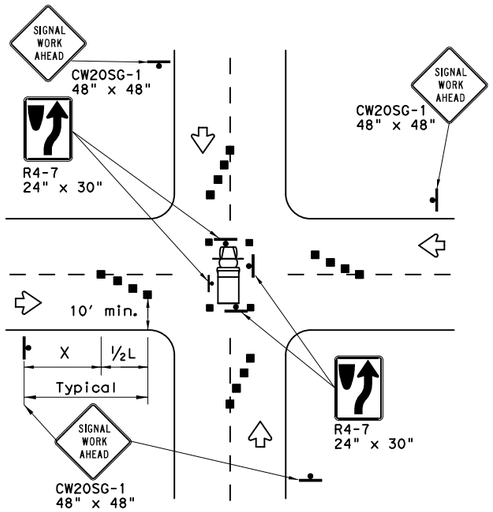
Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'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

* Conventional Roads Only

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

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





OPERATIONS IN THE INTERSECTION

SHORT DURATION

GENERAL NOTES

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

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	0024	05	102	US 90
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	SAT	MEDINA, ETC.		13

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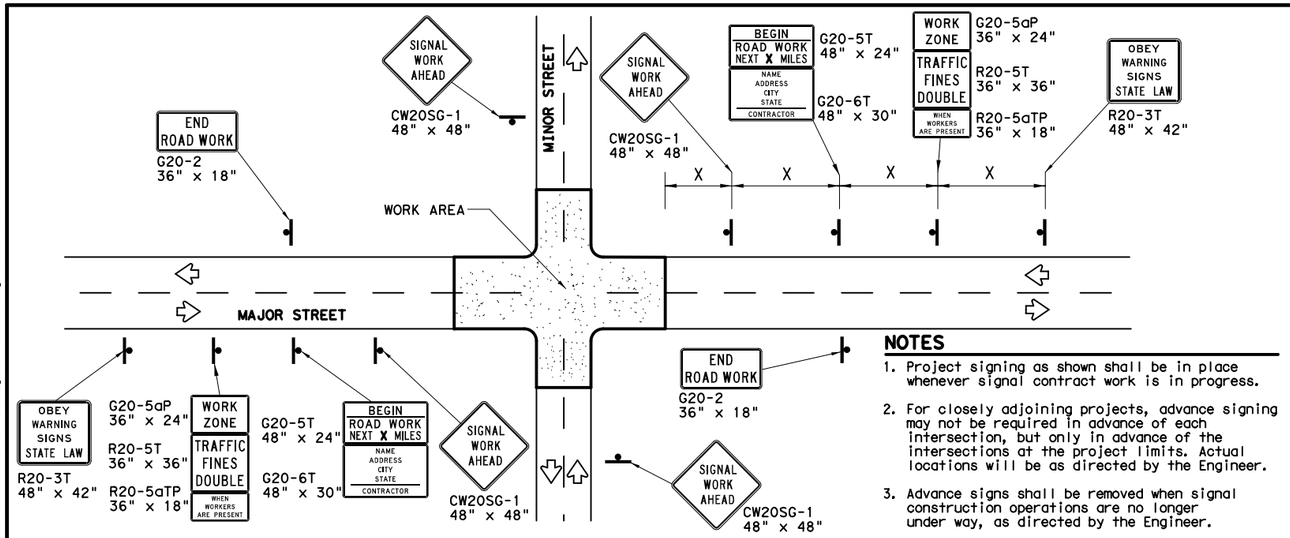


TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

DURATION OF WORK

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

SIGN MOUNTING HEIGHT

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

REMOVING OR COVERING

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

REFLECTIVE SHEETING

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

SIGN SUPPORT WEIGHTS

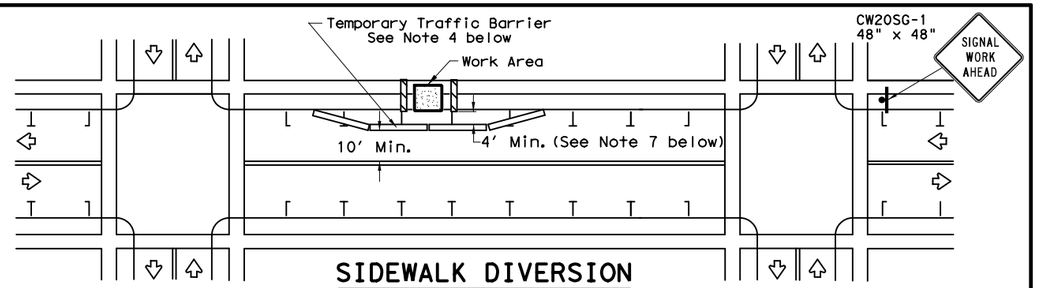
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

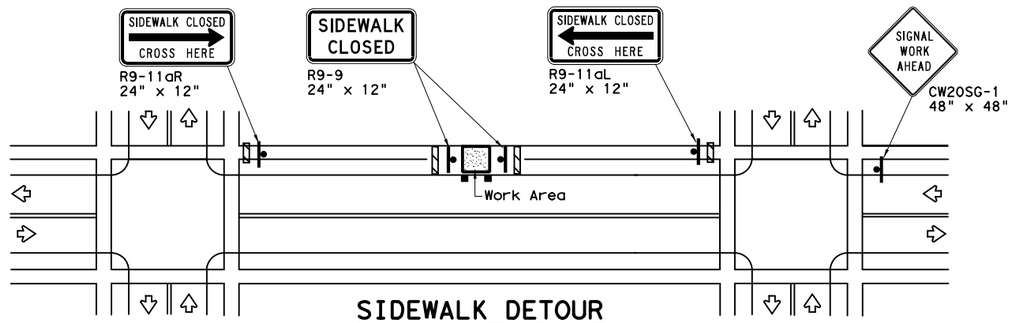
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

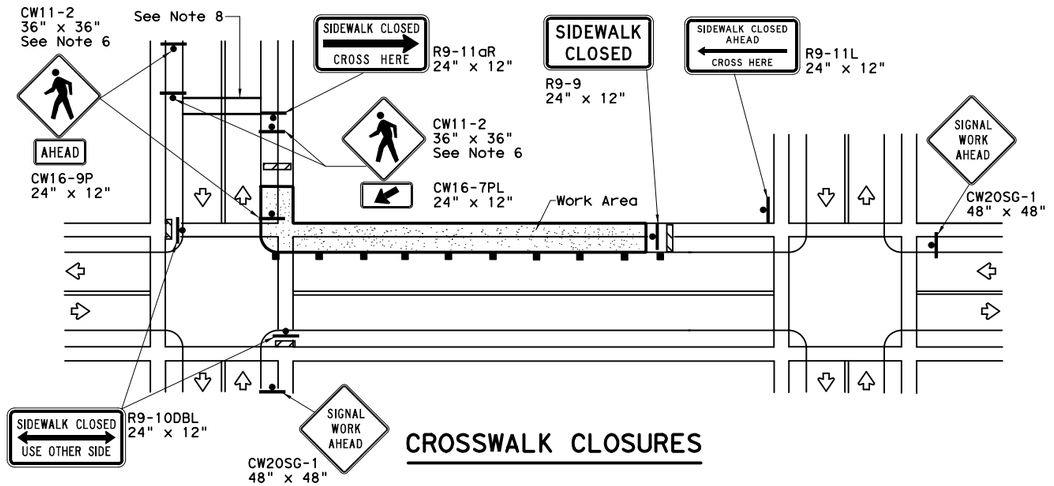
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

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

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
REVISIONS	0024	05	102	US 90
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	SAT	MEDINA, ETC.		14

DATE: 6/12/2024 9:47:21 AM
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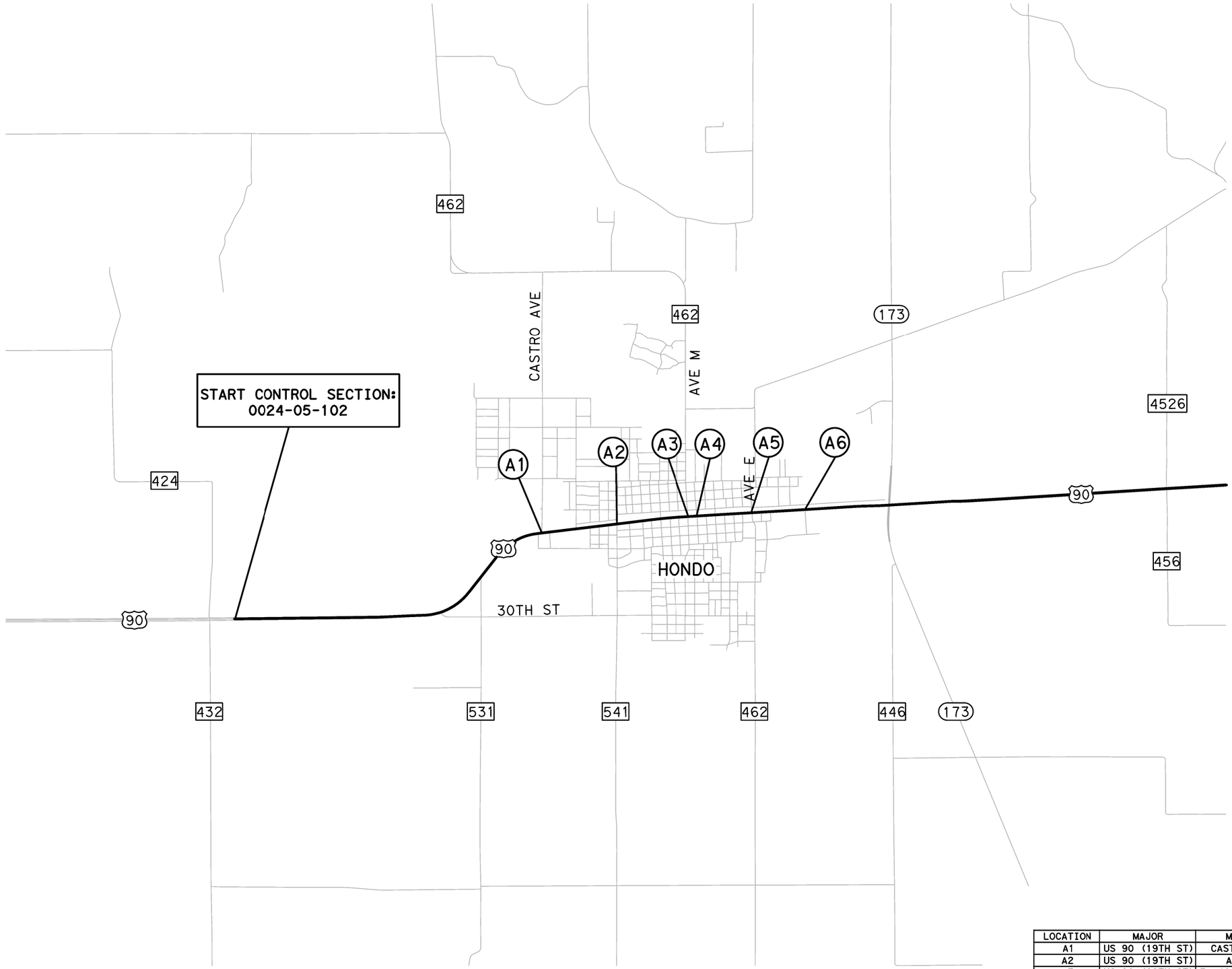

N

SCALE: 1" = 4000'
0 2000 4000

LEGEND

CONTROL SECTION LIMITS

(#) UPGRADE LOCATION

LOCATION	MAJOR	MINOR
A1	US 90 (19TH ST)	CASTRO AVE
A2	US 90 (19TH ST)	AVE U
A3	US 90 (19TH ST)	FM 462 (AVE M)
A4	US 90 (19TH ST)	AVE K
A5	US 90 (19TH ST)	FM 462 (AVE E)
A6	US 90 (19TH ST)	VETERANS BLVD

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD.
Houston, TX. 77095
PHONE: (713) 828-4742

US 90
SIGNAL UPGRADE MAP
LOCATIONS A1-A6
CSJ 0024-05-102

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		15
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

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...\MAS Intersection Upgrades\Location Summary A1.dgn

Bid Item Information			0024-05-102	
Item No.	Desc.	Description	Unit	Estimate
500	7001	MOBILIZATION	LS	1
502	7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	12
505	7001	TMA (STATIONARY)	DAY	12
680	7011	INSTALL HWY TRF SIG (UPGRADE)	EA	6
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	44
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	14
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	44
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	20
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	44
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	10
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	40
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	14
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	5310
690	7009	REMOVAL OF CABLES	LF	5310
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	54
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	27
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	36

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.		REVISION	APPROV.

STEVENS TECHNICAL
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8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

US 90 SUMMARY OF QUANTITIES LOCATIONS A1-A6 CSJ 0024-05-102

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		16
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

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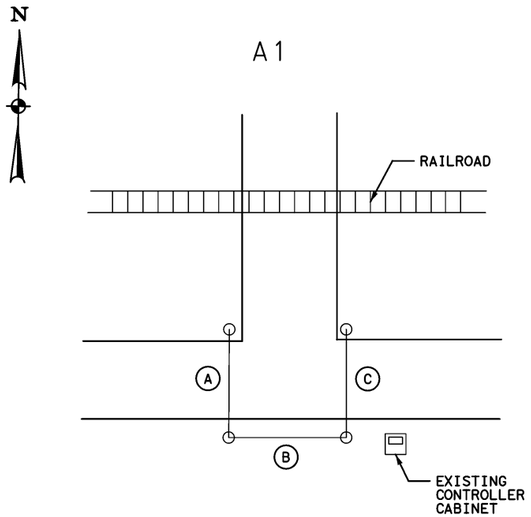
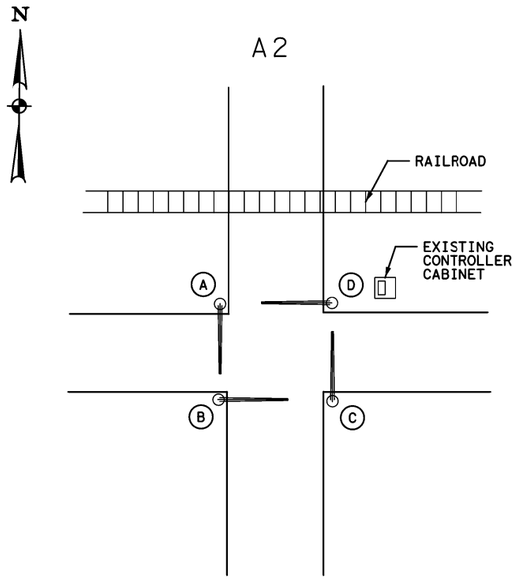


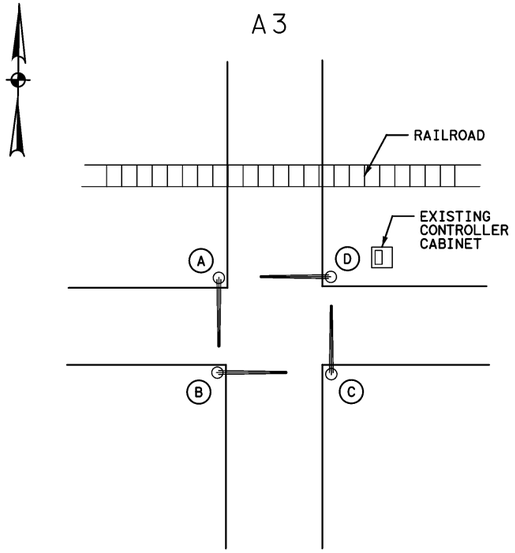
US 90 AT CASTRO AVE

N. T. S.



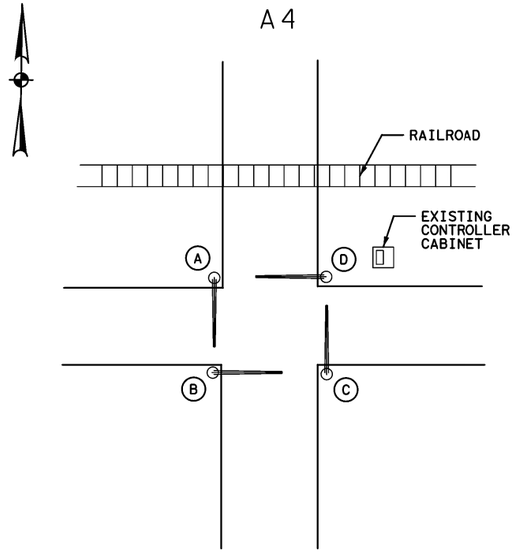
US 90 AT AVENUE U

N. T. S.



US 90 AT AVENUE M

N. T. S.



US 90 AT AVENUE K

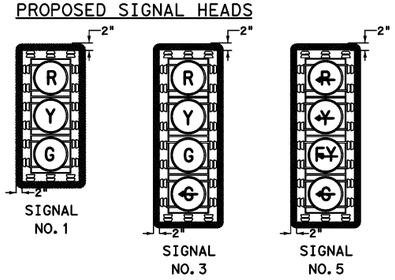
N. T. S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
A1-A	1,1	0	505	S2
A1-B	1,1	0	330	S1
A1-C	5,1,1	0	475	S2,Y2
A2-A	5,1,1	0	275	S3,Y2
A2-B	3,1	0	95	S1,Y1
A2-C	5,1,1	0	315	S3,Y2
A2-D	1,1	0	120	S1
A3-A	5,1,1	0	305	S4,Y2
A3-B	3,1	0	105	S1,Y1
A3-C	5,1,1	0	305	S5,Y2
A3-D	1,1	0	105	S1
A4-A	5,1,1	0	285	S6,Y2
A4-B	3,1	0	105	S1,Y1
A4-C	5,1,1	0	320	S6,Y2
A4-D	1,1	0	120	S1

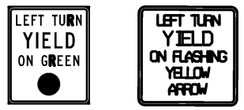
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



R10-12
(30"x36")
Y1

R10-17T
(36"x42")
Y2

S1 **US 90**

S2 **Castro Ave**

S3 **Avenue U**

S4 **← Avenue M**
FM 462 →

S5 **← FM 462**
Avenue M →

S6 **Avenue K**

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED
PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SIGNAL LAYOUTS
LOCATIONS A1-A4
CSJ 0024-05-102
US 90

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		17
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

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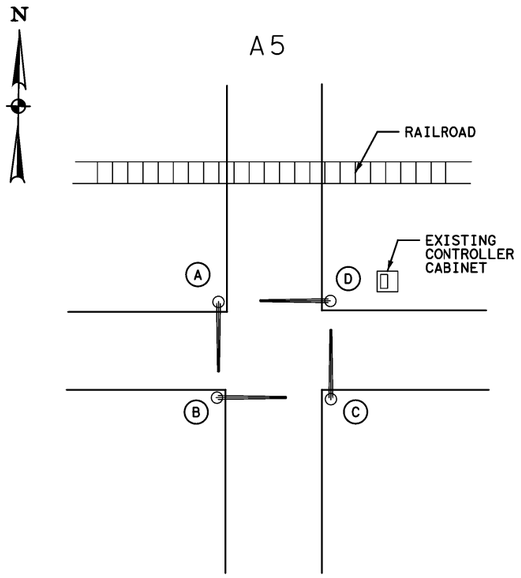
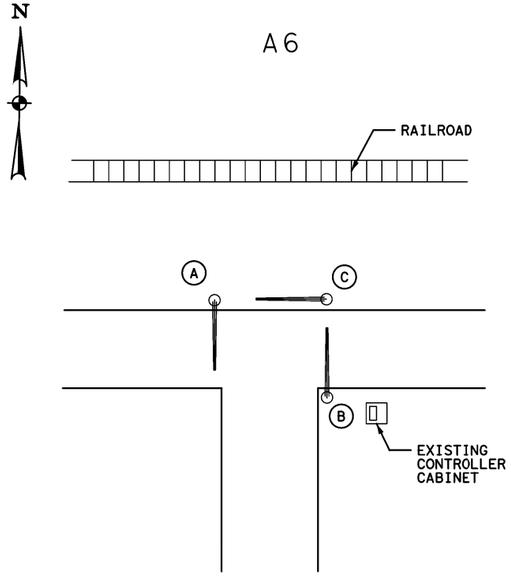
...\Location A Intersection layouts-1.dgn



US 90 AT AVENUE E

N. T. S.



US 90 AT VETERANS BLVD

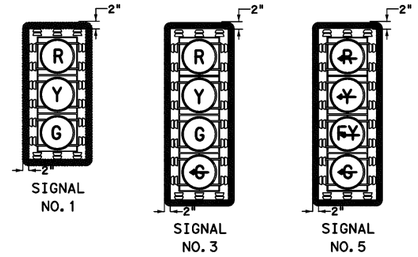
N. T. S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINARE UPGRADE	7C/#12	SIGN NO.
A5-A	5, 1, 1	0	285	S2, Y2
A5-B	3, 1	0	130	S1, Y1
A5-C	5, 1, 1	0	315	S3, Y2
A5-D	1, 1	0	110	S1
A6-A	5, 1, 1	0	455	S4, Y2
A6-B	1, 1	0	130	S4
A6-C	1, 1	0	120	S1

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

R10-12
(30"x36")
Y1

R10-17T
(36"x42")
Y2

S1

S2

S3

S4

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

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8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

SIGNAL LAYOUTS LOCATIONS A5-A6 CSJ 0024-05-102 US 90

SHEET 2 OF 3

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		18
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

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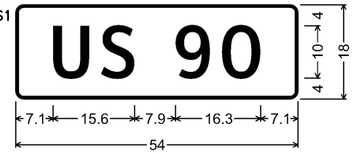
...\Location A Intersection layouts-1.dgn

PROPOSED SIGN DETAILS LOCATION A1-A4 (SEE SHEET 1)

S1

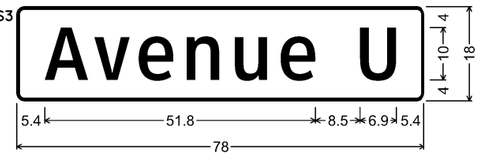


1.5" Radius, 0.5" Border, White on Green;
"US 90", ClearviewHwy-3-W;

S2

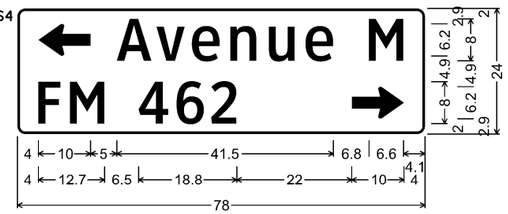
1.5" Radius, 0.5" Border, White on Green;
"Castro", ClearviewHwy-3-W; "Ave", ClearviewHwy-3-W;

S3



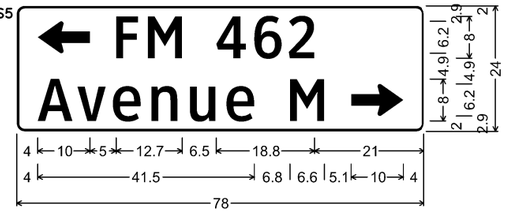
1.5" Radius, 0.5" Border, White on Green;
"Avenue U", ClearviewHwy-3-W;

S4



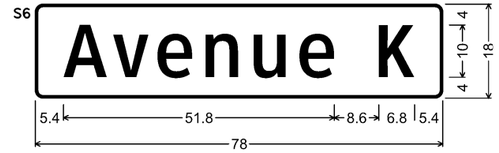
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"Avenue M", ClearviewHwy-3-W;
"FM 462", ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S5



1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"FM 462", ClearviewHwy-3-W;
"Avenue M", ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

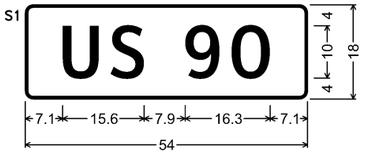
S6



1.5" Radius, 0.5" Border, White on Green;
"Avenue K", ClearviewHwy-3-W;

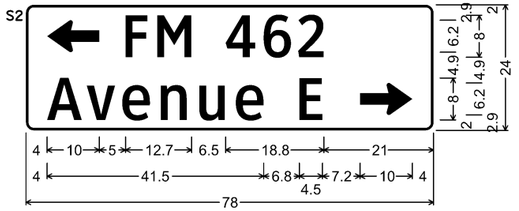
PROPOSED SIGN DETAILS LOCATION A5-A6 (SEE SHEET 2)

S1



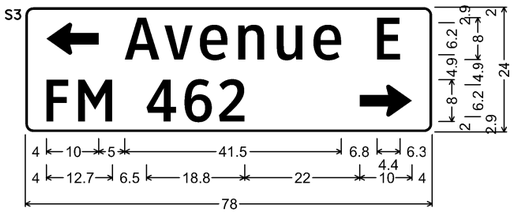
1.5" Radius, 0.5" Border, White on Green;
"US 90", ClearviewHwy-3-W;

S2



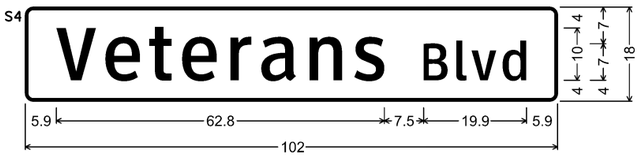
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"FM 462", ClearviewHwy-3-W;
"Avenue E", ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S3



1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"Avenue E", ClearviewHwy-3-W;
"FM 462", ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S4



1.5" Radius, 0.5" Border, White on Green;
"Veterans", ClearviewHwy-3-W; "Blvd", ClearviewHwy-3-W;

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

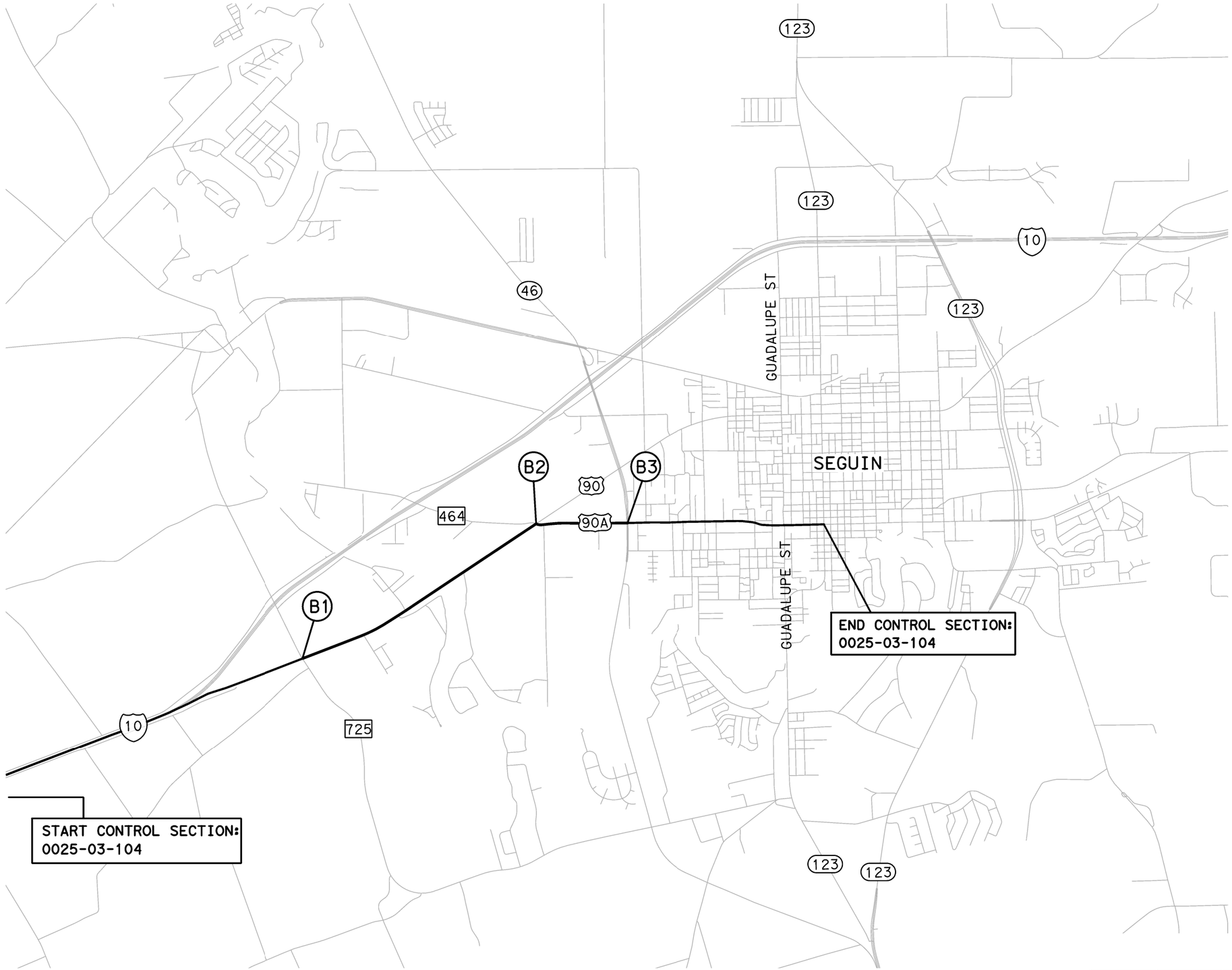
STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

PROPOSED SIGN DETAILS LOCATIONS A1-A6
CSJ 0024-05-102
US 90

SHEET 3 OF 3

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		19
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:06:57 PM
...\Location A Intersection Layouts-1.dgn



N

SCALE: 1" = 4000'

0 2000 4000

LEGEND

CONTROL SECTION LIMITS

(#) UPGRADE LOCATION

LOCATION	MAJOR	MINOR
B1	US 90	FM 725
B2	US 90	FM 464
B3	US 90	SH 46

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

US 90
SIGNAL UPGRADE MAP
LOCATIONS B1-B3
CSJ 0025-03-104

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	20

STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:00 PM

...\WA5 Intersection Upgrade\Location Summary B.dgn

Bid Item Information			0025-03-104	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	6
610	7012	REPLACE LUMINAIRE W/LED (250W EQ)	EA	3
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	26
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	6
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	26
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	8
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	26
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	4
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	24
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	6
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	3885
690	7009	REMOVAL OF CABLES	LF	3885
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	30
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	10
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	16

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

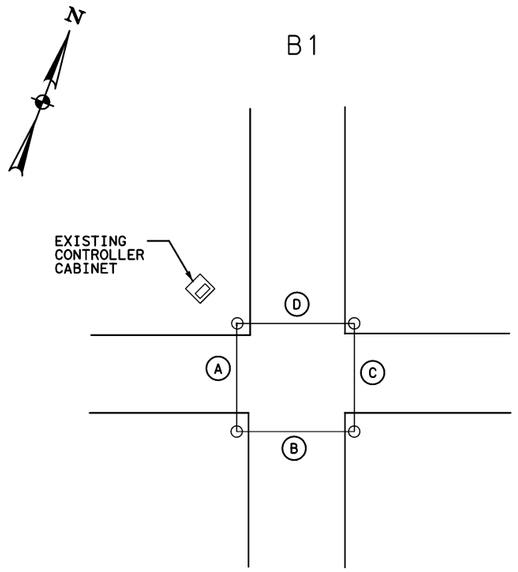
NO.		REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

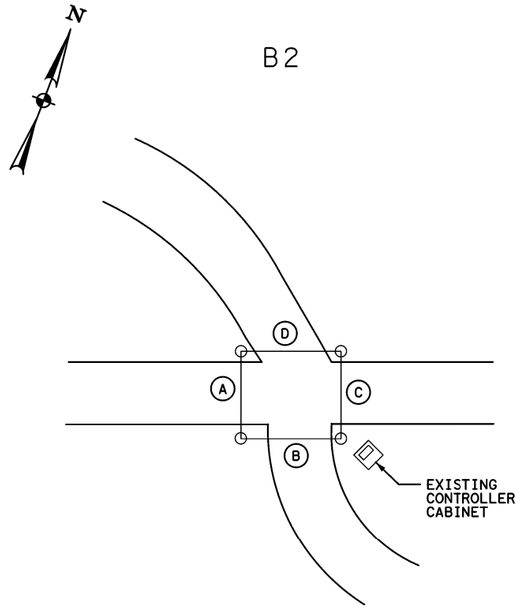
US 90 SUMMARY OF QUANTITIES LOCATIONS B1-B3 CSJ 0025-03-104

SHEET 1 OF 1

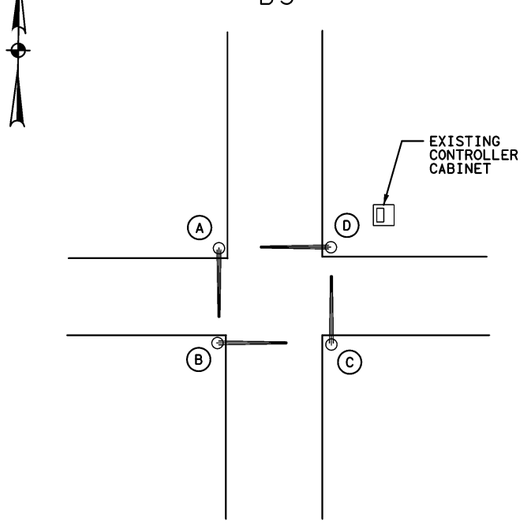
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		21
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



US 90 AT FM 725
N.T.S.



US 90 AT FM 464
N.T.S.



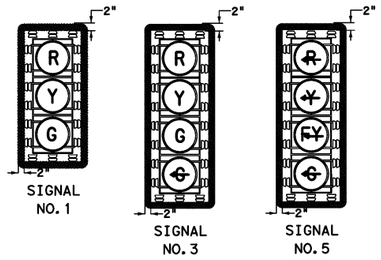
US 90 AT SH 46
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEADS NO.	LED LUMINARE UPGRADE	7C/#12	SIGN NO.
B1-A	1,1	0	305	S2
B1-B	1,1	1	495	S1
B1-C	1,1	0	540	S2
B1-D	1,1	1	295	S1
B2-A	1,1	0	445	S3
B2-B	3,1,1	1	405	S1
B2-C	1,1	0	170	S3
B2-D	3,1,1	0	530	S1
B3-A	5,1,1	0	175	S5,Y2
B3-B	5,1,1	0	185	S4,Y2
B3-C	5,1,1	0	170	S5,Y2
B3-D	5,1,1	0	170	S4,Y2

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

R10-17T
(36"x42")
Y2

S1 US 90

S2 FM 725

S3 FM 464

S4 w Court

S5 SH 46

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SIGNAL LAYOUTS LOCATIONS B1-B3 CSJ 0025-03-104 US 90

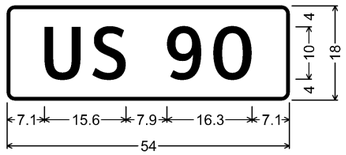
SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		22
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:05 PM
...\Location B Intersection Layouts-1.dgn

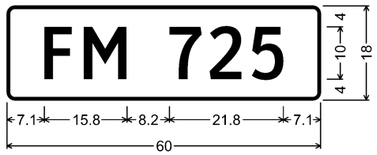
PROPOSED SIGN DETAILS LOCATION B1-B3 (SEE SHEET 1)

S1



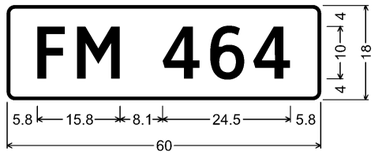
1.5" Radius, 0.5" Border, White on Green;
"US 90", ClearviewHwy-3-W;

S2



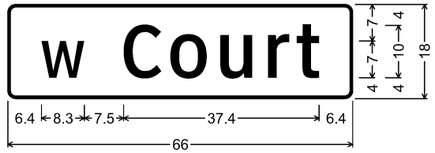
1.5" Radius, 0.5" Border, White on Green;
"FM 725", ClearviewHwy-3-W;

S3



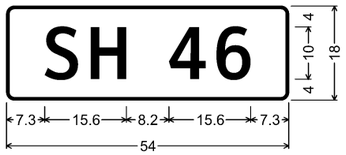
1.5" Radius, 0.5" Border, White on Green;
"FM 464", ClearviewHwy-3-W;

S4



1.5" Radius, 0.5" Border, White on Green;
"W", ClearviewHwy-3-W;
"Court", ClearviewHwy-3-W;

S5



1.5" Radius, 0.5" Border, White on Green;
"SH 46", ClearviewHwy-3-W;

MICHELLE C. MAGALLANEZ, P.E.

6/12/2024
DATE

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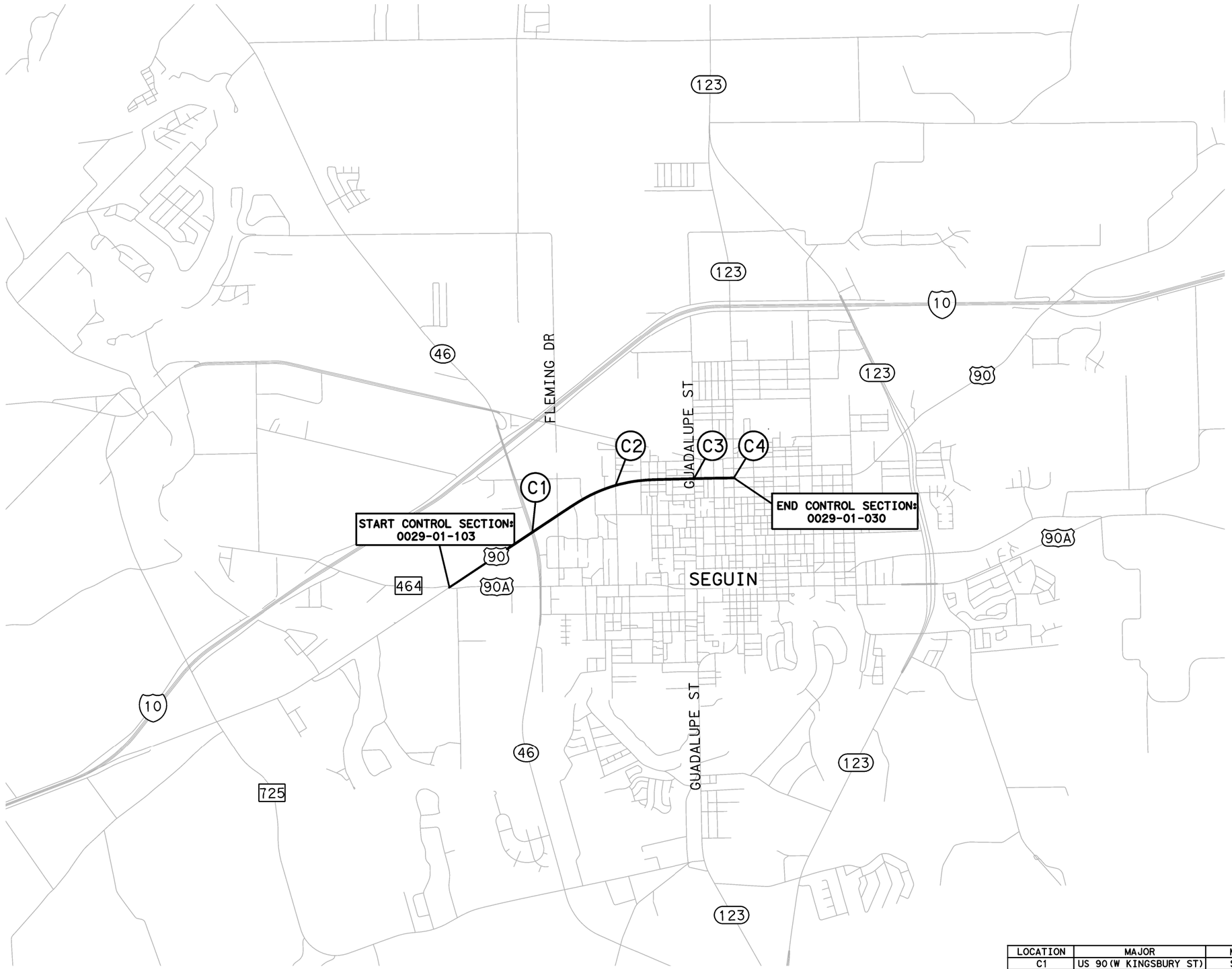
STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD.
Houston, TX. 77095
PHONE: (713) 828-4742

PROPOSED SIGN DETAILS LOCATIONS B1-B3 CSJ 0025-03-104 US 90

SHEET 2 OF 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		23
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



N

SCALE: 1" = 4000'

0 2000 4000

LEGEND

CONTROL SECTION LIMITS

(#) UPGRADE LOCATION

LOCATION	MAJOR	MINOR
C1	US 90(W KINGSBURY ST)	SH 46
C2	US 90(W KINGSBURY ST)	HIDALGO ST
C3	US 90(W KINGSBURY ST)	GUADALUPE ST
C4	US 90(W KINGSBURY ST)	SH 123 (N AUSTIN ST)

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

US 90
SIGNAL UPGRADE MAP
LOCATIONS C1-C4
CSJ 0029-01-030

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		24
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

Bid Item Information			0029-01-030	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	8
680	7011	INSTALL HWY TRF SIG (UPGRADE)	EA	2
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	32
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	10
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	32
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	10
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	32
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	6
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	30
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	8
682	7050	BACKPLATE W/REF BRDR (1 SEC) (VENT) ALUM	EA	0
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	3140
690	7009	REMOVAL OF CABLES	LF	3140
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	38
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	10
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	20

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

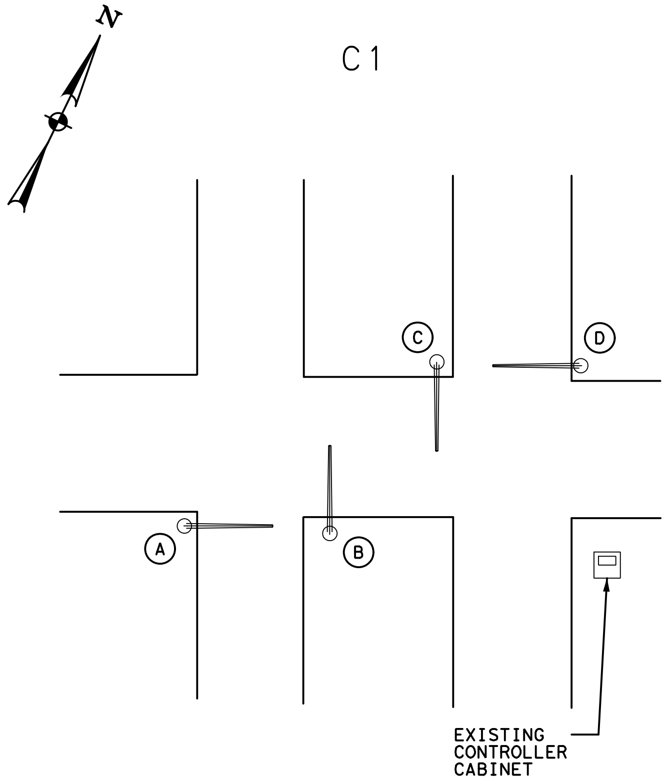
US 90 SUMMARY OF QUANTITIES LOCATIONS C1-C4 CSJ 0029-01-030

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		25
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:11 PM
...\US 90 SUMMARY OF QUANTITIES-C1-C5-CSJ 0029-01-030.dgn

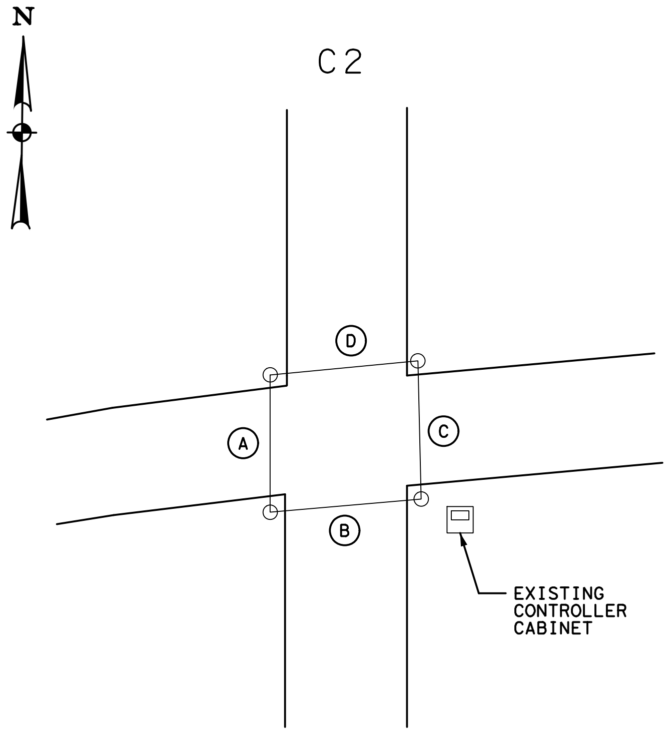
C1



W KINGSBURY AT SH 46

N.T.S.

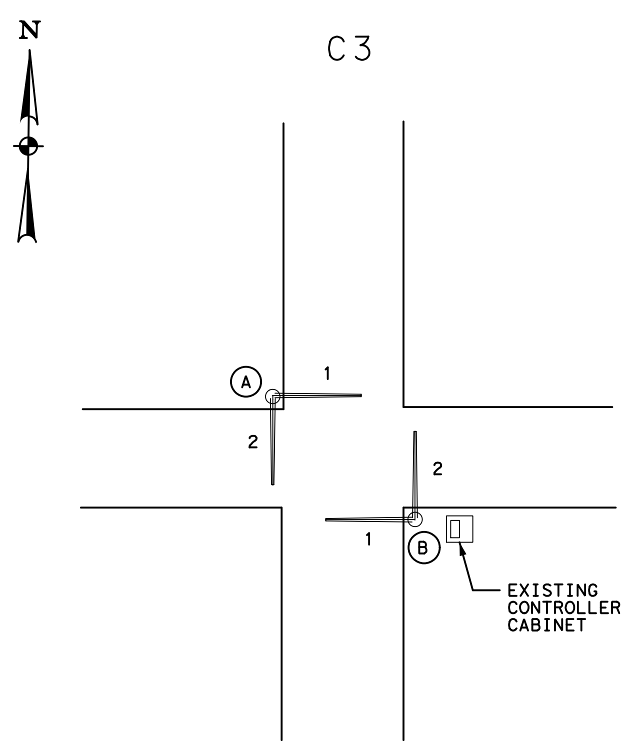
C2



W KINGSBURY AT HIDALGO ST

N.T.S.

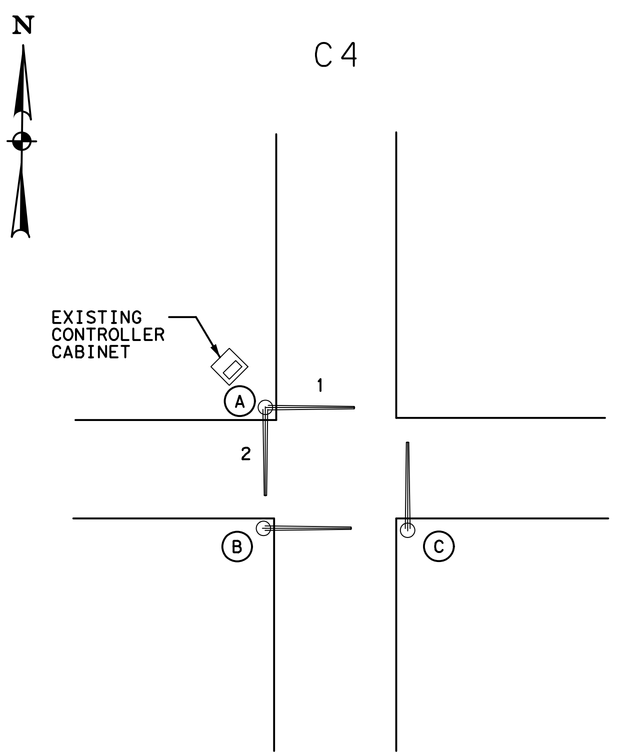
C3



W KINGSBURY AT GUADALUPE ST

N.T.S.

C4



W KINGSBURY AT BUSINESS 123 / N AUSTIN ST

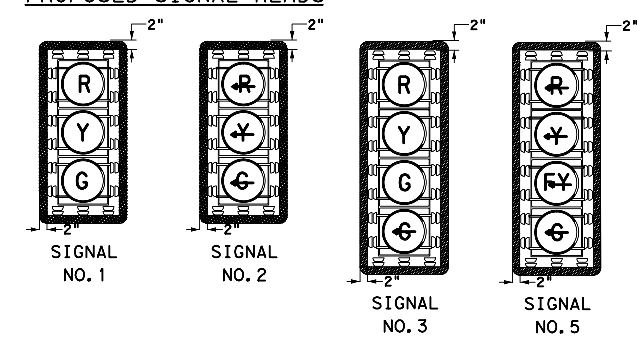
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINARE UPGRADE	7C/#12	SIGN NO.
C1-A	2,1,1	0	190	S1
C1-B	3,1	0	105	S2
C1-C	3,1	0	130	S2
C1-D	2,1,1	0	175	S1
C2-A	1,1	0	380	S3
C2-B	1,1	0	170	S4
C2-C	1,1	0	190	S5
C2-D	1,1	0	390	S4
C3-A2	5,1,1	0	340	S6,Y2
C3-B1	1,1	0	130	S1
C3-B2	5,1,1	0	180	S6,Y2
C3-A1	1,1	0	115	S1
C4-A2	5,1,1	0	160	S7,Y2
C4-B	3,1	0	95	S1
C4-C	5,1,1	0	275	S7,Y2
C4-A1	3,1	0	115	S1

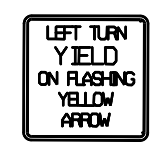
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



R10-17T
(36"x42")
Y2

S1 W Kingsbury St

S2 SH 46

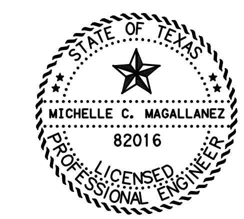
S3 ← N Vaughan Ave / Hidalgo St →

S4 W Kingsbury St XXX

S5 ← Hidalgo St / N Vaughan Ave →

S6 Guadalupe St

S7 N Austin St



MICHELLE C. MAGALLANEZ, P.E. 6/18/2024 DATE

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STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

 Texas Department of Transportation®

SIGNAL LAYOUTS
LOCATIONS C1-C4
CSJ 0029-01-030
US 90

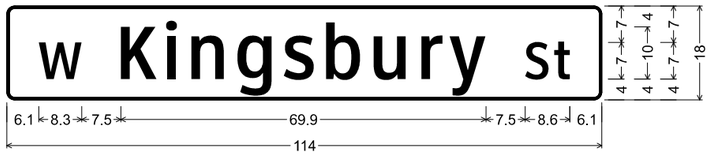
SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		26
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

...\Location C Intersection layouts-1.dgn 6/18/2024 3:20:21 PM

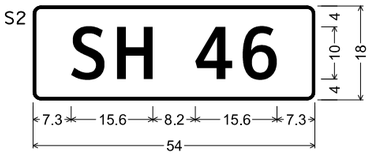
PROPOSED SIGN DETAILS LOCATION C1-C4 (SEE SHEET 1)

S1



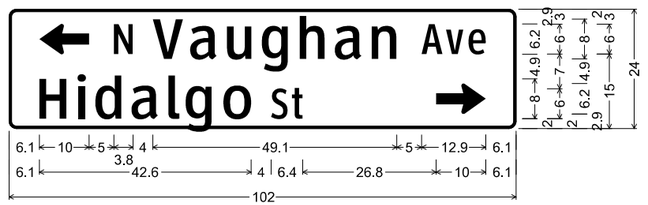
1.5" Radius, 0.5" Border, White on Green;
"W", ClearviewHwy-3-W; "Kingsbury", ClearviewHwy-3-W; "St", ClearviewHwy-3-W;

S2



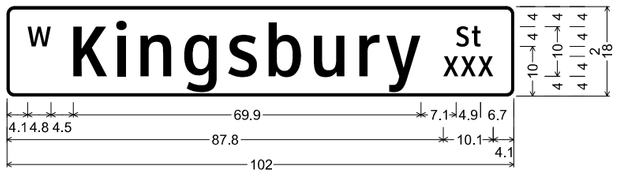
1.5" Radius, 0.5" Border, White on Green;
"SH 46", ClearviewHwy-3-W;

S3



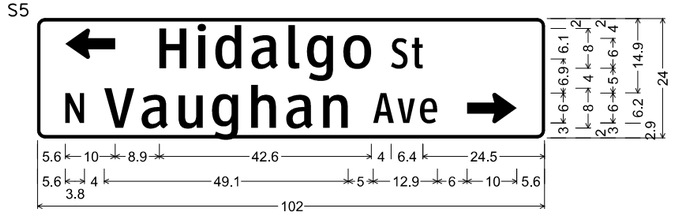
1.5" Radius, 0.5" Border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°; "N", ClearviewHwy-2-W;
"Vaughan", ClearviewHwy-3-W; "Ave", ClearviewHwy-2-W;
"Hidalgo", ClearviewHwy-3-W; "St", ClearviewHwy-2-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

*S4



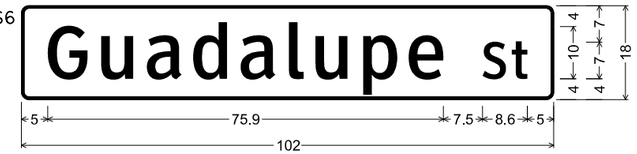
1.5" Radius, 0.5" Border, White on Green;
"W", ClearviewHwy-3-W; "Kingsbury", ClearviewHwy-3-W;
"St", ClearviewHwy-3-W; "XXX", ClearviewHwy-3-W;

S5



1.5" Radius, 0.5" Border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°; "", ClearviewHwy-3-W;
"Hidalgo", ClearviewHwy-3-W; "St", ClearviewHwy-2-W;
"N", ClearviewHwy-2-W; "Vaughan", ClearviewHwy-3-W;
"Ave", ClearviewHwy-2-W; Standard Arrow Custom 10.0" X 6.1" 0°;

S6



1.5" Radius, 0.5" Border, White on Green;
"Guadalupe", ClearviewHwy-3-W; "St", ClearviewHwy-3-W;

S7

1.5" Radius, 0.5" Border, White on Green;
"N", ClearviewHwy-3-W; "Austin", ClearviewHwy-3-W;
"St", ClearviewHwy-3-W;

* CONTRACTOR TO VERIFY BLOCK NUMBERS ON SITE PRIOR TO ORDERING SIGNS

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
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MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

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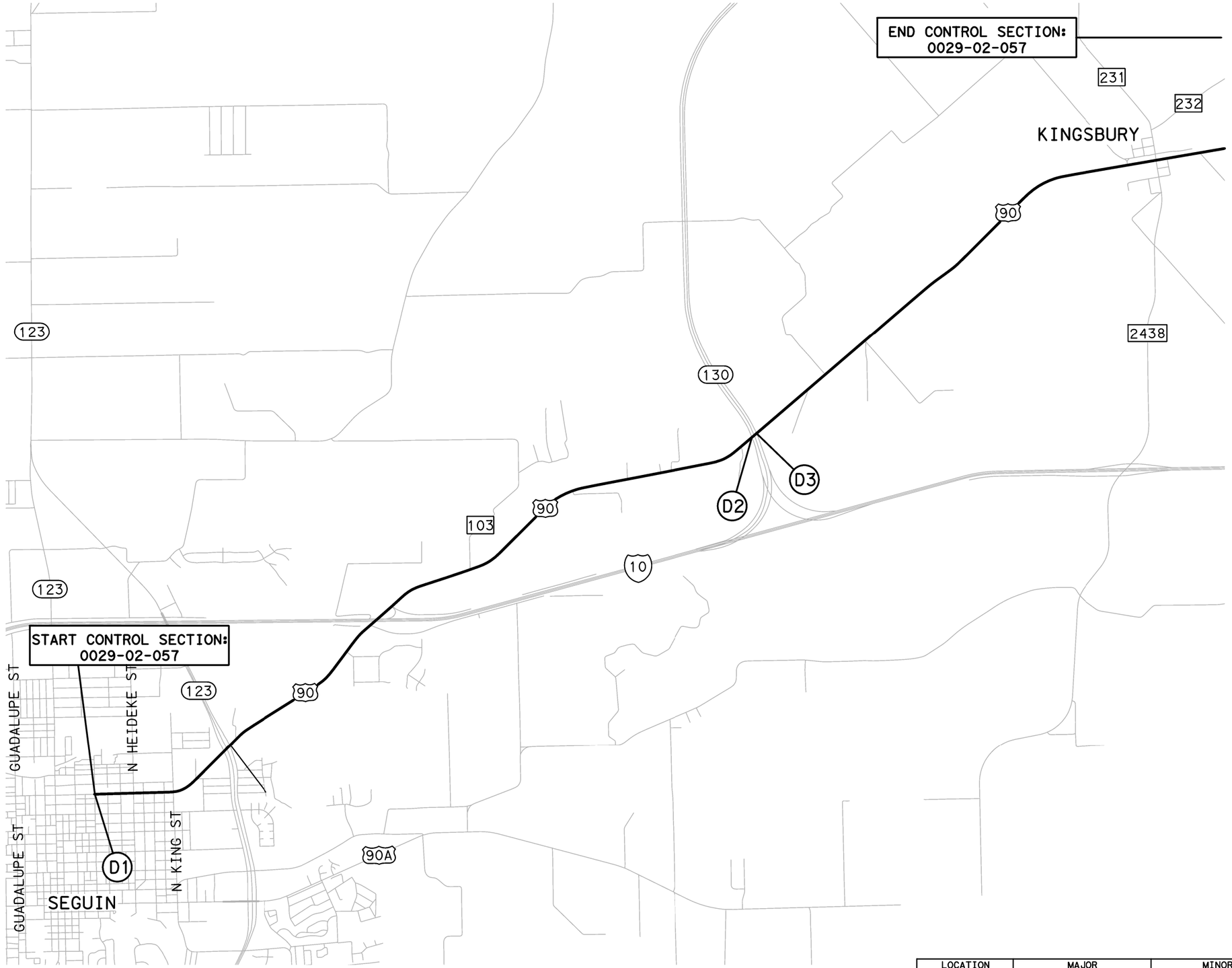
PHONE: (713) 828-4742

PROPOSED SIGN DETAILS
LOCATIONS C1-C4
CSJ 0029-01-030
US 90

SHEET 2 OF 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		27
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



N

SCALE: 1" = 4000'

0 2000 4000

LEGEND

CONTROL SECTION LIMITS

(#) UPGRADE LOCATION

LOCATION	MAJOR	MINOR
D1	US 90 (E KINGSBURY ST)	N SAN MARCOS ST
D2	US 90	SH 130 EXIT S
D3	US 90	SH 130 ENTRY/PRIVATE DRIVEWAY

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US 90
SIGNAL UPGRADE MAP
LOCATION D1-D3
CSJ 0029-02-057

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		28
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:18 PM
...\WA5 Intersection Upgrade\Location Summary D.dgn

Bid Item Information			0029-02-057	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	6
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	8
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	2
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	24
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	4
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	16
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	2
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	8
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	2
682	7050	BACKPLATE W/REF BRDR (1 SEC) (VENT) ALUM	EA	24
684	7009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	5230
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	530
690	7009	REMOVAL OF CABLES	LF	5760
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	34
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	5
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	6

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

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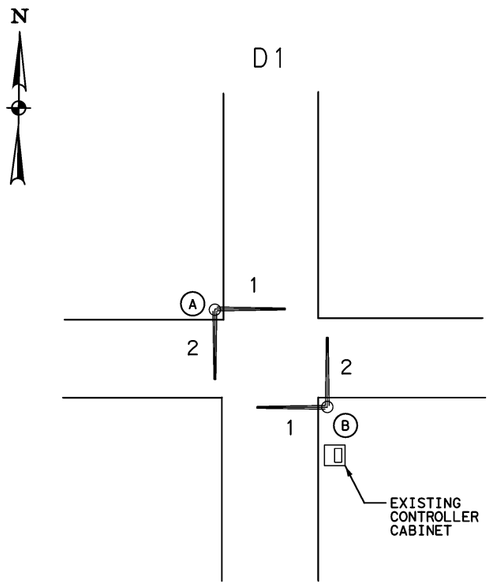
US 90 SUMMARY OF QUANTITIES LOCATIONS D1-D3 CSJ 0029-02-057

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		29
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



E KINGSBURY AT N SAN MARCOS

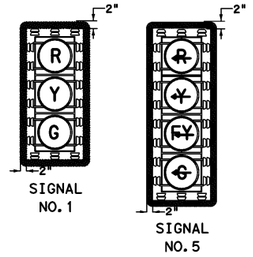
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
D1-A2	5, 1, 1	0	155	S2, Y2
D1-B1	1, 1	0	110	S1
D1-B2	5, 1, 1	0	155	S2, Y2
D1-A1	1, 1	0	110	S1

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

R10-17T
(36"x42")
Y2

S1

S2

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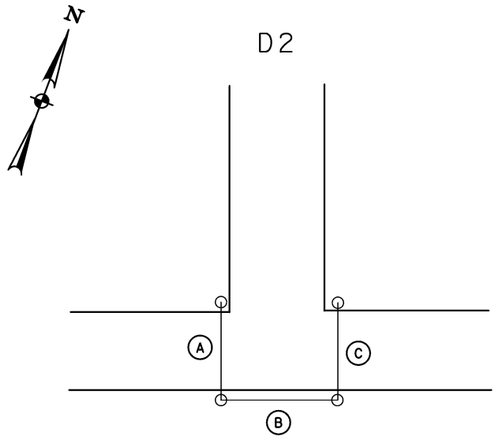
SIGNAL LAYOUTS
LOCATIONS D1
CSJ 0029-02-057
US 90

SHEET 1 OF 3

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	30

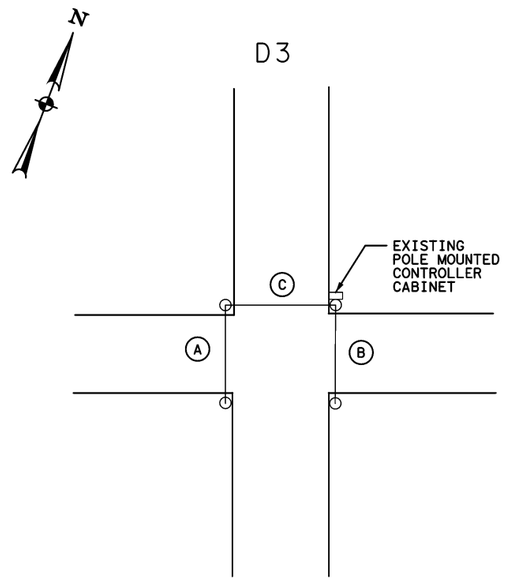
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:23 PM
...\Location D Intersection layouts-1.dgn



E US 90 AT SH 130 EXIT

N.T.S.



E US 90 AT SH 130 ENTRY

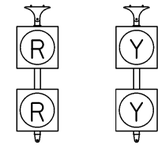
N.T.S

FLASHER POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	4C/#12	SIGN NO.
D2-A	11,11	0	1600	NO SIGN
D2-B	10,10	0	1450	NO SIGN
D2-C	11,11	0	1300	NO SIGN
D3-A	11,11	0	390	NO SIGN
D3-B	11,11	0	245	NO SIGN
D3-C	10,10	0	245	NO SIGN

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



SIGNAL NO. 10 SIGNAL NO. 11

STATE OF TEXAS
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MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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Houston, TX. 77095

FLASHER LAYOUTS LOCATIONS D2-D3 CSJ 0029-02-057 US 90

SHEET 2 OF 3

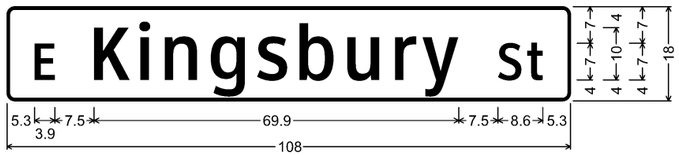
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		31
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:24 PM

...\Location D Intersection layouts-1.dgn

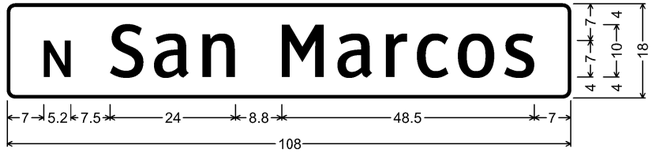
PROPOSED SIGN DETAILS LOCATION D1-D3 (SEE SHEET 1)

S1



1.5" Radius, 0.5" Border, White on Green;
"E", ClearviewHwy-3-W; "Kingsbury", ClearviewHwy-3-W;
"St", ClearviewHwy-3-W;

S2



1.5" Radius, 0.5" Border, White on Green;
"N", ClearviewHwy-3-W; "San Marcos", ClearviewHwy-3-W;

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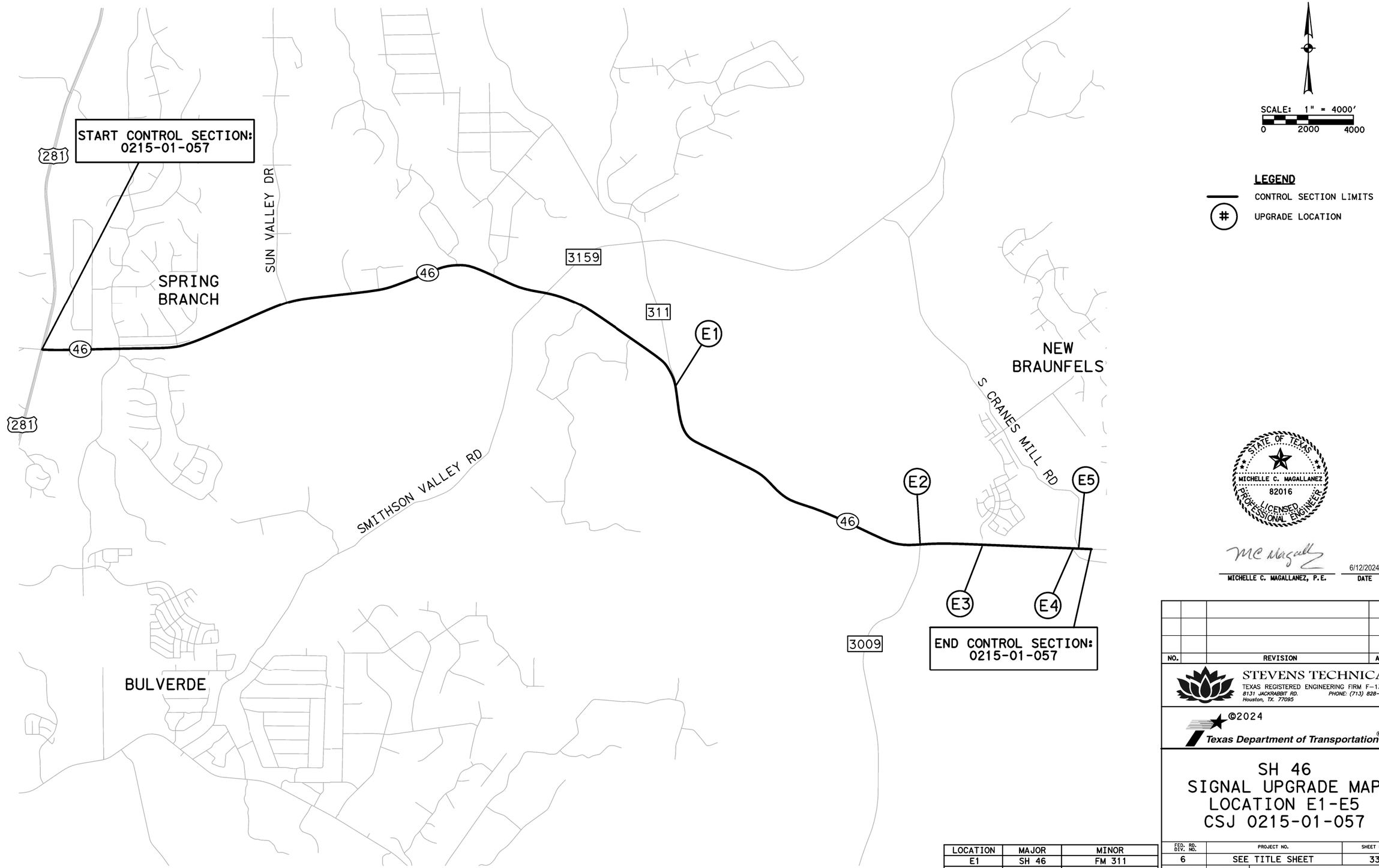
PROPOSED SIGN DETAILS LOCATIONS D1-D3 CSJ 0029-02-057 US 90

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		32
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:26 PM
...\Location D Intersection Layouts-1.dgn



LOCATION	MAJOR	MINOR
E1	SH 46	FM 311
E2	SH 46	FM 3009
E3	SH 46	MEYER PKWY
E4	SH 46	HERBELIN RD
E5	SH 46	S CRANES MILL RD

STATE OF TEXAS
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MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

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8131 JACKRABBIT RD. Houston, TX. 77095
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SH 46
SIGNAL UPGRADE MAP
LOCATION E1-E5
CSJ 0215-01-057

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		33
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:28 PM
...\WA5 Intersection Upgrade\Location Summary E.dgn

Bid Item Information			0215-01-057	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	10
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	7
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	1
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	39
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	2
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	27
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	1
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	7
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	1
682	7050	BACKPLATE W/REF BRDR (1 SEC) (VENT) ALUM	EA	52
684	7009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	6135
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	2105
690	7009	REMOVAL OF CABLES	LF	8240
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	60
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	3
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	4

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

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SH 46 SUMMARY OF QUANTITIES LOCATIONS E1-E5 CSJ 0215-01-057

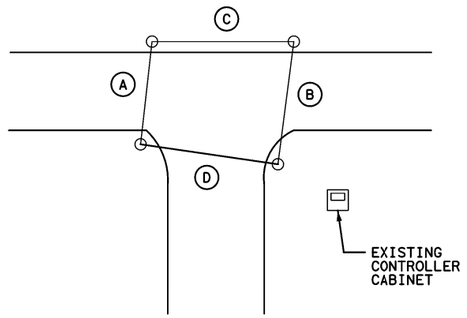
SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		34
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:30 PM
...\SH 46 SUMMARY OF QUANTITIES-E1-E9-CSJ 0215-01-057.dgn

N

E2



SH 46 AT FM 3009

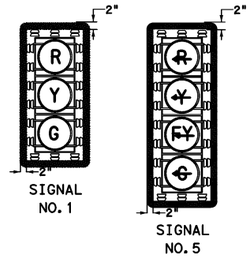
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
E2-A	5, 1, 1	0	1035	S2, Y2
E2-B	1, 1	0	325	S2
E2-C	1, 1	0	550	S1
E2-D	1	0	195	NO SIGN

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

R10-17T
(36"x42")
Y2

S1 SH 46

S2 FM 3009

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.		REVISION	APPROV.

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SIGNAL LAYOUTS LOCATIONS E2 CSJ 0215-01-057 SH 46

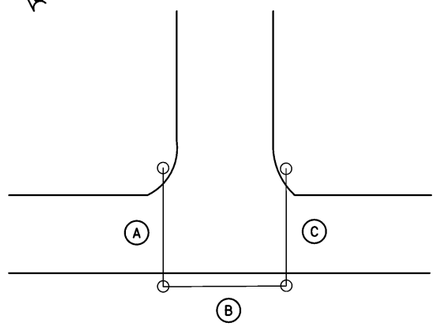
SHEET 1 OF 3

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		35
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:32 PM

...\Location E Intersection layouts-1.dgn

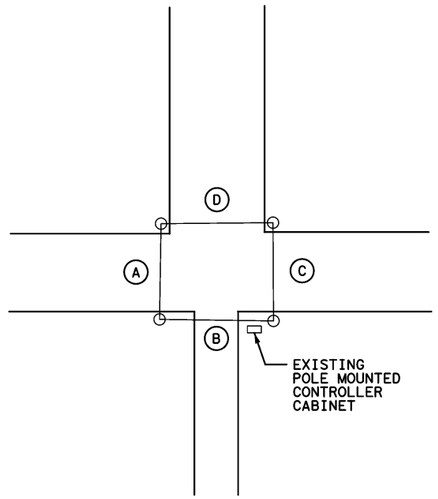
E1



SH 46 AT FM 311

N.T.S.

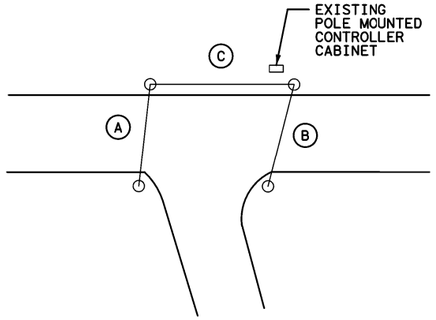
E3



SH 46 AT MEYER PKWY

N.T.S.

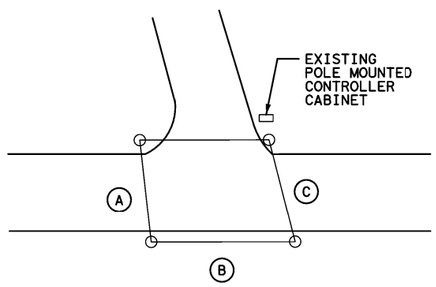
E4



SH 46 AT HERBELIN RD

N.T.S.

E5



SH 46 AT S CRANES MILL RD

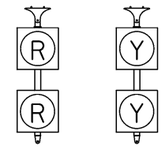
N.T.S.

FLASHER POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	4C/#12	SIGN NO.
E1-A	11,11	0	1230	NO SIGN
E1-B	10,10	0	990	NO SIGN
E1-C	11,11	0	790	NO SIGN
E3-A	11,11	0	410	NO SIGN
E3-B	10,10	0	250	NO SIGN
E3-C	11,11	0	180	NO SIGN
E3-D	10,10	0	340	NO SIGN
E4-A	11,11	0	420	NO SIGN
E4-B	11,11	0	190	NO SIGN
E4-C	10,10	0	275	NO SIGN
E5-A	11,11	0	420	NO SIGN
E5-B	10,10	0	430	NO SIGN
E5-C	11,11	0	210	NO SIGN

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



SIGNAL NO. 10 | SIGNAL NO. 11

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

FLASHER LAYOUTS LOCATIONS E1-E3, E4-E5 CSJ 0215-01-057 SH 46

SHEET 2 OF 3

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	36

STATE	DIST.	COUNTY
TEXAS	SAT	MEDINA, ETC.

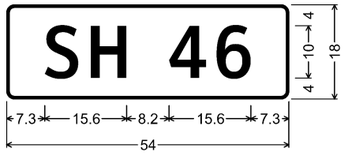
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:34 PM

...\Location E Intersection Layouts-1.dgn

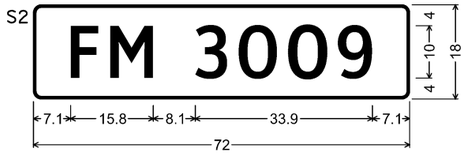
PROPOSED SIGN DETAILS LOCATION E1-E3, E4-E5 (SEE SHEET 1)

S1



;
1.5" Radius, 0.5" Border, White on Green;
"SH 46", ClearviewHwy-3-W;

S2



;
1.5" Radius, 0.5" Border, White on Green;
"FM 3009", ClearviewHwy-3-W;

6/12/2024 3:07:36 PM
...\Location E Intersection Layouts-1.dgn

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.		REVISION	APPROV.

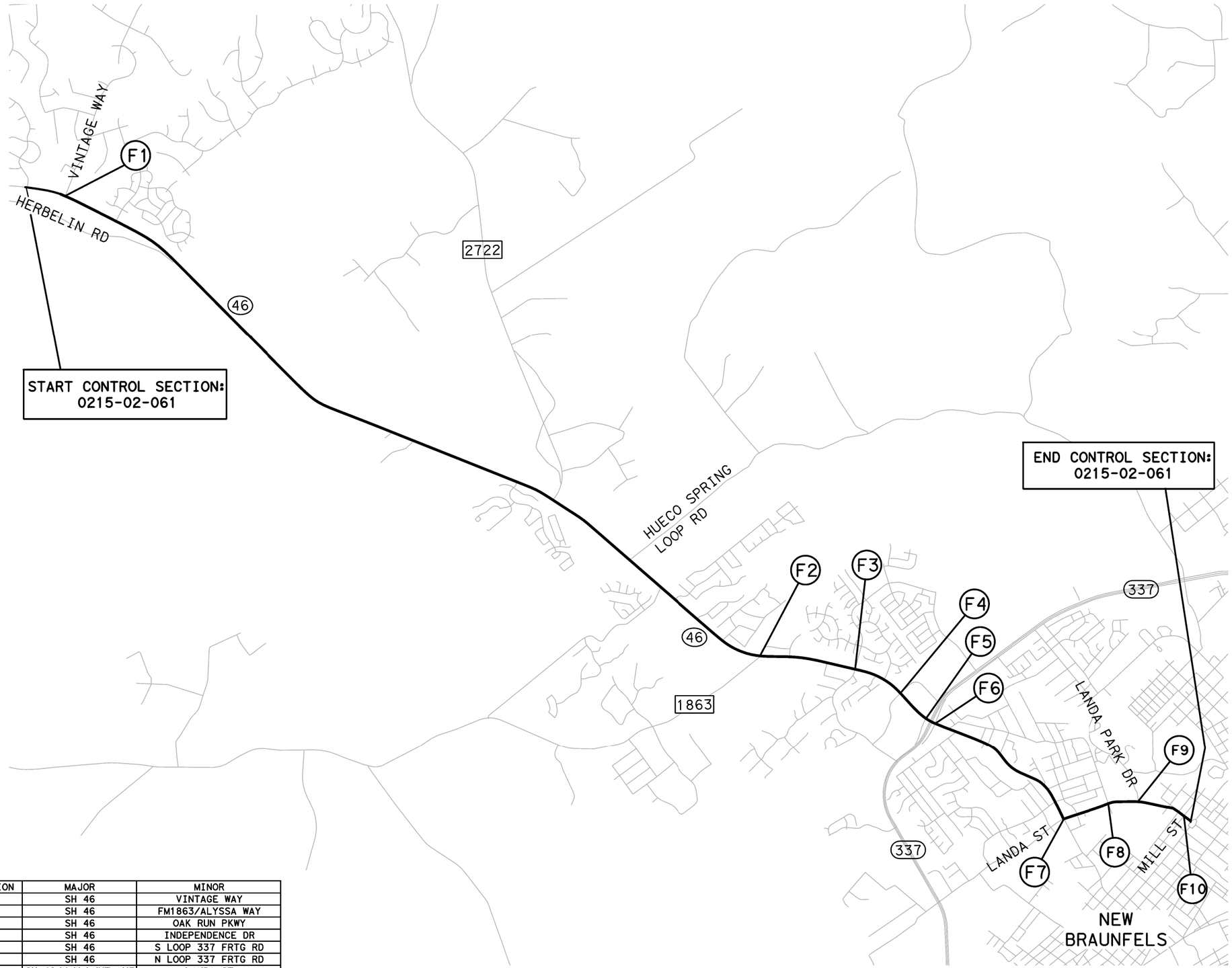
STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

Texas Department of Transportation®

PROPOSED SIGN DETAILS LOCATIONS E1-E5 CSJ 0215-01-057 SH 46

SHEET 3 OF 3

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		37
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



LOCATION	MAJOR	MINOR
F1	SH 46	VINTAGE WAY
F2	SH 46	FM1863/ALYSSA WAY
F3	SH 46	OAK RUN PKWY
F4	SH 46	INDEPENDENCE DR
F5	SH 46	S LOOP 337 FRTG RD
F6	SH 46	N LOOP 337 FRTG RD
F7	SH 46/N WALNUT AVE	LANDA ST
F8	SH 46/LANDA ST	FREDRICKSBURG RD
F9	SH 46/LANDA ST	LANDA PARK DR
F10	N SEGUIN AVE	MILL ST

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
PROFESSIONAL LICENSED ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
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8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SH 46
SIGNAL UPGRADE MAP
LOCATION F1-F10
CSJ 0215-02-061

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	38

STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

Bid Item Information			0215-02-061	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	20
610	7012	REPLACE LUMINAIRE W/LED (250W EQ)	EA	9
680	7011	INSTALL HWY TRF SIG (UPGRADE)	EA	3
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	83
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	21
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	83
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	22
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	83
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	17
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	91
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	9
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	17480
690	7009	REMOVAL OF CABLES	LF	17480
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	100
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	30
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	42

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

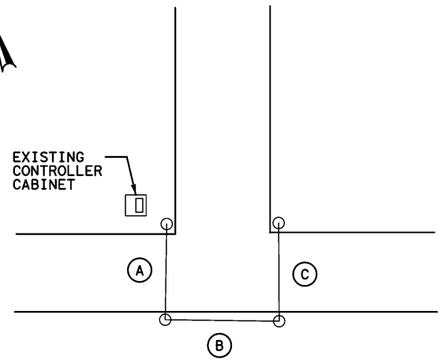
SH 46 SUMMARY OF QUANTITIES LOCATIONS F1-F10 CSJ 0215-02-061

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		39
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:40 PM
...\SH 46 SUMMARY OF QUANTITIES-F1-F12-CSJ 0215-02-061.dgn

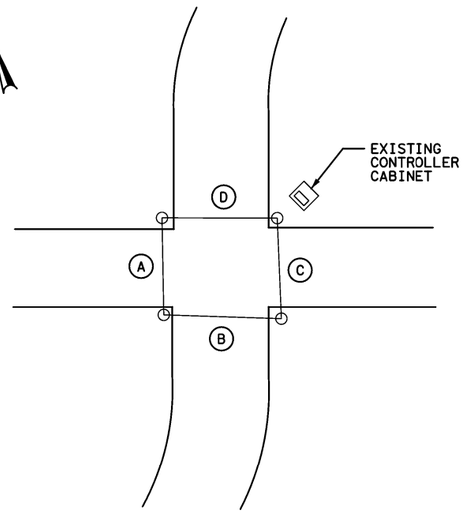
F1



SH 46 AT VINTAGE WAY

N.T.S.

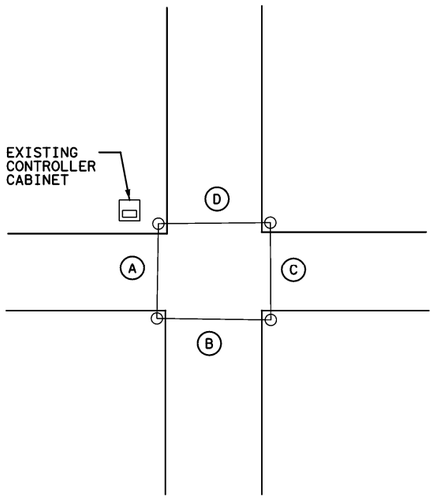
F2



SH 46 AT ALYSSA WAY/FM 1863

N.T.S.

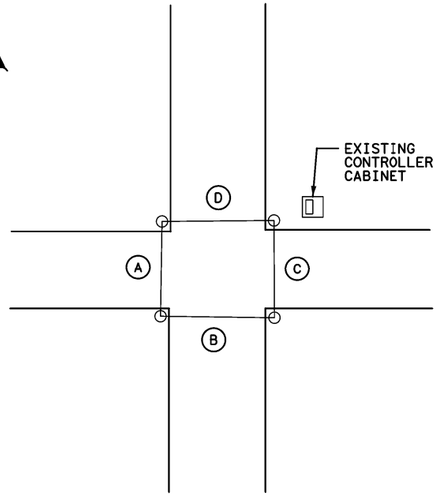
F3



SH 46 AT OAK RUN PKWY

N.T.S.

F4



SH 46 AT INDEPENDENCE DR

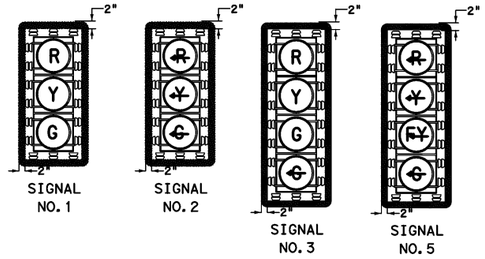
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
F1-A	1,1,1	0	275	S2
F1-B	1,1	0	380	S1
F1-C	5,1,1	0	885	S2,Y2
F2-A	2,1,1,1	0	1115	S3,Y5
F2-B	5,1,1,1	1	1115	S1,Y2
F2-C	2,1,1,1	0	830	S4
F2-D	5,1,1,1	1	655	S1,Y2
F3-A	2,1,1,1	1	420	S5
F3-B	2,3,1	0	725	S1,Y6,Y7
F3-C	2,1,1,1	1	945	S5
F3-D	3,1	0	315	S1,Y8,Y9
F4-A	2,1,1,1	1	850	S6
F4-B	3,1	0	525	S1
F4-C	2,1,1,1	1	515	S6
F4-D	3,1	0	190	S1

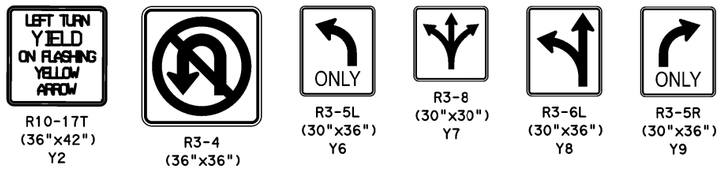
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



S1 **SH 46**

S2 **Vintage Way**

S3 **← FM 1863**
Alyssa Way →

S4 **← Alyssa Way**
FM 1863 →

S5 **Oak Run Pkwy**

S6 **Independence Dr**

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SIGNAL LAYOUTS LOCATIONS F1-F4 CSJ 0215-02-061 SH 46

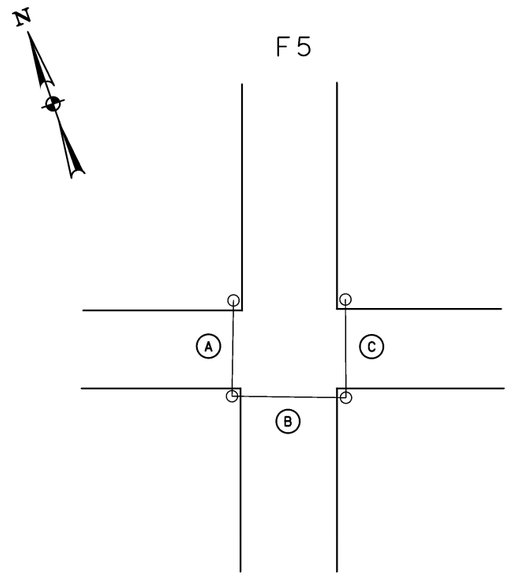
SHEET 1 OF 4

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	40

STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

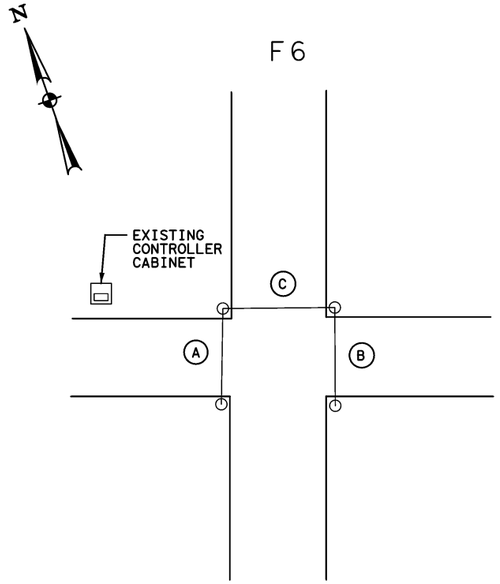
6/12/2024 3:07:42 PM

...\Location F Intersection Layouts-1.dgn



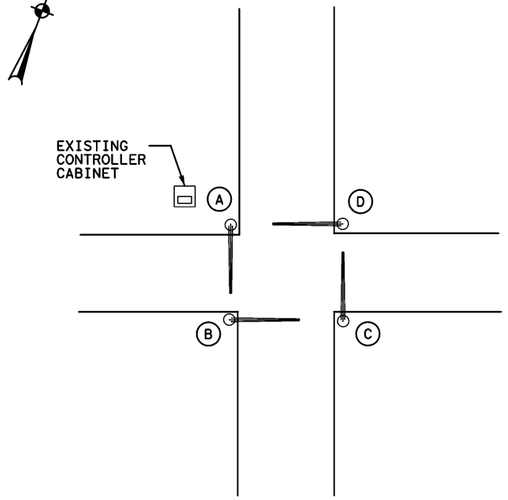
SH 46 AT S LOOP 337 FRONTAGE RD

N. T. S.



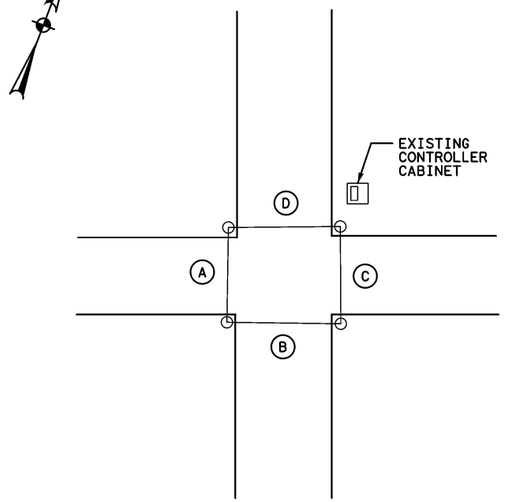
SH 46 AT N LOOP 337 FRONTAGE RD

N. T. S.



SH 46/N WALNUT AVE AT LANDA ST

N. T. S.



SH 46/LANDA ST AT FREDERICKSBURG RD

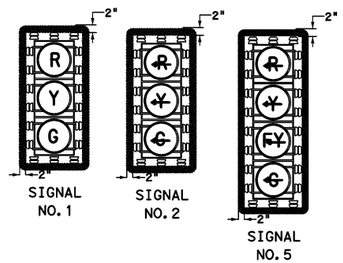
N. T. S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
F5-A	5,1,1	1	1185	S2,Y2
F5-B	1,1	0	925	S1
F5-C	1,1,1	1	1165	S2
F6-A	1,1,1	0	460	S2
F6-B	5,1,1	1	900	S2,Y2
F6-C	1,1	0	340	S1
F7-A	2,1,1	0	205	NO SIGN
F7-B	2,1,1	0	205	NO SIGN
F7-C	2,1,1	0	205	NO SIGN
F7-D	2,1,1	0	205	NO SIGN
F8-A	1,1	0	350	S4
F8-B	1,1	0	420	S3
F8-C	1,1	0	245	S4
F8-D	1,1	0	160	S3

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

R10-17T
(36"x42")
Y2

S1 **SH 46**

S2 **Loop 337**

S3 **Landa St**

S4 **Fredericksburg Rd**

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

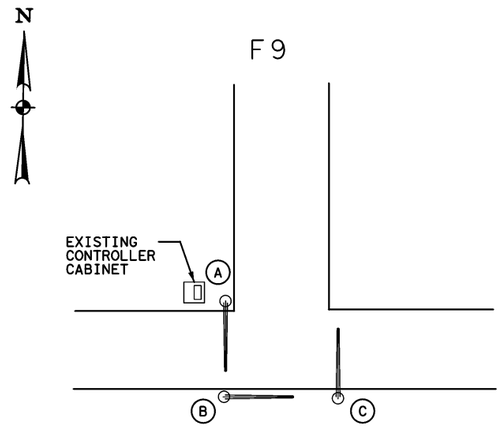
STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SIGNAL LAYOUTS LOCATIONS F5-F8 CSJ 0215-02-061 SH 46

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		41
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

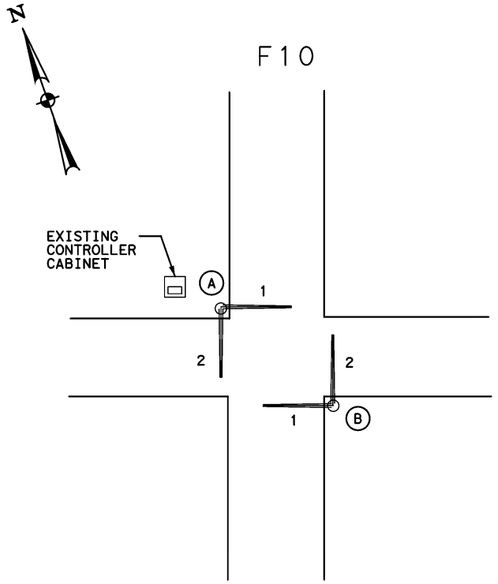
6/12/2024 3:07:44 PM

...\Location F Intersection Layouts-1.dgn



SH 46/LANDA ST AT LANDA PARK DR

N.T.S.



N SEGUIN AVE AT MILL ST

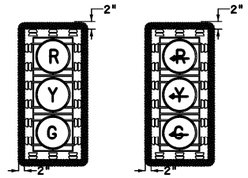
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
F9-A	1,1	0	95	S2
F9-B	1,1	0	95	S1
F9-C	2,1,1	0	145	S2
F10-A(1)	1,1	0	120	S3
F10-A(2)	1,1	0	105	S4
F10-B(1)	1,1	0	105	S3
F10-B(2)	1,1	0	105	S4

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

S1 **Landa St**

S2 **Landa Park Dr**

S3 **Seguin Ave**

S4 **Mill St**

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

SIGNAL LAYOUTS LOCATIONS F9-F10 CSJ 0215-02-061 SH 46

SHEET 3 OF 4

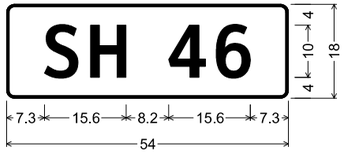
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		42
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:46 PM

...\Location F Intersection Layouts-1.dgn

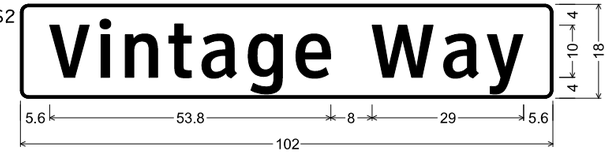
PROPOSED SIGN DETAILS LOCATION F1-F4 (SEE SHEET 1)

S1



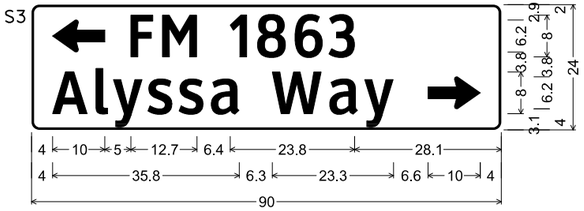
1.5" Radius, 0.5" Border, White on Green;
"SH 46", ClearviewHwy-3-W;

S2



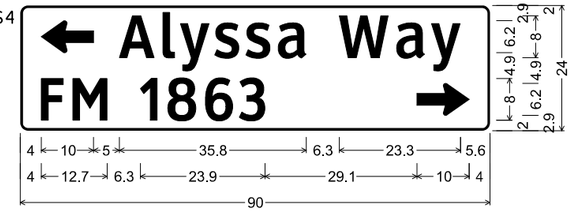
1.5" Radius, 0.5" Border, White on Green;
"Vintage Way", ClearviewHwy-3-W;

S3



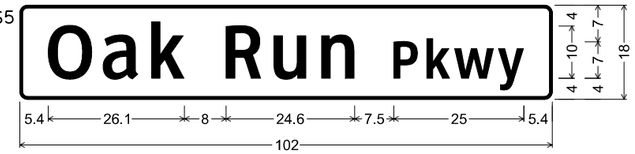
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"FM 1863", ClearviewHwy-3-W; "Alyssa Way", ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S4



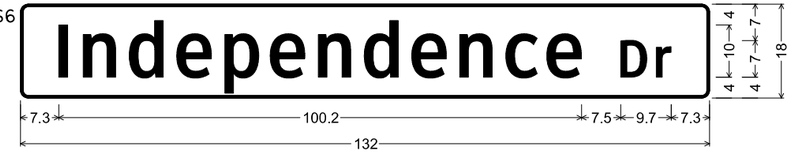
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"Alyssa Way", ClearviewHwy-3-W; "FM 1863", ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S5



1.5" Radius, 0.5" Border, White on Green;
"Oak Run", ClearviewHwy-3-W; "Pkwy", ClearviewHwy-3-W;

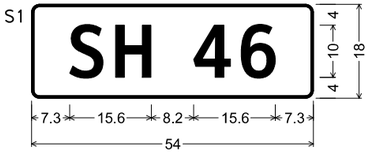
S6



1.5" Radius, 0.5" Border, White on Green;
"Independence", ClearviewHwy-3-W; "Dr", ClearviewHwy-3-W;

PROPOSED SIGN DETAILS LOCATION F5-F8 (SEE SHEET 2)

S1

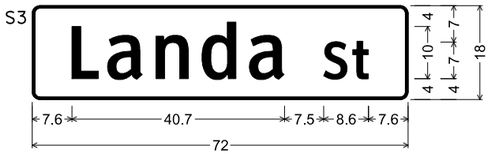


1.5" Radius, 0.5" Border, White on Green;
"SH 46", ClearviewHwy-3-W;

S2

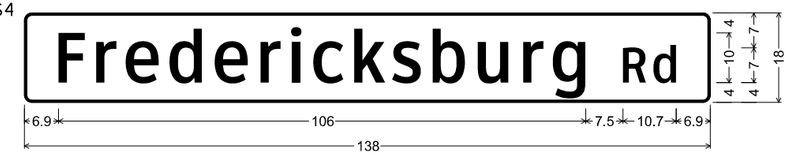
1.5" Radius, 0.5" Border, White on Green;
"Loop 337", ClearviewHwy-3-W;

S3

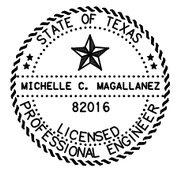


1.5" Radius, 0.5" Border, White on Green;
"Landa", ClearviewHwy-3-W;
"St", ClearviewHwy-3-W;

S4



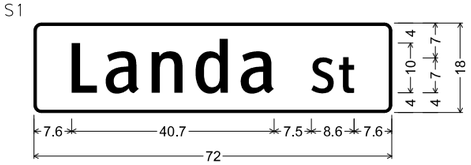
1.5" Radius, 0.5" Border, White on Green;
"Fredericksburg", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;



MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

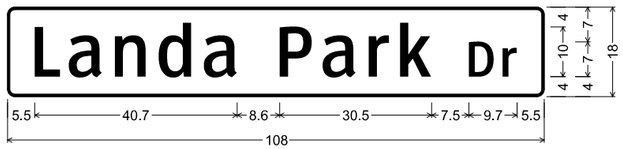
PROPOSED SIGN DETAILS LOCATION F9-F10 (SEE SHEET 3)

S1



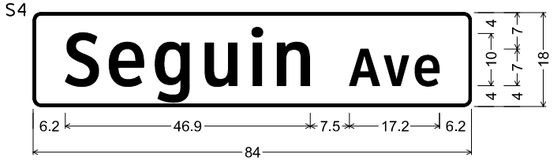
1.5" Radius, 0.5" Border, White on Green;
"Landa", ClearviewHwy-3-W;
"St", ClearviewHwy-3-W;

S2



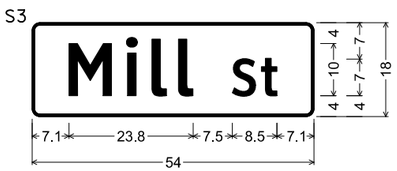
1.5" Radius, 0.5" Border, White on Green;
"Landa Park", ClearviewHwy-3-W; "Dr", ClearviewHwy-3-W;

S4



1.5" Radius, 0.5" Border, White on Green;
"Seguin", ClearviewHwy-3-W; "Ave", ClearviewHwy-3-W;

S3



1.5" Radius, 0.5" Border, White on Green;
"Mill", ClearviewHwy-3-W;
"St", ClearviewHwy-3-W;

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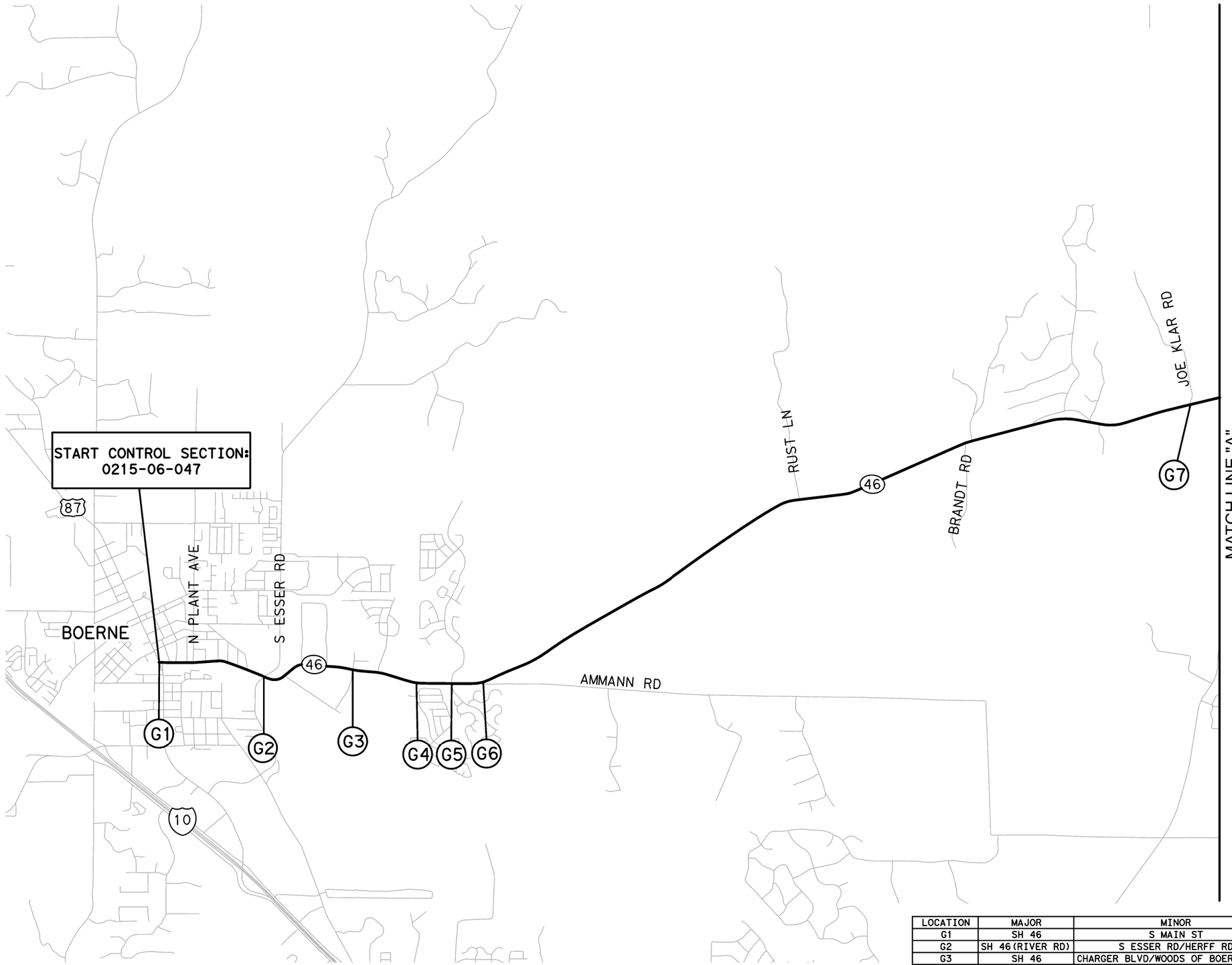
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

PROPOSED SIGN DETAILS LOCATIONS F1-F10 CSJ 0215-02-061 US 46

SHEET 4 OF 4

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		43
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



N

SCALE: 1" = 4000'
0 2000 4000

LEGEND

CONTROL SECTION LIMITS

(#) UPGRADE LOCATION

LOCATION	MAJOR	MINOR
G1	SH 46	S MAIN ST
G2	SH 46(RIVER RD)	S ESSER RD/HERFF RD
G3	SH 46	CHARGER BLVD/WOODS OF BOERNE BLVD
G4	SH 46	HERFF RANCH BLVD
G5	SH 46	COPPER CREEK BLVD/ESPERANZA BLVD
G6	SH 46	AMMANN RD
G7	SH 46	JOE KLAR RD

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TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

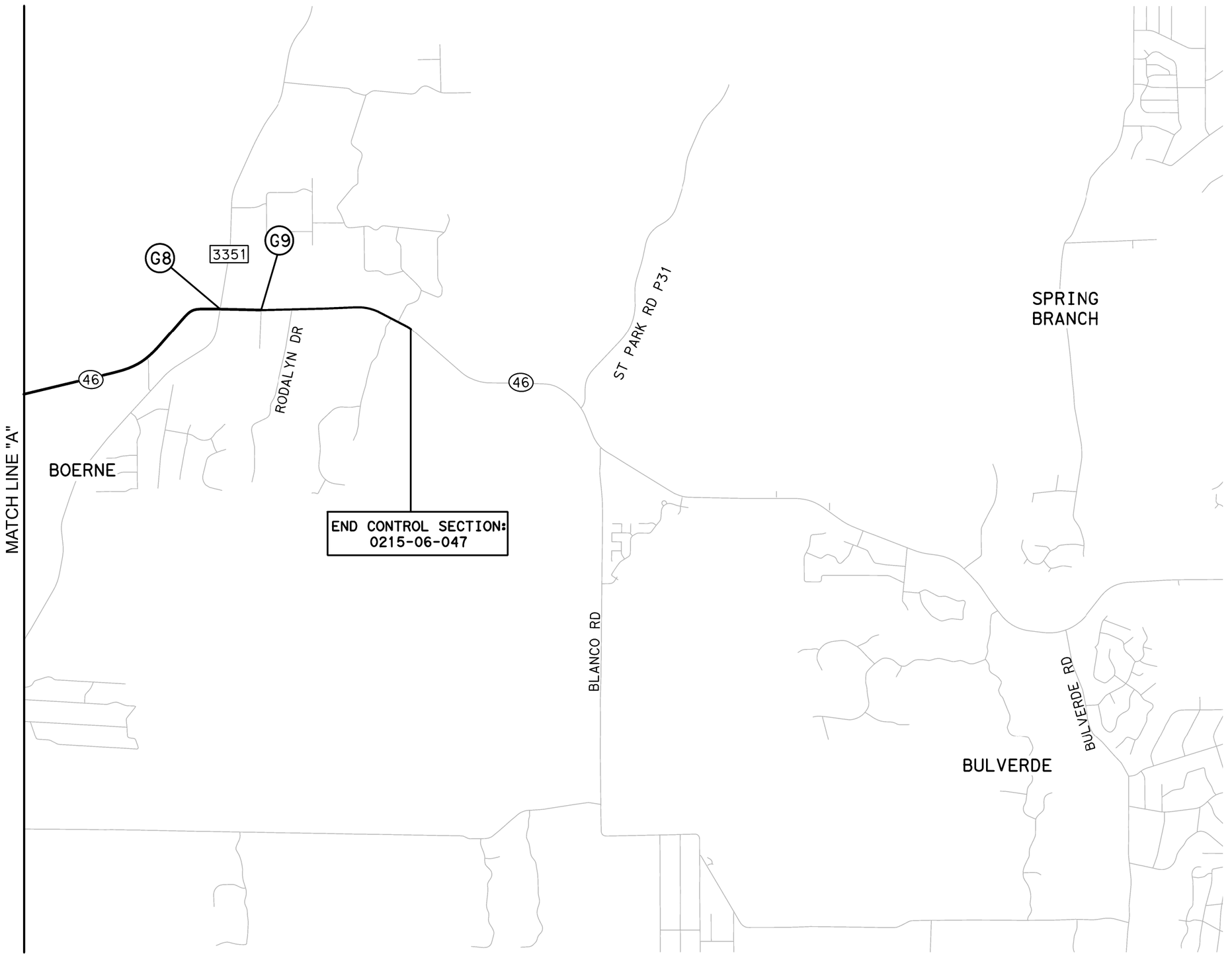
SH 46
SIGNAL UPGRADE MAP
LOCATIONS G1-G7
CSJ 0215-06-047

SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	44

STATE	DIST.	COUNTY
TEXAS	SAT	MEDINA, ETC.

CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



LOCATION	MAJOR	MINOR
G8	SH 46	FM 3351
G9	SH 46	VOSS PARKWAY

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8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

SH 46
SIGNAL UPGRADE MAP
LOCATIONS G8 & G9
CSJ 0215-06-047

SHEET 2 OF 2

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	45

STATE	DIST.	COUNTY
TEXAS	SAT	MEDINA, ETC.

CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

Bid Item Information			0215-06-047	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	18
610	7012	REPLACE LUMINAIRE W/LED (250W EQ)	EA	2
680	7011	INSTALL HWY TRF SIG (UPGRADE)	EA	1
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	57
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	21
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	65
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	30
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	61
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	18
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	63
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	9
682	7044	BACKPLATE W/REF BRDR (5 SEC) (VENT) ALUM	EA	1
682	7044	BACKPLATE W/REF BRDR (5 SEC) (VENT) ALUM "DOGHOUS	EA	2
682	7050	BACKPLATE W/REF BRDR (1 SEC) (VENT) ALUM	EA	12
684	7009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	980
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	7045
690	7009	REMOVAL OF CABLES	LF	8025
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	87
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	37
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	42

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

STATE OF TEXAS
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82016
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MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

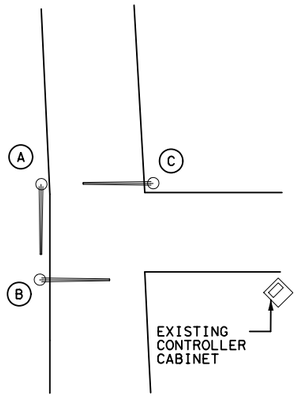
SH 46 SUMMARY OF QUANTITIES LOCATIONS G1-G9 CSJ 0215-06-047

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		46
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:07:54 PM
...\SH 46 SUMMARY OF QUANTITIES-G1-G9-CSJ 0215-06-047.dgn

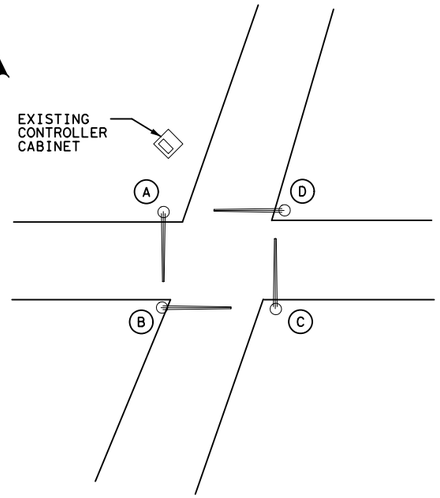
G1



SH 46 AT S MAIN ST

N.T.S.

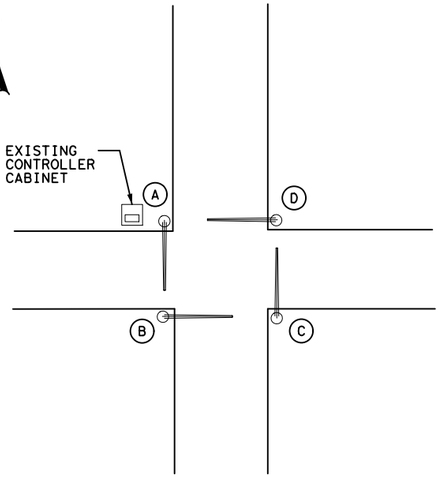
G2



SH 46 AT HERFF/S ESSER RD

N.T.S.

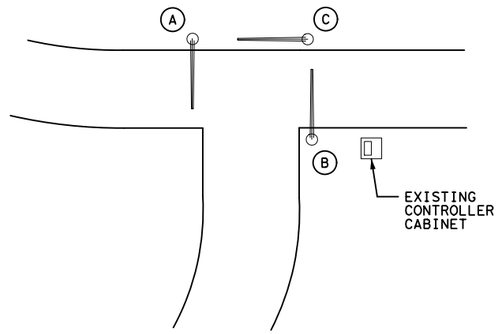
G3



SH 46 AT CHARGER BLVD/
WOODS OF BOERNE BLVD

N.T.S.

G4



SH 46 AT HERFF RANCH BLVD

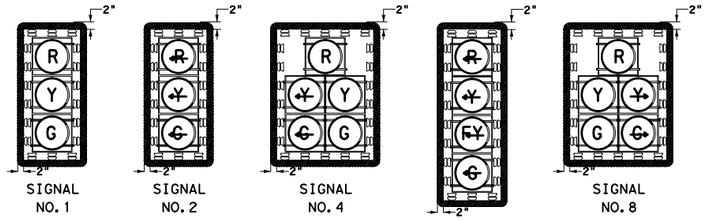
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
G1-A	1,1	0	130	S2
G1-B	4,1	0	105	S3,Y1
G1-C	1,1	0	130	S3
G2-A	5,1,1	0	230	S6,Y2
G2-B	5,1,1	0	400	S4,Y2
G2-C	5,1,1	0	495	S7,Y2
G2-D	2,1,8	1	220	S5,Y10
G3-A	5,1,1	0	220	S8,Y2
G3-B	5,1,1	0	205	S1,Y2
G3-C	5,1,1	0	220	S9,Y2
G3-D	5,1,1	0	190	S1,Y2
G4-A	5,1,1	0	190	S10,Y2
G4-B	1,1	0	100	S10
G4-C	1,1	0	110	S1

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

R10-12 (30"x36") Y1

R10-17T (36"x42") Y2

R10-10L (30"x36") Y10

S1 SH 46

S2 S XXX Main St XXX

S3 River Rd XXX

S4 E XXX River Rd W XXX

S5 W XXX River Rd XXX

S6 ← S XXX Herff Rd
Esser N XXX Rd →

S7 ← N XXX Esser Rd
Herff S XXX Rd →

S8 ← Charger Blvd
Woods of Boerne Blvd →

S9 ← Woods of Boerne Blvd
Charger Blvd →

S10 Herff Ranch Blvd

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

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TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

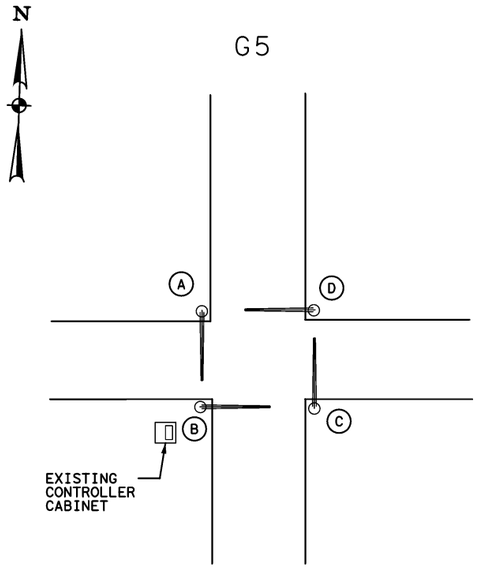
SIGNAL LAYOUTS LOCATIONS G1-G4 CSJ 0215-06-047 SH 46

SHEET 1 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		47
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

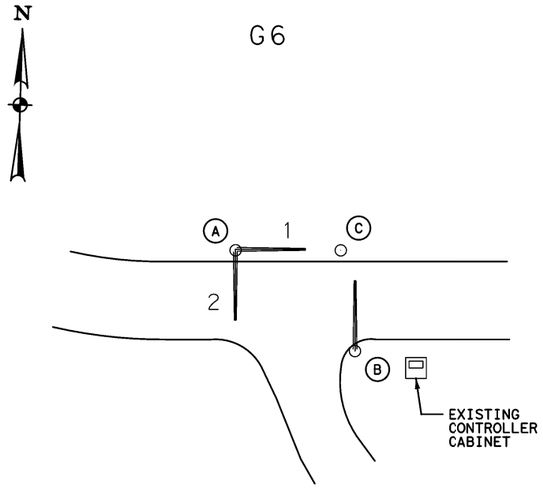
6/18/2024 3:21:26 PM

...\Location G Intersection layouts-1.dgn



SH 46 AT ESPERANZA BLVD/
COPPER CREEK BLVD

N.T.S.



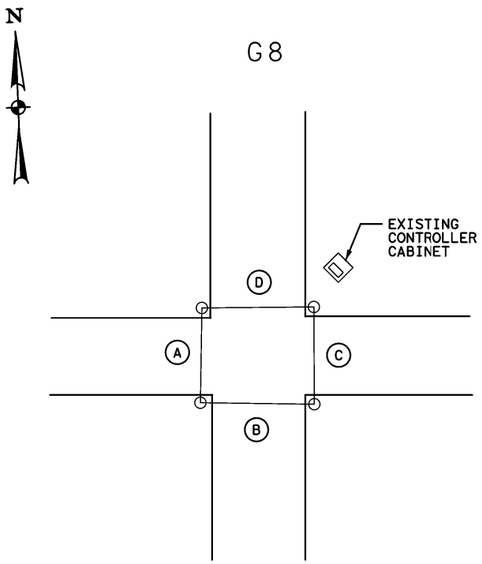
SH 46 AT AMMANN RD

N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
G5-A	2,1,1	0	200	S2,Y10
G5-B	1,1	0	110	S1,Y1
G5-C	2,2,1,1	0	265	S3
G5-D	1,1	0	110	S1,Y1
G6-A(1)	1,1	0	120	S1
G6-A(2)	5,1,1	0	190	S4,Y2
G6-B	1,1	0	130	S4
G6-C	7	0	25	NO SIGN
G8-A	2,1,1	0	820	S5
G8-B	2,1,1	0	775	S1
G8-C	2,1,1	1	460	S5
G8-D	2,1,1	0	490	S1
G9-A	2,1,1	0	205	S6
G9-B	1,1	0	85	S6
G9-C	1,1	0	115	S1

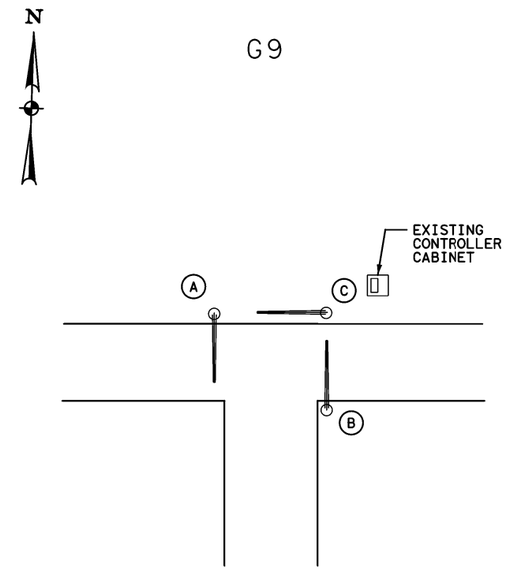
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET



SH 46 AT FM 3351

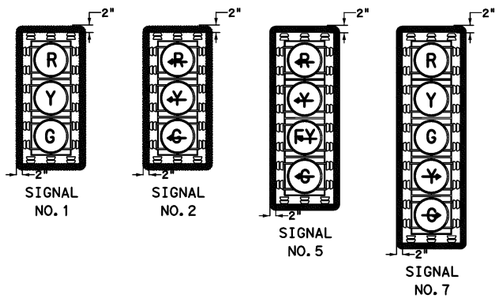
N.T.S.



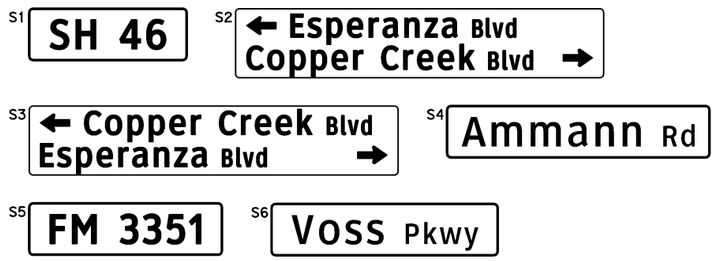
SH 46 AT VOSS PKWY

N.T.S.

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



STATE OF TEXAS
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MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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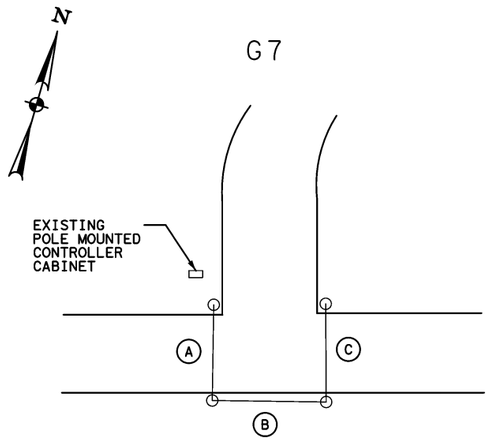
SIGNAL LAYOUTS
LOCATIONS G5-G6, G8-G9
CSJ 0215-06-047
SH 46

SHEET 2 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		48
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



SH 46 AT JOE KLAR RD

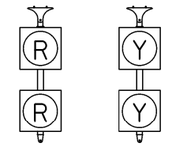
N.T.S.

FLASHER POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	4C/#12	SIGN NO.
G7-A	11,11	0	200	NO SIGN
G7-B	10,10	0	390	NO SIGN
G7-C	11,11	0	390	NO SIGN

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



SIGNAL NO. 10 SIGNAL NO. 11

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FLASHER LAYOUTS LOCATIONS G7 CSJ 0215-06-047 SH 46

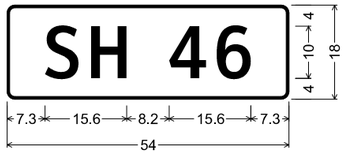
SHEET 3 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		49
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:01 PM
...\Location G Intersection layouts-1.dgn

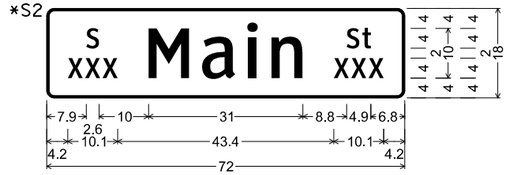
PROPOSED SIGN DETAILS LOCATION G1-G4 (SEE SHEET 1)

S1



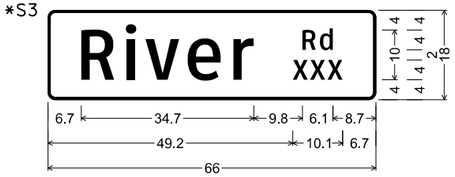
1.5" Radius, 0.5" Border, White on Green;
"SH 46", ClearviewHwy-3-W;

*S2



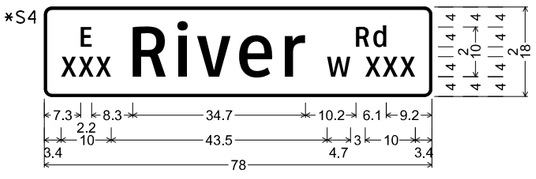
1.5" Radius, 0.5" Border, White on Green;
"S", ClearviewHwy-3-W; "XXX", ClearviewHwy-3-W;
"Main", ClearviewHwy-3-W; "St", ClearviewHwy-3-W;
"XXX", ClearviewHwy-3-W;

*S3



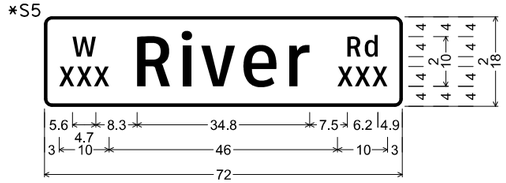
1.5" Radius, 0.5" Border, White on Green;
"River", ClearviewHwy-3-W;
"Rd", ClearviewHwy-3-W;
"XXX", ClearviewHwy-3-W;

*S4



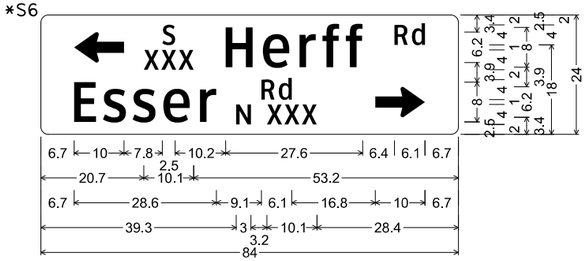
1.5" Radius, 0.5" Border, White on Green;
"E", ClearviewHwy-3-W; "XXX", ClearviewHwy-3-W;
"River", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;
"W XXX", ClearviewHwy-3-W;

*S5



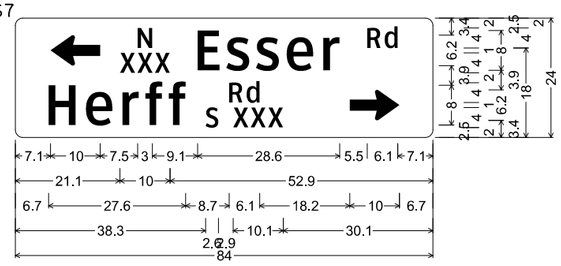
1.5" Radius, 0.5" Border, White on Green;
"W", ClearviewHwy-3-W; "XXX", ClearviewHwy-3-W;
"River", ClearviewHwy-3-W;
"Rd", ClearviewHwy-3-W; "XXX", ClearviewHwy-3-W;

*S6



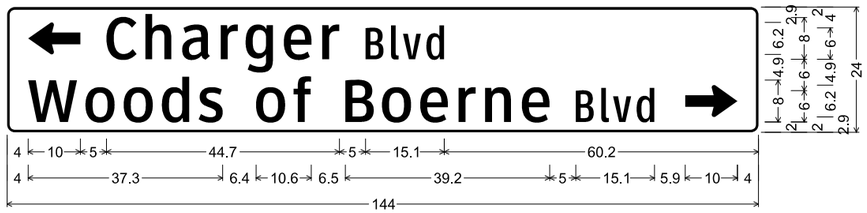
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"S", ClearviewHwy-3-W; "XXX", ClearviewHwy-3-W;
"Herff", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;
"Esser", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;
"N XXX", ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

*S7



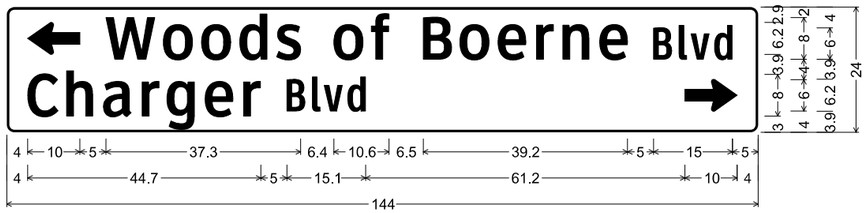
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"N", ClearviewHwy-3-W; "XXX", ClearviewHwy-3-W;
"Esser", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;
"Herff", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;
"S XXX", ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S8



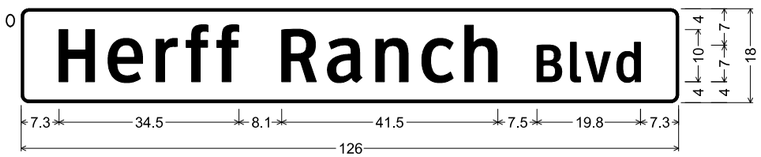
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°; "Charger", ClearviewHwy-3-W; "Blvd", ClearviewHwy-2-W;
"Woods of Boerne", ClearviewHwy-3-W; "Blvd", ClearviewHwy-2-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S9



1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°; "Woods of Boerne", ClearviewHwy-3-W;
"Blvd", ClearviewHwy-2-W; "Charger", ClearviewHwy-3-W; "Blvd", ClearviewHwy-2-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S10



1.5" Radius, 0.5" Border, White on Green;
"Herff Ranch", ClearviewHwy-3-W; "Blvd", ClearviewHwy-3-W;

* CONTRACTOR TO VERIFY BLOCK NUMBERS ON SITE PRIOR TO ORDERING SIGNS

STATE OF TEXAS
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MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

PROPOSED SIGN DETAILS
LOCATIONS G1-G4
CSJ 0215-06-047
US 46

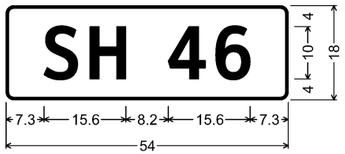
SHEET 4 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		50
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:21:42 PM
...\Location G Intersection Layouts-1.dgn

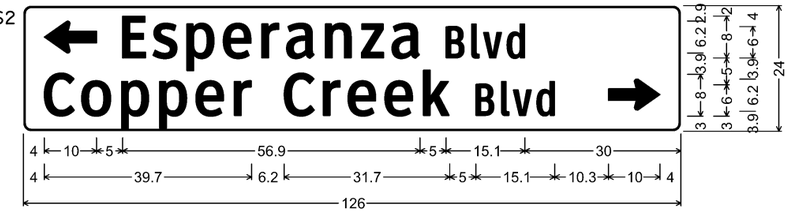
PROPOSED SIGN DETAILS LOCATION G5-G6,G8-G9 (SEE SHEET 2)

S1



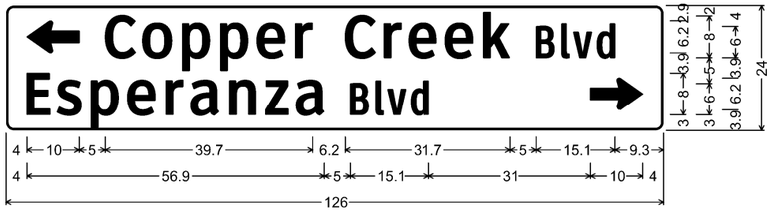
1.5" Radius, 0.5" Border, White on Green;
"SH 46", ClearviewHwy-3-W;

S2



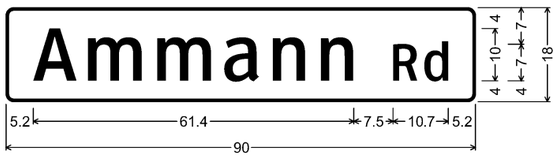
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°; "Esperanza", ClearviewHwy-3-W;
"Blvd", ClearviewHwy-2-W; "Copper Creek", ClearviewHwy-3-W; "Blvd", ClearviewHwy-2-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S3



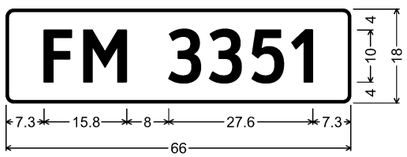
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°; "Copper Creek", ClearviewHwy-3-W;
"Blvd", ClearviewHwy-2-W; "Esperanza", ClearviewHwy-3-W; "Blvd", ClearviewHwy-2-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S4



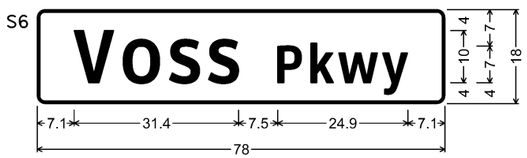
1.5" Radius, 0.5" Border, White on Green;
"Ammann", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

S5



1.5" Radius, 0.5" Border, White on Green;
"FM 3351", ClearviewHwy-3-W;

S6



1.5" Radius, 0.5" Border, White on Green;
"Voss", ClearviewHwy-3-W; "Pkwy", ClearviewHwy-3-W;

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TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

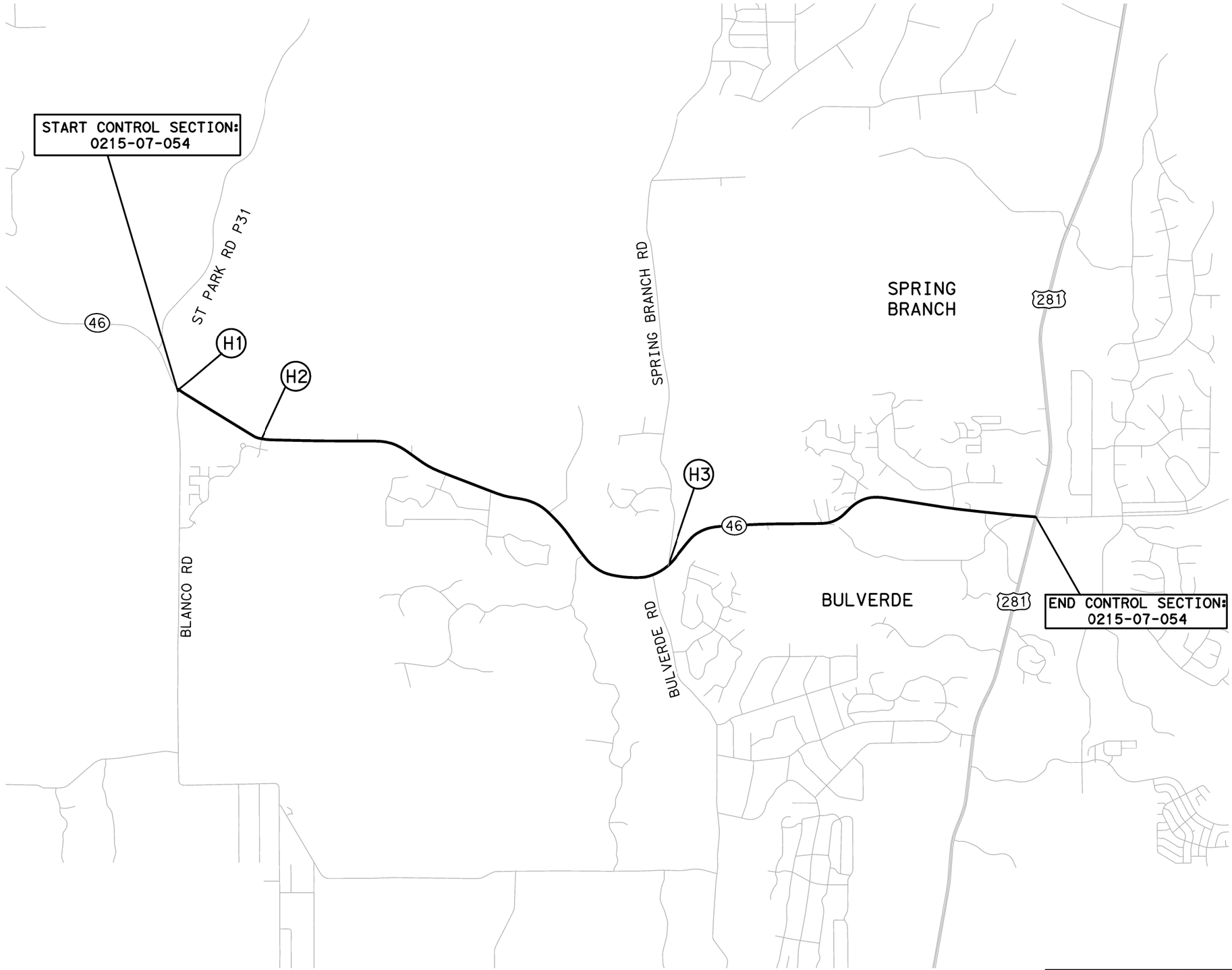
PROPOSED SIGN DETAILS LOCATIONS G5-G9 CSJ 0215-06-047 US 46

SHEET 5 OF 5

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	51

STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:05 PM
...\Location G Intersection layouts-1.dgn



N

SCALE: 1" = 4000'

0 2000 4000

LEGEND

CONTROL SECTION LIMITS

(#) UPGRADE LOCATION

LOCATION	MAJOR	MINOR
H1	SH 46	BLANCO RD
H2	SH 46	LOBO PK
H3	SH 46	SPRING BRANCH RD

STATE OF TEXAS
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TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

SH 46
SIGNAL UPGRADE MAP
LOCATIONS H1-H3
CSJ 0215-07-054

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		52
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

...\WA5 Intersection Upgrade\Location Summary H.dgn 6/12/2024 3:08:08 PM

Bid Item Information			0215-07-054	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	6
610	7012	REPLACE LUMINAIRE W/LED (250W EQ)	EA	6
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	18
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	2
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	26
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	2
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	22
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	2
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	20
682	7050	BACKPLATE W/REF BRDR (1 SEC) (VENT) ALUM	EA	12
684	7009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	1385
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	3145
690	7009	REMOVAL OF CABLES	LF	4530
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	32
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	8
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	7

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

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8131 JACKRABBIT RD. Houston, TX. 77095
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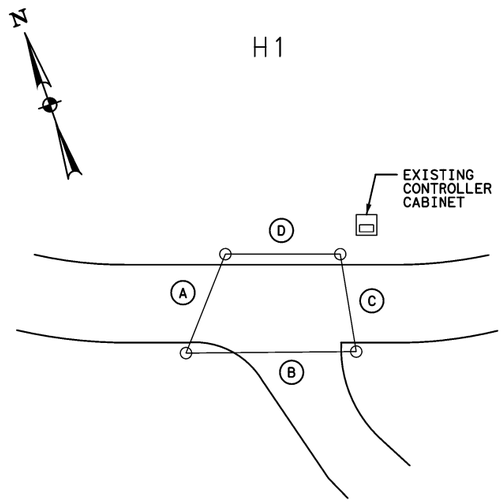
SH 46 SUMMARY OF QUANTITIES LOCATIONS H1-H3 CSJ 0215-07-054

SHEET 1 OF 1

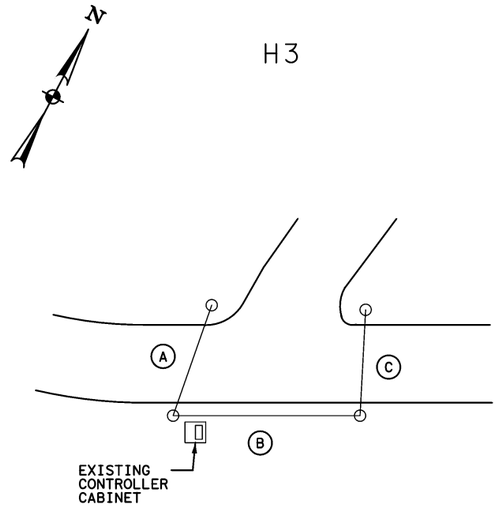
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		53
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

...\SH 46 SUMMARY OF QUANTITIES-H1-H7-CSJ 0215-07-054.dgn 6/12/2024 3:08:10 PM



SH 46 AT BLANCO RD

N.T.S.



SH 46 AT SPRING BRANCH RD

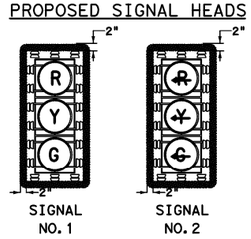
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
H1-A	2,1,1,1	1	800	S2
H1-B	1,1,1	0	715	S1
H1-C	1,1,1	1	380	S2
H1-D	1,1	0	200	S1
H3-A	1,1,1	1	255	S3
H3-B	1,1	1	150	S1
H3-C	2,1,1	0	645	S3

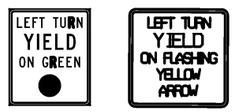
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



S1 SH 46

S2 Blanco Rd

S3 Spring Branch Rd

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MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

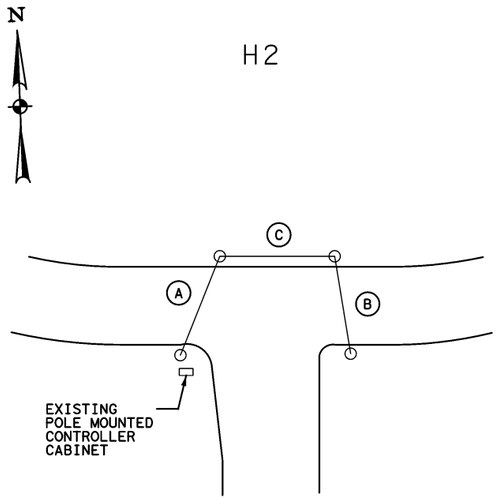
SIGNAL LAYOUTS LOCATIONS H1, H3 CSJ 0215-07-054 SH 46

SHEET 1 OF 3

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		54
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:12 PM

...\Location H Intersection layouts-1.dgn



SH 46 AT LOBO PK

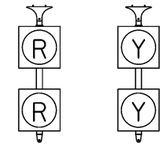
N.T.S.

FLASHER POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	4C/#12	SIGN NO.
H2-A	11,11	0	245	NO SIGN
H2-B	11,11	1	685	NO SIGN
H2-C	10,10	1	455	NO SIGN

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



SIGNAL NO. 10 | SIGNAL NO. 11

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MC Magallanez

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8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

FLASHER LAYOUTS
LOCATIONS H2
CSJ 0215-07-054
SH 46

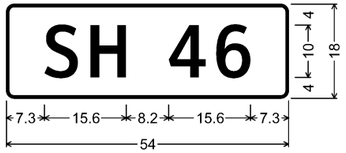
SHEET 2 OF 3

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		55
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:14 PM
...\Location H Intersection layouts-1.dgn

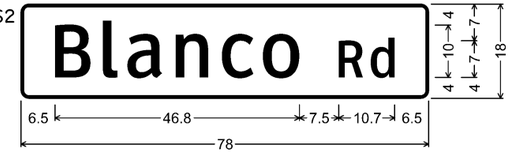
PROPOSED SIGN DETAILS LOCATION H1-H3 (SEE SHEET 1)

S1



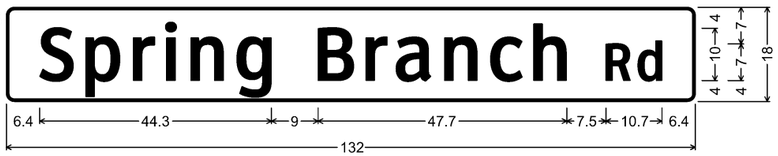
1.5" Radius, 0.5" Border, White on Green;
"SH 46", ClearviewHwy-3-W;

S2



1.5" Radius, 0.5" Border, White on Green;
"Blanco", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

S3



1.5" Radius, 0.5" Border, White on Green;
"Spring Branch", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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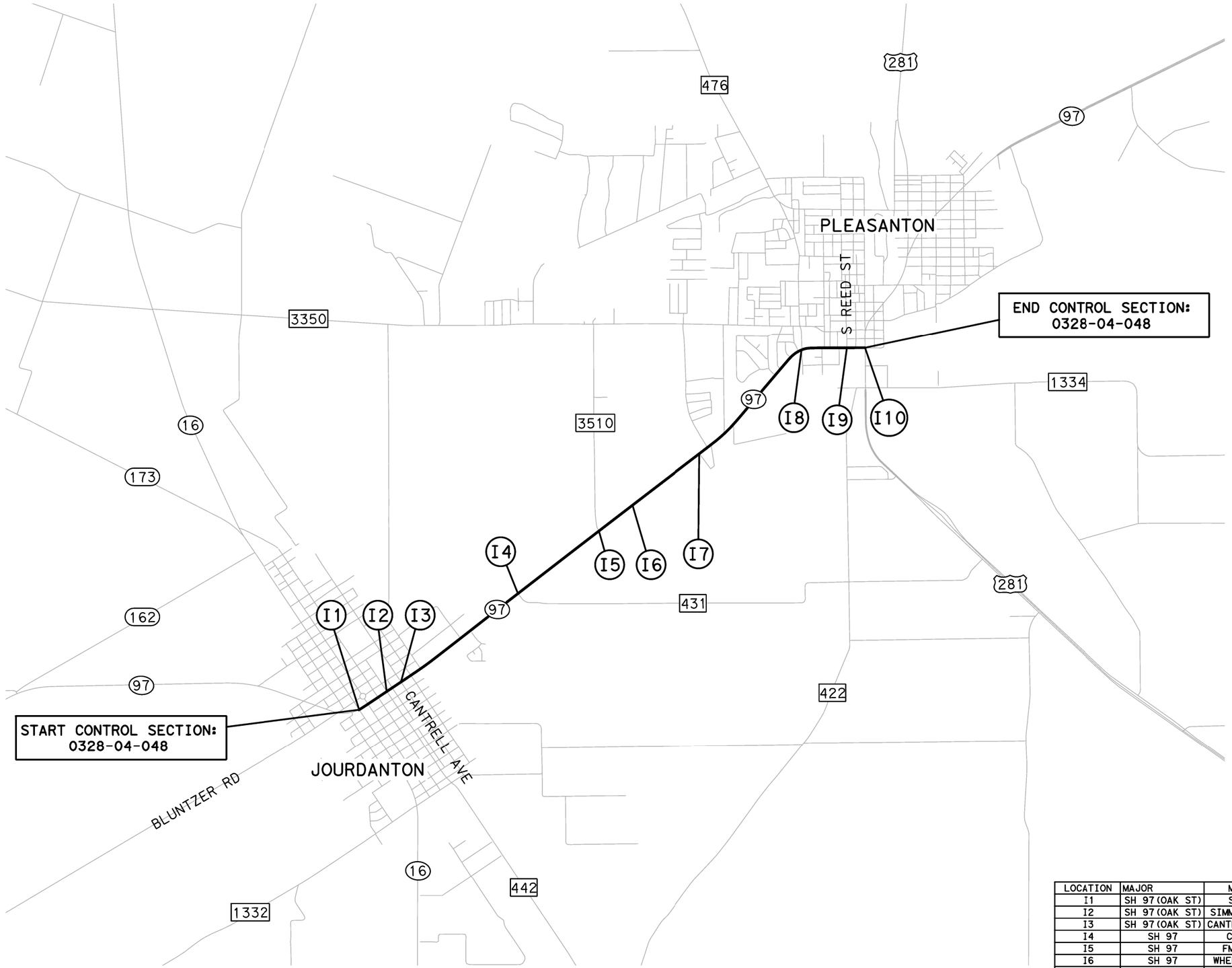
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

PROPOSED SIGN DETAILS LOCATIONS H1-H3 CSJ 0215-07-054 SH 46

SHEET 3 OF 3

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		56
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



LOCATION	MAJOR	MINOR
I1	SH 97(OAK ST)	SH 16
I2	SH 97(OAK ST)	SIMMONS AVE
I3	SH 97(OAK ST)	CANTRELL AVE
I4	SH 97	CR 431
I5	SH 97	FM 3510
I6	SH 97	WHEELER DR
I7	SH 97	JR BLVD
I8	SH 97	BRYANT ST
I9	SH 97	REED ST
I10	SH 97	US 281

STATE OF TEXAS
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MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SH 97
SIGNAL UPGRADE MAP
LOCATIONS I1-I10
CSJ 0328-04-048

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		57
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

Bid Item Information			0328-04-048	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	20
610	7012	REPLACE LUMINAIRE W/LED (250W EQ)	EA	7
680	7011	INSTALL HWY TRF SIG (UPGRADE)	EA	6
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	71
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	28
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	79
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	33
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	79
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	20
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	71
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	19
682	7044	BACKPLATE W/REF BRDR (5 SEC) (VENT) ALUM "DOGHOUS	EA	1
682	7050	BACKPLATE W/REF BRDR (1 SEC) (VENT) ALUM	EA	16
684	7009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	965
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	8280
690	7009	REMOVAL OF CABLES	LF	9245
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	107
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	47
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	51

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

STATE OF TEXAS
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82016
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MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.		REVISION	APPROV.

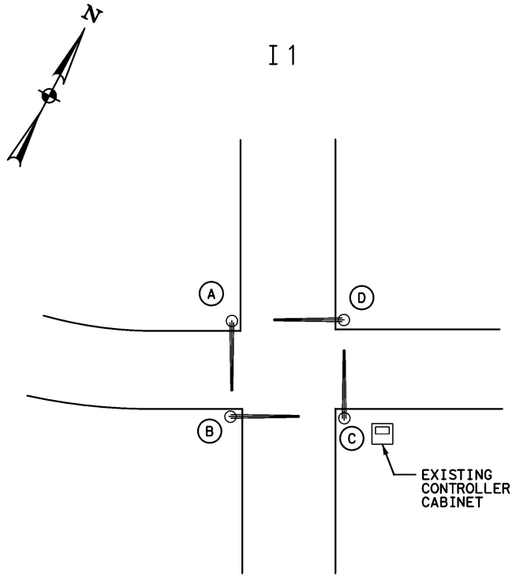
STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

SH 97 SUMMARY OF QUANTITIES LOCATIONS I1-I10 CSJ 0328-04-048

SHEET 1 OF 1

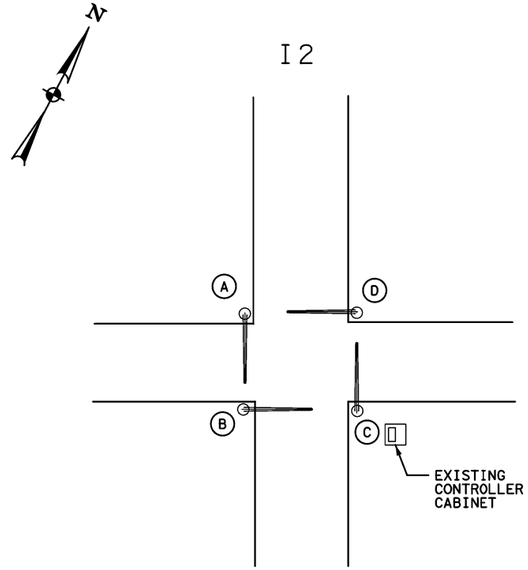
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		58
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:20 PM
...\SH 97 SUMMARY OF QUANTITIES-I1-I9-CSJ 0328-04-048.dgn



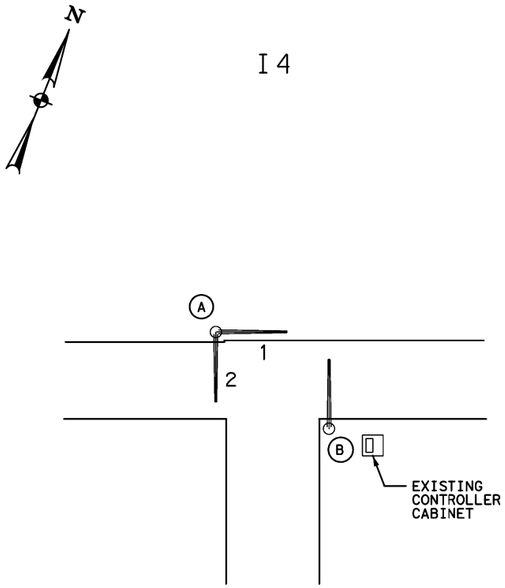
SH 97 AT SH 16

N.T.S.



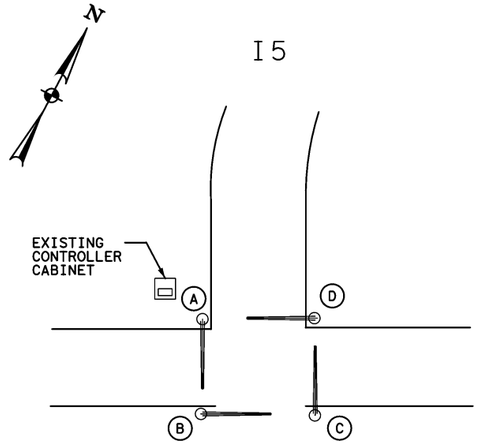
SH 97 AT SIMMONS AVE

N.T.S.



SH 97 AT CR 431

N.T.S.



SH 97 AT FM 3510

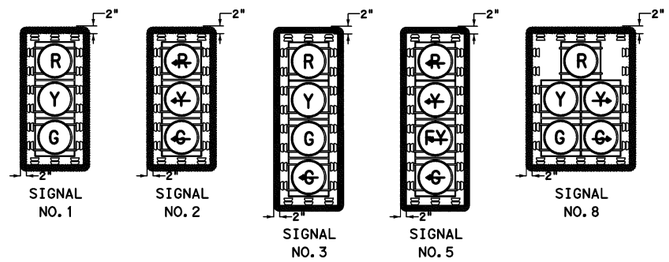
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
I1-A	2,3,1	0	220	S2,Y11
I1-B	5,1,1	0	335	S1,Y2
I1-C	2,1,1	0	220	S2
I1-D	5,1,8	0	350	S1,Y2
I2-A	5,1,1	0	400	S3,Y2
I2-B	1,1	1	130	S1
I2-C	5,1,1	0	245	S3,Y2
I2-D	1,1	1	140	S1
I4-A2	2,1,1	1	220	S4,Y10
I4-B	1,1	1	130	S4
I4-A1	1,1	0	130	S1
I5-A	2,1,1	0	220	S5
I5-B	1,1	1	140	S1
I5-C	2,1,1	0	220	S5
I5-D	1,1	1	120	S1

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS

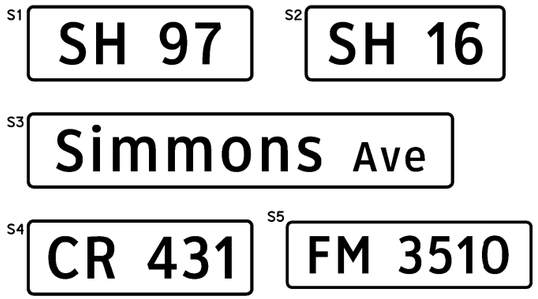


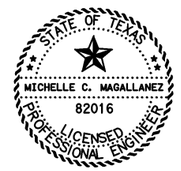
PROPOSED SIGN DETAILS

R10-17T (36"x42") Y2

R10-10L (30"x36") Y10

R3-8 (30"x30") Y11





MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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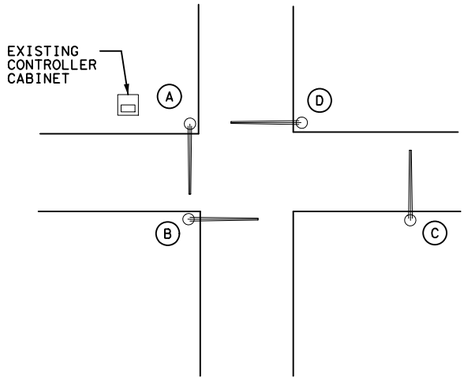
STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

SIGNAL LAYOUTS
LOCATIONS I1-I2, I4-I5
CSJ 0328-04-048
SH 97

SHEET 1 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		59
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

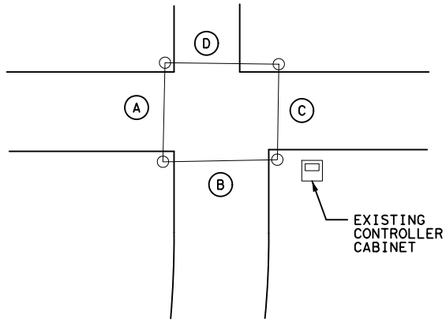
I6



SH 97 AT WHEELER DR

N.T.S.

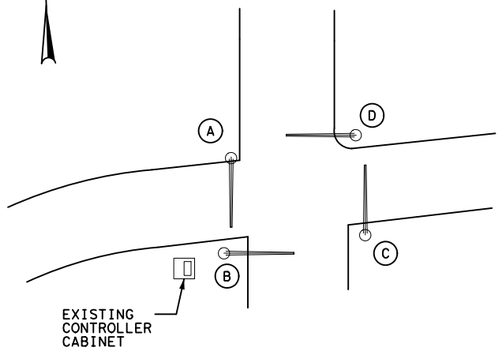
I7



SH 97 AT JR BLVD

N.T.S.

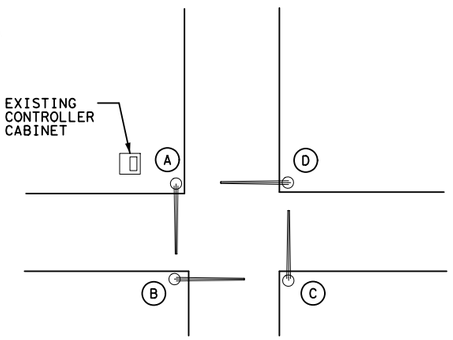
I8



SH 97 AT BRYANT ST

N.T.S.

I9



SH 97 AT REED ST

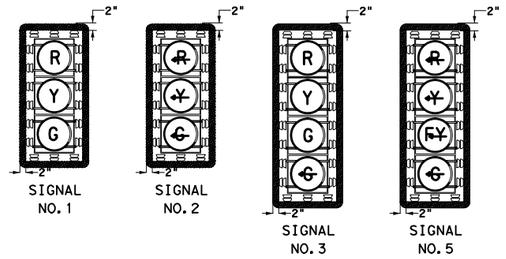
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
I6-A	5,1,1	0	280	S2,Y2
I6-B	1,1	0	120	S1
I6-C	5,1,1	0	465	S2,Y2
I6-D	1,1	0	130	S1,Y8
I7-A	2,1,1	0	615	S3
I7-B	3,1	1	285	S1
I7-C	2,1,1	0	285	S3
I7-D	3,1	0	325	S1
I8-A	5,1,1,1	0	340	S6,Y2
I8-B	1,1	0	110	S4
I8-C	5,1,1	0	330	S5,Y2
I8-D	1,1	0	110	S4
I9-A	5,1,1	0	195	S7,Y2
I9-B	3,1	0	105	S1
I9-C	5,1,1	0	330	S7,Y2
I9-D	3,1	0	105	S1

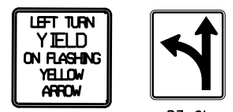
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



R10-17T
(36"x42")
Y2

R3-6L
(30"x36")
Y8

S1 SH 97

S2 Wheeler Dr

S3 Jr Blvd

S4 W XXX Oaklawn Dr XXX

S5 N Bryant St XXX

S6 S Bryant St XXX

S7 Reed St

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED
PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD.
Houston, TX. 77095
PHONE: (713) 828-4742

SIGNAL LAYOUTS
LOCATIONS I6-I9
CSJ 0328-04-048
SH 97

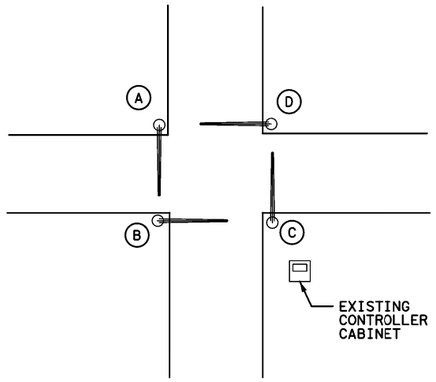
SHEET 2 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		60
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:23:48 PM

...\Location I Intersection layouts-1.dgn

I10



SH 97/OAKLAWN RD AT
US 281/S MAIN ST

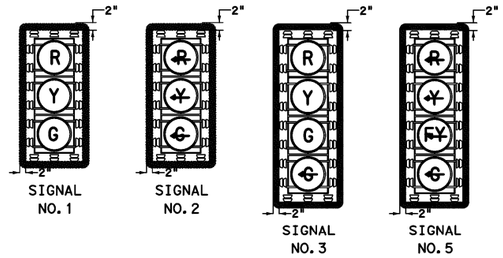
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
I10-A	3,1	0	105	S3
I10-B	5,1,1	0	295	S2,Y2
I10-C	2,3,1	0	190	S3,Y11
I10-D	5,1,1	0	340	S1,Y2

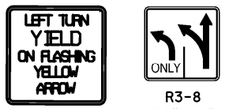
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



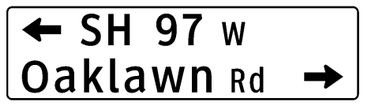
PROPOSED SIGN DETAILS



R10-17T
(36"x42")
Y2

R3-8
(30"x30")
Y11

S1



S2

S3

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SIGNAL LAYOUTS
LOCATIONS I10
CSJ 0328-04-048
SH 97

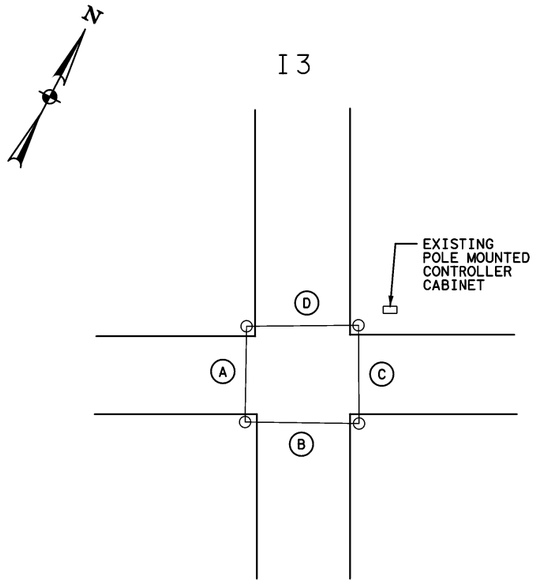
SHEET 3 OF 5

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	61

STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:26 PM

...\Location I Intersection layouts-1.dgn

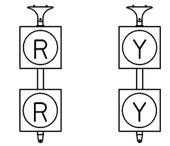


SH 97 AT CANTRELL AVE

N.T.S.

FLASHER POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	4C/#12	SIGN NO.
I3-A	11,11	0	265	NO SIGN
I3-B	10,10	0	360	NO SIGN
I3-C	11,11	0	200	NO SIGN
I3-D	10,10	0	140	NO SIGN

PROPOSED SIGNAL HEADS



SIGNAL NO. 10 SIGNAL NO. 11

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

FLASHER LAYOUTS LOCATIONS I3 CSJ 0328-04-048 SH 97

SHEET 4 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		62
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

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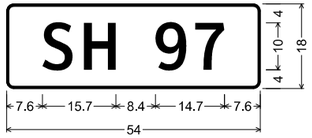
...\Location I Intersection layouts-1.dgn

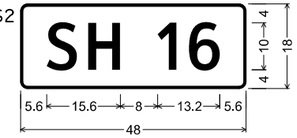
PROPOSED SIGN DETAILS LOCATION I1-I2, I4-I5 (SEE SHEET 1)

S1



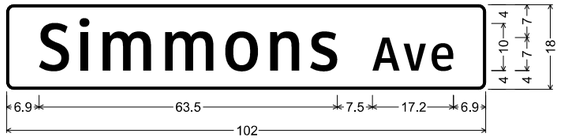
1.5" Radius, 0.5" Border, White on Green;
"SH 97", ClearviewHwy-3-W;

S2



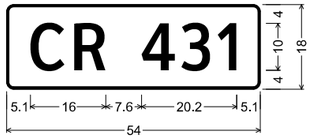
1.5" Radius, 0.5" Border, White on Green;
"SH 16", ClearviewHwy-3-W;

S3



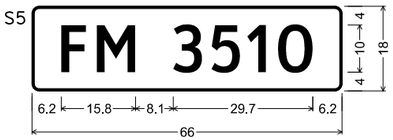
1.5" Radius, 0.5" Border, White on Green;
"Simmons", ClearviewHwy-3-W; "Ave", ClearviewHwy-3-W;

S4



1.5" Radius, 0.5" Border, White on Green;
"CR 431", ClearviewHwy-3-W;

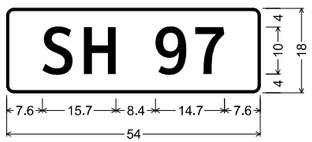
S5



1.5" Radius, 0.5" Border, White on Green;
"FM 3510", ClearviewHwy-3-W;

PROPOSED SIGN DETAILS LOCATION I6-I9 (SEE SHEET 2)

S1

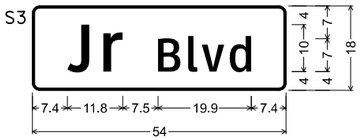


1.5" Radius, 0.5" Border, White on Green;
"SH 97", ClearviewHwy-3-W;

S2

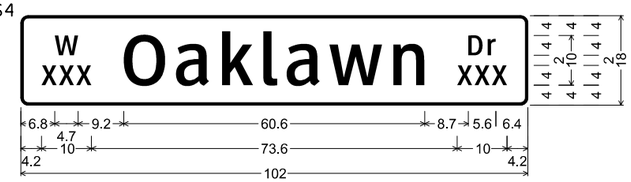
1.5" Radius, 0.5" Border, White on Green;
"Wheeler", ClearviewHwy-3-W; "Dr", ClearviewHwy-3-W;

S3



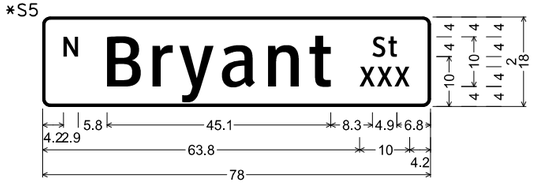
1.5" Radius, 0.5" Border, White on Green;
"Jr", ClearviewHwy-3-W;
"Blvd", ClearviewHwy-3-W;

*S4



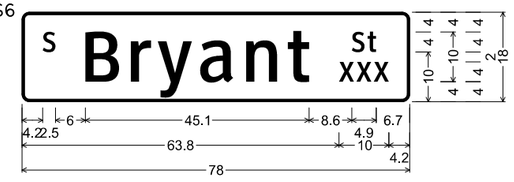
1.5" Radius, 0.5" Border, White on Green;
"W", ClearviewHwy-3-W; "XXX", ClearviewHwy-3-W;
"Oaklawn", ClearviewHwy-3-W; "Dr", ClearviewHwy-3-W;
"XXX", ClearviewHwy-3-W;

*S5



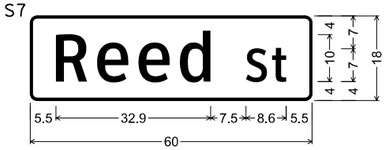
1.5" Radius, 0.5" Border, White on Green;
"N", ClearviewHwy-3-W; "Bryant", ClearviewHwy-3-W;
"St", ClearviewHwy-3-W; "XXX", ClearviewHwy-3-W;

*S6



1.5" Radius, 0.5" Border, White on Green;
"S", ClearviewHwy-3-W; "Bryant", ClearviewHwy-3-W;
"St", ClearviewHwy-3-W; "XXX", ClearviewHwy-3-W;

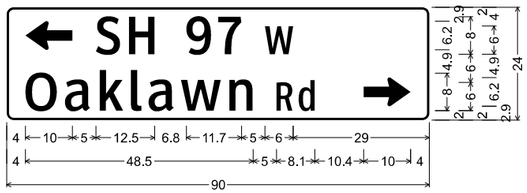
S7



1.5" Radius, 0.5" Border, White on Green;
"Reed", ClearviewHwy-3-W; "St", ClearviewHwy-3-W;

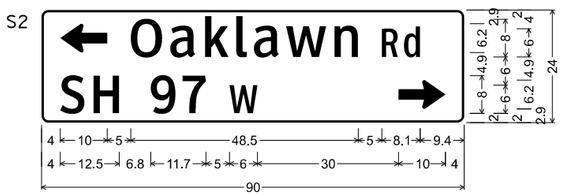
PROPOSED SIGN DETAILS LOCATION I10 (SEE SHEET 3)

S1



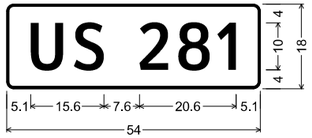
1.5" Radius, No border, White on Green; Standard Arrow Custom 10.0" X 6.1" 180°;
"SH 97", ClearviewHwy-3-W; "W", ClearviewHwy-2-W; "Oaklawn", ClearviewHwy-3-W;
"Rd", ClearviewHwy-2-W; Standard Arrow Custom 10.0" X 6.1" 0°;

S2



1.5" Radius, No border, White on Green; Standard Arrow Custom 10.0" X 6.1" 180°;
"Oaklawn", ClearviewHwy-3-W; "Rd", ClearviewHwy-2-W; "SH 97", ClearviewHwy-3-W;
"W", ClearviewHwy-2-W; Standard Arrow Custom 10.0" X 6.1" 0°;

S3



1.5" Radius, 0.5" Border, White on Green;
"US 281", ClearviewHwy-3-W;

* CONTRACTOR TO VERIFY BLOCK NUMBERS ON SITE PRIOR TO ORDERING SIGNS

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED
PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

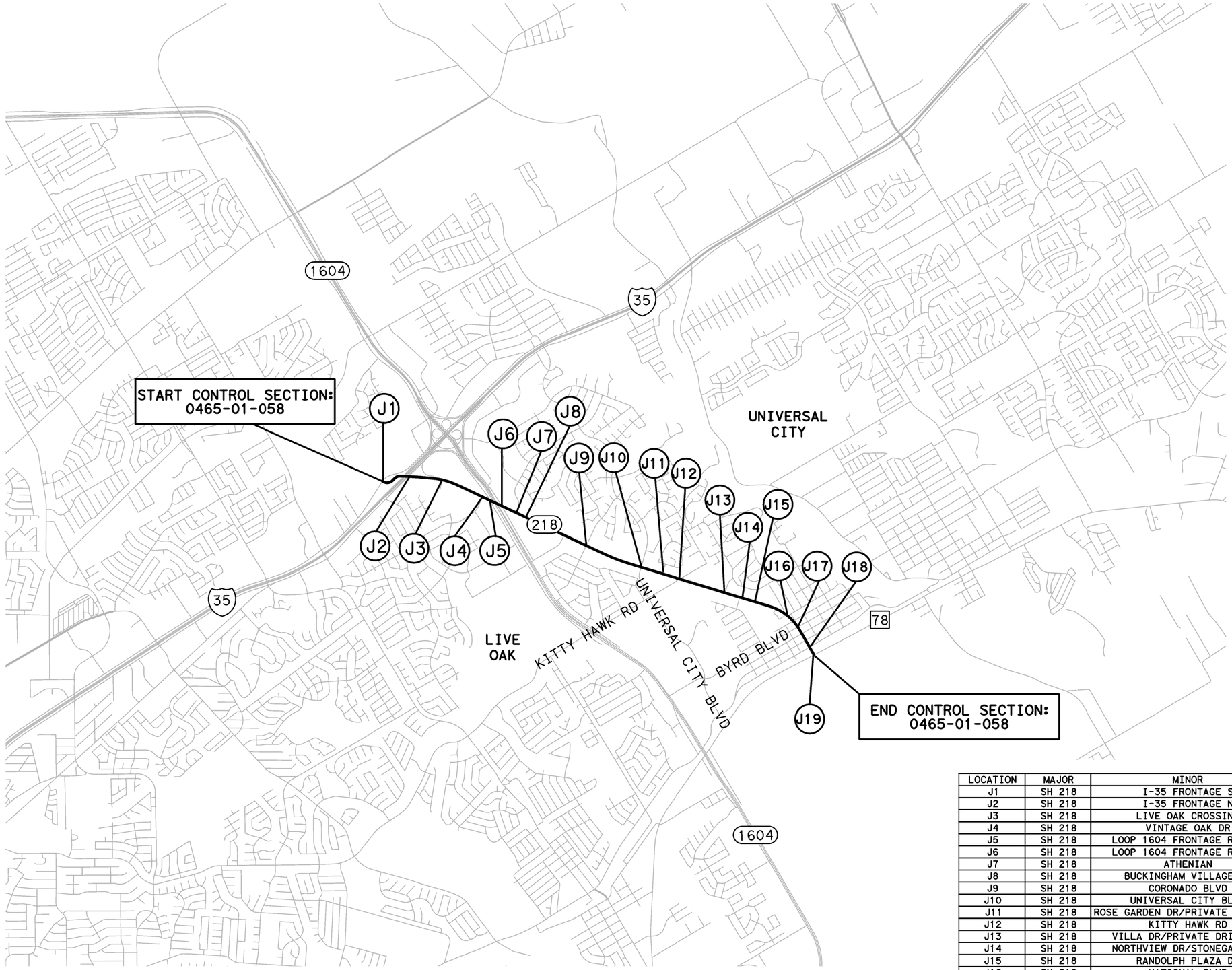
Texas Department of Transportation®

PROPOSED SIGN DETAILS LOCATIONS I1-I10 CSJ 0328-04-048 SH 97

SHEET 5 OF 5

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		63
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:52:27 PM
...\Location I Intersection Layouts-1.dgn



N

SCALE: 1" = 4000'
0 2000 4000

LEGEND

CONTROL SECTION LIMITS

(#) UPGRADE LOCATION

LOCATION	MAJOR	MINOR
J1	SH 218	I-35 FRONTAGE S
J2	SH 218	I-35 FRONTAGE N
J3	SH 218	LIVE OAK CROSSING
J4	SH 218	VINTAGE OAK DR
J5	SH 218	LOOP 1604 FRONTAGE ROAD S
J6	SH 218	LOOP 1604 FRONTAGE ROAD N
J7	SH 218	ATHENIAN
J8	SH 218	BUCKINGHAM VILLAGE ST
J9	SH 218	CORONADO BLVD
J10	SH 218	UNIVERSAL CITY BLVD
J11	SH 218	ROSE GARDEN DR/PRIVATE DRIVEWAY
J12	SH 218	KITTY HAWK RD
J13	SH 218	VILLA DR/PRIVATE DRIVEWAY
J14	SH 218	NORTHVIEW DR/STONEGATE DR
J15	SH 218	RANDOLPH PLAZA DR
J16	SH 218	NATIONAL BLVD
J17	SH 218	BYRD BLVD
J18	SH 218	AVIATION BLVD
J19	SH 218	FM 78/GORDON A BLAKE

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

SH 218
SIGNAL UPGRADE MAP
LOCATIONS J1-J19
CSJ 0465-01-058

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	64

STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

Bid Item Information			0465-01-058	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	38
610	7012	REPLACE LUMINAIRE W/LED (250W EQ)	EA	6
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	151
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	55
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	151
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	87
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	151
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	48
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	153
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	46
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	13225
690	7009	REMOVAL OF CABLES	LF	13225
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	199
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	89
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	126

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

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SH 218 SUMMARY OF QUANTITIES LOCATIONS J1-J19 CSJ 0465-01-058

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		65
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:39 PM
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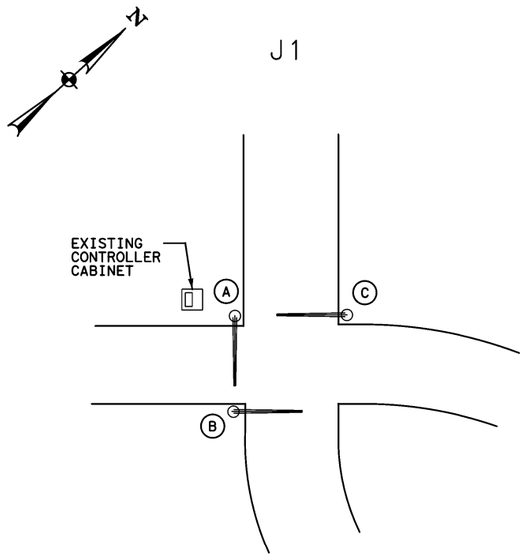
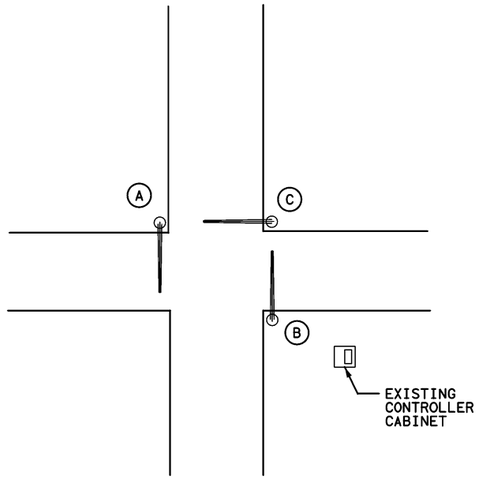
J1



SH 218/IKEA RBFCU PKWY
AT I-35 FRTG RD S

N.T.S.

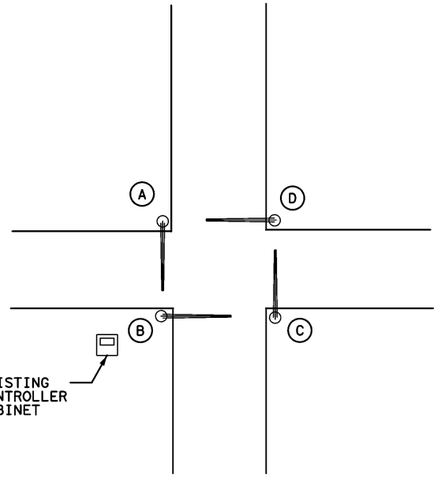
J2



SH 218 AT I-35 FRTG RD N

N.T.S.

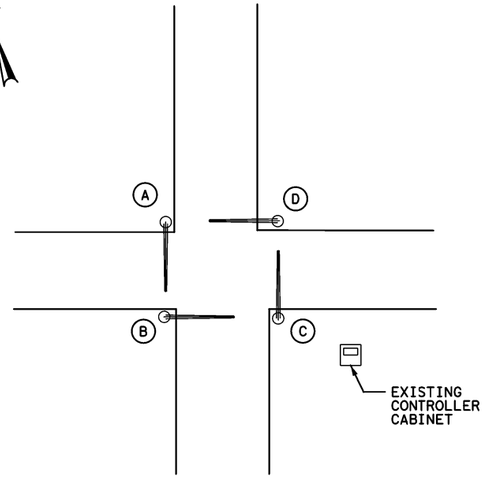
J3



SH 218 AT LIVE OAK CROSSING

N.T.S.

J4



SH 218 AT VILLAGE OAK DR

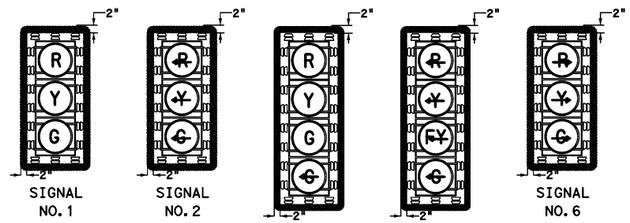
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
J1-A	2,1,1,6	0	210	S2,Y11
J1-B	1,1,6	0	205	S1,Y9
J1-C	2,2,1,1	0	300	S1,Y12,Y13
J2-A	1,1	0	110	Y14
J2-B	1,1,1	0	140	Y13
J2-C	2,2	0	140	S2
J3-A	5,1,1	1	190	S3,Y2
J3-B	3,1,1	0	190	S2,Y11
J3-C	5,1,1	1	210	S3,Y2
J3-D	3,1,1	0	240	S2
J4-A	5,1,1	0	220	S4,Y2
J4-B	3,1	0	130	S2,Y15
J4-C	1,1,1,1	0	300	S4
J4-D	1,1	1	110	S2,Y15

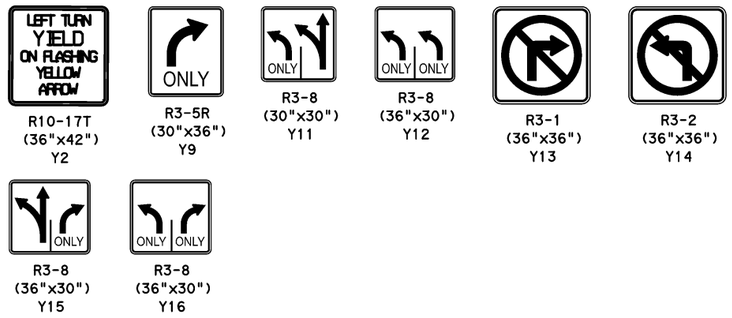
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



S1 IH 35

S2 SH 218

S3 Live Oak Crossing

S4 Village Oak Dr

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SIGNAL LAYOUTS
LOCATIONS J1-J4
CSJ 0465-01-058
SH 218

SHEET 1 OF 7

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	66

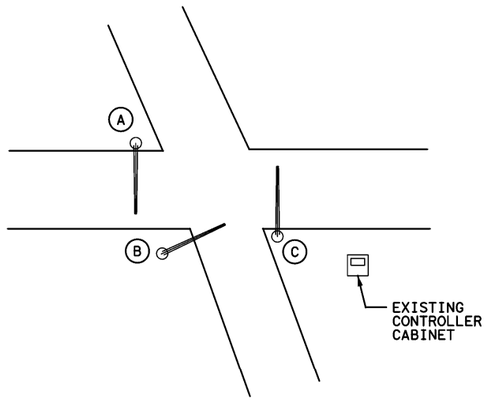
STATE	DIST.	COUNTY
TEXAS	SAT	MEDINA, ETC.

CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:41 PM

...\Location J Intersection layouts-1.dgn

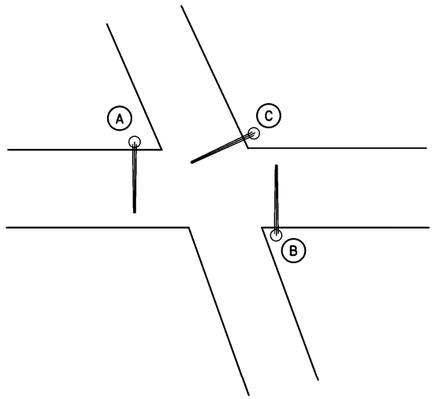
J5



SH 218 AT LOOP 1604 FRTG RD S/ CONVERSE RD

N.T.S.

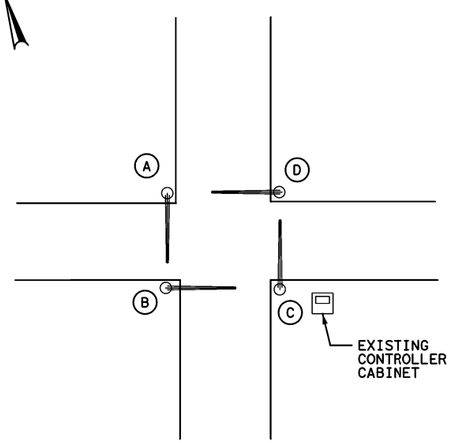
J6



SH 46 AT LOOP 1604 FRTG RD N

N.T.S.

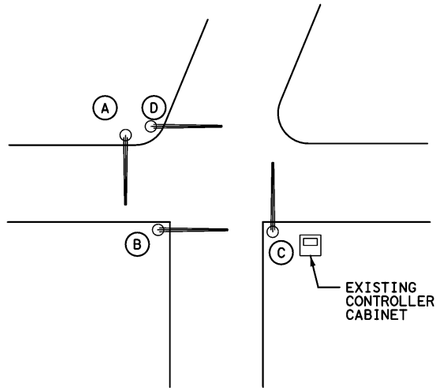
J7



SH 218 AT ATHENIAN

N.T.S.

J8



SH 218 AT BUCKINGHAM VILLAGE ST

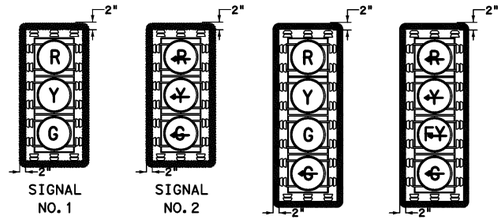
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
J5-A	5,1,1	0	190	S2,Y2
J5-B	2,1,1	0	205	S1,Y8
J5-C	1,1,1,1	0	245	S2,Y6,Y9,Y17
J6-A	1,1,1	0	190	S3
J6-B	5,1,1,1	0	275	S3,Y2
J6-C	2,1,1	0	190	S1
J7-A	5,1,1	0	240	S4,Y2
J7-B	3,1	0	130	S1,Y18
J7-C	5,1,1	0	220	S4,Y2,Y5
J7-D	3,1	0	130	S1
J8-A	5,1,1	0	220	S5,Y2
J8-B	1,1	0	100	S1
J8-C	5,1,1	0	220	S5,Y2
J8-D	1,1	0	130	S1

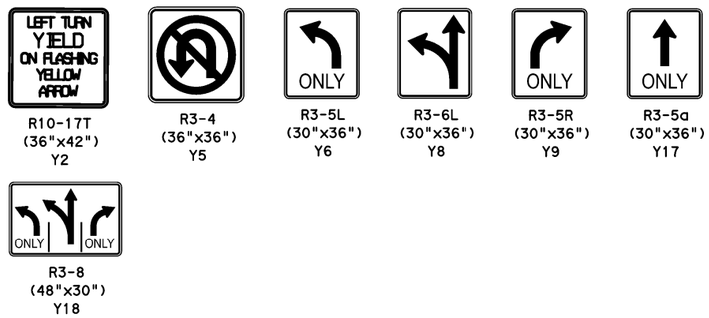
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



S1 SH 218

S2 Converse Rd

S3 Loop 1604

S4 Athenian St

S5 Buckingham Village St

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
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LICENSED PROFESSIONAL ENGINEER

MC Magallanez

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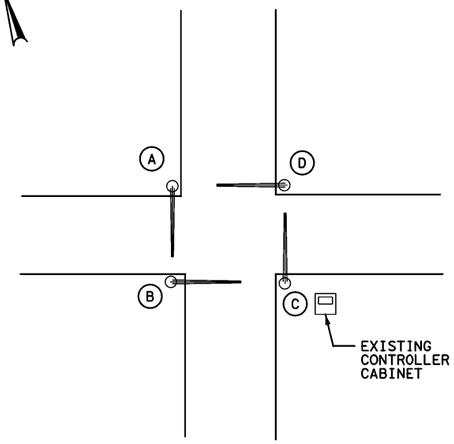
SIGNAL LAYOUTS LOCATIONS J5-J8 CSJ 0465-01-058 SH 218

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		67
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:43 PM
...\Location J Intersection layouts-1.dgn

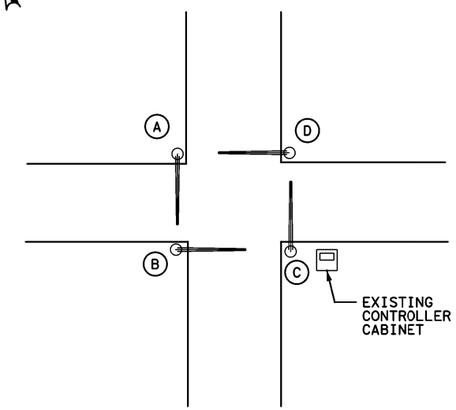
J9



SH 218 AT CORONADO BLVD

N. T. S.

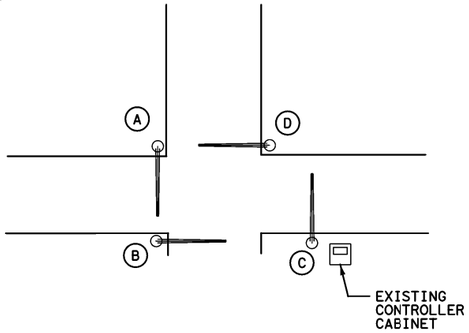
J10



SH 218 AT UNIVERSAL CITY BLVD

N. T. S.

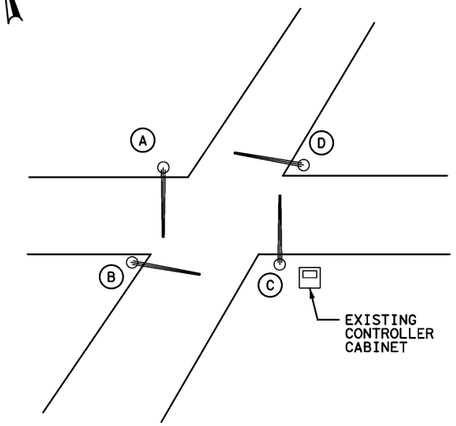
J11



SH 218 AT ROSE GARDEN DR

N. T. S.

J12



SH 218 AT KITTY HAWK RD

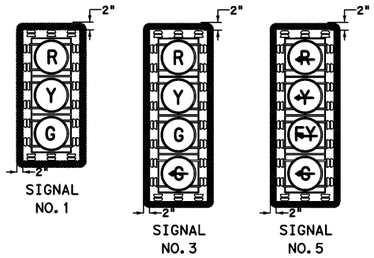
N. T. S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
J9-A	5,1,1	0	220	S2,Y2
J9-B	5,1,1	0	220	S1,Y2
J9-C	5,1,1	0	220	S2,Y2
J9-D	5,1,1	0	220	S1,Y2
J10-A	5,1,1	0	205	S3,Y2
J10-B	5,1,1	0	205	S1,Y2
J10-C	5,1,1	0	220	S3,Y2
J10-D	5,1,1	0	220	S1,Y2
J11-A	5,1,1	0	190	S4,Y2
J11-B	3,1	0	130	S1
J11-C	5,1,1	0	220	S4,Y2
J11-D	3,1	0	105	S1
J12-A	5,1,1	0	205	S5,Y2
J12-B	5,1,1	0	205	S1,Y2
J12-C	5,1,1	0	220	S5,Y2
J12-D	5,1,1	0	220	S1,Y2

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



SIGNAL NO. 1 — SIGNAL NO. 3 — SIGNAL NO. 5

PROPOSED SIGN DETAILS

R10-17T
(36"x42")
Y2

S1 **SH 218** S2 **Coronado Blvd**

S3 **University City Blvd**

S4 **Rose Garden Dr**

S5 **Kitty Hawk Rd**

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
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LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — DATE 6/12/2024

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STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

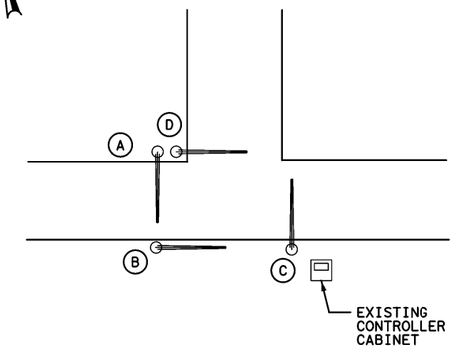
SIGNAL LAYOUTS LOCATIONS J9-J12 CSJ 0465-01-058 SH 218

SHEET 3 OF 7

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		68
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

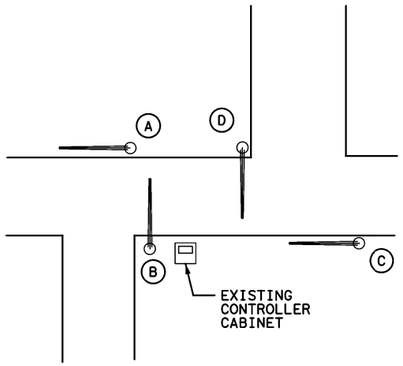
6/12/2024 3:08:45 PM ...\Location J Intersection layouts-1.dgn

J13



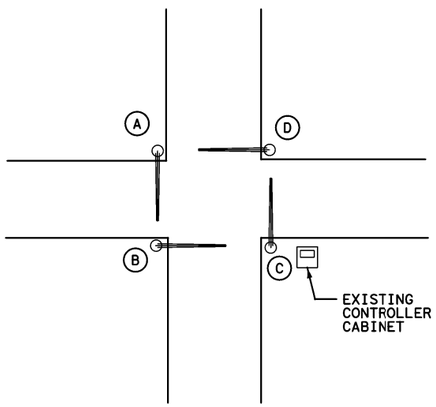
SH 218 AT VILLA DR
N.T.S.

J14



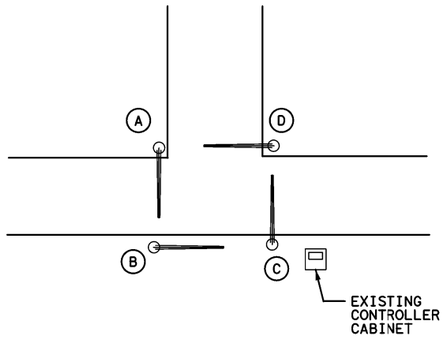
SH 218 AT STONEGATE DR/
NORTHVIEW DR
N.T.S.

J15



SH 218 AT RANDOLPH PLAZA DR
N.T.S.

J16



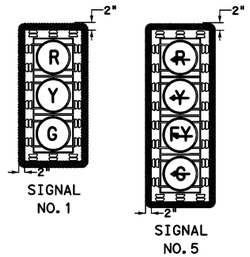
SH 218 AT NATIONAL BLVD
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
J13-A	5,1,1	0	220	S2,Y2
J13-B	1,1	0	140	S1
J13-C	5,1,1	0	205	S2,Y2
J13-D	1,1	0	100	S1
J14-A	1,1	0	100	S1,Y19
J14-B	1,1	0	120	S3
J14-C	1,1	0	90	S1,Y19
J14-D	1,1	0	120	S4
J15-A	5,1,1	0	220	S5,Y2
J15-B	1,1	0	130	S1
J15-C	5,1,1	0	220	S5,Y2
J15-D	1,1	0	110	S1
J16-A	5,1,1	0	220	S6,Y2
J16-B	1,1	0	100	S1
J16-C	5,1,1	0	190	S6,Y2
J16-D	1,1	0	120	S1

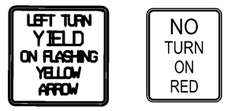
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



R10-17T
(36"x42")
Y2

R10-11a
(36"x48")
Y19

S1 SH 218

S2 Villa Dr

S3 ← Stonegate Dr
Northview Dr →

S4 ← Northview Dr
Stonegate Dr →

S5 Randolph Plaza Dr

S6 National Blvd

STATE OF TEXAS
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82016
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PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
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8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

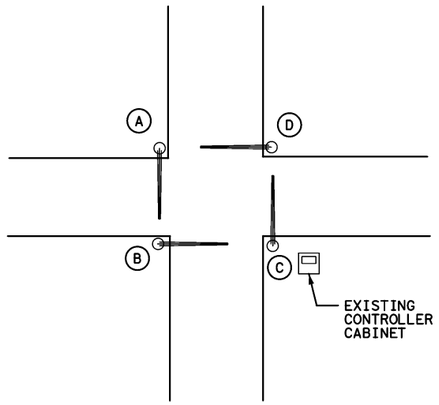
SIGNAL LAYOUTS
LOCATIONS J13-J16
CSJ 0465-01-058
SH 218

SHEET 4 OF 7

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	69

STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

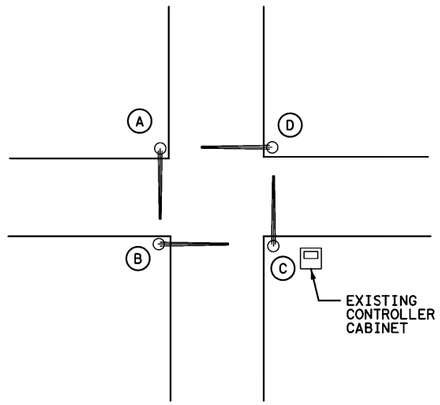
J17



SH 218 AT BYRD BLVD

N. T. S.

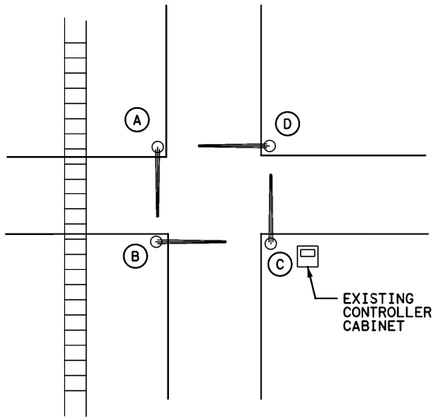
J18



SH 218 AT AVIATION BLVD

N. T. S.

J19

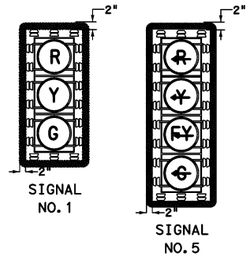


SH 218/PAT BOOKER RD AT
FM 78/GORDON A BLAKE HWY

N. T. S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
J17-A	5,1,1	0	220	S2,Y2
J17-B	1,1	0	110	S1
J17-C	5,1,1	0	190	S2,Y2
J17-D	1,1	0	110	S1
J18-A	5,1,1	0	240	S3,Y2
J18-B	5,1,1	0	175	S4,Y2
J18-C	5,1,1	1	220	S3,Y2
J18-D	5,1,1	0	145	S4,Y2
J19-A	5,1,1	0	190	S5,Y2
J19-B	5,1,1	1	220	S4,Y2
J19-C	5,1,1	0	190	S5,Y2
J19-D	5,1,1	1	205	S4,Y2

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

R10-17T
(36"x42")
Y2

S1 SH 218

S2 Byrd Blvd

S3 Aviation Blvd

S4 Pat Booker Rd

S5 Gordon A Blake Hwy

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

SIGNAL LAYOUTS
LOCATIONS J17-J19
CSJ 0465-01-058
SH 218

SHEET 5 OF 7

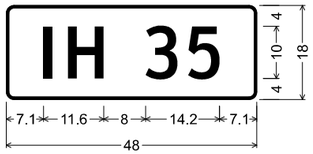
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		70
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:49 PM

...\Location J Intersection layouts-1.dgn

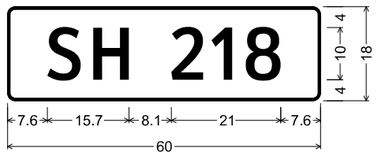
PROPOSED SIGN DETAILS LOCATION J1-J4 (SEE SHEET 1)

S1



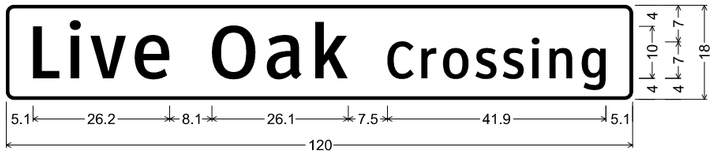
1.5" Radius, 0.5" Border, White on Green;
"IH 35", ClearviewHwy-3-W;

S2



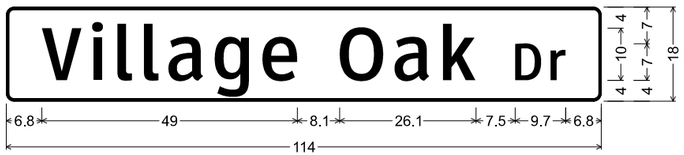
1.5" Radius, 0.5" Border, White on Green;
"SH 218", ClearviewHwy-3-W;

S3



1.5" Radius, 0.5" Border, White on Green;
"Live Oak", ClearviewHwy-3-W; "Crossing", ClearviewHwy-3-W;

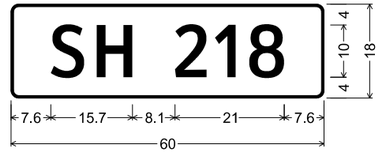
S4



1.5" Radius, 0.5" Border, White on Green;
"Village Oak", ClearviewHwy-3-W; "Dr", ClearviewHwy-3-W;

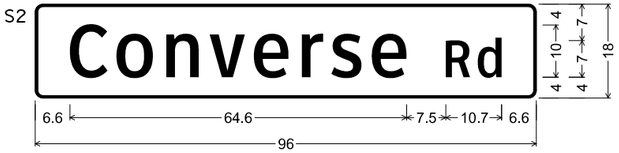
PROPOSED SIGN DETAILS LOCATION J5-J8 (SEE SHEET 2)

S1



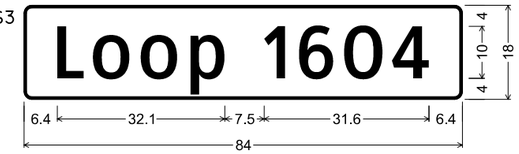
1.5" Radius, 0.5" Border, White on Green;
"SH 218", ClearviewHwy-3-W;

S2



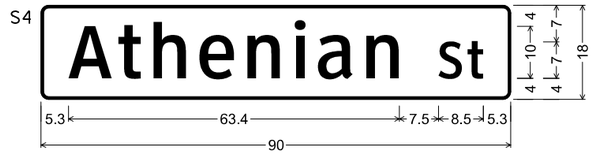
1.5" Radius, 0.5" Border, White on Green;
"Converse", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

S3



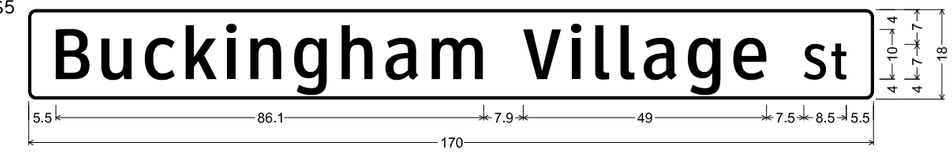
1.5" Radius, 0.5" Border, White on Green;
"Loop 1604", ClearviewHwy-3-W;

S4



1.5" Radius, 0.5" Border, White on Green;
"Athenian", ClearviewHwy-3-W; "St", ClearviewHwy-3-W;

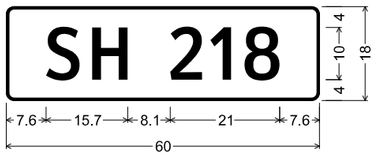
S5



1.5" Radius, 0.5" Border, White on Green;
"Buckingham Village", ClearviewHwy-3-W; "St", ClearviewHwy-3-W;

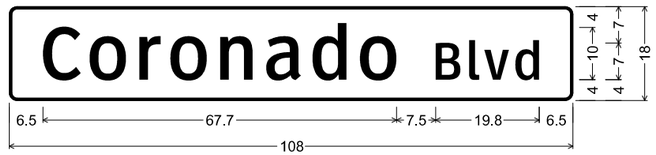
PROPOSED SIGN DETAILS LOCATION J9-J12 (SEE SHEET 3)

S1



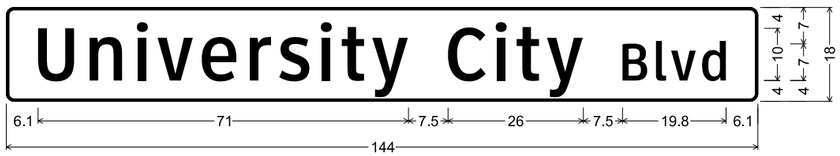
1.5" Radius, 0.5" Border, White on Green;
"SH 218", ClearviewHwy-3-W;

S2



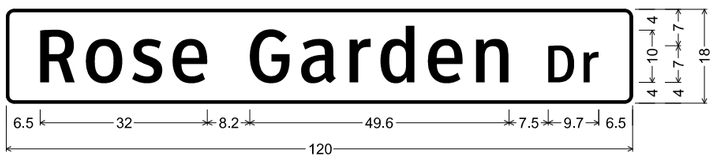
1.5" Radius, 0.5" Border, White on Green;
"Coronado", ClearviewHwy-3-W; "Blvd", ClearviewHwy-3-W;

S3



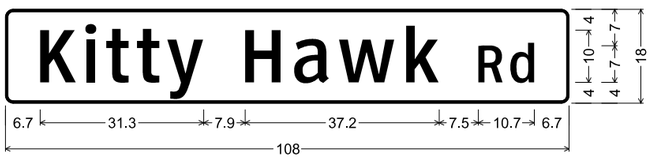
1.5" Radius, 0.5" Border, White on Green;
"University City", ClearviewHwy-3-W; "Blvd", ClearviewHwy-3-W;

S4



1.5" Radius, 0.5" Border, White on Green;
"Rose Garden", ClearviewHwy-3-W; "Dr", ClearviewHwy-3-W;

S5



1.5" Radius, 0.5" Border, White on Green;
"Kitty Hawk", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED
PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

Texas Department of Transportation®

PROPOSED SIGN DETAILS LOCATIONS J1-J12 CSJ 0465-01-058 SH 218

SHEET 6 OF 7

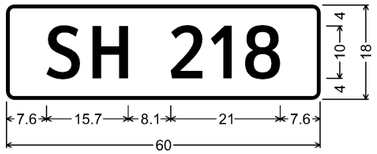
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	SEE TITLE SHEET	71

STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:24:43 PM
...\Location J Intersection Layouts-1.dgn

PROPOSED SIGN DETAILS LOCATION J13-J16 (SEE SHEET 4)

S1

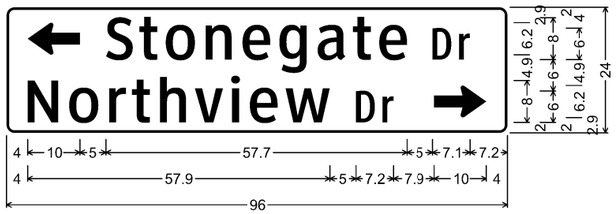


1.5" Radius, 0.5" Border, White on Green;
"SH 218", ClearviewHwy-3-W;

S2

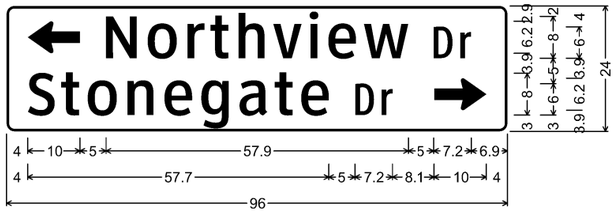
1.5" Radius, 0.5" Border, White on Green;
"Villa", ClearviewHwy-3-W;
"Dr", ClearviewHwy-3-W;

S3



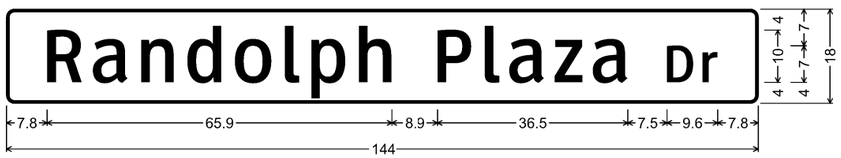
1.5" Radius, No border, White on Green; Standard Arrow Custom 10.0" X 6.1" 180°;
"Stonegate", ClearviewHwy-3-W; "Dr", ClearviewHwy-2-W; "Northview", ClearviewHwy-3-W;
"Dr", ClearviewHwy-2-W; Standard Arrow Custom 10.0" X 6.1" 0°;

S4



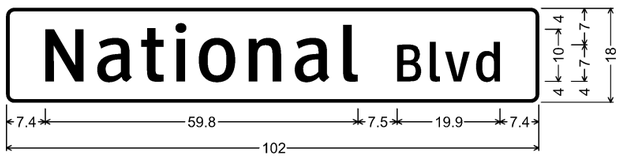
1.5" Radius, No border, White on Green; Standard Arrow Custom 10.0" X 6.1" 180°;
"Northview", ClearviewHwy-3-W; "Dr", ClearviewHwy-2-W; "Stonegate", ClearviewHwy-3-W;
"Dr", ClearviewHwy-2-W; Standard Arrow Custom 10.0" X 6.1" 0°;

S5



1.5" Radius, 0.5" Border, White on Green;
"Randolph Plaza", ClearviewHwy-3-W; "Dr", ClearviewHwy-3-W;

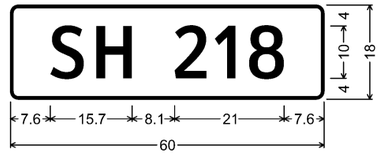
S6



1.5" Radius, 0.5" Border, White on Green;
"National", ClearviewHwy-3-W; "Blvd", ClearviewHwy-3-W;

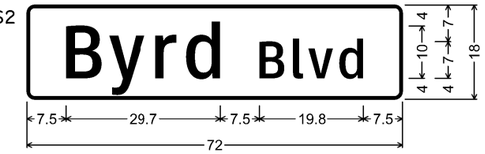
PROPOSED SIGN DETAILS LOCATION J17-J19 (SEE SHEET 5)

S1



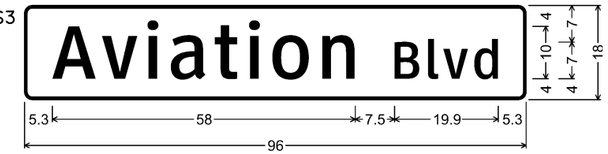
1.5" Radius, 0.5" Border, White on Green;
"SH 218", ClearviewHwy-3-W;

S2



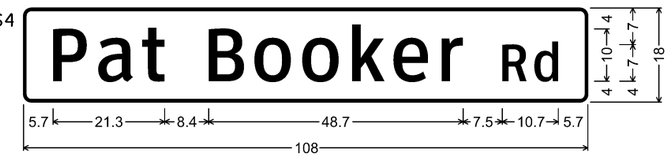
1.5" Radius, 0.5" Border, White on Green;
"Byrd", ClearviewHwy-3-W;
"Blvd", ClearviewHwy-3-W;

S3



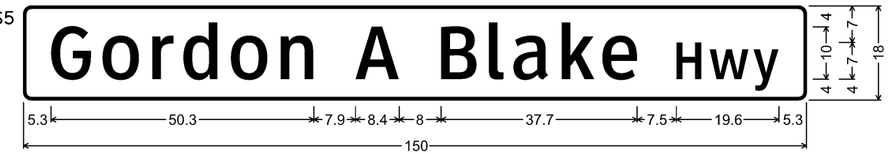
1.5" Radius, 0.5" Border, White on Green;
"Aviation", ClearviewHwy-3-W; "Blvd", ClearviewHwy-3-W;

S4



1.5" Radius, 0.5" Border, White on Green;
"Pat Booker", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

S5



1.5" Radius, 0.5" Border, White on Green;
"Gordon A Blake", ClearviewHwy-3-W; "Hwy", ClearviewHwy-3-W;

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

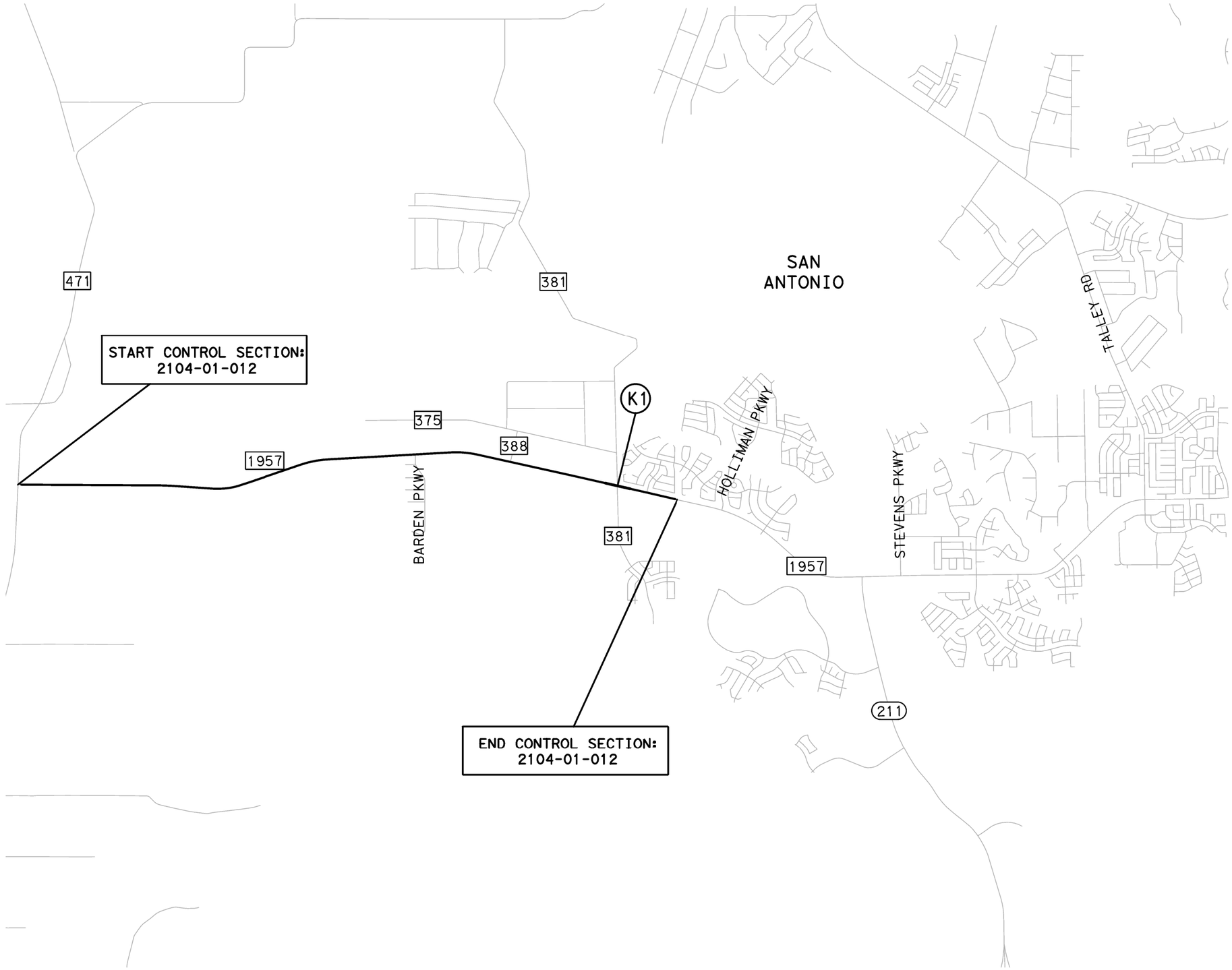
STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

PROPOSED SIGN DETAILS LOCATIONS J13-J19 CSJ 0465-01-058 SH 218

SHEET 7 OF 7

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		72
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:53 PM
...\Location J Intersection Layouts-1.dgn



N

SCALE: 1" = 4000'

0 2000 4000

LEGEND

CONTROL SECTION LIMITS

(#) UPGRADE LOCATION

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

FM 1957
SIGNAL UPGRADE MAP
LOCATION K1
CSJ 2104-01-012

LOCATION	MAJOR	MINOR
K1	FM 1957	FM 381

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		73
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:08:56 PM

...\WA5 Intersection Upgrade\Location Summary K.dgn

Bid Item Information			2104-01-012	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	2
610	7012	REPLACE LUMINAIRE W/LED (250W EQ)	EA	2
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	8
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	4
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	8
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	7
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	8
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	3
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	7
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	3
682	7044	BACKPLATE W/REF BRDR (5 SEC) (VENT) ALUM "DOGHOUS	EA	1
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	2105
690	7009	REMOVAL OF CABLES	LF	2105
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	11
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	4
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	8

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.		REVISION	APPROV.

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TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD.
Houston, TX. 77095
PHONE: (713) 828-4742

FM 1957 SUMMARY OF QUANTITIES LOCATIONS K1 CSJ 2104-01-012

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		74
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:32:58 PM
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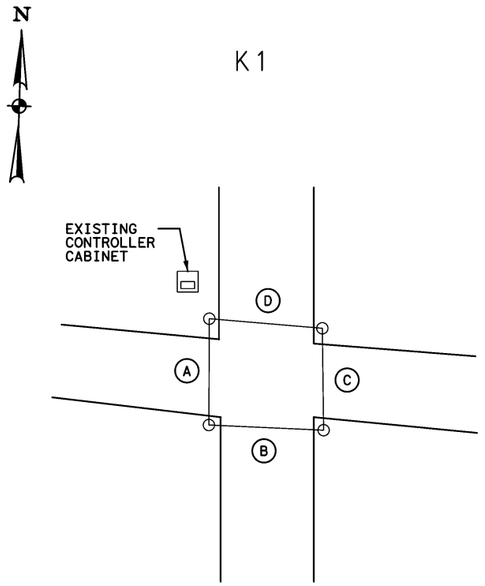


FM 1957 AT FM 381

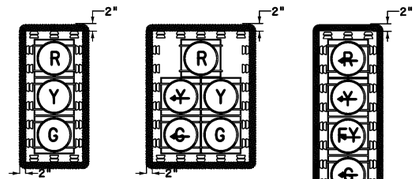
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
K1-A	5,1,1	1	350	S2,Y2
K1-B	4,1	0	460	S1,Y1
K1-C	5,1,1	1	835	S2,Y2
K1-D	5,1,1	0	460	S1,Y1

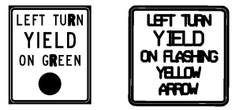
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



S1 **FM 1957**

S2 **FM 381**

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SIGNAL LAYOUTS
LOCATION K1
CSJ 2104-01-012
FM 1957

SHEET 1 OF 2

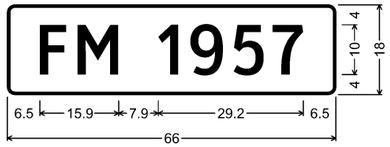
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		75
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:09:01 PM

...\Location K Intersection layouts-1.dgn

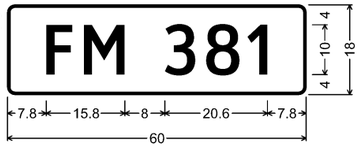
PROPOSED SIGN DETAILS LOCATION K1 (SEE SHEET 1)

S1



1.5" Radius, 0.5" Border, White on Green;
"FM 1957", ClearviewHwy-3-W;

S2



1.5" Radius, 0.5" Border, White on Green;
"FM 381", ClearviewHwy-3-W;

6/12/2024 3:09:02 PM

...\Location K Intersection Layouts-1.dgn

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

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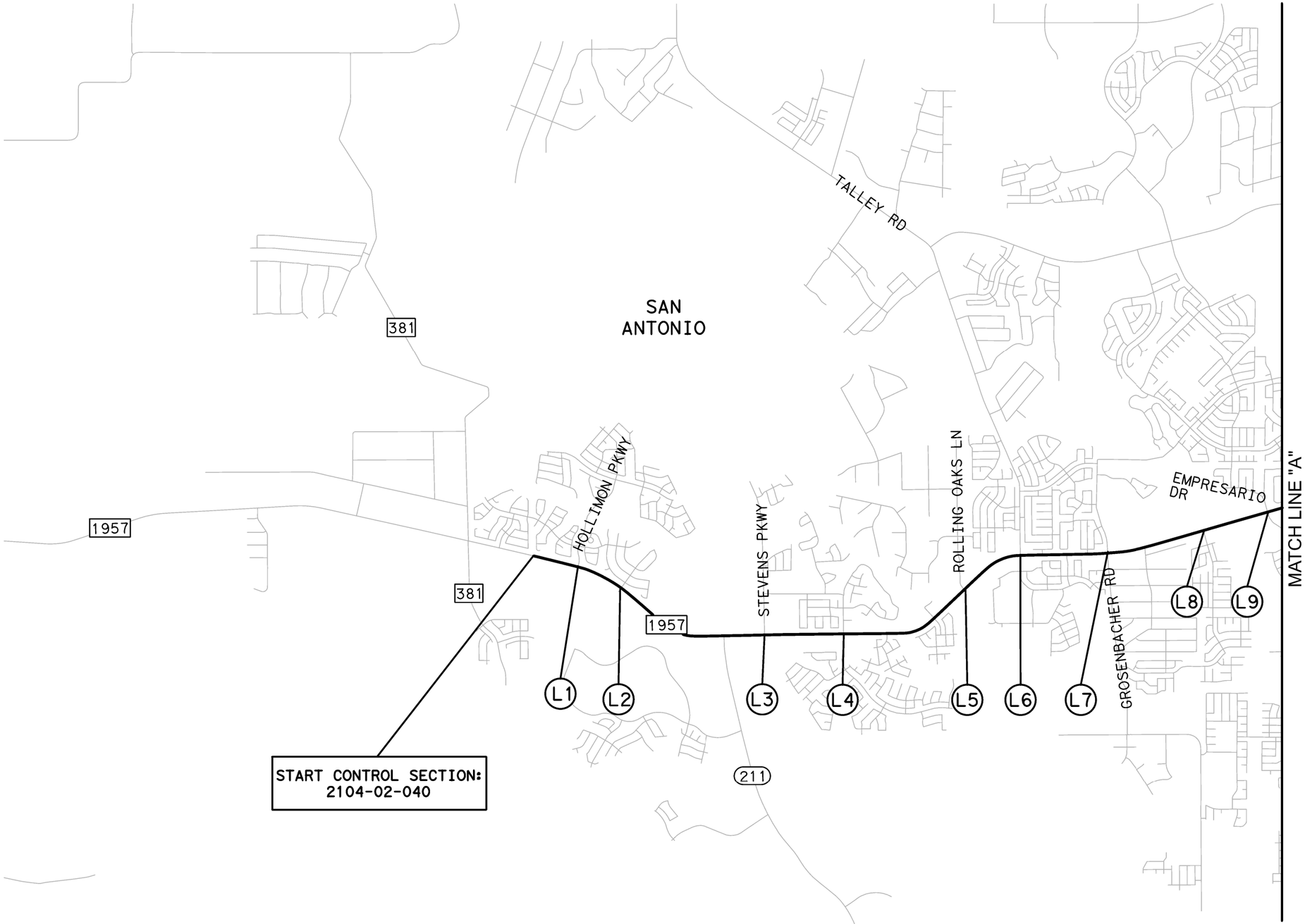
STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

PROPOSED SIGN DETAILS LOCATIONS K1 CSJ 2104-01-012 FM 1957

SHEET 2 OF 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		76
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



N

SCALE: 1" = 4000'
0 2000 4000

LEGEND

CONTROL SECTION LIMITS

(#) UPGRADE LOCATION

LOCATION	MAJOR	MINOR
L1	FM 1957	HOLLIMAN PKWY/BLUE LARKSPUR
L2	FM 1957	SEBASTIAN FARM/REDBIRD CHASE
L3	FM 1957 (POTRANCO RD)	STEVENS PKWY
L4	FM 1957 (POTRANCO RD)	ACADIA PATH/BELLA VISTA PL
L5	FM 1957 (POTRANCO RD)	S ROLLING OAKS LN
L6	FM 1957 (POTRANCO RD)	REID RANCH/TALLEY RD
L7	FM 1957 (POTRANCO RD)	GROSENBACHER RD
L8	FM 1957 (POTRANCO RD)	AMERICAN LOTUS/PRIVATE DRIVEWAY
L9	FM 1957 (POTRANCO RD)	EMPRESARIO DR

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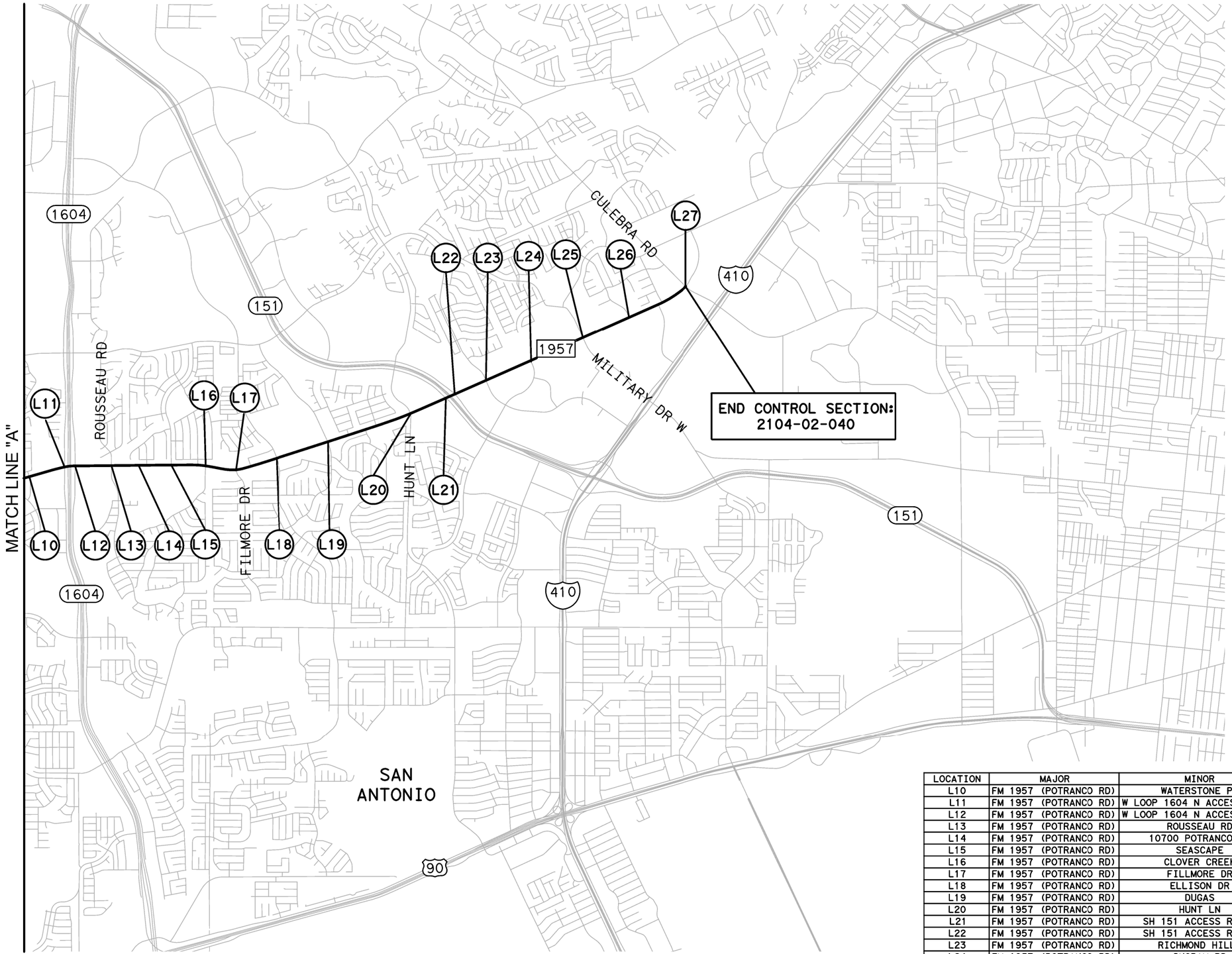
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 MONRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

FM 1957
SIGNAL UPGRADE MAP
LOCATIONS L1-L9
CSJ 2104-02-040

SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		77
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:09:04 PM
...\WA5 Intersection Upgrade\Location Summary L1.dgn



N

SCALE: 1" = 4000'

0 2000 4000

LEGEND

CONTROL SECTION LIMITS

(#) UPGRADE LOCATION

LOCATION	MAJOR	MINOR
L10	FM 1957 (POTRANCO RD)	WATERSTONE PL
L11	FM 1957 (POTRANCO RD)	W LOOP 1604 N ACCESS RD SB
L12	FM 1957 (POTRANCO RD)	W LOOP 1604 N ACCESS RD NB
L13	FM 1957 (POTRANCO RD)	ROUSSEAU RD
L14	FM 1957 (POTRANCO RD)	10700 POTRANCO RD
L15	FM 1957 (POTRANCO RD)	SEASCAPE
L16	FM 1957 (POTRANCO RD)	CLOVER CREEK
L17	FM 1957 (POTRANCO RD)	FILLMORE DR
L18	FM 1957 (POTRANCO RD)	ELLISON DR
L19	FM 1957 (POTRANCO RD)	DUGAS
L20	FM 1957 (POTRANCO RD)	HUNT LN
L21	FM 1957 (POTRANCO RD)	SH 151 ACCESS RD SB
L22	FM 1957 (POTRANCO RD)	SH 151 ACCESS RD NB
L23	FM 1957 (POTRANCO RD)	RICHMOND HILLS
L24	FM 1957 (POTRANCO RD)	INGRAM RD
L25	FM 1957 (POTRANCO RD)	MILITARY DR
L26	FM 1957 (POTRANCO RD)	MICRON DR
L27	FM 1957 (POTRANCO RD)	CULEBRA

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STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

FM 1957
SIGNAL UPGRADE MAP
LOCATIONS L10-L27
CSJ 2104-02-040

SHEET 2 OF 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		78
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:09:07 PM

...\WA5 Intersection Upgrade\Location Summary L2.dgn

Bid Item Information			2104-02-040	
Item No.	Desc.	Description	Unit	Estimate
505	7001	TMA (STATIONARY)	DAY	54
610	7012	REPLACE LUMINAIRE W/LED (250W EQ)	EA	31
682	7001	VEH SIG SEC (12 IN) LED (GRN)	EA	219
682	7002	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	104
682	7003	VEH SIG SEC (12 IN) LED (YEL)	EA	219
682	7004	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	150
682	7005	VEH SIG SEC (12 IN) LED (RED)	EA	219
682	7006	VEH SIG SEC (12 IN) LED (RED ARW)	EA	77
682	7007	VEH SIG SEC (12 IN) LED (GRN U-TURN ARW)	EA	2
682	7008	VEH SIG SEC (12 IN) LED (YEL U-TURN ARW)	EA	2
682	7009	VEH SIG SEC (12 IN) LED (RED U-TURN ARW)	EA	2
682	7042	BACKPLATE W/REF BRDR (3 SEC) (VENT) ALUM	EA	240
682	7043	BACKPLATE W/REF BRDR (4 SEC) (VENT) ALUM	EA	80
682	7044	BACKPLATE W/REF BRDR (5 SEC) (VENT) ALUM "DOGHOUS	EA	7
684	7012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)	LF	10265
684	7035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	13400
690	7009	REMOVAL OF CABLES	LF	23665
690	7024	REMOVAL OF SIGNAL HEAD ASSM	EA	327
690	7027	REMOVAL OF SIGNAL RELATED SIGNS	EA	171
690	7029	INSTALL OF SIGNAL RELATED SIGNS	EA	186

NOTE:
1. ALL REMOVALS NOT PAID FOR UNDER ITEMS 610-7012, 690-7009, 690-7024, AND 690-7027 SHALL BE CONSIDERED SUBSIDIARY TO THE ITEMS BEING INSTALLED AND AT THE DIRECTION OF THE DEPARTMENT.

STATE OF TEXAS
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PHONE: (713) 828-4742

FM 1957 SUMMARY OF QUANTITIES LOCATIONS L1-L27 CSJ 2104-02-040

SHEET 1 OF 1

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		79
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/12/2024 3:09:09 PM
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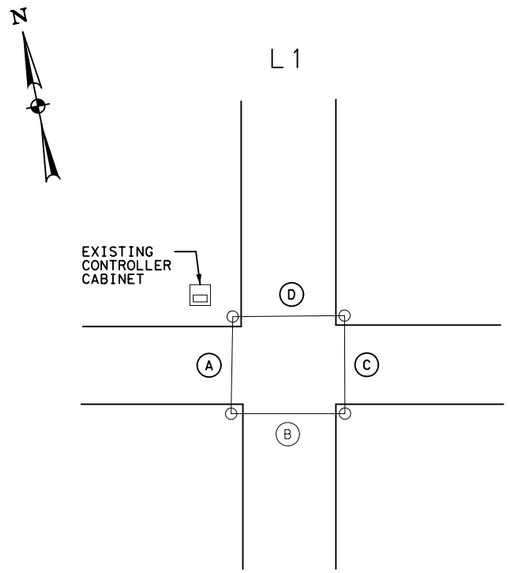
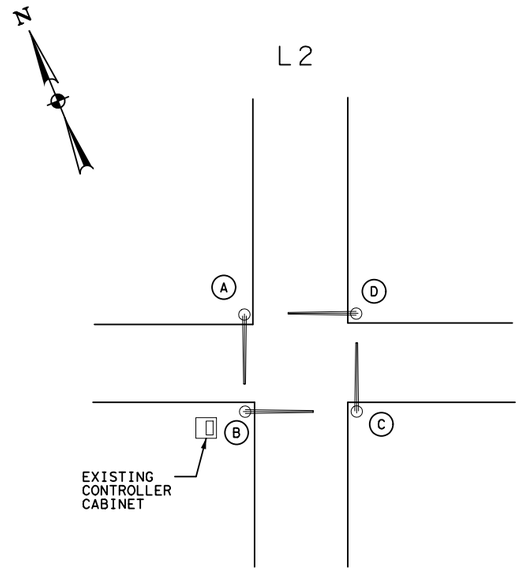


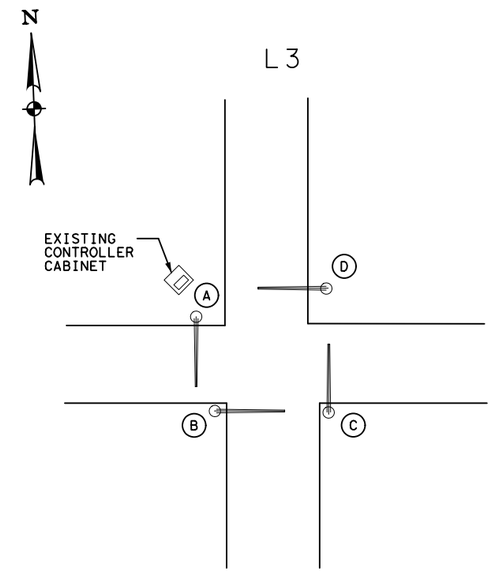
FM 1957 AT HOLLIMON PKWY

N.T.S.



FM 1957 AT REDBIRD CHASE

N.T.S.



FM 1957 AT STEVENS PKWY

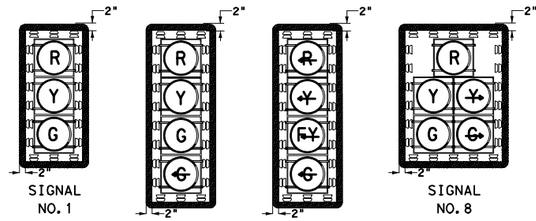
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
L1-A	5,1,1	1	330	S2,Y2
L1-B	5,1,1	1	630	S1,Y2
L1-C	5,1,1	1	805	S2,Y2
L1-D	1,1	1	295	S1,Y1
L2-A	5,1,1,1	0	220	S4,Y2
L2-B	5,1,1	0	205	S3,Y2
L2-C	5,1,1	0	220	S5,Y2
L2-D	1,1	0	120	S3,Y1
L3-A	5,1,1,8	0	220	S7,Y2
L3-B	3,1	0	130	S6,Y6,Y9
L3-C	5,1,1	0	205	S7,Y2,Y19
L3-D	3,1	0	105	S6

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

R10-12 (30"x36") Y1

R10-17T (36"x42") Y2

R3-5L (30"x36") Y6

R3-5R (30"x36") Y9

R10-11a (36"x48") Y19

S1 Potranco Rd

S2 Hollimon Pkwy

S3 Potranco Rd

S4 ← Sebastian Farm
Redbird Chase →

S5 ← Redbird Chase
Sebastian Farm →

S6 FM 1957

S7 Stevens Pkwy

STATE OF TEXAS
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8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

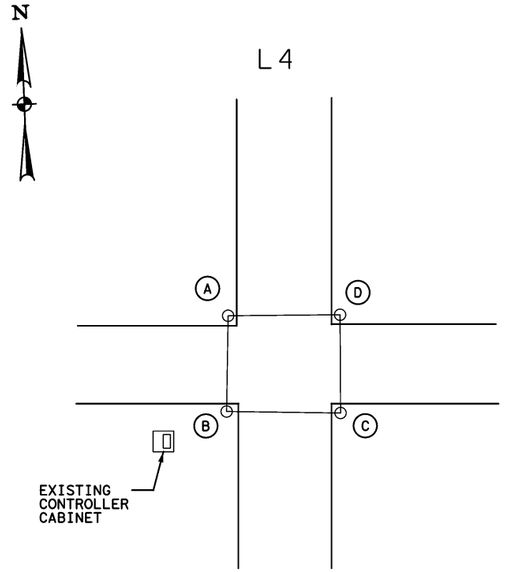
SIGNAL LAYOUTS LOCATIONS L1-L3 CSJ 2104-02-040 FM 1957

SHEET 1 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		80
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

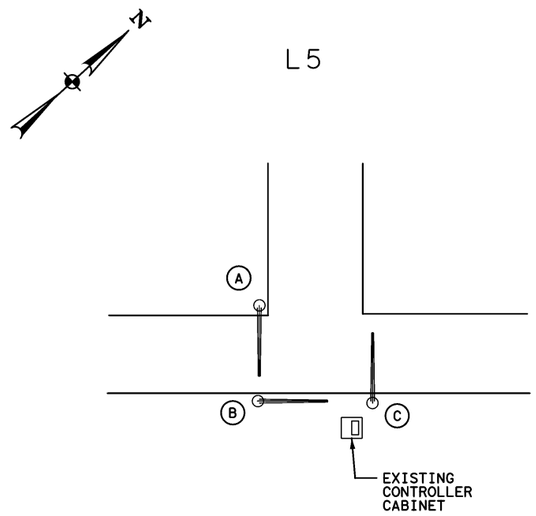
6/18/2024 3:25:29 PM

...\Location L Intersection layouts-1.dgn



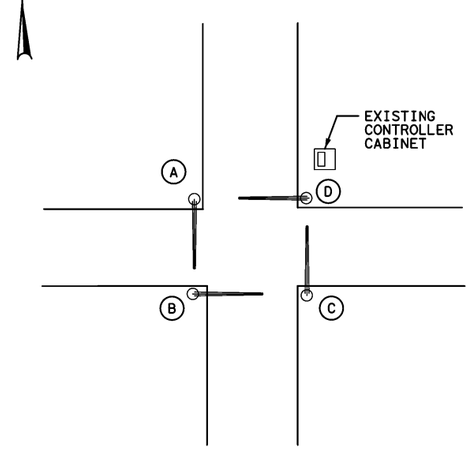
FM 1957 AT ARCADIA PATH/
BELLA VISTA PL

N.T.S.



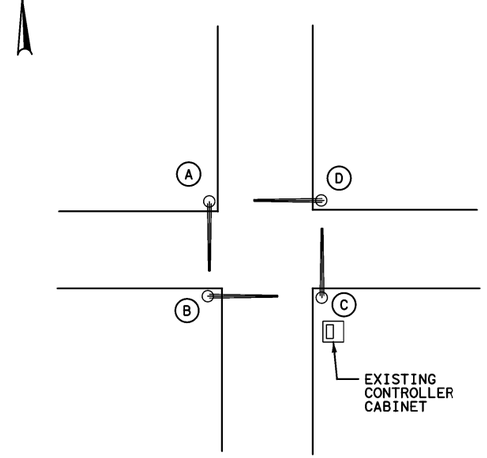
FM 1957 AT S ROLLING OAKS LN

N.T.S.



FM 1957 AT REID RANCH/TALLEY RD

N.T.S.



FM 1957 AT GROSENBACHER RD

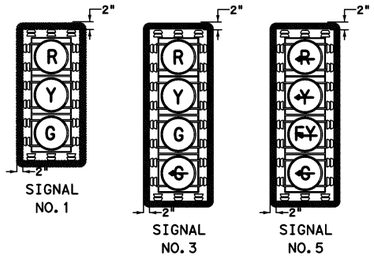
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
L4-A	5,1,1	0	490	S2,Y2,Y6
L4-B	3,1	1	190	S1
L4-C	5,1,1	0	760	S3,Y2,Y6,Y20
L4-D	3,1	1	610	S1
L5-A	1,1	1	120	S4
L5-B	1,1	1	140	S1
L5-C	5,1,1	1	220	S4,Y2
L6-A	5,1,1,1	1	255	S5,Y2
L6-B	3,1,1	1	220	S1
L6-C	5,1,1	1	205	S6,Y2
L6-D	3,1,1	1	205	S1
L7-A	5,1,1	1	220	S7,Y2
L7-B	5,1,1	1	205	S1,Y2
L7-C	5,1,1	1	220	S7,Y2
L7-D	5,1,1	0	255	S1,Y2

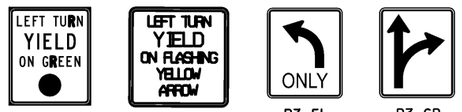
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



R10-12 (30"x36") Y1

R10-17T (36"x42") Y2

R3-5L (30"x36") Y6

R3-6R (30"x36") Y20

S1 Potranco Rd

S2 ← Arcadia Path
Bella Vista Pl →

S3 ← Bella Vista Pl
Arcadia Path →

S4 Rolling Oaks ln

S5 ← Reid Ranch
Talley Rd →

S6 ← Talley Rd
Reid Ranch →

S7 Grosenbacher Rd

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED
PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

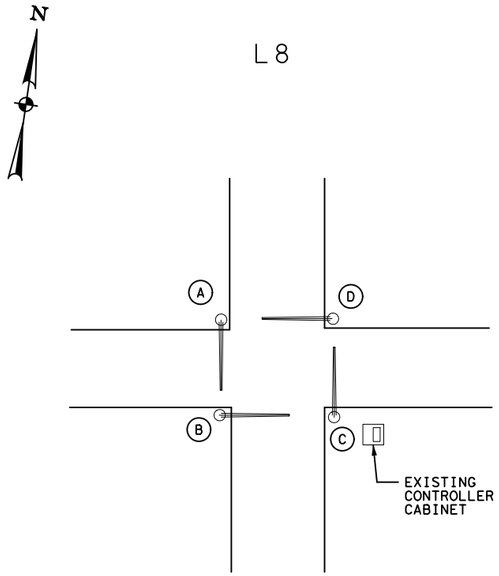
SIGNAL LAYOUTS
LOCATIONS L4-L7
CSJ 2104-02-040
FM 1957

SHEET 2 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		81
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

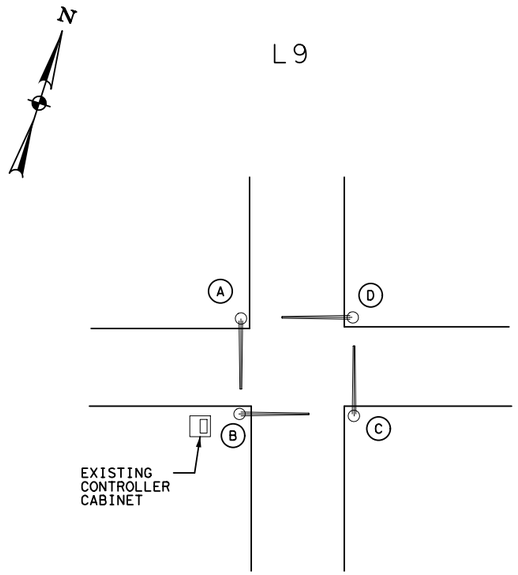
6/12/2024 3:09:17 PM

...\location L Intersection layouts-1.dgn



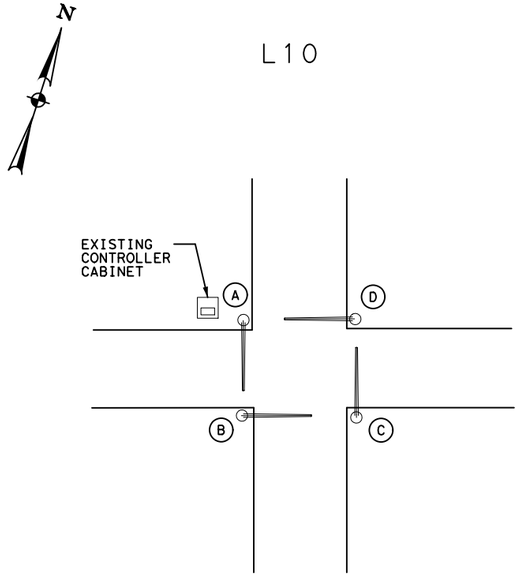
FM 1957 AT AMERICAN LOTUS

N.T.S.



FM 1957 AT EMPRESARIO DR

N.T.S.



FM 1957 AT WATERSTONE PLACE

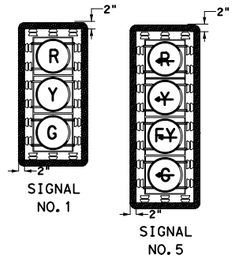
N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	7C/#12	SIGN NO.
L8-A	5,1,1	1	205	S2,Y2
L8-B	5,1,1	1	190	S1,Y2
L8-C	5,1,1	1	205	S2,Y2
L8-D	5,1,1	1	205	S1,Y2
L9-A	5,1,1	0	205	S3,Y2
L9-B	5,1,1	0	205	S1,Y2
L9-C	5,1,1	0	205	S3,Y2
L9-D	5,1,1	0	175	S1,Y2
L10-A	5,1,1	1	205	S4,Y2
L10-B	5,1,1	1	240	S5,Y2
L10-C	5,1,1	1	220	S4,Y2
L10-D	5,1,1	1	205	S5,Y2

LEGEND

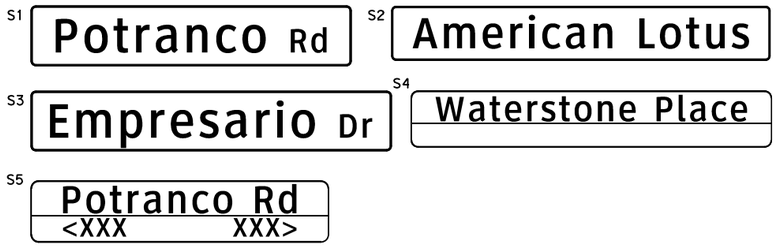
- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

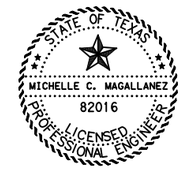
PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

R10-17T
(36"x42")
Y2





MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD.
Houston, TX. 77095
PHONE: (713) 828-4742

SIGNAL LAYOUTS
LOCATIONS L8-L10
CSJ 2104-02-040
FM 1957

SHEET 3 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		82
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

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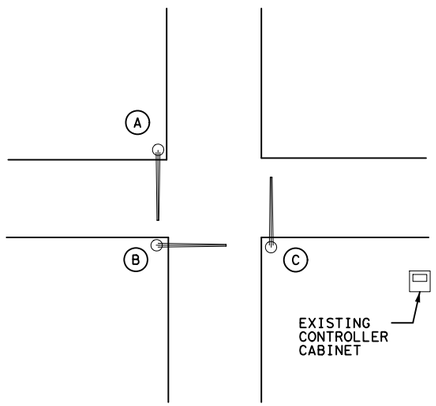
...\Location L Intersection layouts-1.dgn

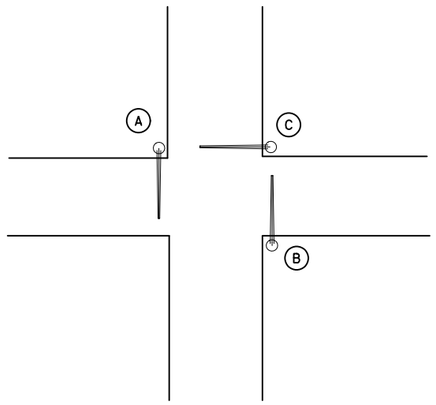
L11



FM 1957 AT W LOOP 1604 S

N.T.S.

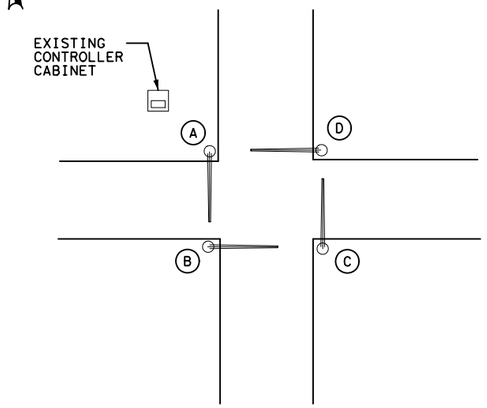
L12



POTRANCO RD AT W LOOP 1604 N

N.T.S.

L13



POTRANCO RD AT ROUSSEAU RD

N.T.S.

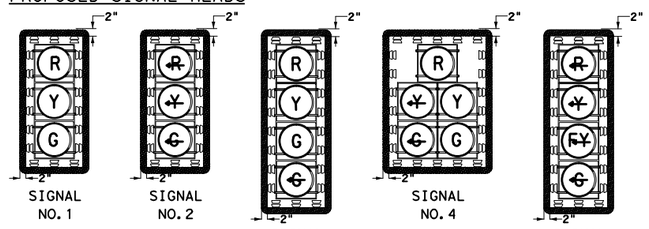
SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	9C/#12	SIGN NO.
L11-A	5, 4, 1	0	175	S5, Y1, Y2, Y3
L11-B	2, 3, 1	0	190	S1
L11-C	1, 1, 1	0	220	S5, Y4
L12-A	1, 1, 1	0	190	S2, Y4
L12-B	5, 4, 1	0	190	S2, Y1, Y2, Y3, Y11
L12-C	2, 3, 1	0	205	S1
L13-A	5, 1, 1	0	205	S3, Y2, Y21
L13-B	2, 1, 1	0	205	S4, Y20
L13-C	5, 1, 1	0	220	S3, Y2
L13-D	2, 1, 1	0	205	S4

LEGEND

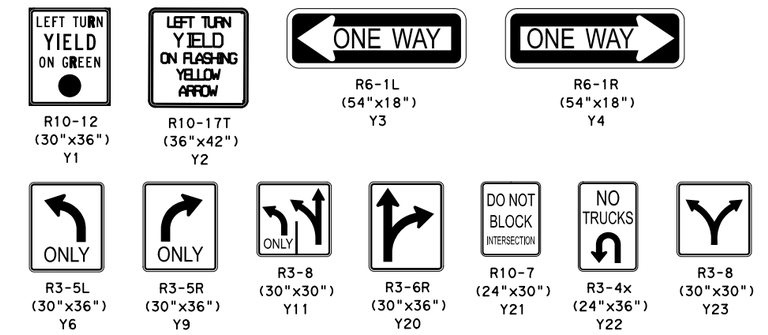
- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

CITY OF SAN ANTONIO SIGNAL

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



S1 Potranco Rd

S2 W Loop 1604 N

S3 Rousseau

S4 Potranco Rd <XXX XXX>

S5 W Loop 1604 S

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

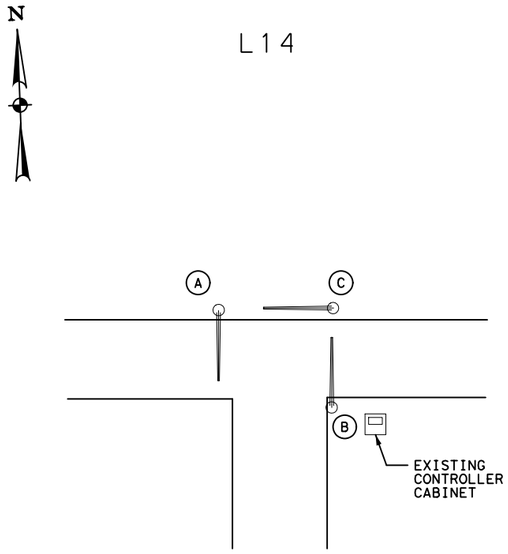
STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SIGNAL LAYOUTS LOCATIONS L11-L13 CSJ 2104-02-040 FM 1957

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		83
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

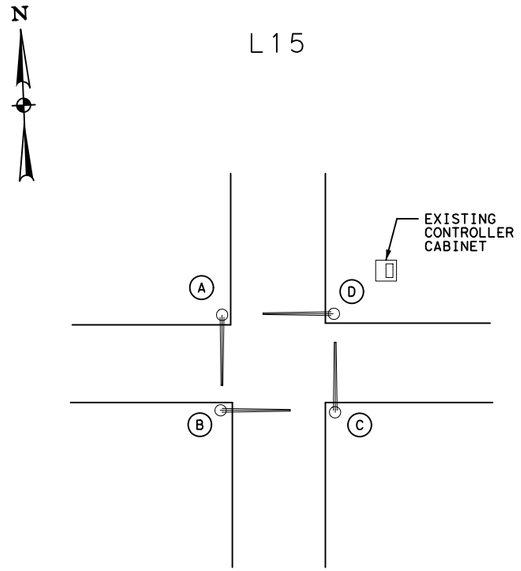
6/18/2024 3:26:05 PM

...\Location L Intersection layouts-1.dgn



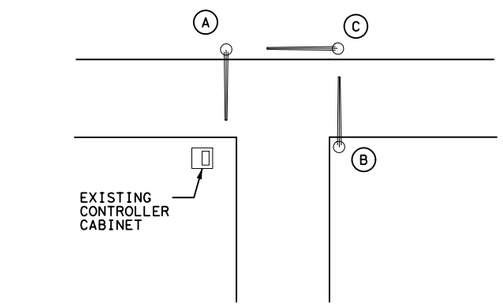
POTRANCO RD AT 10700 POTRANCO RD

N. T. S.



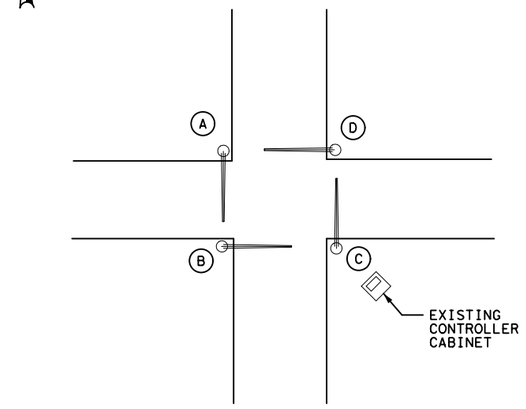
POTRANCO RD AT SEASCAPE RD

N. T. S.



POTRANCO RD AT CLOVER CREEK

N. T. S.



POTRANCO RD AT FILLMORE DR

N. T. S.

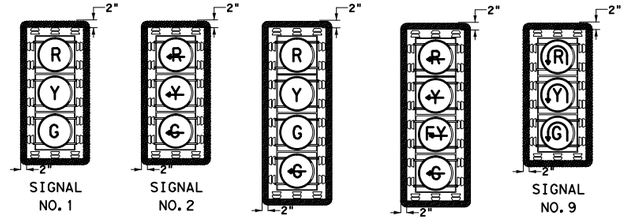
SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	9C/#14	SIGN NO.
L14-A	5, 1, 1, 9, 9	1	330	Y2, Y22
L14-B	1, 1	1	130	NO SIGN
L14-C	2, 3	1	140	Y6, Y23
L15-A	5, 1, 1	0	220	Y2
L15-B	5, 1, 1	0	175	Y2
L15-C	5, 1, 1	0	220	Y2, Y9
L15-D	5, 1, 1	0	205	Y2
L16-A	5, 1, 1	0	190	S2, Y2
L16-B	1, 1	0	130	S3
L16-C	1, 1	0	110	S1, Y6, Y9
L17-A	5, 1, 1	0	220	Y2
L17-B	5, 1, 1	0	175	Y2, Y24
L17-C	5, 1, 1	0	220	Y2
L17-D	5, 1, 1	0	175	Y2, Y20

CITY OF SAN ANTONIO SIGNAL

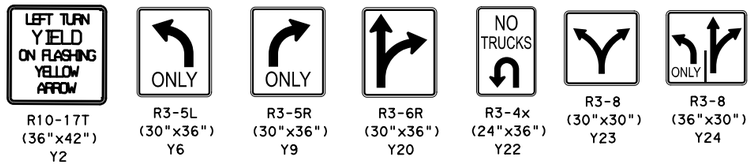
LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS



R10-17T (36"x42") Y2 | R3-5L (30"x36") Y6 | R3-5R (30"x36") Y9 | R3-6R (30"x36") Y20 | R3-4x (24"x36") Y22 | R3-8 (30"x30") Y23 | R3-8 (36"x30") Y24

PROPOSED SIGN DETAILS (CONT.)

S1

S2

S3

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. PHONE: (713) 828-4742
Houston, TX. 77095

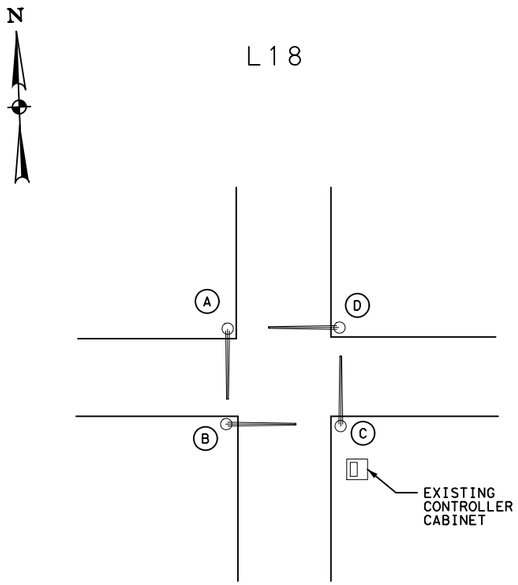
SIGNAL LAYOUTS LOCATIONS L14-L17 CSJ 2104-02-040 FM 1957

SHEET 5 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		84
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

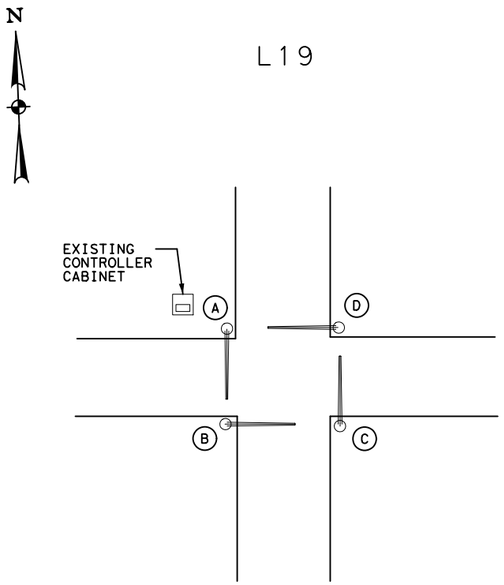
6/18/2024 3:26:20 PM

...\Location L Intersection layouts-1.dgn



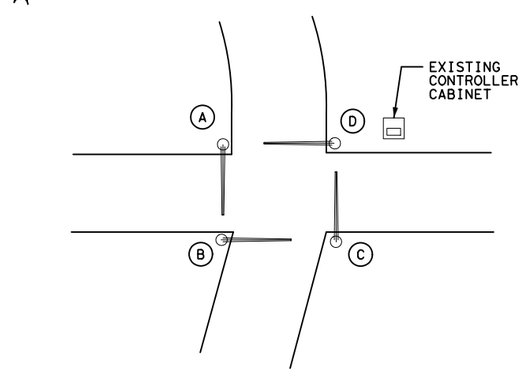
POTRANCO RD AT ELLISON DR

N.T.S.



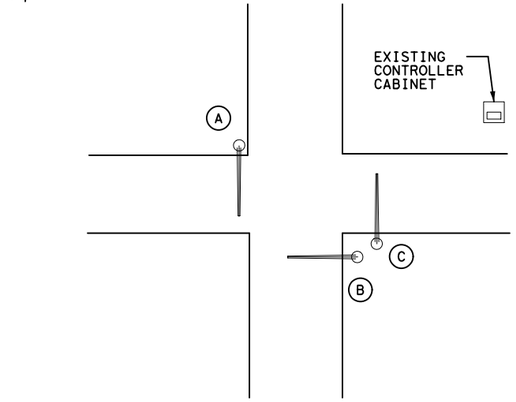
POTRANCO RD AT DUGAS RD

N.T.S.



POTRANCO RD AT HUNT LN

N.T.S.



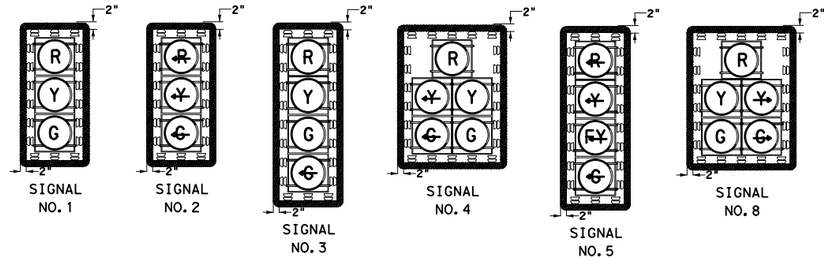
POTRANCO RD AT S SH 151

N.T.S.

SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	9C/#14	SIGN NO.
L18-A	2,1,1	0	175	S1,Y5
L18-B	3,1,8	0	190	S2,Y5,Y25
L18-C	2,1,1	0	220	S3,Y5
L18-D	3,1	0	100	S2,Y5
L19-A	5,1,1	0	220	S4,Y2
L19-B	3,1	0	130	S2,Y6
L19-C	5,1,1	0	220	S4,Y2
L19-D	3,8	0	95	S2,Y9
L20-A	5,1,1	1	205	Y2
L20-B	5,1,1,1	1	360	Y2,Y9
L20-C	5,1,1	1	220	Y2
L20-D	5,1,1	1	145	Y2,Y26
L21-A	4,1,1	0	205	S6,Y1,Y11
L21-B	1,1	0	130	S5,Y11
L21-C	1,1	0	140	S6

CITY OF SAN ANTONIO SIGNAL

PROPOSED SIGNAL HEADS

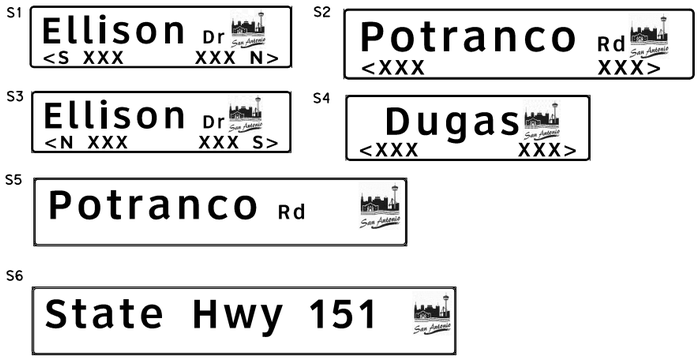


LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGN DETAILS

PROPOSED SIGN DETAILS (CONT.)



STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SIGNAL LAYOUTS LOCATIONS L18-L21 CSJ 2104-02-040 FM 1957

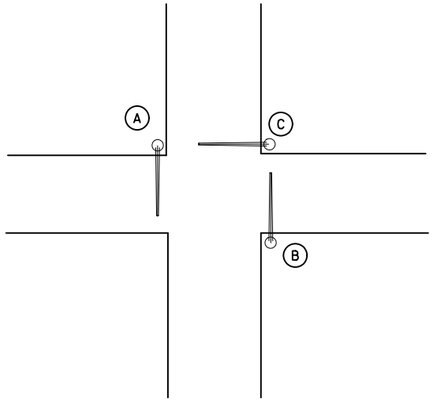
SHEET 6 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		85
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:26:33 PM

...\Location L Intersection layouts-1.dgn

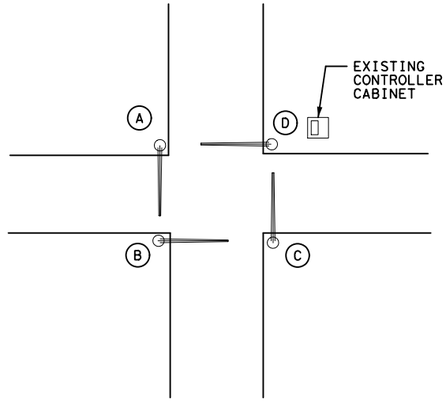
L22



POTRANCO RD AT N SH 151

N.T.S.

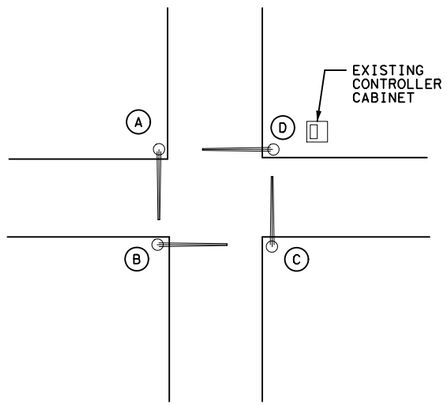
L23



POTRANCO RD AT RICHLAND HILLS DR

N.T.S.

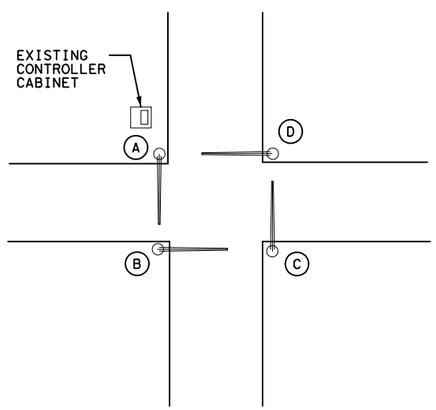
L24



POTRANCO RD AT INGRAM RD

N.T.S.

L25



POTRANCO RD AT MILITARY DR

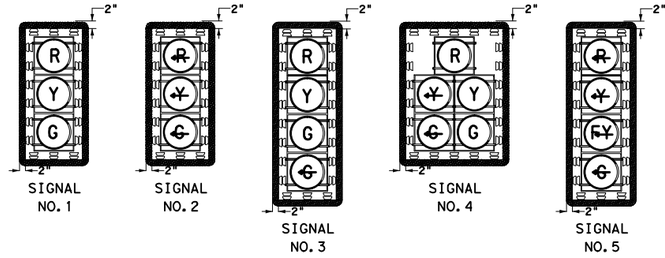
N.T.S.

SIGNAL POLE UPGRADE DETAILS

POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	9C/#14	SIGN NO.
L22-A	1,1	0	120	S2
L22-B	4,1,1	0	205	S2,Y1,Y11
L22-C	1,1	0	190	S1,Y11
L23-A	5,1,1	0	240	S3,Y2
L23-B	3,1	0	150	S4
L23-C	5,1,1	0	190	S3,Y2
L23-D	2,3,1	0	240	S4,Y6,Y8,Y9
L24-A	5,1,1	0	220	Y2
L24-B	5,1,1	0	220	Y2
L24-C	5,1,1	0	220	Y2
L24-D	5,1,1	0	205	Y2
L25-A	5,1,1	0	220	Y2
L25-B	5,1,1	0	205	Y2
L25-C	5,1,1	0	205	Y2
L25-D	5,1,1	0	220	Y2

CITY OF SAN ANTONIO SIGNAL

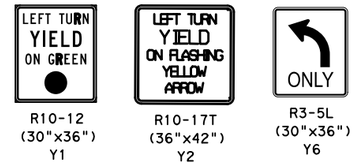
PROPOSED SIGNAL HEADS



LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGN DETAILS



R10-12 (30"x36") Y1

R10-17T (36"x42") Y2

R3-5L (30"x36") Y6

R3-6L (30"x36") Y8

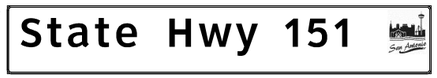
R3-5R (30"x36") Y9

R3-8 (30"x30") Y11

PROPOSED SIGN DETAILS (CONT.)

S1

S2



S3

S4

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

SIGNAL LAYOUTS LOCATIONS L22-L25 CSJ 2104-02-040 FM 1957

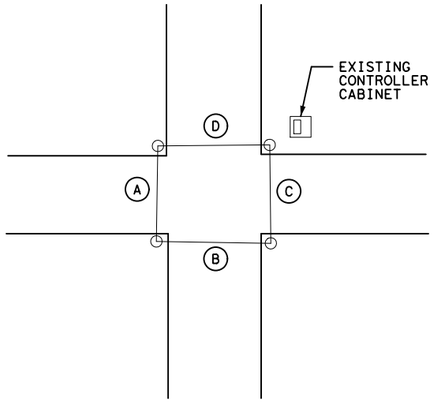
SHEET 7 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		86
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:26:44 PM

...\Location L Intersection layouts-1.dgn

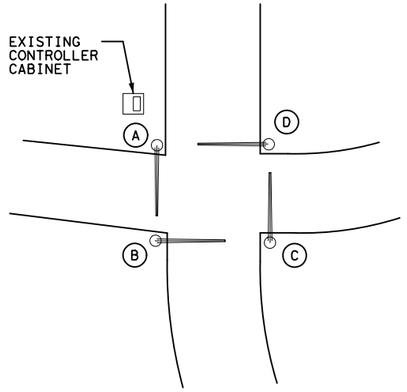
L26



POTRANCO RD AT MICRON DR

N.T.S.

L27



POTRANCO RD AT CULEBRA RD

N.T.S.

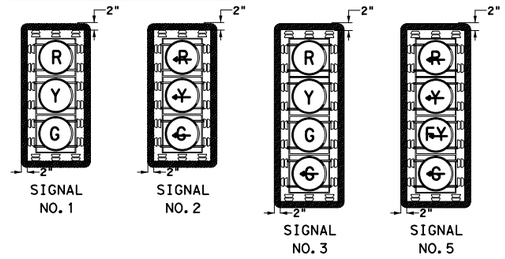
SIGNAL POLE UPGRADE DETAILS				
POLE/SPAN	SIGNAL HEAD NO.	LED LUMINAIRE UPGRADE	9C/#14	SIGN NO.
L26-A	5,1,1	0	555	S1,Y2
L26-B	5,1,1	0	630	S2,Y2
L26-C	5,1,1	0	365	S3,Y2
L26-D	5,1,1	0	255	S2,Y2
L27-A	2,3,1	0	255	S4,Y11
L27-B	2,1,1,1	0	340	S5
L27-C	2,3,1	0	190	S4,Y11
L27-D	2,1,1,1	0	360	S5

CITY OF SAN ANTONIO SIGNAL

LEGEND

- EXIST TRAFFIC SIGNAL POLE
- EXIST TRAFFIC SIGNAL SPAN WIRE
- EXIST TRAFFIC SIGNAL MAST ARM
- EXIST CONTROLLER CABINET
- EXIST POLE MOUNTED CONTROLLER CABINET

PROPOSED SIGNAL HEADS



PROPOSED SIGN DETAILS

R10-17T
(36"x42")
Y2

R3-8
(30"x30")
Y11

S1

S2

S3

S4

S5

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD.
Houston, TX. 77095
PHONE: (713) 828-4742

Texas Department of Transportation®

SIGNAL LAYOUTS
LOCATIONS L26-L27
CSJ 2104-02-040
FM 1957

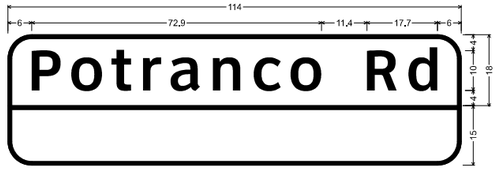
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		87
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:26:56 PM

...\Location L Intersection Layouts-1.dgn

PROPOSED SIGN DETAILS LOCATION L1-L3 (SEE SHEET 1)

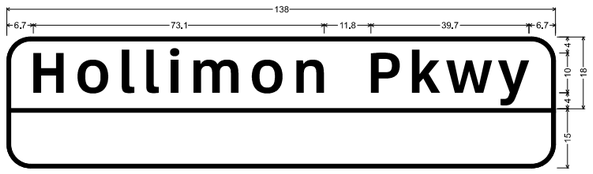
S1



6.0" Radius, 1.0" Border, White on Blue;
"Potranco Rd", ClearviewHwy-5-W;

6.0" Radius, 1.0" Border, White on Blue;

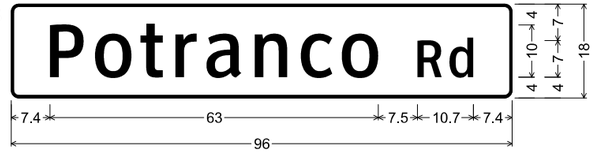
S2



6.0" Radius, 1.0" Border, White on Blue;
"Hollimon Pkwy", ClearviewHwy-5-W;

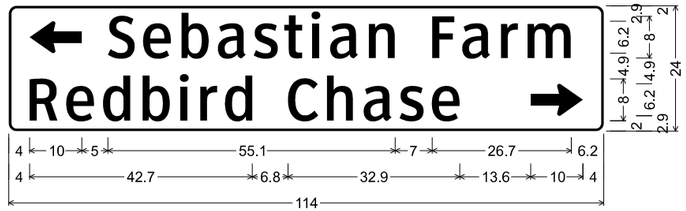
6.0" Radius, 1.0" Border, White on Blue;

S3



1.5" Radius, 0.5" Border, White on Green;
"Potranco", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

S4

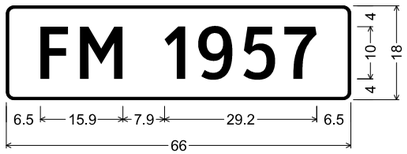


1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°; "Sebastian Farm", ClearviewHwy-3-W;
"Redbird Chase", ClearviewHwy-3-W; Standard Arrow Custom 10.0" X 6.1" 0°;

S5

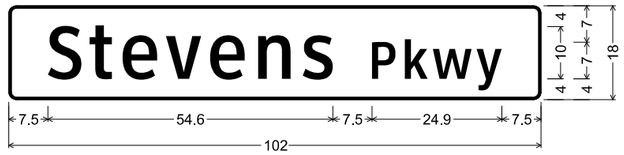
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°; "Redbird Chase", ClearviewHwy-3-W;
"Sebastian Farm", ClearviewHwy-3-W; Standard Arrow Custom 10.0" X 6.1" 0°;

S6

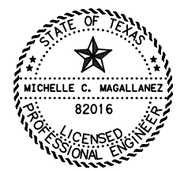


1.5" Radius, 0.5" Border, White on Green;
"FM 1957", ClearviewHwy-3-W;

S7



1.5" Radius, 0.5" Border, White on Green;
"Stevens", ClearviewHwy-3-W; "Pkwy", ClearviewHwy-3-W;



MC Magallanez

MICHELLE C. MAGALLANEZ, P.E.

6/18/2024
DATE

NO.		REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD.
Houston, TX. 77095
PHONE: (713) 828-4742

PROPOSED SIGN DETAILS LOCATIONS L1-L3 CSJ 2104-02-040 FM 1957

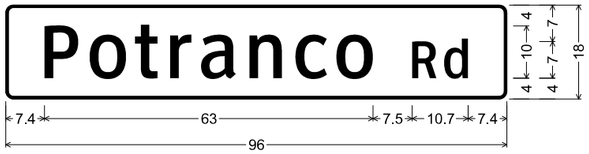
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		88
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:27:08 PM

...\Location L Intersection layouts-1.dgn

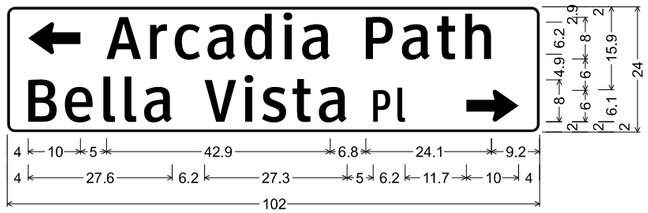
PROPOSED SIGN DETAILS LOCATION L4-L7 (SEE SHEET 2)

S1



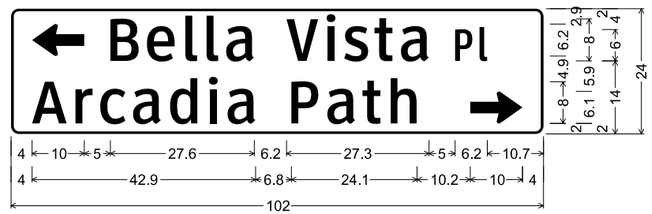
1.5" Radius, 0.5" Border, White on Green;
"Potranco", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

S2



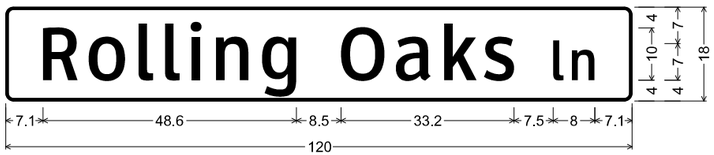
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"Arcadia Path", ClearviewHwy-3-W; "Bella Vista", ClearviewHwy-3-W;
"Pl", ClearviewHwy-2-W; Standard Arrow Custom 10.0" X 6.1" 0°;

S3



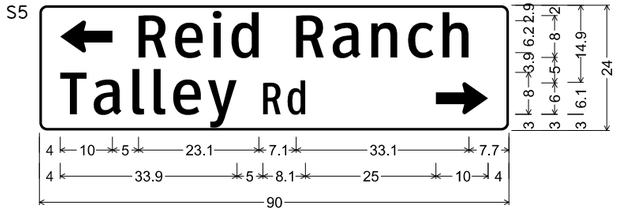
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"Bella Vista", ClearviewHwy-3-W; "Pl", ClearviewHwy-2-W;
"Arcadia Path", ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S4



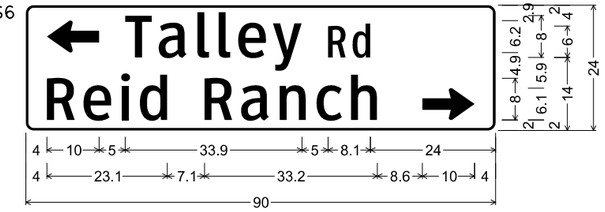
1.5" Radius, 0.5" Border, White on Green;
"Rolling Oaks", ClearviewHwy-3-W; "ln", ClearviewHwy-3-W;

S5



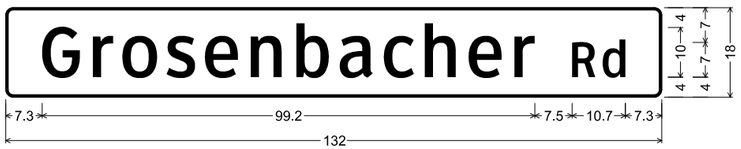
1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"Reid Ranch", ClearviewHwy-3-W; "Talley", ClearviewHwy-3-W;
"Rd", ClearviewHwy-2-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S6



1.5" Radius, No border, White on Green;
Standard Arrow Custom 10.0" X 6.1" 180°;
"Talley", ClearviewHwy-3-W; "Rd", ClearviewHwy-2-W;
"Reid Ranch", ClearviewHwy-3-W;
Standard Arrow Custom 10.0" X 6.1" 0°;

S7



1.5" Radius, 0.5" Border, White on Green;
"Grosenbacher", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED
PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

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TEXAS REGISTERED ENGINEERING FIRM F-13097
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Texas Department of Transportation®

PROPOSED SIGN DETAILS LOCATIONS L4-L7 CSJ 2104-02-040 FM 1957

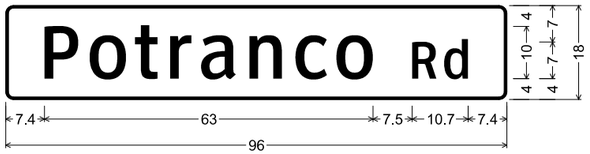
SHEET 10 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		89
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:27:19 PM
...\Location L Intersection layouts-1.dgn

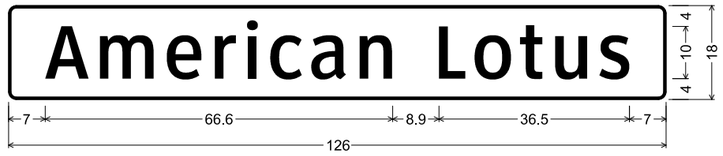
PROPOSED SIGN DETAILS LOCATION L8-L10 (SEE SHEET 3)

S1



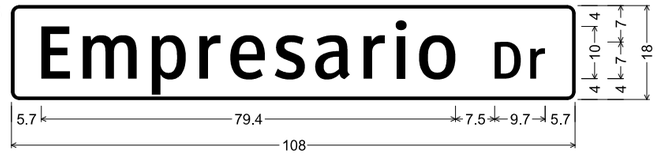
1.5" Radius, 0.5" Border, White on Green;
"Potranco", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

S2



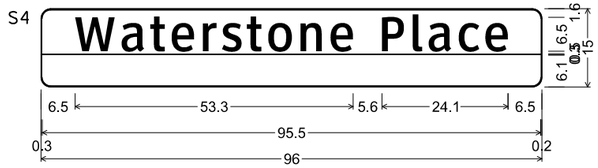
1.5" Radius, 0.5" Border, White on Green;
"American Lotus", ClearviewHwy-3-W;

S3



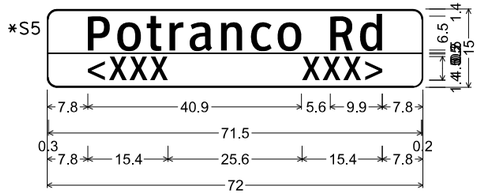
1.5" Radius, 0.5" Border, White on Green;
"Empresario", ClearviewHwy-3-W; "Dr", ClearviewHwy-3-W;

S4



1.9" Radius, 0.3" Border, White on Blue;
"Waterstone Place", ClearviewHwy-3-W;

*S5



1.9" Radius, 0.3" Border, White on Blue;
"Potranco Rd", ClearviewHwy-3-W;
"<XXX", ClearviewHwy-3-W;
"XXX>", ClearviewHwy-3-W;

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STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

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PROPOSED SIGN DETAILS LOCATIONS L8-L10 CSJ 2104-02-040 FM 1957

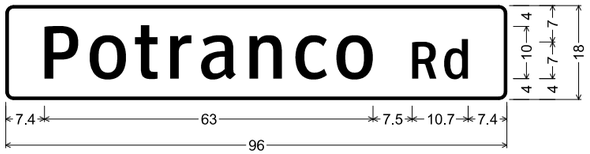
SHEET 11 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		90
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:27:36 PM
...\Location L Intersection Layouts-1.dgn

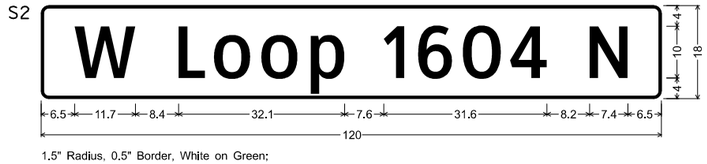
PROPOSED SIGN DETAILS LOCATION L11-L13 (SEE SHEET 4)

S1



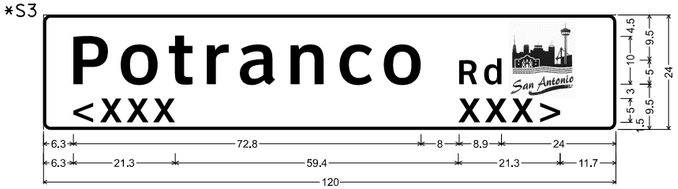
1.5" Radius, 0.5" Border, White on Green;
"Potranco", ClearviewHwy-3-W; "Rd", ClearviewHwy-3-W;

S2



1.5" Radius, 0.5" Border, White on Green;
"W Loop 1604 N", ClearviewHwy-3-W;

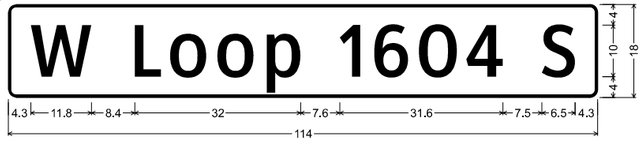
*S3



D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Potranco", ClearviewHwy-5-W; "Rd", ClearviewHwy-5-W; "<XXX XXX> ", ClearviewHwy-6-W;
"", ClearviewHwy-3-W;

D3-1G- 90"X18";
1.5" Radius, 0.5" Border, White on Blue;
"", ClearviewHwy-3-W; "Rousseau", ClearviewHwy-3-W;
"", ClearviewHwy-3-W;

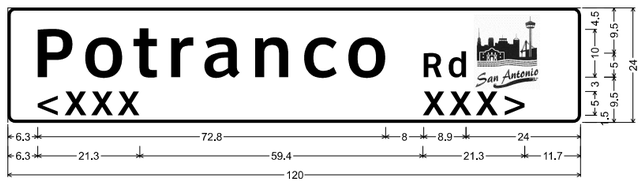
S5



1.5" Radius, 0.5" Border, White on Green;
"W Loop 1604 S", ClearviewHwy-3-W;

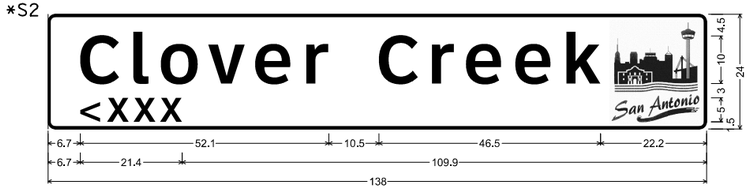
PROPOSED SIGN DETAILS LOCATION L14-L17 (SEE SHEET 5)

*S1



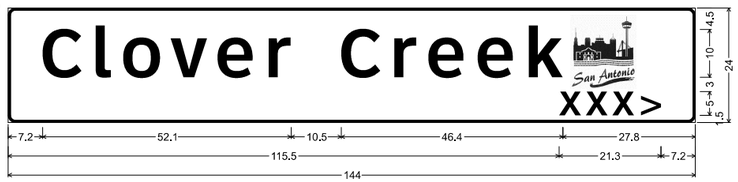
D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Potranco", ClearviewHwy-5-W; "Rd", ClearviewHwy-5-W; "<XXX XXX> ", ClearviewHwy-6-W;
"", ClearviewHwy-3-W;

*S2



D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Clover Creek ", ClearviewHwy-5-W; "<XXX", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

*S3



D3-1G-144"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Clover Creek ", ClearviewHwy-5-W; " XXX>", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

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STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED
PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.	REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095 PHONE: (713) 828-4742

PROPOSED SIGN DETAILS LOCATIONS L11-L17 CSJ 2104-02-040 FM 1957

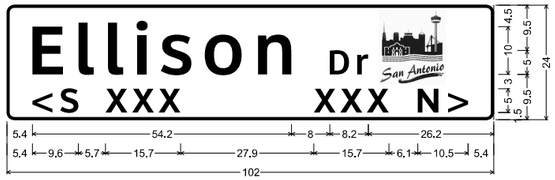
SHEET 12 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		91
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:27:47 PM
...\Location L Intersection layouts-1.dgn

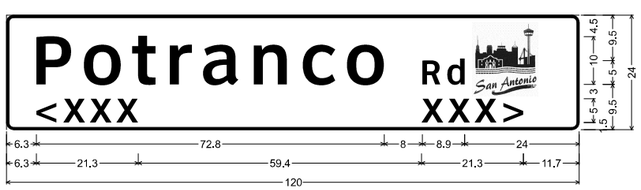
PROPOSED SIGN DETAILS LOCATION L18-L21 (SEE SHEET 6)

*S1



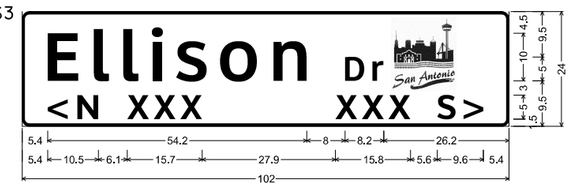
D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Ellison", ClearviewHwy-5-W; "Dr ", ClearviewHwy-5-W;
"<S XXX XXX N>", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

*S2



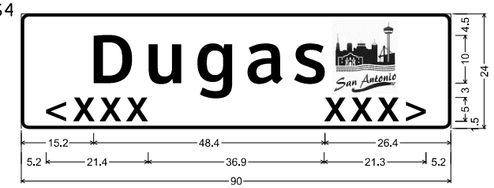
D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Potranco", ClearviewHwy-5-W; "Rd", ClearviewHwy-5-W; "<XXX XXX> ", ClearviewHwy-6-W;
"", ClearviewHwy-3-W;

*S3



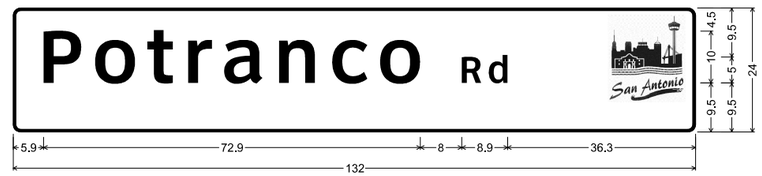
D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Ellison", ClearviewHwy-5-W; "Dr ", ClearviewHwy-5-W;
"<N XXX XXX S>", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

*S4



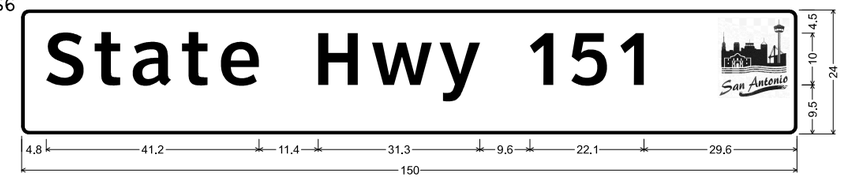
D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
" Dugas ", ClearviewHwy-5-W; "", ClearviewHwy-5-W;
"<XXX XXX>", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

S5



D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Potranco", ClearviewHwy-5-W; "Rd", ClearviewHwy-5-W; "", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

S6



D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"State Hwy 151 ", ClearviewHwy-5-W; "", ClearviewHwy-5-W; "", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

* CONTRACTOR TO VERIFY BLOCK NUMBERS ON SITE PRIOR TO ORDERING SIGNS

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
PROFESSIONAL LICENSED ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.		REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

PROPOSED SIGN DETAILS LOCATIONS L18-L21 CSJ 2104-02-040 FM 1957

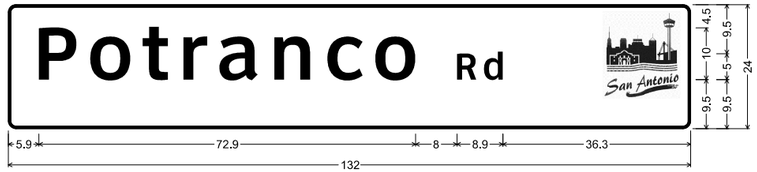
SHEET 13 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		92
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

6/18/2024 3:27:58 PM
...\Location L Intersection layouts-1.dgn

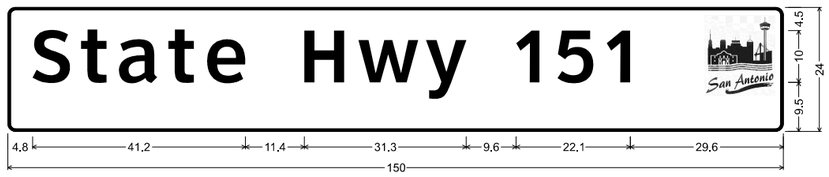
PROPOSED SIGN DETAILS LOCATION L22-L25 (SEE SHEET 7)

S1



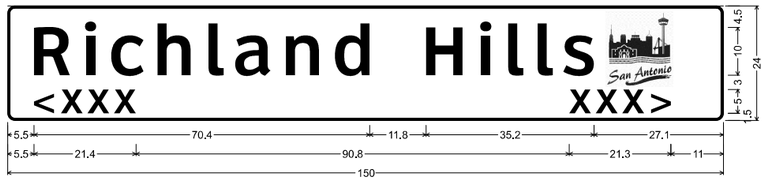
D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Potranco", ClearviewHwy-5-W; "Rd", ClearviewHwy-5-W; "", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

S2



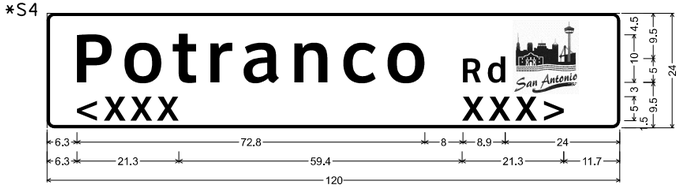
D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"State Hwy 151 ", ClearviewHwy-5-W; "", ClearviewHwy-5-W; "", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

*S3



D3-1G-120"X24";
1.5" Radius, 0,5" Border, White on Blue;
"Richland Hills", ClearviewHwy-5-W; "", ClearviewHwy-5-W; "<XXX XXX> ", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

*S4



D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Potranco", ClearviewHwy-5-W; "Rd", ClearviewHwy-5-W; "<XXX XXX> ", ClearviewHwy-6-W;
"", ClearviewHwy-3-W;

* CONTRACTOR TO VERIFY BLOCK NUMBERS ON SITE PRIOR TO ORDERING SIGNS

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.		REVISION	APPROV.

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PROPOSED SIGN DETAILS LOCATIONS L22-L25 CSJ 2104-02-040 FM 1957

SHEET 14 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		93
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

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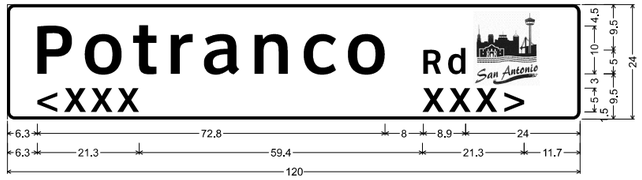
...\Location L Intersection layouts-1.dgn

PROPOSED SIGN DETAILS LOCATION L26-27 (SEE SHEET 7)

*S1

D3-1G-120"X24";
1.5" Radius, 0.5" Border, White on Blue;
"Micron", ClearviewHwy-5-W; "Dr", ClearviewHwy-5-W;
" XXX>", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

*S2



D3-1G-120"X24";
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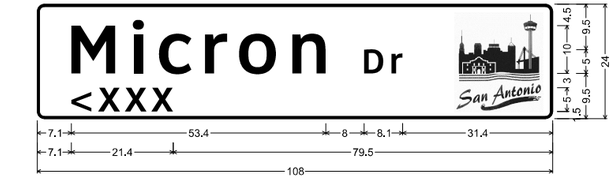
"Potranco", ClearviewHwy-5-W; "Rd", ClearviewHwy-5-W; "<XXX XXX> ", ClearviewHwy-6-W;
"", ClearviewHwy-3-W;

*S3



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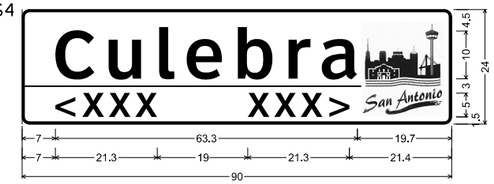
1.5" Radius, 0.5" Border, White on Blue;
"Micron", ClearviewHwy-5-W; "Dr", ClearviewHwy-5-W; "<XXX ", ClearviewHwy-6-W;
"", ClearviewHwy-3-W;

*S4



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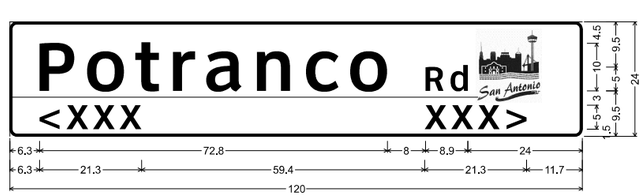
"<XXX XXX> ", ClearviewHwy-6-W; "", ClearviewHwy-3-W;

*S2



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1.5" Radius, 0.5" Border, White on Blue;
"Potranco", ClearviewHwy-5-W; "Rd", ClearviewHwy-5-W; "<XXX XXX> ", ClearviewHwy-6-W;
"", ClearviewHwy-3-W;

* CONTRACTOR TO VERIFY BLOCK NUMBERS ON SITE PRIOR TO ORDERING SIGNS

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MC Magallanez

MICHELLE C. MAGALLANEZ, P.E. — 6/18/2024 DATE

NO.		REVISION	APPROV.

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
8131 JACKRABBIT RD. Houston, TX. 77095
PHONE: (713) 828-4742

PROPOSED SIGN DETAILS LOCATIONS L26-L27 CSJ 2104-02-040 FM 1957

SHEET 15 OF 15

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		94
STATE	DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

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GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

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© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
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		SAT	MEDINA, ETC.		95

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.
12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

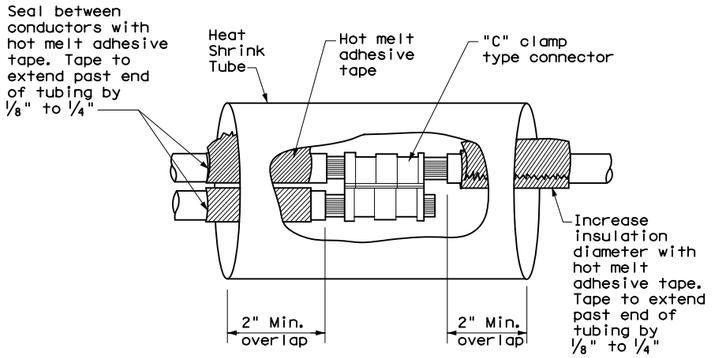
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

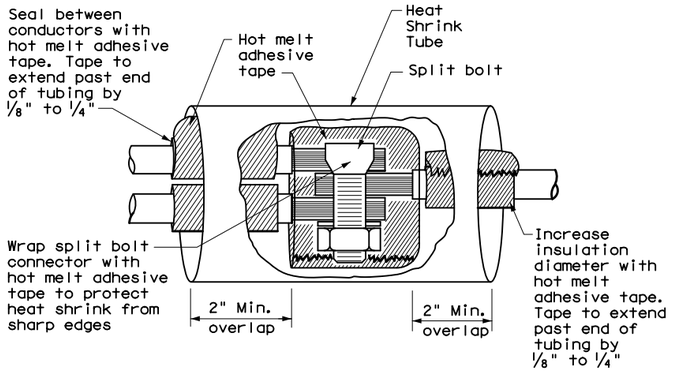
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

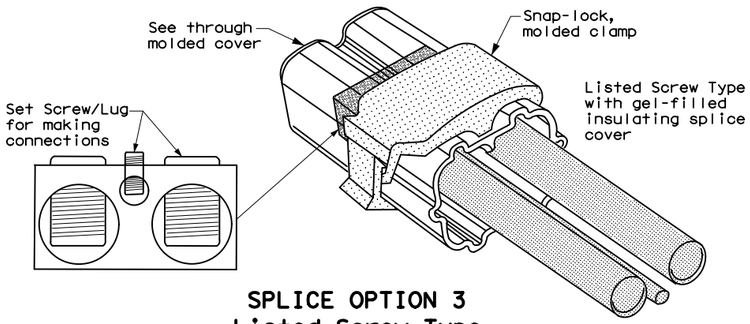
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation | Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

FILE: ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
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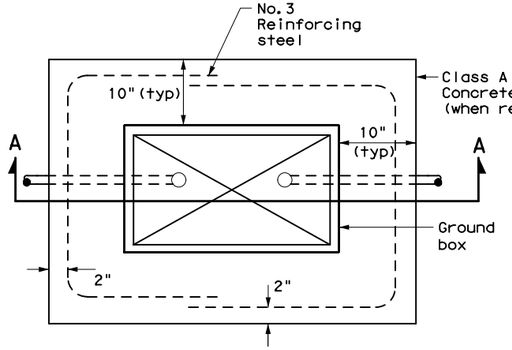
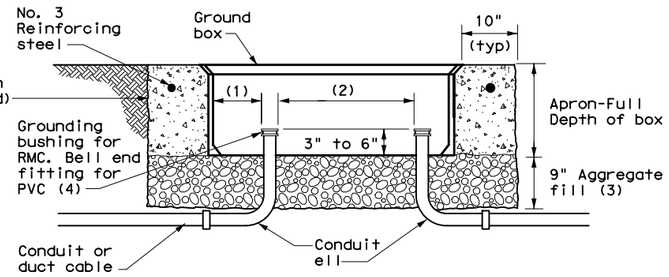


PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

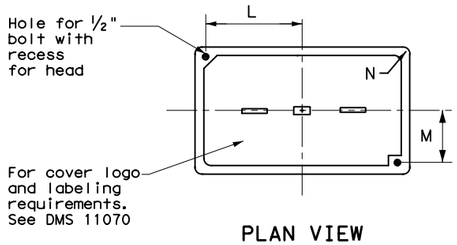
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

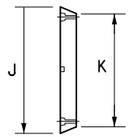
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



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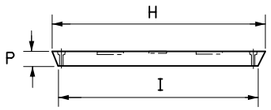

SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS GROUND BOXES

ED(4)-14

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	DIST	COUNTY		SHEET NO.
	SAT	MEDINA, ETC.		97

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ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

Schematic Type

Service Voltage V / V

Disconnect Amp Rating
000 indicates main lug only/
Typically Type T

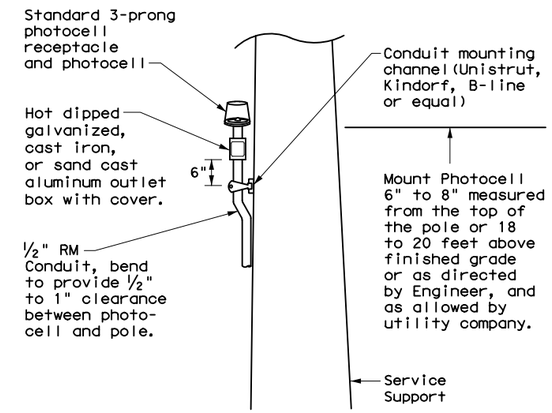
(SS)= Safety Switch Ahead of Meter-Check with Utility
(NS)= No safety Switch Ahead of Meter-Check with Utility

Enclosure Type
GS= Galvanized steel("off the shelf")
SS= Stainless steel(Custom Enclosure)See MPL
AL= Aluminum (Custom Enclosure)See MPL

Photocell Mounting Location
(E)= Inside Service/Enclosure Mounted
(T)= Top of pole
(L)= Luminaire mounted
(N)= None/No Photocell or Lighting Contactor Required

Service Support Type
GC= Granite concrete
OC= Other concrete
TP= Timber pole
SP= Steel pole
SF= Steel frame
OT= Pole by others or paid for separately
EX= Existing pole
TS= Service on traffic signal pole
PS= Pedestal Service

O= Overhead Service Feed from Utility
U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	SAT	MEDINA, ETC.		98

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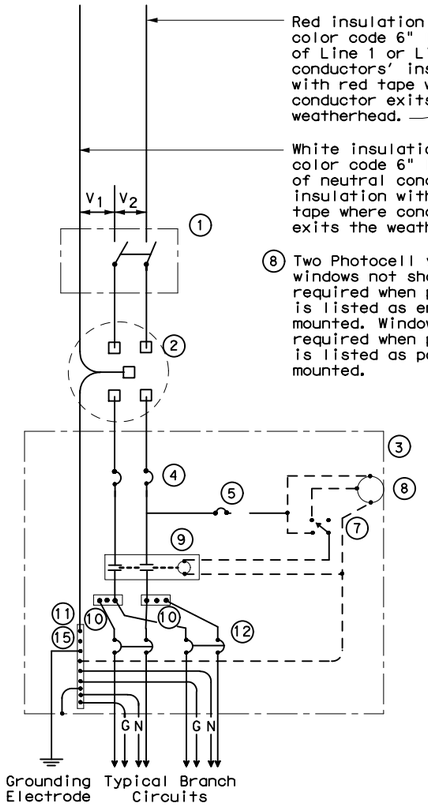
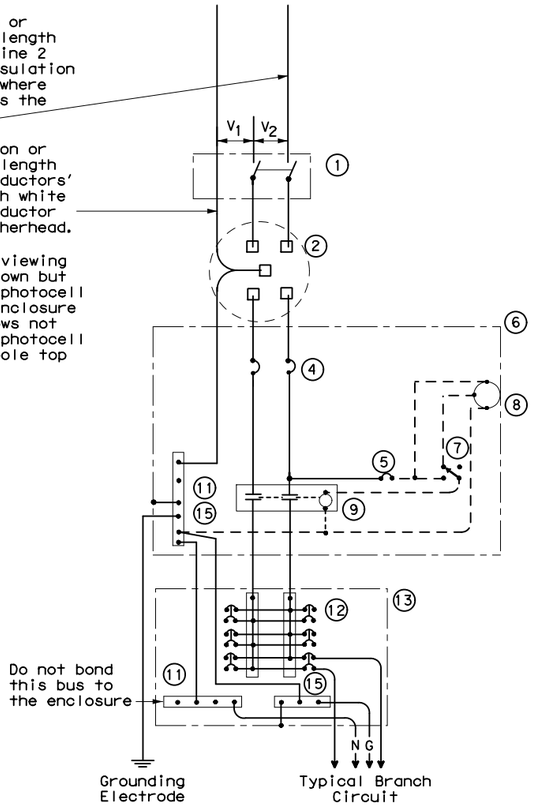
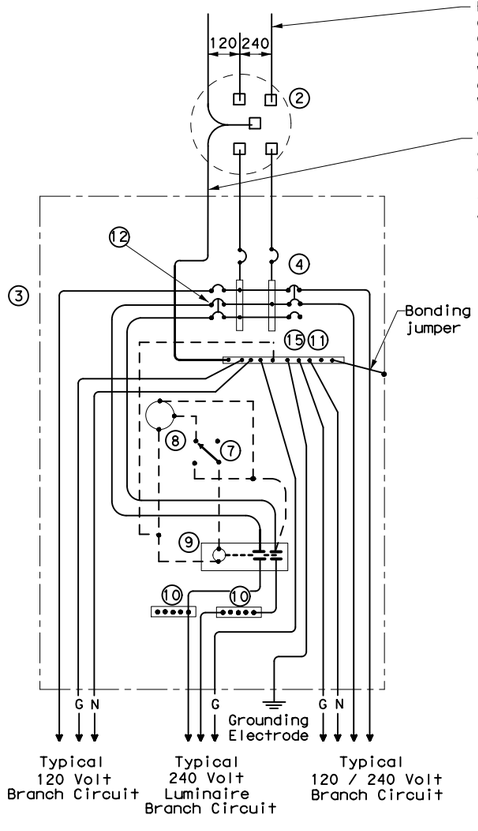


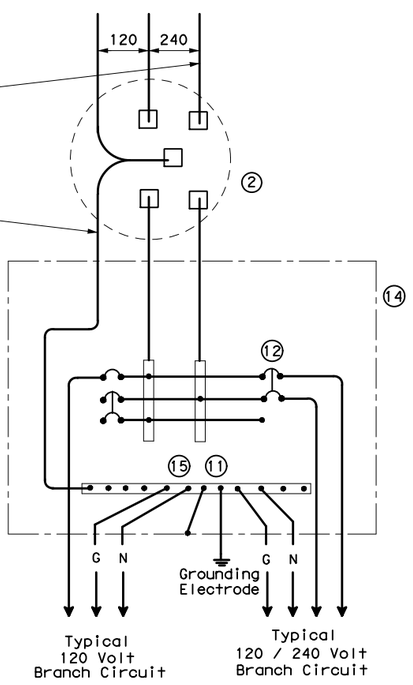
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
- - - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

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	SAT	MEDINA, ETC.		99

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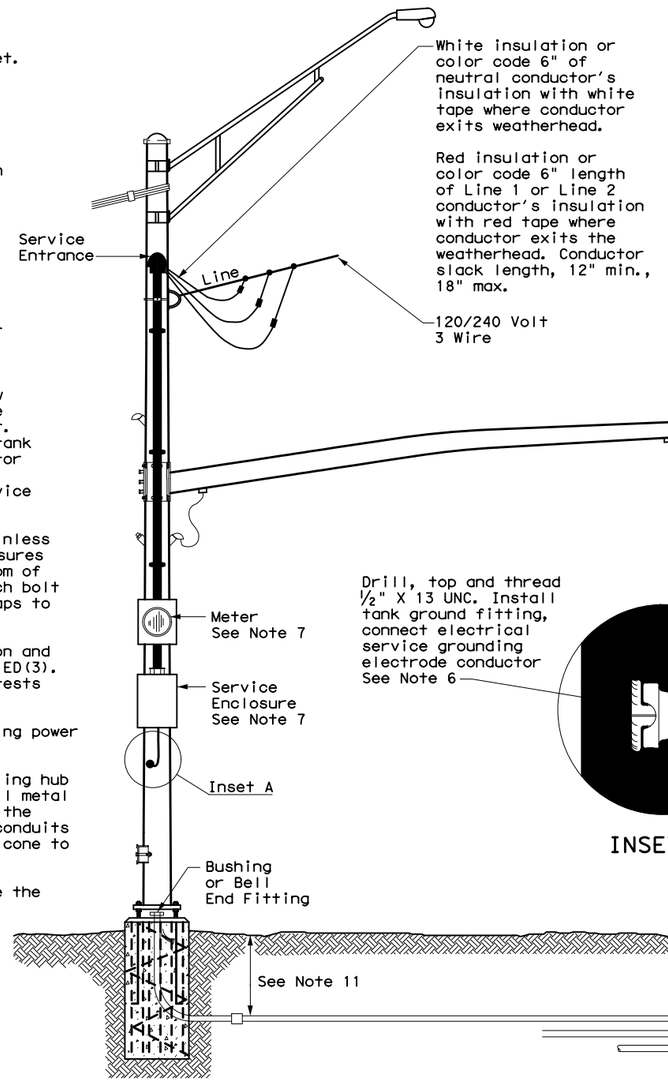
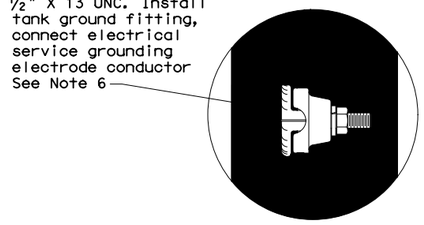
TRAFFIC SIGNAL NOTES

1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".

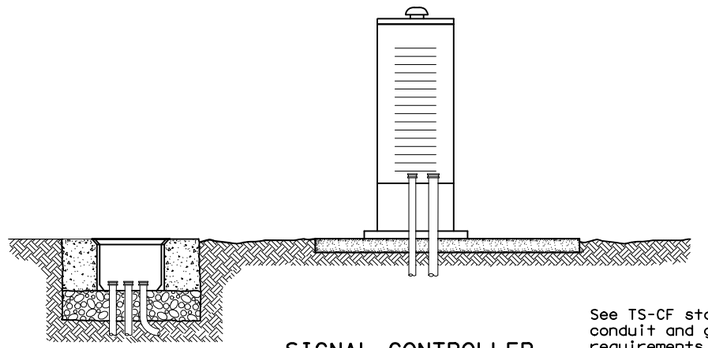


SIGNAL POLE WITH SERVICE

Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

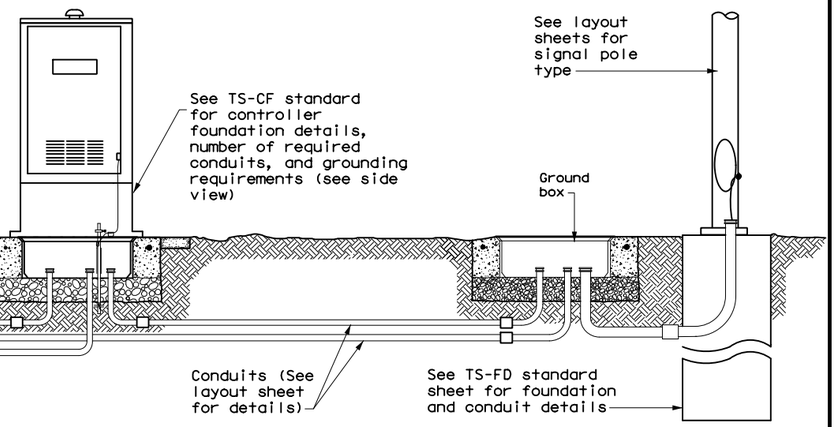


INSET A



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.



SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE

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Texas Department of Transportation | Traffic Operations Division Standard

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(8)-14

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PEDESTAL SERVICE NOTES

1. Manufacture pedestal electrical services in accordance with Departmental Material Specifications (DMS)11080 "Electrical Services", 11085 "Electrical Services-Pedestal (PS)" and Item 628 "Electrical Services. "Provide pedestal electrical services as listed on the Material Producers list (MPL) on the Department's web site under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.

2. When a meter socket is required, provide a socket with a minimum 100 amp rating that complies with local utility requirements.

3. Provide Class A or C concrete for pedestal service foundations in accordance with Item 420, "Concrete Substructures," except that concrete will not be paid for directly but is considered subsidiary to Item 628.

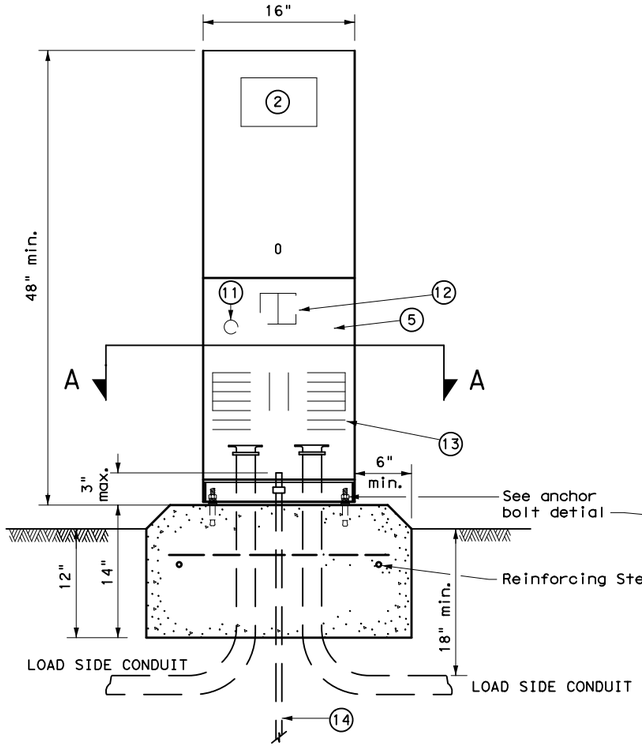
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

5. Install ½ in. X 2 1/16 in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Anchor location to match mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a ½ in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.

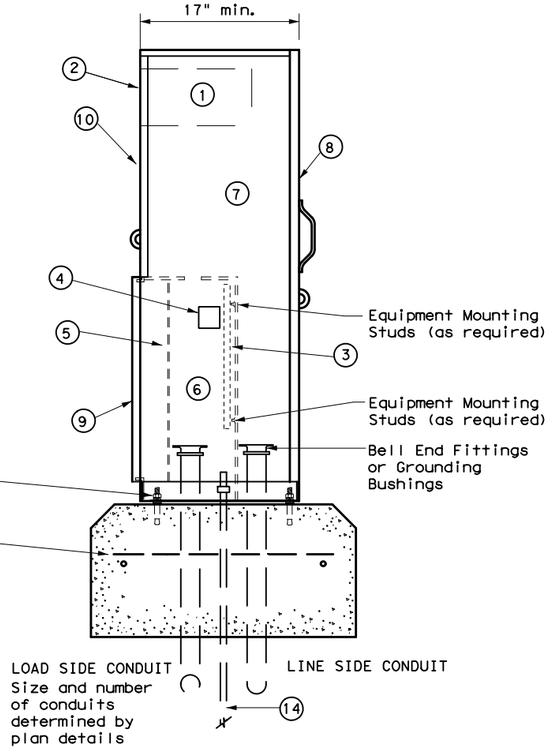
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than ⅛ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within ¼ in. Repair rocking or movement of the service enclosure at no additional cost to the department.

7. Do not use liquidtight flexible metal conduit (LFMC) on pedestal type services.

8. Ensure all elbows in the foundation are sized as per utility provider's conduit requirements for underground conduit and feeders. PVC extensions may be installed provided the ends of the rigid metal conduits are more than 2 in. below the top of the concrete foundation. Where extension conduits are metal, grounding bushings must be installed with a bonding jumper properly terminated.

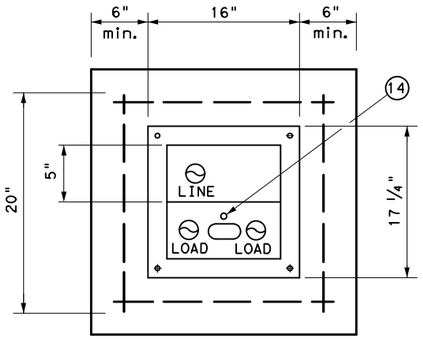


FRONT VIEW

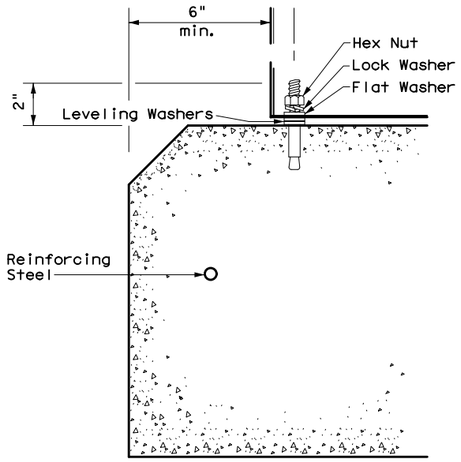


SIDE VIEW

TYPE C shown, TYPE A similar except that TYPE A shall have individual circuit breakers (CB) mounted on an equipment mounting panel. CB Handles shall protrude through hinged deadfront trim.



SECTION A-A



ANCHOR BOLT DETAIL

LEGEND	
1	Meter Socket, (when required)
2	Meter Socket Window, (when required)
3	Equipment Mounting Panel
4	Photo Electric Control Window, (When required)
5	Hinged Deadfront Trim
6	Load Side Conduit Trim
7	Line Side Conduit Area
8	Utility Access Door, with handle
9	Pedestal Door
10	Hinged Meter Access
11	Control Station (H-O-A Switch)
12	Main Disconnect
13	Branch Circuit Breakers
14	Copper Clad Ground Rod - 5/8" X 10'

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS
ED(9)-14

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TIMBER POLE (TP) SERVICE SUPPORT NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627 "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Conduit and electrical conductors attached to the electrical service pole and underground within 12 in. of service pole are not paid for directly but are subsidiary to the electrial service.
3. Install pole-top mounted photocell (T) on north side of pole, or in service enclosure (E) as required. See Electrical Service Data chart in plan set.
4. Gain pole as required to provide flat surface for each channel. Gain timber pole to 5/8 in. max. depth and 1 7/8 in. max. height. Gain pole in a neat and workmanlike manner.
5. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to 3 3/4 in. maximum depth, and 1½ in. to 1⅝ in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or SS lag bolts, ¼ in. minimum diameter by 1½ in. minimum length. Use a galvanized or SS flat washer on each lag bolt. Do not stack channel.
6. When excess length must be trimmed from poles, trim from the top end only.

(1) Class 5 pole, height as required

(2) Service drop from utility company (attached below weatherhead)

(3) Service conduit (RMC) and service entrance conductors - One Red, One Black, One White (See Electrical Service Data)

(4) Safety switch (when required)

(5) Meter (when required)

(6) Service enclosure

(7) 6 AWG bare grounding electrode conductor in ½ in. PVC to ground rod - extend ½ in. PVC 6 in. underground.

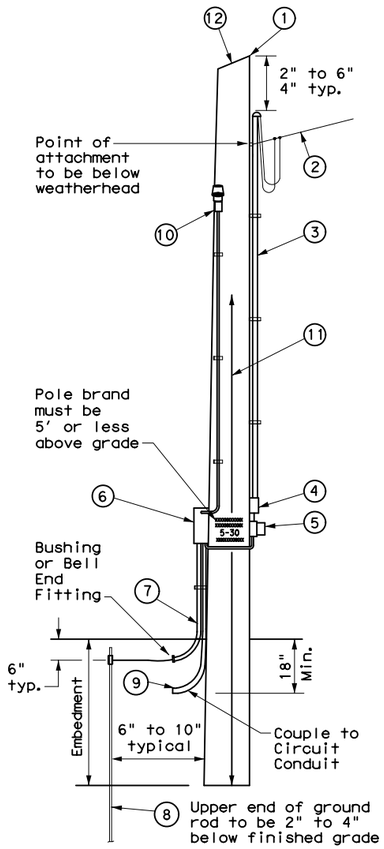
(8) 5/8 in. x 8 ft. Copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.

(9) RMC same size as branch circuit conduit.

(10) See pole-top mounted photocell detail on ED(5).

(11) When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.

(12) When required by utility, cut top of pole at an angle to enhance rain run off.

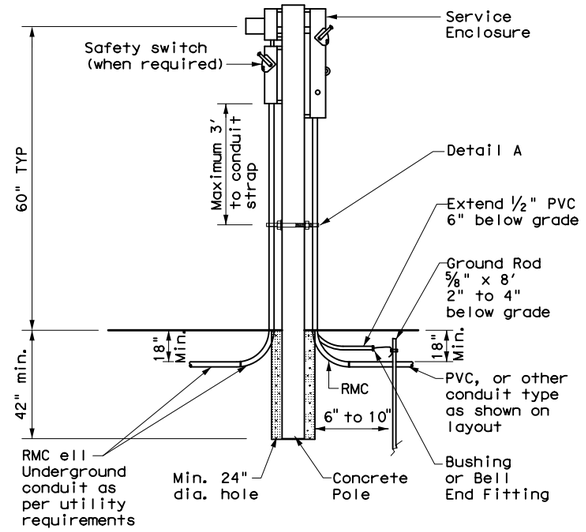


SERVICE SUPPORT TYPE TP (O)

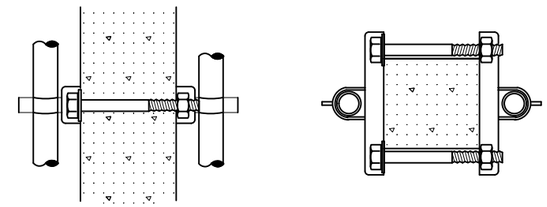
GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) NOTES

Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the following requirements.

1. Provide GC and OC poles that meet the requirements of DMS 11080 "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS 11080. Location of marking should be approximately 4' above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Ensure all installation details of services are in accordance with utility company specifications.
6. Install a one point rack or eye bolt bracket 6 inches to 12 inches below the weatherhead as an overhead service drop anchoring point for the electric utility.
7. Furnish and install galvanized or stainless steel channel strut 1 ½ in. or 1 ⅝ in. wide by 1 in. up to 3 3/4 in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1" depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.
8. Backfill the holes thoroughly by tamping in 6 in. lifts. After tamping to grade, place additional backfill material in a 6 inch high cone around the pole to allow for settling. Use material equal in composition and density to the surrounding area. Backfilling will not be paid for directly but is subsidiary to various bid items.

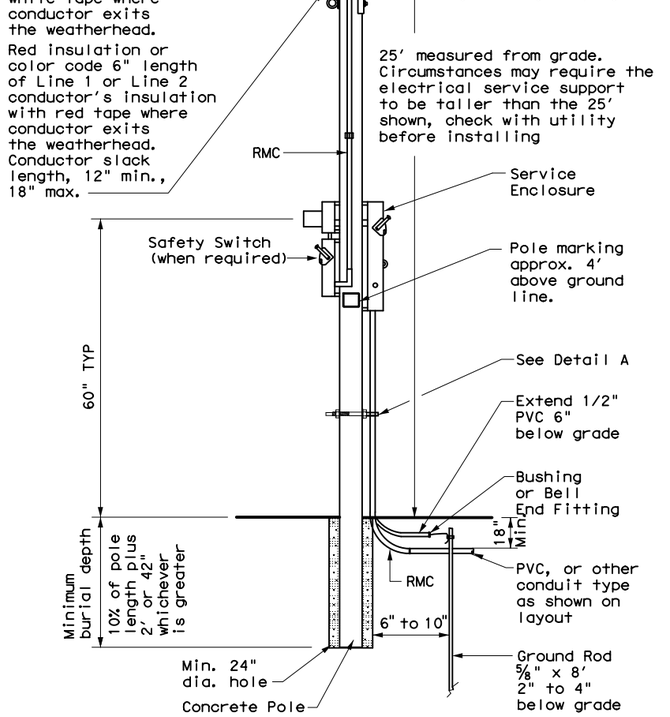


CONCRETE SERVICE SUPPORT
Underground (U)



DETAIL A

See Note 7. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.



CONCRETE SERVICE SUPPORT
Overhead (O)

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP

ED(10)-14

FILE: ed10-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0024	05	102	US 90
	DIST	COUNTY		SHEET NO.
	SAT	MEDINA, ETC.		102

71K

DATE: 6/12/2024 10:40:52 AM
FILE: ...\Standards\83_ed10-14.dgn

DUCT CABLE & HDPE CONDUIT NOTES

1. Provide duct cable in accordance with Departmental Material Specification (DMS) 11060 "Duct Cable" and Item 622 "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 622.

2. Provide High-Density Polyethylene (HDPE) conduit in accordance with DMS 11060 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.

3. Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.

4. Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel RMC elbows are called for in the plans and any portion of the RMC elbow is buried less than 18" from possible contact, ground the RMC elbow.

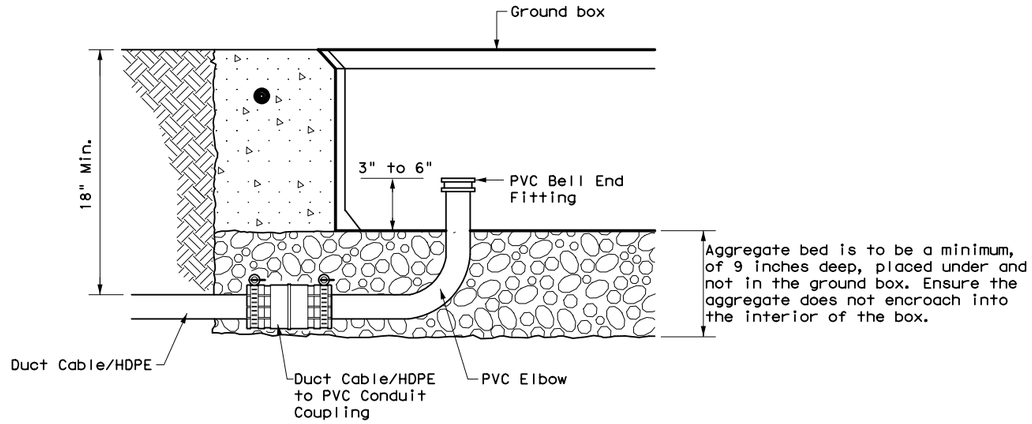
5. Furnish and install duct cable with factory installed conductors, sized as shown in the plans and as required by the National Electrical Code (NEC). The NEC contains specific requirements for duct cable in Article, "Nonmetallic Underground Conduit with Conductors: Type NUCC."

6. When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.

7. Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after completing the pull tests required by Item 622.

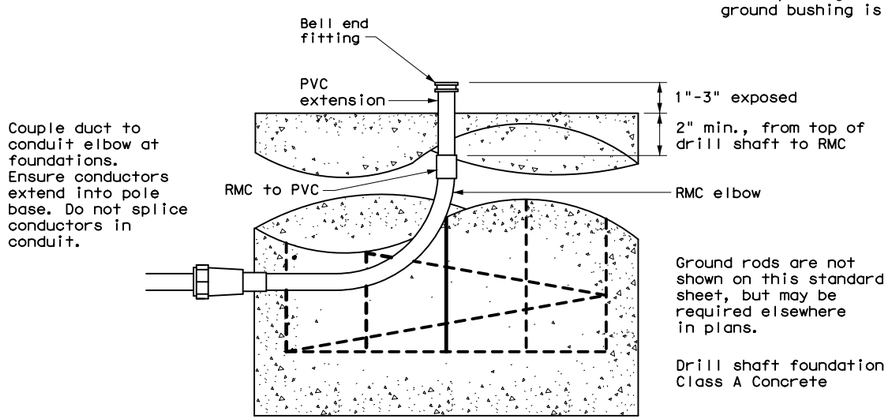
8. Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.

9. Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field-threaded and spliced with PVC or RMC threaded couplings; connected with listed tie-wrap fittings; connected using listed coupling made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors all installed in accordance with their manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.

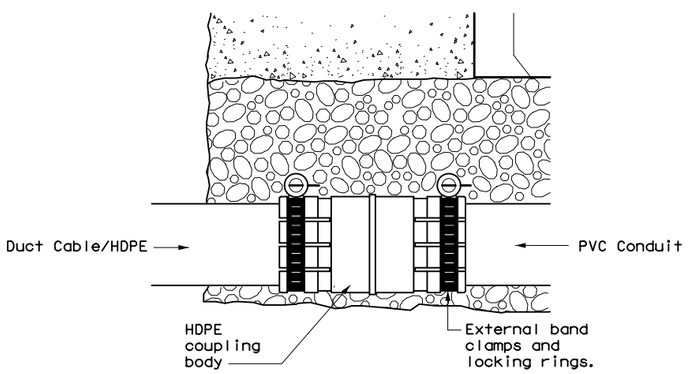


DUCT CABLE/HDPE AT GROUND BOX

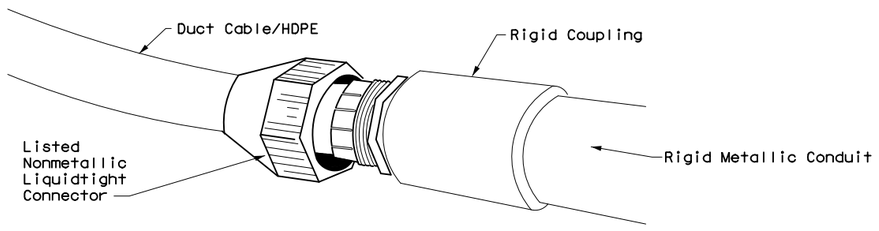
When the upper end of an RMC Ell does not enter the ground box, it may be extended with a SCH-40 PVC conduit nipple and bell end, provided there is a minimum of 18" of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.



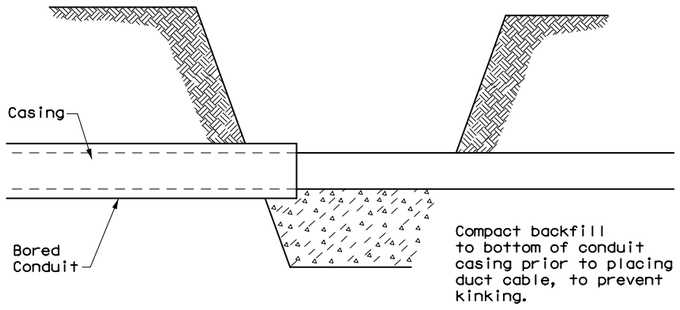
DUCT CABLE / HDPE AT FOUNDATION



DUCT CABLE/HDPE TO PVC



DUCT CABLE/HDPE TO RMC



BORE PIT DETAIL

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
DUCT CABLE/ HDPE CONDUIT

ED(11)-14

FILE: ed11-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0024	05	102	US 90
	DIST	COUNTY		SHEET NO.
	SAT	MEDINA, ETC.		103

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DATE: 6/12/2024 10:41:14 AM
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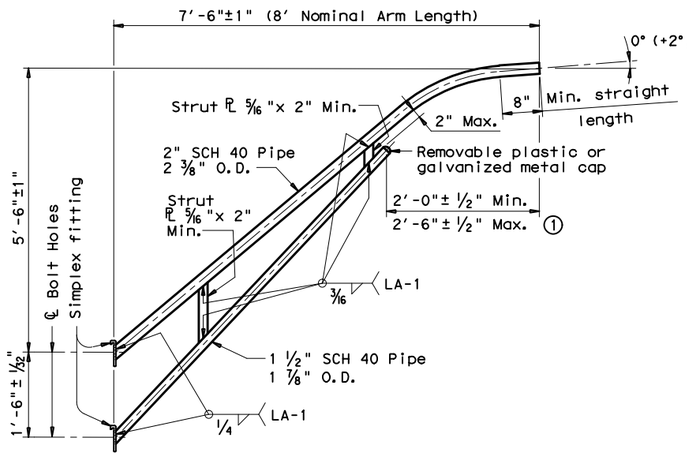
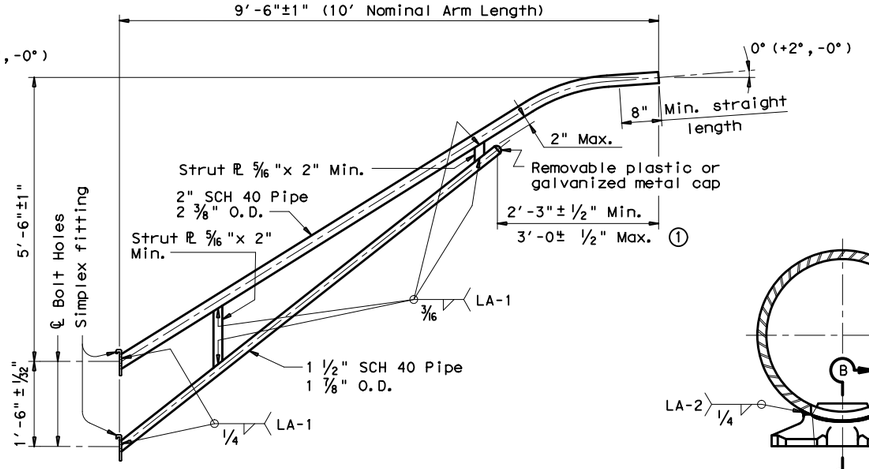
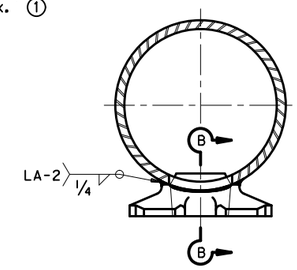


8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM



DIRECT ATTACHMENT DETAIL

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr.65-35 or A148 Gr.80-50, A576 Gr.1021 ③, or A36 (Arm only)
Arm Pipes	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50 ④, or A1011 HSLAS-F Gr.50 ④
Arm Strut Plates ②	ASTM A36, A572 Gr.50 ④, or A588
Misc.	ASTM designations as noted

① Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

② Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

③ A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

④ ASTM A572, A1008 HSLAS-F, and A1011 HSLAS-F may have higher yield strengths but shall not have less elongation than the grade indicated.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. Design Wind Speed equals 90 mph plus a 1.3 gust factor. Arms are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq. ft.

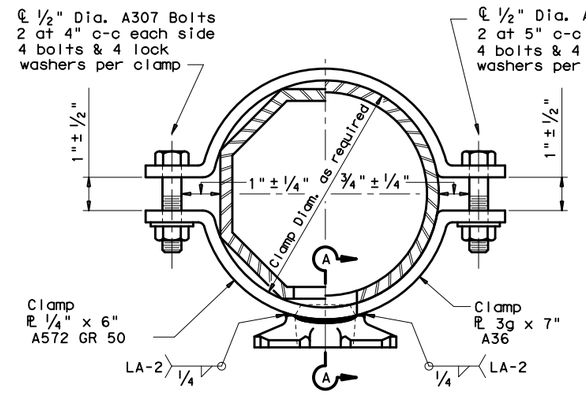
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absense of specified Fabricaton tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.

Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing".

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

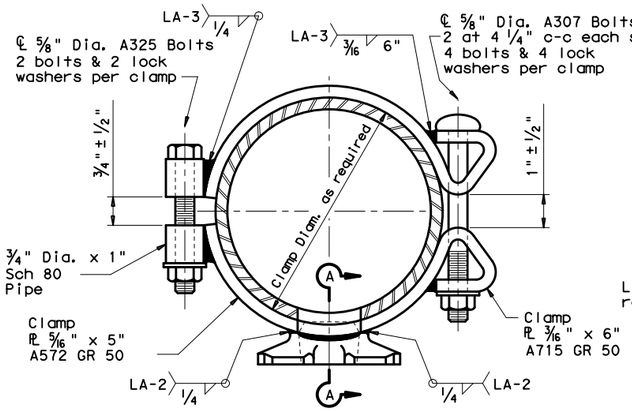
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly securely attached to the pole at the location shown on the plans.

If clamp assemblies are ordered without poles, the Fabricator shall ship one upper and one lower clamp assembly together in a single package, including all nuts and washers required for the clamps and simplex fittings.



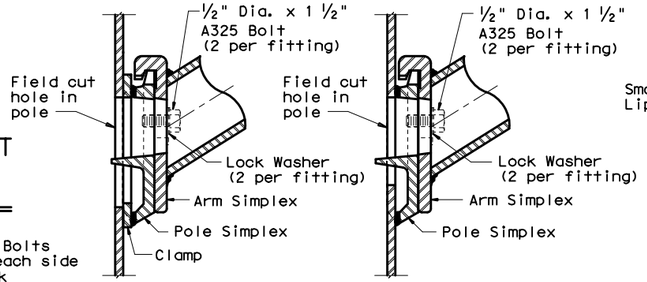
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



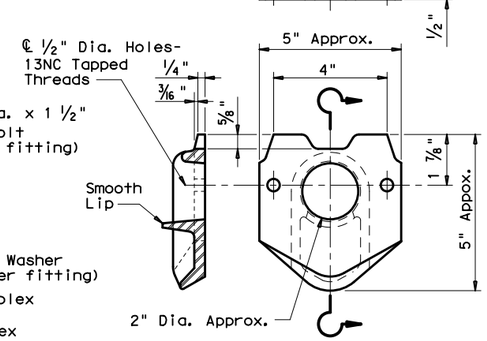
CLAMP ATTACHMENT DETAIL NO. 3 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)

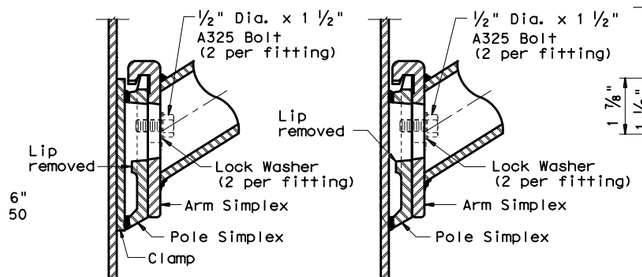


UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING



POLE SIMPLEX DETAIL

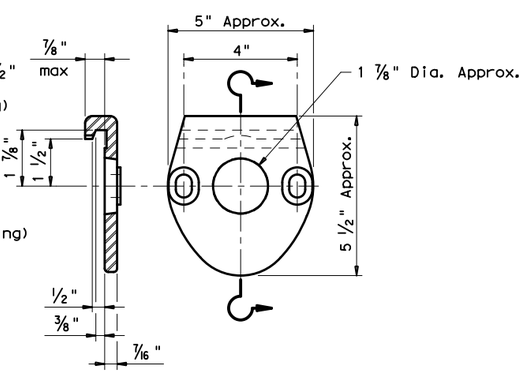


LOWER SIMPLEX FITTING

LOWER SIMPLEX FITTING

SECTON A-A

SECTON B-B



ARM SIMPLEX DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES

ARM DETAILS

LUM-A-12

DN: LEH	CK: JSY	DW: LTT	CK: TEB

REVISIONS: 5-96, 1-99, 1-12

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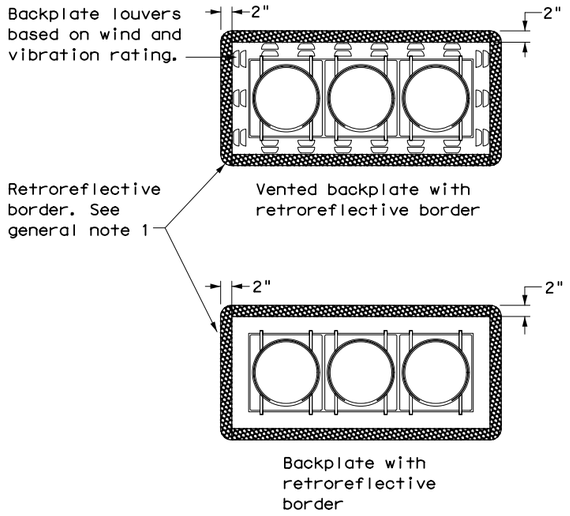
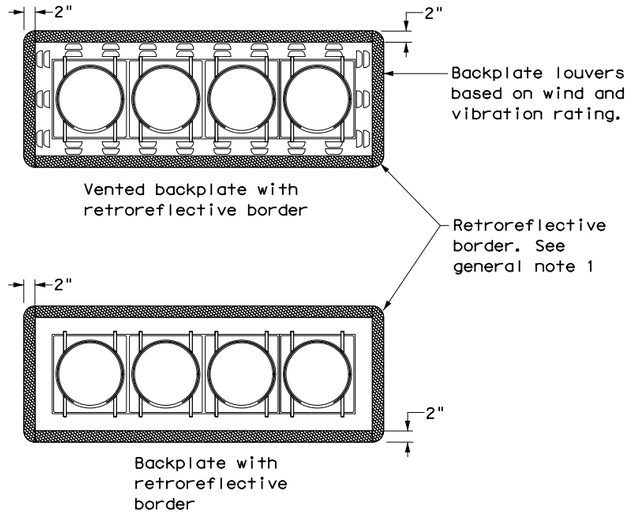
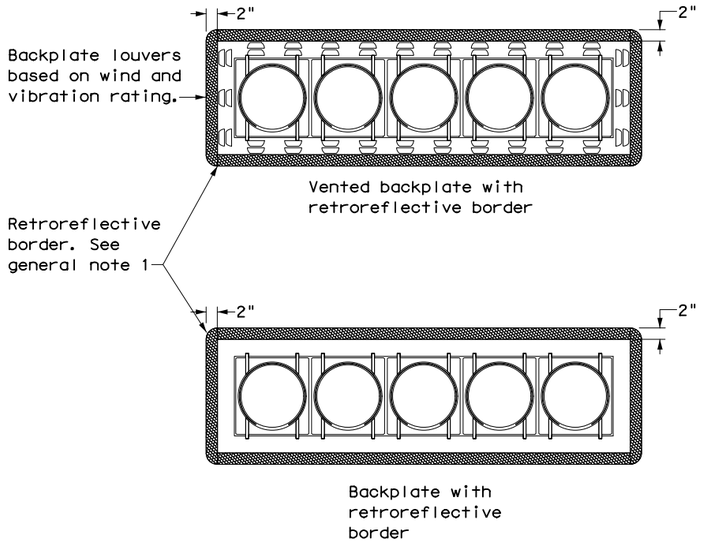


THREE-SECTION HEAD
HORIZONTAL OR VERTICAL



FOUR-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
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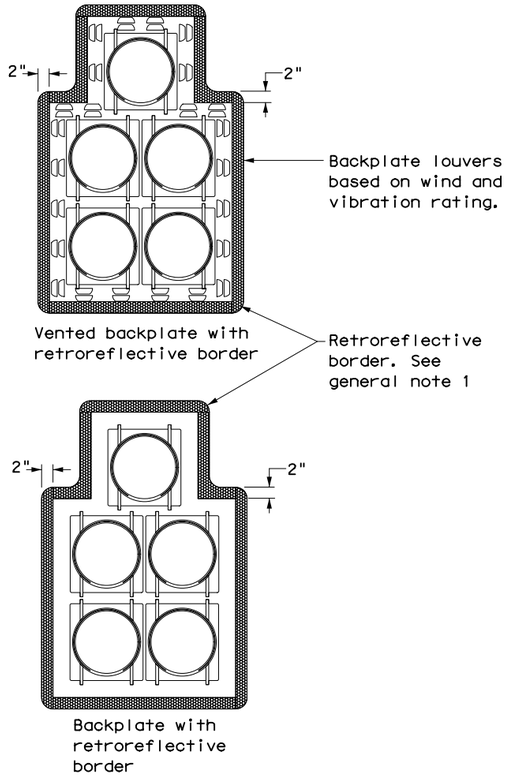
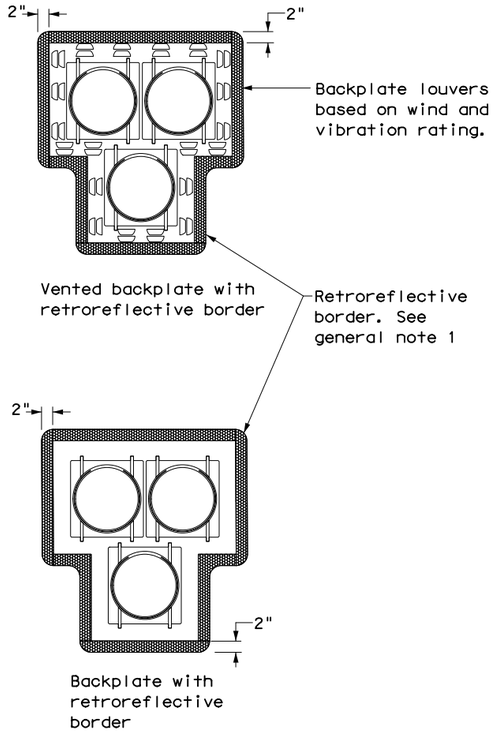


FIVE-SECTION HEAD
CLUSTER



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
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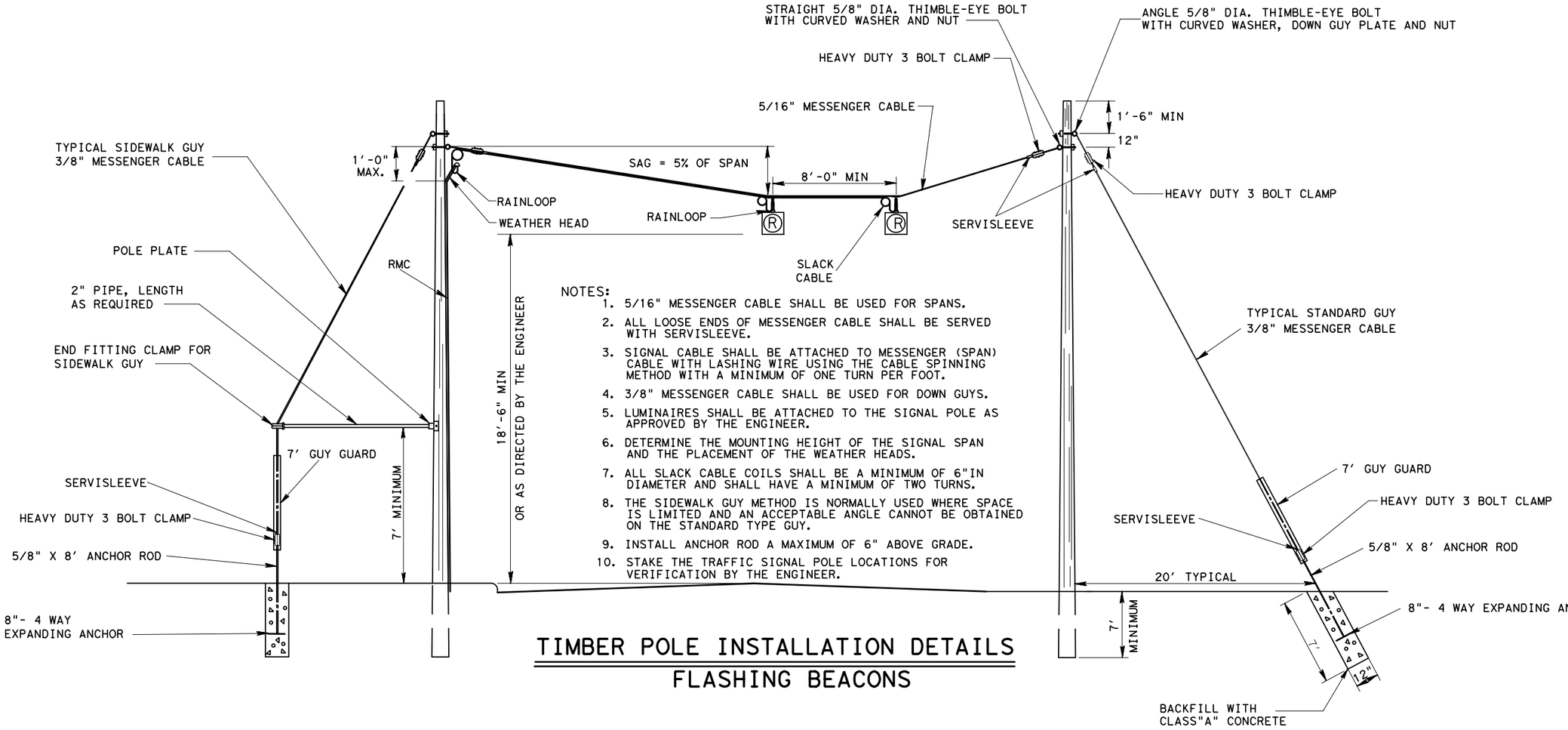
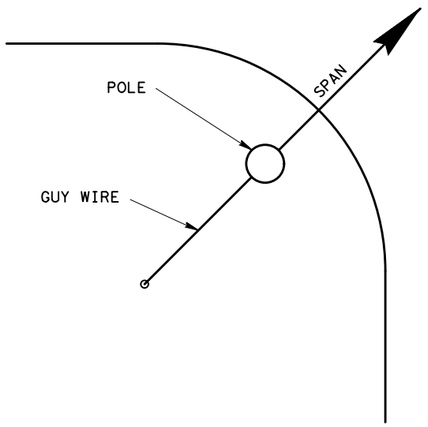


NOTES:

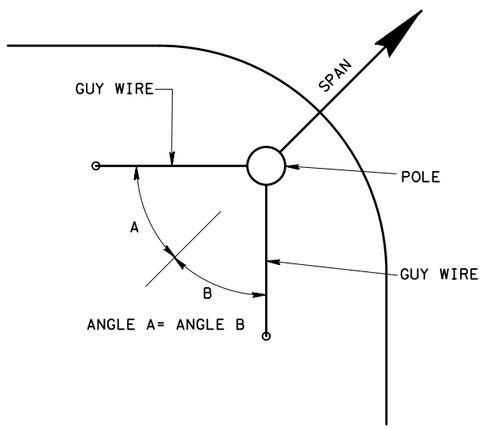
1. 5/16" MESSENGER CABLE SHALL BE USED FOR SPANS.
2. ALL LOOSE ENDS OF MESSENGER CABLE SHALL BE SERVED WITH SERVISLEEVE.
3. SIGNAL CABLE SHALL BE ATTACHED TO MESSENGER (SPAN) CABLE WITH LASHING WIRE USING THE CABLE SPINNING METHOD WITH A MINIMUM OF ONE TURN PER FOOT.
4. 3/8" MESSENGER CABLE SHALL BE USED FOR DOWN GUYS.
5. LUMINAIRES SHALL BE ATTACHED TO THE SIGNAL POLE AS APPROVED BY THE ENGINEER.
6. DETERMINE THE MOUNTING HEIGHT OF THE SIGNAL SPAN AND THE PLACEMENT OF THE WEATHER HEADS.
7. ALL SLACK CABLE COILS SHALL BE A MINIMUM OF 6"IN DIAMETER AND SHALL HAVE A MINIMUM OF TWO TURNS.
8. THE SIDEWALK GUY METHOD IS NORMALLY USED WHERE SPACE IS LIMITED AND AN ACCEPTABLE ANGLE CANNOT BE OBTAINED ON THE STANDARD TYPE GUY.
9. INSTALL ANCHOR ROD A MAXIMUM OF 6" ABOVE GRADE.
10. STAKE THE TRAFFIC SIGNAL POLE LOCATIONS FOR VERIFICATION BY THE ENGINEER.

TIMBER POLE INSTALLATION DETAILS
FLASHING BEACONS

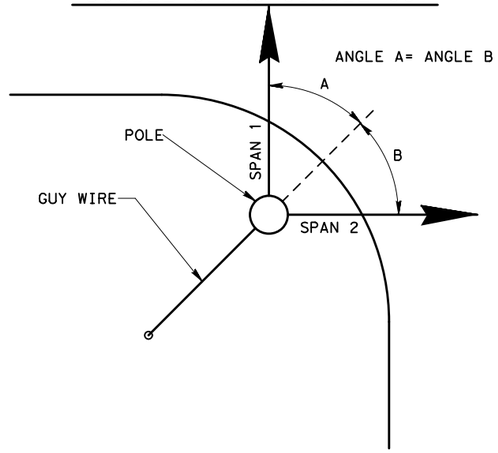
SINGLE SPAN-SINGLE GUY



SINGLE SPAN-DOUBLE GUY



DOUBLE SPANS-SINGLE GUY



TYPICAL GUY ALIGNMENT

Texas Department of Transportation
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San Antonio District Standard

FLASHING BEACON TIMBER POLE INSTALLATION DETAILS

SCALE: NS

FBTP-18

REVISIONS	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
FEB 2006	6	$FAP-NO$		106
OCT 2006	STATE	DIST.	COUNTY	
MAY 2018	TEXAS	SAT	MEDINA, ETC.	
	CONT.	SECT.	JOB	HIGHWAY NO.
	0024	05	102	US 90

LEVELS DISPLAYED
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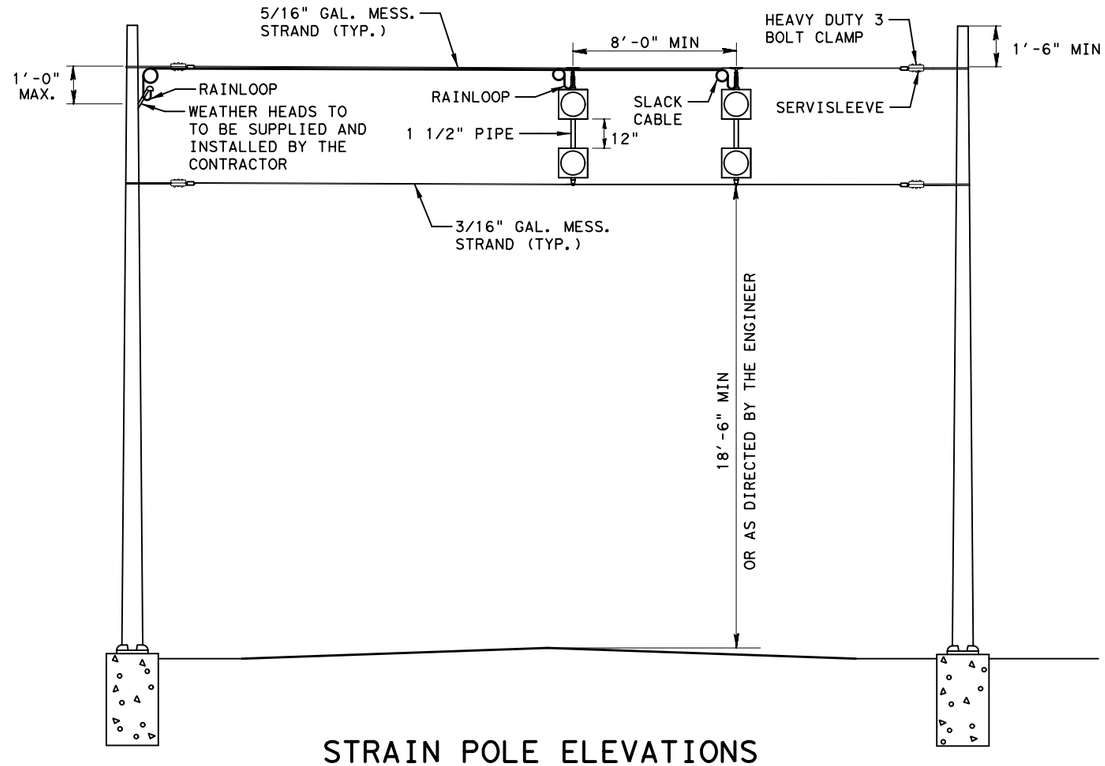
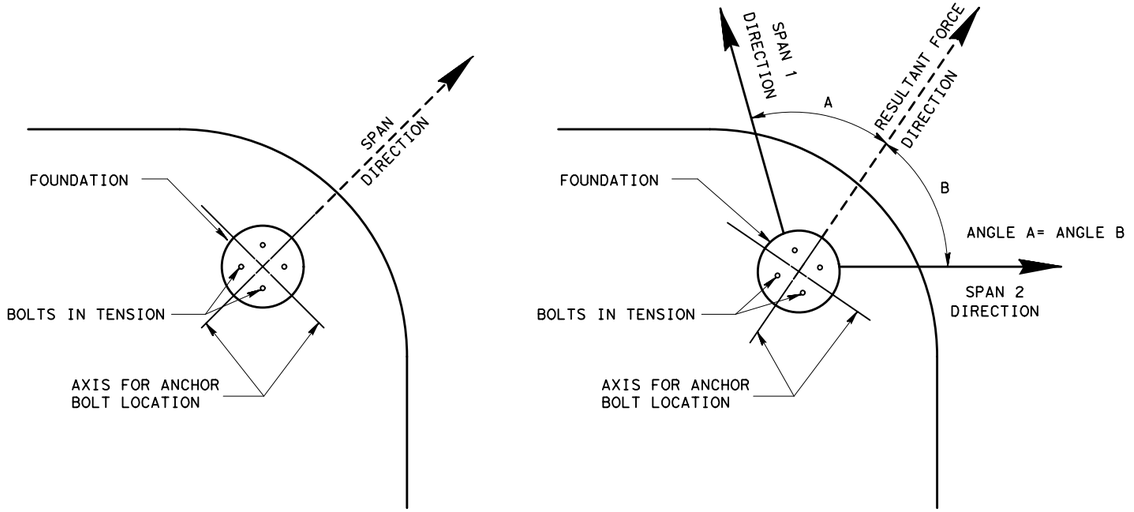


STRAIN POLE ELEVATIONS
FLASHING BEACONS

NOTES:

1. 5/16" AND 3/16" MESSENGER CABLE SHALL BE USED FOR SPANS.
2. ALL LOOSE ENDS OF MESSENGER CABLE SHALL BE SERVED WITH SERVISLEEVE.
3. SIGNAL CABLE AND DETECTOR CABLE SHALL BE ATTACHED TO MESSENGER (SPAN) CABLE WITH LASHING WIRE USING THE CABLE SPINNING METHOD WITH A MINIMUM OF ONE TURN PER FOOT.
4. DETERMINE THE MOUNTING HEIGHT OF THE SIGNAL SPAN AND THE PLACEMENT OF THE WEATHER HEADS.
5. ALL SLACK CABLE COILS SHALL BE A MINIMUM OF 6"IN DIAMETER AND SHALL HAVE A MINIMUM OF TWO TURNS.
6. WEATHER HEADS INSTALLED ON THE STRAIN POLE SHALL EQUAL THE SIZE AND NUMBER OF CONDUIT INSTALLED IN THE SIGNAL POLE FOUNDATION.



TYPICAL ANCHOR BOLT ALIGNMENT

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San Antonio District Standard

FLASHING BEACON STEEL STRAIN POLE INSTALLATION DETAILS

SCALE: NS

FBSP-18

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	0024	05	102	US 90

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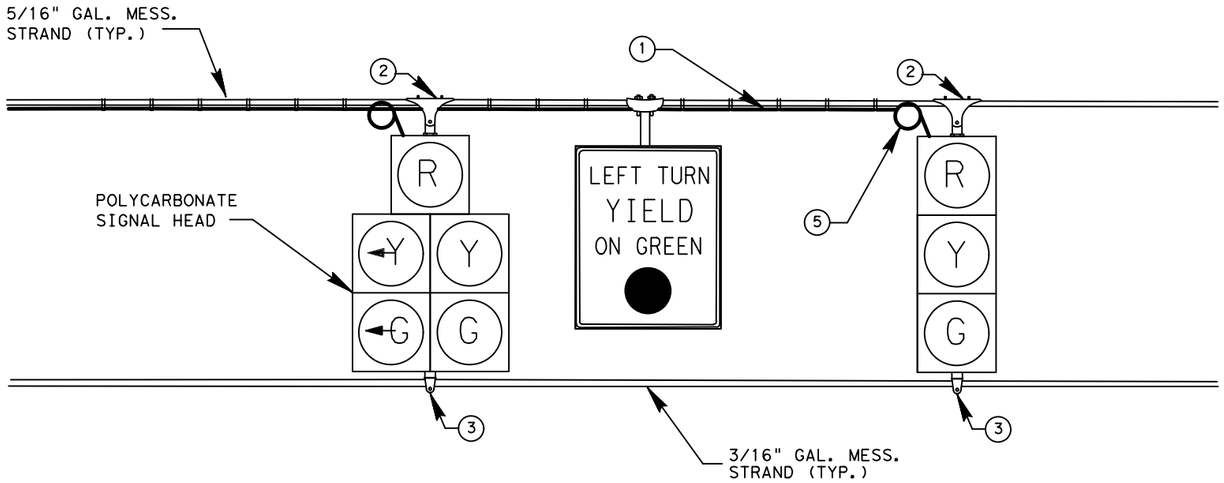

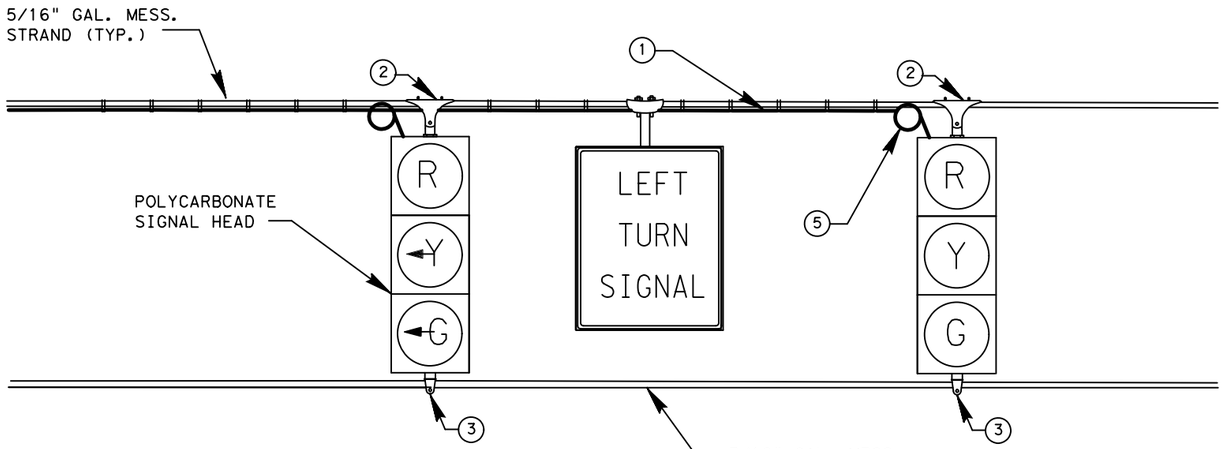

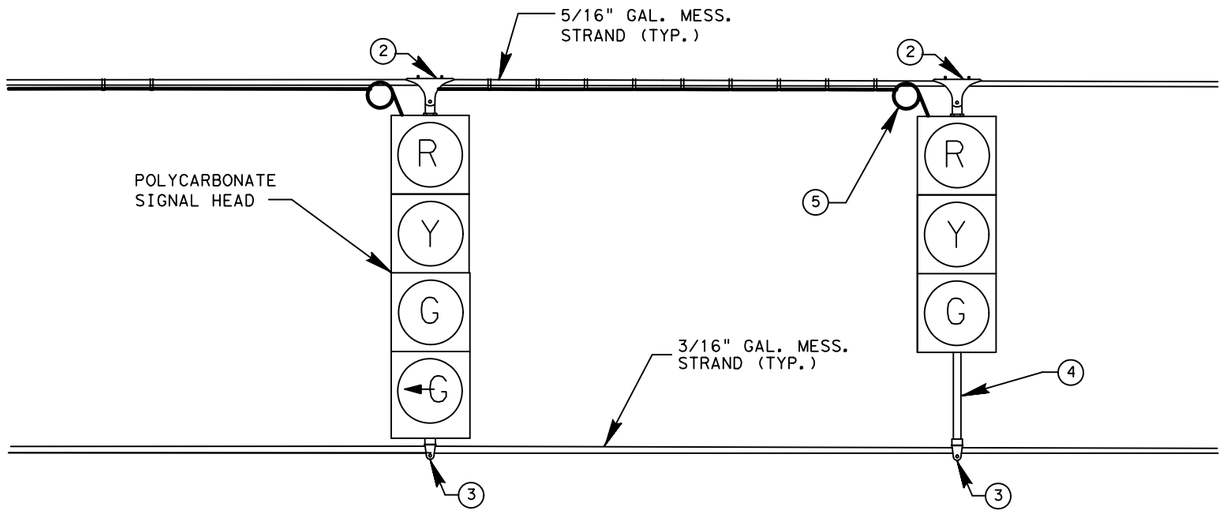

(1) LEAD - IN CABLE FROM CONTROLLER TO SIGNAL HEAD.

(2) CAST ALUMINUM SPAN WIRE CLAMP AND CLEVIS ADAPTER. SECURE CLEVIS PIN WITH A WASHER (BOTH ENDS) AND HUMP BACK COTTER PIN. DRILL CLEVIS PIN OPENINGS AND FIT WITH A SPLIT BUSHING. CLEVIS PIN, WASHER, COTTER PIN, AND SPLIT BUSHING TO BE STAINLESS STEEL.

(3) BREAKAWAY TETHER ASSEMBLY.

(4) 1 1/2 ALUM. PIPE (TYP.).

(5) ALL SLACK CABLE COILS SHALL BE A MINIMUM OF 6"IN DIAMETER AND SHALL HAVE A MINIMUM OF TWO TURNS.

NOTE: BACKPLATES OMITTED FOR CLARITY.

SETSCREWS SHALL BE INSTALLED IN ALL PIPE FITTINGS.

SIGNAL CABLE AND DETECTOR CABLE SHALL BE ATTACHED TO MESSENGER (SPAN) CABLE WITH LASHING WIRE USING THE CABLE SPINNING METHOD WITH A MINIMUM OF ONE TURN PER FOOT.

SEE FLASHING BEACON STRAIN POLE OR TIMBER POLE INSTALLATION DETAILS FOR ADDITIONAL INFORMATION.

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6/12/2024
...\Standards\87-90*MTS-18.dgn

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
ACC:

Texas Department of Transportation

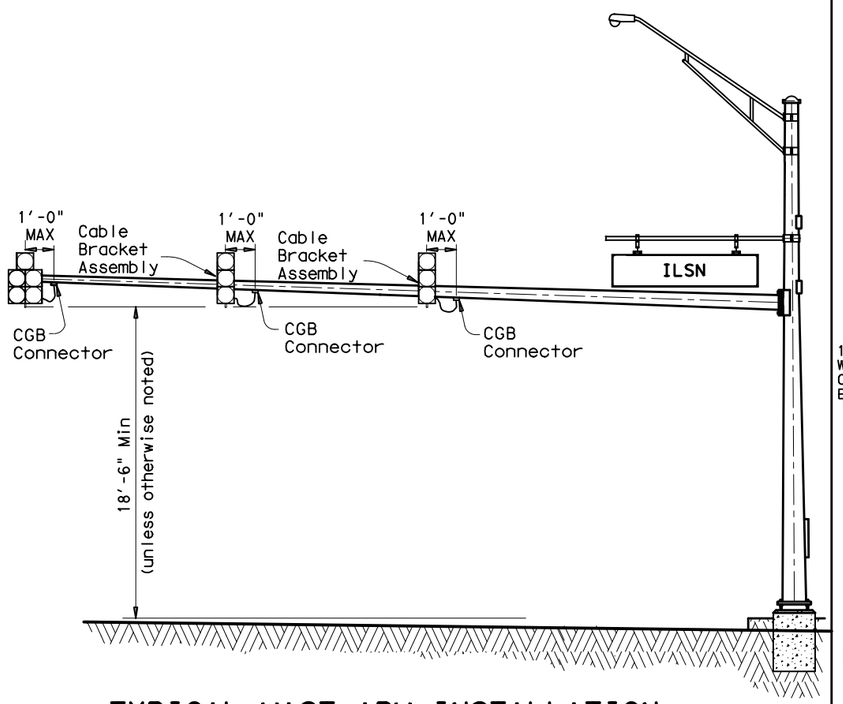
San Antonio District Standard

SIGNAL HEAD SPAN WIRE MOUNT DETAILS

SCALE: NS

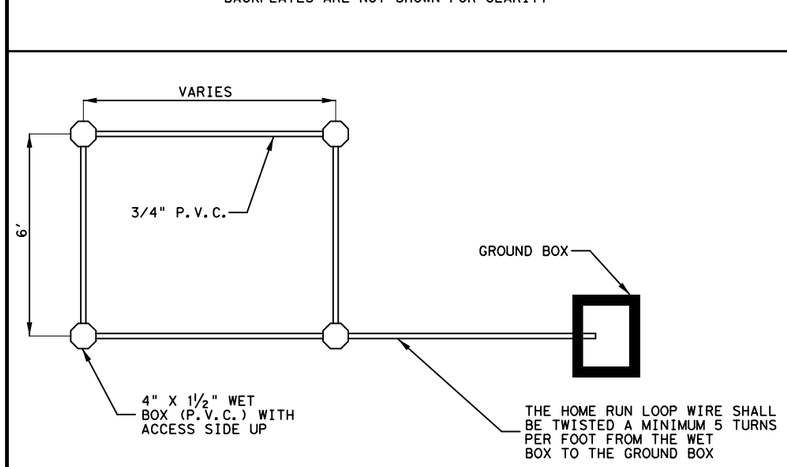
SHS(1)-07

REVISIONS	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
FEB 2006	6	$FAP-NO$		108
OCT 2006	STATE	DIST.	COUNTY	
OCT 2007	TEXAS	SAT	MEDINA, ETC.	
	CONT.	SECT.	JOB	HIGHWAY NO.
	0024	05	102	US 90



TYPICAL MAST ARM INSTALLATION

BACKPLATES ARE NOT SHOWN FOR CLARITY



NOTES:

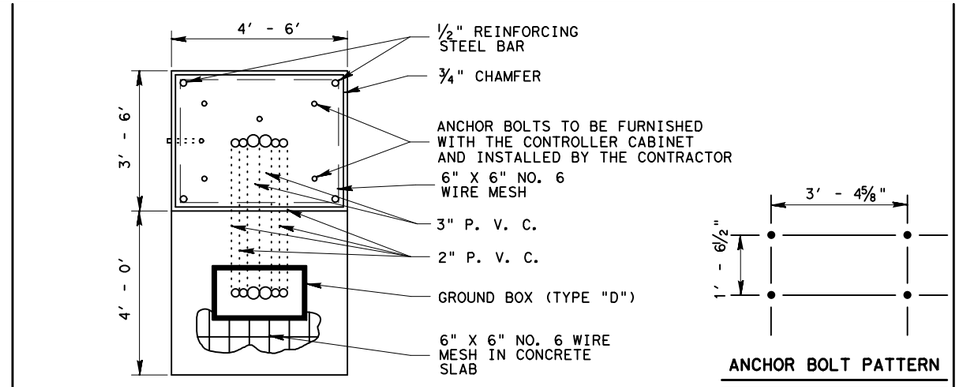
SHALL INSTALL CONDUIT ENCASED LOOPS AT THE LOCATIONS SHOWN ON THE PLANS USING 3/4 " DIAMETER PVC SCHEDULE 40 OR AT NO ADDITIONAL COST 1" DIAMETER PVC SCHEDULE 80.

LOOP LOCATIONS MAY BE STAGGERED SLIGHTLY (6") TO ACCOMMODATE HOME RUN PLACEMENT.

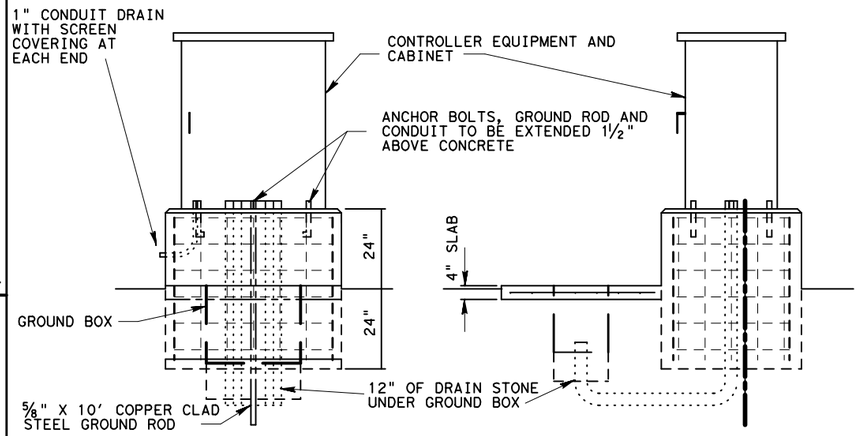
INDIVIDUAL HOME RUN CONDUITS SHALL BE EXTENDED TO THE GROUND BOX SHOWN ON THE PLANS FOR EACH LOOP INSTALLED.

THE NUMBER OF LOOP WIRE TURNS SHALL BE AS SHOWN ON THE TYPICAL LOOP DETECTOR DETAILS.

CONDUIT ENCASED LOOPS



ANCHOR BOLT PATTERN



CONTROLLER MOUNT NOTES :

ALL WIRING TERMINATING IN THE CONTROLLER SHALL BE LABELED IN A MANNER THAT CAN BE IDENTIFIED WHEN THE CONTROLLER IS INSTALLED THE CONTRACTOR SHALL CONNECT THE FIELD WIRING TO THE CONTROLLER

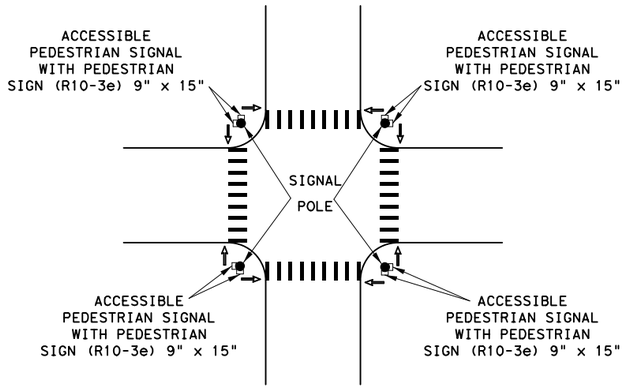
ONE 2" PVC SHALL REMAIN EMPTY FOR FUTURE USE

CONCRETE SHALL BE TESTED AS MISCELLANEOUS CONCRETE

ALL MATERIALS SHOWN AND LABOR TO INSTALL THE CONTROLLER FOUNDATION SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS

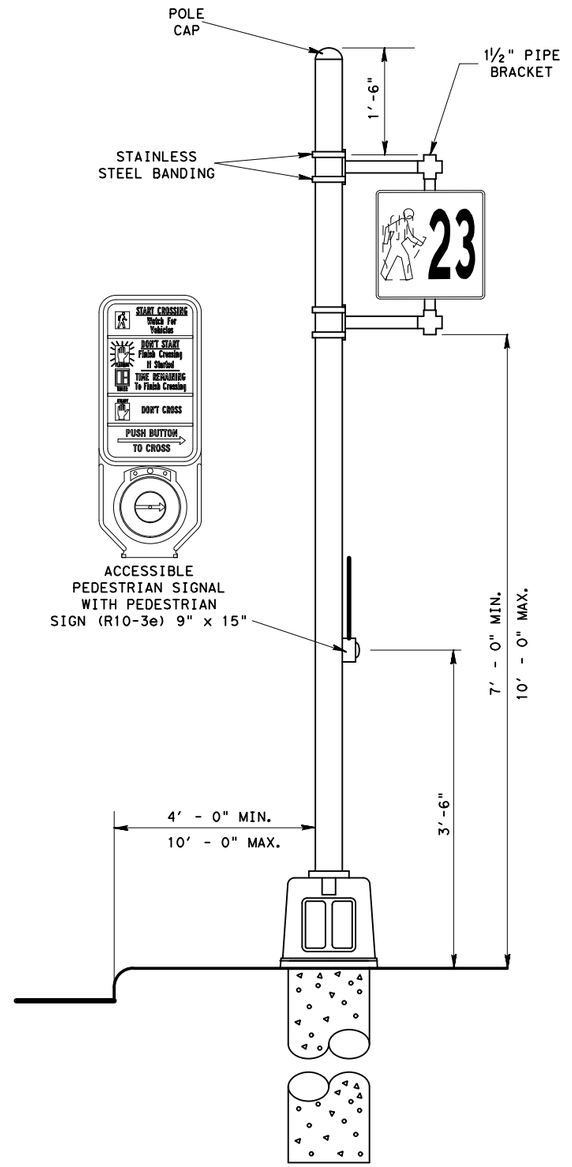
CONTROLLER FOUNDATION SHALL BE AS SHOWN ON THE PLANS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

TYPICAL CONTROLLER MOUNT DETAILS



TYPICAL PED PUSH BUTTON LOCATION

THE ENGINEER SHALL VERIFY ALL PEDESTRIAN SIGNAL AND PEDESTRIAN PUSH BUTTON LOCATIONS PRIOR TO INSTALLATION.



TYPICAL PEDESTAL POLE ASSEMBLY

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San Antonio District Standard

MISCELLANEOUS TRAFFIC SIGNAL DETAILS

SCALE: NS

MTS-18

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
FEB 2006	6	$FAP-NO$		109
OCT 2007	STATE	DIST.	COUNTY	
MAR 2017	TEXAS	SAT	MEDINA, ETC.	
MAY 2018	CONT.	SECT.	JOB	HIGHWAY NO.
	0024	05	102	US 90

LEVELS DISPLAYED
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17 18 19 20 21 22 23 24 25 26 27 28 29 30 33 132
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49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

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DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

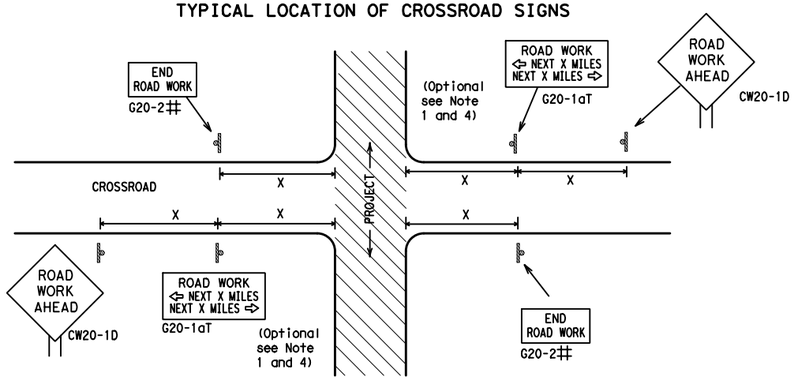
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13 9-07 8-14 5-10 5-21	0024	05	102	US 90
	DIST	COUNTY		SHEET NO.
	SAT	MEDINA, ETC.		110

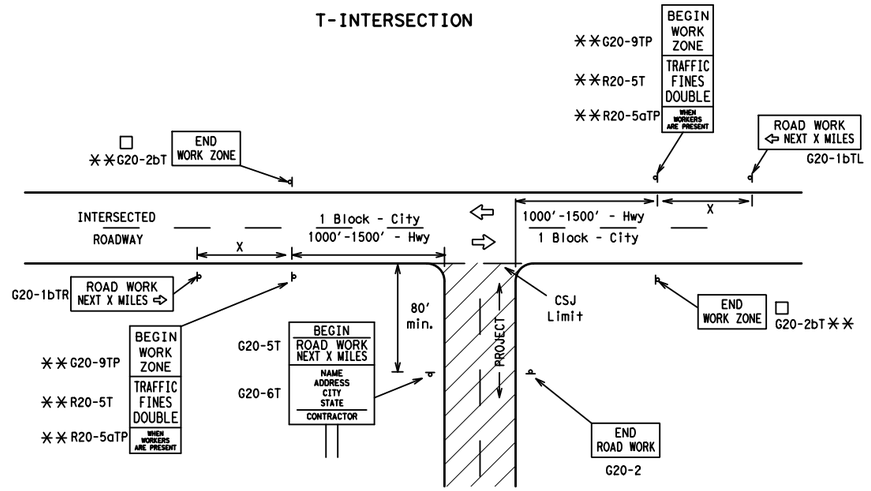
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

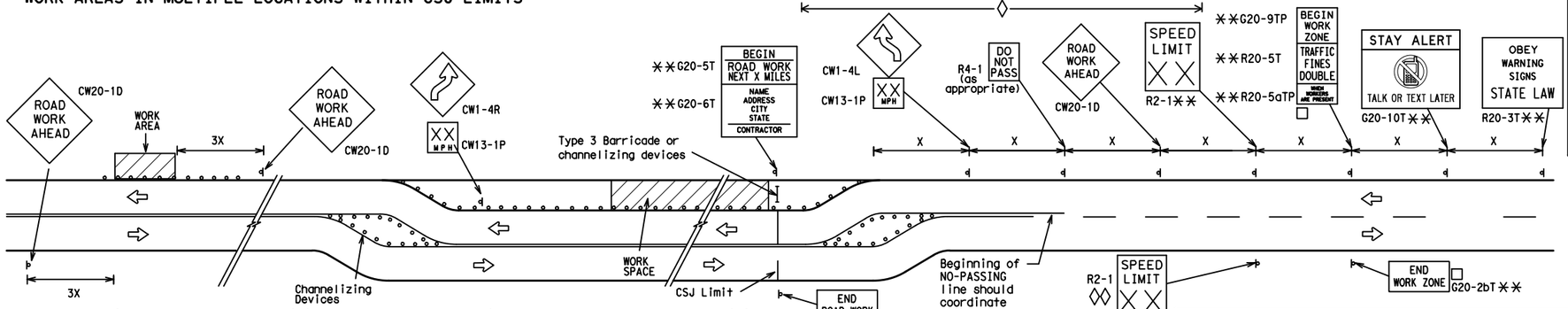
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ 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.

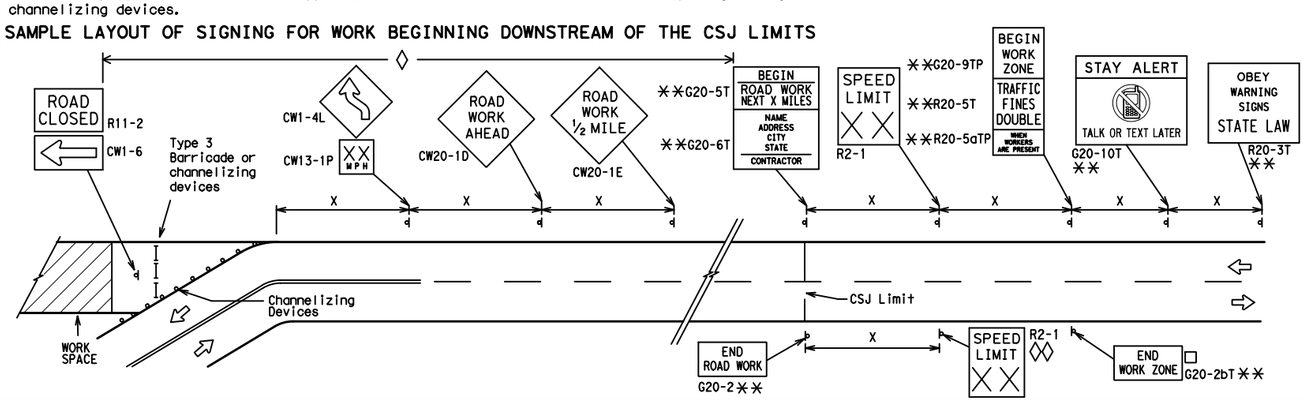
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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.

SHEET 2 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0024	05	102	US 90
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	MEDINA, ETC.		111

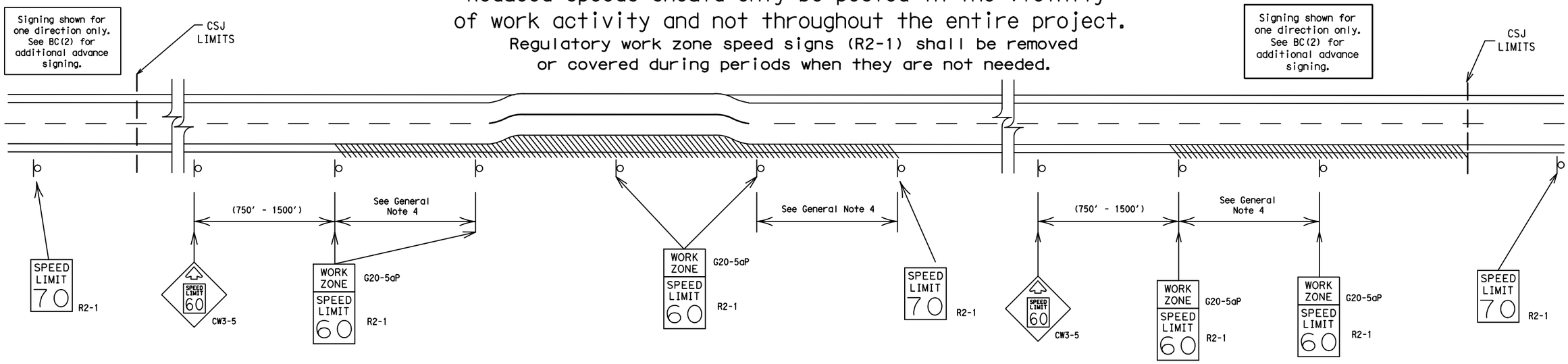
DATE:
FILE:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

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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 9-07 8-14 7-13 5-21	0024	05	102	US 90
	DIST	COUNTY		SHEET NO.
	SAT	MEDINA, ETC.		112

DATE:
FILE:

DATE:
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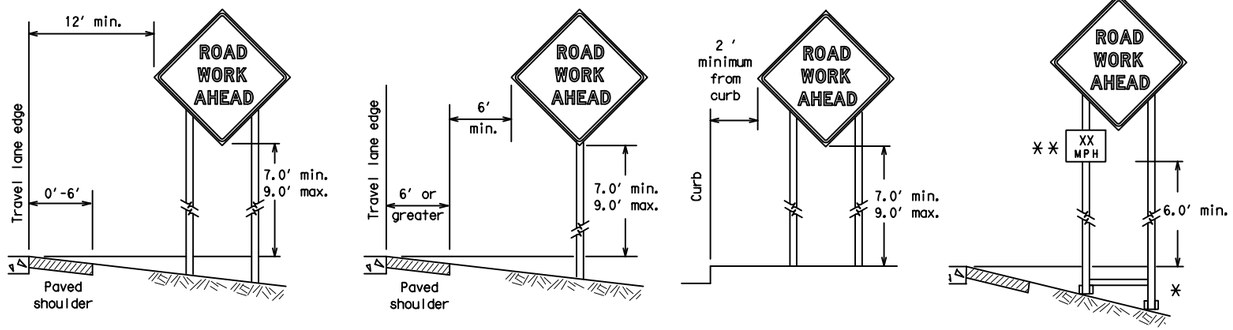
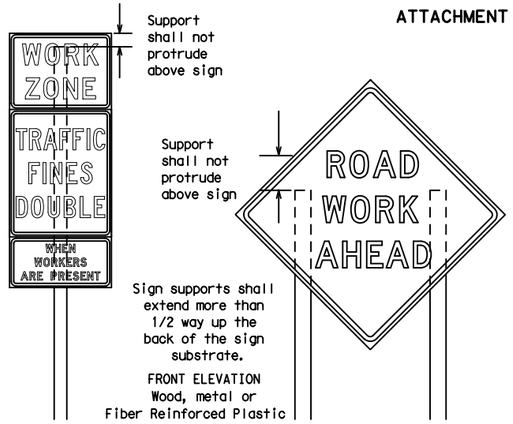
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



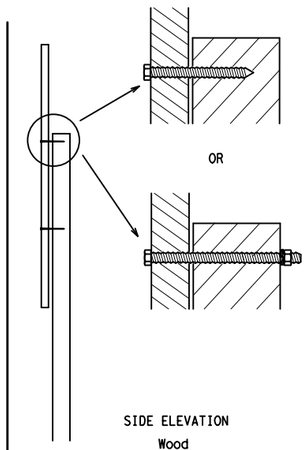
⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic



SIDE ELEVATION
Wood

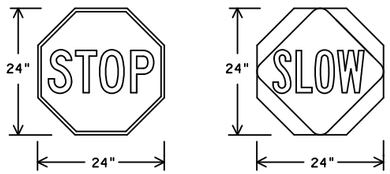
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0024	05	102	US 90
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	MEDINA, ETC.		113

DATE:
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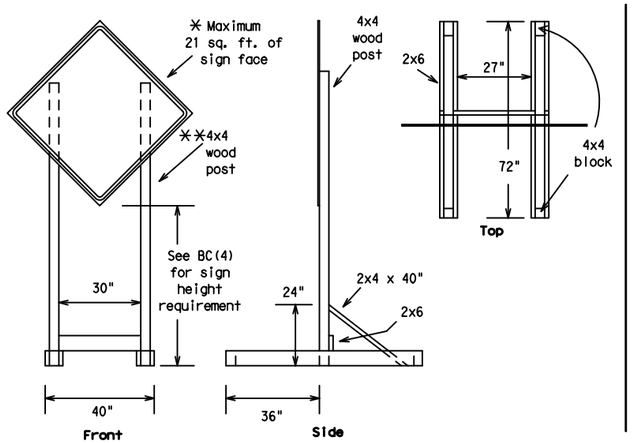
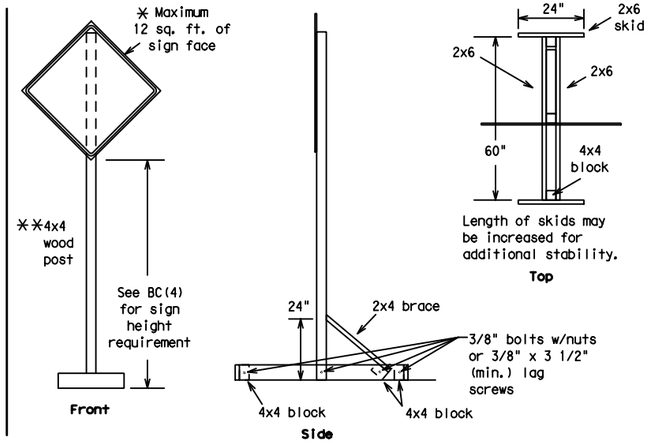
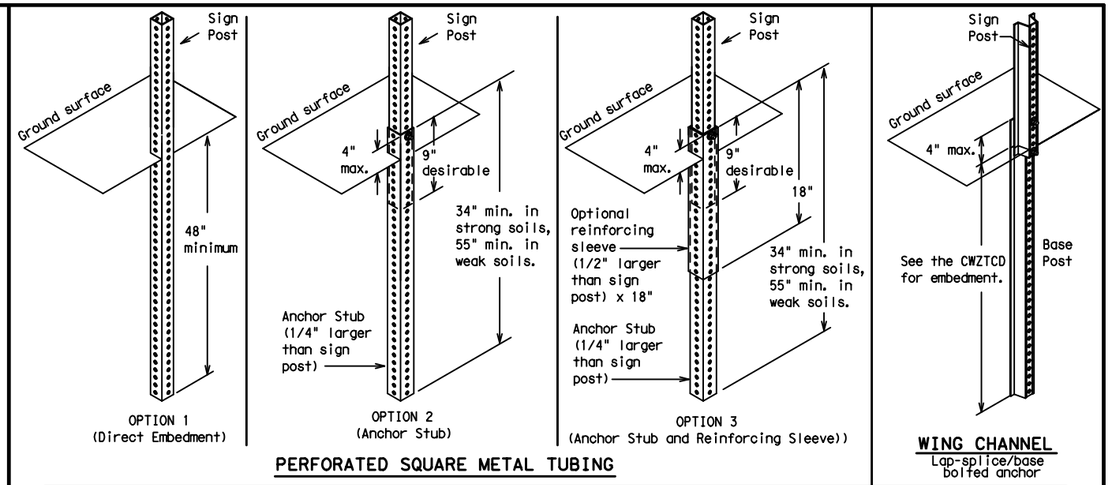




SKID MOUNTED WOOD SIGN SUPPORTS

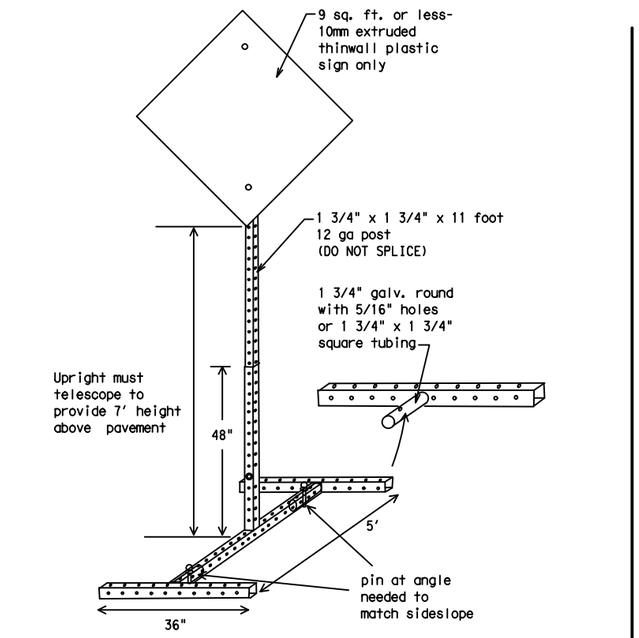
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

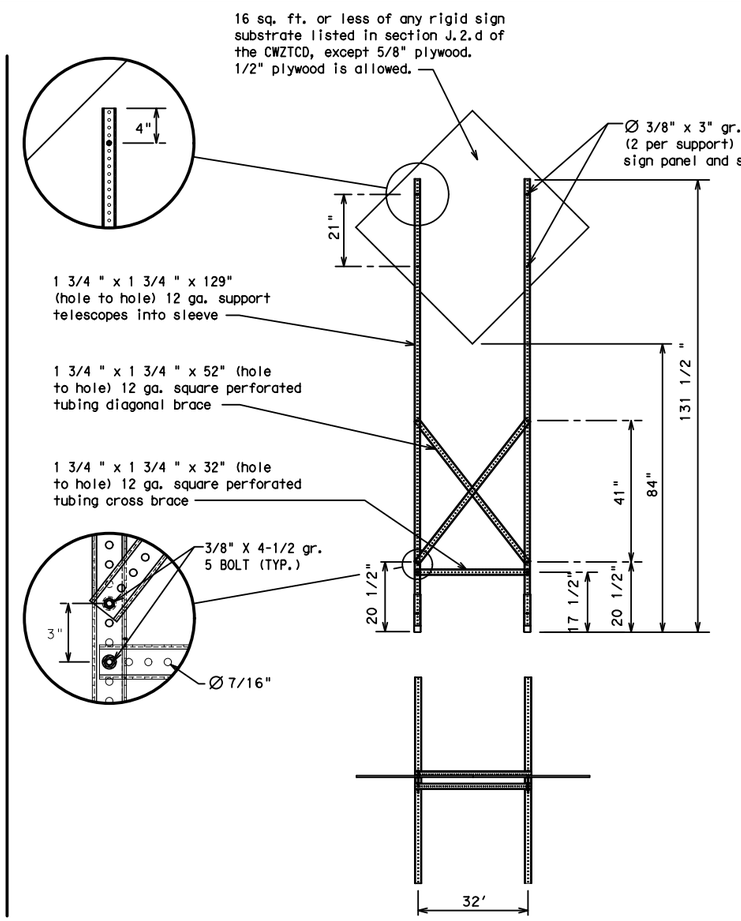


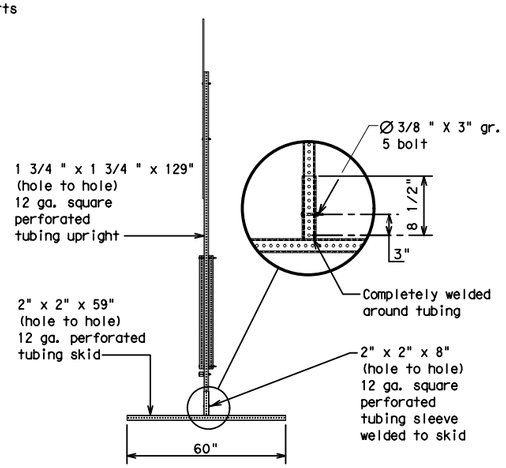
PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0024	05	102	US 90
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	MEDINA, ETC.		114

DATE:
FILE:

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

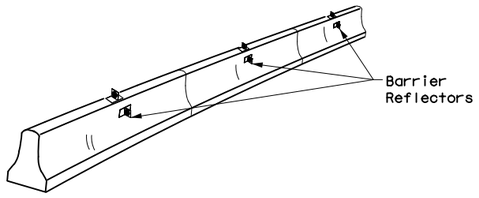
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0024	05	102	US 90
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	MEDINA, ETC.		115

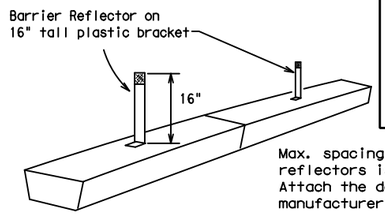
DATE:
FILE:

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



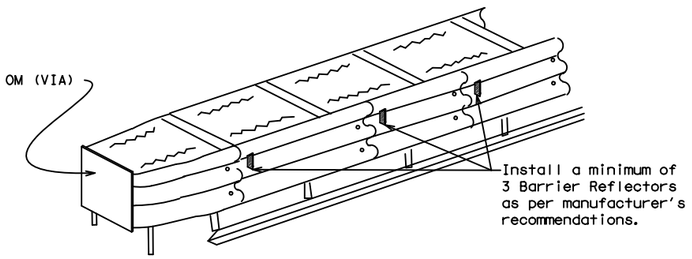
CONCRETE TRAFFIC BARRIER (CTB)

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



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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

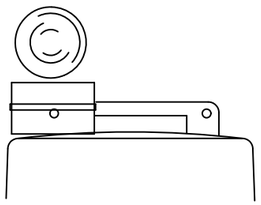
LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

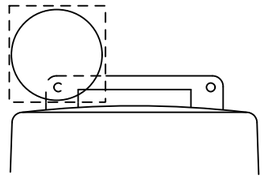
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

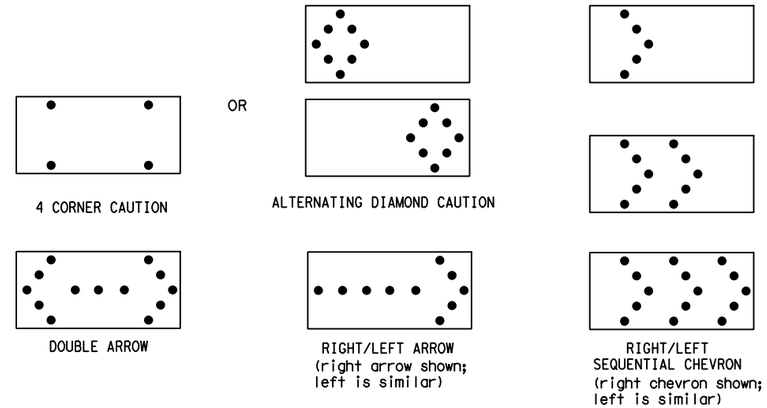
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the 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	0024	05	102	US 90
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	MEDINA, ETC.		116

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DATE:
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

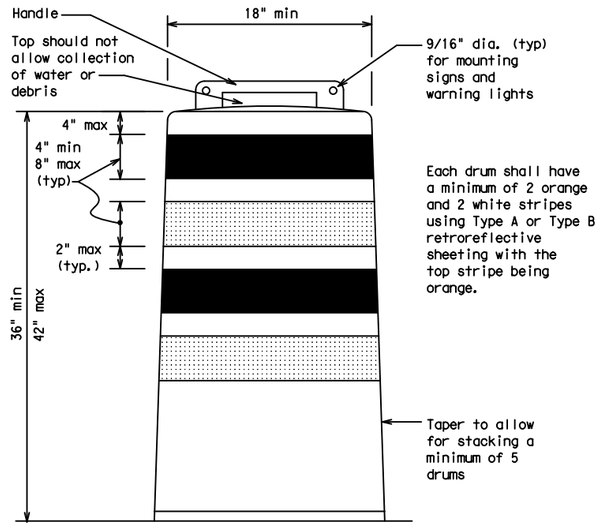
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

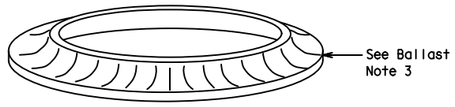
RETROREFLECTIVE SHEETING

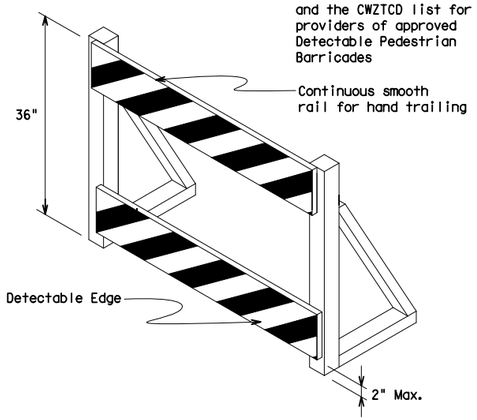
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

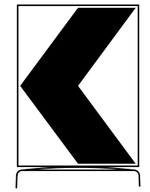




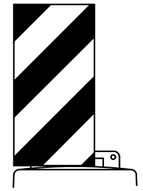


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0024	05	102	US 90
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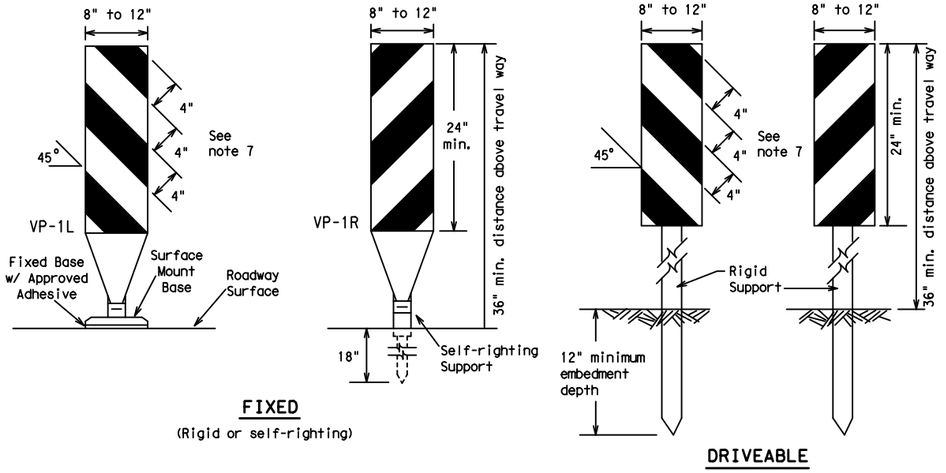
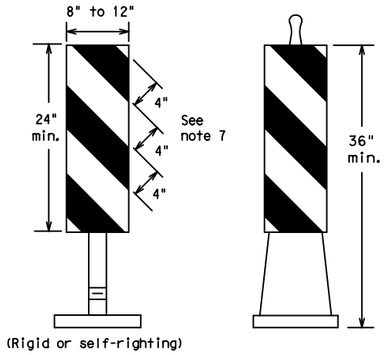


FIXED
(Rigid or self-righting)

DRIVEABLE

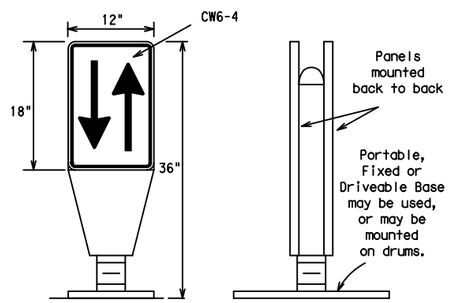


(Rigid or self-righting)

PORTABLE

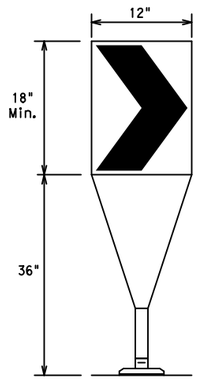
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

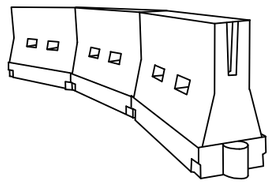
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



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

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

CHEVRONS



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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	MEDINA, ETC.		118

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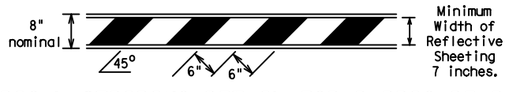
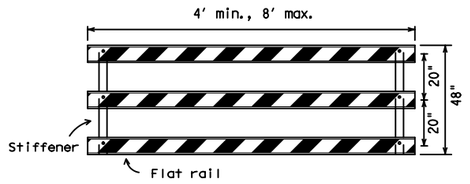
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



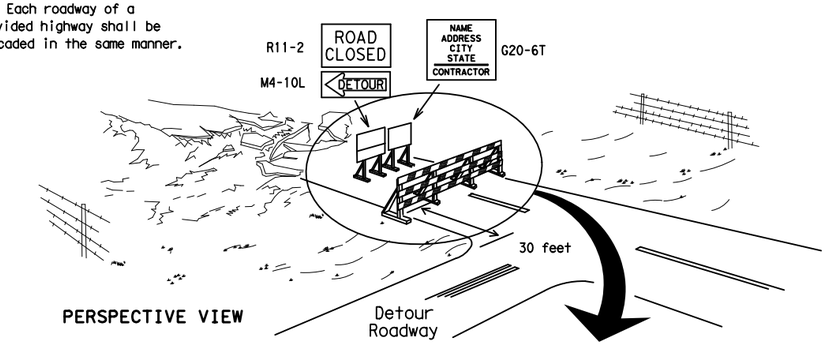
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

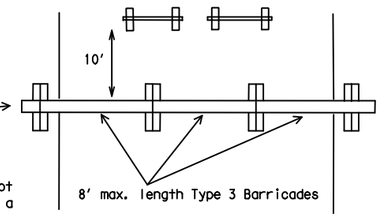
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

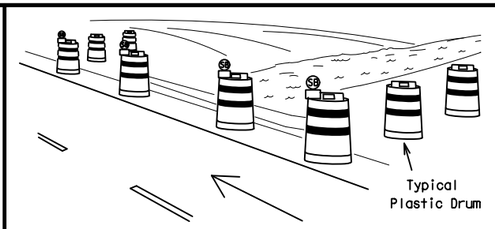
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

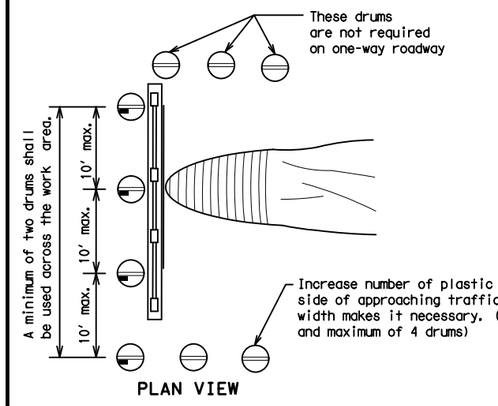
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

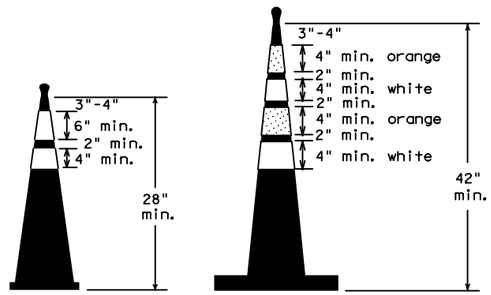
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

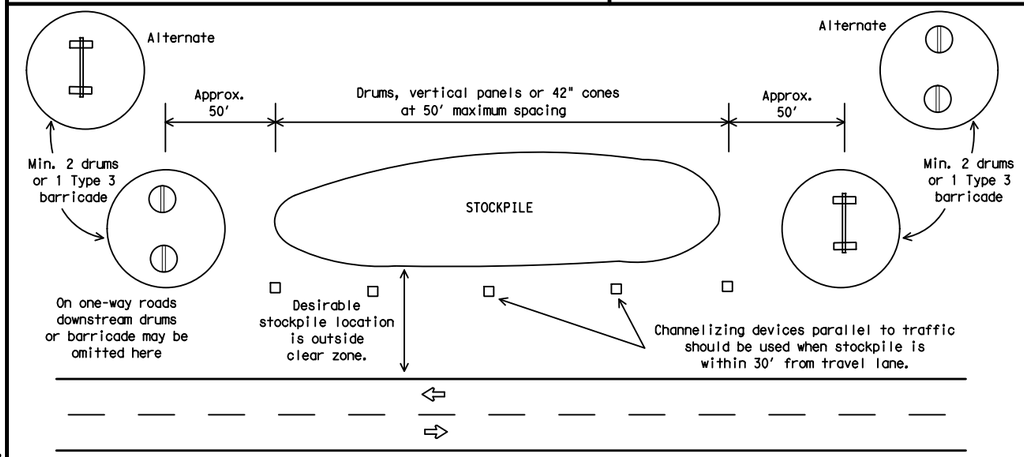
LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

DATE:
FILE:

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0024	05	102	US 90
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	MEDINA, ETC.		119

104

DATE:
FILE:

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

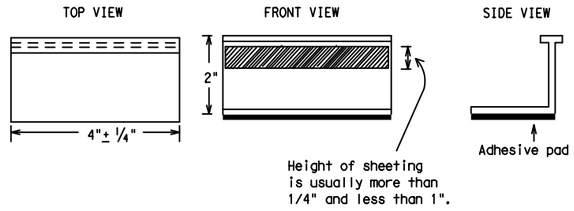
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

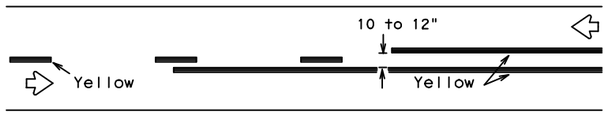
BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

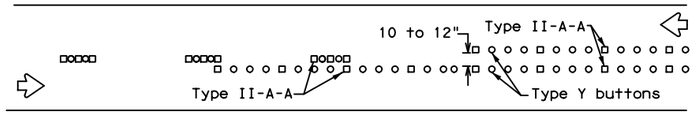
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0024	05	102	US 90
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	SAT	MEDINA, ETC.		120
11-02 8-14				

DATE:
FILE:

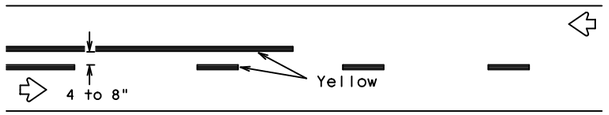
PAVEMENT MARKING PATTERNS



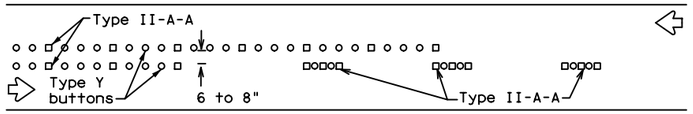
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



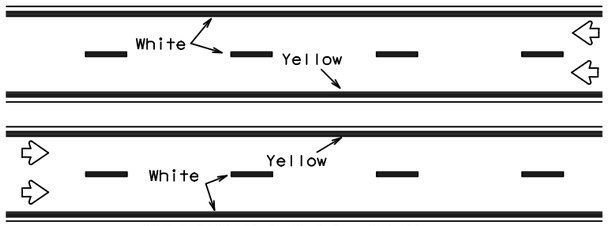
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



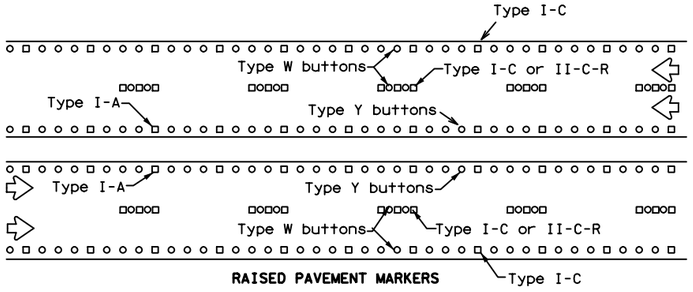
RAISED PAVEMENT MARKERS - PATTERN B

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



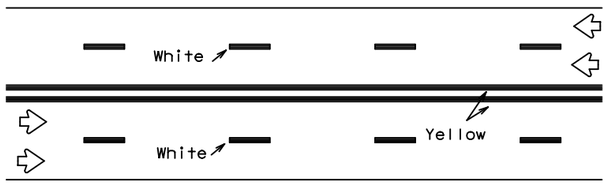
REFLECTORIZED PAVEMENT MARKINGS



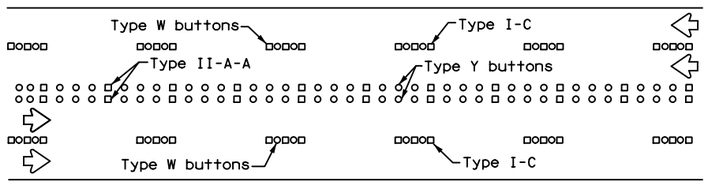
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



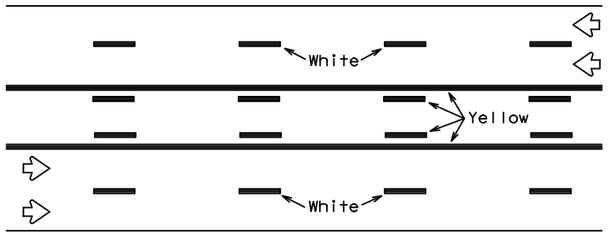
REFLECTORIZED PAVEMENT MARKINGS



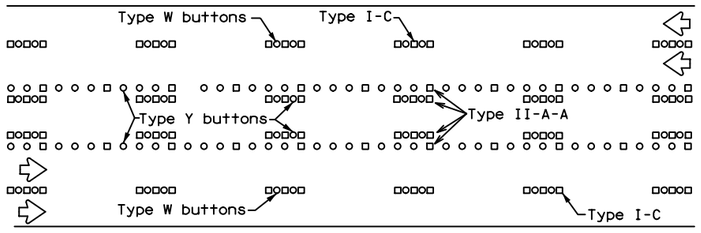
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



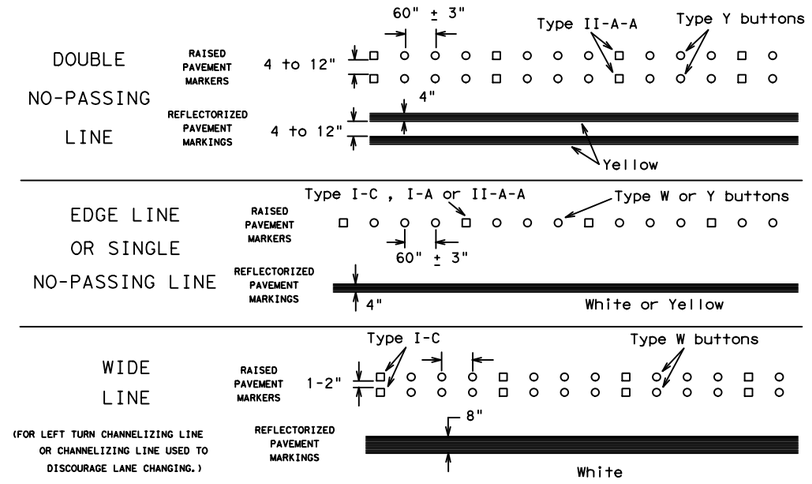
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

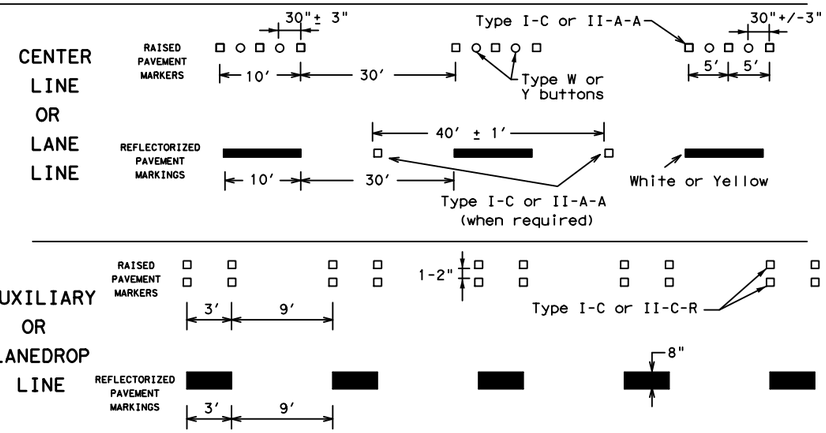
TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

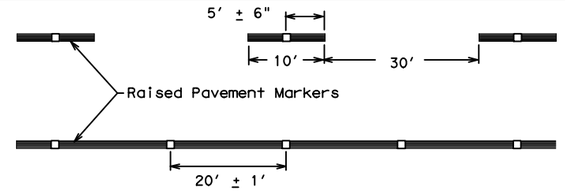


BROKEN LINES



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	0024	05	102	US 90
2-98 7-13	DIST	COUNTY		SHEET NO.
11-02 8-14	SAT	MEDINA, ETC.		121

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I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit (CGP) required for projects with 1 or more acres distrubed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

☒ 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 Storm Water Pollution Prevention Plan (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 Texas Commission on Environmental Quality (TCEQ), Environmental Protection Agency (EPA) or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, Contractor shall submit Notice of Intent (NOI) to TCEQ and the Engineer.
5. NOI required: ☐ Yes ☐ No

Note: If amount of soil disturbance changes, permit requirements may change.

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

US Army Corps of Engineers (USACE) Permit required for filling, dredging, excavating or other work in any potential USACE jurisdictional water, such as, rivers, creeks, streams, or wetlands.

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

☒ No Permit Required
☐ Nationwide Permit (NWP) 14 - Pre-construction Notice (PCN) not Required
☐ Nationwide Permit 14 - PCN Required
☐ 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 (BMPs) planned to control erosion, sedimentation and post-project total suspended solids (TSS).

1.

2.

3.

4.

401 Best Management Practices: (Not applicable if no USACE permit)

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	☐ Sedimentation Chambers
		☐ Grassy Swales

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

☐ No Action Required ☒ Required Action

Action No.

1. MIGRATORY BIRD NESTS: Schedule construction activities as needed to meet the following requirements:

   A. Do not remove or destroy any active migratory bird nests (nests containing eggs and/or flightless birds) at any time of year. If there are any active nests, they shall not be removed until the nests become inactive.

   B. On/in structures, if there are any active nests, they shall not be removed until all nests become inactive. After inactive nests are removed and/or before nest activity begins, deterrent materials may be applied to the structures to prevent future nest building.

2. See Item 5 in General Notes.

3.

4.

If any of the listed species are observed, cease work in the immediated 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 immediated area, and contact the Engineer immediately.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Does the project involve the demolition of a span bridge?
☐ Yes ☒ No (No further action required)

If "Yes", a pre- demolition notification must be submitted to the Texas Department of State Health Services. The contractor shall contact TxDOT's Project Engineer 25 calendar days prior to the demolition of the bridges(s) on the project to assist with the notification.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

Texas Department of Transportation
San Antonio District Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic_2015-10-09_SAT.dgn	DN: TxDOT	CK: TxDOT	DW: BW	CK: GAG
©TxDOT OCTOBER 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0024	05	102	US 90
	DIST	COUNTY		SHEET NO.
	SAT	MEDINA, ETC.		122

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

For projects with less than one acre of soil disturbing activity and that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

This SWP3 is consistent with requirements specified in applicable stormwater plans, and the project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

CSJ 0024-05-102, ETC.

1.2 PROJECT LIMITS:

From: Castro St

To: Veterans Blvd

1.3 PROJECT COORDINATES:

BEGIN: (Lat)_____N/A_____,(Long)_____N/A_____

END: (Lat)_____N/A_____,(Long)_____N/A_____

1.4 TOTAL PROJECT AREA (Acres): 0

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0

1.6 NATURE OF CONSTRUCTION ACTIVITY:

INSTALLING SIGNAL BACKPLATES AND SIGNAL HEADS AT VARIOUS INTERSECTIONS

1.7 MAJOR SOIL TYPES:

Soil Type	Description

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

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

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

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.3.)

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☐ Sediment laden stormwater from stormwater conveyance over disturbed area
- X Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ☐ Solvents, paints, adhesives, etc. from various construction activities
- ☐ Transported soils from offsite vehicle tracking
- ☐ Construction debris and waste from various construction activities
- ☐ Contaminated water from excavation or dewatering pump-out water
- ☐ Sanitary waste from onsite restroom facilities
- ☐ Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☐ Discharges from concrete washout activities, runoff from concrete cutting activities, and other concrete related activities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- X Development of plans and specifications
- X Perform SWP3 inspections
- X Maintain SWP3 records and update to reflect daily operations
- ☐ Other: _____
- ☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- X Day To Day Operational Control
- X Maintain schedule of major construction activities
- X Install, maintain and modify BMPs
- ☐ Other: _____
- ☐ Other: _____

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

MICHELLE C. MAGALLANEZ, P.E. — 6/12/2024 DATE

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2025 (004) HES		123
STATE	STATE DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ ☐ Permanent Planting, Sodding or Seeding
- ☐ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

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

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- X Fire hydrant flushings
- X Irrigation drainage
- X Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- X Potable water sources
- X Springs
- X Uncontaminated groundwater
- X Water used to wash vehicles or control dust
- X Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3 .

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3.

STATE OF TEXAS
MICHELLE C. MAGALLANEZ
82016
PROFESSIONAL ENGINEER
LICENSED

MICHELLE C. MAGALLANEZ, P.E.

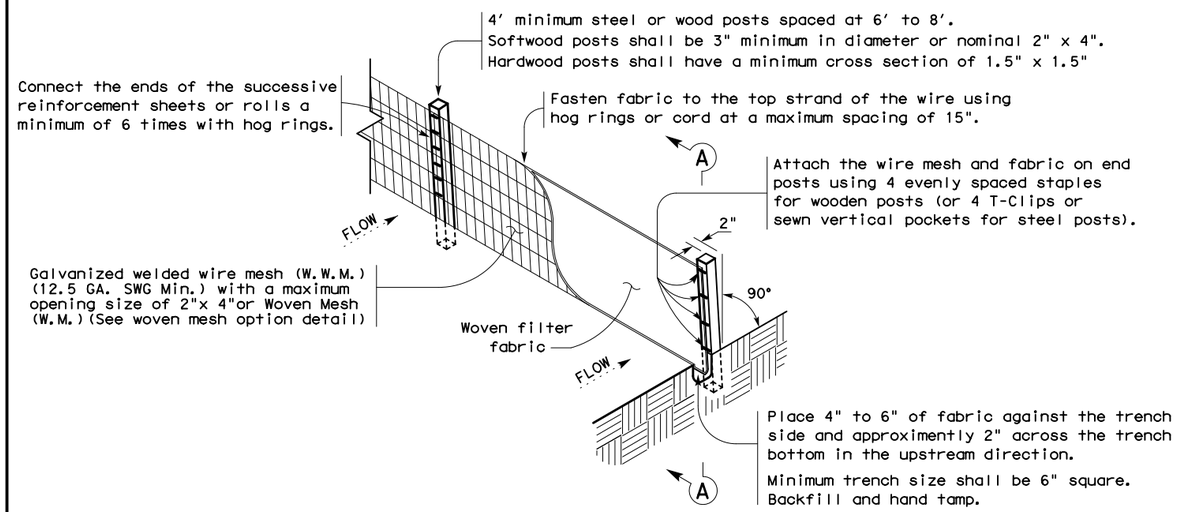
6/12/2024
DATE

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 2 of 2

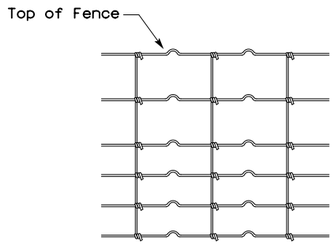
Texas Department of Transportation

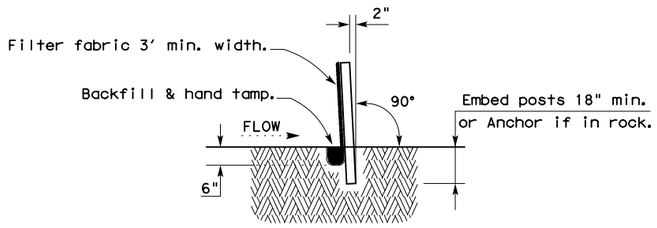
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2025 (004) HES		123A
STATE	STATE DIST.	COUNTY	
TEXAS	SAT	MEDINA, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0024	05	102	US 90



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

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

SEDIMENT CONTROL FENCE USAGE GUIDELINES

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

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

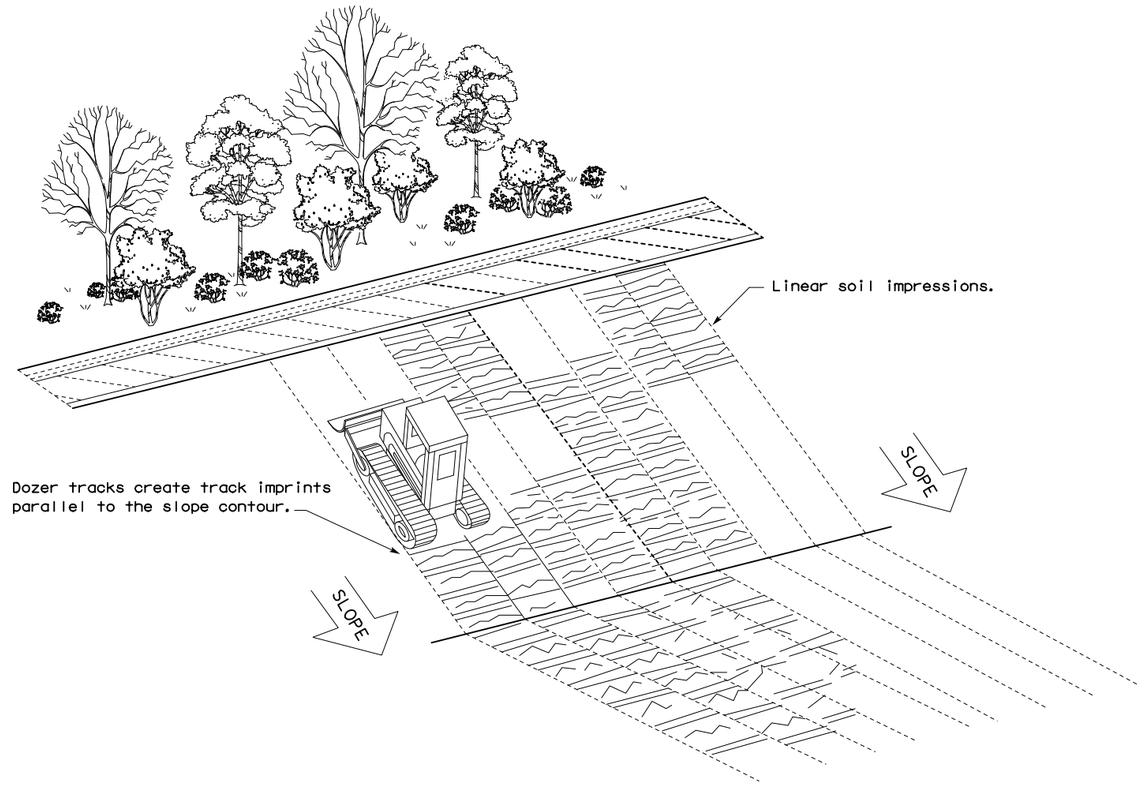
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

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



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0024	05	102	US 90
	DIST	COUNTY		SHEET NO.
	SAT	MEDINA, ETC.		124

DATE:6/2024
FILE:standards\93_ec116 (1).dgn

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

☑ This project is adjacent or parallel work, not within RR ROW:

DOT No.: 742736N (AVENUE E AT US90)
Crossing Type: AT GRADE
RR Company Operating Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR Company Owning Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR MP: 258.040
RR Subdivision: DEL RIO
City: HONDO
County: MEDINA
CSJ at this Crossing: 0024-05-102
Latitude: 29.3482939
Longitude: -99.1338068

Scope of Work, including any TCP, to be performed by State Contractor:

SIGNAL MAINTENANCE/BACKPLATE UPGRADES
DUE TO POSSIBLE BACKUP AT THIS INTERSECTION, FLAGGERS WILL NEED TO BE PRESENT TO PREVENT FOULING OF TRACKS.

Scope of Work to be performed by Railroad Company:

N/A

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 1

On this project, night or weekend flagging is:

☐ Expected
☑ Not Expected

Flagging services will be provided by:

☐ Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
☑ Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30-day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

☑ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777

☐ **BNSF** BNSFinfo@railprosfs.com
Call Center 877-315-0513, Select #1 for flagging

☐ **CPKCR** KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

☑ Not Required
☐ Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☐ Required.
☑ Not Required
Railroad Point of Contact: _____

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Escalated Limits

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000

Railroad Protective Liability Limits

☑ Not Required
☐ Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures — $2,000,000 / $6,000,000
☐ Bridge Structure Projects. Includes new construction or replacement of overpass/ underpass structures — $5,000,000 / $10,000,000
☐ Other: _____

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

☐ Not Required
☑ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☐ Required: Contractor to obtain
- ☐ BNSF: _____ https://bnsf.railpermitting.com
- ☐ CPKCR https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

Approved CROE templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1, of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

A. Complete the Railroad's course "Orientation for Contractor's Safety," and maintain registration prior to working on the Railroad's property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

UPRR, BNSF, CPKCR will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

Know and follow the Contractor's Right of Entry Agreement EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call: UNION PACIFIC RAILROAD COMPANY
Railroad Emergency Line at: 800-848-8715
Location: DOT 742736N (AVENUE E AT US90)
RR Milepost: 258.040
Subdivision: DEL RIO

RRD Review Only
Initials: _____
Date: _____

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0024	05	102		US 90	
6/2023		DIST	COUNTY			SHEET NO.	
		SAT	MEDINA			125	

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

☑ This project is adjacent or parallel work, not within RR ROW:

DOT No.: 742741K (AVENUE K AT US90)
Crossing Type: AT GRADE
RR Company Operating Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR Company Owning Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR MP: 258.450
RR Subdivision: DEL RIO
City: HONDO
County: MEDINA
CSJ at this Crossing: 0024-05-102
Latitude: 29.3479237
Longitude: -99.1406163

Scope of Work, including any TCP, to be performed by State Contractor:

SIGNAL MAINTENANCE/BACKPLATE UPGRADES
DUE TO POSSIBLE BACKUP AT THIS INTERSECTION, FLAGGERS WILL NEED TO BE PRESENT TO PREVENT FOULING OF TRACKS.

Scope of Work to be performed by Railroad Company:

N/A

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 1

On this project, night or weekend flagging is:

☐ Expected
☑ Not Expected

Flagging services will be provided by:

☐ Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
☑ Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

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☑ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777

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Call Center 877-315-0513, Select #1 for flagging

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Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

☑ Not Required
☐ Required. Contact Information for Construction Inspection:

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☐ Required.
☑ Not Required
Railroad Point of Contact: _____

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Escalated Limits

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Workers Compensation	$500,000 / $500,000 / $500,000
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Business Automobile	$2,000,000

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☐ Other: _____	

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☑ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☐ Required: Contractor to obtain
- ☐ BNSF: _____
  https://bnsf.railpermitting.com
- ☐ CPKCR
  https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads: _____

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Location: DOT 742741K (FM462 (AVENUE K) AT US90)
RR Milepost: 258.450
Subdivision: DEL RIO

RRD Review Only
Initials: _____
Date: _____

Texas Department of Transportation | Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0024	05	102		US 90	
6/2023		DIST	COUNTY			SHEET NO.	
		SAT	MEDINA			126	

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

☑ This project is adjacent or parallel work, not within RR ROW:

DOT No.: 742743Y (FM462 (AVENUE M) AT US90)
Crossing Type: AT GRADE
RR Company Operating Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR Company Owning Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR MP: 258.520
RR Subdivision: DEL RIO
City: HONDO
County: MEDINA
CSJ at this Crossing: 0024-05-102
Latitude: 29.3478626
Longitude: -99.141743

Scope of Work, including any TCP, to be performed by State Contractor:

SIGNAL MAINTENANCE/BACKPLATE UPGRADES
DUE TO POSSIBLE BACKUP AT THIS INTERSECTION, FLAGGERS WILL NEED TO BE PRESENT TO PREVENT FOULING OF TRACKS.

Scope of Work to be performed by Railroad Company:

N/A

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 1

On this project, night or weekend flagging is:

☐ Expected
☑ Not Expected

Flagging services will be provided by:

☐ Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
☑ Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30-day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

☑ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777

☐ **BNSF** BNSFinfo@railprosfs.com
Call Center 877-315-0513, Select #1 for flagging

☐ **CPKCR** KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

☑ Not Required
☐ Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☐ Required.
☑ Not Required

Railroad Point of Contact: _____

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Escalated Limits

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000

Railroad Protective Liability Limits

☑ Not Required	
☑ Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures	$2,000,000 / $6,000,000
☐ Bridge Structure Projects. Includes new construction or replacement of overpass/ underpass structures	$5,000,000 / $10,000,000
☐ Other: _____	

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

☐ Not Required
☑ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☐ Required: Contractor to obtain
- ☐ BNSF: _____
  https://bnsf.railpermitting.com
- ☐ CPKCR
  https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

Approved CROE templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1, of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

A. Complete the Railroad's course "Orientation for Contractor's Safety," and maintain registration prior to working on the Railroad's property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

UPRR, BNSF, CPKCR will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

Know and follow the Contractor's Right of Entry Agreement EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call: UNION PACIFIC RAILROAD COMPANY
Railroad Emergency Line at: 800-848-8715
Location: DOT 742743Y (FM462 (AVENUE M) AT US90)
RR Milepost: 258.520
Subdivision: DEL RIO

RRD Review Only
Initials: _____
Date: _____

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
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© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0024	05	102		US 90	
6/2023		DIST	COUNTY			SHEET NO.	
		SAT	MEDINA			127	

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

☑ This project is adjacent or parallel work, not within RR ROW:

DOT No.: 742746U (AVENUE U AT US90)
Crossing Type: AT GRADE
RR Company Operating Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR Company Owning Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR MP: 259.030
RR Subdivision: DEL RIO
City: HONDO
County: MEDINA
CSJ at this Crossing: 0024-05-102
Latitude: 29.3470150
Longitude: -99.1504117

Scope of Work, including any TCP, to be performed by State Contractor:

SIGNAL MAINTENANCE/BACKPLATE UPGRADES
DUE TO POSSIBLE BACKUP AT THIS INTERSECTION, FLAGGERS WILL NEED TO BE PRESENT TO PREVENT FOULING OF TRACKS.

Scope of Work to be performed by Railroad Company:

N/A

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 1

On this project, night or weekend flagging is:

☐ Expected
☑ Not Expected

Flagging services will be provided by:

☐ Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
☑ Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

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Contact Information for Flagging:

☑ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777

☐ **BNSF** BNSFinfo@railprosfs.com
Call Center 877-315-0513, Select #1 for flagging

☐ **CPKCR** KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

☑ Not Required
☐ Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☐ Required.
☑ Not Required

Railroad Point of Contact: _____

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

IV. RAILROAD INSURANCE REQUIREMENTS

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Escalated Limits

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000

Railroad Protective Liability Limits

☑ Not Required	
☑ Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures	$2,000,000 / $6,000,000
☐ Bridge Structure Projects. Includes new construction or replacement of overpass/ underpass structures	$5,000,000 / $10,000,000
☐ Other: _____	

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

☐ Not Required
☑ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☐ Required: Contractor to obtain
- ☐ BNSF: _____
  https://bnsf.railpermitting.com
- ☐ CPKCR
  https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

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Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed CROE between the Contractor and the Railroad if required on project.

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1, of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

A. Complete the Railroad's course "Orientation for Contractor's Safety," and maintain registration prior to working on the Railroad's property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.

UPRR, BNSF, CPKCR will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

Know and follow the Contractor's Right of Entry Agreement EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call: UNION PACIFIC RAILROAD COMPANY
Railroad Emergency Line at: 800-848-8715
Location: DOT 742746U (AVENUE U AT US90)
RR Milepost: 259.030
Subdivision: DEL RIO

RRD Review Only
Initials: _____
Date: _____

Texas Department of Transportation | Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0024	05	102		US 90	
6/2023		DIST	COUNTY			SHEET NO.	
		SAT	MEDINA			128	

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

☐ This project is adjacent or parallel work, not within RR ROW:

DOT No.: 742748H (CASTRO AVE AT US90)
Crossing Type: AT GRADE
RR Company Operating Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR Company Owning Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR MP: 259.610
RR Subdivision: DEL RIO
City: HONDO
County: MEDINA
CSJ at this Crossing: 0024-05-102
Latitude: 29.3460371
Longitude: -99.1596684

Scope of Work, including any TCP, to be performed by State Contractor:

SIGNAL MAINTENANCE/BACKPLATE UPGRADES
DUE TO POSSIBLE TRAFFIC BUILDUP AT THIS INTERSECTION, FLAGGERS WILL NEED TO BE PRESENT TO CONTROL FOULING OF TRACKS.

SEE ADDITIONAL MULTIPLE SPREADSHEET FOR THE US90 STRETCH

Scope of Work to be performed by Railroad Company:

N/A

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 1

On this project, night or weekend flagging is:

☐ Expected
☑ Not Expected

Flagging services will be provided by:

☐ Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
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Contact Information for Flagging:

☑ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777

☐ **BNSF** BNSFinfo@railprosfs.com
Call Center 877-315-0513, Select #1 for flagging

☐ **CPKCR** KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

☑ Not Required
☐ Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☐ Required.
☑ Not Required

Railroad Point of Contact: _____

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Escalated Limits

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000

Railroad Protective Liability Limits

☐ Not Required	
☑ Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures	$2,000,000 / $6,000,000
☐ Bridge Structure Projects. Includes new construction or replacement of overpass/ underpass structures	$5,000,000 / $10,000,000
☐ Other: _____	

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

☐ Not Required
☑ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☐ Required: Contractor to obtain
- ☐ BNSF: _____
  https://bnsf.railpermitting.com
- ☐ CPKCR
  https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

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Railroad Emergency Line at: 800-848-8715
Location: DOT 742748H (CASTRO AVE AT US90)
RR Milepost: 259.610
Subdivision: DEL RIO

RRD Review Only
Initials: _____
Date: 02/13/2024

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS	6/2023	0024	05	102		US 90	
		DIST	COUNTY			SHEET NO.	
		15	MEDINA, ETC			129	

I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)

☐ This project is adjacent or parallel work, not within RR ROW:

DOT No.: 764352R (PAT BOOKER 218 AT FM78)
Crossing Type: AT GRADE
RR Company Operating Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR Company Owning Track at Crossing: UNION PACIFIC RAILROAD COMPANY
RR MP: 194.110
RR Subdivision: GLIDDEN SUB
City: UNIVERSAL CITY
County: BEXAR
CSJ at this Crossing: 0465-01-058
Latitude: 29.5442216
Longitude: -98.2881306

Scope of Work, including any TCP, to be performed by State Contractor:

SIGNAL MAINTENANCE/BACKPLATE UPGRADES
DUE TO TRAFFIC BUILDUP AT THIS INTERSECTION, FLAGGERS WILL NEED TO BE PRESENT TO CONTROL FOULING OF TRACKS.

Scope of Work to be performed by Railroad Company:

N/A

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 1

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Call Center 877-315-0513, Select #1 for flagging
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☐ Required. Contact Information for Construction Inspection:

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Railroad Protective Liability Limits

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☑ Required: UPRR Maintenance Consent Letter. TxDOT to assist
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RR Milepost: 194.110
Subdivision: GLIDDEN SUB

RRD Review Only
Initials: _____
Date: 02/13/2024

Texas Department of Transportation — Rail Division

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