FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	STP 2022(685)HES, ETC		1
STATE	STATE DIST.	COUNTY	
TEXAS	SAT	BEXAR	
CONT.	SECT.	JOB	HIGHWAY NO.
0016	08	043,ETC	SL368, ETC

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT
PROJECT NO.: STP 2022(685)HES, ETC
CSJ: 0016-08-043,ETC

BEXAR COUNTY

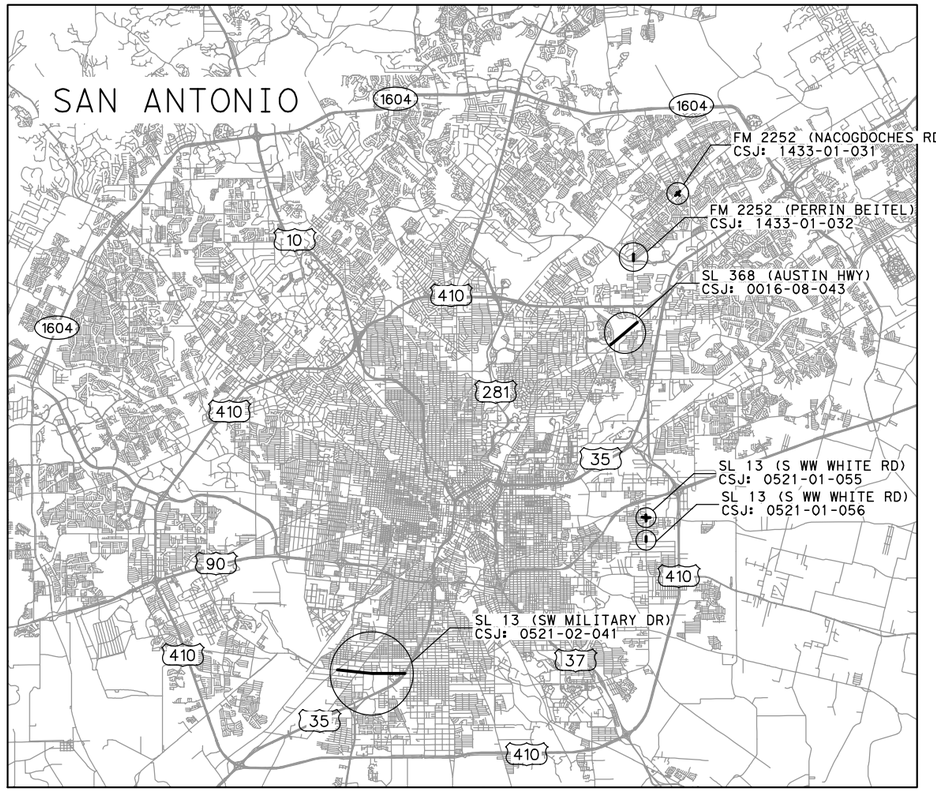
SL 368, ETC.

LIMITS:

CCSJ: 0016-08-043 - SL 368 (AUSTIN HWY) - WALZEM TO CORRINE DR
CSJ: 0521-02-041 - SL 13 (SW MILITARY DR) - SL 353 TO KELSEY AVE
CSJ: 0521-01-055 - SL 13 (S WW WHITE RD) - AT FM 1346 (HOUSTON ST)
CSJ: 0521-01-056 - SL 13 (S WW WHITE RD) - SL 13 TO MLK DR
CSJ: 1433-01-031 - FM 2252 (NACOGDOCHES RD) - O'CONNOR RD TO EL CHARRO ST
CSJ: 1433-01-032 - FM 2252 (PERRIN BEITEL) - EL SENDERO ST TO SCHERTZ RD

NET LENGTH OF ROADWAY = 9,134 FT = 1.73 MI
NET LENGTH OF BRIDGE = 0.0 FT = 0.0 MI
NET LENGTH OF PROJECT = 9,134 FT = 1.73 MI

TYPE OF WORK: INTERSECTION IMPROVEMENTS AND PEDESTRIAN INFRASTRUCTURE
CONSISTING OF: INSTALL RAISED MEDIAN, SAFETY LIGHTING, INSTALL PEDESTRIAN CROSSWALK.



EQUATIONS: NONE
EXCEPTIONS: NONE
RAILROAD CROSSINGS: NONE

N

N.T.S.

INDEX OF SHEETS

SEE SHEET 2 FOR INDEX OF SHEETS

DESIGN SPEED = 40 MPH (SL 368)
40 MPH (FM 2252)
40 MPH (SL 13)
AREA OF DISTURBED SOIL = < 1 ACRE
ADT: N/A
ACCESSIBILITY STANDARDS = PROWAG

REGISTERED ACCESSIBILITY SPECIALIST INSPECTION REQUIRED
TDLR NO. TABS2022019129

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

SUBMITTED FOR LETTING 4/22/2022
TRANSPORTATION ENGINEER SUPERVISOR

RECOMMENDED FOR LETTING 4/27/2022
DocuSigned by: Clayton Ripps, P.E.
DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

RECOMMENDED FOR LETTING 4/28/2022
DocuSigned by: Gregg Granato, P.E.
DISTRICT DESIGN ENGINEER

APPROVED FOR LETTING 4/29/2022
DocuSigned by: Gina Gallegos, P.E.
DISTRICT ENGINEER

Texas Department of Transportation

Kimley»Horn
601 NW LOOP 410 STE. 350, SAN ANTONIO, TX 78216
TEXAS REGISTRATION NO. F-928
210-541-9166

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

FILE LOCATION
http://www.txdot.gov/inside-txdot/district/san-antonio/specinfo.html

LEVELS DISPLAYED
1

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

INDEX OF SHEETS

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

AMY E. AVERY, P.E.

4/19/2022
DATE

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

INDEX OF SHEETS

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		2
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:53:43
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call\WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_INDEX.dgn

**********GENERAL NOTES**********
2014 Specification Book

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

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. Properly dispose unsalvageable materials in accordance with local, state, and federal regulations. 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.

Locate and reference all manholes and valves within the construction area with station and offset. Each manhole and valve shall be identified by its owner (SAWS, CPS, etc.). No roadwork will begin until this list has been submitted. All valves and manhole covers have to be accessible at all times, therefore; temp. CTB, material stock piles, etc. cannot be placed over these valves or covers.

The Contractor has the option to adjust or construct all manholes and valves to final pavement elevations prior to the final mat of HMA or after final mat of HMA. If between the final elevation adjustment and the final mat of HMA, the manholes and valves are going to be exposed to traffic, place temporary asphalt around the manhole and valve to provide a +/- 50:1 taper. The cost of elevation adjustment and the concrete apron around the manhole and valve will be part of the manhole and valve work. The asphalt tapers are part of the HMA work.

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.

The Contractor should be aware that the "City Public Service" (CPS) will be consulted by the Engineer in matters concerning the execution of the work, materials and testing related to the CPS work. As such; a CPS employee may be observing the construction and related operations as they progress.

If a sanitary sewer overflow (SSO) occurs:

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

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

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

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

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

Contractor questions on this project are to be addressed to the following individual(s):
Dale Picha, PE (District Traffic Engineer) dale.picha@txdot.gov
Eduardo Villalon, PE (Transportation Engineer Supervisor) eduardo.villalon@txdot.gov

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

All contractor questions will be reviewed by the Engineer. Once a response is developed, it will be posted to TxDOT's Public FTP at the following Address:
https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting Responses/

All questions submitted that generate a response will be posted through this site. The site is organized by District, Project Type (Construction or Maintenance), Letting Date, CCSJ/Project Name.

The Contractor must measure the vertical clearance at each structure after the final surface of the roadway is completed and provide the vertical clearance measurement to the Engineer.

--Item 5--
Taper ACP placed at curb inlets, traffic inlets and slotted drains.

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

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

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

interfere with or discourage swallows from returning to their nests. Prevention of swallow nesting can be performed by one of the following methods:

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

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

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

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

When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with "Standard Operating Procedure for Alternate Precast Proposal Submission" found online at https://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/publications/bridge.html#design. Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

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

Steel Wrapped or Asbestos Utility Lines:

Existing steel wrapped natural gas and/or asbestos cement (AC) water lines that will no longer be in service are usually abandoned in place (AIP). However, if any of these lines have to be removed for whatever reason (in the way of other construction, to make tie-ins, etc.), comply with Item 6.

If removal of AC water lines is included in the construction contract, then notify the Engineer of proposed dates of removal of the AC water lines in accordance to Item 6. Excavate to the top of the AC water line to allow a separate contractor hired by the State to remove the AC water line. The excavation for the AC water line removal is subsidiary to the work that created the need for the removal (excavation for structures, roadway, a new line, tie-ins, etc.).

--Item 7--

The total disturbed areas 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 "Sequence of Work Narrative" for these dates.

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

Create and maintain a Bar Chart schedule.

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

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

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

All law enforcement personnel used in Work Zone Traffic Control shall be trained for performing duties in work zones and are required to take "Safe and Effective Use of Law Enforcement Personnel in Work Zones" (Course #133119) which can be found online at the following site: www.nhi.fhwa.dot.gov

Certificates of completion should be available to all who finish the course. These should be kept by the officers in order 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 100--
Trim and remove brush and trees within the stations noted in the plans and as needed for construction operations. Unless shown otherwise in the plans or a designated non-mow area, perform trimming or removal for areas to the ROW limits. Trim or remove to provide minimum of 5 ft. of horizontal clearance and 7 ft. of vertical clearance for the following: sidewalks, paths, guard fence, rails, signs, object markers, and structures. Trim to provide a minimum of 12 ft. vertical clearance under all trees. This work is subsidiary.

Obtain approval for proposed method of tree and brush trimming and removal. Vertical flailing equipment is not allowed. Treat damaged or cut branches, roots and/or stumps of all oak trees with a commercial tree wound dressing. Disinfect all pruning tools with a solution of 70% alcohol before moving from one tree to another. Unless otherwise approved remove all resulting vegetative debris from the ROW within 24 hours. The Engineer can stop all construction operations if the dressing, cut and removal requirements are not followed.

--Item 354--
Retain planed material.

Take precaution to avoid damage to existing bridge decks and armor joints. Repair any damage to the bridge decks and/or armor joints as approved. This work will not be paid directly, but will be performed at the Contractor's expense.

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

--Item 502--
When advanced warning flashing arrow panels and/or changeable message sign is specified, have one standby unit in good condition at the job site. Standby time shall be considered subsidiary to the bid item.

Treat the pavement drop-offs as shown in the TCP.

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.

There are existing traffic signals at the following intersections:
- FM 2252 & El Charro
- LP 13 & Barlite

- LP 13 & Yarrow
- LP 13 & South Park Mall
- SL 368 & Lanark
- SL 368 & Perrin Beitel
- SL 368 & Walzem
- LP 13 & Houston

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, hire off duty police officers to control the traffic until the signals are back in satisfactory condition.

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. Unless shown in the TCP, no lane, ramp, connector, etc. closures are allowed during special events. At least one lane has to remain open at all times. Lane closures will not be allowed if this reporting requirement is not met.

For closures not listed in the TCP; the lane closures are limited to between the hours of 9:00 AM to 3:00 PM, and at least one lane has to remain open at all times.

Avoid placing stockpiles within the roadway's horizontal clear zone. If a stockpile is placed within the clear zone, address in accordance with the TMUTCD.

Do not place barricades, signs, or any other traffic control devices where they interfere with sight distance at driveways or side streets.

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.

If Nighttime work is required and work is not behind positive barrier then full TY 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.

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.

--Item 506--
An Inspector will perform a regularly scheduled SWP3 inspection every 7 calendar days.

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 531--
The curb ramp locations shown in the plans have taken into account the geometric features of the intersection, traffic signals, and the pavement markings. If anything changes during construction, the location of curb ramps must be adjusted to ensure they meet TAS requirements.

--Item 618--
It might be necessary to cut concrete for placement of conduit. Saw cut existing concrete, remove the concrete from the steel reinforcement (bars or fabric) and bend the steel to install the conduit. After the conduit has been placed, bend the steel back to its original position and back-fill the trench with an approved concrete. This work is subsidiary to this Item.

The conduit depth for illumination under the City of San Antonio streets is 36 inches.

Use materials from Material Producers list as shown on the Construction Division's (CST) web site. Category is "Roadway Illumination and Electrical Supplies."

--Item 628--
Make all arrangements for electrical service, and compliance with local standards and practices for proper installations.

--Item 644--
The wedge anchor system shown on State Standard Sheet SMD (TWT) is not allowed.

The set screw type for Triangular Slipbase Systems is not allowed. Use the following products for the Triangular Slipbase System.

Triangular Slip Base Systems
(For use with 10 BWG and Schedule 80 Round Posts)

Southern Plains Fabrication	SPF Triangular Slipbase Housing	Info@SouthernPlainsFabrication.com http://SouthernPlainsFabrication.com (806) 241-0060
Structural and Steel Products	Triangular Slipbase Breakaway Support	CustServ@s-steel.com http://s-steelcom (800) 782-5804

--Item 666--
Use TY II material (vs. an acrylic or epoxy) as the sealer for the TY I markings, place the TY II a minimum of 14 calendar days (to provide adequate curing) before placing the TY I markings. Failure to provide the retroreflectometer testing data within the time specified in the specifications will result in non-payment of the bid item.

--Item 672--
Place all adhesive material directly from the heated dispenser to the pavement. Do not use portable or non-heated containers. Use adhesive of sufficient thickness so that when the marker is pressed into the adhesive, 1/8" or more adhesive will remain under 100% of the marker. The adhesive should extend not less than 1/2" but not more than 1 1/2" beyond the perimeter of the marker.

--Item 677--
Obtain approval before using the mechanical method for the elimination of existing thermoplastic pavement markings.

--Item 680--
Furnish and install all required materials and equipment necessary for the complete and operating traffic signal installation at the following intersections:

- FM 2252 (Nacogdoches) & El Charro
- LP 13 (SW Military) & Barlite
- LP 13 (SW Military) & Yarrow

- LP 13 (SW Military) & South Park Mall
- SL 368 (Austin Hwy) & Lanark
- LP 13 (S WW White) & FM 1346 (Houston)
- SL 368 (Austin Hwy) Z-Crossing
- FM 2252 (Perrin Beitel) Z-Crossing
- LP 13 (S WW White) Z-Crossing

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

Furnish and install a new Henke Enterprises or Mobotrex eight-phase NEMA TS2 Type 2 controller and cabinet, meeting the requirements of Departmental Materials Specifications DMS-11170. Provide detector panel toggle switches that additionally permit the user to disconnect the detector. For both ground and pole-mount cabinets, provide cabinet configuration with 16 position load bay.

Deliver TS type 2 controller cabinet and assembly to the TxDOT San Antonio district signal shop for programming and testing two weeks in advance prior to contractor installing equipment in the field. Coordinate drop off and pick up with Craig Williams (210) 731-5143.

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.

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

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

Demonstrate that the field wiring is properly installed, install the controller assembly, connect the wiring and turn on the controller.

The following wiring sequence shall be used 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.

Integrate the proposed traffic signal(s) into the existing Advanced Traffic Management System (ATMS) as shown on the plans. Centracs ATMS software, which utilizes Econolite controllers, is currently in use in the San Antonio District. Provide controllers on this project that fully communicate with the existing ATMS software. For use when signal controller is furnished by contractor.

This project includes the installation of at least one cellular modem at the location(s) specified in the plans. Cellular modem(s) and power supply(s) will be furnished by the department. Provide all materials not supplied by the department necessary for the cellular modem installation. All materials provided by the contractor must be new unless otherwise shown on the plans. Equipment provided by the department shall be stored by the department for pick up at the TxDOT San Antonio district office, 4615 NW Loop 410 San Antonio, TX 78229. Prevent damage to all cellular modem components supplied by the department. Replace any component that is damaged or lost during transportation or installation at the contractor's expense. Verify operation of the cellular modem(s) together with operation of its links; demonstrate that data can be transmitted at a satisfactory rate from the field location to the central location. Demonstrate that the cellular modem(s) data packets are being received at the central site via a networked computer. Transportation, installation and incidentals for installation of the cellular modem(s)

shall be considered subsidiary to item 680. For use when a cellular communication link will be established to Transguide.

Provide a submittal compliance matrix with all traffic signal submittals.

Field verify the depths of the drill shafts to meet the minimum clearances specified in the plans before ordering materials.

Damage to existing facilities such as traffic signal equipment, conduit, cables, etc. caused by the contractor during construction will be replaced by the contractor at no cost to TxDOT with equipment as approved by the engineer. Replace all pavements, sidewalk, curb, rip-rap or any item damaged during construction subsidiary to various bid items with no direct payment. Any damage that was not caused by the contractor during operations will be reimbursed for repair of damage caused by: motor vehicle, watercraft, aircraft, or railroad-train incident, vandalism or acts of God, such as earthquake, tidal wave, tornado, hurricane, or other cataclysmic phenomena of nature.

Ensure that all TMS (Traffic Management System) equipment furnished and installed is completely compatible with the existing hardware and software located within the TransGuide operations center (i.e. TransGuide central software). The contractor shall contact the traffic management engineer for details on the system network architecture.

Contractor shall be responsible for integrating and testing all new TMS equipment and any existing TMS equipment that is relocated into the existing network management system, subsidiary to the various bid items.

--Item 682--
Pedestrian signals may be by a different manufacturer than the vehicle signal heads.

Cover all signal faces until placed in operation.

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 shall be continuous without splices from terminal point to terminal point. All proposed signal cable shall be #12 AWG stranded copper.

--Item 686 & 687--
Provide all signal poles from the same manufacturer. Pedestrian poles may be from a different manufacturer.

--Item 688--

The button placement has to be coordinated with the concrete pad to access the button and if any mounting modifications are needed (extensions, brackets, etc.) to meet ADA and TDLR requirements the adjustment will be subsidiary to Item 688. The concrete pad (if required) shall be paid separately.

The pedestrian push button must be wired with a 2/C#14 loop detector cable in lieu of a #12 A.W.G. XHHW wire.

Furnish and install new Polara Enterprises accessible pedestrian signals (APS) push buttons or approved equivalent.

--Item 6185--
Six (6) 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 6292--
Radar presence detection device must utilize true-presence detection. Systems using locking algorithms to attempt presence detection will not be accepted. In addition, radar systems will not be allowed to use extensions/delays or place the controller on locking detection to aid in presence detection.

Radar presence detection device must be able to detect up to 10 lanes with a minimum offset of 6' and have at least 16 zones and channels per unit.

Radar presence detection device must be mounted on the same side of the intersection as the lanes it is set to detect.

Final placement of radar devices shall be approved by the engineer.

Furnish and install new Wavetronix SmartSensor Matrix, or approved equivalent, for radar presence detectors and Wavetronix SmartSensor Advance, or approved equivalent, for radar advanced detection devices.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0016-08-043 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY FM 2252, SL 13, SL 368

				0016-08-043		0521-01-055		0521-01-056		0521-02-041		1433-01-031		1433-01-032	
		CONTROL SECTION JOB													
		PROJECT ID		A00066417		A00066420		A00183507		A00064116		A00063890		A00064105	
		COUNTY		Bexar		Bexar		Bexar		Bexar		Bexar		Bexar	
		HIGHWAY		SL 368		SL 13		SL 13		SL 13		FM 2252		FM 2252	
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
	100-6002	PREPARING ROW	STA			9.000									
	104-6011	REMOVING CONC (MEDIANS)	SY			101.000									
	104-6015	REMOVING CONC (SIDEWALKS)	SY	38.000				33.000				18.000		16.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF			408.000									
	104-6032	REMOVING CONC (WHEELCHAIR RAMP)	SY							70.000					
	104-6036	REMOVING CONC (SIDEWALK OR RAMP)	SY			68.000									
	105-6029	REMOVE STAB BASE & ASPH PAV (24")	SY			239.000									
	132-6003	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY			82.000									
	162-6002	BLOCK SODDING	SY			242.000									
	354-6023	PLANE ASPH CONC PAV(0" TO 4")	SY	2,092.000											
	400-6006	CUT & RESTORING PAV	SY			681.000									
	416-6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	26.000				39.000							
	416-6034	DRILL SHAFT (TRF SIG POLE) (48 IN)	LF			88.000									
	420-6002	CL A CONC (MISC)	CY			16.000		6.000							
	464-6005	RC PIPE (CL III)(24 IN)	LF			29.000									
	465-6022	INLET (COMPL)(PCO)(5FT)(LEFT)	EA			1.000									
	465-6023	INLET (COMPL)(PCO)(5FT)(RIGHT)	EA			1.000									
	465-6024	INLET (COMPL)(PCO)(5FT)(BOTH)	EA			1.000									
	465-6338	INLET (COMPL)(ARMOR CURB SLOT)	EA	34.000											
	479-6003	ADJUSTING MANHOLES & INLETS	EA			2.000									
	500-6001	MOBILIZATION	LS	0.364		0.331		0.080		0.139		0.037		0.049	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	5.000		4.000		3.000		4.000		2.000		2.000	
	506-6004	ROCK FILTER DAMS (INSTALL) (TY 4)	LF	55.000											
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	55.000											
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	320.000											
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	320.000											
	506-6047	TEMP SDMT CONT FENCE (INLET PROTECTION)	LF	110.000											
	529-6002	CONC CURB (TY II)	LF			437.000									
	531-6002	CONC SIDEWALKS (5")	SY			57.000									
	531-6004	CURB RAMPS (TY 1)	EA			2.000		1.000		11.000					
	531-6005	CURB RAMPS (TY 2)	EA	2.000				1.000				2.000		2.000	
	531-6010	CURB RAMPS (TY 7)	EA			6.000				3.000					
	531-6016	CURB RAMPS (TY 21)	EA	1.000				1.000						1.000	
	536-6002	CONC MEDIAN	SY	2,092.000				72.000						76.000	
	618-6040	CONDT (PVC) (SCH 80) (1")	LF					55.000							
	618-6046	CONDT (PVC) (SCH 80) (2")	LF	20.000		290.000		15.000						15.000	
	618-6053	CONDT (PVC) (SCH 80) (3")	LF	65.000		5.000		110.000		315.000		50.000		315.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0016-08-043 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY FM 2252, SL 13, SL 368

				0016-08-043		0521-01-055		0521-01-056		0521-02-041		1433-01-031		1433-01-032	
		CONTROL SECTION JOB													
		PROJECT ID		A00066417		A00066420		A00183507		A00064116		A00063890		A00064105	
		COUNTY		Bexar		Bexar		Bexar		Bexar		Bexar		Bexar	
		HIGHWAY		SL 368		SL 13		SL 13		SL 13		FM 2252		FM 2252	
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
	618-6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	245.000		420.000		220.000						180.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF	285.000		710.000		320.000		305.000		50.000		475.000	
	620-6010	ELEC CONDR (NO.6) INSULATED	LF	120.000				70.000						85.000	
	621-6002	TRAY CABLE (3 CONDR) (12 AWG)	LF			630.000									
	624-6009	GROUND BOX TY D (162922)	EA			5.000		2.000						2.000	
	624-6010	GROUND BOX TY D (162922)W/APRON	EA	2.000										2.000	
	628-6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	EA	1.000		1.000		1.000						1.000	
	636-6001	ALUMINUM SIGNS (TY A)	SF	5.000											
	644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	6.000				4.000						4.000	
	644-6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	11.000				2.000						2.000	
	644-6010	IN SM RD SN SUP&AM TY10BWG(1)SB(P-BM)	EA	10.000											
	644-6012	IN SM RD SN SUP&AM TY10BWG(1)SB(T)	EA					2.000							
	644-6076	REMOVE SM RD SN SUP&AM	EA			6.000						1.000			
	644-6078	REMOVE SM RD SN SUP&AM (SIGN ONLY)	EA							2.000		2.000			
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	2,965.000		100.000									
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	160.000		605.000		175.000		1,390.000		335.000		130.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	31.000		5.000									
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	16.000		5.000									
	666-6141	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)	LF			400.000									
	666-6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF					50.000						20.000	
	666-6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA					2.000		2.000				1.000	
	666-6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	530.000				485.000		4,890.000		1,280.000		310.000	
	666-6167	REFL PAV MRK TY II (W) 4" (BRK)	LF			1,200.000									
	666-6170	REFL PAV MRK TY II (W) 4" (SLD)	LF			350.000									
	666-6224	PAVEMENT SEALER 4"	LF	1,745.000		1,550.000									
	666-6225	PAVEMENT SEALER 6"	LF	530.000				485.000		4,890.000		1,280.000		310.000	
	666-6226	PAVEMENT SEALER 8"	LF	2,965.000		100.000									
	666-6228	PAVEMENT SEALER 12"	LF			400.000									
	666-6230	PAVEMENT SEALER 24"	LF	160.000		605.000		225.000		1,390.000		335.000		145.000	
	666-6231	PAVEMENT SEALER (ARROW)	EA	31.000		5.000									
	666-6232	PAVEMENT SEALER (WORD)	EA	16.000		5.000									
	666-6233	PAVEMENT SEALER (MED NOSE)	EA					2.000		2.000				1.000	
	666-6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	LF	1,050.000											
	666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	700.000											
	672-6009	REFL PAV MRKR TY II-A-A	EA					26.000						26.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA	138.000											
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	12,905.000		1,550.000		90.000		185.000					

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0016-08-043 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY FM 2252, SL 13, SL 368

				0016-08-043		0521-01-055		0521-01-056		0521-02-041		1433-01-031		1433-01-032	
		CONTROL SECTION JOB													
		PROJECT ID		A00066417		A00066420		A00183507		A00064116		A00063890		A00064105	
		COUNTY		Bexar		Bexar		Bexar		Bexar		Bexar		Bexar	
		HIGHWAY		SL 368		SL 13		SL 13		SL 13		FM 2252		FM 2252	
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	175.000		100.000				10.000					
	677-6005	ELIM EXT PAV MRK & MRKS (12")	LF			400.000									
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	125.000		605.000				1,160.000		235.000			
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	15.000		5.000								2.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	1.000		5.000									
	677-6020	ELIM EXT PAV MRK & MRKS (MED NOSE)	EA	2.000						1.000					
	678-6001	PAV SURF PREP FOR MRK (4")	LF	1,745.000		1,550.000									
	678-6002	PAV SURF PREP FOR MRK (6")	LF	530.000				485.000		4,890.000		1,280.000		310.000	
	678-6004	PAV SURF PREP FOR MRK (8")	LF	2,965.000		100.000									
	678-6006	PAV SURF PREP FOR MRK (12")	LF			400.000									
	678-6008	PAV SURF PREP FOR MRK (24")	LF	160.000		605.000		225.000		1,390.000		335.000		145.000	
	678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	31.000											
	678-6016	PAV SURF PREP FOR MRK (WORD)	EA	16.000											
	678-6024	PAV SURF PREP FOR MRK (MED NOSE)	EA					2.000		2.000				1.000	
	678-6033	PAV SURF PREP FOR MRK (RPM)	EA	138.000											
	680-6001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	1.000				1.000						1.000	
	680-6003	INSTALL HWY TRF SIG (SYSTEM)	EA			1.000									
	680-6004	REMOVING TRAFFIC SIGNALS	EA			1.000									
	680-6011	INSTALL HWY TRF SIG (UPGRADE)	EA	1.000						3.000		1.000			
	682-6001	VEH SIG SEC (12")LED(GRN)	EA			10.000									
	682-6002	VEH SIG SEC (12")LED(GRN ARW)	EA			4.000									
	682-6003	VEH SIG SEC (12")LED(YEL)	EA	8.000		10.000		8.000						8.000	
	682-6004	VEH SIG SEC (12")LED(YEL ARW)	EA			4.000									
	682-6005	VEH SIG SEC (12")LED(RED)	EA			10.000									
	682-6006	VEH SIG SEC (12")LED(RED ARW)	EA			4.000									
	682-6007	VEH SIG SEC (12")LED(GRN U-TURN ARW)	EA	1.000											
	682-6008	VEH SIG SEC (12")LED(YEL U-TURN ARW)	EA	1.000											
	682-6009	VEH SIG SEC (12")LED(RED U-TURN ARW)	EA	1.000											
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA			8.000				19.000		5.000			
	682-6021	BACK PLATE (12")(1 SEC)	EA	8.000				8.000						8.000	
	682-6049	BACKPLATE W/REFL BRDR(4 SEC)	EA			4.000									
	682-6060	BACKPLATE W/REFL BRDR(3 SEC)	EA	1.000		10.000									
	684-6030	TRF SIG CBL (TY A)(14 AWG)(4 CONDR)	LF			770.000									
	684-6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	750.000		1,740.000		695.000		3,135.000		575.000		1,190.000	
	684-6049	TRF SIG CBL (TY A)(16 AWG)(3 CONDR)	LF			600.000				3,365.000		1,035.000			
	686-6041	INS TRF SIG PL AM(S)1 ARM(40')	EA	2.000				1.000							
	686-6045	INS TRF SIG PL AM(S)1 ARM(44')	EA					1.000							

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0016-08-043 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY FM 2252, SL 13, SL 368

				0016-08-043		0521-01-055		0521-01-056		0521-02-041		1433-01-031		1433-01-032	
		CONTROL SECTION JOB													
		PROJECT ID		A00066417		A00066420		A00183507		A00064116		A00063890		A00064105	
		COUNTY		Bexar		Bexar		Bexar		Bexar		Bexar		Bexar	
		HIGHWAY		SL 368		SL 13		SL 13		SL 13		FM 2252		FM 2252	
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL
	686-6056	INS TRF SIG PL AM(S)1 ARM(50')LUM&ILSN	EA			2.000									
	686-6060	INS TRF SIG PL AM(S)1 ARM(55')LUM&ILSN	EA			1.000									
	686-6068	INS TRF SIG PL AM(S)1 ARM(65')LUM&ILSN	EA			1.000									
	686-6282	RELOC TRF SG PL AM(S)SNGL MST ARM POLE	EA					1.000							
	687-6001	PED POLE ASSEMBLY	EA			6.000				17.000		4.000		4.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA			8.000				22.000		8.000			
	688-6003	PED DETECTOR CONTROLLER UNIT	EA			1.000									
	690-6001	REMOVAL OF CONDUIT	LF							85.000		55.000			
	690-6009	REMOVAL OF CABLES	LF							1,705.000		550.000			
	690-6024	REMOVAL OF SIGNAL HEAD ASSM	EA							6.000		3.000			
	690-6030	REMOVAL OF PEDESTRIAN PUSH BUTTONS	EA							7.000		3.000			
	690-6089	REMOVE PED POLE ASSM	EA							5.000		2.000			
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	40.000				20.000		60.000		20.000		20.000	
	6004-6031	ITS COM CBL (ETHERNET)	LF	675.000				695.000						1,100.000	
	6027-6003	CONDUIT (PREPARE)	LF	15.000						1,250.000		440.000			
	6027-6008	GROUND BOX (PREPARE)	EA	1.000						14.000		4.000			
	6185-6002	TMA (STATIONARY)	DAY	90.000				4.000							
	6292-6001	RVDS(PRESENCE DETECTION ONLY)	EA			4.000									
	6319-6003	LED WRONG WAY DRIVER SYSTEM (THERMAL)	EA					4.000							
	08	CONTRACTOR FORCE ACCOUNT WORK (NON-PARTICIPATING)	LS	1.000											
	18	LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000											
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000											
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000											

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0016-08-043 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY FM 2252, SL 13, SL 368

			CONTROL SECTION JOB	TOTAL EST.	TOTAL FINAL
			PROJECT ID		
			COUNTY		
			HIGHWAY		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**		
	100-6002	PREPARING ROW	STA	9.000	
	104-6011	REMOVING CONC (MEDIANS)	SY	101.000	
	104-6015	REMOVING CONC (SIDEWALKS)	SY	105.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF	408.000	
	104-6032	REMOVING CONC (WHEELCHAIR RAMP)	SY	70.000	
	104-6036	REMOVING CONC (SIDEWALK OR RAMP)	SY	68.000	
	105-6029	REMOVE STAB BASE & ASPH PAV (24")	SY	239.000	
	132-6003	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	82.000	
	162-6002	BLOCK SODDING	SY	242.000	
	354-6023	PLANE ASPH CONC PAV(0" TO 4")	SY	2,092.000	
	400-6006	CUT & RESTORING PAV	SY	681.000	
	416-6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	65.000	
	416-6034	DRILL SHAFT (TRF SIG POLE) (48 IN)	LF	88.000	
	420-6002	CL A CONC (MISC)	CY	22.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF	29.000	
	465-6022	INLET (COMPL)(PCO)(5FT)(LEFT)	EA	1.000	
	465-6023	INLET (COMPL)(PCO)(5FT)(RIGHT)	EA	1.000	
	465-6024	INLET (COMPL)(PCO)(5FT)(BOTH)	EA	1.000	
	465-6338	INLET (COMPL)(ARMOR CURB SLOT)	EA	34.000	
	479-6003	ADJUSTING MANHOLES & INLETS	EA	2.000	
	500-6001	MOBILIZATION	LS	1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	20.000	
	506-6004	ROCK FILTER DAMS (INSTALL) (TY 4)	LF	55.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	55.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	320.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	320.000	
	506-6047	TEMP SDMT CONT FENCE (INLET PROTECTION)	LF	110.000	
	529-6002	CONC CURB (TY II)	LF	437.000	
	531-6002	CONC SIDEWALKS (5")	SY	57.000	
	531-6004	CURB RAMPS (TY 1)	EA	14.000	
	531-6005	CURB RAMPS (TY 2)	EA	7.000	
	531-6010	CURB RAMPS (TY 7)	EA	9.000	
	531-6016	CURB RAMPS (TY 21)	EA	3.000	
	536-6002	CONC MEDIAN	SY	2,240.000	
	618-6040	CONDT (PVC) (SCH 80) (1")	LF	55.000	
	618-6046	CONDT (PVC) (SCH 80) (2")	LF	340.000	
	618-6053	CONDT (PVC) (SCH 80) (3")	LF	860.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0016-08-043 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY FM 2252, SL 13, SL 368

			CONTROL SECTION JOB		TOTAL EST.	TOTAL FINAL
			PROJECT ID			
			COUNTY			
			HIGHWAY			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**		
	618-6054	CONDT (PVC) (SCH 80) (3") (BORE)		LF	1,065.000	
	620-6009	ELEC CONDR (NO.6) BARE		LF	2,145.000	
	620-6010	ELEC CONDR (NO.6) INSULATED		LF	275.000	
	621-6002	TRAY CABLE (3 CONDR) (12 AWG)		LF	630.000	
	624-6009	GROUND BOX TY D (162922)		EA	9.000	
	624-6010	GROUND BOX TY D (162922)W/APRON		EA	4.000	
	628-6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)		EA	4.000	
	636-6001	ALUMINUM SIGNS (TY A)		SF	5.000	
	644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)		EA	14.000	
	644-6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)		EA	15.000	
	644-6010	IN SM RD SN SUP&AM TY10BWG(1)SB(P-BM)		EA	10.000	
	644-6012	IN SM RD SN SUP&AM TY10BWG(1)SB(T)		EA	2.000	
	644-6076	REMOVE SM RD SN SUP&AM		EA	7.000	
	644-6078	REMOVE SM RD SN SUP&AM (SIGN ONLY)		EA	4.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)		LF	3,065.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)		LF	2,795.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)		EA	36.000	
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)		EA	21.000	
	666-6141	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)		LF	400.000	
	666-6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)		LF	70.000	
	666-6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)		EA	5.000	
	666-6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)		LF	7,495.000	
	666-6167	REFL PAV MRK TY II (W) 4" (BRK)		LF	1,200.000	
	666-6170	REFL PAV MRK TY II (W) 4" (SLD)		LF	350.000	
	666-6224	PAVEMENT SEALER 4"		LF	3,295.000	
	666-6225	PAVEMENT SEALER 6"		LF	7,495.000	
	666-6226	PAVEMENT SEALER 8"		LF	3,065.000	
	666-6228	PAVEMENT SEALER 12"		LF	400.000	
	666-6230	PAVEMENT SEALER 24"		LF	2,860.000	
	666-6231	PAVEMENT SEALER (ARROW)		EA	36.000	
	666-6232	PAVEMENT SEALER (WORD)		EA	21.000	
	666-6233	PAVEMENT SEALER (MED NOSE)		EA	5.000	
	666-6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)		LF	1,050.000	
	666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)		LF	700.000	
	672-6009	REFL PAV MRKR TY II-A-A		EA	52.000	
	672-6010	REFL PAV MRKR TY II-C-R		EA	138.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")		LF	14,730.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0016-08-043 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY FM 2252, SL 13, SL 368

			CONTROL SECTION JOB		TOTAL EST.	TOTAL FINAL
			PROJECT ID			
			COUNTY			
			HIGHWAY			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**		
	677-6003	ELIM EXT PAV MRK & MRKS (8")		LF	285.000	
	677-6005	ELIM EXT PAV MRK & MRKS (12")		LF	400.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")		LF	2,125.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)		EA	22.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)		EA	6.000	
	677-6020	ELIM EXT PAV MRK & MRKS (MED NOSE)		EA	3.000	
	678-6001	PAV SURF PREP FOR MRK (4")		LF	3,295.000	
	678-6002	PAV SURF PREP FOR MRK (6")		LF	7,495.000	
	678-6004	PAV SURF PREP FOR MRK (8")		LF	3,065.000	
	678-6006	PAV SURF PREP FOR MRK (12")		LF	400.000	
	678-6008	PAV SURF PREP FOR MRK (24")		LF	2,860.000	
	678-6009	PAV SURF PREP FOR MRK (ARROW)		EA	31.000	
	678-6016	PAV SURF PREP FOR MRK (WORD)		EA	16.000	
	678-6024	PAV SURF PREP FOR MRK (MED NOSE)		EA	5.000	
	678-6033	PAV SURF PREP FOR MRK (RPM)		EA	138.000	
	680-6001	INSTALL HWY TRF SIG (FLASH BEACON)		EA	3.000	
	680-6003	INSTALL HWY TRF SIG (SYSTEM)		EA	1.000	
	680-6004	REMOVING TRAFFIC SIGNALS		EA	1.000	
	680-6011	INSTALL HWY TRF SIG (UPGRADE)		EA	5.000	
	682-6001	VEH SIG SEC (12")LED(GRN)		EA	10.000	
	682-6002	VEH SIG SEC (12")LED(GRN ARW)		EA	4.000	
	682-6003	VEH SIG SEC (12")LED(YEL)		EA	34.000	
	682-6004	VEH SIG SEC (12")LED(YEL ARW)		EA	4.000	
	682-6005	VEH SIG SEC (12")LED(RED)		EA	10.000	
	682-6006	VEH SIG SEC (12")LED(RED ARW)		EA	4.000	
	682-6007	VEH SIG SEC (12")LED(GRN U-TURN ARW)		EA	1.000	
	682-6008	VEH SIG SEC (12")LED(YEL U-TURN ARW)		EA	1.000	
	682-6009	VEH SIG SEC (12")LED(RED U-TURN ARW)		EA	1.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)		EA	32.000	
	682-6021	BACK PLATE (12")(1 SEC)		EA	24.000	
	682-6049	BACKPLATE W/REFL BRDR(4 SEC)		EA	4.000	
	682-6060	BACKPLATE W/REFL BRDR(3 SEC)		EA	11.000	
	684-6030	TRF SIG CBL (TY A)(14 AWG)(4 CONDR)		LF	770.000	
	684-6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)		LF	8,085.000	
	684-6049	TRF SIG CBL (TY A)(16 AWG)(3 CONDR)		LF	5,000.000	
	686-6041	INS TRF SIG PL AM(S)1 ARM(40')		EA	3.000	
	686-6045	INS TRF SIG PL AM(S)1 ARM(44')		EA	1.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0016-08-043 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY FM 2252, SL 13, SL 368

			CONTROL SECTION JOB		TOTAL EST.	TOTAL FINAL
			PROJECT ID			
			COUNTY			
			HIGHWAY			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**		
	686-6056	INS TRF SIG PL AM(S)1 ARM(50')LUM&ILSN		EA	2.000	
	686-6060	INS TRF SIG PL AM(S)1 ARM(55')LUM&ILSN		EA	1.000	
	686-6068	INS TRF SIG PL AM(S)1 ARM(65')LUM&ILSN		EA	1.000	
	686-6282	RELOC TRF SG PL AM(S)SNGL MST ARM POLE		EA	1.000	
	687-6001	PED POLE ASSEMBLY		EA	31.000	
	688-6001	PED DETECT PUSH BUTTON (APS)		EA	38.000	
	688-6003	PED DETECTOR CONTROLLER UNIT		EA	1.000	
	690-6001	REMOVAL OF CONDUIT		LF	140.000	
	690-6009	REMOVAL OF CABLES		LF	2,255.000	
	690-6024	REMOVAL OF SIGNAL HEAD ASSM		EA	9.000	
	690-6030	REMOVAL OF PEDESTRIAN PUSH BUTTONS		EA	10.000	
	690-6089	REMOVE PED POLE ASSM		EA	7.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN		DAY	160.000	
	6004-6031	ITS COM CBL (ETHERNET)		LF	2,470.000	
	6027-6003	CONDUIT (PREPARE)		LF	1,705.000	
	6027-6008	GROUND BOX (PREPARE)		EA	19.000	
	6185-6002	TMA (STATIONARY)		DAY	94.000	
	6292-6001	RVDS(PRESENCE DETECTION ONLY)		EA	4.000	
	6319-6003	LED WRONG WAY DRIVER SYSTEM (THERMAL)		EA	4.000	
	08	CONTRACTOR FORCE ACCOUNT WORK (NON-PARTICIPATING)		LS	1.000	
	18	LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)		LS	1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)		LS	1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)		LS	1.000	

SL 368 (CSJ: 0016-08-043)

SL 368 (AUSTIN HWY) MATCHLINE A, THIS SHEET

SL 368 (AUSTIN HWY) MATCHLINE A, THIS SHEET

SL 368 (AUSTIN HWY) MATCHLINE B, THIS SHEET

SL 368 (AUSTIN HWY) MATCHLINE B, THIS SHEET

N

0 100 200

SCALE: 1"=200'

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
TBPE Firm No. 928
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY)
PROJECT LAYOUT

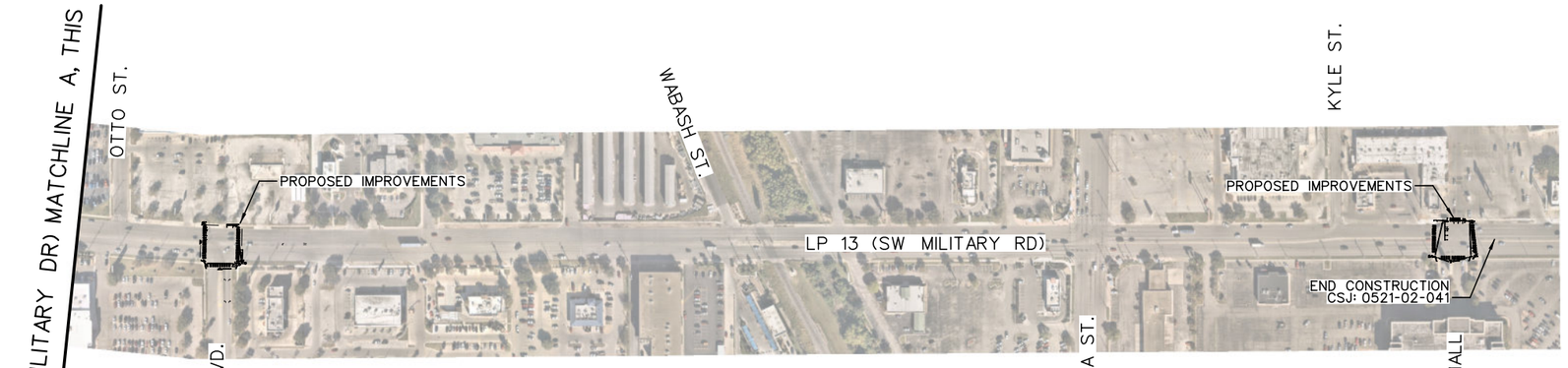
SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		5
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:54:09
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA *1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_Prj_Lyt.dgn

SL 13 (CSJ: 0521-02-041)

SL 13 (SW MILITARY DR) MATCHLINE A, THIS SHEET



SL 13 (SW MILITARY DR) MATCHLINE A, THIS SHEET

0 200 400
SCALE: 1"=400'

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

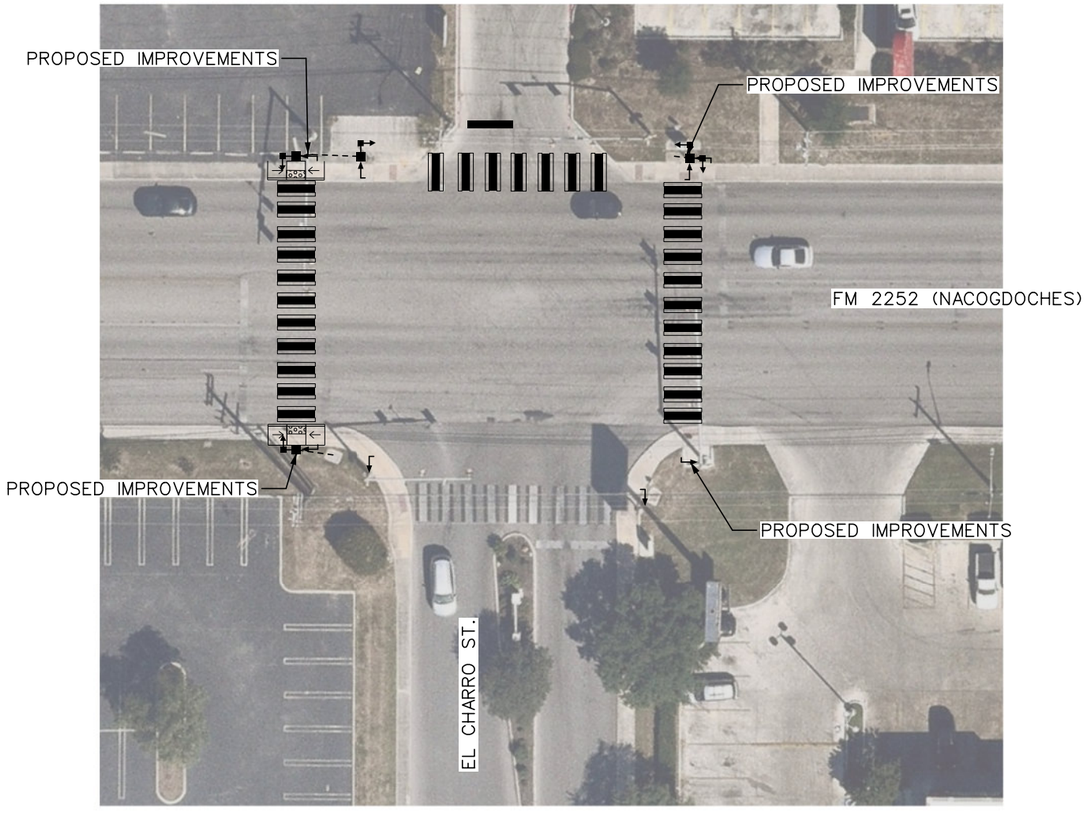
SL 13 (SW MILITARY DR)
PROJECT LAYOUT

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		5A
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:56:36
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_Prj_Lyt.dgn

FM 2252 (CSJ: 1433-01-031)



N

0 20 40
SCALE: 1"=40'

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

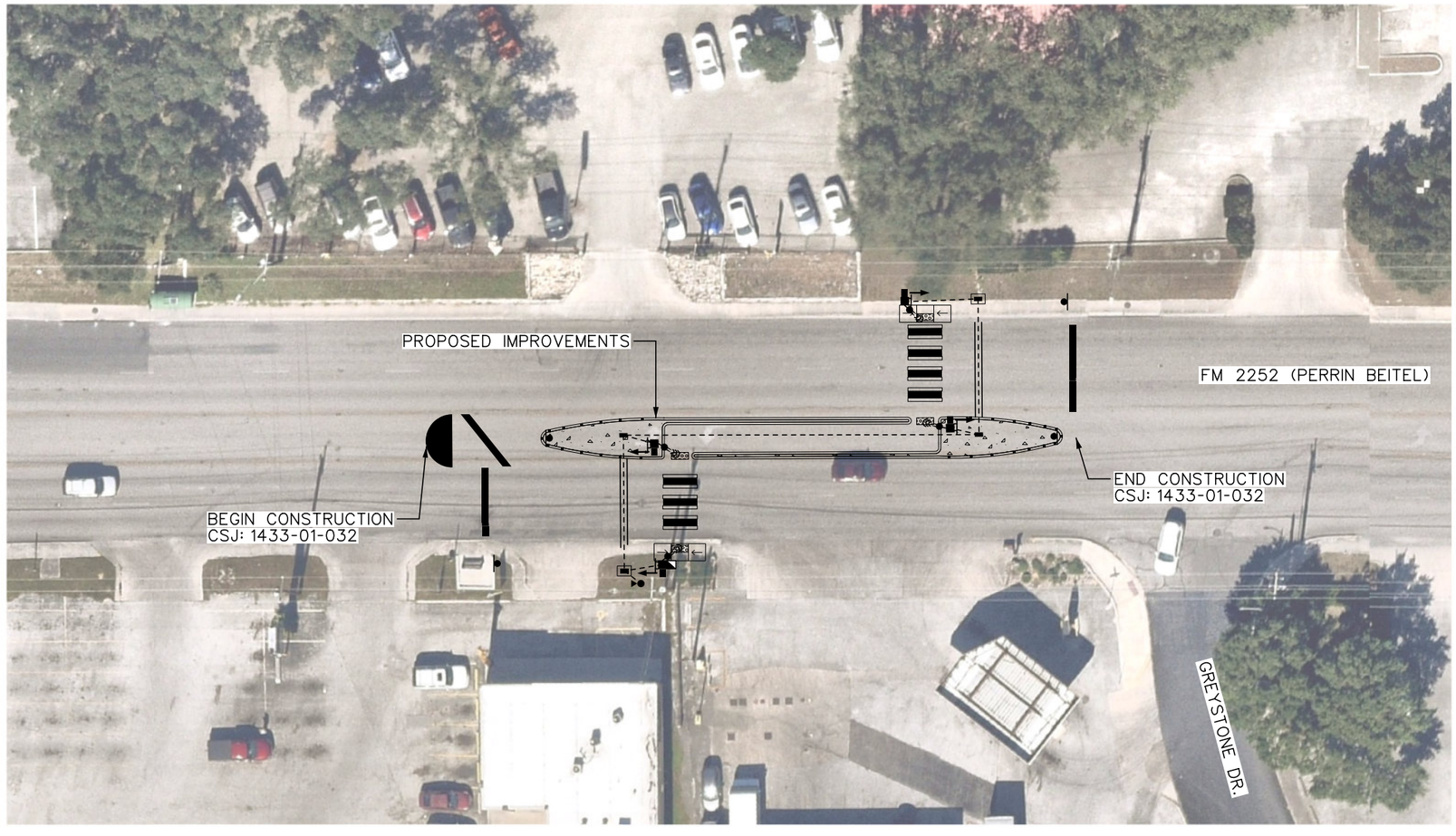
FM 2252 (NACOGDOCHES) PROJECT LAYOUT

SHEET 1 OF 1

FED RD DIV. NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		5B
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:56:52
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Naco_Prj_Lyt.dgn

FM 2252 (CSJ: 1433-01-032)



N

0 20 40

SCALE: 1"=40'

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

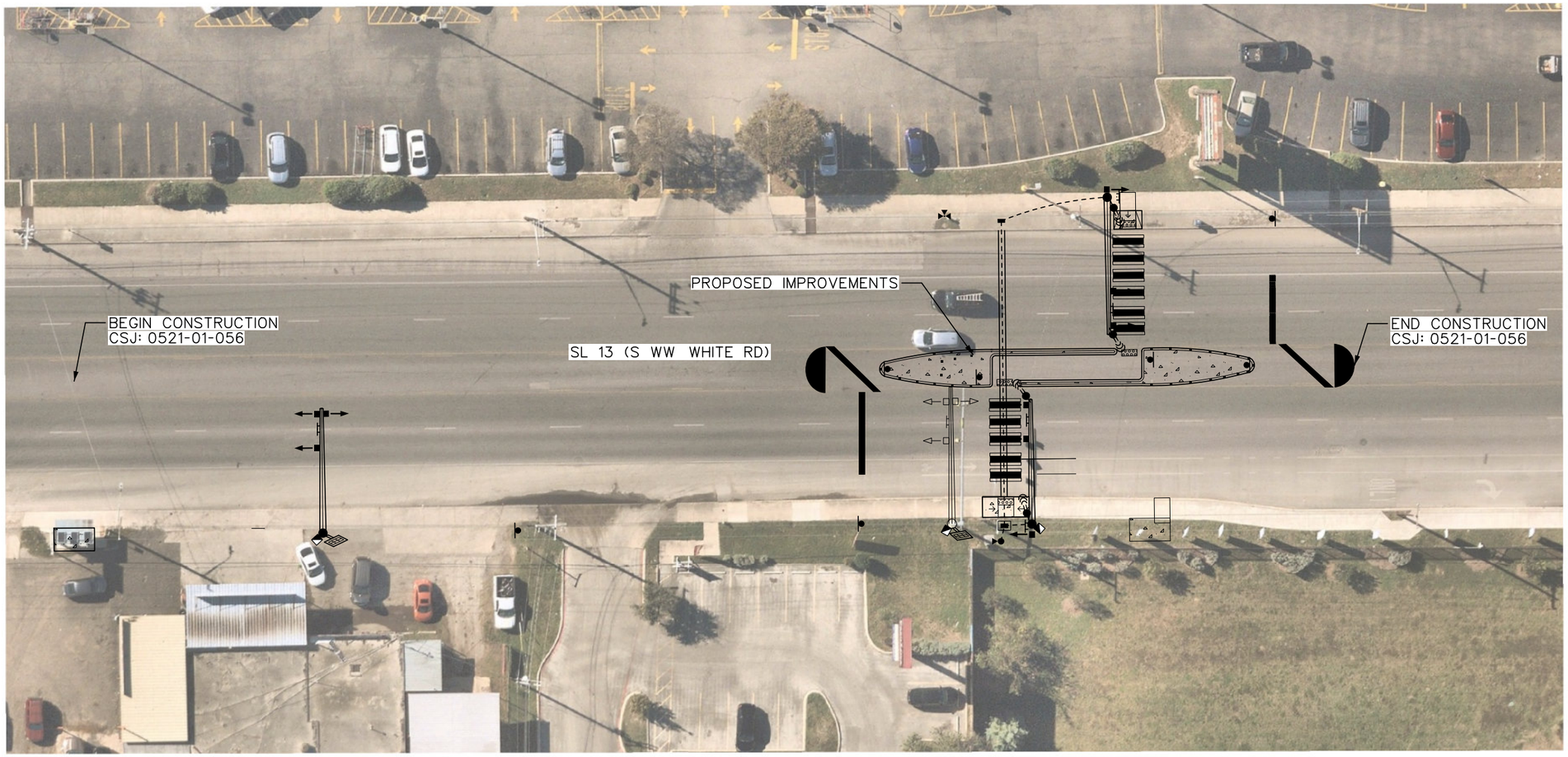
FM 2252 (PERRIN BEITEL) PROJECT LAYOUT

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		5C
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:56:59
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Perrin_Prj_Lyt.dgn

SL 13 (CSJ: 0521-01-056)



N

0 20 40

SCALE: 1"=40'

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

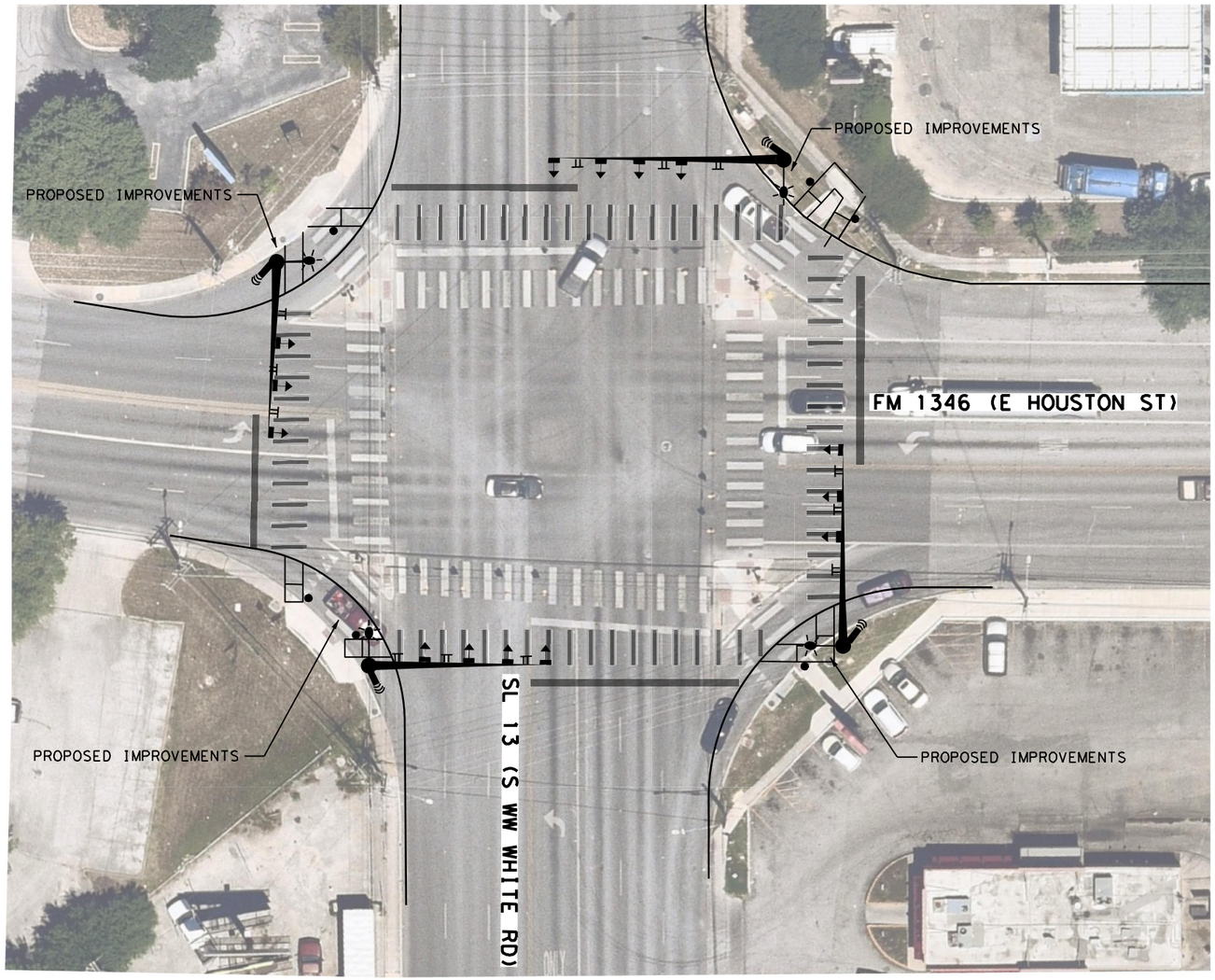
SL 13 (S WW WHITE RD) Z-CROSSING PROJECT LAYOUT

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		5D
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:57:09
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA •1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_WHITE_Prj_Lyt.dgn

SL 13 (CSJ 0521-1-055)



N

0 20' 40'
SCALE: 1" = 40'

STATE OF TEXAS
FEDERICO J. MENDOZA
63311
REGISTERED PROFESSIONAL ENGINEER

4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

Texas Department of Transportation

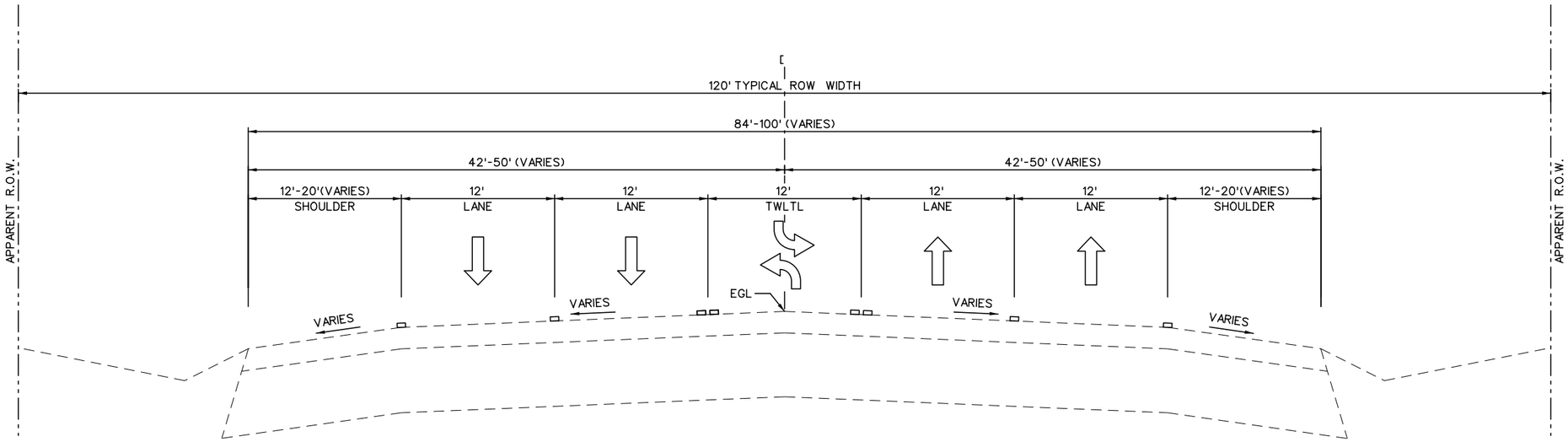
FY 2022 HSIP

SL 13 AT FM 1346
PROJECT LAYOUT

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		5E
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D1903647X.04



EXISTING TYPICAL SECTION
SL 368 (AUSTIN HWY)

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-9699

Texas Department of Transportation

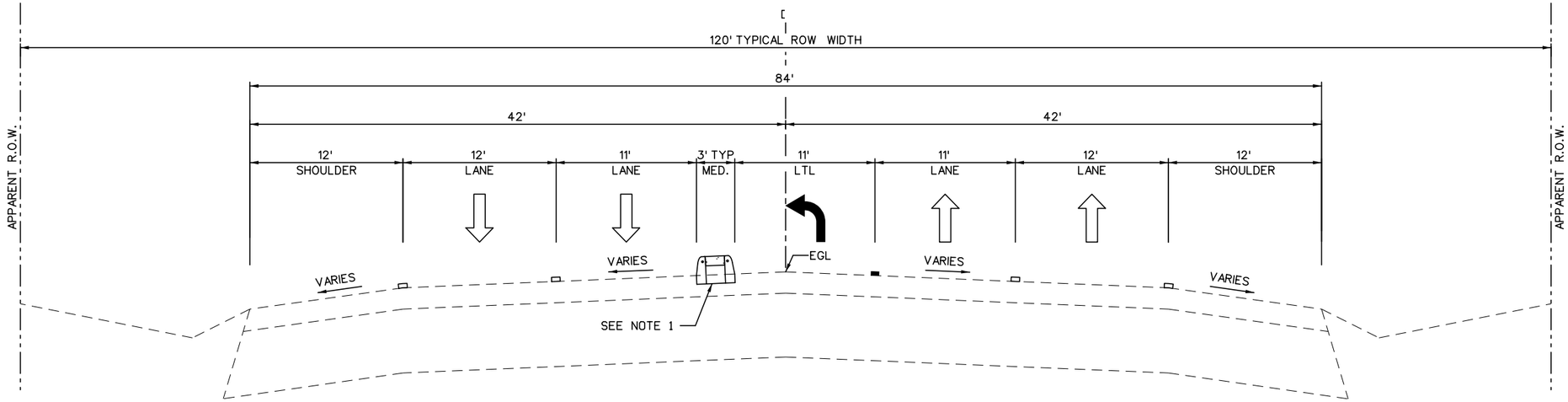
FY 2022 HSIP

SL 368 (AUSTIN HWY)
EXISTING TYPICAL
SECTION

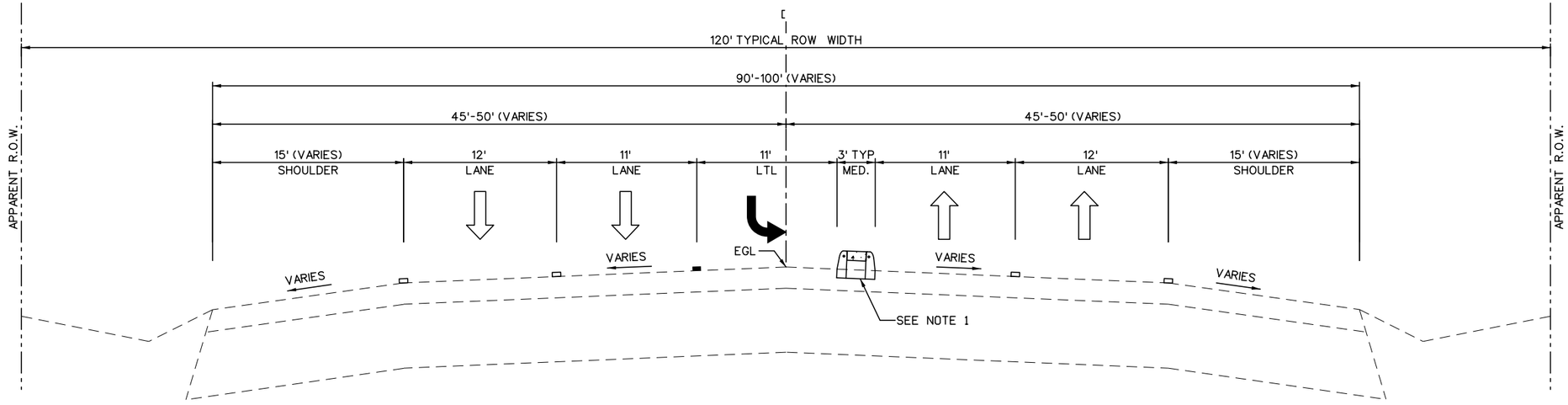
SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		6
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

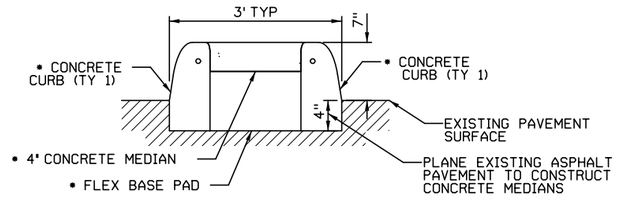
Justin.Kinne
4/19/2022 18:25:22
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA *I\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_TYP_E01.dgn



PROPOSED EASTBOUND LEFT-TURN LANE TYPICAL SECTION
SL 368 (AUSTIN HWY)



PROPOSED WESTBOUND LEFT-TURN LANE TYPICAL SECTION
SL 368 (AUSTIN HWY)



× SUBSIDIARY TO CONCRETE MEDIAN BID ITEM 536-6002

MEDIAN DETAIL
N.T.S.

NOTES:

1. 3' CONCRETE MEDIAN IS TYPICAL. IN CONSTRAINED AREAS WIDTH OF MEDIAN MAY VARY FROM 2' MINIMUM TO 3' DESIRABLE.

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

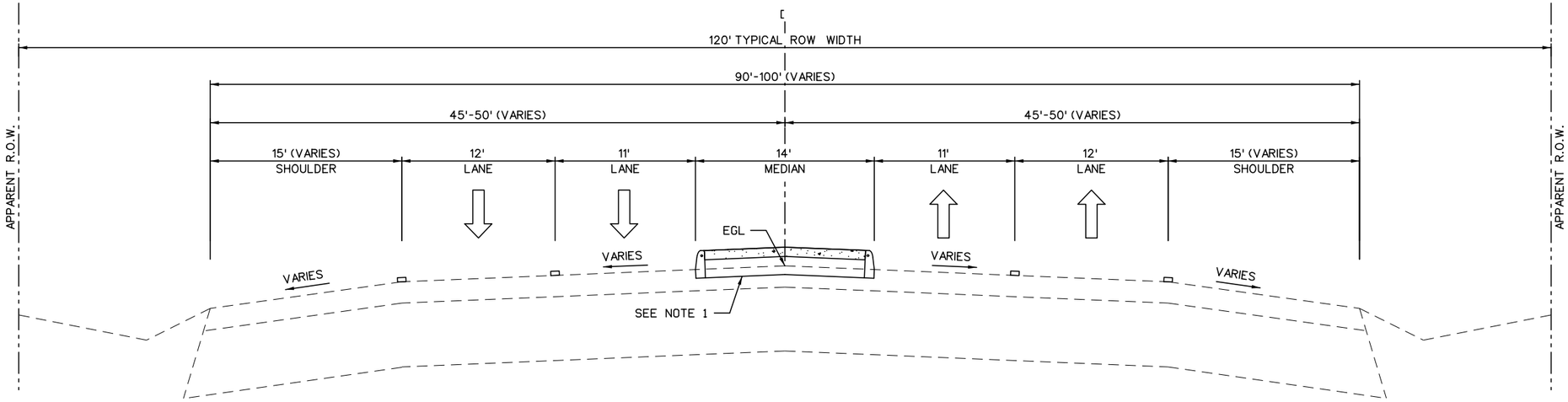
FY 2022 HSIP

SL 368 (AUSTIN HWY)
PROPOSED TYPICAL SECTION

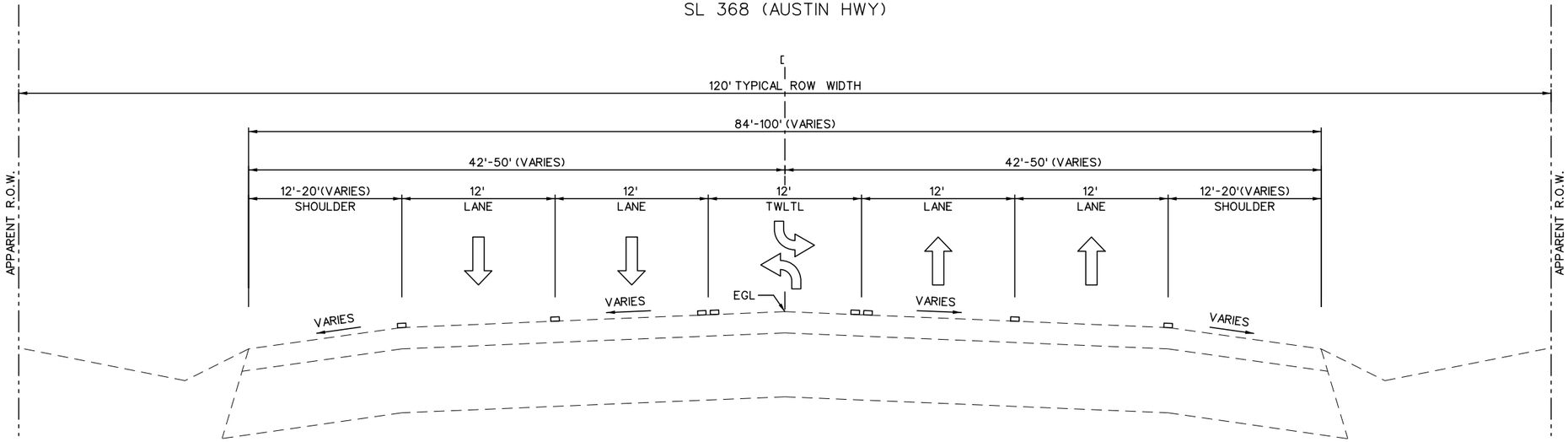
SHEET 1 OF 3

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		7
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

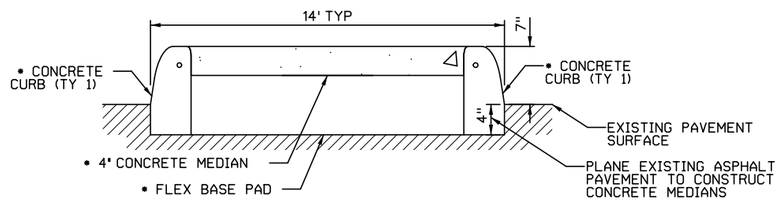
Justin.Kinne
4/19/2022 18:25:37
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_TYP_P01.dgn



PROPOSED 14' CONCRETE MEDIAN TYPICAL SECTION
SL 368 (AUSTIN HWY)



PROPOSED TWO-WAY LEFT-TURN LANE TYPICAL SECTION
SL 368 (AUSTIN HWY)



× SUBSIDIARY TO CONCRETE MEDIAN BID ITEM 536-6002

MEDIAN DETAIL
N.T.S.

NOTES:

1. 14' CONCRETE MEDIAN IS TYPICAL. IN CONSTRAINED AREAS, WIDTH OF MEDIAN MAY VARY TO ENSURE ADJACENT 11' TRAVEL LANES ARE MAINTAINED.

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

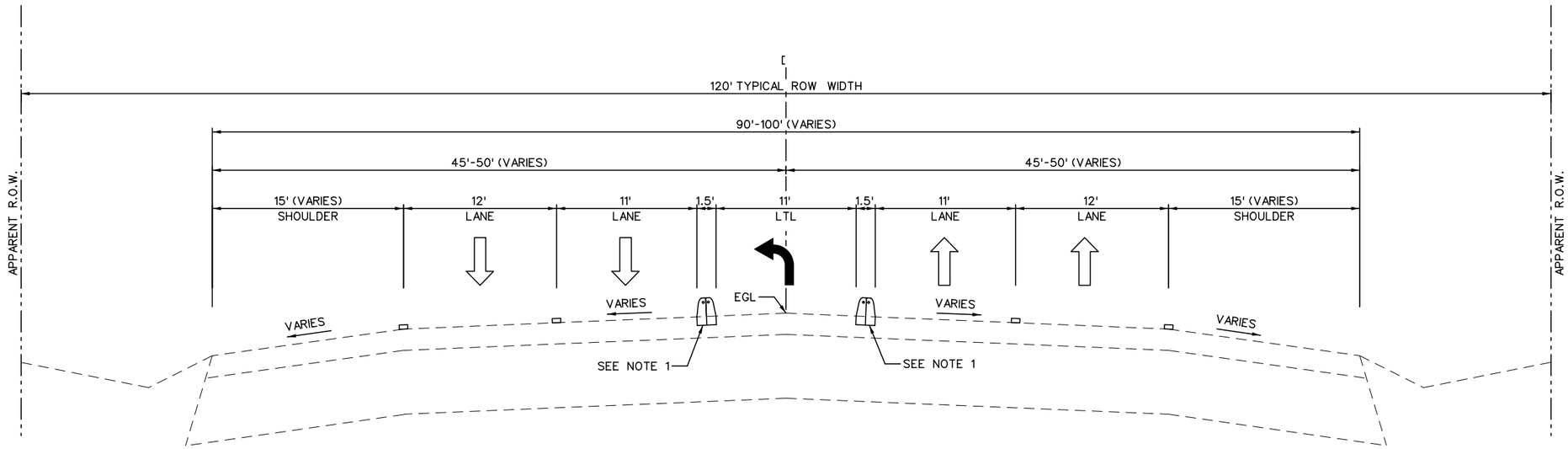
FY 2022 HSIP

SL 368 (AUSTIN HWY)
PROPOSED TYPICAL SECTION

SHEET 2 OF 3

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		7A
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

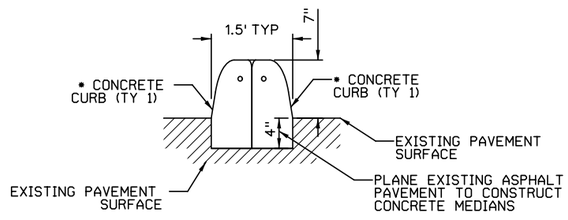
Justin.Kinne
4/19/2022 18:26:00
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA •1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_TYP_P02.dgn



PROPOSED HOODED LEFT-TURN LANE TYPICAL SECTION
SL 368 (AUSTIN HWY)

NOTES:

1. 11' LEFT-TURN LANE TYPICAL. IN CONSTRAINED AREAS, WIDTH OF LEFT-TURN LANE MAY VARY FROM 10' MINIMUM TO 11' DESIRABLE, TO ENSURE ADJACENT 11' TRAVEL LANES ARE MAINTAINED.



* SUBSIDIARY TO CONCRETE MEDIAN BID ITEM 536-6002

MEDIAN DETAIL
N.T.S.

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY)
PROPOSED TYPICAL SECTION

SHEET 3 OF 3

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		7B
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 18:26:16
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_TYP_P03.dgn

SL 368 (CSJ: 0016-08-043)

Item No.	Desc. Code	Description	Unit	MEDIAN LAYOUTS	Z-CROSSING	AUSTIN HIGHWAY & LANARK	TOTAL
104	6015	REMOVING CONC (SIDEWALKS)	SY	38	-	-	38
354	6023	PLANE ASPH CONC PAV(0" TO 4")	SY	2092	-	-	2092
416	6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	-	26	-	26
465	6338	INLET (COMPL)(ARMOR CURB SLOT)	EA	34	-	-	34
500	6001	MOBILIZATION	LS	-	-	-	1
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	5	-	-	5
506	6004	ROCK FILTER DAMS (INSTALL) (TY 4)	LF	55	-	-	55
506	6011	ROCK FILTER DAMS (REMOVE)	LF	55	-	-	55
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	320	-	-	320
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	320	-	-	320
506	6047	TEMP SDMT CONT FENCE (INLET PROTECTION)	LF	110	-	-	110
531	6005	CURB RAMPS (TY 2)	EA	2	-	-	2
531	6016	CURB RAMPS (TY 21)	EA	1	-	-	1
536	6002	CONC MEDIAN	SY	2092	-	-	2092
618	6046	CONDT (PVC) (SCH 80) (2")	LF	-	20	-	20
618	6053	CONDT (PVC) (SCH 80) (3")	LF	-	65	-	65
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	-	245	-	245
620	6009	ELEC CONDR (NO.6) BARE	LF	-	285	-	285
620	6010	ELEC CONDR (NO.6) INSULATED	LF	-	120	-	120
624	6010	GROUND BOX TY D (162922)W/APRON	EA	-	2	-	2
628	6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	EA	-	1	-	1
636	6001	ALUMINUM SIGNS (TY A)	SF	-	-	5	5
644	6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	6	-	-	6
644	6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	11	-	-	11
644	6010	IN SM RD SN SUP&AM TY10BWG(1)SB(P-BM)	EA	10	-	-	10
666	6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	2965	-	-	2965
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	160	-	-	160
666	6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	31	-	-	31
666	6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	16	-	-	16
666	6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	530	-	-	530
666	6224	PAVEMENT SEALER 4"	LF	1745	-	-	1745
666	6225	PAVEMENT SEALER 6"	LF	530	-	-	530
666	6226	PAVEMENT SEALER 8"	LF	2965	-	-	2965
666	6230	PAVEMENT SEALER 24"	LF	160	-	-	160
666	6231	PAVEMENT SEALER (ARROW)	EA	31	-	-	31
666	6232	PAVEMENT SEALER (WORD)	EA	16	-	-	16
666	6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	LF	1050	-	-	1050
666	6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	700	-	-	700
672	6010	REFL PAV MRKR TY II-C-R	EA	138	-	-	138
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	12905	-	-	12905
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	175	-	-	175
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	125	-	-	125
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	15	-	-	15
677	6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	1	-	-	1
677	6020	ELIM EXT PAV MRK & MRKS (MED NOSE)	EA	2	-	-	2
678	6001	PAV SURF PREP FOR MRK (4")	LF	1745	-	-	1745
678	6002	PAV SURF PREP FOR MRK (6")	LF	530	-	-	530
678	6004	PAV SURF PREP FOR MRK (8")	LF	2965	-	-	2965
678	6008	PAV SURF PREP FOR MRK (24")	LF	160	-	-	160
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	31	-	-	31
678	6016	PAV SURF PREP FOR MRK (WORD)	EA	16	-	-	16
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	138	-	-	138
680	6001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	-	1	-	1
680	*	W11-2 "PEDESTRIAN CROSSING" SIGN - (36" x 36")	EA	-	4	-	4
680	*	W16-9PL "DIRECTIONAL ARROW" SIGN - (24" x 12")	EA	-	2	-	2
680	*	THERMAL DETECTION SYSTEM - INSTALL ONLY	EA	-	4	-	4
680	6011	INSTALL HWY TRF SIG (UPGRADE)	EA	-	-	1	1
682	6003	VEH SIG SEC (12")LED(YEL)	EA	-	8	-	8
682	6007	VEH SIG SEC (12")LED(GRN U-TURN ARW)	EA	-	-	1	1
682	6008	VEH SIG SEC (12")LED(YEL U-TURN ARW)	EA	-	-	1	1
682	6009	VEH SIG SEC (12")LED(RED U-TURN ARW)	EA	-	-	1	1
682	6021	BACK PLATE (12")(1 SEC)	EA	-	8	-	8
682	6060	BACKPLATE W/REFL BRDR (3 SEC)	EA	-	-	1	1
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	-	675	75	750
686	6041	INS TRF SIG PL AM(S)1 ARM(40')	EA	-	2	-	2
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	-	20	20	40
6004	6031	ITS COM CBL (ETHERNET)	LF	-	675	-	675
6027	6008	CONDUIT (PREPARE)	LF	-	-	15	15
6027	6008	GROUND BOX (PREPARE)	EA	-	-	1	1
6185	6002	TMA (STATIONARY)	DAY	90	-	-	90

* SUBSIDIARY TO PERTINENT ITEM

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

QUANTITIES SUMMARY:
SL 368 (AUSTIN HWY)

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		8
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:36:49
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_QUAN_AUS HWY.dgn

SL 13 (CSJ: 0521-02-041)

Item No.	Desc. Code	Description	Unit	SW. MILITARY & BARLITE	SW. MILITARY & YARROW	SW. MILITARY & S. PARK MALL	TOTAL
104	6034	REMOVING CONC (WHEELCHAIR RAMP)	SY	39	23	8	70
500	6001	MOBILIZATION	LS	-	-	-	1
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1	2	1	4
531	6004	CURB RAMPS (TY 1)	EA	5	5	1	11
531	6010	CURB RAMPS (TY 7)	EA	2	1	-	3
618	6053	CONDT (PVC) (SCH 80) (3")	LF	150	65	100	315
620	6009	ELEC CONDR (NO.6) BARE	LF	150	65	90	305
644	6078	REMOVE SM RD SN SUP&AM (SIGN ONLY)	EA	-	2	-	2
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	365	570	455	1390
666	6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA	-	2	-	2
666	6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	1455	1630	1805	4890
666	6225	PAVEMENT SEALER 6"	LF	1455	1630	1805	4890
666	6230	PAVEMENT SEALER 24"	LF	365	570	455	1390
666	6233	PAVEMENT SEALER (MED NOSE)	EA	-	2	-	2
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	-	185	-	185
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	-	10	-	10
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	400	430	330	1160
677	6020	ELIM EXT PAV MRK & MRKS (MED NOSE)	EA	-	1	-	1
678	6002	PAV SURF PREP FOR MRK (6")	LF	1455	1630	1805	4890
678	6008	PAV SURF PREP FOR MRK (24")	LF	365	570	455	1390
678	6024	PAV SURF PREP FOR MRK (MED NOSE)	EA	-	2	-	2
680	6011	INSTALL HWY TRF SIG (UPGRADE)	EA	1	1	1	3
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	7	5	7	19
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	1340	805	990	3135
684	6049	TRF SIG CBL (TY A)(16 AWG)(3 CONDR)	LF	1425	840	1100	3365
687	6001	PED POLE ASSEMBLY	EA	7	3	7	17
687	*	DRILL SHAFT (24 IN FOUNDATION)	LF	42	18	42	102
688	6001	PED DETECT PUSH BUTTON (APS)	EA	8	6	8	22
688	*	SIGN, PEDESTRIAN PUSH BUTTON (SYMBOL TYPE) (9" X 15") (R10-3e)	EA	4	2	2	8
688	*	SIGN, PEDESTRIAN PUSH BUTTON (SYMBOL TYPE) (9" X 15") (R10-3e)	EA	4	4	6	14
690	6001	REMOVAL OF CONDUIT	LF	30	20	35	85
690	6009	REMOVAL OF CABLES	LF	550	55	1100	1705
690	6024	REMOVAL OF SIGNAL HEAD ASSM	EA	3	-	3	6
690	6030	REMOVAL OF PEDESTRIAN PUSH BUTTONS	EA	3	1	3	7
690	6089	REMOVE PED POLE ASSM	EA	2	1	2	5
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	20	20	20	60
6027	6003	CONDUIT (PREPARE)	LF	440	360	450	1250
6027	6008	GROUND BOX (PREPARE)	EA	4	5	5	14

* SUBSIDIARY TO PERTINENT ITEM

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

QUANTITIES SUMMARY:
SL 13 (SW MILITARY RD)

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		8A
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:36:51
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_QUAN_MIL.dgn

FM 2252 (CSJ: 1433-01-031)

Item No.	Desc. Code	Description	Unit	FM 2252 & EL CHARRO
104	6015	REMOVING CONC (SIDEWALKS)	EA	18
500	6001	MOBILIZATION	EA	1
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2
531	6005	CURB RAMPS (TY 2)	EA	2
618	6053	CONDT (PVC) (SCH 80) (3")	LF	50
620	6009	ELEC CONDR (NO.6) BARE	LF	50
644	6076	REMOVE SM RD SN SUP&AM	EA	1
644	6078	REMOVE SM RD SN SUP&AM (SIGN ONLY)	EA	2
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	335
666	6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	1280
666	6225	PAVEMENT SEALER 6"	LF	1280
666	6230	PAVEMENT SEALER 24"	LF	335
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	235
678	6002	PAV SURF PREP FOR MRK (6")	LF	1280
678	6008	PAV SURF PREP FOR MRK (24")	LF	335
680	6011	INSTALL HWY TRF SIG (UPGRADE)	EA	1
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	5
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	575
684	6049	TRF SIG CBL (TY A)(16 AWG)(3 CONDR)	LF	1035
687	6001	PED POLE ASSEMBLY	EA	4
687	*	DRILL SHAFT (30 IN FOUNDATION - MODIFIED)	LF	6
688	6001	PED DETECT PUSH BUTTON (APS)	EA	8
688	*	SIGN, PEDESTRIAN PUSH BUTTON (SYMBOL TYPE) (9" X 15") (R10-3e) (L)	EA	5
688	*	SIGN, PEDESTRIAN PUSH BUTTON (SYMBOL TYPE) (9" X 15") (R10-3e) (R)	EA	3
690	6001	REMOVAL OF CONDUIT	LF	55
690	6009	REMOVAL OF CABLES	LF	550
690	6024	REMOVAL OF SIGNAL HEAD ASSM	EA	3
690	6030	REMOVAL OF PEDESTRIAN PUSH BUTTONS	EA	3
690	6089	REMOVE PED POLE ASSM	EA	2
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	20
6027	6003	CONDUIT (PREPARE)	LF	440
6027	6008	GROUND BOX (PREPARE)	EA	4

* SUBSIDIARY TO PERTINENT ITEM

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

QUANTITIES SUMMARY:
FM 2252 (NACOGDOCHES RD)

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		8B
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:36:52
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_QUAN_NAC0.dgn

FM 2252 (CSJ: 1433-01-032)

Item No.	Desc. Code	Description	Unit	PERRIN BEITEL Z-CROSSING
104	6015	REMOVING CONC (SIDEWALKS)	SY	16
500	6001	MOBILIZATION	EA	1
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2.5
531	6005	CURB RAMPS (TY 2)	EA	2
531	6016	CURB RAMPS (TY 21)	EA	1
536	6002	CONC MEDIAN	SY	76
618	6046	CONDT (PVC) (SCH 80) (2")	LF	15
618	6053	CONDT (PVC) (SCH 80) (3")	LF	315
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	180
620	6009	ELEC CONDR (NO.6) BARE	LF	475
620	6010	ELEC CONDR (NO.6) INSULATED	LF	85
624	6009	GROUND BOX TY D (162922)	EA	2
624	6010	GROUND BOX TY D (162922)W/APRON	EA	2
628	6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	EA	1
644	6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	4
644	6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	2
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	130
666	6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF	20
666	6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA	1
666	6162	REFL PAV MRK TY I (BLACK) 6"(SHADOW)	LF	310
667	6225	PAVEMENT SEALER 6"	LF	310
666	6230	PAVEMENT SEALER 24"	LF	145
666	6233	PAVEMENT SEALER (MED NOSE)	EA	1
672	6009	REFL PAV MRKR TY II-A-A	EA	26
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	2
678	6002	PAV SURF PREP FOR MRK (6")	LF	310
678	6008	PAV SURF PREP FOR MRK (24")	LF	145
678	6024	PAV SURF PREP FOR MRK (MED NOSE)	EA	1
680	6001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	1
680	*	THERMAL DETECTION SYTSEM - INSTALL ONLY	EA	4
682	6003	VEH SIG SEC (12")LED(YEL)	EA	8
682	6021	BACK PLATE (12")(1 SEC)	EA	8
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	1190
687	6001	PED POLE ASSEMBLY	EA	4
416	*	DRILL SHAFT (30 IN FOUNDATION - MODIFIED)	LF	12
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	20
6004	6031	CAT 5 ETHERNET CABLE	LF	1100
6185	6002	TMA (STATIONARY)	DAY	4

* SUBSIDIARY TO PERTINENT ITEM

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

QUANTITIES SUMMARY:
FM 2252 (PERRIN BIETEL)
Z-CROSSING

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		8C
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:36:54
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_QUAN_PERRIN.dgn

SL 13 (CSJ: 0521-01-056)

Item No.	Desc. Code	Description	Unit	TOTAL
104	6015	REMOVING CONC (SIDEWALKS)	SY	33
416	6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	39
420	6002	CL A CONC (MISC)	CY	6
500	6001	MOBILIZATION	EA	1
502	6001	BARRICADES, SIGNS, AND TRAFFIC HANDLING	EA	2.5
531	6004	CURB RAMPS (TY 1)	EA	1
531	6005	CURB RAMPS (TY 2)	EA	1
531	6016	CURB RAMPS (TY 21)	EA	1
536	6002	CONC MEDIAN	SY	72
618	6040	CONDT (PVC) (SCH 80) (1")	LF	55
618	6046	CONDT (PVC) (SCH 80) (2")	LF	15
618	6053	CONDT (PVC) (SCH 80) (3")	LF	110
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	220
620	6009	ELEC CONDR (NO.6) BARE	LF	320
620	6010	ELEC CONDR (NO.6) INSULATED	LF	70
624	6009	GROUND BOX TY D (162922)	EA	2
628	6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	EA	1
644	6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	4
644	6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	2
644	6012	IN SM RD SN SUP&AM TY10BWG(1)SB(T)	EA	2
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	175
666	6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)	LF	50
666	6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA	2
666	6219	REFL PAV MRK TY II (BLACK) 6"(SHADOW)	LF	485
667	6225	PAVEMENT SEALER 6"	LF	485
666	6230	PAVEMENT SEALER 24"	LF	225
666	6233	PAVEMENT SEALER (MED NOSE)	EA	2
672	6009	REFL PAV MRKR TY II-A-A	EA	26
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	90
678	6002	PAV SURF PREP FOR MRK (6")	LF	485
678	6008	PAV SURF PREP FOR MRK (24")	LF	225
678	6024	PAV SURF PREP FOR MRK (MED NOSE)	EA	2
680	6001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	1
680	*	W11-2 "PEDESTRIAN CROSSING" SIGN - (36" x 36")	EA	4
680	*	W16-9PL "DIRECTIONAL ARROW" SIGN - (24" x 12")	EA	2
680	*	THERMAL DETECTION SYSTEM - INSTALL ONLY	EA	4
682	6003	VEH SIG SEC (12")LED(YEL)	EA	8
682	6021	BACK PLATE (12")(1 SEC)	EA	8
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	695
686	6041	INS TRF SIG PL AM (S)1 ARM(40')	EA	1
686	6045	INS TRF SIG PL AM (S)1 ARM(44')	EA	1
686	6282	RELOC TRF SG PL AM(S)SNGL MST ARM POLE	EA	1
686	*	REMOVAL OF EXISTING TRAFFIC SIGNAL POLE FND	LF	13
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	20
6004	6031	ITS COM CBL (ETHERNET)	LF	695
6185	6002	TMA (STATIONARY)	DAY	4

* SUBSIDIARY TO PERTINENT ITEM

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

QUANTITIES SUMMARY:
SL 13 (S WW WHITE RD) Z-CROSSING

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		8D
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:36:55
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA •1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_QUAN_WW_Z.dgn

CSJ: 0521-01-055

ITEM	CODE	DESCRIPTION	UNITS	WW WHITE RD AT HOUSTON ST
100	6002	PREPARING ROW	STA	9
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	408
104	6011	REMOVE CONC (MEDIANS)	SY	101
104	6036	REMOVE CONC (SIDEWALK OR RAMP)	SY	68
105	6029	REMOVE STAB BASE & ASPH PAV	SY	239
132	6003	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	82
162	6002	BLOCK SODDING	SY	242
400	6006	CUT & RESTORING PAV	SY	681
529	6002	CONC CURB(TY II)	LF	437
531	6002	CONC SIDEWALKS (5")	SY	57
531	6004	CURB RAMPS (TY 1)	EA	2
531	6010	CURB RAMPS (TY 7)	EA	6

CSJ: 0521-01-055

ITEM	CODE	DESCRIPTION	UNITS	WW WHITE RD AT HOUSTON ST
420	6002	CL A CONC (MISC)	CY	16
464	6005	RC PIPE (CL III)(24 IN)	LF	29
465	6022	INLET (COMPL)(PCO)(5FT)(LEFT)	EA	1
465	6023	INLET (COMPL)(PCO)(5FT)(RIGHT)	EA	1
465	6024	INLET (COMPL)(PCO)(5FT)(BOTH)	EA	1
479	6003	ADJUSTING MANHOLES & INLETS	EA	2

NO.	DATE	REVISION	APPROV.

CONSOR

F-12040

Texas Department of Transportation

SL 13 AT FM 1346

SUMMARY OF ROADWAY AND DRAINAGE QUANTITIES

SHEET 1 OF 2

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		8E
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D190364TX.04

ITEM	CODE	DESCRIPTION	UNITS	WW WHITE RD AT HOUSTON ST
416	6034	DRILL SHAFT (TRF SIG POLE) (48 IN)	LF	88
500	6001	MOBILIZATION	EA	1
502	6001	BARRICADES	MO	4
618	6046	CONDT (PVC) (SCH 80) (2")	LF	290
618	6053	CONDT (PVC) (SCH 80) (3")	LF	5
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	420
620	6009	ELEC CONDR (NO.6) BARE	LF	710
621	6002	TRAY CABLE (3 CONDR) (12 AWG)	LF	630
624	6009	GROUND BOX TY D (162922)	EA	5
628	6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	EA	1
644	6076	REMOVE SM RD SN SUP&AM	EA	6
666	6036	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	100
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	605
666	6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	5
666	6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	5
666	6141	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)	LF	400
666	6167	REFL PAV MRK TY II (W) 4" (BRK)	LF	1200
666	6170	REFL PAV MRK TY II (W) 4" (SLD)	LF	350
666	6224	PAVEMENT SEALER 4"	LF	1550
666	6226	PAVEMENT SEALER 8"	LF	100
666	6228	PAVEMENT SEALER 12"	LF	400
666	6230	PAVEMENT SEALER 24"	LF	605
666	6231	PAVEMENT SEALER (ARROW)	EA	5
666	6232	PAVEMENT SEALER (WORD)	EA	5
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1550
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	100
677	6005	ELIM EXT PAV MRK & MRKS (12")	LF	400
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	605
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	5
677	6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	5
678	6001	PAV SURF PREP FOR MRK (4")	LF	1550
678	6004	PAV SURF PREP FOR MRK (8")	LF	100
678	6006	PAV SURF PREP FOR MRK (12")	LF	400
678	6008	PAV SURF PREP FOR MRK (24")	LF	605
680	6003	INSTALL HWY TRF SIG (SYSTEM)	EA	1
	*	TRAFFIC SIGNAL CONTROLLER IN MODEL TS TYPE 2 CABINET		1
	*	CONTROLLER FOUNDATION	EA	1
	*	ROD, 5/8" X 10' COPPER-CLAD STEEL GROUND (CONTROLLER ONLY)	EA	1
	*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3eL)	EA	6
	*	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9"X15") (R10-3eR)	EA	2
	*	REGULATORY SIGN PANEL (R10-17T, LEFT TURN YIELD ON FLASHING YELLOW ARROW) (30"X30")	EA	4

ITEM	CODE	DESCRIPTION	UNITS	WW WHITE RD AT HOUSTON ST
	*	ILSN SIGN, STREET NAME (S WW WHITE)	EA	2
	*	ILSN SIGN, STREET NAME (E HOUSTON)	EA	2
	*	LEDLUMINAIRE	EA	4
	*	DETECTOR UNIT	EA	1
	*	POWER SUPPLY	EA	1
	*	CONTROL, PHOTOELECTRIC	EA	1
	*	AIR WING	EA	4
680	6004	REMOVING TRAFFIC SIGNALS	EA	1
682	6001	VEH SIG SEC (12")LED(GRN)	EA	10
682	6002	VEH SIG SEC (12")LED(GRN ARW)	EA	4
682	6003	VEH SIG SEC (12")LED(YEL)	EA	10
682	6004	VEH SIG SEC (12")LED(YEL ARW)	EA	4
682	6005	VEH SIG SEC (12")LED(RED)	EA	10
682	6006	VEH SIG SEC (12")LED(RED ARW)	EA	4
682	6018	PED SIG SEC (LED) (COUNTDOWN)	EA	8
682	6049	BACKPLATE W/REFL BRDR(4 SEC)	EA	4
682	6060	BACKPLATE W/REFL BRDR(3 SEC)	EA	10
684	6030	TRF SIG CBL (TY A)(14 AWG)(4 CONDR)	LF	770
684	6035	TRF SIG CBL (TY A)(14 AWG) (9 CONDR)	LF	1740
684	6049	TRF SIG CBL (TY A)(16 AWG) (3 CONDR)	LF	600
686	6056	INS TRF SIG PL AM(S)1 ARM(50')LUM&ILSN	EA	2
686	6060	INS TRF SIG PL AM(S)1 ARM(55')LUM&ILSN	EA	1
686	6068	INS TRF SIG PL AM(S)1 ARM(65')LUM&ILSN	EA	1
687	6001	PED POLE ASSEMBLY	EA	6
	**	DRILL SHAFT (24 IN)	LF	36
688	6001	PED DETECT PUSH BUTTON (APS)	EA	8
688	6003	PED DETECTOR CONTROLLER UNIT	EA	1
6292	6001	RVDS(PRESENCE DETECTION ONLY)	EA	4
	***	RADAR PRESENCE DETECTOR COMM CABLE	LF	590

* SUBSIDIARY TO 680 6003 INSTALL HWY TRF SIG (SYSTEM)
** SUBSIDIARY TO 687 6001 PED POLE ASSEMBLY
*** SUBSIDIARY TO 6292 6001 RVDS(PRESENCE DETECTION ONLY)

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

Texas Department of Transportation

SL 13 AT FM 1346

SUMMARY OF TRAFFIC QUANTITIES

SHEET 2 OF 2

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		8F
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D1903647X.04

PLOTDRIVER: pdfv8.plt PENTABLE: $PENTBL$$
11:21:59 AM
5/20/2022
P:_V-TPD\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\01 general\C_LP13_S_GSL01.dgn

5/20/2022 11:21:59 AM D:\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\01 general\C_LP13_S_GSL01.dgn

SUMMARY OF SMALL SIGNS

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

POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
			PREFABRICTATED	1 EXT or 2EXT = # of Ext
FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA = Universal Concret UB = Universal Bolt SA = Slipbase - Conc SB = Slipbase - Bolt WS = Wedge Steel WP = Wedge Plastic	P = "Plain T = "T" U = "U"	BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL = Extruded Alum Sign Panels

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE
SL 368 - CSJ: 0016 - 08 - 043												TY N TY S
41	S1	R4-7		(24" x 30")	X		10BWG	1	SB	P		
41	S2	R6-1R		(36" x 12")	X		10BWG	1	SB	P	BM	
41	S3	R4-7C		(18" x 30")	X		10BWG	1	SB	P		
41	S4	R4-7C		(18" x 30")	X		10BWG	1	SB	P		
41	S5	R6-1R		(36" x 12")	X		10BWG	1	SB	P	BM	
	S6		MOUNT BACK-TO-BACK									
41	S7	R6-1R		(36" x 12")	X		10BWG	1	SB	P	BM	
42	S8	R6-1R		(36" x 12")	X		10BWG	1	SB	P	BM	
42	S9	R6-1R		(36" x 12")	X		10BWG	1	SB	P	BM	
42	S10	R4-7C		(18" x 30")	X		10BWG	1	SB	P		
42	S11	R4-7C		(18" x 30")	X		10BWG	1	SB	P		
42	S12	R6-1R		(36" x 12")	X		10BWG	1	SB	P	BM	
42	S13	R4-7		(24" x 30")	X		10BWG	1	SB	P		

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website. http://www.txdot.gov

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SUMMARY OF SMALL SIGNS

SHEET 1 OF 4

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		9
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:57:58
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_SOSS_1.dgn

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA = Universal Concret UB = Universal Bolt SA = Slipbase - Conc SB = Slipbase - Bolt WS = Wedge Steel WP = Wedge Plastic	MOUNTING DESIGNATION PREFABRICTATED P = "Plain T = "T" U = "U"	MOUNTING DESIGNATION 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL = Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
43	S14	R4-7C		(18" x 30")	X		10BWG	1	SB	P		
44	S15	R6-1R		(36" x 12")	X		10BWG	1	SB	P	BM	
44	S16	R4-7C		(18" x 30")	X		10BWG	1	SB	P		
44	S17	R4-7C		(18" x 30")	X		10BWG	1	SB	P		
		W11-2		(36" x 36")	X							
44	S18						10BWG	1	SA	T		
		W6-9P		(30" x 18")	X							
45	S19	R1-5bL		(36" x 36")	X		10BWG	1	SA	T		
		W11-2		(36" x 36")	X							
45	S20						10BWG	1	SA	T		
		W6-9PR		(24" x 12")	X							
		W11-2		(36" x 36")	X							
45	S21						10BWG	1	SA	T		
		W6-9PR		(24" x 12")	X							
45	S22	R1-5bL		(36" x 36")	X		10BWG	1	SA	T		
		W11-2		(36" x 36")	X							
45	S23						10BWG	1	SA	T		
		W6-9P		(30" x 18")	X							
45	S24	R6-1R		(36" x 12")	X		10BWG	1	SB	P	BM	
45	S25	R6-1R		(36" x 12")	X		10BWG	1	SB	P	BM	

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
http://www.txdot.gov

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SUMMARY OF SMALL SIGNS

SHEET 2 OF 4

FED RD DIV NO.	FEDERAL AID PROJECT	SHEET NO.
6	SEE TITLE SHEET	9A

STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:58:01
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA •\1-8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_SGSS_2.dgn

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X)XX (X-XXXX) POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
										PREFABRICTATED	1 EXT or 2EXT = # of Ext	TY = TYPE
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA = Universal Concret UB = Universal Bolt SA = Slipbase - Conc SB = Slipbase - Bolt WS = Wedge Steel WP = Wedge Plastic	P = "Plain T = "T" U = "U"	BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL = Extruded Alum Sign Panels	TY N TY S
45	S26	R4-7C		(18" x 30")	X		10BWG	1	SB	P		
45	S27	R4-7C		(36" x 12")	X		10BWG	1	SB	P		
46	S28	R6-1R		(36" x 12")	X		10BWG	1	SB	P	BM	
46	S29	R4-7		(24" x 30")	X		10BWG	1	SB	P		
FM 2252 - CSJ: 1433 - 01 - 032												
		W11-2		(36" x 36")	X							
126	S1						10BWG	1	SA	T		
		W6-9P		(30" x 18")	X							
126	S2	R1-5bL		(36" x 36")	X		10BWG	1	SA	T		
126	S3	R4-7		(24" x 30")	X		10BWG	1	SB	P		
126	S4	R4-7		(24" x 30")	X		10BWG	1	SB	P		
126	S5	R1-5bL		(36" x 36")	X		10BWG	1	SA	T		
		W11-2		(36" x 36")	X							
126	S6						10BWG	1	SA	T		
		W6-9P		(30" x 18")	X							
SL 13 - CSJ: 0521 - 01 - 036												
		W11-2		(36" x 36")	X							
131	S1						10BWG	1	SA	T		
		W6-9P		(30" x 18")	X							
131	S2	R1-5bL		(36" x 36")	X		10BWG	1	SA	T		

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
http://www.txdot.gov

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SUMMARY OF SMALL SIGNS

SHEET 3 OF 4

FED RD DIV. NO.	FEDERAL AID PROJECT	SHEET NO.
6	SEE TITLE SHEET	9B
STATE	DISTRICT	COUNTY
TEXAS	SAT	BEXAR
CONTROL	SECTION	JOB / HIGHWAY
0016	08	043,ETC / SL 368,ETC

Justin.Kinne
4/19/2022 13:58:04
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_SOSS_3.dgn

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA = Universal Concret UB = Universal Bolt SA = Slipbase - Conc SB = Slipbase - Bolt WS = Wedge Steel WP = Wedge Plastic	MOUNTING DESIGNATION PREFABRICTATED P = "Plain T = "T" U = "U"	MOUNTING DESIGNATION 1 EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL = Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
131	S3	R4-7		(24" x 30")	X		10BWG	1	SB	P		
		W11-2		(36" x 36")	X							
131	S4						10BWG	1	SB	T		
		W6-9PR		(24" x 12")	X							
		W11-2		(36" x 36")	X							
131	S5						10BWG	1	SB	T		
		W6-9PR		(24" x 12")	X							
131	S6	R4-7		(24" x 30")	X		10BWG	1	SB	P		
131	S7	R1-5bL		(36" x 36")	X		10BWG	1	SA	T		
		W11-2		(36" x 36")	X							
131	S8						10BWG	1	SA	T		
		W6-9P		(30" x 18")	X							

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
http://www.txdot.gov

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel No. (210) 541-9166
Fax No. (281) 541-9699

Texas Department of Transportation

FY 2022 HSIP

SUMMARY OF SMALL SIGNS

SHEET 4 OF 4

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		9C
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:58:06
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #\1&_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_SOSS_4.dgn

LOC NO.	TCP PHASE	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	FURNISH TMA/TA	RELOCATE/REUSE TMA/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	6185 6002 TMA/TA (STATIONARY)
		SHEET NUMBER	EA	EA	EA	DAYS PER TMA/TA USE	DAY
SL 368 (AUSTIN HWY) CSJ:0016-08-043							
N/A	I	TCP(1-4)-18, TCP(3-1)-13, TCP(3-3)-14, TCP(3-4)-13 & TCP(SC-3)-21	2	16	18	5	90
SL 13 (S WW WHITE) CSJ: 0521-01-056							
N/A	I	TCP(3-4)-13	2		2	2	4
FM 2252 (PERRIN BEITEL) CSJ: 1433-01-032							
N/A	I	TCP(3-4)-13	2		2	2	4
		TOTALS	6			9	98

NOTES:

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

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

TMA SUMMARY

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		10
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:29:10
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA •1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_TMA.dgn

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

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

1. GENERAL

(1) TRAFFIC MUST BE HANDLED THROUGHOUT THE PROJECT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SAFE AND COMFORTABLE PASSAGE FOR VEHICULAR AND PEDESTRIAN TRAFFIC WITH MINIMALINCONVENIENCE TO THE PUBLIC, AS SHOWN IN THE PLANS OR AS DIRECTED/APPROVED BY THE ENGINEER.

(2) THE CONTRACTOR MAY PROPOSE/RECOMMEND MODIFICATIONS TO THE SEQUENCE OF WORK FOR CONSIDERATION BY THE ENGINEER. ANY MAJOR RECOMMENDED MODIFICATION BY THE CONTRACTOR SHALL INCLUDE ANY CHANGES TO THE VARIOUS BID ITEMS, IMPACT TO TRAFFIC, EFFECT OF OVERALL PROJECT IN TIME AND COST, ETC. IF THIS PROPOSAL IS IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR INCLUSION WITH THE CHANGE ORDER. THE CONTRACTOR CANNOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE/SEQUENCE UNLESS WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER. IF AT ANY TIME DURING CONSTRUCTION THE CONTRACTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE AND COMFORTABLE MOVEMENT, THE CONTRACTOR WILL IMMEDIATELY CHANGE THEIR OPERATION TO CORRECT THE UNSATISFACTORY CONDITION.

(3) DO NOT STORE ANY CONSTRUCTION MATERIAL OR EQUIPMENT AT ANY LOCATION THAT WILL CONSTITUTE A HAZARD AND WILL ENDANGER TRAFFIC.

(4) THE CONTRACTOR WILL PROVIDE ADVANCE NOTIFICATION TO THE ENGINEER OF IMPENDING / UPCOMING LANE CLOSURES FOR ALL TEMPORARY AND / OR PERMANENT LANE, RAMP, CONNECTOR, FRONTAGE, SHOULDER, ETC. CLOSURES OR DETOURS. SEE GENERAL NOTES FOR NOTIFICATION REQUIREMENTS.

(5) ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.

(6) TEMPORARY DRAINAGE IS THE RESPONSIBILITY OF THE CONTRACTOR.

(7) AT NO TIME SHALL TWO CONSECUTIVE INTERSECTING ROADWAYS BE CLOSED AT ONE TIME DURING CONSTRUCTION.

(8) AT NO TIME SHALL TWO CONSECUTIVE RAMPS BE CLOSED AT ONE TIME DURING CONSTRUCTION OR OVERLAY OPERATIONS.

(9) UNLESS OTHERWISE NOTED IN THE PLANS AND/OR AS DIRECTED BY THE ENGINEER, DAILY LANE CLOSURES SHALL BE LIMITED ACCORDING TO THE FOLLOWING RESTRICTIONS:

NIGHTTIME : ASK AREA ENGINEER AND CONSTRUCTION ENGINEER. (WITH UNIFORMED OFF DUTY LAW ENFORCEMENT OFFICERS)

WEEKEND CLOSURES WHEN APPROVED BY THE ENGINEER: ASK AREA ENGINEER AND CONSTRUCTION ENGINEER. NO LANE CLOSURES WILL BE PERMITTED FOR THE FOLLOWING DATES AND/OR SPECIAL EVENTS:

- BETWEEN DECEMBER 15 AND JANUARY 1.
- FIESTA WEEK AND TAX FREE WEEKEND. (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)
- CALL OUT SPECIFIC DATES FOR EASTER WEEKEND

(10) REMOVAL AND DISPOSAL OF EXISTING ABANDONED UTILITIES (EITHER PREVIOUSLY ABANDONED OR ABANDONED DURING THIS PROJECT) REQUIRED TO SUPPORT THIS PROJECT'S CONSTRUCTION SHALL BE PERFORMED UNDER THE OVERALL PREPARE RIGHT-OF- WAY ITEM (ITEM 100).

(11) COORDINATE WITH ADJACENT PROJECTS.

(12) COVER PERMANENT SIGNS IF NOT USED. THIS IS SUBSIDIARY TO ITEM 502.

(13) EXCAVATION WITHIN 5 FEET OF AN EXISTING CPS ENERGY POLE WILL REQUIRE POLE BRACING. CONTACT CPS ENERGY UTILTY COORDINATION TO REQUEST POLE BRACING (JOHN OFFER, JEOFFER@CPSENERGY.COM). THE ESTIMATED DURATION FOR THE POLE BRACING PROCESS IS APPROXIMATELY 6 TO 8 WEEKS.

(14) COORDINATE WITH THE CITY OF SAN ANTONIO OR TXDOT FOR SIGNAL TIMING REVISIONS, AS NECESSARY.

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

2. SEQUENCE OF WORK

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

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

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

(4) A BRIEF DESCRIPTION OF THIS PHASE IS AS FOLLOWS:

PHASE I (CONCRETE MEDIAN CONSTRUCTION)

THE INTENT OF THIS PHASE IS TO CONSTRUCT THE CONCRETE MEDIANS AND LEFT TURN LANES WITHIN THE CENTER LANE OF AUSTIN HWY.

(1) INSTALL ADVANCE WARNING SIGNS AND TEMPORARY SIGNS AND BARRICADES AS SHOW ON THE PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER. MAINTAIN ACCESS TO ADJACENT PROPERTIES AND INTERSECTING SIDE STREETS AT ALL TIMES DURING CONSTRUCTION. MATERIAL AND LABOR REQUIRED TO MAINTAIN ACCESS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM 502.

(2) PLACE TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN PLANS

(3) CONTRACTOR TO LIMIT WORK ZONE TO A SINGLE CONCRETE MEDIAN'S CONSTRUCTION UNLESS APPROVED BY THE ENGINEER.

(4) THE FOLLOWING OPERATIONS MUST BE LIMITED TO ONLY WHAT CAN BE DONE WITHIN ONE WORKDAY. THE LIMITS OF OPERATION MUST BE COMPLETED BY THE TIME SPECIFIED AND ALL TRAFFIC LANES MUST BE REOPENED AT THE CONCLUSION OF EACH WORKDAY.

A. PLACE WORK ZONE CHANNELIZING DEVICES AND SHIFT TRAFFIC ACCORDING TO TCP (SC-3a)-21 TO MAINTAIN TWO-LANES OF TRAFFIC, ONE IN EACH DIRECTION, AND AS SHOWN IN PLANS.

B. REMOVE EXISTING PAVEMENT MARKINGS IN CONFLICT WITH WORK ZONE AND PROPOSED CONCRETE MEDIAN AND PAVEMENT MARKINGS. COVER EXISTING SIGNS IN CONFICT WITH WORK SIGNING.

C. PERFORM PROPOSED WORK ON CONCRETE MEDIANS, SIGNING, AND PAVEMENT MARKINGS.

D. CONSTRUCT THE TWO PROPOSED PEDESTRIAN RAMPS IN SEPARATE STEPS TO ACCOMMODATE PEDESTRIAN DETOURING. FOR SIDEWALK CLOSURES AND DETOURING, UTILIZE PEDESTRIAN DETOUR 1 AND 2.

E. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES.

F. OPEN ALL LANES TO TRAFFIC.

3. SAFETY

(1) THE CONTRACTOR WILL PROVIDE, CONSTRUCT AND MAINTAIN BARRICADES AND SIGNS IN ACCORDANCE WITH STATE STANDARDS. ANY SIGNS REQUIRED THAT ARE NOT DETAILED IN THE STANDARD SHEETS SHALL BE IN CONFORMANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND THE "STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS."

(2) BARRICADES AND WARNING SIGNS SHALL BE PLACED AS INDICATED ON THE PLANS. THIS SHALL BE CONSIDERED THE MINIMUM REQUIRED TO PROVIDE FOR THE SAFETY OF TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN OTHER SUCH BARRICADES AND SIGNS DEEMED NECESSARY BY THE ENGINEER OR AS DIRECTED BY FIELD CONDITIONS, TO PROVIDE FOR THE PASSAGE OF TRAFFIC IN SAFETY AT ALL TIMES.

(3) THE CONTRACTOR SHALL PROVIDE AND MAINTAIN FLAGGERS AS DIRECTED/APPROVED BY THE ENGINEER, AT SUCH POINTS, AND FOR SUCH PERIODS OF TIME AS MAY BE REQUIRED, TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC AND THE CONTRACTOR'S PERSONNEL.

4. HAULING EQUIPMENT

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

(2) 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.

5. FINAL CLEAN UP

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

6. PAYMENT

ALL BARRICADES, SIGNS, AND FLAGGERS SHALL BE SUBSIDIARY TO ITEM 502 BARRICADES, SIGNS AND TRAFFIC HANDLING. ALL EROSION AND SEDIMENT CONTROL DEVICES WILL BE PAID FOR UNDER ITEM 506 TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS. ALL WORK ZONE PAVEMENT MARKINGS WILL BE PAID FOR UNDER ITEM 662 WORK ZONE PAVEMENT MARKINGS. ALL OTHER WORK AND MATERIALS SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS UNLESS OTHERWISE INDICATED IN THE PLANS.

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY)
SEQUENCE OF WORK
NARRATIVE

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		11
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:58:11
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA *1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_TCP_NAR01.dgn

LOCATION	CW1-4L	CW1-4R	CW1-6aT	CW9-3T	CW13-1P	CW20-1D	CW20-5TL	CW20-5TR	CW20SG-1	CW21-10aT	CW21-15	G20-1aT	G20-1bTL	G20-1bTR
1					X	X								
2														
3						X						X	X	X
4														
5	X	X	X	X	X	X	X	X	X	X	X			

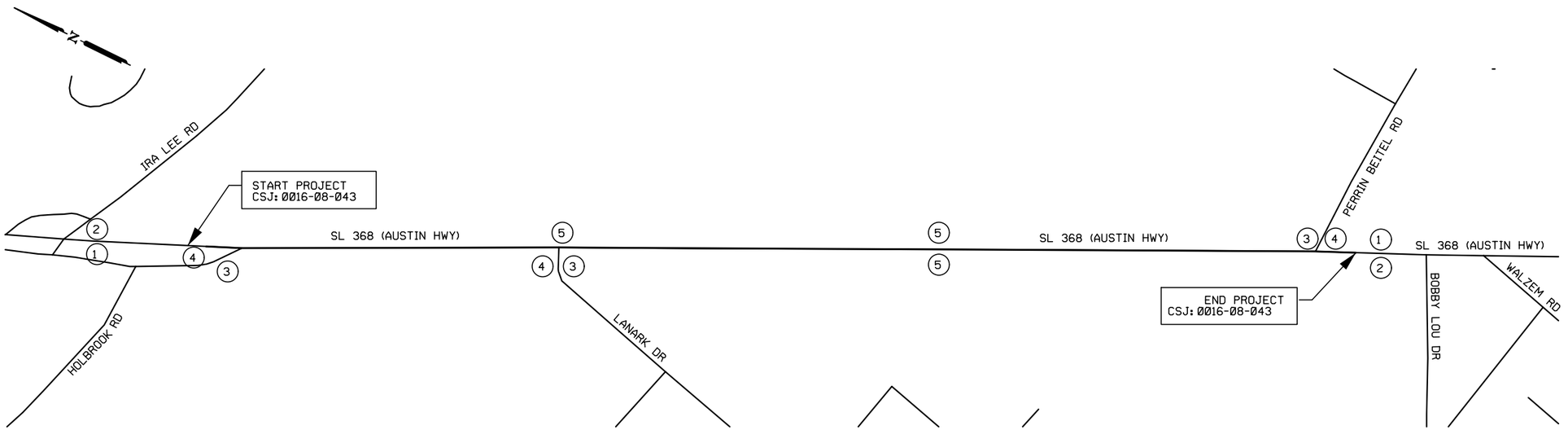
LOCATION	G20-2	G20-5aP	G20-5T	G20-6T	M4-9bR	M4-9bL	R20-3T	R20-5T	R20-5aTP	R9-9	R9-11aL	R9-11aR
1		X	X	X			X	X	X			
2	X											
3												
4	X											
5					X	X	X	X	X	X	X	X

LOCATION	TRAILER MOUNTED FLASHING ARROW PANEL	TRUCK MOUNTED ATTENUATOR	PLASTIC DRUM	PORTABLE CHANGEABLE MESSAGE SIGN
1				
2				
3				
4				
5	X	X	X	X

NOTES:

1. REFER TO STANDARDS "BC", "TCP", AND "WZ" STANDARDS FOR PLACEMENT OF ADVANCE WARNING SIGNS, BARRICADES, AND OTHER TRAFFIC CONTROL DEVICES.
2. BARRICADES ARE NOT TO BE USED AS A SIGN SUPPORT. SUPPORTS FOR SIGNS SHALL BE TEMPORARY, FIXED OR PORTABLE SIGN SUPPORTS, AS DIRECTED BY THE ENGINEER OR IN ACCORDANCE WITH THE "BC" STANDARD SHEETS AND THE TEXAS MUTCD.
3. THE DISTANCE PLAQUE IN FEET OR MILES, MAY BE REQUIRED FOR USE IN CONJUNCTION WITH WARNING SIGNS.
4. ALL CONSTRUCTION TRAFFIC IS TO BE REGULATED SO AS TO CAUSE A MINIMUM OF INCONVENIENCE TO THE TRAVELLING PUBLIC. AT TIMES WHEN IT IS NECESSARY FOR CONSTRUCTION EQUIPMENT OR TRUCKS TO STOP, UNLOAD, OR CROSS ROADWAYS UNDER TRAFFIC, WARNING SIGNS AND FLAGGER SHALL BE PROVIDED AS NECESSARY TO ADEQUATELY PROTECT TRAVELING PUBLIC.
5. BARRICADES AND WARNING SIGNS SHOWN ON THIS STREET ARE MINIMAL WORK ZONE SIGNING. ADDITIONAL BARRICADES, WARNING SIGNS, ARROW PANELS, CONES, ETC. MAY BE REQUIRED IN ACCORDANCE WITH "TCP" SHEETS, TXDOT STANDARDS, AND TEXAS MUTCD.
6. CERTAIN SIGNS MUST BE USED IN CONJUNCTION WITH OTHER SIGNS. EXAMPLE: "FLAGGER AHEAD" SIGN MUST BE USED WITH THE "BE PREPARED TO STOP" SIGN.

(1) LOCATION 1 TO BE PLACED AT BEGINNING OF PROJECT
(2) LOCATION 2 TO BE PLACED AT THE END OF THE PROJECT
(3) LOCATION 3 TO BE PLACED AT THE BEGINNING OF THE SIDE STREETS
(4) LOCATION 4 TO BE PLACED AT THE END OF THE SIDE STREETS
(5) LOCATION 5 TO BE USED THROUGHOUT AS DIRECTED BY THE ENGINEER AND ACCORDING TO TXDOT STANDARD DETAILS



SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

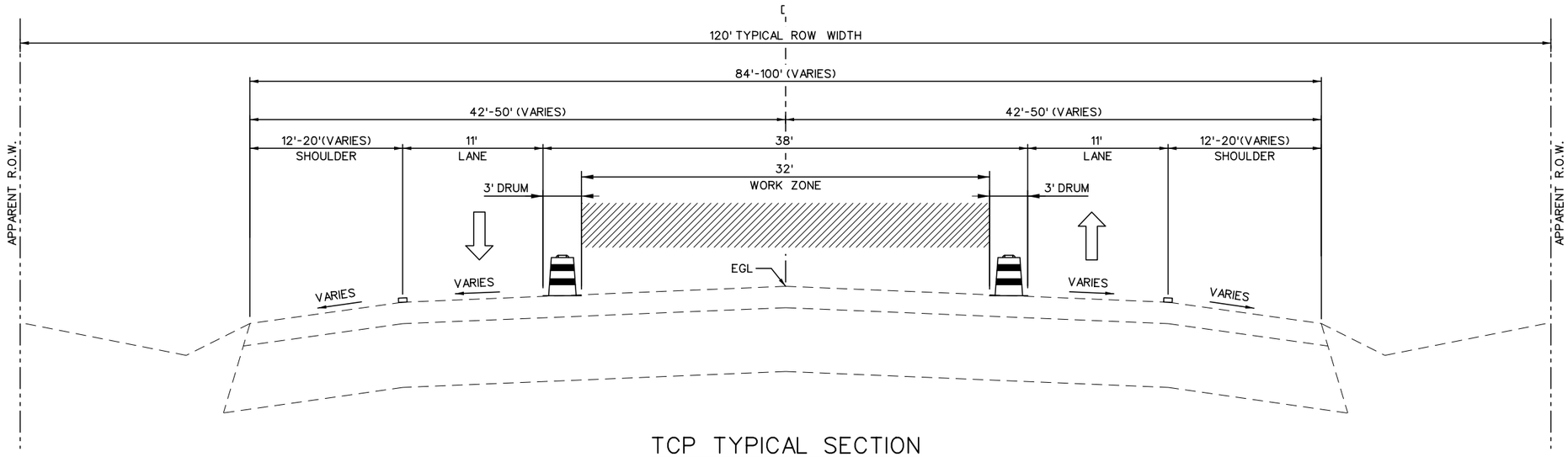
FY 2022 HSIP

SL 368 (AUSTIN HWY) SCHEDULE OF BARRICADES & ADVANCED WARNING DEVICES

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		12
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:58:27
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_TCP_AWL.dgn



TCP TYPICAL SECTION

SL 368 (AUSTIN HWY)

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

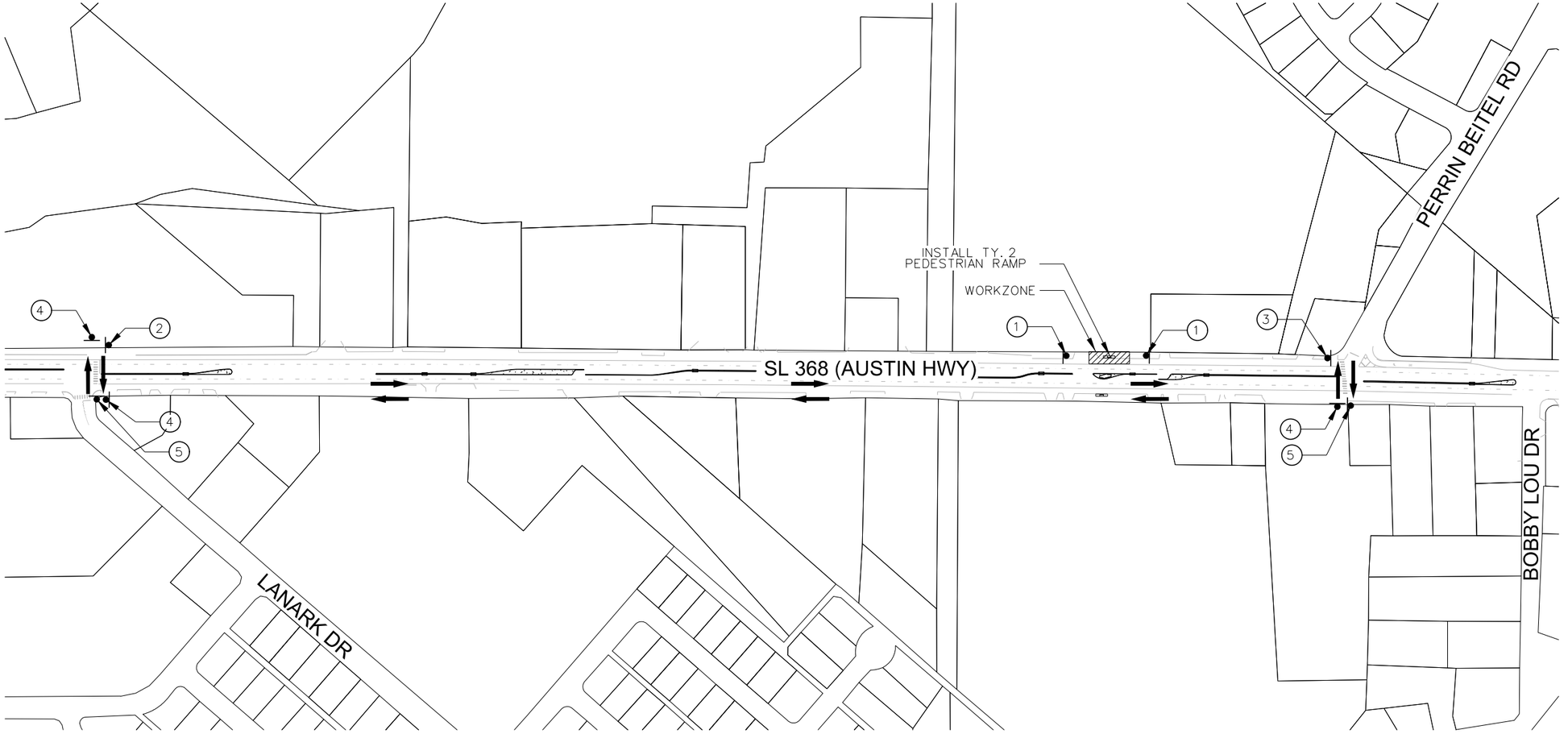
FY 2022 HSIP

SL 368 (AUSTIN HWY)
TRAFFIC CONTROL
TYPICAL SECTION

SHEET 1 OF 1

FED RD DIV. NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		13
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 18:26:34
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\X8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_TCP_TYP.dgn



NOTES

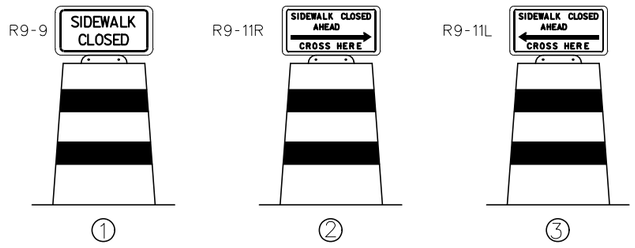
1. SIDEWALK CLOSURE IS ONLY PERMITTED TO ONE SIDE AT A TIME SO THAT AT LEAST ONE PEDESTRIAN DETOUR ROUTE REMAINS ACCESSIBLE.

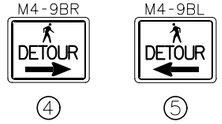
N

0 150 300

SCALE: 1"=300'

SL 368 (CSJ: 0016-08-043)





LEGEND

SIDEWALK WORKZONE

PEDESTRIAN TRAFFIC FLOW

PROPOSED DETOUR SIGN

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-9699

Texas Department of Transportation

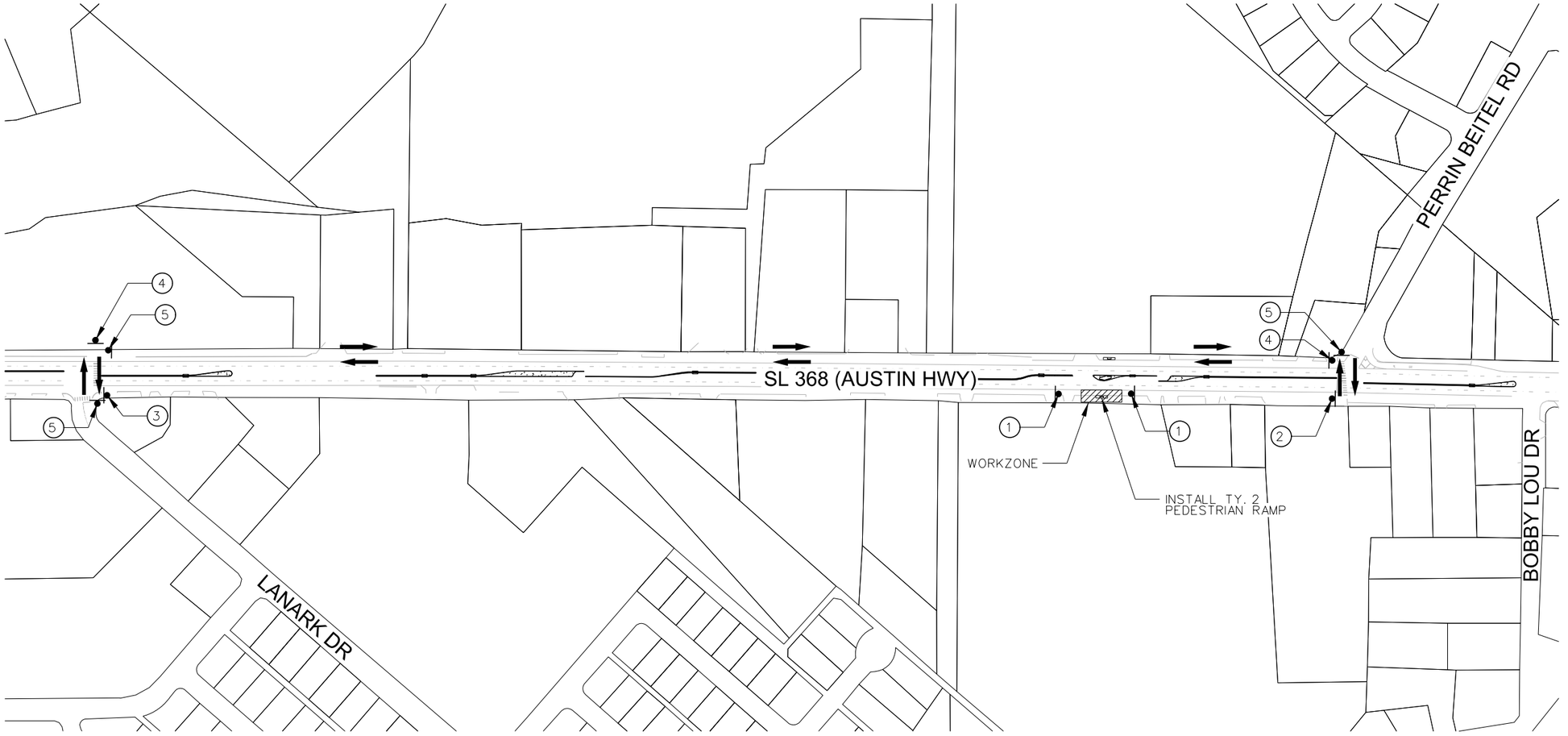
FY 2022 HSIP

SL 368 (AUSTIN HWY) TRAFFIC CONTROL PLAN PEDESTRIAN DETOUR 1

SHEET 1 OF 2

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		14
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:58:47
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA •\1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_SW_Detour01.dgn



NOTES

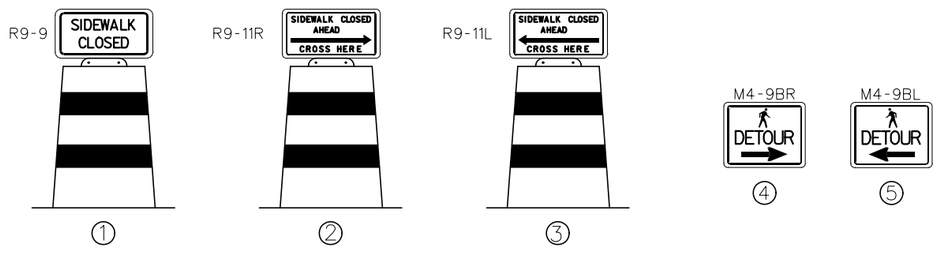
1. SIDEWALK CLOSURE IS ONLY PERMITTED TO ONE SIDE AT A TIME SO THAT AT LEAST ONE PEDESTRIAN DETOUR ROUTE REMAINS ACCESSIBLE.

N

0 150 300

SCALE: 1"=300'

SL 368 (CSJ: 0016-08-043)



LEGEND

SIDEWALK WORKZONE

PEDESTRIAN TRAFFIC FLOW

PROPOSED DETOUR SIGN

STATE OF TEXAS
CHRIS STONG
128193
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-9699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY) TRAFFIC CONTROL PLAN PEDESTRIAN DETOUR 2

SHEET 2 OF 2

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		15
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 13:58:51
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA *\1-8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_SW_Detour02.dgn

DATE: 4/19/2022 13:58:55
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1)-21.dgn

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

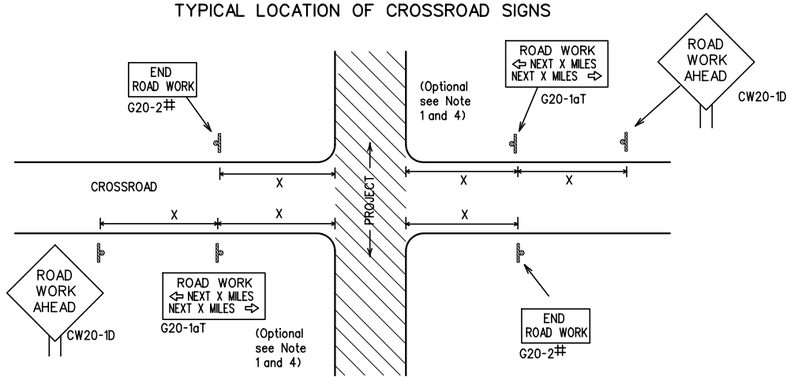
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	SAT	BEXAR		16
5-10 5-21				

DATE: 4/19/2022 13:58:57
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1)-21-21.dgn

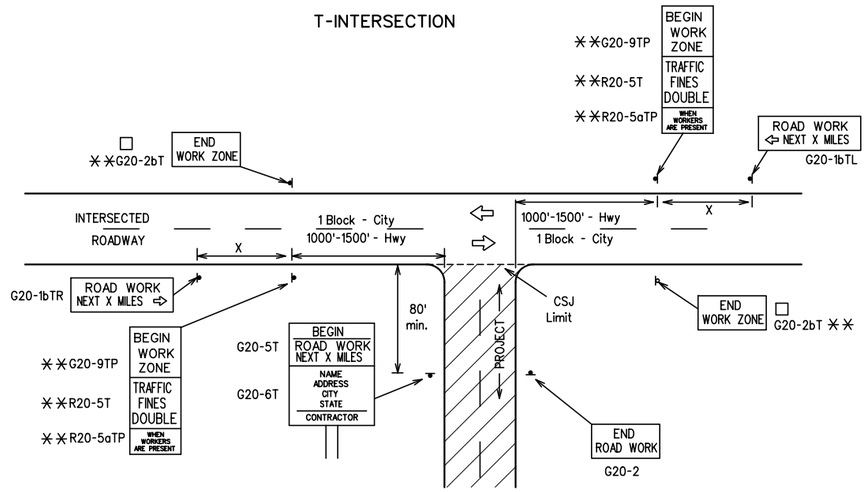
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

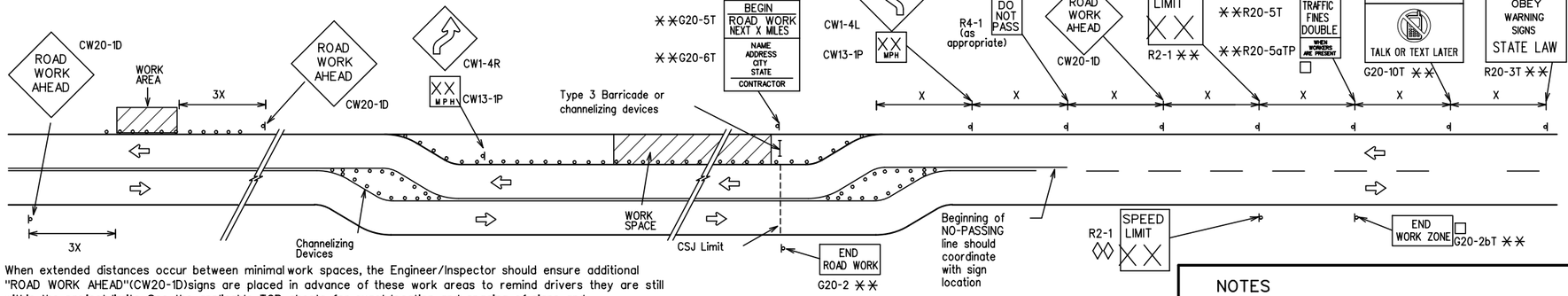
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

* 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.

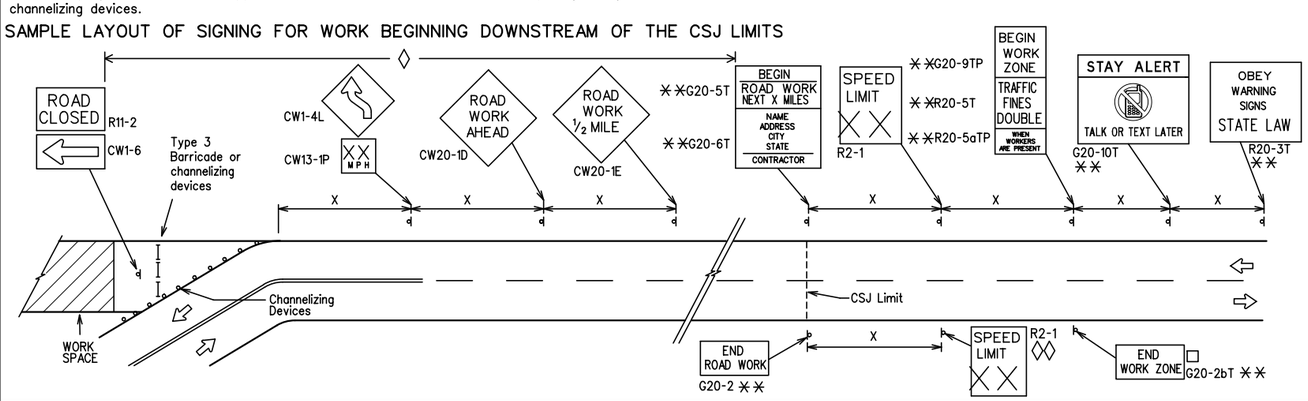
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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	0016	08	043,ETC	SL 368,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		17

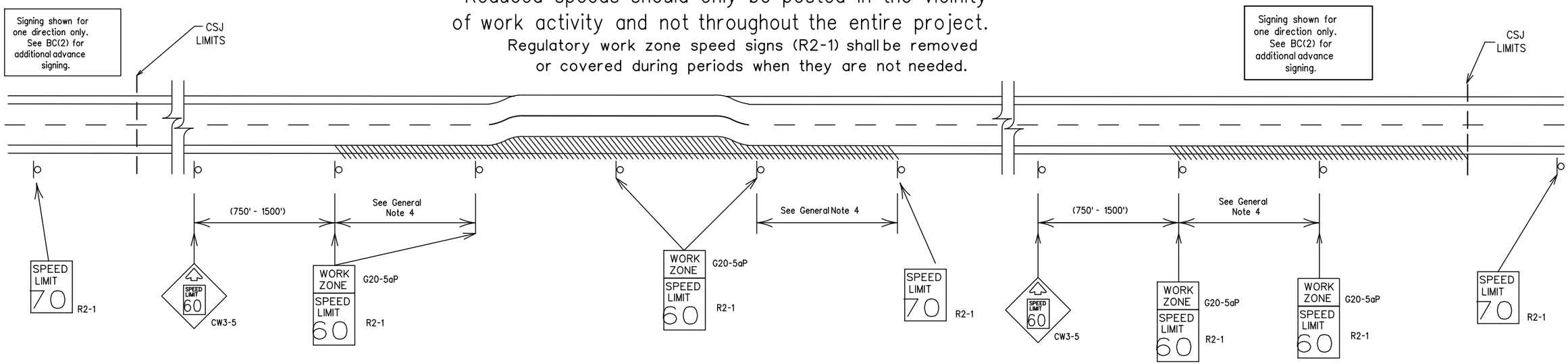
DATE: 4/19/2022 13:58:59
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1)-21.dgn

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

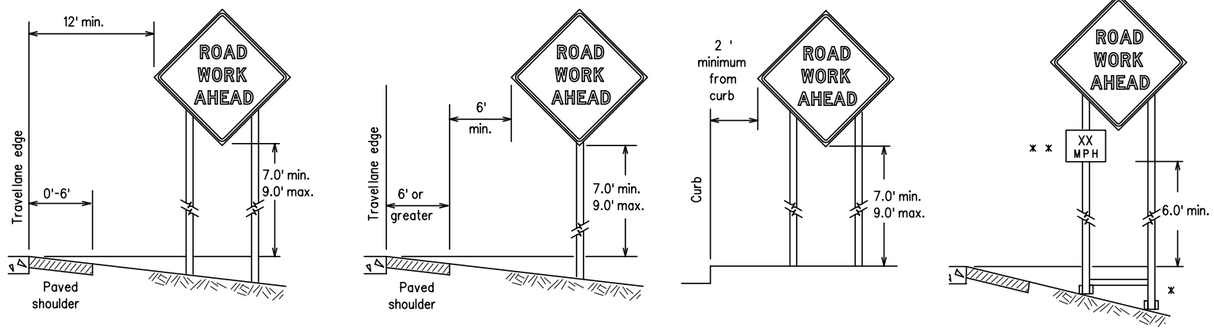
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		18

DATE: 4/19/2022 13:59:00
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1-12)-21.dgn

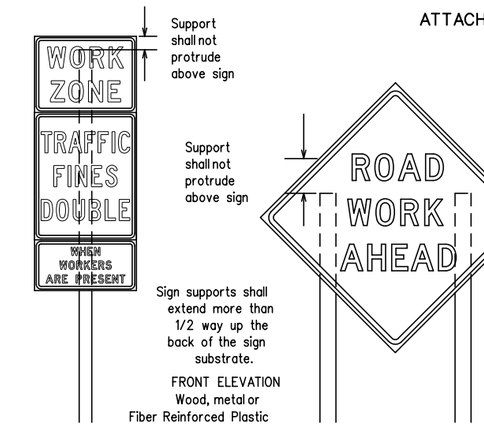
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

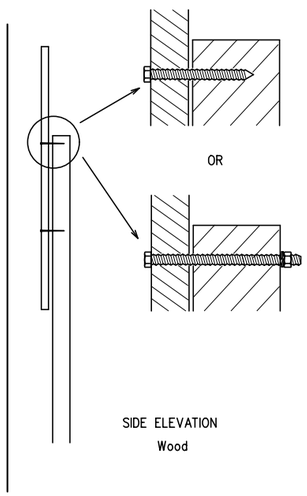


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





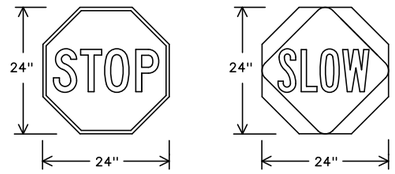
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

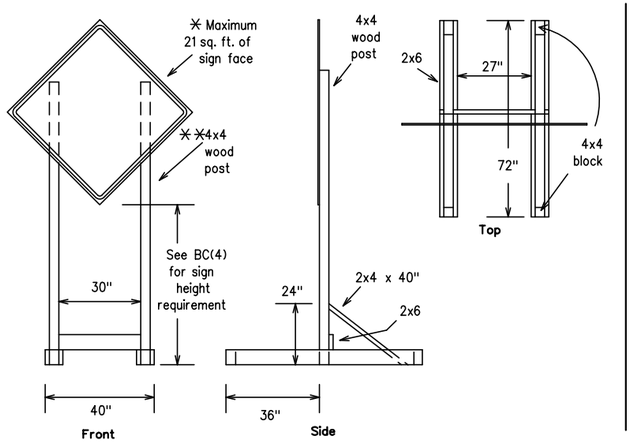
Traffic Safety Division Standard

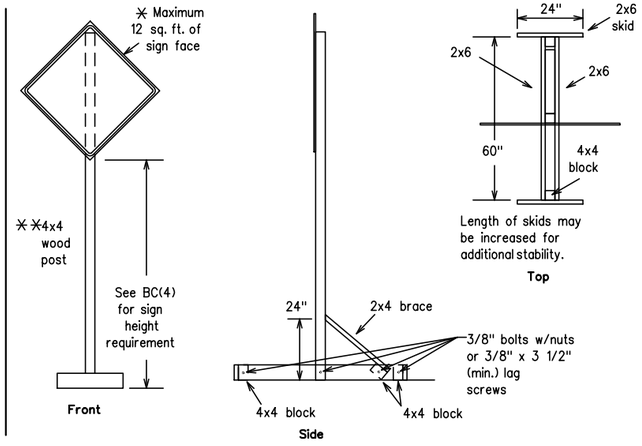
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		19

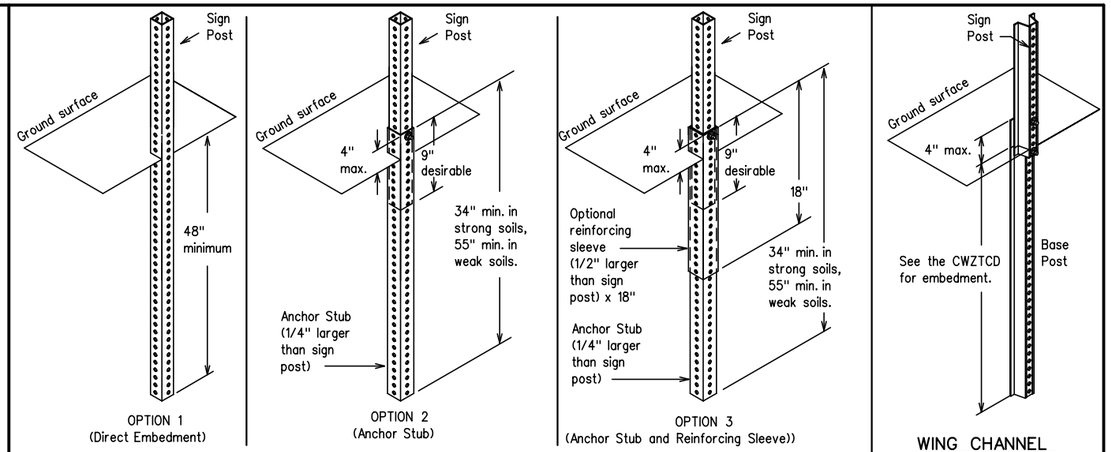
DATE: 4/19/2022 13:59:02
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1-12)-21.dgn





SKID MOUNTED WOOD SIGN SUPPORTS

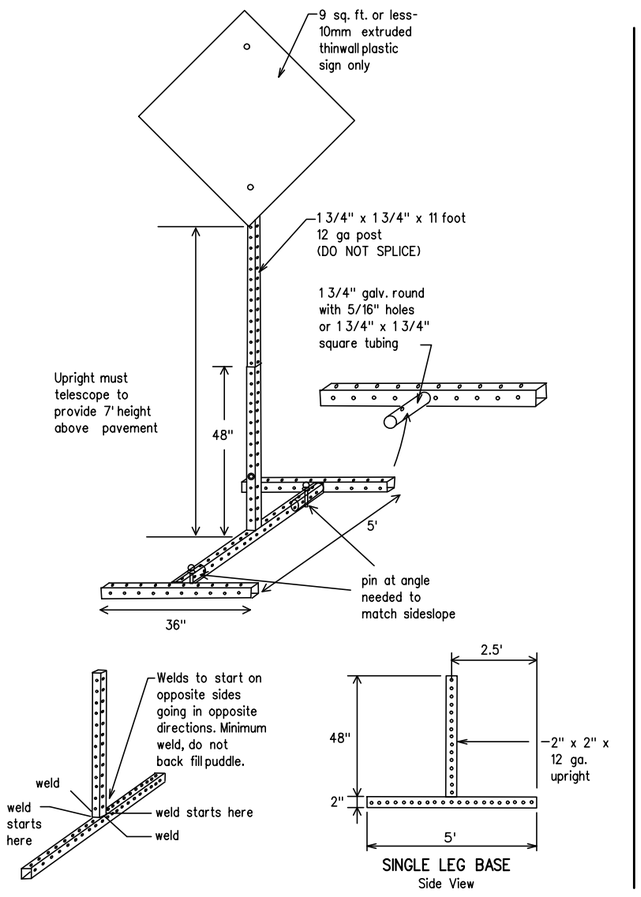
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

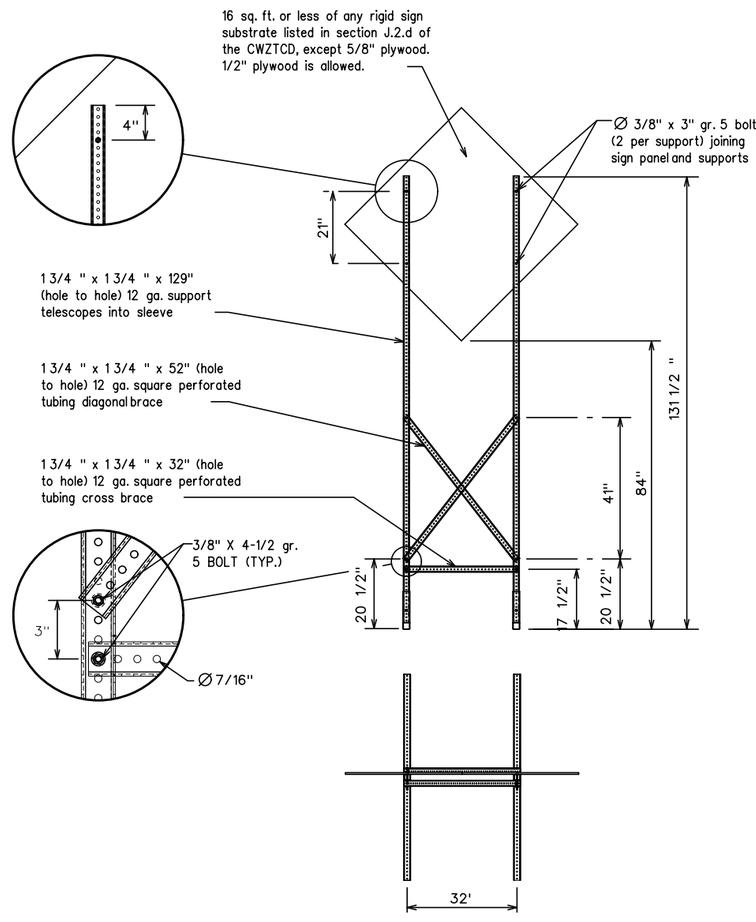


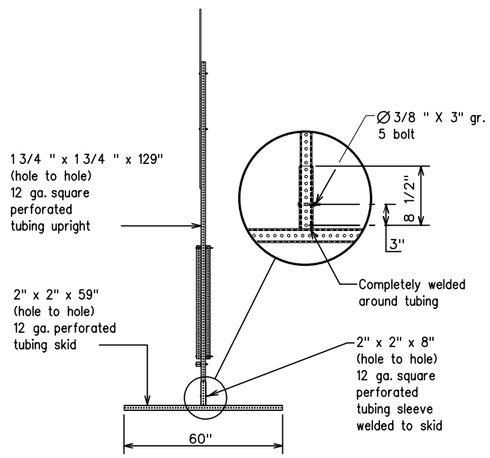
PERFORATED SQUARE METAL TUBING

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	0016	08	043,ETC	SL 368,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		20

DATE: 4/19/2022 13:59:04
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1-12)-21.dgn

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

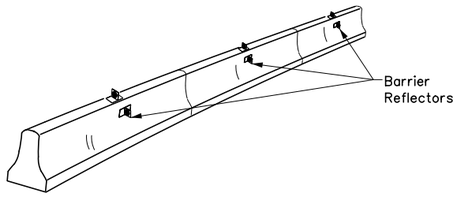
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		21

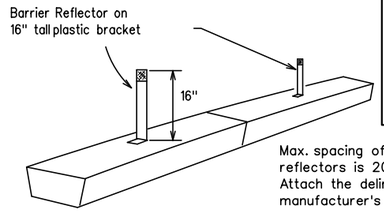
DATE: 4/19/2022 13:59:05
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1-12)-21.dgn

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



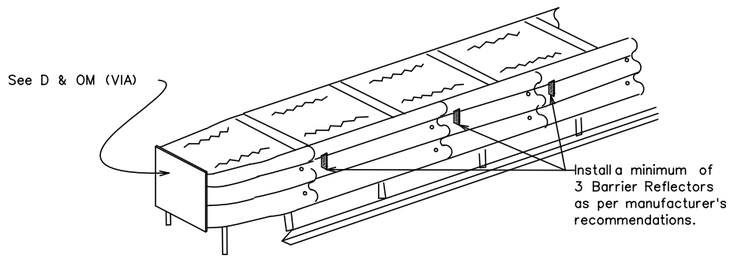
CONCRETE TRAFFIC BARRIER (CTB)

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



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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

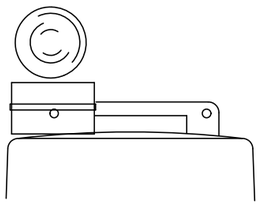
LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

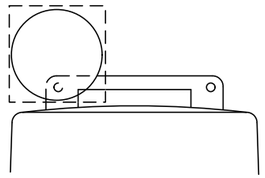


Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

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



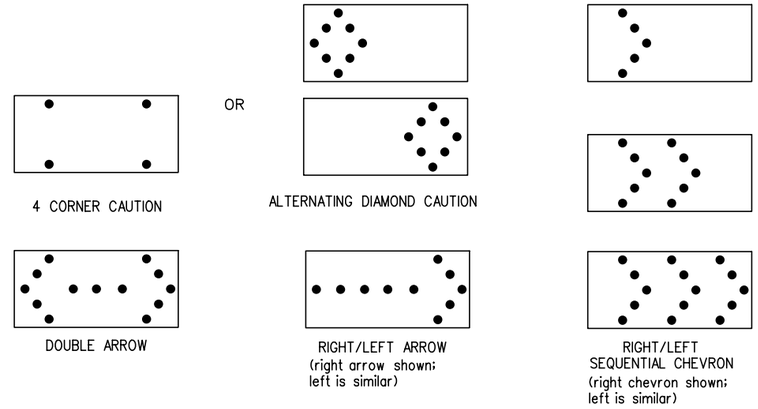
Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

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	0016	08	043,ETC	SL 368,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		22

DATE: 4/19/2022 13:59:07
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1-12)-21.dgn

GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

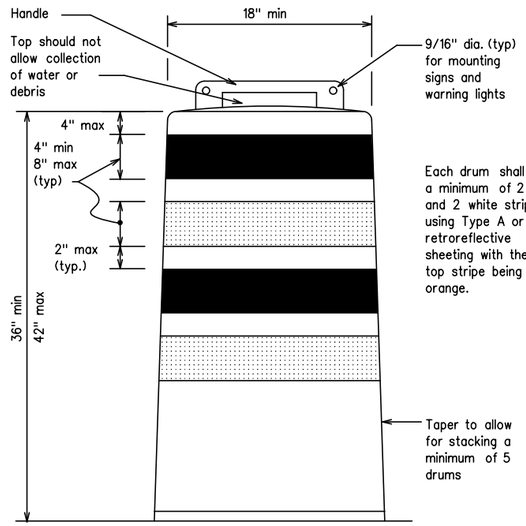
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

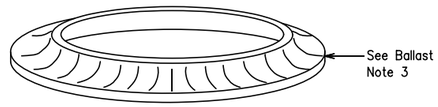
RETROREFLECTIVE SHEETING

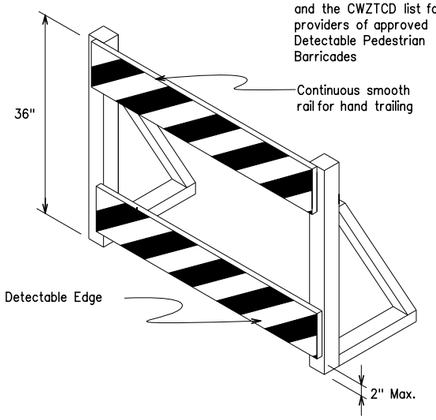
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

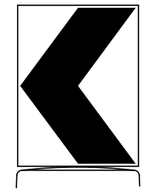




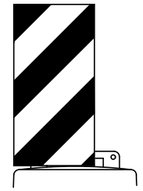


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

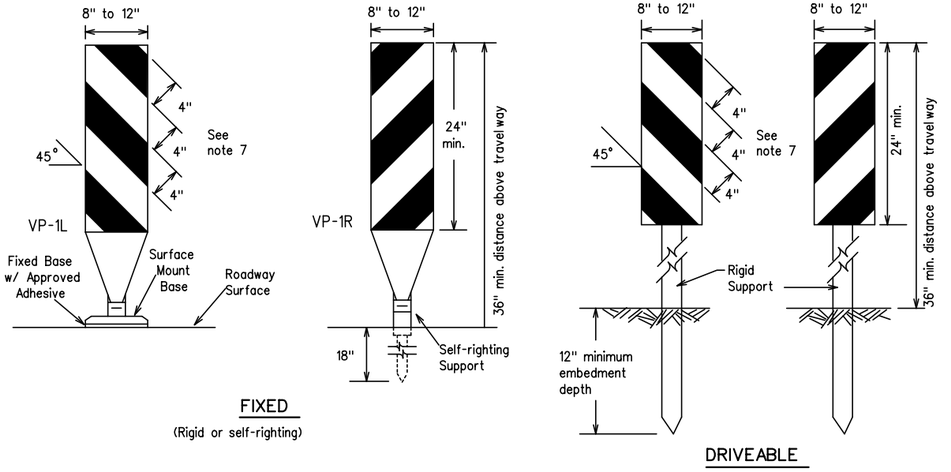
Traffic Safety Division Standard

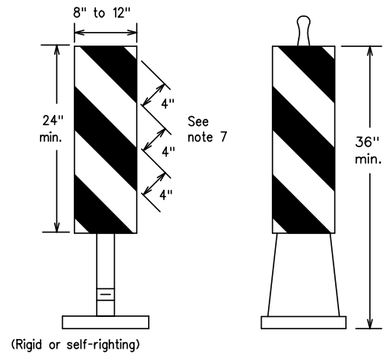
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	SAT	BEXAR		23
7-13				

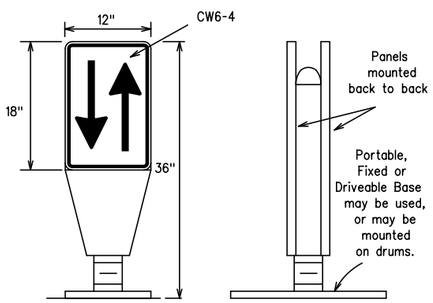
DATE: 4/19/2022 13:59:08
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1-12)-21.dgn





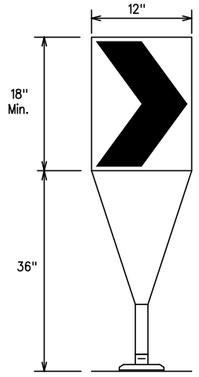
VERTICAL PANELS (VPs)

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



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

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



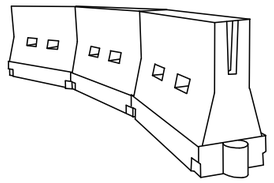
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

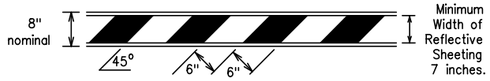
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		24

DATE: 4/19/2022 13:59:10
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(11-12)-21.dgn

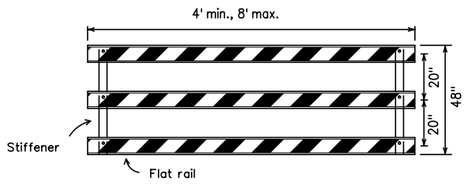
TYPE 3 BARRICADES

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.



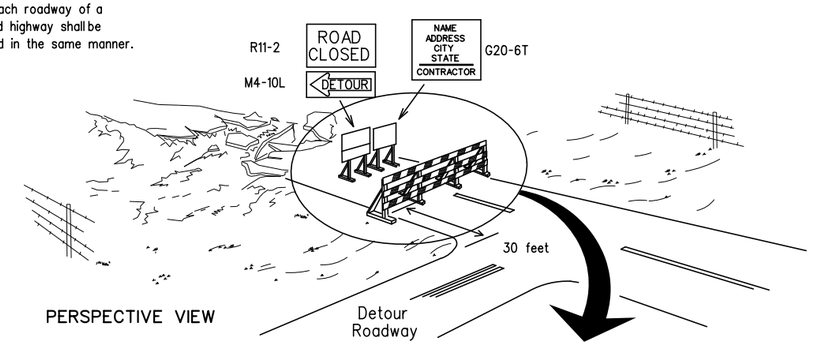
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

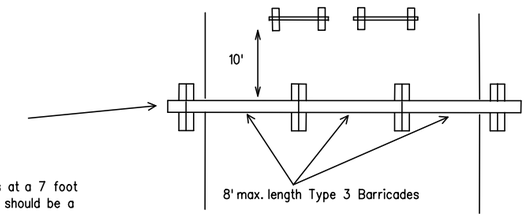
Each roadway of a divided highway shall be barricaded in the same manner.



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.

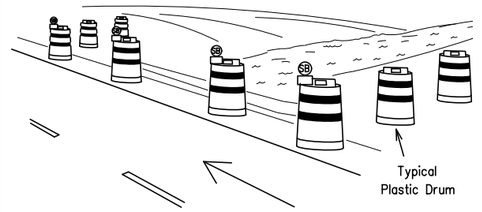
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

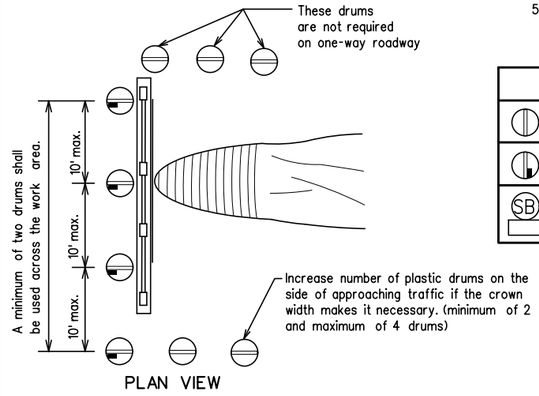
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

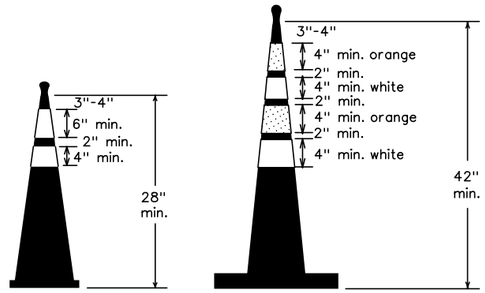
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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

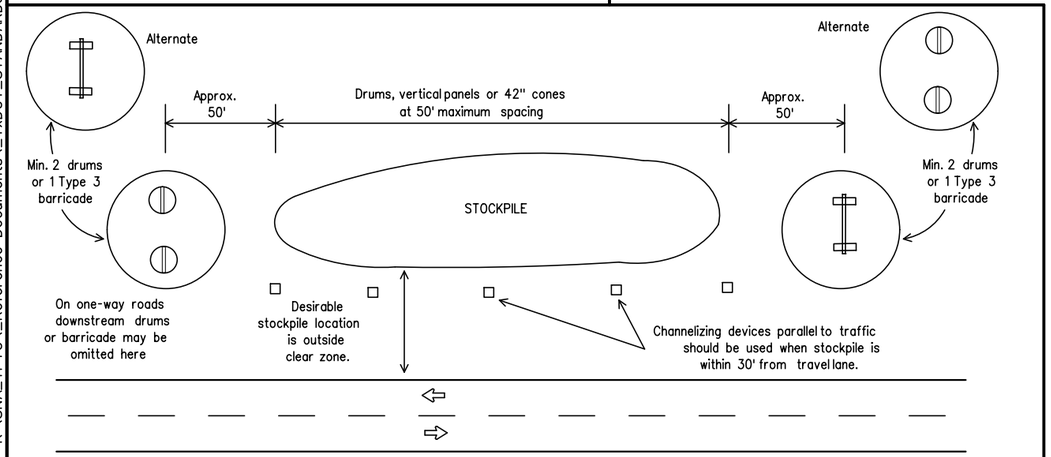
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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 9-07 8-14 7-13 5-21	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		25

DATE: 4/19/2022 13:59:11
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1-12)-21.dgn

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.

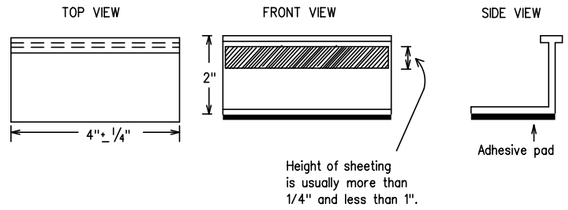
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

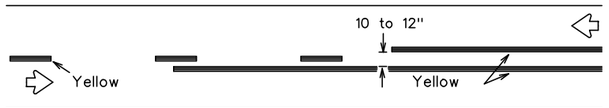
BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

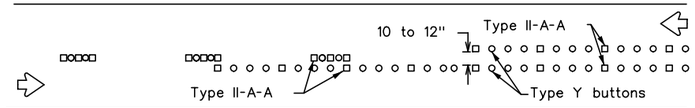
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	SAT	BEXAR		26
11-02 8-14				

DATE: 4/19/2022 13:59:13
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\BC(1-12)-21.dgn

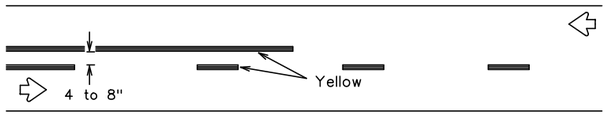
PAVEMENT MARKING PATTERNS



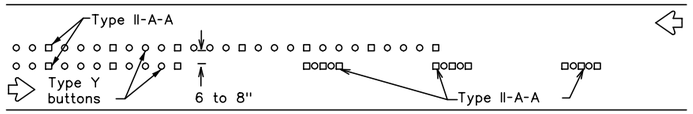
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



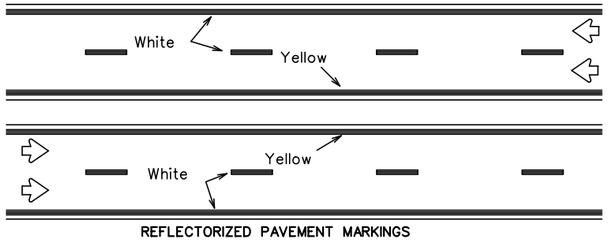
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



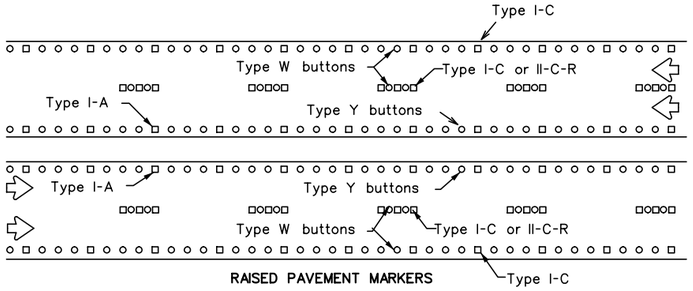
RAISED PAVEMENT MARKERS - PATTERN B

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

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



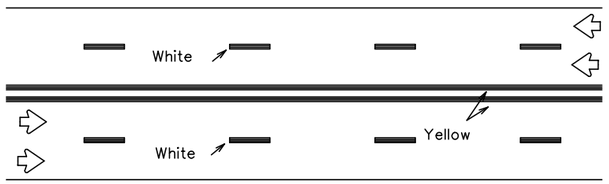
REFLECTORIZED PAVEMENT MARKINGS



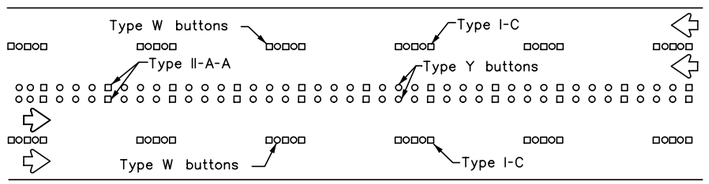
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



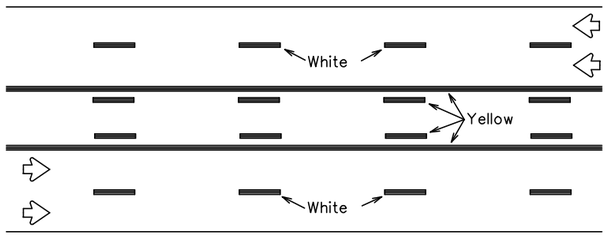
REFLECTORIZED PAVEMENT MARKINGS



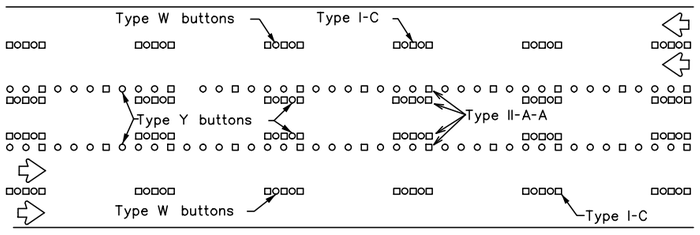
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

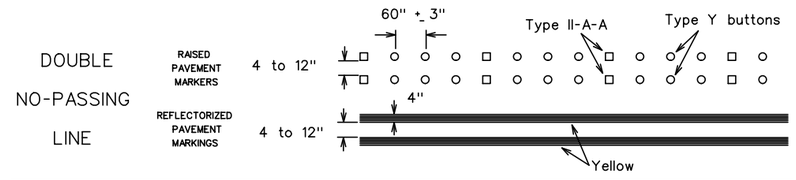
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

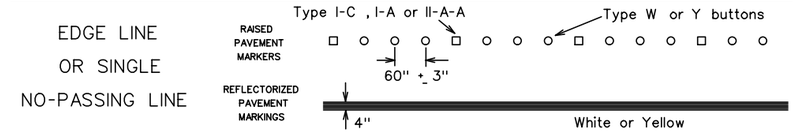
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

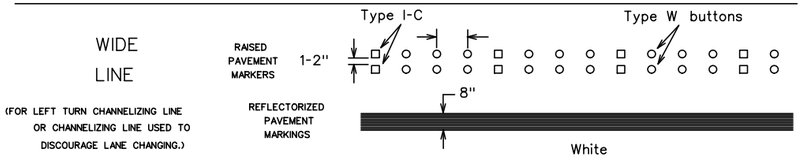


EDGE LINE OR SINGLE NO-PASSING LINE



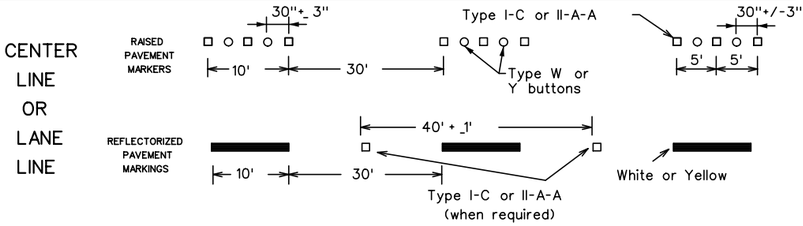
WIDE LINE

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

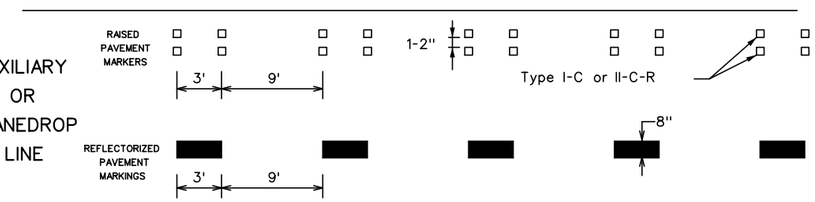


BROKEN LINES

CENTER LINE OR LANE LINE

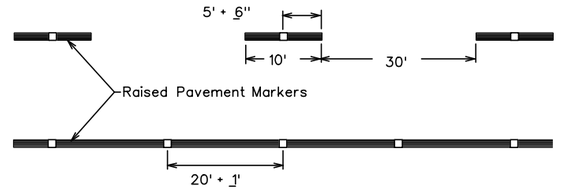


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

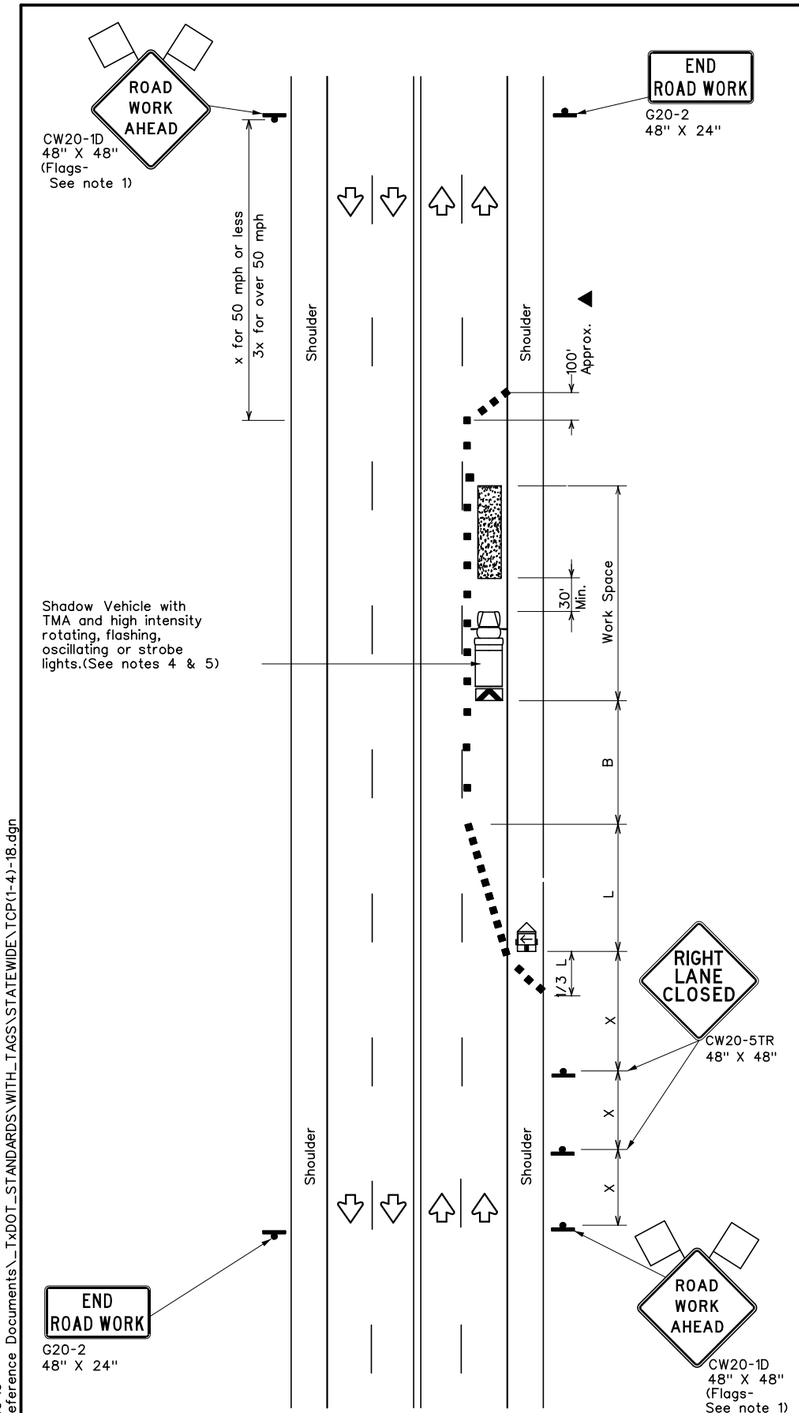
BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		27

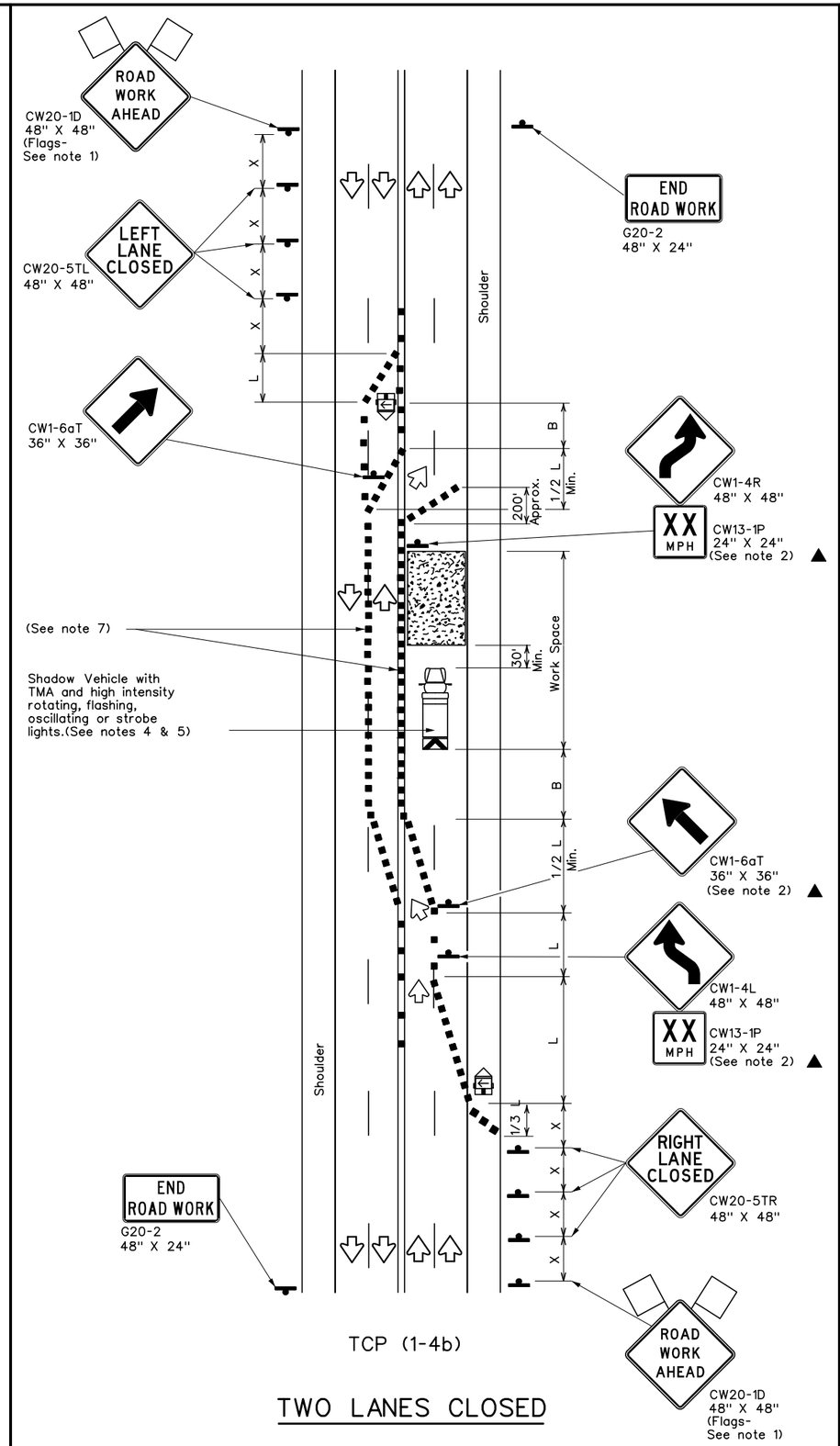
106

DATE: 4/19/2022 13:59:16
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\TCP(1-4)-18.dgn



TCP (1-4a)

ONE LANE CLOSED



TCP (1-4b)

TWO LANES CLOSED

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

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

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

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

GENERAL NOTES

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

TCP (1-4a)

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

TCP (1-4b)

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

Texas Department of Transportation

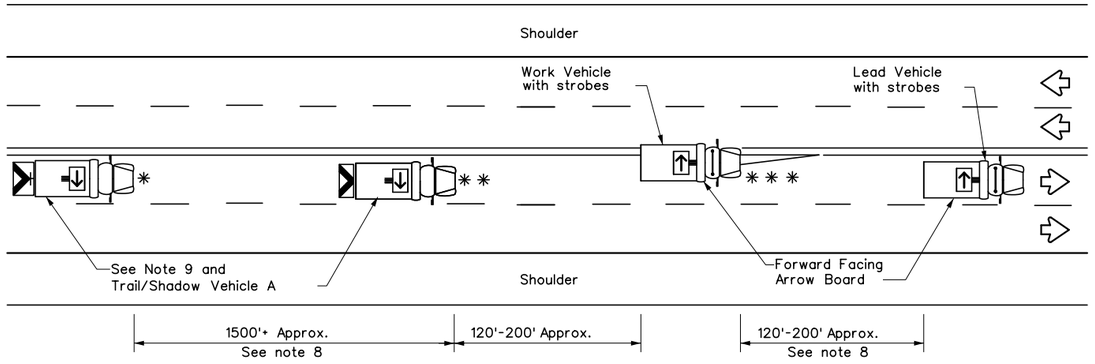
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(1-4)-18

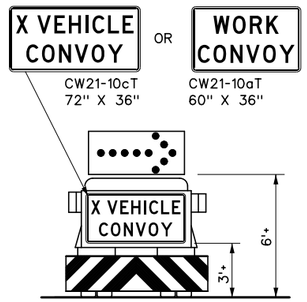
FILE: tcp1-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		28

DATE: 4/19/2022 13:59:19
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\TCP(3-1)-13.dgn



TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

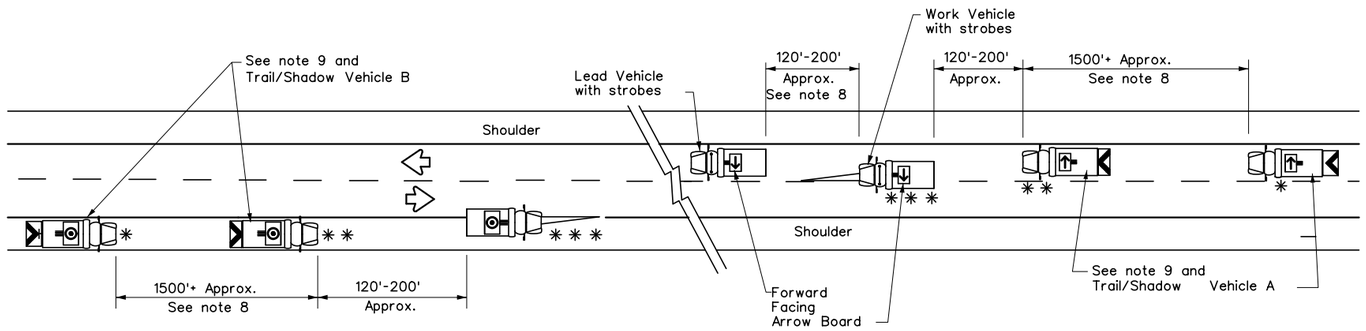
with RIGHT Directional display Flashing Arrow Board

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

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

GENERAL NOTES

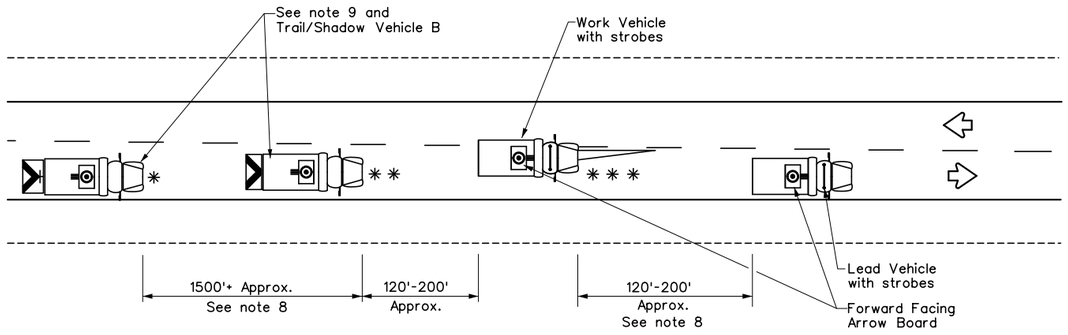
1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY"(CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.



WORK ON SHOULDER WORK ON TRAVEL LANE

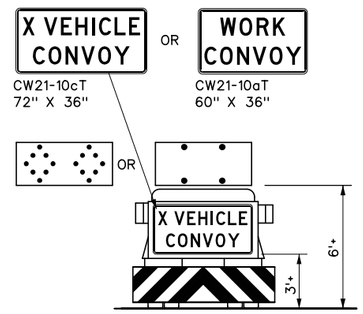
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



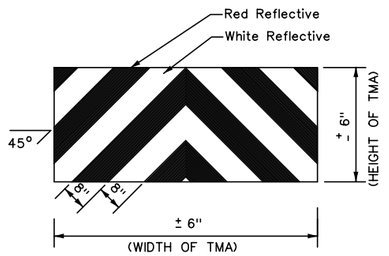
TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display



STRIPING FOR TMA

Texas Department of Transportation

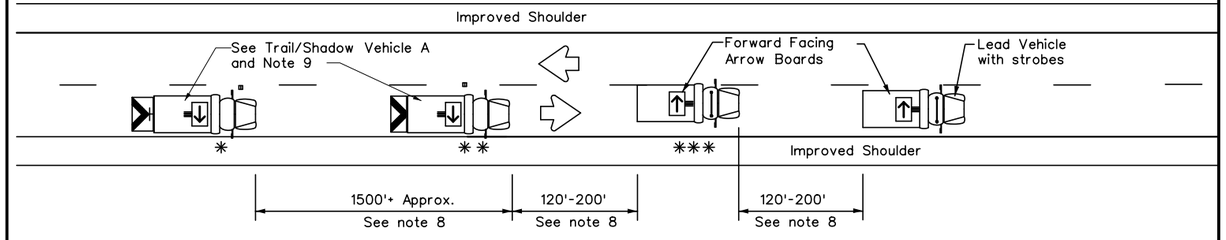
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

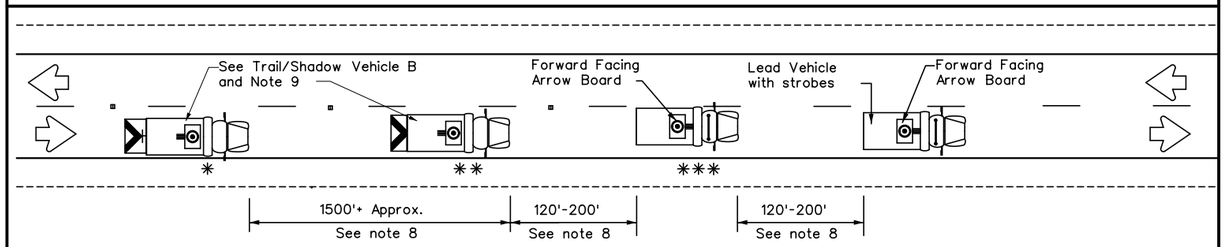
FILE: tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	SAT	BEXAR		29
1-97				

DATE: 4/19/2022 13:59:22
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\TCP(3-3)-14.dgn



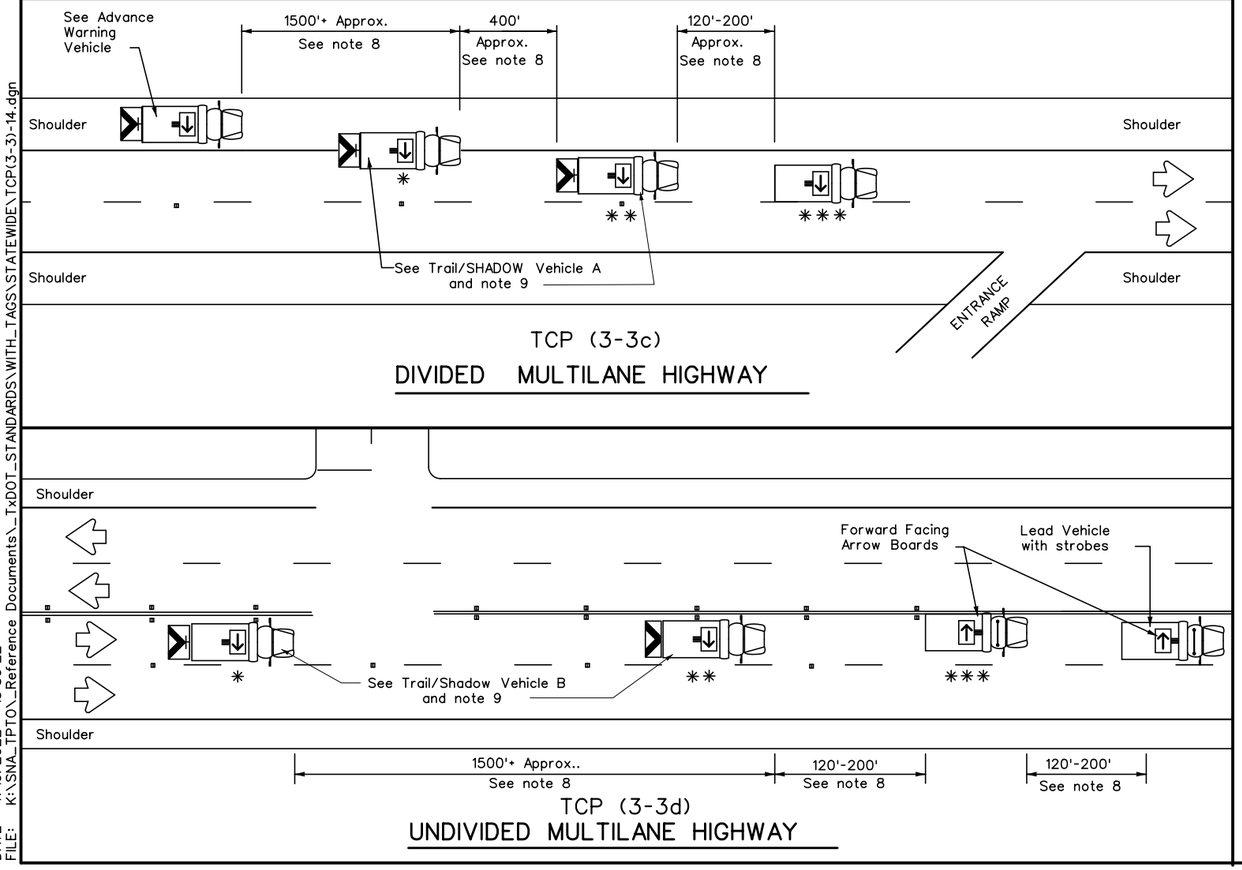
TCP (3-3a)

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



TCP (3-3b)

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

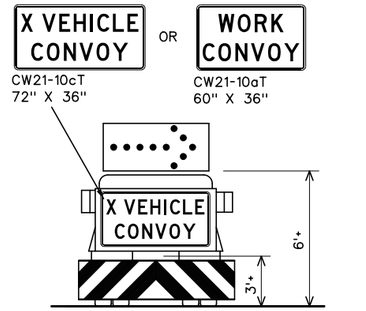


TCP (3-3c)

DIVIDED MULTILANE HIGHWAY

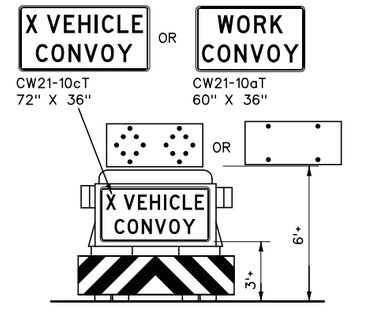
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



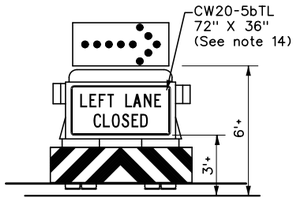
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

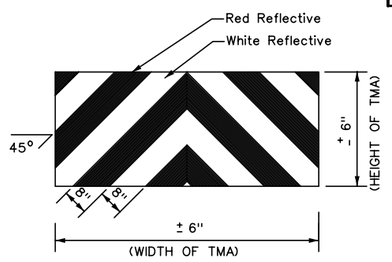


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

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

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

GENERAL NOTES

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

Texas Department of Transportation

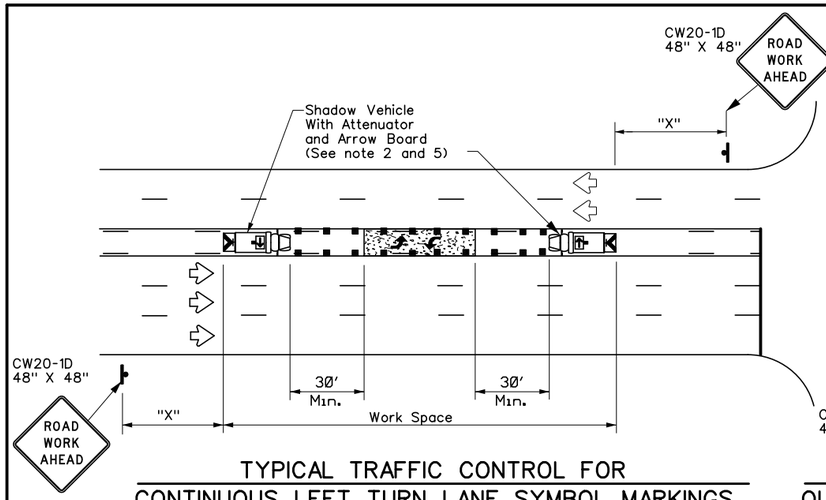
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL TCP(3-3)-14

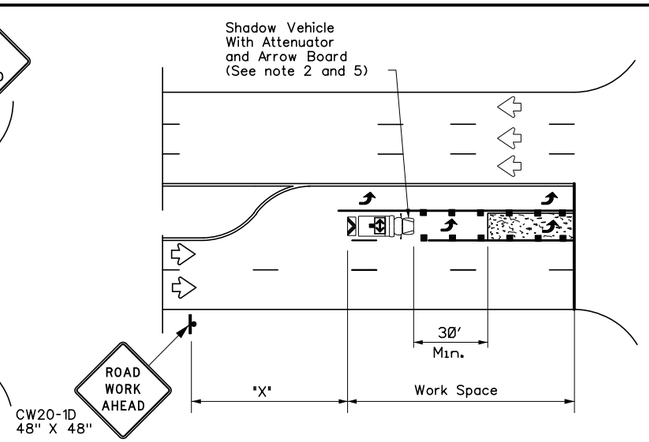
FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	SAT	BEXAR		30
1-97 7-14				

177

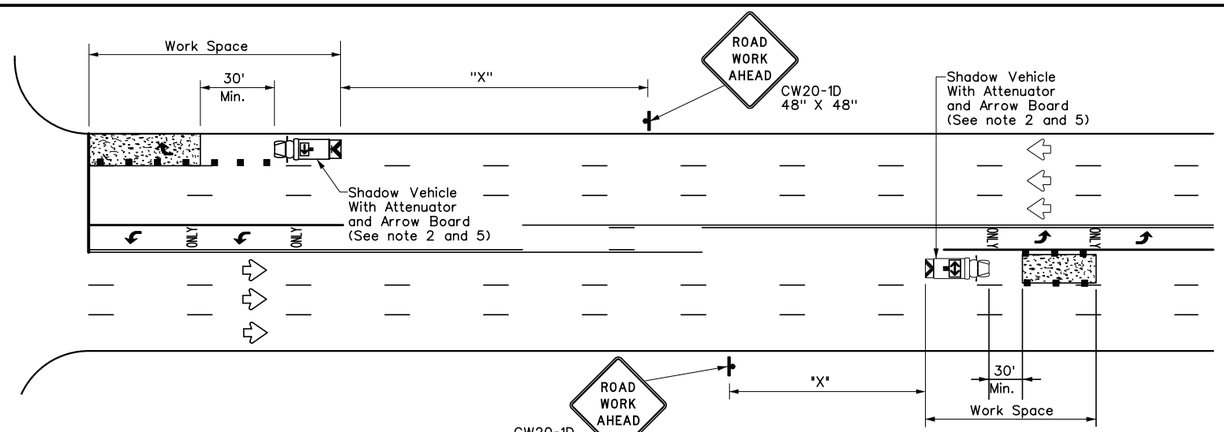
DATE: 4/19/2022 13:59:25
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\TCP(3-4)-13.dgn



TYPICAL TRAFFIC CONTROL FOR
CONTINUOUS LEFT TURN LANE SYMBOL MARKINGS

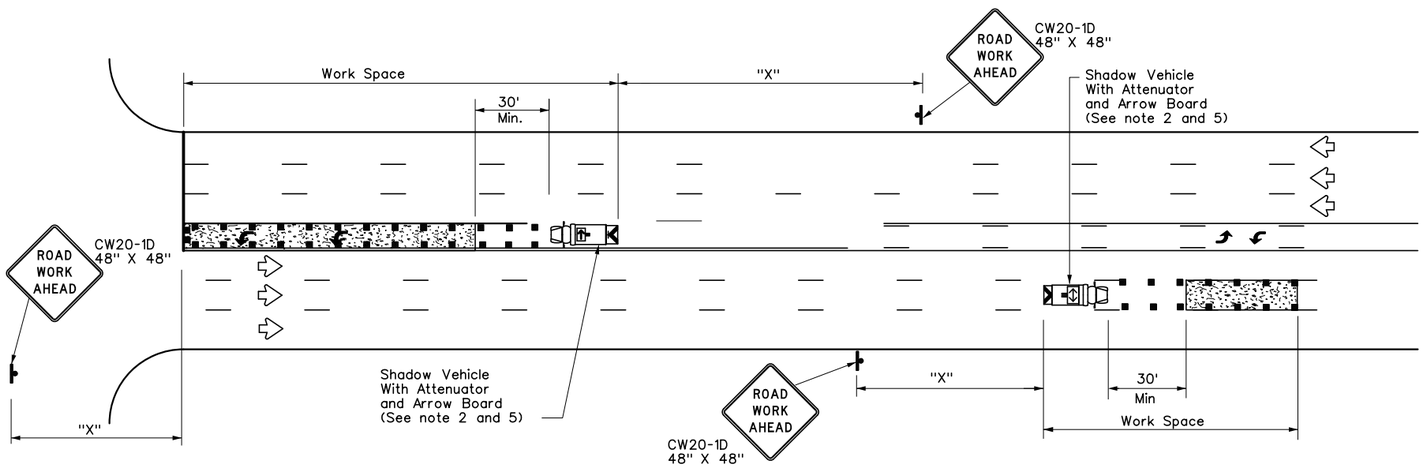


TYPICAL TRAFFIC CONTROL FOR
OUTSIDE DUAL LEFT TURN LANE SYMBOL MARKINGS



TYPICAL TRAFFIC CONTROL FOR
OUTSIDE LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
INSIDE LANE MARKINGS



TYPICAL TRAFFIC CONTROL FOR
LEFT TURN LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
CENTER LANE MARKINGS

LEGEND

*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		Channelizing Devices

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

* Conventional Roads Only

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

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

GENERAL NOTES

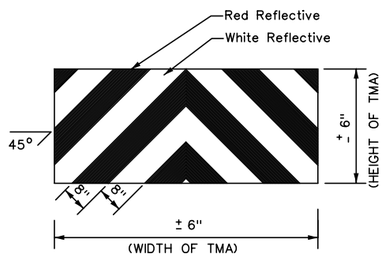
1. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.

2. A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.

3. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.

4. The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.

5. Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



STRIPING FOR TMA

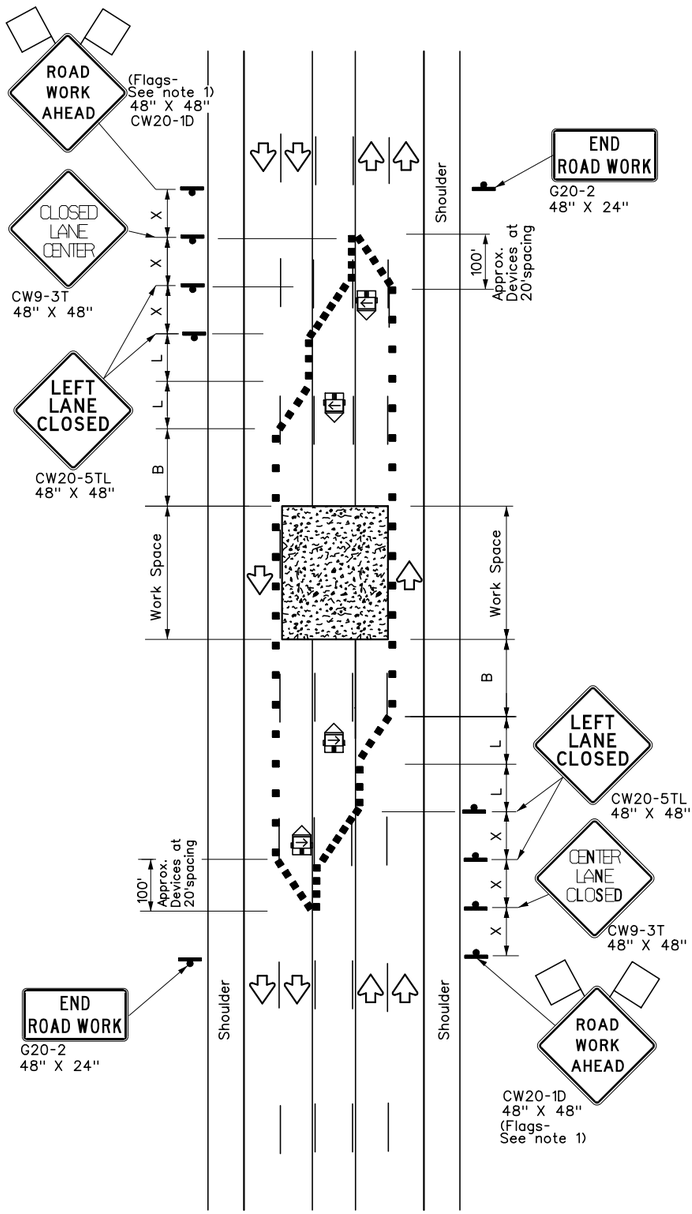
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS FOR ISOLATED WORK AREAS UNDIVIDED HIGHWAYS

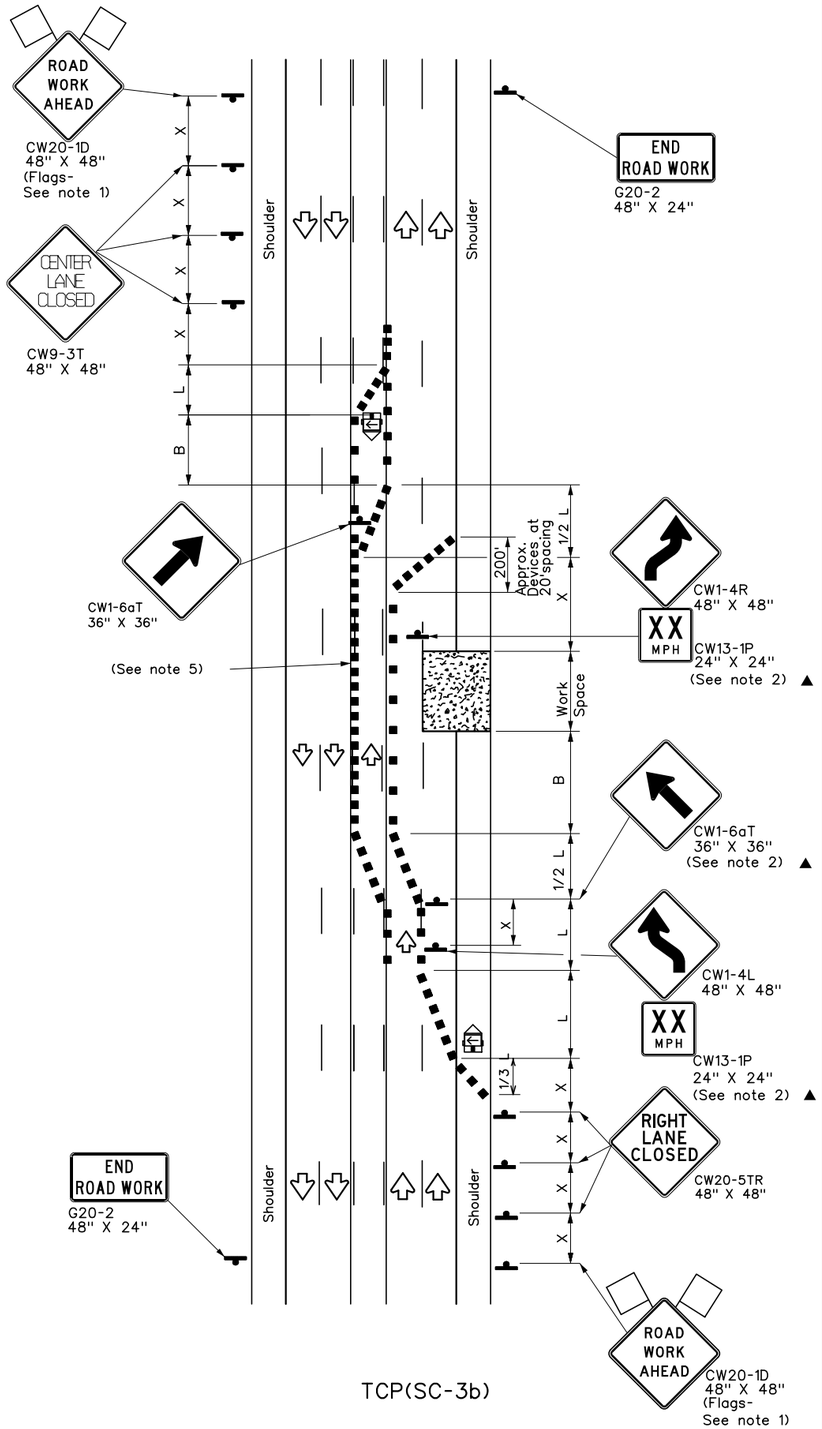
TCP(3-4)-13

FILE: tcp3-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT July, 2013	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		31



TCP(SC-3a)

CENTER LANES CLOSED
CONTROL WITH CHANNELIZING DEVICES



TCP(SC-3b)

ONE LANES CLOSED
CONTROL WITH CHANNELIZING DEVICES

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work when approved by the Engineer.
3. If the seal coat operation crosses intersections, traffic in these areas must be controlled. Care must be taken to prevent vehicles from crossing the asphalt before the aggregate is placed. This may require positioning other members of the traffic control crew at the intersection.
4. Temporary rumble strips are not required on seal coat operations.

TCP (SC-3b)

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

DATE: 4/19/2022 13:59:30
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\TCP(SC-3)-21.dgn

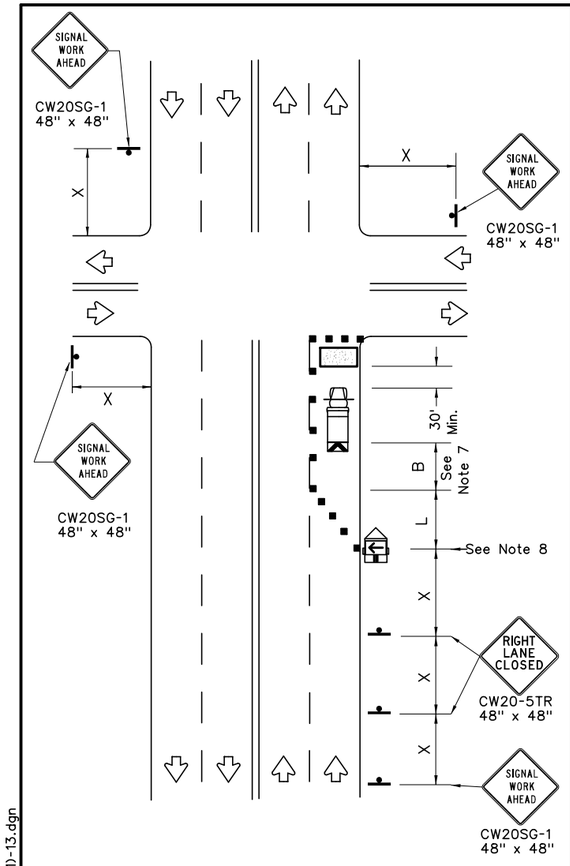
Texas Department of Transportation — Traffic Safety Division Standard

TRAFFIC CONTROL PLAN SEAL COAT OPERATIONS

TCP(SC-3)-21

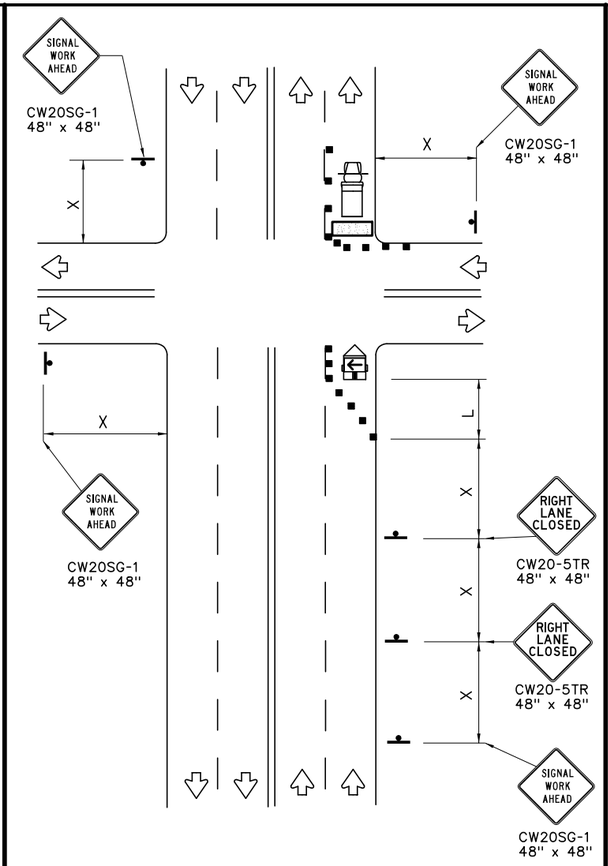
FILE: tcpsc-3-21.dgn	DN:	CK:	DW:	CK:
© TxDOT April 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		32

DATE: 4/19/2022 13:59:33
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\WZ-BTS(1)-13.dgn



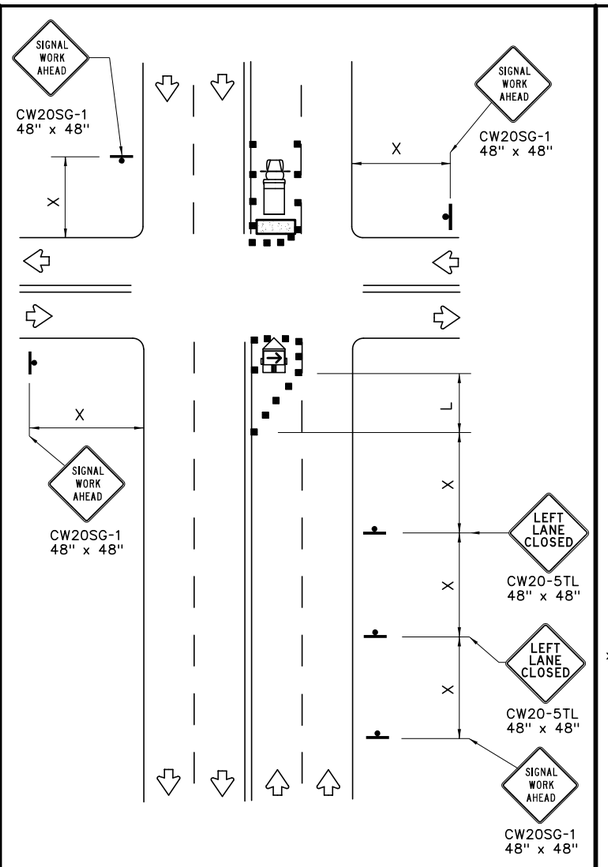
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



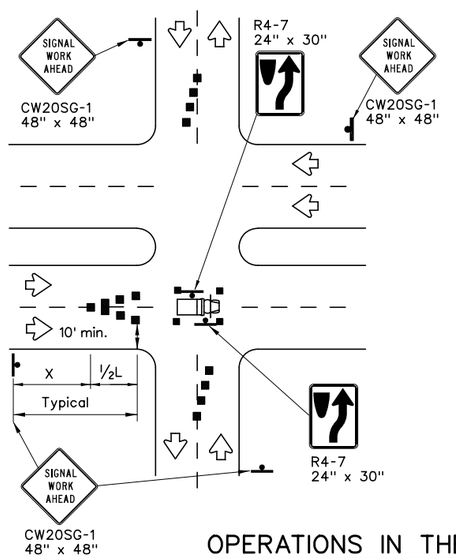
FAR SIDE RIGHT LANE CLOSURE

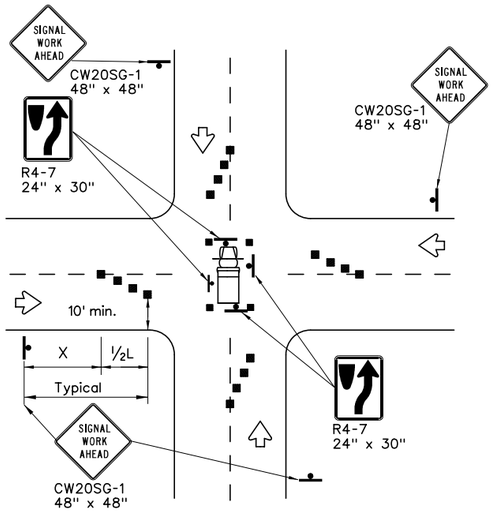
SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY





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.

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.

SHEET 1 OF 2

Texas Department of Transportation

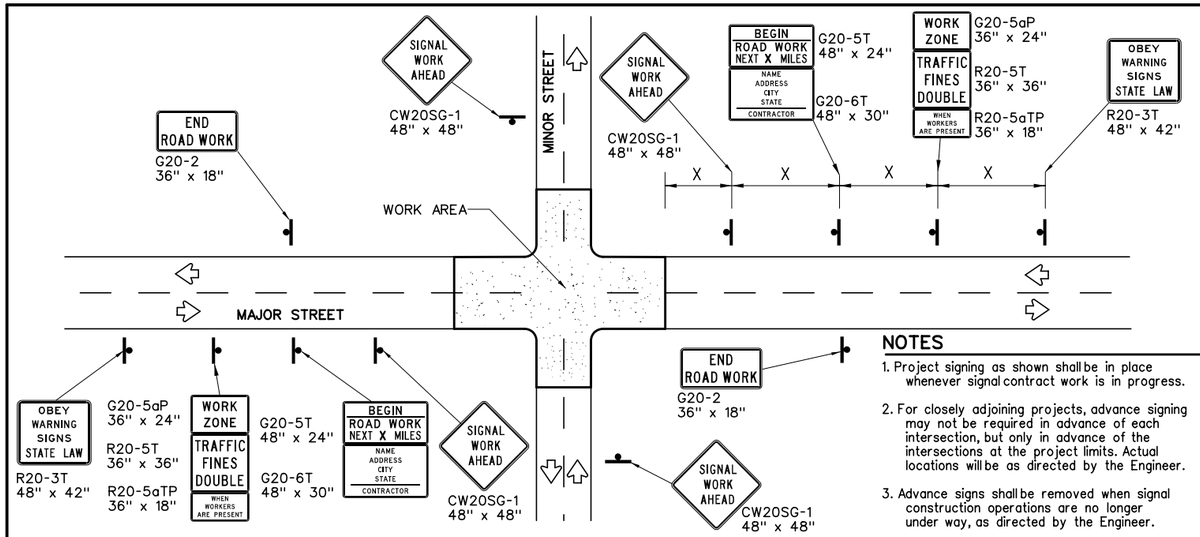
Traffic Operations Division Standard

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	0016	08	043,ETC	SL 368,ETC
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	SAT	BEXAR		33

DATE: 4/19/2022 13:59:36
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\WZ-BTS(2)-13.dgn



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 alluminum 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 backfilled 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

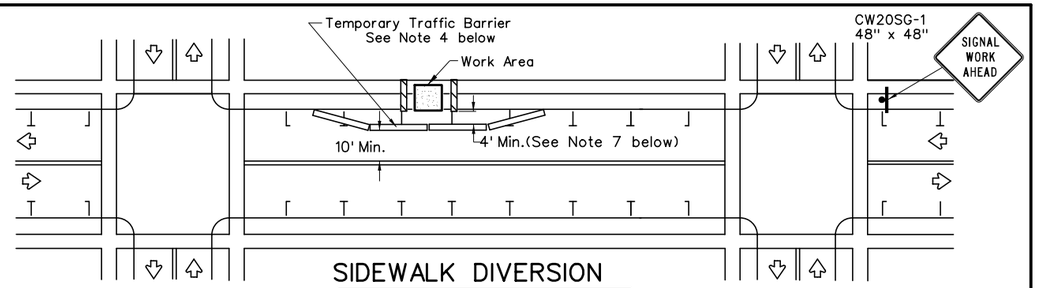
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support 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

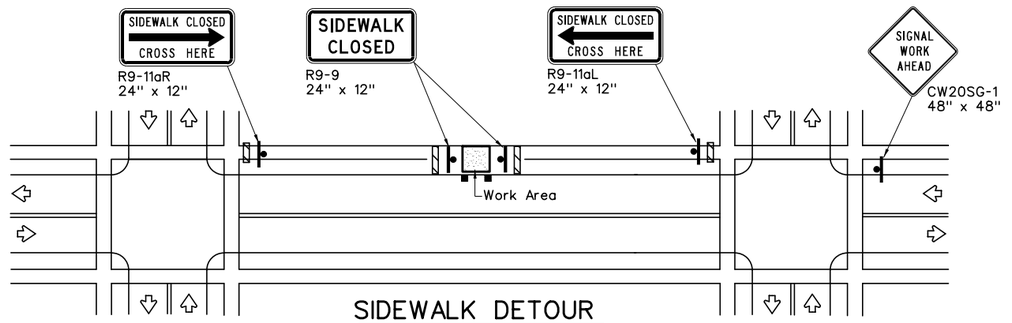
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

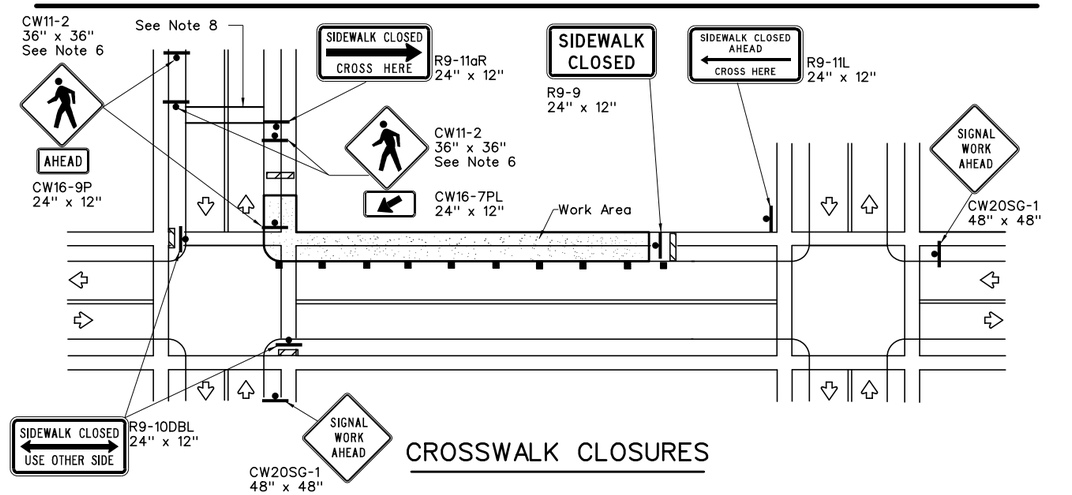
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



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

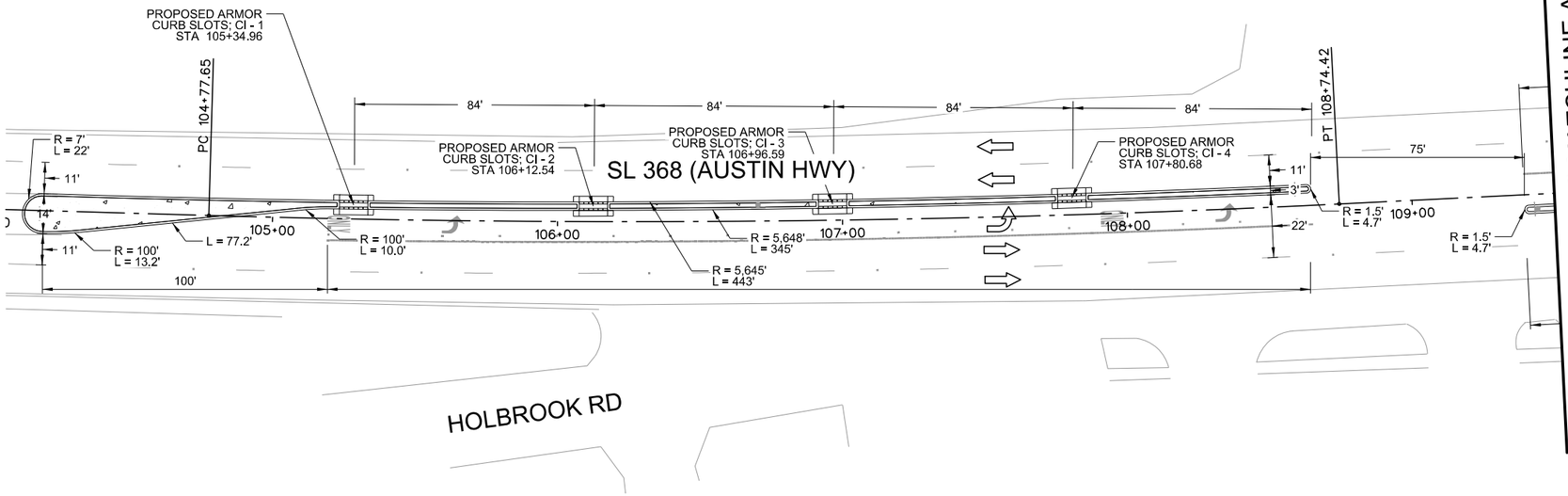
TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

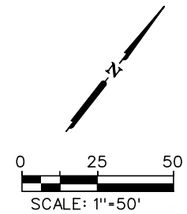
WZ(BTS-2)-13

FILE:	wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS		0016	08	043,ETC	SL 368,ETC
2-98 10-99 7-13		DIST	COUNTY		SHEET NO.
4-98 3-03		SAT	BEXAR		34

SL 368 (CSJ: 0016-08-043)

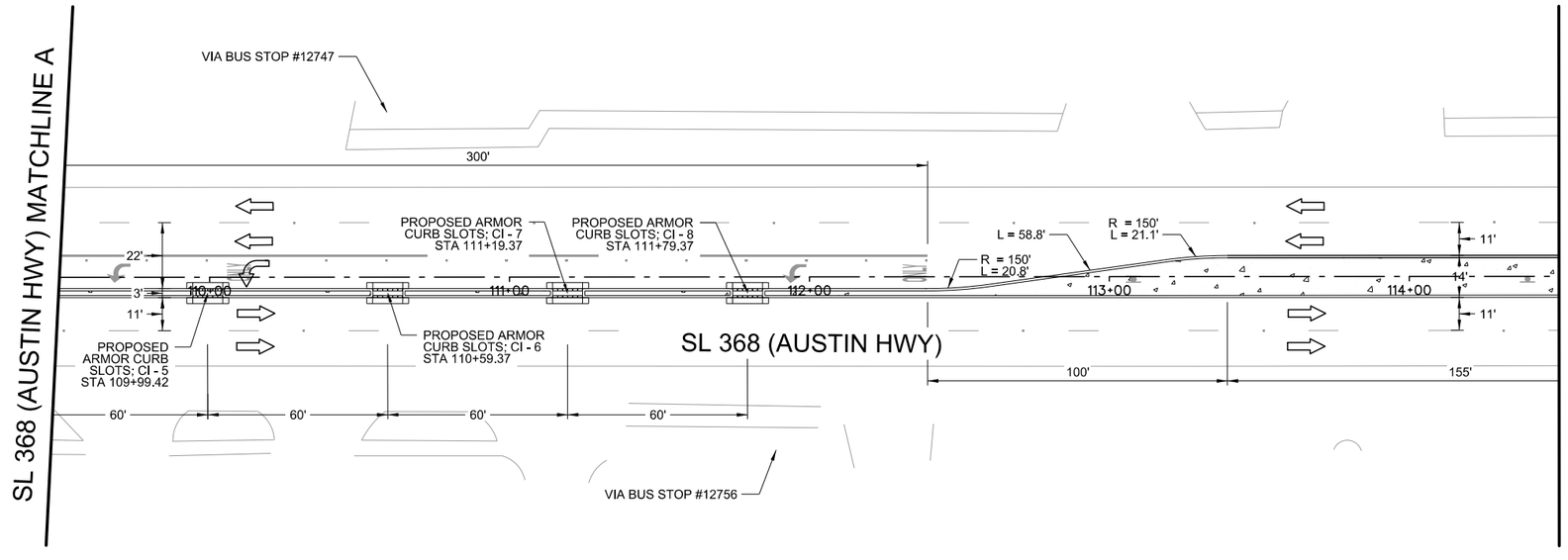
ESTIMATED QUANTITIES				
ITEM NO.	DESC. CO	DESCRIPTION	UNIT	QTY
354	6023	PLANE ASPH CONC PAV(0" TO 4")	SY	585
465	6338	INLET (COMPL)(ARMOR CURB SLOT)	EA	16
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1
536	6002	CONC MEDIAN	SY	585
6185	6002	TMA (STATIONARY)	DAY	15

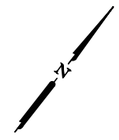




NOTES

1. EXISTING STRIPING AND FLATWORK SHOWN ARE APPROXIMATE BASED OFF AERIAL IMAGERY.
2. EXISTING 4-IN BROKEN WHITE LANE LINE AND 4-IN SOLID WHITE SHOULDER STRIPING SHALL REMAIN IN PLACE FOR BOTH DIRECTIONS OF TRAFFIC. PROPOSED STRIPING AND MEDIAN WORK WILL BE CONSTRUCTED FROM THE EXISTING 4-IN BROKEN WHITE LANE LINE. MAINTAIN A MINIMUM 11-FT LANE ON BOTH INSIDE THRU LANES AND PROPOSED LEFT TURN LANES. VARY MEDIAN WIDTH TO MAINTAIN A MINIMUM 2-FT MEDIAN WIDTH FROM FACE-OF-CURB TO FACE-OF-CURB.
3. AT HOODED LEFT TURN LANES, A MINIMUM 1.5-FT MEDIAN WIDTH MUST BE PROVIDED. VARY LEFT-TURN LANE WIDTH BETWEEN MINIMUM 10' AND DESIRABLE 11' TO PROVIDE 1.5' MEDIANS AT HOODED LEFT TURNS.
4. REFER TO SIGNING AND STRIPING SHEETS FOR SIGNING AND PAVEMENT MARKING DETAILS.





STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
5/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

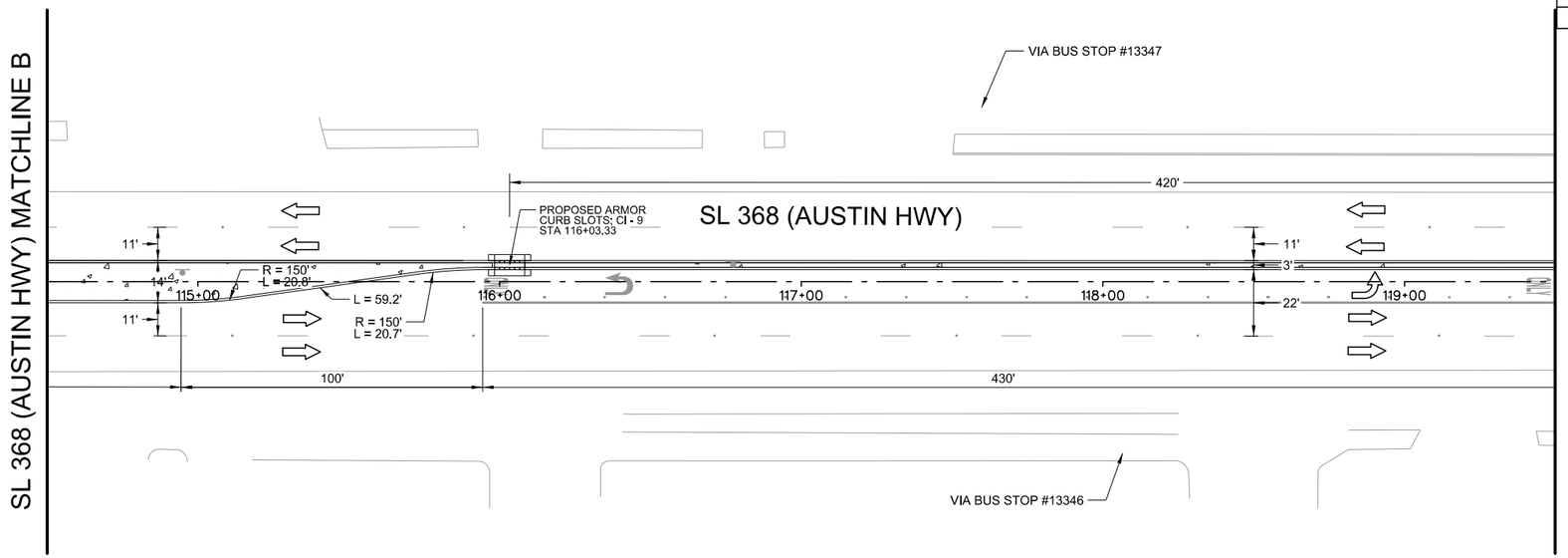
SL 368 (AUSTIN HWY)
MEDIAN LAYOUT

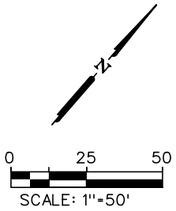
SHEET 1 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		35
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:37:05
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_01.dgn

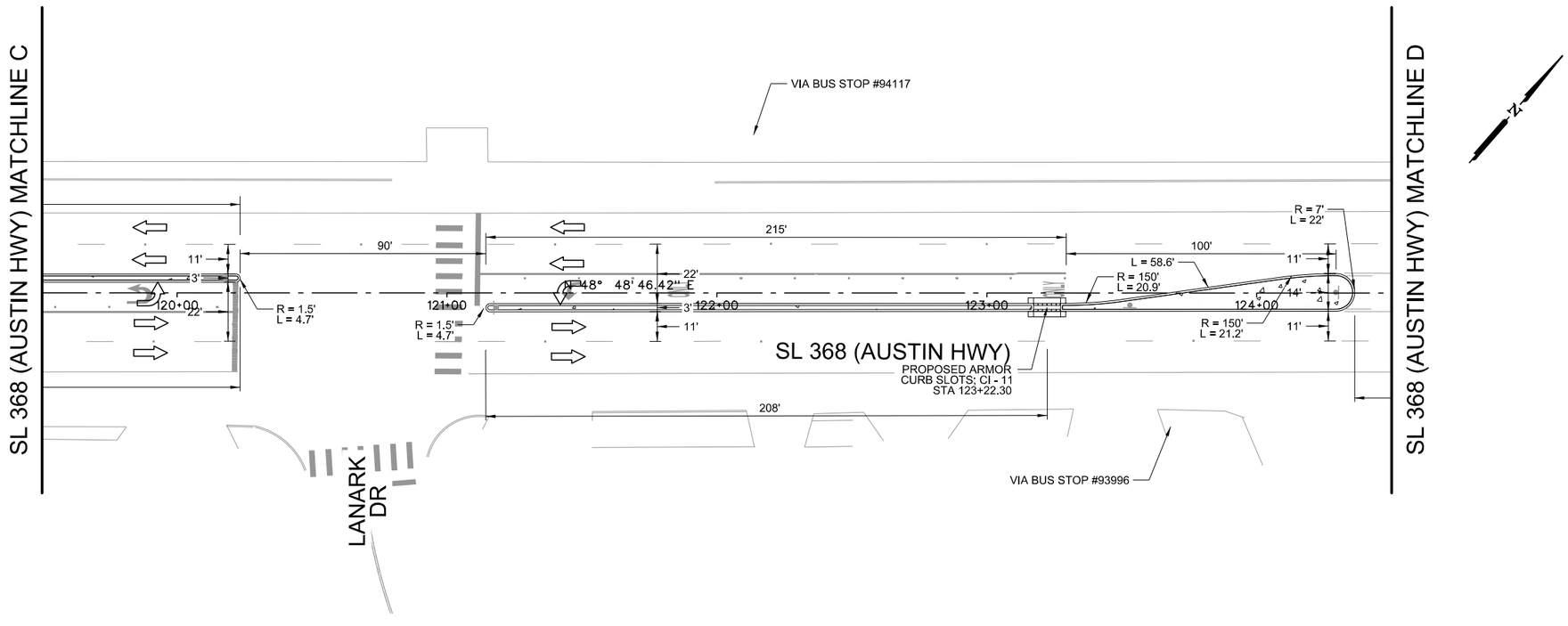
ESTIMATED QUANTITIES				
ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
354	6023	PLANE ASPH CONC PAV(0" TO 4")	SY	482
465	6338	INLET (COMPL)(ARMOR CURB SLOT)	EA	4
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1
536	6002	CONC MEDIAN	SY	482
6185	6002	TMA (STATIONARY)	DAY	15





NOTES

1. EXISTING STRIPING AND FLATWORK SHOWN ARE APPROXIMATE BASED OFF AERIAL IMAGERY.
2. EXISTING 4-IN BROKEN WHITE LANE LINE AND 4-IN SOLID WHITE SHOULDER STRIPING SHALL REMAIN IN PLACE FOR BOTH DIRECTIONS OF TRAFFIC. PROPOSED STRIPING AND MEDIAN WORK WILL BE CONSTRUCTED FROM THE EXISTING 4-IN BROKEN WHITE LANE LINE. MAINTAIN A MINIMUM 11-FT LANE ON BOTH INSIDE THRU LANES AND PROPOSED LEFT TURN LANES. VARY MEDIAN WIDTH TO MAINTAIN A MINIMUM 2-FT MEDIAN WIDTH FROM FACE-OF-CURB TO FACE-OF-CURB.
3. AT HOODED LEFT TURN LANES, A MINIMUM 1.5-FT MEDIAN WIDTH MUST BE PROVIDED. VARY LEFT-TURN LANE WIDTH BETWEEN MINIMUM 10' AND DESIRABLE 11' TO PROVIDE 1.5' MEDIANS AT HOODED LEFT TURNS.
4. REFER TO SIGNING AND STRIPING SHEETS FOR SIGNING AND PAVEMENT MARKING DETAILS.



STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
5/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

FY 2022 HSIP

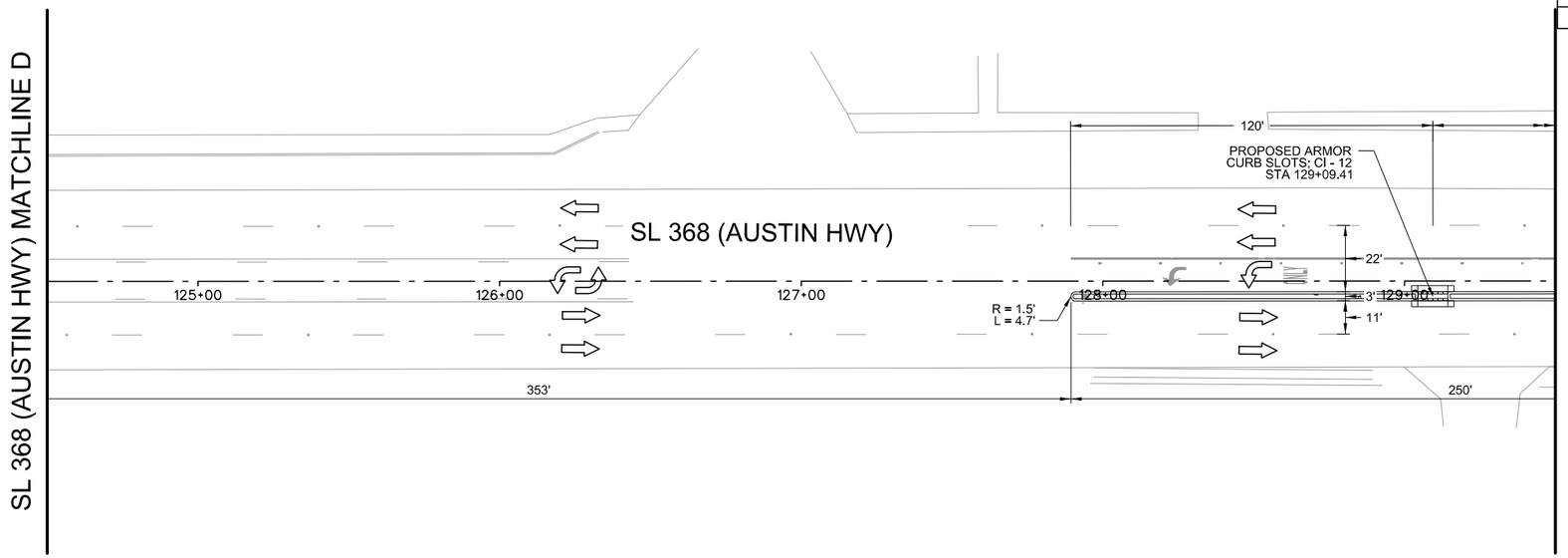
SL 368 (AUSTIN HWY) MEDIAN LAYOUT

SHEET 2 OF 6

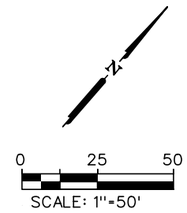
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		36
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:37:08
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_02.dgn

SL 368 (CSJ: 0016-08-043)

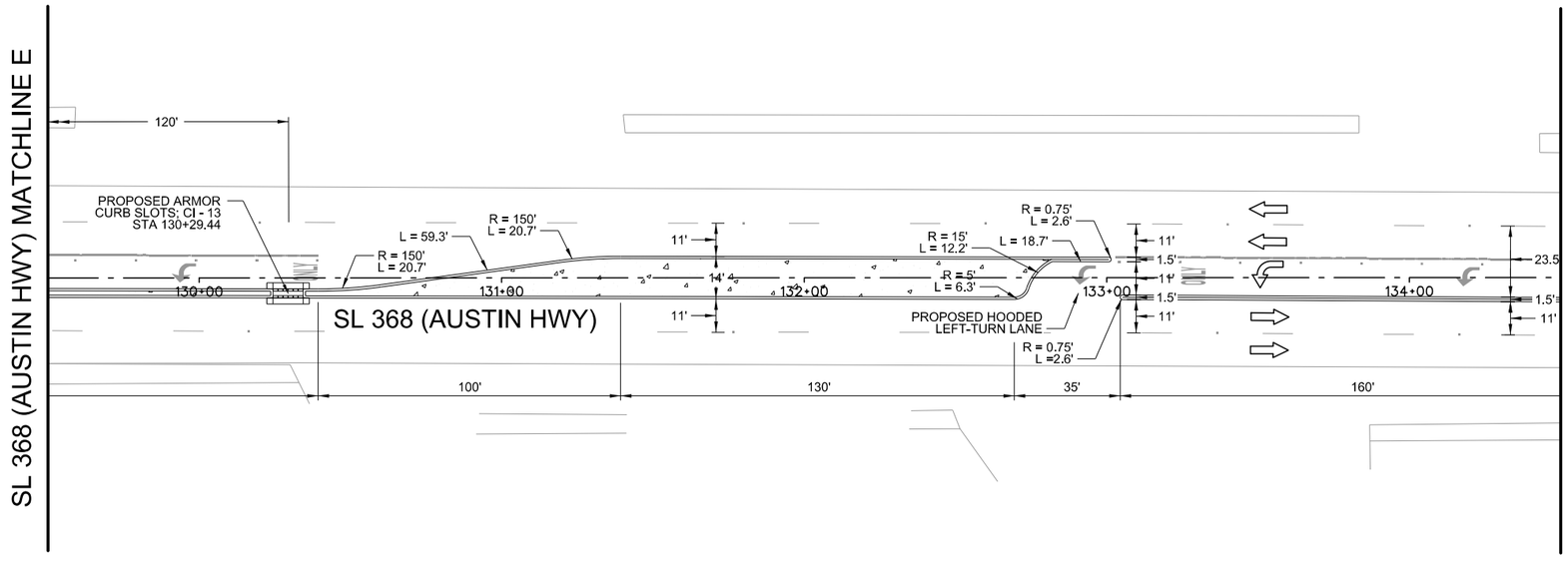


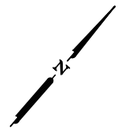
ESTIMATED QUANTITIES				
ITEM NO.	DESC. CO	DESCRIPTION	UNIT	QTY
354	6023	PLANE ASPH CONC PAV(0" TO 4")	SY	419
465	6338	INLET (COMPL)(ARMOR CURB SLOT)	EA	4
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1
536	6002	CONC MEDIAN	SY	419
6185	6002	TMA (STATIONARY)	DAY	15



NOTES

1. EXISTING STRIPING AND FLATWORK SHOWN ARE APPROXIMATE BASED OFF AERIAL IMAGERY.
2. EXISTING 4-IN BROKEN WHITE LANE LINE AND 4-IN SOLID WHITE SHOULDER STRIPING SHALL REMAIN IN PLACE FOR BOTH DIRECTIONS OF TRAFFIC. PROPOSED STRIPING AND MEDIAN WORK WILL BE CONSTRUCTED FROM THE EXISTING 4-IN BROKEN WHITE LANE LINE. MAINTAIN A MINIMUM 11-FT LANE ON BOTH INSIDE THRU LANES AND PROPOSED LEFT TURN LANES. VARY MEDIAN WIDTH TO MAINTAIN A MINIMUM 2-FT MEDIAN WIDTH FROM FACE-OF-CURB TO FACE-OF-CURB.
3. AT HOODED LEFT TURN LANES, A MINIMUM 1.5-FT MEDIAN WIDTH MUST BE PROVIDED. VARY LEFT-TURN LANE WIDTH BETWEEN MINIMUM 10' AND DESIRABLE 11' TO PROVIDE 1.5' MEDIANS AT HOODED LEFT TURNS.
4. REFER TO SIGNING AND STRIPING SHEETS FOR SIGNING AND PAVEMENT MARKING DETAILS.





STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
5/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

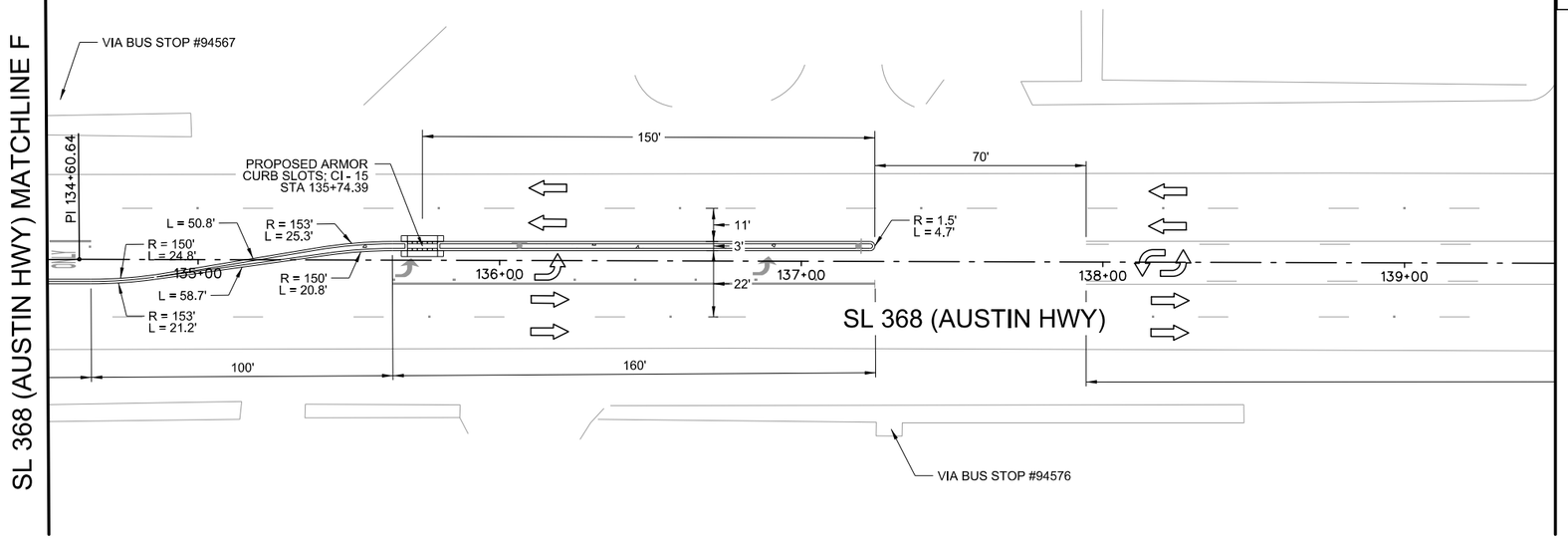
SL 368 (AUSTIN HWY)
MEDIAN LAYOUT

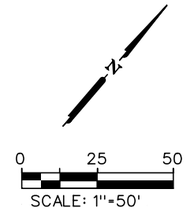
SHEET 3 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		37
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:37:09
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_03.dgn

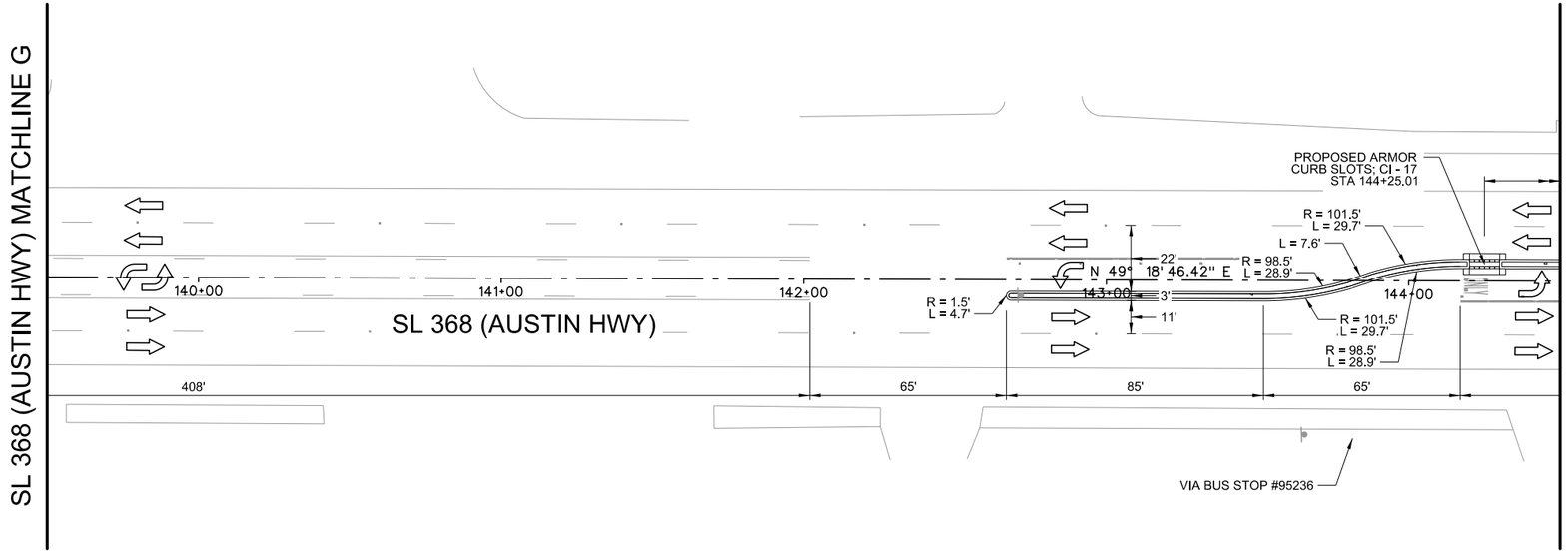
ESTIMATED QUANTITIES				
ITEM NO.	DESC. CO	DESCRIPTION	UNIT	QTY
354	6023	PLANE ASPH CONC PAV(0" TO 4")	SY	143
465	6338	INLET (COMPL)(ARMOR CURB SLOT)	EA	4
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1
536	6002	CONC MEDIAN	SY	143
6185	6002	TMA (STATIONARY)	DAY	15

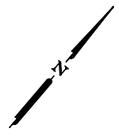


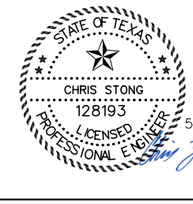


NOTES

1. EXISTING STRIPING AND FLATWORK SHOWN ARE APPROXIMATE BASED OFF AERIAL IMAGERY.
2. EXISTING 4-IN BROKEN WHITE LANE LINE AND 4-IN SOLID WHITE SHOULDER STRIPING SHALL REMAIN IN PLACE FOR BOTH DIRECTIONS OF TRAFFIC. PROPOSED STRIPING AND MEDIAN WORK WILL BE CONSTRUCTED FROM THE EXISTING 4-IN BROKEN WHITE LANE LINE. MAINTAIN A MINIMUM 11-FT LANE ON BOTH INSIDE THRU LANES AND PROPOSED LEFT TURN LANES. VARY MEDIAN WIDTH TO MAINTAIN A MINIMUM 2-FT MEDIAN WIDTH FROM FACE-OF-CURB TO FACE-OF-CURB.
3. AT HOODED LEFT TURN LANES, A MINIMUM 1.5-FT MEDIAN WIDTH MUST BE PROVIDED. VARY LEFT-TURN LANE WIDTH BETWEEN MINIMUM 10' AND DESIRABLE 11' TO PROVIDE 1.5' MEDIANS AT HOODED LEFT TURNS.
4. REFER TO SIGNING AND STRIPING SHEETS FOR SIGNING AND PAVEMENT MARKING DETAILS.







NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

FY 2022 HSIP

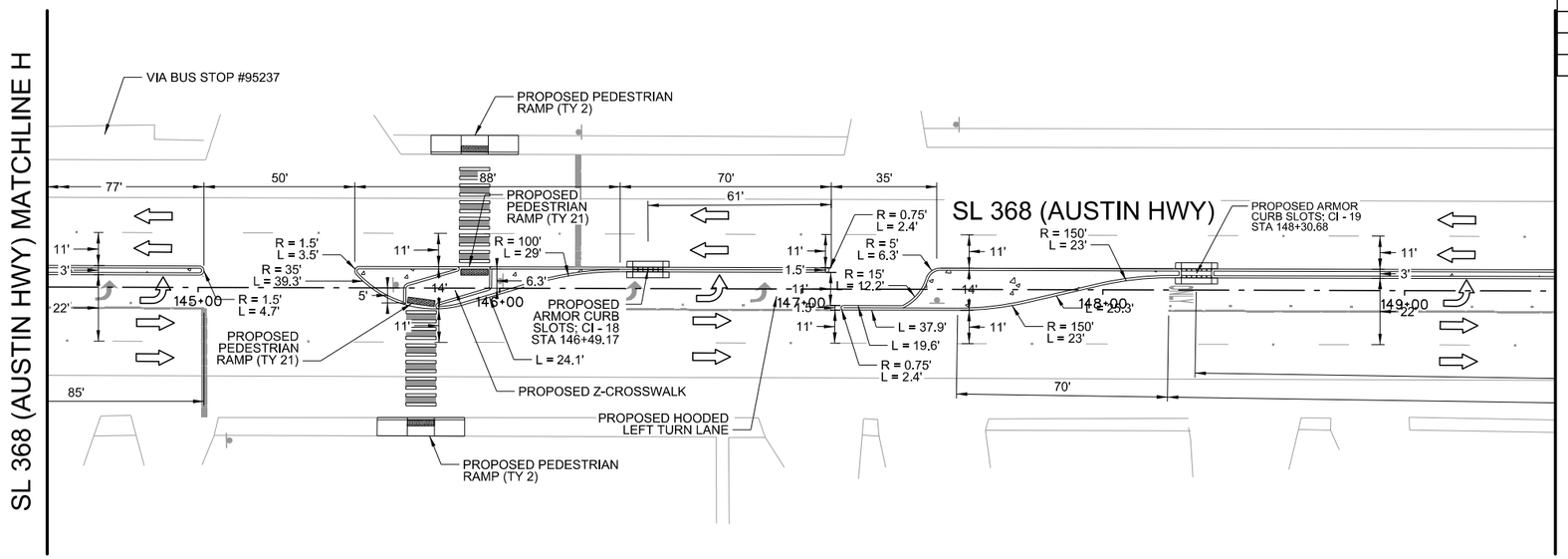
SL 368 (AUSTIN HWY) MEDIAN LAYOUT

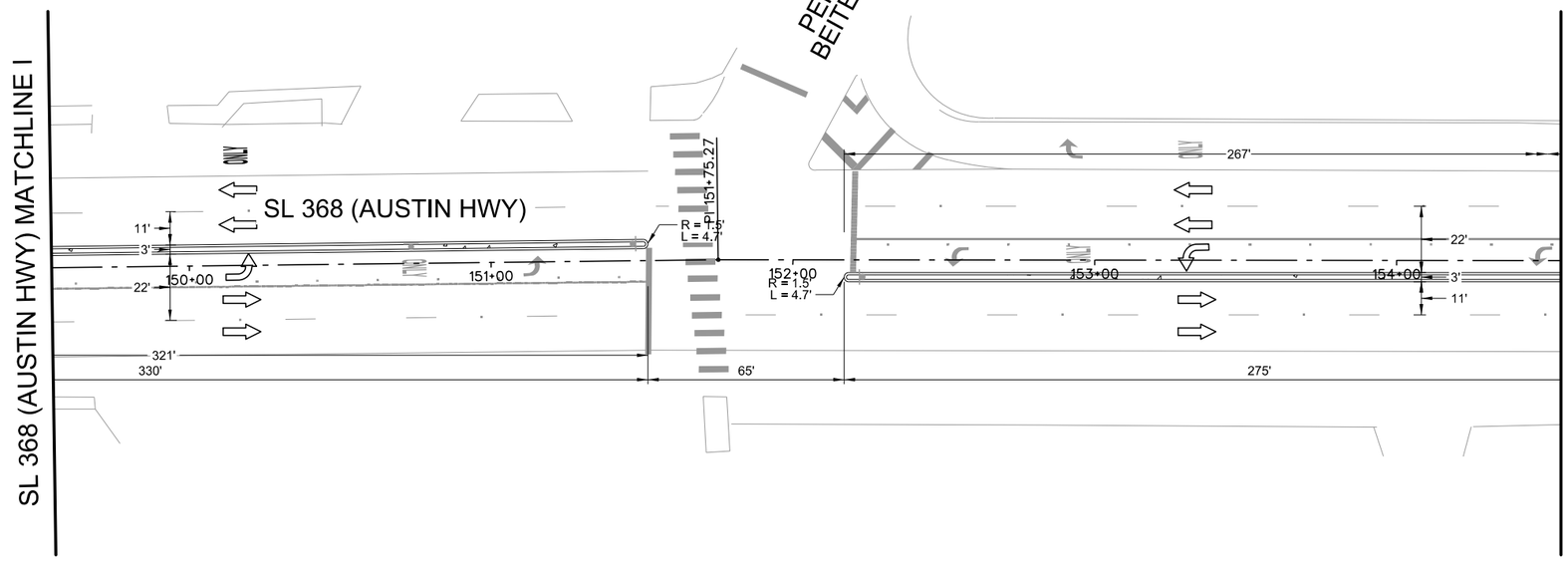
SHEET 4 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		38
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:37:11
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_04.dgn

SL 368 (CSJ: 0016-08-043)





ESTIMATED QUANTITIES				
ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
354	6023	PLANE ASPH CONC PAV(0" TO 4")	SY	358
465	6338	INLET (COMPL)(ARMOR CURB SLOT)	EA	4
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1
531	6005	CURB RAMPS (TY 2)	EA	2
531	6016	CURB RAMPS (TY 21)	EA	1
536	6002	CONC MEDIAN	SY	358
6185	6002	TMA (STATIONARY)	DAY	15

SL 368 (AUSTIN HWY) MATCHLINE I

N

0 25 50

SCALE: 1"=50'

NOTES

1. EXISTING STRIPING AND FLATWORK SHOWN ARE APPROXIMATE BASED OFF AERIAL IMAGERY.
2. EXISTING 4-IN BROKEN WHITE LANE LINE AND 4-IN SOLID WHITE SHOULDER STRIPING SHALL REMAIN IN PLACE FOR BOTH DIRECTIONS OF TRAFFIC. PROPOSED STRIPING AND MEDIAN WORK WILL BE CONSTRUCTED FROM THE EXISTING 4-IN BROKEN WHITE LANE LINE. MAINTAIN A MINIMUM 11-FT LANE ON BOTH INSIDE THRU LANES AND PROPOSED LEFT TURN LANES. VARY MEDIAN WIDTH TO MAINTAIN A MINIMUM 2-FT MEDIAN WIDTH FROM FACE-OF-CURB TO FACE-OF-CURB.
3. AT HOODED LEFT TURN LANES, A MINIMUM 1.5-FT MEDIAN WIDTH MUST BE PROVIDED. VARY LEFT-TURN LANE WIDTH BETWEEN MINIMUM 10' AND DESIRABLE 11' TO PROVIDE 1.5' MEDIANS AT HOODED LEFT TURNS.
4. REFER TO SIGNING AND STRIPING SHEETS FOR SIGNING AND PAVEMENT MARKING DETAILS.

STATE OF TEXAS
CHRIS STONG
128193
LICENSED PROFESSIONAL ENGINEER
5/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY)
MEDIAN LAYOUT

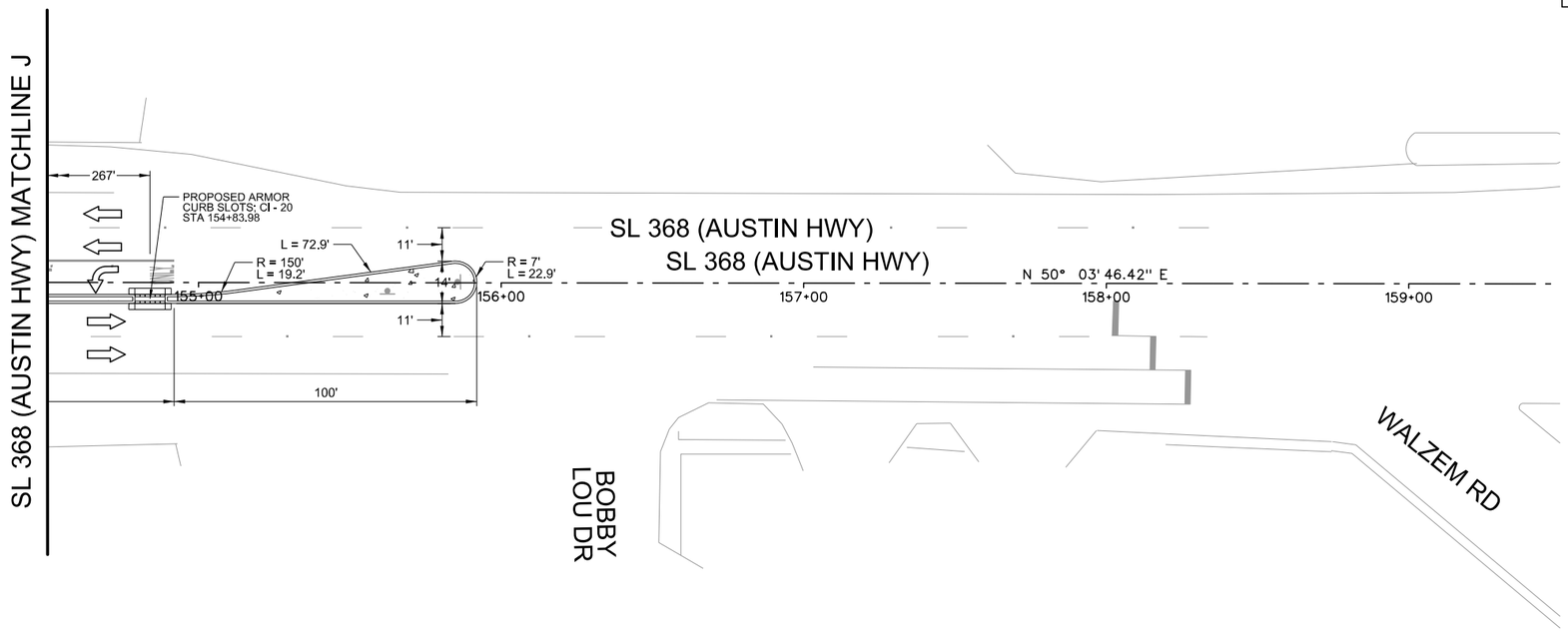
SHEET 5 OF 6

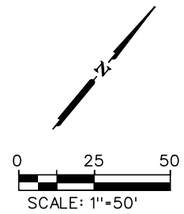
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		39
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:37:13
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_05.dgn

SL 368 (CSJ: 0016-08-043)

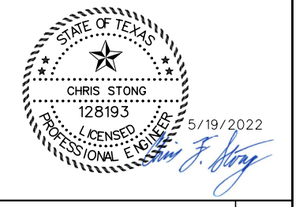
ESTIMATED QUANTITIES				
ITEM NO.	DESC. CO	DESCRIPTION	UNIT	QTY
354	6023	PLANE ASPH CONC PAV(0" TO 4")	SY	105
465	6338	INLET (COMPL)(ARMOR CURB SLOT)	EA	2
536	6002	CONC MEDIAN	SY	105
6185	6002	TMA (STATIONARY)	DAY	15





NOTES

1. EXISTING STRIPING AND FLATWORK SHOWN ARE APPROXIMATE BASED OFF AERIAL IMAGERY.
2. EXISTING 4-IN BROKEN WHITE LANE LINE AND 4-IN SOLID WHITE SHOULDER STRIPING SHALL REMAIN IN PLACE FOR BOTH DIRECTIONS OF TRAFFIC. PROPOSED STRIPING AND MEDIAN WORK WILL BE CONSTRUCTED FROM THE EXISTING 4-IN BROKEN WHITE LANE LINE. MAINTAIN A MINIMUM 11-FT LANE ON BOTH INSIDE THRU LANES AND PROPOSED LEFT TURN LANES. VARY MEDIAN WIDTH TO MAINTAIN A MINIMUM 2-FT MEDIAN WIDTH FROM FACE-OF-CURB TO FACE-OF-CURB.
3. AT HOODED LEFT TURN LANES, A MINIMUM 1.5-FT MEDIAN WIDTH MUST BE PROVIDED. VARY LEFT-TURN LANE WIDTH BETWEEN MINIMUM 10' AND DESIRABLE 11' TO PROVIDE 1.5' MEDIANS AT HOODED LEFT TURNS.
4. REFER TO SIGNING AND STRIPING SHEETS FOR SIGNING AND PAVEMENT MARKING DETAILS.



NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY)
MEDIAN LAYOUT

SHEET 6 OF 6

FED RD DIV. NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		40
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:37:15
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\X8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_06.dgn

PROPOSED SIGNS

R6-1R (36" x 12")

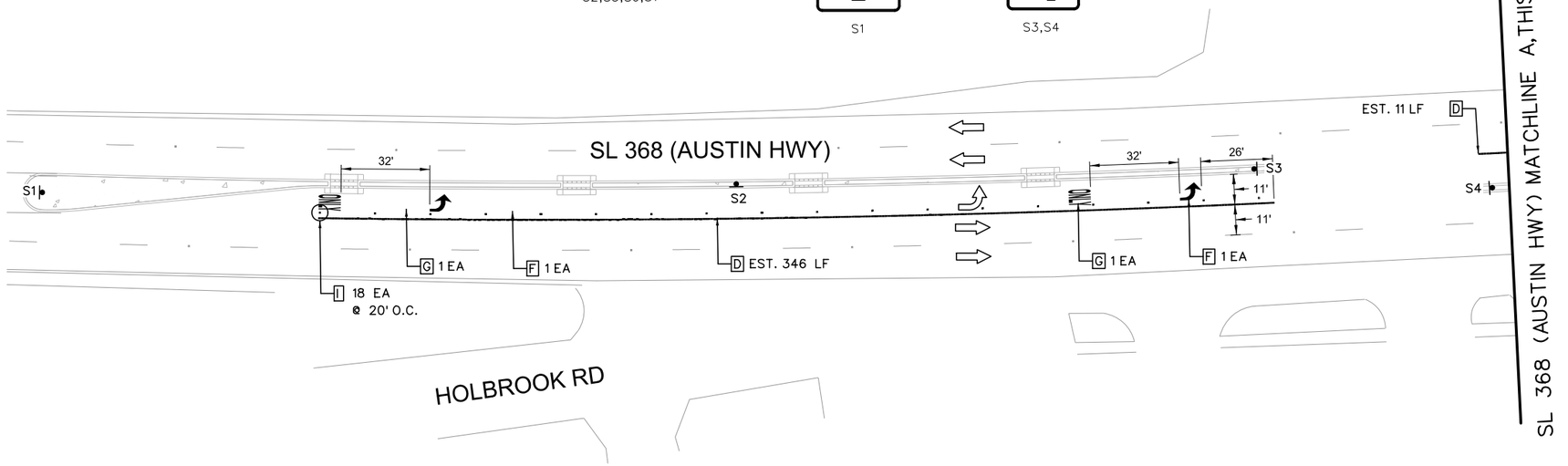
S2,S5,S6,S7

R4-7 (24" x 30")

S1

R4-7C (18" x 30")

S3,S4



	ESTIMATED QUANTITIES				
	ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
	644	6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	3
	644	6010	IN SM RD SN SUP&AM TY10BWG(1)SB(P-BM)	EA	3
D	666	6036	REFL PAV MRK TY I(W)8"(SLD)(100MIL)	LF	715
F	666	6054	REFL PAV MRK TY I(W)(ARROW)(100MIL)	EA	4
G	666	6078	REFL PAV MRK TY I(W)(WORD)(100MIL)	EA	4
	666	6226	PAVEMENT SEALER 8"	LF	715
	666	6231	PAVEMENT SEALER (ARROW)	EA	4
	666	6232	PAVEMENT SEALER (WORD)	EA	4
I	672	6010	REFL PAV MRKR TY II-C-R	EA	33
	677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	2385
	678	6004	PAV SURF PREP FOR MRK (8")	LF	715
	678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
	678	6016	PAV SURF PREP FOR MRK (WORD)	EA	4
	678	6033	PAV SURF PREP FOR MRK (RPM)	EA	33

LEGEND

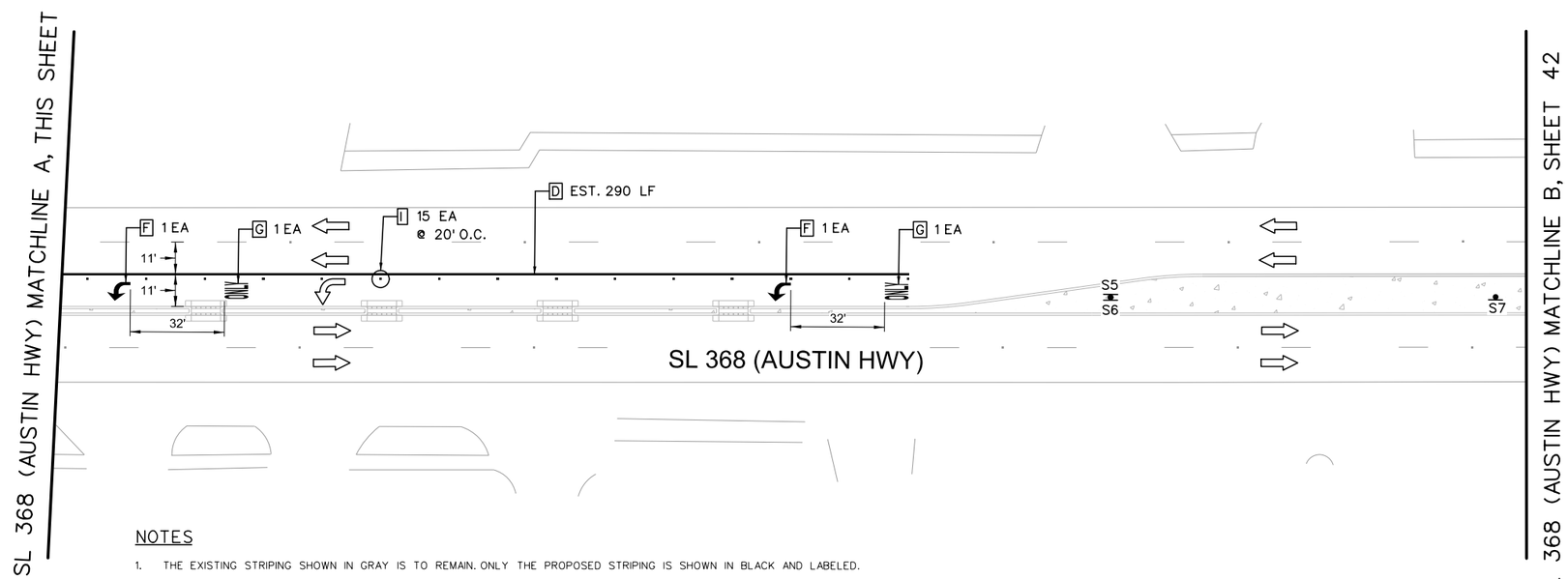
- PROP EDGE OF MEDIAN
- PROPOSED SIGN
- [X] PROPOSED PAVEMENT MARKING
- PAVEMENT MARKING ARROW
- DIRECTION OF TRAFFIC FLOW

N

0 25 50

SCALE: 1"=50'

SL 368 (CSJ: 0016-08-043)



NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED PAVEMENT MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY)
SIGNING & MARKING PLAN

SHEET 1 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		41
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

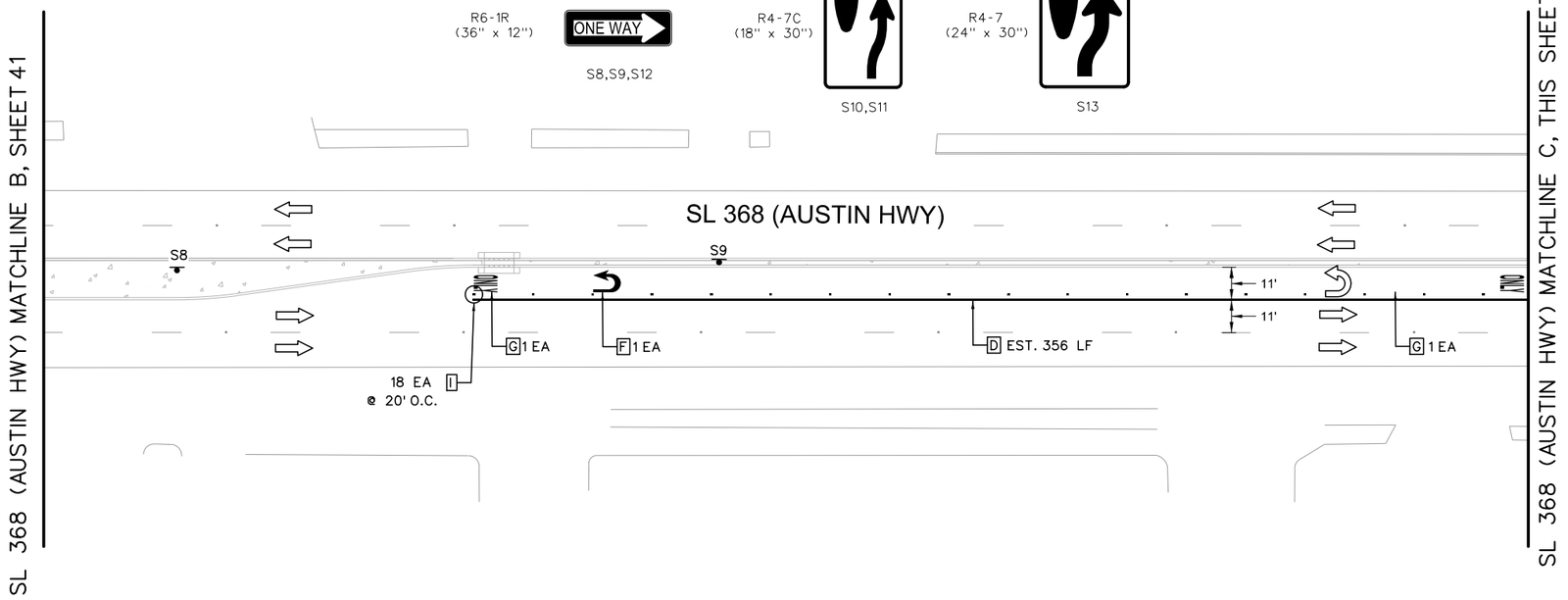
Justin.Kinne
4/19/2022 14:00:16
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_07a.dgn

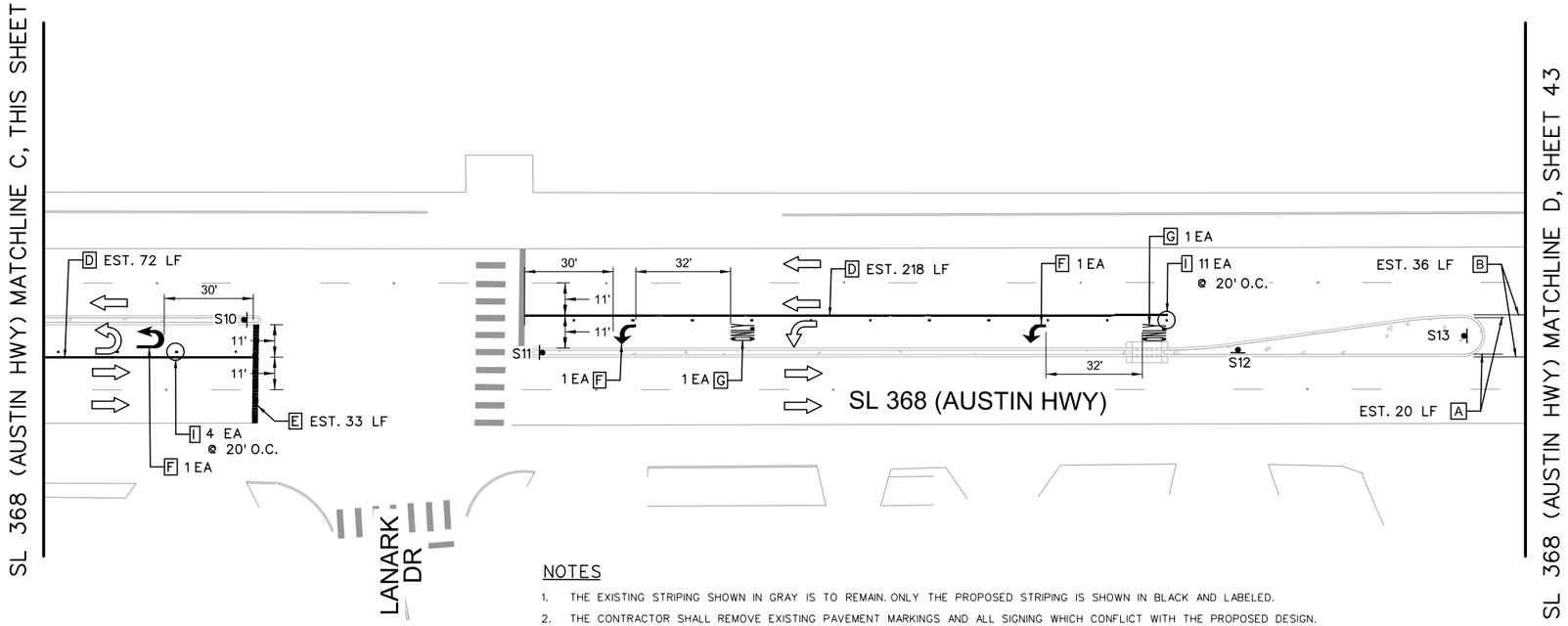
PROPOSED SIGNS

R6-1R (36" x 12") — ONE WAY — S8,S9,S12

R4-7C (18" x 30") — S10,S11

R4-7 (24" x 30") — S13





	ESTIMATED QUANTITIES				
	ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
	644	6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	3
	644	6010	IN SM RD SN SUP&AM TY10BWG(1)SB(P-BM)	EA	3
D	666	6036	REFL PAV MRK TY I(W)8"(SLD)(100MIL)	LF	715
E	666	6048	REFL PAV MRK TY I(W)24"(SLD)(100MIL)	LF	40
F	666	6054	REFL PAV MRK TY I(W)(ARROW)(100MIL)	EA	4
G	666	6078	REFL PAV MRK TY I(W)(WORD)(100MIL)	EA	4
	666	6224	PAVEMENT SEALER 4"	LF	65
	666	6226	PAVEMENT SEALER 8"	LF	715
	666	6230	PAVEMENT SEALER 24"	LF	40
	666	6231	PAVEMENT SEALER (ARROW)	EA	4
	666	6232	PAVEMENT SEALER (WORD)	EA	4
A	666	6312	RE PM W/RET REQ TY I(Y)4"(BRK)(100MIL)	LF	40
B	666	6315	RE PM W/RET REQ TY I(Y)4"(SLD)(100MIL)	LF	25
I	672	6010	REFL PAV MRKR TY II-C-R	EA	33
	677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	2275
	677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	95
	677	6020	ELIM EXT PAV MRK & MRKS (MED NOSE)	EA	1
	678	6001	PAV SURF PREP FOR MRK (4")	LF	65
	678	6004	PAV SURF PREP FOR MRK (8")	LF	715
	678	6008	PAV SURF PREP FOR MRK (24")	LF	40
	678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
	678	6016	PAV SURF PREP FOR MRK (WORD)	EA	4
	678	6033	PAV SURF PREP FOR MRK (RPM)	EA	33

LEGEND

- PROP EDGE OF MEDIAN
- PROPOSED SIGN
- X PROPOSED PAVEMENT MARKING
- PAVEMENT MARKING ARROW
- DIRECTION OF TRAFFIC FLOW

0 25 50

SCALE: 1"=50'

SL 368 (CSJ: 0016-08-043)

NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED PAVEMENT MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

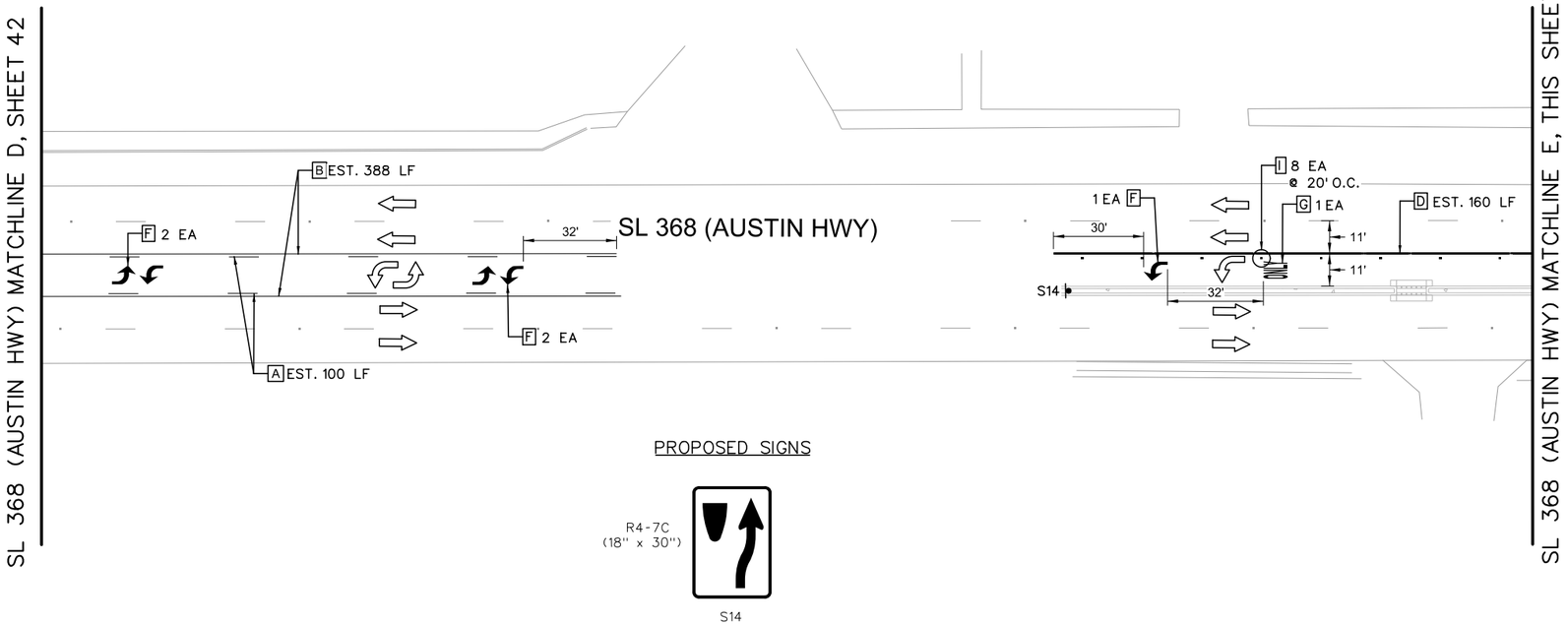
FY 2022 HSIP

SL 368 (AUSTIN HWY)
SIGNING & MARKING PLAN

SHEET 2 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		42
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

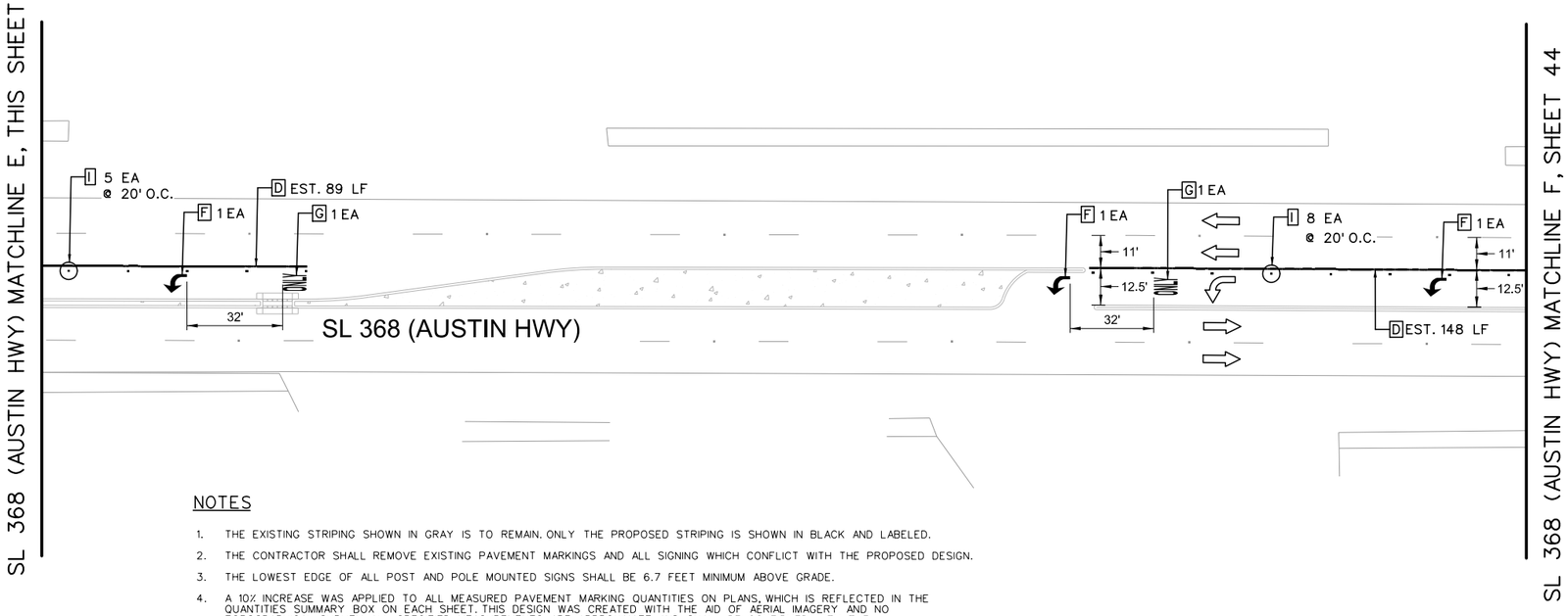
Justin.Kinne
4/19/2022 14:00:19
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_07b.dgn



PROPOSED SIGNS

R4-7C
(18" x 30")

S14



NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED PAVEMENT MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

ESTIMATED QUANTITIES

	ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
D	644	6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	1
F	666	6036	REFL PAV MRK TY I(W)8"(SLD)(100MIL)	LF	440
G	666	6054	REFL PAV MRK TY I(W)(ARROW)(100MIL)	EA	8
	666	6078	REFL PAV MRK TY I(W)(WORD)(100MIL)	EA	3
	666	6224	PAVEMENT SEALER 4"	LF	540
	666	6226	PAVEMENT SEALER 8"	LF	440
	666	6231	PAVEMENT SEALER (ARROW)	EA	8
A	666	6232	PAVEMENT SEALER (WORD)	EA	3
B	666	6312	RE PM W/RET REQ TY I(Y)4"(BRK)(100MIL)	LF	110
I	666	6315	RE PM W/RET REQ TY I(Y)4"(SLD)(100MIL)	LF	430
	672	6010	REFL PAV MRKR TY II-C-R	EA	21
	677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	2810
	677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	4
	678	6001	PAV SURF PREP FOR MRK (4")	LF	540
	678	6004	PAV SURF PREP FOR MRK (8")	LF	440
	678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	8
	678	6016	PAV SURF PREP FOR MRK (WORD)	EA	3
	678	6033	PAV SURF PREP FOR MRK (RPM)	EA	21

LEGEND

- PROP EDGE OF MEDIAN
- PROPOSED SIGN
- [X] PROPOSED PAVEMENT MARKING
- PAVEMENT MARKING ARROW
- DIRECTION OF TRAFFIC FLOW

N

0 25 50

SCALE: 1"=50'

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY)
SIGNING & MARKING PLAN

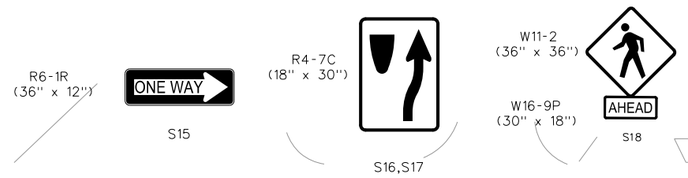
SHEET 3 OF 6

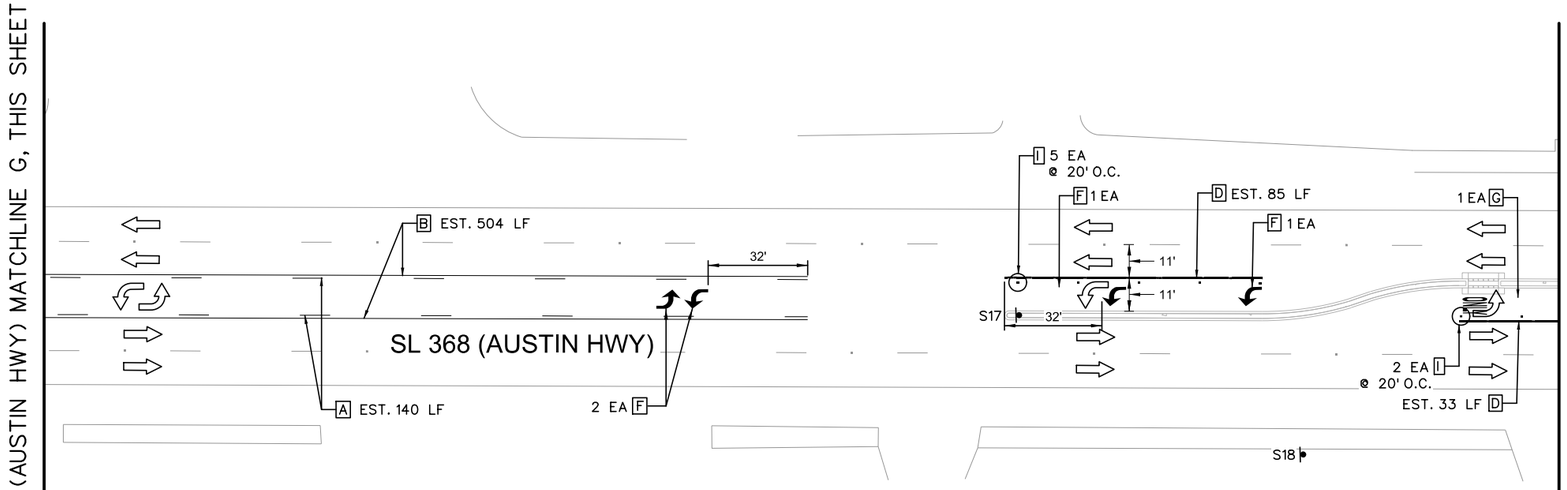
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		43
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:00:23
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_07c.dgn

SL 368 (CSJ: 0016-08-043)

PROPOSED SIGNS





	ESTIMATED QUANTITIES				
	ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
	644	6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	1
D	644	6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	2
F	644	6010	IN SM RD SN SUP&AM TY10BWG(1)SB(P-BM)	EA	1
G	666	6036	REFL PAV MRK TY I(W)8"(SLD)(100MIL)	LF	290
	666	6054	REFL PAV MRK TY I(W)(ARROW)(100MIL)	EA	8
	666	6078	REFL PAV MRK TY I(W)(WORD)(100MIL)	EA	1
	666	6224	PAVEMENT SEALER 4"	LF	1140
	666	6226	PAVEMENT SEALER 8"	LF	290
A	666	6231	PAVEMENT SEALER (ARROW)	EA	8
B	666	6232	PAVEMENT SEALER (WORD)	EA	1
I	666	6312	RE PM W/RET REQ TY I(Y)4"(BRK)(100MIL)	LF	900
	666	6315	RE PM W/RET REQ TY I(Y)4"(SLD)(100MIL)	LF	245
	672	6010	REFL PAV MRKR TY II-C-R	EA	13
	677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	2805
	677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	6
	678	6001	PAV SURF PREP FOR MRK (4")	LF	1140
	678	6004	PAV SURF PREP FOR MRK (8")	LF	290
	678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	8
	678	6016	PAV SURF PREP FOR MRK (WORD)	EA	1
	678	6033	PAV SURF PREP FOR MRK (RPM)	EA	13

NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED PAVEMENT MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

LEGEND

- PROP EDGE OF MEDIAN
- PROPOSED SIGN
- [X] PROPOSED PAVEMENT MARKING
- PAVEMENT MARKING ARROW
- DIRECTION OF TRAFFIC FLOW

N

0 25 50

SCALE: 1"=50'

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

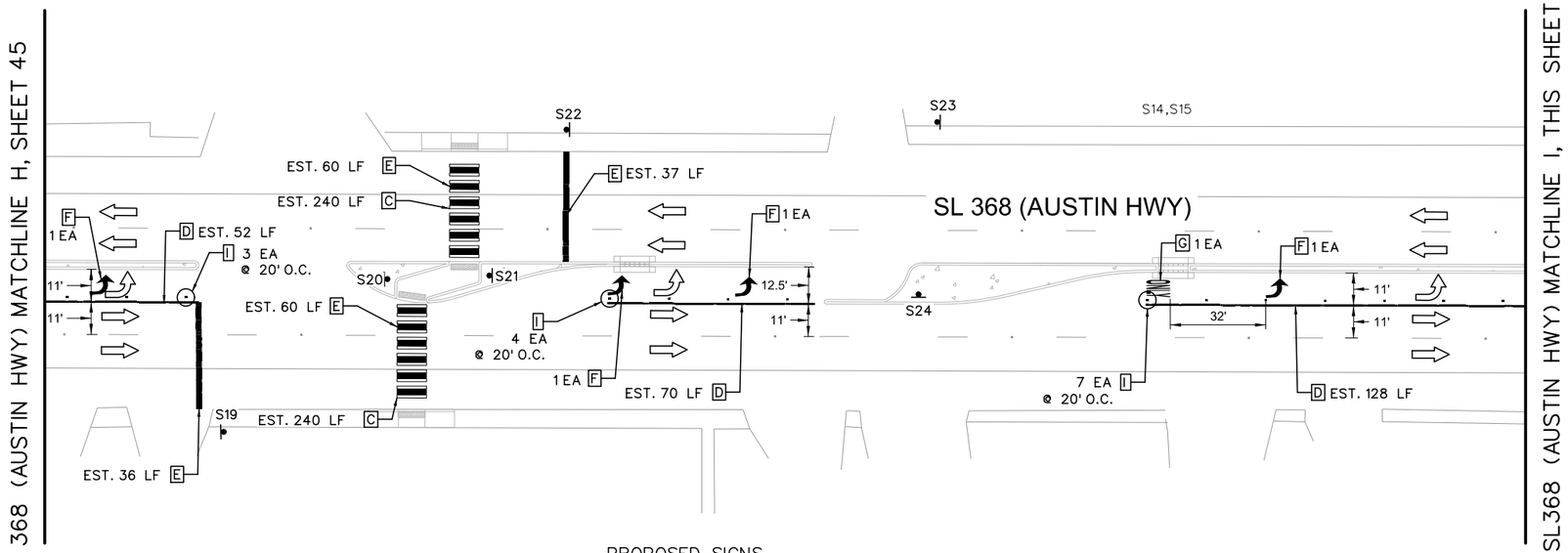
SL 368 (AUSTIN HWY) SIGNING & MARKING PLAN

SHEET 4 OF 6

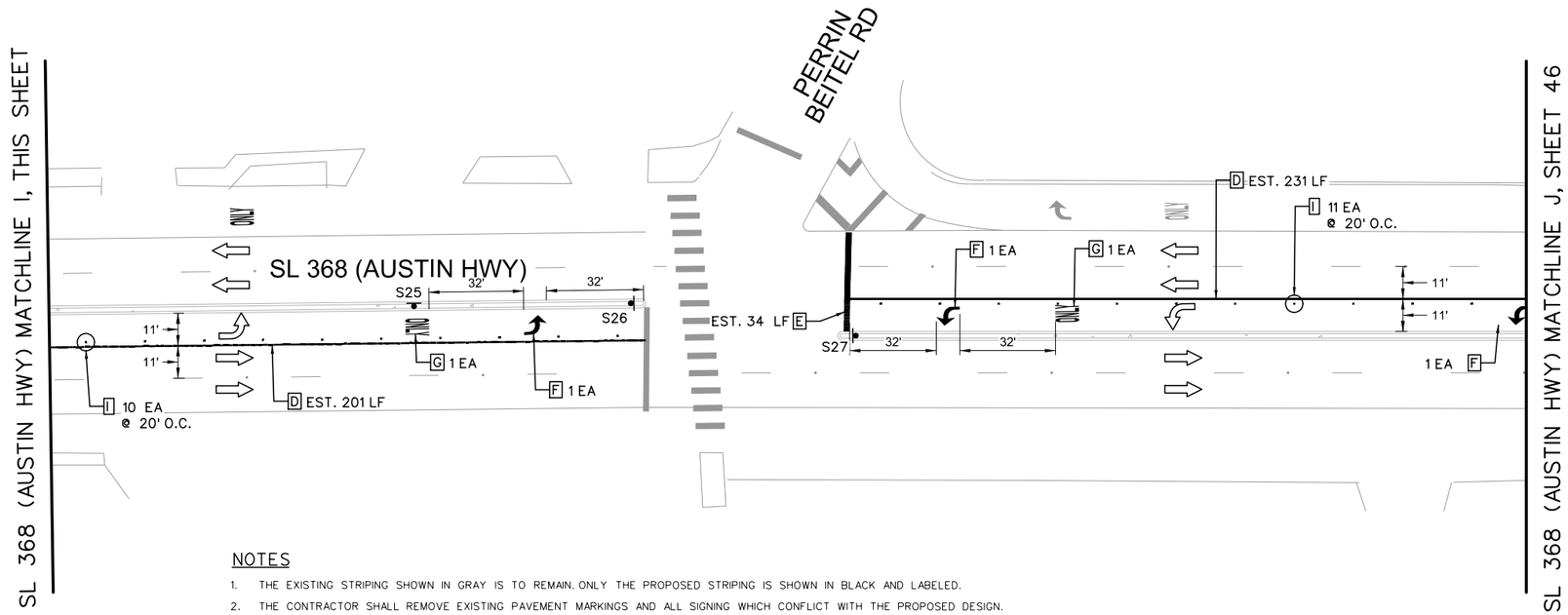
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		44
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:00:26
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_07d.dgn

SL 368 (CSJ: 0016-08-043)



PROPOSED SIGNS



NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED PAVEMENT MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

ESTIMATED QUANTITIES

	ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
	644	6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	5
	644	6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	2
D	644	6010	IN SM RD SN SUP&AM TY10BWG(1)SB(P-BM)	EA	2
E	666	6036	REFL PAV MRK TY I(W)8"(SLD)(100MIL)	LF	755
F	666	6048	REFL PAV MRK TY I(W)24"(SLD)(100MIL)	LF	120
G	666	6054	REFL PAV MRK TY I(W)(ARROW)(100MIL)	EA	7
C	666	6078	REFL PAV MRK TY I(W)(WORD)(100MIL)	EA	3
	666	6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	530
	666	6225	PAVEMENT SEALER 6"	LF	530
	666	6226	PAVEMENT SEALER 8"	LF	755
	666	6230	PAVEMENT SEALER 24"	LF	120
	666	6231	PAVEMENT SEALER (ARROW)	EA	7
I	666	6232	PAVEMENT SEALER (WORD)	EA	3
	672	6010	REFL PAV MRKR TY II-C-R	EA	35
	677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	2235
	677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	175
	677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	30
	677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	5
	677	6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	1
	677	6020	ELIM EXT PAV MRK & MRKS (MED NOSE)	EA	1
	678	6002	PAV SURF PREP FOR MRK (6")	LF	530
	678	6004	PAV SURF PREP FOR MRK (8")	LF	755
	678	6008	PAV SURF PREP FOR MRK (24")	LF	120
	678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	7
	678	6016	PAV SURF PREP FOR MRK (WORD)	EA	3
	678	6033	PAV SURF PREP FOR MRK (RPM)	EA	35

LEGEND

- PROP EDGE OF MEDIAN
- PROPOSED SIGN
- [X] PROPOSED PAVEMENT MARKING
- PAVEMENT MARKING ARROW
- DIRECTION OF TRAFFIC FLOW

N

0 25 50

SCALE: 1"=50'

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-9699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY)
SIGNING & MARKING PLAN

SHEET 5 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		45
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:00:29
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA *1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_07e.dgn

SL 368 (CSJ: 0016-08-043)

PROPOSED SIGNS

R6-1R (36" x 12")

S28

R4-7 (24" x 30")

S29

	ESTIMATED QUANTITIES				
	ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
	644	6010	IN SM RD SN SUP&AM TY10BWG(1)SB(P-BM)	EA	1
	666	6036	REFL PAV MRK TY I(W)8"(SLD)(100MIL)	LF	50
D	666	6078	REFL PAV MRK TY I(W)(WORD)(100MIL)	EA	1
G	666	6226	PAVEMENT SEALER 8"	LF	50
	666	6232	PAVEMENT SEALER (WORD)	EA	1
	672	6010	REFL PAV MRKR TY II-C-R	EA	3
I	677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	395
	678	6004	PAV SURF PREP FOR MRK (8")	LF	50
	678	6016	PAV SURF PREP FOR MRK (WORD)	EA	1
	678	6033	PAV SURF PREP FOR MRK (RPM)	EA	3

LEGEND

- PROP EDGE OF MEDIAN
- PROPOSED SIGN
- PROPOSED PAVEMENT MARKING
- PAVEMENT MARKING ARROW
- DIRECTION OF TRAFFIC FLOW

N

0 25 50

SCALE: 1"=50'

NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED PAVEMENT MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY) SIGNING & MARKING PLAN

SHEET 6 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		46
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 18:30:18
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_071.dgn

TPT 15
N= 13704723.58
E= 2158138.11
Z= 659.28
½ IR W/ RED BMB
CONTROL CAP

BM 1
N= 13704719.77
E= 2158136.28
Z= 659.14
3IN ALUM.DISK IN CURB INLET TEXAS
DEPARTMENT OF TRANSPORTATION
BENCH MARK1

POT 56+16.84

TEXAS BANK SUBDIVISION
VOL.9400, PG.204, D.P.R.B.C.T.

TPT 5
N= 13704576.86
E= 2158004.06
Z= 659.42
½ IR W/ RED BMB
CONTROL CAP

SL 13 (S. W.W. WHITE RD)
(112.5' R.O.W.)

FAMILY DOLLAR WW WHITE ROAD II
VOL.9679, PG.130, D.P.R.B.C.T.

POT 131+12.87

E. HOUSTON ST
(80' R.O.W.)

PC 132+20.74

PT 132+80.63

POT1 132+99.59

FM 1346 (E. HOUSTON ST)
(100' R.O.W.)

POT 135+23.41

56+00
55+00
132+00
133+00
134+00
135+00
54+00

CURVE CL_FM1346_3
PI 132+50.74
N 13,704,522.5013
E 2,158,009.2490
~ 8° 14' 47" (LT)
D 13° 46' 11"
R 416.10
Lc 59.89
T 30.00

EQUATION:
Sta 132+99.59 AH
Sta 133+32.24 BK

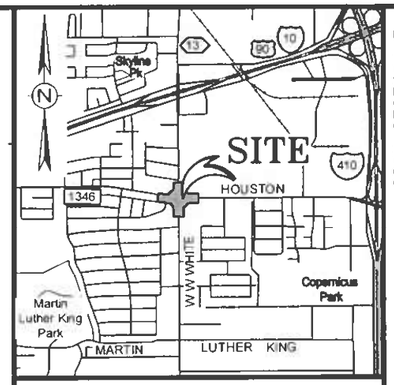
SL 13 (S. W.W. WHITE RD)
(105' R.O.W.)

53+00
52+00

TPT 10
N= 13704438.29
E= 2158149.22
Z= 659.30
½ IR W/ RED BMB
CONTROL CAP

EASTWOOD VILLAGE
VOL.4181, PG.164, D.P.R.B.C.T.

FIRST MATE SUBDIVISION, UNIT 1
VOL.6600, PG.51, D.P.R.B.C.T.



LOCATION MAP
N.T.S.

CSJ 0521-01-055

NOTES:

1. COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED SCALE FACTOR OF 1.00017.

2. ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 1988). VALUES WERE ESTABLISHED BY GPS OBSERVATION USING GEOID 12B.

NOT TO SCALE

LEGEND

⊗ BMB SURVEY CONTROL

⌖ BMB SURVEY BENCHMARK

STATE OF TEXAS
REGISTERED
GREGORIO LOPEZ JR.
5274
PROFESSIONAL
LAND SURVEYOR

Gregorio Lopez Jr.
4/19/2022

THE SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PLAN SPECIFICATION AND ESTIMATE

BAIN MEDINA BAIN
ENGINEERS & SURVEYORS

TEXAS DEPARTMENT OF TRANSPORTATION

SL 13 (S WW WHITE RD) AT
FM 1346 (E HOUSTON ST)
BEXAR COUNTY
HORIZONTAL & VERTICAL CONTROL

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
	SEE TITLE SHEET		47
STATE	DISTRICT	COUNTY	
TEXAS	6	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY NO.
0016	08	043, ETC	SL368, ETC

403 WW WHITE, LLC
VOL.15309, PG.2339, O.P.R.B.C.T.
LOT 18, BLOCK 4
N.C.B. 10673

TEXAS BANK SUBDIVISION
VOL.9400, PG.204, D.P.R.B.C.T.

25' BUILDING SETBACK LINE
VOL.9400, PG.204, D.P.R.B.C.T.

14' OVERHANG ELECTRIC EASEMENT AT 18' HIGH
VOL.9400, PG.204, D.P.R.B.C.T.

W. W. WHITE ROAD

SECOND PARTY ACCESS EASEMENT (0.0670 AC.)
VOL.16876, PG.1175, O.P.R.B.C.T.

8' X 19' WATER EASEMENT
VOL.9679, PG.130, D.P.R.B.C.T.

FIRST PARTY ACCESS EASEMENT (0.0523 AC.)
VOL.16876, PG.1175 O.P.R.B.C.T.

ASPRI INVESTMENTS, LLC
VOL.17590, PG.1371, O.P.R.B.C.T.
LOT 85
(1.039 AC.)
N.C.B. 10614

FAMILY DOLLAR WW WHITE ROAD II
VOL.9679, PG.130, D.P.R.B.C.T.

20' PIPELINE RIGHT-OF-WAY
VOL.2447, PG.192 & VOL.3739, PG.565, O.P.R.B.C.T.

14' ELECTRIC, GAS, TELEPHONE AND CABLE TV EASEMENT
VOL.9539, PG.25, D.P.R.B.C.T.

1' X 155' VEHICULAR NON-ACCESS EASEMENT
VOL.9679, PG.130, D.P.R.B.C.T.

E. HOUSTON STREET

ELECTRIC DIP
ATT DIP
ZAYO FOC DIP
TH#1
ELECTRIC DIP
TH#2
NO TONE-ELECTRIC DIP
LOST TONE-STORM DRAIN
LOST TONE-ATT T-DUCT
LOST TONE-ATT FOC
ELECTRIC DIP
ATT DIP
LOST TONE-STORM DRAIN
TH#11A
TH#9
TH#7
TH#4
TH#5
TH#8
TH#10
TH#11

WW1 (D)
SD1 (D)
FOC3 (D)
W1 (D)
PL1 (D)
FOC1 (D)
FOC4 (D)
FOC5 (D)

LOT 2
LOT 3
LOT 1

GCA INVESTMENTS, CORP.
LOT 2 AND A PORTION OF LOT 3
DOC. NO. 20190237036, O.P.R.B.C.T.

35' DRAINAGE EASEMENT
VOL.4181, PG.164, D.P.R.B.C.T.

JAE GEUM KIM
LOT 1 AND THE
SOUTHEAST PORTION OF LOT 3
VOL.10197, PG.2386, O.P.R.R.P.B.C.T.

BLOCK 30

FIRST BERKE PORTFOLIO, L.P.
VOL.7836, PG.2090, O.P.R.R.P.B.C.T.
LOT 63
(0.733 AC.)
N.C.B. 10615

FIRST MATE SUBDIVISION, UNIT 1
VOL.6600, PG.51, D.P.R.B.C.T.

35' BUILDING SETBACK LINE
VOL.6600, PG.51, D.P.R.B.C.T.

30' BUILDING SETBACK LINE
VOL.6600, PG.51, D.P.R.B.C.T.

N

0 25 50

LEGEND

ELECTRIC	E1
ATT FIBER OPTIC	FOC1
UNITE FIBER OPTIC	FOC2
ZAYO FIBER OPTIC	FOC3
CENTURYLINK FIBER OPTIC	FOC4
AT&T T-DUCT	T-DUCT1
CPS GAS	G1
SINCLAIR PIPELINE	PL1
WASTE WATER	WW1
STORM SEWER	SD1
WATER	W1

- OUT OF SCOPE
- FIBER OPTIC HANDHOLE
- TELEPHONE MANHOLE
- STORM SEWER MANHOLE
- WASTE WATER MANHOLE
- TRAFFIC SIGNAL LIGHT
- WATER VALVE
- FIRE HYDRANT
- GAS VALVE
- GAS VENT
- POWER POLE
- ELECTRIC HANDHOLE

QUALITY LEVEL LEGEND

- WW1 — QUALITY LEVEL "B"
- WW1 (D) — QUALITY LEVEL "D"
- WW1 (C) — QUALITY LEVEL "C"
- WW1 — QUALITY LEVEL "A"

TYPICAL FOR ALL UTILITIES

Quality Level "D":

Information derived from existing records and/or oral recollections,

Quality Level "C":

Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to quality level D information.

Quality Level "B":

Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities (aka Designating).

Quality Level "A":

Precise horizontal and vertical location of utilities obtained by the actual exposure and subsequent measurement of subsurface utilities, usually at a specific point(aka Locating).

STATE OF TEXAS
AIMEE R. TRAWICK
126400
LICENSED PROFESSIONAL ENGINEER

3/3/2022

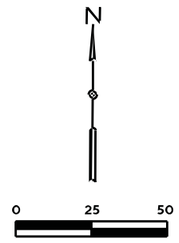
LINA T. RAMEY & ASSOCIATES, INC.
3320 BELT LINE ROAD
FARMERS BRANCH, Texas 75234
(214)979-1144
Fax (214)979-2480
TBPE FIRM #782

EXISTING SUBSURFACE UTILITY MAP

STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	SAT	BEXAR	48
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043, ETC	SL368, ETC

FILE:N:*CADD*PROJECTS*SUE\SAT*Traffic*Intersections*SUE\DGN\SHEETS\SAT*UL*001.dgn
DATE:3/3/2022 TIME:11:34:25 AM USER:jmartinez

TH NO.	ANTICIPATED UTILITY/OWNER	TYPE	SIZE/MATERIAL	Street	STATION (CL FM 1346)	OFFSET	DATE COMPLETED	DEPTH OF COVER (FT)
1	CPS	Gas Main	16" STEEL (PER REP)	E. Houston St. & WW White Rd.	TBD	TBD	01/11/22	6.04'
2	SAWS	Abandoned Water (Per records)	6" CAST IRON	E. Houston St. & WW White Rd.	TBD	TBD	01/18/22	5.07'
4	CPS	Gas Main	8" STEEL	E. Houston St. & WW White Rd.	TBD	TBD	01/12/22	4.07'
5	SAWS	Water	14" ASBESTOS CONCRETE	E. Houston St. & WW White Rd.	TBD	TBD	01/12/22	2.64'
7	CPS	Gas Main	8" STEEL	E. Houston St. & WW White Rd.	TBD	TBD	01/11/22	3.67'
8	SAWS	Water	14" ASBESTOS CONCRETE	E. Houston St. & WW White Rd.	TBD	TBD	01/12/22	3.74'
9	CPS	Gas Main	4" STEEL	E. Houston St. & WW White Rd.	TBD	TBD	01/11/22	4.47'
10	SAWS	Water	8" DUCTILE IRON	E. Houston St. & WW White Rd.	TBD	TBD	01/17/22	4.86'
11	TBD	Storm Drain	24" CONCRETE (PER REP)	E. Houston St. & WW White Rd.	TBD	TBD	01/17/22	7.72'
11A	TBD	Storm Drain	10' X 8' CONCRETE BOX (PER REP)	E. Houston St. & WW White Rd.	TBD	TBD	01/12/22	5.99'



LEGEND

ELECTRIC — E1
ATT FIBER OPTIC — FOC1
UNITE FIBER OPTIC — FOC2
ZAYO FIBER OPTIC — FOC3
CENTURYLINK FIBER OPTIC — FOC4
AT&T T-DUCT — T-DUCT1
CPS GAS — G1
SINCLAIR PIPELINE — PL1
WASTE WATER — WW1
STORM SEWER — SD1
WATER — W1

- OUT OF SCOPE
- FIBER OPTIC HANDHOLE
- TELEPHONE MANHOLE
- STORM SEWER MANHOLE
- WASTE WATER MANHOLE
- TRAFFIC SIGNAL LIGHT
- WATER VALVE
- FIRE HYDRANT
- GAS VALVE
- GAS VENT
- POWER POLE
- ELECTRIC HANDHOLE

QUALITY LEVEL LEGEND

- WW1 — QUALITY LEVEL "B"
- WW1 (D) — QUALITY LEVEL "D"
- WW1 (C) — QUALITY LEVEL "C"
- WW1 — QUALITY LEVEL "A"

TYPICAL FOR ALL UTILITIES

Quality Level "D":

Information derived from existing records and/or oral recollections.

Quality Level "C":

Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to quality level D information.

Quality Level "B":

Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities (aka Designating).

Quality Level "A":

Precise horizontal and vertical location of utilities obtained by the actual exposure and subsequent measurement of subsurface utilities, usually at a specific point (aka Locating).

3/3/2022

LINA T. RAMEY & ASSOCIATES, INC.
3320 BELT LINE ROAD
FARMERS BRANCH, Texas 75234
(214)979-1144
Fax (214)979-2480
TBPE FIRM #782

TEST HOLE SUMMARY

STATE	DISTRICT	COUNTY	SHEET NO.
TEXAS	SAT	BEXAR	49
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043, ETC	SL368, ETC

FILE:$FILE$
DATE:$DATE$
TIME:$TIME$
USER:$USER$

CSJ 0521-01-055

EXIST. DESIGN BASE LINE (℄ OR DBL)

Beginning chain CL_HOUSTONST description
Feature: Geom_Centerline

Point DRG18 N 13,704,542.19 E 2,157,872.79 Sta 131+13

Course from DRG18 to PC CL_HOUSTONST_3 S 81° 47′ 16.59" E Dist 107.87

Curve Data

Curve CL_HOUSTONST_3
P.I. Station 132+51 N 13,704,522.50 E 2,158,009.25
Delta = 8° 14′ 46.78" (LT)
Degree = 13° 46′ 10.97"
Tangent = 30.00
Length = 59.89
Radius = 416.10
External = 1.08
Long Chord = 59.84
Mid. Ord. = 1.08
P.C. Station 132+21 N 13,704,526.79 E 2,157,979.56
P.T. Station 132+81 N 13,704,522.52 E 2,158,039.24
C.C. N 13,704,938.62 E 2,158,039.00
Back = S 81° 47′ 16.59" E
Ahead = N 89° 57′ 56.63" E
Chord Bear = S 85° 54′ 39.98" E

Course from PT CL_HOUSTONST_3 to PC STAEQU2 N 89°57′ 56.63" E Dist 51.61

End Region 1

Equation: Sta 133+32 (BK) = Sta 133+00 (AH)

Begin Region 2

Point STAEQU2 N 13,704,522.55 E 2,158,090.86 Sta 133+00

Course from STAEQU2 to DRG19 N 89°57′ 56.63" E Dist 223.82

Point DRG19 N 13,704,522.68 E 2,158,314.67 Sta 135+23

Ending chain CL_HOUSTONST description

Beginning chain CL_WWWHITERD description
Feature: Geom_Centerline

Point DRG16 N 13,704,268.27 E 2,158, 82.06 Sta 51+54

Course from DRG16 to DRG17 N 0° 16′ 15.15" W Dist 463.26

Point DRG17 N 13,704,731.52 E 2,158,089.87 Sta 56+17

Ending chain CL_WWHITERD description

STATE OF TEXAS
CARLOS J. PIZARRO-PAGAN
129809
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

Texas Department of Transportation

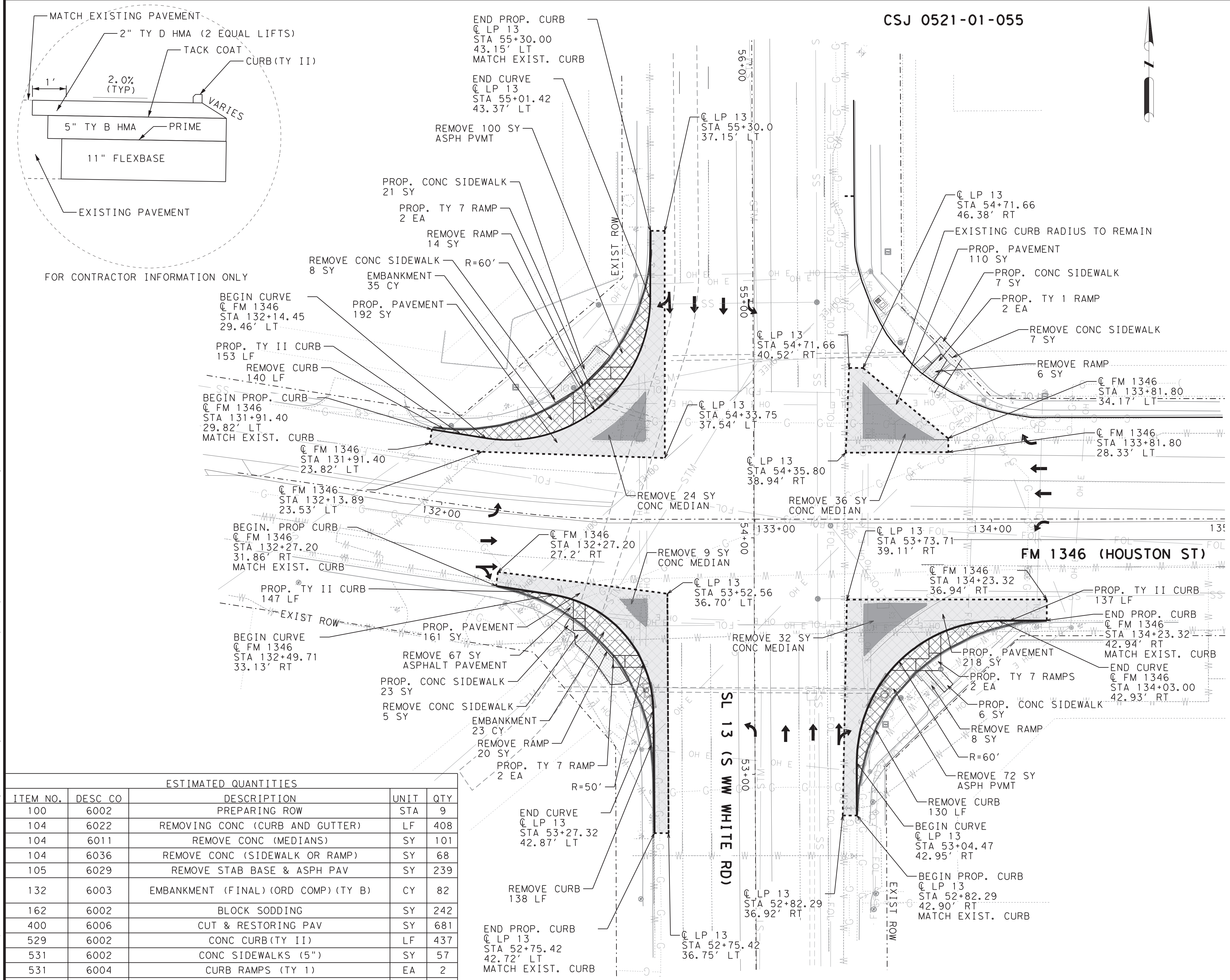
SL 13 AT FM 1346

HORIZONTAL ALIGNMENT DATA

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		50
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D1903647X.04

CSJ 0521-01-055


MATCH EXISTING PAVEMENT
2" TY D HMA (2 EQUAL LIFTS)
TACK COAT
CURB(TY II)
1'
2.0% (TYP)
VARIES
5" TY B HMA
PRIME
11" FLEXBASE
EXISTING PAVEMENT
FOR CONTRACTOR INFORMATION ONLY
END PROP. CURB ℄ LP 13 STA 55+30.00 43.15' LT MATCH EXIST. CURB
END CURVE ℄ LP 13 STA 55+01.42 43.37' LT
REMOVE 100 SY ASPH PVMT
℄ LP 13 STA 55+30.0 37.15' LT
PROP. CONC SIDEWALK 21 SY
PROP. TY 7 RAMP 2 EA
REMOVE RAMP 14 SY
REMOVE CONC SIDEWALK 8 SY
R=60'
EMBANKMENT 35 CY
BEGIN CURVE ℄ FM 1346 STA 132+14.45 29.46' LT
PROP. PAVEMENT 192 SY
PROP. TY II CURB 153 LF
REMOVE CURB 140 LF
BEGIN PROP. CURB ℄ FM 1346 STA 131+91.40 29.82' LT MATCH EXIST. CURB
℄ FM 1346 STA 131+91.40 23.82' LT
℄ FM 1346 STA 132+13.89 23.53' LT
EXIST ROW
℄ LP 13 STA 54+33.75 37.54' LT
REMOVE 24 SY CONC MEDIAN
℄ LP 13 STA 54+71.66 40.52' RT
℄ LP 13 STA 54+35.80 38.94' RT
REMOVE 36 SY CONC MEDIAN
℄ LP 13 STA 54+71.66 46.38' RT
EXISTING CURB RADIUS TO REMAIN
PROP. PAVEMENT 110 SY
PROP. CONC SIDEWALK 7 SY
PROP. TY 1 RAMP 2 EA
REMOVE CONC SIDEWALK 7 SY
REMOVE RAMP 6 SY
℄ FM 1346 STA 133+81.80 34.17' LT
℄ FM 1346 STA 133+81.80 28.33' LT
132+00
133+00
134+00
55+00
54+00
53+00
56+00
FM 1346 (HOUSTON ST)
BEGIN. PROP CURB ℄ FM 1346 STA 132+27.20 31.86' RT MATCH EXIST. CURB
℄ FM 1346 STA 132+27.20 27.2' RT
REMOVE 9 SY CONC MEDIAN
℄ LP 13 STA 53+73.71 39.11' RT
℄ FM 1346 STA 134+23.32 36.94' RT
PROP. TY II CURB 147 LF
℄ LP 13 STA 53+52.56 36.70' LT
EXIST ROW
BEGIN CURVE ℄ FM 1346 STA 132+49.71 33.13' RT
PROP. PAVEMENT 161 SY
REMOVE 67 SY ASPHALT PAVEMENT
REMOVE 32 SY CONC MEDIAN
PROP. TY II CURB 137 LF
END PROP. CURB ℄ FM 1346 STA 134+23.32 42.94' RT MATCH EXIST. CURB
PROP. PAVEMENT 218 SY
END CURVE ℄ FM 1346 STA 134+03.00 42.93' RT
PROP. CONC SIDEWALK 23 SY
PROP. TY 7 RAMPS 2 EA
REMOVE CONC SIDEWALK 5 SY
PROP. CONC SIDEWALK 6 SY
EMBANKMENT 23 CY
REMOVE RAMP 8 SY
REMOVE RAMP 20 SY
R=60'
PROP. TY 7 RAMP 2 EA
REMOVE 72 SY ASPH PVMT
R=50'
REMOVE CURB 130 LF
SL 13 (S WW WHITE RD)
END CURVE ℄ LP 13 STA 53+27.32 42.87' LT
BEGIN CURVE ℄ LP 13 STA 53+04.47 42.95' RT
REMOVE CURB 138 LF
BEGIN PROP. CURB ℄ LP 13 STA 52+82.29 42.90' RT MATCH EXIST. CURB
℄ LP 13 STA 52+82.29 36.92' RT
END PROP. CURB ℄ LP 13 STA 52+75.42 42.72' LT MATCH EXIST. CURB
℄ LP 13 STA 52+75.42 36.75' LT

ESTIMATED QUANTITIES

ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
100	6002	PREPARING ROW	STA	9
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	408
104	6011	REMOVE CONC (MEDIANS)	SY	101
104	6036	REMOVE CONC (SIDEWALK OR RAMP)	SY	68
105	6029	REMOVE STAB BASE & ASPH PAV	SY	239
132	6003	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	82
162	6002	BLOCK SODDING	SY	242
400	6006	CUT & RESTORING PAV	SY	681
529	6002	CONC CURB(TY II)	LF	437
531	6002	CONC SIDEWALKS (5")	SY	57
531	6004	CURB RAMPS (TY 1)	EA	2
531	6010	CURB RAMPS (TY 7)	EA	6

LEGEND

- EXIST ROW
- EXIST TOPO
- PAVEMENT REMOVAL
- PAVEMENT REPLACEMENT
- CONC MEDIAN REMOVAL
- DIRECTION OF TRAVEL FLOW

NOTES:

1. EXISTING UTILITIES SHOWN ARE APPROXIMATE AND ARE BASED ON BEST AVAILABLE DATA. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, TYPE AND ELEVATION OF ALL UTILITIES SHOWN AND NOT SHOWN PRIOR TO CONSTRUCTION.
2. SEE EXISTING SUBSURFACE UTILITY MAP FOR ADDITIONAL UTILITY INFORMATION.
3. CONTRACTOR MUST TAKE ALL STEPS NECESSARY TO PROTECT UTILITIES DURING CONSTRUCTION.
4. STATION/OFFSET/ELEVATION CALLOUTS ARE TO FOC.

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
CARLOS J. PIZARRO-PAGAN
129809
LICENSED
PROFESSIONAL ENGINEER

4/20/2022

NO.	DATE	REVISION	APPROV.

CONSOR

F-12040

©2022

Texas Department of Transportation

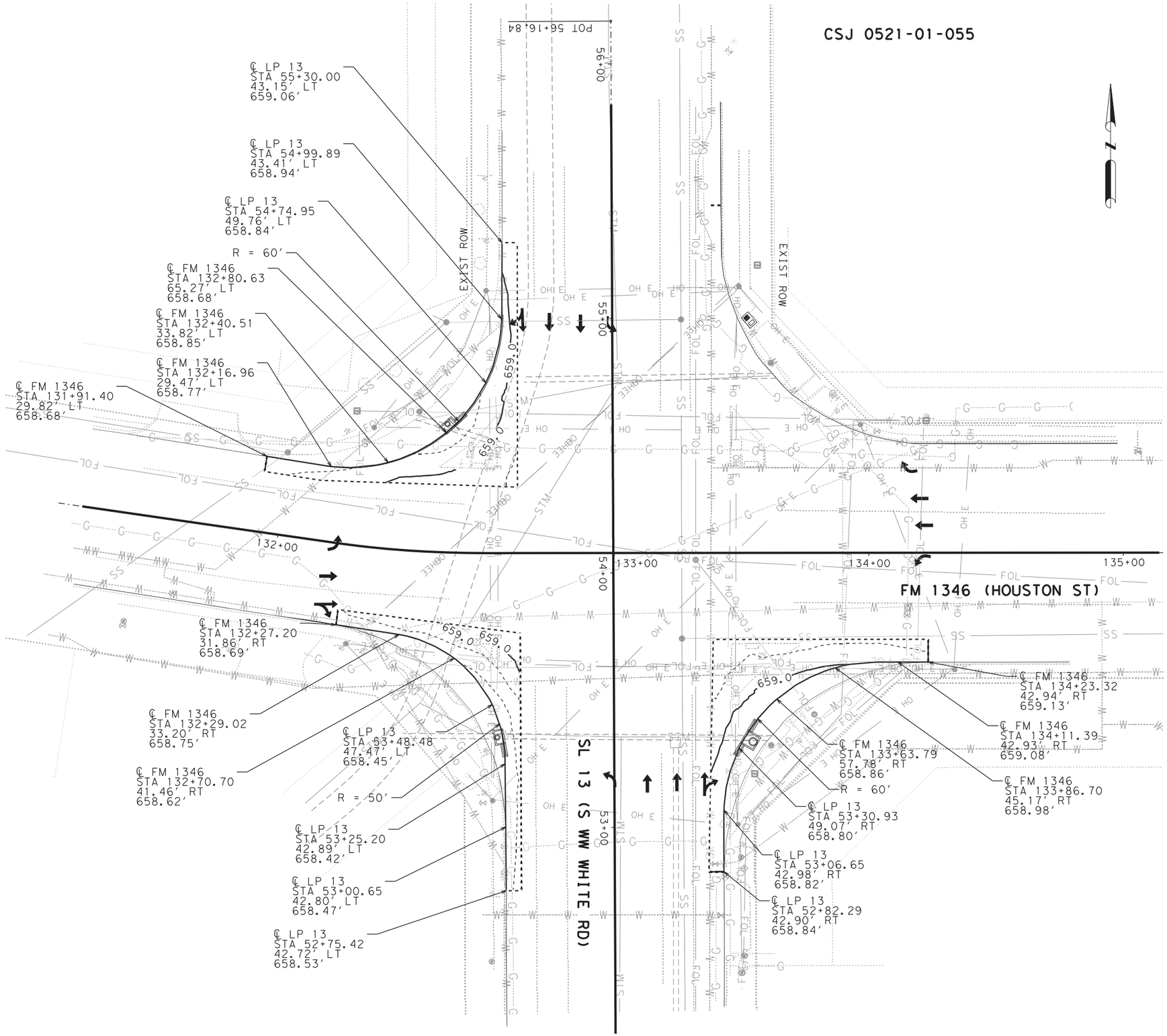
SL 13 AT FM 1346

ROADWAY PLAN AND REMOVAL

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		51
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043, ETC	SL 368, ETC

12:00:03 PM
4/20/2022
P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\03 roadway\C_HOUSTON ST_WW WHITE BLVD_P_PLN01.dgn
PENTABLE: $PENTBLS$
PLOTDRIVER: pdfV8.plt
D190364TX.04

CSJ 0521-01-055



LEGEND

- DIRECTION OF TRAVEL FLOW
- —XXX— MAJOR CONTOURS
- ------- MINOR CONTOURS

NOTE:

1. STATION/OFFSET/ELEVATION CALLOUTS ARE TO FOC.

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
CARLOS J. PIZARRO-PAGAN
129809
LICENSED
PROFESSIONAL ENGINEER

4/20/2022

NO.	DATE	REVISION	APPROV.

CONSOR

F-12040

Texas Department of Transportation

SL 13 AT FM 1346

INTERSECTION LAYOUT

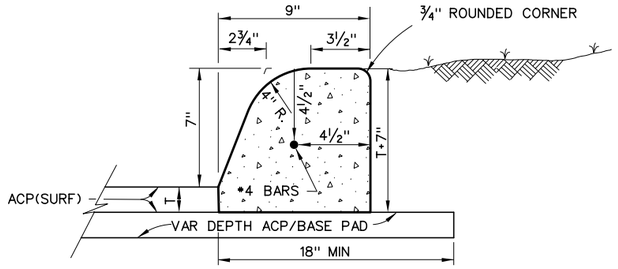
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		52
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D1903647X.04

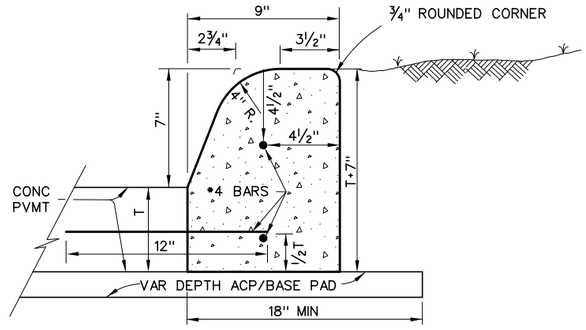
PLOTDRIVER: pdfv8.plt
PENTABLE: $PENTBL$$

8:28:50 AM
4/20/2022
P:_V-TPD\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\03 roadway\C_LP13_S_RIL01.dgn

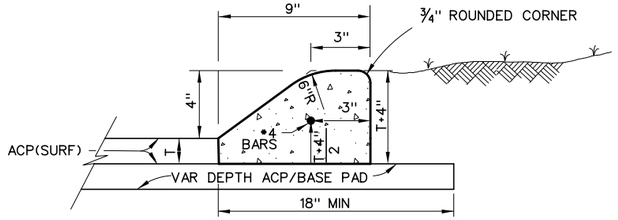
4/20/2022 8:28:49AM PD P:\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\03 roadway\C_LP13_S_RIL01.dgn



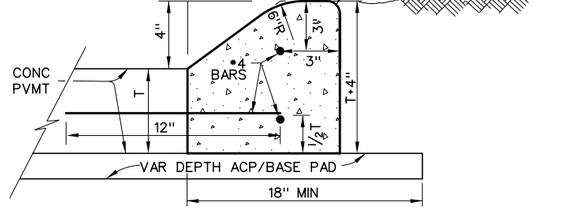
CONCRETE CURB (TYPE 1)
W/ ACP



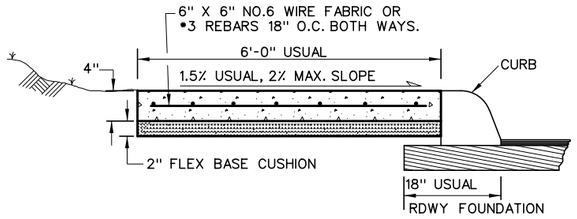
CONCRETE CURB (TYPE 1)
W/ CONC PAVEMENT



CONCRETE CURB (TYPE 2)
W/ ACP

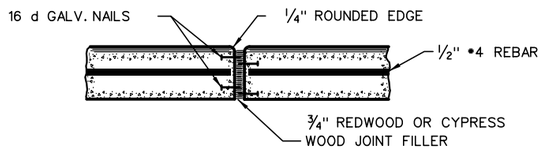


CONCRETE CURB (TYPE 2)
W/ CONC PAVEMENT



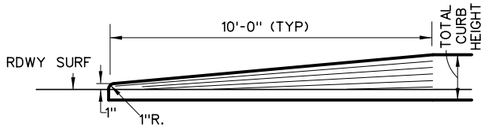
TYPICAL SIDEWALK SECTION

GROOVED JOINTS IN THE SIDE WALK SHALL BE AT A MAX. SPACING OF 10 FT. AND SHALL HAVE ¾" EXPANSION JOINTS AT A MAX. SPACING OF 60' AND TO COINSIDE WITH THE CURB EXP. JOINTS.



TYPICAL CURB EXPANSION JOINT DETAIL

EXPANSION JOINTS TO BE PLACED AT BEGINNING AND END OF CURVES, DRIVEWAYS WHEELCHAIR RAMPS, INLETS, ILLUMINATION/ SIGNAL FOUNDATIONS AND OTHER FIXED OBJECTS.

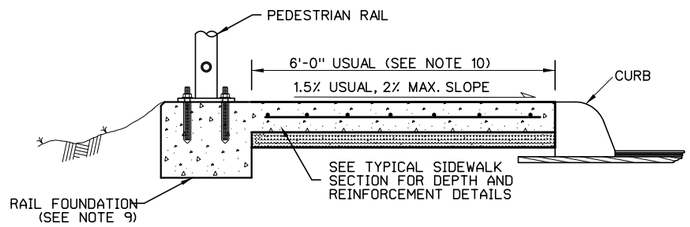


TRANSITION FOR CONCRETE CURB ENDS

SEE CURB DETAIL FOR REINFORCEMENT

GENERAL NOTES:

1. CONCRETE CURB TYPE 1 AND 2 SHOWN SHALL MEET THE MINIMUM SPECIFICATION REQUIREMENTS OF CLASS "A" CONCRETE PER ITEM 529 AND 421.
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. WHERE CONCRETE CURB IS PLACED ON EXISTING CONCRETE PAVEMENT, THE PAVEMENT SHALL BE DRILLED AND THE REINFORCING BARS GROUTED IN PLACE.
4. EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED TO MATCH PAVEMENT JOINTS IN ALL CURBS AND CURB AND GUTTER ADJACENT TO JOINTED CONCRETE PAVEMENT. WHERE PLACEMENT OF CURB OR CURB AND GUTTER IS NOT ADJACENT TO CONCRETE PAVEMENT, EXPANSION JOINTS SHALL BE PROVIDED AT STRUCTURES, CURB RETURNS AT STREETS, AND AT LOCATIONS DIRECTED BY THE ENGINEER..
5. VERTICAL AND HORIZONTAL DOWEL BARS AND TRANSVERSE REINFORCING BARS SHALL BE PLACED AT 4 FEET C-C, UNLESS OTHERWISE SHOWN.
6. ONE-HALF INCH EXPANSION JOINT MATERIAL SHALL BE PROVIDED WHERE CURB OR CURB AND GUTTER IS ADJACENT TO SIDEWALK OR RIPRAP. THIS IS SUBSIDIARY TO THE CURB, ITEM 529.
7. LAYDOWN CURB AT DRIVEWAYS WILL BE PAID AS SUBSIDIARY TO ITEM 530.
8. FOR SIDEWALK DETAILS AT DRIVEWAYS, SEE SAN ANTONIO DISTRICT STANDARD "DRIVEWAY DETAILS".
9. SEE PEDESTRIAN HANDRAIL DETAILS STANDARD "PRD" FOR MORE INFORMATION. CONCRETE RAIL FOUNDATION TO BE POURED WITH THE SIDEWALK BUT PAYMENT IS SUBSIDIARY TO ITEM 450 "RAILING".
10. CLEAR SIDEWALK WIDTH EXCLUDING THE PEDESTRIAN RAIL FOUNDATION SHALL BE 6' UNLESS OTHERWISE SPECIFIED IN THE PLANS



TYPICAL SIDEWALK SECTION WITH PEDESTRIAN RAIL

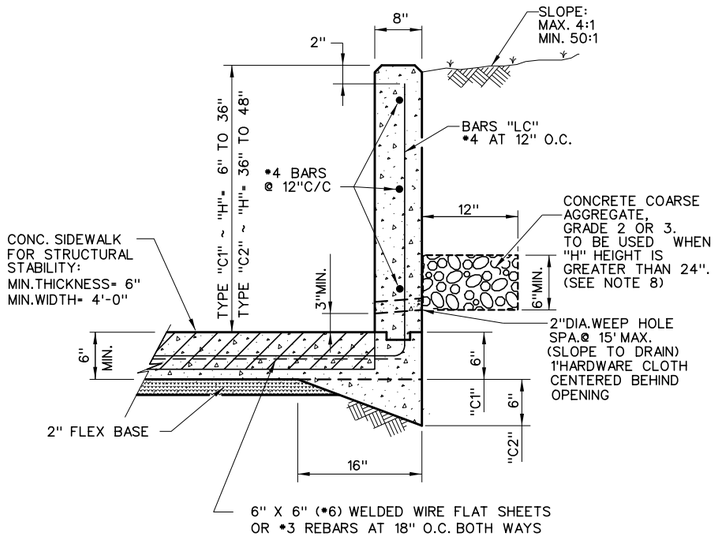
Texas Department of Transportation
San Antonio District

MISCELLANEOUS CURB AND SIDEWALK DETAILS

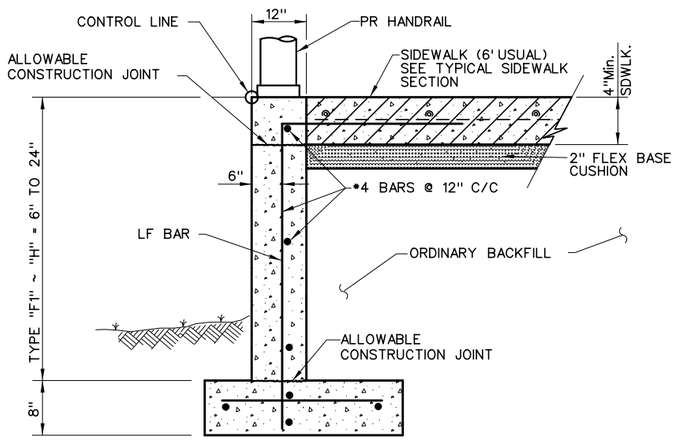
San Antonio District Standard
Sheet (1 of 2)

T:Engdata/Standards/MiscCurbdetails.dgn	PREPARED BY AND FOR USE OF TxDoT.				
ORIGINAL DRAWING DATE:	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
REVISIONS	SAT	6			53
09-01-08	COUNTY	CONTROL	SECTION	JOB	HIGHWAY
10-10-17 sidewalk width equals 6' usual	BEXAR	0016	08	043,ETC	SL 368,ETC
07-22-20 9" curb + curb w/ conc pvmt det.					

5/19/2022 21:53:27
K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\SAT DISTRICT\msccurbdetails.dgn



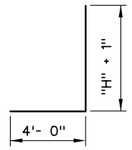
TYPE "C1" & "C2" CURB



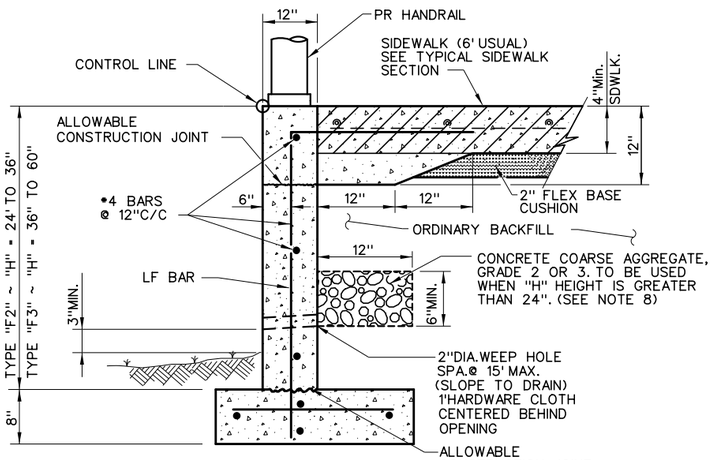
TYPE "F1" CURB

GENERAL NOTES:

1. CONCRETE FOR CURB TYPE F AND C SHOWN SHALL MEET THE MINIMUM SPECIFICATION REQUIREMENTS OF CLASS "C" CONCRETE PER ITEM 421
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED TO MATCH PAVEMENT JOINITS IN ALL CURBS AND CURB AND GUTTER ADJACENT TO JOINTED CONCRETE PAVEMENT. WHERE PLACEMENT OF CURB OR CURB AND GUTTER IS NOT ADJACENT TO CONCRETE PAVEMENT, EXPANSION JOINTS SHALL BE PROVIDED AT STRUCTURES, CURB RETURNS AT STREETS, AND AT LOCATIONS DIRECTED BY THE ENGINEER.
4. VERTICAL AND HORIZONTAL DOWEL BARS AND TRANSVERSE REINFORCING BARS SHALL BE PLACED AT 4 FEET C-C, UNLESS OTHERWISE SHOWN.
5. UNTIL THE SIDEWALK IS COMPLETE, LATERAL SUPPORT FOR THE "F" CURBS WILL BE REQUIRED.
6. IF AGGREGATE IS REQUIRED PER THE DETAIL, IT IS PAID AS SUBSIDIARY TO THE CURB, ITEM 529.

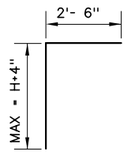


BAR "LC"

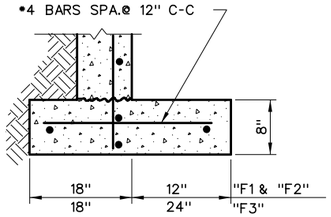


TYPE "F2" & "F3" CURB

DESIGN SOIL PARAMETERS:
Soil Unit Wt.= 120 pcf
Phi = 30 Degrees
Cohesion = 50 psf
Min. PI = 15
Max. PI = 30
SURCHARGE:
TYPE F CURB q = 2' Adjacent to sidewalk
Max. slope behind TYPE C Curb = 4:1
Min. Factor of Safety against sliding is 1.5.
Designed in accordance with current AASHTO Standards and Interim Specifications.



BAR "LF"



FOOTING DETAIL

CLASS C CONCRETE PAID UNDER ITEM 531, SIDEWALK. (NOTE. ADDITIONAL CONCRETE TO MEET THE THICKENED SECTIONS REQUIRED BY THESE DETAILS IS SUBSIDIARY TO ITEM 531, CURB.)

Texas Department of Transportation
San Antonio District

MISCELLANEOUS CURB AND SIDEWALK DETAILS

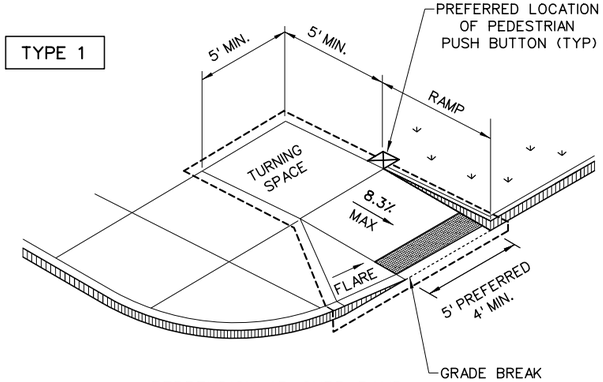
San Antonio District Standard
Sheet (2 of 2)

T:Engdata/Standards/MiscCurbdetails.dgn	PREPARED BY AND FOR USE OF TxDoT.					
ORIGINAL DRAWING DATE:	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT			SHEET
REVISIONS	SAT	6				54
09-01-08	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
10-10-17 sidewalk width equals 6' usual	BEXAR		0016	08	043,ETC	SL 368,ETC
07-22-20 9"curb + curb w/ conc pvmt det.						

K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\SAT DISTRICT\msccurbdetails.dgn 5/19/2022 21:53:28

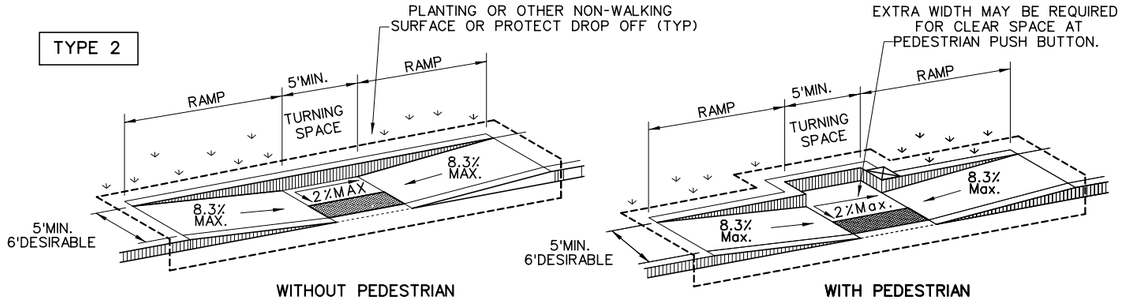
DATE: 4/19/2022 14:00:41
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\PED(1-4)-18.dgn

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

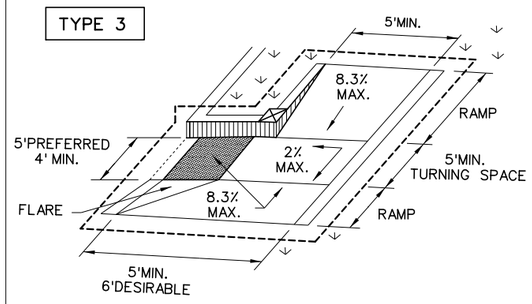


WITHOUT PEDESTRIAN PUSH BUTTON

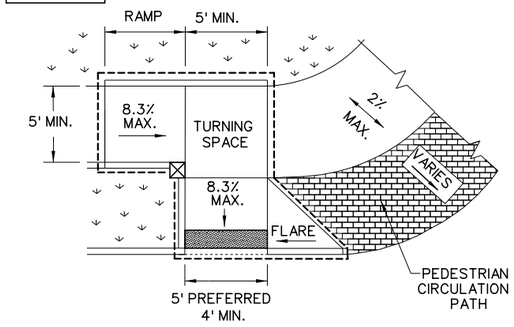
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

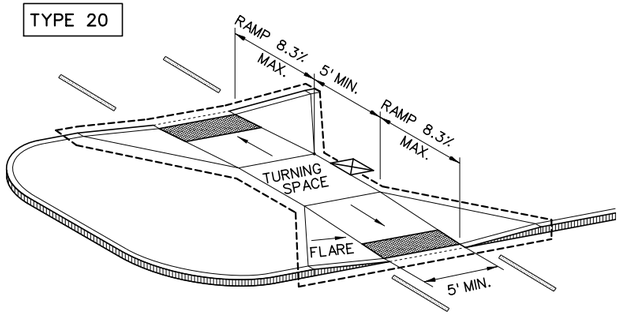


TYPE 6



COMBINATION CURB RAMPS

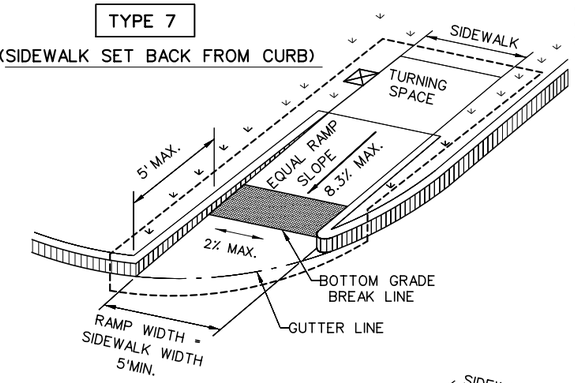
TYPE 20



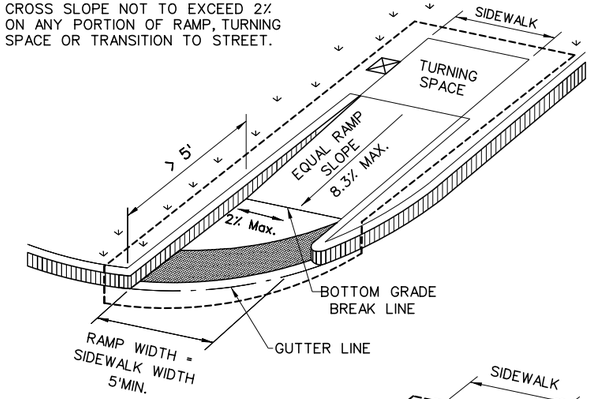
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

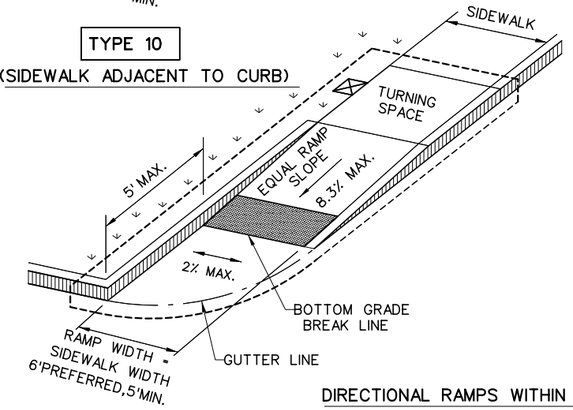


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

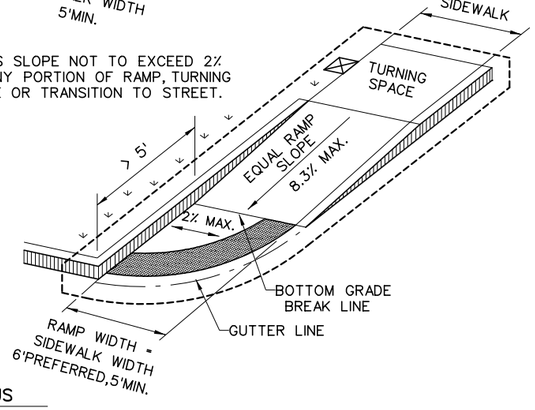


TYPE 10

(SIDEWALK ADJACENT TO CURB)

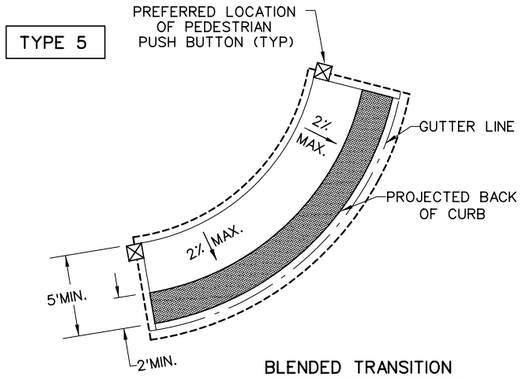


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

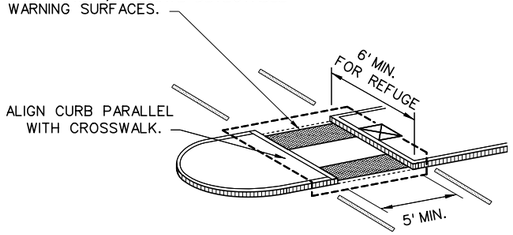
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

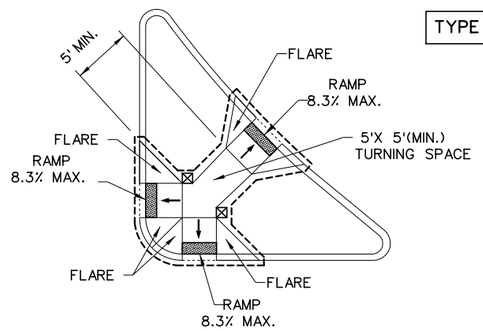
TYPE 21

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



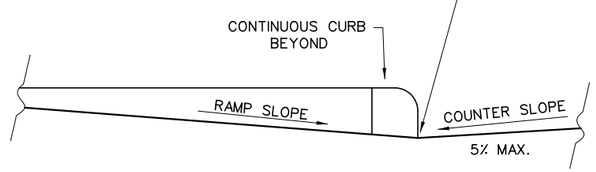
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

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



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		55

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.

2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.

3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.

4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.

5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.

6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.

7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.

8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).

9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.

10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.

11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.

12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.

13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".

14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.

15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.

16. Provide a smooth transition where the curb ramps connect to the street.

17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.

18. Existing features that comply with applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.

20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.

21. Detectable warning surfaces must be firm, stable and slip resistant.

22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.

23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.

24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.

26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.

28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.

29. Street grades and cross slopes shall be as shown elsewhere in the plans.

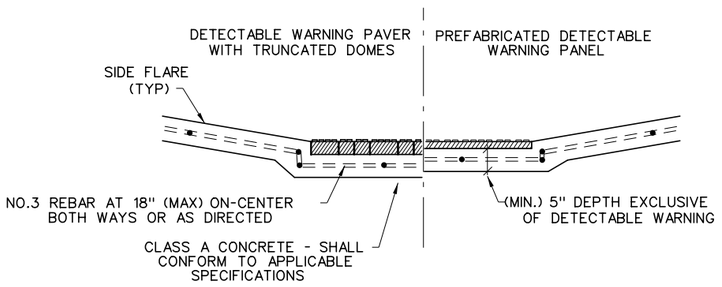
30. Changes in level greater than 1/4 inch are not permitted.

31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.

32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.

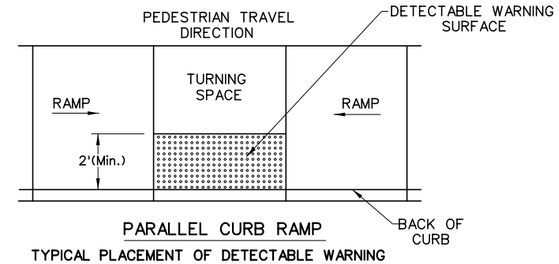
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".

34. Sidewalk details are shown elsewhere in the plans.



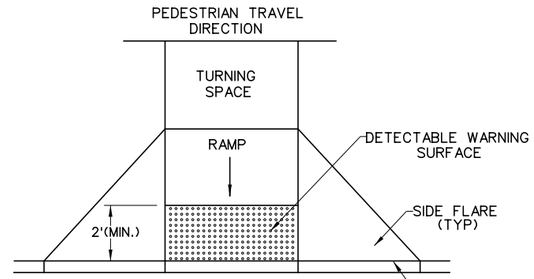
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



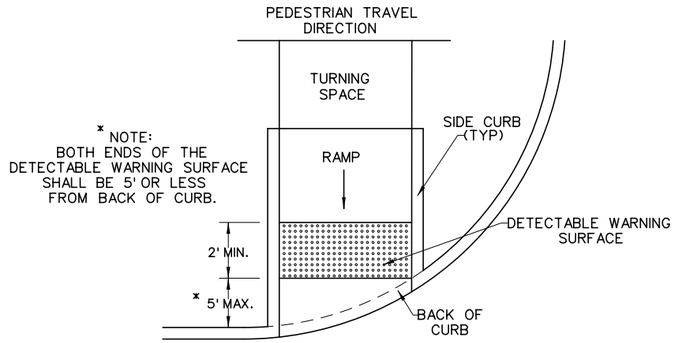
PARALLEL CURB RAMP

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



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

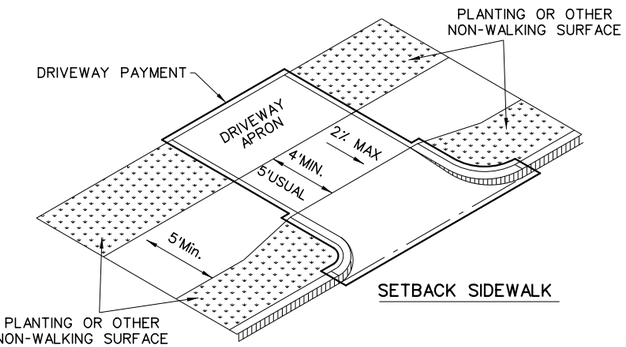
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0016	08	043,ETC		SL 368,ETC
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST		COUNTY		SHEET NO.
	SAT		BEXAR		56

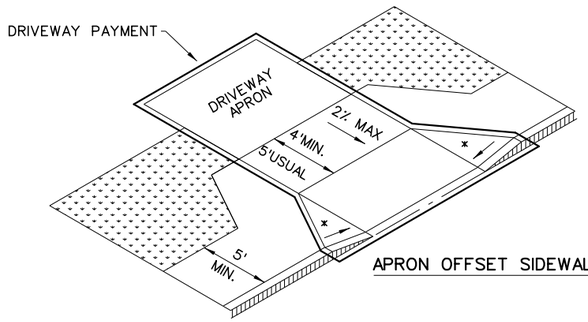
DATE: 4/19/2022 14:00:42
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\PED(1-4)-18.dgn

DATE: 4/19/2022 14:00:44
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\PED(1-4)-18.dgn

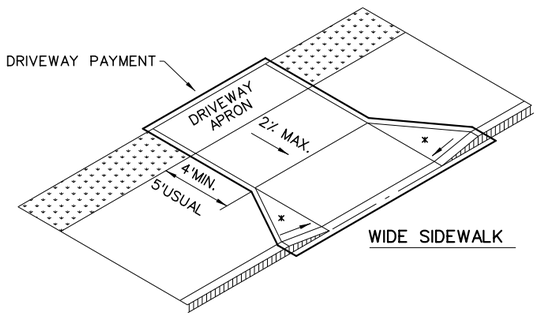
SIDEWALK TREATMENT AT DRIVEWAYS



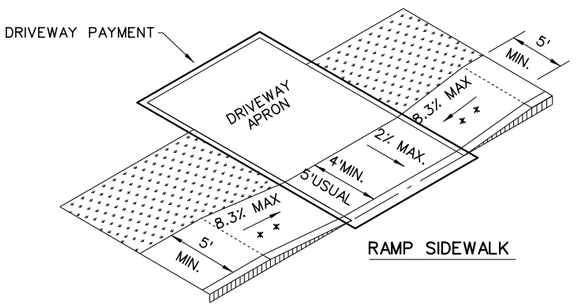
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

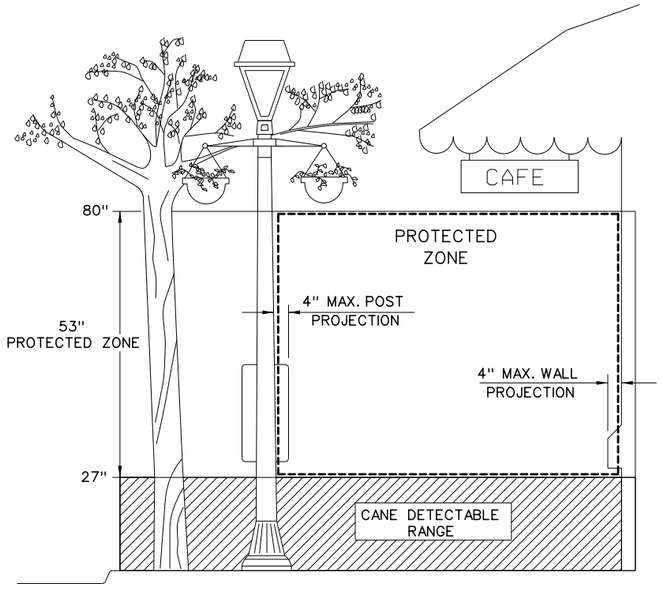


RAMP SIDEWALK

NOTES:

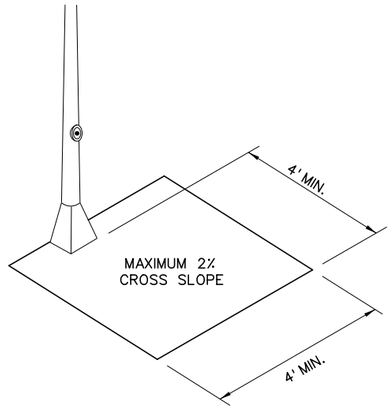
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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

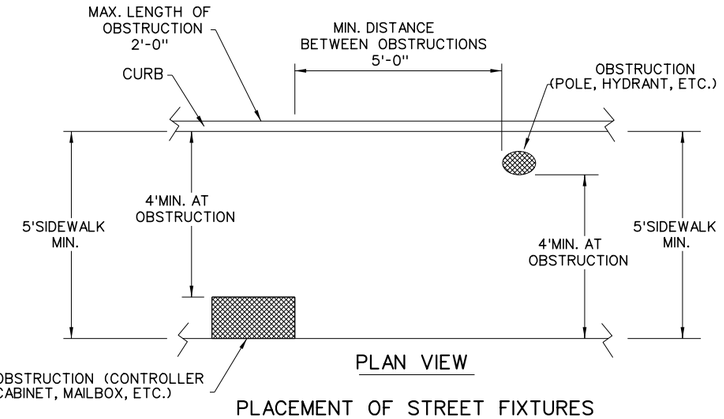


PROTECTED ZONE

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



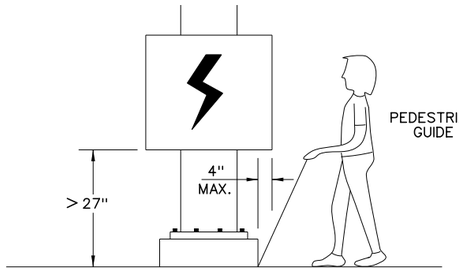
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



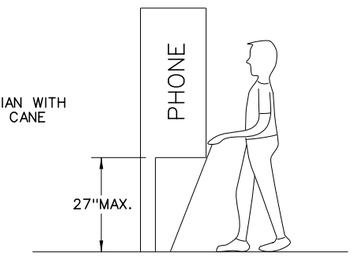
PLAN VIEW

PLACEMENT OF STREET FIXTURES

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



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



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

DETECTION BARRIER FOR VERTICAL CLEARANCE <80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

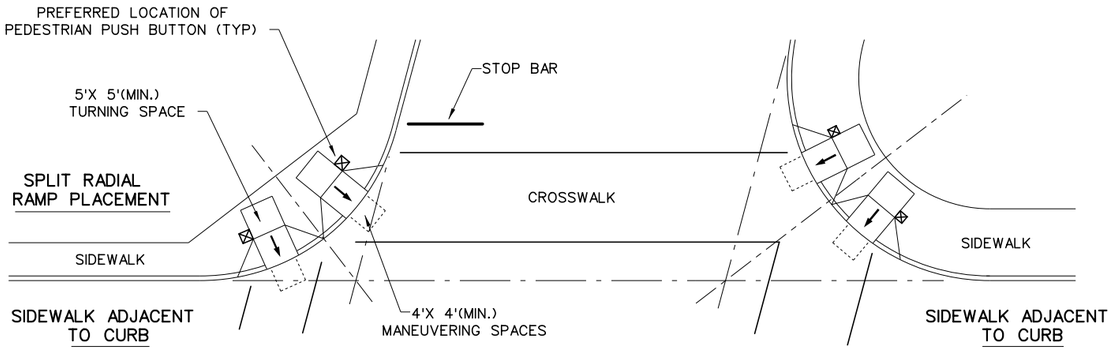
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		57

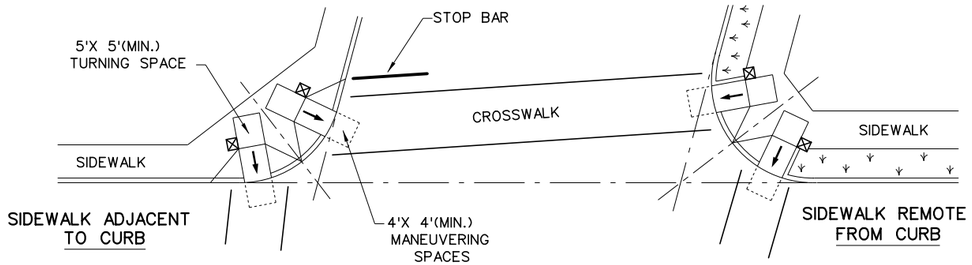
DATE: 4/19/2022 14:00:45
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\PED(1-4)-18.dgn

TYPICAL CROSSING LAYOUTS

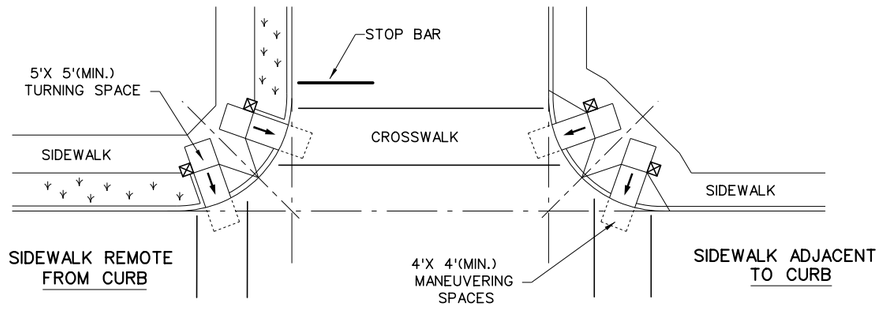
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



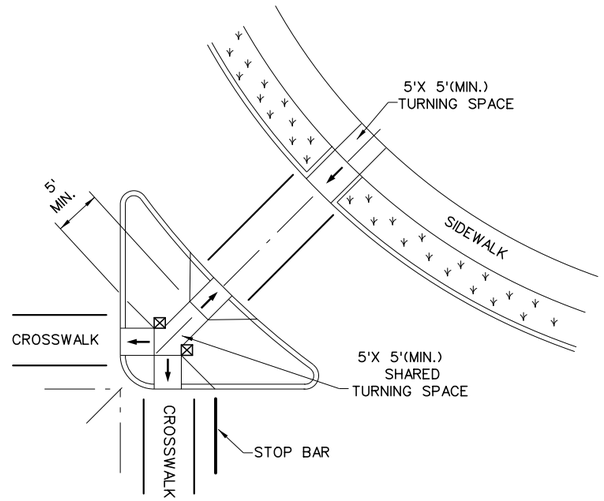
SKEWED INTERSECTION WITH "LARGE" RADIUS



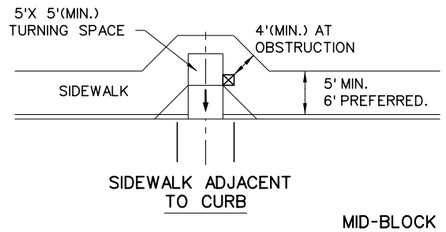
SKEWED INTERSECTION WITH "SMALL" RADIUS

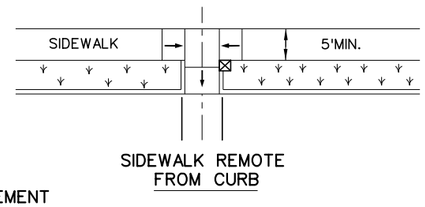


NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND





MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

Texas Department of Transportation

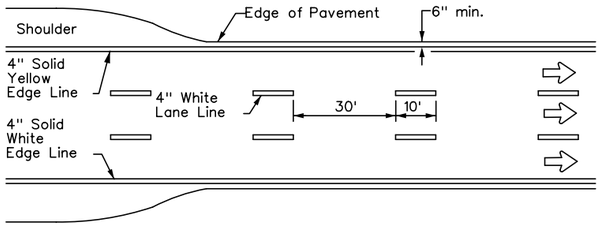
Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

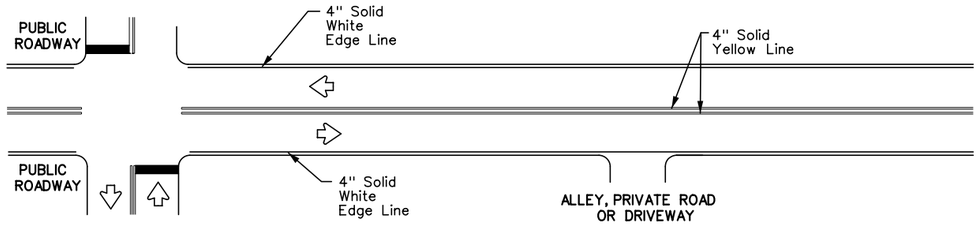
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		58

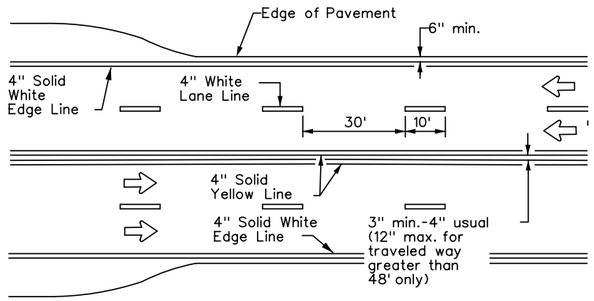
DATE: 4/19/2022 14:00:49
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE_PM(1)-20.dgn



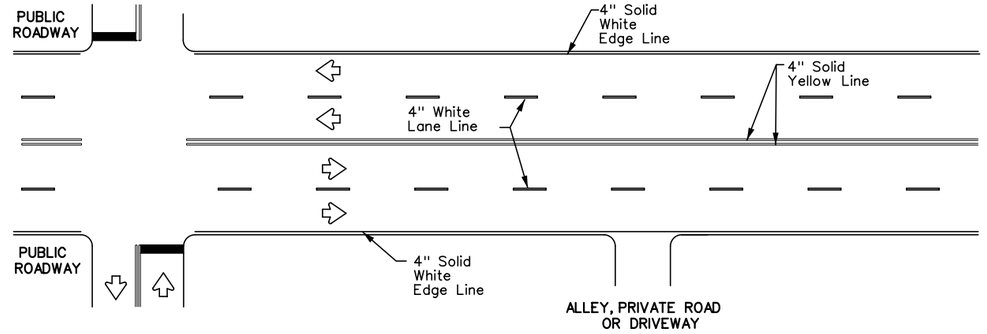
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



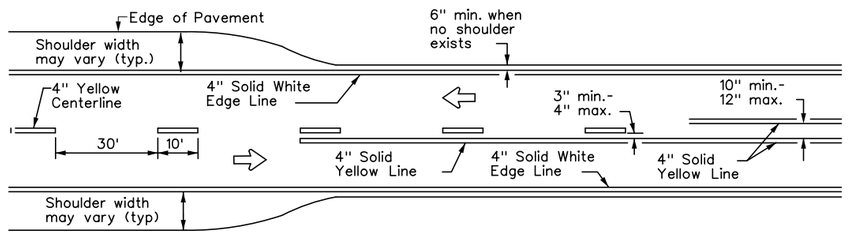
TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



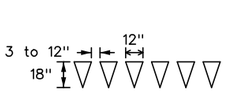
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



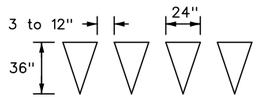
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

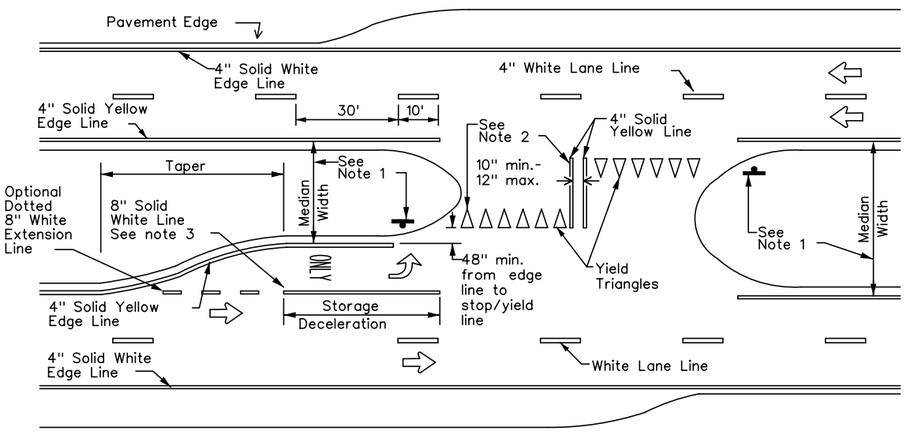


For posted speed on road being marked equal to or less than 40 MPH.



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

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

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

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

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

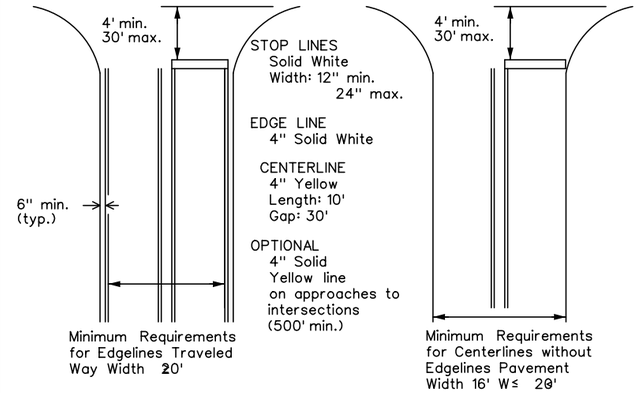
GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.

2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to the inside of edgeline of a two lane roadway.

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

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



GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways

Texas Department of Transportation

Traffic Safety Division Standard

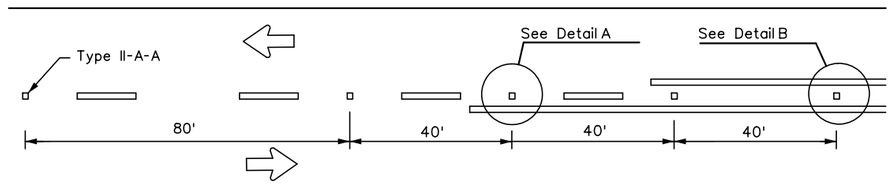
TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-20

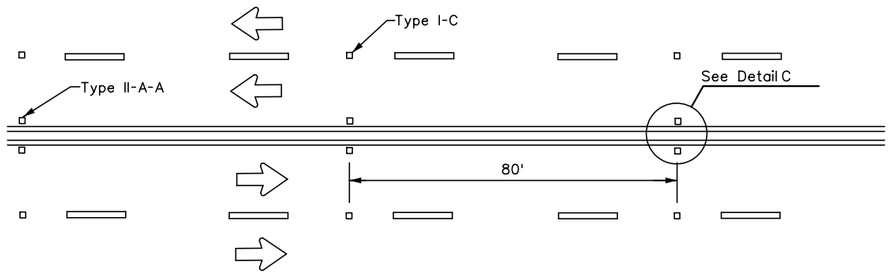
FILE: pm1-20.dgn	DN:	CK:	DW:	CK:
© TxDOT November 1978	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	0016	08	043,ETC	SL 368,ETC
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	SAT	BEXAR		59

22A

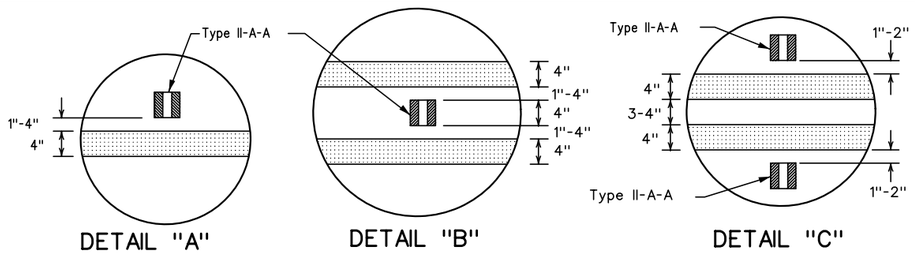
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

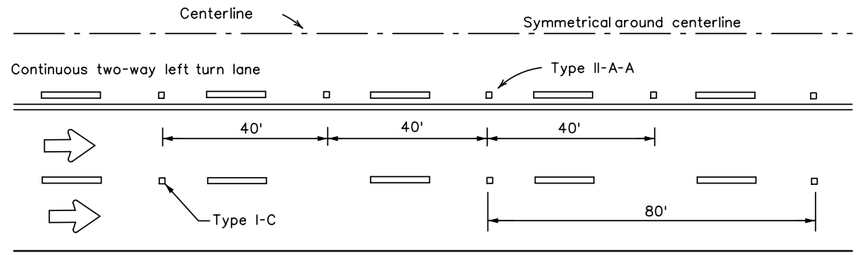


CENTERLINE FOR ALL TWO LANE ROADWAYS

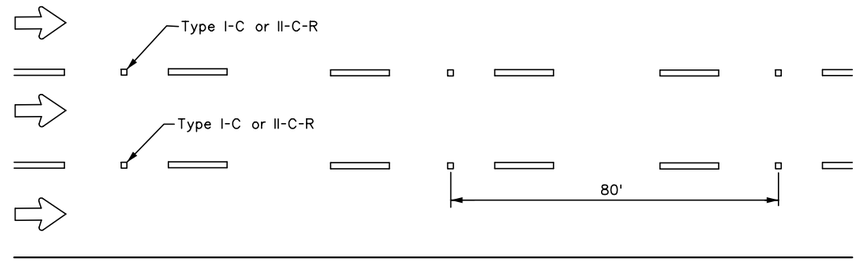


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS



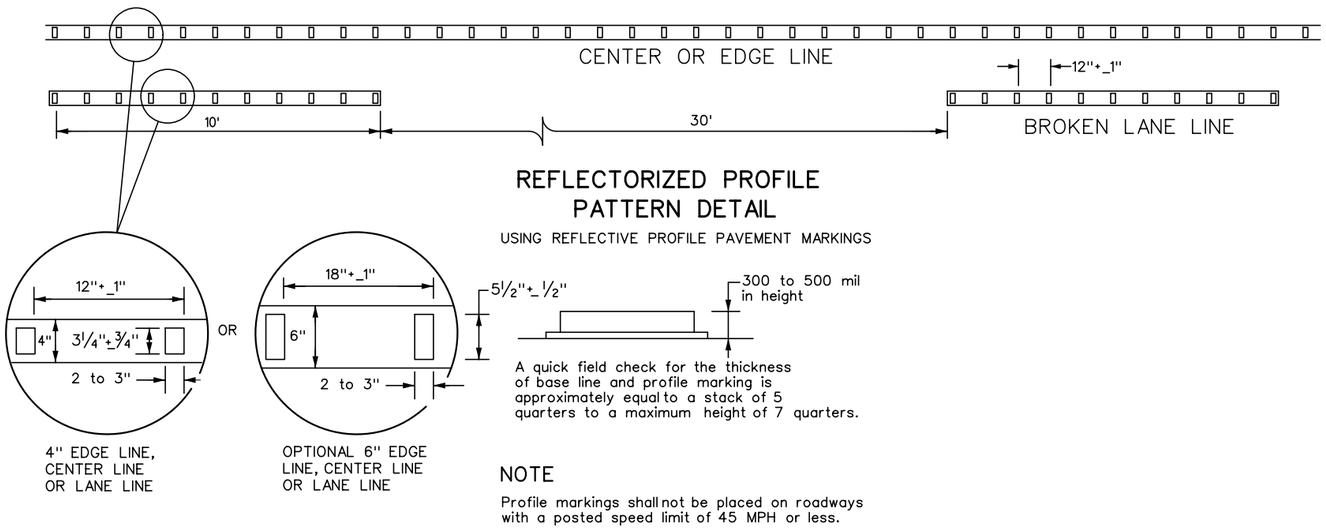


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



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

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



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

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

NOTE

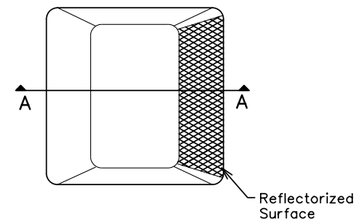
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

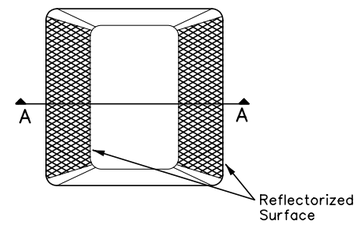
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

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

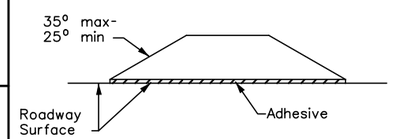
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation

Traffic Safety Division Standard

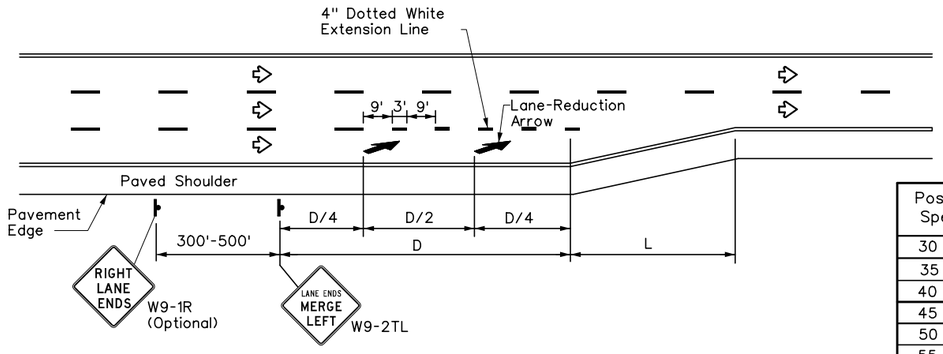
POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-20

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-92 2-10	0016	08	043,ETC	SL 368,ETC
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	SAT	BEXAR		60

22B

DATE: 4/19/2022 14:00:52
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\PM(2)-20.dgn

DATE: 4/19/2022 14:00:56
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\PM(3)-20.dgn

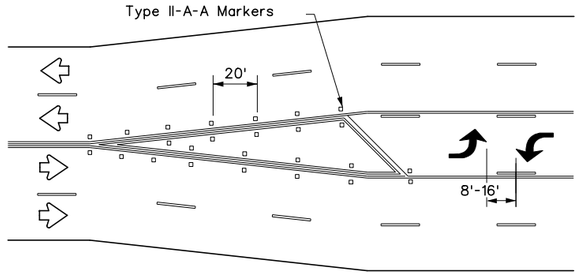


LANE REDUCTION

Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional W9-1R "RIGHT LANE ENDS" sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.



A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

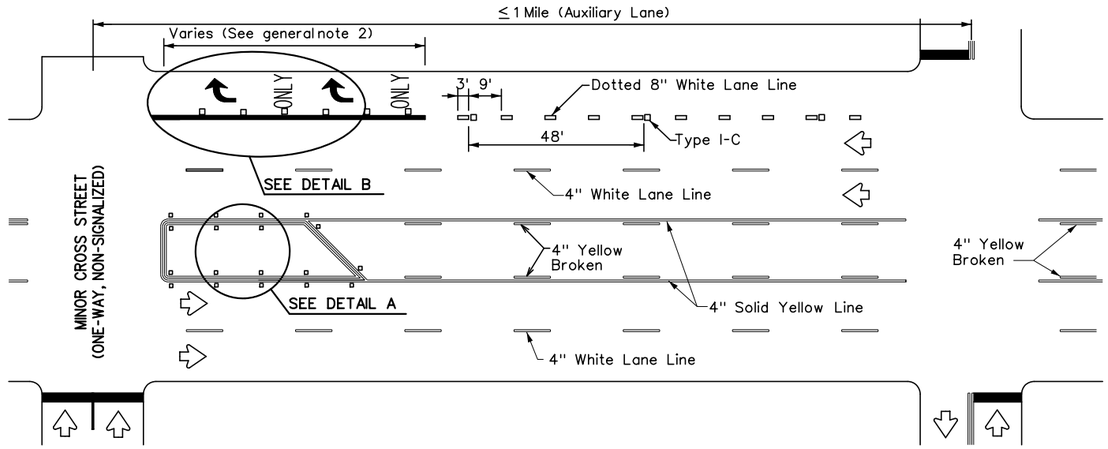
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

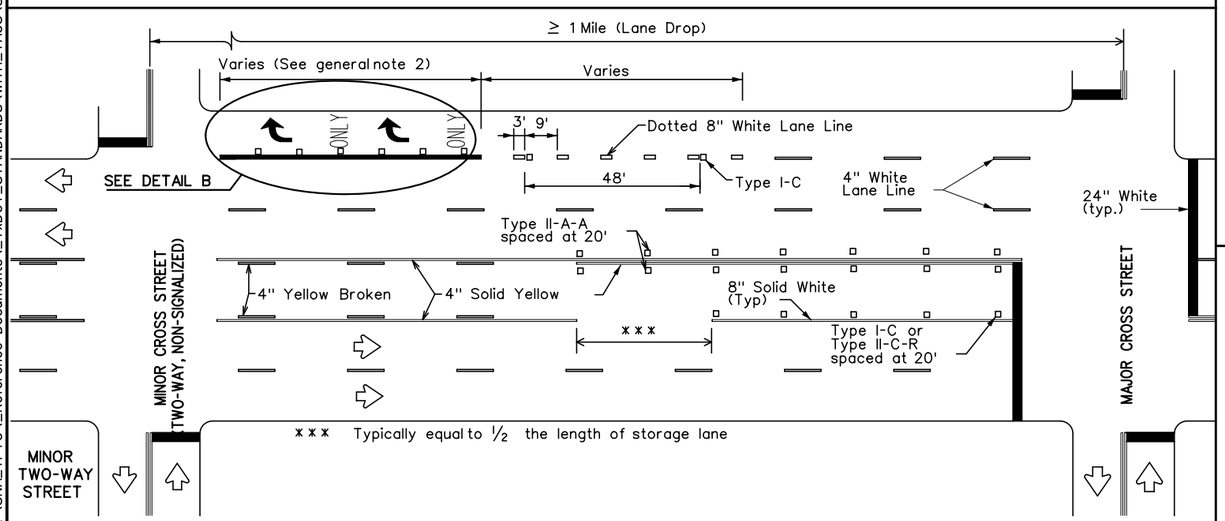
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

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

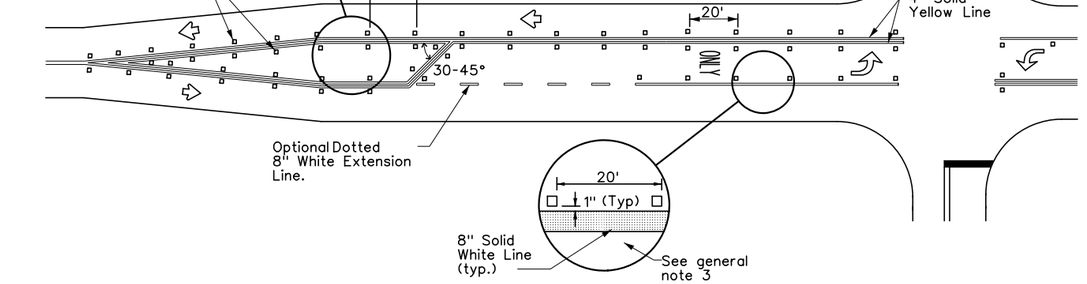
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



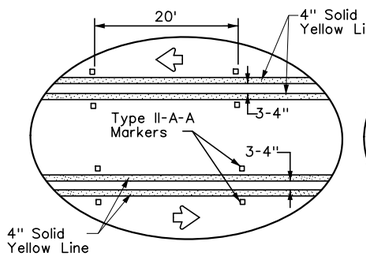
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



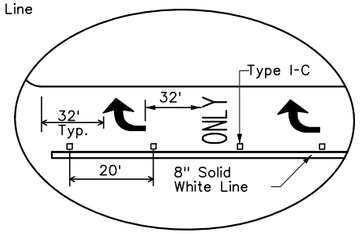
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A



DETAIL B

Texas Department of Transportation

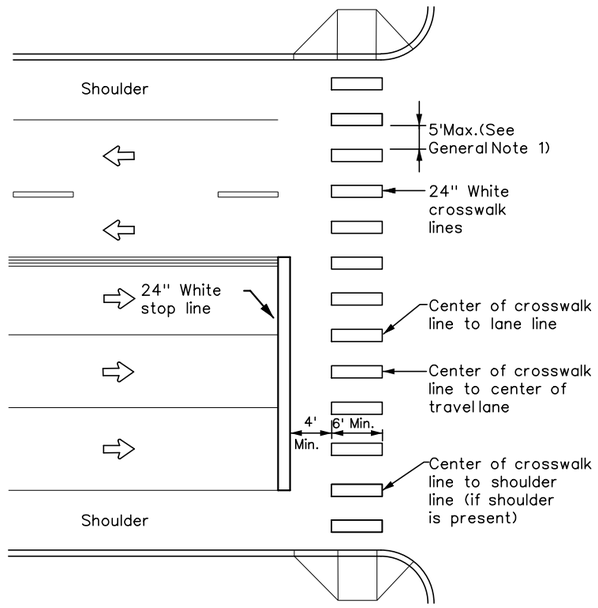
Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-20

FILE: pm3-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
5-00 2-10	DIST	COUNTY		SHEET NO.
8-00 2-12	SAT	BEXAR		61
3-03 6-20				

22C

DATE: 4/19/2022 14:01:00
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\PM(4)-22.dgn



HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).

2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.

3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.

4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.

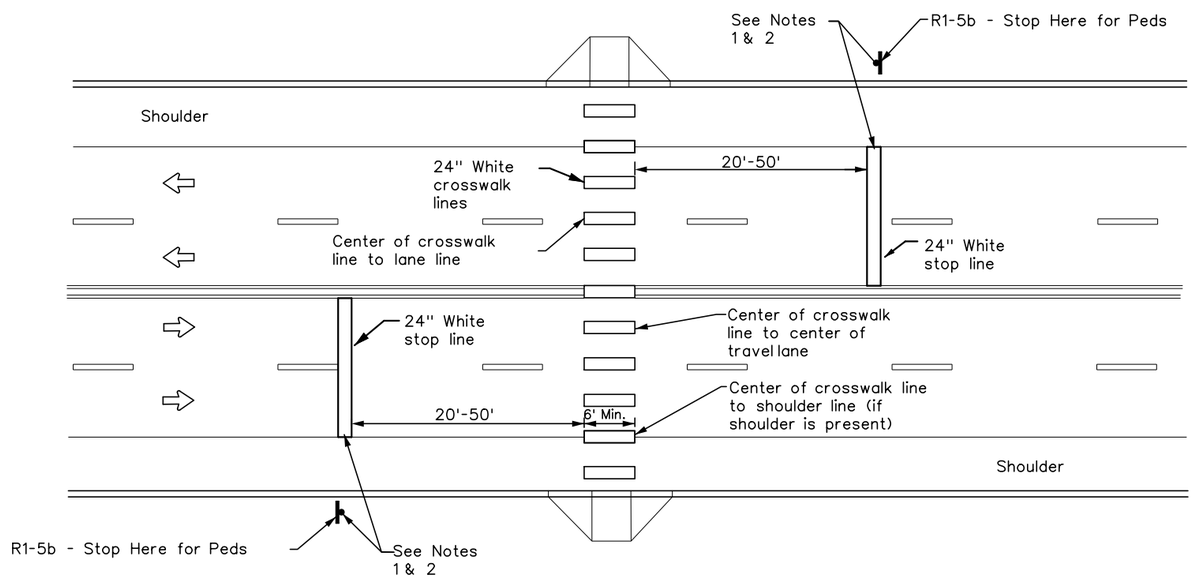
5. Each crosswalk shall be a minimum of 6' wide.

6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."

7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED MID BLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with "Stop Here for Pedestrians" signs at unsignalized mid block cross walks.

2. Use stop bars with "Stop Here on Red" signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22

FILE: pm4-22.dgn	DN:	CK:	DW:	CK:
© TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 3-22	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		62

22D

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

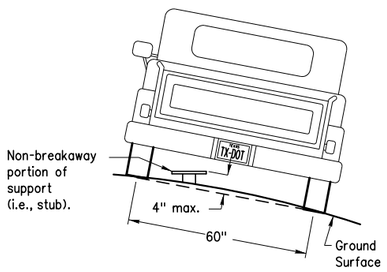
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

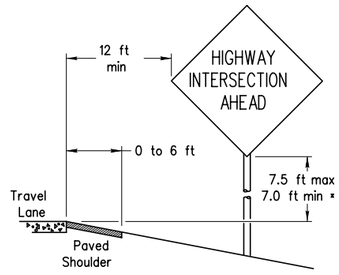
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

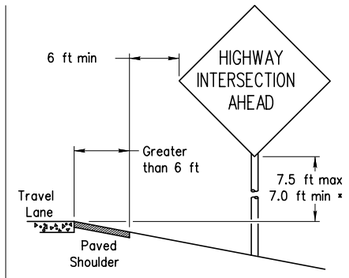
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

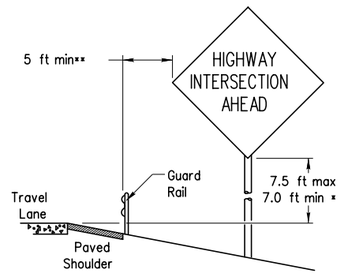
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



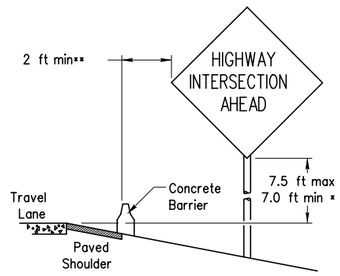
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

BEHIND BARRIER



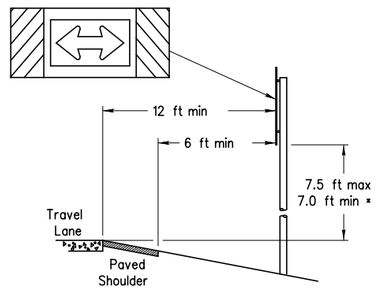
BEHIND GUARDRAIL



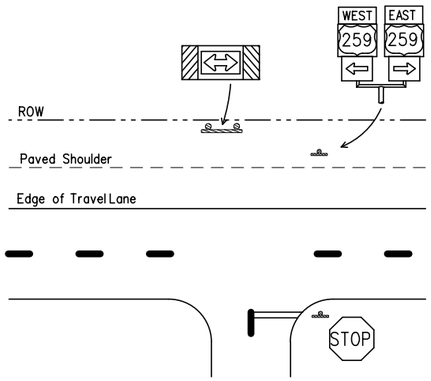
BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

T-INTERSECTION



When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

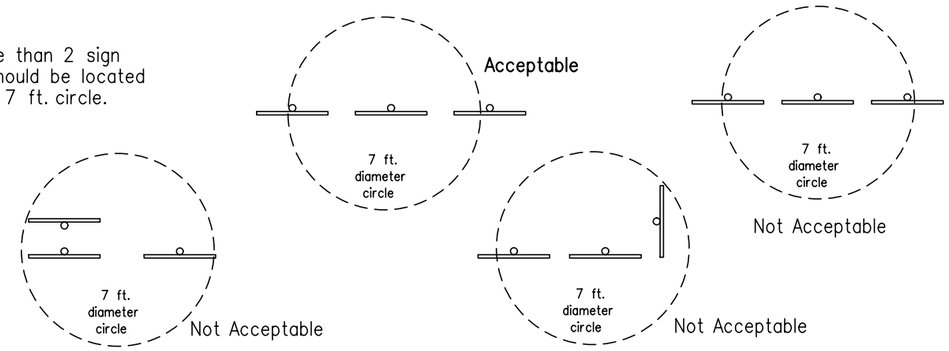
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

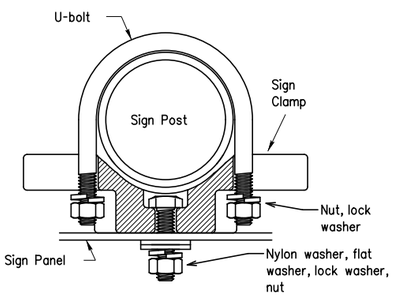
The website address is:
http://www.txdot.gov/publications/traffic.htm

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

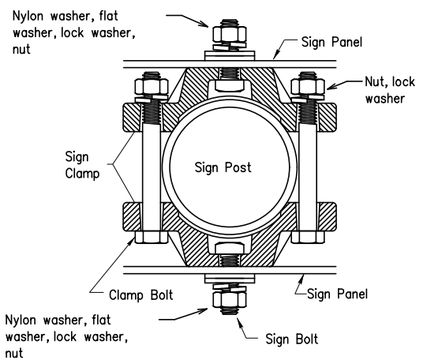


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

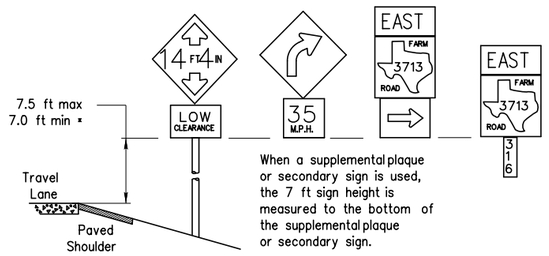
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



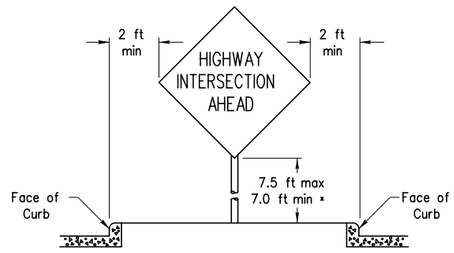
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



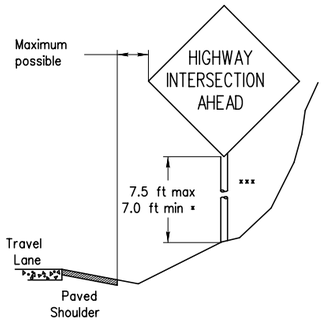
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

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:

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

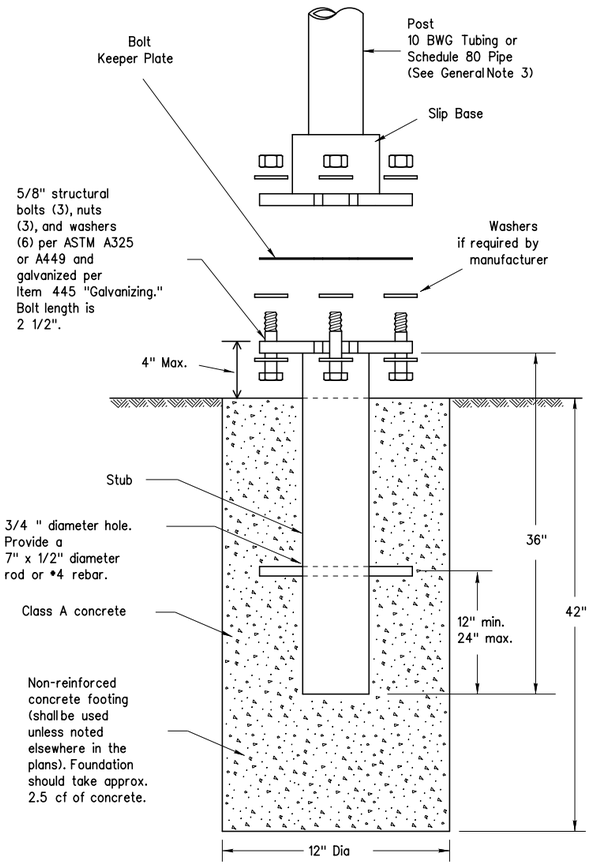
SMD(GEN)-08

© TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
9-08	SAT			63

COUNTY	CONTROL	SECTION	JOB	HIGHWAY
BEXAR	0016	08	043,ETC	SL 368,ETC

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

NOTE

There are various devices approved
for the Triangular Slipbase System.
Please reference the Material Producer
List for approved slip base systems.
http://www.txdot.gov/business/producer list.htm_
The devices shall be installed per
manufacturers' recommendations.
Installation procedures shall be
provided to the Engineer by Contractor.

GENERAL NOTES:

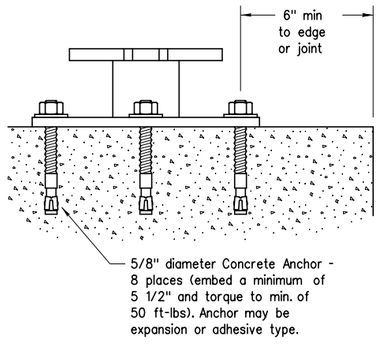
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   - 10 BWG Tubing (2.875" outside diameter)
     - 0.134" nominal wall thickness
     - Seamless or electric-resistance welded steel tubing or pipe
     - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
     - Other steels may be used if they meet the following:
       - 55,000 PSI minimum yield strength
       - 70,000 PSI minimum tensile strength
       - 20% minimum elongation in 2"
     - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
     - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
     - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   - Schedule 80 Pipe (2.875" outside diameter)
     - 0.276" nominal wall thickness
     - Steel tubing per ASTM A500 Gr C
     - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
       - 46,000 PSI minimum yield strength
       - 62,000 PSI minimum tensile strength
       - 21% minimum elongation in 2"
     - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
     - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
     - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



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

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

LEVELS DISPLAYED

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	ACC:
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		

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

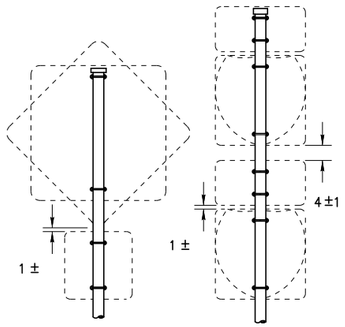
DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
9-08	SAT	6		64

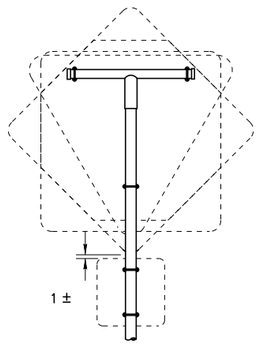
COUNTY	CONTROL	SECTION	JOB	HIGHWAY
BEXAR	0016	08	043,ETC	SL 368,ETC

LEVELS DISPLAYED ACC:

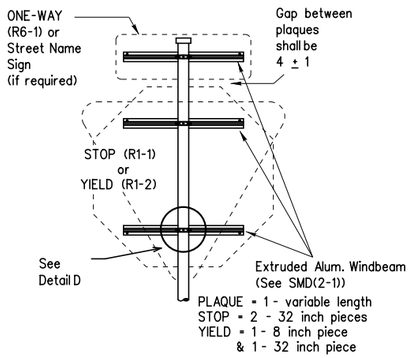
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	



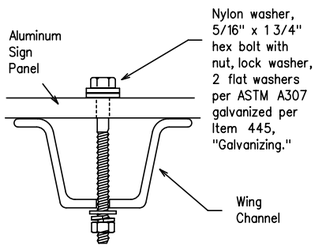
SM RD SGN ASSM TY XXXXX(1)XX(P)



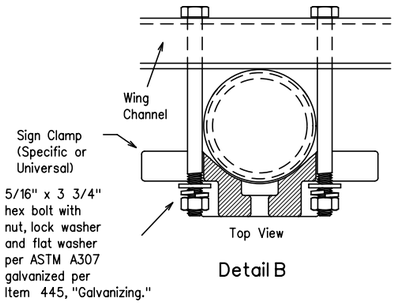
SM RD SGN ASSM TY XXXXX(1)XX(T)



SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



Detail A

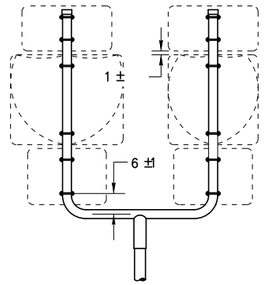


Detail B

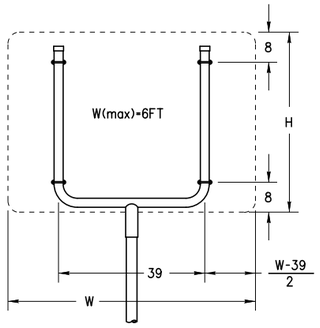
GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

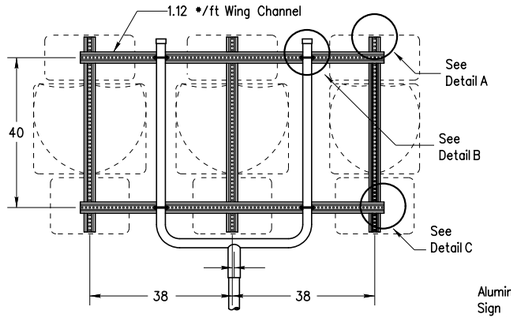
1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
10. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with Friction Caps.
12. Sign blanks shall be the sizes and shapes shown on the plans.



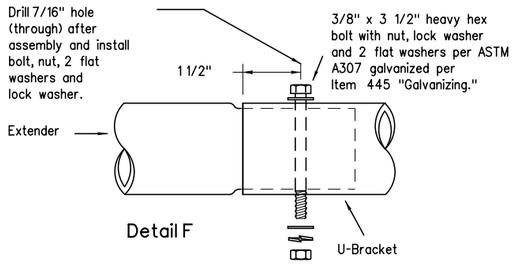
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

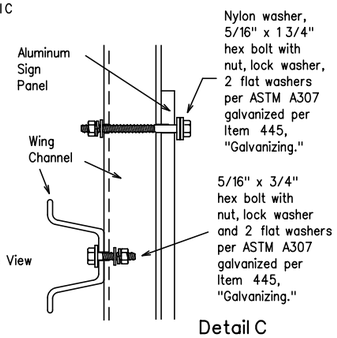


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

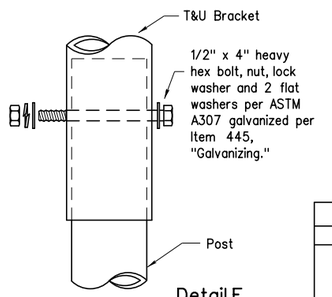


Detail F

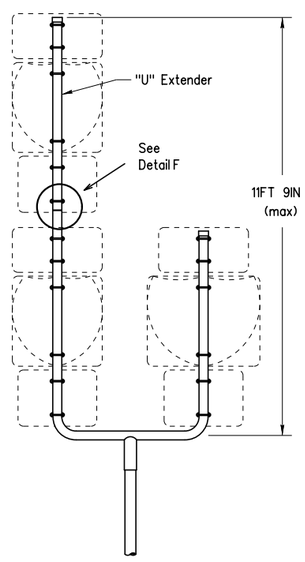
Splices shall only be allowed behind the sign substrate.



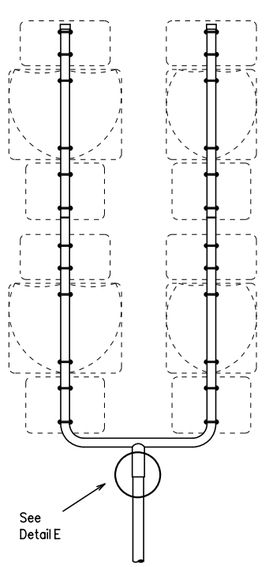
Detail C



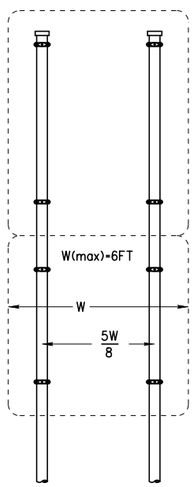
Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

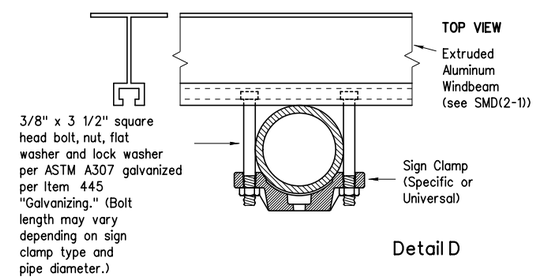


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

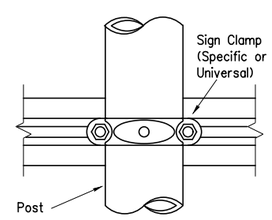


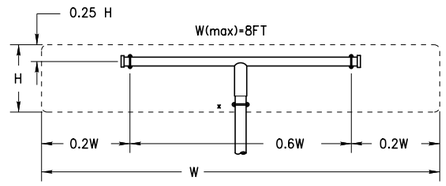
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW



Detail D

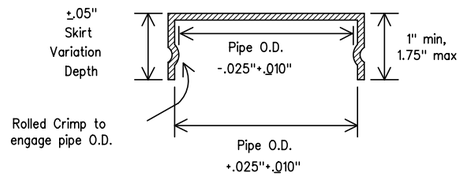




All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

STANDARD PLANS
Texas Department of Transportation
Traffic Operations Division

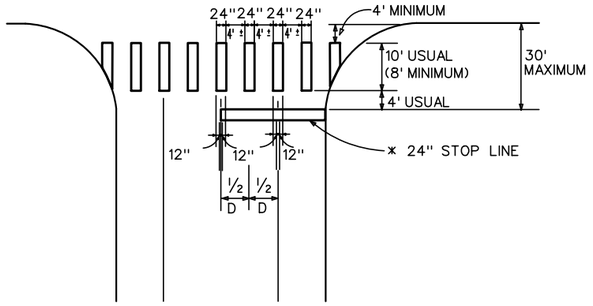
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

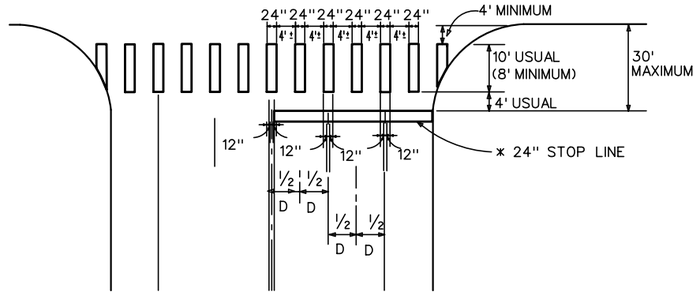
DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
9-08	SAT	6		65

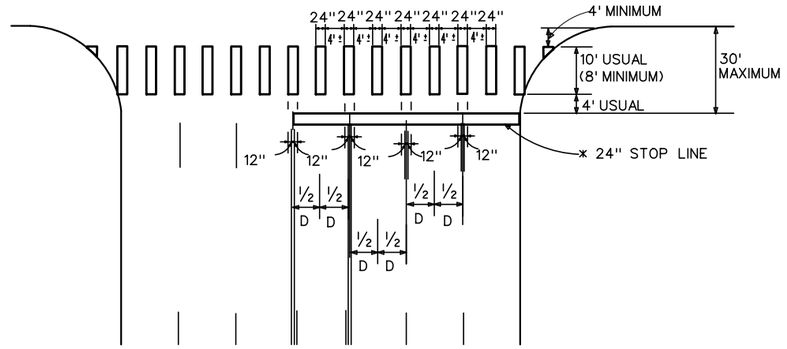
COUNTY	CONTROL	SECTION	JOB	HIGHWAY
BEXAR	0016	08	043,ETC	SL 368,ETC



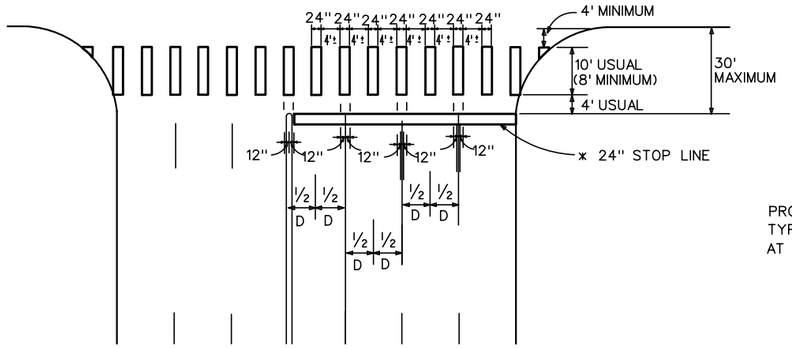
TWO LANES WITH SHOULDERS



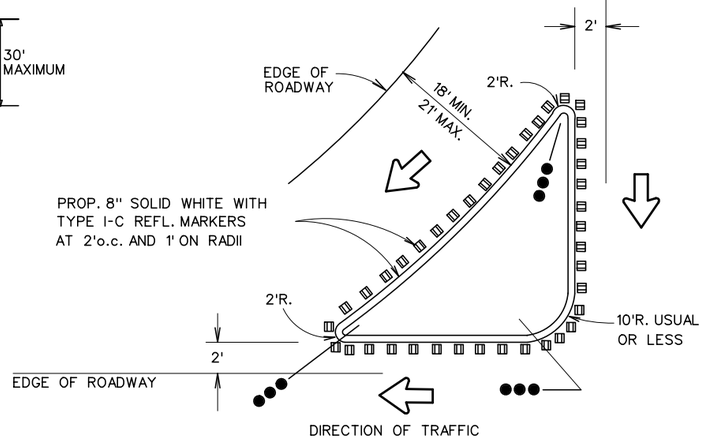
FOUR LANES WITH SHOULDERS



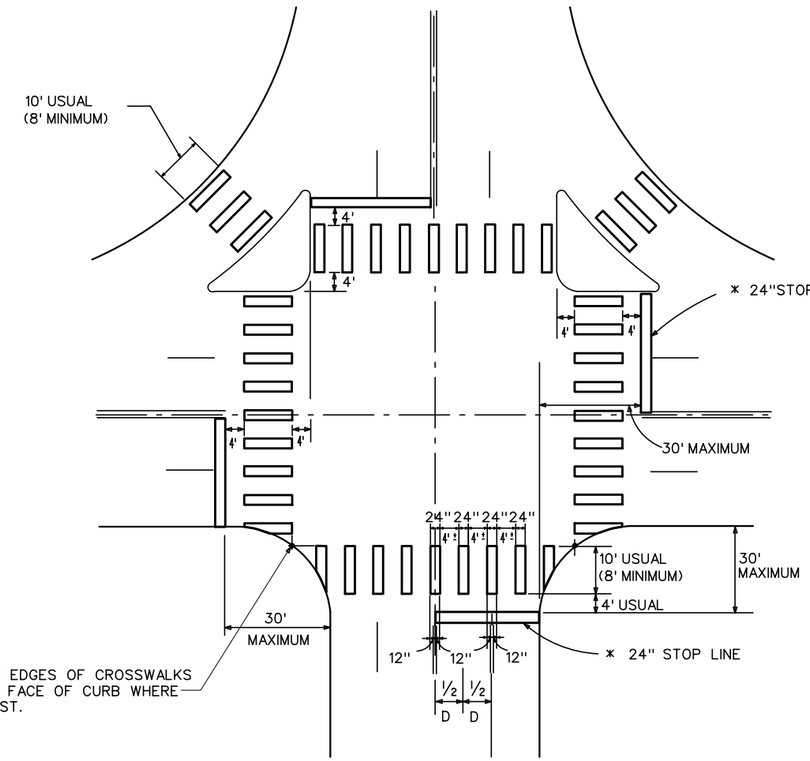
MULTI - LANES



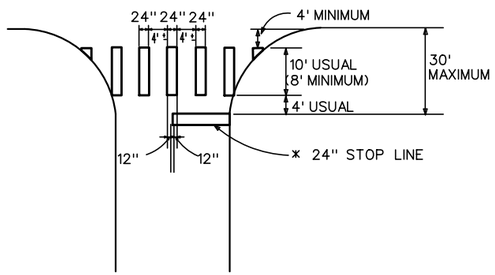
MULTI - LANE WITH MEDIAN



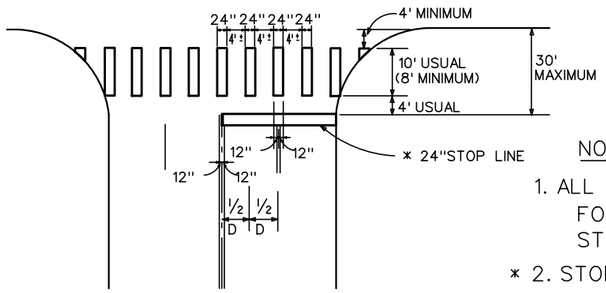
TYPICAL RIGHT TURN ISLAND
WITH DELINEATION



INTERSECTION WITH RIGHT - TURN ISLANDS



TWO LANES



FOUR LANES

NOTES:

1. ALL LONGITUDINAL LINES FORMING CROSSWALK AND STOP LINES SHALL BE WHITE
* 2. STOP LINES AS REQUIRED ON DETAILED PAVEMENT MARKING PLANS.
3. "D" IS EQUAL TO ONE HALF THE DISTANCE.

LEVELS DISPLAYED ACC:

	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		

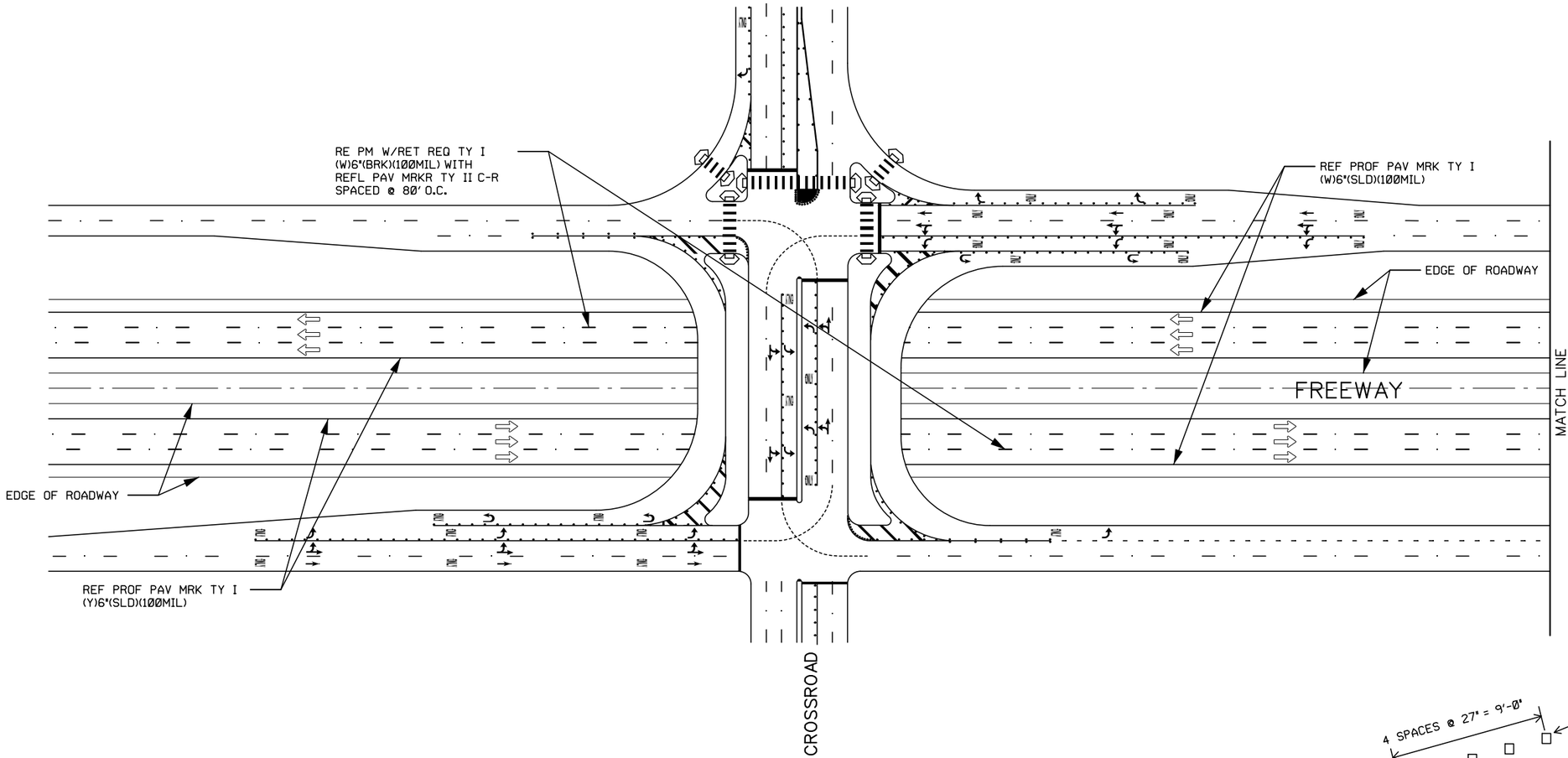
San Antonio District Standard

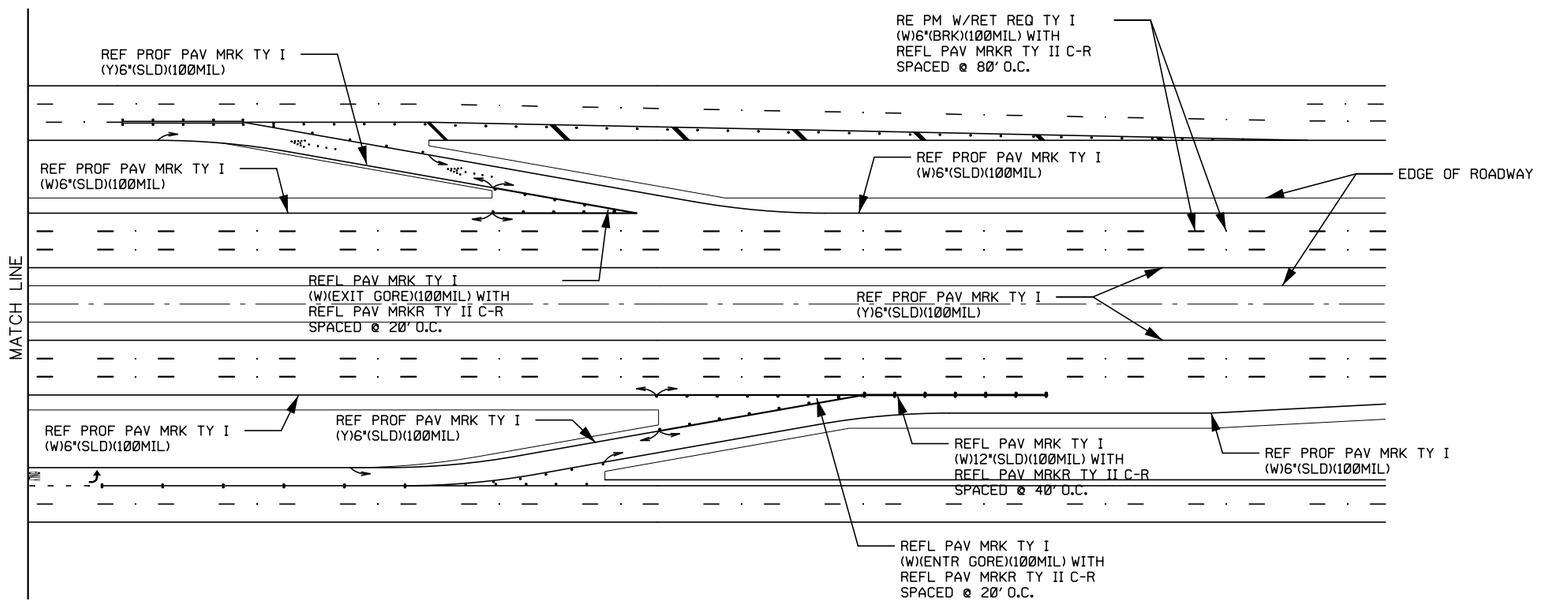
TYPICAL CROSSWALK DETAILS

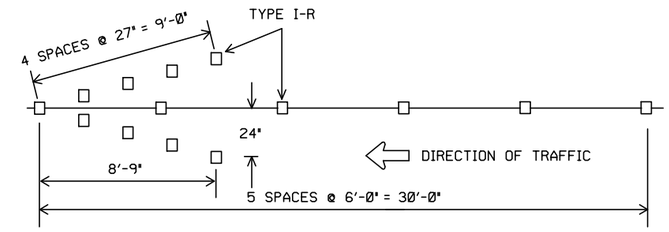
TCD-05

 Texas Department of Transportation

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
DEC 1999	6			66
AUG 2005	STATE	DIST.	COUNTY	
	TEXAS	SAT	BEXAR	
	CONT.	SECT.	JOB	HIGHWAY NO.
	0016	08	043,ETC	SL 368,ETC







ALL RAISED MARKERS IN THE WRONG WAY ARROW SHALL BE TYPE I-R REFLECTORIZED PAVEMENT MARKERS WITH THE REFLECTORIZED SURFACE FACING THE WRONG WAY TRAFFIC. TYPE II-C-R SHALL NOT BE USED.

REFLECTORIZED WRONG WAY ARROWS, NOT TO EXCEED TWO, MAY BE PLACED ON EXIT RAMPS. LOCATION OF THE ARROWS SHALL BE AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

WRONG WAY ARROW DETAIL

San Antonio District Standard

TYPICAL PAVEMENT MARKING DETAILS

SCALE:NS

TPMD(1)-18

REVISIONS	FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
MAY 2018				67
	STATE	DIST.	COUNTY	
	TEXAS	SAT	BEXAR	
	CONT.	SECT.	JOB	HIGHWAY NO.
	0016	08	043,ETC	SL 368,ETC

REVISED ON: 5-18 | CHECKED BY: GG / OMG | REVISED BY: JCO3 | DRAWN BY: TED

4/19/2022 14:01:14

K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\SAT DISTRICT\TPMD(1-3)-18.dgn

REFL PAV MRK TY I (W) 8" (SLD) (100MIL) WITH REFL PAV MRKR TY I-C SPACED @ 20' O.C.

REFL PAV MRK TY I (Y) (MED NOSE) (100MIL) WITH REFL PAV MRKR TY II-A-A SPACED @ 2' O.C.

REFL PAV MRK TY I (W) 4" (DOT) (100MIL) (3' LONG AND 3' SPACE)

RE PM W/RET REQ TY I (Y) 4" (SLD)(100MIL) DOUBLE YELLOW WITH REFL PAV MRKR TY II-A-A SPACED AT 20' O.C.

REFER TO SAN ANTONIO DISTRICT STANDARD TCD-05 - TYPICAL CROSSWALK DETAILS

REFL PAV MRK TY I (W) 8" (SLD) (100MIL) WITH REFL PAV MRKR TY I-C SPACED @ 20' O.C.

RE PM W/RET REQ TY I (W)4"(BRK)(100MIL) WITH REFL PAV MRKR TY II C-R SPACED @ 80' O.C.

REFL PAV MRK TY I (Y)24"(SLD)(100MIL) DIAGONALS AT 80' O.C. AND 45 DEG. ANGLE

80' DESIRABLE — VARIABLE — 600'

32' — VARIES — VARIES — 48'

TANG. 48' — VARIES — 48'

8' 32' 8'

75'

50'

SEE DETAIL ON SHT TPMD(3)-18

REFL PAV MRK TY I (W) 8" (SLD) (100MIL) WITH REFL PAV MRKR TY I-C SPACED @ 20' O.C.

VARIES — 49'

WHITE PAVEMENT LEGENDS *

RE PM W/RET REQ TY I (W) 4" (SLD)(100MIL) DOUBLE WHITE WITH REFL PAV MRKR TY II C-R SPACED @ 20' O.C.

SEE DETAIL ON SHT TPMD(3)-18

REFL PAV MRK TY I (W)(EXIT GORE)(100MIL) WITH REFL PAV MRKR TY II C-R SPACED @ 20' O.C.

REFL PAV MRK TY I (Y) 8" (SLD) (100MIL) WITH REFL PAV MRKR TY II A-A SPACED @ 20' O.C.

48'

WHITE PAVEMENT LEGENDS

FREEWAY

REFL PAV MRK TY I (W) 8" (SLD) (100MIL) WITH REFL PAV MRKR TY I-C SPACED @ 20' O.C.

FOR LEGEND PLACEMENT SEE PM(3)-12

32'

REFL PAV MRK TY I (W) 8" (SLD) (100MIL) WITH REFL PAV MRKR TY II C-R SPACED @ 20' O.C. ON EACH SIDE OF LINE

49' — 8' 32' 9" — VARIES

80' DESIRABLE — 8' 32' 8' — VARIES — 48' — 200' (VARIABLE)

8' 32' 8'

48' — VARIES — VARIES — 32'

SEE DETAIL ON SHT TPMD(3)-18

WHITE PAVEMENT LEGENDS

REFL PAV MRK TY I (W) 4" (DOT) (100MIL) (3' LONG AND 3' SPACE)

REFL PAV MRK TY I (W) 8"(LNDR)(100MIL) (3' LONG AND 9' SPACE) WITH REFL PAV MRKR TY II C-R SPACED @ 48' O.C.(DOUBLE REFLECTORS)

* WHITE PAVEMENT LEGENDS

REFL PAV MRK TY I (W)(ENTR GORE)(100MIL) WITH REFL PAV MRKR TY II C-R SPACED @ 20' O.C.

CROSSROAD

MATCH LINE

MATCH LINE

600' — 200' — 400'

REFL PAV MRK TY I (Y) 24" (SLD) (100MIL) DIAGONALS AT 80'o.c. AND 45 DEG. ANGLE

REFL PAV MRK TY I (Y) 8" (SLD) (100MIL) WITH REFL PAV MRKR TY II A-A SPACED @ 20' O.C.

LANE REDUCTION ARROWS (REFER TO MUTCD)

RE PM W/RET REQ TY I (W)4"(BRK)(100MIL) WITH REFL PAV MRKR TY II C-R SPACED @ 80' O.C.

* PROPOSED WHITE LEGENDS TEXT AND ARROW SIZE TO BE IN ACCORDANCE WITH THE TEXAS MUTCD

San Antonio District Standard

TYPICAL PAVEMENT MARKING DETAILS

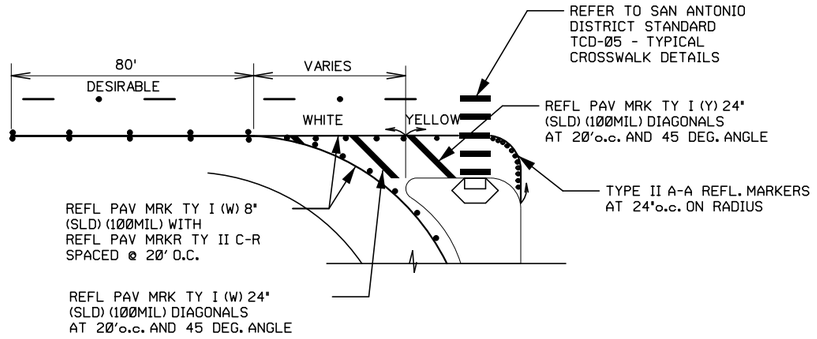
SCALE:NS — TPMD(2)-18

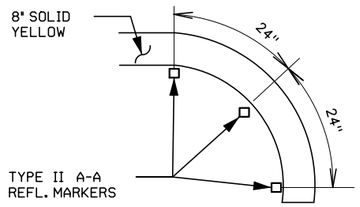
REVISIONS	FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.			SHEET NO.
MAY 2018					68
	STATE	DIST.	COUNTY		
	TEXAS	SAT	BEXAR		
	CONT.	SECT.	JOB	HIGHWAY NO.	
	0016	08	043,ETC	SL 368,ETC	

REVISED ON: 5-18 | CHECKED BY: GG / OMG | REVISED BY: JC03 | DRAWN BY: TED

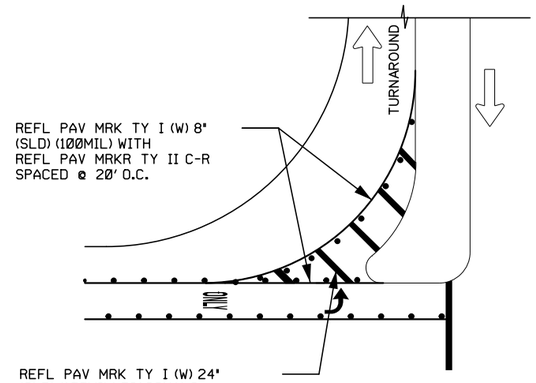
4/19/2022 14:01:15

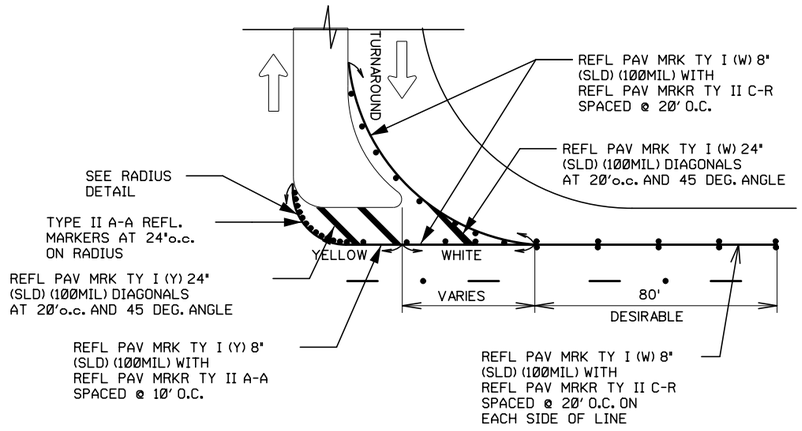
K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\SAT DISTRICT\TPMD(1-3)-18.dgn





RADIUS DETAIL





TYPICAL TURNAROUND PAVEMENT MARKING DETAILS

San Antonio District Standard

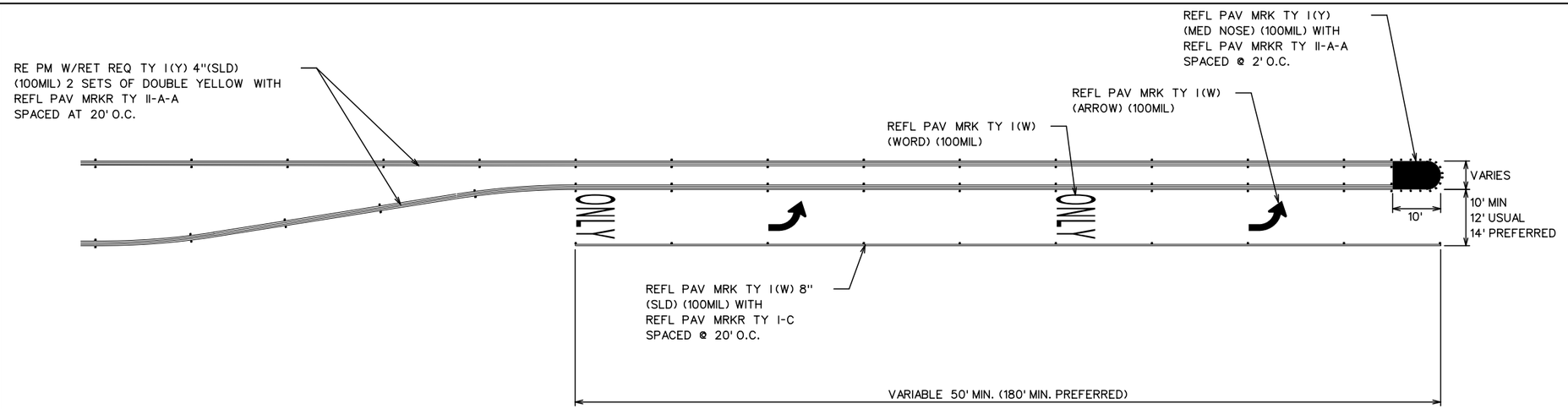
TYPICAL PAVEMENT MARKING DETAILS

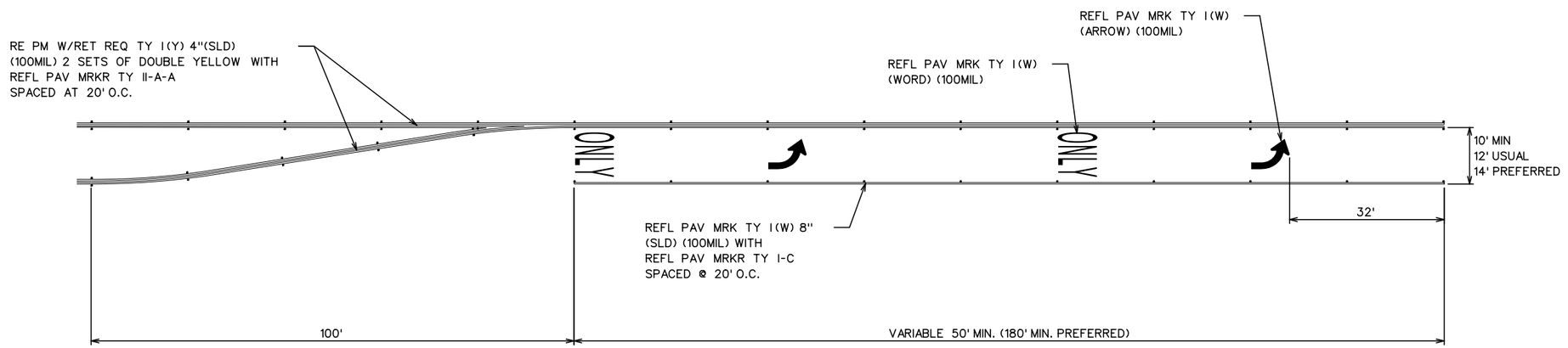
SCALE:NS

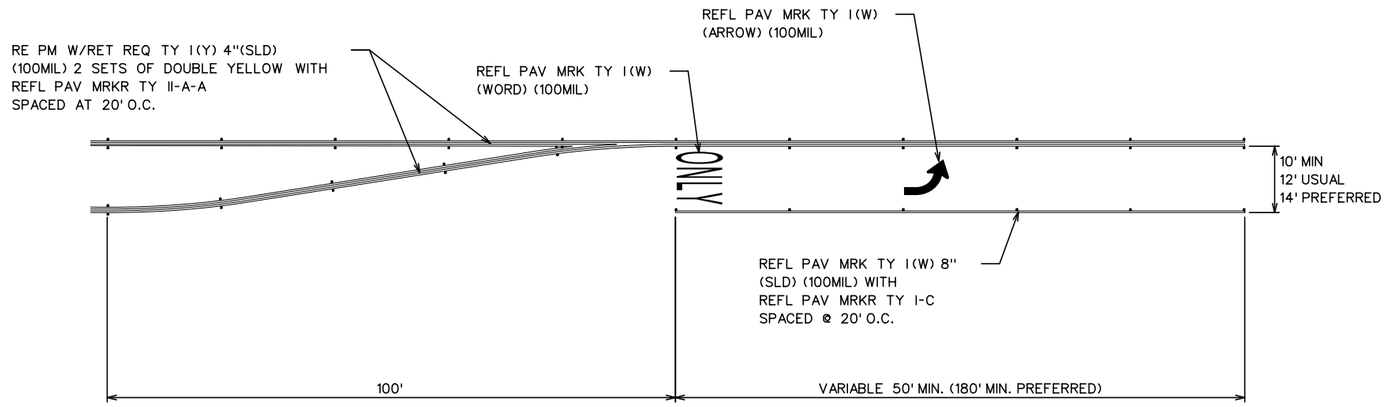
TPMD(3)-18

REVISIONS	FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
MAY 2018				69
	STATE	DIST.	COUNTY	
	TEXAS	SAT	BEXAR	
	CONT.	SECT.	JOB	HIGHWAY NO.
	0016	08	043,ETC	SL 368,ETC

REVISED ON: 5-18 | CHECKED BY: G.G./OMG | REVISED BY: JC03 | DRAWN BY: TED
4/19/2022 14:01:19
K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\SAT DISTRICT\TWTL(1-6)-18.dgn







MEDIAN LEFT TURN BAY DETAILS

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-12 (POSITIONING GUIDANCE).
2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE. ALSO REFER TO STATE STANDARD PM(3)-12)

LEGEND

☐ REFLECTIVE MARKER

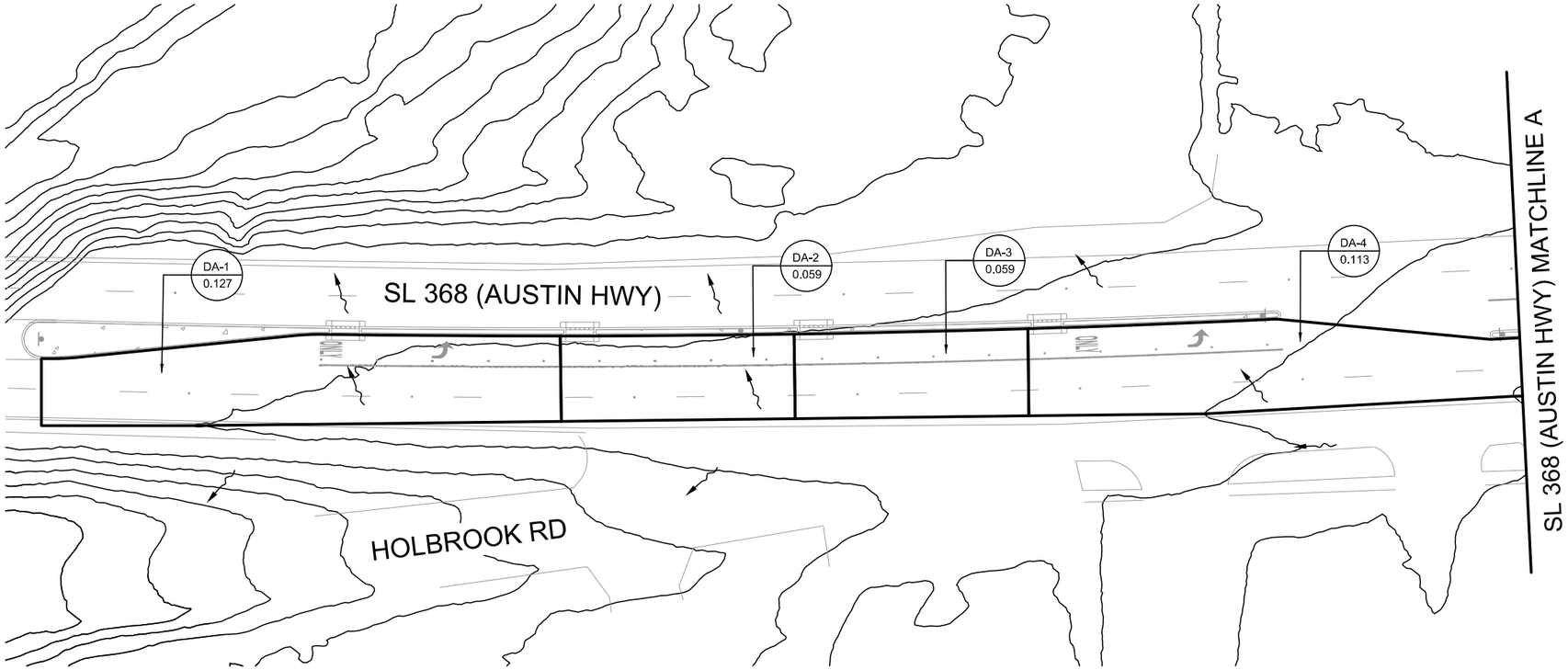
Texas Department of Transportation

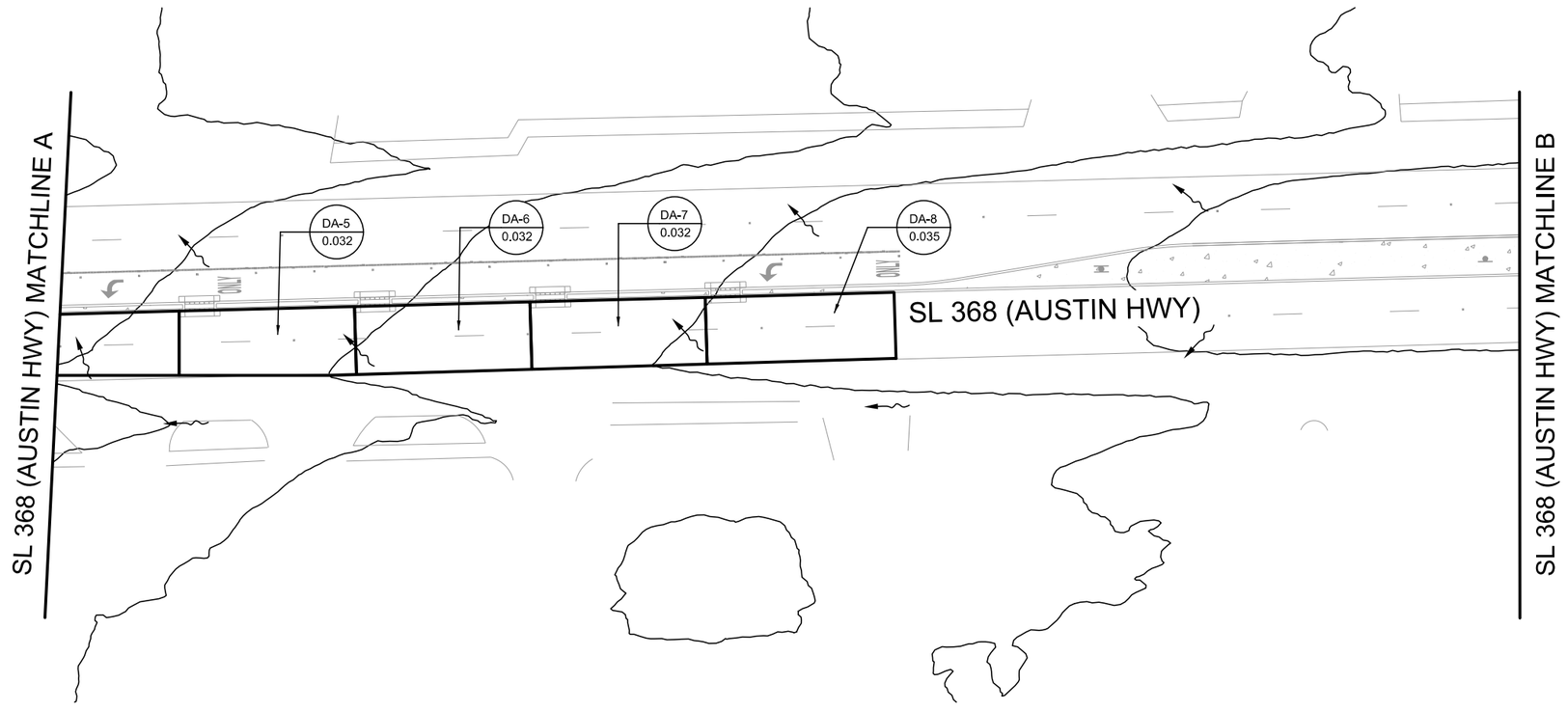
San Antonio District Standard

TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - URBAN ROADS

SCALE:NS **TWLTL(6)-18**

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
AUG 2002				70
APRIL 2003	STATE	DIST.	COUNTY	
NOV 2007	TEXAS	SAT	BEXAR	
SEPT 2008	CONT.	SECT.	JOB	HIGHWAY NO.
MARCH 2010				
MAY 2010	0016	08	043,ETC	SL 368,ETC
MAY 2018				





LEGEND

DA-X / X.XX — DRAINAGE AREA, AREA IN ACRES

PROP DRAINAGE BOUNDARY

FLOW DIRECTION

2-FT CONTOURS

N

0 25 50

SCALE: 1"=50'

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

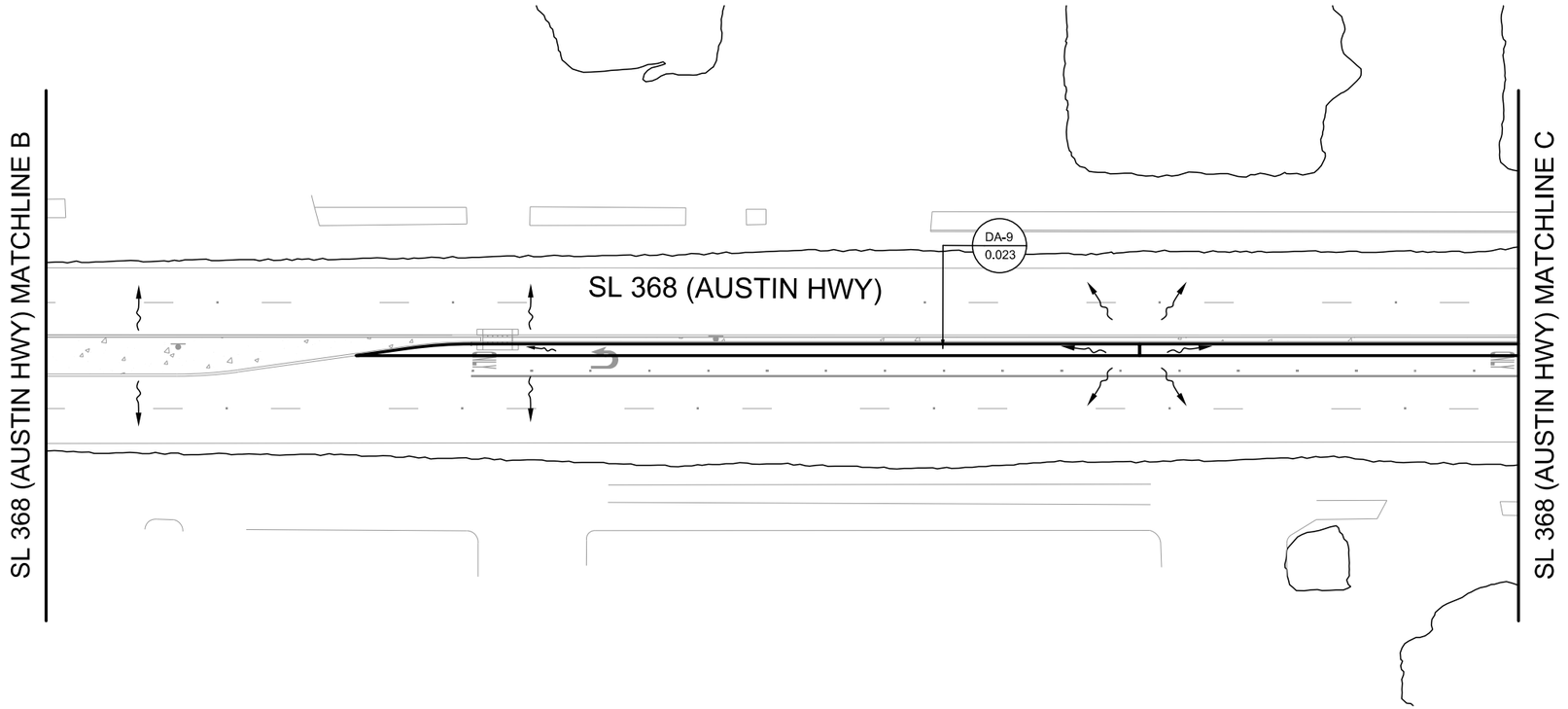
FY 2022 HSIP

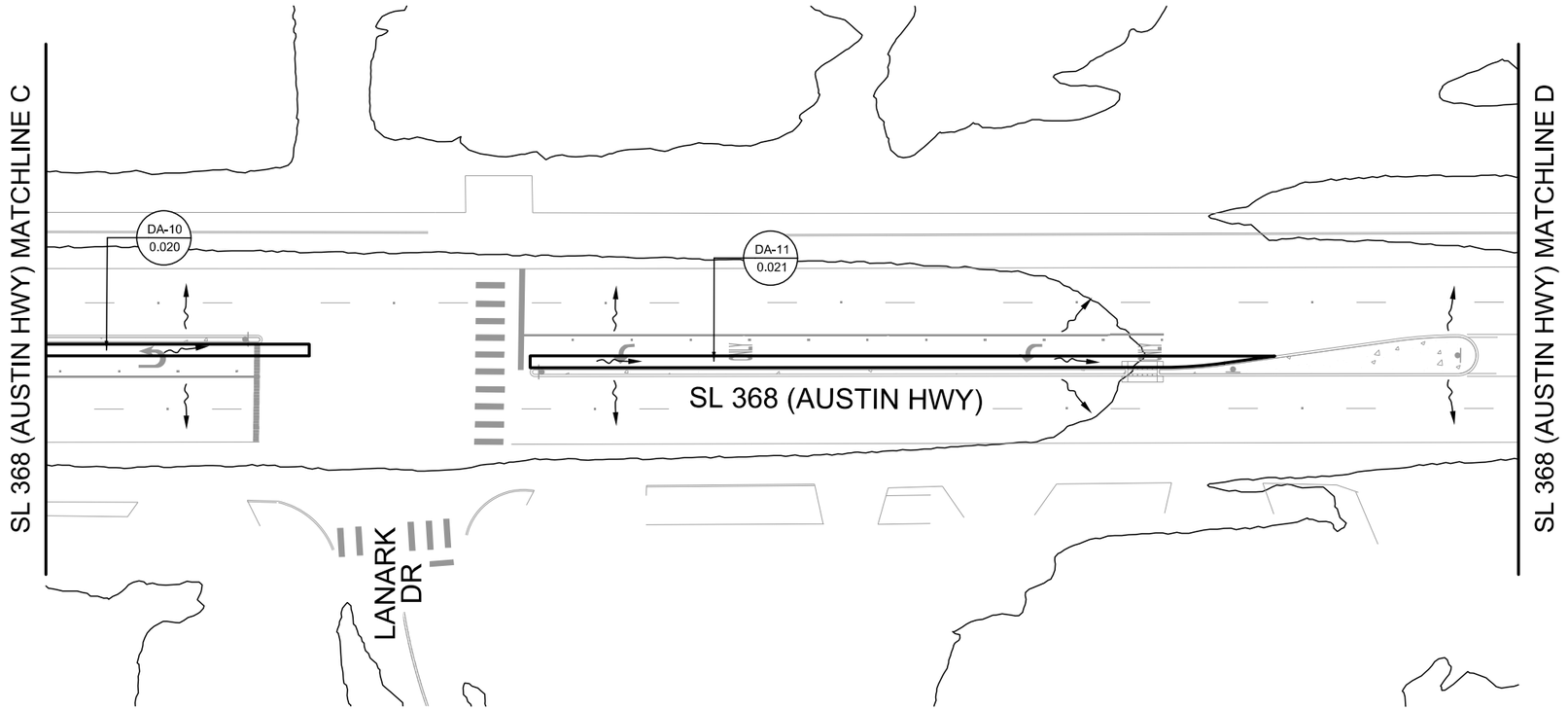
SL 368 (AUSTIN HWY)
DRAINAGE AREAS

SHEET 1 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		71
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:06:04
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_DA01.dgn





LEGEND

DA-X / X.XX — DRAINAGE AREA, AREA IN ACRES

PROP DRAINAGE BOUNDARY

FLOW DIRECTION

2-FT CONTOURS

N

0 25 50

SCALE: 1"=50'

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

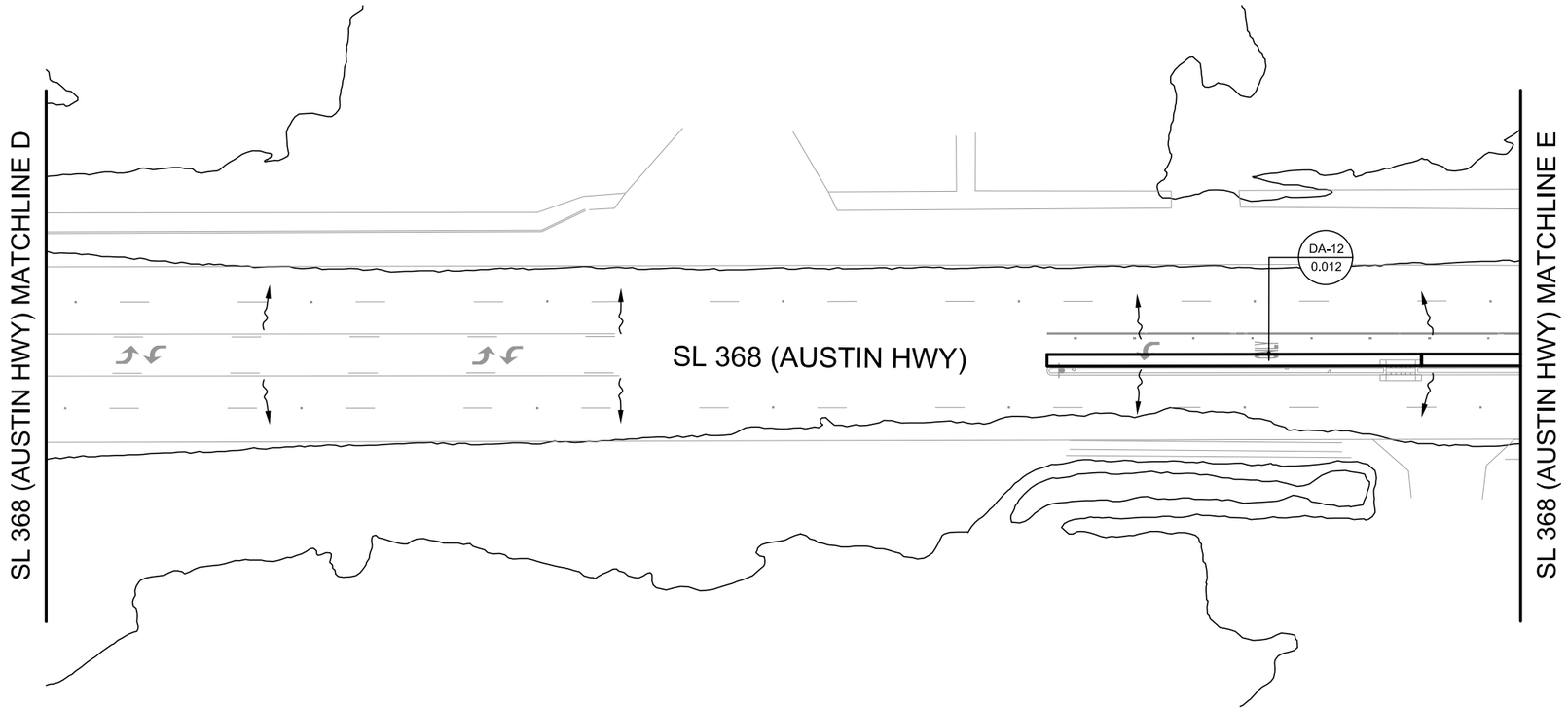
FY 2022 HSIP

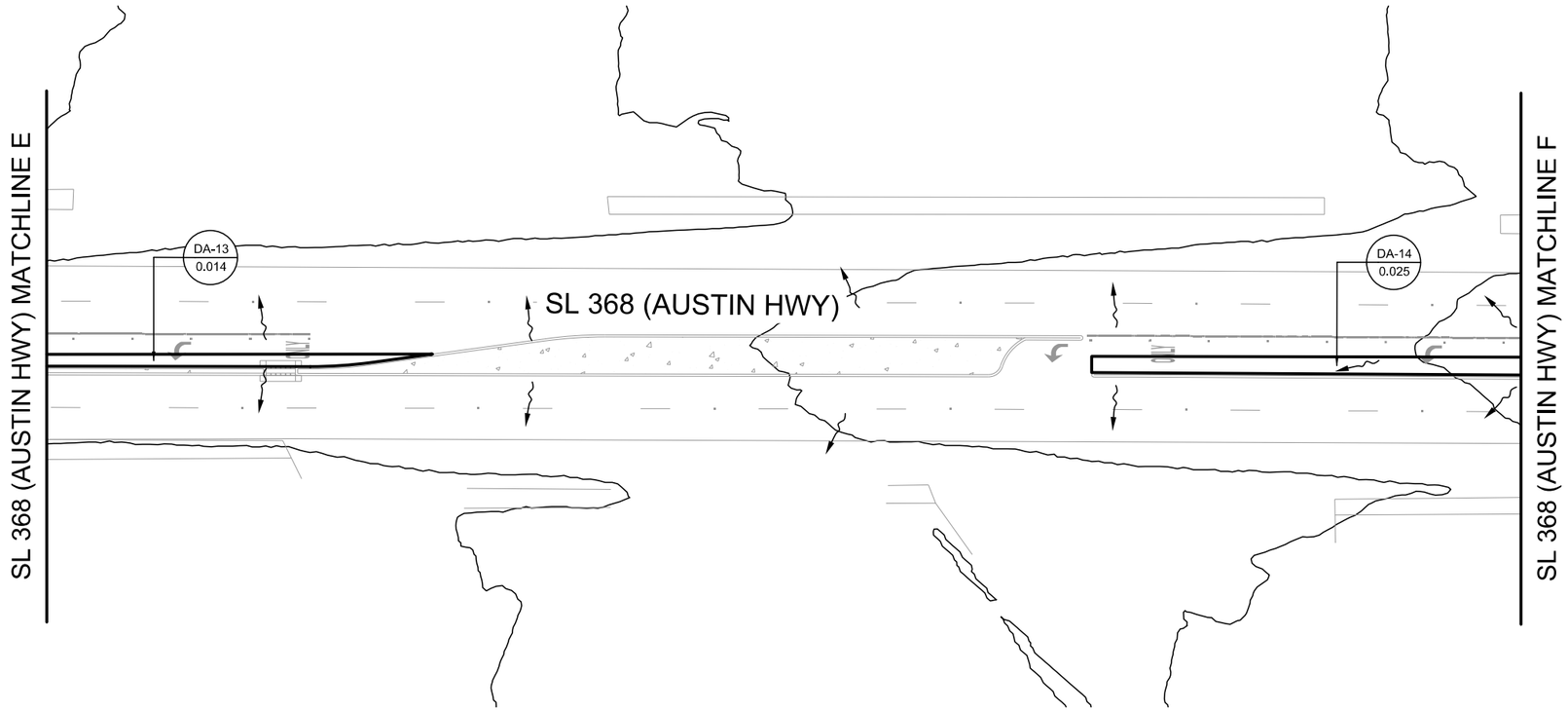
SL 368 (AUSTIN HWY)
DRAINAGE AREAS

SHEET 2 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		72
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:06:07
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_DA02.dgn





LEGEND

DA-X / X.XX — DRAINAGE AREA, AREA IN ACRES

PROP DRAINAGE BOUNDARY

FLOW DIRECTION

2-FT CONTOURS

N

0 25 50

SCALE: 1"=50'

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

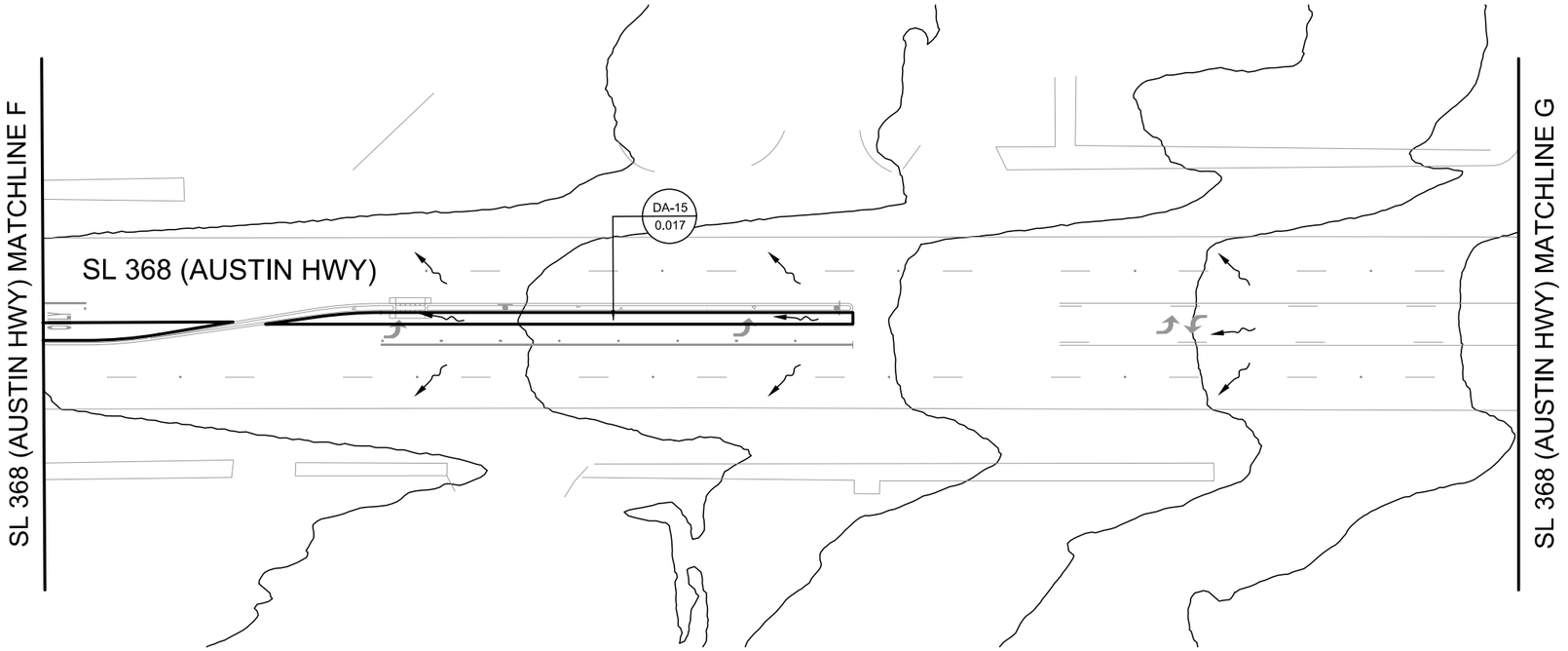
FY 2022 HSIP

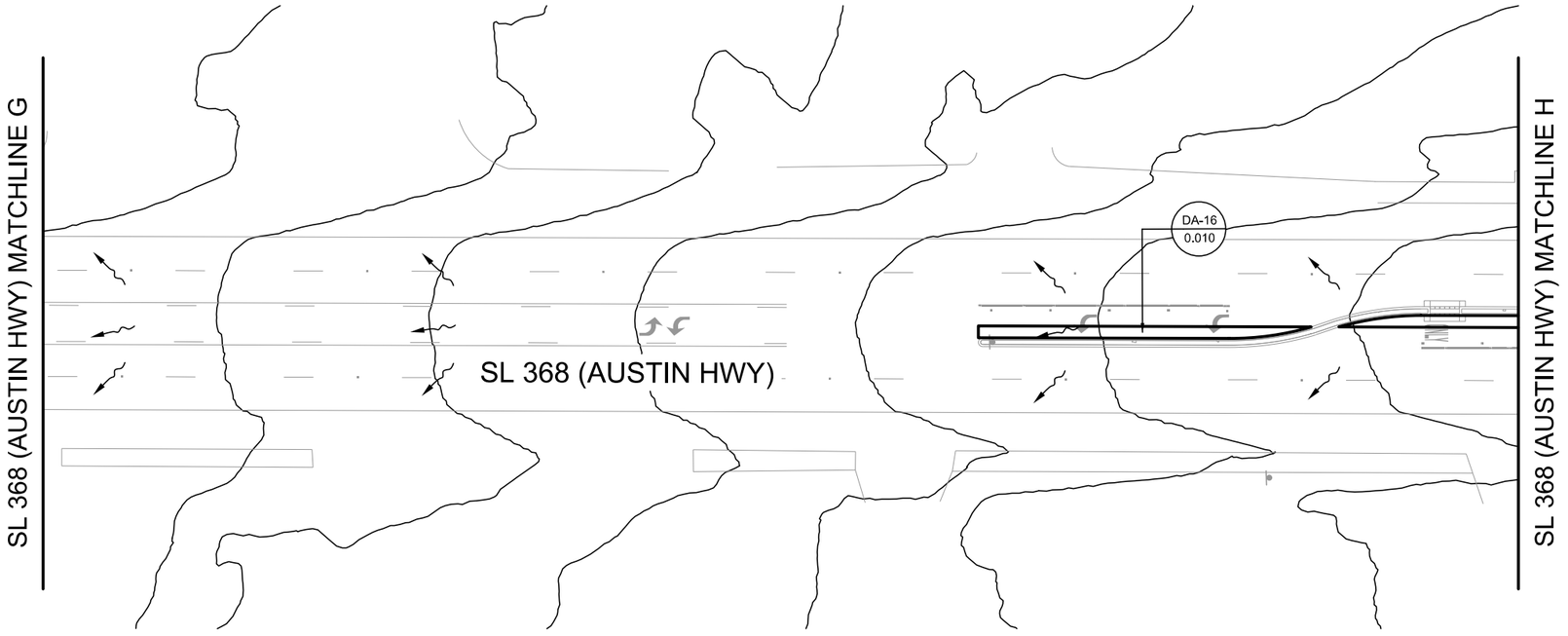
SL 368 (AUSTIN HWY)
DRAINAGE AREAS

SHEET 3 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		73
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:06:10
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_DA03.dgn





LEGEND

DA-X / X.XX — DRAINAGE AREA, AREA IN ACRES

PROP DRAINAGE BOUNDARY

FLOW DIRECTION

2-FT CONTOURS

N

0 25 50

SCALE: 1"=50'

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

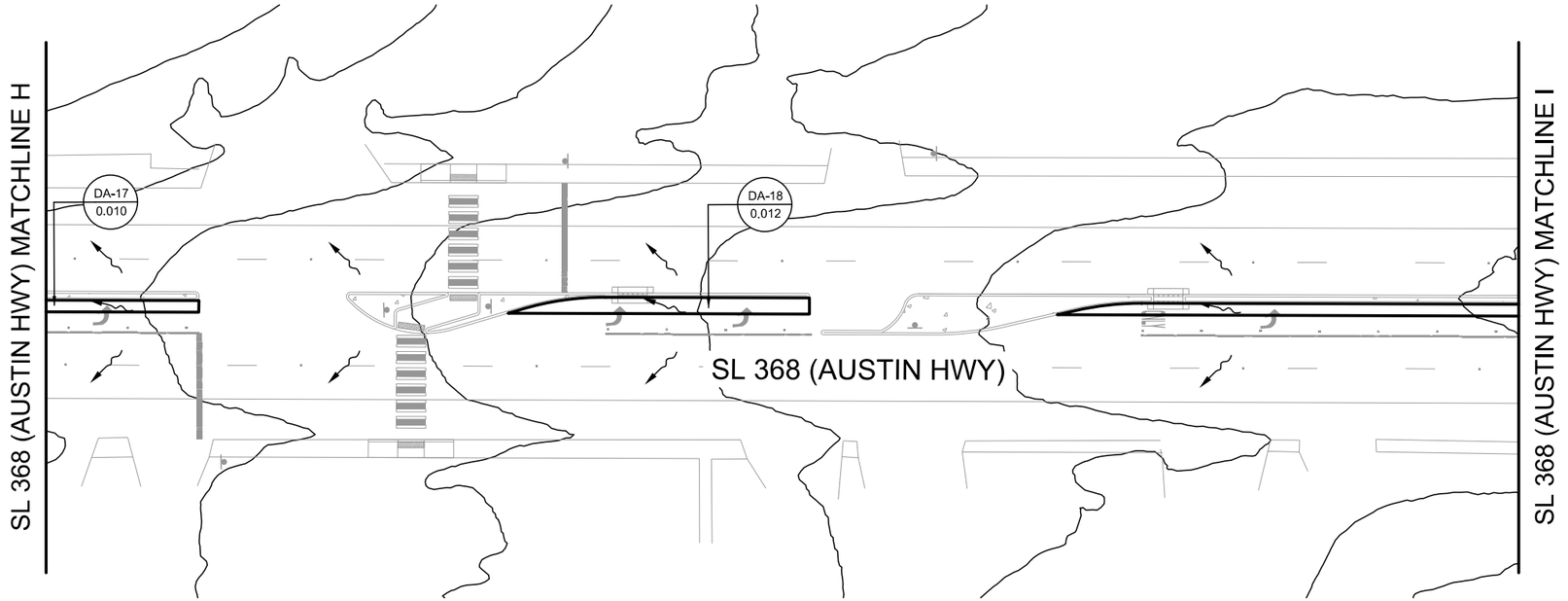
FY 2022 HSIP

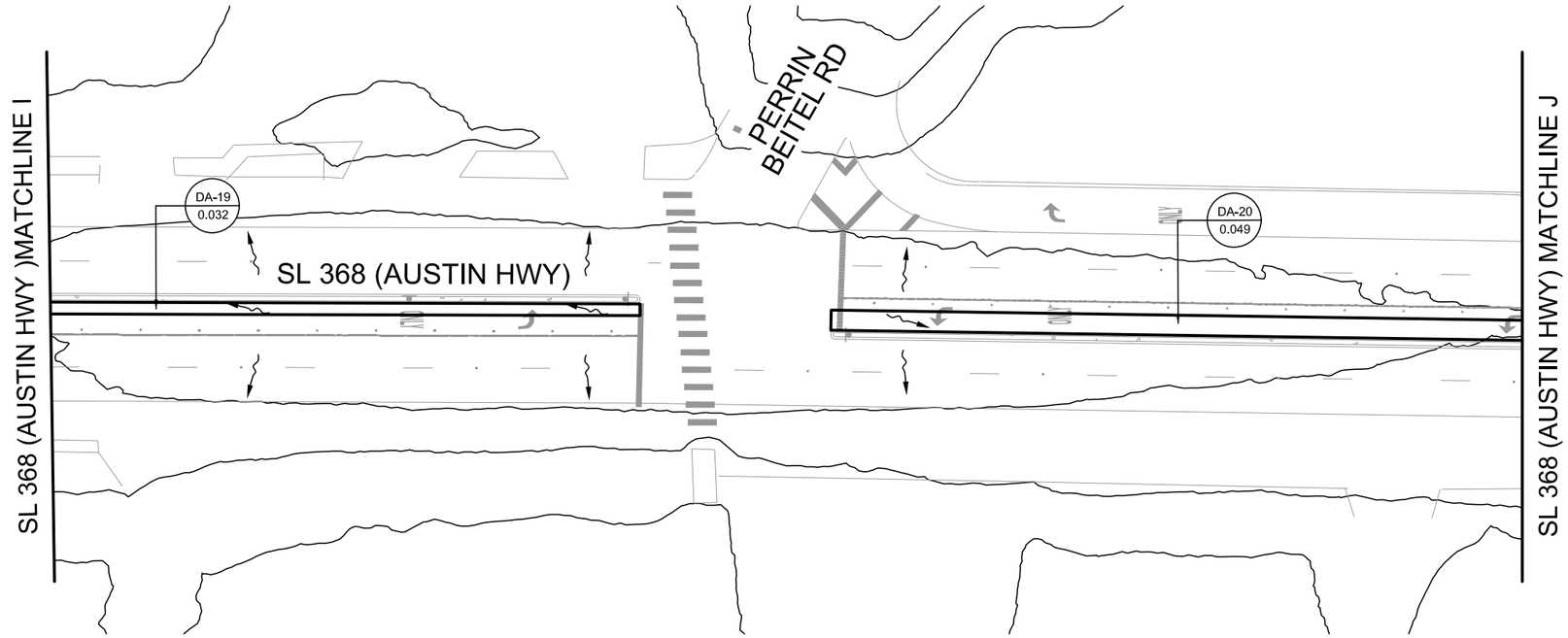
SL 368 (AUSTIN HWY)
DRAINAGE AREAS

SHEET 4 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		74
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:06:13
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_DA04.dgn





LEGEND

DA-X / X.XX — DRAINAGE AREA, AREA IN ACRES

PROP DRAINAGE BOUNDARY

FLOW DIRECTION

2-FT CONTOURS

N

0 25 50

SCALE: 1"=50'

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

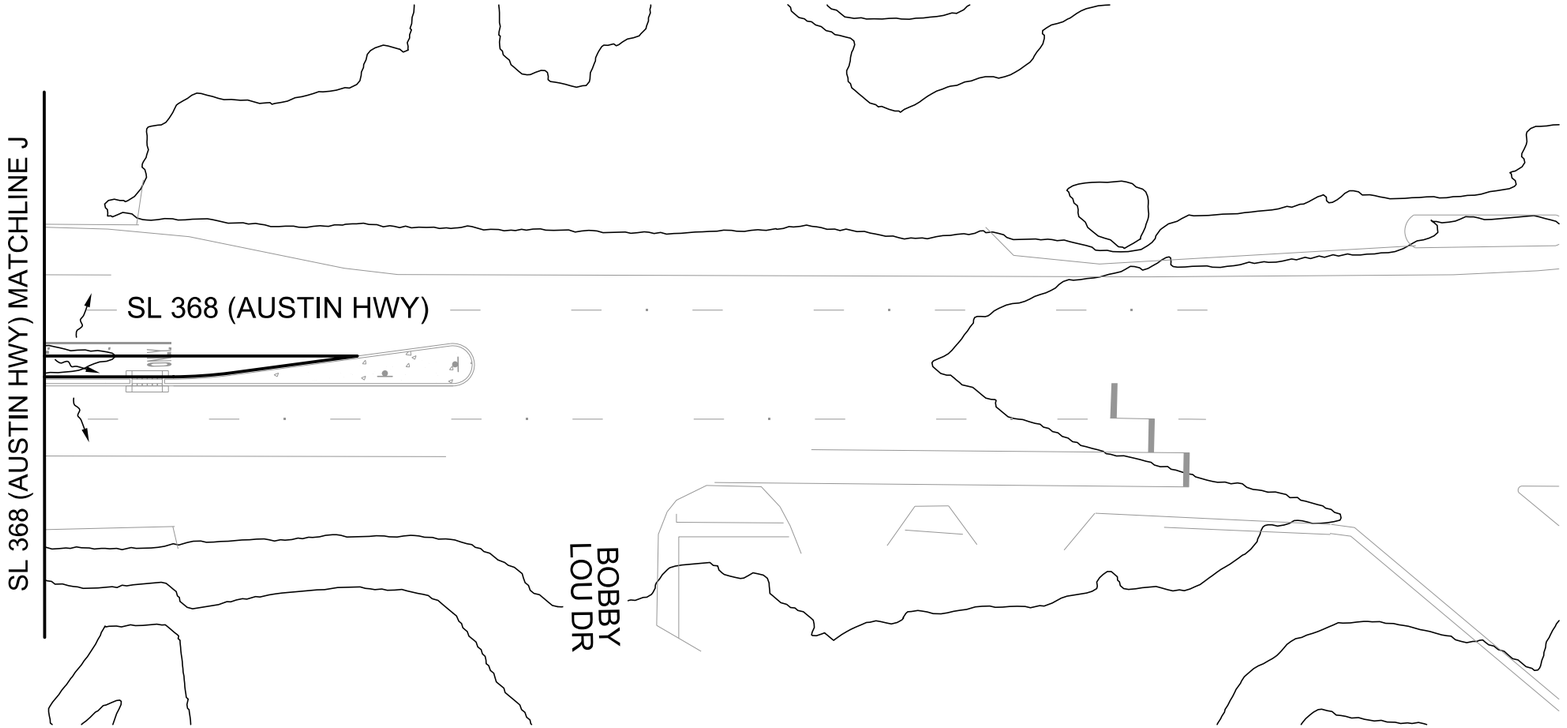
FY 2022 HSIP

SL 368 (AUSTIN HWY)
DRAINAGE AREAS

SHEET 5 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		75
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:06:17
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_DA05.dgn



LEGEND

DA-X / X.XX — DRAINAGE AREA, AREA IN ACRES

PROP DRAINAGE BOUNDARY

FLOW DIRECTION

2-FT CONTOURS

N

0 25 50

SCALE: 1"=50'

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY)
DRAINAGE AREAS

SHEET 6 OF 6

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		76
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:06:20
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_DA06.dgn

RATIONAL FLOWS, Q (cfs)					
DRAINAGE AREA ID	AREA (ACRES)	C	Tc (MIN)	INTENSITY I = 5 YR (IN / HR)	DISCHARGE Q = 5 YR (CFS)
DA-1	0.127	0.95	10	6.30	0.759
DA-2	0.059	0.95	10	6.30	0.351
DA-3	0.059	0.95	10	6.30	0.354
DA-4	0.139	0.95	10	6.30	0.832
DA-5	0.032	0.95	10	6.30	0.189
DA-6	0.032	0.95	10	6.30	0.191
DA-7	0.032	0.95	10	6.30	0.189
DA-8	0.034	0.95	10	6.30	0.201
DA-9	0.023	0.95	10	6.30	0.138
DA-10	0.020	0.95	10	6.30	0.120
DA-11	0.021	0.95	10	6.30	0.128
DA-12	0.012	0.95	10	6.30	0.070
DA-13	0.014	0.95	10	6.30	0.084
DA-14	0.025	0.95	10	6.30	0.152
DA-15	0.017	0.95	10	6.30	0.101
DA-16	0.010	0.95	10	6.30	0.057
DA-17	0.010	0.95	10	6.30	0.057
DA-18	0.012	0.95	10	6.30	0.069
DA-19	0.032	0.95	10	6.30	0.192
DA-20	0.049	0.95	10	6.30	0.292

HYDROLOGY NOTES

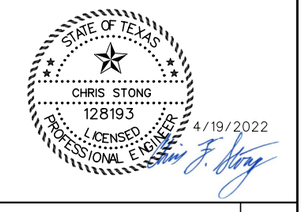
1. STORM DRAIN INLET 5-YEAR DESIGN STORM EVENT CAPACITY.
2. TXDOT HYDRAULIC DESIGN MANUAL (HDM), SEPTEMBER 2019, WAS USED TO DETERMINE HYDROLOGIC DATA.

HYDRAULIC NOTES

1. INLETS SPACED TO REDUCE LARGE POINT DISCHARGES ON THE BACKSIDE OF THE INLETS AND ONTO THE OPPOSING LANES OF TRAFFIC.
2. LIMITED TO NO SURVEY WAS PERFORMED ON THIS PROJECT. ROADWAY LONGITUDINAL AND CROSS SLOPE GRADES WERE DETERMINED FROM 2-FT CONTOURS.

DRAINAGE AREA	ID	TYPE	PROFILE TYPE	DISCHARGE Q (CFS)	ADDED CARRY OVER (CFS)	Q INTERCEPTED (CFS)	ARMOR CURB SLOT DESIGN									CAPACITY (CFS)	CARRY OVER INLET ID	CARRY OVER FLOW (CFS)
							LENGTH REQUIRED (FT)	ACTUAL LENGTH (FT)	DEPRESSION DEPTH (FT)	DEPRESSION WIDTH (FT)	LONG. SLOPE (%)	CROSS SLOPE %	MANNING'S n-VALUE	ALLOW. POND WIDTH (FT)	ACTUAL POND WIDTH (FT)			
DA-1	CI-1	DUAL ARMOR CURB SLOT MEDIAN DRAIN	SAG	0.759	0.000	0.759	-	10	0	2	0.850%	3.356%	0.013	11	3.930	1.437	DA-2	
DA-2	CI-2	DUAL ARMOR CURB SLOT MEDIAN DRAIN	ON GRADE	0.351	0.002	0.353	9.62	10	0	2	0.850%	3.356%	0.013	11	3.357	0.367	DA-3	
DA-3	CI-3	DUAL ARMOR CURB SLOT MEDIAN DRAIN	ON GRADE	0.354	0.084	0.438	10.53	10	0	2	0.850%	3.356%	0.013	11	3.642	0.416	DA-4	0.002
DA-4	CI-4	DUAL ARMOR CURB SLOT MEDIAN DRAIN	ON GRADE	0.832	0.009	0.840	13.85	10	0	2	0.850%	3.356%	0.013	11	4.649	0.607	DA-5	0.084
DA-5	CI-5	DUAL ARMOR CURB SLOT MEDIAN DRAIN	ON GRADE	0.189	0.009	0.198	12.11	10	0	2	1.904%	2.280%	0.013	3	2.958	0.163	DA-6	0.009
DA-6	CI-6	DUAL ARMOR CURB SLOT MEDIAN DRAIN	ON GRADE	0.191	0.009	0.200	12.16	10	0	2	1.904%	2.280%	0.013	3	2.969	0.164	DA-7	0.009
DA-7	CI-7	DUAL ARMOR CURB SLOT MEDIAN DRAIN	ON GRADE	0.189	0.009	0.198	12.13	10	0	2	1.904%	2.280%	0.013	3	2.961	0.163	DA-8	0.009
DA-8	CI-8	DUAL ARMOR CURB SLOT MEDIAN DRAIN	ON GRADE	0.201	0.000	0.201	12.20	10	0	2	1.904%	2.280%	0.013	3	2.978	0.165		0.009
DA-9	CI-9	DUAL ARMOR CURB SLOT MEDIAN DRAIN	SAG	0.138	0.000	0.138	-	10	0	2	0.500%	2.000%	0.013	11	3.946	0.665		
DA-10		-	-	0.120	0.000	0.120	-	-	0	2	0.500%	2.000%	0.016	11	3.696	0.000		
DA-11	CI-11	DUAL ARMOR CURB SLOT MEDIAN DRAIN	SAG	0.128	0.000	0.128	-	10	0	2	0.500%	2.000%	0.013	11	3.835	0.637		
DA-12	CI-12	DUAL ARMOR CURB SLOT MEDIAN DRAIN	ON GRADE	0.070	0.000	0.070	6.73	10	0	2	0.500%	1.500%	0.013	11	3.342	0.104		
DA-13	CI-13	DUAL ARMOR CURB SLOT MEDIAN DRAIN	SAG	0.084	0.000	0.084	-	10	0	2	0.500%	1.500%	0.013	11	3.913	0.427	DA-12	
DA-14		-	-	0.152	0.000	0.152	-	-	0	2	0.901%	1.014%	0.016	11	5.533	0.000		
DA-15	CI-15	DUAL ARMOR CURB SLOT MEDIAN DRAIN	SAG	0.101	0.000	0.101	-	10	0	2	1.593%	0.879%	0.013	11	4.726	0.254		
DA-16		-	-	0.057	0.000	0.057	-	-	0	2	2.424%	1.702%	0.016	11	2.300	0.000		
DA-17	CI-17	DUAL ARMOR CURB SLOT MEDIAN DRAIN	SAG	0.057	0.000	0.057	-	10	0	2	2.235%	1.500%	0.013	11	2.559	0.226		
DA-18	CI-18	DUAL ARMOR CURB SLOT MEDIAN DRAIN	SAG	0.069	0.000	0.069	-	10	0	2	2.045%	1.500%	0.013	11	2.675	0.241		
DA-19	CI-19	DUAL ARMOR CURB SLOT MEDIAN DRAIN	SAG	0.192	0.000	0.192	-	10	0	2	1.204%	1.000%	0.013	11	5.839	0.423		
DA-20	CI-12	DUAL ARMOR CURB SLOT MEDIAN DRAIN	SAG	0.292	0.000	0.292	-	10	0	2	1.200%	1.000%	0.013	11	6.842	0.537		

SL 368 (CSJ: 0016-08-043)



NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY)
HYDROLOGIC AND HYDRAULIC COMPUTATIONS

SHEET 1 OF 1

FED RD DIV. NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		77
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

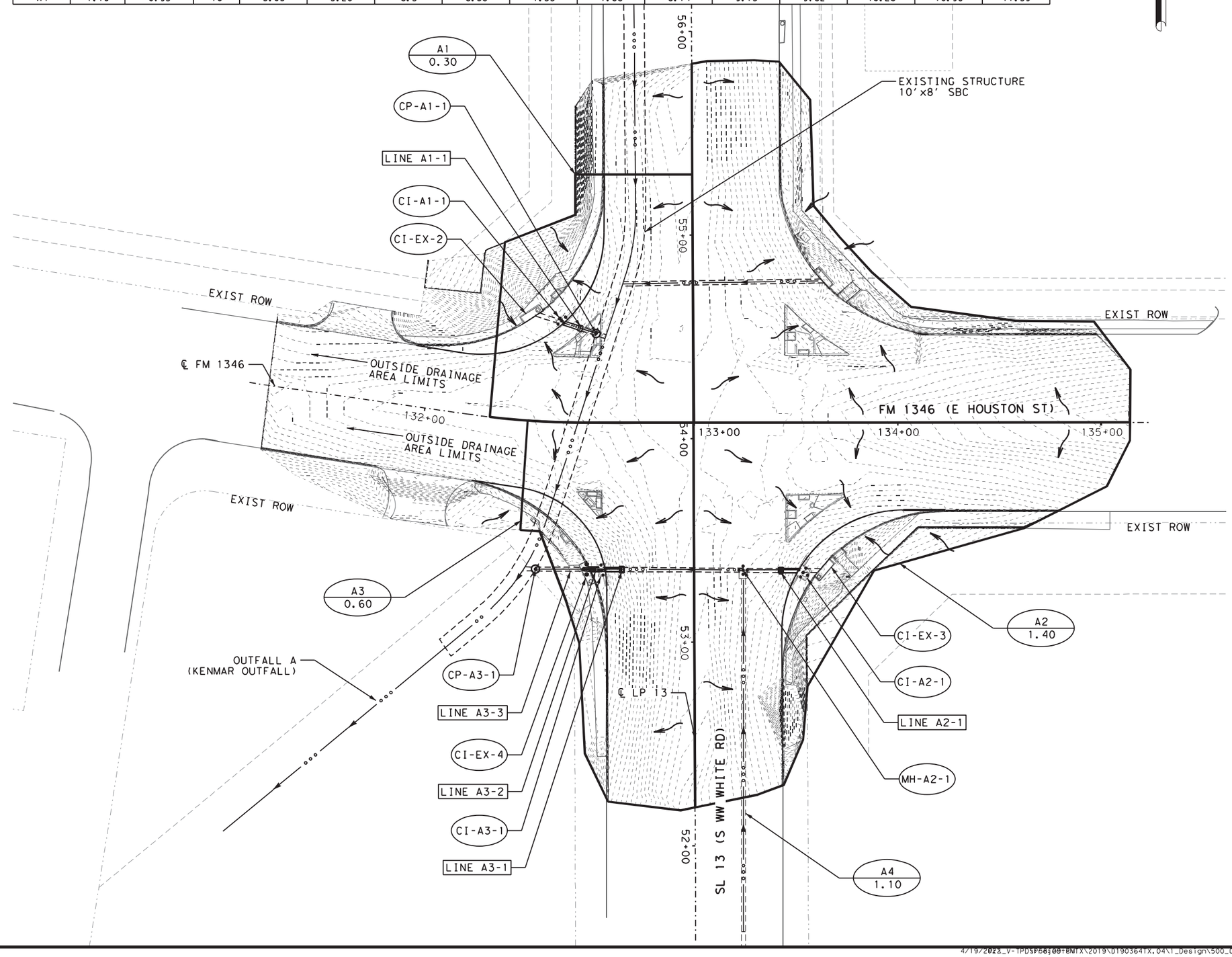
Justin.Kinne
4/19/2022 14:06:23
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Austinhwy_Hydrau.dgn

OUTFALL A (KENMAR OUTFALL)

PROPOSED DRAINAGE AREA RUNOFF COMPUTATIONS

DRAINAGE AREA ID	AREA "A" (AC)	RUNOFF COEFFICIENT "C"	Tc USED (MIN)	50% AEP INTENSITY (IN/HR)	50% AEP FLOW "Q" (CFS)	20% AEP INTENSITY (IN/HR)	20% AEP FLOW "Q" (CFS)	10% AEP INTENSITY (IN/HR)	10% AEP FLOW "Q" (CFS)	4% AEP INTENSITY (IN/HR)	4% AEP FLOW "Q" (CFS)	2% AEP INTENSITY (IN/HR)	2% AEP FLOW "Q" (CFS)	1% AEP INTENSITY (IN/HR)	1% AEP FLOW "Q" (CFS)
A1	0.30	0.95	10	5.05	1.44	6.3	1.80	7.33	2.09	8.74	2.49	9.82	2.80	10.90	3.11
A2	1.40	0.95	10	5.05	6.72	6.3	8.38	7.33	9.75	8.74	11.62	9.82	13.06	10.90	14.50
A3	0.60	0.95	10	5.05	2.88	6.3	3.59	7.33	4.18	8.74	4.98	9.82	5.60	10.90	6.21
A4	1.10	0.95	10	5.05	5.28	6.3	6.58	7.33	7.66	8.74	9.13	9.82	10.26	10.90	11.39

CSJ 0521-01-055



LEGEND

- DRAINAGE AREA BOUNDARY
- FLOW DIRECTION
- STREAM CENTERLINE
- EXIST ROADWAY
- PROP ROADWAY
- EXIST ROW
- CONTOURS
- XXX-X-XX / XX.XX — DRAINAGE AREA ID / DRAINAGE AREA (ACRES)
- XX-XX-X — DRAINAGE NODE
- XX-XX-X — DRAINAGE LINK

NOTES:

1. INTERIOR DRAINAGE AREAS CONTRIBUTE FLOW TO CURB INLETS.
2. DRAINAGE AREAS BASED ON AS-BUILTS.
3. PROPOSED INLETS ARE DESIGNED ACCORDING TO ATLAS-14 10% AEP.
4. EXISTING SYSTEM TO REMAIN IN PLACE WAS NOT ANALYZED.

0 25' 50'
SCALE: 1" = 50'

STATE OF TEXAS
CARLOS J. PIZARRO-PAGAN
129809
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

Texas Department of Transportation

SL 13 AT FM 1346

DRAINAGE AREA MAP

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		78
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043, ETC	SL 368, ETC

D190364TX.04

PENTABLE: $PENTBL$
PLOTDRIVER: pdfv8.plt
5:58:09 PM
4/19/2022
P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\05 drainage\sub1\sheet\C_LP13_S_DAM01.dgn
4/19/2022 P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\05 drainage\sub1\sheet\C_LP13_S_DAM01.dgn

CSJ 0521-01-055

ESTIMATED QUANTITIES				
ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
420	6002	CL A CONC (MISC)	CY	16
464	6005	RC PIPE (CL III) (24 IN)	LF	29
465	6022	INLET (COMPL) (PCO) (5FT) (LEFT)	EA	1
465	6023	INLET (COMPL) (PCO) (5FT) (RIGHT)	EA	1
465	6024	INLET (COMPL) (PCO) (5FT) (BOTH)	EA	1
479	6003	ADJUSTING MANHOLES & INLETS	EA	2

CONTRACTOR TO EXERCISE CAUTION! EXISTING GAS LINE.

CP-A1-1
EXIST PIPE JUNCTION
℄ = 649.58'

LINE A1-1
TIE TO EXISTING 24" RCP
WITH CONC COLLAR
8 LF

CI-A1-1
INLET (COMPL) (PCO) (5FT) (RIGHT)
℄ LP 13
STA 54+57.14
OFF = 63.40' LT
FOC ELEV = 658.68'

CI-EX-2
EXIST INLET TO BE CAPPED (8 CY)
℄ LP 13
STA 54+61.49
CURB TOP ELEV = 658.84'

EXISTING
10'X 8' SBC

℄ LP 13

KENMAR OUTFALL
℄ = 644.42'

KENMAR OUTFALL
℄ = 644.33'

EXIST 24" RCP
TO REMAIN

EXIST CURB INLET
TO REMAIN

EXIST ROW

EXIST EOP
PROP EOP

SL 13 (WW WHITE RD)

55+00

54+00

53+00

132+00

133+00

134+00

135+00

FM 1346 (E HOUSTON ST)

℄ FM 1346

CP-A3-1
EXIST PIPE JUNCTION
℄ = 648.94'

KENMAR OUTFALL
℄ = 643.98'

OUTFALL "A"
(KENMAR OUTFALL)

CI-EX-4
EXIST INLET
℄ LP 13
STA 53+35.68
CURB TOP ELEV = 658.56'

LINE A3-2
PROP 24" RCP
5 LF

CI-A3-1
INLET (COMPL) (PCO) (5FT) (LEFT)
℄ LP 13
STA 53+36.00
OFF = 43.72' LT
FOC ELEV = 658.40'

CONTRACTOR TO EXERCISE CAUTION! EXISTING GAS AND WATER LINE.

LINE A3-1
TIE TO EXISTING 24" RCP
WITH CONC COLLAR
8 LF

CI-EX-3
EXIST INLET TO BE CAPPED (8 CY)
℄ LP 13
STA 53+35.30
CURB TOP ELEV = 658.68'

CI-A2-1
INLET (COMPL) (PCO) (5FT) (BOTH)
℄ LP 13
STA 53+35.31
OFF = 51.45' RT
FOC ELEV = 658.80'

CONTRACTOR TO EXERCISE CAUTION! EXISTING SEWER AND WATER LINE.

LINE A2-1
TIE TO EXISTING 24" RCP
WITH CONC COLLAR
8 LF

MH-A2-1
EXIST MANHOLE
℄ = 649.85'

MH-A2-1
EXIST MANHOLE
℄ = 649.39'

LEGEND

- DRAINAGE AREA BOUNDARY
- FLOW DIRECTION
- STREAM CENTERLINE
- EXIST ROADWAY
- PROP ROADWAY
- EXIST ROW
- CONTOURS

NOTES:

1. FOR STORM SEWER PROFILES, SEE "LATERAL PROFILE" SHEETS.
2. FOR CAPPING AN EXISTING INLET OR MANHOLE, SEE SAN ANTONIO DISTRICT STANDARD "CAPPING INLETS & MANHOLES" DETAIL SHEET.
3. EXISTING UTILITIES SHOWN ARE APPROXIMATE AND ARE BASED ON BEST AVAILABLE DATA. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, TYPE, AND ELEVATION OF ALL UTILITIES SHOWN PRIOR TO CONSTRUCTION.
4. SEE EXISTING SUBSURFACE UTILITY MAP FOR ADDITIONAL UTILITY INFORMATION.
5. CONTRACTOR MUST TAKE ALL STEPS NECESSARY TO PROTECT UTILITIES DURING CONSTRUCTION.
6. STATION/OFFSET/ELEVATION CALLOUTS ARE TO FOC/INLET OPENING.
7. CONCRETE COLLAR TIE-INS TO BE SUBSIDIARY TO ITEM 464.

0 20' 40'
SCALE: 1" = 40'

STATE OF TEXAS
CARLOS J. PIZARRO-PAGAN
129809
LICENSED
PROFESSIONAL ENGINEER
5/20/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

Texas Department of Transportation

SL 13 AT FM 1346

STORM SEWER PLAN

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		79
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043, ETC	SL 368, ETC

D1903647X.04

PENTBL: $PENTBL.S$
PLOTDRIVER: pdfv8.plt
11:24:08 AM
5/20/2022
P:_V-TPD\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\05 drainage\sub1\sheet\C_LP13_S_DDP01.dgn
5/20/2022 P:_V-TPD\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\05 drainage\sub1\sheet\C_LP13_S_DDP01.dgn

50% AEP ON GRADE INLET AND SAG INLET CONFIGURATION DATA

INLET ID	INLET CHAIN	INLET STATION	INLET OFFSET	INLET STANDARD	INLET TYPE	INLET PROFILE TYPE	CROSS SLOPE (%)	INLET DISCHARGE (CFS)	INLET CAPACITY (CFS)	MANNING'S SPREAD, N	TOP ELEVATION (FT)	FLOWLINE ELEVATION (FT)	COMPUTED PONDED DEPTH (FT)	ALLOWABLE PONDED DEPTH (FT)	COMPUTED PONDED WIDTH (FT)	ALLOWABLE PONDED WIDTH (FT)
CI-A1-1	CL_LP13	54+57.14	-63.40	PCO10R-3x5	CURB	SAG	2.00	1.44	9.92	0.016	658.68	651.05	0.14	0.5	1.34	6.25
CI-A2-1	CL_LP13	53+35.31	51.45	PCO15-5x5	CURB	SAG	2.00	6.72	13.58	0.016	658.40	650.52	0.31	0.5	2.60	6.25
CI-A3-1	CL_LP13	53+36.00	-43.72	PCO10L-3x5	CURB	SAG	2.00	2.88	9.92	0.016	658.80	649.33	0.22	0.5	1.79	6.25

10% AEP ON GRADE INLET AND SAG INLET CONFIGURATION DATA

INLET ID	INLET CHAIN	INLET STATION	INLET OFFSET	INLET STANDARD	INLET TYPE	INLET PROFILE TYPE	CROSS SLOPE (%)	INLET DISCHARGE (CFS)	INLET CAPACITY (CFS)	MANNING'S SPREAD, N	TOP ELEVATION (FT)	FLOWLINE ELEVATION (FT)	COMPUTED PONDED DEPTH (FT)	ALLOWABLE PONDED DEPTH (FT)	COMPUTED PONDED WIDTH (FT)	ALLOWABLE PONDED WIDTH (FT)
CI-A1-1	CL_LP13	54+57.14	-63.40	PCO10R-3x5	CURB	SAG	2.00	2.09	9.92	0.016	658.68	651.05	0.18	0.5	1.54	6.25
CI-A2-1	CL_LP13	53+35.31	51.45	PCO15-5x5	CURB	SAG	2.00	9.75	13.58	0.016	658.40	650.52	0.40	0.5	2.99	6.25
CI-A3-1	CL_LP13	53+36.00	-43.72	PCO10L-3X5	CURB	SAG	2.00	4.18	9.92	0.016	658.80	649.33	0.28	0.5	2.06	6.25

1% AEP ON GRADE INLET AND SAG INLET CONFIGURATION DATA

INLET ID	INLET CHAIN	INLET STATION	INLET OFFSET	INLET STANDARD	INLET TYPE	INLET PROFILE TYPE	CROSS SLOPE (%)	INLET DISCHARGE (CFS)	INLET CAPACITY (CFS)	MANNING'S SPREAD, N	TOP ELEVATION (FT)	FLOWLINE ELEVATION (FT)	COMPUTED PONDED DEPTH (FT)	ALLOWABLE PONDED DEPTH (FT)	COMPUTED PONDED WIDTH (FT)	ALLOWABLE PONDED WIDTH (FT)
CI-A1-1	CL_LP13	54+57.14	-63.40	PCO10R-3x5	CURB	SAG	2.00	3.11	9.92	0.016	658.68	651.05	0.23	0.5	1.79	6.25
CI-A2-1	CL_LP13	53+35.31	51.45	PCO15-5x5	CURB	SAG	2.00	14.50	13.58	0.016	658.40	650.52	0.52	0.5	3.46	6.25
CI-A3-1	CL_LP13	53+36.00	-43.72	PCO10L-3X5	CURB	SAG	2.00	6.21	9.92	0.016	658.80	649.33	0.37	0.5	2.39	6.25

50% AEP CONVEYANCE CONFIGURATION DATA

LINK ID	US NODE ID	DS NODE ID	US FL ELEV (FT)	US HGL (FT)	DS FL ELEV (FT)	DS HGL (FT)	ACTUAL DS VELOCITY (FPS)	UNIFORM VELOCITY (FPS)	ACTUAL LENGTH (FT)	HYDRAULIC LENGTH (FT)	LINK SLOPE (%)	MANNING'S N	CUMULATIVE Tc (MIN)	Tc USED (MIN)	CUMULATIVE C VALUE	CUMULATIVE A (AC)	DISCHARGE (CFS)	CAPACITY (CFS)
LINE A1-1	CI-A1-1	CP-A1-1	651.05	651.55	649.58	649.79	8.20	8.86	16.67	18.17	8.06	0.012	0.03	10	0.95	0.30	1.44	74.85
LINE A2-1	CI-A2-1	MH-A2-1	650.52	651.85	649.85	650.49	7.84	8.90	25.36	29.85	2.23	0.012	0.04	10	0.95	1.40	6.72	39.41
LINE A3-1	MH-A2-1	CI-A3-1	649.59	650.98	649.33	650.78	4.92	5.32	65.82	69.32	0.37	0.012	0.26	10	0.95	2.50	*12.00	*16.05
LINE A3-2	CI-A3-1	CI-EX-4	649.32	650.78	649.29	650.68	6.38	5.57	4.58	7.58	0.40	0.012	0.27	10	0.95	3.10	*14.88	*16.58
LINE A3-3	CI-EX-4	CP-A3-1	649.24	650.63	648.94	650.10	7.88	8.76	23.67	25.17	1.19	0.012	0.32	10	0.95	3.10	14.88	28.78

10% AEP CONVEYANCE CONFIGURATION DATA

LINK ID	US NODE ID	DS NODE ID	US FL ELEV (FT)	US HGL (FT)	DS FL ELEV (FT)	DS HGL (FT)	ACTUAL DS VELOCITY (FPS)	UNIFORM VELOCITY (FPS)	ACTUAL LENGTH (FT)	HYDRAULIC LENGTH (FT)	LINK SLOPE (%)	MANNING'S N	CUMULATIVE Tc (MIN)	Tc USED (MIN)	CUMULATIVE C VALUE	CUMULATIVE A (AC)	DISCHARGE (CFS)	CAPACITY (CFS)
LINE A1-1	CI-A1-1	CP-A1-1	651.05	651.68	649.58	649.84	8.83	9.91	16.67	18.17	8.06	0.012	0.03	10	0.95	0.30	2.09	74.85
LINE A2-1	CI-A2-1	MH-A2-1	650.52	652.20	649.85	650.64	8.50	9.87	25.36	29.85	2.23	0.012	0.04	10	0.95	1.40	9.75	39.41
LINE A3-1	MH-A2-1	CI-A3-1	649.59	651.45	649.33	651.12	5.89	5.68	65.82	69.32	0.37	0.012	0.26	10	0.95	2.50	*17.40	*16.05
LINE A3-2	CI-A3-1	CI-EX-4	649.32	651.12	649.29	650.95	7.74	7.05	4.58	7.58	0.40	0.012	0.27	10	0.95	3.10	*21.58	*16.58
LINE A3-3	CI-EX-4	CP-A3-1	649.24	650.90	648.94	650.40	8.79	9.45	23.67	25.17	1.19	0.012	0.32	10	0.95	3.10	21.58	28.78

1% AEP CONVEYANCE CONFIGURATION DATA

LINK ID	US NODE ID	DS NODE ID	US FL ELEV (FT)	US HGL (FT)	DS FL ELEV (FT)	DS HGL (FT)	ACTUAL DS VELOCITY (FPS)	UNIFORM VELOCITY (FPS)	ACTUAL LENGTH (FT)	HYDRAULIC LENGTH (FT)	LINK SLOPE (%)	MANNING'S N	CUMULATIVE Tc (MIN)	Tc USED (MIN)	CUMULATIVE C VALUE	CUMULATIVE A (AC)	DISCHARGE (CFS)	CAPACITY (CFS)
LINE A1-1	CI-A1-1	CP-A1-1	651.05	651.86	649.58	649.90	9.49	11.16	16.67	18.17	8.06	0.012	0.03	10	0.95	0.30	3.11	74.85
LINE A2-1	CI-A2-1	MH-A2-1	650.52	652.72	649.85	652.22	4.62	10.98	25.36	29.85	2.23	0.012	0.04	10	0.95	1.40	14.50	39.41
LINE A3-1	MH-A2-1	CI-A3-1	649.59	652.22	649.33	651.45	8.24	8.45	65.82	69.32	0.37	0.012	0.26	10	0.95	2.50	*25.89	*16.05
LINE A3-2	CI-A3-1	CI-EX-4	649.32	651.45	649.29	651.32	10.22	10.48	4.58	7.58	0.40	0.012	0.27	10	0.95	3.10	*32.10	*16.58
LINE A3-3	CI-EX-4	CP-A3-1	649.24	651.32	648.94	650.83	10.44	10.48	23.67	25.17	1.19	0.012	0.32	10	0.95	3.10	32.10	28.78

NOTES:

1. INLET ANALYSIS PERFORMED USING GEOPAK DRAINAGE (SELECT SERIES 10), WHICH PERFORMS HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH FHWA (HEC-22 GUIDELINES).
2. COMPUTED PONDED WIDTH FOR SAG INLETS IS THE GREATEST VALUE OF LEFT, RIGHT AND TOTAL PONDED WIDTH.
3. ALL DRAINAGE FACILITIES ARE CHECKED WITH THE 1% AEP TO EXAMINE WHERE OVERFLOW WOULD TRAVEL AND TO PROVIDE REASONABLE ASSURANCE THAT NO SIGNIFICANT ADVERSE IMPACTS RESULT DUE TO THE PROJECT.

* LINKS DO NOT MEET 10% AEP. LINKS MEET 50% AEP ALLOWABLE PER TXDOT HYDRAULIC DESIGN MANUAL. 10% HGL CONTAINED WITHIN PIPES.

CSJ 0521-01-055

STATE OF TEXAS
CARLOS J. PIZARRO-PAGAN
129809
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

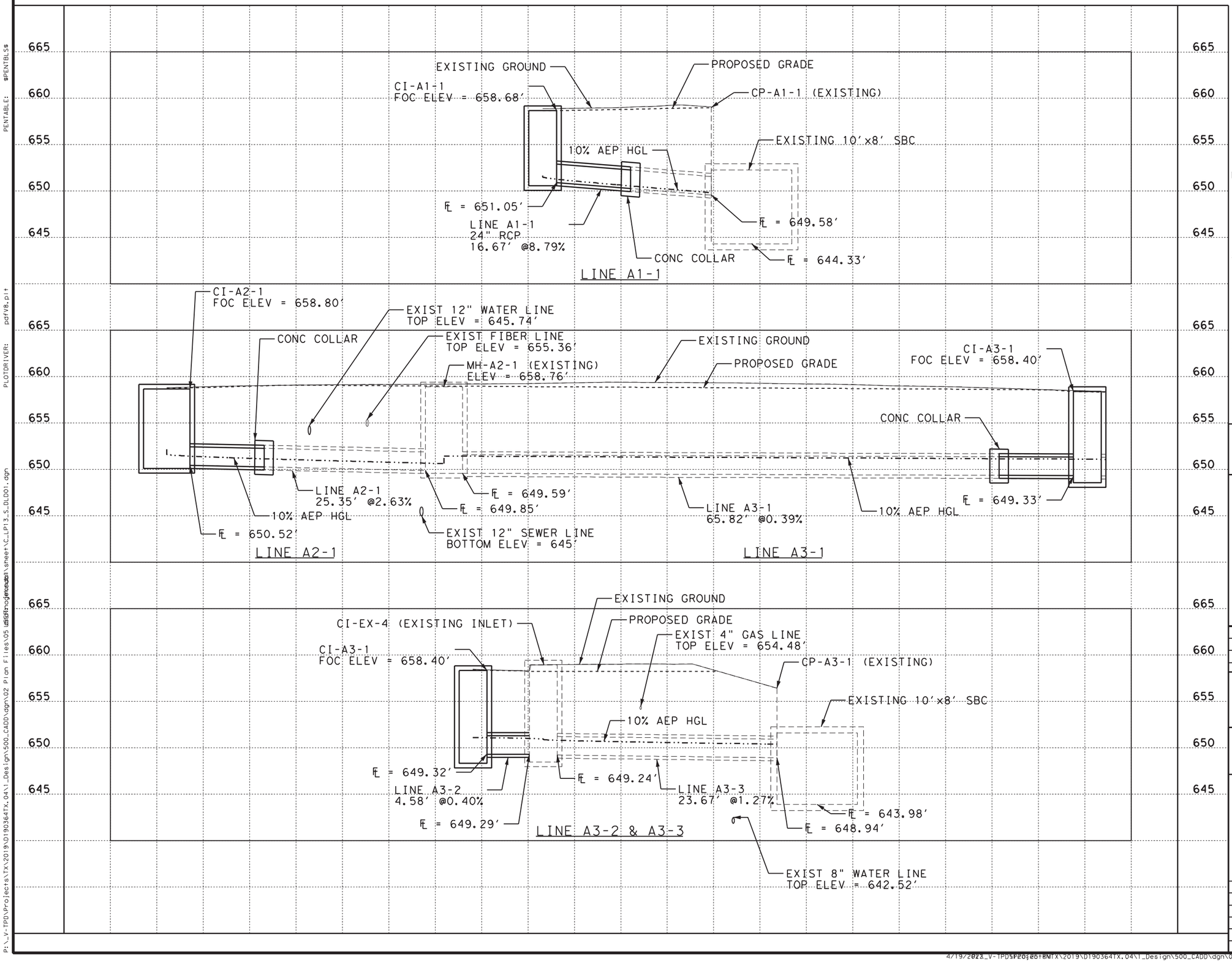
Texas Department of Transportation

SL 13 AT FM 1346

HYDRAULIC DATA SHEET

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		80
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D1903647X.04



NOTES:

1. PIPE LENGTHS SHOWN IN PROFILE ARE CALCULATED ACTUAL LENGTHS. SEE HYDRAULIC DATA SHEET FOR HYDRAULIC LENGTHS.
2. EXISTING UTILITIES SHOWN ARE APPROXIMATE AND ARE BASED ON BEST AVAILABLE DATA. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, TYPE, AND ELEVATION OF ALL UTILITIES SHOWN PRIOR TO CONSTRUCTION.
3. CONTRACTOR MUST TAKE ALL STEPS NECESSARY TO PROTECT UTILITIES DURING CONSTRUCTION.

0 5' 10'
SCALE: 1" = 10' HORZ
1" = 10' VERT

STATE OF TEXAS
CARLOS J. PIZARRO-PAGAN
129809
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

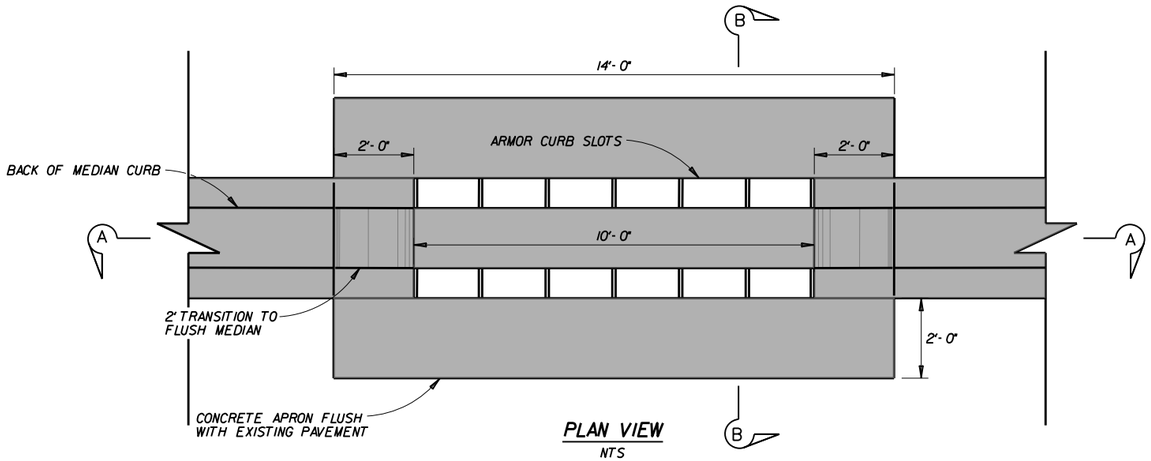
Texas Department of Transportation

SL 13 AT FM 1346

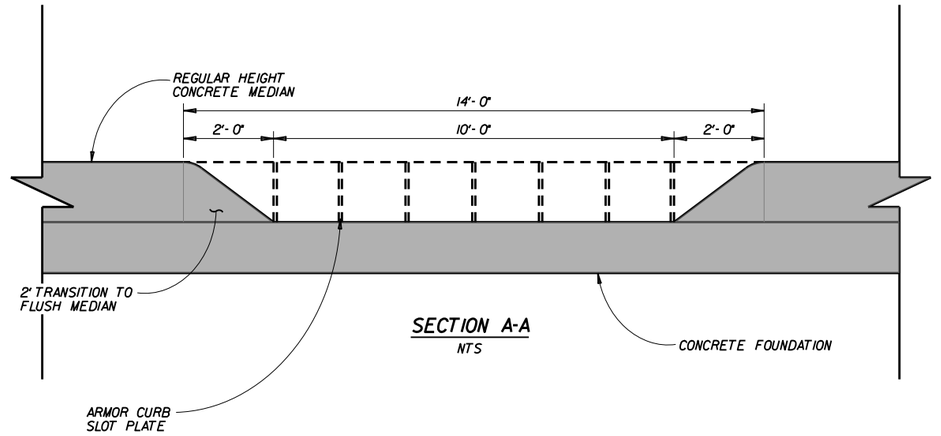
DRAINAGE LATERAL PROFILES

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		81
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043, ETC	SL 368, ETC

D1903641X.04



PLAN VIEW
NTS

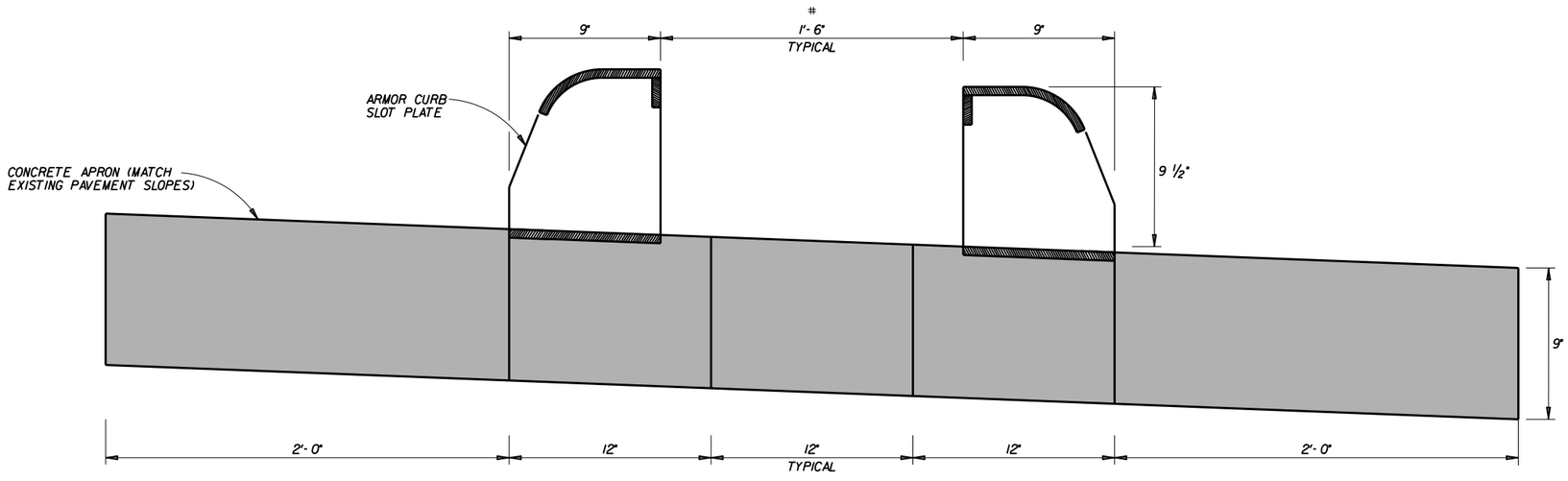


SECTION A-A
NTS

NOTES

1. REFERENCE THE MODIFIED ARMOR CURB SLOT DETAIL FOR ADDITIONAL DETAILS AND DIMENSIONS.
2. DIMENSIONS GIVEN ON THIS SHEET SHALL NOT SUPERCEDE THOSE SHOWN ON THE MODIFIED ARMOR CURB SLOT DETAIL UNLESS APPROVED BY THE ENGINEER.

3. AT HOODED LEFT-TURN LANES, ARMOR CURB SLOTS WILL BE PLACED BACK-TO-BACK AT A 0' SPACING.



SECTION B-B
NTS

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
CHRIS STONG
128193
LICENSED PROFESSIONAL ENGINEER
4/20/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

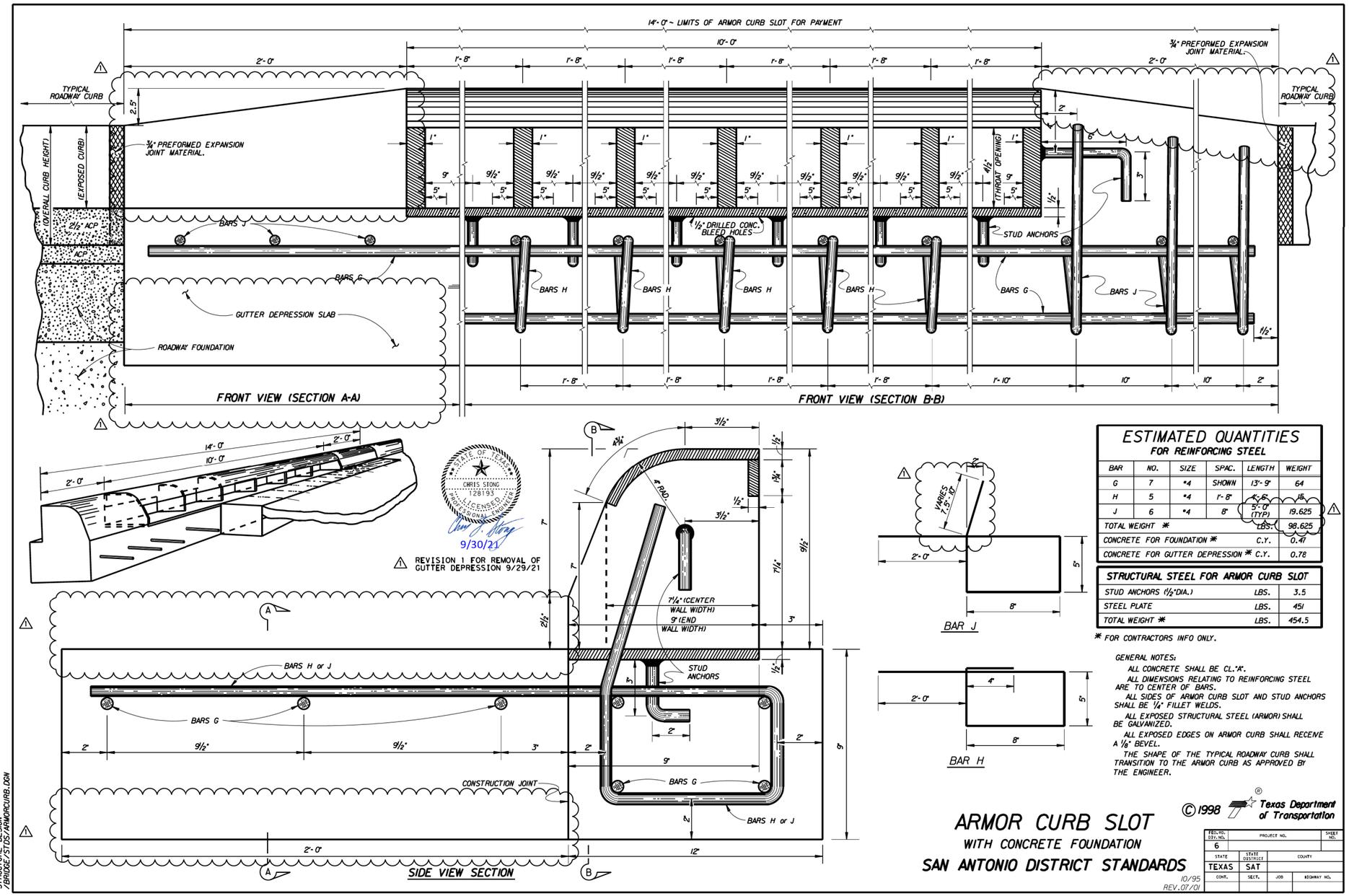
FY 2022 HSIP

SL 368 (AUSTIN HWY)
DRAINAGE DETAILS

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		82
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Christopher.Stong
4/20/2022 3:15:59 PM
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_ARMR_DTL.dgn



ESTIMATED QUANTITIES FOR REINFORCING STEEL

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
G	7	#4	SHOWN	13'-9"	64
H	5	#4	1'-8"	4'-6"	15
J	6	#4	8"	5'-0" (TYP)	19.625
TOTAL WEIGHT *				LBS.	98.625
CONCRETE FOR FOUNDATION *				C.Y.	0.41
CONCRETE FOR GUTTER DEPRESSION *				C.Y.	0.78

STRUCTURAL STEEL FOR ARMOR CURB SLOT

STUD ANCHORS (1/2" DIA.)	LBS.	3.5
STEEL PLATE	LBS.	451
TOTAL WEIGHT *	LBS.	454.5

* FOR CONTRACTORS INFO ONLY.

GENERAL NOTES:

ALL CONCRETE SHALL BE CL."A".

ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.

ALL SIDES OF ARMOR CURB SLOT AND STUD ANCHORS SHALL BE 1/4" FILLET WELDS.

ALL EXPOSED STRUCTURAL STEEL (ARMOR) SHALL BE GALVANIZED.

ALL EXPOSED EDGES ON ARMOR CURB SHALL RECEIVE A 1/8" BEVEL.

THE SHAPE OF THE TYPICAL ROADWAY CURB SHALL TRANSITION TO THE ARMOR CURB AS APPROVED BY THE ENGINEER.

ARMOR CURB SLOT
WITH CONCRETE FOUNDATION
SAN ANTONIO DISTRICT STANDARDS

10/95
REV. 07/01

FED.RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			
STATE	STATE DISTRICT	COUNTY	
TEXAS	SAT		
CONT.	SECT.	JOB	HIGHWAY NO.

STATE OF TEXAS — CHRIS STONG — 128193 — LICENSED PROFESSIONAL ENGINEER — 4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

FY 2022 HSIP

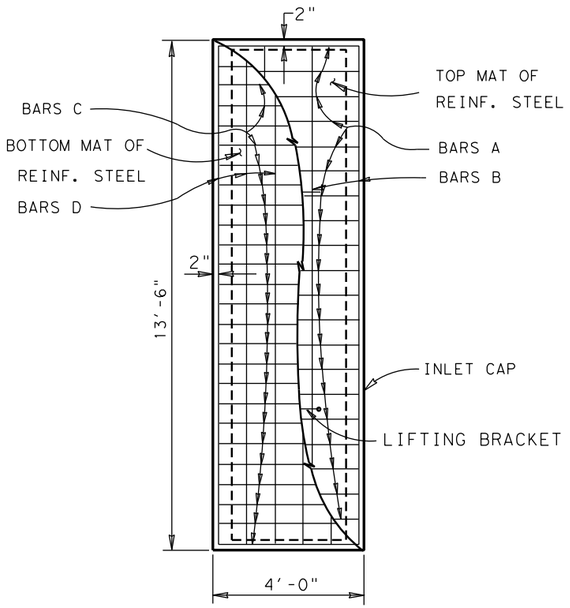
MODIFIED ARMOR CURB SLOT DETAIL

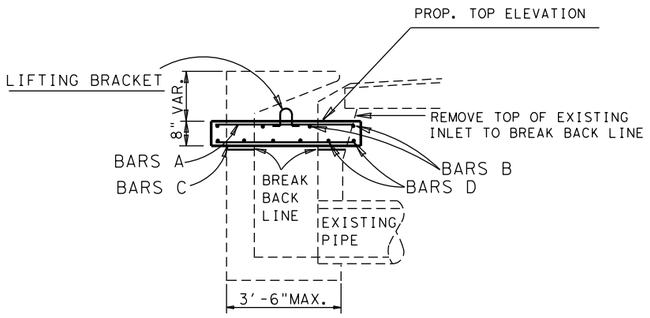
SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		83
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 18:29:42
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call\WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_CURB_MOD.dgn

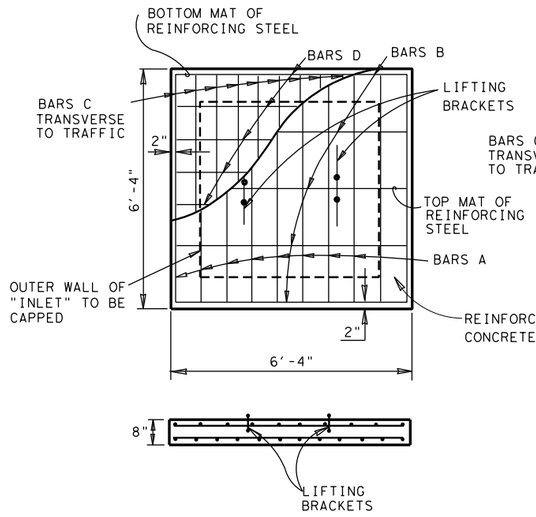
CAP FOR A CURB INLET





REINFORCING STEEL					
BAR	NO.	SIZE	SPAC.	LEN.	WGT.
A	24	4	7"	3'-8"	59
B	4	4	1'-2"	13'-2"	35
C	19	6	9"	3'-8"	105
D	9	4	6"	13'-2"	80
REINFORCING STEEL =					279 LBS. ✳
CL "A" CONCRETE =					1.33 C.Y. ✳

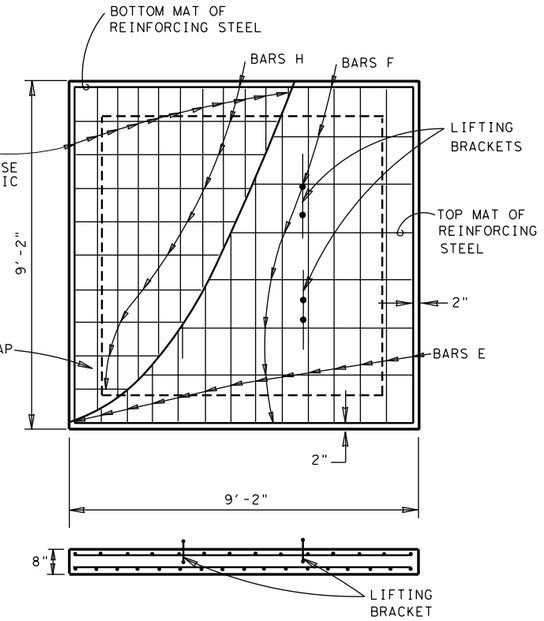
6'-4" SQUARE CAP



REINFORCING STEEL					6'-4" CAP
BAR	NO.	SIZE	SPAC.	LEN.	WGT.
A	10	4	8"	6'-0"	40
B	5	4	18"	6'-0"	20
C	12	6	6"	6'-0"	108
D	8	4	10"	6'-0"	32
REINFORCING STEEL =					200 LBS. ✳
CL "A" CONCRETE =					0.99 C.Y. ✳

✳ FOR CONTRACTORS INFORMATION ONLY

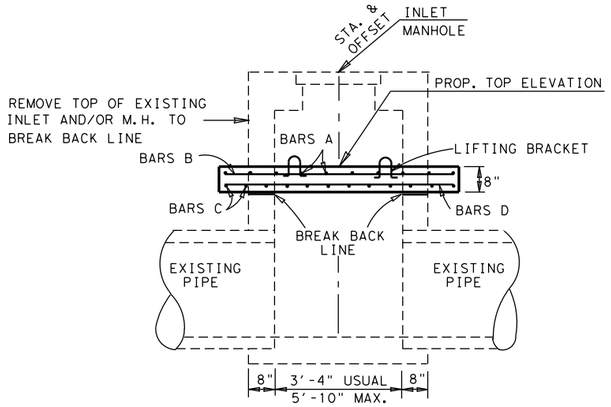
9'-2" SQUARE CAP



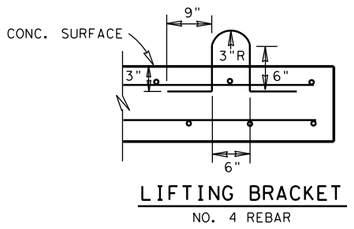
REINFORCING STEEL					9'-2" CAP
BAR	NO.	SIZE	SPAC.	LEN.	WGT.
E	14	4	7"	8'-10"	83
F	8	4	7"	8'-10"	47
G	17	6	7"	8'-10"	226
H	12	4	10"	8'-10"	71
REINFORCING STEEL =					427 LBS. ✳
CL "A" CONCRETE =					2.08 C.Y. ✳

✳ FOR CONTRACTORS INFORMATION ONLY

CAP SIZE	LOCATION	AT STR. NO.	TOP OF CAP ELEV.
CURB INLET	STORM SEWER PLAN (SHEET NO. 79)	CI-EX-2	658.84'
CURB INLET	STORM SEWER PLAN (SHEET NO. 79)	CI-EX-3	658.68'



CAP FOR A DROP INLET OR MANHOLE



LIFTING BRACKET
NO. 4 REBAR

PLACEMENT OF LIFTING BRACKETS

CURB INLET CAP: 2 CENTERED 4FT +/- FROM EACH END
6'-4" CAP: 2 CENTERED 2FT +/- FROM EACH END
9'-2" CAP: 4 PLACED 3FT +/- IN FROM EACH END

NOTES:

1) REMOVAL OF THE TOP PORTION OF THE INLET AND/OR MANHOLE WHERE REQUIRED PLUS FURNISHING & INSTALLING THE CONC. CAP WILL BE PAID FOR UNDER ITEM 479 "ADJUSTING MANHOLES AND INLETS"

2) ALL CONCRETE SHALL BE CLASS "A" AND SHALL MEET THE REQUIREMENTS OF ITEMS 420 & 421

3) ALL REINFORCING STEEL SHALL BE GRADE 60 AND SHALL MEET THE REQUIREMENTS OF ITEM 440

4) THE BREAK-BACK LINE SHALL BE CUT SMOOTH TO ENSURE UNIFORM BEARING OF THE CAP ON THE INLET/M.H. WALLS.

SAN ANTONIO
DISTRICT STANDARD

CAPPING INLETS & MANHOLES

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			84
STATE	STATE DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONT.	SECT.	JOB	HIGHWAY NO.
0016	08	043,ETC	SL 368,ETC

10/95

STRUCTURE DESIGN
/BRIDGE/STDS/CAPINLET.DGN

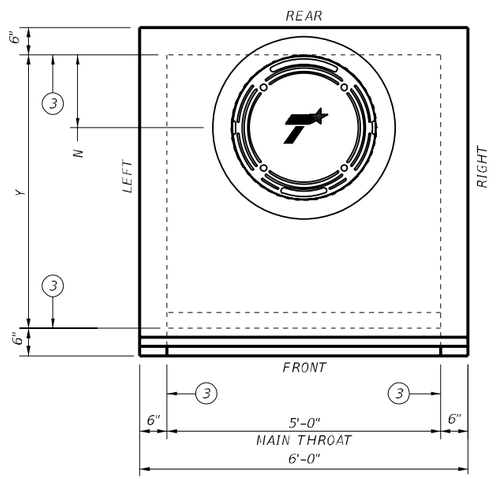
Size (Y)	N	MH Dia (2)
3'	9"	18"
4'	16"	32"
5'	16"	32"
6'	16"	32"

BAR TABLE	
BAR	SIZE
A1	#3
A2	#3
A3 (1)	#3
A4 (1)	#3
B1	#4
B2	#4
B3 (1)	#4
C (1)	#4
G	#4
L (1)	#5
Ra	#5
U1 (1)	#5
U2 (1)	#5

(1) Reinforcing bar used only with extension(s).

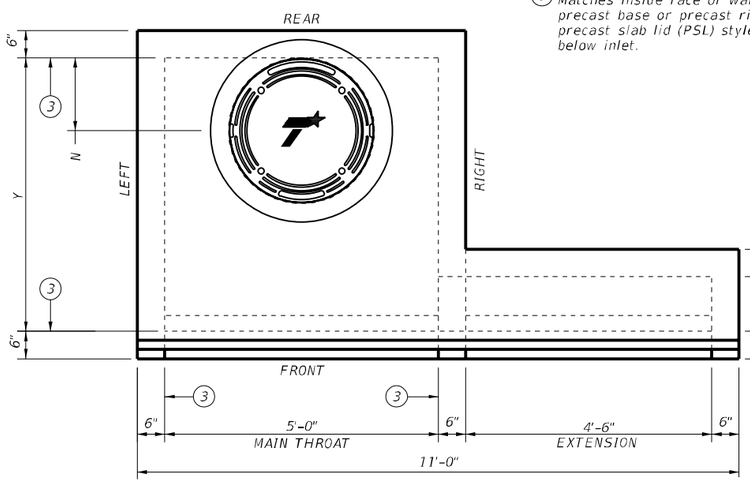
(2) Nominal ring and cover size.

(3) Matches inside face of wall of precast base or precast riser or precast slab lid (PSL) style "S1" below inlet.



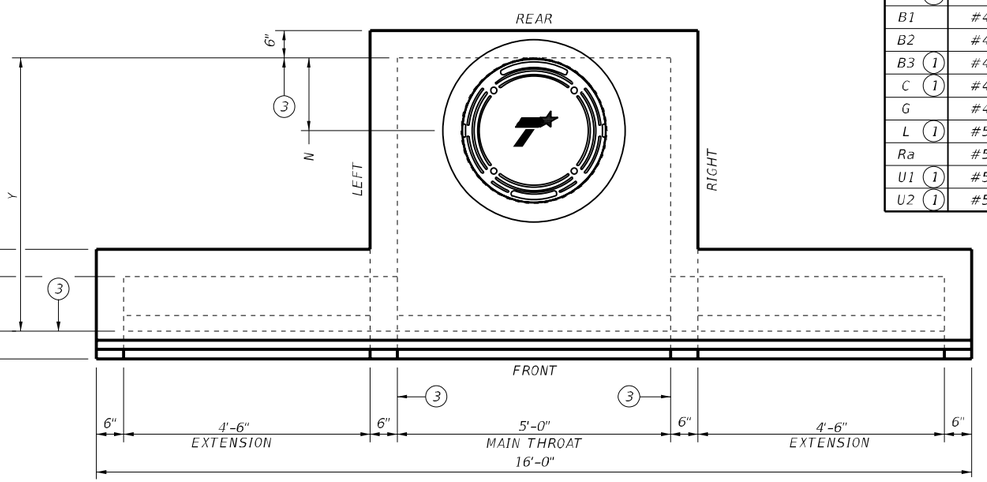
PLAN VIEW

(Shown without extensions.)
See SHEET 2 OF 4 for details.



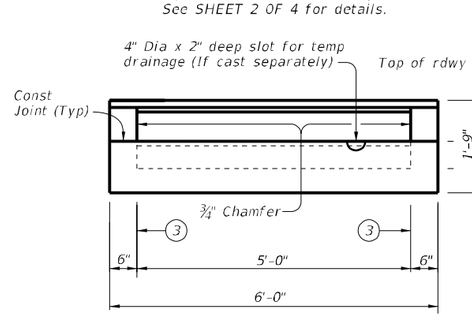
PLAN VIEW

(Showing one extension.)
See SHEET 3 OF 4 for details.



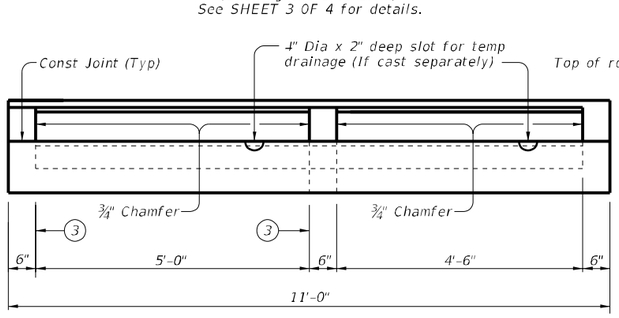
PLAN VIEW

(Showing extension on each side)
See SHEET 4 OF 4 for details.



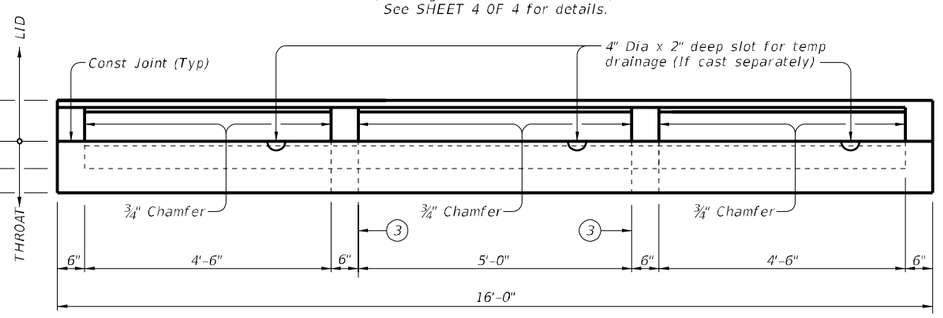
FRONT VIEW

(Shown without extensions.)
See SHEET 2 OF 4 for details.



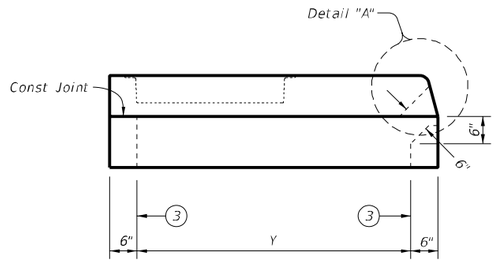
FRONT VIEW

(Showing one extension.)
See SHEET 3 OF 4 for details.



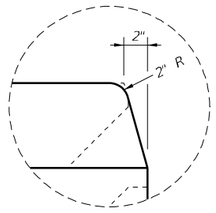
FRONT VIEW

(Showing extension on each side.)
See SHEET 4 OF 4 for details.



LEFT SIDE VIEW

(Extensions not shown for clarity.)



DETAIL "A"

CONSTRUCTION NOTES:

Chamfer all vertical edges of inlet lid ¾" as shown in Front View, Sheet 1 of 4.
Maintain 1 ½" clear cover to ends of all vertical reinforcing bars, unless otherwise noted.

MATERIAL NOTES:

Provide Class "S" concrete (f'c = 4,000 psi).
Provide Grade 60 reinforcing steel or equivalent area of WWR.
Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
The intent of this standard is to provide a cast-in-place lid to be used with precast base, precast riser or precast slab lid style "S1".
Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
Lid and throat may be cast monolithically or separately.
See Precast Base (PB) standard for details and notes not shown.
See Precast Slab Lid (PSL) standard for details and notes not shown.
See Curb & Gutter Transitions Details (CGT-PCO) standard for transition examples.
Extensions may be right, left, both, or none. Provide extensions as specified elsewhere in the plans.
Shop drawings for approval are not required.
Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.
Open area of main throat = 360 sq in.
Open area of one extension throat = 324 sq in.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING

SHEET 1 OF 4

Texas Department of Transportation

Bridge Division Standard

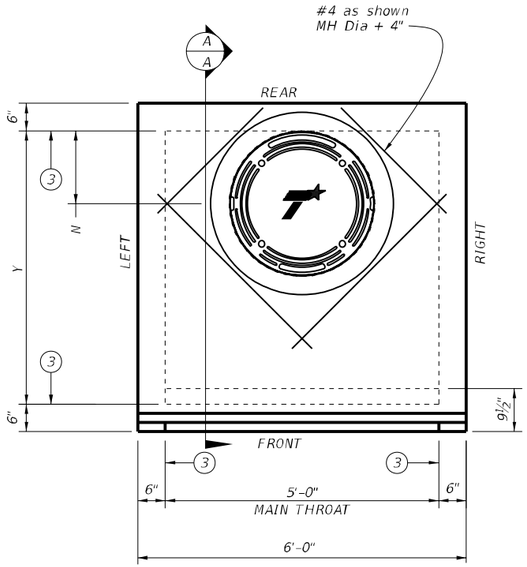
CAST-IN-PLACE CURB INLET OUTSIDE ROADWAY

CCO

FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043, ETC	SL 368, ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		85

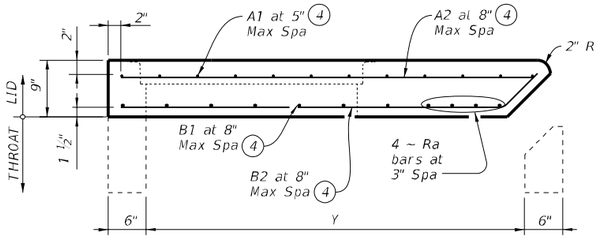
DATE: 4/19/2022 9:33:51 AM
FILE: P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Sheets\05 drainage\ccostds1-20.dgn

DATE: 4/19/2022 9:33:53 AM
FILE: P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\05 Drainage\ccostds1-20.dgn

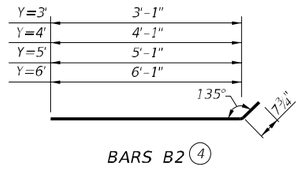


LID PLAN VIEW

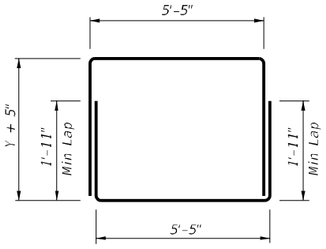
(Shown without extensions)



LID SECTION A-A

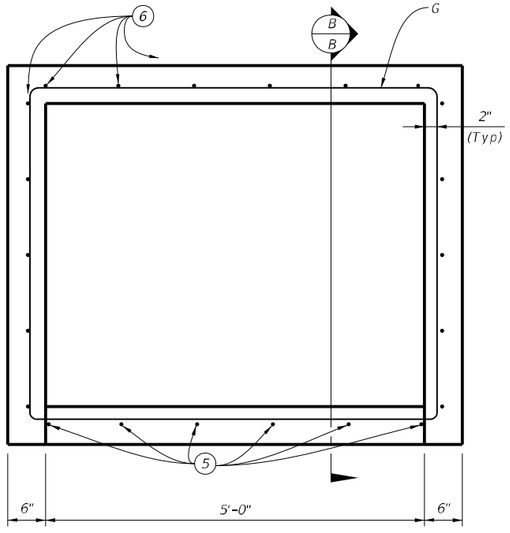


BARS B2 (4)



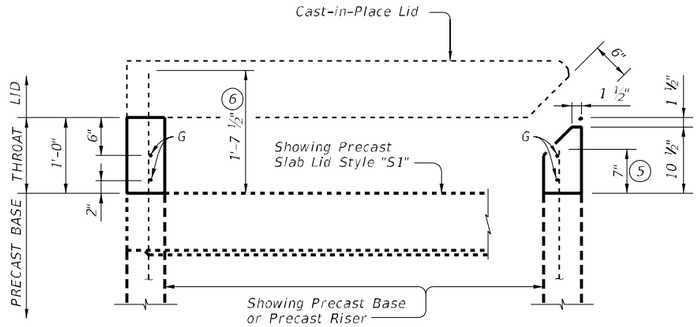
BARS G

Showing one complete bar.



THROAT PLAN VIEW

(Shown without extensions)



THROAT SECTION B-B

(Showing reinforcing bar extended from pecast base or precast riser or precast slab lid style "S1".)

(3) Matches inside face of wall of precast base or precast riser or precast slab lid style "S1" below inlet.

(4) Cut reinforcing bars as needed to provide 1 ½" clear to manhole.

(5) Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 7".

(6) Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 1'-7 ½".

HL93 LOADING SHEET 2 OF 4

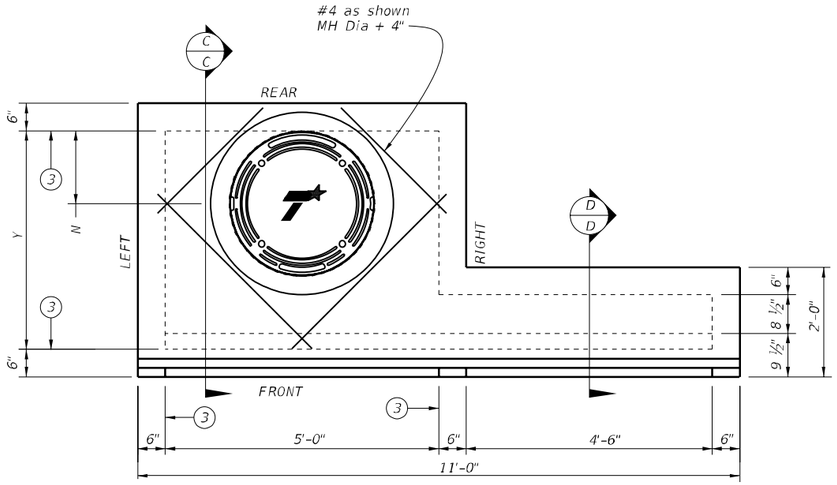
Texas Department of Transportation | Bridge Division Standard

CAST-IN-PLACE CURB INLET OUTSIDE ROADWAY

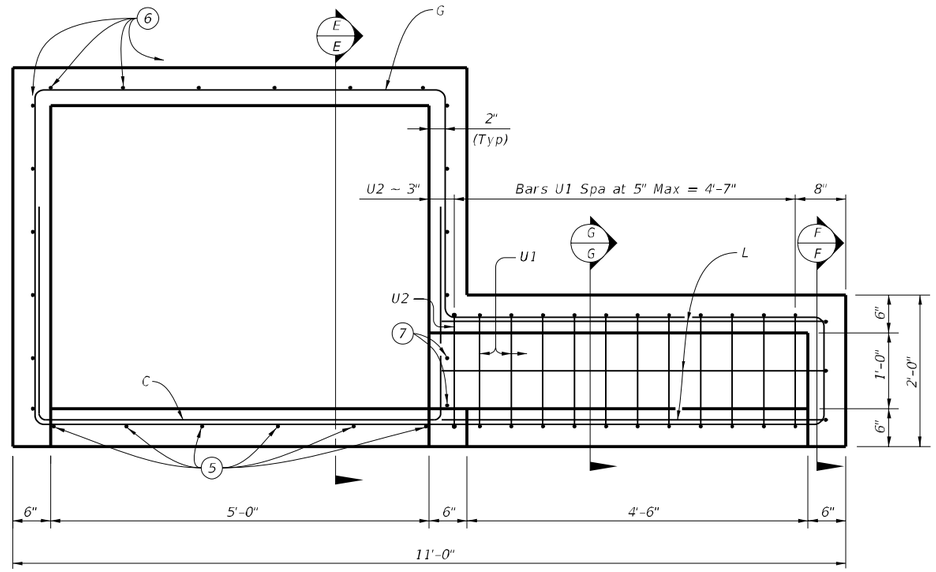
CCO

FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043, ETC	SL 368, ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		86

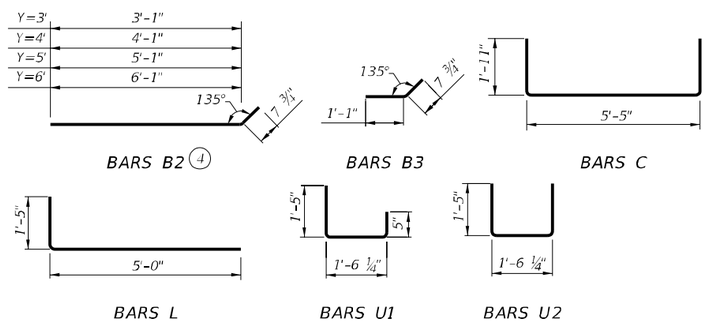
DATE: 4/19/2022 9:33:54 AM
FILE: P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\05 Drainage\ccostds1-20.dgn

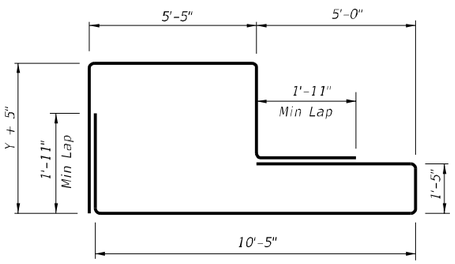


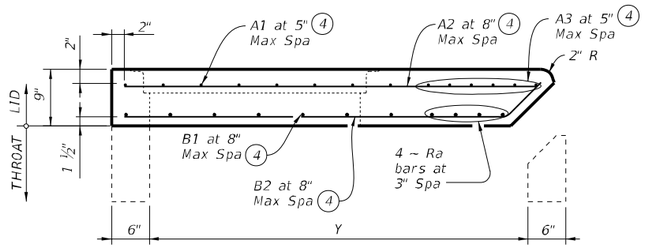
LID PLAN VIEW
(Showing one extension.)



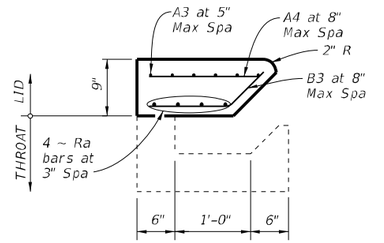
THROAT PLAN VIEW
(Showing one extension.)



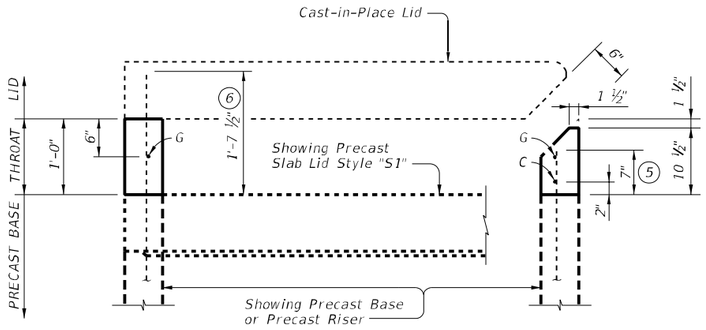




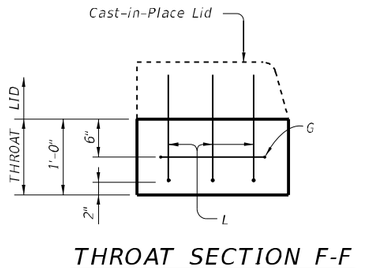
LID SECTION C-C



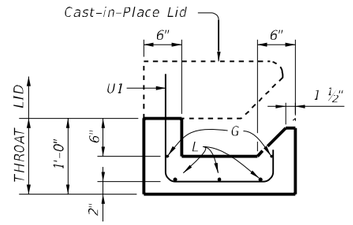
LID SECTION D-D



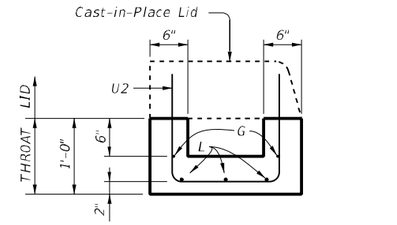
THROAT SECTION E-E
(Showing reinforcing bar extended from pecast base or precast riser or precast slab lid style "S1".)



THROAT SECTION F-F



BARS U1 LOCATION



BARS U2 LOCATION

THROAT SECTION G-G

(3) Matches inside face of wall of precast base or precast riser or precast slab lid style "S1" below inlet.

(4) Cut reinforcing bars as needed to provide 1 ½" clear to manhole.

(5) Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 7".

(6) Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 1'-7 ½".

(7) Do not extend reinforcing bars from precast base.

HL93 LOADING SHEET 3 OF 4

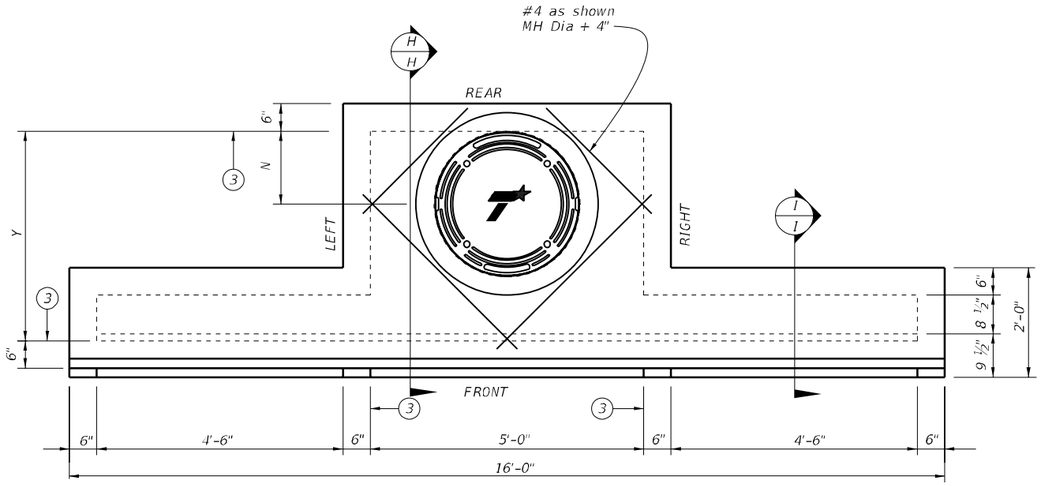
Texas Department of Transportation | Bridge Division Standard

CAST-IN-PLACE CURB INLET OUTSIDE ROADWAY

CCO

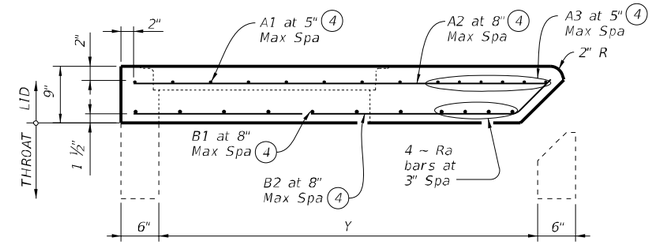
FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043, ETC	SL 368, ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		87

DATE: 4/19/2022 9:33:55 AM
FILE: P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\05 Bridge\standards\ccostds1-20.dgn

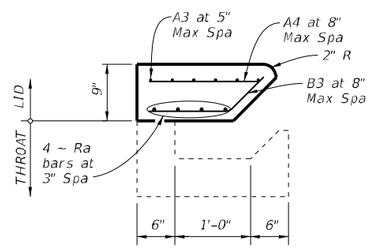


LID PLAN VIEW

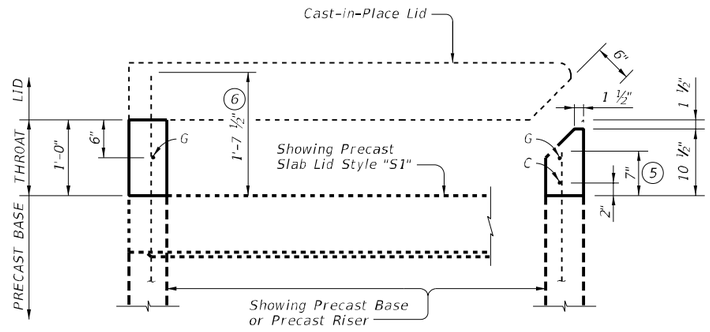
(Showing extension on each side.)



LID SECTION H-H

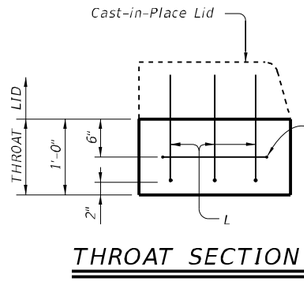


LID SECTION I-I

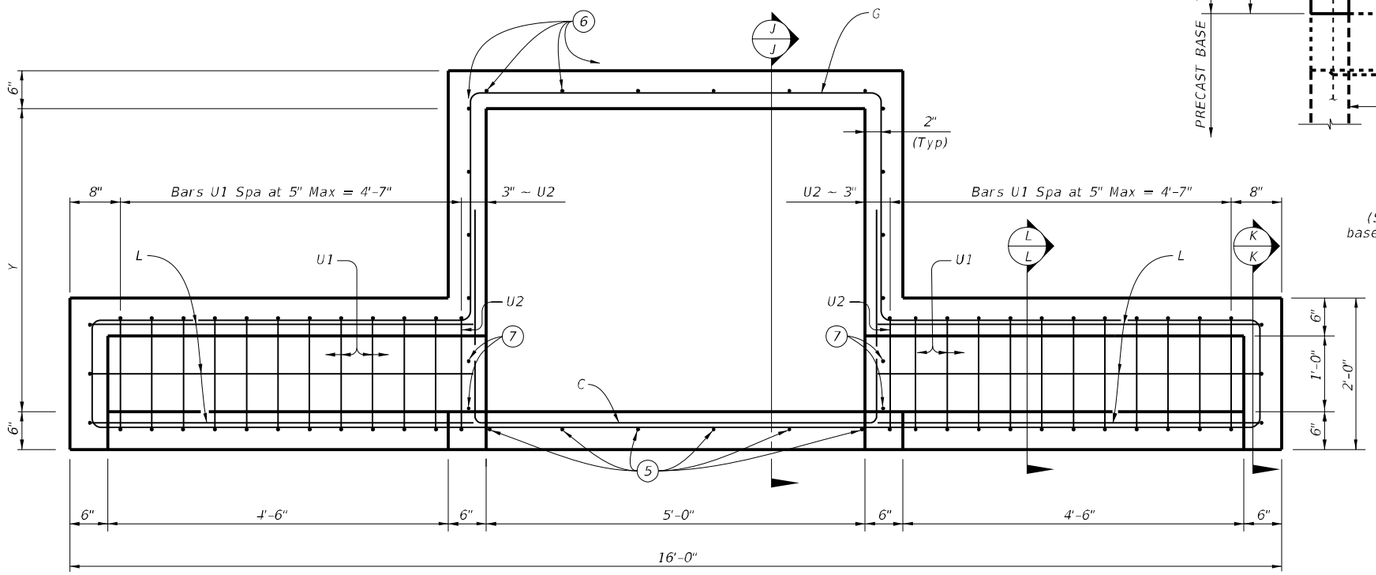


THROAT SECTION J-J

(Showing reinforcing bar extended from pecast base or precast riser or precast slab lid style "S1".)

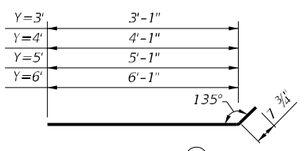


THROAT SECTION K-K

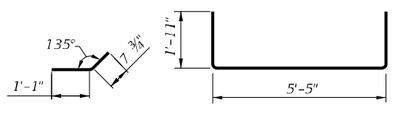


THROAT PLAN VIEW

(Showing extension on each side.)

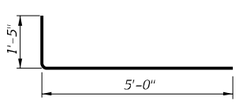


BARS B2 (4)

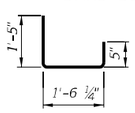


BARS B3

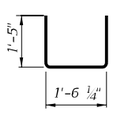
BARS C



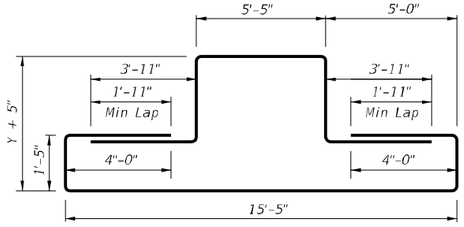
BARS L



BARS U1



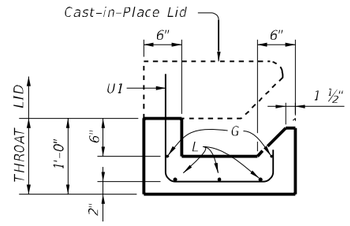
BARS U2



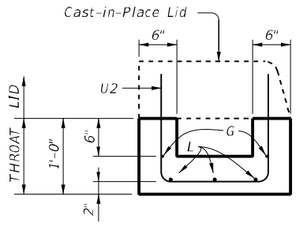
BARS G

Showing one complete bar.

THROAT SECTION L-L



BARS U1 LOCATION



BARS U2 LOCATION

(3) Matches inside face of wall of precast base or precast riser or precast slab lid style "S1" below inlet.

(4) Cut reinforcing bars as needed to provide 1 ½" clear to manhole.

(5) Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 7".

(6) Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 1'-7 ½".

(7) Do not extend reinforcing bars from precast base.

HL93 LOADING SHEET 4 OF 4

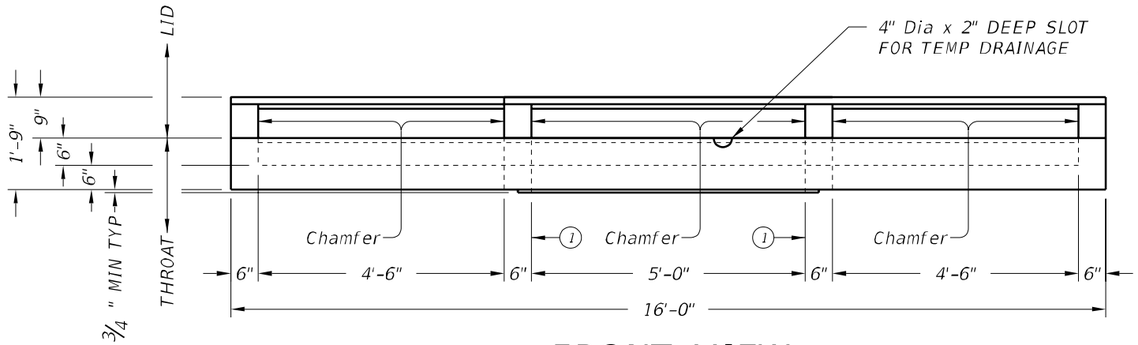
Texas Department of Transportation

Bridge Division Standard

CAST-IN-PLACE CURB INLET OUTSIDE ROADWAY

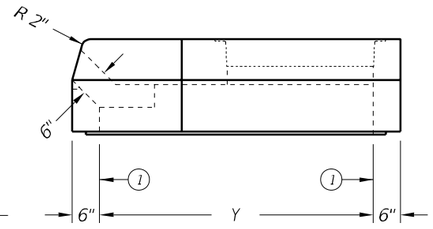
CCO

FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043, ETC	SL 368, ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		88



FRONT VIEW

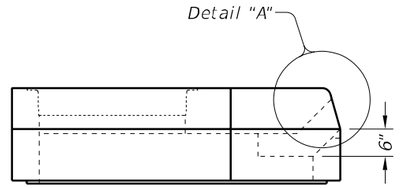
(SHOWING LEFT AND RIGHT EXTENSIONS)



RIGHT VIEW

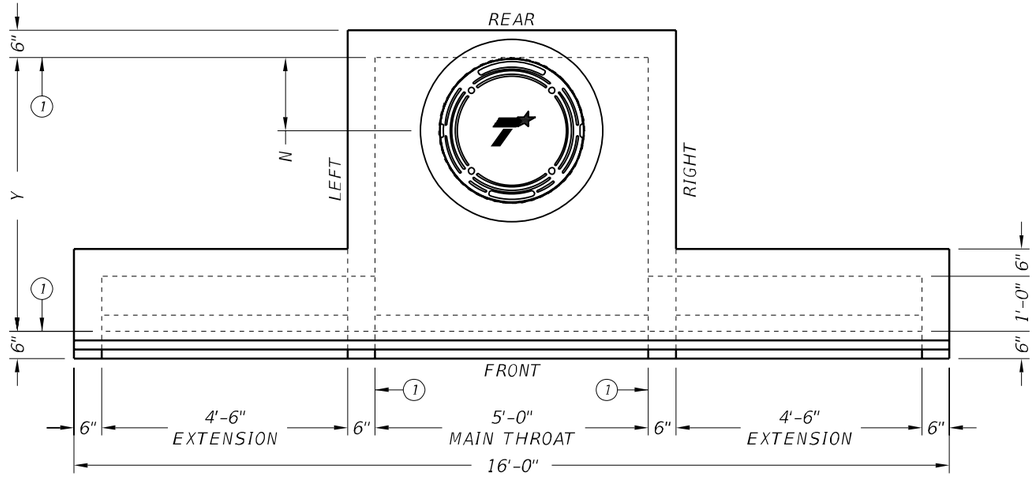
REAR VIEW

(EXTENSIONS NOT SHOWN)



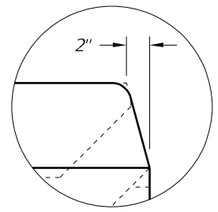
LEFT VIEW

(1) Matches inside face of wall of precast base or riser below inlet.



PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



DETAIL "A"

HS20 LOADING

Texas Department of Transportation

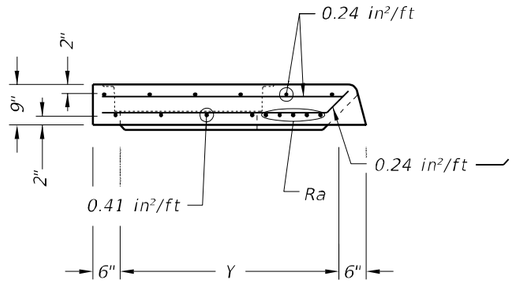
Bridge Division Standard

PRECAST CURB INLET OUTSIDE ROADWAY

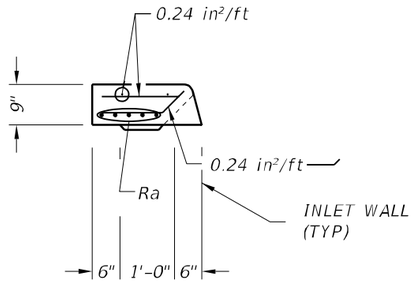
PCO

FILE: prestd03-20.dgn		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT		
©TxDOT February 2020	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0016	08	043, ETC		SL 368, ETC		
	DIST	COUNTY			SHEET NO.		
	SAT	BEXAR			89		

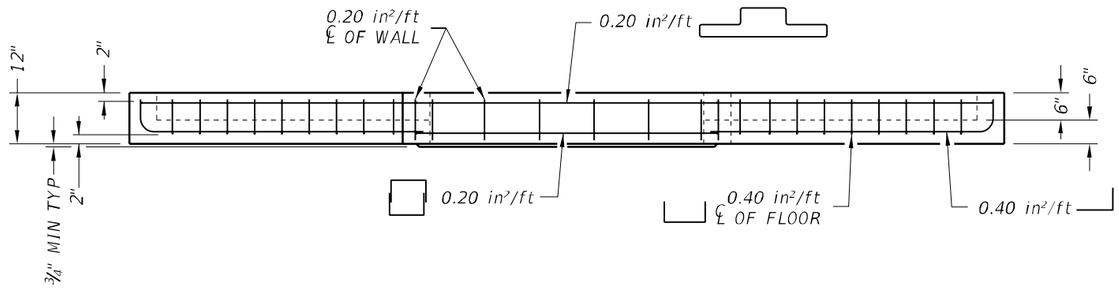
DATE: 4/19/2022 9:33:56 AM
FILE: P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\05 Drainage\stnd\prestd03-20.dgn



LID SECTION A-A

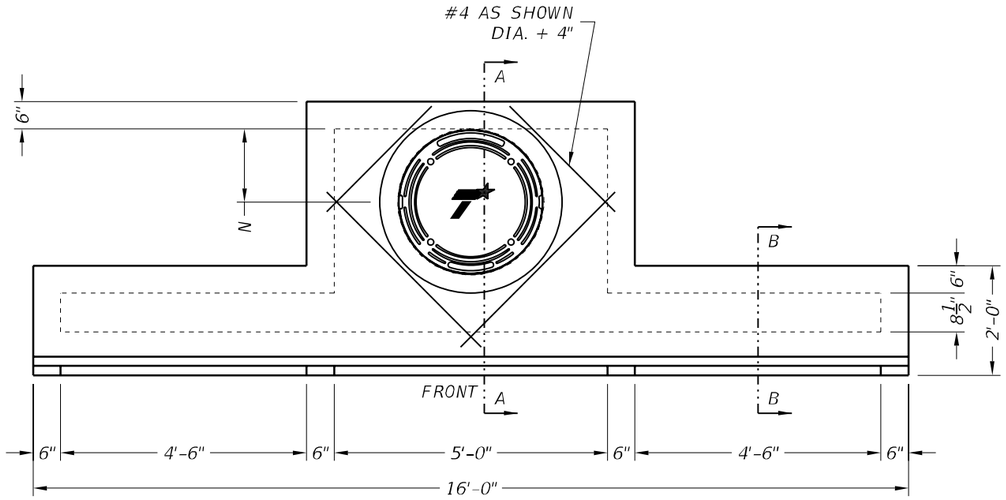


LID SECTION B-B



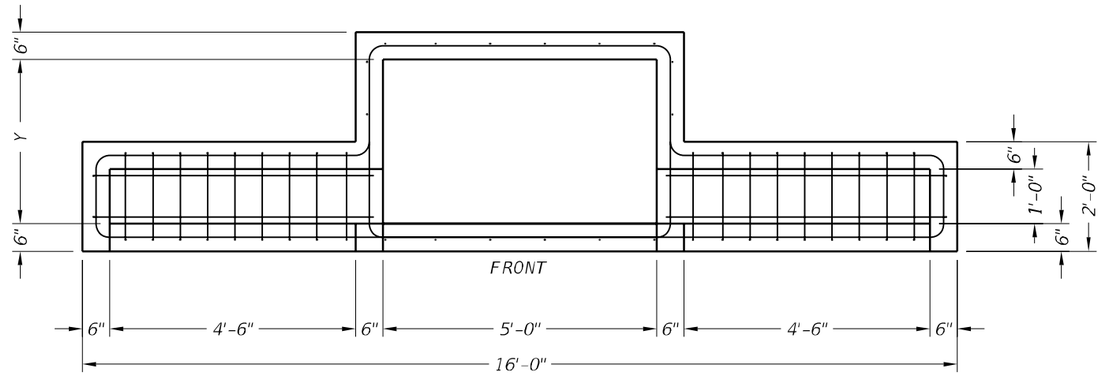
THROAT ELEVATION VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



LID PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



THROAT PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)

SIZE(Y)	N	MH DIA*	Ra
3'	9"	18"	(4) #5 Additional
4'	16"	32"	(4) #5 Additional
5'	16"	32"	(4) #5 Additional
6'	16"	32"	(4) #5 Additional

* Nominal ring and cover size.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in the plans.
4. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾". Lid may employ a butt joint with dowels at the Contractor's option.
5. Provide lifting devices in conformance with Manufacturer's recommendations.
6. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.
7. Chamfer vertical edges of inlet lid ¾" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Open area of main throat = 360 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.

Cover dimensions are clear dimensions, unless noted otherwise.

HS20 LOADING SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

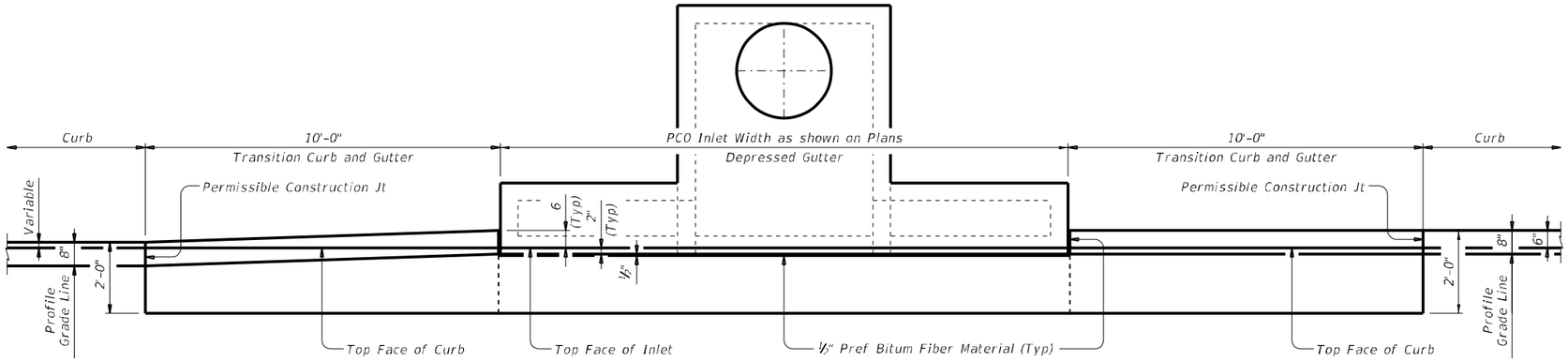
PRECAST CURB INLET OUTSIDE ROADWAY

PCO

FILE: prestd03-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043, ETC	SL 368, ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		90

DATE: 4/19/2022 9:33:57 AM
FILE: P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan\Prestds\prestd03-20.2.dgn

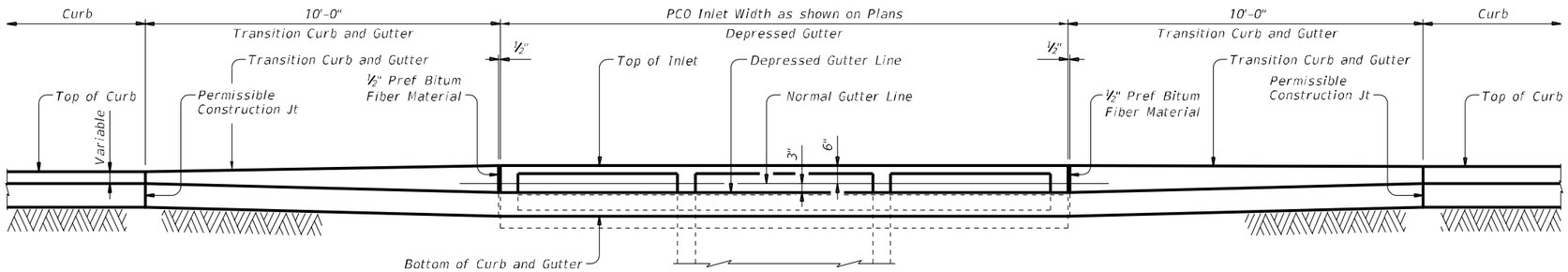
DATE: 4/19/2022 9:33:58 AM
FILE: P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\05 Bridge\Standards\prestd13-20.dgn



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

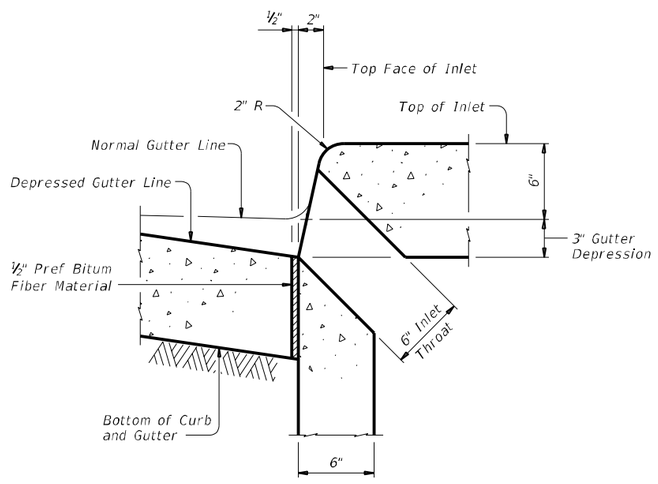
PLAN



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

ELEVATION



SECTION AT GUTTER AND INLET

Reinforcing steel not shown for clarity.

CONSTRUCTION NOTES:
Align top face of curb with PCO Inlet as shown.

MATERIAL NOTES:
Provide ½" Preformed Bituminous Fiber Material.

GENERAL NOTES:
See Precast Curb Inlet Outside Roadway (PCO) standard for details and notes not shown.
See Concrete Curb and Curb and Gutter (CCCG-12) standard for details and notes not shown.
Curb and Gutter Transitions is paid for and in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
Preformed Bituminous Fiber Material is subsidiary to PCO Inlet.

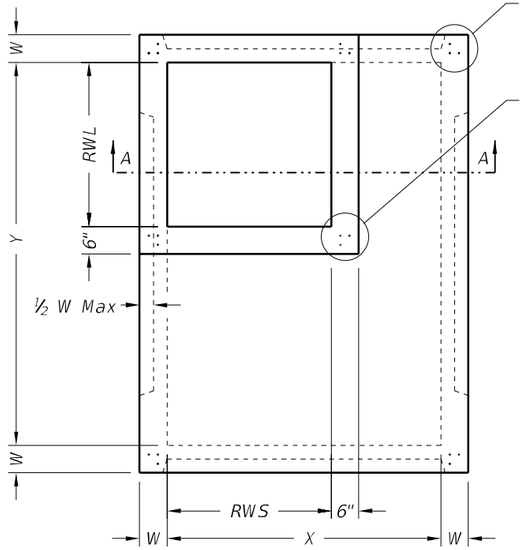
Texas Department of Transportation

Bridge Division Standard

CURB AND GUTTER TRANSITION DETAILS FOR PCO INLET

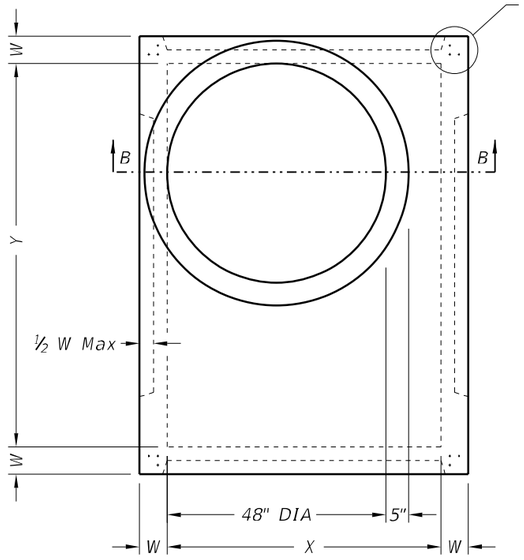
CGT-PCO

FILE: prestd13-20.dgn	DN: TxDOT	CK: AES	DW: JTR	CK: AES
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		91



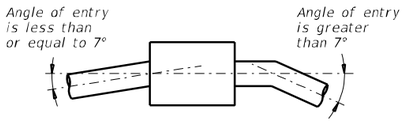
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



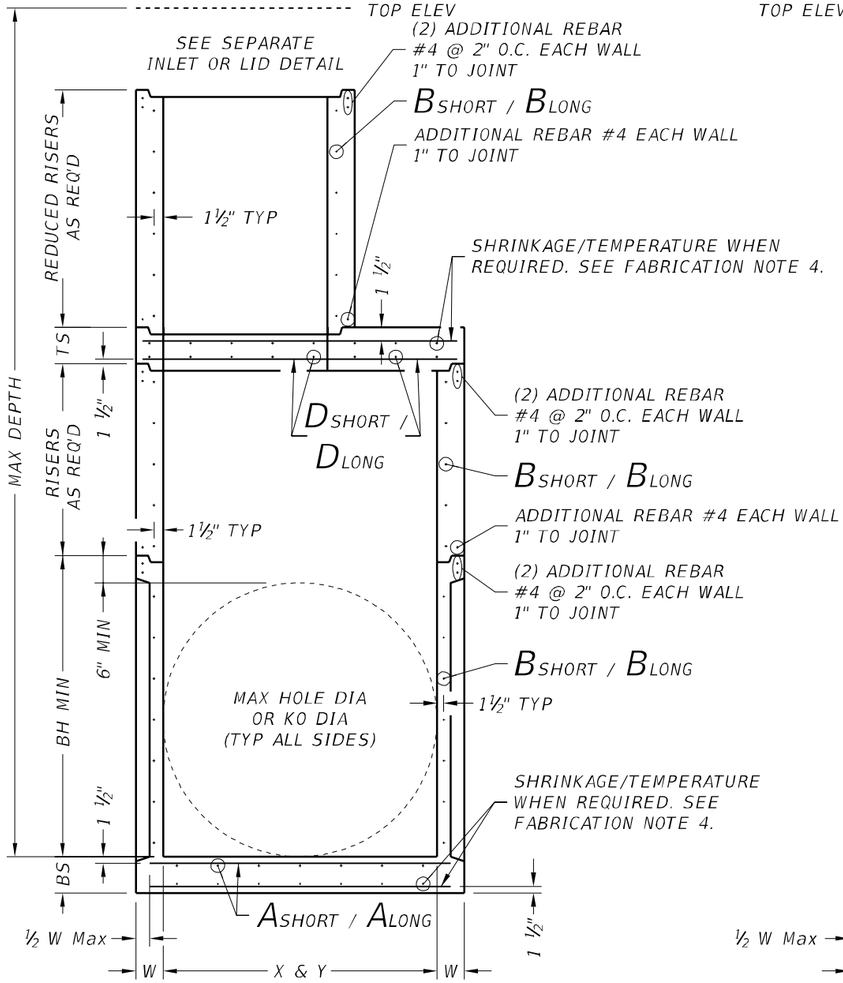
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



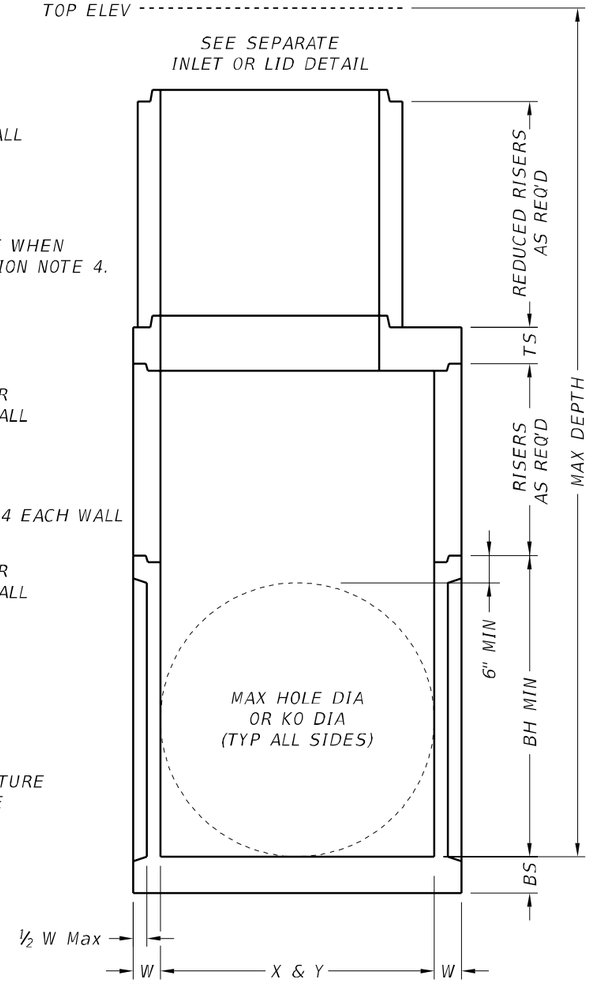
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved
approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

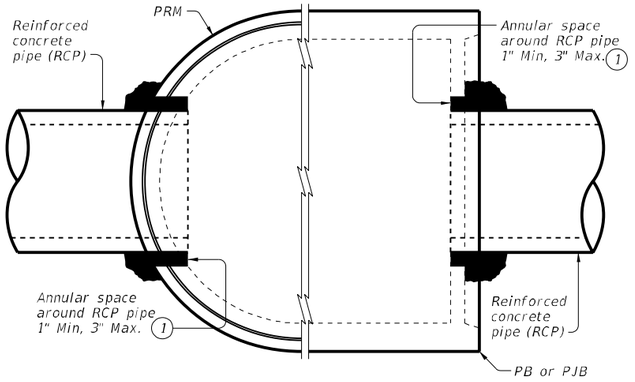
PRECAST BASE

PB

FILE: prestd01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043, ETC	SL 368, ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		92

DATE: 4/19/2022 9:33:59 AM
FILE: P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\05 Bridge\standards\prestd01-20.dgn

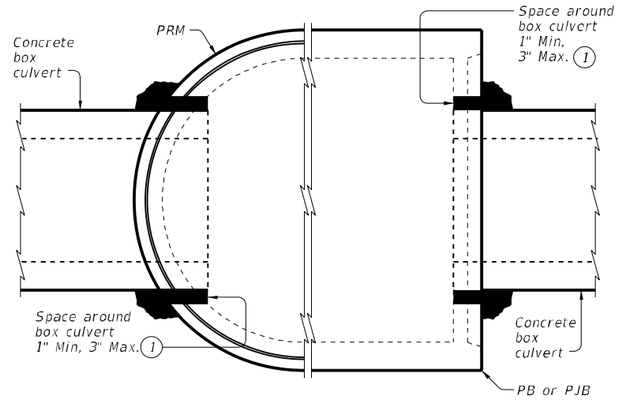
DATE: 4/19/2022 9:34:01 AM
FILE: P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\05 drothgeb\rstndrds\pbgcstd1-20.dgn



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

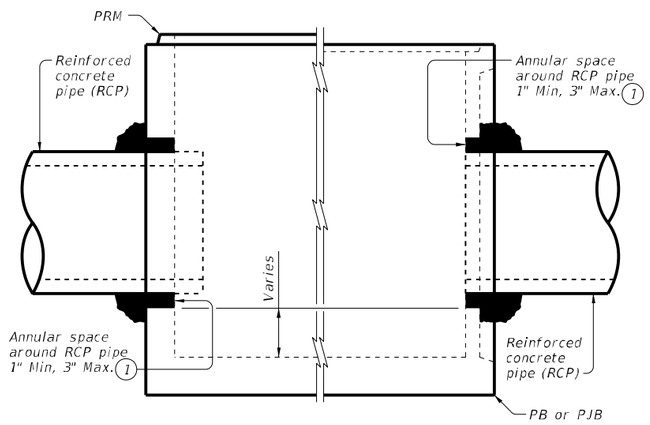
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

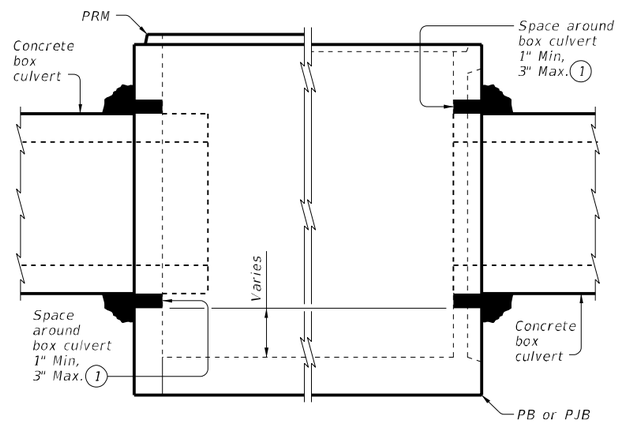
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

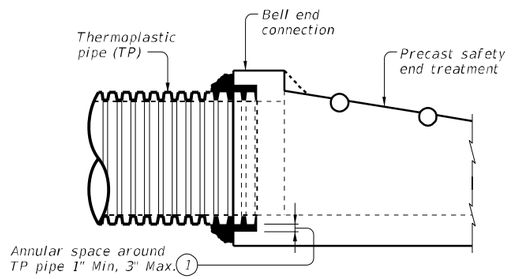
TYPICAL HALF ELEVATION



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF ELEVATION



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS

Showing square PSET for parallel drainage, cross drainage shown similar.

(1) Completely fill the void between the precast structure and the connecting pipe or box with cementitious grouts and mortars in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application".

CONSTRUCTION NOTES:

Do not grout rubber gasket joints without Manufacturer's recommendations.

Do not use bricks, masonry blocks, native stone, or similar materials in conjunction with grouted connections when filling void spaces around pipes or box culverts.

MATERIAL NOTES:

Provide grouted connections in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application".

GENERAL NOTES:

See applicable standards for notes and details not shown:
- Precast Base (PB)
- Precast Junction Box (PJB)
- Precast Round Manhole (PRM)
- Precast Safety End Treatments C/D Square (PSET-SC)
- Precast Safety End Treatments P/D Square (PSET-SP)

Provide Concrete Box Culverts in accordance with Item 462 "Concrete Box Culverts and Drains".

Provide Reinforced Concrete Pipe (RCP) in accordance with Item 464 "Reinforced Concrete Pipe".

Provide Thermoplastic Pipe (TP) in accordance with Special Specification Thermoplastic Pipe.

Payment for grouted connections is considered subsidiary to other bid Items.

Texas Department of Transportation

Bridge Division Standard

PIPE AND BOX GROUTED CONNECTIONS FOR PRECAST STRUCTURES

PBGC

FILE: pbgcstd1-20.dgn	DN: TxDOT	CK: TAR	DW: JTR	CK: TAR
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043, ETC	SL 368, ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		93

	Size	MAX DEPTH = 15 ft. to top of BASE SLAB: Base Slab: Short Span Reinf Steel Area	Base Slab: Long Span Reinf Steel Area	Base Slab: Thickness	Base Unit or Riser Walls: Short Span Reinf Steel Area	Base Unit or Riser Walls: Long Span Reinf Steel Area	Base Unit or Riser Walls: Thickness	Below Grade Slab (w/PJB) Reducing Slab (w/PB): Reduced Riser Size	Below Grade Slab: Short Span Reinf Steel Area	Below Grade Slab: Long Span Reinf Steel Area	Below Grade Slab: Thickness	MAX DEPTH = 25 ft. to top of BASE SLAB: Base Slab: Short Span Reinf Steel Area	Base Slab: Long Span Reinf Steel Area	Base Slab: Thickness	Base Unit or Riser Walls: Short Span Reinf Steel Area	Base Unit or Riser Walls: Long Span Reinf Steel Area	Base Unit or Riser Walls: Thickness	Below Grade Slab (w/PJB) Reducing Slab (w/PB): Reduced Riser Size	Below Grade Slab: Short Span Reinf Steel Area	Below Grade Slab: Long Span Reinf Steel Area	Below Grade Slab: Thickness	Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

FABRICATION NOTES:

1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

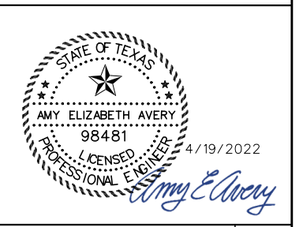
DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

FILE: prestd10-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT: 0016	SECT: 08	JOB: 043, ETC	HIGHWAY: SL 368, ETC
REVISIONS	DIST: SAT	COUNTY: BEXAR		SHEET NO.: 94

TRAFFIC SIGNAL NOTES

1. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SURFACE.
2. FURNISH VEHICLE AND PEDESTRIAN SIGNALS WITH LIGHT EMITTING DIODE (LED) SIGNAL LAMP UNITS.
3. FURNISH MOUNTING HARDWARE REQUIRED FOR ATTACHING VEHICLE SIGNAL HEADS TO THE TOP AND BOTTOM SWAY CABLES.
4. USE TYPE C HIGH SPECIFIC IINTENSITY GRADE SHEETING FOR SIGNS MOUNTED UNDER OR ADJACENT TO THE SIGNAL HEADS.
5. FURNISH AND INSTALL FULL-ACTUATED CONTROLLER WITH INTERNAL TIME BASE COORDINATION UNIT IN A BASE MOUNTED CABINET.
6. ASSUME OWNERSHIP OF THE REMOVED EXISTING SIGNS.
7. PLACE PAVEMENT MARKINGS AS SHOWN ON THE PLANS OR AS DIRECTED.
8. FUNISH AND INSTALL URETHANE FOAM TO ENCLOSE THE ENDS OF ALL CONDUITES CONTAINING SIGNAL CABLES AND ELECTRICAL CONDUCTORS.
9. CAP SPARE CONDUITS INSTALLED IN POLE FOUNDATIONS AND GROUND BOXES USING APPROVED CAPING DEVICES.
10. DO NOT PLACE SIGNAL HEADS OVER THE ROADWAY UNTIL ALL NECESSARY MATERIALS ARE ON HAND AS APPROVED.
11. INSTALL TOW SET SCREWS ON ALL VEHICLE SIGNAL HEAD MOUNTING HARDWARE FITTINGS.
12. INSTALL A 5/8-IN. (MINIMUM) EYE BOLT FOR THE POINT OF ATTACHMENT BELOW THE SERVICE ENTRANCE WEATHERHEAD FOR THE SERVICE DROP TO STEEL OR WOOD POLE.
13. PROVIDE 250 WATT LIGHT EMITTING DIODE (LED) LAMP LUMINAIRES OPERATING AT 240 VOLTS.
14. WRAP SIGNAL HEADS WITH DARK PLASTIC OR SUITABLE MATERIAL TO CONCEAL THE SIGNAL FACES FROM THE TIME OF INSTALLATION UNTIL PLACING INTO OPERATION.
15. GROUND STEEL MAST ARM POLE ASSEMBLIES IN ACCORDANCE WITH THE REQUIREMENTS SHOWN ON THE LATEST TRAFFIC SIGNAL POLE FOUNDATION STANDARD. USE THE GROUNDING LUG ON THE POLE TO GROUND THE POLE TO THE GROUND CONDUCTORS FROM THE CONDUITS.
16. VERIFY THE CORRECT MAST ARM POLE LENGTHS FOR EACH SIGNALIZED INTERSECTION PRIOR TO ORDERING THE EQUIPMENT.
17. INSTALL A CLOSE NIPPLE WITH LOCK NUT AND BRUSHING (SIZE AS REQUIRED) WHERE THE CABLE ENTERS THE UPPER PORTION OF THE SIGNAL POLE.
18. REFER TO TXDOT'S WEBSITE FOR PREQUALIFIED PRODUCTS LIST REGARDING RADAR DETECTION UNITS, VEHICLE LED TRAFFIC SIGNAL LAMP UNIT, SYMBOLIC PEDESTRIAN SIGNAL HEAD, SYMBOLIC PEDESTRIAN SIGNAL LAMP, CONDUIT, CONDUCTORS, GROUND BOXES, AND ELECTRICAL SERVICE. CHECK WEBSITE PERIODICALLY FOR CURRENT UPDATES.
19. THE LOCATION OF THE DETECTION ZONE IS APPROXIMATE. THE EXACT LOCATION WILL BE DETERMINED BY THE ENGINEER AND/OR DEPARTMENTS TRAFFIC OPERATIONS SECTION.
20. REMOVE THE EXISTING PAVEMENT MARKINGS AS DIRECTED. REMOVE THE PAVEMENT MARKINGS TO THE EXTENT THAT THEY ARE EITHER COMPLETELY REMOVED OR OBLITERATED TO THE SATISFACTION OF THE ENGINEER.
21. RIGHT OF WAY, EASEMENTS, OR OTHER MATTERS OF RECORD MAY EXIST WHERE NONE ARE SHOWN.
22. THE EXISTING PAVEMENT MARKINGS, UTILITIES, AND OTHER APPURTENANCES ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR TO VERIFY LOCATION OF ADJACENT UNDERGROUND UTILITIES PRIOR TO DIGGING AND PROTECT THEM DURING CONSTRUCTION.
23. THE CONTRACTOR SHALL CONNECT ALL FIELD WIRING TO THE CONTROLLER.
24. TRAY CABLE AND ILSN CABLE SHALL BE RUN IN 2-IN. CONDUIT SEPARATE FROM THE SIGNAL CABLE.
25. THE PRESENCE DETECTOR PROCESSOR SYSTEM PROVIDED SHALL CONSIST OF UNITS THAT INSERT DIRECTLY INTO THE CONTROLLER INPUT FILE.
26. MINIMUM CLEARANCE OF 10' RADIUS FROM THE NEUTRAL AND 10' RADIUS FROM PRIMARY SHALL BE MAINTAINED BETWEEN PROPOSED TRAFFIC SIGNAL EQUIPMENT. INCLUDING EXISTING OVERHEAD ELECTRICAL LINES.
27. IT IS THE INTENTION OF THESE PLANS TO PROVIDE A FULLY OPERATIONAL TRAFFIC SIGNAL. ANY ITEMS REQUIRED, BUT OMITTED, ARE THE RESPONSIBILITY OF THE CONTRACTOR AND WILL BE SUBSIDIARY TO THE PROPER BID ITEM.
28. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ALL UTILITIES (PUBLIC AND PRIVATE) PRIOR TO COMMENCING WORK. THE CONTRACTOR IS FULLY RESONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO LOCATE, PRESERVE, AND PROTECT THESE UTILITIES, WHETHER UNDERGROUND, ABOVE GROUND, OR OVERHEAD.
29. CONTRACTOR SHALL EXERCISE CAUTION WHEN EXCAVATING IN THE VICINITY OF UNDERGROUND UTILITIES.
30. CONTRACTOR WILL NOTIFY THE STATE'S UTILITIES LOCATOR AT 800-344-8377 WITH 48 HOURS ADVANCE NOTICE PRIOR TO ANY EXCAVATION, BORING, TRENCHING, OR PUSHING PIPING IN THE AREA.
31. ALL CONSTRUCTION SIGNS AND BARRICADES WILL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND BE CONSISTENT WITH TXDOT TCP STANDARDS.
32. EXACT LOCATION OF TRAFFIC SIGNAL POLES, GROUND BOXES,AND ELECTRICAL SERVICE WILL BE DETERMINED IN THE FIELD SUBJECT TO FINAL APPROVAL BY TXDOT INSPECTOR. IT IS THE CONTRACTOR'S RESONSIBILITY TO VERIFY THE EXACT LOCATIONS FROM INSPECTING ENGINEER, PRIOR TO CONSTRUCTION.
33. ALL CONDUITS IN NATURAL GROUND WILL BE TRENCHED AND BURIED. THE CONTRACTOR WILL BACKFILL, COMPACT, AND RESTORE TRENCH AREA TO ORIGINAL CONDITIONS AND MATCH EXISTING SURFACE CONDITIONS TO THE DENSITY OF THE ADJACENT AREA.
34. ALL CONDUITS UNDER ROADWAYS AND PAVED SHOULDERS WILL BE BORED.
35. ALL PVC CONDUIT WILL BE SCHEDULE 80.
36. ALL POLES AND GROUND BOXES WILL BE GROUNDED.
37. ALL DRILL SHAFT LOCATIONS ARE APPROXIMATE AND WILL BE FIELD VERIFIED PRIOR TO CONSTRUCTION. ANY ADJUSTMENTS WILL BE APPROVED BY THE INSPECTING ENGINEER.
38. CONTRACTOR WILL RESTORE THE CONSTRUCTION AREA TO ORIGINAL CONDITIONS PRIOR TO FINAL INSPECTION.
39. ANY EXISTING PAVEMENT, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION WILL BE REPLACED TO TXDOT STANDARDS.
40. SIGNAL HEADS WILL BE LED AND HAVE RED, YELLOW, GREEN, RED ARROW, YELLOW ARROW, GREEN ARROW, WHERE SPECIFIED INDICATORS WITH 12-IN. LENS. ALL SIGNAL HEADS WILL HAVE BLACK BACKPLATES.
41. FURNISH MATERIALS NECESSARY TO INSTALL ACCESSIBLE PEDESTRIAN SIGNAL UNITS AND SIGNS AS SHOWN IN THE PLANS.
42. PEDESTRIAN PUSH BUTTONS WILL CONFORM TO CURRENT ADA STANDARDS AND WILL BE ACCESSIBLE PEDESTRIAN SIGNAL (APS) UNITS CONFORMING TO ITEM 688. EACH APS PUSH BUTTON WILL HAVE THE FOLLOING FEATURES:
    I) PUSH BUTTON LOCATOR TONE
    II) A TACTILE ARROW
    III) A SPEECH WALK MESSAGE INDICATION, AND
    IV) A SPEECH PUSH BUTTON INFORMATION MESSAGE.
43. THE APS UNIT WILL BE PROGRAMMED BY A MANUFACTURERS REPRESENTATIVE IN ACCORDANCE WITH SPECIFICATIONS AND THE TMUTCD.
44. CABINET ASSEMBLY SHALL BE EQUIPPED WITH A MANUAL CONTROL SWITCH AND INTERNAL ADVANCE BUTTON IN THE POLICE PANEL FOR MANUAL CONTROL OF SIGNAL.
45. TXDOT HAS THE AUTHORITY TO STOP CONSTRUCTION OF TRAFFIC SIGNAL, IF THE STATE INSPECTIONS ARE NOT BEING FOLLOWED.
46. FURNISH SYMBOL TYPE PEDESTRIAN COUNTDOWN SIGNALS. INSTALL USING MOUNTING HEIGHT IN ACORDANCE WITH THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
47. FURNISH MATERIALS NECESSARY TO INSTALL ACCESSIBLE PEDESTRIAN SIGNAL UNITS AND SIGNS AS SHOWN IN PLANS. INSTALL AT 3 FT. 6 IN. TO 4 FT. 0 IN. ABOVE THE SIDEWALK OR CONCRETE WALKWAY.
48. INSTALL A CONCRETE WALKWAY FROM THE END OF THE CURB RAMP OR EDGE OF PAVEMENT TO THE TRAFFIC SIGNAL POLE FOUNDATION TO PROVIDE ACCESS TO PEDESTRIAN PUSH BUTTON(S). PERFORM THIS WORK IN ACCORDANCE WITH ITEM 531, "SIDEWALKS".
49. REPAIR OR REPLACE PAVEMENT DAMAGED BY THE CONTRACTOR'S FORCES DURING CONSTRUCTION AT NO COST TO THE DEPARTMENT.
50. CONTACT AND COORDINATE WITH THE OWNER OF ANY OPTICOM EQUIPMENT PRIOR TO CONSTRUCTION. THE OWNER IS TO REMOVE OPTICOM EQUIPMENT. ONCE THE CONSTRUCTION IS COMPLETED IT'S THE OWNER RESPONSIBILITY TO REINSTALL OPTICOM COMPONENTS.



NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

TRAFFIC SIGNAL NOTES

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		95
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043, ETC	SL 368, ETC

Justin.Kinne
4/19/2022 14:06:54
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\N8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_NOTES.dgn

CoSA TRAFFIC SIGNAL NOTES

1. PRIOR TO CONSTRUCTION THE CITY SHALL APPROVE ALL LOCATIONS FOR TRAFFIC SIGNAL POLES, CONTROLLER FOUNDATION, AND ELECTRICAL SERVICE PEDESTALS. CONTRACTOR SHALL STAKE LOCATIONS BEFORE CONTACTING GOVERNING AGENCY FOR APPROVAL.

2. GROUND BOX COVERS SHALL BE POLYMER CONCRETE WITH "TRAFFIC SIGNAL" LEGIBLY IMPRINTED IN 1 INCH LETTERS (MINIMUM HEIGHT).

3. MATERIALS & EQUIPMENT DEEMED SALVAGEABLE BY THE CITY INSPECTOR SHALL BE DELIVERED BY THE CONTRACTOR TO THE CITY OF SAN ANTONIO TRAFFIC OPERATIONS. THE CONTRACTOR SHALL CONTACT THE CITY SERVICES AND SUPPLY SUPERINTENDENT, AT (210)-27-8462 SEVEN (7) DAY PRIOR TO THE DELIVERY OF THE SALVAGED MATERIAL IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATION.

4. FINAL ADJUSTMENT OF TRAFFIC SIGNAL HEADS (VEHICLE OR PEDESTRIAN), AS REQUIRED BY THE ENGINEER, SHALL BE DONE BY THE CONTRACTOR AND SHALL BE SUBSIDIARY TO FURNISHING AND INSTALLING TRAFFIC SIGNAL HEADS OR SECTIONS.

5. ALL VEHICLE AND PEDESTRIAN SIGNAL FACES SHALL BE COVERED SO THAT THE INDICATIONS CANNOT BE SEEN FROM THE TIME OF INSTALLATION UNTIL PLACED IN OPERATION.

6. EXISTING TRAFFIC SIGNAL SHALL REMAIN IN OPERATION UNTIL NEW SIGNAL IS READY.

7. WHEN NECESSARY TO TURN OFF AN EXISTING SIGNAL, CONTRACTOR SHALL PROVIDE AN OFF-DUTY UNIFORMED POLICE OFFICER TO CONTROL TRAFFIC UNTIL THE TRAFFIC SIGNAL IS BACK IN SATISFACTORY OPERATION.

8. THE CONTRACTOR SHALL CONTACT THE CITY TRAFFIC ENGINEER AT (210) 207-8462 AND THE CITY INSPECTOR AT (210) 207-3954 A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE TRAFFIC SIGNAL TURN-ON.

9. THE LENGTH OF TIME FOR ANY TRAFFIC SIGNAL DEACTIVATION AND REACTIVATION FOR THIS PROJECT WILL BE MINIMIZED. DEACTIVATION CAN ONLY OCCUR DURING OFF-PEAK TIME PERIOD TO MINIMIZE TRAFFIC DISRUPTIONS. OFF-DUTY POLICE OFFICERS ARE REQUIRED IF TRAFFIC SINGAL DEACTIVATION REQUIRES MORE THAN 20 MINUTES (NO SEPARATE PAY ITEM).

10. CONTRACTOR TO REMOVE ALL EXISTING ELECTRIAL SERVICES, PEDESTAL POLES, MAST ARM ASSEMBLIES, LUMINAIRES, SIGNAL HEADS, CONTROLLERS, CABLES, AND OTHER ACCESSORIES. REMOVE IN A MANNER SO THAT DAMAGE DOES NOT OCCUR. REMOVE AND SALVAGE ALL ITEMS SHOWN ON THE PLANSOR AS DIRECTED BY THE INSPECTOR.

11. CONTRACTOR TO REMOVE ABANDONED GROUND BOXES AND ALL EXISTING CABLES REGARDLESS OF TYPE OR NUMBER FROM EXISTING CONDUIT. REMOVE EXISTING CONDUIT 24" BELOW GRADE AS IT TURNS UP INTO THE GROUND BOX AND BACKFILL THE HOLE WITH MATERIAL EQUAL IN COMPOSITION AND DENSITY TO THE SURROUNDING AREA.

12. CONTRACTOR TO REMOVE ABANDONED CONCRETE FOUNDATIONS TO A POINT 24" BELOW FINAL GRADE. BACKFILL HOLE WITH MATERIAL EQUAL IN COMPOSITION AND DENSITY TO THE SURROUNDING AREA. REPLACE SURFACING MATERIAL WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION.

13. CONTRACTOR SHALL ACCEPT OWNERSHIP OF UNSALVAGEABLE MATERIALS AND DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.

14. ALL DIMENSIONS ARE SHOWN IN FEET UNLESS SPECIFIED OTHERWISE (ALL EXISTING FEATURES ARE SHOWN IN SCREENED BLACK I.E. FADED).

15. ALL TRAFFIC SIGNAL EQUIPMENT, INCLUDING SPAN WIRE INSTALLED SHALL MAINTAIN A MINIMUM CLEARANCE OF 10' RADIUS FROM NEUTRAL AND 15' RADIUS FROM PRIMARY OR SECONDARY OVERHEAD ELECTRIC LINES. CONTRACTOR SHALL CONSIDER ALTERNATIVE FOUNDATION PLACEMENT METHODS IN AREAS WHERE EXISTING OVERHEAD ELECTRIC LINES PROHIBIT THE USE OF CONVENTIONAL DRILL TRUCK.

16. CONTRACTOR TO POTHOLE SIGNAL POLE LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATION.

17. BATTERY BACK UP SYSTEM (BBS) COMPLETE SHALL BE ABOVE GROUND AND INSTALLED PER TxDOT SPECIFICATION ITEM 6058.

18. LOCATION OF TRAFFIC SIGNAL, POLES, CONTROLLER ASSEMBLIES, AND ELECTRICAL SERVICE SHALL BE VERIFIED AN APPROVED BY COSA PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL SUPPLY AND INSTALL THE ADDRESS IN PERMANENT NUMBERS AND LETTERS TO THE STREET SIDE OF THE SERVICE ENCLOSEURE. SAID ADDRESS SHALL ALSO BE RECORDED AND GIVEN TO THE CITY OF SAN ANTONIO INSPECTOR FOR THE CITY'S RECORDS.

19. ALL ILSN SIGNS SHALL BE INSTALLED ON THE ILSN MAST ARM AS DIRECTED BY THE ENGINEER.

20. AN ADDITIONAL 2" SCHEDULE 80 PVC SHALL BE INSTALLED AT EACH POLE FOUNDATION STUBBED OUT 2" FROM THE FACE OF THE FOUNDATION. STUB OUTS SHALL BE APPROPRIATELY CAPPED BELOW GRADE FOR FUTURE USE.

21. SIDEWALK SHALL BE EXTENDED UP TO THE MAST ARM POLES, AS NEEDED, TO PROVIDE PEDESTRIAN ACCESS TO THE PEDESTRIAN PUSH BUTTONS.

22. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO COMMENCING EXCAVATION. ALL UTILITY LOCATION SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.

23. NEATLY CAP/COIL ALL WIRES AND CABLES IN GROUND BOX OR AT TERMINATION.

24. SIGNAL OPERATION WILL BE MONITORED AFTER CONSTRUCTION AND MODIFIED AS NECESSARY.

25. ALL SIGNAL HEADS SHALL HAVE BACK PLATES.

26. CONTRACTOR SHALL CONTACT THE CITY TRAFFIC ENGINEER AT (210) 207-8462 A MINIMUM OF SEVEN (7) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

27. CONTRACTOR SHALL FURNISH AND DELIVER CONTROLLER AND CABINET ASSEMBLY TO THE CITY OF SAN ANTONIO SIGNAL SHOP FOR PROGRAMMING FOUR (4) WEEKS IN ADVANCE OF THE EQUIPMENT INSTALLATION IN THE FIELD.

28. CONTRACTOR SHALL NOT INSTALL ANY TRAFFIC SIGNAL EQUIPMENT OR SIGNS PERTINENT TO

    UNFINISHED ROADWAY BEING OPENED TO VEHICULAR TRAFFIC.

29. ACTUAL POWER SOURCE LOCATION UNIDENTIFIED AT THE TIME OF PLAN PREPARATION. CONDUIT QUANTITY INCLUDES ALLOWANCE FOR 150 LF OG 3 INCH CONDUIT.

SIGNAL MODIFICATION NOTES

1. PROVIDE CONTINUED OPERATION OF THE EXISTING SIGNAL(S) DURING CONSTRUCTION AND UNTIL THE PROPOSED OPERATION IS COMPLETED.

2. ONCE THE INTEGRITY AND/OR FUNCTION OF THE EXISTING TRAFFIC SIGNAL(S) IS ALTERED BY THE CONTRACTOR, MAINTAIN AND OPERATE THE EXISTING TRAFFIC SIGNAL(S) UNTIL THE TRAFFIC SIGNAL WORK IS ACCEPTED BY THE DEPARTMENT. DURING THE CONSTRUCTION OF THE PROPOSED SIGNAL WORK, MAINTAIN THE EXISTING TRAFFIC SIGNAL(S) IN CONFORMANCE WITH THE LATEST TxMUTCD.

3. DURING THE CONSTRUCTION OF THE PROPOSED SIGNAL WORK, IF THE EXISTING TRAFFIC SIGNAL EQUIPMENT REQUIRES REPLACEMENT DUE TO WEAR, DETERIORATION, OR ANY CIRCUMSTANCE OVER WHICH THE CONTRACTOR HAS NO CONTROL, THE EQUIPMENT WILL BE FURNISHED BY THE DEPARTMENT AT NO COST TO THE CONTRACTOR. INSTALL THIS EQUIPMENT AT NO COST TO THE DEPARTMENT. SUCH MATERIALS WILL BE PROVIDED AT THE DEPARTMENT'S SIGNAL SHOP.

4. IF EXISTING GROUND BOXES ARE FOUND TO BE INSUFFICIENT IN SIZE TO ACCOMODATE THE PROPOSED CONDUITS AND CABLES AS SHOWN ON THE PLANS OR IF THEY HAVE BEEN DAMAGED TO THE EXTENT THEY WILL NOT ACCOMODATE THE ADDITIONAL CONDUITS AND CABLES, REPLACE THE GROUND BOX WITH A NEW GROUND BOX (SIZE AS REQUIRED) OR INSTALL A NEW GROUND BOX ADJACENT TO THE EXISTING GROUND BOX AS APPROVED BY THE ENGINEER. SUCH REPAIR OR REPLACEMENT IS INCIDENTAL TO ITEM 624, "GROUND BOX".

5. IF THE ENGINEER IN THE FIELD FINDS THE EXISTING CONDUITS IN THE SIGNAL POLE FOUNDATION INADEQUATE TO ACCOMODATE THE PROPOSED CABLES, ATTACH A NEW CONDUIT (SIZE AS REQUIRED) TO THE SIGNAL POLE FOUNDATION. IF ADEQUATE ROOM EXISTS BETWEEN THE SIGNAL POLE AND THE FOUNDATION, INSTALL THE CONDUIT UNDER THE SIGNAL POLE. IF ADEQUATE ROOM DOES NOT EXIST BETWEEN THE SIGNAL POLE AND THE FOUNDATION, ATTACH THE CONDUIT TO THE SIGNAL POLE FOR THE PROPOSED CABLES. SUCH WORK IS CONSIDERED INCIDENTAL TO THE BID ITEM 618, "CONDUIT".

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

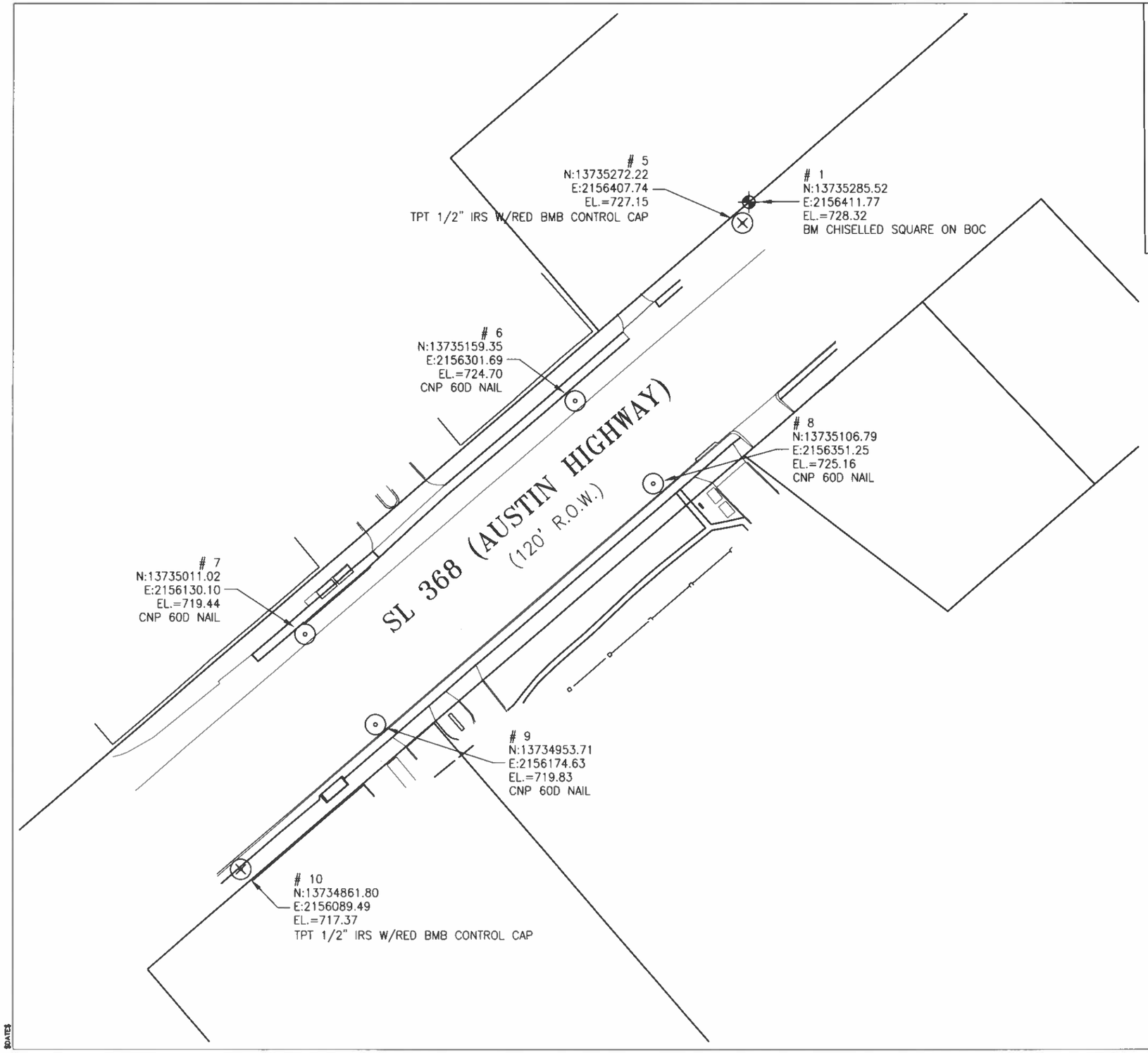
FY 2022 HSIP

CoSA TRAFFIC SIGNAL NOTES

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		96
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043, ETC	SL 368, ETC

Justin.Kinne
4/19/2022 14:06:58
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_NOTES_CoSA.dgn



LOCATION MAP
N.T.S.

CSJ 0016-08-043

NOTES:

1. COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT. COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE COMBINED SCALE FACTOR OF 1.00017.

2. ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 1988). VALUES WERE ESTABLISHED BY GPS OBSERVATION USING GEOID 12B.

N

NOT TO SCALE

THE SURVEY CONTROL INFORMATION HAS BEEN ACCEPTED AND INCORPORATED INTO THIS PLAN SPECIFICATION AND ESTIMATE

STATE OF TEXAS
REGISTERED
GREGORIO LOPEZ, JR.
5271
PROFESSIONAL
LAND SURVEYOR

Gregorio Lopez, Jr.
4/18/2022

BAIN MEDINA BAIN
ENGINEERS & SURVEYORS

© 2021 TEXAS DEPARTMENT OF TRANSPORTATION

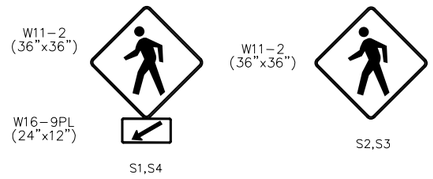
AUSTIN HWY
HORIZONTAL & VERTICAL CONTROL

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.		SHEET NO.
			97

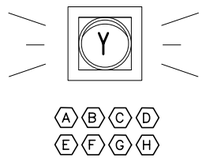
STATE	DISTRICT	COUNTY	
TEXAS		BEXAR	
CONTROL	SECTION	JOB	HIGHWAY NO.
0016	08	043	AUSTIN HWY

$FILES
$DATES

PROPOSED SIGNS

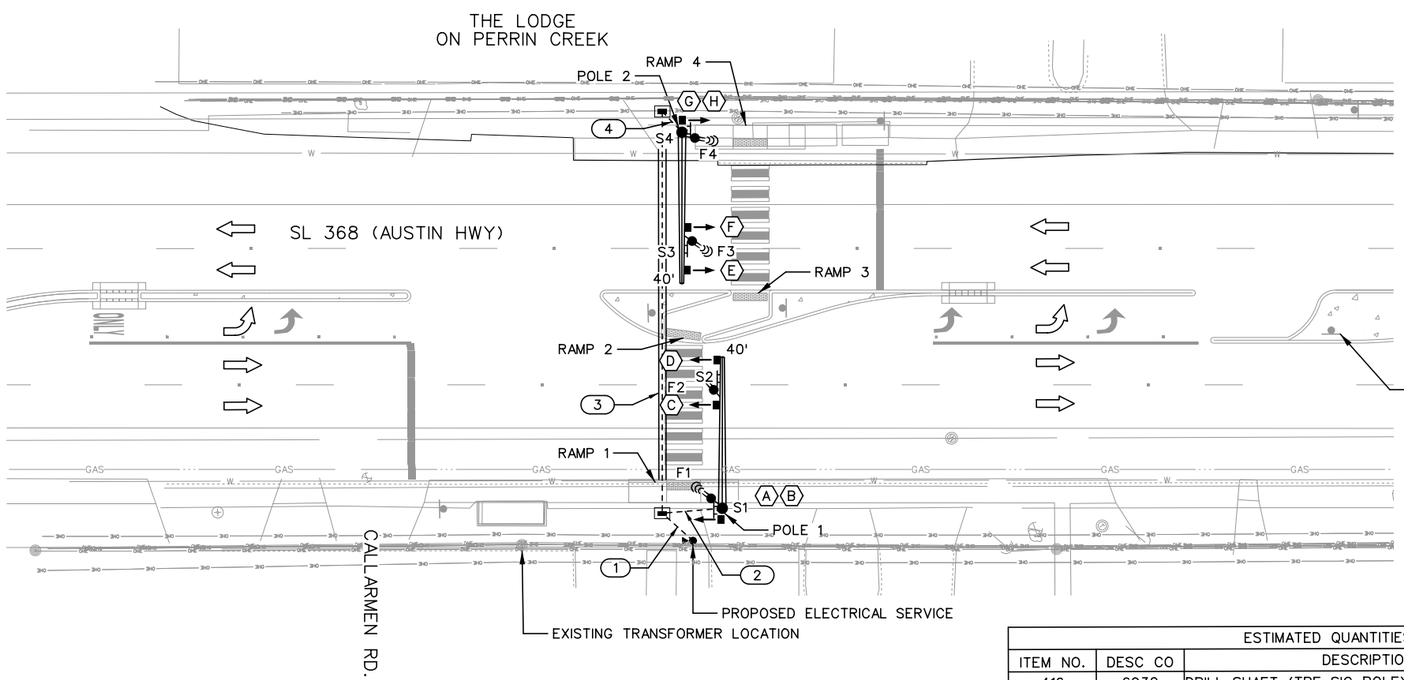


PROPOSED LED SIGNAL HEADS



LEGEND

- SIGNAL POLE W/MAST ARM
- SIGNAL HEAD
- MAST ARM SIGN
- FLIR SMART CITY SENSOR
- TYPE D GROUND BOX
- TYPE D GROUND BOX W/APRON
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- OHE — OVERHEAD ELECTRIC LINE
- GAS — GAS LINE
- SS — SEWER LINE
- W — WATER LINE
- SERVICE METER AND DISCONNECT
- POLE MOUNTED CONTROLLER CABINET
- POST MOUNTED SIGN
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)



0 20 40

SCALE: 1"=40'

SL 368 (CSJ: 0016-08-043)

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. LOCATION OF SIGNAL POLES SHALL BE VERIFIED AND APPROVED BY CITY OF SAN ANTONIO PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
6. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
7. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SERVICE.
8. CONTRACTOR SHALL POTHOLE ALL SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATIONS.
9. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION.
10. CONTRACTOR SHALL CONTACTCITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE FLASHER TURN-ON.
11. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
12. TOP OF DRILL SHAFT FOUNDATIONS (POLES 1 & 2) SHALL BE 3" HIGHER THAN THE EXISTING CROWN OF ROADWAY. THE FOUNDATION LENGTH ABOVE GROUND LEVEL IS IN ADDITIONAL TO THE REQUIRED DRILL SHAFT LENGTH GIVEN ON THE TRAFFIC SIGNAL POLE STANDARD.
13. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
416	6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	26
618	6046	CONDT (PVC) (SCH 80) (2")	LF	20
618	6053	CONDT (PVC) (SCH 80) (3")	LF	65
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	245
620	6009	ELEC CONDR (NO.6) BARE	LF	285
620	6010	ELEC CONDR (NO.6) INSULATED	LF	120
624	6010	GROUND BOX TY D (162922)W/APRON	EA	2
628	6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	EA	1
680	6001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	1
682	6003	VEH SIG SEC (12")LED(YEL)	EA	8
682	6021	BACK PLATE (12")(1 SEC)	EA	8
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	675
686	6041	INS TRF SIG PL AM(S)1 ARM(40')	EA	2
6004	6031	ITS COM CBL (ETHERNET)	LF	675

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

FY 2022 HSIP

PROPOSED SL 368 (AUSTIN HWY)
Z-CROSSING LAYOUT

SHEET 1 OF 3

FED RD DIV. NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		98
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:07:13
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Austinhwy_08.dgn

CONDUCTOR AND CONDUIT SCHEDULE					
CONDUIT/ SPAN RUN NUMBER		1	2	3	4
NUMBER OF CONDUITS		1	2	2	1
CONDUIT SIZE IN INCHES		2.0	3.0	3.0	3.0
CONDUIT/ SPAN LENGTH (LF)		15	20	110	15
RUN TYPE, B=BORE, T=TRENCH, E=EXISTING		T	T	B	T
CABLE	CIRCUIT	NUMBER OF CONDUCTORS			
#6 THHN/THWN	120 POWER HOT & COMMON	2	2		
BARE BOND GROUND	(POWER) BARE #6	1	1		
	(CONDUIT) BARE #6		1	2	1
9/C - #14 CABLE (FLASHERS)	POLE 1				
	POLE 2		2	2	2
ETHERNET CABLE (COLOR CODED)	POLE 1				
	POLE 2		2	2	2

INSIDE POLES	9C	CAT 5E
	(FT)	(FT)
POLE 1	40	40
POLE 2	40	40
TOTALS	80	80

INSIDE ARMS	9C	CAT 5E
	(FT)	(FT)
POLE 1	40	40
POLE 2	40	40
TOTALS	80	80

TRAFFIC POLE SCHEDULE		
POLE	1	2
FOUNDATION	30-A	30-A
MOUNTING HEIGHT	19'	19'
ATTACHMENTS	S1,S2 (2) FLIR SMART SENSORS	S3,S4 (2) FLIR SMART SENSORS

FLIR SMART SENSOR DETECTION DETAILS		
DETECTOR	RAMP	MOUNTING LOCATION
F1	RAMP 1	POLE 1
F2	RAMP 2	POLE 1 - MAST ARM
F3	RAMP 3	POLE 2 - MAST ARM
F4	RAMP 4	POLE 2

ELECTRICAL SERVICE DATA										
PLAN SHEET NUMBER	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT.BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANE IBD/LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANK CKT. BRK. POLE/AMPS	KVA LOAD
98	ELC SRV TY D 120/240 070 (NS) AL (E) PS (U)	1 1/4"	3/#6	N/A	2P/70		100	SIG. CONTROLLER	1P/30	<7.1

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

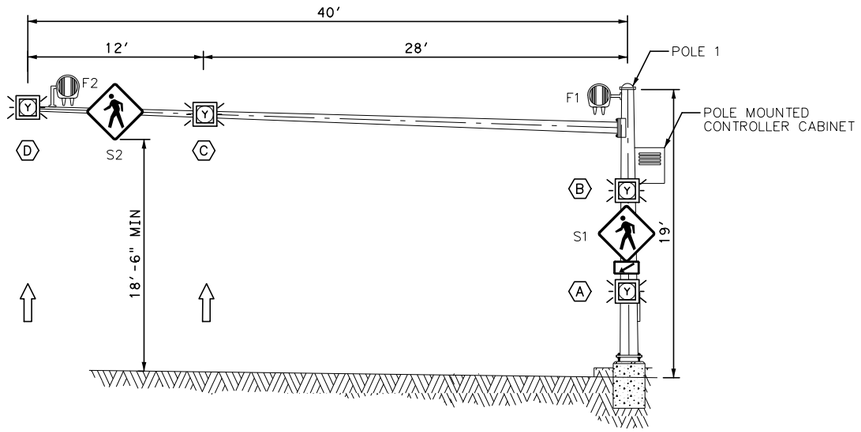
FY 2022 HSIP

PROPOSED SL 368 (AUSTIN HWY)
Z-CROSSING DETAILS

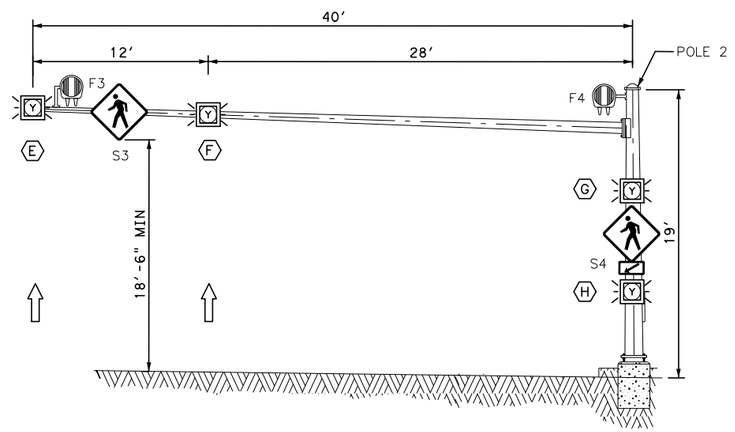
SHEET 2 OF 3

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		99
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:07:30
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_09.dgn



LOOKING NORTH ON SL 368 (AUSTIN HWY)



LOOKING SOUTH ON SL 368 (AUSTIN HWY)

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

PROPOSED SL 368 (AUSTIN HWY) Z-CROSSING ELEVATIONS

SHEET 3 OF 3

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		100
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:07:34
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA •1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_10.dgn

EXISTING SIGNS TO REMAIN

R10-17T — LEFT TURN YIELD ON FLASHING YELLOW ARROW — S2

R9-3 — S1,S4

R10-4L — PUSH BUTTON FOR — PB1,PB3,PB4

R10-4R — PUSH BUTTON FOR — PB2

D3-1 — Lanark < 100 — S3

D3-1 — Lanark 100 > — S6

D3-1 — Austin Hwy < 2000 2100 > — S5

EXISTING LED SIGNAL HEADS TO REMAIN

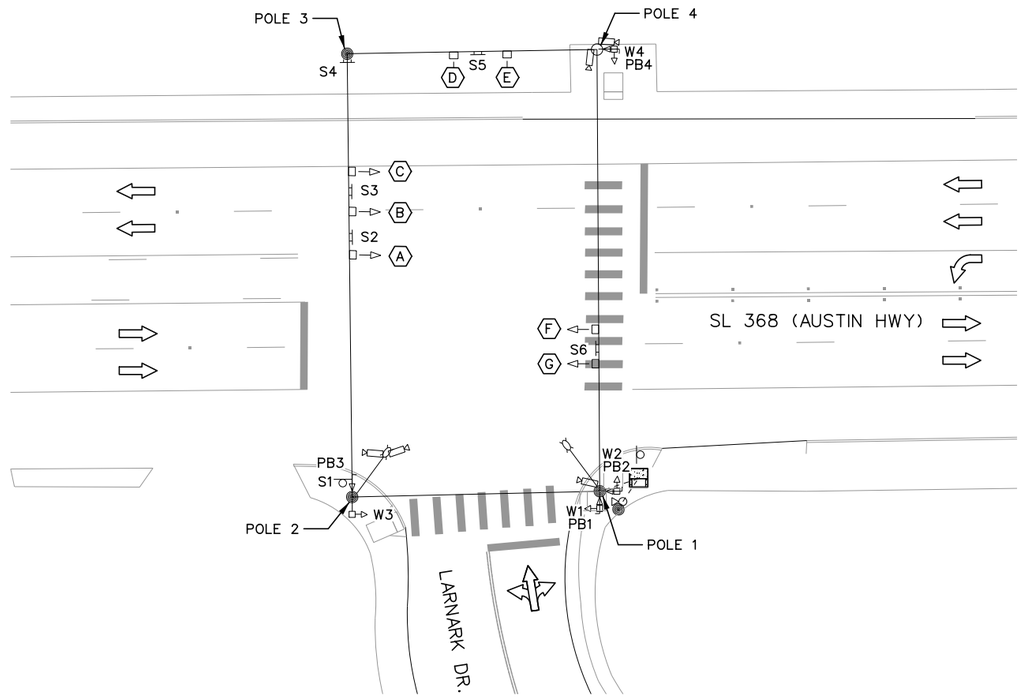
COUNTDOWN PEDESTRIAN SIGNAL HEAD — W1,W2,W3,W4

3-SECTION VERTICAL 12" SIGNAL HEAD (R, Y, G) — B C D / E F G

4-SECTION VERTICAL 12" SIGNAL HEAD (FYA) (R, Y, Y, G) — A

LEGEND

- EXISTING STRAIN POLE W/ SPAN WIRE
- EXISTING LUMINAIRE
- EXISTING VERTICAL SIGNAL HEAD
- EXISTING OVERHEAD SIGN
- PROPOSED OVERHEAD SIGN
- EXISTING PEDESTRIAN POLE W/ SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING VIVDS DETECTION DEVICE
- EXISTING CONDUIT
- EXISTING SERVICE METER AND DISCONNECT
- EXISTING GROUND MOUNTED CONTROLLER CABINET
- EXISTING POST MOUNTED SIGN
- EXISTING TIMBER POLE
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)



0 20 40

SCALE: 1"=40'

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY) & LANARK DR.
EXISTING CONDITIONS & REMOVALS

SHEET 1 OF 4

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		101
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTITILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK TEXAS "ONE-CALL" SYTEM: 1-800-345-4545.
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. THE CONTRACTOR SHALL ELIMINATE EXISTING PAVEMENT MARKINGS WHICH CONFLICT WITH PAVEMENT MARKINGS. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.
5. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.

Justin.Kinne
4/19/2022 14:07:44
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Austinhwy_11.dgn

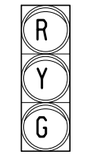
PROPOSED SIGNS

R3-4 (MOD)
(24" x 30")

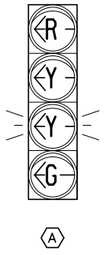
S1

EXISTING LED SIGNAL HEADS TO REMAIN

3-SECTION VERTICAL
12" SIGNAL HEAD

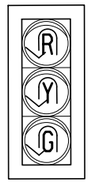


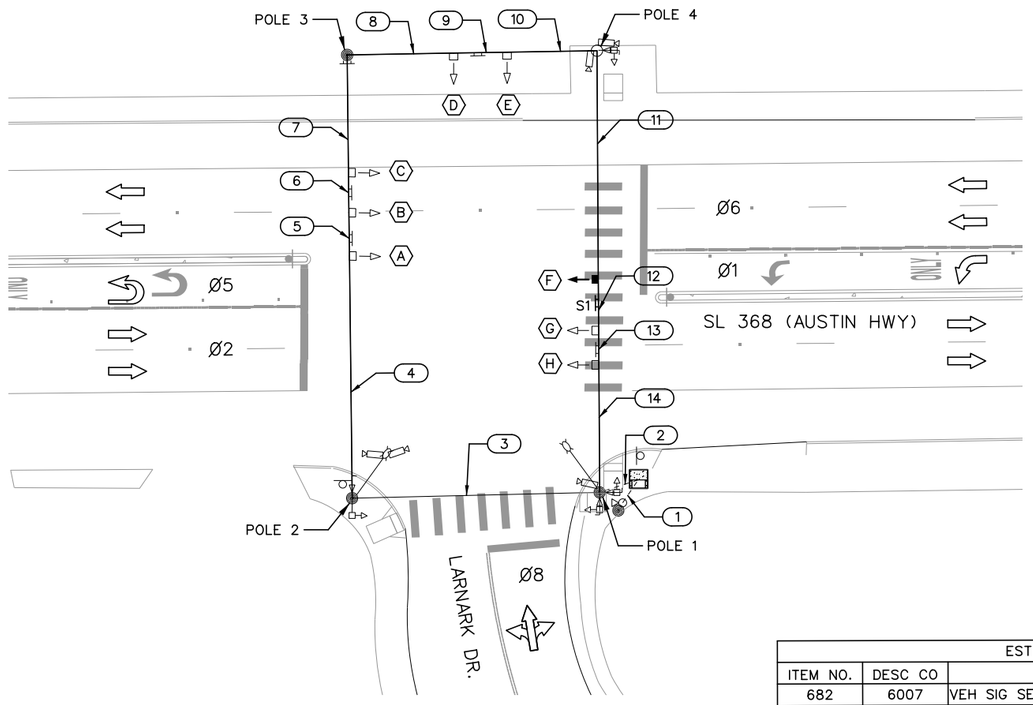
4-SECTION VERTICAL
12" SIGNAL HEAD (FYA)



PROPOSED LED SIGNAL HEADS

3-SECTION VERTICAL
12" SIGNAL HEAD





LEGEND

- EXISTING STRAIN POLE W/ SPAN WIRE
- EXISTING LUMINAIRE
- EXISTING VERTICAL SIGNAL HEAD
- PROPOSED VERTICAL SIGNAL HEAD
- EXISTING OVERHEAD SIGN
- PROPOSED OVERHEAD SIGN
- EXISTING PEDESTRIAN POLE W/ SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING VIVDS DETECTION DEVICE
- EXISTING CONDUIT
- EXISTING SERVICE METER AND DISCONNECT
- EXISTING GROUND MOUNTED CONTROLLER CABINET
- EXISTING POST MOUNTED SIGN
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)

N

0 20 40
SCALE: 1"=40'

SL 368 (CSJ: 0016-08-043)

ESTIMATED QUANTITIES				
ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
682	6007	VEH SIG SEC (12")LED(GRN U-TURN ARW)	EA	1
682	6008	VEH SIG SEC (12")LED(YEL U-TURN ARW)	EA	1
682	6009	VEH SIG SEC (12")LED(RED U-TURN ARW)	EA	1
682	6060	BACKPLATE W/REFL BRDR(3 SEC)	EA	1
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	75
6027	6003	CONDUIT (PREPARE)	LF	15
6027	6008	GROUND BOX (PREPARE)	EA	1

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. LOCATION OF SIGNAL POLES SHALL BE VERIFIED AND APPROVED BY CITY OF SAN ANTONIO PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
6. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
7. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SERVICE.
8. CONTRACTOR SHALL POTHOLE ALL SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATIONS.
9. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION.
10. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE SIGNAL MODIFICATION IMPLEMENATION.
11. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
12. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-9699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY) & LANARK DR.
INTERSECTION IMPROVEMENTS

SHEET 2 OF 4

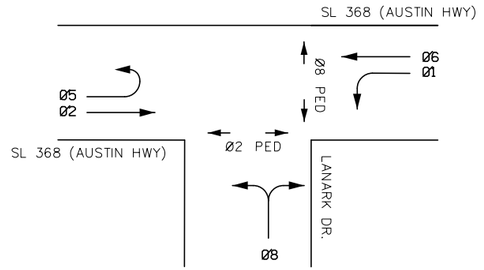
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		102
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:07:51
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_12.dgn

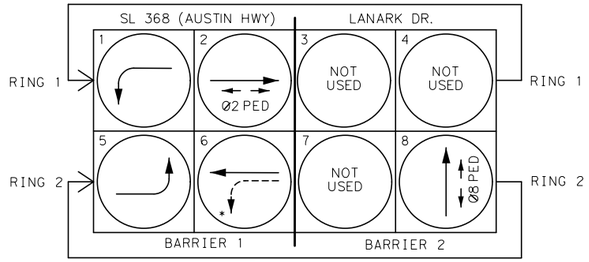
CONDUCTOR AND CONDUIT SCHEDULE															
CONDUIT/ SPAN RUN NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14
NUMBER OF CONDUITS		1	3												
CONDUIT SIZE IN INCHES		2.0	3.0												
CONDUIT/ SPAN LENGTH (LF)		10	10	65	65	12	11	31	28	14	24	60	13	9	34
RUN TYPE, S=SPAN, T=TRENCH, E=EXISTING		E	E	S	S	S	S	S	S	S	S	S	S	S	S
CABLE	CIRCUIT	NUMBER OF CONDUCTORS													
#6 THHN/THWN	120 POWER HOT & COMMON														
BARE BOND GROUND	(POWER) BARE #6														
	(CONDUIT) BARE #6														
9/C - #14 CABLE (SIGNAL)	POLE 1 - POLE 4: Ø5 + Ø2		1										1	1	1
	POLE 2 - POLE 3: Ø1 + Ø6														
	POLE 3 - POLE 4: Ø8														
9/C - #14 CABLE (PED SIGNAL)	POLE 1 - Ø2 + Ø8														
	POLE 2 - Ø2														
	POLE 4 - Ø8														
3/C - #16 (PED PUSH BUTTONS-APS)	POLE 1 - Ø2 + Ø8														
	POLE 2 - Ø2														
	POLE 4 - Ø8														
DATA & POWER CABLE (VIVDS)	POLE 1 - VIVDS Ø2 + Ø5														
	POLE 2 - VIVDS Ø2														
	POLE 2 - VIVDS 01 + Ø6														
	POLE 4 - Ø8														
	POLE 4 - Ø6														

ELECTRICAL SERVICE DATA										
PLAN SHEET NUMBER	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT.BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANE IBD/LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANK CKT. BRK. POLE/AMPS	KVA LOAD
EXISTING ELECTRICAL SERVICE TO REMAIN										

ORIENTATION DIAGRAM



PHASING DIAGRAM



———— PROTECTED PHASE

- - - - - - - - - - PERMITTED PHASE

* FLASHING YELLOW ARROW

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

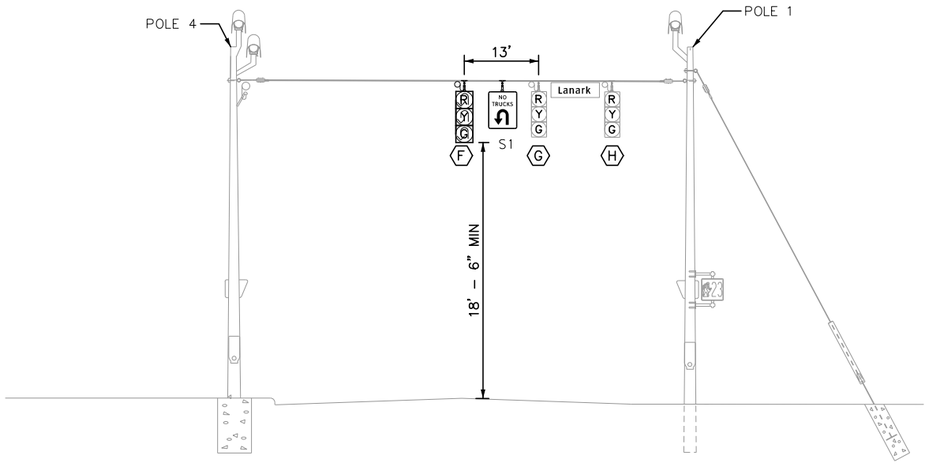
FY 2022 HSIP

SL 368 (AUSTIN HWY) & LANARK DR. INTERSECTION IMPROVEMENTS DETAILS

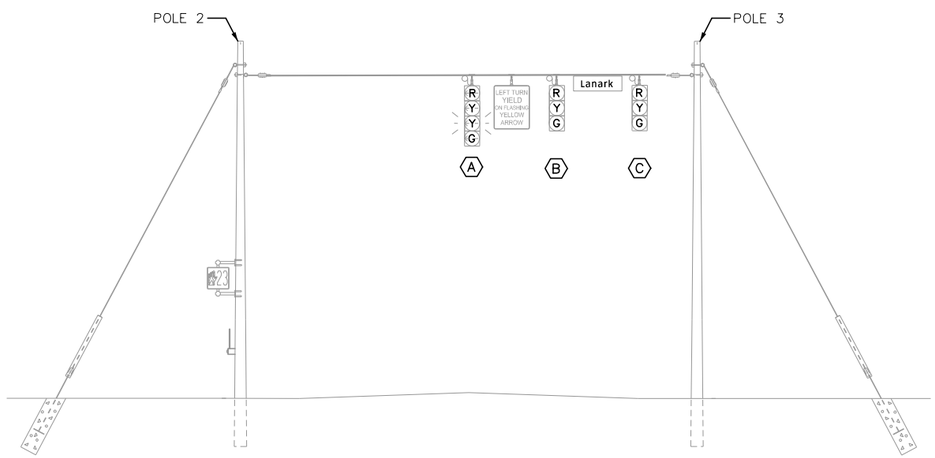
SHEET 3 OF 4

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		103
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

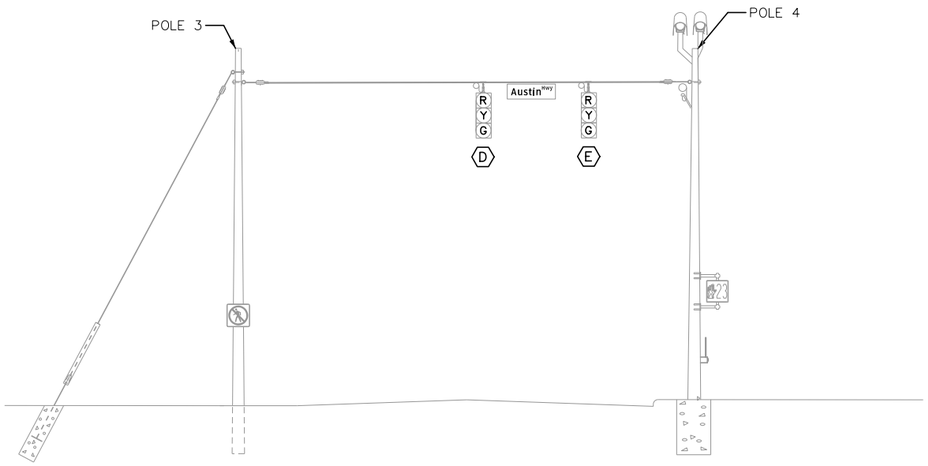
Justin.Kinne
4/19/2022 14:08:11
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_13.dgn



LOOKING NORTH ON SL 368 (AUSITN HWY)



LOOKING SOUTH ON SL 368 (AUSTIN HWY)



LOOKING WEST ON LANARK DR.

SL 368 (CSJ: 0016-08-043)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 368 (AUSTIN HWY) & LANARK DR. INTERSECTION IMPROVEMENTS ELEVATIONS

SHEET 4 OF 4

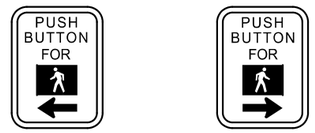
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		104
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:08:14
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_14.dgn

EXISTING LED SIGNAL HEADS TO BE REMOVED

W1,W2,W3
W4,W5,W6,W7

EXISTING SIGNS TO BE REMOVED

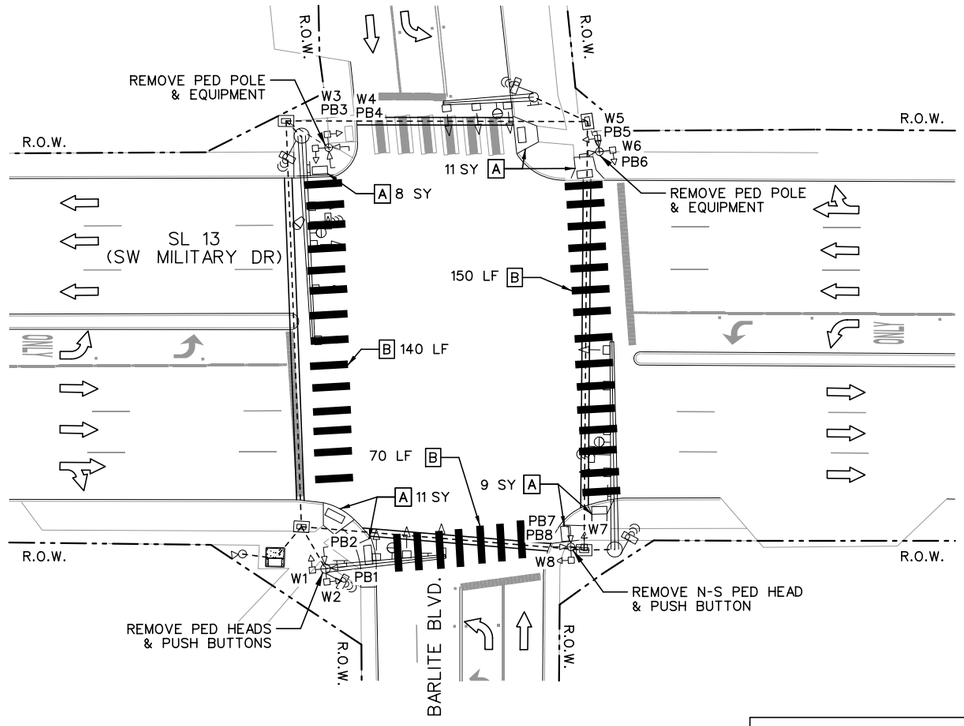


PB2,PB4,PB8

PB1,PB3
PB5,PB6,PB7

LEGEND

- EXISTING SIGNAL POLE W/ MAST ARM
- EXISTING VERTICAL SIGNAL HEAD
- EXISTING OVERHEAD SIGN
- EXISTING PEDESTRIAN POLE W/ SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING RADAR PRESENCE DETECTION DEVICE (RPDD)
- EXISTING RADAR ADVANCE DETECTION DEVICE (RADD)
- EXISTING TYPE D GROUND BOX W/ APRON
- PROPOSED CONDUIT (TRENCH)
- EXISTING SERVICE METER AND DISCONNECT
- EXISTING GROUND MOUNTED CONTROLLER CABINET
- [A] EXISTING CURB RAMP TO BE REMOVED
- [B] ELIM EXIST PAV MRKS - 24"
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)



N

0 20 40

SCALE: 1"=40'

SL 13 (CSJ: 0521-02-041)

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTITILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK TEXAS "ONE-CALL" SYTEM: 1-800-345-4545.
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. THE CONTRACTOR SHALL ELIMINATE EXISTING PAVEMENT MARKINGS WHICH CONFLICT WITH PAVEMENT MARKINGS. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.
5. CONTRACTOR SHALL REMOVE DRILLED SHAFT FOUNDATIONS TO A POINT 2 FT BELOW GRADE.
6. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
7. CONTRACTOR TO PROVIDE PEDESTRIAN DETOUR CONSISTENT WITH WZ(BTS-2)-13.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
104	6032	REMOVING CONC (WHEELCHAIR RAMP)	SY	39
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	400
690	6001	REMOVAL OF CONDUIT	LF	30
690	6009	REMOVAL OF CABLES	LF	550
690	6024	REMOVAL OF SIGNAL HEAD ASSM	EA	3
690	6030	REMOVAL OF PEDESTRIAN PUSH BUTTONS	EA	3
690	6089	REMOVE PED POLE ASSM	EA	2

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (SW MILITARY DR.) & BARLITE BLVD. EXISITNG CONDITIONS & REMOVALS

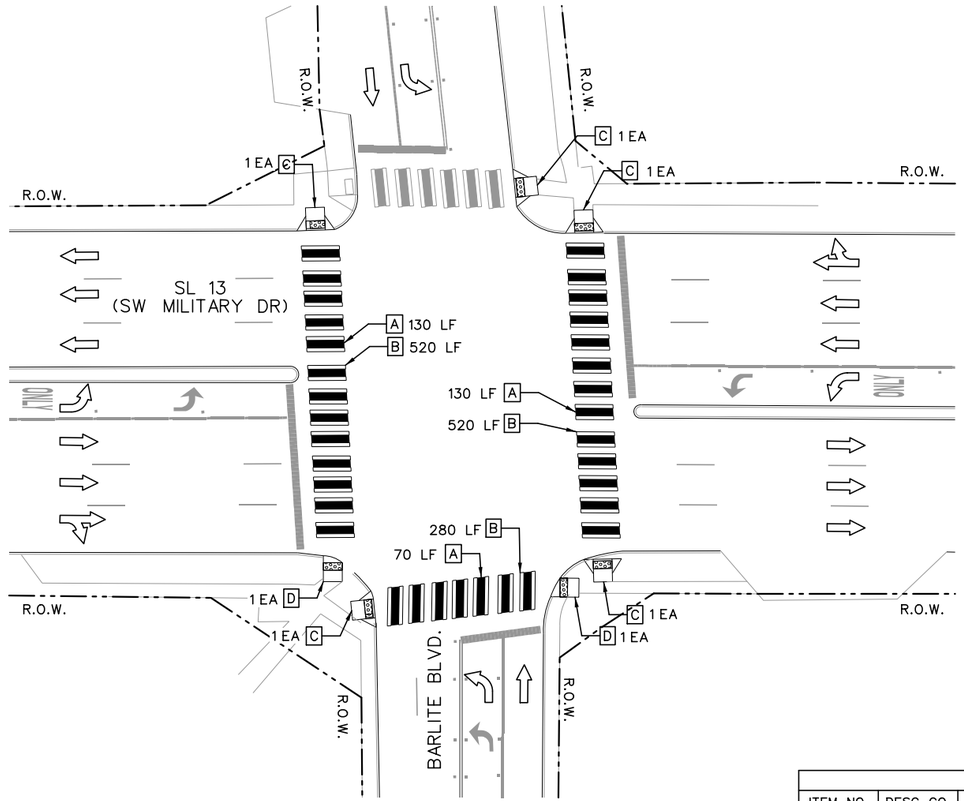
SHEET 1 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		105
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:08:26
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_02.dgn

LEGEND

A	REFL PAV MRK TY I(W)24"(SLD)(100MIL)
B	REFL PAV MRK TY I(BLACK)6"(SHADOW)(100MIL)
C	TxDOT TY 1 CURB RAMP
D	TxDOT TY 7 CURB RAMP
⇦	DIRECTION OF TRAFFIC
— - - —	RIGHT OF WAY (R.O.W.)



N

0 20 40

SCALE: 1"=40'

SL 13 (CSJ: 0521-02-041)

ESTIMATED QUANTITIES				
ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
531	6004	CURB RAMPS (TY 1)	EA	5
531	6010	CURB RAMPS (TY 7)	EA	2
666	6048	REFL PAV MRK TY I(W)24"(SLD)(100MIL)	LF	365
666	6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	1455
666	6225	PAVEMENT SEALER 6"	LF	1455
666	6230	PAVEMENT SEALER 24"	LF	365
678	6002	PAV SURF PREP FOR MRK (6")	LF	1455
678	6008	PAV SURF PREP FOR MRK (24")	LF	365

NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (SW MILITARY DR.)
& BARLITE BLVD.
PROPOSED RAMP & STRIPING PLAN

SHEET 2 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		106
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:08:30
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_02A.dgn

EXISTING LED SIGNAL HEADS TO REMAIN

COUNTDOWN PEDESTRIAN SIGNAL HEAD

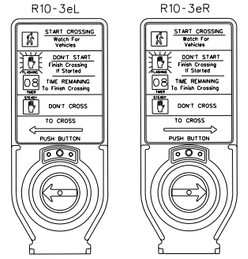
W8

PROPOSED LED SIGNAL HEADS

COUNTDOWN PEDESTRIAN SIGNAL HEAD

W1,W2,W3
W4,W5,W6,W7

PROPOSED SIGNS



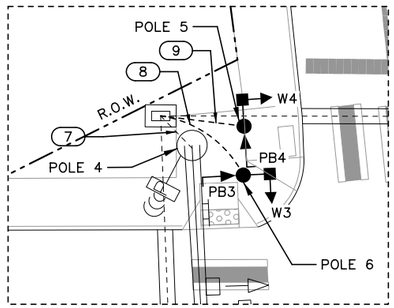
PB2,PB5
PB6,PB7

PB1,PB3
PB4,PB8

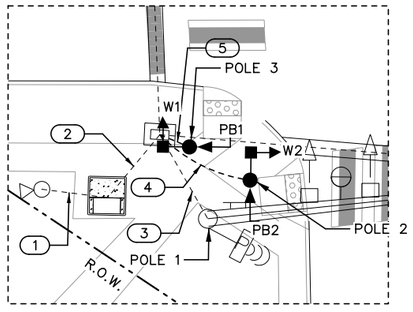
LEGEND

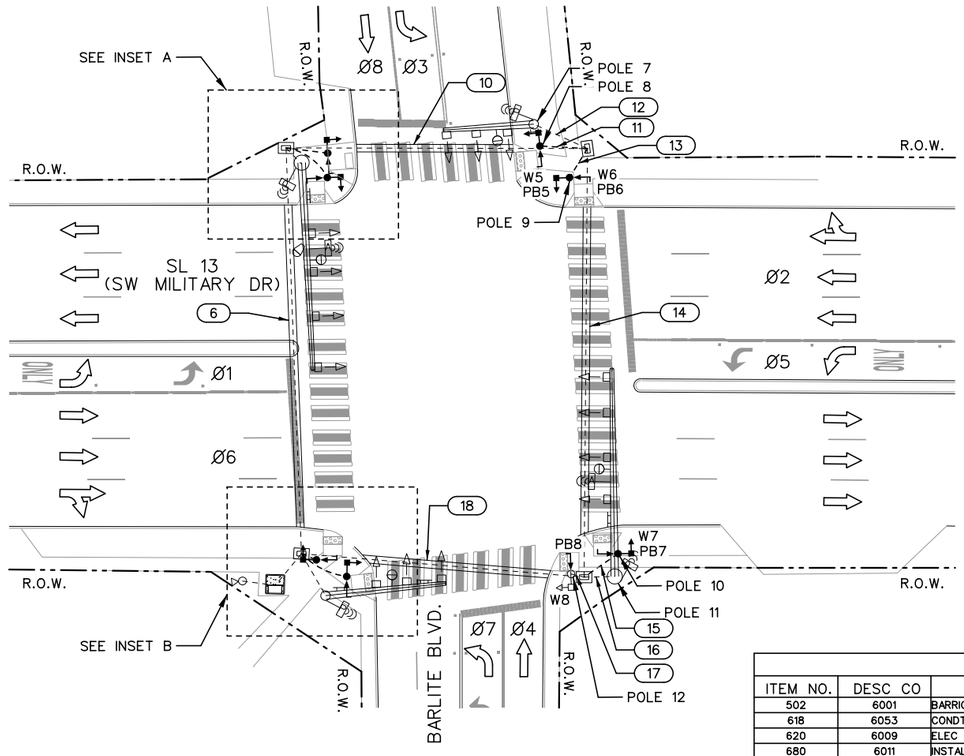
- EXISTING SIGNAL POLE W/ MAST ARM
- EXISTING VERTICAL SIGNAL HEAD
- EXISTING OVERHEAD SIGN
- EXISTING PEDESTRIAN POLE W/ SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- PROPOSED PEDESTRIAN POLE W/ SIGNAL HEAD
- PROPOSED PEDESTRIAN PUSH BUTTON
- EXISTING RADAR PRESENCE DETECTION DEVICE (RPDD)
- EXISTING RADAR ADVANCE DETECTION DEVICE (RADD)
- EXISTING TYPE D GROUND BOX W/ APRON
- PROPOSED CONDUIT (TRENCH)
- EXISTING SERVICE METER AND DISCONNECT
- EXISTING GROUND MOUNTED CONTROLLER CABINET
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)

INSET A: 1" = 20'



INSET B: 1" = 20'





ESTIMATED QUANTITIES				
ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1
618	6053	CONDT (PVC) (SCH 80) (3")	LF	150
620	6009	ELEC CONDR (NO.6) BARE	LF	150
680	6011	INSTALL HWY TRF SIG (UPGRADE)	EA	1
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	7
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	1340
684	6049	TRF SIG CBL (TY A)(16 AWG)(3 CONDR)	LF	1425
687	6001	PED POLE ASSEMBLY	EA	7
688	6001	PED DETECT PUSH BUTTON (APS)	EA	8
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	20
6027	6008	CONDUIT (PREPARE)	LF	440
6027	6008	GROUND BOX (PREPARE)	EA	4

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. LOCATION OF SIGNAL POLES SHALL BE VERIFIED AND APPROVED BY CoSA PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
6. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
7. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SERVICE.
8. CONTRACTOR SHALL POTHOLE ALL SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATIONS.
9. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION.
10. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE SIGNAL MODIFICATION IMPLEMENTATION.
11. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
12. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

N

0 20 40
SCALE: 1"=40'

SL 13 (CSJ: 0521-02-041)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (SW MILITARY DR.)
& BARLITE BLVD.
INTERSECTION IMPROVEMENTS

SHEET 3 OF 5

FED RD DIV. NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		107
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:08:34
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_03.dgn

CONDUCTOR AND CONDUIT SCHEDULE

CONDUIT/ SPAN RUN NUMBER		1	2	3	4	5	6	6	7	8	9	10	10	11	12	13	14	14	15	16	17	18	18
NUMBER OF CONDUITS		1	3	2	1	1	2	1	2	1	1	2	1	1	2	1	2	1	1	2	1	2	1
CONDUIT SIZE IN INCHES		2.0	3.0	2.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.0
CONDUIT/ SPAN LENGTH (LF)		20	25	30	30	10	110	110	15	30	25	160	160	15	20	10	115	115	15	10	10	75	75
RUN TYPE, B=BORE, T=TRENCH, E=EXISTING		E	E	E	T	T	E	E	E	T	T	E	E	T	E	T	E	E	T	E	E	E	E
CABLE	CIRCUIT	NUMBER OF CONDUCTORS																					
#6 THHN/THWN	120 POWER HOT & COMMON																						
BARE BOND GROUND	(POWER) BARE #6																						
	(CONDUIT) BARE #6				1	1				1	1			1		1			1				
9/C - #14 CABLE (SIGNAL)	POLE 1 - Ø3 + Ø8																						
	POLE 4 - Ø5 + Ø2																						
	POLE 7 - Ø7 + Ø4																						
	POLE 11 - Ø1 + Ø6																						
9/C - #14 CABLE (PED SIGNAL)	POLE 2 - Ø6		1		1																		
	POLE 3 - Ø8		1			1																	
	POLE 5 - Ø2		1				1				1												
	POLE 6 - Ø8		1				1			1													
	POLE 8 - Ø2		1				1					1		1									
	POLE 9 - Ø4		1				1					1				1							
	POLE 10 - Ø4		1																1			1	
	POLE 12 - Ø6																						
3/C - #16 (PED PUSH BUTTONS-APS)	POLE 2 - Ø6		1		1																		
	POLE 3 - Ø8		1			1																	
	POLE 5 - Ø2		1				1				1												
	POLE 6 - Ø8		1				1			1													
	POLE 8 - Ø2		1				1					1		1									
	POLE 9 - Ø4		1				1					1				1							
	POLE 10 - Ø4		1																1			1	
	POLE 12 - Ø6		1																		1	1	
6-CONDUCTOR DATA & POWER CABLE (RADAR-RPDD & RADD)	POLE 1 - RPDD Ø7 + Ø4																						
	POLE 4 - RADD Ø2																						
	POLE 4 - RPDD Ø1 + Ø6																						
	POLE 10 - RPDD Ø5 + Ø2																						
	POLE 10 - RADD Ø6																						
4/C - #14 TRAY CABLE (ILSN)	POLE 1																						
	POLE 4																						
	POLE 7																						
	POLE 11																						
EMERGENCY PREEMPTION CABLE	POLE 1																						
	POLE 4																						
	POLE 7																						
	POLE 11																						
ETHERNET CABLE (COLOR CODED)	POLE 4																						

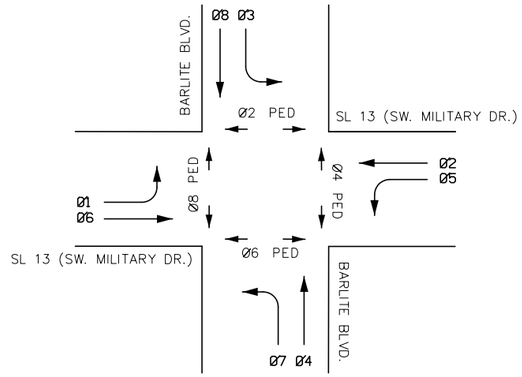
TRAFFIC POLE SCHEDULE

POLE	1	2	3	4	5	6	7	8	9	10	11	12
FOUNDATION	EXISTING	24-A	24-A	EXISTING	24-A	24-A	EXISTING	24-A	24-A	24-A	EXISTING	EXISTING
MOUNTING HEIGHT		10'	10'		10'	10'		10'	10'	10'		
ATTACHMENTS		W2,PB2 (1) APS PUSH BUTTON	W1,PB1 (1) APS PUSH BUTTON		W4,PB4 (1) APS PUSH BUTTON	W3,PB3 (1) APS PUSH BUTTON		W5,PB5 (1) APS PUSH BUTTON	W6,PB6 (1) APS PUSH BUTTON	W7,PB7 (1) APS PUSH BUTTON		PB8 (1) APS PUSH BUTTON

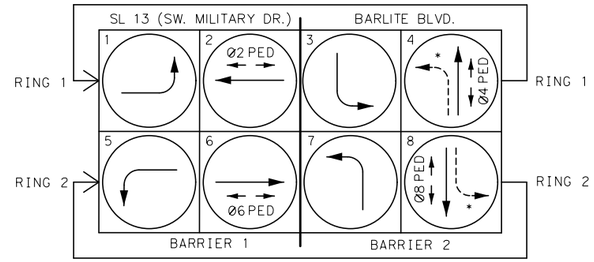
ELECTRICAL SERVICE DATA

ELEC. SERVICE ID	PLAN SHEET NUMBER	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT.BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANE IBD/LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANK CKT. BRK. POLE/AMPS	KVA LOAD
EXISTING ELECTRICAL SERVICE TO REMAIN											

ORIENTATION DIAGRAM



PHASING DIAGRAM



SL 13 (CSJ: 0521-02-041)

———— PROTECTED PHASE
- - - - - - - - - - PERMITTED PHASE
* FLASHING YELLOW ARROW

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel.No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

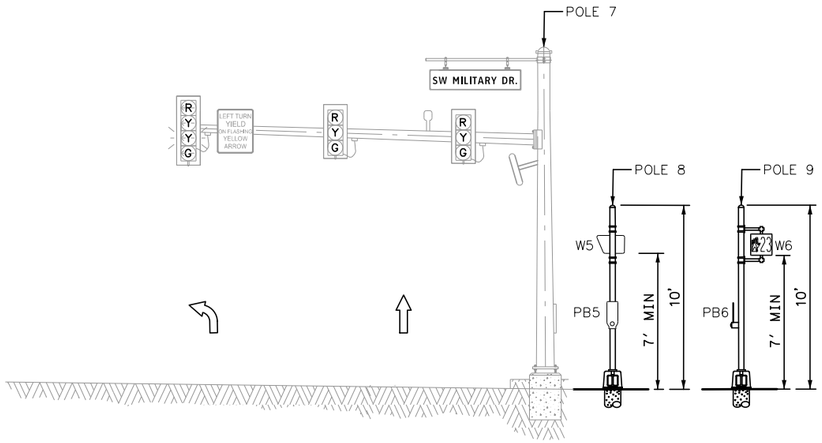
FY 2022 HSIP

SL 13 (SW MILITARY DR.) & BARLITE BLVD. INTERSECTION IMPROVEMENTS DETAILS

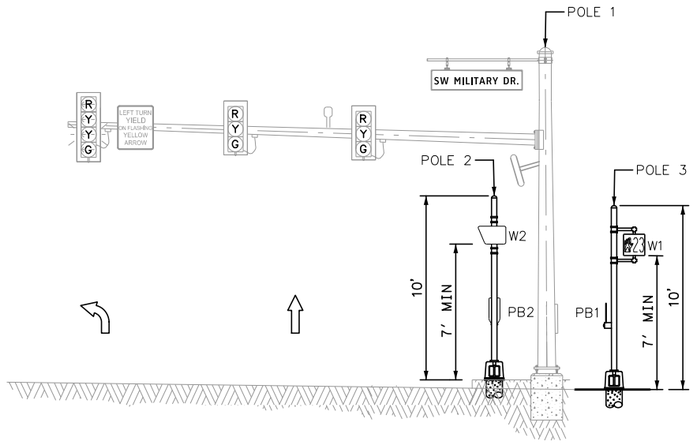
SHEET 4 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		108
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

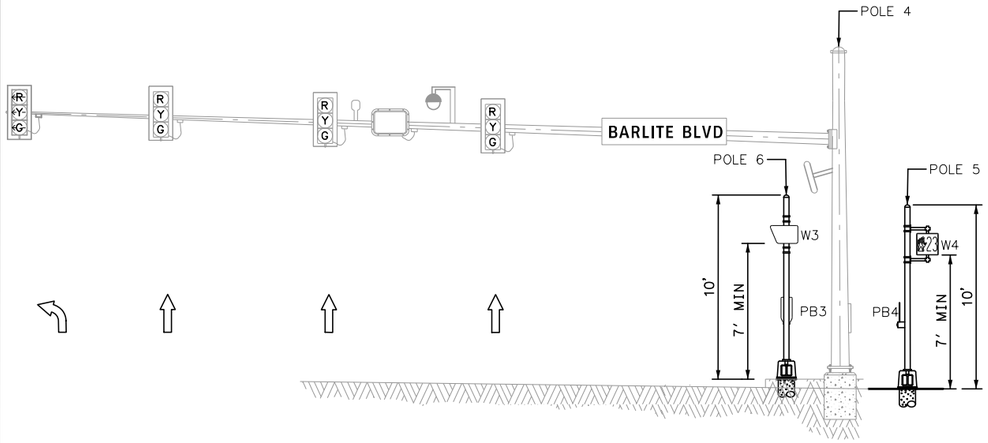
Justin.Kinne
4/19/2022 14:08:53
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_04.dgn



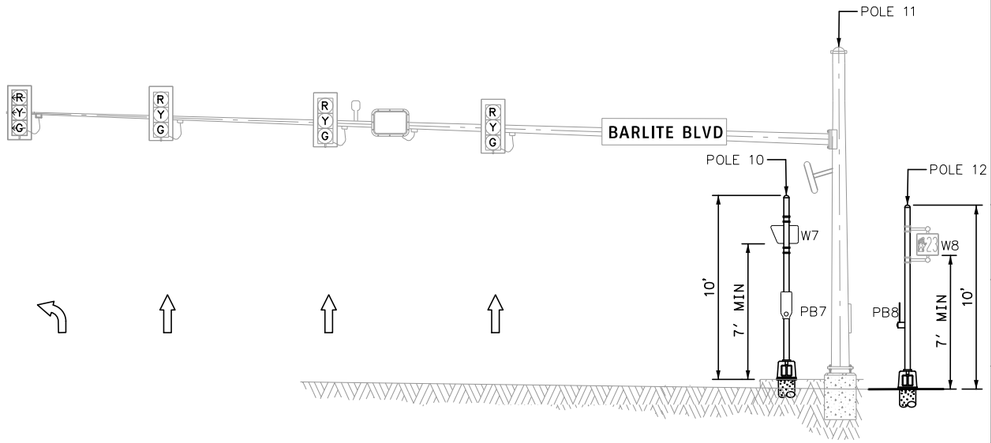
LOOKING NORTH ON BARLITE BLVD



LOOKING SOUTH ON BARLITE BLVD



LOOKING WEST ON SL 13 (SW MILITARY DR)



LOOKING EAST ON SL 13 (SW MILITARY DR)

SL 13 (CSJ: 0521-02-041)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

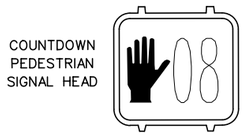
SL 13 (SW MILITARY DR.) & BARLITE BLVD. INTERSECTION IMPROVEMENTS ELEVATIONS

SHEET 5 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		109
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:08:57
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_05.dgn

EXISTING LED SIGNAL HEADS TO REMAIN



W4

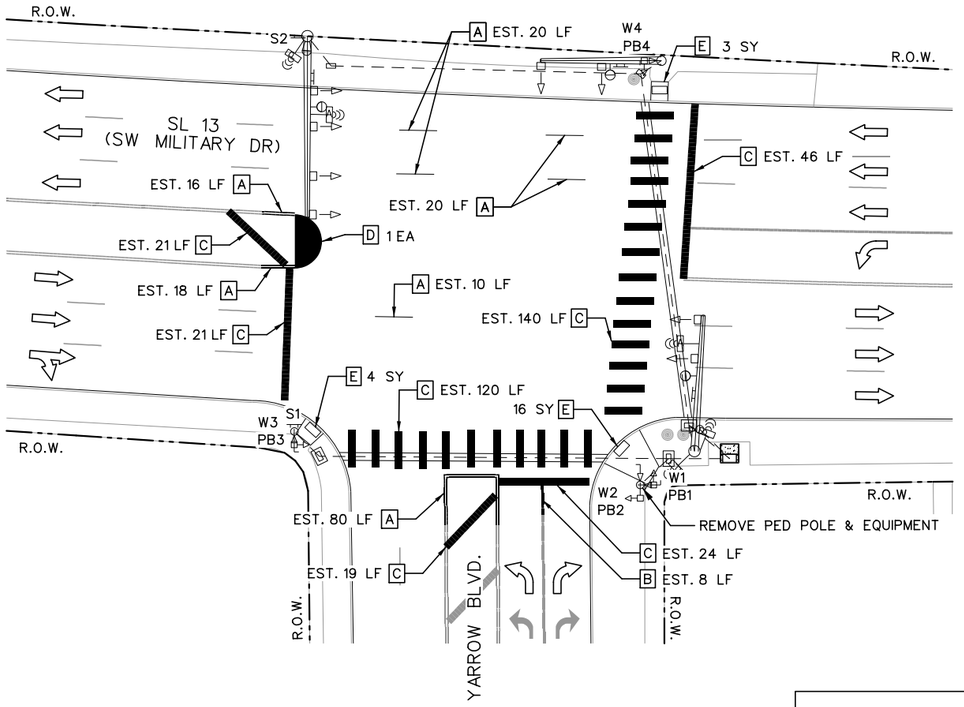
EXISTING LED SIGNAL HEADS TO BE REMOVED

W1,W2,W3

EXISTING SIGNS TO BE REMOVED

PB1 PB2,PB3,PB4

S1,S2



LEGEND

- EXISTING SIGNAL POLE W/ MAST ARM
- EXISTING VERTICAL SIGNAL HEAD
- EXISTING OVERHEAD SIGN
- EXISTING PEDESTRIAN POLE W/ SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING RADAR PRESENCE DETECTION DEVICE (RPDD)
- EXISTING RADAR ADVANCE DETECTION DEVICE (RADD)
- EXISTING GPS OPTICOM
- EXISTING PTZ CAMERA
- EXISTING TYPE D GROUND BOX
- EXISTING TYPE D GROUND BOX W/ APRON
- EXISTING CONDUIT
- EXISTING SERVICE METER AND DISCONNECT
- EXISTING GROUND MOUNTED CONTROLLER CABINET
- EXISTING TIMBER UTILITY POLE
- [A] ELIMINATE EXIST PAV MRK - 4"
- [B] ELIMINATE EXIST PAV MRK - 8"
- [C] ELIMINATE EXIST PAV MRK - 24"
- [D] ELIMINATE EXIST PAV MRK - MED NOSE
- [E] REMOVE WHEELCHAIR RAMP
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W)

SL 13 (CSJ: 0521-02-041)

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTITILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK TEXAS "ONE-CALL" SYTEM: 1-800-345-4545.
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. THE CONTRACTOR SHALL ELIMINATE EXISTING PAVEMENT MARKINGS WHICH CONFLICT WITH PAVEMENT MARKINGS. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.
5. CONTRACTOR SHALL REMOVE DRILLED SHAFT FOUNDATIONS TO A POINT 2 FT BELOW GRADE.
6. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
7. CONTRACTOR TO PROVIDE PEDESTRIAN DETOUR CONSISTENT WITH WZ(BTS-2)-13.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
104	6032	REMOVING CONC (WHEELCHAIR RAMP)	SY	23
644	6078	REMOVE SM RD SN SUP&AM (SIGN ONLY)	EA	2
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	185
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	10
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	430
677	6020	ELIM EXT PAV MRK & MRKS (MED NOSE)	EA	1
690	6001	REMOVAL OF CONDUIT	LF	20
690	6009	REMOVAL OF CABLES	LF	55
690	6030	REMOVAL OF PEDESTRIAN PUSH BUTTONS	EA	1
690	6089	REMOVE PED POLE ASSM	EA	1

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (SW MILITARY DR.) & YARROW BLVD. EXISTING CONDITIONS & REMOVALS

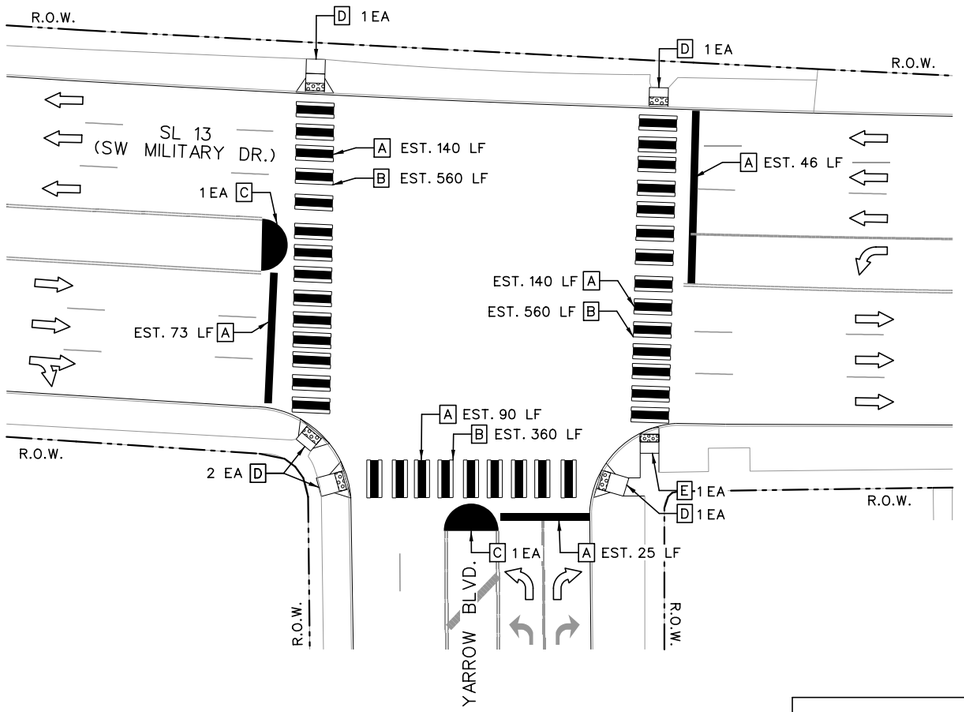
SHEET 1 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		110
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:09:08
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_06.dgn

LEGEND

A	REFL PAV MRK TY I(W)24"(SLD)(100MIL)
B	REFL PAV MRK TY I(BLACK)6"(SHADOW)(100MIL)
C	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)
D	TxDOT TY 1 CURB RAMP
E	TxDOT TY 7 CURB RAMP
⇦	DIRECTION OF TRAFFIC
— - - —	RIGHT OF WAY (R.O.W.)



N

0 20 40

SCALE: 1"=40'

SL 13 (CSJ: 0521-02-041)

NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.
5. CONTRACTOR TO PROVIDE PEDESTRIAN DETOUR CONSISTENT WITH WZ(BTS-2)-13.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
531	6004	CURB RAMPS (TY 1)	EA	5
531	6005	CURB RAMPS (TY 7)	EA	1
666	6048	REFL PAV MRK TY I(W)24"(SLD)(100MIL)	LF	570
666	6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA	2
666	6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	1630
666	6225	PAVEMENT SEALER 6"	LF	1630
666	6230	PAVEMENT SEALER 24"	LF	570
666	6233	PAVEMENT SEALER (MED NOSE)	EA	2
678	6002	PAV SURF PREP FOR MRK (6")	LF	1630
678	6008	PAV SURF PREP FOR MRK (24")	LF	570
678	6024	PAV SURF PREP FOR MRK (MED NOSE)	EA	2

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
TBPE Firm No. 928
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
Tel. No. (210) 541-9166
Fax No. (281) 541-9699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (SW MILITARY DR.)
& YARROW BLVD.
PROPOSED STRIPING & RAMP PLAN

SHEET 2 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		111
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:09:12
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_07.dgn

EXISTING LED SIGNAL HEADS TO REMAIN

COUNTDOWN PEDESTRIAN SIGNAL HEAD

W6

PROPOSED LED SIGNAL HEADS

COUNTDOWN PEDESTRIAN SIGNAL HEAD

W1,W2
W3,W4,W5

LEGEND

- EXISTING SIGNAL POLE W/ MAST ARM
- EXISTING VERTICAL SIGNAL HEAD
- EXISTING OVERHEAD SIGN
- EXISTING PEDESTRIAN POLE W/ SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- PROPOSED PEDESTRIAN POLE W/ SIGNAL HEAD
- PROPOSED PEDESTRIAN PUSH BUTTON
- EXISTING RADAR PRESENCE DETECTION DEVICE (RPDD)
- EXISTING RADAR ADVANCE DETECTION DEVICE (RADD)
- EXISTING GPS OPTICOM
- EXISTING TYPE D GROUND BOX W/ APRON
- EXISTING CONDUIT
- PROPOSED CONDUIT (TRENCH)
- EXISTING SERVICE METER AND DISCONNECT
- EXISTING GROUND MOUNTED CONTROLLER CABINET
- EXISTING TIMBER UTILITY POLE
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)

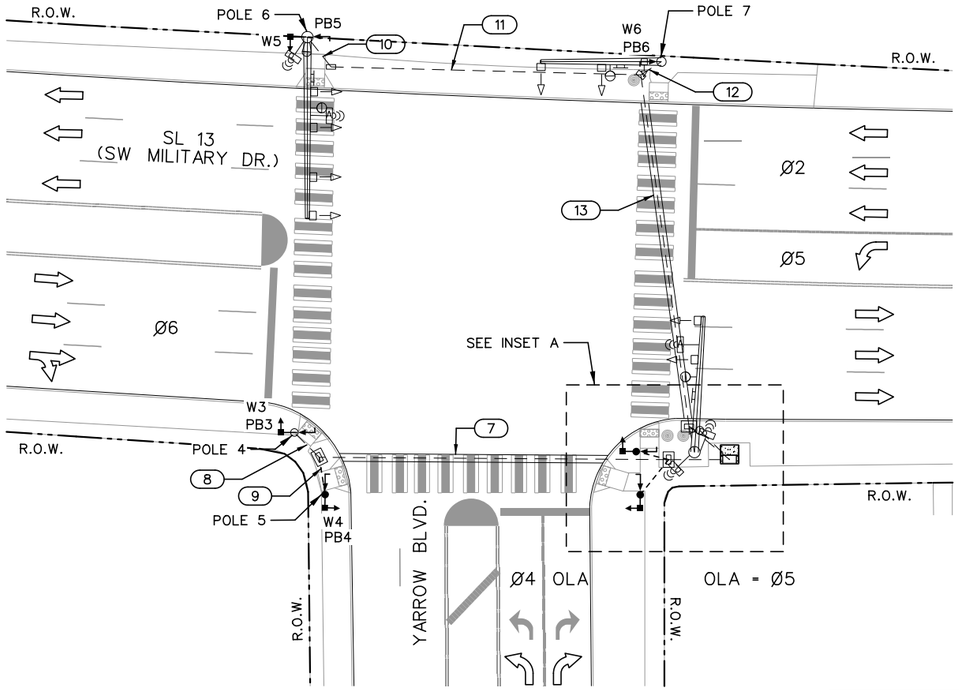
PROPOSED SIGNS

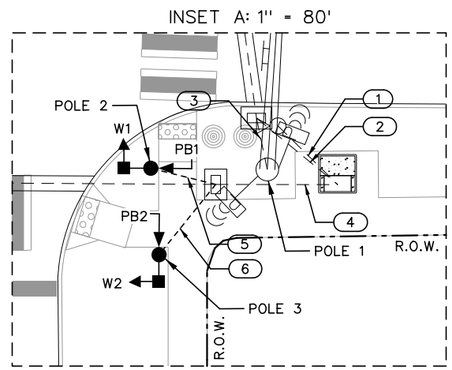
R10-3eL

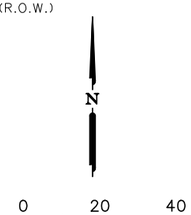
PB4,PB5

R10-3eR

PB1,PB2
PB3,PB6







SCALE: 1"=40'

SL 13 (CSJ: 0521-02-041)

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. LOCATION OF SIGNAL POLES SHALL BE VERIFIED AND APPROVED BY CITY OF SAN ANTONIO PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
6. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
7. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SERVICE.
8. CONTRACTOR SHALL POTHOLE ALL SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATIONS.
9. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION.
10. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE SIGNAL MODIFICATION IMPLEMENATION.
11. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
12. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.
13. N-S PED CROSSINGS TO BE RUN ON AN EXCLUSIVE PEDESTRIAN PHASE, SEE TRAFFIC SIGNAL DETAIL SHEET FOR MORE INFORMATION. COORDINATE WITH CITY OF SAN ANTONIO TRAFFIC ENGINEER FOR PROPER PROGRAMMING OF CONTROLLER.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2
618	6053	CONDT (PVC) (SCH 80) (3")	LF	65
620	6009	ELEC CONDR (NO.6) BARE	LF	65
680	6011	INSTALL HWY TRF SIG (UPGRADE)	EA	1
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	5
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	805
684	6049	TRF SIG CBL (TY A)(16 AWG)(3 CONDR)	LF	840
687	6001	PED POLE ASSEMBLY	EA	3
688	6001	PED DETECT PUSH BUTTON (APS)	EA	6
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	20
6027	6003	CONDUIT (PREPARE)	LF	360
6027	6008	GROUND BOX (PREPARE)	EA	5

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
5/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (SW MILITARY DR.)
& YARROW BLVD.
INTERSECTION IMPROVEMENTS

SHEET 3 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		112
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

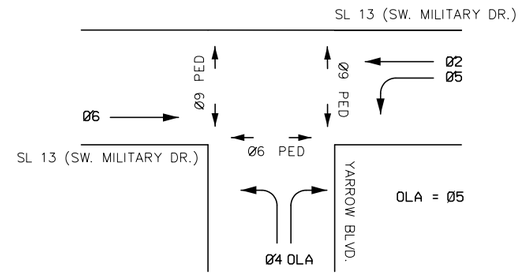
Justin.Kinne
5/19/2022 21:37:33
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_08.dgn

CONDUCTOR AND CONDUIT SCHEDULE														
CONDUIT/ SPAN RUN NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13
NUMBER OF CONDUITS		1	2	2	2	1	1	2	1	1	2	2	2	2
CONDUIT SIZE IN INCHES		2.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	2.0	2.0	3.0
CONDUIT/ SPAN LENGTH (LF)		25	20	15	35	20	25	95	10	10	10	85	10	95
RUN TYPE, B=BORE, T=TRENCH, E=EXISTING		E	E	E	E	T	T	E	E	T	E	E	E	E
CABLE	CIRCUIT	NUMBER OF CONDUCTORS												
#6 THHN/THWN	120 POWER HOT & COMMON													
BARE BOND GROUND	(POWER) BARE #6													
	(CONDUIT) BARE #6					1	1			1				
9/C - #14 CABLE (SIGNAL)	POLE 1 - Ø6													
	POLE 6 - Ø5 + Ø2													
	POLE 7 - Ø4 + OLA													
9/C - #14 CABLE (PED SIGNAL)	POLE 2 - Ø9				1	1								
	POLE 3 - Ø6				1		1							
	POLE 4 - Ø9				1			1	1					
	POLE 5 - Ø4				1			1		1				
	POLE 6 - Ø9		1								1	1		1
	POLE 7 - Ø9													
3/C - #16 (PED PUSH BUTTONS-APS)	POLE 2 - Ø9				1	1								
	POLE 3 - Ø6				1		1							
	POLE 4 - Ø9				1			1	1					
	POLE 5 - Ø4				1			1		1				
	POLE 6 - Ø9		1								1	1		1
	POLE 7 - Ø9		1										1	1
6-CONDUCTOR DATA & POWER CABLE (RADAR-RPDD & RADD)	POLE 1 - RPDD Ø5 + Ø2													
	POLE 1 - RADD Ø6													
	POLE 1 - RPDD Ø4													
	POLE 6 - RADD Ø2													
	POLE 6 - RPDD Ø2													
	POLE 6 - RPDD Ø2													
4/C - #14 TRAY CABLE (ILSN)	POLE 1													
	POLE 6													
	POLE 7													
EMERGENCY PREEMPTION CABLE	POLE 1													
	POLE 6													
	POLE 7													
ETHERNET CABLE (COLOR CODED)	POLE 6													

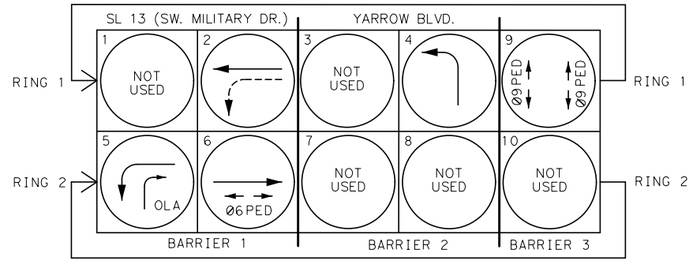
TRAFFIC POLE SCHEDULE							
POLE	1	2	3	4	5	6	7
FOUNDATION	EXISTING	24-A	24-A	EXISTING	24-A	EXISTING	EXISTING
MOUNTING HEIGHT		10'	10'		10'		
ATTACHMENTS		W1,PB1 (1) APS PUSH BUTTON	W2,PB2 (1) APS PUSH BUTTON	W3,PB3 (1) APS PUSH BUTTON	W4,PB4 (1) APS PUSH BUTTON	W5,PB5 (1) APS PUSH BUTTON	PB6 (1) APS PUSH BUTTON

ELECTRICAL SERVICE DATA											
ELEC. SERVICE ID	PLAN SHEET NUMBER	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT.BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANE IBD/LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANK CKT. BRK. POLE/AMPS	KVA LOAD
EXISTING ELECTRICAL SERVICE TO REMAIN											

ORIENTATION DIAGRAM



PHASING DIAGRAM



PROTECTED PHASE
PERMITTED PHASE

PHASE 9 TO BE PROGRAMMED AS AN EXCLUSIVE PEDESTRIAN PHASE.

SL 13 (CSJ: 0521-02-041)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

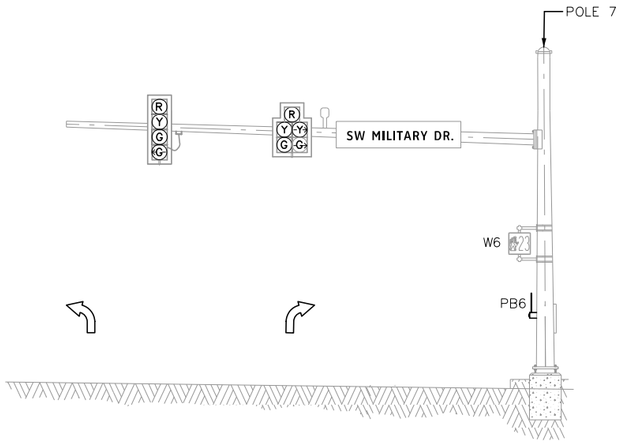
FY 2022 HSIP

SL 13 (SW MILITARY DR.) & YARROW BLVD. INTERSECTION IMPROVEMENTS DETAILS

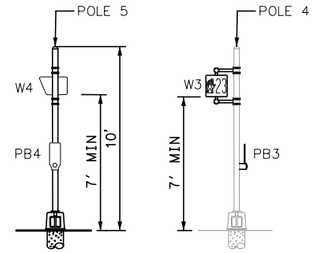
SHEET 4 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		113
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

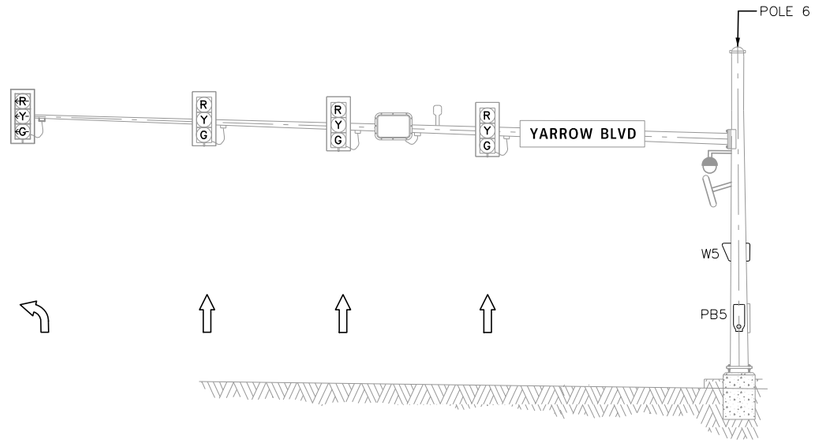
Justin.Kinne
4/19/2022 14:09:47
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_09.dgn



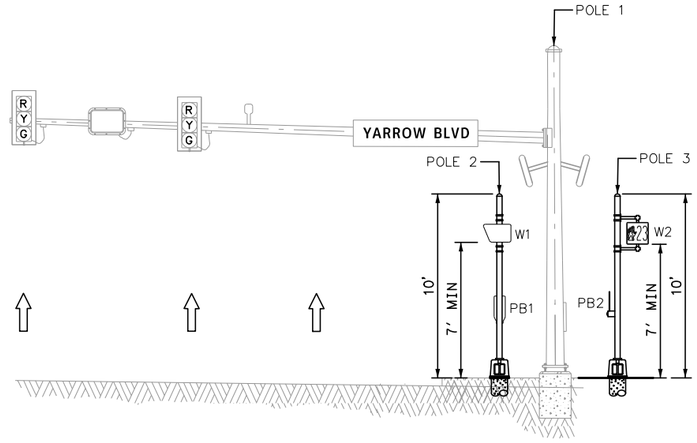
LOOKING NORTH ON YARROW BLVD



LOOKING SOUTH ON YARROW BLVD



LOOKING WEST ON SL 13 (SW MILITARY DR)



LOOKING EAST ON SL 13 (SW MILITARY DR)

SL 13 (CSJ: 0521-02-041)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

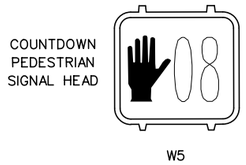
SL 13 (SW MILITARY DR.) & YARROW BLVD. INTERSECTION IMPROVEMENTS ELEVATIONS

SHEET 5 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		114
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

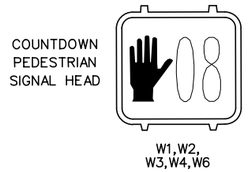
Justin.Kinne
4/19/2022 14:09:50
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_10.dgn

EXISTING LED SIGNAL HEADS TO REMAIN



W5

EXISTING LED SIGNAL HEADS TO BE REMOVED



W1,W2,
W3,W4,W6

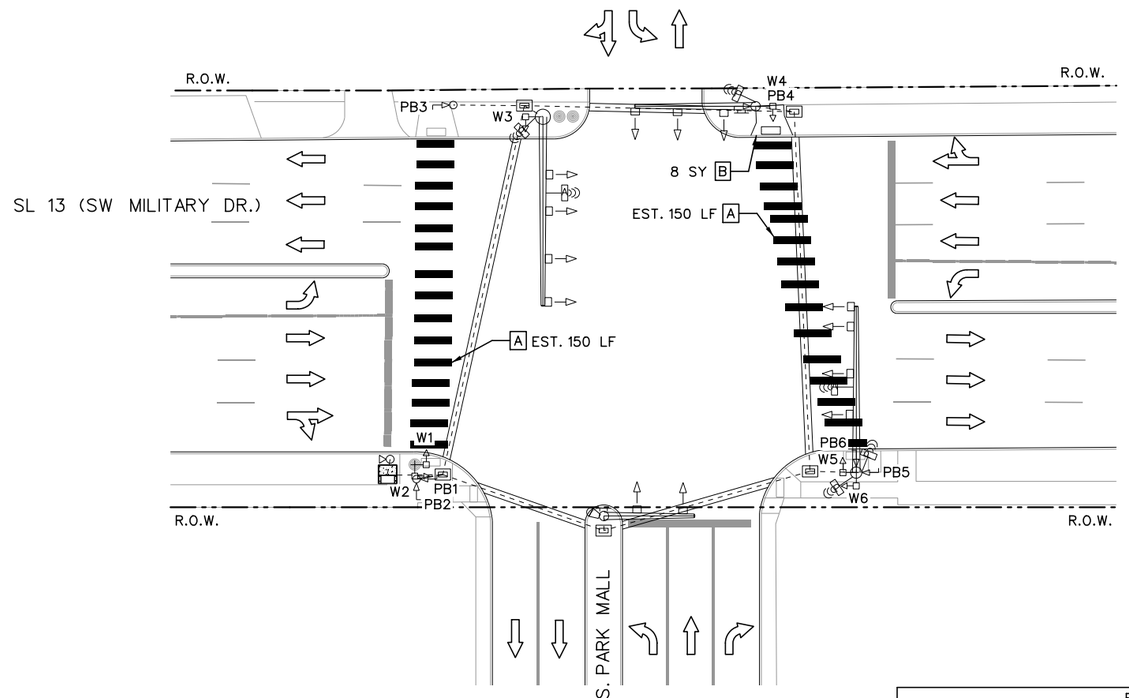
EXISTING SIGNS TO BE REMOVED

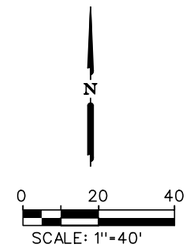
PB1

PB2,PB3
PB4,PB5,PB6

LEGEND

- EXISTING SIGNAL POLE W/ MAST ARM
- EXISTING VERTICAL SIGNAL HEAD
- EXISTING OVERHEAD SIGN
- EXISTING PEDESTRIAN POLE W/ SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING RADAR PRESENCE DETECTION DEVICE (RPDD)
- EXISTING RADAR ADVANCE DETECTION DEVICE (RADD)
- EXISTING TYPE D GROUND BOX W/ APRON
- EXISTING CONDUIT
- EXISTING SERVICE METER AND DISCONNECT
- EXISTING GROUND MOUNTED CONTROLLER CABINET
- EXISTING TIMBER UTILITY POLE
- [A] ELIMINATE EXIST PAV MRK - 24"
- [B] REMOVE CURB RAMP
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)





SL 13 (CSJ: 0521-02-041)

ESTIMATED QUANTITIES				
ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
104	6032	REMOVING CONC (WHEELCHAIR RAMP)	SY	8
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	330
690	6001	REMOVAL OF CONDUIT	LF	35
690	6009	REMOVAL OF CABLES	LF	1100
690	6024	REMOVAL OF SIGNAL HEAD ASSM	EA	3
690	6030	REMOVAL OF PEDESTRIAN PUSH BUTTONS	EA	3
690	6089	REMOVE PED POLE ASSM	EA	2

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTITILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK TEXAS "ONE-CALL" SYTEM: 1-800-345-4545.
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. THE CONTRACTOR SHALL ELIMINATE EXISTING PAVEMENT MARKINGS WHICH CONFLICT WITH PAVEMENT MARKINGS. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.
5. CONTRACTOR SHALL REMOVE DRILLED SHAFT FOUNDATIONS TO A POINT 2 FT BELOW GRADE.
6. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
7. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.
8. CONTRACTOR TO PROVIDE PEDESTRIAN DETOUR CONSISTENT WITH WZ(BTS-2)-13.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-9699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (SW MILITARY DR.)
& S. PARK MALL
EXISTING CONDITIONS
& REMOVALS

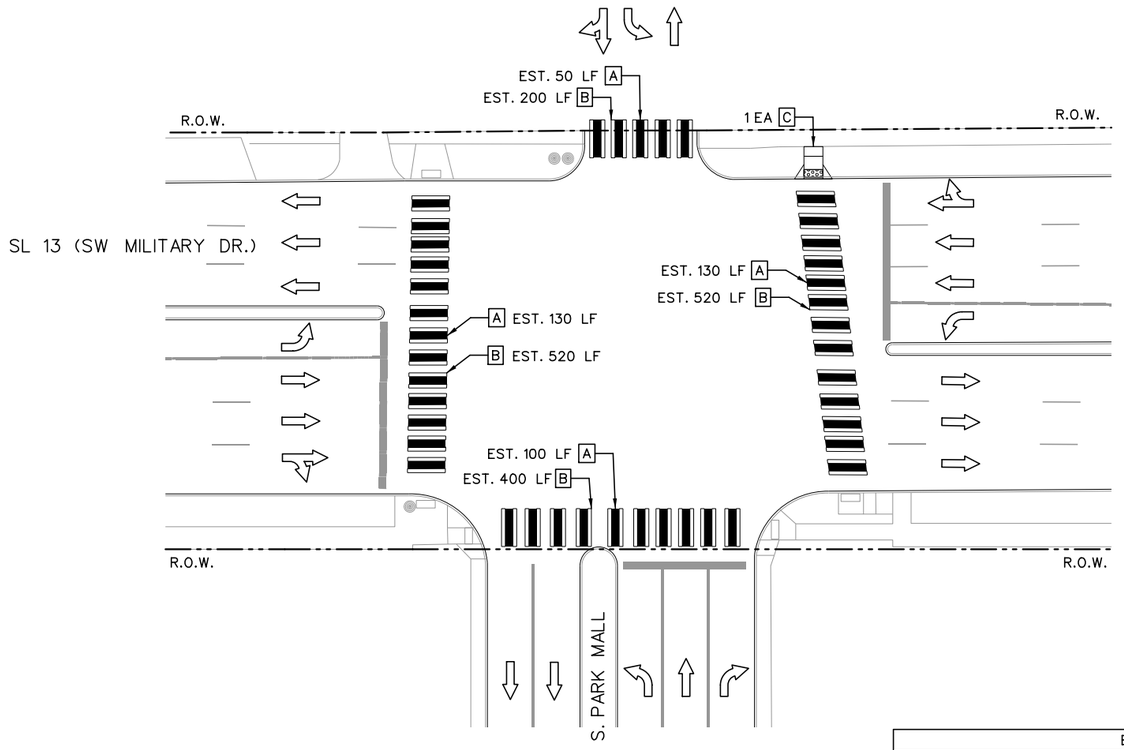
SHEET 1 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		115
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:10:02
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_11.dgn

LEGEND

A	REFL PAV MRK TY 1(W)24"(SLD)(100MIL)
B	REFL PAV MRK TY I(BLACK)6"(SHADOW)(100MIL)
C	TxDOT TY 1 CURB RAMP
⇦	DIRECTION OF TRAFIC
—·—	RIGHT OF WAY (R.O.W.)



N

0 20 40

SCALE: 1"=40'

SL 13 (CSJ: 0521-02-041)

NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
531	6004	CURB RAMPS (TY 1)	EA	1
666	6048	REFL PAV MRK TY I(W)24"(SLD)(100MIL)	LF	455
666	6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	1805
666	6225	PAVEMENT SEALER 6"	LF	1805
666	6230	PAVEMENT SEALER 24"	LF	455
678	6002	PAV SURF PREP FOR MRK (6")	LF	1805
678	6008	PAV SURF PREP FOR MRK (24")	LF	455

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

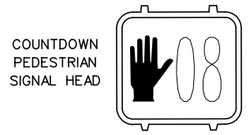
SL 13 (SW MILITARY DR.)
& S. PARK MALL
STRIPING & RAMP PLAN

SHEET 2 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		116
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

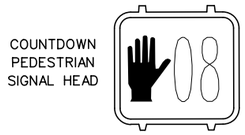
Justin.Kinne
4/19/2022 14:10:06
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_12.dgn

EXISTING LED SIGNAL HEADS TO REMAIN



W7

PROPOSED LED SIGNAL HEADS

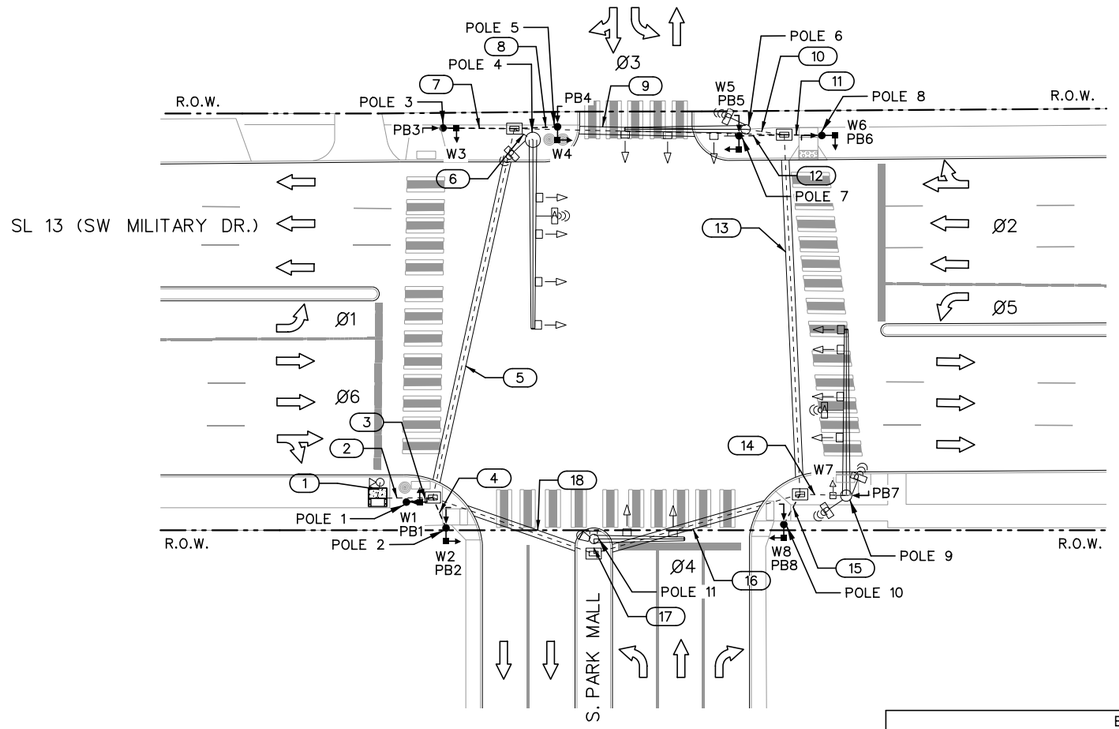


W1,W2,W3,
W4,W5,W6,W8

PROPOSED SIGNS

PB2,PB4

PB1,PB3,PB5
PB6,PB7,PB8



LEGEND

- EXISTING SIGNAL POLE W/ MAST ARM
- EXISTING VERTICAL SIGNAL HEAD
- EXISTING OVERHEAD SIGN
- EXISTING PEDESTRIAN POLE W/ SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- PROPOSED PEDESTRIAN POLE W/ SIGNAL HEAD
- PROPOSED PEDESTRIAN PUSH BUTTON
- EXISTING RADAR PRESENCE DETECTION DEVICE (RPDD)
- EXISTING RADAR ADVANCE DETECTION DEVICE (RADD)
- EXISTING TYPE D GROUND BOX W/ APRON
- EXISTING CONDUIT
- PROPOSED CONDUIT (TRENCH)
- EXISTING SERVICE METER AND DISCONNECT
- EXISTING GROUND MOUNTED CONTROLLER CABINET
- EXISTING TIMBER UTILITY POLE
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)

N

0 20 40

SCALE: 1"=40'

SL 13 (CSJ: 0521-02-041)

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. LOCATION OF SIGNAL POLES SHALL BE VERIFIED AND APPROVED BY CITY OF SAN ANTONIO PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
6. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
7. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SERVICE.
8. CONTRACTOR SHALL POTHOLE ALL SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATIONS.
9. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION.
10. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF FOURTEEN CONFIRMED WITH THE INSPECTOR/ENGINEER (14) DAYS PRIOR TO THE SIGNAL MODIFICATION IMPLEMENTATION.
11. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
12. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE

ESTIMATED QUANTITIES				
ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1
618	6053	CONDT (PVC) (SCH 80) (3")	LF	100
620	6009	ELEC CONDR (NO.6) BARE	LF	90
680	6011	INSTALL HWY TRF SIG (UPGRADE)	EA	1
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	7
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	990
684	6049	TRF SIG CBL (TY A)(16 AWG)(3 CONDR)	LF	1090
687	6001	PED POLE ASSEMBLY	EA	7
688	6001	PED DETECT PUSH BUTTON (APS)	EA	8
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	220
6027	6003	CONDUIT (PREPARE)	LF	450
6027	6008	GROUND BOX (PREPARE)	EA	5

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (SW MILITARY DR.) & S. PARK MALL INTERSECTION IMPROVEMENTS

SHEET 3 OF 5

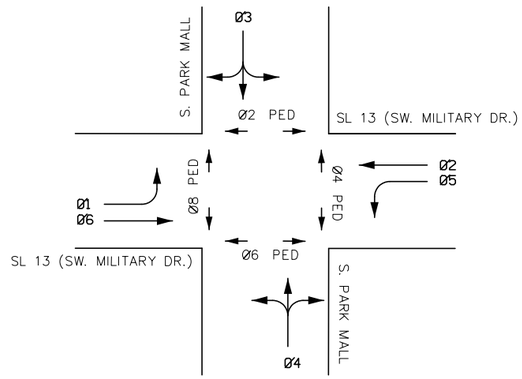
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		117
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:10:10
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call\WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_13.dgn

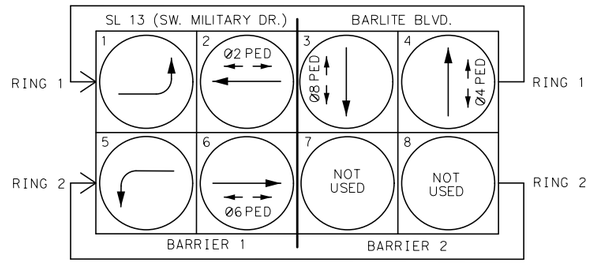
CONDUCTOR AND CONDUIT SCHEDULE

CONDUIT/ SPAN RUN NUMBER		1	2	3	4	5	5	6	7	8	9	9	10	11	12	13	13	14	15	16	16	17	18	18
NUMBER OF CONDUITS		1	3	1	1	2	1	2	1	1	2	1	2	1	1	2	1	2	1	2	1	2	2	1
CONDUIT SIZE IN INCHES		2.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0
CONDUIT/ SPAN LENGTH (LF)		10	10	10	10	100	100	10	20	15	75	75	15	15	10	100	100	15	10	60	60	10	45	45
RUN TYPE, B=BORE, T=TRENCH, E=EXISTING		E	E	T	T	E	E	E	T	T	E	E	E	T	T	E	E	E	T	E	E	E	E	E
CABLE	CIRCUIT	NUMBER OF CONDUCTORS																						
#6 THHN/THWN	120 POWER HOT & COMMON																							
BARE BOND GROUND	(POWER) BARE #6																							
	(CONDUIT) BARE #6			1					1	1				1	1				1					
9/C - #14 CABLE (SIGNAL)	POLE 4 - Ø5 + Ø2																							
	POLE 6 - Ø4																							
	POLE 9 - Ø1 + Ø6																							
	POLE 11 - Ø3																							
9/C - #14 CABLE (PED SIGNAL)	POLE 1 - Ø3		1	1																				
	POLE 2 - Ø6		1		1																			
	POLE 3 - Ø3		1			1			1															
	POLE 5 - Ø2		1			1				1														
	POLE 7 - Ø2		1			1					1		1		1									
	POLE 8 - Ø4		1			1					1			1										
	POLE 9 - Ø4																							
	POLE 10 - Ø6		1																1	1			1	
3/C - #16 (PED PUSH BUTTONS-APS)	POLE 1 - Ø3		1	1																				
	POLE 2 - Ø6		1		1																			
	POLE 3 - Ø3		1			1			1															
	POLE 5 - Ø2		1			1				1														
	POLE 7 - Ø2		1			1					1		1		1									
	POLE 8 - Ø4		1			1					1			1										
	POLE 9 - Ø4		1															1		1			1	
	POLE 10 - Ø6		1																1	1			1	
6-CONDUCTOR DATA & POWER CABLE (RADAR-RPDD & RADD)	POLE 4 - RPDD Ø1 + Ø6																							
	POLE 4 - RADD Ø2																							
	POLE 6 - RPDD Ø3																							
	POLE 9 - RPDD Ø5 + Ø2																							
	POLE 9 - RPDD Ø4																							
	POLE 9 - RADD Ø6																							
ETHERNET CABLE (COLOR CODED)	POLE 11																							

ORIENTATION DIAGRAM



PHASING DIAGRAM



PROTECTED PHASE
PERMITTED PHASE
* FLASHING YELLOW ARROW

TRAFFIC POLE SCHEDULE

POLE	1	2	3	4	5	6	7	8	9	10	11
FOUNDATION	24-A	24-A	24-A	EXISTING	24-A	EXISTING	24-A	24-A	EXISTING	24-A	EXISTING
MOUNTING HEIGHT	10'	10'	10'		10'		10'	10'		10'	
ATTACHMENTS	W1,PB1 (1) APS PUSH BUTTON	W2,PB2 (1) APS PUSH BUTTON	W3,PB3 (1) APS PUSH BUTTON		W5,PB5 (1) APS PUSH BUTTON		W5,PB5 (1) APS PUSH BUTTON	W6,PB6 (1) APS PUSH BUTTON	PB7 (1) APS PUSH BUTTON	W8,PB8 (1) APS PUSH BUTTON	

ELECTRICAL SERVICE DATA

ELEC. SERVICE ID	PLAN SHEET NUMBER	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT.BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANE IBD/LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANK CKT. BRK. POLE/AMPS	KVA LOAD
EXISTING ELECTRICAL SERVICE TO REMAIN											

SL 13 (CSJ: 0521-02-041)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

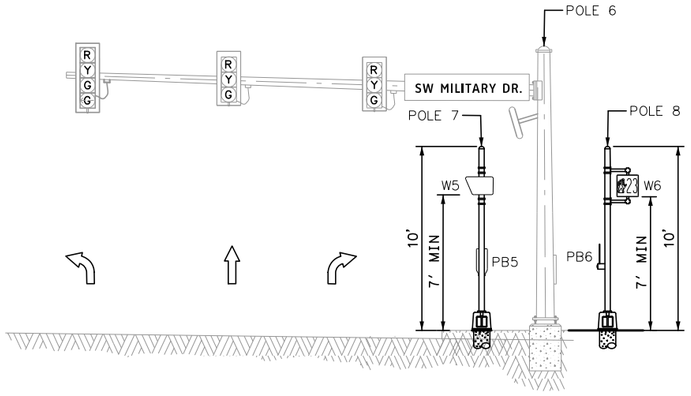
FY 2022 HSIP

SL 13 (SW MILITARY DR.) & S. PARK MALL INTERSECTION IMPROVEMENTS DETAILS

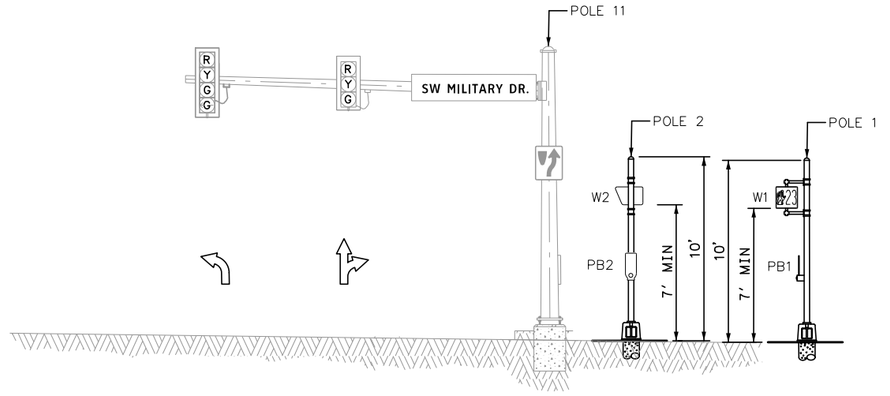
SHEET 4 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		118
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

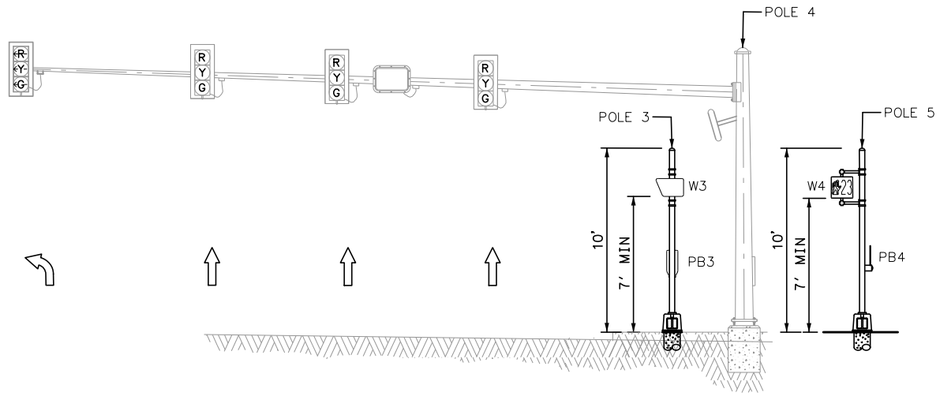
Justin.Kinne
4/19/2022 14:10:28
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_14.dgn



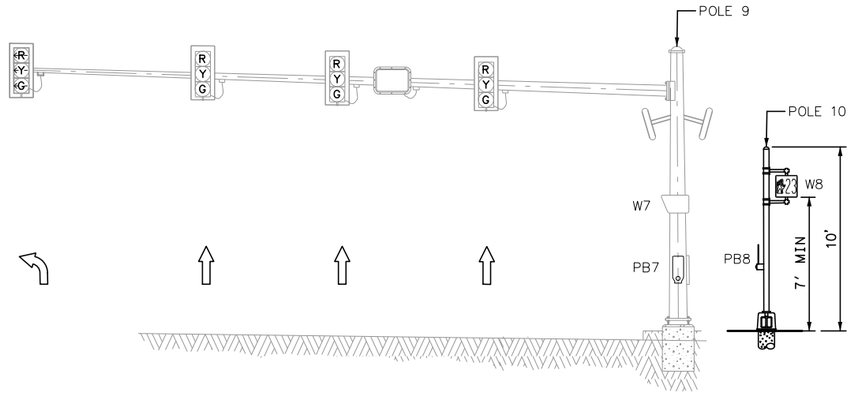
LOOKING NORTH ON S. PARK MALL



LOOKING SOUTH ON S. PARK MALL



LOOKING WEST ON SL 13 (SW MILITARY DR)



LOOKING EAST ON SL 13 (SW MILITARY DR)

SL 13 (CSJ: 0521-02-041)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (SW MILITARY DR.) & S. PARK MALL INTERSECTION IMPROVEMENTS ELEVATIONS

SHEET 5 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		119
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:10:32
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_MIL_15.dgn

EXISTING SIGNS TO BE REMOVED

R9-3A

S1,S2,S3

R10-4L

PB1,PB2,PB3,PB5

R10-4R

PB4,PB6

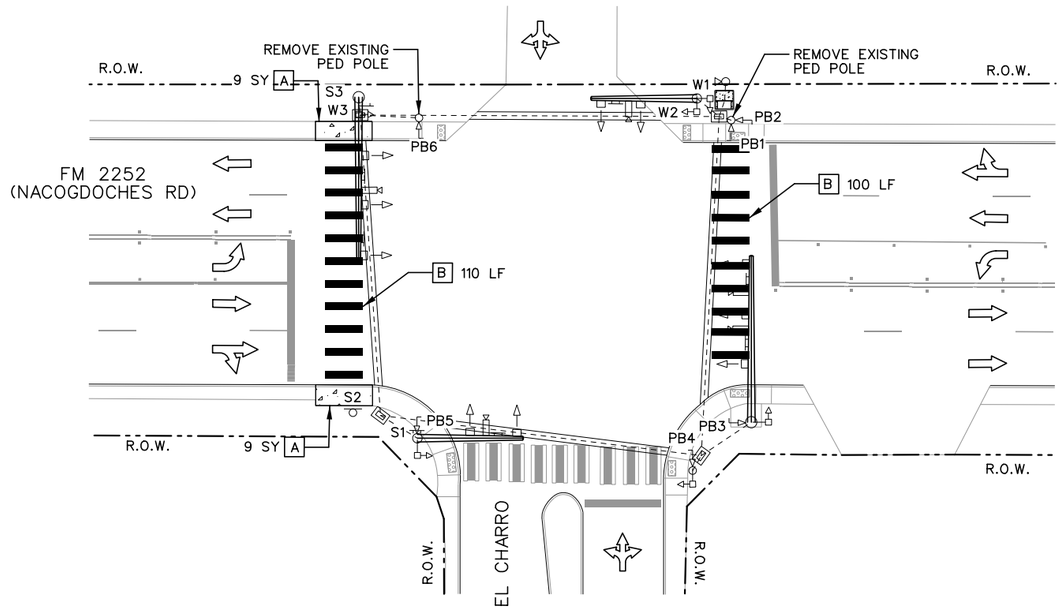
EXISTING LED SIGNAL HEADS TO BE REMOVED

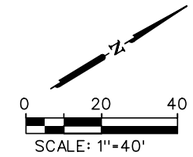
COUNTDOWN PEDESTRIAN SIGNAL HEAD

W1,W2,W3

LEGEND

- EXISTING SIGNAL POLE W/ MAST ARM
- EXISTING VERTICAL SIGNAL HEAD
- EXISTING OVERHEAD SIGN
- EXISTING PEDESTRIAN POLE W/ SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING VIVDS DETECTION DEVICE
- EXISTING TYPE D GROUND BOX W/ APRON
- EXISTING CONDUIT
- EXISTING SERVICE METER AND DISCONNECT
- EXISTING GROUND MOUNTED CONTROLLER CABINET
- EXISTING POST MOUNTED SIGN
- [A] REMOVE CONCRETE SIDEWALK
- [B] ELIM EXIST PAV MARK - 24"
- DIRECTION OF TRAFFIC
- RIGHT-OF-WAY (R.O.W.)





FM 2252 (CSJ: 1433-01-031)

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTITILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK TEXAS "ONE-CALL" SYTEM: 1-800-345-4545.
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. THE CONTRACTOR SHALL ELIMINATE EXISTING PAVEMENT MARKINGS WHICH CONFLICT WITH PAVEMENT MARKINGS. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.
5. CONTRACTOR SHALL REMOVE DRILLED SHAFT FOUNDATIONS TO A POINT 2 FT BELOW GRADE.
6. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
7. CONTRACTOR TO PROVIDE PEDESTRIAN DETOUR CONSISTENT WITH WZ(BTS-2)-13.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
104	6015	REMOVING CONC (SIDEWALKS)	SY	18
644	6076	REMOVE SM RD SN SUP&AM	EA	1
644	6078	REMOVE SM RD SN SUP&AM (SIGN ONLY)	EA	2
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	235
690	6001	REMOVAL OF CONDUIT	LF	55
690	6009	REMOVAL OF CABLES	LF	550
690	6024	REMOVAL OF SIGNAL HEAD ASSM	EA	3
690	6030	REMOVAL OF PEDESTRIAN PUSH BUTTONS	EA	3
690	6089	REMOVE PED POLE ASSM	EA	2

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

FY 2022 HSIP

FM 2252 (NACOGDOCHES RD) & EL CHARRO EXISTING CONDITIONS & REMOVALS

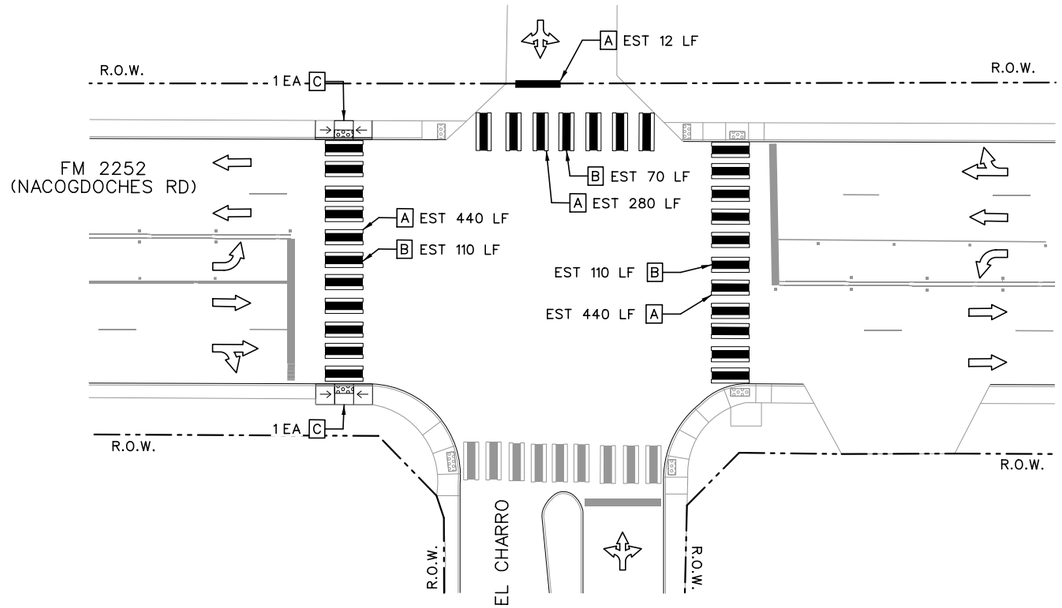
SHEET 1 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		120
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:10:44
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Naco_03.dgn

LEGEND

- [A] REFL PAV MRK TY I(BLACK)6"(SHADOW)(100MIL)
- [B] REFL PAV MRK TY I(W)24"(SLD)(100MIL)
- [C] TxDOT TY 2 CURB RAMP
- DIRECTION OF TRAFFIC
- RIGHT-OF-WAY (R.O.W.)



0 20 40
SCALE: 1"=40'

FM 2252 (CSJ: 1433-01-031)

NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
531	6005	CURB RAMPS (TY 2)	EA	2
666	6048	REFL PAV MRK TY I(W)24"(SLD)(100MIL)	LF	335
666	6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	1280
666	6225	PAVEMENT SEALER 6"	LF	1280
666	6230	PAVEMENT SEALER 24"	LF	335
678	6002	PAV SURF PREP FOR MRK (6")	LF	1280
678	6008	PAV SURF PREP FOR MRK (24")	LF	335

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-9699

Texas Department of Transportation

FY 2022 HSIP

FM 2252 (NACOGDOCHES RD)
& EL CHARRO
STRIPING & RAMP PLAN

SHEET 2 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		121
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

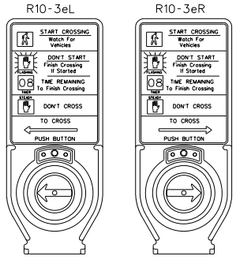
Justin.Kinne
4/19/2022 14:10:49
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Naco_04.dgn

PROPOSED LED SIGNAL HEADS

COUNTDOWN PEDESTRIAN SIGNAL HEAD

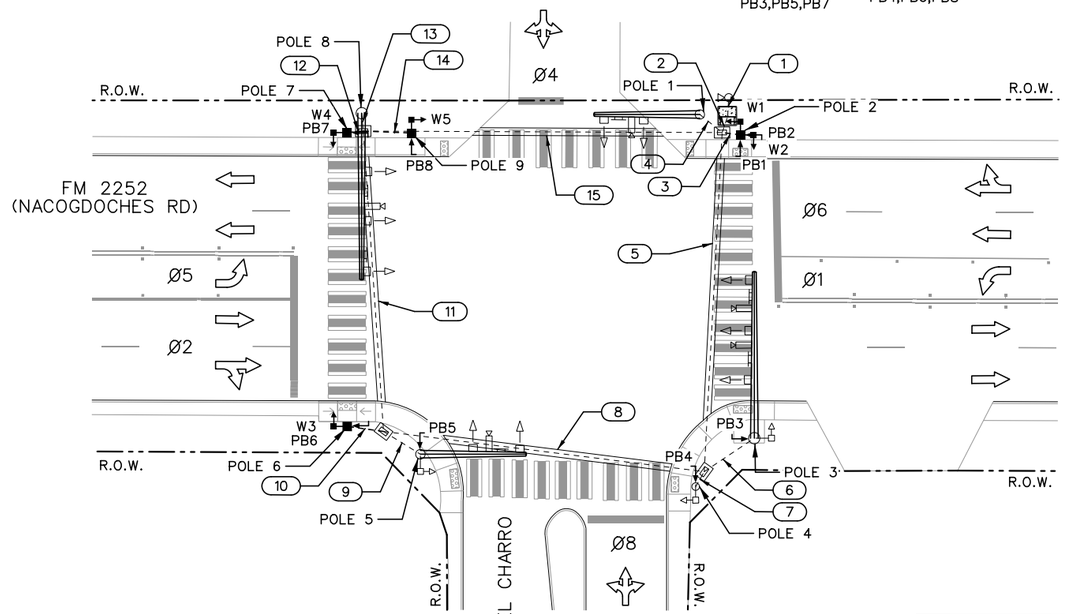
W1,W2
W3,W4,W5

PROPOSED SIGNS



PB1,PB2
PB3,PB5,PB7

PB4,PB6,PB8



LEGEND

- EXISTING SIGNAL POLE W/ MAST ARM
- EXISTING VERTICAL SIGNAL HEAD
- EXISTING OVERHEAD SIGN
- EXISTING PEDESTRIAN POLE W/ SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- MODIFIED SHALLOW PEDESTAL POLE FOUNDATION
- PROPOSED PEDESTRIAN SIGNAL HEAD
- PROPOSED PEDESTRIAN PUSH BUTTON
- EXISTING VIVDS DETECTION DEVICE
- EXISTING TYPE D GROUND BOX W/ APRON
- PROPOSED CONDUIT (TRENCH)
- EXISTING SERVICE METER AND DISCONNECT
- EXISTING GROUND MOUNTED CONTROLLER CABINET
- DIRECTION OF TRAFFIC
- RIGHT-OF-WAY (R.O.W.)

0 20 40
SCALE: 1"=40'

FM 2252 (CSJ: 1433-01-031)

ESTIMATED QUANTITIES				
ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2
618	6053	CONDT (PVC) (SCH 80) (3")	LF	50
620	6009	ELEC CONDR (NO.6) BARE	LF	50
680	6011	INSTALL HWY TRF SIG (UPGRADE)	EA	1
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	5
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	575
684	6049	TRF SIG CBL (TY A)(16 AWG)(3 CONDR)	LF	1035
687	6001	PED POLE ASSEMBLY	EA	4
688	6001	PED DETECT PUSH BUTTON (APS)	EA	8
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	20
6027	6003	CONDUIT (PREPARE)	LF	440
6027	6008	GROUND BOX (PREPARE)	EA	4

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. LOCATION OF SIGNAL POLES SHALL BE VERIFIED AND APPROVED BY CITY OF SAN ANTONIO PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
6. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
7. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SERVICE.
8. CONTRACTOR SHALL POTHOLE ALL SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATIONS.
9. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION.
10. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE SIGNAL TURN-ON.
11. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
12. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.
13. ALL PROPOSED PEDESTAL POLES SHALL BE CONSTRUCTED WITH A MODIFIED SHALLOW FOUNDATION, SEE INCLUDED STANDARD FOR DETAILS.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
5/19/2022
Amy E Avery

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

FY 2022 HSIP

FM 2252 (NACOGDOCHES RD) & EL CHARRO INTERSECTION IMPROVEMENTS

SHEET 3 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT	SHEET NO.
6	SEE TITLE SHEET	122

STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

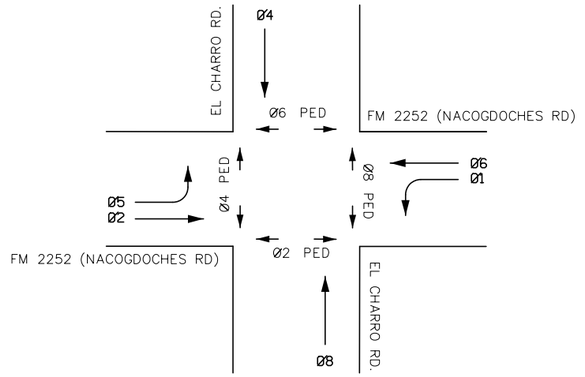
Justin.Kinne
5/19/2022 21:37:41
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call\WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Noco_05.dgn

CONDUCTOR AND CONDUIT SCHEDULE																				
CONDUIT/ SPAN RUN NUMBER		1	2	3	4	5	5	6	7	8	8	9	10	11	11	12	13	14	15	15
NUMBER OF CONDUITS		1	3	1	2	2	1	2	1	2	1	2	1	2	1	1	2	1	2	1
CONDUIT SIZE IN INCHES		2.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0
CONDUIT/ SPAN LENGTH (LF)		10	10	10	10	90	90	20	10	90	90	15	10	80	80	10	10	15	95	95
RUN TYPE, B=BORE, T=TRENCH, E=EXISTING		E	E	T	E	E	E	E	E	E	E	E	T	E	E	T	E	T	E	E
CABLE	CIRCUIT	NUMBER OF CONDUCTORS																		
#6 THHN/THWN	120 POWER HOT & COMMON																			
BARE BOND GROUND	(POWER) BARE #6																			
	(CONDUIT) BARE #6			1									1			1		1		
9/C - #14 CABLE (SIGNAL)	POLE 1 - Ø8																			
	POLE 3 - Ø5 + Ø2																			
	POLE 5 - Ø4																			
	POLE 7 - Ø1 + Ø6																			
9/C - #14 CABLE (PED SIGNAL)	POLE 2 - Ø6 + Ø8		2	2																
	POLE 3 - Ø8																			
	POLE 4 - Ø2																			
	POLE 5 - Ø2																			
	POLE 6 - Ø4		1										1	1					1	
	POLE 7 - Ø4		1													1			1	
	POLE 9 - Ø6		1															1	1	
3/C - #16 (PED PUSH BUTTONS-APS)	POLE 2 - Ø6 + Ø8		2	2																
	POLE 3 - Ø8		1			1		1												
	POLE 4 - Ø2		1			1			1											
	POLE 5 - Ø2		1									1		1					1	
	POLE 6 - Ø4		1										1	1					1	
	POLE 7 - Ø4		1													1			1	
	POLE 9 - Ø6		1															1	1	
DATA & POWER CABLE (VIVDS)	POLE 1 - VIVDS Ø8																			
	POLE 3 - VIVDS Ø5 + Ø2																			
	POLE 5 - VIVDS Ø4																			
	POLE 8 - VIVDS Ø1 + Ø6																			

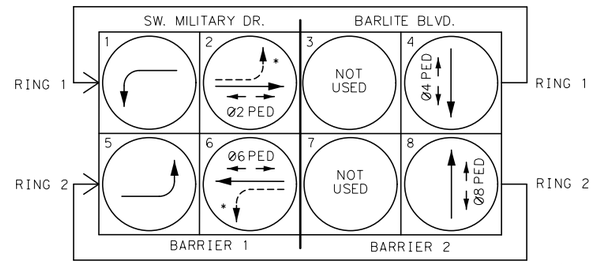
TRAFFIC POLE SCHEDULE									
POLE	1	2	3	4	5	6	7	8	9
FOUNDATION	EXISTING	SHALLOW	EXISTING	EXISTING	EXISTING	SHALLOW	SHALLOW	EXISTING	SHALLOW
MOUNTING HEIGHT		10'				10'	10'		10'
ATTACHMENTS		W1,W2,PB1,PB2 (2) APS PUSH BUTTONS	PB3 (1) APS PUSH BUTTON	PB4 (1) APS PUSH BUTTON	PB5 (1) APS PUSH BUTTON	W3,PB6 (1) APS PUSH BUTTON	W4,PB7 (1) APS PUSH BUTTON		W5,PB8 (1) APS PUSH BUTTON

ELECTRICAL SERVICE DATA											
ELEC. SERVICE ID	PLAN SHEET NUMBER	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT.BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANE IBD/LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANK CKT. BRK. POLE/AMPS	KVA LOAD
EXISTING											

ORIENTATION DIAGRAM



PHASING DIAGRAM



PROTECTED PHASE
PERMITTED PHASE
* FLASHING YELLOW ARROW

FM 2252 (CSJ: 1433-01-031)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

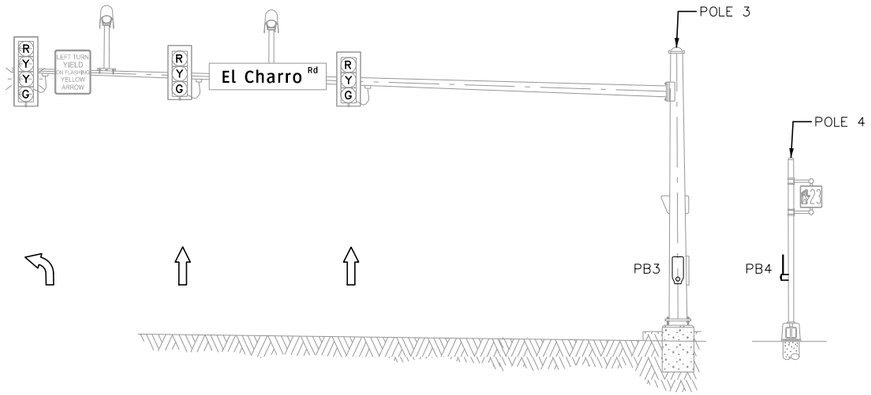
FY 2022 HSIP

FM 2252 (NACOGDOCHES RD) & EL CHARRO INTERSECTION IMPROVEMENTS DETAILS

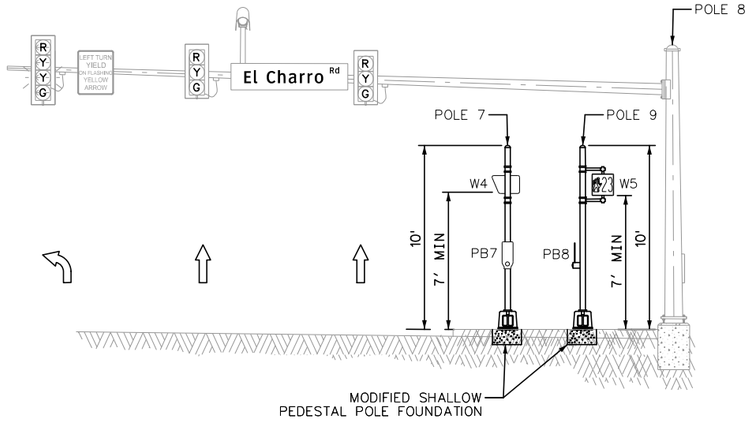
SHEET 4 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		123
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

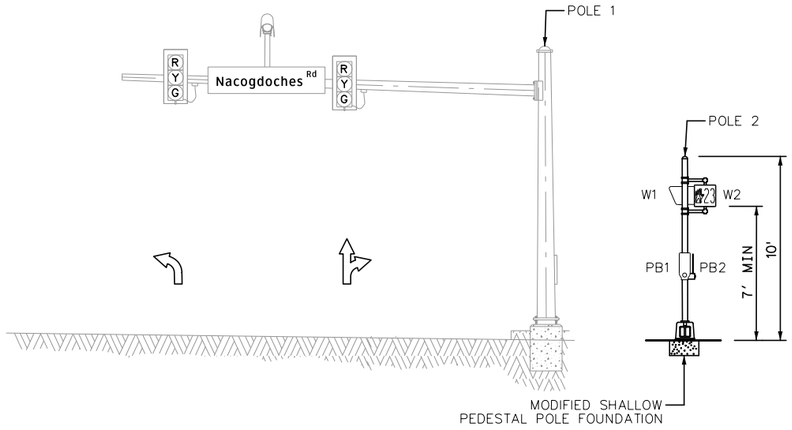
Justin.Kinne
4/19/2022 14:11:09
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call\WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Noco_06.dgn



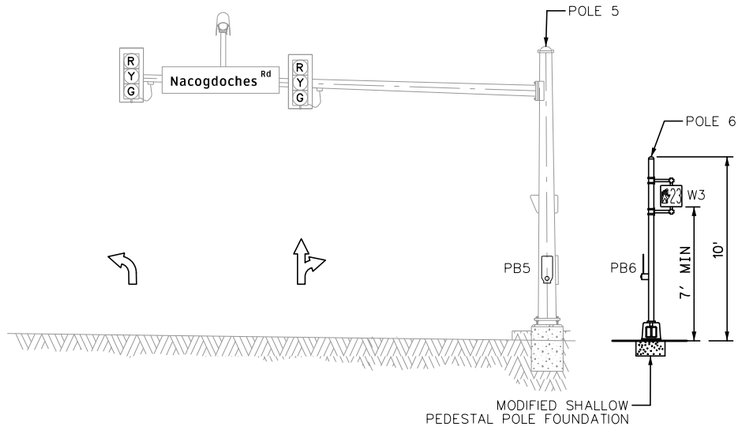
LOOKING NORTH ON FM 2252 (NACOGDOCHES RD)



LOOKING SOUTH ON FM 2252 (NACOGDOCHES RD)



LOOKING WEST ON EL CHARRO



LOOKING EAST ON EL CHARRO

FM 2252 (CSJ: 1433-01-031)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

FM 2252 (NACOGDOCHES RD) & EL CHARRO INTERSECTION IMPROVEMENTS ELEVATIONS

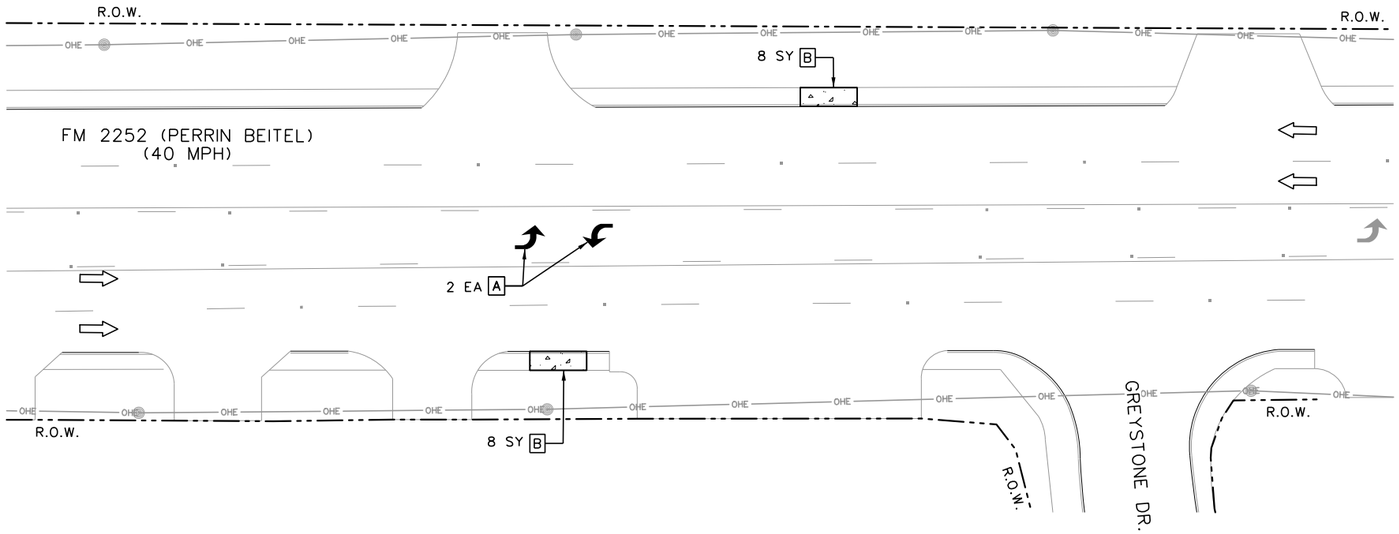
SHEET 5 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		124
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:11:13
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Naco_07.dgn

LEGEND

- [A] ELIM EXIST PAV MRK – ARROW
- [B] REMOVE CONC SIDEWALK
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)



Z

0 20 40

SCALE: 1"=40'

FM 2252 (CSJ: 1433-01-032)

ESTIMATED QUANTITIES				
ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
104	6015	REMOVING CONC (SIDEWALKS)	SY	16
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	2

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTITILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK TEXAS "ONE-CALL" SYTEM: 1-800-345-4545.
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. THE CONTRACTOR SHALL ELIMINATE EXISTING PAVEMENT MARKINGS WHICH CONFLICT WITH PAVEMENT MARKINGS. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.
5. CONTRACTOR TO PROVIDE PEDESTRIAN DETOUR ROUTE CONSISTENT WITH WZ(BTS-2)-13.
6. VIA METROPOLITAN TRANSIT HAS ROUTES IN THIS AREA. PROVIDE 7 DAYS NOTICE TO MICHAEL LEDESMA OF ANY LANE CLOSURES AT 210-362-2000. FOR ANY STOP CLOSURES PROVIDE 14 DAYS NOTICE TO ABIGAIL RODRIGUEZ OR ERNEST SWEET AT 210-362-2000.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

FM 2252 (PERRIN BEITEL RD)
Z-CROSSING
EXISTING CONDITIONS & REMOVALS

SHEET 1 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		125
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:11:25
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Perrin_03.dgn

PROPOSED SIGNS

W11-2 (36"x36")

S1,S6

W16-9P (30"x18")

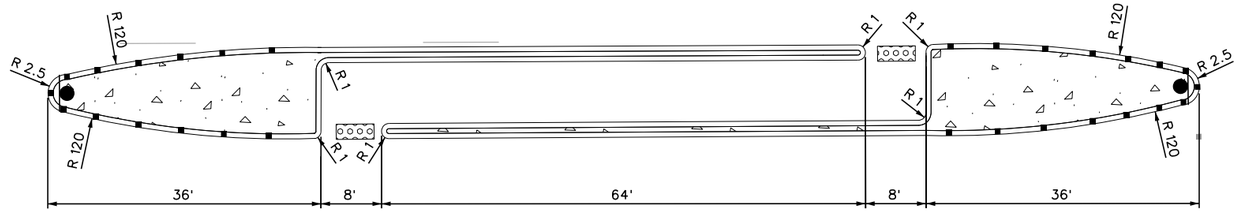
R1-5bL (36"x36")

S2,S5

R4-7 (24"x30")

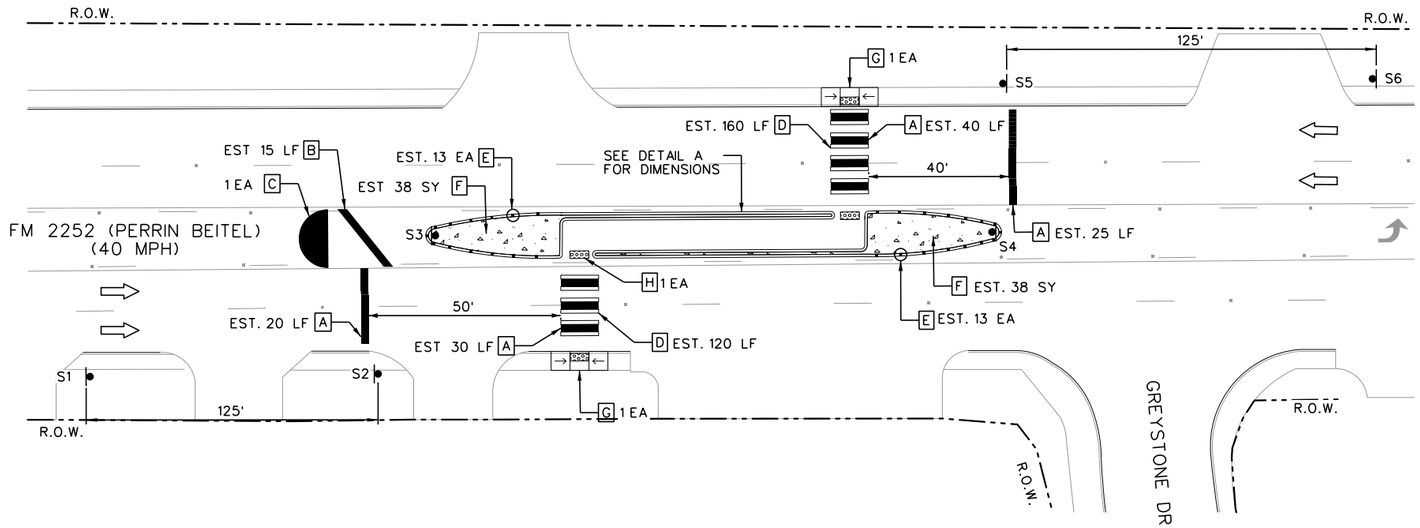
S3,S4

DETAIL A: 1"=20'



LEGEND

A	REFL PAV MRK TY 1(W)24"(SLD)(100MIL)
B	REFL PAV MRK TY 1(Y)24"(SLD)(100MIL)
C	REFL PAV MRK TY 1(Y)(MED NOSE)(100MIL)
D	REFL PAV MRK TY 1(SHADOW)6"(SLD)(100MIL)
E	REFL PAV MRKR TY II A-A
F	CONCRETE MEDIAN
G	TxDOT TY 2 CURB RAMP
H	TxDOT TY 21 CURB RAMP
●	POST MOUNTED SIGN
⇦	DIRECTION OF TRAFFIC
	RIGHT OF WAY (R.O.W.)



0 20 40

SCALE: 1"=40'

FM 2252 (CSJ: 1433-01-032)

NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
531	6005	CURB RAMPS (TY 2)	EA	2
531	6016	CURB RAMPS (TY 21)	EA	1
536	6002	CONC MEDIAN	SY	76
644	6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	4
644	6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	2
666	6048	REFL PAV MRK TY I(W)24"(SLD)(100MIL)	LF	130
666	6147	REFL PAV MRK TY I(Y)24"(SLD)(100MIL)	LF	20
666	6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA	1
666	6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	310
666	6225	PAVEMENT SEALER 6"	LF	310
666	6230	PAVEMENT SEALER 24"	LF	145
666	6233	PAVEMENT SEALER (MED NOSE)	EA	1
672	6009	REFL PAV MRKR TY II-A-A	EA	26
678	6002	PAV SURF PREP FOR MRK (6")	LF	310
678	6008	PAV SURF PREP FOR MRK (24")	LF	145
678	6024	PAV SURF PREP FOR MRK (MED NOSE)	EA	1
6185	6002	TMA (STATIONARY)	DAY	4

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
TBPE Firm No. 928
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
Tel. No. (210) 541-9166
Fax No. (281) 541-9699

Texas Department of Transportation

FY 2022 HSIP

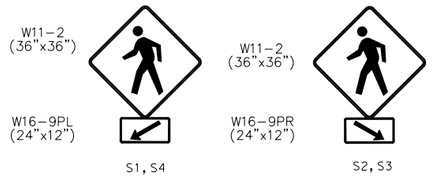
FM 2252 (PERRIN BEITEL RD) Z-CROSSING RAMP, STRIPING, AND SIGNING PLAN

SHEET 2 OF 5

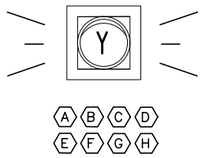
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		126
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:11:31
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA - *\1-8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Perrin_04.dgn

PROPOSED SIGNS

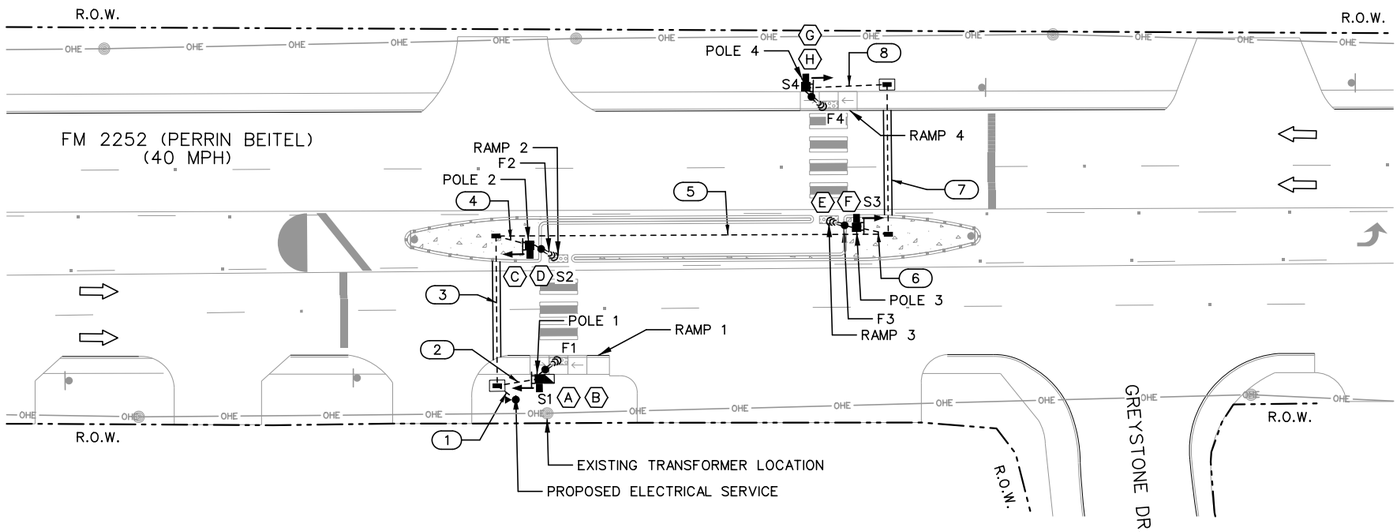


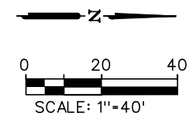
PROPOSED LED SIGNAL HEADS



LEGEND

- SHALLOW PEDESTAL POLE FOUNDATION
- SIGNAL HEAD
- MAST ARM SIGN
- FLIR SMART CITY SENSOR
- TYPE D GROUND BOX
- TYPE D GROUND BOX W/APRON
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- SERVICE METER AND DISCONNECT
- POLE MOUNTED CONTROLLER CABINET
- POST MOUNTED SIGN
- TIMBER POLE
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)





FM 2252 (CSJ: 1433-01-032)

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. LOCATION OF SIGNAL POLES SHALL BE VERIFIED AND APPROVED BY CITY OF SAN ANTONIO PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
6. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
7. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SERVICE.
8. CONTRACTOR SHALL POTHOLE ALL SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATIONS.
9. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION.
10. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE SIGNAL TURN-ON.
11. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
12. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2.5
618	6046	CONDT (PVC) (SCH 80) (2")	LF	15
618	6053	CONDT (PVC) (SCH 80) (3")	LF	315
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	180
620	6009	ELEC CONDR (NO.6) BARE	LF	475
620	6010	ELEC CONDR (NO.6) INSULATED	LF	85
624	6009	GROUND BOX TY D (162922)	EA	2
624	6010	GROUND BOX TY D (162922)W/APRON	EA	2
628	6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	EA	1
680	6001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	1
682	6003	VEH SIG SEC (12")LED(YEL)	EA	8
682	6021	BACK PLATE (12")(1 SEC)	EA	8
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	1190
687	6001	PED POLE ASSEMBLY	EA	4
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	20
6004	6031	ITS COM CBL (ETHERNET)	LF	1100

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
5/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

FM 2252 (PERRIN BEITEL RD)
Z-CROSSING LAYOUT

SHEET 3 OF 5

FED RD DIV. NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		127
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:37:47
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Perrin_05.dgn

CONDUCTOR AND CONDUIT SCHEDULE									
CONDUIT/ SPAN RUN NUMBER		1	2	3	4	5	6	7	8
NUMBER OF CONDUITS		1	2	2	1	2	1	2	1
CONDUIT SIZE IN INCHES		2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
CONDUIT/ SPAN LENGTH (LF)		10	15	40	10	105	10	40	25
RUN TYPE, B=BORE, T=TRENCH, E=EXISTING		T	T	B	T	T	T	B	T
CABLE	CIRCUIT	NUMBER OF CONDUCTORS							
#6 THHN/THWN	120 POWER HOT & COMMON	2	2						
BARE BOND GROUND	(POWER) BARE #6	1	1						
	(CONDUIT) BARE #6		1	2	1	2	1	2	1
9/C - #14 CABLE (FLASHERS)	POLE 1								
	POLE 2		2	2	2				
	POLE 3		2	2		2	2		
	POLE 4		2	2		2		2	2
ETHERNET CABLE (COLOR CODED)	POLE 1								
	POLE 2		2	2	2				
	POLE 3		2	2		2	2		
	POLE 4		2	2		2		2	2

INSIDE POLES	9C	CAT 5E
	(FT)	(FT)
POLE 1	40	20
POLE 2	40	20
POLE 2	40	20
POLE 2	40	20
TOTALS	160	80

TRAFFIC POLE SCHEDULE				
POLE	1	2	3	4
FOUNDATION	SHALLOW	SHALLOW	SHALLOW	SHALLOW
MOUNTING HEIGHT	20'	20'	20'	20'
ATTACHMENTS	S1 (1) FLIR SMART SENSOR (1) POLE MOUNTED CONTROLLER CABINET	S2 (1) FLIR SMART SENSOR	S3 (1) FLIR SMART SENSOR	S4 (1) FLIR SMART SENSOR

FLIR SMART SENSOR DETECTION DETAILS		
DETECTOR	RAMP	MOUNTING LOCATION
F1	RAMP 1	POLE 1
F2	RAMP 2	POLE 2
F3	RAMP 3	POLE 3
F4	RAMP 4	POLE 4

ELECTRICAL SERVICE DATA										
PLAN SHEET NUMBER	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT.BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANE IBD/LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANK CKT. BRK. POLE/AMPS	KVA LOAD
127	ELC SRV TY D 120/240 070 (NS) AL (E) PS (U)	1 1/4"	3 / #6	N/A	2P/70		100	SIG. CONTROLLER	1P/30	<7.1

FM 2252 (CSJ: 1433-01-032)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

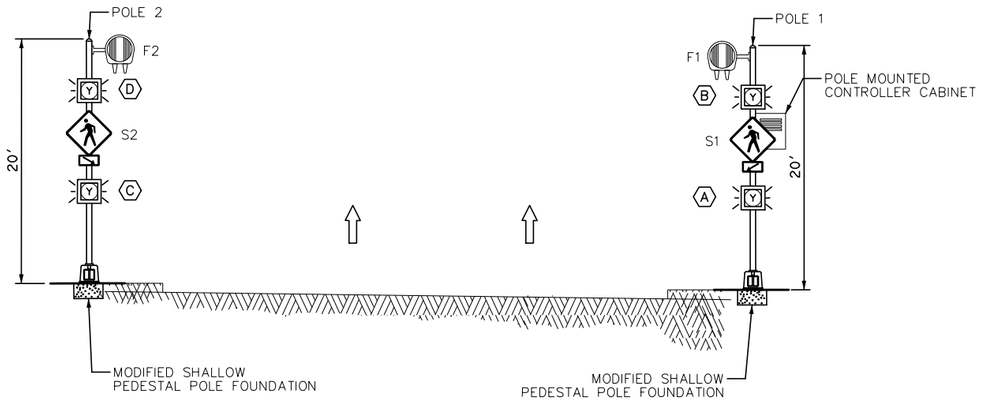
Texas Department of Transportation

FY 2022 HSIP

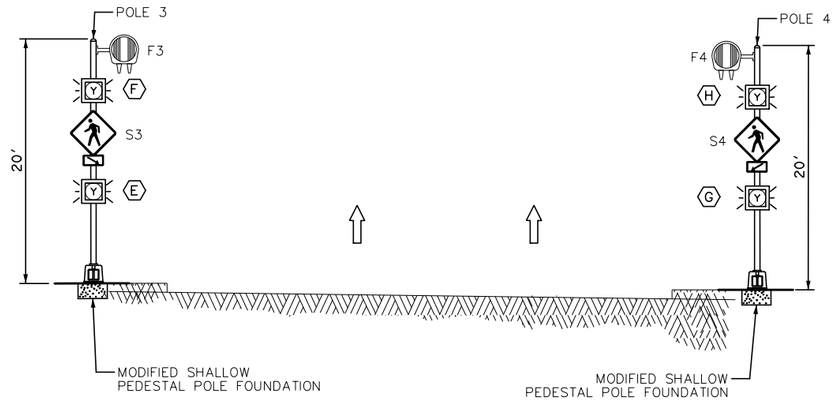
FM 2252 (PERRIN BEITEL RD)
Z-CROSSING DETAILS

SHEET 4 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		128
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC



LOOKING NORTH ON FM 2252 (PERRIN BEITEL)



LOOKING SOUTH ON FM 2252 (PERRIN BEITEL)

FM 2252 (CSJ: 1433-01-032)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel.No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

FM 2252 (PERRIN BEITEL RD)
Z-CROSSING ELEVATIONS

SHEET 5 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		129
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:12:01
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WAL_Perrin_07.dgn

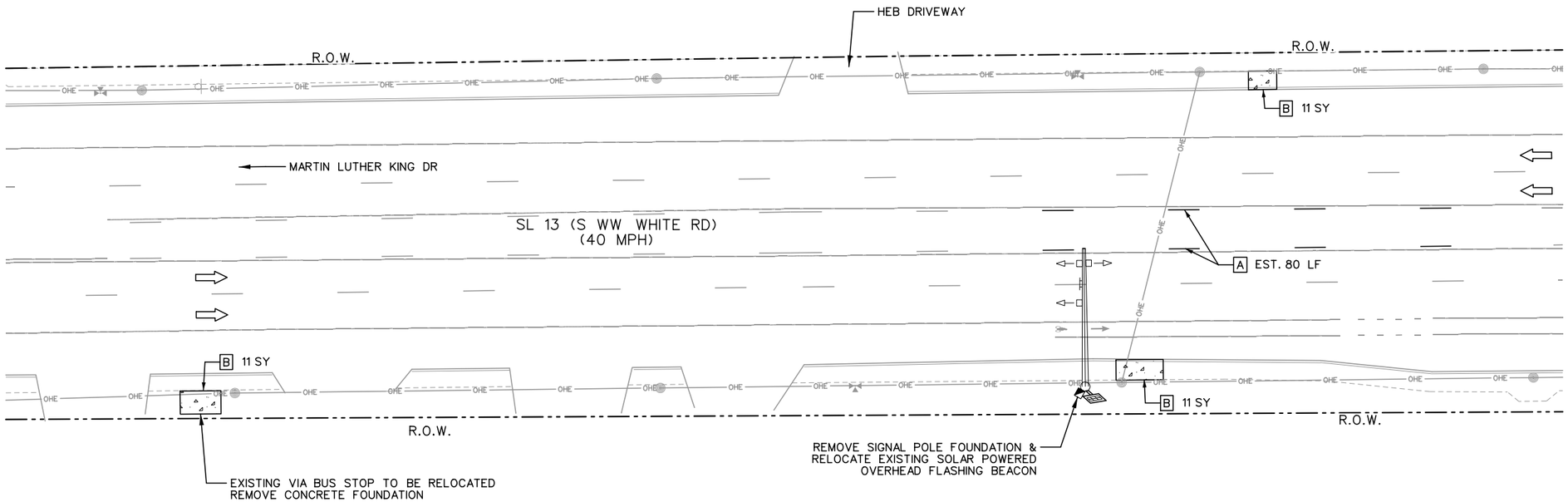
LEGEND

A — ELIM EXIST PAV MARK & MRKRS - 4"

B — REMOVE CONC SIDEWALK

DIRECTION OF TRAFFIC

RIGHT OF WAY (R.O.W.)



N

0 20 40

SCALE: 1"=40'

SL 13 (CSJ: 0521-01-056)

ESTIMATED QUANTITIES				
ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
104	6015	REMOVING CONC (SIDEWALKS)	SY	33
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	90
690	6033	REMOVAL OF TRAFFIC SIGNAL POLE FND	LF	13

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTITILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK TEXAS "ONE-CALL" SYTEM: 1-800-345-4545.
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. THE CONTRACTOR SHALL ELIMINATE EXISTING PAVEMENT MARKINGS WHICH CONFLICT WITH PAVEMENT MARKINGS. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.
5. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
6. VIA METROPOLITAN TRANSIT HAS ROUTES IN THIS AREA. PROVIDE 7 DAYS NOTICE TO MICHAEL LEDESMA OF ANY LANE CLOSURES AT 210-362-2000. FOR ANY STOP CLOSURES PROVIDE 14 DAYS NOTICE TO ABIGAIL RODRIGUEZ OR ERNEST SWEET AT 210-362-2000.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

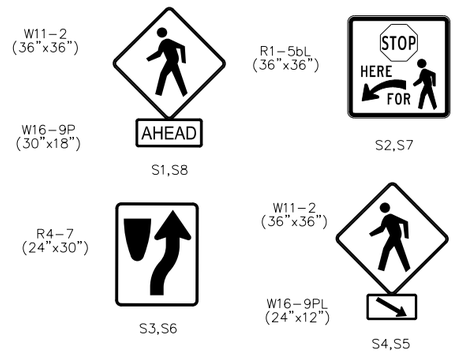
SL 13 (S WW WHITE RD) Z-CROSSING
EXISTING CONDITIONS & REMOVALS

SHEET 1 OF 5

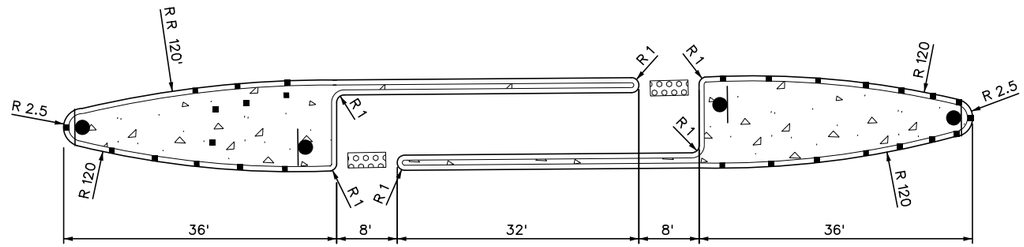
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		130
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:12:11
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA •1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_WHITE_01.dgn

PROPOSED SIGNS

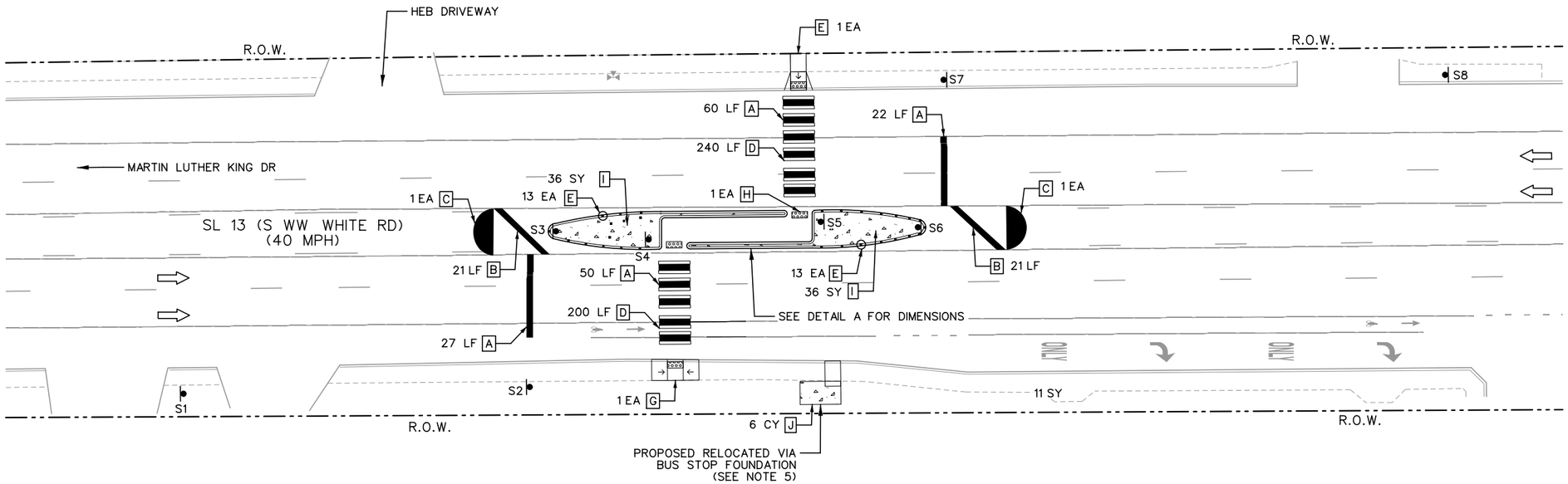


DETAIL A: 1' = 20'



LEGEND

A	REFL PAV MRK TY I(W)24"(SLD)(100MIL)
B	REFL PAV MRK TY I(Y)24"(SLD)(100MIL)
C	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)
D	REFL PAV MRK TY I(BLACK)6"(SHADOW)(100MIL)
E	REFL PAV MRKR TY II-A-A
F	TxDOT TY 1 CURB RAMP
G	TxDOT TY 2 CURB RAMP
H	TxDOT TY 21 CURB RAMP
I	CONC MEDIAN
J	VIA CONC FOUNDATION
●	POST MOUNTED SIGN
⇦	DIRECTION OF TRAFFIC
—·—	RIGHT OF WAY (R.O.W.)



0 20 40
SCALE: 1"=40'

SL 13 (CSJ: 0521-01-056)

NOTES

1. THE EXISTING STRIPING SHOWN IN GRAY IS TO REMAIN. ONLY THE PROPOSED STRIPING IS SHOWN IN BLACK AND LABELED.
2. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
3. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
4. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.
5. REFER TO INCLUDED VIA BUS STOP FOUNDATION STANDARD FOR FOUNDATION DETAILS.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO.	DESCRIPTION	UNIT	QTY
420	6002	CL A CONC (MISC)	CY	6
531	6004	CURB RAMPS (TY 1)	EA	1
531	6005	CURB RAMPS (TY 2)	EA	1
531	6016	CURB RAMPS (TY 21)	EA	1
536	6002	CONC MEDIAN	SY	72
644	6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	4
644	6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	2
644	6012	IN SM RD SN SUP&AM TY10BWG(1)SB(T)	EA	2
666	6048	REFL PAV MRK TY I(W)24"(SLD)(100MIL)	LF	175
666	6147	REFL PAV MRK TY I(Y)24"(SLD)(100MIL)	LF	50
666	6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL)	EA	2
666	6162	RE PV MRK TY I(BLACK)6"(SHADOW)(100MIL)	LF	485
666	6225	PAVEMENT SEALER 6"	LF	485
666	6230	PAVEMENT SEALER 24"	LF	225
666	6233	PAVEMENT SEALER (MED NOSE)	EA	2
672	6009	REFL PAV MRKR TY II-A-A	EA	26
678	6002	PAV SURF PREP FOR MRK (6")	LF	5596
678	6008	PAV SURF PREP FOR MRK (24")	LF	225
678	6024	PAV SURF PREP FOR MRK (MED NOSE)	EA	2
6185	6002	TMA (STATIONARY)	DAY	4

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

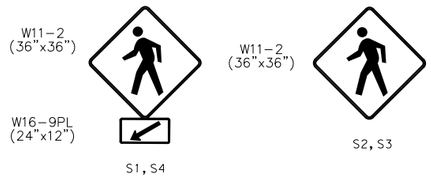
SL 13 (S WW WHITE RD) Z-CROSSING RAMP, STRIPING, AND SIGNING PLAN

SHEET 2 OF 5

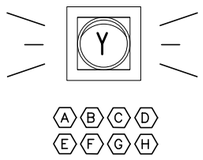
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		131
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:12:16
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_WHITE_02.dgn

PROPOSED SIGNS

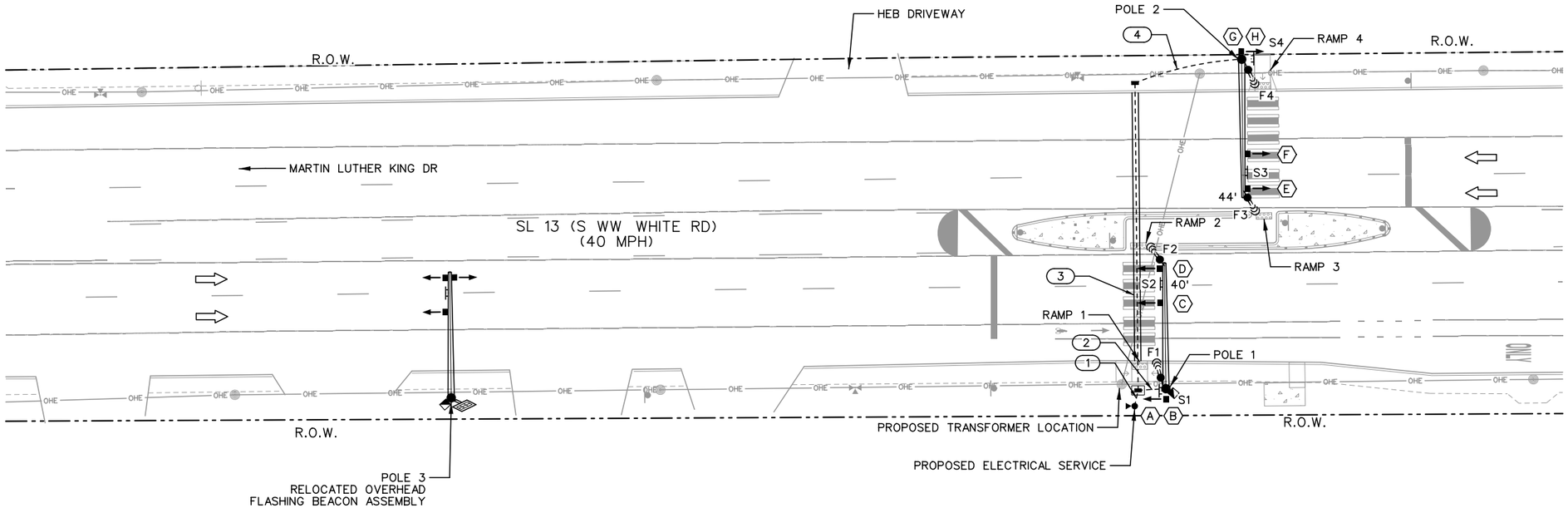


PROPOSED LED SIGNAL HEADS



LEGEND

- SIGNAL POLE W/MAST ARM
- SIGNAL HEAD
- MAST ARM SIGN
- FLIR SMART CITY SENSOR
- TYPE D GROUND BOX
- TYPE D GROUND BOX W/APRON
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- SERVICE METER AND DISCONNECT
- POLE MOUNTED CONTROLLER CABINET
- POST MOUNTED SIGN
- TIMBER POLE
- DIRECTION OF TRAFFIC
- RIGHT OF WAY (R.O.W.)



0 20 40
SCALE: 1"=40'

SL 13 (CSJ: 0521-01-056)

NOTES

1. THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK. TEXAS "ONE-CALL" SYSTEM: 1-800-245-4545
3. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE AND PRESERVE THE UNDERGROUND FACILITIES.
4. LOCATION OF SIGNAL POLES SHALL BE VERIFIED AND APPROVED BY CITY OF SAN ANTONIO PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS AND ALL SIGNING WHICH CONFLICT WITH THE PROPOSED DESIGN.
6. THE LOWEST EDGE OF ALL POST AND POLE MOUNTED SIGNS SHALL BE 6.7 FEET MINIMUM ABOVE GRADE.
7. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET CLEARANCE ABOVE ROADWAY SERVICE.
8. CONTRACTOR SHALL POTHOLE ALL SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATIONS.
9. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION.
10. CONTRACTOR SHALL CONTACT CITY OF SAN ANTONIO TRAFFIC ENGINEER A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE FLASHING BEACON TURN-ON.
11. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO CITY OF SAN ANTONIO SIGNAL SHOP.
12. A 10% INCREASE WAS APPLIED TO ALL MEASURED CONDUIT, CABLE, AND MARKING QUANTITIES ON PLANS, WHICH IS REFLECTED IN THE QUANTITIES SUMMARY BOX ON EACH SHEET. THIS DESIGN WAS CREATED WITH THE AID OF AERIAL IMAGERY AND NO TOPOGRAPHICAL SURVEY. ALL SPECIFIED MEASUREMENTS ARE APPROXIMATE AND SHALL BE CONFIRMED WITH THE INSPECTOR/ENGINEER.

ESTIMATED QUANTITIES

ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
416	6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	39
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2.5
618	6046	CONDT (PVC) (SCH 80) (2")	LF	10
618	6053	CONDT (PVC) (SCH 80) (3")	LF	100
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	200
620	6009	ELEC CONDR (NO.6) BARE	LF	290
620	6010	ELEC CONDR (NO.6) INSULATED	LF	60
624	6009	GROUND BOX TY D (162922)	EA	2
628	6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	EA	1
680	6001	INSTALL HWY TRF SIG (FLASH BEACON)	EA	1
682	6003	VEH SIG SEC (12")LED(YEL)	EA	8
682	6021	BACK PLATE (12")(1 SEC)	EA	8
684	6035	TRF SIG CBL (TY A)(14 AWG)(9 CONDR)	LF	628
686	6041	INS TRF SIG PL AM(S)1 ARM(40')	EA	1
686	6045	INS TRF SIG PL AM(S)1 ARM(44')	EA	1
686	6282	RELOC TRF SG PL AM(S)SNGL MST ARM POLE	EA	1
6004	6031	ITS COM CBL (ETHERNET)	LF	628

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
5/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (S WW WHITE RD) Z-CROSSING
PROPOSED CROSSING LAYOUT

SHEET 3 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		132
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
5/19/2022 21:37:51
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_WHITE_03.dgn

CONDUCTOR AND CONDUIT SCHEDULE					
CONDUIT/ SPAN RUN NUMBER		1	2	3	4
NUMBER OF CONDUITS		1	2	2	1
CONDUIT SIZE IN INCHES		2.0	3.0	3.0	3.0
CONDUIT/ SPAN LENGTH (LF)		10	20	40	95
RUN TYPE, B=BORE, T=TRENCH, E=EXISTING		T	T	B	T
CABLE	CIRCUIT	NUMBER OF CONDUCTORS			
#6 THHN/THWN	120 POWER HOT & COMMON	2	2		
BARE BOND GROUND	(POWER) BARE #6	1	1		
	(CONDUIT) BARE #6		1	2	1
9/C - #14 CABLE (FLASHERS)	POLE 1				
	POLE 2		2	2	2
ETHERNET CABLE (COLOR CODED)	POLE 1				
	POLE 2		2	2	2

INSIDE POLES	9C	CAT 5E
	(FT)	(FT)
POLE 1	40	40
POLE 2	40	40
TOTALS	80	80

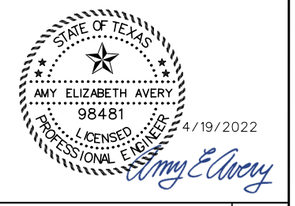
INSIDE ARMS	9C	CAT 5E
	(FT)	(FT)
POLE 1	40	40
POLE 2	44	44
TOTALS	84	84

TRAFFIC POLE SCHEDULE		
POLE	1	2
FOUNDATION	36-A	36-A
MOUNTING HEIGHT	19'	19'
ATTACHMENTS	40' MAST ARM S1,S2 (2) FLIR SMART SENSORS (1) POLE MOUNTED CONTROLLER CABINET	44' MAST ARM S3,S4 (2) FLIR SMART SENSORS

FLIR SMART SENSOR DETECTION DETAILS		
DETECTOR	RAMP	MOUNTING LOCATION
F1	RAMP 1	POLE 1
F2	RAMP 2	POLE 1 - MAST ARM
F3	RAMP 3	POLE 2 - MAST ARM
F4	RAMP 4	POLE 2

ELECTRICAL SERVICE DATA										
PLAN SHEET NUMBER	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT.BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANE IBD/LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANK CKT. BRK. POLE/AMPS	KVA LOAD
132	ELC SRV TY D 120/240 070 (NS) AL (E) PS (U)	1 1/4"	3 / #6	N/A	2P/70		100	SIG. CONTROLLER	1P/30	<7.1

SL 13 (CSJ: 0521-01-056)



NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

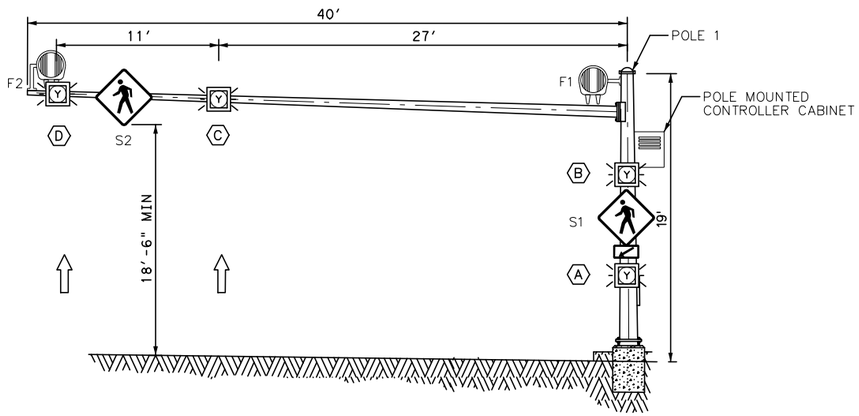
FY 2022 HSIP

SL 13 (S WW WHITE RD)
Z-CROSSING DETAILS

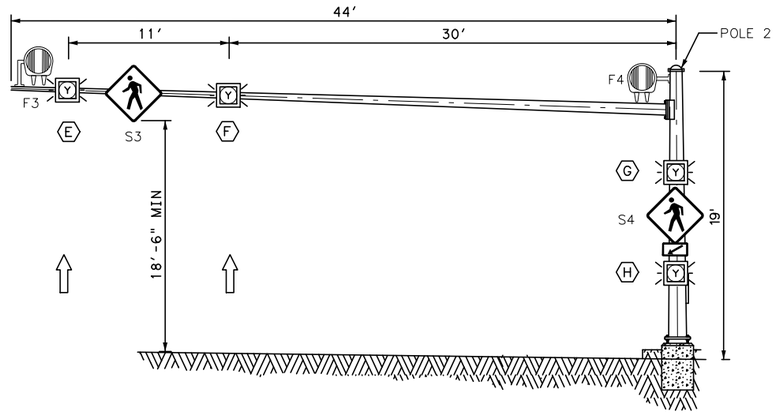
SHEET 4 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		133
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:12:38
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_WHITE_04.dgn



LOOKING NORTH ON SL 13 (S WW WHITE RD)



LOOKING SOUTH ON SL 13 (S WW WHITE RD)

SL 13 (CSJ: 0521-01-056)

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

SL 13 (S WW WHITE RD)
Z-CROSSING ELEVATIONS

SHEET 5 OF 5

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		134
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:12:41
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA • \1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_WHITE_05.dgn

EXISTING TRAFFIC SIGNAL HEADS

1 WAY, 3 SECTION VERTICAL

B, C, E, F, G, I, J, K, L, M

1 WAY, 3 SECTION VERTICAL

A, D, H, K

PEDESTRIAN SIGNAL HEAD

E1, E2, E3, E4, E5, E6, E7, E8

EXISTING PEDESTRIAN SIGNS AND PUSH BUTTONS

PUSH BUTTON FOR

PB2, PB4, PB6, PB8

PUSH BUTTON FOR

PB1, PB3, PB5, PB7

LEGEND

- EXIST SIGNAL HEAD AND DESIGNATION
- EXIST CONTROLLER
- EXIST SIGN
- EXIST SIGNAL POLE
- EXIST SPAN WIRE
- EXIST SERVICE POLE
- EXIST VIVDS
- EXIST LUMINAIRE
- EXIST ROAD SIGN
- EXIST SIGNAL/PEDESTAL POLE WITH PEDESTRIAN SIGNALS AND PUSHBUTTONS
- OVERHEAD ELECTRIC
- DIRECTION OF TRAFFIC FLOW
- EXISTING POWER POLE

COMERICA BANK / SAWS

POLE A

CIRCLE K

POLE B

SHOPPING CENTER

POLE D

POPEYES

POLE C

EXIST ROW

EXIST ROW

EXIST ROW

EXIST ROW

EXIST ROW

EXIST ROW

EXISTING PAVEMENT MARKINGS

EXISTING PAVEMENT MARKINGS

FM 1346 (E HOUSTON ST)

(POSTED SPEED = 40 MPH)

SL 13 (S WW WHITE RD)

(POSTED SPEED = 40 MPH)

FARM 1346 ROAD

LOOP 13

DO NOT ENTER

YIELD

LANE ENDS MERGE LEFT

EXISTING SIGNS MOUNTED ON SPAN WIRE

E 4500 HOUSTON 4000

S4, S8

S 400 WW WHITE 500

S2, S6

DON'T BLOCK THE BOX

S1, S3, S5, S7

NOTES TO CONTRACTOR:
1. UPON OPERATION OF THE NEW TRAFFIC SIGNAL, REMOVE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT AND MATERIALS THAT WILL BE NO LONGER NEEDED INCLUDING, BUT NOT LIMITED TO, CONTROLLER CABINET & FOUNDATION, GROUND BOXES, PED SIGNALS, SPAN WIRES & CABLES, VISIBLE RMC. SERVICE POLE, YIELD SIGNS/"DO NOT ENTER" SIGNS AND POSTS, ETC.

CSJ 0521-01-055

0 20' 40'

SCALE: 1" = 40'

STATE OF TEXAS
FEDERICO J. MENDOZA
63311
REGISTERED PROFESSIONAL ENGINEER

4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR

F-12040

Texas Department of Transportation

SL 13 AT FM 1346

SL 13 (S WW WHITE RD) AT FM 1346 (HOUSTON ST) EXISTING SIGNAL LAYOUT

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		135
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

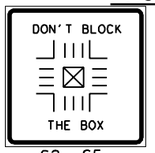
D1903647X.04

PENTABLE: $PENTBL.S$

PLOTDRIVER: pdfv8.plt

9:34:06 AM
4/19/2022
P:_V-TPD\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\08 signal\C_HOUSTON ST_WW WHITE BLVD_SIG_Condition.dgn

PROPOSED SIGNS



S2, S5, S8, S11

S6, S12

S3, S9

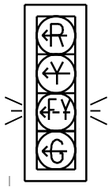
R10-3eL
9" X 15"
PB1, PB2, PB3, PB5, PB8

R10-3eR
9" X 15"
PB4, PB6, PB7

R10-17T
30" X 30"
S1, S4, S7, S10

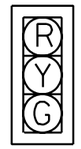
PROPOSED SIGNAL HEADS

4-SECTION VERTICAL 12" SIGNAL HEAD



A, D, H, K

3-SECTION VERTICAL 12" SIGNAL HEAD



B, C, E, F, G, I, J, L, M, N

PEDESTRIAN SIGNAL HEAD

W1, W2, W3, W4, W5, W6, W7, W8

LEGEND

X	PROPOSED SIGNAL HEAD
WX	PROPOSED PED SIGNAL
PBX	PROPOSED PUSH BUTTON
	PROPOSED CONTROLLER CABINET ITS TYPE 340 W/ BBU AND GPS
SX	PROPOSED OVERHEAD SIGN
PX	POLE NUMBER
	PROPOSED MAST ARM SIGNAL POLE
	PROPOSED PEDESTRIAN POLE
RX	PROP RADAR DETECTOR
	PROPOSED CONDUIT (TRENCH)
	PROPOSED CONDUIT (BORE)
	PROPOSED GROUND BOX
	PROPOSED GROUND BOX W/APRON
	PROP LUMINAIRE ARM
	PROP ELECTRICAL SERVICE METER
	PROPOSED ELECTRICAL SERVICE
	TRAFFIC FLOW
	PROP ADVANCE DETECTION ZONE
	PROP PRESENCE DETECTION ZONE
25	PROPOSED CABLE RUN

SERVICE SOURCE FROM EXIST. PP
PROP. SERVICE POLE K
PROP. CONTROLLER
INSTALL 2 TY D GROUND BOXES
PROP. 65' MAST ARM POLE C
PROP. 50' MAST ARM POLE A
POLE A
POLE B
POLE D
POLE E
POLE F
POLE G
POLE H
POLE I
POLE J
PROP. 55' MAST ARM POLE F
EXIST ROW
SL 13 (S WW WHITE RD)
FM 1346 (HOUSTON ST)
Ø 1
Ø 2
Ø 3
Ø 4
Ø 5
Ø 6
Ø 7
Ø 8
54+00
55+00
56+00
132+00
133+00
134+00
135+00

NOTES:

1. LOCATION OF TRAFFIC SIGNAL POLES, CONTROLLER ASSEMBLIES, AND ELECTRICAL SERVICE SHALL BE VERIFIED AND APPROVED BY COSA PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL SUPPLY AND INSTALL THE ADDRESS IN PERMANENT NUMBER AND LETTERS TO THE STREET SIDE OF THE SERVICE ENCLOSURE, SID ADDRESS SHALL ALSO BE RECOREDED AND GIVEN TO THE CITY OF SAN ANTONIO INSPECTOR FOR THE CITY'S RECORDS.
2. SIDEWALK SHALL BE EXTENDED UP TO THE MAST ARM POLES, AS NEEDED, TO PROVIDE PEDESTRIAN ACCESS TO THE PEDESTRIAN PUSH BUTTONS.
3. THE TOP OF ALL SIGNAL POLE FOUNDATIONS SHALL BE INSTALLED FLUSH WITH THE SIDEWALK, FINISH SURFACE, OR AS DIRECTED BY THE TRAFFIC ENGINEER. IF THE POLE IS NOT ADJACENT TO A SIDEWALK OR FINISH SURFACE, THE TOP OF THE FOUNDATION SHALL BE 3" ABOVE THE GROUND SURFACE.
4. ALL ILSN SIGNS SHALL BE INSTALLED ON THE ILSN MAST ARM AS DIRECTED BY THE ENGINEER.
5. AN ADDITIONAL 2" SCHEDULE 80 PVC SHALL BE INSTALLED AT EACH POLE FOUNDATION STUBBED OUT 1' FROM THE FACE OF THE FOUNDATION. STUB OUTS SHALL BE APPROPIATELY CAPPED BELOW GRADE FOR FUTURE USE.
6. MINIMUM CLEARANCE OF 10' RADIUS FROM NEUTRAL AND 20' RADIUS FROM PRIMARY SHALL BE MAINTAINED BETWEEN PROPOSED TRAFFIC SIGNAL EQUIPMENT, INCLUDING SPAN WIRE, AND EXISTING OVERHEAD ELECTRICAL LINES.
7. CONTRACTOR SHALL CONTACT THE CITY TRAFFIC ENGINEER AT (210)207-4583 A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION, AND COORDINATE WITH THE CITY REGARDING EXISTING COMMUNICATIONS EQUIPMENT.
8. CONTRACTOR SHALL CONTACT THE CITY TRAFFIC ENGINEER AT)210)207-4583 A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO THE TRAFFIC SIGNAL TURN-ON.

NOTES(CONT.):

9. EXISTING UTILITIES SHOWN ARE APPROXIMATE AND ARE BASED ON BEST AVAILABLE DATA. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, TYPE AND ELEVATION OF ALL UTILITIES SHOWN AND NOT SHOWN PRIOR TO CONSTRUCTION.
10. SEE EXISTING SUBSURFACE UTILITY MAP FOR ADDITIONAL UTILITY INFORMATION
11. CONTRACTOR MUST TAKE ALL STEPS NECESSARY TO PROTECT UTILITIES DURING CONSTRUCTION.

CSJ 0521-01-055

0 20' 40'
SCALE: 1" = 40'

STATE OF TEXAS
FEDERICO J. MENDOZA
63311
REGISTERED
PROFESSIONAL ENGINEER

4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

Texas Department of Transportation

SL 13 AT FM 1346

SL 13 (S WW WHITE RD) AT FM 1346 (HOUSTON ST) PROPOSED SIGNAL LAYOUT

SHEET 1 OF 4

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		136
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043, ETC	SL 368, ETC

D190364TX.04

CSJ 0521-01-055

QUANTITY SUMMARY FOR SHEET 1 OF 4				
ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
416	6034	DRILL SHAFT (TRF SIG POLE) (48 IN)	LF	88
500	6001	MOBILIZATIONS	EA	1
502	6001	BARRICADES	MO	4
618	6046	CONDT (PVC) (SCH 80) (2")	LF	290
618	6053	CONDT (PVC) (SCH 80) (3")	LF	5
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	420
620	6009	ELEC CONDR (NO.6) BARE	LF	710
621	6002	TRAY CABLE (3 CONDR) (12 AWG)	LF	630
624	6009	GROUND BOX TY D (162922)	EA	5
628	6164	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	EA	1
680	6003	INSTALL HWY TRF SIG (SYSTEM)	EA	1
680	6004	REMOVING TRAFFIC SIGNALS	EA	1
682	6001	VEH SIG SEC (12")LED(GRN)	EA	10
682	6002	VEH SIG SEC (12")LED(GRN ARW)	EA	4
682	6003	VEH SIG SEC (12")LED(YEL)	EA	10
682	6004	VEH SIG SEC (12")LED(YEL ARW)	EA	4
682	6005	VEH SIG SEC (12")LED(RED)	EA	10
682	6006	VEH SIG SEC (12")LED(RED ARW)	EA	4
682	6018	PED SIG SEC (LED) (COUNTDOWN)	EA	8
682	6049	BACKPLATE W/REFL BRDR(4 SEC)	EA	4
682	6060	BACKPLATE W/REFL BRDR(3 SEC)	EA	10
684	6030	TRF SIG CBL (TY A)(14 AWG)(4 CONDR)	LF	770
684	6035	TRF SIG CBL (TY A)(14 AWG) (9 CONDR)	LF	1740
684	6049	TRF SIG CBL (TY A)(16 AWG) (3 CONDR)	LF	600
686	6056	INS TRF SIG PL AM(S)1 ARM(50')LUM&ILSN	EA	2
686	6060	INS TRF SIG PL AM(S)1 ARM(55')LUM&ILSN	EA	1
686	6068	INS TRF SIG PL AM(S)1 ARM(65')LUM&ILSN	EA	1
687	6001	PED POLE ASSEMBLY	EA	6
688	6001	PED DETECT PUSH BUTTON (APS)	EA	8
688	6003	PED DETECTOR CONTROLLER UNIT	EA	1
6292	6001	RVDS(PRESENCE DETECTION ONLY)	EA	4

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

Texas Department of Transportation

SL 13 AT FM 1346

SL 13 (S WW WHITE RD) AT FM 1346 (HOUSTON ST) PROPOSED SIGNAL LAYOUT

SHEET 2 OF 4

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		137
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D1903647X.04

CSJ 0521-01-055

CONDUCTOR & CONDUIT SCHEDULE

T = TRENCHED B = BORED R = RIGID METAL I = INSTALL E = EXISTING TS = TEMP SIGNAL SP = SPAN WIRE	CONDUIT / SPAN RUN NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	CONDUIT STATUS	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	NUMBER OF CONDUITS	3	1	3	1	3	3	1	1	3	3	1	3	3	1	1
	CONDUIT SIZE IN INCHES	2	2	3	2	3	2	2	2	3	2	2	3	2	2	2
	CONDUIT / SPAN LENGTH (FT)	20	20	140	5	5	5	20	35	155	20	5	125	20	10	5
	RUN TYPE	T	T	B	T	T	T	T	T	B	T	T	B	T	T	T
#6 THHN/THWN	120 POWER HOT & COMMON				2											
BARE BOND GROUND	#6 BARE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9-CONDUCTOR #14 CABLE	o7, o4 - SIGNAL - POLE A	2		2		2										
	o1, o6 - SIGNAL - POLE C					2	2									
	o3, o8 - SIGNAL - POLE F					2				2	2					
	o2, o5, -SIGNAL - POLE H					2				2			2	2		
9-CONDUCTOR #14 CABLE	o2 PH - POLE D					1				1	1					
	o2 PH - POLE A					1			1							
	o4 PH - POLE E					1				1			1		1	
	o4 PH - POLE B					1				1		1				
	o6 PH - POLE G	1		1		1										
	o6 PH - POLE F					1				1			1			1
	o8 PH - POLE I					1		1								
	o8 PH - POLE A		1	1		1										
3-CONDUCTOR #16 CABLE	o2 PPB - POLE F					1				1	1					
	o2 PPB - POLE E					1			1							
	o4 PPB - POLE I					1				1			1		1	
	o4 PPB - POLE G					1				1		1				
	o6 PPB - POLE A	1		1		1										
	o6 PPB - POLE J					1				1			1			1
	o8 PPB - POLE D					1		1								
	o8 PPB - POLE B		1	1		1										
6-CONDUCTOR COMM & POWER CABLE	o7, 'o4 RPD, - POLE A	1		1		1										
	o1, 'o6 RPD - POLE C					1	1									
	o3, 'o8 RPD - POLE F					1				1	1					
	o5, 'o2 RPD - POLE H					1				1			1	1		
3-CONDUCTOR #12 TRAY CABLE	LUMINAIRE - POLE A	1		1		1										
	LUMINAIRE - POLE C					1	1									
	LUMINAIRE - POLE F					1				1	1					
	LUMINAIRE - POLE H					1				1			1	1		
4-CONDUCTOR #14 XHHW	ILSN - POLE A	1		1		1										
	ILSN - POLE C					1	1									
	ILSN - POLE F					1				1	1					
	ILSN - POLE H					1				1			1	1		

NOTE: COMMUNICATION CABLES, LUMINAIRE CABLES AND SIGNAL CABLES MUST BE IN SEPARATE CONDUITS.

STATE OF TEXAS
FEDERICO J. MENDOZA
63311
REGISTERED
PROFESSIONAL ENGINEER

4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

Texas Department of Transportation

SL 13 AT FM 1346

SL 13 (S WW WHITE RD) AT FM 1346 (HOUSTON ST) PROPOSED SIGNAL LAYOUT

SHEET 3 OF 4

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		138
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D1903647X.04

PENTABLE: $PENTBL.S$
PLOTDRIVER: pdrv8.plt
9:34:24 AM
4/19/2022
P:_V-TPD\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\08 signal\C_HOUSTON ST_WW WHITE BLVD_P_SIG02A.dgn

P:_V-TPD\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\08 signal\C_HOUSTON ST_WW WHITE BLVD_P_SIG02A.dgn

ELECTRICAL SERVICE DATA

ELEC SERVICE POLE NO	SERVICE POLE DESCRIPTION (SEE ED(5)-(14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO/SIZE	SAFETY SWITCH AMPS	MAIN CKT BKR POLE/AMPS	TWO-POLE CONTACTOR AMPS	PANELBOARD/LOAD CENTER AMP RATING	CIRCUIT NO	BRANCH CKT BKR POLE/AMPS	CKT AMP LOAD	SERVICE KVA LOAD
K	ELC SRV TY D 120/240 070(NS)AL(E)PS(U)	1 1/4'	3/#6	N/A	2P/70	30	100	A - TRF SIG	1P/50	40	6.2
								B - LUM	2P/15	6	

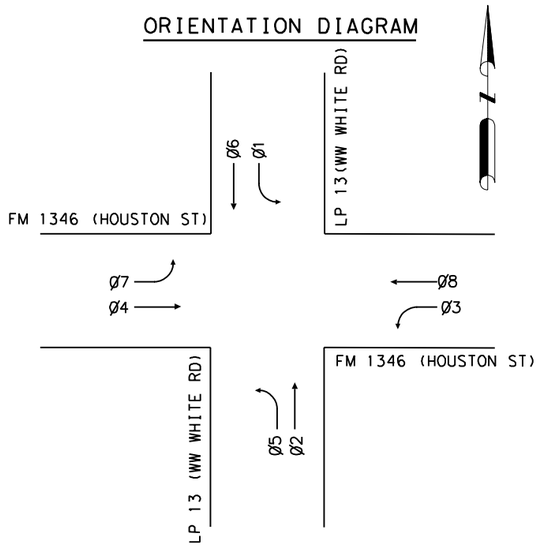
EQUIPMENT SCHEDULE

POLE	DESCRIPTION	FDTN. TYPE	DRILL SHAFT LENGTH (FT)
A	PROP 30'' HIGH LMA STEEL POLE W/ 50' MAST ARM, (1) 8' LUMINAIRE ARM, (1) LED COUNTDOWN PED SIGNAL HEAD, (1) APS PED PUSH BUTTON, (1) RPD.	48-A	22
B	PROP 10' HIGH PEDESTAL POLE W/ (1) LED COUNTDOWN PEDESTRIAN HEAD AND (1) APS PED PUSH BUTTON.	24-A	6
C	PROP 30'' HIGH LMA STEEL POLE W/ 65' MAST ARM, (1) 8' LUMINAIRE ARM, (1) RPD.	48-A	22
D	PROP 10' HIGH PEDESTAL POLE W/ (1) LED COUNTDOWN PEDESTRIAN HEAD AND (1) APS PED PUSH BUTTON.	24-A	6
E	PROP 10' HIGH PEDESTAL POLE W/ (1) LED COUNTDOWN PEDESTRIAN HEAD AND (1) APS PED PUSH BUTTON.	24-A	6
F	PROP 30'' HIGH LMA STEEL POLE W/ 55' MAST ARM, (1) 8' LUMINAIRE ARM, (1) LED COUNTDOWN PED SIGNAL HEAD, (1) APS PED PUSH BUTTON, (1) RPD.	48-A	22
G	PROP 10' HIGH PEDESTAL POLE W/ (1) LED COUNTDOWN PEDESTRIAN HEAD AND (1) APS PED PUSH BUTTON.	24-A	6
H	PROP 30'' HIGH LMA STEEL POLE W/ 50' MAST ARM, (1) 8' LUMINAIRE ARM, (1) RPD.	48-A	22
I	PROP 10' HIGH PEDESTAL POLE W/ (1) LED COUNTDOWN PEDESTRIAN HEAD AND (1) APS PED PUSH BUTTON.	24-A	6
J	PROP 10' HIGH PEDESTAL POLE W/ (1) LED COUNTDOWN PEDESTRIAN HEAD AND (1) APS PED PUSH BUTTON.	24-A	6
K	PROPOSED ELECTRICAL SERVICE POLE		

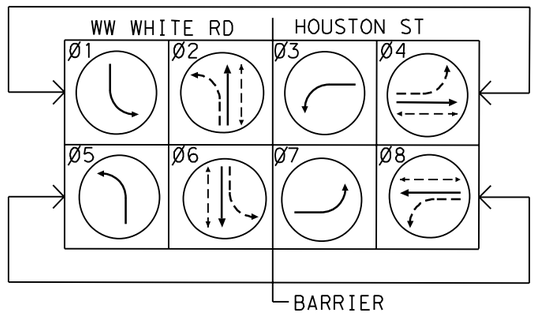
VEHICLE DETECTOR DATA

RADAR ID	APPROACH	DESCRIPTION	MOUNTING LOCATION	PHASE
R1	EB HOUSTON ST	RADAR PRESENCE DETECTOR (RPD)	POLE A	7,4
R2	SB WW WHITE RD	RADAR PRESENCE DETECTOR (RPD)	POLE C	1,6
R3	WB HOUSTON ST	RADAR PRESENCE DETECTOR (RPD)	POLE F	3,8
R4	NB WW WHITE	RADAR PRESENCE DETECTOR (RPD)	POLE H	2,5

ORIENTATION DIAGRAM



PHASING DIAGRAM



CSJ 0521-01-055

4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR

F-12040

Texas Department of Transportation

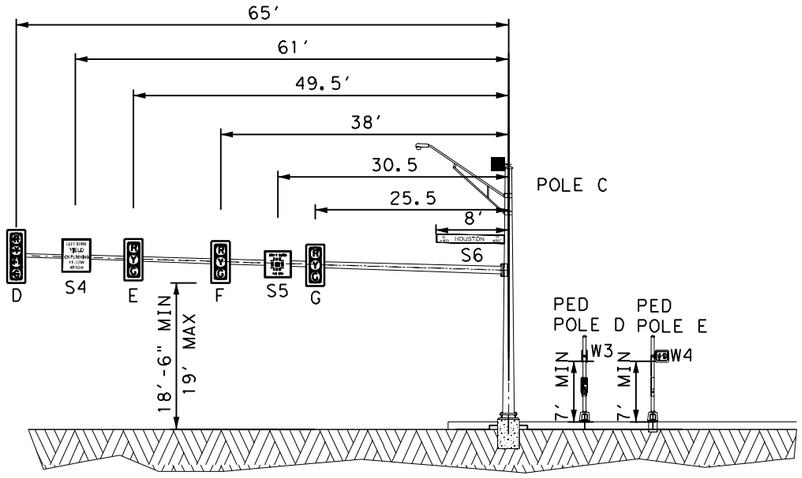
SL 13 AT FM 1346

SL 13 (S WW WHITE RD) AT FM 1346 (HOUSTON ST) PROPOSED SIGNAL LAYOUT

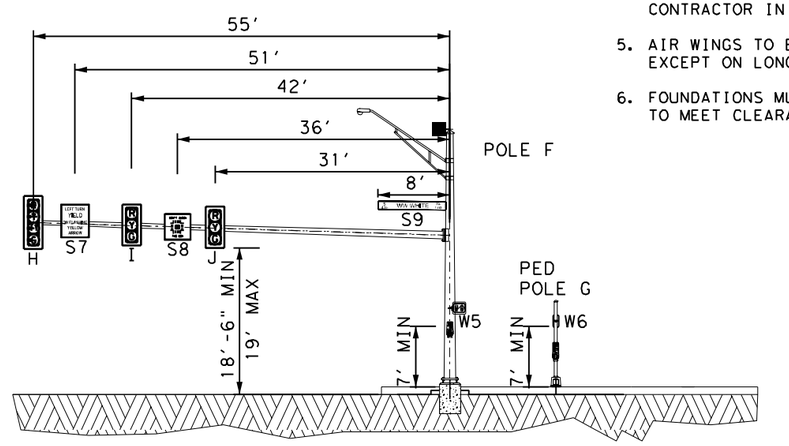
SHEET 4 OF 4

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		139
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

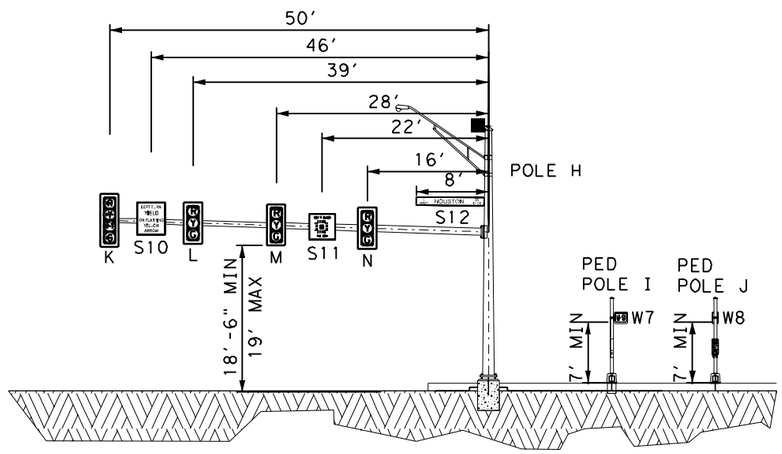
D190364TX.04



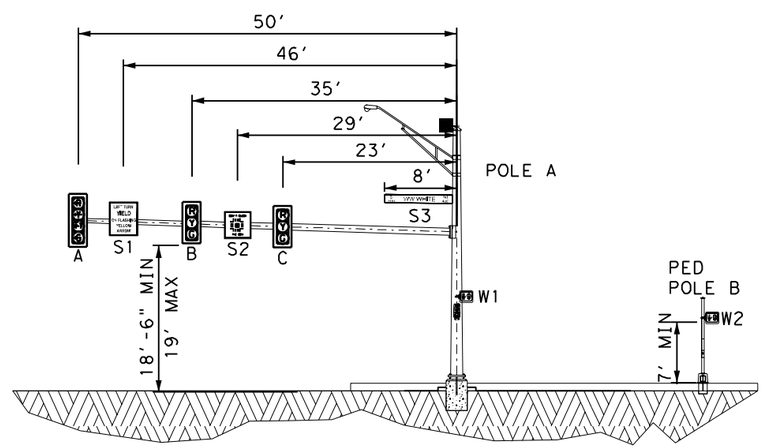
LOOKING NORTH ON WW WHITE RD
AT HOUSTON ST



LOOKING EAST ON HOUSTON ST
AT WW WHITE RD



LOOKING SOUTH ON WW WHITE RD
AT HOUSTON ST



LOOKING WEST ON HOUSTON ST
AT WW WHITE AVE

NOTES:

1. SEE SUMMARY OF PERMANENT TRAFFIC SIGNAL QUANTITIES AND PROPOSED SIGNAL SHEETS FOR SIGN SCHEDULE AND POLE DESCRIPTION.
2. DISTANCES SHOWN ALONG MAST ARMS ARE APPROXIMATE AND WILL BE ADJUSTED IN THE FIELD AS NEEDED.
3. LOCATION OF POLES ARE APPROXIMATE. ANY CHANGES WILL BE APPROVED BY THE FIELD ENGINEER.
4. MAST ARM ATTACHMENT HEIGHT WILL BE CALCULATED BY THE CONTRACTOR IN THE FIELD AND APPROVED BY THE ENGINEER.
5. AIR WINGS TO BE INSTALLED ON ARMS 40′ OR LONGER, EXCEPT ON LONG MAST ARMS.
6. FOUNDATIONS MUST BE ADJUSTED IN THE FIELD IN ORDER TO MEET CLEARANCE.

CSJ 0521-01-055

STATE OF TEXAS
FEDERICO J. MENDOZA
63311
REGISTERED
PROFESSIONAL ENGINEER

4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

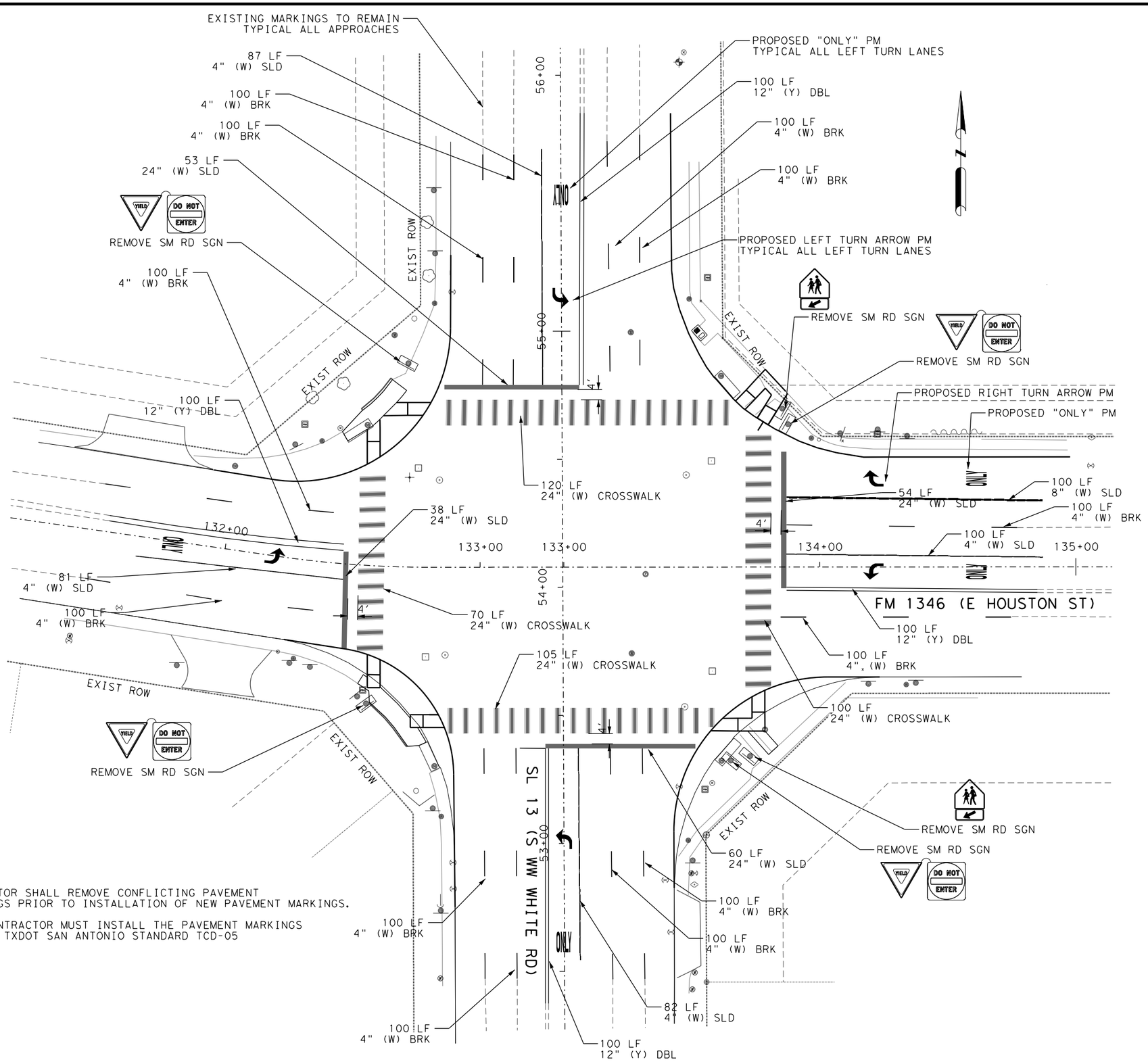
Texas Department of Transportation

SL 13 AT FM 1346

SL 13 (S WW WHITE RD) AT FM 1346 (HOUSTON ST) ELEVATIONS

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		140
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043, ETC	SL 368, ETC

D1903647X.04



LEGEND:

SM RD SN SUP&AM TO BE REMOVED

NOTES:

1. CONTRACTOR SHALL REMOVE CONFLICTING PAVEMENT MARKINGS PRIOR TO INSTALLATION OF NEW PAVEMENT MARKINGS.
2. THE CONTRACTOR MUST INSTALL THE PAVEMENT MARKINGS AS PER TXDOT SAN ANTONIO STANDARD TCD-05

CSJ 0521-01-055

0 20′ 40′

SCALE: 1" = 40′

STATE OF TEXAS
FEDERICO J. MENDOZA
63311
REGISTERED
PROFESSIONAL ENGINEER

4/20/2022

NO.	DATE	REVISION	APPROV.

CONSOR

F-12040

Texas Department of Transportation

SL 13 AT FM 1346

SL 13 (S WW WHITE RD) AT FM 1346 (HOUSTON ST) SIGNING & PAVEMENT MARKINGS

SHEET 1 OF 2

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		141
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D1903641X.04

PENTABLE: $PENTBLS$

PLOTDRIVER: pdfv8.plt

CSJ 0521-01-055

QUANTITY SUMMARY FOR SHEET 1 OF 2				
ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
644	6076	REMOVE SM RD SN SUP&AM	EA	6
666	6036	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	100
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	640
666	6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	5
666	6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	5
666	6141	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)	LF	400
666	6167	REFL PAV MRK TY II (W) 4" (BRK)	LF	1200
666	6170	REFL PAV MRK TY II (W) 4" (SLD)	LF	350
666	6224	PAVEMENT SEALER 4"	LF	1550
666	6226	PAVEMENT SEALER 8"	LF	100
666	6228	PAVEMENT SEALER 12"	LF	400
666	6230	PAVEMENT SEALER 24"	LF	640
666	6231	PAVEMENT SEALER (ARROW)	EA	5
666	6232	PAVEMENT SEALER (WORD)	EA	5
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1550
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	100
677	6005	ELIM EXT PAV MRK & MRKS (12")	LF	400
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	640
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	5
677	6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	5
678	6001	PAV SURF PREP FOR MRK (4")	LF	1550
678	6004	PAV SURF PREP FOR MRK (8")	LF	100
678	6006	PAV SURF PREP FOR MRK (12")	LF	400
678	6008	PAV SURF PREP FOR MRK (24")	LF	640

NO.	DATE	REVISION	APPROV.

CONSOR

F-12040

Texas Department of Transportation

SL 13 AT FM 1346

SL 13 (S WW WHITE RD) AT FM 1346 (HOUSTON ST)
SIGNING & PAVEMENT MARKINGS

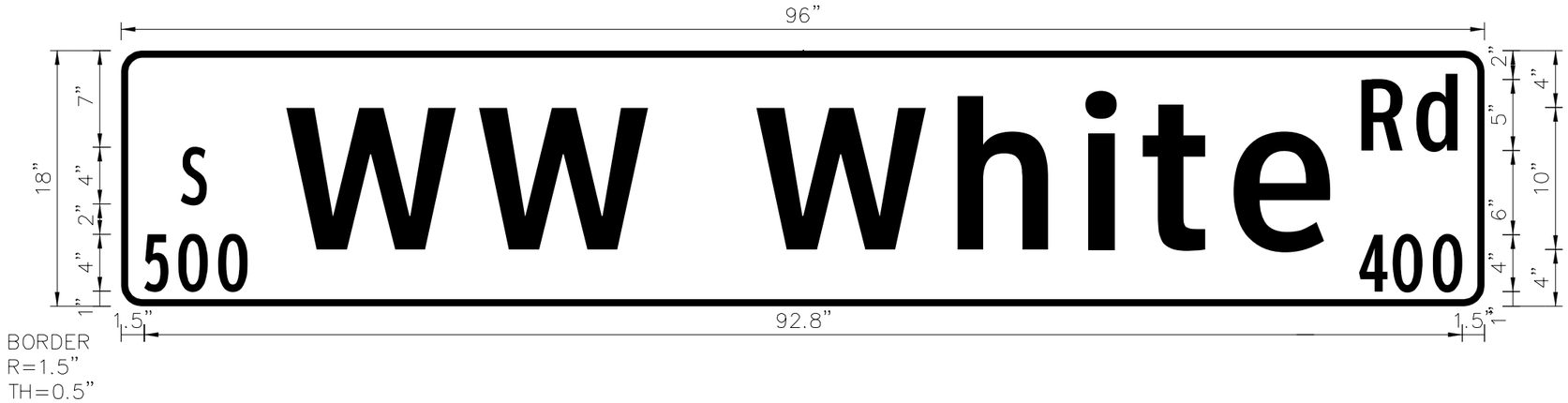
SHEET 2 OF 2

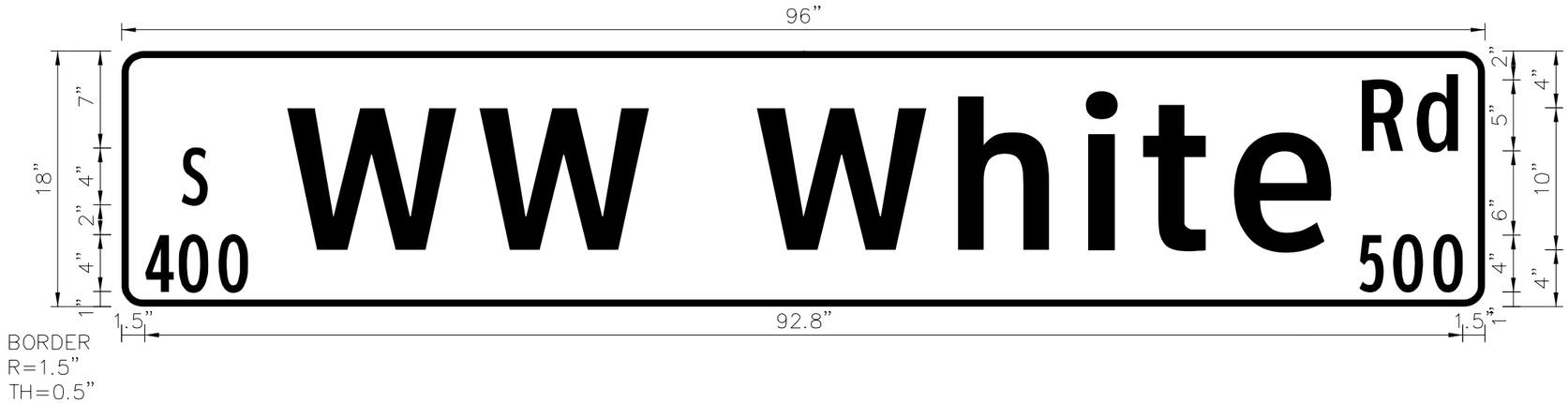
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		142
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D190364TX.04

2:48:17 PM
4/20/2022
P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\10 sign mark\C_LPT3_S_QSPM01.dgn

4/20/2022 2:48:17 PM P:_V-TPD\Projects\TX\2019\D190364TX.04\1_Design\500_CADD\dgn\02 Plan Files\10 sign mark\C_LPT3_S_QSPM01.dgn





NOTE:
CONTRACTOR TO SUBMIT SHOP DRAWINGS
FOR APPROVAL PRIOR TO FABRICATION OF THE ILSN

CSJ 0521-01-055

STATE OF TEXAS
FEDERICO J. MENDOZA
63311
REGISTERED
PROFESSIONAL ENGINEER

4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

Texas Department of Transportation

SL 13 AT FM 1346

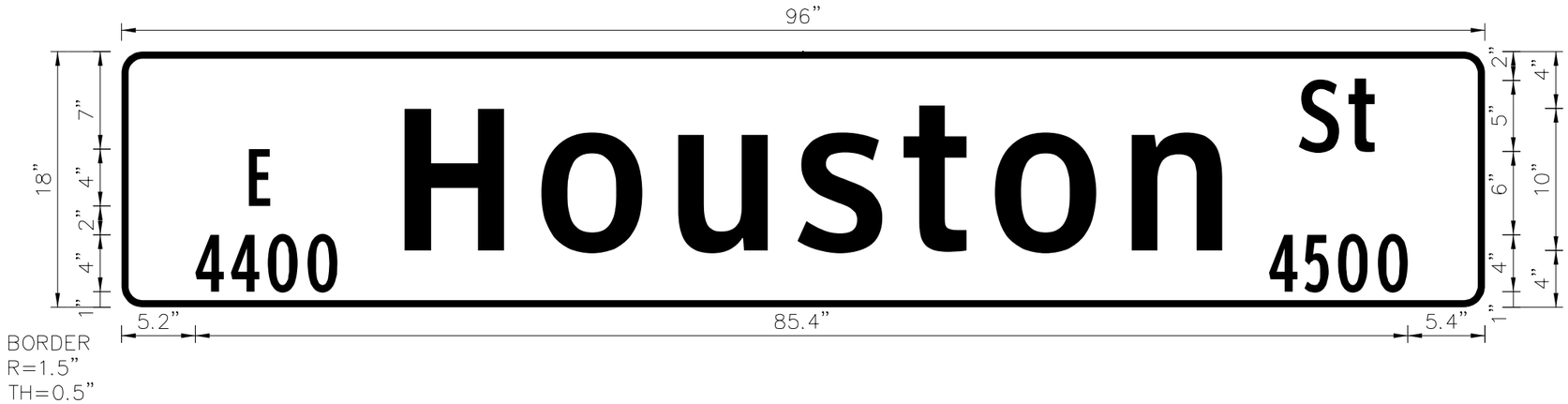
ILSN SIGN
DETAILS

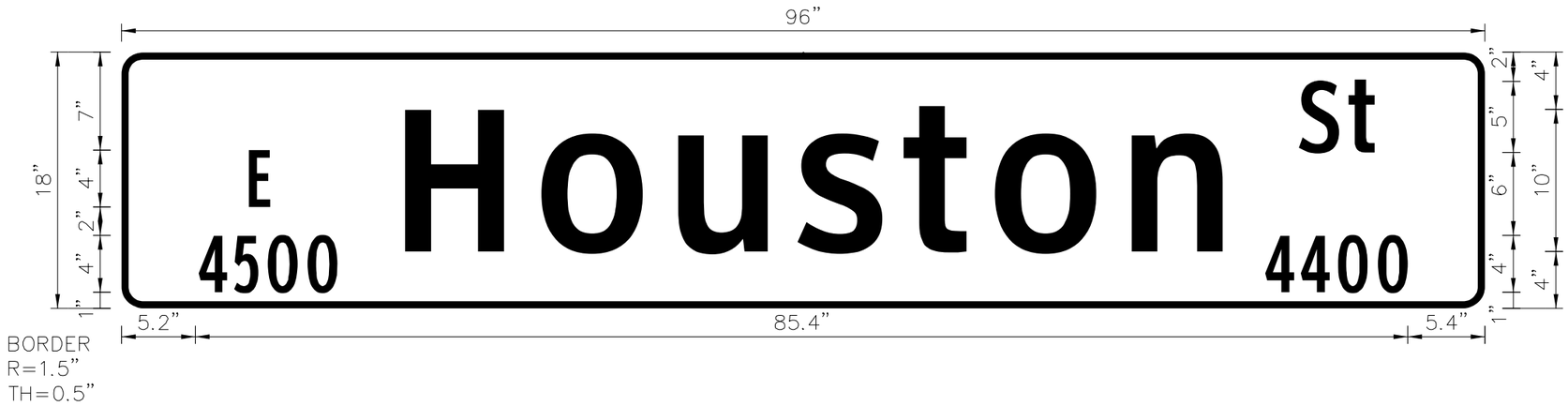
SHEET 1 OF 2

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		143
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D1903647X.04

PENTABLE: $PENTBL.S$
PLOTDRIVER: pdrv8.plt
3:40:01 PM
4/19/2022
P:_V-TPD\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\10 sign mark\C_LP13_S_SSD01.dgn
4/19/2022 3:40:01 PM P:_V-TPD\Projects\TX\2019\D1903647X.04\1_Design\500_CADD\dgn\02 Plan Files\10 sign mark\C_LP13_S_SSD01.dgn





NOTE:
CONTRACTOR TO SUBMIT SHOP DRAWINGS
FOR APPROVAL PRIOR TO FABRICATION OF THE ILSN

CSJ 0521-01-055

STATE OF TEXAS
FEDERICO J. MENDOZA
63311
REGISTERED
PROFESSIONAL ENGINEER

4/19/2022

NO.	DATE	REVISION	APPROV.

CONSOR
F-12040

Texas Department of Transportation

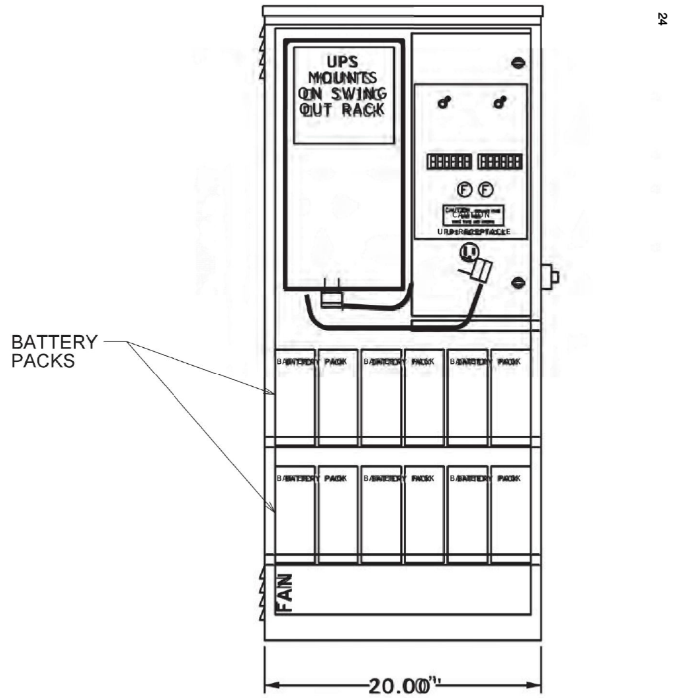
SL 13 AT FM 1346

ILSN SIGN
DETAILS

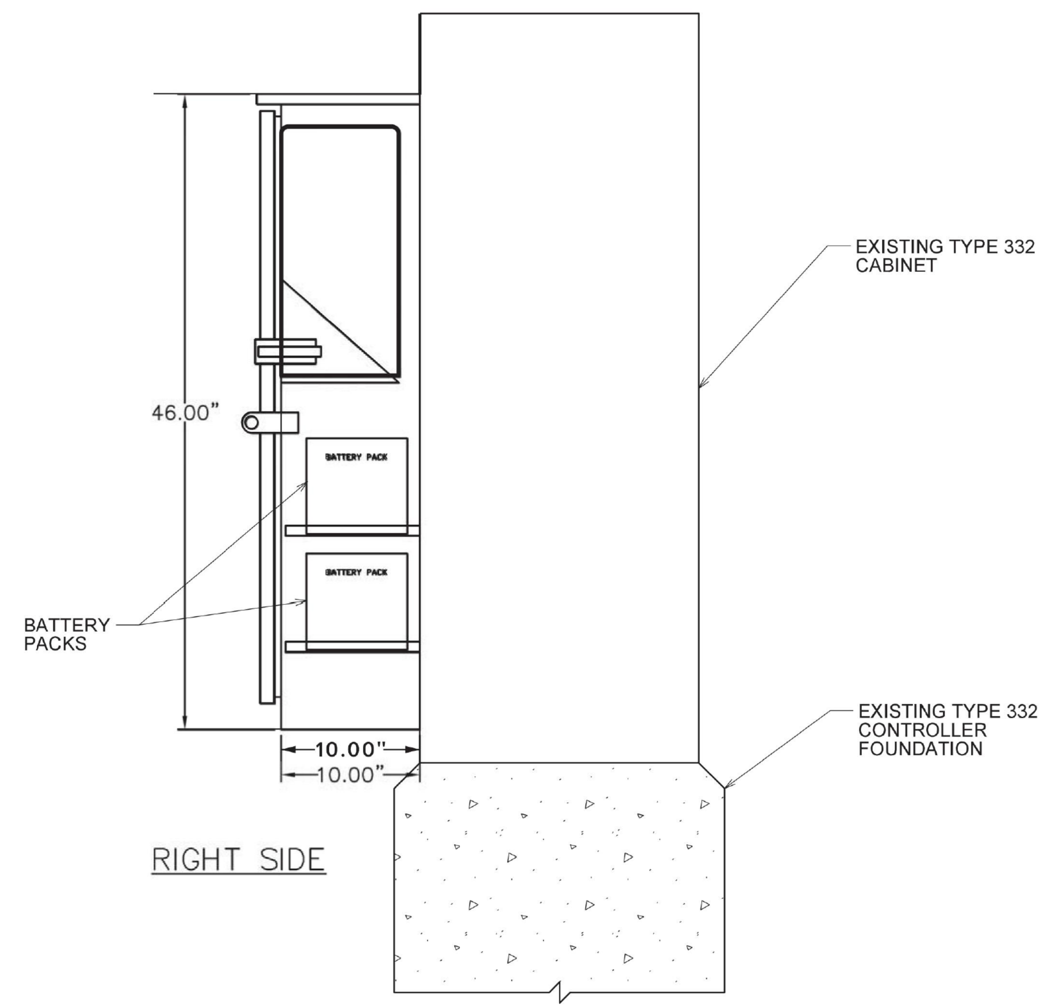
SHEET 2 OF 2

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		144
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

D1903647X.04



FRONT VIEW



RIGHT SIDE

NOTE: THIS DETAIL IS TO BE USED FOR RETROFIT OF EXISTING SIGNALS ONLY.

NTS

REV NO	DATE	DESCRIPTION	BY

GKW ENGINEERING
3463 MAGIC DR., SUITE 250
SAN ANTONIO, TEXAS 78229
210-582-5870 FAX 210-582-5872
WWW.GKW-INC.COM FIRM No. TX - 4532

CITY OF SAN ANTONIO
DEPARTMENT OF TRANSPORTATION & CAPITAL IMPROVEMENTS

BANDERA ROAD AT MAINLAND DRIVE IMPROVEMENTS
BATTERY BACKUP DETAIL

SHEET NO.: 1 OF 1
PROJECT NO.: DATE: 1/27/2015
DRWN BY: MAL DSGN BY: MAL CHKD BY: AFG SHEET: 26
FILE NAME: Bandera-Mainland-Battery Backup.dgn

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

FY 2022 HSIP

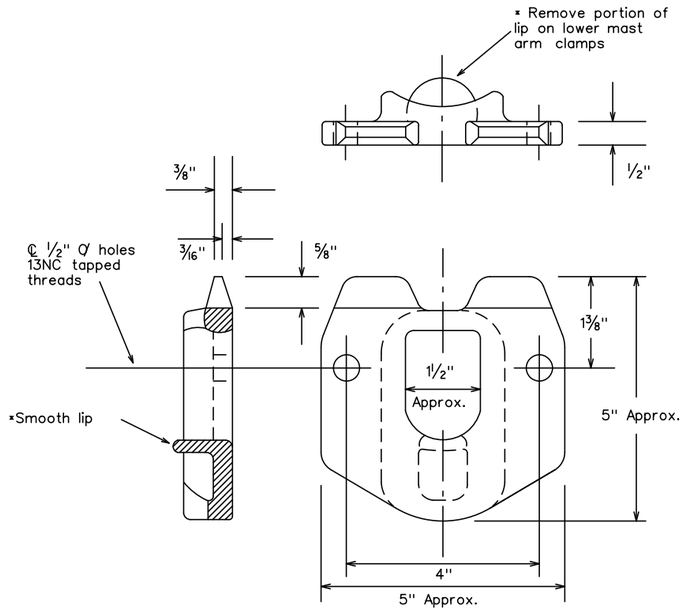
BATTERY BACKUP DETAIL

SHEET 1 OF 1

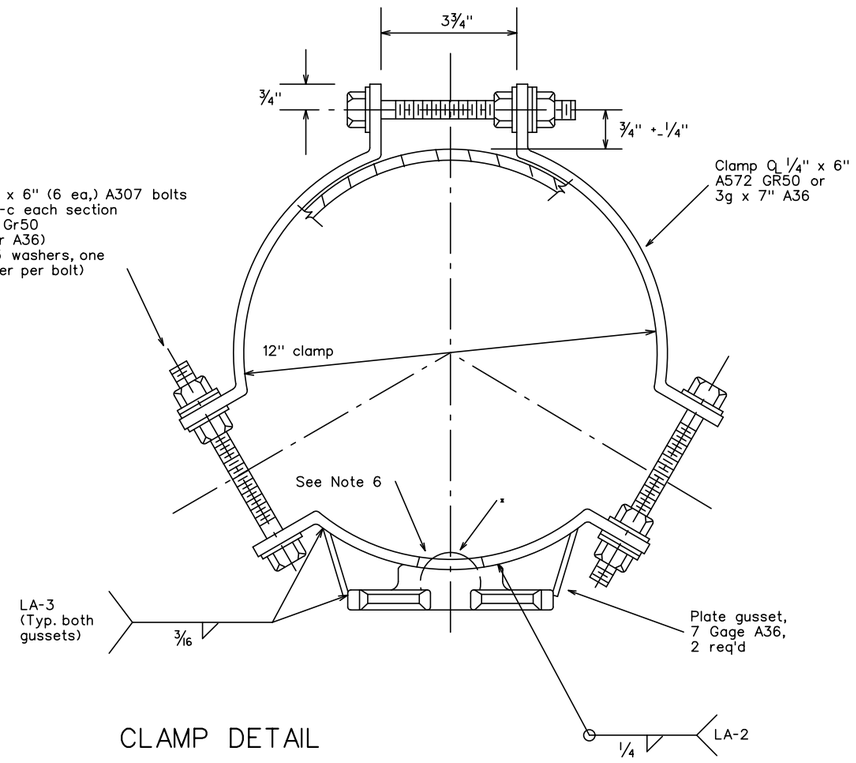
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		145
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:12:44
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_BBU.dgn

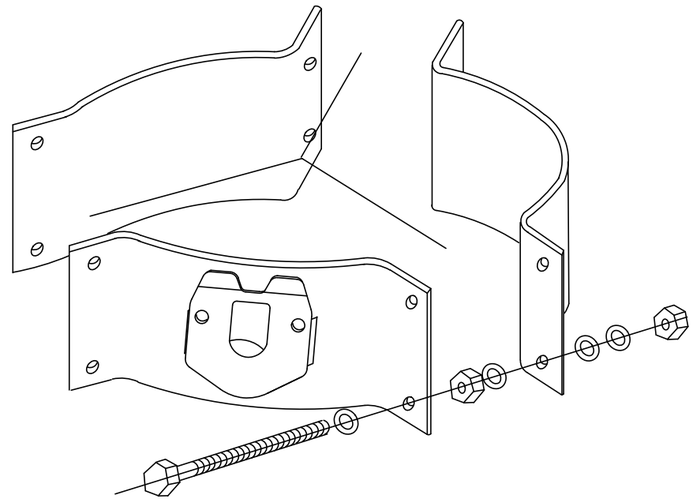
DATE: 4/19/2022 14:12:52
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\CFA-12.dgn



POLE SIMPLEX DETAILS



CLAMP DETAIL



PROJECTION

OTHER MATERIALS:

1. Pole simplex shall be ASTM A27 GR65-35 or A148 GR80-50 or A576 GR1021. ASTM A576 must be suitable for forging and also meet minimum tensile of 65ksi, minimum yield of 35ksi, and a minimum elongation of 22 percent in 2 inches.
2. Welded tabs and backplates shall be ASTM A-36 steel or better.
3. Nylon insert locknuts shall conform to ASTM A563.

GENERAL NOTES:

1. Materials and fabrication shall be in accordance with Standard Sheet "MA-C" 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 absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
2. All parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing". The throat of the Simplex shall be made free of all rough or sharp edges resulting from the galvanizing process.
3. Each simplex fitting shall be supplied with 2 ASTM A325 bolts, 1/2in. X 1 1/2in. and 2 lock washers. The bolts and lock washers shall be secured to the clamp with the other hardware items. The Fabricator shall ship clamp assembly together in a single package, including all bolts, nuts, and washers required for the clamp and simplex fitting.
4. 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 80 mph plus a 1.3 gust factor. Clamps are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq.ft.,12 ft. maximum arm length.
5. Each assembly shall consist of one upper piece simplex fitting having a smooth lip and one lower piece simplex fitting with the lip removed.
6. Approximately 2 in. diameter hole in upper mast arm clamp.

For 8.9 - 12 inch diameter Signal Poles
(Two req'd for each mast arm)

Texas Department of Transportation
Traffic Operations Division

CLAMP ON FITTING ASSEMBLY FOR LUMINAIRE MAST ARM

CFA-12

DN: KAB	CK: RES	DW: FDN	CK: CAL

REVISIONS
11-99
1-12

CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

DIST	COUNTY	SHEET NO.
SAT	BEXAR	146

PLOTTED: 4/19/2022 14:12:54 $$$SCALE$$$ BY: Justin.Kinne
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\ED(1)-14.dgn

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

FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
	REVISIONS	0016	08	043,ETC	SL 368,ETC
		DIST	COUNTY		SHEET NO.
		SAT	BEXAR		147

PLOTTED: 4/19/2022 14:12:57 $$$SCALE$$$ BY: Justin.Kinne
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\ED(3)-14.dgn

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.

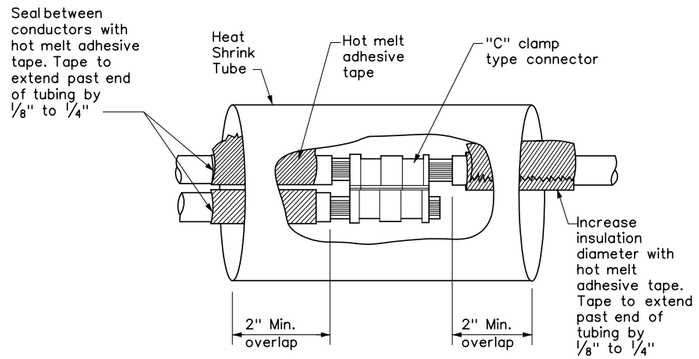
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

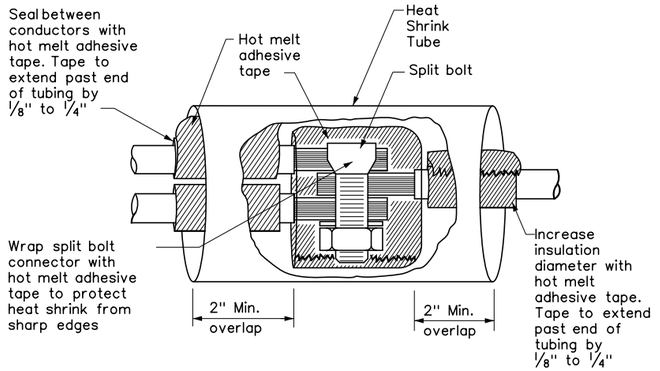
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

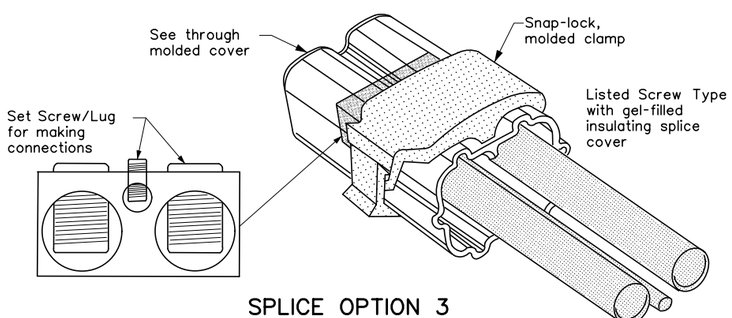
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, 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

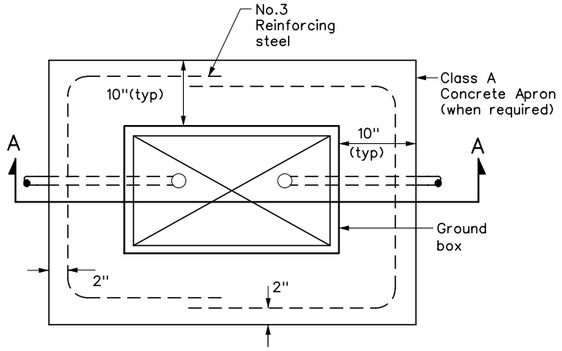
ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

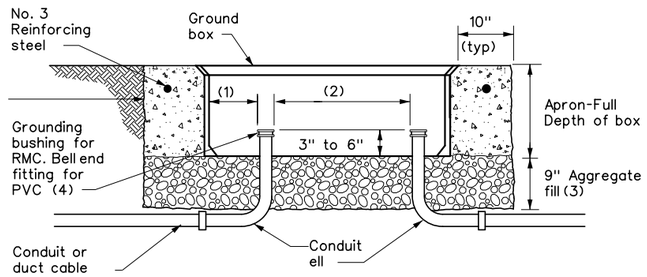
FILE: ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		148

71C

PLOTTED: 4/19/2022 14:13:00 $$$SCALE$$$ BY: Justin.Kinne
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\ED(4)-14.dgn



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 bushings.

(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 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.

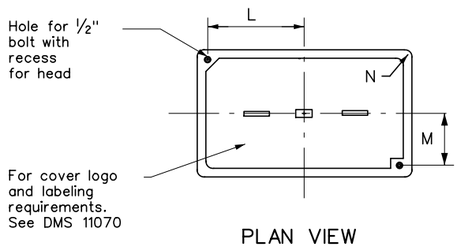
9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers 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.

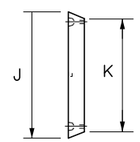
11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

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

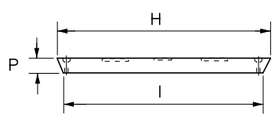
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS GROUND BOXES

ED(4)-14

FILE: ed4-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		149

71D

PLOTTED: 4/19/2022 14:13:02 $$$SCALE$$$ BY: Justin.Kinne
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\ED(5)-14.dgn

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	

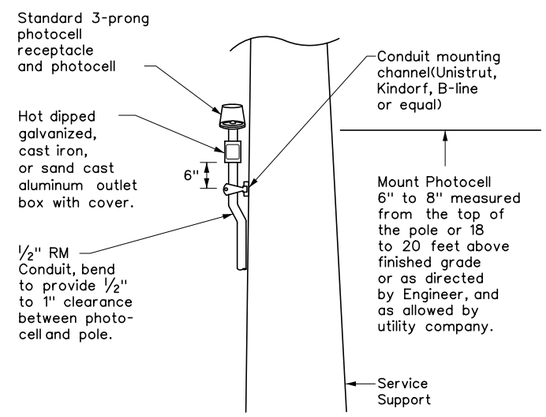
* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** 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

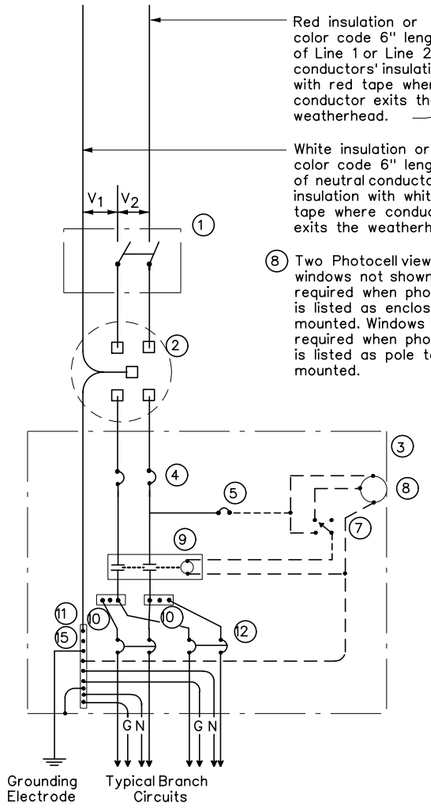
Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

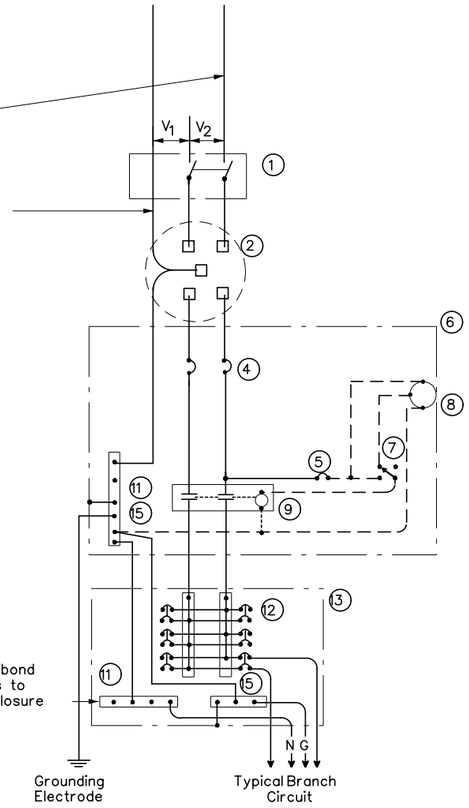
ED(5)-14

FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		150

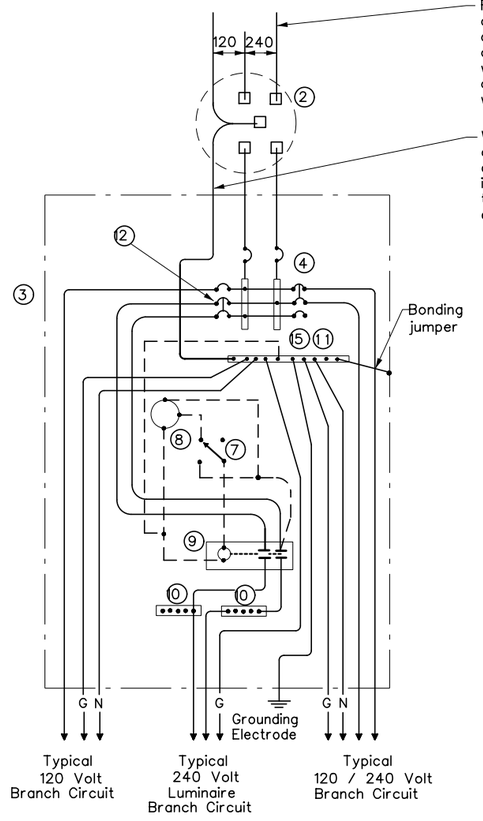
71E



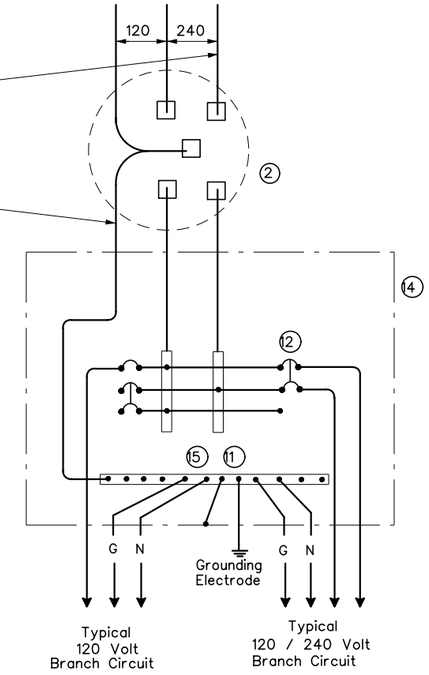
SCHEMATIC TYPE A
THREE WIRE



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

FILE: ed6-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		151

71F

PLOTTED: 4/19/2022 14:13:05 $$$$SCALE$$$$ BY: Justin.Kinne
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\ED(6)-14.dgn

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.

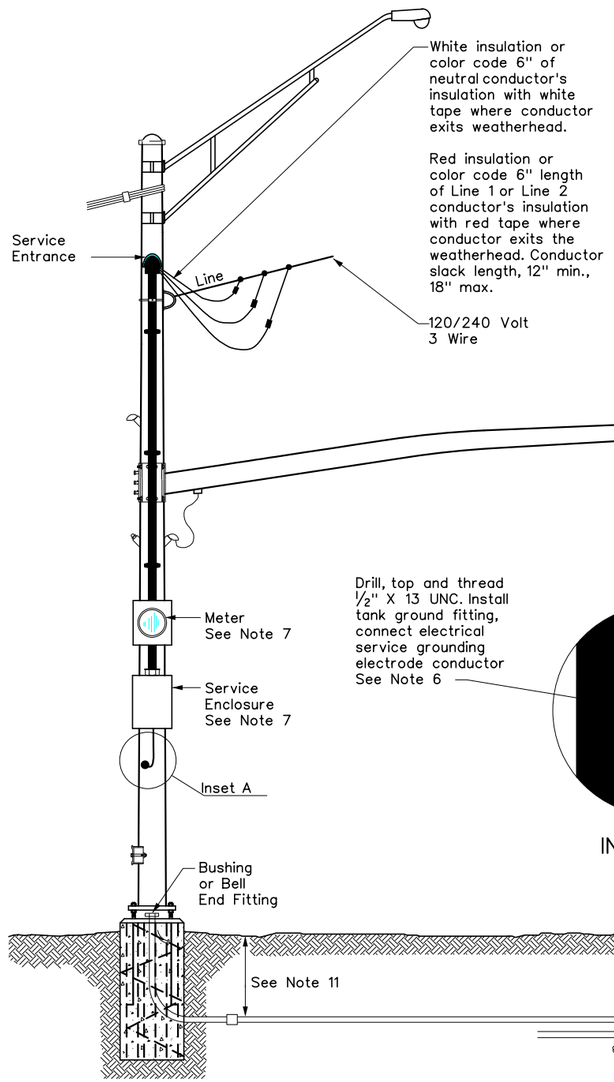
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt 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.

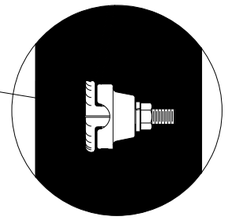
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits 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".

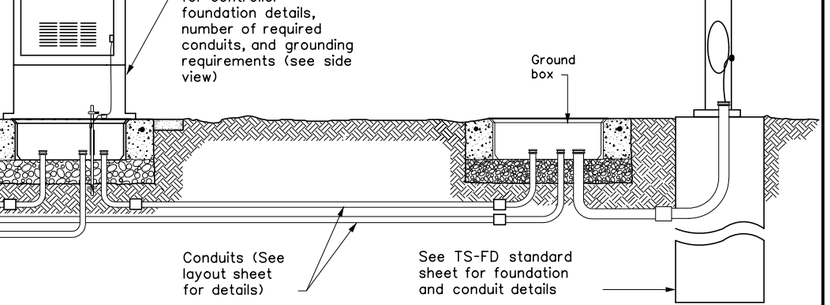


SIGNAL POLE WITH SERVICE

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.

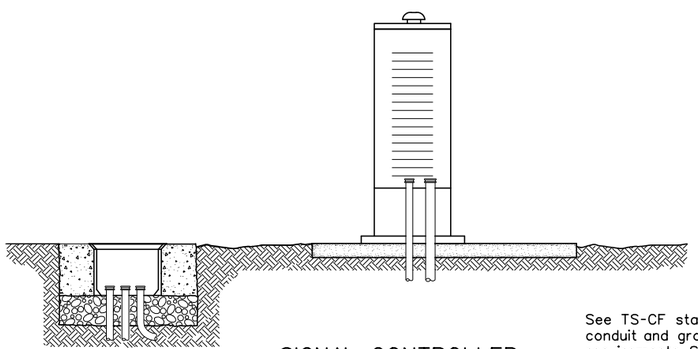


INSET A



SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE



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.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS
ED(8)-14

FILE: ed8-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		152

71H

PLOTTED: 4/19/2022 14:13:08 $$$SCALE$$$ BY: Justin.Kinne
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\ED(8)-14.dgn

PLOTTED: 4/19/2022 14:13:10 $$$$SCALE$$$$ BY: Justin.Kinne
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\ED(9)-14.dgn

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.

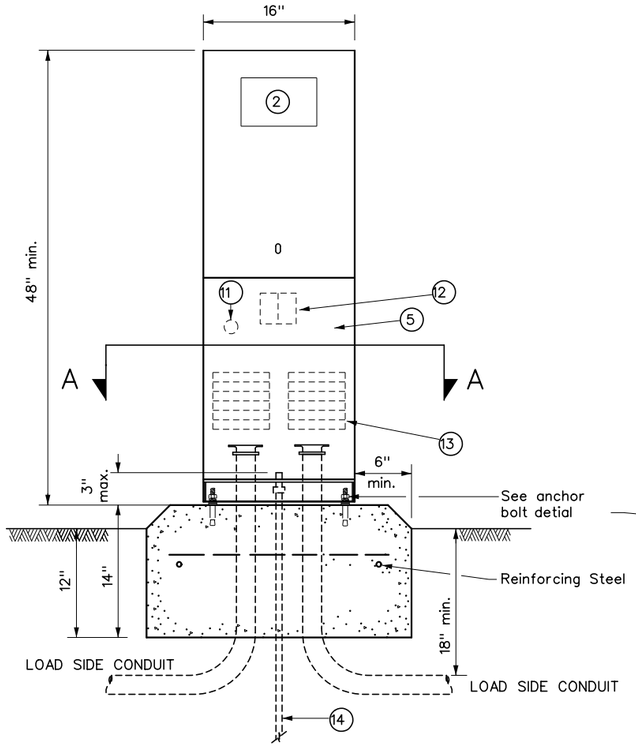
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

5. Install 1/2 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 1/2 in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.

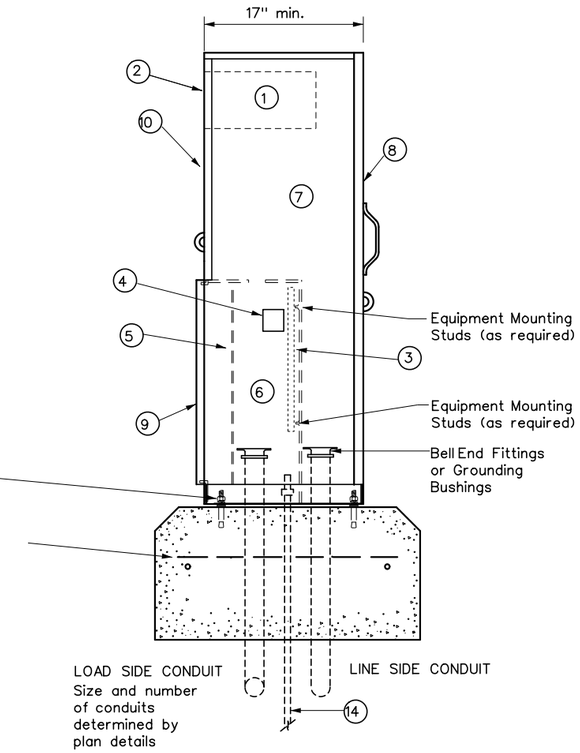
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than 1/8 in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of 1/8 in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within 1/4 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.

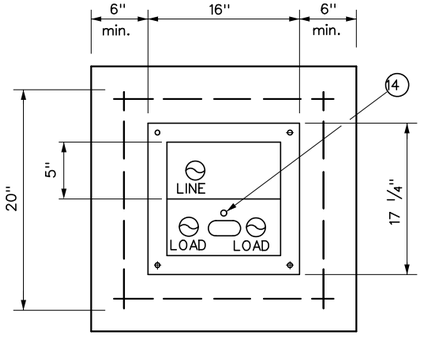


FRONT VIEW

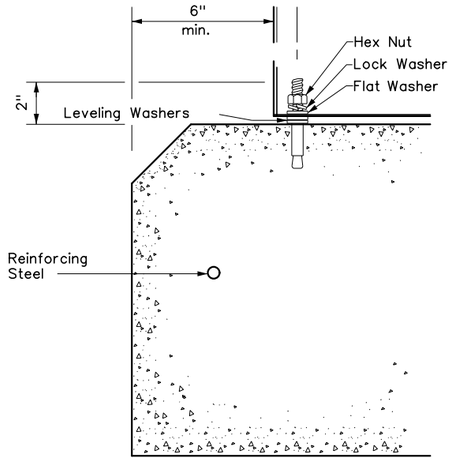


SIDE VIEW

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

FILE: ed9-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		153

71J

INTERNALLY LIGHTED STREET NAME SIGN WITH LIGHT EMITTING DIODE LAMPS

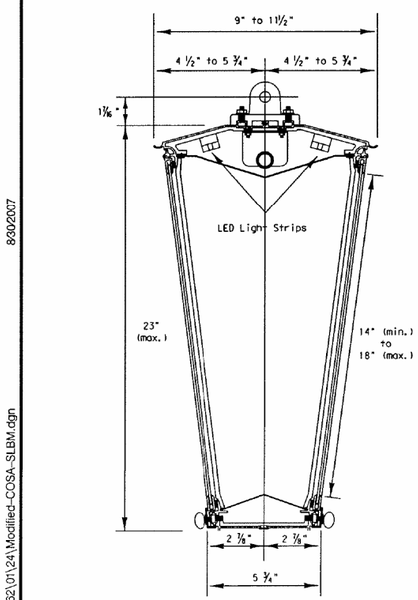
SINGLE + DOUBLE SIDED ILSN SIGN NOTES:

1. Eight foot ILSN sign shall not exceed 16 sq. ft. effective projected area (EPA) and shall not exceed a weight of 85 lbs.
   Six foot ILSN sign shall not exceed 12 sq. ft. EPA and shall not exceed a weight of 70 lbs.
2. Sign message shall be as shown elsewhere in the plans.
3. See Special Specification, "Internally Lighted Street Name Signs" for additional details.
4. Actual sign housing may change with vendor.
5. LED Light Source locations may vary by manufacturer. Power requirements and light output levels of specificaiton shall be satisfied.

EXPLANATION OF DESCRIPTION

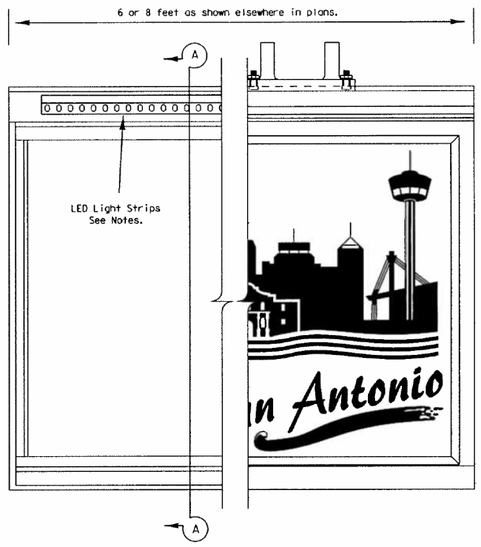
ILSN Sign B D

- Internally lighted street name sign
- Sign length; 6 or 8 ft.
- Single or double face

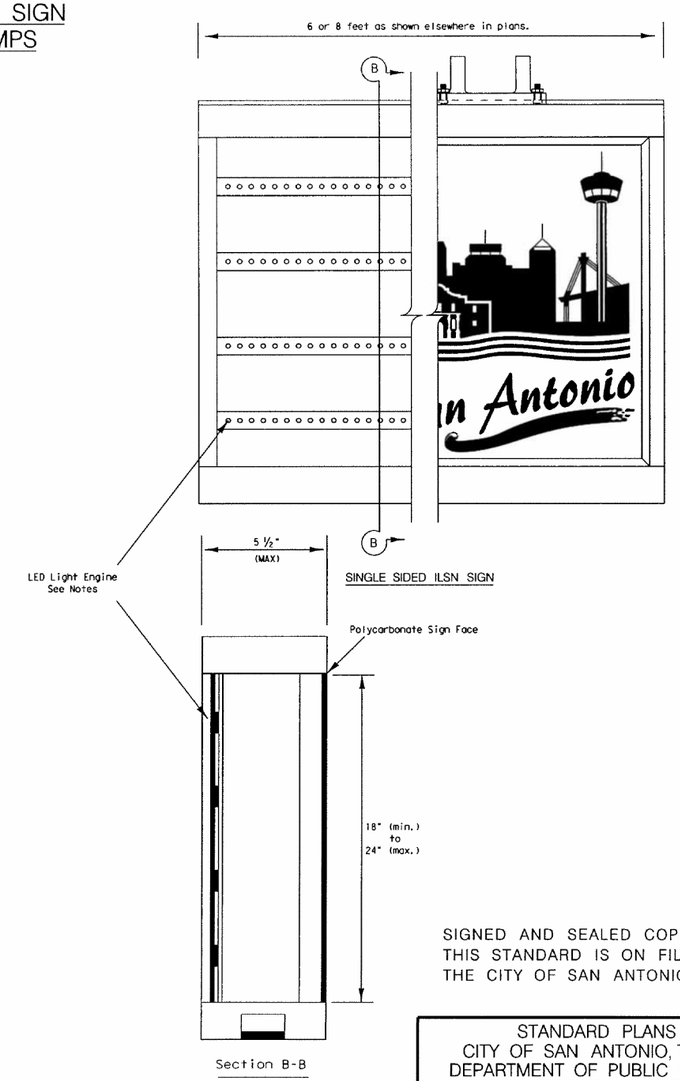


Section A-A

DOUBLE SIDED ILSN SIGN



SINGLE SIDED ILSN SIGN



Section B-B

SIGNED AND SEALED COPIES OF THIS STANDARD IS ON FILE WITH THE CITY OF SAN ANTONIO.

STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEPARTMENT OF PUBLIC WORKS

ILSN SIGN DETAILS
(ILSN-1)

DRAWN BY: M. GLASER	DATE:	REVISIONS	SCALE: N.T.S.
CHECKED BY: GILMER GASTON, P.E., PTOE			DATE:
			SHEET: 1 OF 3

NO.	DATE	REVISION	DRWN.	CHKD	APPR.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

ILSN SIGN DETAILS

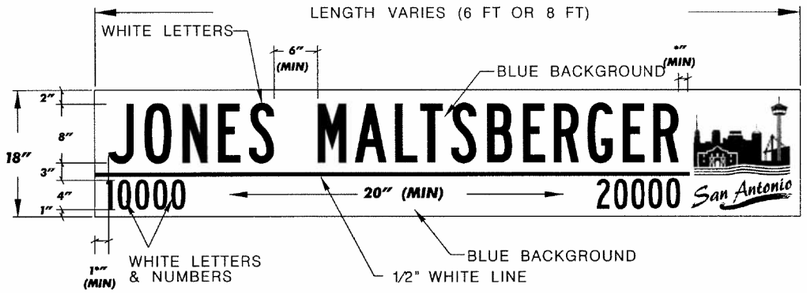
SHEET 1 OF 3

FED RD DIV. NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		154
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

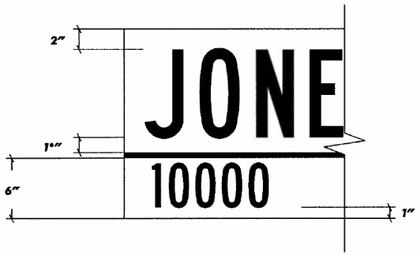
8302017

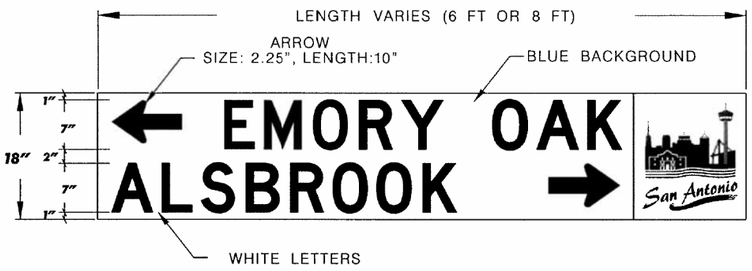
p:\62\01\24\Modified-COSA-SLBM.dgn

Justin.Kinne
4/19/2022 14:13:17
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_ILSN.dgn

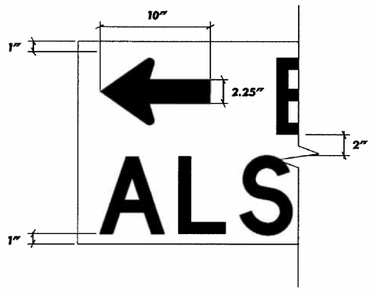


TYPICAL METRO ILSN SIGN



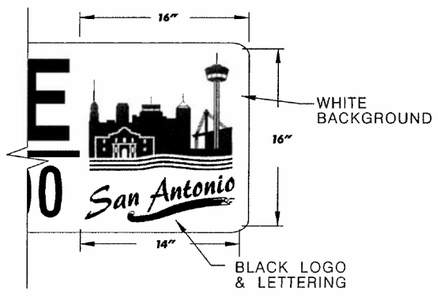


TYPICAL DOUBLE STREET NAME ILSN SIGN



HEIGHT	18"
LENGTH	72" (6 FT) OR 96" (8 FT)
SUBSTRATE	POLYCARBONATE, TRANSLUCENT WHITE
THICKNESS	0.120"
SIGN FACE MATERIALS	BLUE FILM OVER WHITE POLYCARBONATE LOGO-A AS REQUIRED BY CITY
BLOCK NUMBERS	FONT: 4" SERIES D
LEGEND	SERIES D (USUAL) SERIES C OR B FOR MAXIMUM LENGTH 8 FT SIGN, AS NEEDED
COLOR	WHITE LEGEND ON BLUE BACKGROUND

LOGO A



SIGN LOGO PLAQUE
OTHER LOGO PLAQUES
MAY BE SPECIFIED

NO.	DATE	REVISION	DRWN	CHKD	APPR.

SIGNED AND SEALED COPIES OF THIS STANDARD IS ON FILE WITH THE CITY OF SAN ANTONIO.

STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEPARTMENT OF PUBLIC WORKS

ILSN SIGN DETAILS
(ILSN-2)

DRAWN BY: M. GLASER	DATE	REVISIONS	SCALE: N.T.S.
CHECKED BY: GILMER GASTON, P.E., P.T.O.E.			DATE:
			SHEET: 2 OF 3

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022
Amy E Avery

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

ILSN SIGN DETAILS

SHEET 2 OF 3

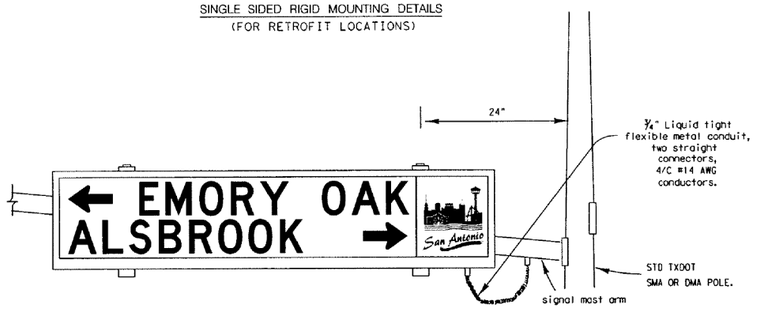
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		155
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

8302007

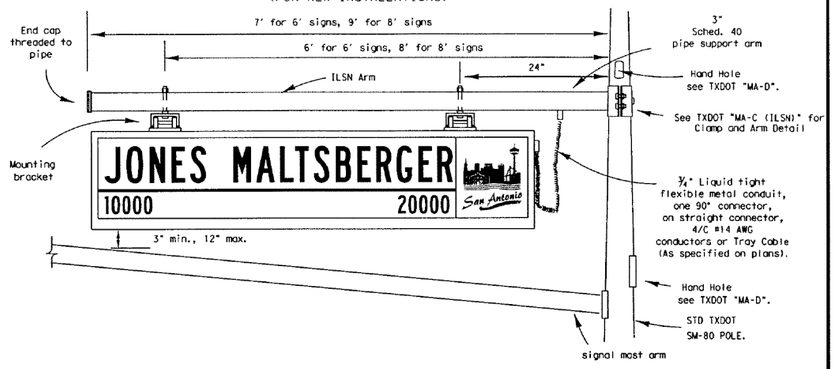
p:\62\01\24\Modified-COSA-SLBM.dgn

Justin.Kinne
4/19/2022 14:13:26
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_ILSN.dgn

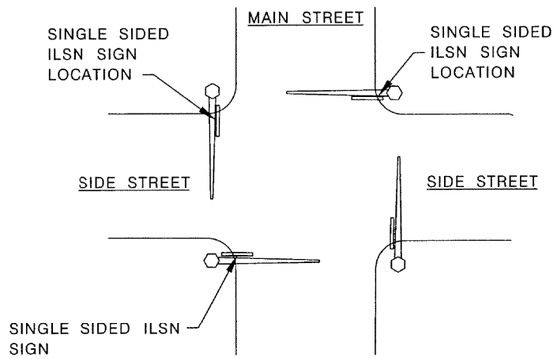
SINGLE SIDED RIGID MOUNTING DETAILS
(FOR RETROFIT LOCATIONS)



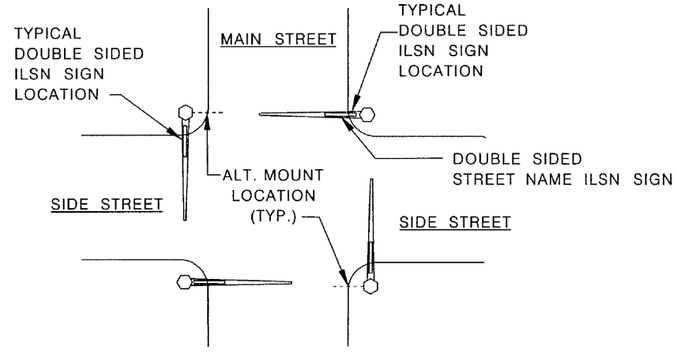
ILSN HANGING SIGN MOUNTING DETAILS
(FOR NEW INSTALLATIONS)



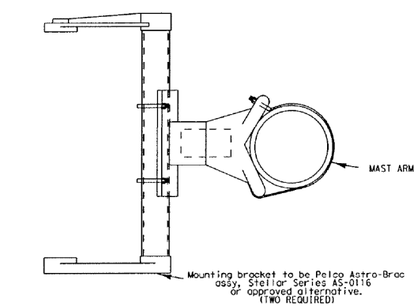
TYPICAL SINGLE SIDED ILSN SIGN PLACEMENT



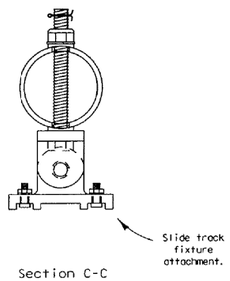
TYPICAL DOUBLE SIDED ILSN SIGN PLACEMENT



SINGLE SIDED SIGN MOUNTING BRACKET

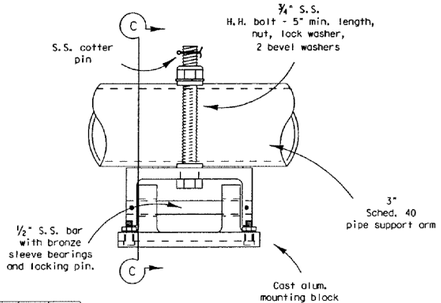


MOUNTING BRACKET



Section C-C

DOUBLE SIDED SIGN MOUNTING



SIGNED AND SEALED COPIES OF THIS STANDARD IS ON FILE WITH THE CITY OF SAN ANTONIO.

STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEPARTMENT OF PUBLIC WORKS

ILSN SIGN DETAILS
(ILSN-3)

DRAWN BY: M. GLASER	DATE	REVISIONS	SCALE: N.T.S.
CHECKED BY: GILMER GASTON, P.E., P.T.O.E.			DATE:
			SHEET: 3 OF 3

NO.	DATE	REVISION	DRWN.	CHKD.	APPR.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

FY 2022 HSIP

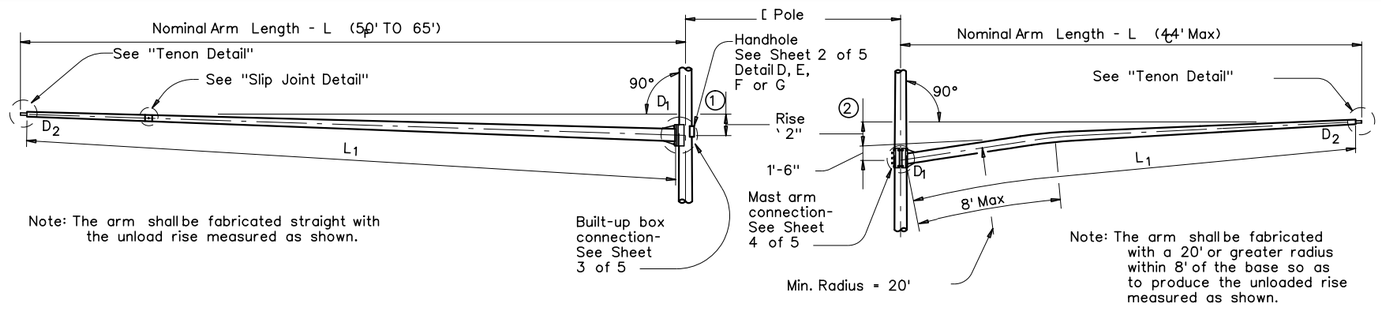
ILSN SIGN DETAILS

SHEET 3 OF 3

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		156
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

8/30/2007
p:\62\01\24\Modified-COSA-SLBM.dgn
Justin.Kinne
4/19/2022 14:13:39
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_ILSN.dgn

PLOTTED: 4/19/2022 14:13:50 BY: Justin.Kinne
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\LMA (1)-12.dgn

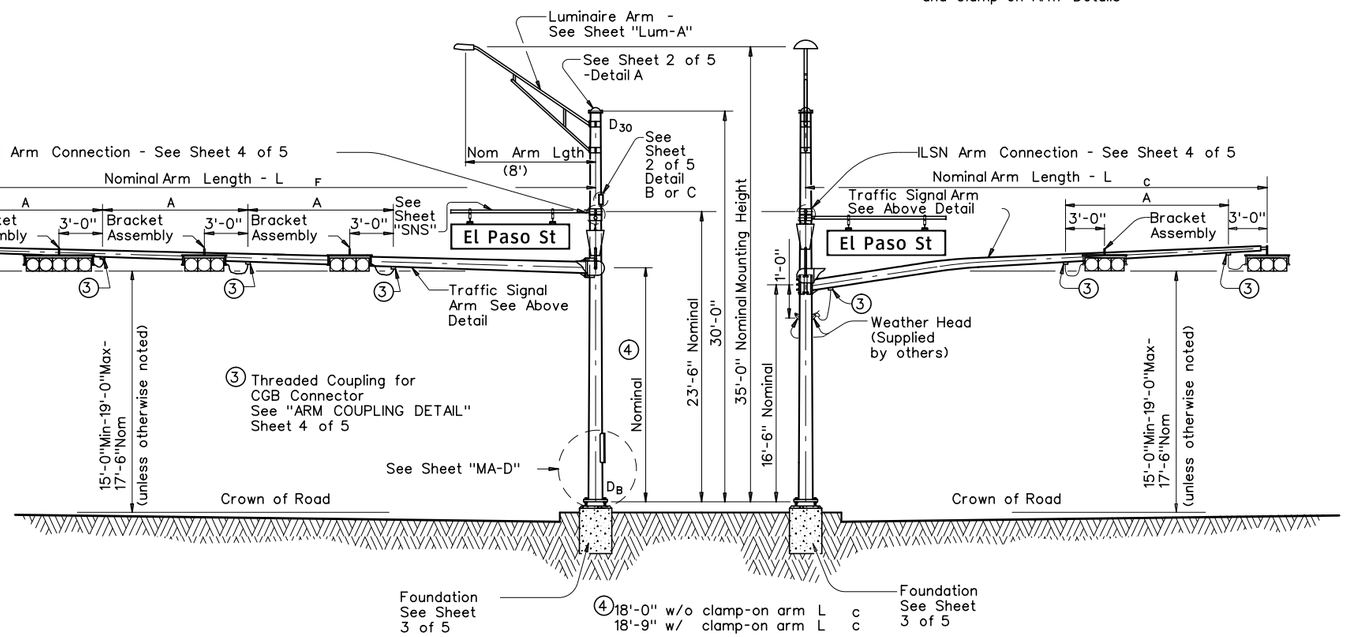


FIXED MOUNT TRAFFIC SIGNAL ARM

① See Sheet 3 of 5 for Arm Rise

CLAMP-ON TRAFFIC SIGNAL ARM (IF REQUIRED)

② See Sheet 4 of 5 for Arm Rise and Clamp-on Arm Details

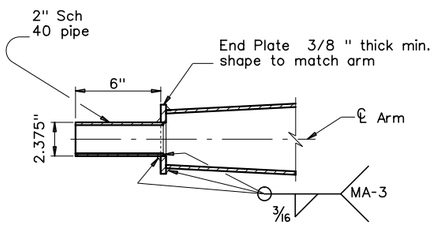


ELEVATION
(Showing fixed mount arm)

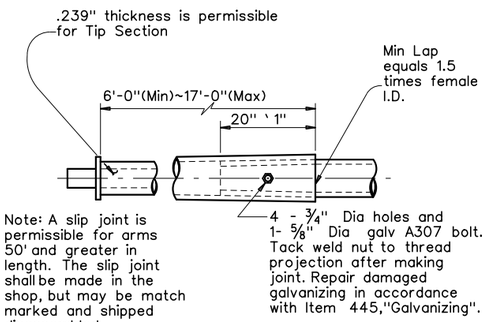
STRUCTURE ASSEMBLY

ELEVATION
(Showing clamp-on arm)

TABLE OF DIMENSIONS "A"										
Arm Length	24'	28'	32'	36'	40'	44'	50'	55'	60'	65'
Arm Type I	10'	11'	12'	13'						
Arm Type II			10'	11'	12'	12'				
Arm Type IV							12'	12'	12'	12'



TENON DETAIL



Note: A slip joint is permissible for arms 50' and greater in length. The slip joint shall be made in the shop, but may be match marked and shipped disassembled.

SLIP JOINT DETAIL(FIXED MOUNT ARM)

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed can be either 100 mph or 80 mph plus a 1.3 gust factor. If clamp-on traffic signal is required, designs are based on an arm included angle of 90 degrees or more. Angles of less than approximately 75 degrees will require a special design.

Poles are designed to support one 8'-0" luminaire arm, two 9'-0" internally lighted street name (ILSN) signs and two traffic signal arms with limited length combinations.

Each arm with its related attachment is shown below

Arm	Equivalent DL ⑤	WL EPA ⑤⑥
8' Luminaire Arm	Luminaire 60 lbs	1.6 sq ft
9' ILSN Arm	Sign 85 lbs	11.5 sq ft
50' to 65' Fixed Mount Arm	Signal Loads 310 lbs	52 sq ft
Up to 44' Clamp-on Arm	Signal Loads 180 lbs	32.4 sq ft

⑤ Equivalent dead load plus horizontal wind load applied at the end of arm except ILSN arm, which applied 4.5' from the centerline of the pole.

⑥ Effective projected area (actual area times drag coefficient) for the application of horizontal wind load.

Except as noted in Sheet 1 thru 5 of 5, other details not covered shall refer to Standard Sheet "MA-D" for pole details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details.

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. Material, fabrication tolerances, and shipping practices shall also meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing" after fabrication.

Deviations from the details and dimensions shown herein require submission of shop drawings in accordance with the Item 441, "Steel Structures". Alternate designs are not acceptable.

Installation of damping plate for the long mast arm is not recommended.

Provision of the bracket assembly used to support the traffic signal heads shall be under the direction of the Engineer for approval.

Design also conforms to NCHRP Report 412 for fatigue resistance except that there are no stiffeners at the base plate. TxDOT is conducting tests to determine if stiffeners at the base plate will or will not result in optimal performance; depending upon the results of the tests, poles may need a retrofit to ensure optimal fatigue performance.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE) LMA(1)-12

Sheet 1 of 5

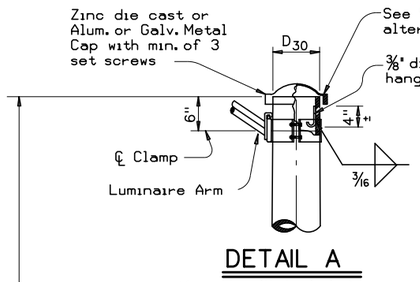
DN: JSY	CK: ARC	DW: TGG	CK: JSY

REVISIONS
4-20-01
1-12

CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC
DIST	COUNTY		SHEET NO.
SAT	BEXAR		157

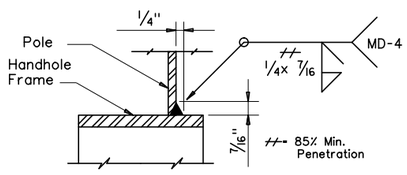
131A

PLOTTED: 4/19/2022 14:13:53 BY: Justin.Kinne
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\LMA (2)-12.dgn

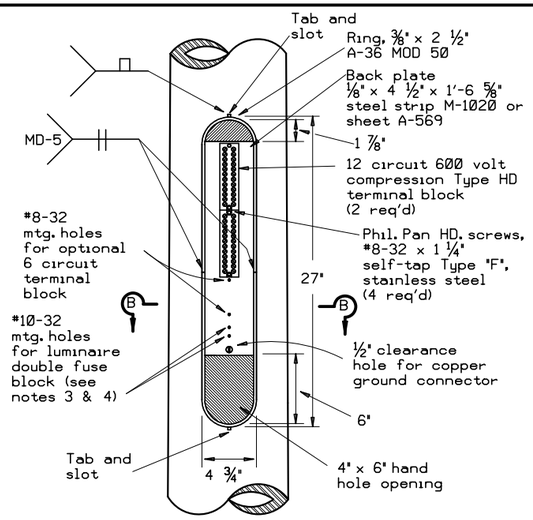


DETAIL A

(for pole with luminaire)



DETAIL H

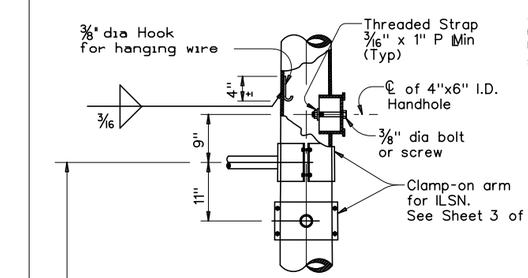


ACCESS COMPARTMENT

MATERIALS	
Round Shafts or Polygonal Shafts (7)	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 (8)
Plates (7)	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325, or A449 except where noted
Pin Bolts	ASTM A325
Pipe (7)	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Misc. Hardware	Galvanized steel or stainless steel or as noted

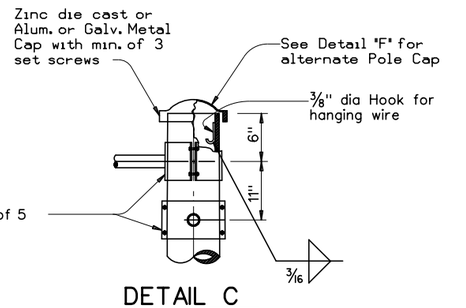
(7) ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F, or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

(8) ASTM A1011 SS Gr.50 shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

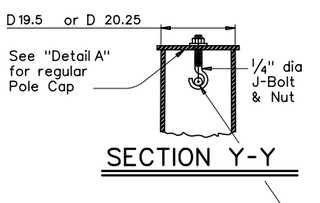


DETAIL B

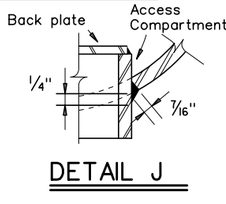
(If ILSN applied)



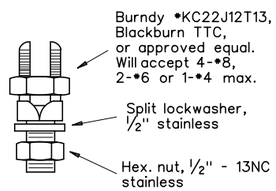
DETAIL C



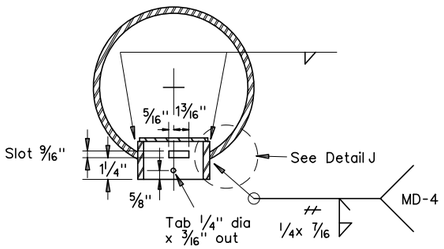
SECTION Y-Y



DETAIL J

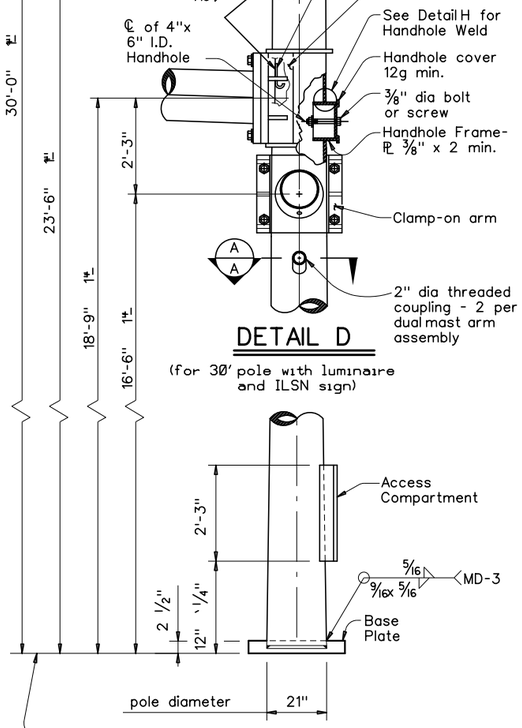


COPPER GROUND CONNECTOR



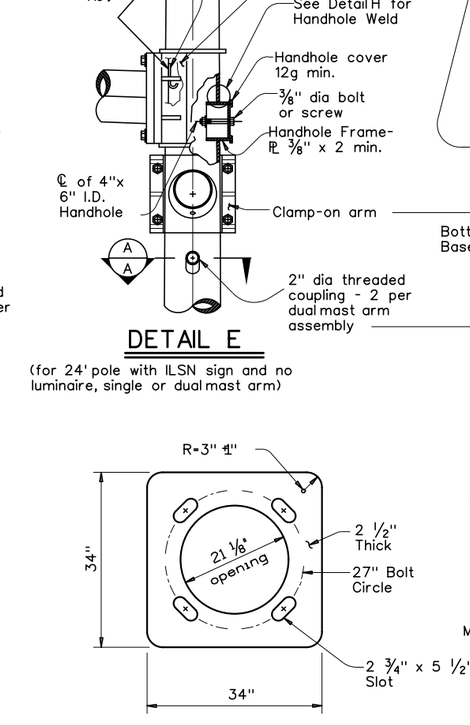
SECTION B-B

Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.



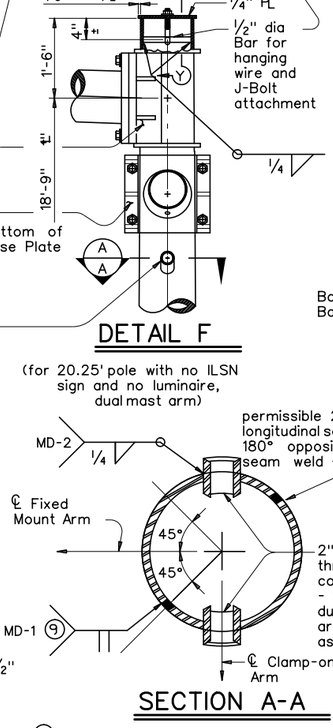
DETAIL D

(for 30' pole with luminaire and ILSN sign)



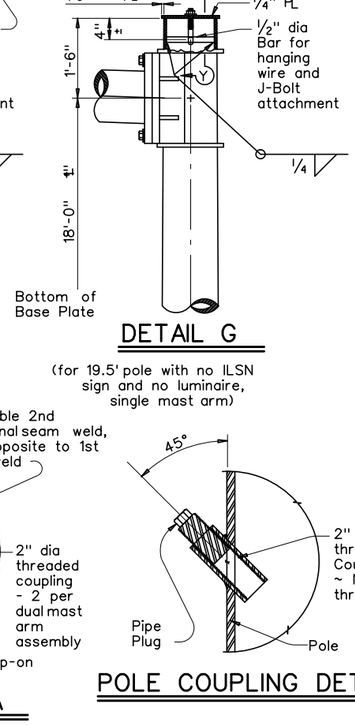
DETAIL E

(for 24' pole with ILSN sign and no luminaire, single or dual mast arm)



DETAIL F

(for 20.25' pole with no ILSN sign and no luminaire, dual mast arm)



DETAIL G

(for 19.5' pole with no ILSN sign and no luminaire, single mast arm)

POLE ELEVATION

BASE PLATE

SECTION A-A

POLE COUPLING DETAIL

(9) Longitudinal seam weld must be oriented within 90° (45° rotation each side) along the fixed mount arm. 60% min penetration required, 100% penetration within 6" of circumferential base weld.

ACCESS COMPARTMENT NOTES:

1. The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 stainless flat socket head screws with tamper proof feature.
2. The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon #985GP12CU or approved equal), four #8-32 x 1 1/4" self tapping type "F" stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or Ilsco SSS-5). The traffic signal contractor shall install the kit items in the field.
3. The screw hole spacing on the enclosure back plate shall be for two Marathon #985GP12 terminal strips, one Marathon #985GP06CU terminal strip, and one Bussmann #BM6032B fuse block.
4. Install one Bussmann #BM6032B, Littelfuse #L60030M-2C, or Ferraz-Shawmut #30352 fuse block for poles where luminaires are to be installed.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)
LMA(2)-12

Sheet 2 of 5

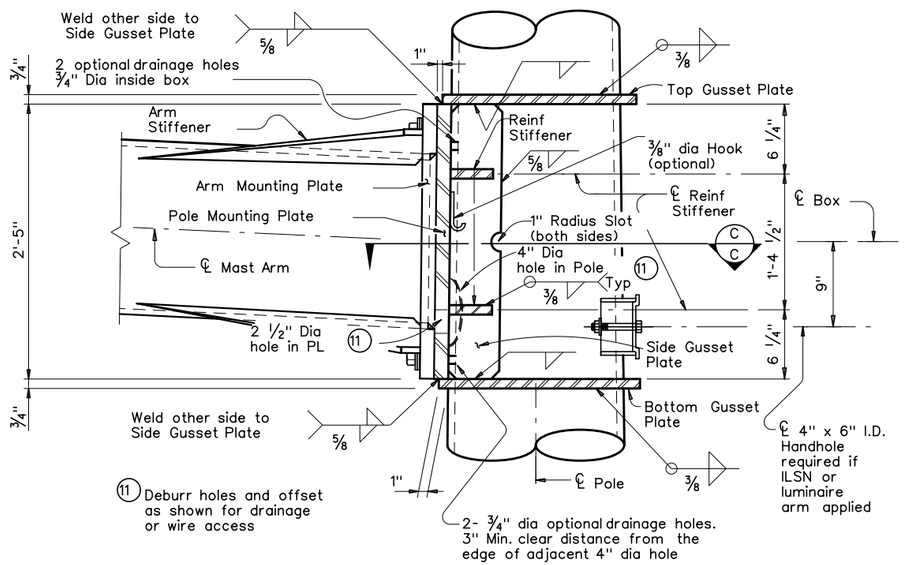
DN: JSY	CK: ARC	DW: TGG	CK: JSY

REVISIONS
4-20-01
1-12

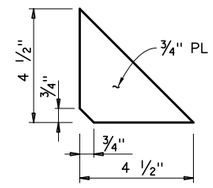
CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC
DIST	COUNTY		SHEET NO.
SAT	BEXAR		158

131B

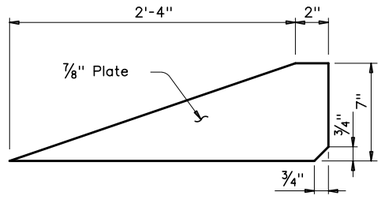
PLOTTED: 4/19/2022 14:13:55
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\LMA (3)-12.dgn
BY: Justin.Kinne



BUILT-UP BOX CONNECTION

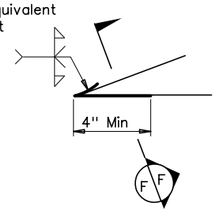


REINFORCING STIFFENER



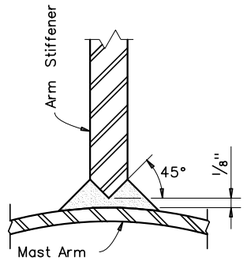
ARM STIFFENER
(Cut to match arm inclination and taper)

Provide Detail shown in SECTION F-F or equivalent 100% complete joint penetration weld from both sides.

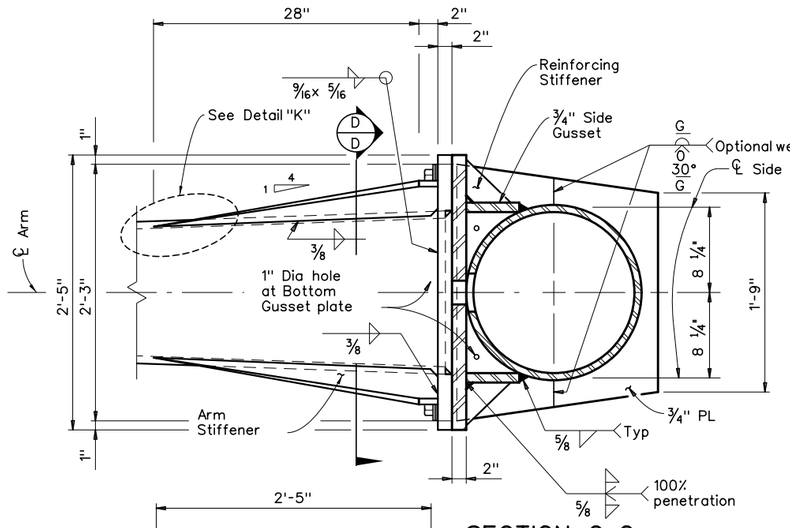


Only 4" length at tip of Arm Stiffener requires a complete joint penetration weld. Smooth weld radius to connect Stiffener. Only a fillet weld is required for the remaining weld length.

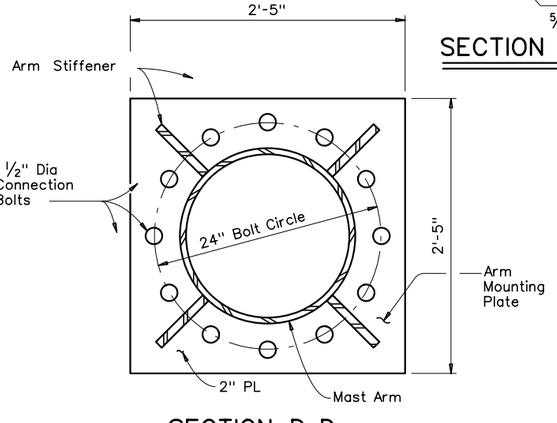
DETAIL "K"



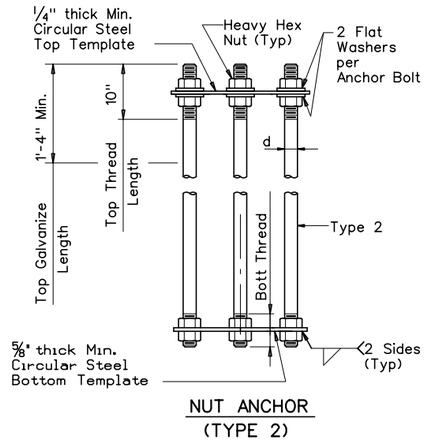
SECTION F-F



SECTION C-C

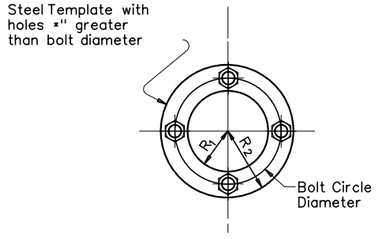


SECTION D-D



NUT ANCHOR
(TYPE 2)

ANCHOR BOLT ASSEMBLY



TEMPLATE DETAIL

Fixed Mount Arm ℄	ROUND POLES (13)					Foundation Type
	D_B	$D_{19.5}$ or $D_{20.25}$	D_{24}	D_{30}	(12) thk	
ft.	in.	in.	in.	in.	in.	
50',55' 60',65'	21.0	18.2	17.6	16.8	.3125	48-A

Fixed Mount Arm ℄	ROUND ARMS (13)				
	L_1	D_1	D_2	(12) thk	Rise
ft.	ft.	in.	in.	in.	
50	49	18.5	11.7	.3125	3'- 3"
55	54	18.5	11.0	.3125	3'- 7"
60	59	18.5	10.3	.3125	3'-11"
65	64	18.5	9.6	.3125	4'- 4"

D_B = Pole Base O.D.
$D_{19.5}$ = Pole Top O.D. with no Luminaire and no ILSN (single mast arm)
$D_{20.25}$ = Pole Top O.D. with no Luminaire and no ILSN (dual mast arm)
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire
D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = Shaft Length
L_F = Fixed Arm Length

(12) Thickness shown is minimum, thicker materials may be used.

(13) Shaft profile 16-sided or 18-sided is considered to be equivalent to round section.

GENERAL NOTES:

Built-up Box Connection: For the welded arm-to-pole connection as a build-up box configuration illustrated here is an example only, fabricators are required to submit a shop drawing of box connection for approval. The drawing shall specify the details of each box element, welds of arm-to-pole connection, arm-to-plate socket connection, and arm rise creation. Specify the proper location of drain holes along the pole. 2 1/2" dia hole in the pole mounting plate and 4" dia hole in the pole need to be aligned for wiring access or drainage. Arm stiffeners cut to match arm inclination and taper shall also be included.

The deviation from flat for either arm or pole mounting plate shall not exceed 3/32in., which is measured along the center of mounting plate to a radial distance of 13.5 in. The deformed-from-flat connection between arm and pole mounting plates shall not be allowed if the center of both mounting plates cannot contact directly.

Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.

FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		DRILLED SHAFT LENGTH-ft (16), (17), (18)			ANCHOR BOLT DESIGN (14)				FOUNDATION DESIGN LOAD (15)		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
				10	15	40							
48-A	48"	20 #9	#4 at 6"	21.9	19.5	14.7	2 1/2"	55	27"	2	490	10	50' to 65' Mast arm assembly.

SEE SHEET "TS-FD" FOR ADDITIONAL DETAILS.

(14) Anchor bolt design develops the foundation capacity given under Foundation Design Laods.

(15) Foundation Design Loads are the allowable moments and shears at the base of the structure.

(16) Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

(17) If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

(18) Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

ANCHOR BOLT & TEMPLATE SIZE

Bolt Dia in.	Length ‡	Top Thread	Bottom Thread	Bolt Circle	R_2	R_1
2 1/2"	5'-2"	10"	6 1/2"	27"	16"	11"

‡ Min dimension given, longer bolts are acceptable.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)

Sheet 3 of 5 — LMA(3)-12

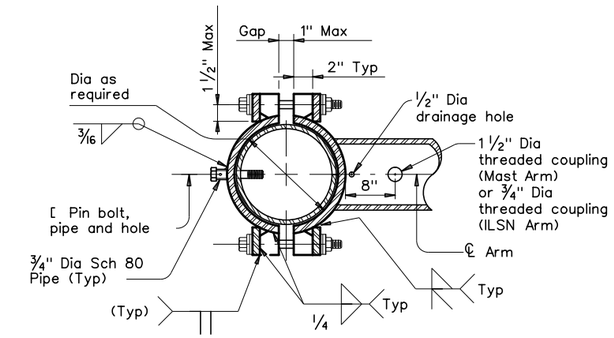
DN: JSY	CK: ARC	DW: TGG	CK: JSY

REVISIONS
4-20-01 1-12

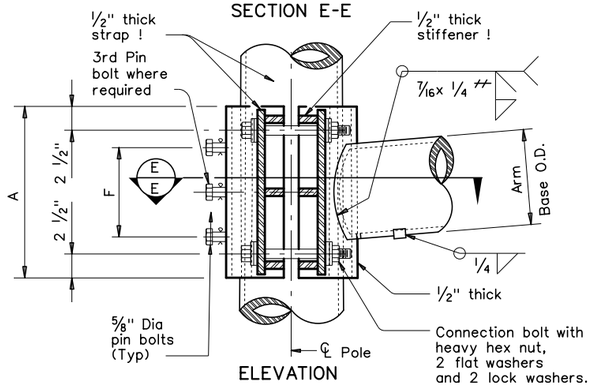
CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC
DIST	COUNTY		SHEET NO.
SAT	BEXAR		159

131C

PLOTTED: 4/19/2022 14:13:58
FILENAME: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\LMA (4)-12.dgn
BY: Justin.Kinne



SECTION E-E



ELEVATION
(Mast Arm or ILSN Arm to pole)

⁄⁄ = 85% Min. Penetration

CLAMP-ON CONNECTION

80 MPH WIND

Clamp-on Arm L C	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	thk (12)	Rise	L_1	D_1	D_2	thk (12)	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"

100 MPH WIND

Clamp-on Arm L C	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	thk (12)	Rise	L_1	D_1	D_2	thk (12)	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	8.0	5.3	.179	1'-8"	19.1	8.0	3.5	.179	1'-7"
24	23.1	9.0	5.8	.179	1'-9"	23.1	9.0	3.5	.179	1'-8"
28	27.1	9.5	5.7	.179	1'-10"	27.1	10.0	3.5	.179	1'-9"
32	31.0	9.5	5.2	.239	1'-11"	31.0	9.5	3.5	.239	1'-10"
36	35.0	10.0	5.1	.239	2'-0"	35.0	10.0	3.5	.239	1'-11"
40	39.0	10.5	5.1	.239	2'-3"	39.0	11.0	3.5	.239	2'-1"
44	43.0	11.0	5.1	.239	2'-8"	43.0	11.5	4.0	.239	2'-3"

D1 = Arm Base O.D.
D2 = Arm End O.D.
L1 = Shaft Length
L C = Clamp-on Arm Length

(12) Thickness shown is minimum, thicker materials may be used.

CLAMP-ON ARM CONNECTION

ILSN Arm Size		A	F	4 Conn. Bolts	5/8" Dia. Pin Bolts
Sch 40 pipe Dia	Thick			Dia	No.
in.	in.	in.	in.	in.	ea
3	.216	10	4		2

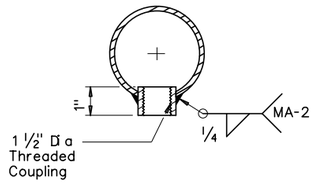
Mast Arm Size		A	F	4 Conn. Bolts	5/8" Dia. Pin Bolts
Base Dia	Thick			Dia	No.
in.	in.	in.	in.	in.	ea
6.5	.179	12	6	1	2
7.5	.179	14	8	1	2
8.0	.179	14	8	1	2
9.0	.179	16	10	1	2
9.5	.179	18	12	1 ¼	3
9.5	.239	18	12	1 ¼	3
10.0	.239	18	12	1 ¼	3
10.5	.239	18	12	1 ¼	3
11.0	.239	18	12	1 ¼	3
11.5	.239	18	12	1 ¼	3

GENERAL NOTES:

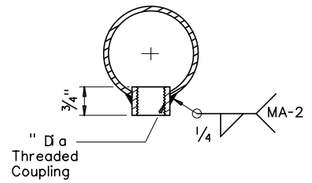
Clamp-on details are used for the second arm on dual mast arm assemblies or ILSN arm support. For a clamp-on mast arm, a maximum 1½" wide vertical slotted hole may be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1". For an ILSN arm, a 1½" diameter hole shall be cut in the front clamp plate for wire access. A matched hole shall be field drilled through the pole to provide wire access after arm is oriented. Deburr both holes.

Where duplicate parts occur on a detail, welds shown for part shall apply to all similar parts on the detail.

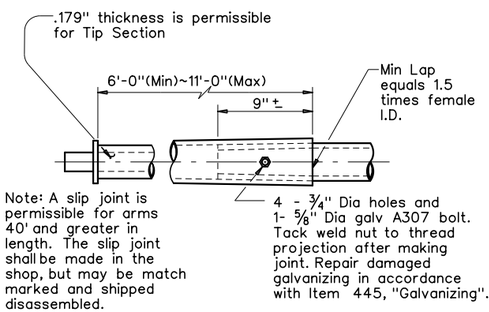
Pin bolts are required to prevent rotation of clamp-on arms under design wind forces. Pin bolts shall be ASTM A325 with threads excluded from the shear plane. Pin bolt and ¾" diameter pipe shall have 3/16" diameter holes for a ⅛" diameter galvanized cotter pin. Back clamp plate shall be furnished with a ¾" diameter hole for each pin bolt. An 11/16" diameter hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.



ARM COUPLING DETAIL



ILSN ARM COUPLING DETAIL

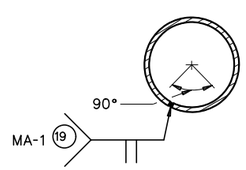


Note: A slip joint is permissible for arms 40' and greater in length. The slip joint shall be made in the shop, but may be match marked and shipped disassembled.

SLIP JOINT DETAIL(CLAMP-ON ARM)

Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1½" Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

(19) Longitudinal Seam Weld must be oriented within the lower 90° of the signal arm.
60% Min penetration
100% penetration within 6" of circumferential base welds.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)

Sheet 4 of 5 LMA(4)-12

DN: JK	CK: GRB	DW: FDN	CK: CAL

REVISIONS
4-20-01
1-12

CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

DIST	COUNTY	SHEET NO.
SAT	BEXAR	160

131D

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

DATE: 4/19/2022 9:34:35 AM
FILE: P:\w\-TPD\Projects\TX\2019\D190364TX.04\1*Design\500*CADD\dgn\02 Plan Files\08 signal\standards\lma*5.dgn

Shipping Parts List						
Ship each pole with the following attached: enlarged hand hole, pole cap, fixed arm connection bolts and washers, and any additional hardware listed in the table.						
Nominal Arm Length	30' Poles with Luminaire See note above plus: one (or two if ILSN attached) small hand hole, clamp-on simplex		24' Poles with ILSN See note above plus one small hand hole		19.50' (Single Mast Arm) 20.25' (Dual Mast Arm) Poles with no Luminaire and no ILSN See note above	
Single Mast Arm						
Lf ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
50	50L		50S		50	2
55	55L		55S		55	1
60	60L		60S		60	
65	65L		65S		65	1
Dual Mast Arm						
Lf ft. / Lc ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
50 / 20	5020L		5020S		5020	
50 / 24	5024L		5024S		5024	
50 / 28	5028L		5028S		5028	
50 / 32	5032L		5032S		5032	
50 / 36	5036L		5036S		5036	
50 / 40	5040L		5040S		5040	
50 / 44	5044L		5044S		5044	
55 / 20	5520L		5520S		5520	
55 / 24	5524L		5524S		5524	
55 / 28	5528L		5528S		5528	
55 / 32	5532L		5532S		5532	
55 / 36	5536L		5536S		5536	
55 / 40	5540L		5540S		5540	
55 / 44	5544L		5544S		5544	
60 / 20	6020L		6020S		6020	
60 / 24	6024L		6024S		6024	
60 / 28	6028L		6028S		6028	
60 / 32	6032L		6032S		6032	
60 / 36	6036L		6036S		6036	
60 / 40	6040L		6040S		6040	
60 / 44	6044L		6044S		6044	
65 / 20	6520L		6520S		6520	
65 / 24	6524L		6524S		6524	
65 / 28	6528L		6528S		6528	
65 / 32	6532L		6532S		6532	
65 / 36	6536L		6536S		6536	
65 / 40	6540L		6540S		6540	
65 / 44	6544L		6544S		6544	

Foundation Summary Table **

Location Ident.	Avg. N Blow/ft.	No. Each	Drill Shaft *** Length (feet) 48-A
LP 13 AT FM 1346			
POLE A	10	1	22
POLE C	10	1	22
POLE F	10	1	22
POLE H	10	1	22
Total Drill Shaft Length			88

Notes

** Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

*** Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

Shipping Parts List		
Traffic Signal Arms (Fixed Mount) (1 per pole) Ship each arm with listed equipment attached		
Nominal Arm Length	Type IV Arm (4 Signals) 3 Bracket Assembly and 4 CGB Connectors	
ft.	Designation	Quantity
50	50IV	
55	55IV	
60	60IV	
65	65IV	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	4

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Traffic Signal Arms (80 MPH Clamp-On Mount) (1 per pole) Ship each arm with listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal) 2 CGB connector and 1 clamp w/bolts and washers		Type II Arm (2 Signals) 1 Bracket Assembly and 3 CGB connectors, and 1 clamp w/bolts and washers		Type III Arm (3 Signals) 2 Bracket Assembly and 4 CGB connectors, and 1 clamp w/bolts and washers	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80		32III-80	
36			36II-80		36III-80	
40					40III-80	
44					44III-80	

Traffic Signal Arms (100 MPH Clamp-On Mount) (1 per pole) Ship each arm with listed equipment attached

Nominal Arm	Type I Arm (1 Signal) 2 CGB connector and 1 clamp w/bolts and washers		Type II Arm (2 Signals) 1 Bracket Assembly and 3 CGB connectors, and 1 clamp		Type III Arm (3 Signals) 2 Bracket Assembly and 4 CGB connectors, and 1 clamp	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-100					
24	24I-100		24II-100			
28	28I-100		28II-100			
32			32II-100		32III-100	
36			36II-100		36III-100	
40					40III-100	
44					44III-100	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
2 1/2 "	5' - 3"	4

Each anchor bolt assembly consists of the following: Top and bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers and 4 nut anchor devices (type 2) per Standard Drawing "TS-FD". Templates may be removed for shipment.

Abbreviations
Lf= Fixed Arm Length
Lc= Clamp-on Arm Length (44' Max.)

STATE OF TEXAS
FEDERICO J. MENDOZA
63311
REGISTERED PROFESSIONAL ENGINEER

4/19/2022

Texas Department of Transportation
Traffic Operations Division

LONG MAST ARM ASSEMBLY PARTS LIST

LMA(5)-12

Sheet 5 of 5

DN: JK	CK: GRB	DW: FDN	CK: CAL

REVISIONS
4-20-01
1-12

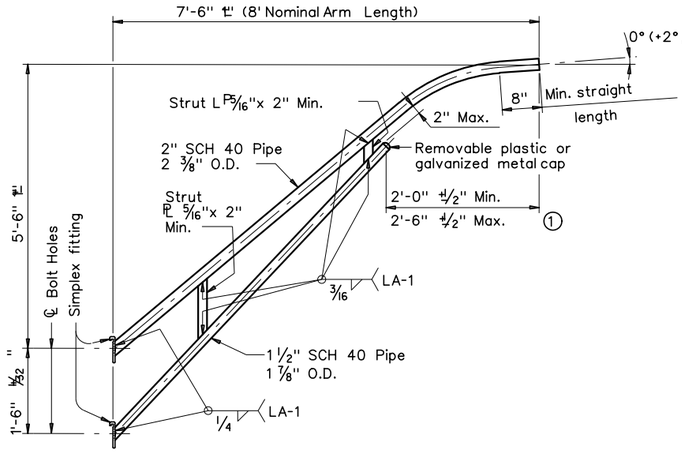
CONT	SECT	JOB	HIGHWAY
0016	08	043, ETC	SL 368, ETC
DIST	COUNTY		SHEET NO.
SAT	BEXAR		161

131E

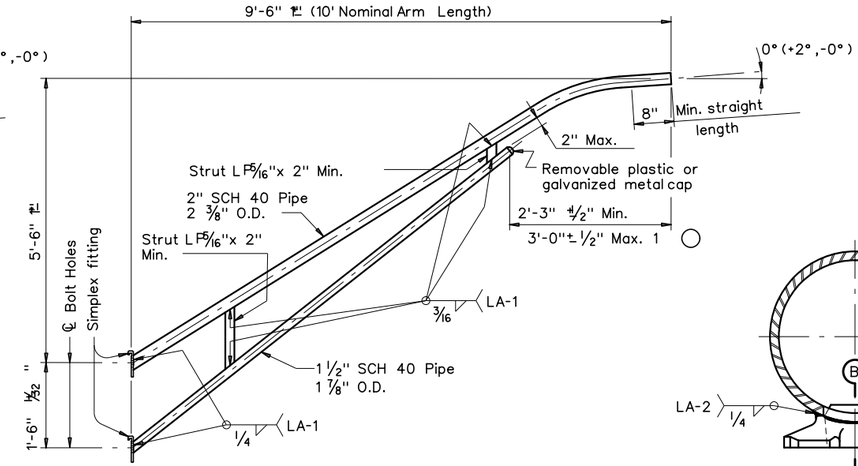
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: 4/19/2022 14:14:01
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\LUM-A-12.DGN

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



8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM

DIRECT ATTACHMENT DETAIL

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.

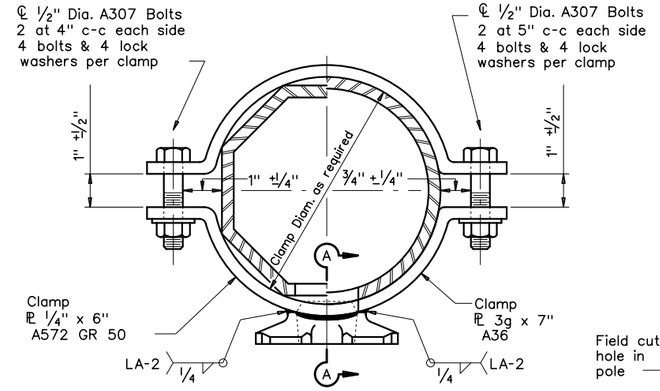
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absense of specified 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.

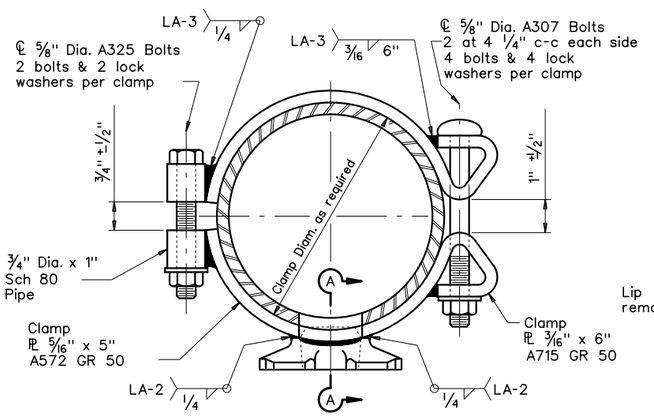
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly 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.



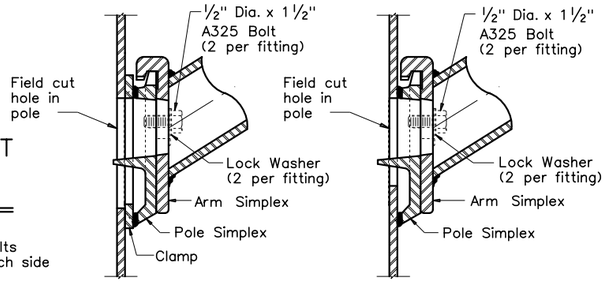
CLAMP ATTACHMENT DETAIL NO.1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO.2 (HALF SECTION)

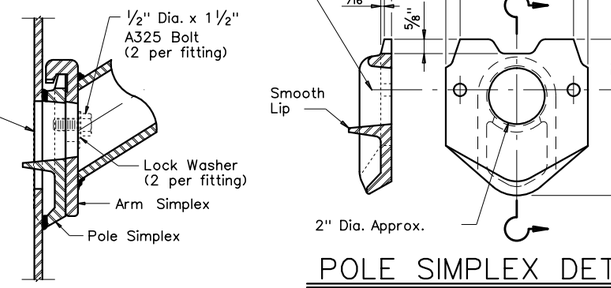


CLAMP ATTACHMENT DETAIL NO.3 (HALF SECTION)

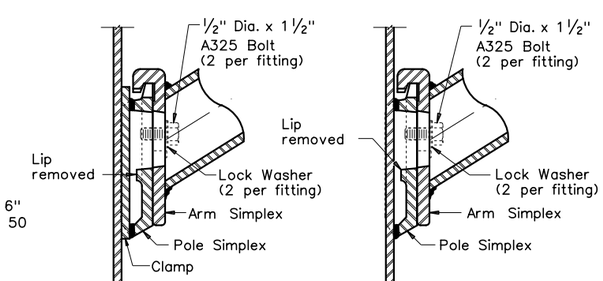
CLAMP ATTACHMENT DETAIL NO.4 (HALF SECTION)



UPPER SIMPLEX FITTING

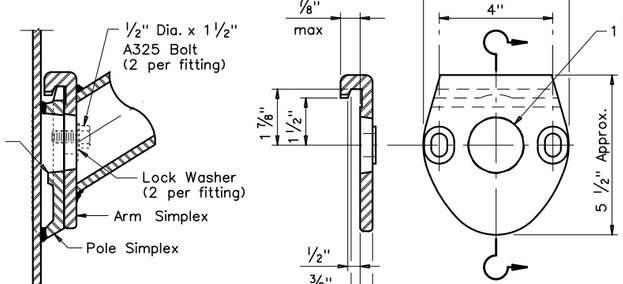


UPPER SIMPLEX FITTING



LOWER SIMPLEX FITTING

SECTON A-A



LOWER SIMPLEX FITTING

SECTON B-B

POLE SIMPLEX DETAIL

ARM SIMPLEX DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES

ARM DETAILS

LUM-A-12

REVISIONS
5-96
1-99
1-12

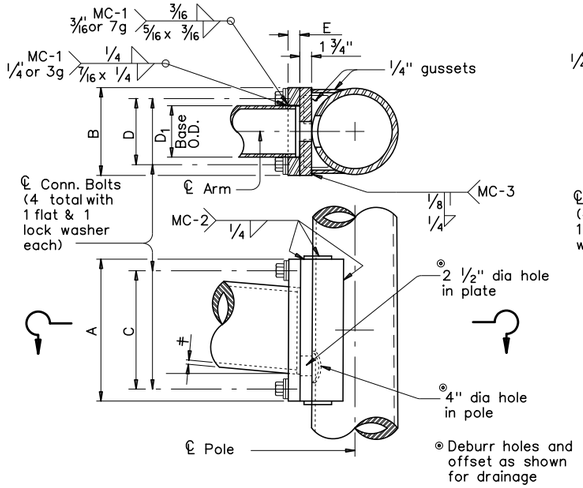
DN: LEH	CK: JSY	DW: LTT	CK: TEB

CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

DIST	COUNTY	SHEET NO.
SAT	BEXAR	162

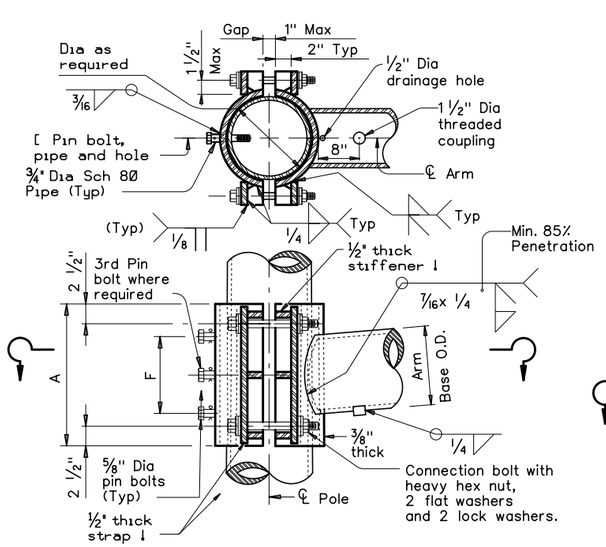
DATE: 4/19/2022 14:14:03
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\MA-C-12.DGN

ARM SIZE D_1	ARM SIZE ∓	A	B	C	D	E	CONN BOLT DIA
in.	in.	in.	in.	in.	in.	in.	in.
6.5	.179	12	9	9	6	1 3/4	1
7.5	.179	13	9	10	6	1 3/4	1
8.0	.179	14	10	11	7	2	1 1/4
9.0	.179	16	11	13	8	2	1 1/4
9.5	.179	17	12	14	9	2	1 1/4
9.5	.239	18	12	15	9	2	1 1/4
10.0	.239	18	12	15	9	2	1 1/4
10.5	.239	18	13	15	10	3	1 1/2
11.0	.239	18	13	15	10	3	1 1/2



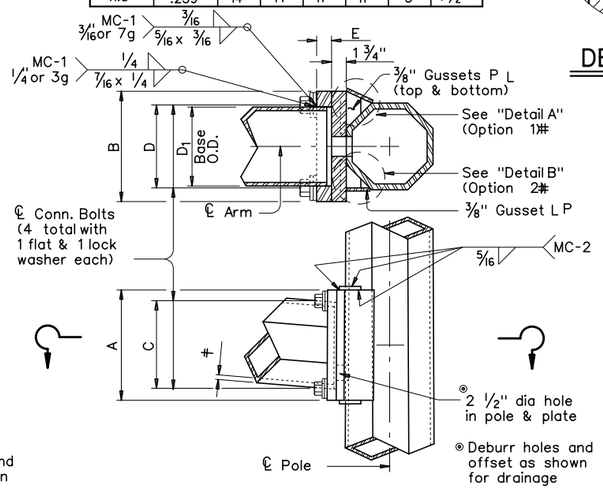
FIXED MOUNT DETAIL 1

ARM SIZE D_1	ARM SIZE ∓	A	F	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	6	4	1	2	5/8
7.5	.179	14	8	4	1	2	5/8
8.0	.179	14	8	4	1	2	5/8
9.0	.179	16	10	4	1	2	5/8
9.5	.179	18	12	4	1 1/4	3	5/8
9.5	.239	18	12	4	1 1/4	3	5/8
10.0	.239	18	12	4	1 1/4	3	5/8



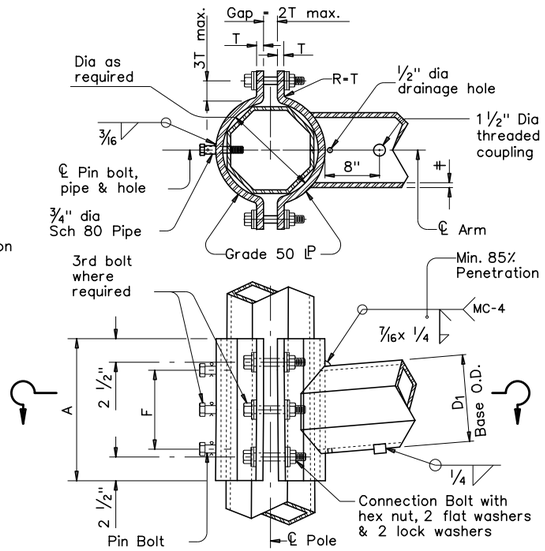
CLAMP-ON DETAIL 1

ARM SIZE D_1	ARM SIZE ∓	A	B	C	D	E	CONN BOLT DIA
in.	in.	in.	in.	in.	in.	in.	in.
7.0	.179	11	11	8	8	1 3/4	1 1/4
7.5	.179	11	11	8	8	1 3/4	1 1/4
8.0	.179	11	11	8	8	2	1 1/4
9.0	.179	13	13	10	10	2	1 1/4
10.0	.179	13	13	10	10	2	1 1/4
9.5	.239	13	13	10	10	2	1 1/4
10.0	.239	14	14	11	11	2	1 1/2
11.0	.239	14	14	11	11	3	1 1/2
11.5	.239	14	14	11	11	3	1 1/2



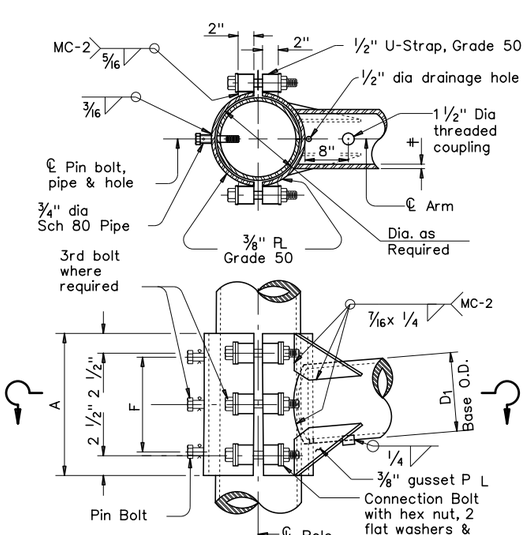
FIXED MOUNT DETAIL 2

ARM SIZE D_1	ARM SIZE ∓	A	F	T	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	in.	ea.	in.	ea.	in.
7.0	.179	12	6	3/4	4	3/4	2	5/8
7.5	.179	14	8	3/4	4	3/4	2	5/8
8.0	.179	14	8	3/4	4	3/4	2	5/8
9.0	.179	16	10	7/8	4	1	2	5/8
10.0	.179	18	10	7/8	4	1	2	5/8
9.5	.239	18	10	1	6	1	3	5/8
10.0	.239	18	10	1	6	1	3	5/8

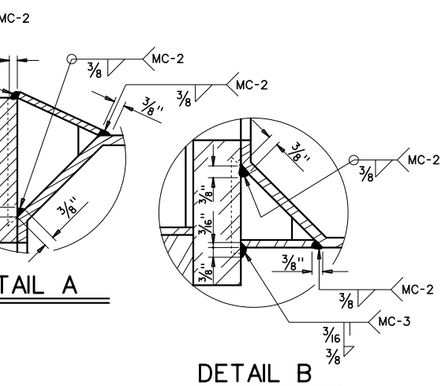


CLAMP-ON DETAIL 2

ARM SIZE D_1	ARM SIZE ∓	A	F	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	6	4	1	2	5/8
7.5	.179	14	8	4	1	2	5/8
8.0	.179	14	8	4	1	2	5/8
9.0	.179	16	10	4	1	2	5/8
9.5	.179	18	12	6	1	3	5/8
9.5	.239	18	12	6	1	3	5/8
10.0	.239	18	12	6	1	3	5/8

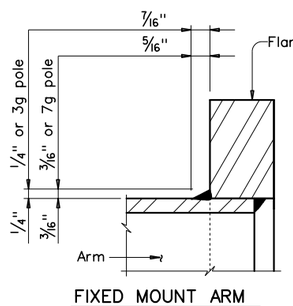


CLAMP-ON DETAIL 3

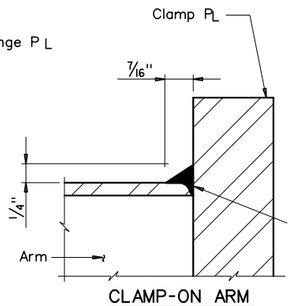


DETAIL A

DETAIL B



FIXED MOUNT ARM



CLAMP-ON ARM

ARM BASE WELD DETAILS

ARM SIZE D_1	ARM SIZE ∓	A	F	CONN. BOLTS No.	CONN. BOLTS Dia	PIN BOLTS No.	PIN BOLTS Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	6	4	1	2	5/8
7.5	.179	14	8	4	1	2	5/8
8.0	.179	14	8	4	1	2	5/8
9.0	.179	16	10	4	1	2	5/8
9.5	.179	18	12	6	1	3	5/8
9.5	.239	18	12	6	1	3	5/8
10.0	.239	18	12	6	1	3	5/8

MATERIALS	
Round Shafts or Polygonal Shafts ①	ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 ②
Plates ①	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 or A449, except where noted
Pin Bolts	ASTM A325
Pipe ①	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Misc. Hardware	Galvanized steel or stainless steel or as noted

① ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

② ASTM A1011 SS Gr.50 material shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

GENERAL NOTES:

Clamp-on details are used for the second arm on dual mast arm assemblies. A Maximum 1 1/2" wide vertical slotted hole shall be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1"

Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the detail.

Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

NOTE:

Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and 3/4" dia pipe shall have 3/16" dia holes for a 1/8" dia galvanized cotter pin. Back clamp plate shall be furnished with a 3/4" dia hole for each pin bolt. An 11/16" dia hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY FOR TRAFFIC SIGNAL SUPPORT STRUCTURES

MAST ARM CONNECTIONS

MA-C-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
5-09
1-12

CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC
DIST	COUNTY		SHEET NO.
SAT	BEXAR		163

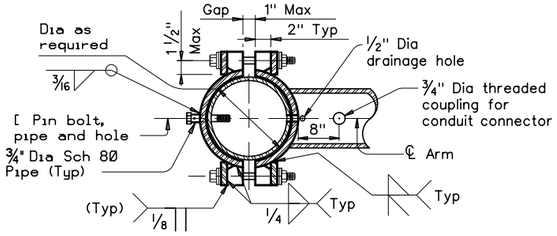
126A

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

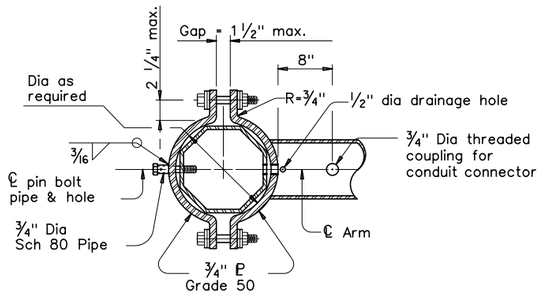
DATE: 4/19/2022 14:14:06
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\MA-C(ILSN)-12.dgn

TABLE OF DIMENSIONS
for ILSN Support Arm Clamp-on Details 1,2 and 3

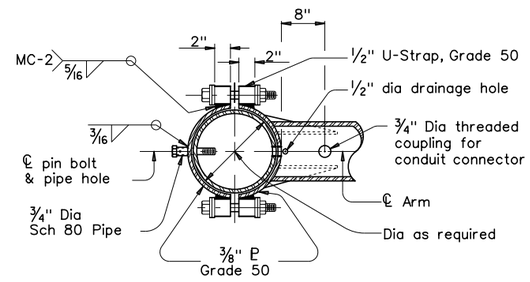
ILSN ARM SIZE	A	F	CONN. BOLTS		PIN BOLTS	
			No.	Dia	No.	Dia
3 in. dia Schedule 40 Pipe	in.	in.	ea.	in.	ea.	in.
	10	4	4	3/4	2	5/8



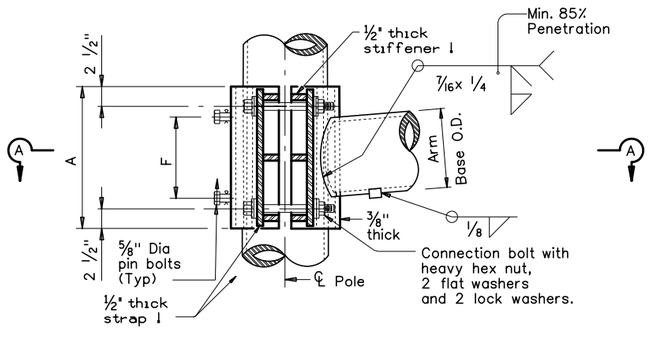
SECTION A-A



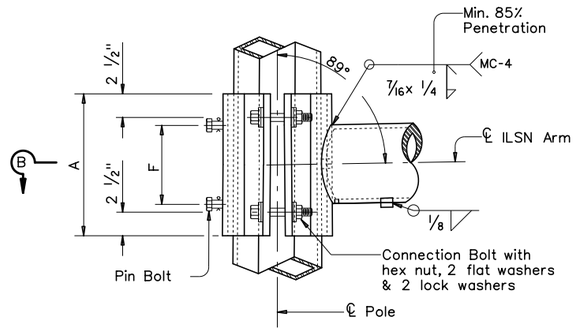
SECTION B-B



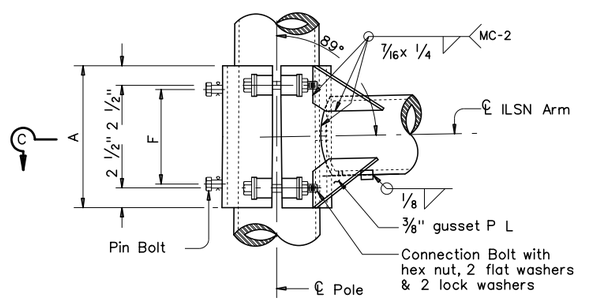
SECTION C-C



ILSN CLAMP-ON DETAIL 1



ILSN CLAMP-ON DETAIL 2



ILSN CLAMP-ON DETAIL 3

GENERAL NOTES:

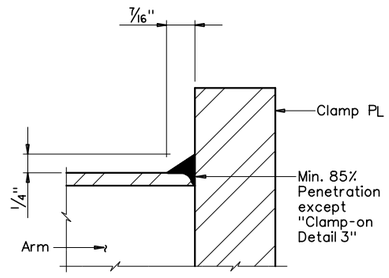
Clamp-on details shall be used for ILSN support arm assemblies. A 1 1/2" inch diameter hole shall be cut in the front clamp plate for wiring access. A matched hole shall be field drilled through the pole to provide wire access after arm is oriented. Deburr both holes.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the details.

Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

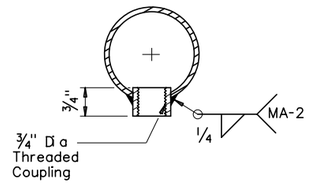
NOTE:

Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and 3/4" dia pipe shall have 3/16" dia holes for a 1/8" dia galvanized cotter pin. Back clamp plate shall be furnished with a 3/4" dia hole for each pin bolt. An 11/16" dia hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.



CLAMP-ON ARM

ARM BASE WELD DETAILS



ILSN ARM COUPLING DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY FOR TRAFFIC SIGNAL SUPPORT STRUCTURES

MAST-ARM CONNECTIONS

MA-C(ILSN)-12

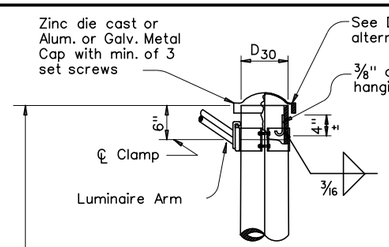
DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
1-12

CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC
DIST	COUNTY		SHEET NO.
SAT	BEXAR		164

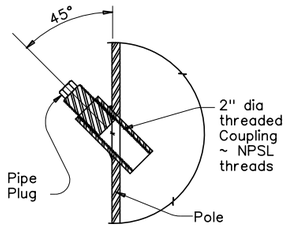
126B

DATE: 4/19/2022 14:14:08
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\MA-D-12.DGN

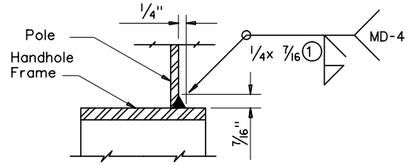


DETAIL A

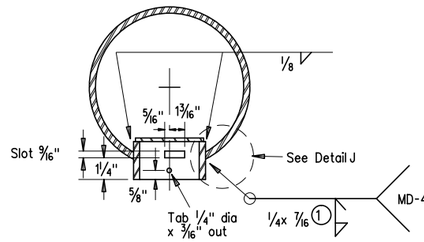
(for pole with luminaire)



POLE COUPLING DETAIL

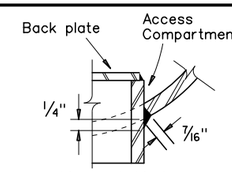


DETAIL G

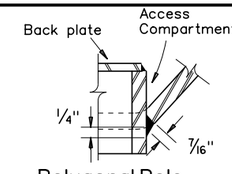


SECTION X-X

Opening for access compartment shall be no more than 1/16inch wider than the access compartment itself.

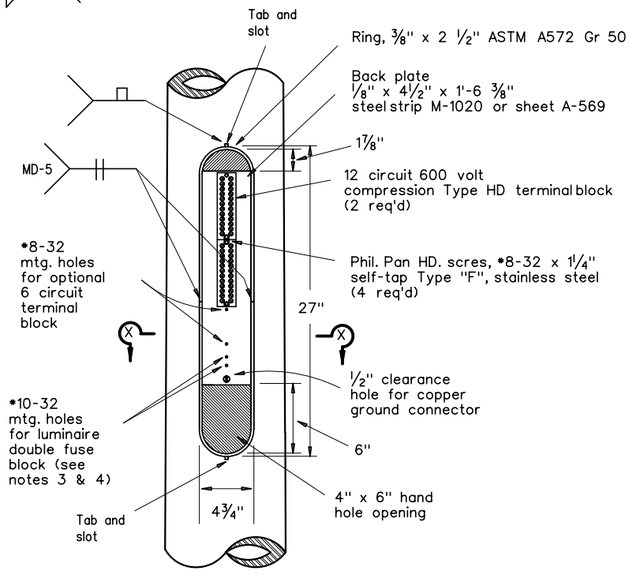


Round Pole

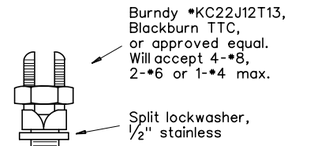


Polygonal Pole

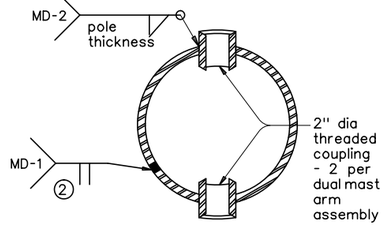
DETAIL J



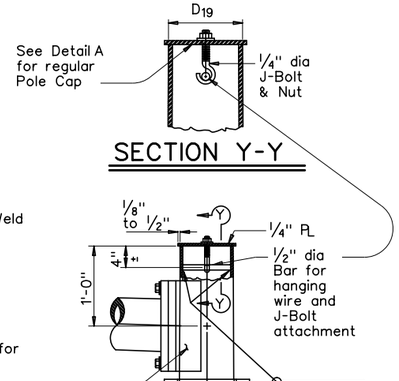
ACCESS COMPARTMENT



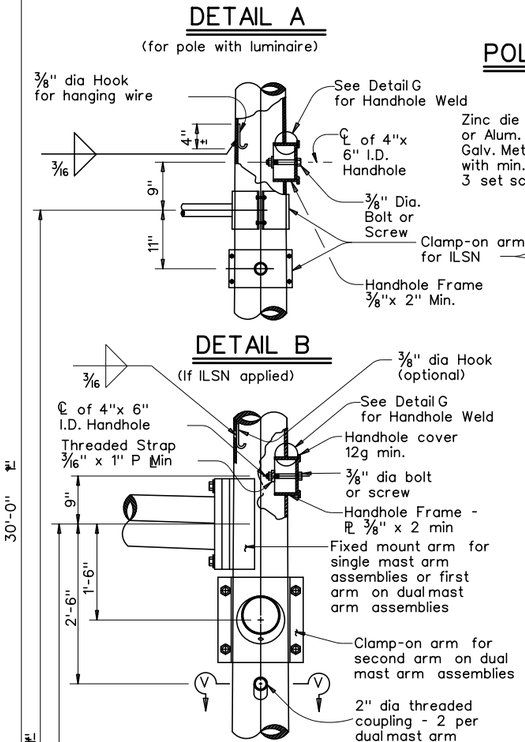
COPPER GROUND CONNECTOR



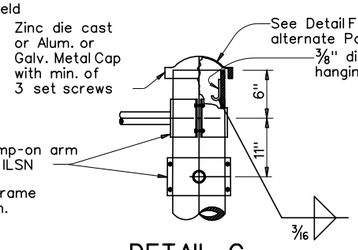
SECTION V-V



SECTION Y-Y



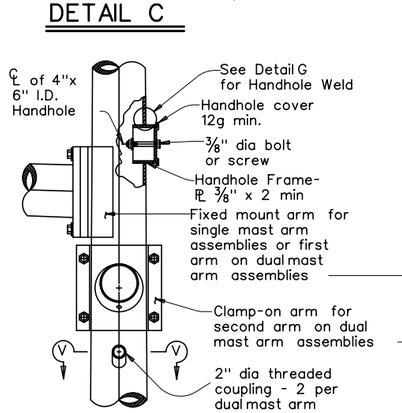
DETAIL B



DETAIL C

DETAIL D

(for 30' pole with luminaire and ILSN sign)

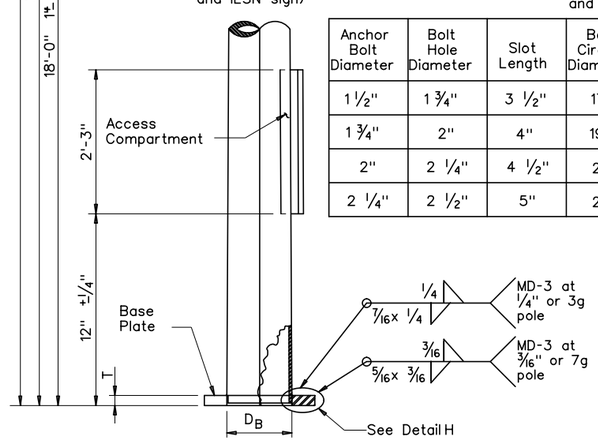


DETAIL E

(for 24' pole with ILSN sign and no luminaire)

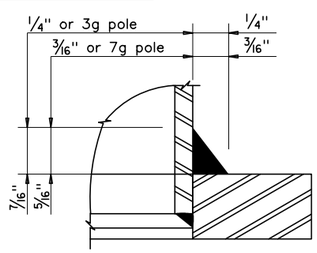
DETAIL F

(for 19' pole with no ILSN sign and no luminaire)

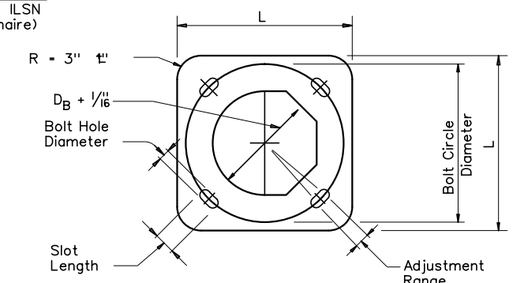


POLE ELEVATION

Anchor Bolt Diameter	Bolt Hole Diameter	Slot Length	Bolt Circle Diameter	Base PL Dim. L x T	Adjust. Range
1 1/2"	1 3/4"	3 1/2"	17"	18" x 1 1/2"	13.4°
1 3/4"	2"	4"	19"	20" x 1 3/4"	13.5°
2"	2 1/4"	4 1/2"	21"	22" x 2"	13.6°
2 1/4"	2 1/2"	5"	23"	24" x 2 1/4"	13.7°



DETAIL H



BASE PLATE PLAN

① 85% Min. penetration

② 60% Min. penetration 100% pemetration within 6" of circumferential base welds.

NOTES:

1. The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 stainless flat socket head screws with tamper proof feature.
2. The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon *985GP12CU or approved equal), four *8-32 x 1 1/4" self tapping type "F" stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or Ilsco SSS-5). The traffic signal contractor shall install the kit items in the field.
3. The screw hole spacing on the enclosure back plate shall be for two Marathon *985GP12 terminal strips, one Marathon *985GP06CU terminal strip, and one Bussmann *BM6032B fuse block.
4. Install one Bussmann *BM6032B, Littelfuse *L60030M-2C, or Ferraz-Shawmut *30352 fuse block for poles where luminaires are to be installed.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES MAST ARM POLE DETAILS

MA-D-12

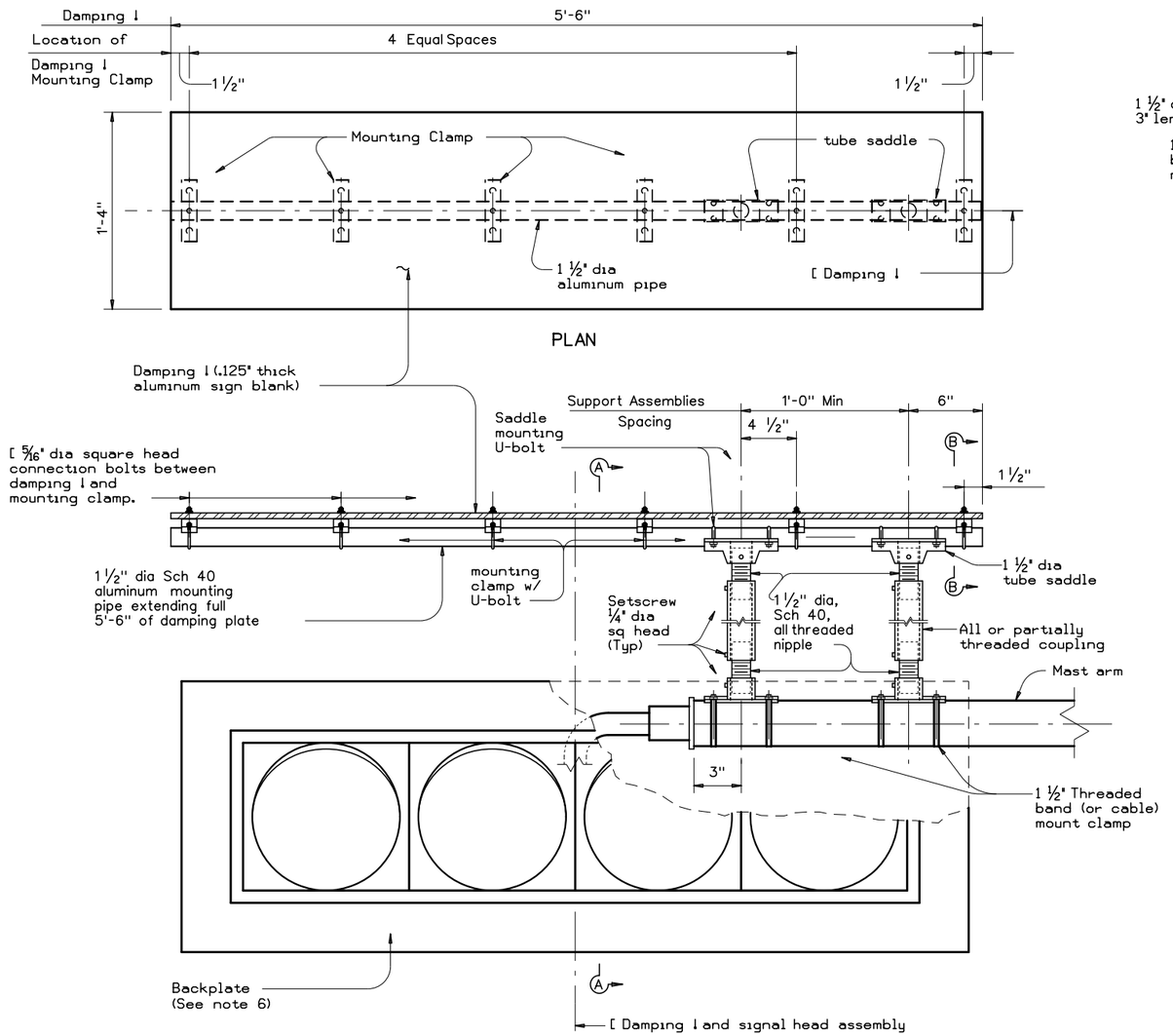
REVISIONS
8-99
1-12

DN: MS	CK: JSY	DW: FDN	CK: CAL

CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

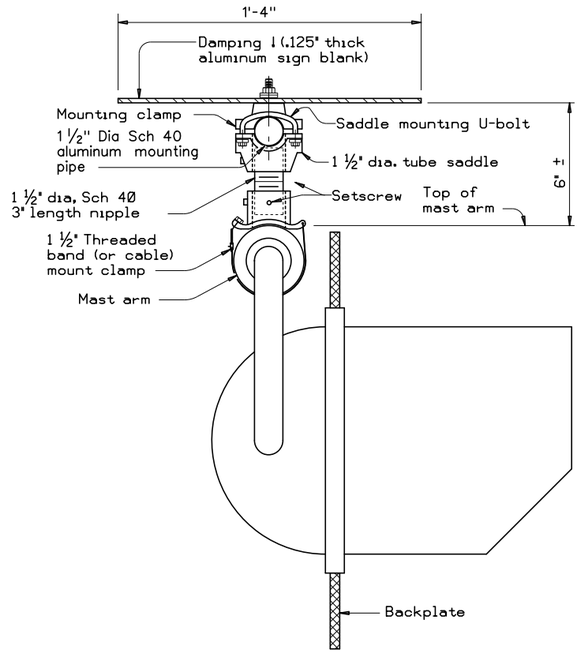
DIST	COUNTY	SHEET NO.
SAT	BEXAR	165

DATE: 4/19/2022
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\MA-DPD-20.dgn



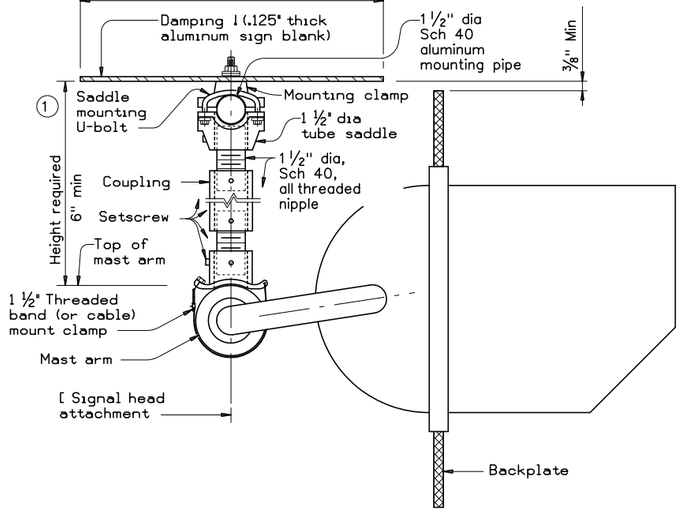
DAMPING PLATE MOUNTING DETAILS

(Showing alternate placement of signal head)



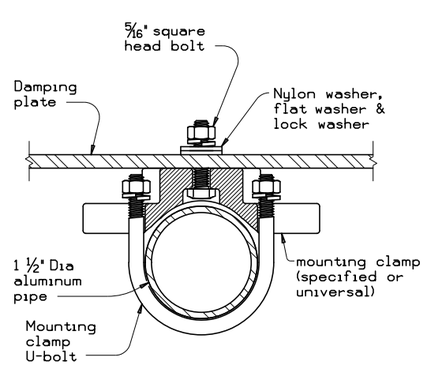
SECTION A-A

(Showing standard placement of signal head)
(Mounting clamp U-bolt is not shown for clarity)



SECTION A-A

(Showing alternate placement of signal head)
(Mounting clamp U-bolt is not shown for clarity)



SECTION B-B

(Showing damping plate attachment)

1 Recommended supporting assemblies to achieve required height for horizontal section heads				
Height required	One nipple each length	Two nipples each length	plus	One coupling each length
6"-6 ¾"	3"	-		-
7"-8 ½"	4"	-		-
9"-10 ½"	6"	-		-
11"-15 ½"	-	4"		5"
16"-24"	-	6"		10"

GENERAL NOTES:

1. In accordance with the findings of TxDOT sponsored research, the installation of a damping plate in accordance with the details shown here at the end of signal mast arms of SMA and DMA standard structures reduces excessive harmonic vertical vibration, and thus fatigue damage. Any deviation from these details may reduce the effectiveness of this damping device.

2. Aluminum sign blank for damping plate will conform to Departmental Material Specifications DMS-7110. Materials for mast arm mounting clamp and tube saddle will be aluminum castings or aluminum alloys as in accordance with manufacturers' stipulations. Mounting pipe, pipe nipple and coupling will be aluminum alloy 6061-T6 or 6063-T6. Damping plate mounting clamp and u-bolt assemblies will conform to Standard sheet SMD(GEN). U-bolts for saddle mounting will have a minimum yield strength of 36 ksi.

3. Damping plate will be mounted horizontally. Position centerline of damping plate to align with centerline of mast arm or horizontal signal head assembly. Vertical clearance between signal head (with or without backing plate)and bottom of damping plate will be maintained as shown. The attachments shown here are examples only, other supporting details which meet both alignment and vertical clearance requirements are also acceptable.

4. Unless stipulated by the manufacturers, all steel parts will be galvanized finish in accordance with Standard Specification Item 445, "Galvanizing".

5. Contractor will verify applicable field dimensions before the installation.

6. Backplates are optional for traffic signals. When backplates are used, Backplates will have a 2-inch fluorescent yellow AASHTO Type B $^{O}_{FL}$ $^{FLC}_{FL}$ retroreflective border conforming to TxDOT DMS-8300 "Sign Face Materials." See Sheet TS-BP-20 for backplate details.

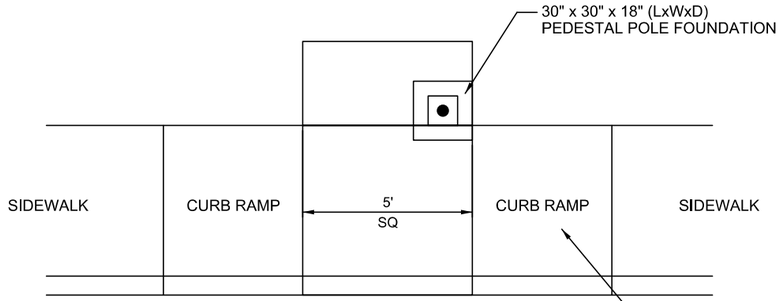
Texas Department of Transportation

Traffic Safety Division Standard

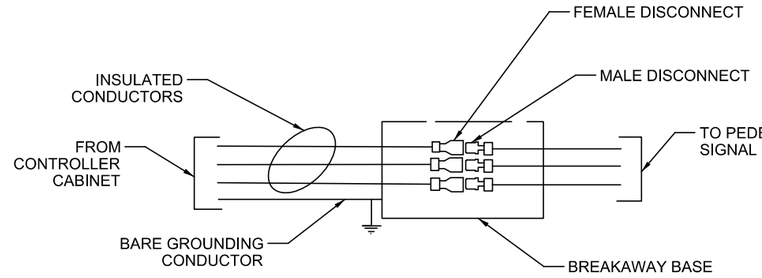
MAST ARM DAMPING PLATE DETAILS

MA-DPD-20

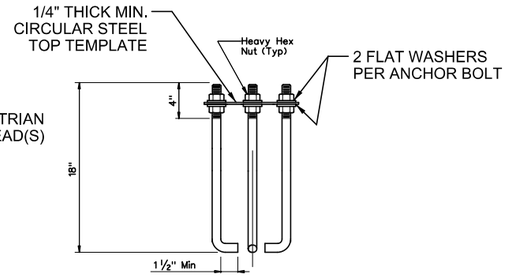
FILE: ma-dpd-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
6-20	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		166



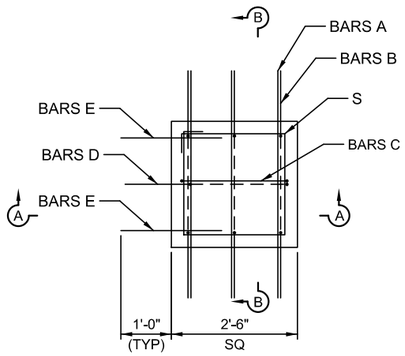
30"X30" FOUNDATION SIDEWALK DETAIL
(NOT TO SCALE)



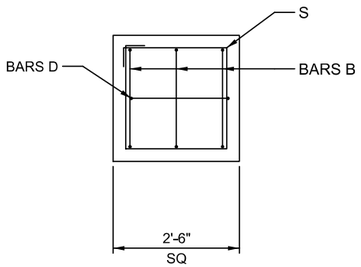
BREAKAWAY IN-LINE FUSEHOLDERS
(NOT TO SCALE)



HOOKED ANCHOR
(NOT TO SCALE)

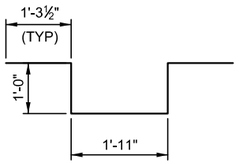


PLAN - TOP

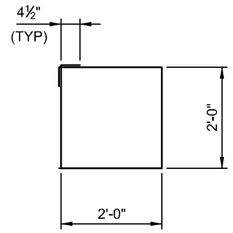


PLAN - BOTTOM

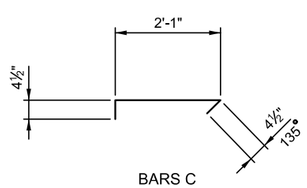
PEDESTAL POLE FOUNDATION PLAN VIEW (NOT TO SCALE)



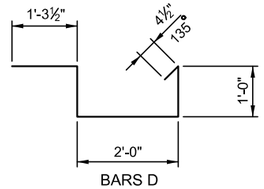
BARS B



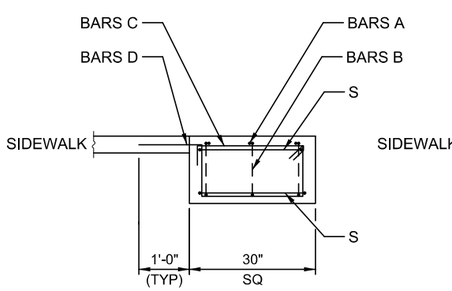
S - STIRRUP



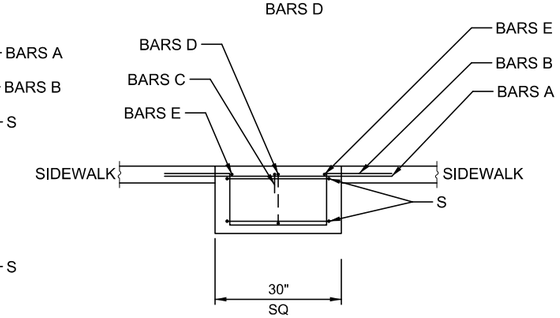
BARS C



BARS D

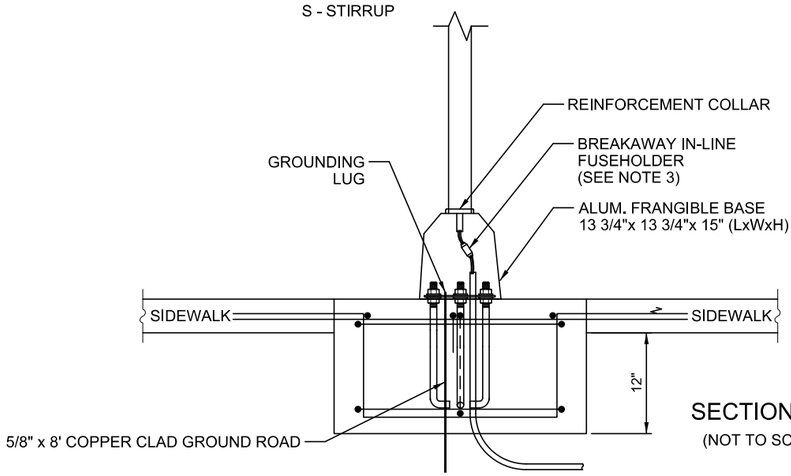


SECTION A-A



SECTION B-B

BARS E (24")



SECTION B-B
(NOT TO SCALE)

NOTES:
1. THE PEDESTAL POLE ASSEMBLY DEPICTED ON THIS SHEET IS DESIGNED FOR SIGNAL HEADS WHERE ELECTRICAL POWER IS NEEDED WITH A BREAKAWAY POLE.
2. POLE SHAFT SHALL BE ONE PIECE, SCHEDULE 40 ALUMINUM PIPE, ASTM B429 OR B221 (ALLOY 6061-T6 ONLY). ALUMINUM CONDUIT WILL NOT DEVELOP THE NECESSARY STRENGTH AND WILL NOT BE ALLOWED.
3. ALL ELECTRICAL CONNECTORS FOR BREAKAWAY POLES SHALL BE WATER TIGHT BREAKAWAY FUSEHOLDERS (BUCHANNAN 65U, BUSSMAN HEBW, LETTELFUSE LEB, HMC FLOOD-SEAL, FERRAZ-SHAWMUT, OR EQUAL). FUSES SHALL BE 10 AMP TIME DELAY.
4. CONDUIT IN FOUNDATION AND WITHIN 6 INCHES OF FOUNDATION IS SUBSIDIARY TO THE ITEM, 'PEDESTAL POLE ASSEMBLY'.
5. PER MANUFACTURER'S RECOMMENDATIONS, ENGAGE ALL THREADS ON THE PEDESTAL POLE BASE PIPE UNLESS THE PIPE IS FULLY SEATED INTO BASE.

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (210) 541-8699

Texas Department of Transportation

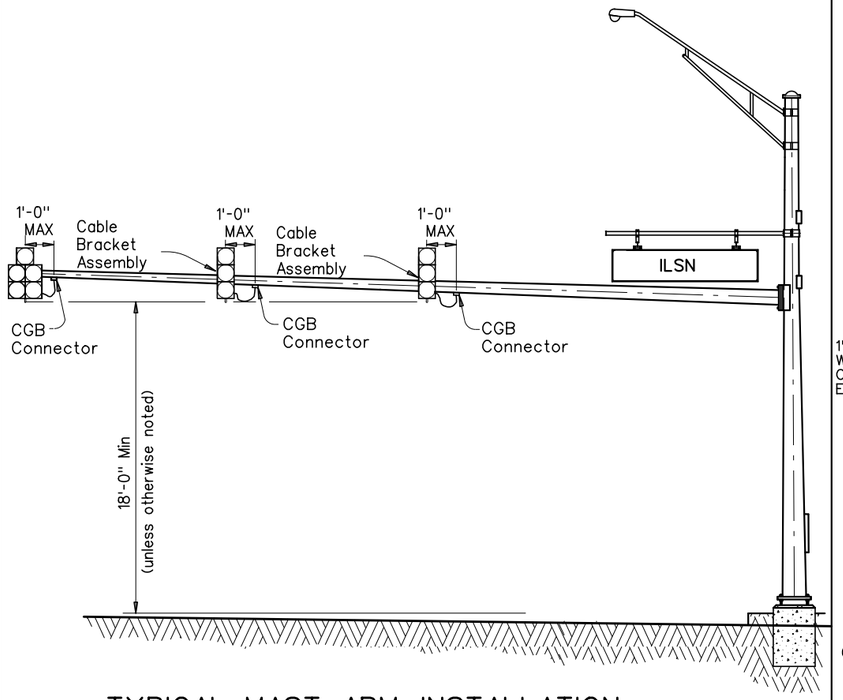
FY 2022 HSIP

MODIFIED PEDESTAL
POLE FOUNDATION DETAIL

SHEET 1 OF 1

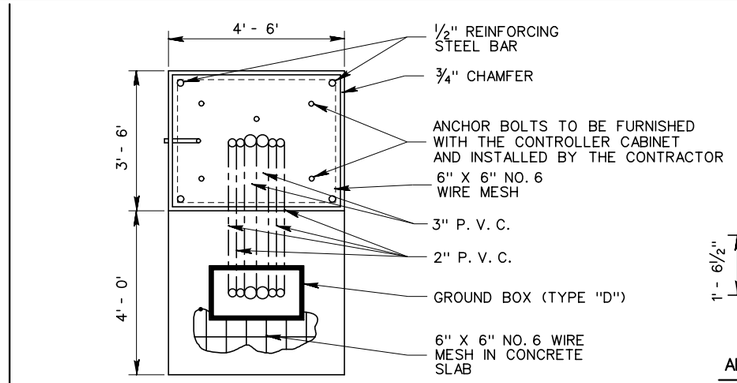
FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		167
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

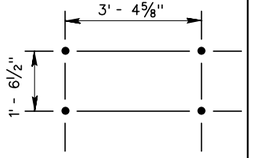
Justin.Kinne
4/19/2022 14:14:18
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_Noco_08.dgn



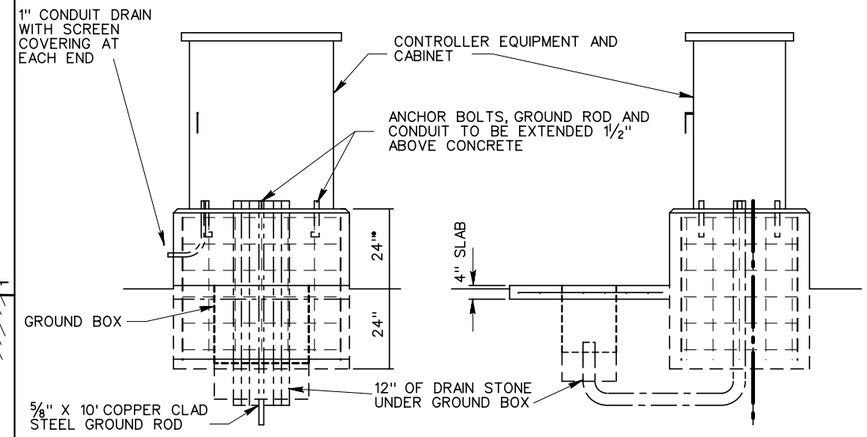
TYPICAL MAST ARM INSTALLATION

BACKPLATES ARE NOT SHOWN FOR CLARITY





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

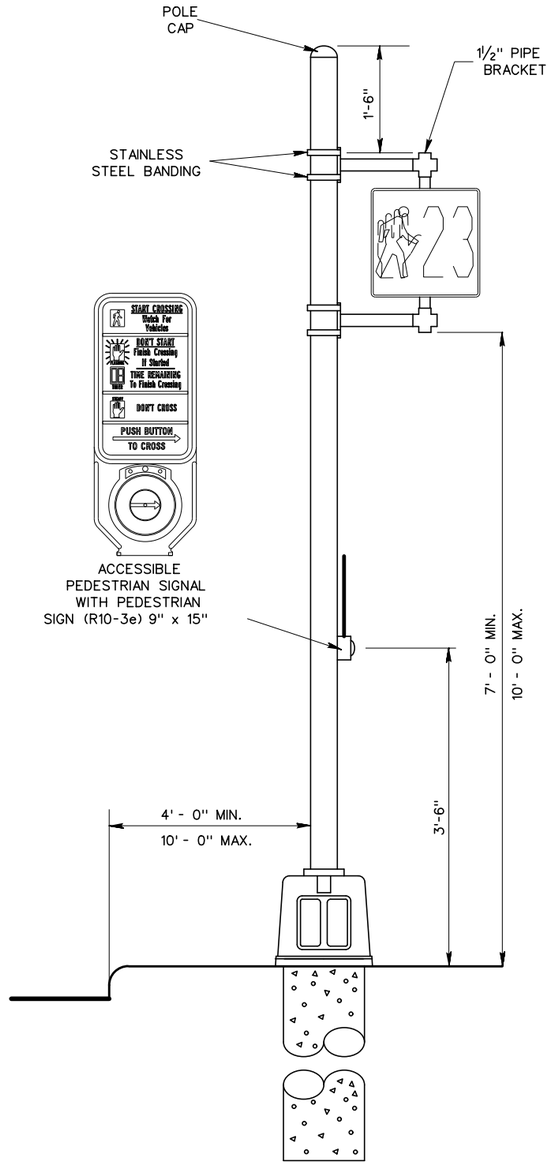
ALL MATERIALS SHOWN AND LABOR TO INSTALL THE CONTROLLER FOUNDATION SHALL BE CONSIDERED SUBSIDIARY TO PERTINENT ITEMS

CONTROLLER FOUNDATION SHALL BE AS SHOWN ON THE PLANS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

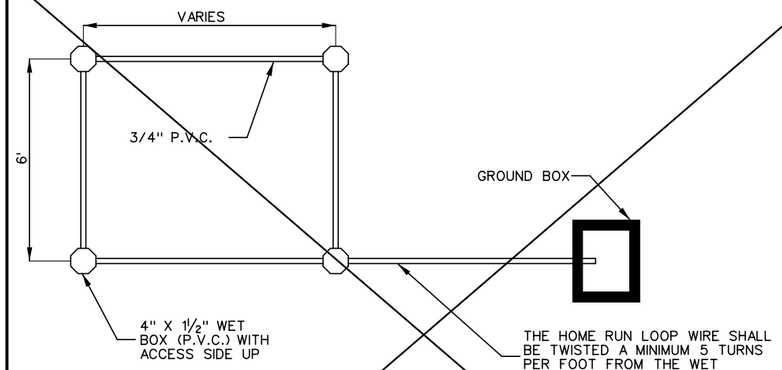
TYPICAL CONTROLLER MOUNT DETAILS

TYPICAL PED PUSH BUTTON LOCATION

THE ENGINEER SHALL VERIFY ALL PEDESTRIAN SIGNAL AND PEDESTRIAN PUSH BUTTON LOCATIONS PRIOR TO INSTALLATION.



TYPICAL PEDESTAL POLE ASSEMBLY



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

San Antonio District Standard

MISCELLANEOUS TRAFFIC SIGNAL DETAILS

MTS

 Texas Department of Transportation

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
FEB. 2006				168
OCT. 2007	STATE	DIST.	COUNTY	
MAR. 2017	TEXAS	SAT	BEXAR	
	CONT.	SECT.	JOB	HIGHWAY NO.
	0016	08	043,ETC	SL 368,ETC

LEVELS DISPLAYED

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ACC:																

MOUNTING LOCATIONS

PRESENCE (RPDD)

① PREFERRED PLACEMENT FOR MAST ARMS, STRAIN POLES AND TIMBER POLES. ON MAST ARM POLES, MOUNT BELOW CONNECTION OF MAST ARM TO A MINIMUM OF 15 FT., MOUNT AS HIGH AS POSSIBLE TO A MAXIMUM OF 30 FT ON STRAIN AND TIMBER POLES.

② PREFERRED PLACEMENT FOR MAST ARMS. MOUNT ON AND BELOW MAST ARM ON NEAR SIDE OF ARM.

③ ALTERNATE PLACEMENT LOCATION. MOUNT AS HIGH AS POSSIBLE TO A MAXIMUM OF 30 FT TO PREVENT OCCLUSION OF THE LEFT TURN LANES. THIS PLACEMENT TO BE USED ONLY IF RPDD CANNOT BE MOUNTED IN THE PREFERRED PLACEMENT LOCATIONS.

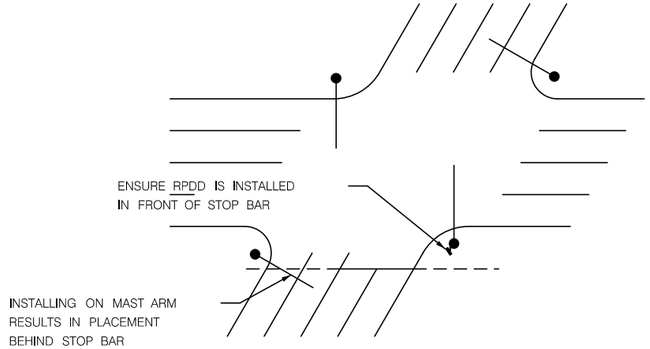
ADVANCE (RADD)

Ⓐ PREFERRED PLACEMENT FOR MAST ARMS. ALIGN RADD WITH CENTER OF TRAVEL LANES.

Ⓑ ALTERNATE PLACEMENT FOR MAST ARMS. MOUNT ON BACK SIDE OF OPPOSING MAST ARM.

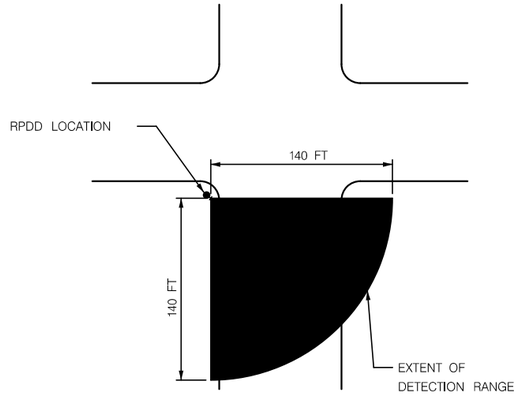
Ⓒ STRAIN OR TIMBER POLE PLACEMENT. MOUNT ON NEAR SIDE POLE.

Ⓓ ALTERNATE STRAIN OR TIMBER POLE PLACEMENT. MOUNT LUMINAIRE ARM ON NEAR SIDE POLE WITH A MAXIMUM 40 FT MOUNTING HEIGHT.



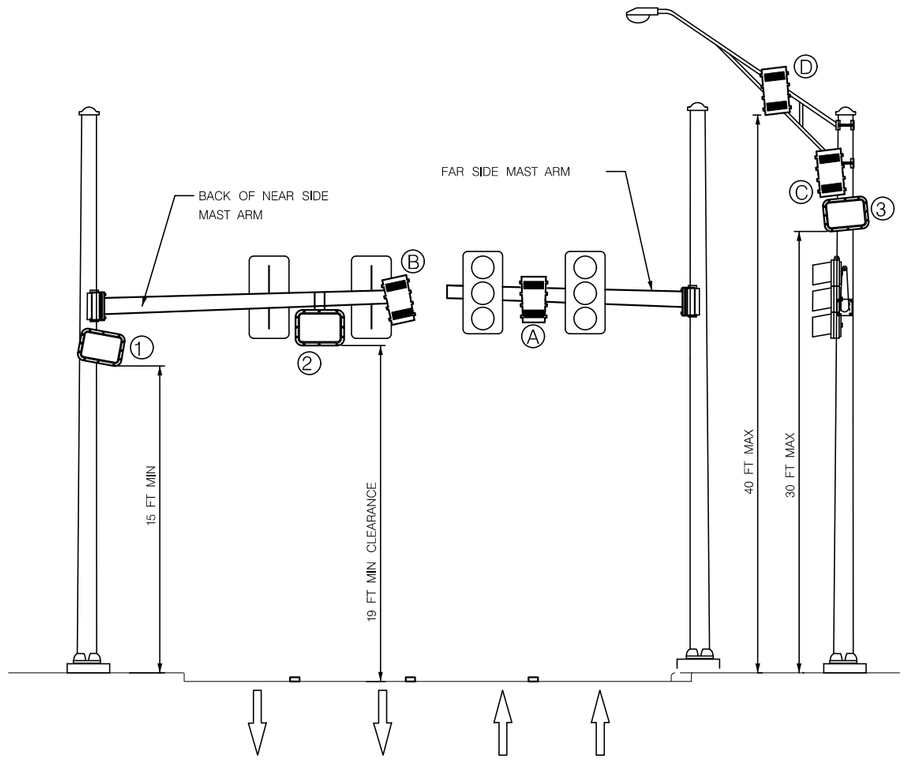
SKEWED INTERSECTION RPDD PLACEMENT

NTS



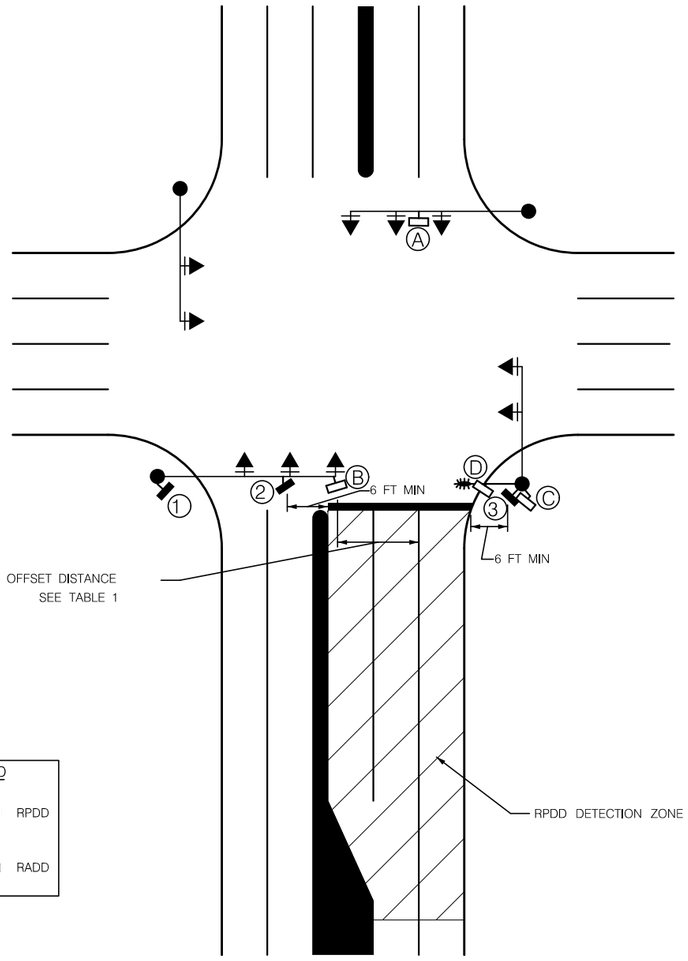
TYPICAL RPDD DETECTION RANGE

NTS



ELEVATION VIEW

NTS



PLAN VIEW

NTS

LEGEND

OR RPDD

OR RADD

NOTES:

1) A MINIMUM 6 FT HORIZONTAL OFFSET MUST BE MAINTAINED BETWEEN THE RPDD AND THE DETECTION ZONE

2) THE RPDD SHALL BE MOUNTED SUCH THAT AT LEAST 20 FT ALONG THE FARTHEST LANE TO BE MONITORED IS WITHIN THE FIELD OF VIEW OF THE RPDD

3) AIM RPDD AT THE CENTER OF THE LANES TO BE MONITORED, APPROXIMATELY 50 FT FROM THE RPDD UNIT

4) MOUNT RPDD SO THAT ITS FIELD OF VIEW IS NOT OCCLUDED BY POLES, SIGNS, OR OTHER STRUCTURES

5) RADD MOUNTING HEIGHT SHALL NOT BE LESS THAN 17 FT OR GREATER THAN 40 FT. RADD MOUNTING LOCATION SHALL HAVE A MAXIMUM 50 FT LATERAL OFFSET FROM CENTER OF TRAVEL LANES TO BE MONITORED

Texas Department of Transportation

San Antonio District Standard

RADAR PRESENCE DETECTOR (RPDD) RADAR ADVANCED DETECTION DEVICE (RADD) PLACEMENT

SCALE:NS

RPDD-RADD-20

REVISIONS	FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
MAR 2020	6			169
	STATE	DIST.	COUNTY	
	TEXAS	SAT	BEXAR	
	CONT.	SECT.	JOB	HIGHWAY NO.
	0016	08	043,ETC	SL 368,ETC

DATE: 4/19/2022 14:14:28
FILE: K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\TxDOT Standards SMA-80 (1)-12.dgn

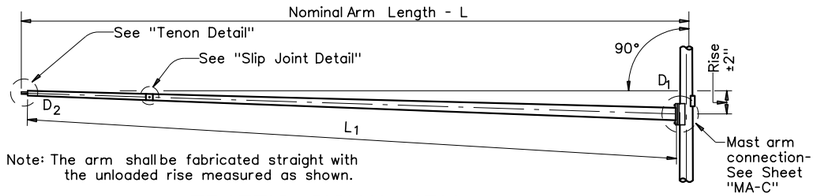
Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D_B	D_{19}	D_{24}	D_{30}	① thk	D_B	D_{19}	D_{24}	D_{30}	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	10.5	7.8	7.1	6.3	.179	11.5	8.5	7.7	6.8	.179	30-A
24	11.0	8.3	7.6	6.8	.179	12.0	9.0	8.2	7.3	.179	30-A
28	11.5	8.8	8.1	7.3	.179	12.5	9.5	8.7	7.8	.179	30-A
32	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
36	12.0	9.3	8.6	7.8	.239	12.5	9.5	8.7	7.8	.239	36-A
40	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
44	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
48	13.0	10.3	9.6	8.8	.239	15.0	12.0	11.2	10.3	.239	36-A

Arm Length	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	① thk	Rise	L_1	D_1	② D_2	① thk	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"
48	47.0	10.5	4.1	.239	3'-4"	47.0	11.0	3.5	.239	2'-9"

D_B = Pole Base O.D.
D_{19} = Pole Top O.D. with no Luminaire and no ILSN
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire
D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = Shaft Length
L = Nominal Arm Length

① Thickness shown are minimums, thicker materials may be used.

② D_2 may be increased by up to 1" for polygonal arms.



Note: The arm shall be fabricated straight with the unloaded rise measured as shown.

TRAFFIC SIGNAL ARM

(Fixed Mount)

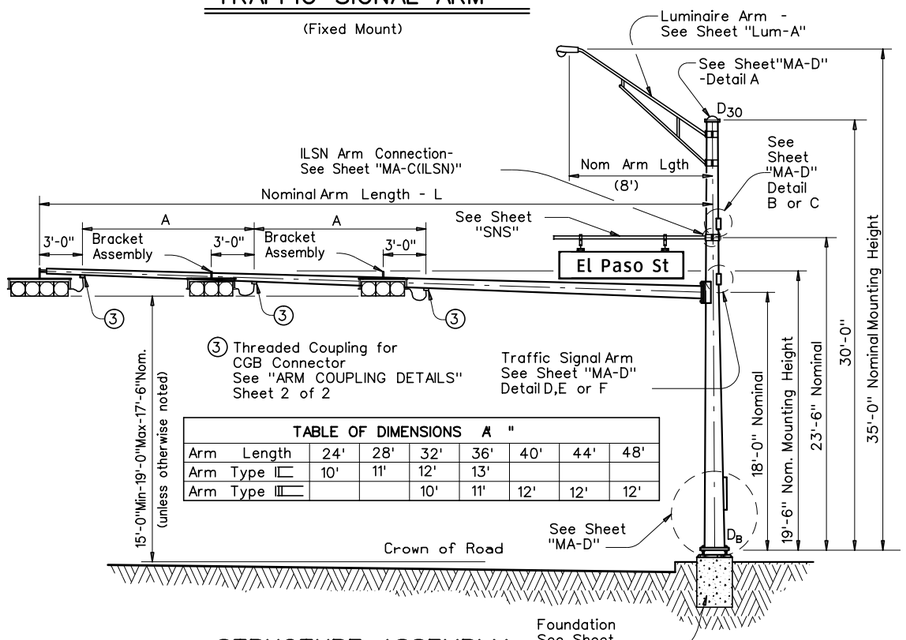


TABLE OF DIMENSIONS A "							
Arm Length	24'	28'	32'	36'	40'	44'	48'
Arm Type I	10'	11'	12'	13'			
Arm Type III			10'	11'	12'	12'	12'

STRUCTURE ASSEMBLY

SHIPPING PARTS LIST

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed-arm connection bolts and washers and any additional hardware listed in the table.

Nominal Arm Length	30' Poles With Luminaire		24' Poles With ILSN		19' Poles With No Luminaire and No ILSN	
	Above hardware plus: One (or two if ILSN attached) small hand hole, clamp-on simplex		Above hardware plus one small hand hole		See note above	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20L-80		20S-80		20-80	
24	24L-80		24S-80		24-80	
28	28L-80		28S-80		28-80	
32	32L-80		32S-80		32-80	
36	36L-80		36S-80		36-80	
40	40L-80		40S-80		40-80	3
44	44L-80		44S-80		44-80	1
48	48L-80		48S-80		48-80	

Traffic Signal Arms (1 per Pole) Ship each arm with the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	1 CGB connector		1 Bracket Assembly and 2 CGB Connectors		2 Bracket Assemblies and 3 CGB Connectors	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80		32III-80	
36			36II-80		36III-80	
40					40III-80	3
44					44III-80	1
48					48III-80	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
1 ½"	3'-4"	
1 ¾"	3'-10"	4

Each anchor bolt assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

Templates may be removed for shipment.

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

SHEET 1 OF 2

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY (80 MPH WIND ZONE)

SMA-80(1)-12

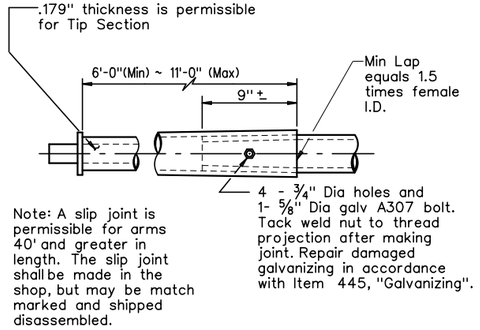
DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
11-99
1-12

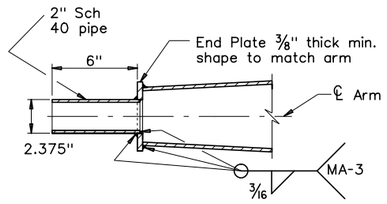
CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC
DIST	COUNTY		SHEET NO.
SAT	BEXAR		170

122A

DATE: 4/19/2022 14:14:30
FILE: K:\SNA_TP1O_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\SMA-80 (2)-12.dgn



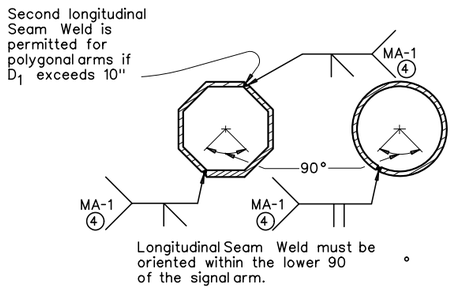
SLIP JOINT DETAIL



TENON DETAIL

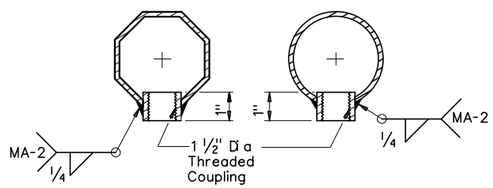
Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1½" Dia Threaded Coupling.

BRACKET ASSEMBLY



ARM WELD DETAIL

④ 60% Min. penetration 100% pemetration within 6" of circumferential base welds.



ARM COUPLING DETAILS

VIBRATION WARNING

Mast Arms of SMA and DMA structures and clamp-on Arms of LMA structures of approximately 40 ft or longer are subject to harmonic vertical vibrations in light wind conditions due to the aeroelastic characteristics of a few of the myriads of possible combinations of the following: signal numbers, weights and positions; existence/solidity of backplates; presence of additional attachments to the arm, such as signs and cameras; arm-wind orientation; and arm-pole stiffness.

Such vibrations may cause fatigue damage to the structure and may lead to galloping in moderate wind conditions which may further damage the structure and alarm the public. Tests have indicated that when wind is blowing toward the back side of signal heads having un-vented backplates attached the probability of unacceptable harmonic vibration and/or galloping is rather high.

If backplates are not required for improved visibility they should not be applied to the signal heads or, if they must be applied, they should be vented as a first and inexpensive measure to mitigate vibrations.

The traffic signal mast arms shall be visually inspected in 5 to 20 mph wind conditions after installation of signal heads and any attachments, including any required backpates. If vertical movements with a total excursion (maximum upward excursion to maximum downward excursion) of more than approximately 8" are observed at the arm tip, a damping plate shall be fitted to the arm. See "Damping Plate Mounting Details" on standard sheet, MA-DPD-10.

This visual inspection shall be repeated after each modification of the structure that could affect its aeroelastic response. Excessive vibrations shall not be allowed to continue for more than two days.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor.

Poles are designed to support one 8'-0" luminaire arm, one 9'-0" internally lighted street name sign and one traffic signal arm with a length as tabulated. The specified luminaire load applied at the end of the luminaire arm equals 60 lbs vertical dead load plus the horizontal wind load on an effective projected area of 1.6 sq ft. The specified internally lighted street name sign load applied 4.5 ft from the centerline of the pole equals 85 lbs vertical dead load plus horizontal wind load on an effective projected area of 11.5 sq ft. The specified signal load applied at the end of the traffic signal arm equals 180 lbs vertical dead load plus the horizontal wind load on an effective projected area of 32.4 sq ft (actual area times drag coefficient).

See Standard Sheet "MA-D" for pole details, "MA-C" for traffic signal arm connection details, "MA-C (ILSN)" for internally lighted street name sign arm connection details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details. See "MA-C" for material specifications.

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. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

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.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

SMA-80(2)-12

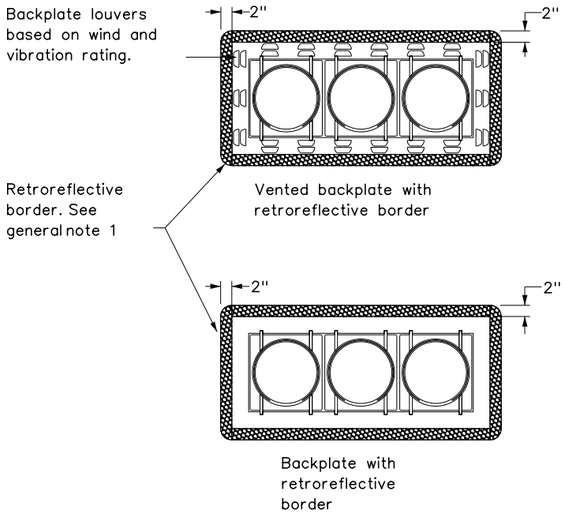
DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
1-12

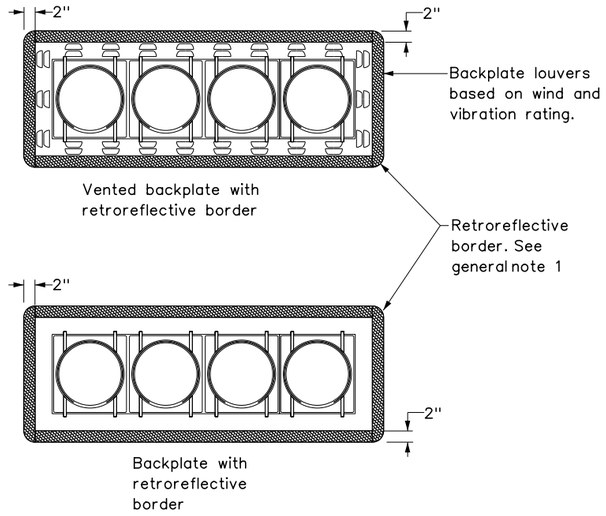
CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC
DIST	COUNTY		SHEET NO.
SAT	BEXAR		171

122B

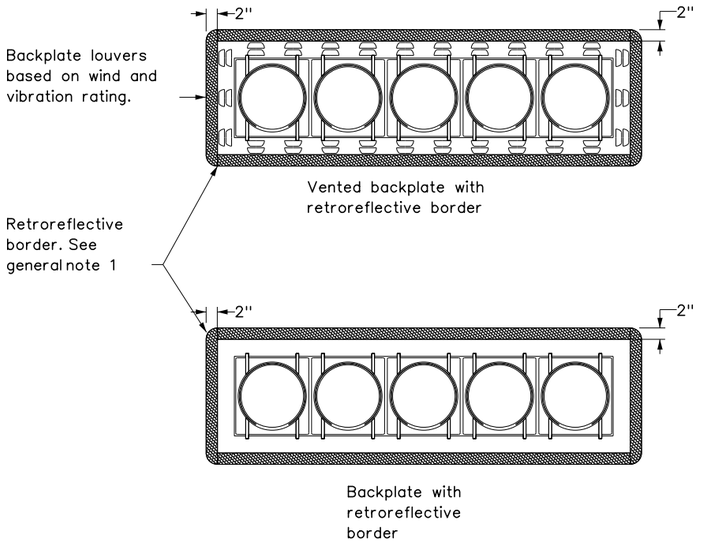
DATE: 4/19/2022 14:14:34
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\TS-BP-20.dgn



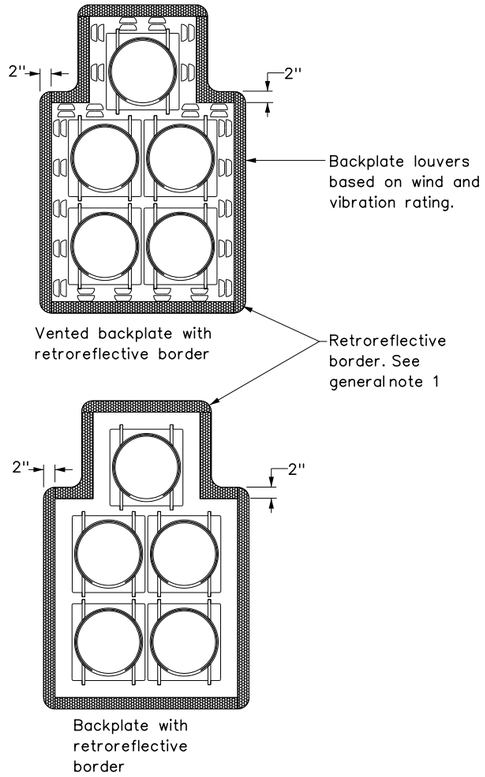
THREE-SECTION HEAD
HORIZONTAL OR VERTICAL



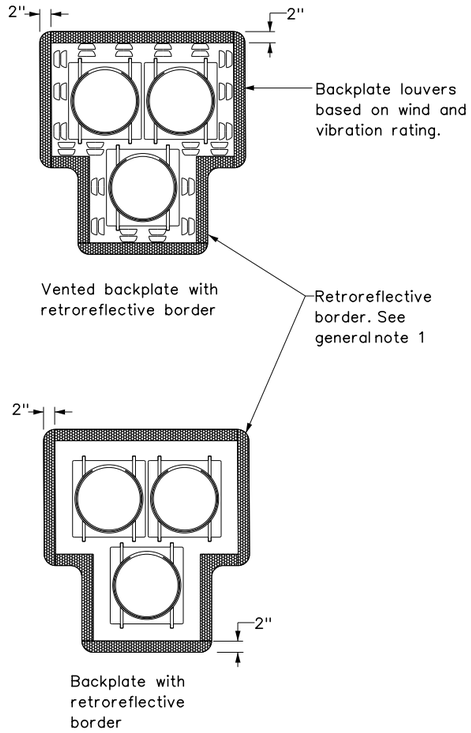
FOUR-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
CLUSTER



PEDESTRIAN HYBRID
BEACON

GENERAL NOTES:

1. Backplates are optional for traffic signals and pedestrian hybrid beacons. When backplates are used, a 2-inch wide fluorescent yellow AASHTO Type B or C_L R_L 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

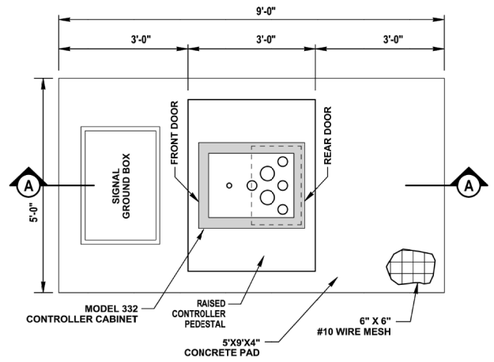
Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC SIGNAL HEAD WITH BACKPLATE

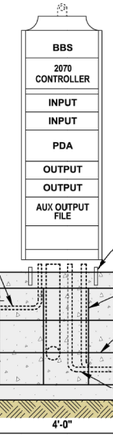
TS-BP-20

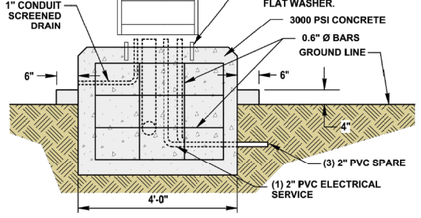
FILE: ts-bp-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		172



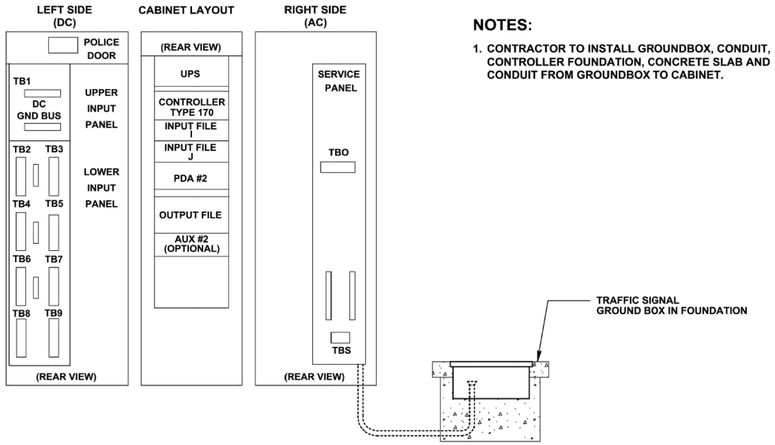
TOP VIEW

(NEW FOUNDATION)

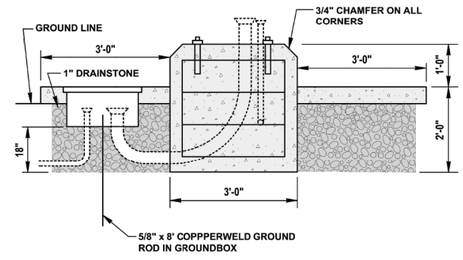




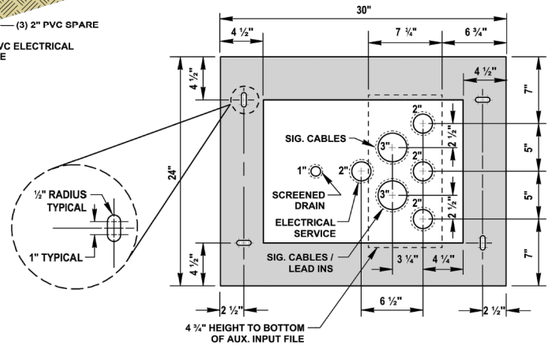
REAR VIEW



REAR VIEW SCHEMATIC



SECTION A-A



BASE PLATE TEMPLATE

NOTES:

1. CONTRACTOR TO INSTALL GROUNDBOX, CONDUIT, CONTROLLER FOUNDATION, CONCRETE SLAB AND CONDUIT FROM GROUNDBOX TO CABINET.

CITY OF SAN ANTONIO
TRANSPORTATION & CAPITAL IMPROVEMENTS
Transportation Planning Division

TRAFFIC SIGNAL STANDARD

TYPE 332 CABINET FOUNDATION

TS-CAB-17

FHWA TEXAS DIVISION	FEDERAL AID PROJECT NO.			SHEET NO.
				25
STATE	DISTRICT	COUNTY		TOTAL SHTS.
TEXAS	SAT	BEXAR		
CONTROL	SECTION	JOB	HIGHWAY NO.	

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022
Amy E Avery

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

TS-CAB-17

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		173
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:14:43
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_CAB.dgn

DATE: 4/19/2022 9:34:36 AM
FILE: P:\xv-TPD\Projects\TX\2019\D190364TX.04\1-Design\500-CADD\dgn\02 Plan Files\08 signal\standards\ts-fd.dgn

FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft ④, ⑤, ⑥			ANCHOR BOLT DESIGN ①				FOUNDATION DESIGN LOAD ②		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

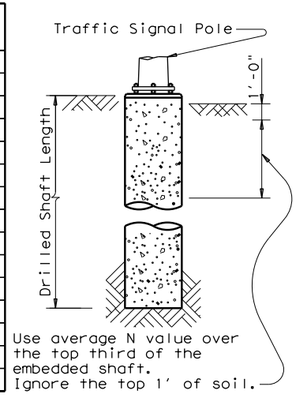
⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE ③

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET)				
				24-A	30-A	36-A	36-B	42-A
LP 13 AT								
FM 1346								
POLE B	10	24-A	1	6				
POLE D	10	24-A	1	6				
POLE E	10	24-A	1	6				
POLE G	10	24-A	1	6				
POLE I	10	24-A	1	6				
POLE J	10	24-A	1	6				
TOTAL DRILLED SHAFT LENGTHS				36				

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'

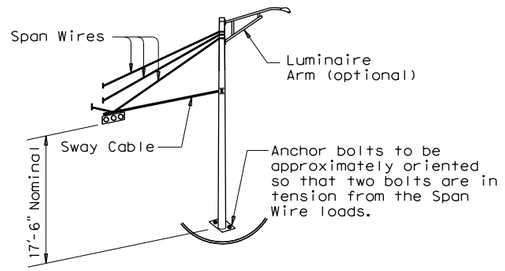


ANCHOR BOLT & TEMPLATE SIZES

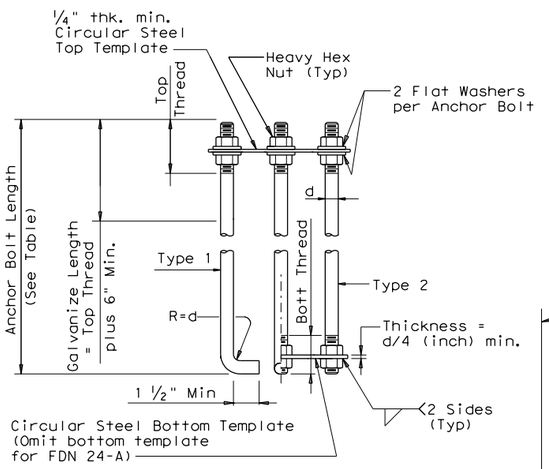
BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

⑦ Min dimensions given, longer bolts are acceptable.

EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



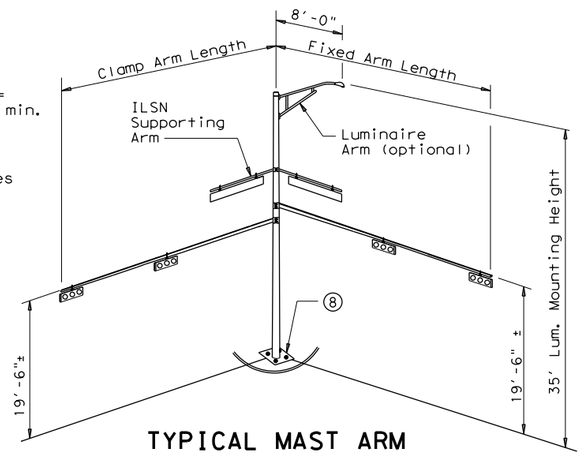
TYPICAL STRAIN POLE ASSEMBLY



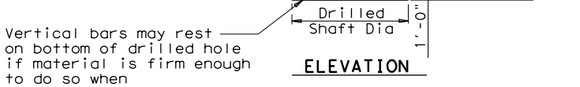
HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY

⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



TYPICAL MAST ARM ASSEMBLY



TOP VIEW

ELEVATION

FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

STATE OF TEXAS
FEDERICO J. MENDOZA
63311
REGISTERED PROFESSIONAL ENGINEER

4/19/2022

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB

REVISIONS: 5-96, 11-99, 1-12

CONT	SECT	JOB	HIGHWAY
0016	08	043, ETC	SL 368, ETC

DIST	COUNTY	SHEET NO.
SAT	BEXAR	174

DATE: 4/19/2022 14:15:00
FILE: K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\TxDOT Standards\TS-FD-12.dgn

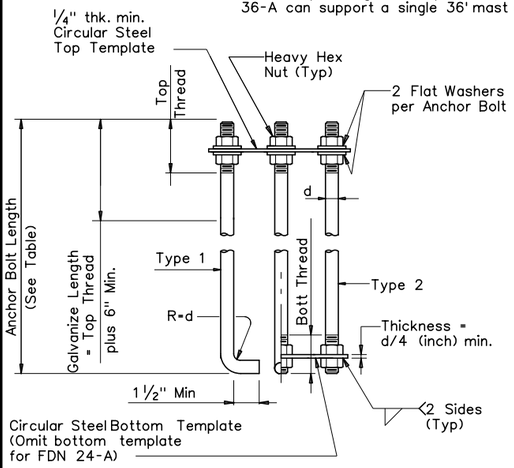
FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft 4 5 6			ANCHOR BOLT DESIGN (1)				FOUNDATION DESIGN LOAD (2)		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft 10	15	40	ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	3/4"	36	12 3/4"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 1/2"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 3/4"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 1/4"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

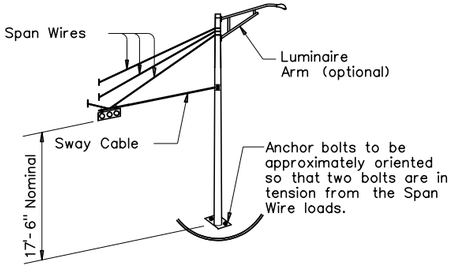
		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'

EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.

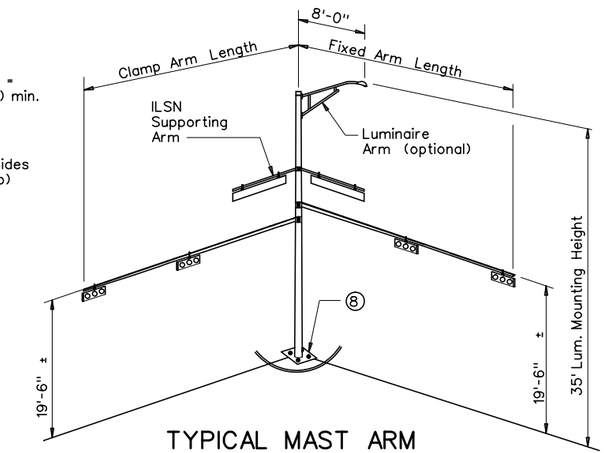


ANCHOR BOLT ASSEMBLY

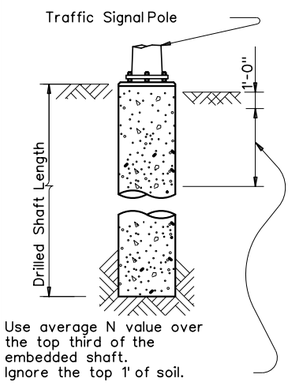
⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



TYPICAL STRAIN POLE ASSEMBLY



TYPICAL MAST ARM ASSEMBLY



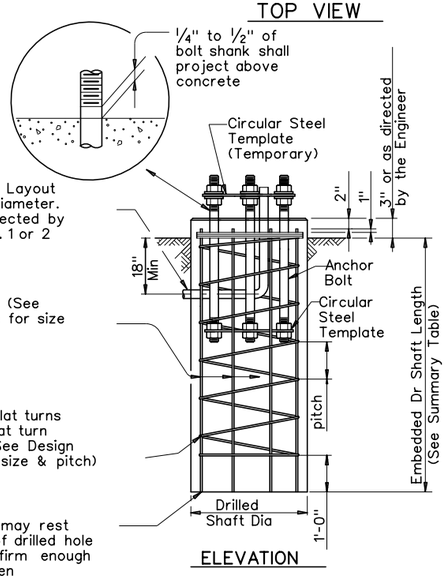
Use average N value over the top third of the embedded shaft. Ignore the top 1' of soil.

Conduit (See Layout Sheets for diameter. Orient as directed by the Engineer. 1 or 2 required)

Vertical Bars (See Design Table for size & number).

Spiral, 3 flat turns top & 1 flat turn bottom. (See Design Table for size & pitch)

Vertical bars may rest on bottom of drilled hole if material is firm enough to do so when concrete is placed.



FOUNDATION DETAILS

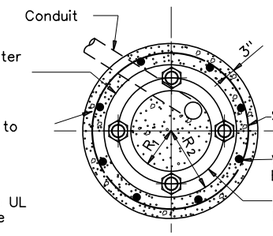
NOTES:

1. Anchor bolt design develops the foundation capacity given under Foundation Design Loads.
2. Foundation Design Loads are the allowable moments and shears at the base of the structure.
3. Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.
4. Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.
5. If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.
6. Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

ANCHOR BOLT & TEMPLATE SIZES

BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
3/4"	1'-6"	3"	—	12 3/4"	7 1/8"	5 5/8"
1 1/2"	3'-4"	6"	4"	17"	10"	7"
1 3/4"	3'-10"	7"	4 1/2"	19"	11 1/4"	7 3/4"
2"	4'-3"	8"	5"	21"	12 1/2"	8 1/2"
2 1/4"	4'-9"	9"	5 1/2"	23"	13 3/4"	9 1/4"

⑦ Min dimensions given, longer bolts are acceptable.



Steel Template with holes 1/16" greater than bolt diameter

Bond anchor bolts to rebar cage, two locations using #3 bar or #6 copper jumper. Mechanical connectors shall be UL Listed for concrete encasement.

TOP VIEW

*SUBSIDIARY TO ITEM 687-6007

** SEE SHALLOW PEDESTAL POLE STANDARD FOR SHALLOW FOUNDATION DETAILS

FOUNDATION SUMMARY TABLE ③

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH (FEET) ⑥ 24-A	30-A	36-A	36-B	42-A
AUSTIN HIGHWAY								
POLE 1	10	36-A	1			13'		
POLE 2	10	36-A	1			13'		
SW. MILITARY DR. & BARLITE BLVD.								
POLE 2	10	24-A	1	6'				
POLE 3	10	24-A	1	6'				
POLE 5	10	24-A	1	6'				
POLE 6	10	24-A	1	6'				
POLE 8	10	24-A	1	6'				
POLE 9	10	24-A	1	6'				
POLE 10	10	24-A	1	6'				
POLE 12	10	24-A	1	6'				
SW. MILITARY DR. & YARROW BLVD.								
POLE 2	10	24-A	1	6'				
POLE 3	10	24-A	1	6'				
POLE 5	10	24-A	1	6'				
SW. MILITARY DR. & S. PARK MALL								
POLE 1	10	24-A	1	6'				
POLE 2	10	24-A	1	6'				
POLE 3	10	24-A	1	6'				
POLE 5	10	24-A	1	6'				
POLE 7	10	24-A	1	6'				
POLE 8	10	24-A	1	6'				
POLE 10	10	24-A	1	6'				
FM 2252 & EL CHARRO								
POLE 2	10	30-A	1		1.5'			
POLE 6	10	30-A	1		1.5'			
POLE 7	10	30-A	1		1.5'			
POLE 9	10	30-A	1		1.5'			
PERRIN BEITEL RD.								
POLE 1	10	30-A	1		1.5'			
POLE 2	10	30-A	1		1.5'			
POLE 3	10	30-A	1		1.5'			
POLE 4	10	30-A	1		1.5'			
WW. WHITE RD.								
POLE 1	10	36-A	1			13'		
POLE 2	10	36-A	1			13'		
POLE 3	10	36-A	1			13'		
TOTAL DRILLED SHAFT LENGTHS				*108'	**12'	65'		

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting thestructure in accordance with Item 449, "Anchor Bolts".

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED PROFESSIONAL ENGINEER
4/19/2022

Texas Department of Transportation
Traffic Operations Division

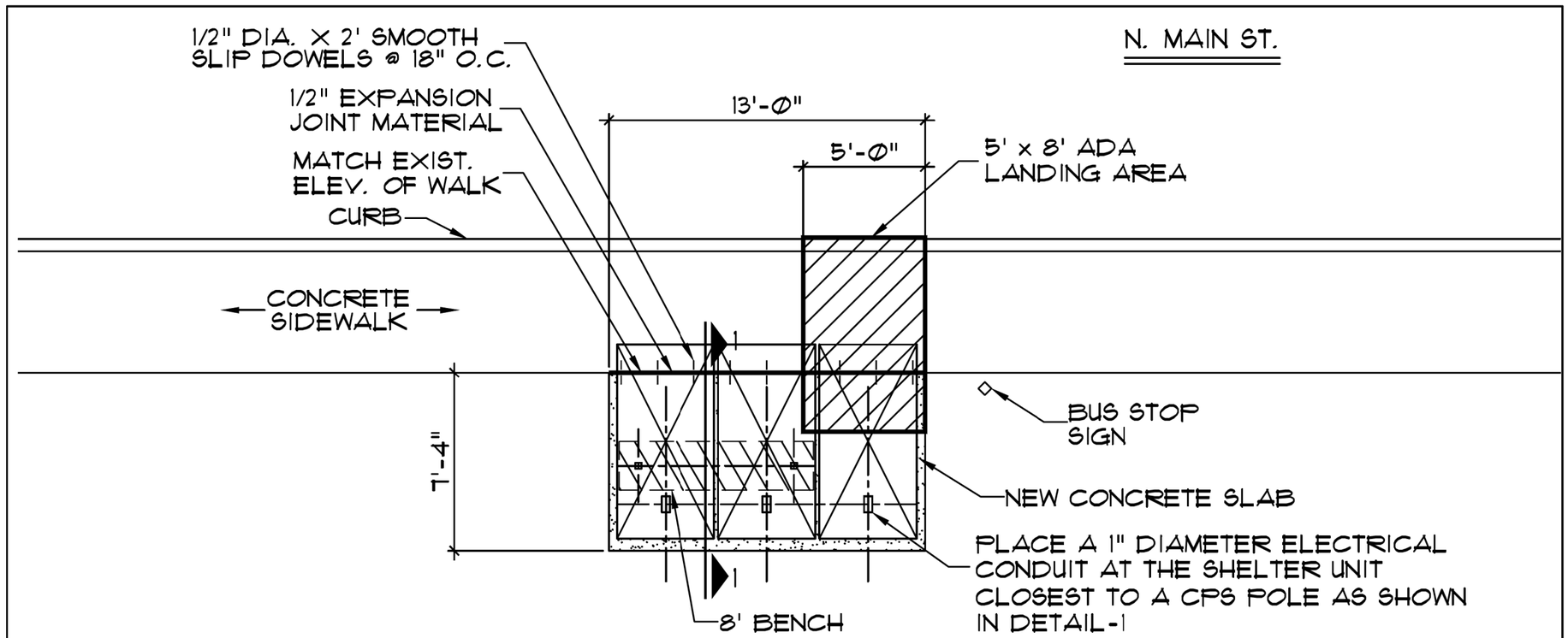
TRAFFIC SIGNAL POLE FOUNDATION

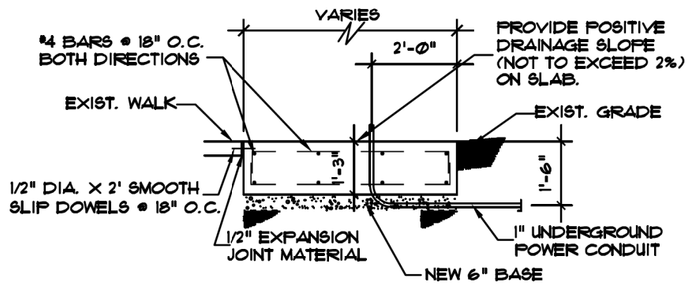
TS-FD-12

DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB

REVISIONS 5-96 11-98 1-12

CONT	SECT	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC
DIST	COUNTY		SHEET NO.
SAT	BEXAR		175





1 DETAIL
SCALE: 3/8"=1'-0"

VIA METROPOLITAN TRANSIT
P.O. BOX 12489, 800 WEST MYRTLE
SAN ANTONIO, TEXAS 78212

N. MAIN @ EVERGREEN
(N.W. CORNER)

DATE: June-21-2016
DRAWN BY: NC
SCALE: 1/4"=1'-0"
SHEET: XXXXX

STATE OF TEXAS
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

VIA BUS STOP FOUNDATION DETAILS

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		176
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

Justin.Kinne
4/19/2022 14:15:05
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call\WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_WHITE_06_VIA.dgn

4/19/2022 14:15:12
K:\SNA_TPTO\0687720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\txdot standards\EPIC.dgn

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. THIS ACTION IS SPECIFIC TO CSJ 0016-08-043, CSJ 1433-01-031, & CSJ 1433-01-032

   Karst Feature Discovery Instructions

   If karst features (caves, solution cavities, sinkholes) are encountered during construction, including drilling, stop all work within 50 feet of the feature and notify TxDOT. Cover the opening with wood, plastic, or a blanket that is weighted down around the perimeter. If daily temperatures exceed 100 degrees fahrenheit, add insulation to the cover. Implement measures such as earth berms, rock berms, or sandbags to minimize surface runoff from entering the opening. Place fence or barricades to prevent fall hazard if necessary.

   TxDOT will provide a permitted scientist to evaluate the feature and will provide direction to the contractor regarding the disposition of feature and notice when work may resume. The duration of the stop work requirement is indefinite dependent on findings and research and resource agency coordination. Features may require management under the Endangered Species Act and Edwards Aquifer Rules under the jurisdiction of the USFWS and TCEQ, respectively.

4.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the 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
AMY ELIZABETH AVERY
98481
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

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	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		177

Note To Designer:
1. Do not alter Sheet Design or Font style, size or weight - match text attributes.
2. If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from it's relative position.

A. GENERAL SITE DATA

1. PROJECT LIMITS: *Hanz Dr.& Gruene Rd.; S.Walnut Ave.& County Line Rd.; W. County Line Rd.& Dove Crossing Dr.*

2. PROJECT SITE MAPS:
   - *Project Latitude Varies Project Longitude Varies*
   - *Project Location Map: Shown on Title Sheet*
   - *Drainage Patterns: Shown on Drainage Area Maps (N/A)*
   - *Approx. Slopes Anticipated After Major Gradings and Areas of Soil Disturbance: Shown on Typical Sections (N/A)*
   - *Major Controls and Locations of Stabilization Practices: Shown on SW3P Sheets (N/A)*
   - *Project Specific Locations: Off-site waste, borrow, or storage areas are not part of this SW3P.*
   - *Surface Waters and Discharge Locations: Shown on Drainage and Culvert Layout Sheets (N/A)*

3. PROJECT DESCRIPTION: *Same description as stated on Title Sheet*

Non-Joint Bld Utilities are not part of this SW3P.

4. FOR MAJOR SOIL DISTURBING ACTIVITIES SEQUENCE OF EVENTS:

1. Install controls down-slope of work area and initiate inspection and maintenance activities.

2. Begin phased construction with interim stabilization practices. Adjust erosion and sedimentation controls during construction to meet requirements and changing conditions and as directed/approved by the Engineer.

3. Major soil disturbing activities may include but are not limited to: right-of-way preparation, cut and/or fill to improve roadway profile, final grading and placement of topsoil and the following (if marked):

- ____ *Placement of road base*
- ____ *Exstensive ditch grading*
- ____ *Upgrading or replacing culverts or bridges*
- ____ *Temporary detour road(s)*
- _X_ *Other: Ramp Installations*

5. EXISTING AND PROPOSED CONDITIONS:

Description of existing vegetative cover: (Roadway; grass along roadway in various locations)
Percentage of existing vegetative cover: (Less than 5%)
Existing vegetative cover: (mark one)
- ____ *Thick or uniformly established*
- ____ *Thin and Patchy*
- _X_ *None or minimal cover*

Description of soils: (Provide classification and description of soils)
Site Acreage: less than 0.5 acres *Acreage disturbed: < 1 ACRE*
Site runoff coefficient (pre-construction): N/A *Site runoff coefficient (post-construction): N/A*

6. RECEIVING WATERS: *(Mark all that apply)*

_X_ *A classified stream does not pass through project.*
____ *A classified stream passes through project. Name* _____ *Segment Number* _____

Name of receiving waters that will receive discharges from disturbed areas of the project: SALADO CREEK

Site is in a Municipal Separate Storm Sewer System (MS4).
MS4 Operator (name): _____

B. BEST MANAGEMENT PRACTICES

General timing or sequence for implementation of BMPs shall be as required and/or as directed/approved by the Engineer to provide adequate controls. BMPs shown on plan sheets are to be considered "proposed" unless/until Install date is shown. BMPs are to reduce sediments from road construction activities.

1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- ____ SEEDING
- ____ MULCHING (Hay or Straw)
- ____ BUFFER ZONES
- ____ PLANTING
- ____ COMPOST/MULCH FILTER BERM
- _P_ SODDING
- ____ PRESERVATION OF NATURAL RESOURCES
- ____ FLEXIBLE CHANNEL LINER
- ____ RIGID CHANNEL LINER
- ____ SOIL RETENTION BLANKET
- ____ COMPOST MANUFACTURED TOPSOIL
- ____ OTHER: (Specify Practice)

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

- _T_ SILT FENCES
- ____ HAY BALES
- _T_ ROCK FILTER DAMS
- ____ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ____ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ____ DIVERSION DIKE AND SWALE COMBINATIONS
- ____ PIPE SLOPE DRAINS
- ____ PAVED FLUMES
- ____ ROCK BEDDING AT CONSTRUCTION EXIT
- ____ TIMBER MATTING AT CONSTRUCTION EXIT
- ____ CHANNEL LINERS
- ____ SEDIMENT TRAPS
- ____ SEDIMENT BASINS
- ____ STORM INLET SEDIMENT TRAP
- ____ STONE OUTLET STRUCTURES
- ____ CURBS AND GUTTERS
- ____ STORM SEWERS
- ____ VELOCITY CONTROL DEVICES
- ____ OTHER: *(Specify Practice)*

3. STORM WATER MANAGEMENT:

The proposed facility was designed in consideration of hydraulic design standards to convey stormwater in a manner that is protective of public safety and property. The control of erosion from the facility is inherent to the design. Additional factors affecting post-construction stormwater at the project location include: (mark all that apply)

- _X_ *Existing or new vegetation provides natural filtration.*
- ____ *The design includes provisions for permanent erosion controls provided by strategically placed pervious and impervious surfaces.*
- ____ *Project includes permanent sedimentation controls (other than grass).*
- _X_ *Velocities do not require dissipation devices.*
- ____ *Velocity-dissipation devices included in the design.*
- ____ *Other :* _____

4. NON-STORM WATER DISCHARGES:

Off-site discharges are prohibited except as follows:

1. Discharges from fire fighting activities and/or fire hydrant flushings.
2. Vehicle, external building, and pavement wash water where detergents and soaps are not used and where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed).
3. Plain water used to control dust.
4. Plain water originating from potable water sources.
5. Uncontaminated groundwater, spring water or accumulated stormwater.
6. Foundation or footing drains where flows are not contaminated with process materials such as solvents.
7. Other: _____

Concrete truck wash water discharges on the site should be prohibited or minimized. If allowed by the Engineer, they must be managed in a manner so as not to contaminate surface water. They must not be located in areas of concentrated flow. Concrete truck wash-out locations must be shown on the SW3P Layout and included in the inspections.

Hazardous material spill/leak shall be prevented or minimized. At a minimum, this includes asphalt products, fuels, oils, lubricants, solvents, paints, acids, concrete curing compounds and chemical additives for soil stabilization. BMPs shall be implemented to the storage areas of these products. All spills must be cleaned and disposed properly and reported to the Engineer. Report any release at or above the reportable quantity during a 24 hour period to the National Response Center at 1-800-424-8802.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:

All erosion and sediment controls shall be maintained in good working order. If a repair is necessary, it shall be performed before the next anticipated storm event but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from equipment. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable. Disturbed areas on which construction activities have ceased, temporarily or permanently, shall be stabilized within 14 calendar days unless they are scheduled to and do resume within 21 calendar days. The areas adjacent to creeks and drainageways shall have priority followed by protecting storm sewer inlets.

2. INSPECTION:

For areas of the construction site that have not been finally stabilized, areas used for storage of materials, structural control measures, and locations where vehicles enter or exit the site, personnel provided by the permittee and familiar with the SW3P must inspect disturbed areas at least once every seven (7) calendar days. An Inspection and Maintenance Report shall be prepared for each inspection and the controls shall be revised on the SW3P within seven (7) calendar days following the inspection.

3. WASTE MATERIALS:

All non-hazardous municipal waste materials such as litter, rubbish, trash and garbage located on or originating from the project shall be collected and stored in a securely lidded metal dumpster, provided by the Contractor. The dumpster shall be emptied as necessary or as required by local regulation and the trash shall be hauled to a permitted disposal facility. The burying of non-hazardous municipal waste on the project shall not be permitted. Construction material waste sites, stockpiles and haul roads shall be constructed to minimize and control the amount of sediment that may enter receiving waters. Construction material waste sites shall not be located in any wetland, water body or stream bed. Construction staging areas and vehicle maintenance areas shall be constructed in a manner to minimize the runoff of pollutants.

4. OFFSITE VEHICLE TRACKING:

Off-site vehicle tracking of sediments and the generation of dust must be minimized. Excess sediments on road shall be removed on a regular basis as directed/approved by the Engineer.

5. OTHER:

See the EPIC sheet for additional environmental information.

Kimley»Horn

 Texas Department of Transportation

STATE OF TEXAS
CHRIS STONG
128193
LICENSED
PROFESSIONAL ENGINEER
4/19/2022

Chris F. Stong
, P.E.
Signature of Registrant & Date

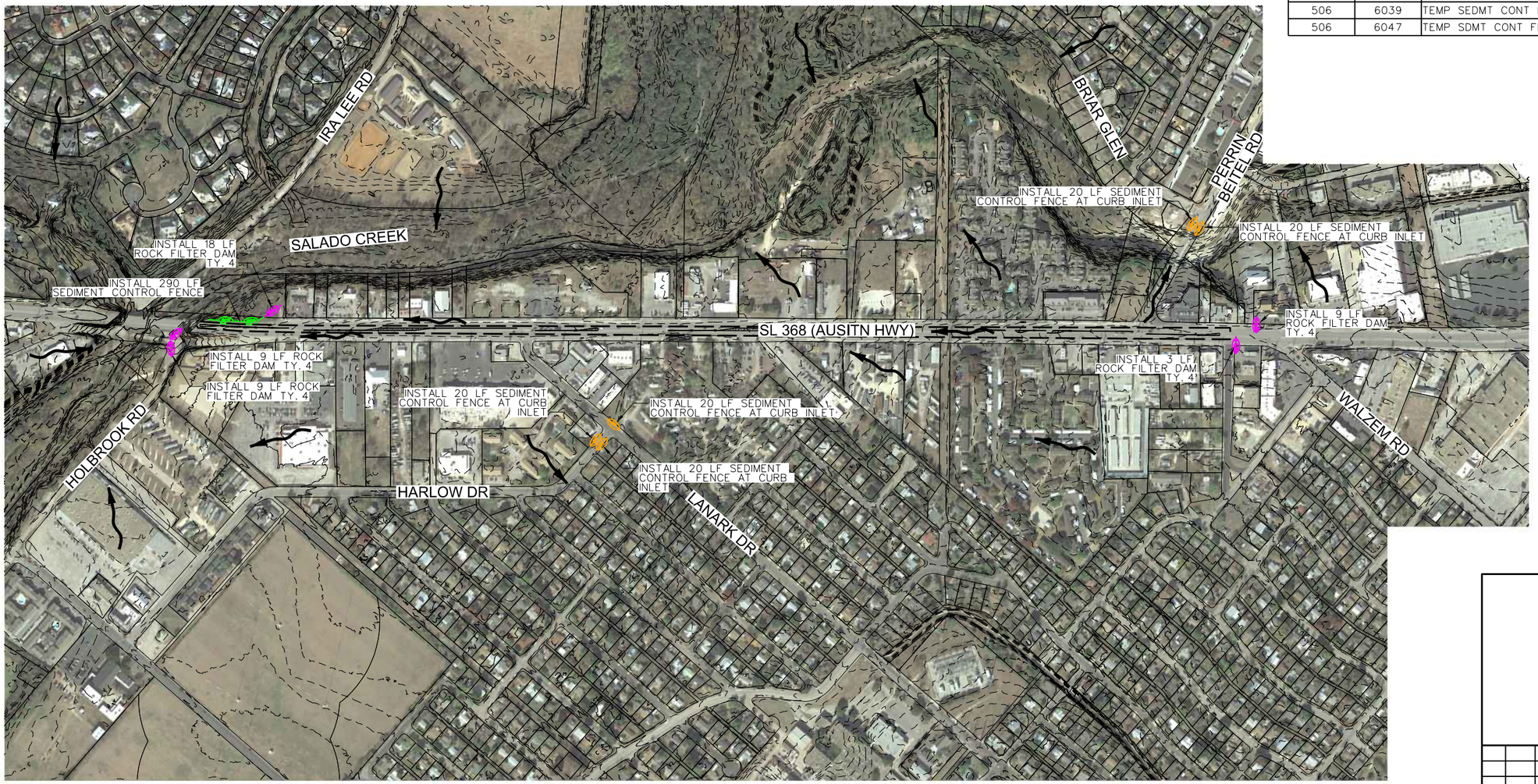
REVISION DATE: 12/12

STORM WATER POLLUTION PREVENTION PLAN (SW3P)

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		SL 368,ETC
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	SHEET NO.
0016	08	043,ETC	178

SL 368 (CSJ: 0016-08-043)

ESTIMATED QUANTITIES				
ITEM NO.	DESC CO	DESCRIPTION	UNIT	QTY
506	6004	ROCK FILTER DAMS (INSTALL) (TY 4)	LF	48
506	6011	ROCK FILTER DAMS (REMOVE)	LF	48
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	290
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	290
506	6047	TEMP SDMT CONT FENCE (INLET PROTECTION)	LF	100



0 300 600

SCALE: 1"=600'

NOTES

1. AREAS CONTAINED WITHIN PROPERTY BOUNDARIES WILL BE AREAS OF DISTURBANCE AND SOIL STABILIZATION. ALL SOILS DISTURBED WITHIN THESE LIMITS SHALL BE STABILIZED BY PERMANENT SODDING VEGETATION.

LEGEND

- PARCEL BOUNDARY
- EXISTING CONTOUR
- PROPOSED LIMITS OF DISTURBANCE
- STORMWATER FLOW DIRECTION
- SEDIMENT CONTROL FENCE AT INLET
- ROCK FILTER DAM
- SEDIMENT CONTROL FENCE

STATE OF TEXAS
CHRIS STONG
128193
LICENSED PROFESSIONAL ENGINEER
4/20/2022

NO.	DATE	REVISION	APPROV.

Kimley»Horn
601 NW Loop 410, Suite 350
San Antonio, Texas 78216
TBPE Firm No. 928
Tel. No. (210) 541-9166
Fax No. (281) 541-8699

Texas Department of Transportation

FY 2022 HSIP

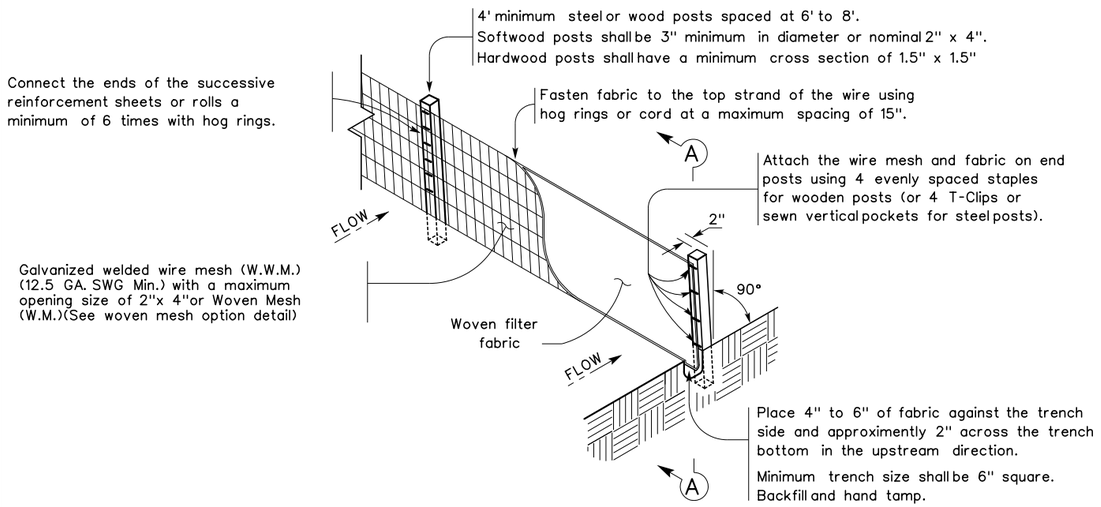
SL 368 (AUSTIN HWY) EROSION CONTROL PLAN

SHEET 1 OF 1

FED RD DIV NO.	FEDERAL AID PROJECT		SHEET NO.
6	SEE TITLE SHEET		179
STATE	DISTRICT	COUNTY	
TEXAS	SAT	BEXAR	
CONTROL	SECTION	JOB	HIGHWAY
0016	08	043,ETC	SL 368,ETC

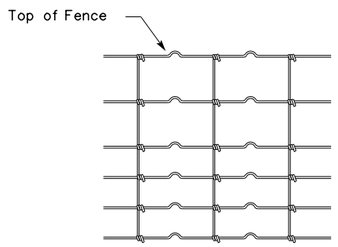
Christopher.Stong
4/20/2022 3:16:32 PM
K:\SNA_TPTO\068720601 - TxDOT SAT 2019 On-Call WA #1\8_HSIP Signals\3_CAD\SHEETS\HSIP_WA1_AustinHwy_SWPPP.dgn

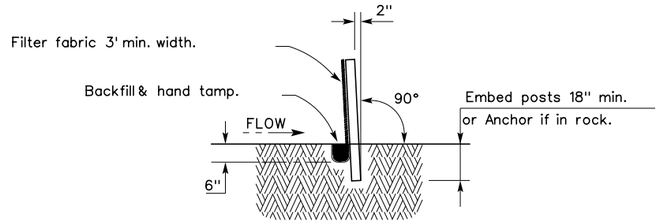
DATE 4/19/2022 14:22:15
FILE K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE_EC(1)-16.dgn



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.

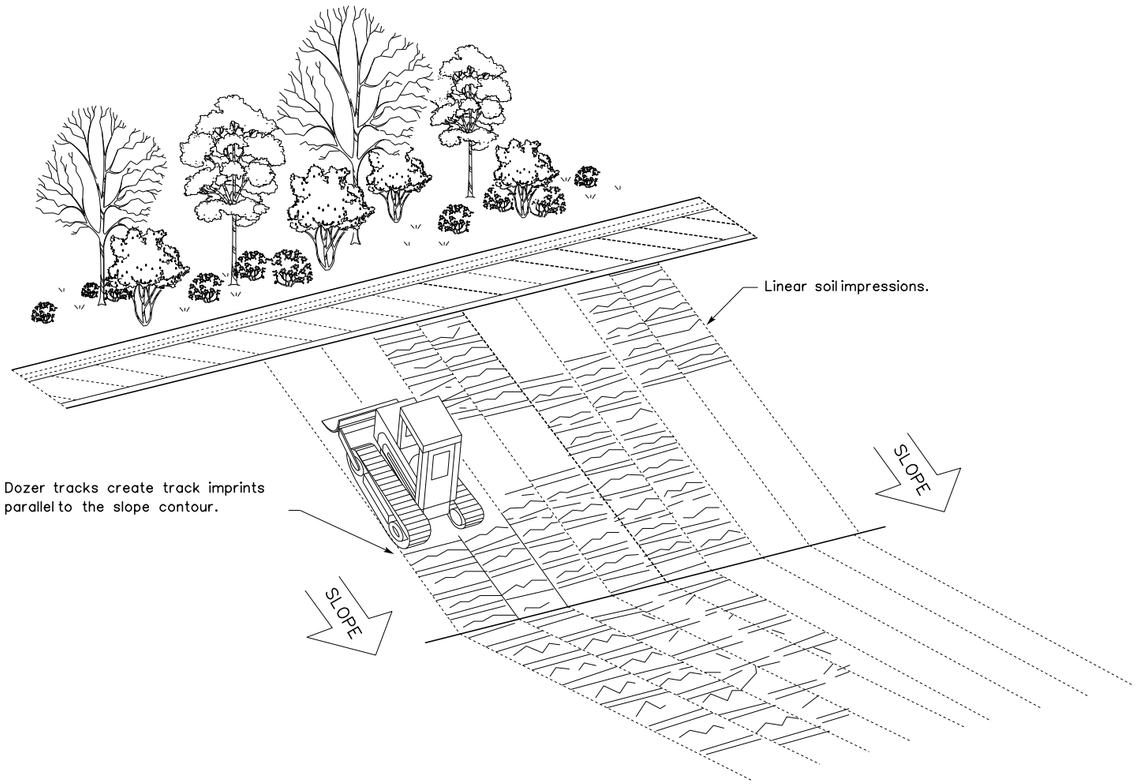
LEGEND

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

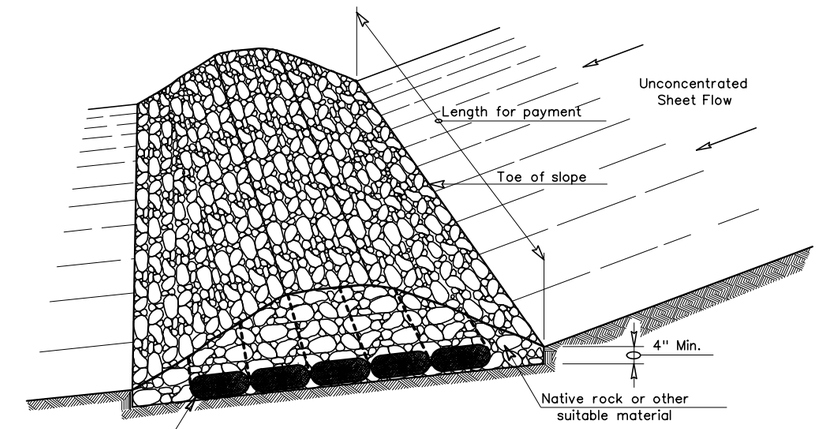
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

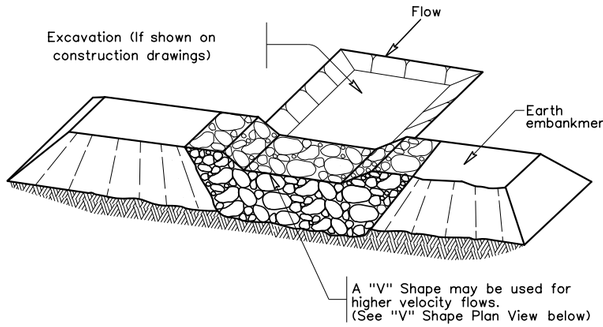
FILE: ec116	DN: TxDOT		CK: KM		DW: VP		DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0016	08	043,ETC		SL 368,ETC		
	DIST	COUNTY					SHEET NO.
	SAT	BEXAR					180

DATE: 4/19/2022 14:22:18
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\EC(2)-16.dgn



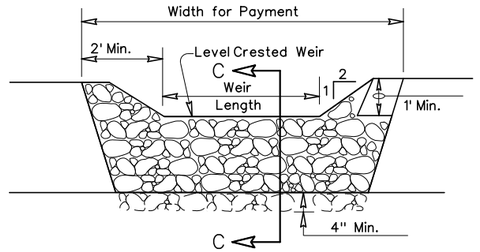
FILTER DAM AT TOE OF SLOPE

RFD1

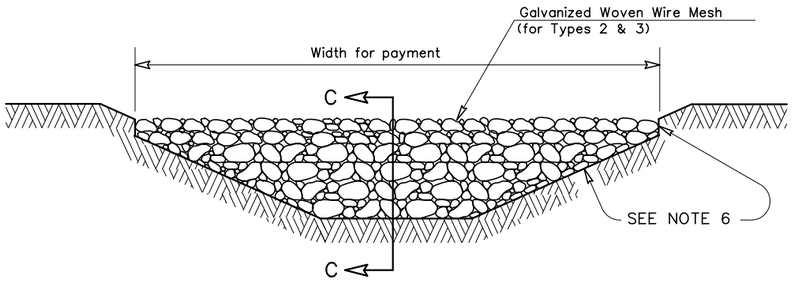


FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2

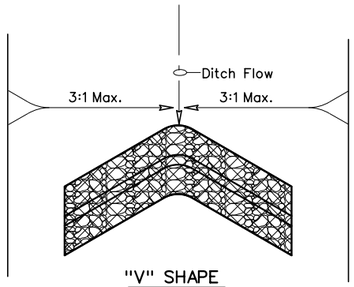


PROFILE

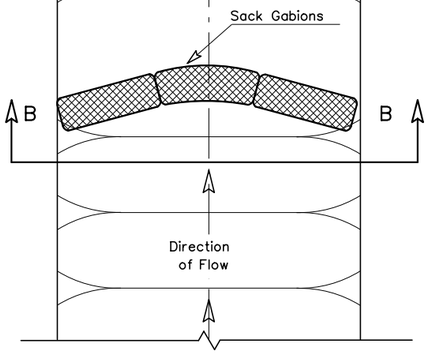


FILTER DAM AT CHANNEL SECTIONS

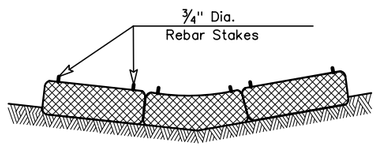
RFD1 OR RFD2 OR RFD3



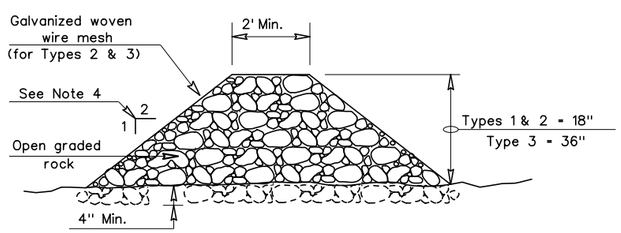
"V" SHAPE
PLAN VIEW



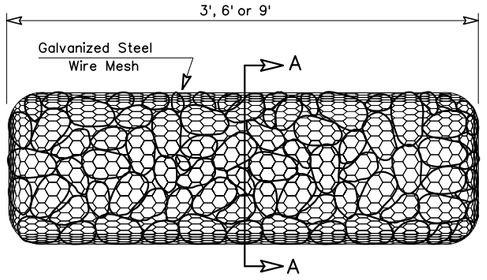
PLAN VIEW



SECTION B-B

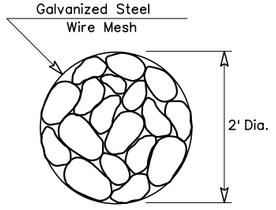


SECTION C-C



TYPE 4 (SACK GABIONS)

RFD4



SECTION A-A

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with 3/4" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 1/2" x 3 1/4"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation

Design Division Standard

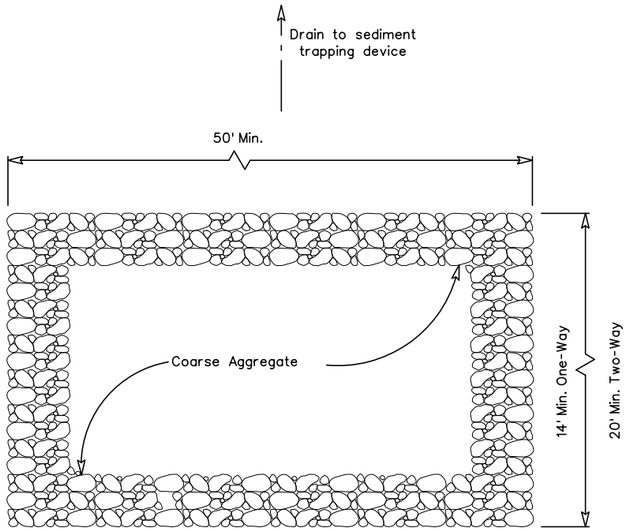
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

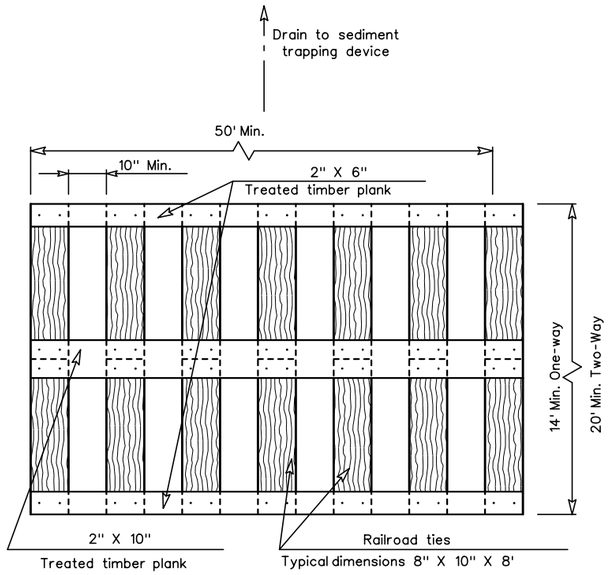
EC(2)-16

FILE: ec216	DN: TxDOT		CK: KM		DW: VP		DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0016	08	043,ETC		SL 368,ETC		
	DIST	COUNTY					SHEET NO.
	SAT	BEXAR					181

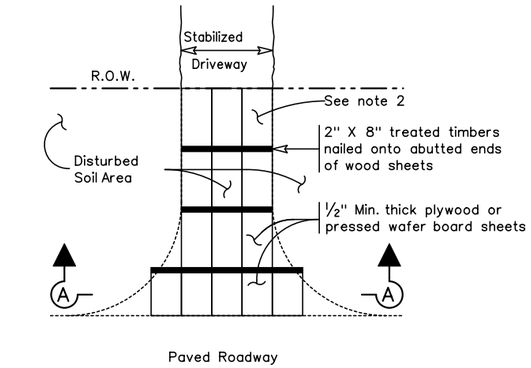
DATE: 4/19/2022 14:22:21
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\EC(3)-16.dgn



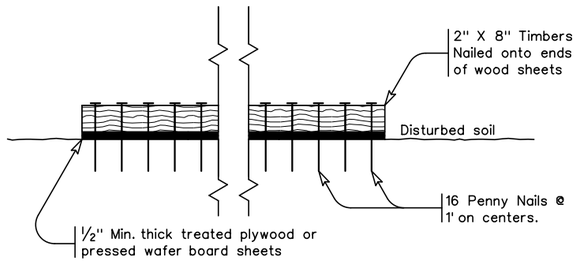
PLAN VIEW



PLAN VIEW



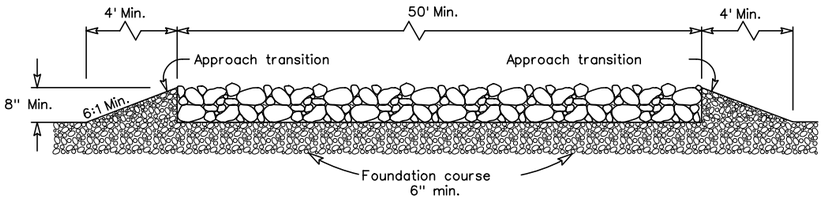
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

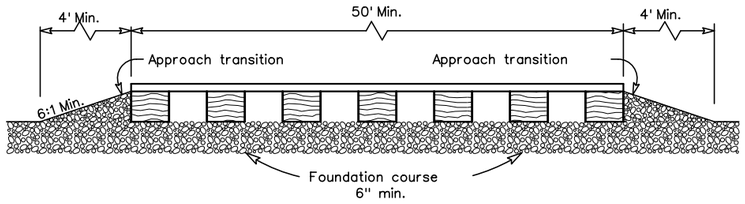
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

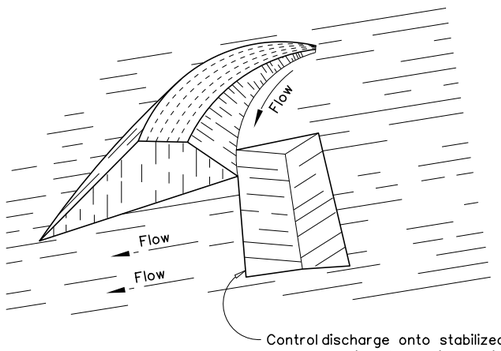
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

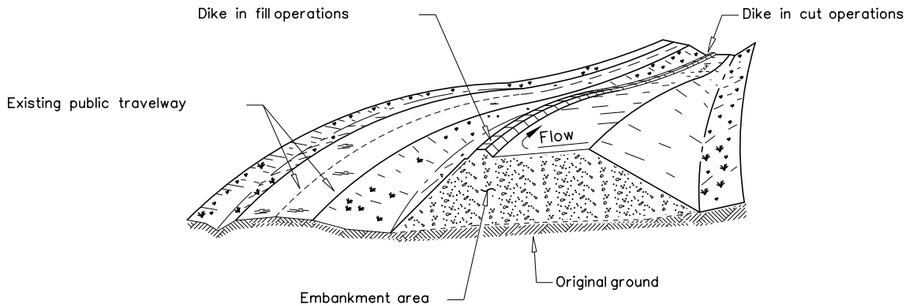
FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		182

DATE: 4/19/2022 14:22:24
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\EC(4)-16.dgn



PERIMETER DIKE

D

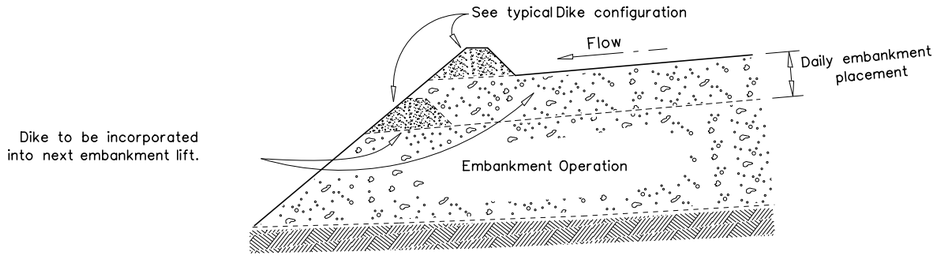


DIVERSION DIKE

D

GENERAL NOTE

1. Soil used in dike construction shall be machine compacted.
2. Top width and height of dike may be modified with prior approval of the Engineer.
3. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter.
4. Grading shall be shown elsewhere in the plans or as directed by the Engineer.
5. The Engineer reserves the right to modify the dimensions shown for the dike dependent on runoff volume characteristics.
6. Dikes that are in place for more than 14 calendar days should be stabilized to prevent sediment runoff.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Remove sediment and debris when accumulation affects the performance of the devices, after a rain and when directed by the engineer.



EMBANKMENT SECTION - DIVERSION DIKE

D

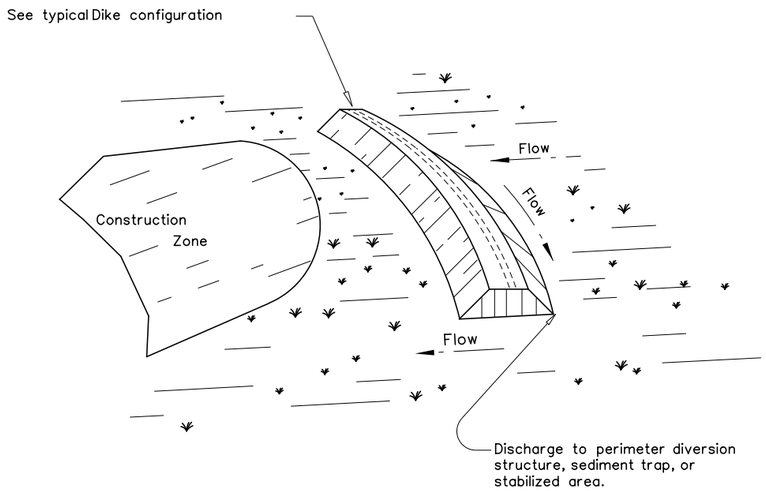
DIKE USAGE GUIDELINES

A Dike may be used to intercept runoff and divert it around unstabilized areas or to divert sediment laden runoff to an erosion control device (sediment basin or trap, rock filter dam, etc.).

The drainage area contributing runoff to a dike should not exceed 5 acres. The spacing of dikes should be as follows:

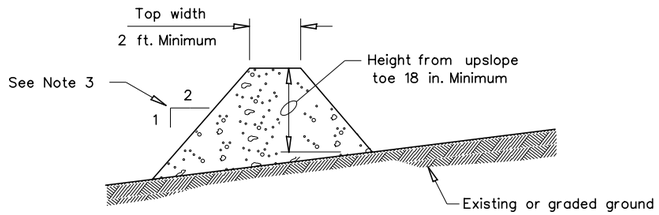
Slope of disturbed areas above dike	greater than 10%	5 - 10%	less than 5%
Maximum distance between dikes	100'	200'	300'

Intercepted runoff flowing along a dike should outlet to a stabilized area (vegetation, rock, etc.).



INTERCEPTOR DIKE

D



TYPICAL DIKE CONFIGURATION

D

PLANS SHEET LEGEND

DIKE D

Texas Department of Transportation

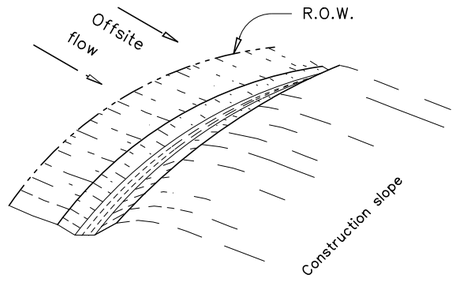
Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES DIKES (EARTHWORK FOR EROSION CONTROL)

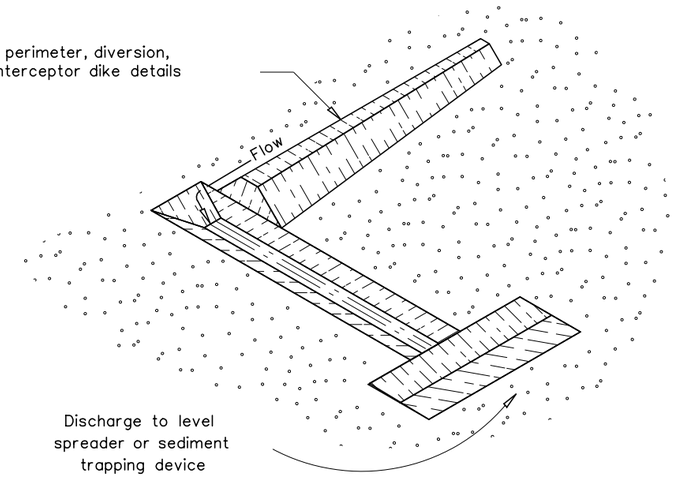
EC(4)-16

FILE: ec416	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		183

DATE: 4/19/2022 14:22:27
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\EC(5)-16.dgn



PERIMETER SWALE



DIVERSION SWALE

GENERAL NOTE

1. Dimensions of swale may be modified with prior approval of the Engineer.
2. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter.
3. Grading shall be shown elsewhere on the plans or as directed by the Engineer.
4. The Engineer reserves the right to modify the dimensions shown for the swale dependent on runoff volume characteristics.
5. Swales that are in place for more than 14 calender days should be stabilized through seeding or other measures to control sediment runoff.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Remove sediment and debris when accumulation affects the performance of the devices, after a rain and when directed by the Engineer.

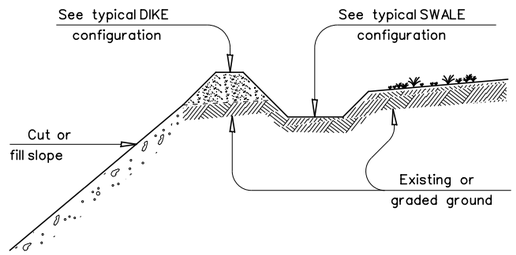
SWALE AND DIKE/SWALE USAGE GUIDELINES

A swale or dike/swale may be used to intercept runoff and divert it around unstabilized areas or to divert sediment laden runoff to an erosion control device (sediment basin or trap, rock filter dam, etc.).

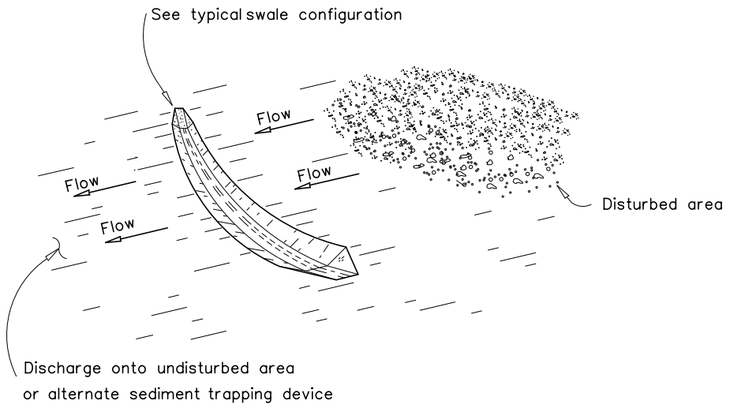
The drainage area contributing runoff to a swale or dike/swale should not exceed 5 acres. The spacing of swales and dike/swales should be as follows:

Slope of disturbed areas above dike	greater than 10%	5 - 10%	less than 5%
Maximum distance between dikes	100'	200'	300'

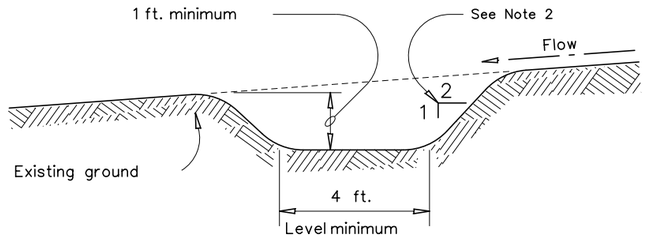
Intercepted runoff flowing in a swale or dike/swale should outlet to a stabilized area (vegetation, rock, etc.).



DIVERSION DIKE WITH SWALE



INTERCEPTOR SWALE



TYPICAL SWALE CONFIGURATION

PLAN SHEET LEGEND

SWALE (S)

DIKE (D)

Texas Department of Transportation

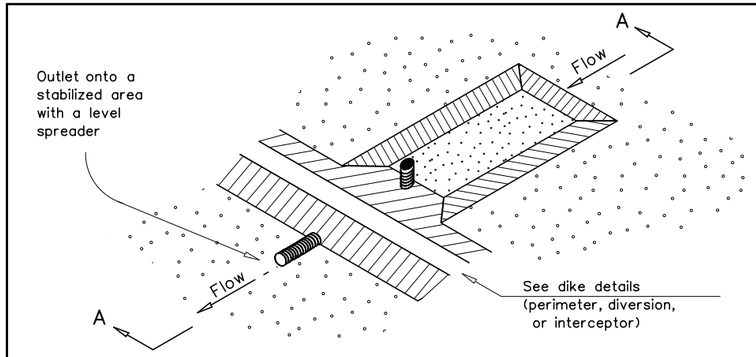
Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
SWALES
(EARTHWORK FOR EROSION CONTROL)

EC(5)-16

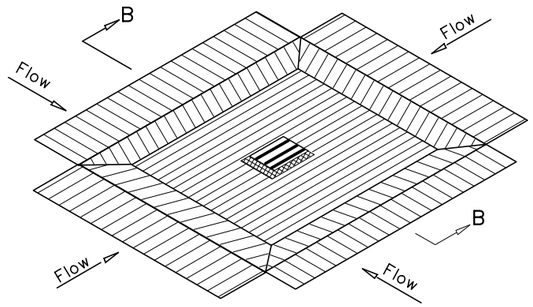
FILE: ec516	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		184

DATE: 4/19/2022 14:22:30
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE_EC(6)-16.dgn



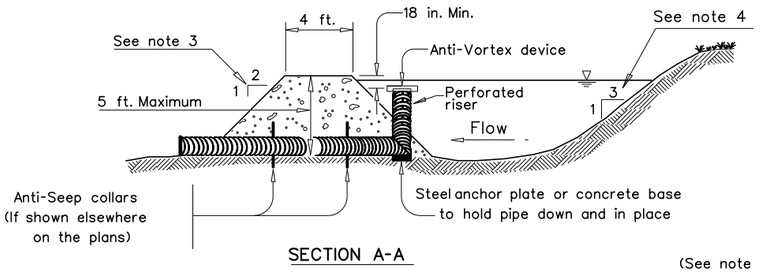
SEDIMENT BASIN AND/OR TRAP WITH PIPE OUTLET

ST/PO

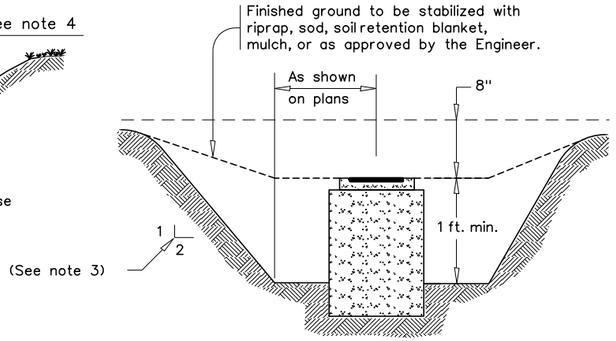


DROP INLET SEDIMENT TRAP

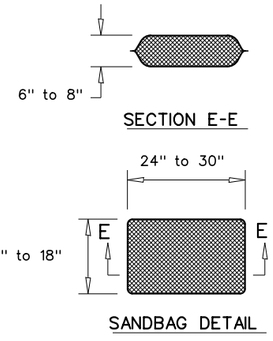
ST-DI



SECTION A-A

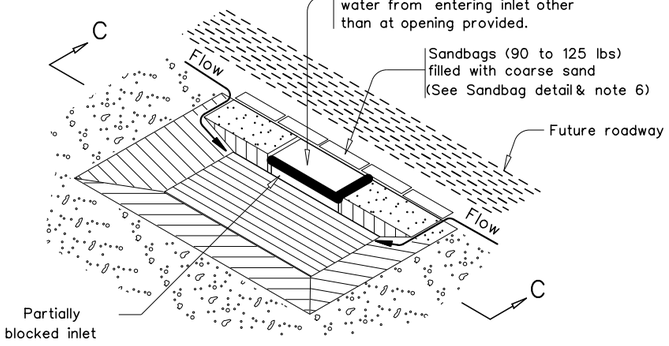


SECTION B-B



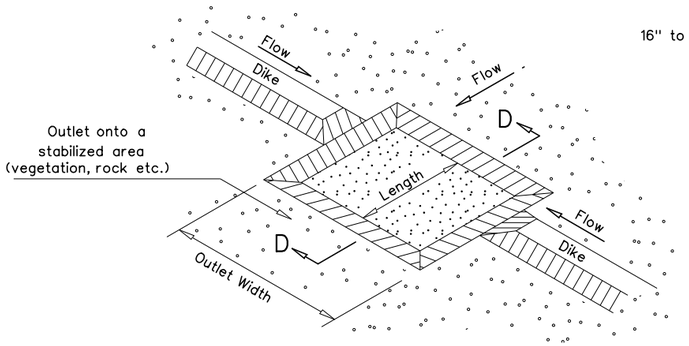
SECTION E-E

SANDBAG DETAIL



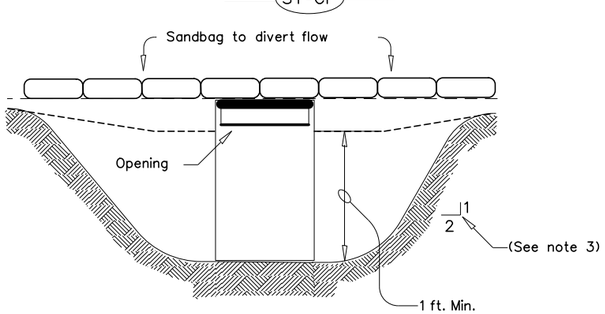
CURB INLET SEDIMENT TRAP

ST-CI

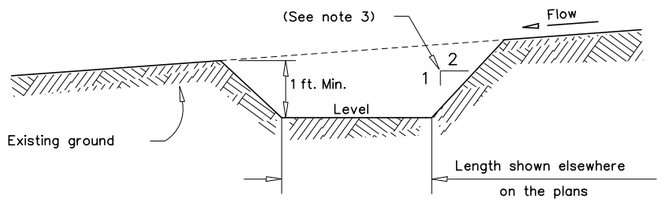


SEDIMENT TRAP WITH LEVEL STABILIZED OUTLET

ST



SECTION C-C



SECTION D-D

GENERAL NOTES

1. Pipe outlet material shall conform to the Item "Pipe Underdrains" or as accepted by the Engineer.
2. All pipe connections shall be watertight.
3. Side slopes within the safety clear zone of a roadway shall be 6:1 or flatter. Protect the traveling public from inlet stacks within the clear zone.
4. Sediment basins shall have side slopes of 3:1 or flatter.
5. The dimensions and limits of excavation for sediment basins and traps will be as shown elsewhere on the plans.
6. The sandbag material shall be made of polypropylene, polyethylene or polyamide woven fabric, min. unit weight 4 ounces /SY, Mullen burst strength exeeding 300 psi and ultraviolet stability exeeding 70%.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

A sediment basin and/or trap may be used to precipitate sediment out of runoff draining from an unstabilized area.

Basins: The drainage area for a sediment basin should not exceed 100 acres. The basin capacity shall be at least 1800 CF/Acre of drainage area (0.5" over the drainage area). If the disturbed area draining to the basin is larger than 10 acres, the basin capacity should be 3600 CF/Acre (1.0" over the drainage area).

The basin should have a 40 hour draw-down time with an emergency spillway. The spillway may be designed to pass the peak rate of runoff from a 25 year frequency storm. The 100 year storm should be investigated to consider possible flooding impacts.

The entrance into the basin should be protected from erosion. The basin should be cleaned when the capacity has been reduced by 1/3.

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

Sediment traps should be placed in the following locations:

1. Within drainage ditches spaced @ 500' on center
2. Immediately preceding ditch inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way

The trap outlet may either be through a perforated riser and pipe assembly designed to achieve a 40 hour draw-down time or over a level stabilized area (vegetation, rock, etc.).

The trap should be cleaned when the capacity has been reduced by 1/2 or the sediment has accumulated to a depth of 1', whichever is less.

PLANS SHEET LEGEND

ST/PO — Sediment Basin and / or Trap with Pipe Outlet

ST-DI — Drop Inlet Sediment Trap

ST-CI — Curb Inlet Sediment Trap

ST — Sediment Trap with Level Stabilized Outlet

Texas Department of Transportation

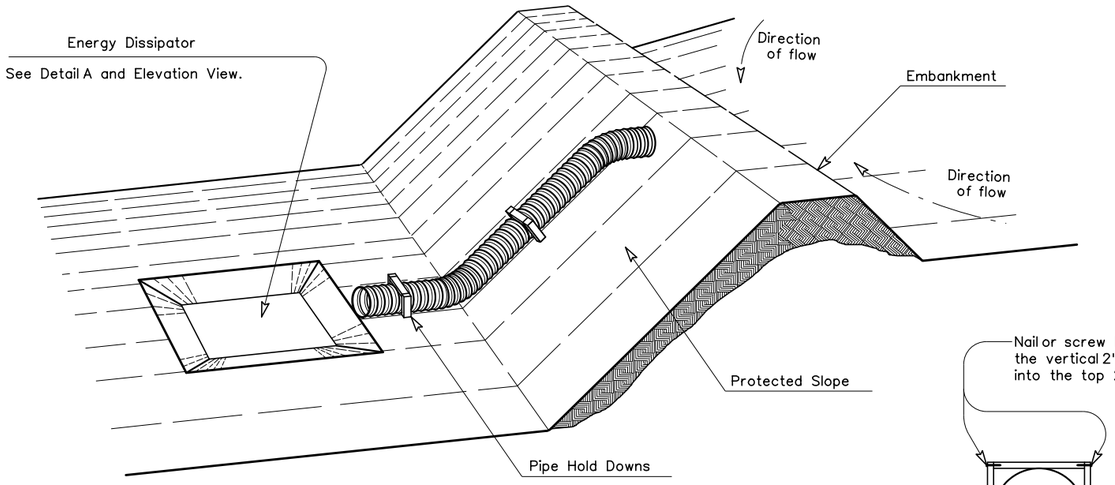
Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

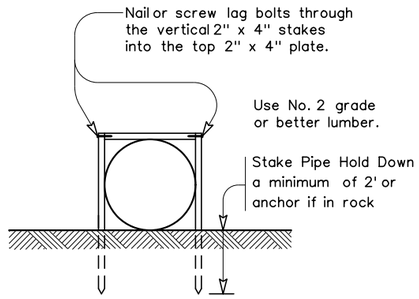
SEDIMENT BASINS AND TRAPS (EARTHWORK FOR EROSION CONTROL)

EC(6)-16

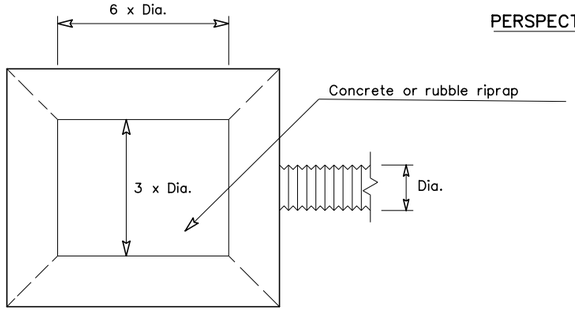
FILE: ec616	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		185



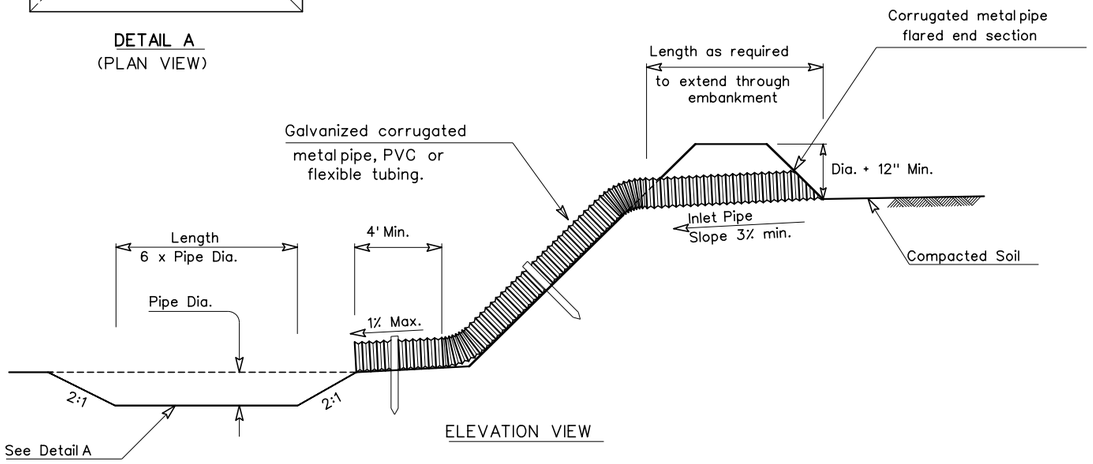
PERSPECTIVE VIEW



DETAIL B
(ELEVATION VIEW)



DETAIL A
(PLAN VIEW)



ELEVATION VIEW

PIPE SLOPE DRAIN WITH ENERGY DISSIPATOR

PSD

GENERAL NOTES

1. The inlet pipe shall have a slope of 3 percent or greater. Pipe diameter shall be as indicated on the construction drawings.
2. The top of embankment shall be at least 12" higher than the top of the inlet pipe at all points.
3. The pipe shall be galvanized corrugated metal pipe, PVC, or flexible tubing with watertight connection bands.
4. Pipe shall be secured with hold-down grommets spaced a maximum of 10' on centers or with pipe hold downs as shown in Detail B.
5. Construct embankment for the drainage system in 8" lifts to the required elevations. Hand tamp the soil around and under the entrance section to the top of the embankment as shown on the plans or as directed by the engineer.
6. The sediment trap shall be constructed to the dimensions as shown and in accordance with Special Specification, "Earthwork for Erosion Control". As otherwise detailed on the plans, the sediment trap may be stabilized using concrete or rubble riprap as per Item, "Riprap".
7. A standard corrugated metal pipe flared end section shall be used at the entrance of the pipe slope drain.
8. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PIPE SLOPE DRAIN DESIGN CRITERIA		
PIPE/TUBING SIZE	DIAMETER	MAXIMUM DRAINAGE AREA
PSD 12	12"	0.5 Acre
PSD 18	18"	1.5 Acres
PSD 21	21"	2.5 Acres
PSD 24	24"	3.5 Acres
PSD 30	30"	5.0 Acres

PIPE SLOPE DRAIN USAGE GUIDELINES

A Pipe Slope Drain (PSD) should be constructed to drain concentrated surface runoff safely down slopes without causing erosion. The drainage area contributing runoff to a PSD should not exceed 5 acres. The PSD should be sized to drain the peak rate of runoff without over-topping at the earth dike entrance. A 25 year storm frequency may be used to calculate the flow rate.

PLAN SHEET LEGEND

Pipe Slope Drain — PSD

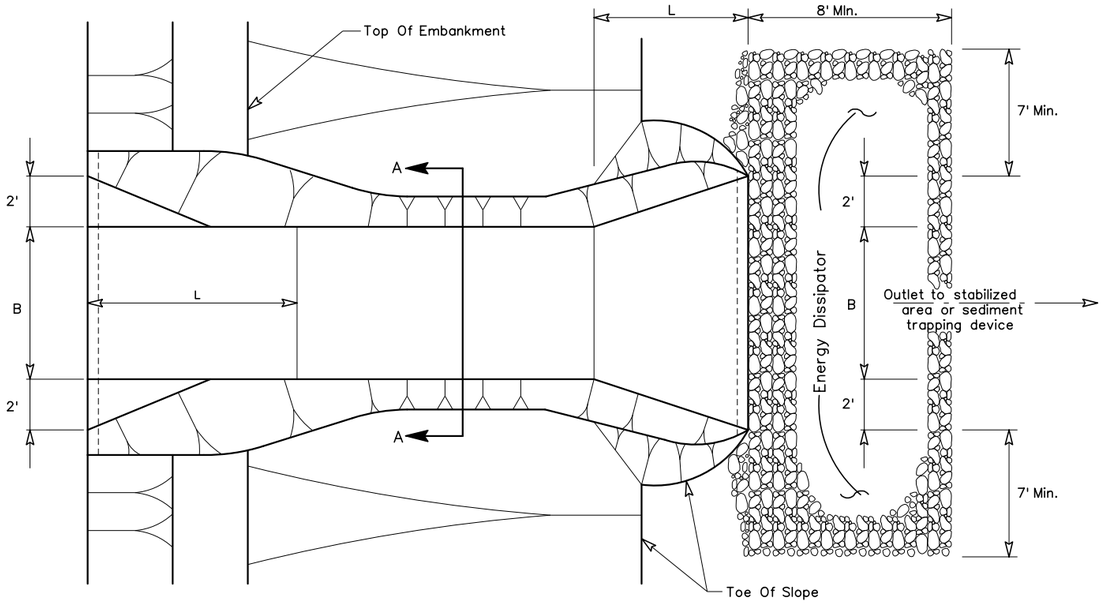
Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
TEMPORARY PIPE SLOPE DRAINS
EC(7)-16

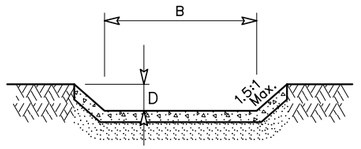
FILE: ec716.dgn	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		186

DATE: 4/19/2022 14:22:32
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\EC(7)-16.dgn

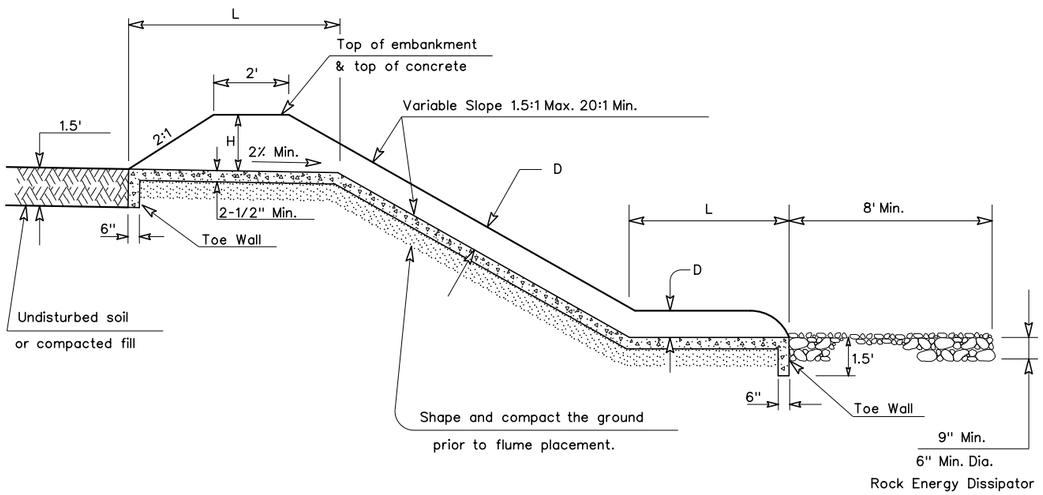
DATE: 4/19/2022 14:22:35
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\EC(8)-16.dgn



PLAN VIEW



SECTION A-A



ELEVATION VIEW

PAVED FLUME

PF

GENERAL NOTES

1. The group / size is a designator for the dimensions of the paved flume. The group / size is designated by a letter (A or B) and the bottom (B) dimension. The appropriate size shall be indicated on the construction plans.

2. Provide rock or rubble with a minimum diameter of 6" and a maximum volume of 1/2 cubic feet for construction of energy dissipaters.

3. For high velocity flows, the aggregate of the energy dissipator should be secured with 20-gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggegrate should be placed on the mesh to the dimensions specified. The mesh shall be folded at the upstream side over the aggegrate and tightly secured to itself on the downstream side using wire ties or hog rings.

4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PAVED FLUME USAGE GUIDELINES

A Paved Flume should be constructed to drain concentrated surface runoff safely down slopes without causing erosion. The drainage area contributing runoff to a paved flume should not exceed that given in the Design Criteria above. The paved flume should be sized to drain the peak rate of runoff without overtopping the embankment at the earth dike entrance. A 25 year storm frequency may be used to calculate the flow rate.

DESIGN CRITERIA					
Group/Size	B Bottom Width	H Min.	D Min.	L Min.	Maximum Drainage Area
A-2	2'	1.5'	8"	5'	5 Acres
A-4	4'	1.5'	8"	5'	8 Acres
A-6	6'	1.5'	8"	5'	11 Acres
A-8	8'	1.5'	8"	5'	14 Acres
A-10	10'	1.5'	8"	5'	18 Acres
B-4	4'	2'	10"	6'	14 Acres
B-6	6'	2'	10"	6'	20 Acres
B-8	8'	2'	10"	6'	25 Acres
B-10	10'	2'	10"	6'	31 Acres
B-12	12'	2'	10"	6'	36 Acres

PLANS SHEET LEGEND

Paved Flume — PF

Texas Department of Transportation

Design Division Standard

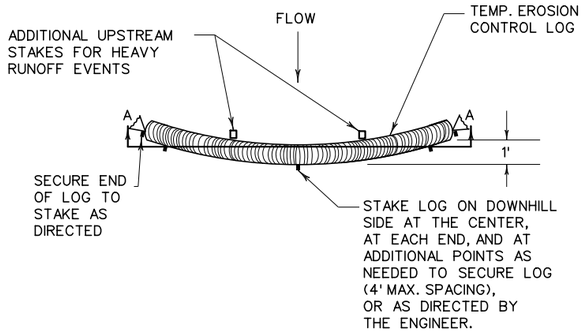
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

TEMPORARY PAVED FLUMES

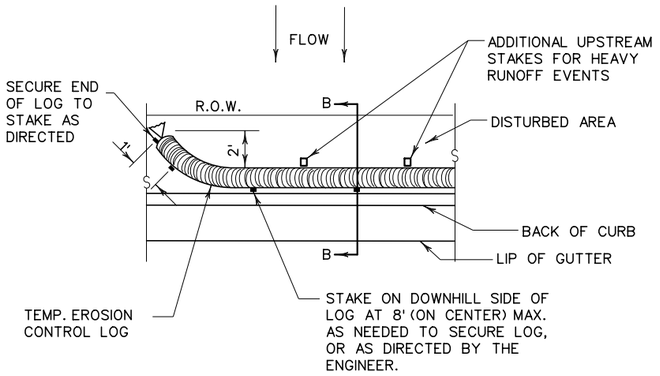
EC(8)-16

FILE: ec816	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		187

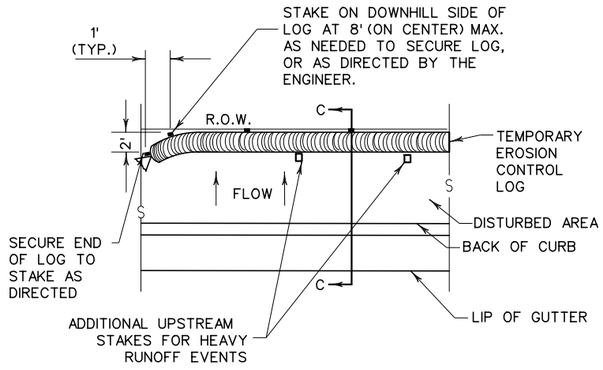
DATE: 4/19/2022 14:22:51
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\EC(9)-16.dgn



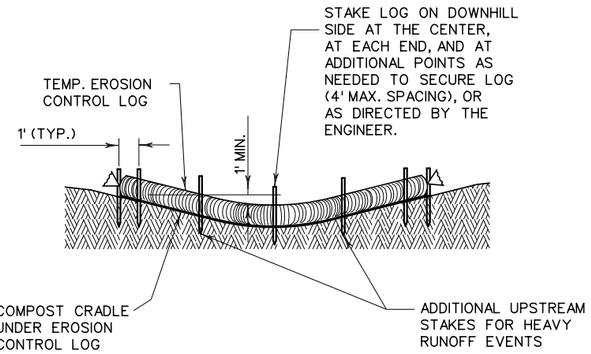
PLAN VIEW



PLAN VIEW



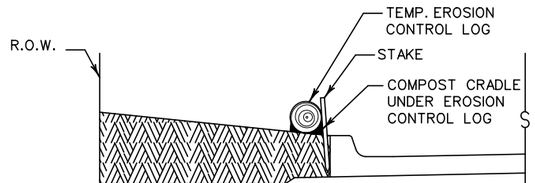
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

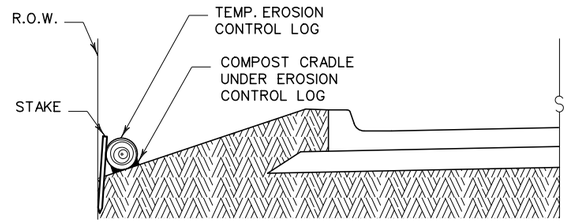
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

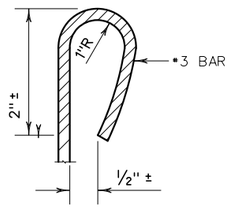
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



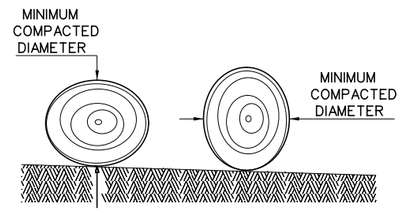
REBAR STAKE DETAIL

LEGEND

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

GENERAL NOTES:

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



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SEDIMENT BASIN & TRAP USAGE GUIDELINES

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

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

Control logs should be placed in the following locations:

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

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

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

Texas Department of Transportation — Design Division Standard

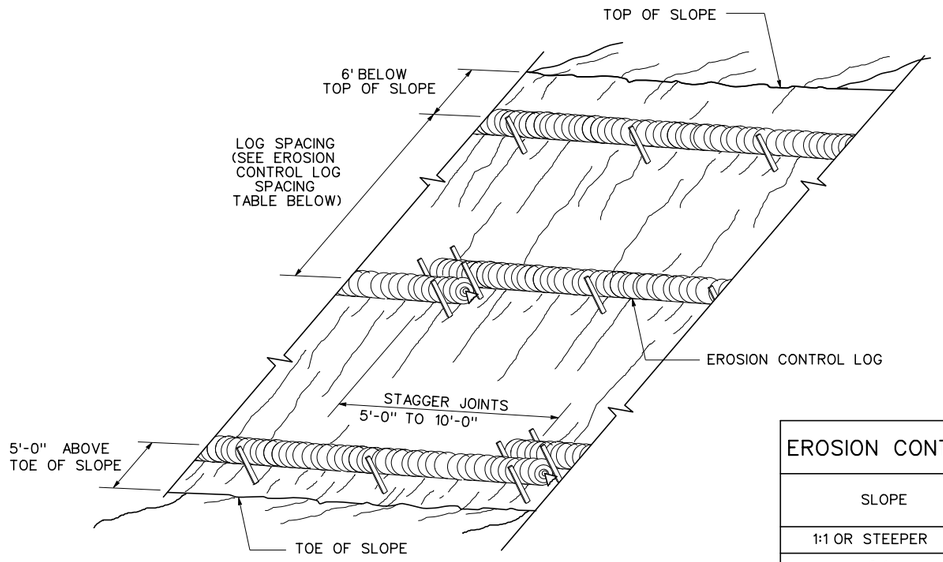
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

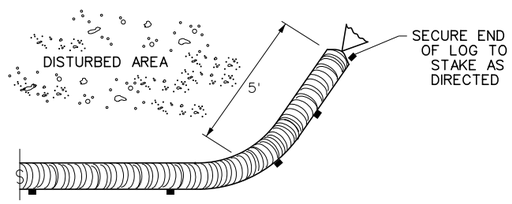
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		188

DATE: 4/19/2022 14:22:52
FILE: K:\SNA_TPTO_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\EC(9)-16.dgn



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

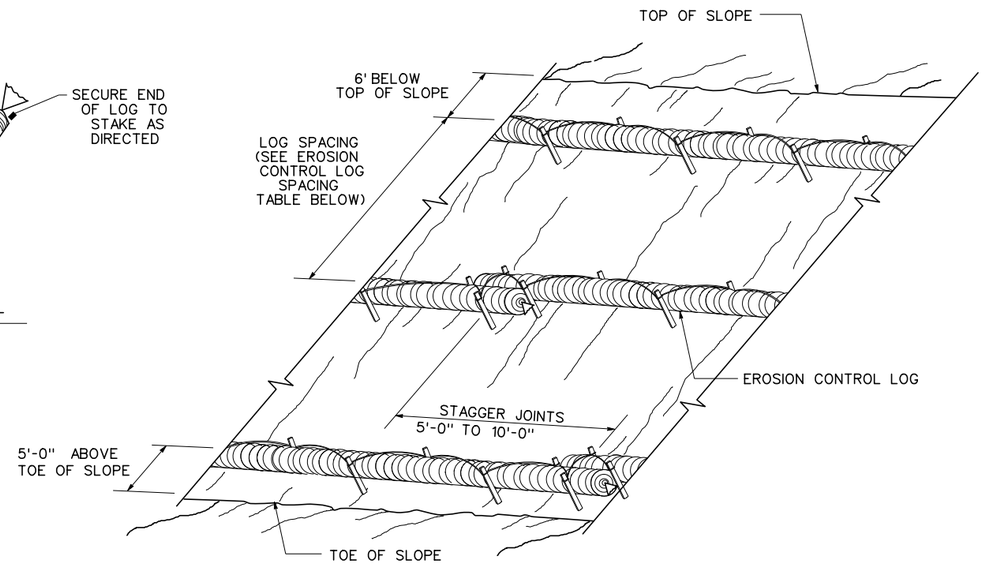
CL-SST



END SECTION RAP DETAIL

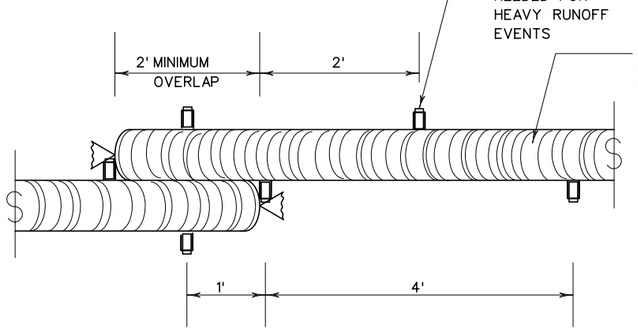
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

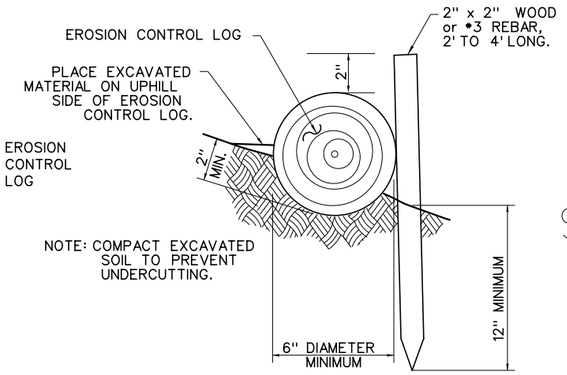
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

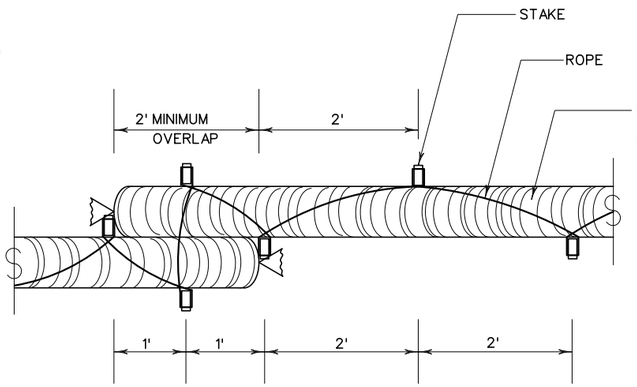


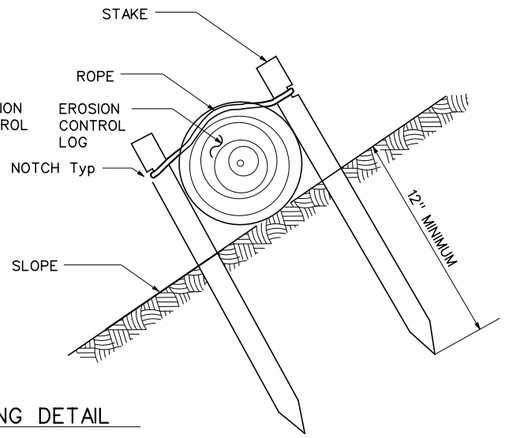


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

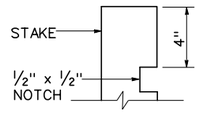
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 3

Texas Department of Transportation

Design Division Standard

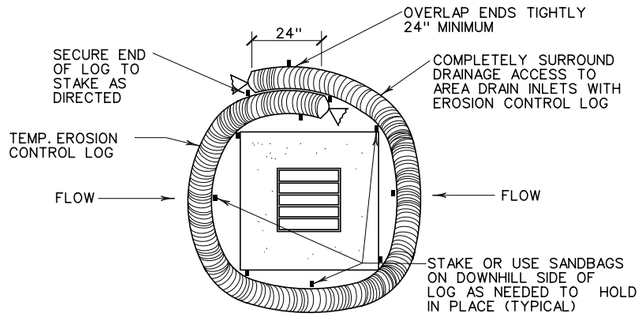
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

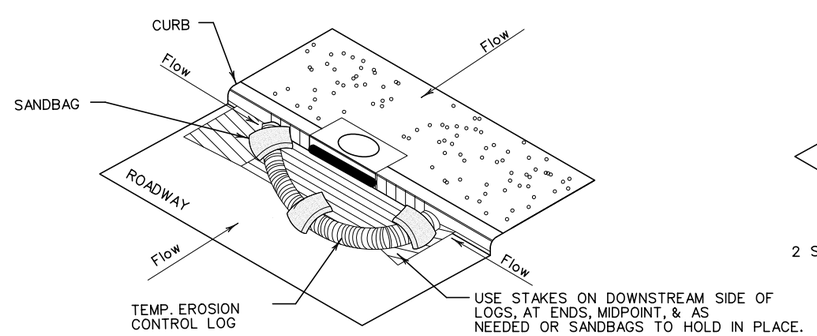
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0016	08	043,ETC	SL 368,ETC
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		189

DATE: 4/19/2022 14:22:54
FILE: K:\SNA_TP1O_Reference Documents_TxDOT_STANDARDS\WITH_TAGS\STATEWIDE\EC(9)-16.dgn



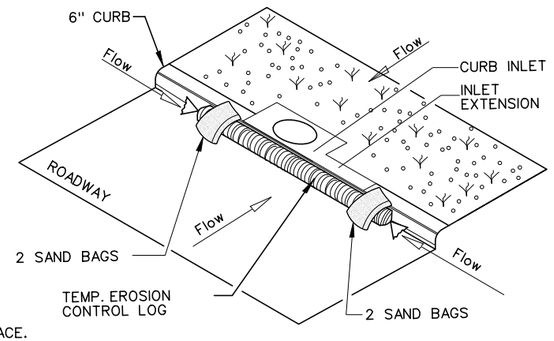
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

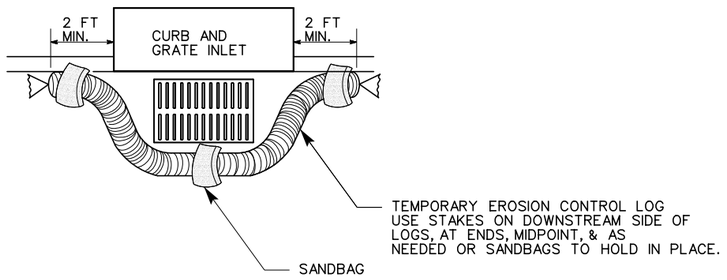
CL-CI



EROSION CONTROL LOG AT CURB INLET

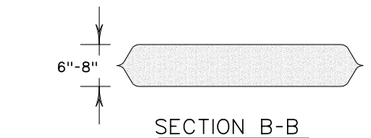
CL-CI

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

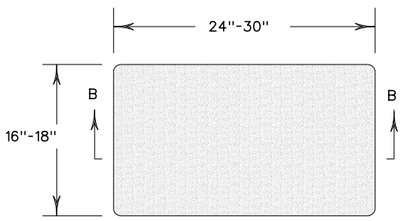


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS			
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY			
REVISIONS	0016	08	043,ETC	SL 368,ETC			
	DIST	COUNTY		SHEET NO.			
	SAT	BEXAR		190			