FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	STP 2023(705)HESG		1
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
0918	47	342, ETC.	CS

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS ACCEPTED: _____

FINAL CONTRACT COST: $ _____

CONTRACTOR: _____

SUMMARY OF CHANGE ORDERS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

FEDERAL AID PROJECT

DALLAS COUNTY

NOTE:

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, JULY 5, 2022)

REGISTERED ACCESSIBILITY SPECIALIST INSPECTION REQUIRED

TDLR NO.: TABS2023012341

CSJ: 0918-47-342
FEDERAL NO.:
STP 2023(705)HESG
AUDELIA RD AT
CHURCH RD

CSJ: 0918-47-343
FEDERAL NO.:
STP 2023(705)HESG
FERGUSON RD AT
WOODMEADOW PKWY

CSJ: 0918-47-344
FEDERAL NO.:
STP 2023(705)HESG
JEFFERSON BLVD AT
ZANG BLVD

CSJ: 0918-47-345
FEDERAL NO.:
STP 2023(705)HESG
BICKERS ST AT
HAMPTON RD

CSJ: 0918-47-346
FEDERAL NO.:
STP 2023(705)HESG
FOREST PARK RD AT
MOCKINGBIRD LN

CSJ: 0353-04-119
FEDERAL NO.:
STP 2023(707)HES
HIGHWAY: SL 12
LIMITS: FROM: SHADY TRAIL
TO: SPUR 348

CSJ: 0353-05-130
FEDERAL NO.:
STP 2023(707)HES
HIGHWAY: SL 12
LIMITS: FROM: SPUR 244
TO: SHADY TRAIL

CSJ: 0581-01-169
FEDERAL NO.:
STP 2023(707)HES
HIGHWAY: SL 12
LIMITS: FROM: IH 35E
TO: SPUR 244

CSJ: 0581-02-159
FEDERAL NO.:
STP 2023(707)HES
HIGHWAY: SL 12
LIMITS: FROM: SPUR 348
TO: IH 35E

TYPE OF WORK: FOR THE CONSTRUCTION OF SAFETY IMPROVEMENT PROJECTS
CONSISTING OF: IMPROVEMENT OF TRAFFIC SIGNALS

END: 0353-04-119

BEGIN: 0353-04-119

BEGIN: 0581-02-159

CITY LIMITS/BREAK: 0581-02-159

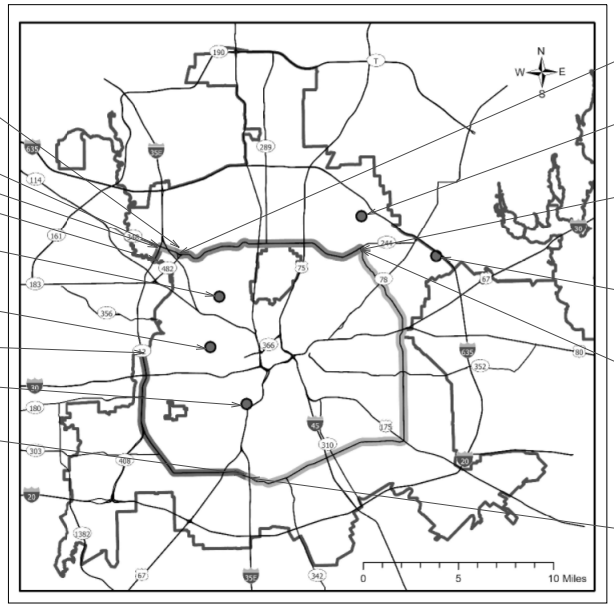
FOREST PARK RD AT
MOCKINGBIRD LN

BICKERS ST AT
HAMPTON RD

RESUME: 0581-02-159

JEFFERSON BLVD AT
ZANG BLVD

END: 0581-02-159



BEGIN: 0353-05-130

AUDELIA RD AT
CHURCH RD

END: 0353-05-130

FERGUSON RD AT
WOODMEADOW PKWY

END: 0581-01-169

BEGIN: 0581-01-169

FINAL PLANS STATEMENT:

THE WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS AND CONTRACT.

P.E. _____ DATE _____

TEXAS DEPARTMENT OF TRANSPORTATION

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

CONCURRENCE

Robert Perez
Robert Perez (Mar 21, 2023 11:34 CDT)
CITY MANAGER, CITY OF DALLAS

RECOMMENDED FOR LETTING

g a khankarli, P.E.
g a khankarli, P.E. (Mar 21, 2023 08:58 CDT)
DIRECTOR, CITY OF DALLAS DEPARTMENT OF TRANSPORTATION

TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED FOR LETTING
DocuSigned by: 3/21/2023
Eyad Fanous, P.E.
TRAFFIC DESIGN SUPERVISOR
7C0741581936480...

RECOMMENDED FOR LETTING
DocuSigned by: 3/21/2023
JEFFREY BUSH
DIRECTOR OF OPERATIONS
345B765EB03F406...

RECOMMENDED FOR LETTING
DocuSigned by: 3/21/2023
Brandi R. Bush, P.E.
DISTRICT TRANSPORTATION ENGINEER
83A34C9C0661432...

APPROVED FOR LETTING
DocuSigned by: 3/21/2023
Cesson Clemens
DISTRICT ENGINEER
A879E0D10CD6464...

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02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED
PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

INDEX OF SHEETS

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CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC.	

GENERAL

The construction, operation and maintenance of the proposed project will be consistent with the state implementation plan as prepared by the Texas Commission on Environmental Quality.

The disturbed area for this project, as shown on the plans is 0.08 AC (CSJ 0918-47-342), 0.08 AC (CSJ 0918-47-343), 0.08 AC (CSJ 0918-47-344), 0.08 AC (0918-47-345), 0.08 AC (CSJ 0918-47-346) acres. However, **the Total Disturbed Area** (TDA) will establish the required authorization for storm water discharges. The TDA of this project will be determined by the sum of the disturbed area in all project locations in the contract, and all disturbed area on all Project-Specific Locations (PSL) located in the project limits and/or within 1 mile of the project limits. The department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction site as shown on the plans, according to the TDA of the project. The contractor will obtain any required authorization from the TCEQ for the discharge of storm water from any PSL for construction support activities on or off of the project row according to the TDA of the project. When the TDA for the project exceeds 1 acre, provide a copy of the appropriate application of permit (NOI, or Construction Site Notice) to the engineer, for any PSL located in the project limits or within 1 mile of the project limits. Follow the directives and adhere to all requirements set forth in the TCEQ, Texas Pollution Discharge Elimination System, Construction General Permit (TPDES, CGP).

Leave all right of way areas undisturbed until actual construction is to be performed in said areas.

Provide the Engineer with a copy of all DBE subcontractor agreements prior to commencing work.

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:
https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors
or Contractor questions on this project are to be addressed to the following individual(s):

Engineer's Email: Christopher.Blain@txdot.gov
Construction Manager's Email: Eric.Herman@txdot.gov
Construction Record-Keeper's Email: Anthony.Block@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 or Construction Manager. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page.

CSJ: 0918-47-342, ETC. **Sheet 3**

County: Dallas

Highway: CS

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

Item 5:

Underground utilities owned by the Texas Department of Transportation may be present within the Right-Of-Way on this project. For signal, illumination, surveillance, and communications & control maintained by TxDOT, call the TxDOT Traffic Signal Office (214-320-6682) for locates a minimum of 48 hours in advance of excavation. For irrigation systems, call TxDOT Maintenance Landscape Office (214-320-6636) 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 the project to be deemed complete, permanently stabilize all unpaved disturbed areas of the project with a vegetative cover at a minimum of 70% density for the control of erosion.

Ensure a representative of the Prime Contractor is available on the project site at all times when work is being performed by the Prime Contractor or sub-contractor(s) to receive instructions from the Engineer or authorized Department representative.

Submit all shop drawings, working drawings, or other documents which require review sufficiently in advance of scheduled construction to allow no less than thirty (30) calendar days for review and response.

Locate all utilities, both underground and above ground, in the project area prior to beginning work so that conflicts are avoided.

Provide to the Engineer, in addition to any submittals required by the specifications and elsewhere in the general notes, a list of pre-qualified material to be used on this project.

Item 6:

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

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

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

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

Item 7:

Repair or replace any structures and utilities that might have been damaged by negligence or a failure to have utility locates performed.

Perform all electrical work in accordance with the National Electrical Code and Texas Department of Transportation Specifications.

Consult with appropriate electric company representatives according to their respective area to coordinate electrical services installations.

Contractor will be responsible for all costs associated with locating and/or exposing existing utilities. This includes existing utilities that may have been mismarked by the locator and/or utilities that are in the near vicinity of proposed construction. In addition, this includes all costs associated with pot-holing, mechanical vacuuming, hand-digging, etc. as needed to properly locate and protect all existing utilities.

Patrol vehicles must be clearly marked to correspond with the officer's agency and equipped with appropriate lights to identify them as law enforcement. For patrol vehicles not owned by a law enforcement agency, markings will be retroreflective and legible from 100 ft. from both sides and the rear of the vehicle. Lights will be high intensity and visible from all angles.

Holiday restrictions – The Engineer may decide that no lane closures or construction operations shall be allowed during the restricted periods listed in the following holiday schedule. TxDOT has the right to lengthen, shorten, or otherwise modify these restricted periods as actual, or expected, traffic conditions may warrant. Working days will not be charged for these restricted periods. No additional compensation will be allowed for these closures (i.e., overhead, delays, stand-by, barricades or any other associated cost impacts).

- New Year's Eve & Day (5 am on December 31 thru 10:00 pm January 1)
- Easter Holiday weekend (5 am on Friday thru 10:00 pm Sunday)
- Memorial Day weekend (5 am on Friday thru 10:00 pm Monday)
- Independence Day (5 am on July 3 thru 10:00 pm on July 5)
- Labor Day weekend (5 am on Friday thru 10:00 pm Monday)
- Thanksgiving Holiday (5 am on Wednesday thru 10:00 pm Sunday)
- Christmas Holiday (5 am on December 23 thru 10:00 pm December 26)

No significant traffic generator events identified.

Item 8:

This project will be a Standard Workweek in accordance with Article 8.3.1.4.

CSJ: 0918-47-342, ETC. Sheet 3A

County: Dallas

Highway: CS

Meet daily with the Engineer to notify him or her of planned work for the day and to provide 24 hour notice of lane closures for planned work for the next day. Do not close lanes for which this requirement is not met. No work is to be performed without prior coordination with the Engineer.

A 120 day construction delay is included in this contract through Special Provision 008-004. This delay is included for material acquisition.

Item 162:

Install block sod as directed by the Engineer.

Item 168:

Water once a day where sod is installed. Include cost for this work in the unit bid price for this item.

Item 416:

Drilled shafts shall be drilled and poured on the same day unless directed by the engineer.

Provide a formed smooth finish for all portions of drill shafts extending above proposed ground. Include cost for this work in the unit bid price for this item.

Traffic signal pole foundations will be paid for once regardless of extra work caused by obstructions.

Concrete removal required for installation of drilled shafts will be subsidiary to Item 416.

Item 421:

Furnish mix designs to the Engineer in a format compatible to the latest version of the Department's Construction Management System (SiteManager). Mix Design templates will be provided by the Engineer.

Provide sulfate resistant concrete for all drilled shafts.

Provide all freshly mixed concrete testing equipment as required by subsection 3.3, except as noted here. Curing facilities, maturity meters, and strength-testing equipment will not be required. Air content testing is waived for this project. All testing equipment shall be clean and in like-new condition. Test molds shall be 4" diameter x 8" tall.

Item 449:

Use Thomas & Betts Kopr-Shield, MG Chemicals #846, MG Chemicals #8463, NYOGEL #756G, Pro-Shield #7308, Cho-Lube #4220, or other approved electrically conducting lubricant compound.

Item 500:

Material On Hand (MOH) will not be used in calculating partial payments for Mobilization.

Item 502:

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

Access will be provided to all business and residences at all times. Where turning radii are limited during phased construction at intersections, provide all weather surfaces such as RAP or base in turning movements to accommodate and to protect the traffic from edge drop-offs. Materials, labor, maintenance and removal for these temporary accesses and radii will not be paid for directly but will be considered subsidiary to the various bid items.

Place barricades and signs in locations that do not obstruct the sight distance of drivers entering the highway from driveways or side streets.

Do not commence work on the road before sunrise. Do not operate or park any equipment/machinery closer than 30 feet from the traveled roadway after sunset unless authorized by the engineer.

When moving unlicensed equipment on or across any pavement or public highways, protect the pavement from all damage using an acceptable method.

As approved by the Engineer, provide uniformed off duty police officers and squad cars during lane or ramp closures, night time work or other situations that indicate a need for additional traffic control to protect the traveling public or the construction workforce. Provide documentation such as payroll, log sheets with signatures and badge number, or invoices from the government entity providing the officers for reimbursement. Complete the weekly 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. Reimbursement will not be made for coordination fees charged by the police department.

Limit lane closures to the hours between 9:00 am and 3:30 pm. Work in other areas of the project is not restricted to this time frame.

CSJ: 0918-47-342, ETC. **Sheet 3B**

County: Dallas

Highway: CS

Item 506:

Install Biodegradable Erosion Control Logs as directed by the Engineer.

Item 529:

Provide grooved joints at 10-foot intervals and ¾ inch expansion joint material for doweled curb at the same locations as on the existing pavement.

For Curb and Gutter sections, provide grooved joints at 10-foot intervals and ¾ inch expansion joint material at a maximum of 50-foot centers and at all radius points and inlets.

Curb and Gutter transitions will be paid for by the foot at the unit price for the corresponding curb or curb and gutter section.

Saw joints at the same location as on the existing pavement.

Item 610:

Provide 12 circuit Buchanan Type 112SN, Kulka Type 985-GP-10 CU, or equal terminal strip in the luminaire pole access compartment. The conductors for the line and load side of the terminal strip shall be identified with a plastic label with two straps per tag. The load side shall have each signal head and ped head identified on the tag.

Item 618:

The location of conduits and ground boxes are diagrammatic only and may be shifted to accommodate field conditions as directed.

Secure permission and approval from the proper authority prior to cutting into or removing any sidewalks or curbs for installation of this Item.

Place conduit under existing pavement by an approved boring method. Do not place boring pits closer than 2 feet from the edge of the pavement unless otherwise directed. Do not use water jetting. When conduits are bored, do not exceed 18 inches in the vertical and horizontal tolerances as measured from the intended target point.

Do not use a pneumatically driven device for punching holes beneath the pavement (commonly known as a "missile").

Furnish and install a flat, high tensile strength polyester fiber pull tape in conduit runs in excess of 50 feet or for future use and protected with standard weather-tight conduit caps, as approved. Acceptable products include Garvin # PT-1250-3K, ComStar PUL 1250P3K, Ideal Part No. 31-315 or equal as approved by the Engineer. This work will not be paid for directly, but is subsidiary to this Item.

Use a colored cleaner-primer on all PVC to PVC joints before application of PVC cement.

Seal all conduit ends with a permanently soft, non-toxic duct seal. Use a duct seal that does not adversely affect other plastic materials or corrode metals.

Where sidewalk is removed to install trenched conduit, replace sidewalk to match existing material. This work will be subsidiary to Item 618 except where shown otherwise in the plans.

Communications cable shall be installed in a separate conduit and bored separately.

2" Schedule 80 PVC will be used at the power pole to supply electricity to underground services.

Item 620:

The equipment grounding conductor shall be identified by a continuous green colored jacket insulation or bare wire. Grounded conductors (Neutral) shall be identified by a continuous white colored jacket. Ungrounded conductors (Hot) in a 120/240v system shall be identified by each pole or leg. For 240-volt branch circuit fed from 120/240 source, ensure one leg is identified by a continuous black colored jacket and the other leg by a continuous red colored jacket.

Item 624:

Slack conductors required by Standard Sheet ED(3)-14 will be subsidiary to Item 624.

Concrete removal required for installation of ground boxes will be subsidiary to Item 624.

Item 628:

Contact the appropriate utility company during the first three weeks of the project lead-time period to allow adequate time for any necessary utility adjustments, transformer installation, etc.

Contractor shall submit an online request at ONCOR.com by following the steps below:
Select Construction and Development tab at top of screen.
Scroll down to New Construction and select Learn More.
Select the Start Request icon under the Commercial and Industrial project type.
Select the One Single Building Facility tab and fill in all required information.
Submit the request. An ONCOR representative will contact you within a few days.

CSJ: 0918-47-342, ETC. **Sheet 3C**

County: Dallas

Highway: CS

Intersection	ONCOR Contact	Phone Number
Audelia Rd at Church Rd	Lorenzo Garcia	(469) 301-0481
Ferguson Rd at Woodmeadow Pkwy	Ithmar Paz	(469) 785-3098
Jefferson Blvd at Zang Blvd	Cathy Gaona	(975) 230-5133
Bickers St at Hampton Rd	Steven Humphreys	(214) 681-0042
Forest Park Rd at Mockingbird Lane	Ithmar Paz	(469) 785-3098

Contact the appropriate utility company during the first three weeks of the project lead-time period to allow adequate time for any necessary utility adjustments, transformer installation, etc. Field meetings with the utility company should also be coordinated with City of Dallas Traffic Signal staff, Mr. Alfred Lemon (Alfred.Lemon@dallas.gov) and Mr. Favian Giraldo (Favian.Giraldo@dallas.gov). City of Dallas Traffic Signal staff should be used as alternate contacts/owners when contacting the utility company. If there is a work reference number available from the design team, the same will be used by the Contractor when contacting the utility company to ensure that utility company can reference the available documentation on file.

The Transocket shall be mounted facing the roadway and the service feed shall be mounted on the opposite side of the service pedestal. An extra 2" stub out conduit with pipe cap, shall be installed for future street lighting. The 2" conduit shall originate at pedestal service, through the foundation and stub out below grade. The installation of conduit shall be incidental to installation of pedestal service.

Label the service enclosures indicating service address as well as all required information as shown on the Electrical Detail (ED) standard sheets. Labeling shall be silk screening or other acceptable method. This work will not be paid for directly, but is subsidiary to this Item.

A Licensed Master Electrician shall oversee the installation of all electrical services.

Bill the electrical service power usage to the City of Dallas.

On the outside lower front of each electrical service meter base cover, install a 12 gauge minimum thickness stainless steel, aluminum or brass placard. The placard shall be engraved or stamped with the numeric portion of the street address and permanently affixed to the cover with exterior rated adhesive so as not to interfere with the operation of the latch. This work will not be paid for directly, but is subsidiary to this Item.

Prior to application for electrical service connection, the Contractor shall apply for an electrical service permit at 320 E. Jefferson Street in Dallas and to have the new electrical service inspected and "green-tagged" at their expense. The Contractor shall apply for inspection of the installed electrical service infrastructure by the utility company, and shall coordinate the installation of underground cable by the utility company. The Contractor shall notify City of Dallas Traffic Signal staff with regular updates about information relevant to setting up electric service accounts for the project.

Upon receipt of “green tag” and after underground cable is installed by the utility company for each location, the Contractor shall provide a copy of the “green tag” to Mr. Alfred Lemon and Mr. Favian Giraldo at the City of Dallas Signal Shop. The City shall submit the request for new electric service to the utility provider upon receipt of a copy of the “green tag”. Electrical service accounts for each new electrical service shall be established by and billed to the City of Dallas.

Item 644:

Prior to taking elevations to determine lengths for fabrication of sign posts, obtain verification of all proposed locations.

All sign mounts shall have a clamp base system for all small roadside sign assemblies.

Item 656:

Before placing the concrete for the controller foundation, coordinate with the City of Dallas to ensure that the anchor bolt spacing will match the anchor bolts and cabinet supplied by the city.

Form a 3/4-inch chamfer on the top edge of each pedestal pole foundation.

Probe for utilities and underground structures prior to drilling foundations. Foundations shall be paid for once regardless of extra work caused by obstructions.

Item 662 and 672:

Black adhesive will be used on asphalt pavements and white adhesive will be used on concrete pavements.

Item 677:

A water blasting method approved by the Engineer will be the only method allowed for the removal of permanent and temporary pavement markings except on a sealcoat surface. A 2 foot wide sealcoat will be required on sealcoat surfaces to eliminate permanent and temporary pavement markings.

Item 680:

Requirements for this Item include the following work, all of which are subsidiary to this Item:

1. Notify the Traffic Projects Office at DAL_TPO@txdot.gov one week before beginning any work involving traffic signals. Supplement email correspondence with the District Signal Maintenance Office at (214) 320-6682 and Construction Office at (214) 319-6406.
2. Notify the City of Dallas Traffic Management Center at (214) 670 3095 and at Alfred.Lemon@dallas.gov one week before beginning any work involving traffic

CSJ: 0918-47-342, ETC. **Sheet 3D**

County: Dallas

Highway: CS

signals. When working in City of Dallas Right of Way, obtain approval for traffic control plans (TCPs) and Right of Way (ROW) cut permits with the City of Dallas online system: www.rowmanagement.dallascityhall.com.

3. Provide submittal literature for all traffic signal equipment before installation.
4. Install the supplied traffic signal controller and cabinet.
5. Install the controller cabinet in an orientation as directed by the City of Dallas.
6. Connect all field wiring to the controller assembly, including SSR coaxial cable termination into the polyphaser. The City 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. Pick up the signal cabinet from the City of Dallas Traffic Field Operations facility at 3204 Canton Street, Dallas, TX. Contact the City of Dallas Traffic Field Operations Supervisor with a 6-week notice and at least 48-hour notice of intent to pick-up materials from the City of Dallas. Have a qualified technician and a representative from the controller supplier on the project site to place the traffic signals in operation.
7. Furnish and install all sign panels for mounting on signal poles, mast arms, and span wires. Fabricate the sign panels in accordance with Item 636, and mount with Astro-Sign Brac, Signfix aluminum channel, or equal as approved by the Engineer. Submit five (5) sets of shop drawings for street name signs.
8. Provide 250W Equivalent LED Fixtures with 120-volt electronic LED drivers as shown on the Material Producers List. If plans specify a wattage other than 250W Equivalent LED Fixtures, confirm with Construction Manager before ordering the Fixtures.
9. 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.
10. When the work required by this contract has been satisfactorily completed on any individual or inter-connected system of signalized intersections, final clean-up has been performed, and the traffic signal equipment supplied has operated continuously and satisfactorily for at least 30 days, release from further maintenance on that particular intersection is authorized. This partial acceptance, made in writing, does not void or alter any of the terms of the contract.
11. Prevent any damage to property owner’s poles, fences, shrubs, mailboxes, etc. Protect all underground and overhead utilities and repair any damage. Provide access to all driveways during construction.
12. Salvage poles, cabinets, service poles and equipment, exposed conduit, and any other equipment as directed. his equipment remains the property of the City of Dallas. Contact the City of Dallas Traffic Field Operations Supervisor, Mr. Alfred Lemon, at (214) 670-3896 with at least 24 hours’ notice of intent to drop-off materials at the City of Dallas. The location of the drop-off facility is 3204 Canton Street, Dallas, TX. All other material removed in this project will become the property of the Contractor. Dispose of material off the right of way in accordance with federal, state,

and local regulations. Maintain the operation of the existing traffic signal until directed to remove it.

13. Contractor is notified that low overhead lines exist in multiple areas. Contractor shall be capable of working below low overhead lines for this project.
14. Contractor shall install a base mounted controller cabinet foundation (Type 332/352i) at each intersection. Payment shall be subsidiary to Item 680.

Item 682:

Install signal head attachments so that the wiring to each signal head passes from the mast arm through the attachment hardware to the signal head. Do not leave cable or wiring exposed.

Provide signal head attachments that allow for adjustment about the horizontal and vertical axis.

Provide black polycarbonate pedestrian and vehicle signal heads with non-painted aluminum tubing. Provide back plates, louvers, and the inside of visors with a flat black finish. Provide aluminum non-vented retroreflective back plates for all traffic signal heads.

Turn down signal heads or cover with burlap or other material, as approved, until traffic signal is placed in operation.

Mount signal heads level and plumb and aim as directed.

Provide black polycarbonate pedestrian and vehicle signal heads with non-painted aluminum tubing. Provide black retroreflective aluminum non-vented back plates for all traffic signal heads.

Item 684:

Provide 18 AWG Type C signal cables for loop detector lead-ins.

Provide stranded 14 AWG Type A signal cables for LED signal heads and stranded 12 AWG Type C cables for APS units.

Provide a separate multi-conductor signal cable (14 AWG) inside pedestal poles and signal poles from the terminal strip to each signal head as shown on the plans.

Identify each cable as shown on the plans (cable 1, etc.) with permanent marking labels (Panduit Type PLM standard single marker tie, Thomas&Betts Type 548M, or equal) at each ground box, pole base, and controller.

Item 686:

Provide 12 circuit Buchanan Type 112SN, Kulka Type 985-GP-12 CU, or equal terminal strips in the signal pole access compartment. Provide additional terminal strips of 8

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circuits each when more than 12 circuits are required. The conductors for the line and load side of the terminal strip shall be identified with a plastic label with two straps per tag. The load side shall have each signal head and ped head identified on the tag.

Mark pole shafts and mast arms with the identification numbers from the plans to facilitate field-assembly. Identify pole shafts and mast arms by intersection for projects with multiple intersections.

Provide nuts on top and bottom (double nuts) of the base plate as shown on the plans.

Set anchor bolts for mast arm signal poles and strain poles so that two are in tension and two are in compression. Obtain approval of anchor bolt placement before placing concrete.

Provide vertical clearance of 17 to 19 feet from the roadway to the lowest point of the signal head or mast arm. Except for supplemental nearside signal heads, all signal heads must be installed at least 40’ from the stop line. If field adjustments result in the nearest signal head being more than 180’ from the stop line, install a supplemental nearside signal head as directed by the engineer. Determine the field measurements and elevations from the actual field location of the poles, considering all above and below ground utilities and existing roadway elevations.

Provide vibration dampers for mast arms 28 feet to 48 feet in length. Install as shown on MA-DPD.

Item 687:

Provide 12 circuit Buchanan Type 112SN, Kulka Type 985-GP-10 CU, or equal terminal strip in the pedestal pole base. The conductors for the line and load side of the terminal strip shall be identified with a plastic label with two straps per tag. The load side shall have each signal head and ped head identified on the tag.

Item 688:

Verify the location of the APS units and the direction of the arrows on the signs prior to installation.

APS Units shall operate with hardwired connections for the communications path between the APS Units and the APS controller. APS controller will need to have an SDLC port and SDLC cabling for installation in an ATC cabinet.

Contractor shall deliver a digital copy of APS messages to the City of Dallas for archival and maintenance purposes. Contact Srinivasa Veeramallu at s.veeramallu@dallas.gov for delivery instructions

Item 6185:

The total number of truck mounted attenuators (TMA) required when utilizing the traffic control standards are shown in the tables below.

TCP 1 Series	Scenario		Required TMA	
(1-3)-18	A	B	1	2

TCP 2 Series	Scenario	Required TMA/TA
(2-1)-18 / (2-2)-18 / (2-4)-18 / (2-5)-18 / (2-6)-18	All	1

WZ (BTS) Series	Scenario	Required TMA
(BTS-1)-13	Near Side Lane Closure	1

Shadow vehicles equipped for truck mounted attenuators (TMA) for stationary operations will be paid for by the day and must be available for use at any time as determined by the Engineer.

Therefore, 1 total shadow vehicle with TMA will be required for this type of work. 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 TMAs needed for the project for those times per plan requirements. Additional TMAs used that are not specified in the plans in which the contractor expects compensation will require prior approval from the Engineer.

Item 6292:

If the radar mounting locations shown on the plans do not allow for proper detection of the proposed zones, relocate the radar units as needed and directed. The labor cost to adjust the units will not be paid for separately but will be considered subsidiary to these items.

This pay item includes install only for radar detectors and radar cable.

The City of Dallas Standard (Exhibit N) refers to mounting radar using astro-brackets. The word “astro-bracket” shall be replaced with the word “mounting clamp” at all instances on this exhibit.

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County: Dallas

Highway: CS

The list of material below is for the Contractor’s information only.
It is the responsibility of the Contractor to verify
all items and quantities listed below.

LIST OF MATERIAL/LABOR
SUBSIDIARY TO ITEM 680

CSJ 0918-47-342: AUDELIA ROAD AT CHURCH ROAD

DESCRIPTION	UNIT	QUANTITY
250W Equivalent LED Luminaire (120V)	EA	3
150W Equivalent LED Luminaire (120V)	EA	1
Install Controller Cabinet (City Provided)	EA	1
Concrete Controller Foundation	CY	3
Procure and Install Street Name Sign Assembly	EA	4

CSJ 0918-47-343: FERGUSON ROAD AT WOODMEADOW PARKWAY

DESCRIPTION	UNIT	QUANTITY
250W Equivalent LED Luminaire (120V)	EA	2
150W Equivalent LED Luminaire (120V)	EA	2
Install Controller Cabinet (City Provided)	EA	1
Concrete Controller Foundation	CY	3
Procure and Install Regulatory Sign Panel	EA	2
Procure and Install Street Name Sign Assembly	EA	4

CSJ 0918-47-344: JEFFERSON BOULEVARD AT ZANG BOULEVARD

DESCRIPTION	UNIT	QUANTITY
250W Equivalent LED Luminaire (120V)	EA	4
Install Controller Cabinet (City Provided)	EA	1
Concrete Controller Foundation	CY	3
Procure and Install Street Name Sign Assembly	EA	4

CSJ 0918-47-345: BICKERS STREET AT HAMPTON ROAD

DESCRIPTION	UNIT	QUANTITY
250W Equivalent LED Luminaire (120V)	EA	2
150W Equivalent LED Luminaire (120V)	EA	2
Install Controller Cabinet (City Provided)	EA	1
Concrete Controller Foundation	CY	3
Procure and Install Regulatory Sign Panel	EA	2
Procure and Install Street Name Sign Assembly	EA	4

CSJ 0918-47-346: FOREST PARK ROAD AT MOCKINGBIRD LANE

DESCRIPTION	UNIT	QUANTITY
250W Equivalent LED Luminaire (120V)	EA	3
150W Equivalent LED Luminaire (120V)	EA	1
Install Controller Cabinet (City Provided)	EA	1
Concrete Controller Foundation	CY	3
Procure and Install Regulatory Sign Panel	EA	3
Procure and Install Street Name Sign Assembly	EA	4

LIST OF MATERIAL
FURNISHED BY THE CITY OF DALLAS

CSJ 0918-47-342: AUDELIA ROAD AT CHURCH ROAD

DESCRIPTION	UNIT	QUANTITY
ATC 352i Signal Controller Cabinet	EA	1
Battery Back-Up Unit (BBU)	EA	1
2070 Controller & Ethernet Communication Devices	EA	1
Radar Presence Detector	EA	4
Radar Advanced Detector	EA	2
Radar Communication Cable	LF	830
Radar 4 Port CCU	EA	2

CSJ 0918-47-343: FERGUSON ROAD AT WOODMEADOW PARKWAY

DESCRIPTION	UNIT	QUANTITY
ATC 352i Signal Controller Cabinet	EA	1
Battery Back-Up Unit (BBU)	EA	1
2070 Controller & Ethernet Communication Devices	EA	1
Radar Presence Detector	EA	4
Radar Advanced Detector	EA	2
Radar Communication Cable	LF	995
Radar 4 Port CCU	EA	2

CSJ 0918-47-344: JEFFERSON BOULEVARD AT ZANG BOULEVARD

DESCRIPTION	UNIT	QUANTITY
ATC 352i Signal Controller Cabinet	EA	1
Battery Back-Up Unit (BBU)	EA	1
2070 Controller & Ethernet Communication Devices	EA	1
Radar Presence Detector	EA	4
Radar Advanced Detector	EA	2
Radar Communication Cable	LF	1270
Radar 4 Port CCU	EA	2

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County: Dallas

Highway: CS

CSJ 0918-47-345: BICKERS STREET AT HAMPTON ROAD

DESCRIPTION	UNIT	QUANTITY
ATC 352i Signal Controller Cabinet	EA	1
Battery Back-Up Unit (BBU)	EA	1
2070 Controller & Ethernet Communication Devices	EA	1
Radar Presence Detector	EA	4
Radar Advanced Detector	EA	2
Radar Communication Cable	LF	915
Radar 4 Port CCU	EA	2

CSJ 0918-47-346: FOREST PARK ROAD AT MOCKINGBIRD LANE

DESCRIPTION	UNIT	QUANTITY
ATC 352i Signal Controller Cabinet	EA	1
Battery Back-Up Unit (BBU)	EA	1
2070 Controller & Ethernet Communication Devices	EA	1
Radar Presence Detector	EA	4
Radar Advanced Detector	EA	2
Radar Communication Cable	LF	1095
Radar 4 Port CCU	EA	2

LIST OF MATERIAL
FURNISHED BY THE DISTRICT

NONE

NONE

General Notes

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0918-47-342

DISTRICT Dallas **COUNTY** Dallas

HIGHWAY AUDELIA RD, FERGUSON RD, HAMPTON RD, MOCKINGBIRD LN, SL 12, ZANGS BLVD

ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL
	104-6001	REMOVING CONC (PAV)	SY	82.000	
	104-6013	REMOVING CONC (FOUNDATIONS)	SY	2.000	
	104-6015	REMOVING CONC (SIDEWALKS)	SY	259.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF	464.000	
	162-6002	BLOCK SODDING	SY	25.000	
	168-6001	VEGETATIVE WATERING	MG	0.030	
	251-6034	REWORK BS MTL (TY C) (8") (ORD COMP)	SY	21.500	
	360-6044	CONC PVMT (CONT REINF)(FAST TRK)(12")	SY	64.000	
	416-6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	48.000	
	416-6030	DRILL SHAFT (TRF SIG POLE) (24 IN)	LF	54.000	
	416-6031	DRILL SHAFT (TRF SIG POLE) (30 IN)	LF	44.000	
	416-6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	195.000	
	416-6034	DRILL SHAFT (TRF SIG POLE) (48 IN)	LF	22.000	
	432-6003	RIPRAP (CONC)(6 IN)	CY	1.500	
	500-6001	MOBILIZATION	LS	1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	18.000	
	506-6042	BIODEG EROSN CONT LOGS (INSTL) (18")	LF	300.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	300.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF	396.500	
	531-6003	CONC SIDEWALKS (6")	SY	394.000	
	531-6004	CURB RAMPS (TY 1)	EA	15.000	
	531-6008	CURB RAMPS (TY 5)	EA	6.000	
	531-6010	CURB RAMPS (TY 7)	EA	6.000	
	536-6006	CONC MEDIAN(MONO NOSE)	SY	26.000	
	610-6124	IN RD IL (TY SA) 20T-4 (150W EQ) LED	EA	6.000	
	618-6046	CONDT (PVC) (SCH 80) (2")	LF	845.000	
	618-6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	50.000	
	618-6053	CONDT (PVC) (SCH 80) (3")	LF	865.000	
	618-6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	1,020.000	
	618-6058	CONDT (PVC) (SCH 80) (4")	LF	190.000	
	618-6059	CONDT (PVC) (SCH 80) (4") (BORE)	LF	1,950.000	
	620-6004	ELEC CONDR (NO.12) INSULATED	LF	1,280.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF	3,295.000	
	620-6010	ELEC CONDR (NO.6) INSULATED	LF	3,980.000	
	624-6010	GROUND BOX TY D (162922)W/APRON	EA	16.000	
	624-6028	REMOVE GROUND BOX	EA	8.000	
	628-6187	ELC SRV TY D 120/240 070(NS)SS(E)PS(U)	EA	5.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	1,520.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	570.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	2,490.000	
	666-6224	PAVEMENT SEALER 4"	LF	5,685.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0918-47-342

DISTRICT Dallas **COUNTY** Dallas

HIGHWAY AUDELIA RD, FERGUSON RD, HAMPTON RD, MOCKINGBIRD LN, SL 12, ZANGS BLVD

ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL
	666-6225	PAVEMENT SEALER 6"	LF	2,375.000	
	666-6226	PAVEMENT SEALER 8"	LF	1,520.000	
	666-6228	PAVEMENT SEALER 12"	LF	570.000	
	666-6230	PAVEMENT SEALER 24"	LF	2,490.000	
	666-6231	PAVEMENT SEALER (ARROW)	EA	32.000	
	666-6234	PAVEMENT SEALER (DBL ARROW)	EA	4.000	
	666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	1,790.000	
	666-6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	LF	1,645.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	2,375.000	
	666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	2,250.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	32.000	
	668-6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA	6.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	160.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA	845.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	4,835.000	
	677-6002	ELIM EXT PAV MRK & MRKS (6")	LF	3,630.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	245.000	
	677-6006	ELIM EXT PAV MRK & MRKS (18")	LF	620.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	1,195.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	23.000	
	677-6009	ELIM EXT PAV MRK & MRKS (DBL ARROW)	EA	2.000	
	678-6001	PAV SURF PREP FOR MRK (4")	LF	5,685.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF	2,375.000	
	678-6004	PAV SURF PREP FOR MRK (8")	LF	1,520.000	
	678-6006	PAV SURF PREP FOR MRK (12")	LF	570.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF	2,620.000	
	678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	32.000	
	678-6010	PAV SURF PREP FOR MRK (DBL ARROW)	EA	4.000	
	678-6033	PAV SURF PREP FOR MRK (RPM)	EA	1,005.000	
	680-6004	REMOVING TRAFFIC SIGNALS	EA	5.000	
	680-6005	INS HY TRF SIG (DPT SUP CNT & CAB)(ISO)	EA	5.000	
	682-6001	VEH SIG SEC (12")LED(GRN)	EA	193.000	
	682-6002	VEH SIG SEC (12")LED(GRN ARW)	EA	26.000	
	682-6003	VEH SIG SEC (12")LED(YEL)	EA	193.000	
	682-6004	VEH SIG SEC (12")LED(YEL ARW)	EA	41.000	
	682-6005	VEH SIG SEC (12")LED(RED)	EA	194.000	
	682-6006	VEH SIG SEC (12")LED(RED ARW)	EA	32.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	40.000	
	682-6051	BACKPLATE W/REFL BRDR(3 SEC)ALUM	EA	957.000	
	682-6052	BACKPLATE W/REFL BRDR(4 SEC)ALUM	EA	57.000	
	682-6053	BACKPLATE W/REFL BRDR(5 SEC)ALUM	EA	170.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0918-47-342 **DISTRICT** Dallas **COUNTY** Dallas

HIGHWAY AUDELIA RD, FERGUSON RD, HAMPTON RD, MOCKINGBIRD LN, SL 12, ZANGS BLVD

ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL
	684-6031	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	LF	4,730.000	
	684-6033	TRF SIG CBL (TY A)(14 AWG)(7 CONDR)	LF	1,430.000	
	684-6036	TRF SIG CBL (TY A)(14 AWG)(10 CONDR)	LF	2,280.000	
	684-6046	TRF SIG CBL (TY A)(14 AWG)(20 CONDR)	LF	2,445.000	
	684-6079	TRF SIG CBL (TY C)(12 AWG)(2 CONDR)	LF	5,440.000	
	686-6031	INS TRF SIG PL AM(S)1 ARM(28')LUM	EA	3.000	
	686-6035	INS TRF SIG PL AM(S)1 ARM(32')LUM	EA	1.000	
	686-6039	INS TRF SIG PL AM(S)1 ARM(36')LUM	EA	4.000	
	686-6041	INS TRF SIG PL AM(S)1 ARM(40')	EA	1.000	
	686-6043	INS TRF SIG PL AM(S)1 ARM(40')LUM	EA	1.000	
	686-6049	INS TRF SIG PL AM(S)1 ARM(48')	EA	5.000	
	686-6051	INS TRF SIG PL AM(S)1 ARM(48')LUM	EA	4.000	
	686-6059	INS TRF SIG PL AM(S)1 ARM(55')LUM	EA	1.000	
	687-6001	PED POLE ASSEMBLY	EA	9.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA	36.000	
	688-6003	PED DETECTOR CONTROLLER UNIT	EA	5.000	
	752-6025	TREE TRIMMING (12"-24")	EA	1.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	50.000	
	6010-6002	CCTV FIELD EQUIPMENT (DIGITAL)	EA	5.000	
	6010-6004	CCTV MOUNT (POLE)	EA	5.000	
	6185-6002	TMA (STATIONARY)	DAY	30.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	160.000	
	6186-6014	ITS GND BOX (POLY) TY 1 (243624)W/APRN	EA	5.000	
	6292-6004	RVDS(PRESENCE DET ONLY)(INSTALL ONLY)	EA	8.000	
	6292-6006	RVDS(PRES AND ADV DET)(INSTALL ONLY)	EA	12.000	
	14	PUBLIC UTILITY FORCE ACCT WORK (PARTICIPATING)	LS	5.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	9.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	5.000	
	31	MATERIALS FURNISHED BY CITY (PARTICIPATING)	LS	5.000	

SUMMARY OF QUANTITIES				CSJ 0918-47-342	CSJ 0918-47-343	CSJ 0918-47-344	CSJ 0918-47-345	CSJ Ø918-47-346	TOTAL
ITEM NO.	CODE	DESCRIPTION	UNIT	AUDELIA RD AT CHURCH RD	FERGUSON RD AT WOODMEADOW PKWY	JEFFERSON BLVD AT ZANG BLVD	BICKERS ST AT HAMPTON RD	FOREST PARK RD AT MOCKINGBIRD LN	
104	6001	REMOVING CONC (PAV)	SY	10	38		19	15	84
104	6013	REMOVING CONC (FOUNDATIONS)	SY			1		1	2
104	6015	REMOVING CONC (SIDEWALKS)	SY	14	50	65	90	40	259
104	6022	REMOVING CONC (CURB AND GUTTER)	LF		105	121	127	111	464
162	6002	BLOCK SODDING	SY	5	10		10		25
168	6001	VEGETATIVE WATERING	MG	0.01	0.01		0.01		0.03
251	6034	REWORK BS MTL (TY C) (8") (ORD COMP)	SY	1.5	12		4	4	21.5
360	6044	CONC PVMT (CONT REINF)(FAST TRK)(12")	SY	6	38		9	11	64
416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	8	16		16	8	48
416	6030	DRILL SHAFT (TRF SIG POLE) (24 IN)	LF	6	12	12	12	12	54
416	6031	DRILL SHAFT (TRF SIG POLE) (30 IN)	LF	11		22		11	44
416	6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	39	52	26	52	26	195
416	6034	DRILL SHAFT (TRF SIG POLE) (48 IN)	LF					22	22
432	6003	RIPRAP (CONC) (6")	CY			1.5			1.5
500	6001	MOBILIZATION	LS	0.1	0.1	0.1	0.1	0.2	0.6
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	2	2	2	2	2	10
506	6042	BIODEG EROSN CONT LOGS (INSTL) (18")	LF	60	60	60	60	60	300
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	60	60	60	60	60	300
529	6008	CONC CURB & GUTTER (TY II)	LF		46.5	121	127	102	396.5
531	6003	CONC SIDEWALKS (6")	SY	48	110	65	103	68	394
531	6004	CURB RAMPS (TY 1)	EA		5	6	2	2	15
531	6008	CURB RAMPS (TY 5)	EA		2	1	3		6
531	6010	CURB RAMPS (TY 7)	EA					6	6
536	6006	CONC MEDIAN(MONO NOSE)	SY	4	8		10	4	26
610	6124	IN RD IL (TY SA) 20T-4 (150W EQ) LED	EA	1	2		2	1	6
618	6046	CONDT (PVC) (SCH 80) (2")	LF	295	80	105	130	235	845
618	6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF				50		50
618	6053	CONDT (PVC) (SCH 80) (3")	LF	130	230	180	175	150	865
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	205	180	195	210	230	1020
618	6058	CONDT (PVC) (SCH 80) (4")	LF	40	50	20	20	60	190
618	6059	CONDT (PVC) (SCH 80) (4") (BORE)	LF	365	370	410	405	400	1950
620	6004	ELEC CONDR (NO.12) INSULATED	LF	240	160	320	240	320	1280
620	6008	ELEC CONDR (NO.8) INSULATED	LF						
620	6009	ELEC CONDR (NO.6) BARE	LF	790	640	625	450	790	3295
620	6010	ELEC CONDR (NO.6) INSULATED	LF	890	730	665	605	1090	3980
624	6010	GROUND BOX TY D (1622922)W/APRON	EA	4	4	2	4	2	16
624	6028	REMOVE GROUND BOX	EA			1	4	3	8
628	6187	ELC SRV TY D 120/240 070(NS)SS(E)PS(U)	EA	1	1	1	1	1	5
666	6036	REFL PAV MRK TY I (W)8"(SLD) (100MIL)	LF	290	180	200	160	690	1520
666	6042	REFL PAV MRK TY I (W)12"(SLD) (100MIL)	LF			570			570
666	6048	REFL PAV MRK TY I (W)24"(SLD) (100MIL)	LF	610	585	130	610	555	2490
666	6224	PAVEMENT SEALER 4"	LF	1565	1140	770	1100	1110	5685
666	6225	PAVEMENT SEALER 6"	LF	525	500		770	580	2375
666	6226	PAVEMENT SEALER 8"	LF	290	180	200	160	690	2945
666	6228	PAVEMENT SEALER 12"	LF			570			570
666	6230	PAVEMENT SEALER 24"	LF	610	585	130	610	555	2490
666	6231	PAVEMENT SEALER (ARROW)	EA	4	6	4	6	12	32
666	6234	PAVEMENT SEALER (DBL ARROW)	EA		2		2		4
666	6300	RE PM W/RET REQ TY I (W)4"(BRK) (100MIL)	LF	500	400	320	310	260	1790
666	6303	RE PM W/RET REQ TY I (W)4"(SLD) (100MIL)	LF	300	295	450	300	300	1645
666	6309	RE PM W/RET REQ TY I (W)6"(SLD) (100MIL)	LF	525	500		770	580	2375
666	6315	RE PM W/RET REQ TY I (Y)4"(SLD) (100MIL)	LF	765	445		490	550	2250
668	6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	4	6	4	6	12	32
668	6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA		2		2		4
672	6009	REFL PAV MRKR TY II-A-A	EA	40	35	25	30	30	160
672	6010	REFL PAV MRKR TY II-C-R	EA	165	110	85	185	300	845
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	710	1125	770	1120	1110	4835
677	6002	ELIM EXT PAV MRK & MRKS (6")	LF	510	645	770	435	1270	3630
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	245					245
677	6006	ELIM EXT PAV MRK & MRKS (18")	LF	125	115	130	105	145	620
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	415			370	410	1195
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	4	1	4	4	10	21
677	6009	ELIM EXT PAV MRK & MRKS (DBL ARROW)	EA				2		2
678	6001	PAV SURF PREP FOR MRK (4")	LF	1565	1140	770	1100	1110	5685
678	6002	PAV SURF PREP FOR MRK (6")	LF	525	500		770	580	2375
678	6004	PAV SURF PREP FOR MRK (8")	LF	290	180	200	160	690	1520
678	6006	PAV SURF PREP FOR MRK (12")	LF			570			570
678	6008	PAV SURF PREP FOR MRK (24")	LF	610	585	130	610	555	2490
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	4	6	4	6	12	32
678	6010	PAV SURF PREP FOR MRK (DBL ARROW)	EA		2		2		4
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	205	145	110	215	330	1005

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED
PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation

TRAFFIC SAFETY IMPROVEMENTS

SUMMARY OF QUANTITIES - TRAFFIC SIGNALS

SHEET 1 OF 2

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	5
	CONTROL	SECTION	JOB	
CHECK JJM	Ø918	47	342, ETC.	

SUMMARY OF QUANTITIES				CSJ 0918-47-342	CSJ 0918-47-343	CSJ 0918-47-344	CSJ 0918-47-345	CSJ 0918-47-346	TOTAL
ITEM NO.	CODE	DESCRIPTION	UNIT	AUDELIA RD AT CHURCH RD	FERGUSON RD AT WOODMEADOW PKWY	JEFFERSON BLVD AT ZANG BLVD	BICKERS ST AT HAMPTON RD	FOREST PARK RD AT MOCKINGBIRD LN	
680	6004	REMOVING TRAFFIC SIGNALS	EA	1	1	1	1	1	5
680	6005	INS HY TRF SIG (DPT SUP CNT & CAB)(ISO)	EA	1	1	1	1	1	5
682	6001	VEH SIG SEC (12")LED(GRN)	EA	11	10	12	10	10	53
682	6002	VEH SIG SEC (12")LED(GRN ARW)	EA	2	4	2	4	5	17
682	6003	VEH SIG SEC (12")LED(YEL)	EA	11	10	12	10	10	53
682	6004	VEH SIG SEC (12")LED(YEL ARW)	EA	4	8	4	8	10	34
682	6005	VEH SIG SEC (12")LED(RED)	EA	11	10	12	10	11	54
682	6006	VEH SIG SEC (12")LED(RED ARW)	EA	4	8	4	8	8	32
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	8	8	8	8	8	40
682	6051	BACKPLATE W/REFL BRDR(3 SEC)ALUM	EA	11	10	12	10	10	53
682	6052	BACKPLATE W/REFL BRDR(4 SEC)ALUM	EA					1	1
682	6053	BACKPLATE W/REFL BRDR(5 SEC)ALUM	EA	2	4	2	4	4	16
684	6031	TRF SIG CBL (TY A) (14 AWG) (5 CONDR)	LF	480	360	485	425	480	2230
684	6033	TRF SIG CBL (TY A) (14 AWG) (7 CONDR)	LF	140	255	150	260	265	1070
684	6036	TRF SIG CBL (TY A) (14 AWG) (10 CONDR)	LF	505	540	340	550	345	2280
684	6046	TRF SIG CBL (TY A) (14 AWG) (20 CONDR)	LF	430	540	500	405	570	2445
684	6079	TRF SIG CBL (TY C) (12 AWG) (2 CONDR)	LF	1050	1115	1045	1025	1205	5440
686	6031	INS TRF SIG PL AM(S)1 ARM(28')LUM	EA			2		1	3
686	6035	INS TRF SIG PL AM(S)1 ARM(32')LUM	EA	1					1
686	6039	INS TRF SIG PL AM(S)1 ARM(36')LUM	EA		1		2	1	4
686	6041	INS TRF SIG PL AM(S)1 ARM(40')	EA		1				1
686	6043	INS TRF SIG PL AM(S)1 ARM(40')LUM	EA			1			1
686	6049	INS TRF SIG PL AM(S)1 ARM(48')	EA	1	1		2	1	5
686	6051	INS TRF SIG PL AM(S)1 ARM(48')LUM	EA	2	1	1			4
686	6059	INS TRF SIG PL AM(S)1 ARM(55')LUM	EA					1	1
687	6001	PED POLE ASSEMBLY	EA	1	2	2	2	2	9
688	6001	PED DETECT PUSH BUTTON (APS)	EA	8	8	8	4	8	36
688	6003	PED DETECTOR CONTROLLER UNIT	EA	1	1	1	1	1	5
752	6025	TREE TRIMMING (12"-24")	EA		1				1
6001	6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	10	10	10	10	10	50
6010	6002	CCTV FIELD EQUIPMENT (DIGITAL)	EA	1	1	1	1	1	5
6010	6004	CCTV MOUNT (POLE)	EA	1	1	1	1	1	5
6185	6002	TMA (STATIONARY)	DAY	6	6	6	6	6	30
6186	6014	ITS GND BOX (POLY) TY 1 (243624)W/APRN	EA	1	1	1	1	1	5
6292	6004	RVDS (PRESENCE DET ONLY) (INSTALL ONLY)	EA	2	2		2	2	8
6292	6006	RVDS (PRES AND ADV DET) (INSTALL ONLY)	EA	2	2	4	2	2	12

02/24/2023

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TRAFFIC SAFETY IMPROVEMENTS

SUMMARY OF QUANTITIES - TRAFFIC SIGNALS

SHEET 2 OF 2

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	5A
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

SUMMARY OF QUANTITIES				CSJ 0353-04-119	CSJ 0353-05-130	CSJ 0581-01-169	CSJ 0581-02-159	TOTAL
ITEM NO.	CODE	DESCRIPTION	UNIT	SL 12 FROM: SHADY TRAIL TO: SPUR 348	SL 12 FROM: SPUR 244 TO: SHADY TRAIL	SL 12 FROM: SHADY TRAIL TO: SH 348	SL 12 FROM: SPUR 348 TO: IH 35E	
500	6001	MOBILIZATION	LS	0.1	0.1	0.1	0.1	0.4
502	6001	BARRICADES,SIGNS AND TRAFFIC HANDLING	MO	2	2	2	2	8
682	6001	VEH SIG SEC (12")LED(GRN)	EA	4	16	66	54	140
682	6002	VEH SIG SEC (12")LED(GRN ARW)	EA			3	6	9
682	6003	VEH SIG SEC (12")LED(YEL)	EA	4	16	66	54	140
682	6004	VEH SIG SEC (12")LED(YEL ARW)	EA			2	5	7
682	6005	VEH SIG SEC (12")LED(RED)	EA	4	16	66	54	140
682	6006	VEH SIG SEC (12")LED(RED ARW)	EA					
682	6051	BACKPLATE W/REFL BRDR(3 SEC)ALUM	EA	27	307	361	209	904
682	6052	BACKPLATE W/REFL BRDR(4 SEC)ALUM	EA	1	30	19	6	56
682	6053	BACKPLATE W/REFL BRDR(5 SEC)ALUM	EA	5	54	65	30	154
684	6031	TRF SIG CBL (TY A) (14 AWG) (5 CONDR)	LF	80	320	1260	840	2500
684	6033	TRF SIG CBL (TY A) (14 AWG) (7 CONDR)	LF			120	240	360
6185	6002	TMA (STATIONARY)	DAY	40	40	40	40	160

02/24/2023

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TRAFFIC SAFETY IMPROVEMENTS

SUMMARY OF QUANTITIES -
SL 12

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS ACC	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	6
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

DATE:
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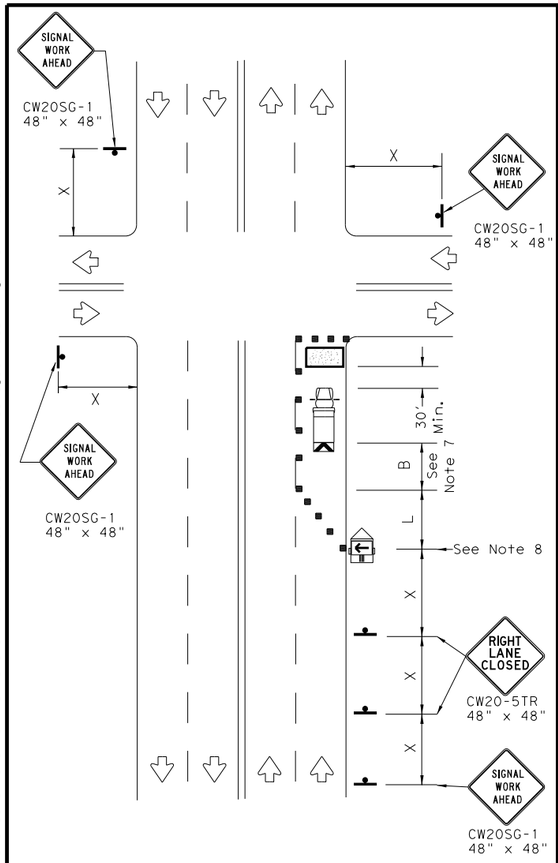
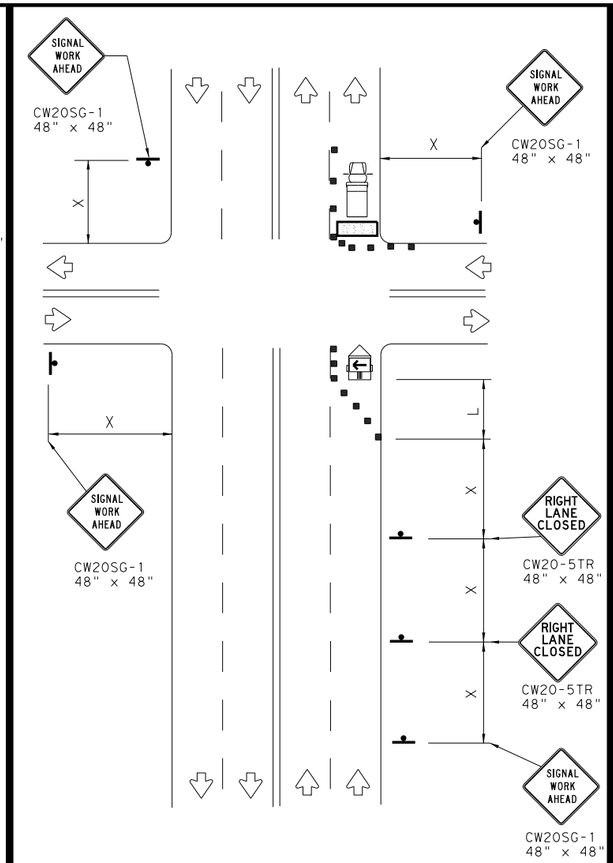


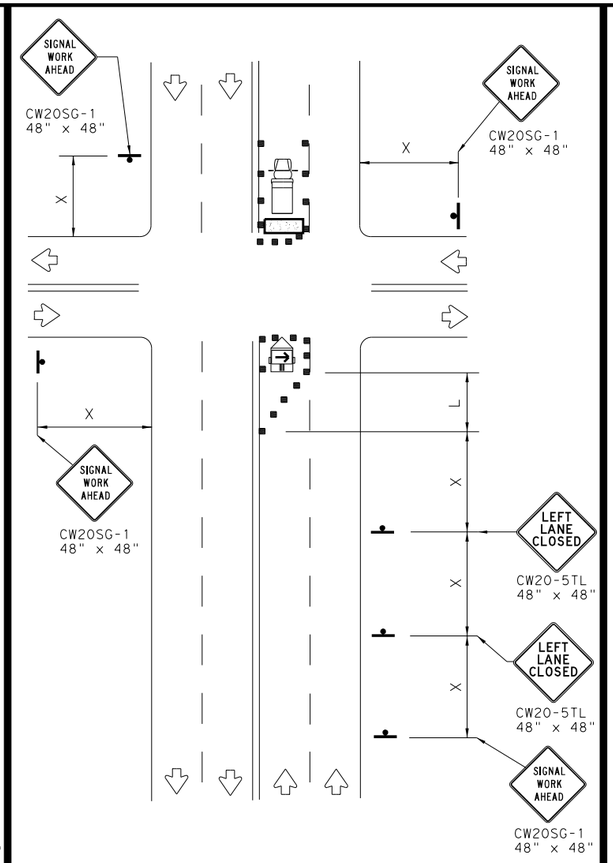
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



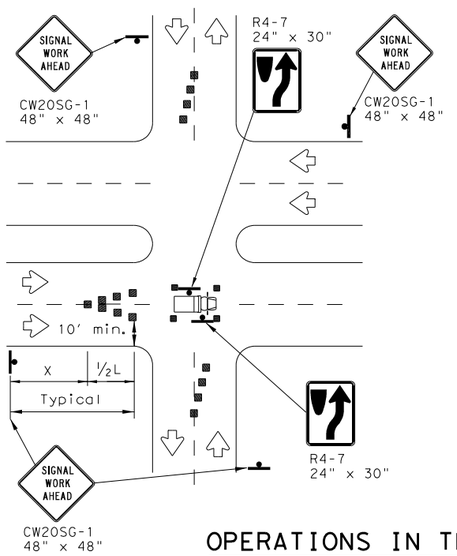
FAR SIDE RIGHT LANE CLOSURE

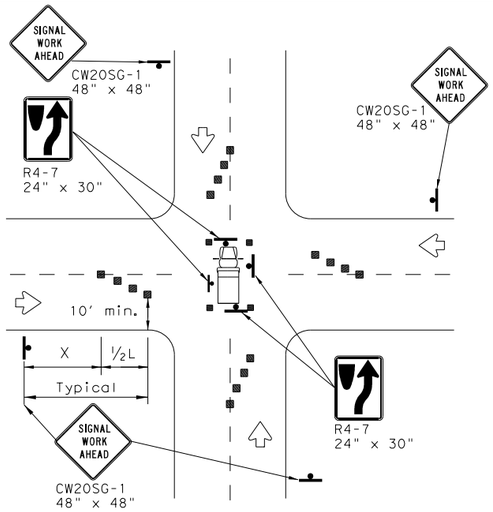
SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY





OPERATIONS IN THE INTERSECTION

SHORT DURATION

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.

Texas Department of Transportation

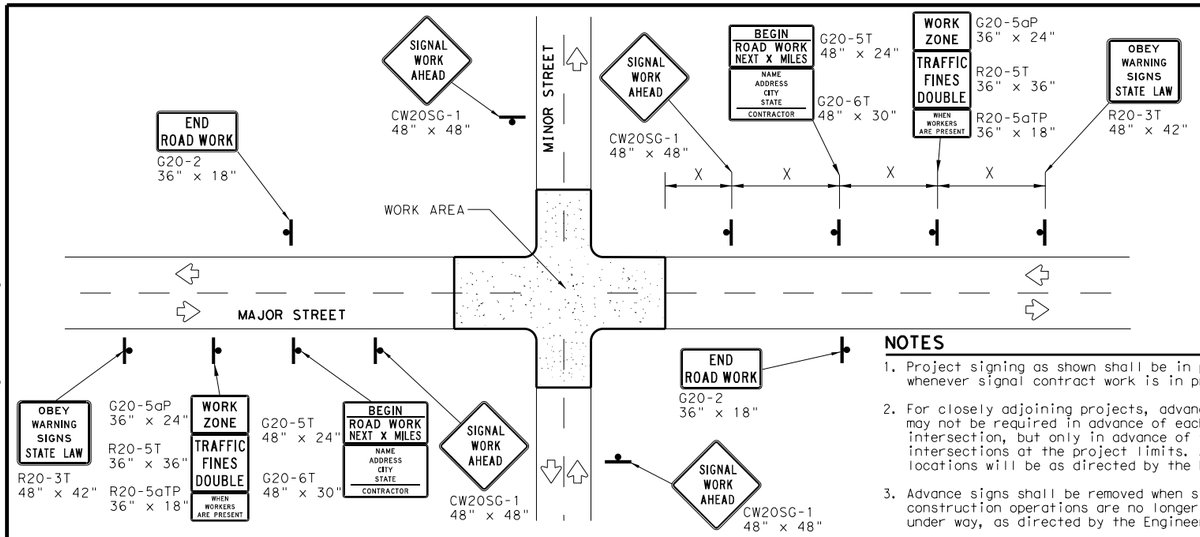
Traffic Operations Division Standard

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	0918	47	342,ETC.	CS
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	DAL	DALLAS		7

DATE:
FILE:



TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

DURATION OF WORK

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

SIGN MOUNTING HEIGHT

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

REMOVING OR COVERING

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

REFLECTIVE SHEETING

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

SIGN SUPPORT WEIGHTS

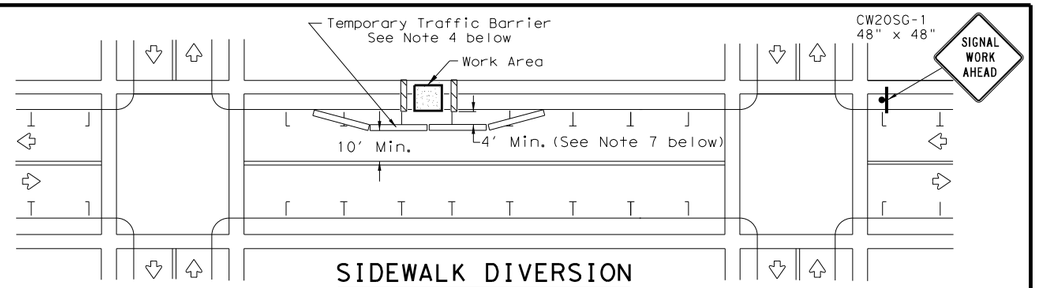
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

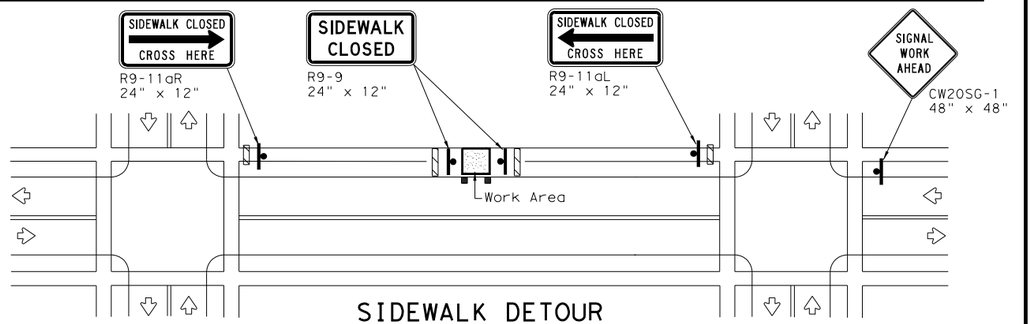
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

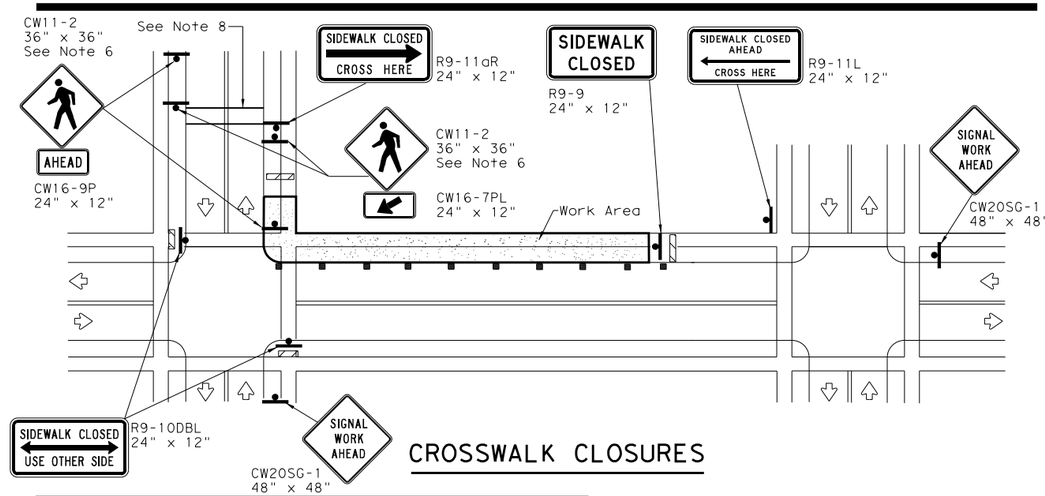
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342, ETC.	CS
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	DAL	DALLAS		8

DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13	0918	47	342,ETC.	CS
9-07 8-14	DIST	COUNTY		SHEET NO.
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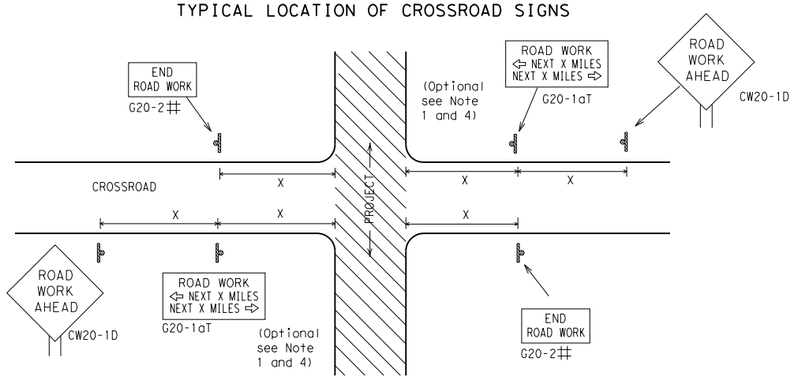
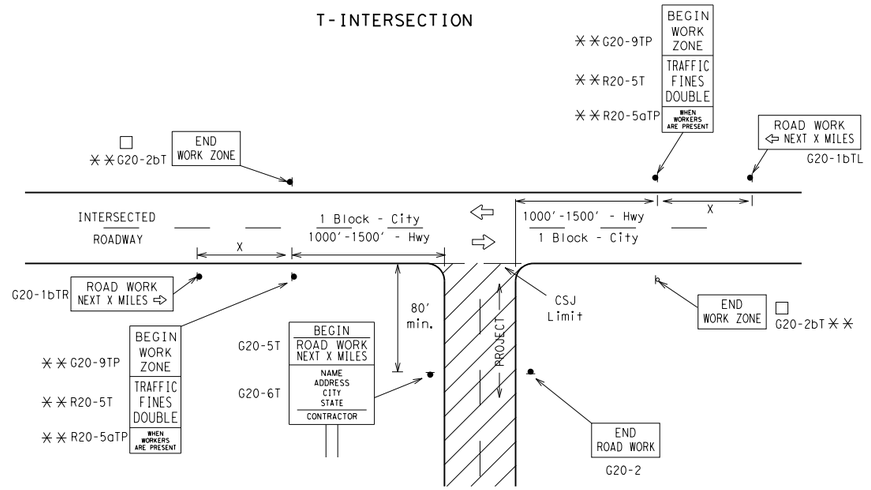
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

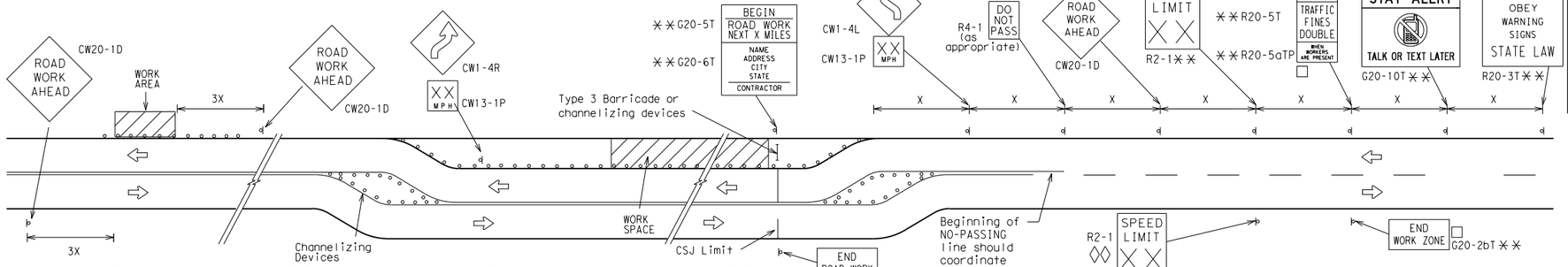
✳ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

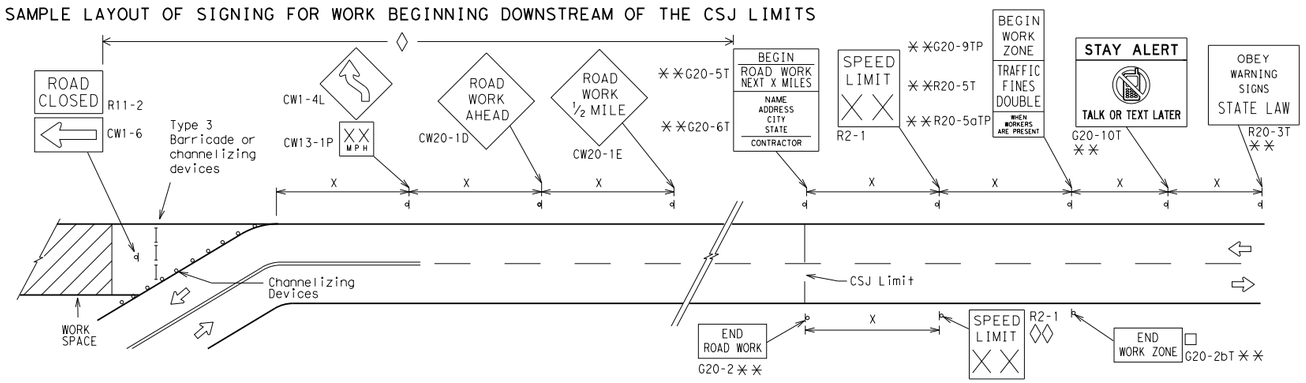
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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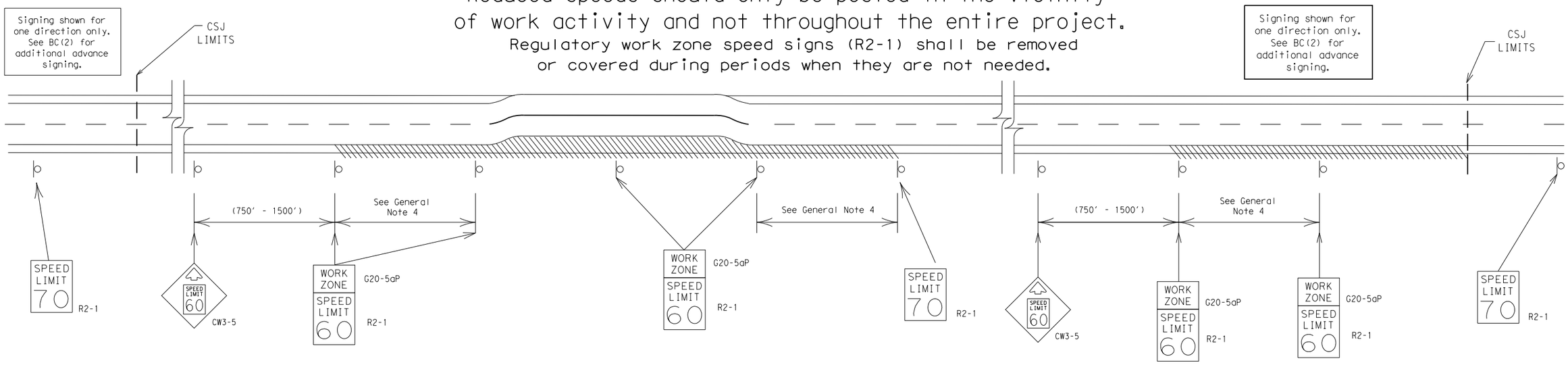
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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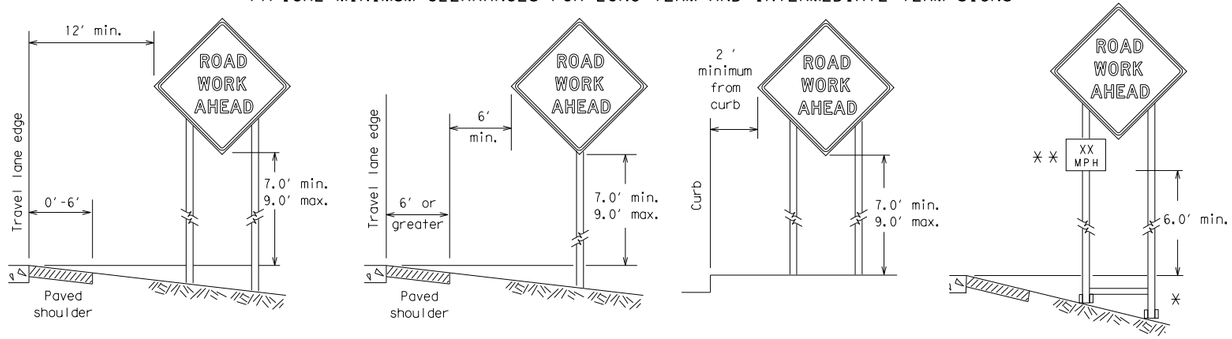
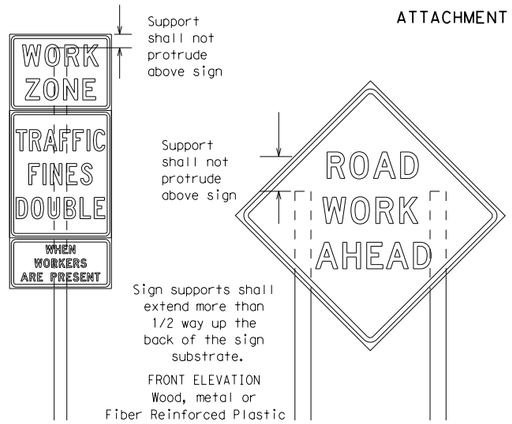
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



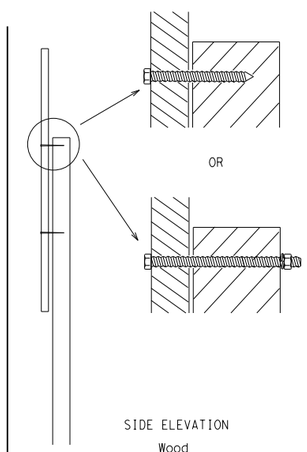
⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic



SIDE ELEVATION
Wood

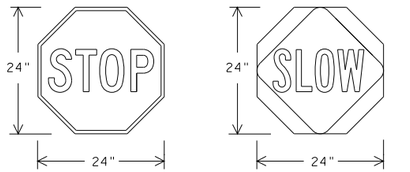
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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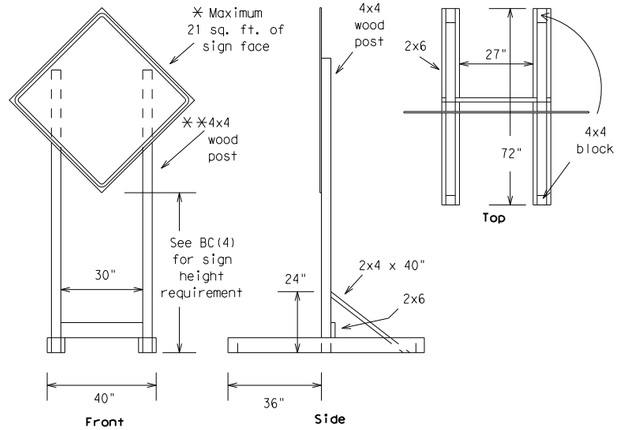
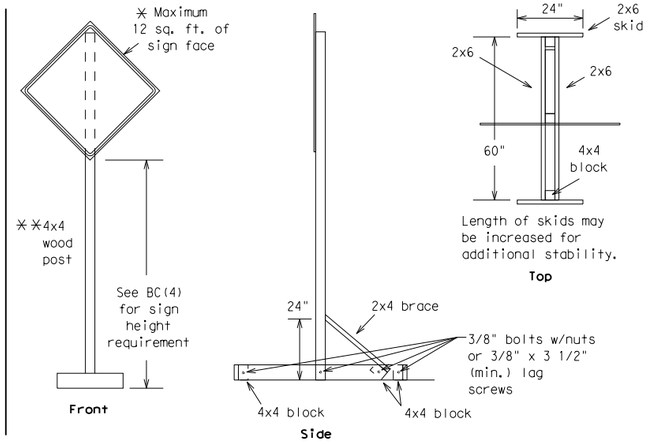
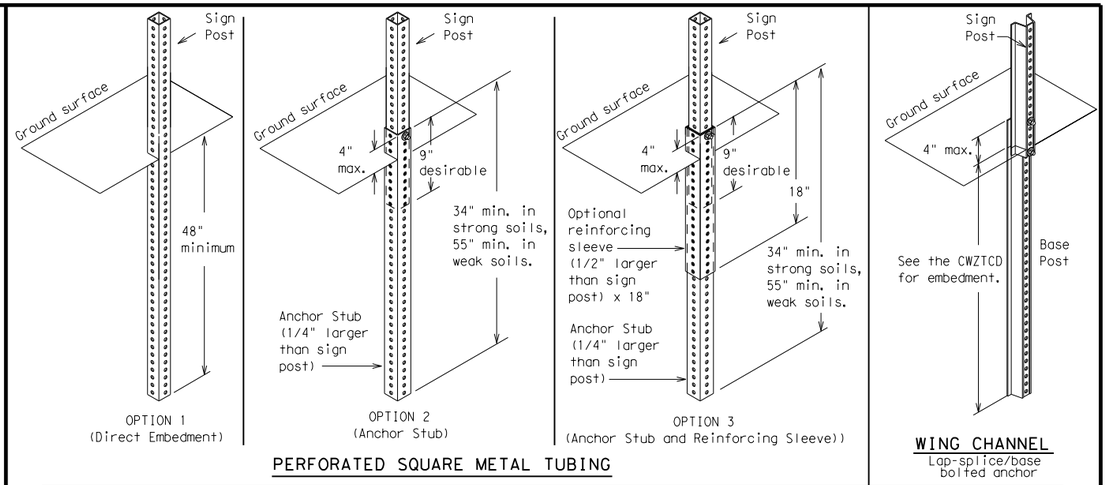
REVISIONS	0918	47	342,ETC.	CS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		12





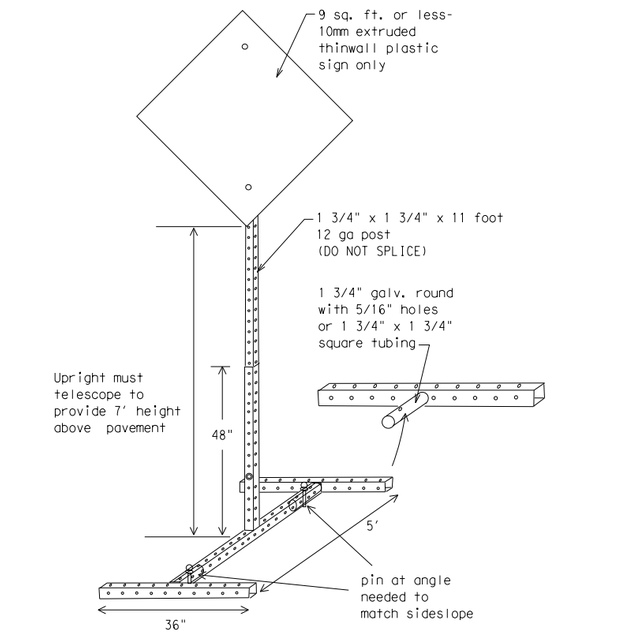
SKID MOUNTED WOOD SIGN SUPPORTS

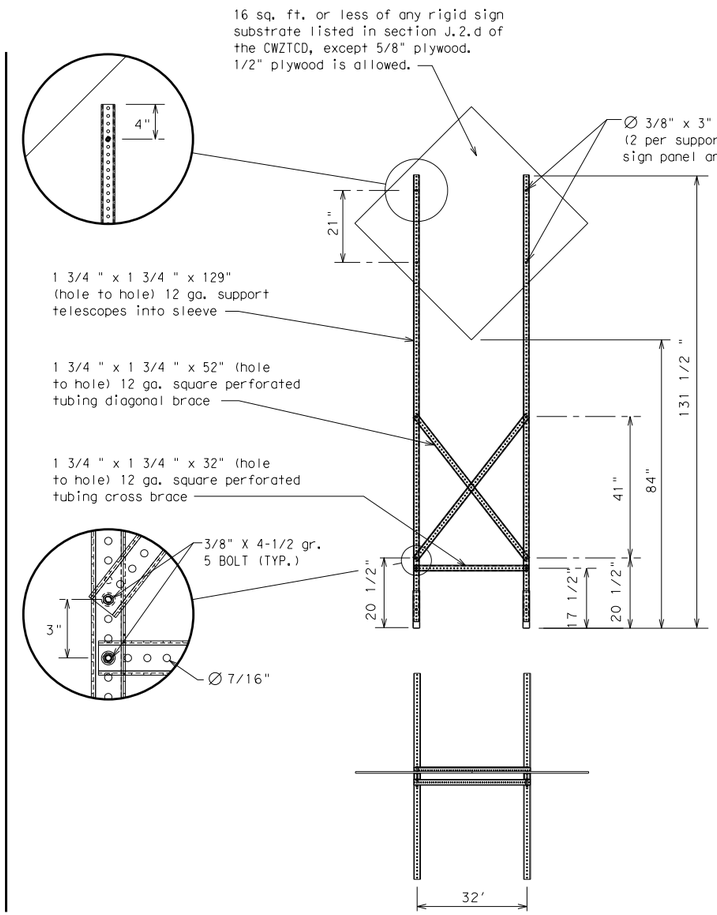
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

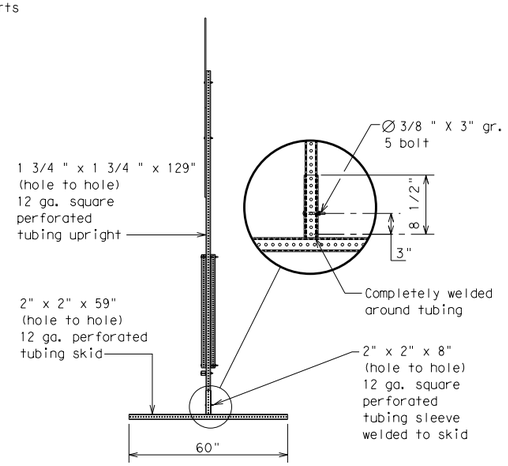


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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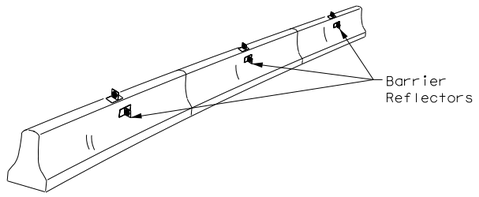
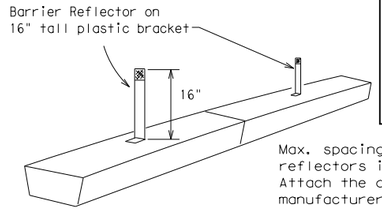
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

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

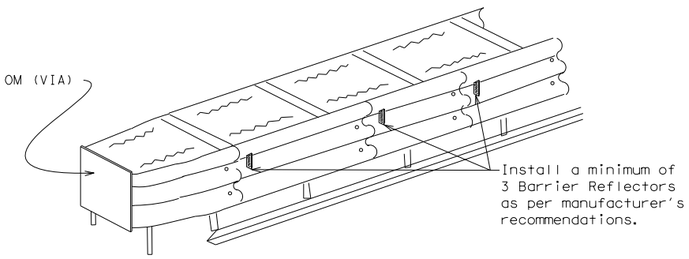


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

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.

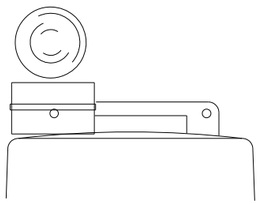


DELINEATION OF END TREATMENTS

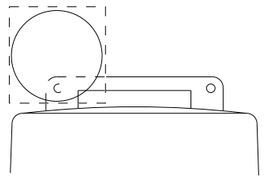
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

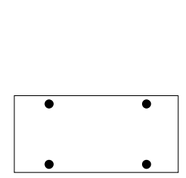
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

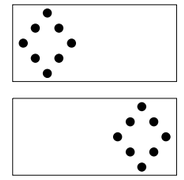
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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

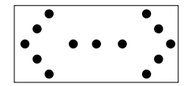


4 CORNER CAUTION

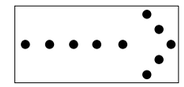
OR



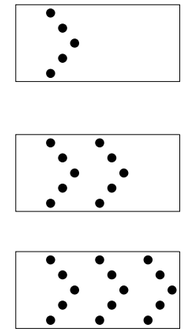
ALTERNATING DIAMOND CAUTION



DOUBLE ARROW



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



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

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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342,ETC.	CS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		15

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DATE:
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

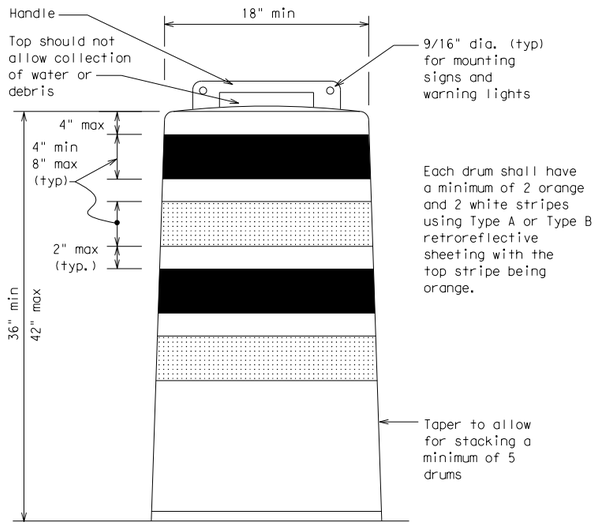
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

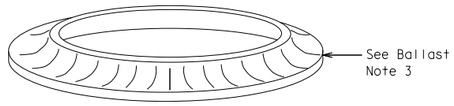
RETROREFLECTIVE SHEETING

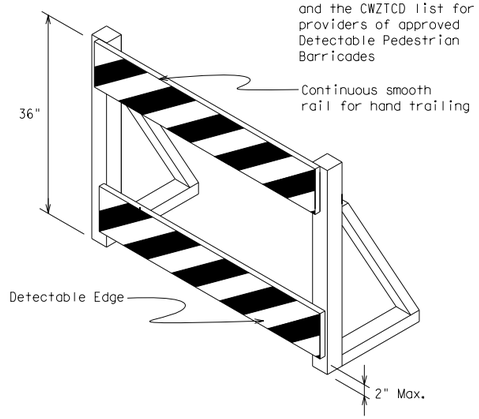
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

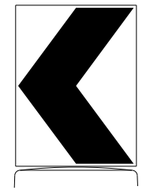




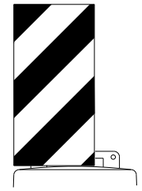


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

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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	0918	47	342,ETC.	CS
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	DAL	DALLAS		16
7-13				

DATE:
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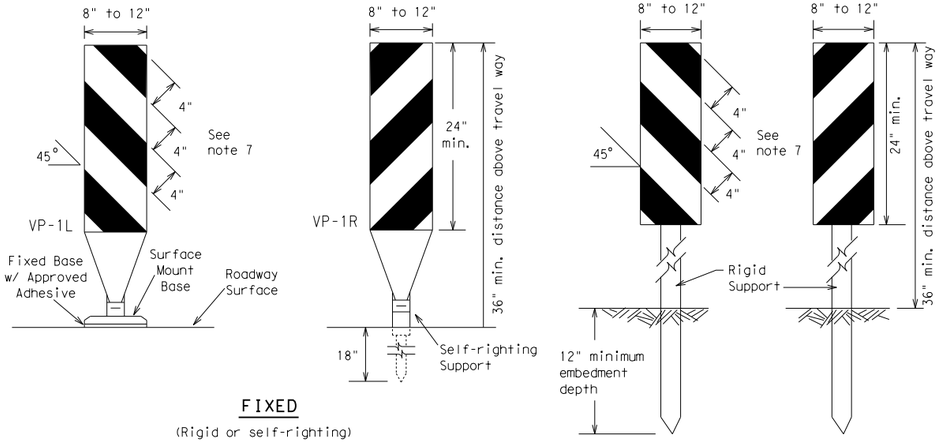
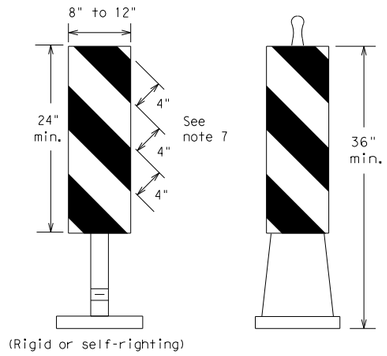


FIXED

(Rigid or self-righting)

DRIVEABLE

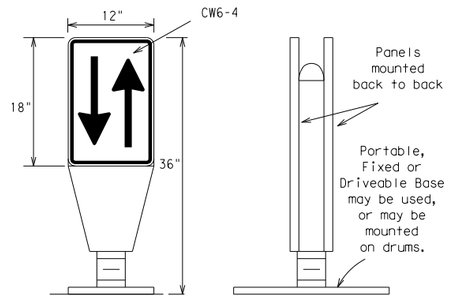


(Rigid or self-righting)

PORTABLE

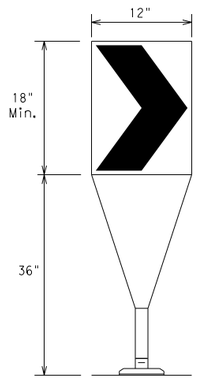
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



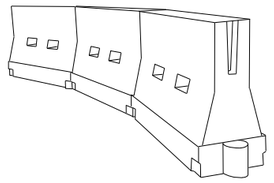
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

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
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REVISIONS	0918	47	342,ETC.	CS
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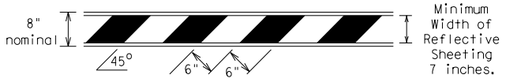
7-13 5-21	DAL	DALLAS		17

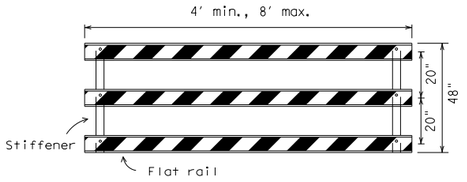
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



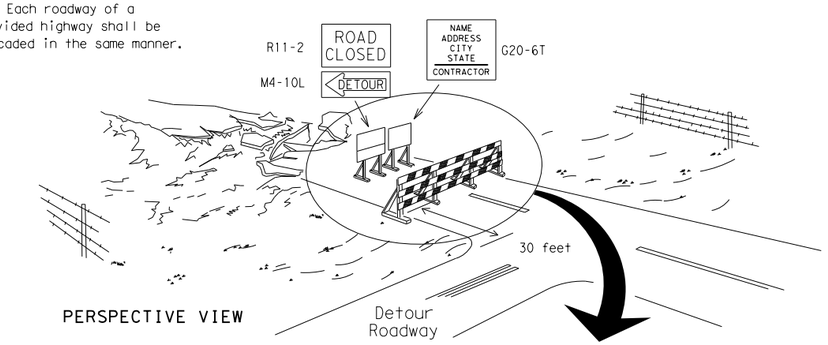
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

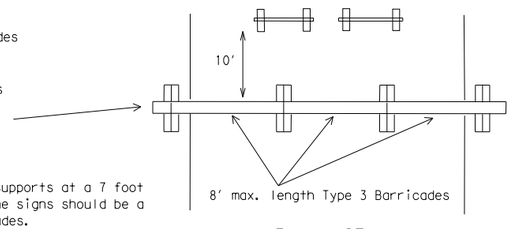
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

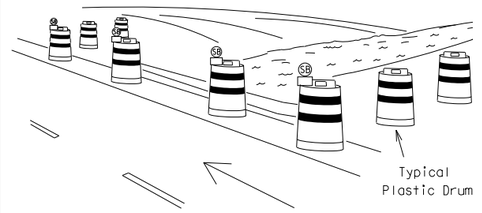
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

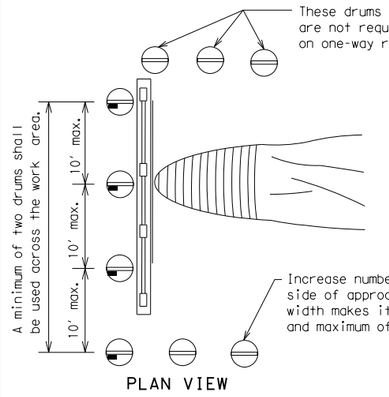
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

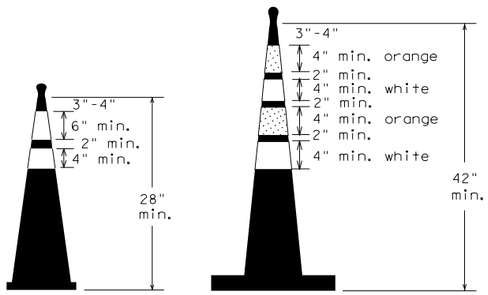
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

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

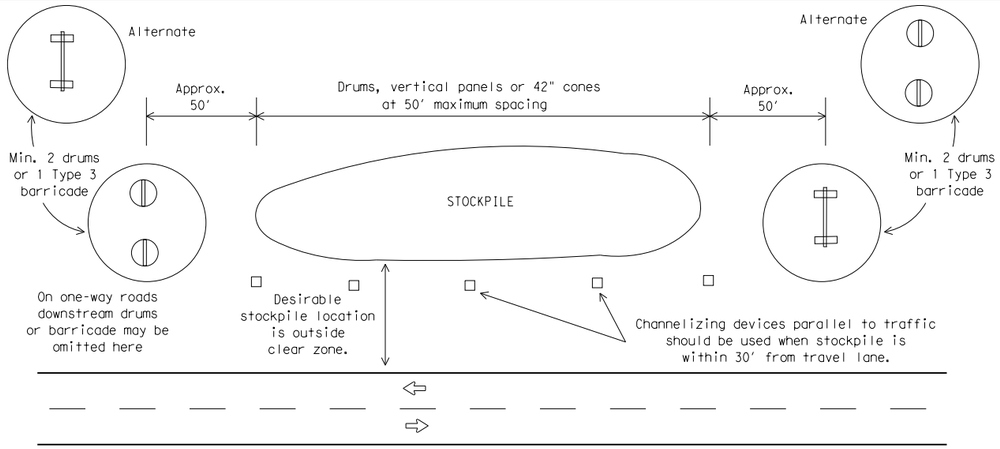
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

DATE:
FILE:

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	0918	47	342,ETC.	CS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	DAL	DALLAS		18

DATE:
FILE:

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

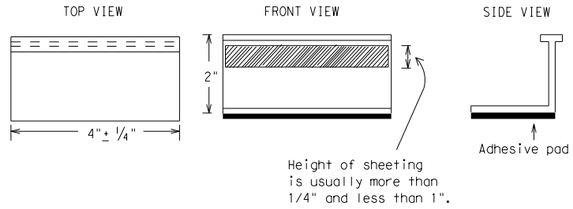
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

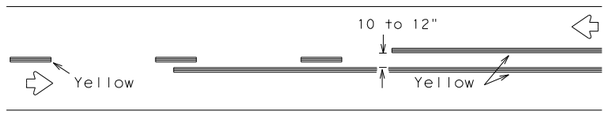
BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342,ETC.	CS
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	DAL	DALLAS		19
11-02 8-14				

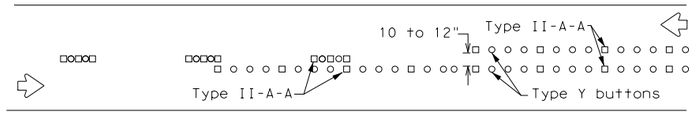
105

DATE:
FILE:

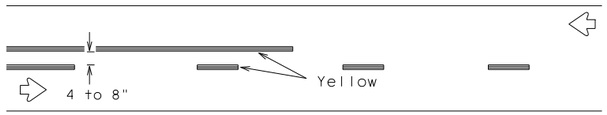
PAVEMENT MARKING PATTERNS



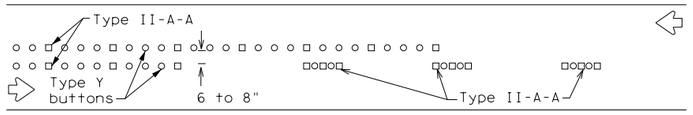
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



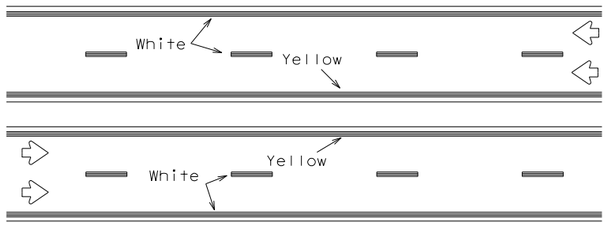
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



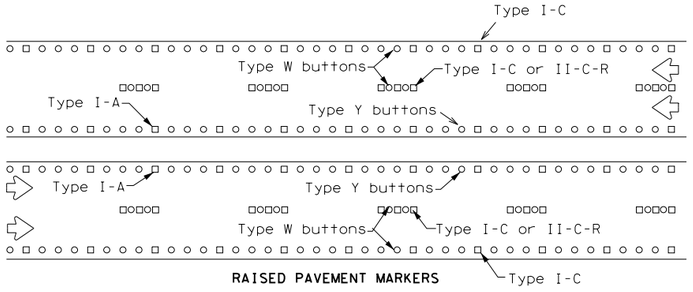
RAISED PAVEMENT MARKERS - PATTERN B

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

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



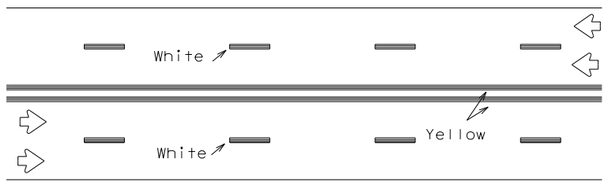
REFLECTORIZED PAVEMENT MARKINGS



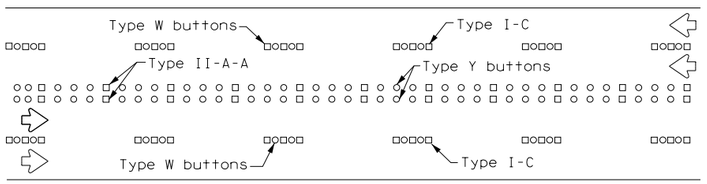
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



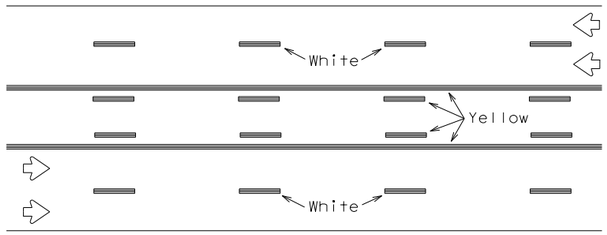
REFLECTORIZED PAVEMENT MARKINGS



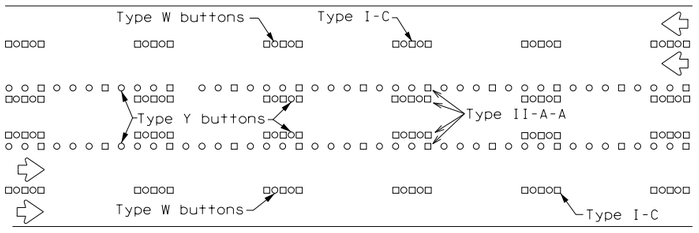
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

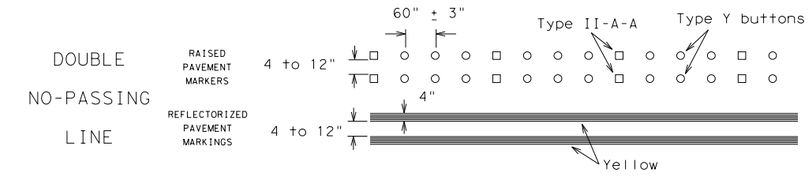
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

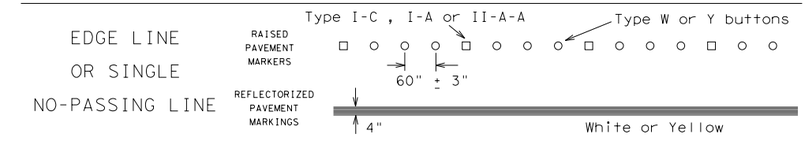
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

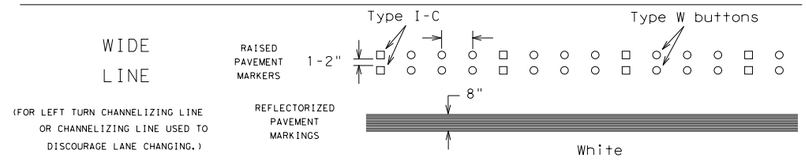


EDGE LINE OR SINGLE NO-PASSING LINE



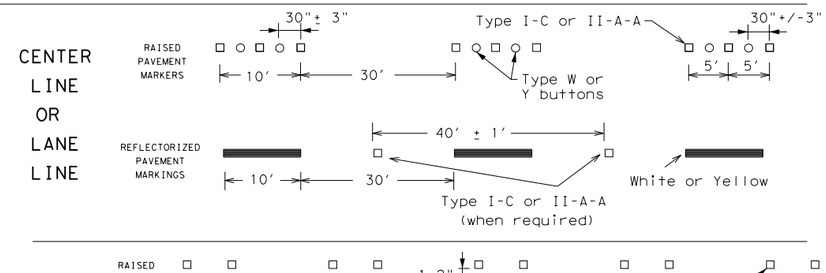
WIDE LINE

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

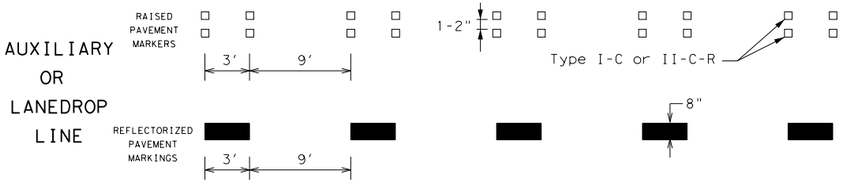


BROKEN LINES

CENTER LINE OR LANE LINE

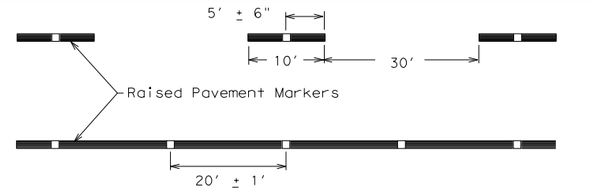


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
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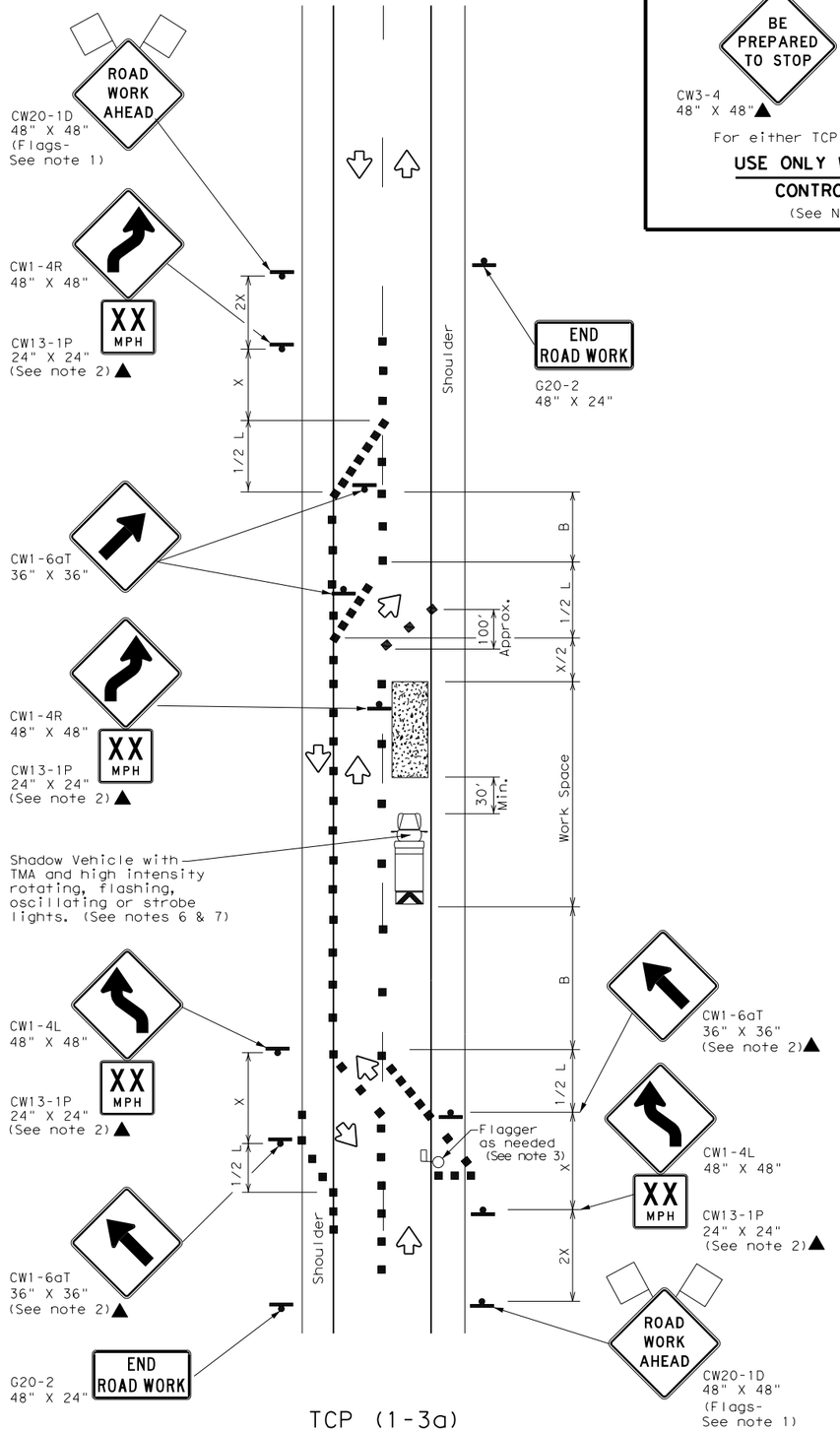
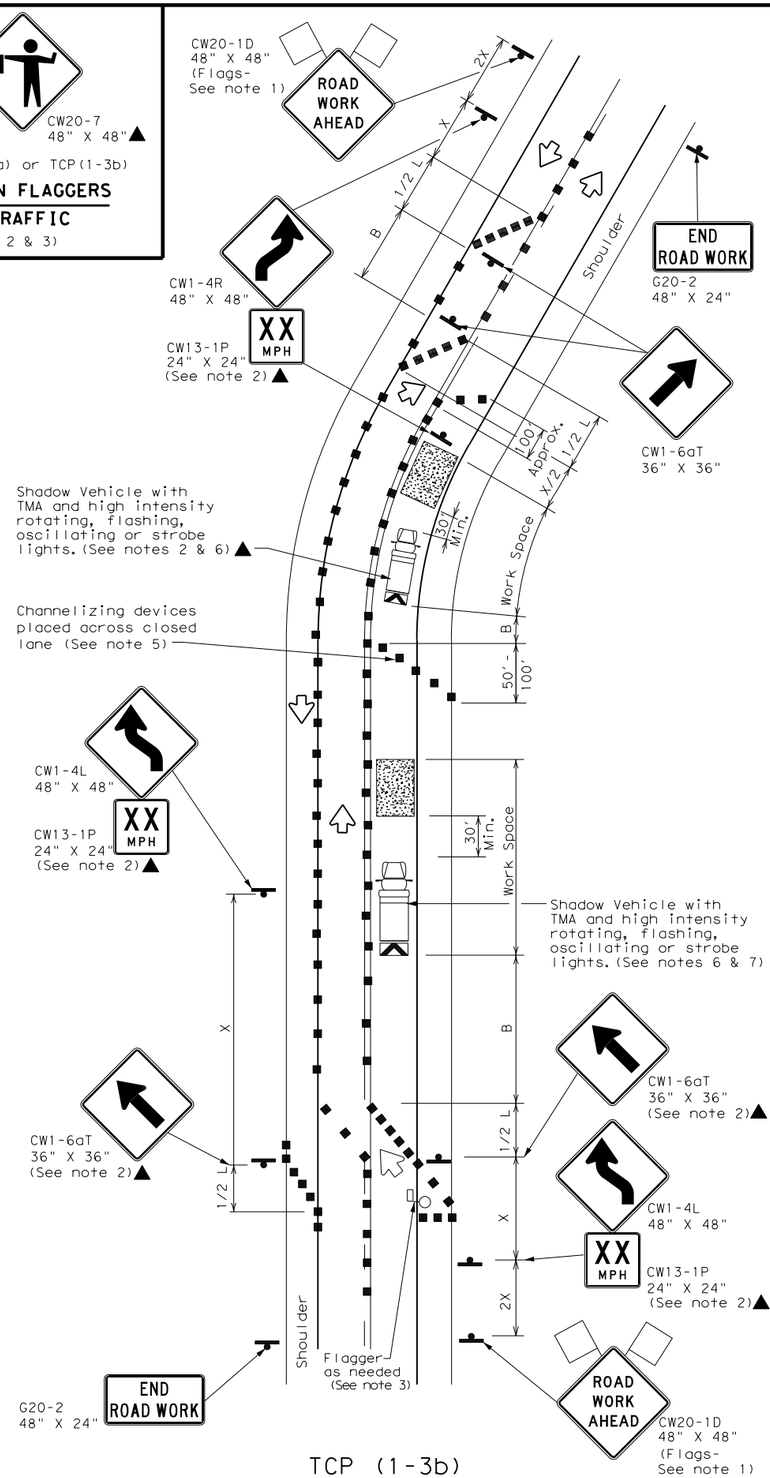


TCP (1-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW

USE ONLY WHEN FLAGGERS CONTROL TRAFFIC
(See Notes 2 & 3)



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

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
4. DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
5. When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
8. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20', or 15' if posted speed are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings not the entire work zone.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON TWO LANE ROADS

TCP(1-3)-18

FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342,ETC.	CS
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	DAL	DALLAS		21
1-97 2-18				

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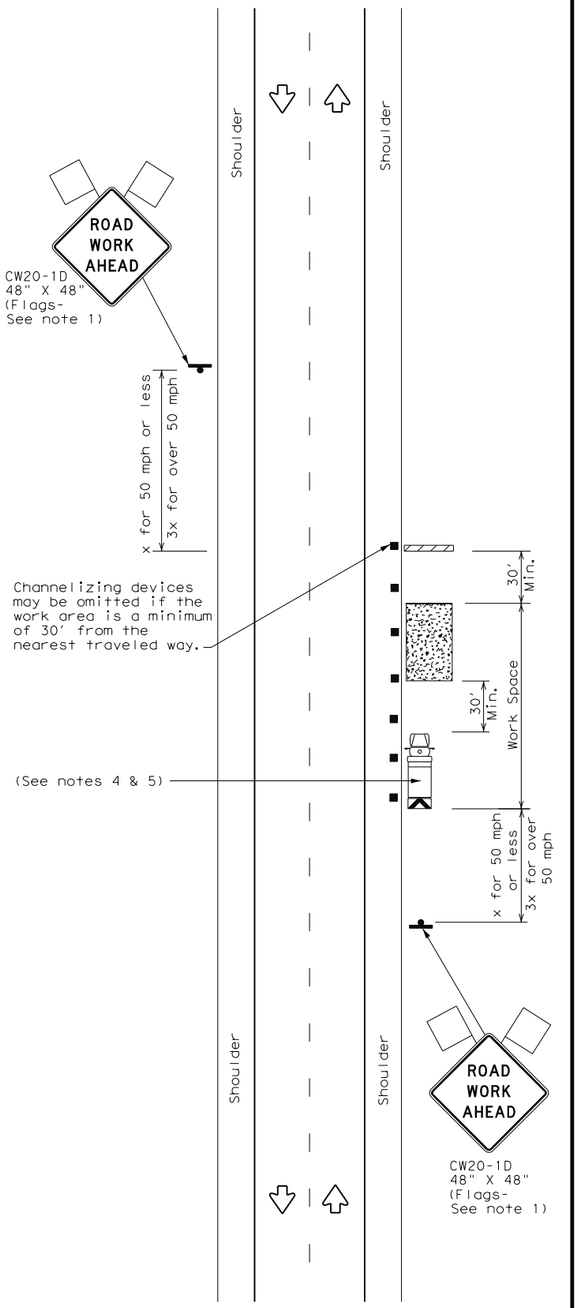
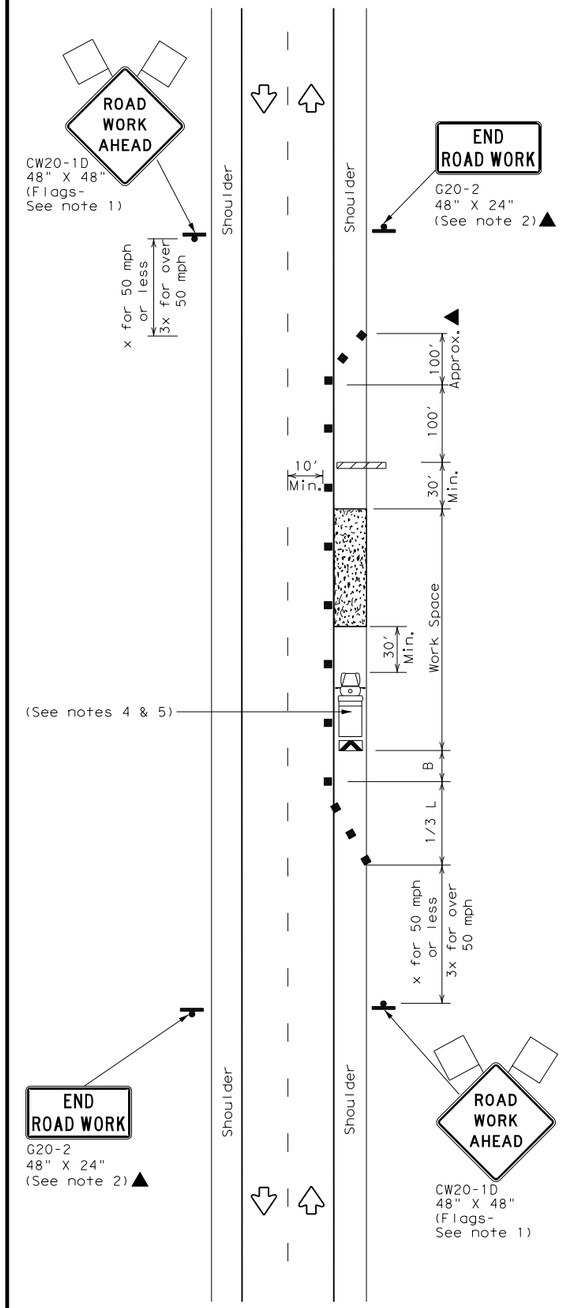


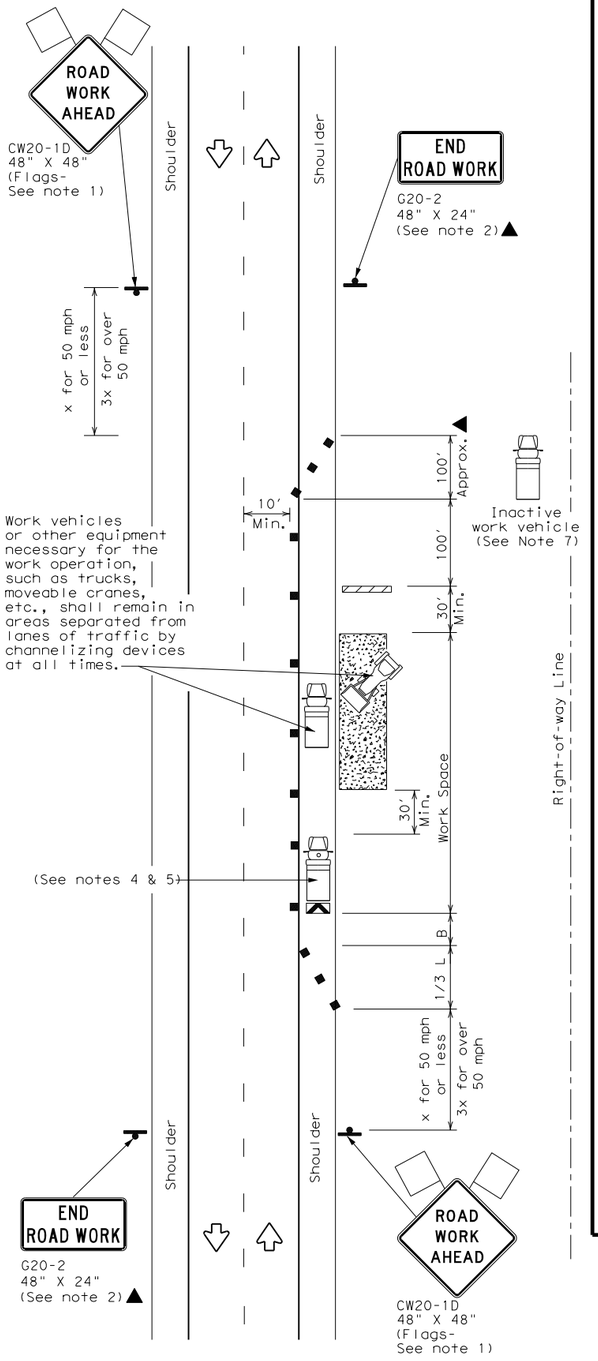
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. 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 a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

Traffic Operations Division Standard

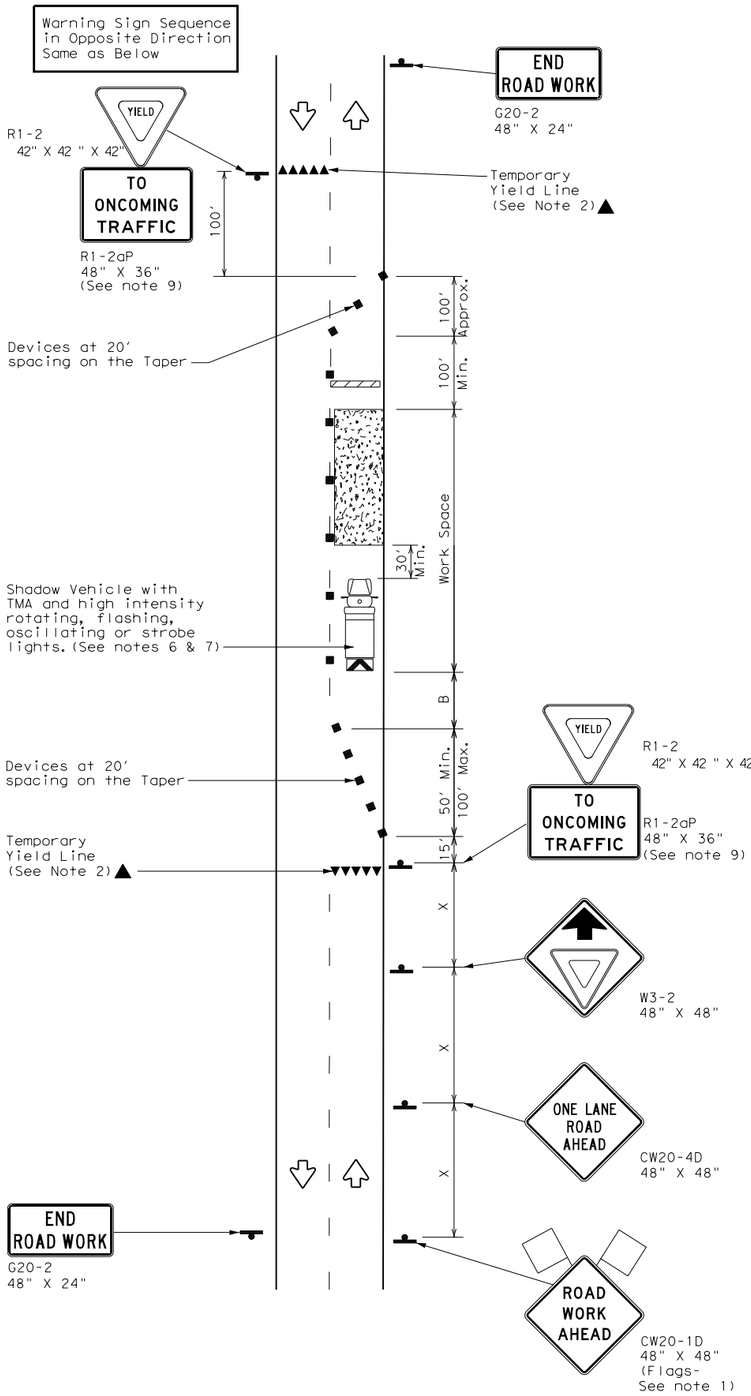
TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		22

161

DATE:
FILE:



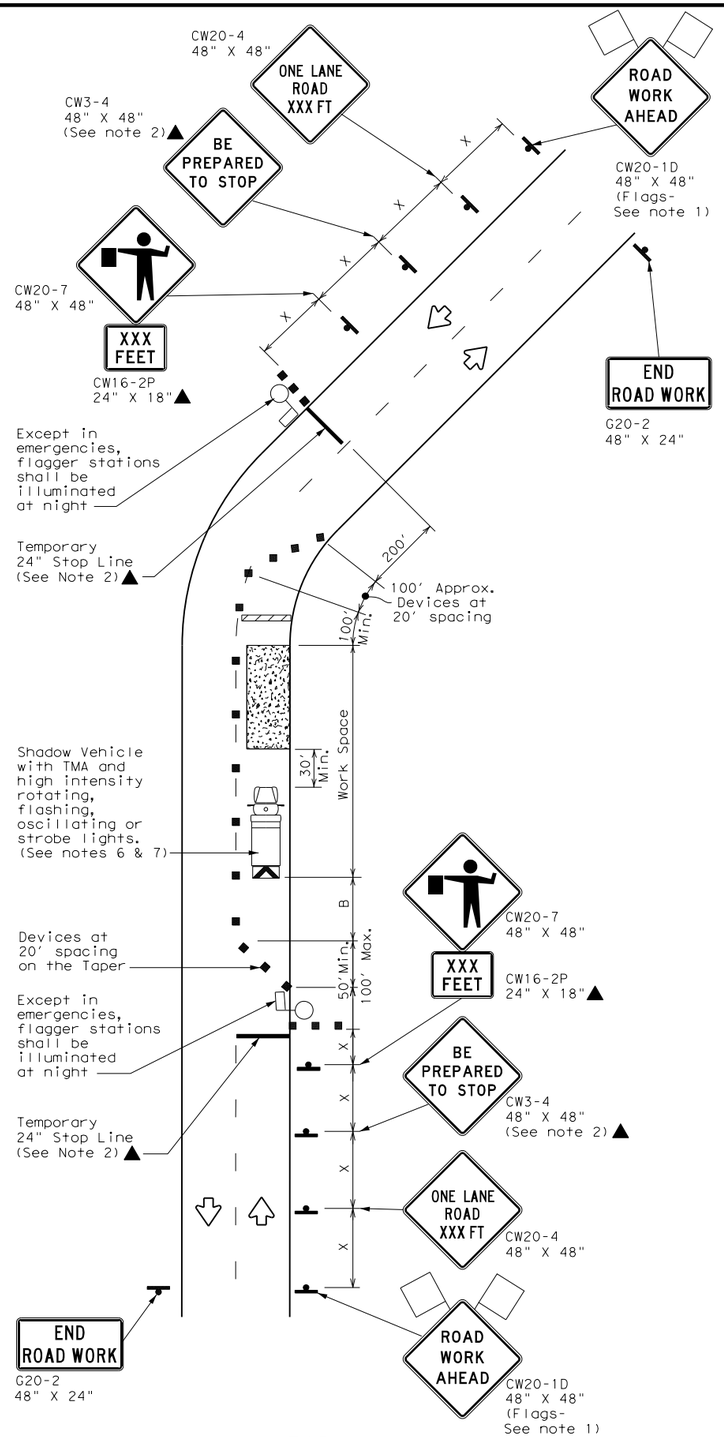
TCP (2-2a)

2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY

CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See Note 9)



TCP (2-2b)

2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY

CONTROL WITH FLAGGERS

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

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

* Conventional Roads Only

** Taper lengths have been rounded off.

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

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

GENERAL NOTES

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

TCP (2-2a)

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

TCP (2-2b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03 1-97 2-12 4-98 2-18	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		23

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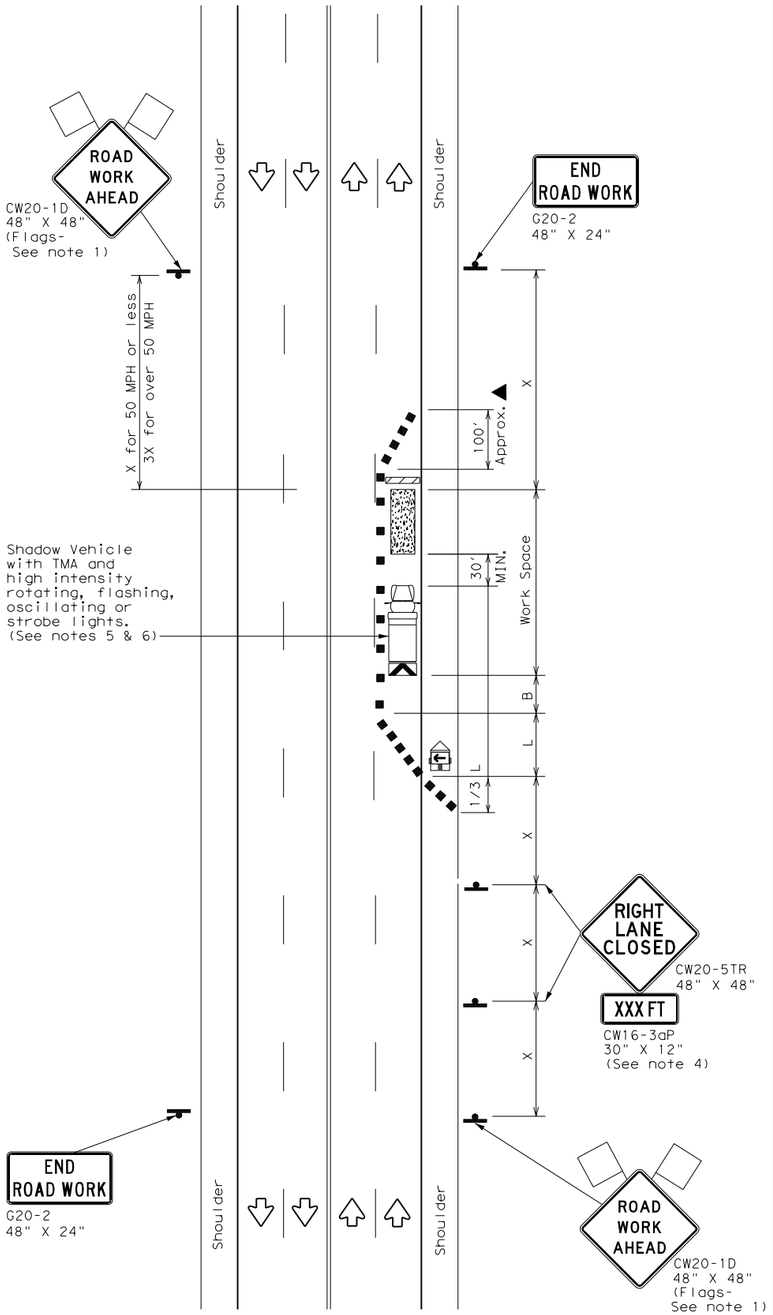
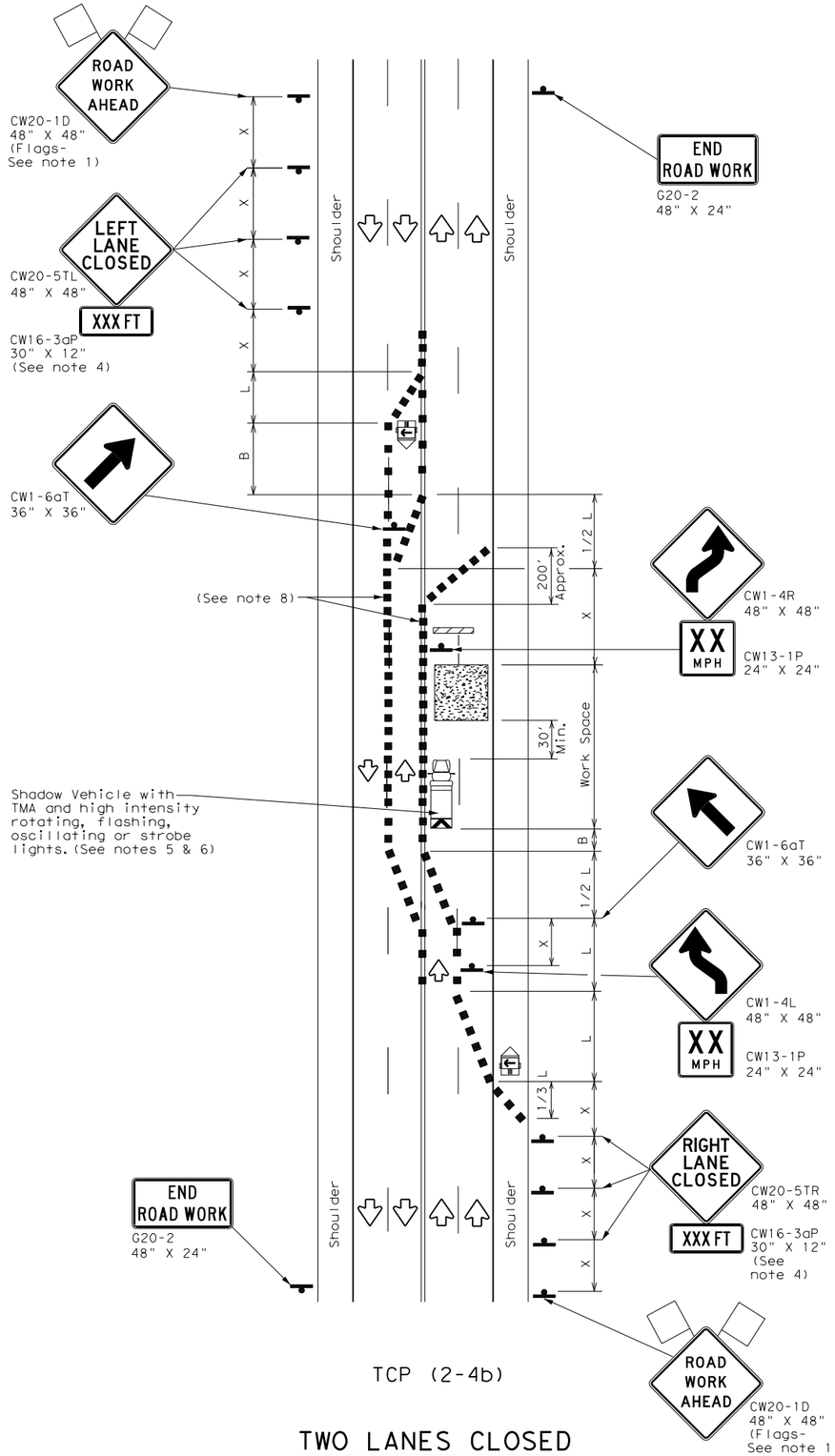
DATE:
FILE:



TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		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 downstream taper is optional. When used, it should be 100 feet minimum length per lane.
4. For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-4a)

7. 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 to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-4b)

8. 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 speed in mph. This tighter devices spacing is intended for the area of conflicting markings, not the entire work zone.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	0918	47	342,ETC.	CS
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	DAL	DALLAS		24

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DATE:
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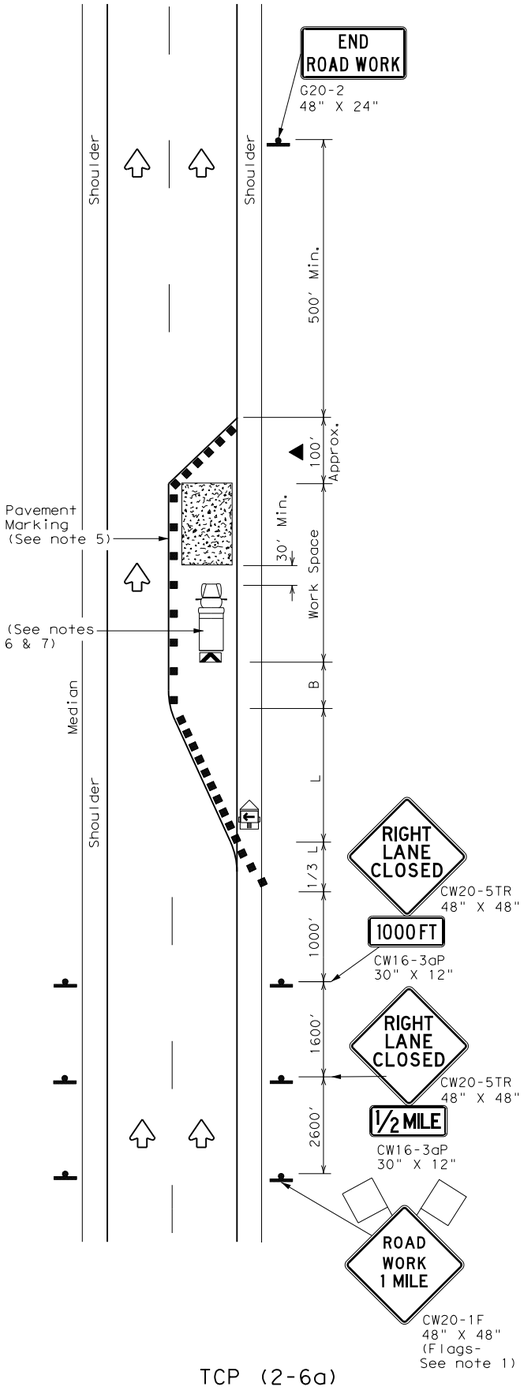
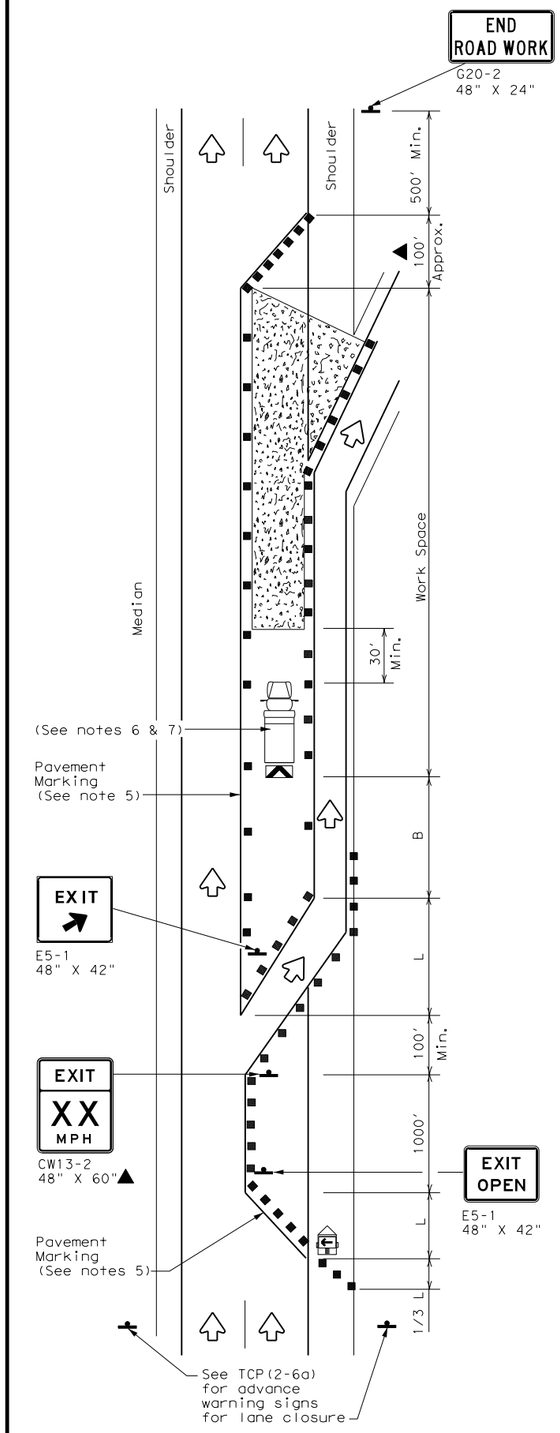


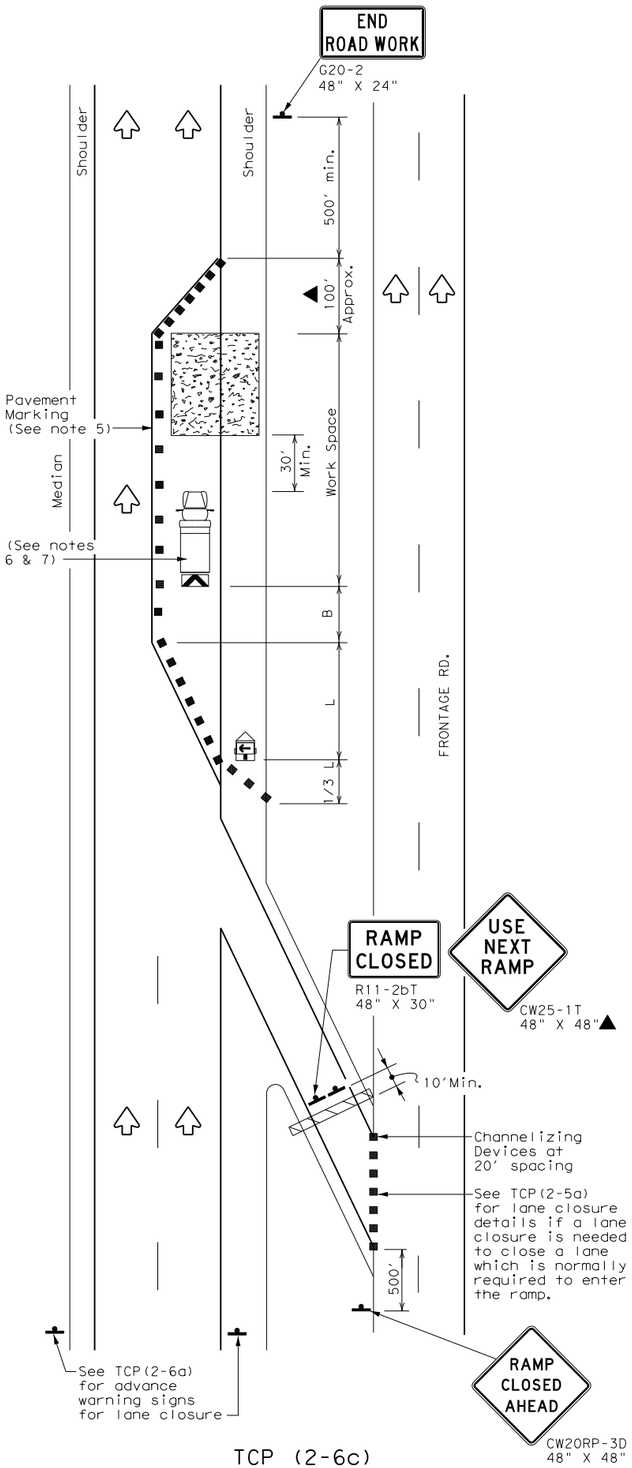
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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. Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
4. Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on everyother channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
5. The placement of pavement markings may be omitted on Intermediate-term stationary work zones with the approval of the Engineer.
6. Shadow Vehicle with TMA and high intensity rotating, flashing,oscillating or strobe lights. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

FILE: tcp2-6-18.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	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		24A

EXISTING SIGNS

R10-3B

S7 S8 S9 S10
S11 S12 S13 S14

S3

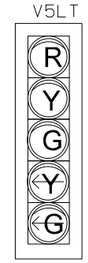
S6

S4

S1

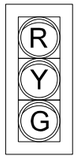
EXISTING SIGNALS

V5LT



SH 9, 18

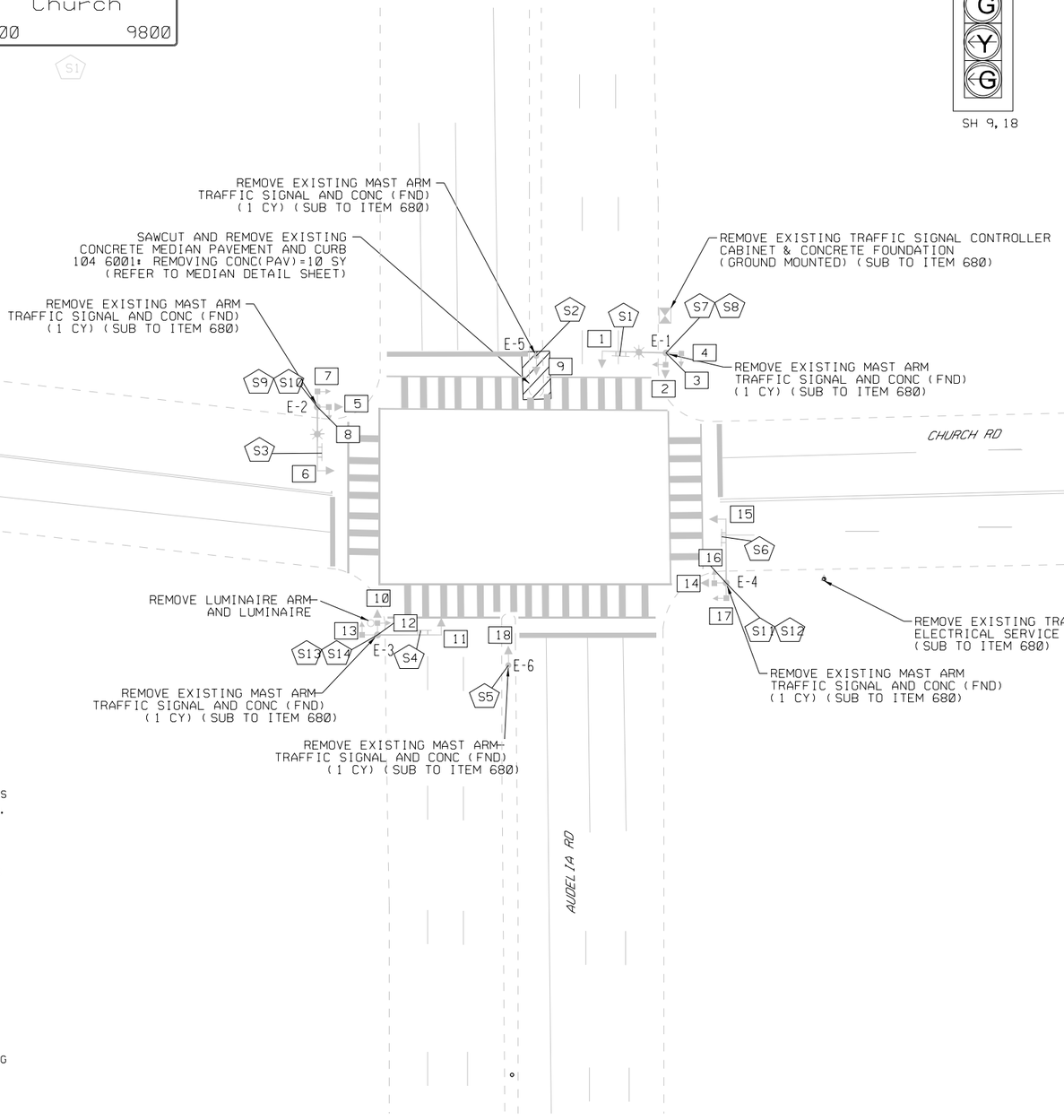
V3



SH 1, 2, 5, 6
10, 11, 14, 15

COUNTDOWN PEDESTRIAN SIGNAL HEAD

SH 3, 4, 7, 8
12, 13, 16, 17



0 10 40
Feet

LEGEND

- TYPICAL EXISTING MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, LED LUMINAIRE, AND SIGNAGE
- EXISTING TRAFFIC SIGNAL CONTROLLER CABINET
- EXISTING CONDUIT
- (S) EXISTING ELECTRICAL SERVICE
- 1 SIGNAL HEAD NUMBER
- S1 SIGN LABEL
- E-# EXISTING TRAFFIC SIGNAL POLE NUMBER
- REMOVAL

NOTES:

1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE EXISTING TRAFFIC SIGNAL HARDWARE, PAVEMENT MARKINGS, SIGNING, RIGHT-OF-WAY, AND THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARENTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.

2. THE ENGINEER DOES NOT CONFIRM OR VALIDATE THE EXISTING ITEMS SHOWN.

3. CONTRACTOR SHALL MAINTAIN THE EXISTING SIGNAL INSTALLATION AND OPERATIONS AT THIS INTERSECTION UNTIL THE PROPOSED SIGNAL IS OPERATIONAL.

4. CONTRACTOR SHALL REMOVE AND SALVAGE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT AFTER PROPOSED SIGNAL EQUIPMENT IS OPERATIONAL. THE EXISTING GROUND BOXES SHALL BE REMOVED AND BACKFILLED WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION UNLESS IT IS IDENTIFIED IN THE PLANS TO REMAIN. THE EXISTING FOUNDATIONS SHALL BE REMOVED, AND THE SIGNAL POLE FOUNDATIONS SHALL BE REMOVED TO A MINIMUM OF 2' BELOW EXISTING SURFACE AND BACKFILLED WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION IN THE SURROUNDING AREA. SEE GENERAL NOTES AND SPECIFICATIONS FOR MORE INFORMATION.

5. ELIMINATE ALL EXISTING PAVEMENT MARKINGS WITHIN THE INTERSECTION AND ALONG 200' IN EACH DIRECTION FROM STOP BAR. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.

6. EXISTING SIGNS S1-S14 SHALL BE REMOVED WITH TRAFFIC SIGNAL EQUIPMENT

7. CURB RAMP AND SIDEWALK REMOVALS SHALL BE SUBSIDIARY TO THE INSTALLATION OF NEW OF NEW CURB RAMP OR CONCRETE SIDEWALK (SEE ITEM 531 QTYS AND PROPOSED PEDESTRIAN RAMP AND SIDEWALK LAYOUT).

02/24/2023

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
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TRAFFIC SAFETY IMPROVEMENTS

EXISTING CONDITIONS AND REMOVALS

AUDELIA ROAD AT CHURCH ROAD

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	25
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC.	

NOTES:

1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.

2. CONTRACTOR TO CONTACT CITY OF DALLAS TRAFFIC MANAGEMENT CENTER AT (214-670-3095) AND TxDOT TRAFFIC SIGNAL OFFICE AT (214-320-6682) 48 HOURS IN ADVANCE TO COORDINATE WORK. CONTRACTOR TO COORDINATE WITH CITY OF DALLAS TO PULL REQUIRED PERMITS, PRIOR TO STARTING WORK.

3. THE LOCATION OF THE PROPOSED SIGNAL POLES, SIGNAL HEADS, RADAR DETECTORS, CONDUIT, GROUND BOXES, AND CONDUCTORS ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMODATE FIELD CONDITIONS.

4. CONTRACTOR SHALL COORDINATE WITH ONCOR CONCERNING TRAFFIC SIGNAL ELECTRICAL SERVICE. CONTACT ONCOR (LORENZO GARCIA AT 469-301-0481) REGARDING POINT OF DELIVERY AND DISTRIBUTION TO ELECTRICAL PEDESTAL SERVICE. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION.

5. THE FOLLOWING ITEMS WILL BE FURNISHED BY THE CITY OF DALLAS AND INSTALLED BY THE CONTRACTOR: SIGNAL CABINET AND INTERNAL HARDWARE, AND RADAR AND RADAR CABLE. CONTACT MR. ALFRED LEMON AT 214-670-4812 (OFFICE) OR 214-213-6121 (MB) AND MR. FAVIAN GIRALDO (FAVIAN.GIRALDO@DALLAS.GOV) TO SCHEDULE PICK-UP OF MATERIALS. PROVIDE WITH A 6-WEEK NOTICE AND AT LEAST 48-HOUR NOTICE OF INTENT TO PICK-UP MATERIALS FROM THE CITY OF DALLAS.

6. INSTALL BASE MOUNTED CONTROLLER CABINET (ATC CABINET) AND FOUNDATION.

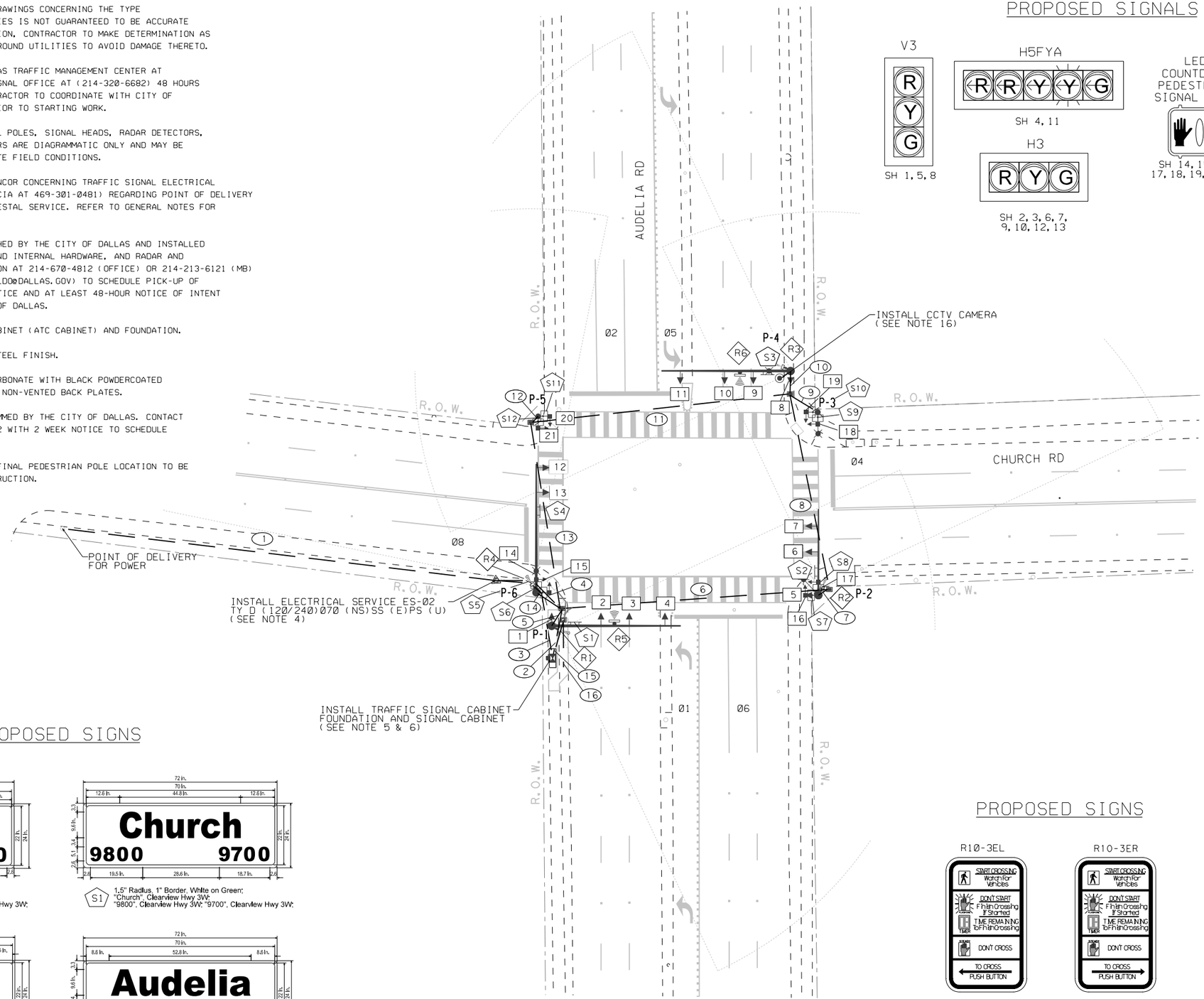
7. SIGNAL POLES SHALL BE GALVANIZED STEEL FINISH.

8. SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BLACK POWDERCOATED ALUMINUM VISORS AND RETROREFLECTIVE NON-VENTED BACK PLATES.

9. RADAR DETECTION ZONES TO BE PROGRAMMED BY THE CITY OF DALLAS. CONTACT SRINIVASA VEERAMALLU AT 214-670-5892 WITH 2 WEEK NOTICE TO SCHEDULE PROGRAMMING AND SIGNAL ACTIVATION.

10. EXISTING RAMP UNDER CONSTRUCTION FINAL PEDESTRIAN POLE LOCATION TO BE CONFIRMED AFTER COMPLETION OF CONSTRUCTION.

NOTES CONTINUE ON NEXT SHEET.



PROPOSED SIGNALS

V3

SH 1, 5, 8

H5FYA

SH 4, 11

H3

SH 2, 3, 6, 7, 9, 10, 12, 13

LED COUNTDOWN PEDESTRIAN SIGNAL HEAD

SH 14, 15, 16, 17, 18, 19, 20, 21

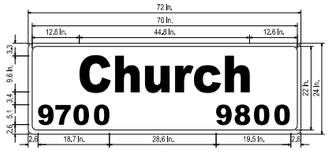
0 10 40
Feet

LEGEND

- TYPICAL PROPOSED MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, LED LUMINAIRE AND SIGNAGE
- TRAFFIC SIGNAL CONTROLLER CABINET AND CONCRETE PAD
- EXISTING GROUND BOX
- PROPOSED TYPE I GROUND BOX W/ APRON
- PROPOSED TYPE D GROUND BOX W/ APRON
- PROPOSED CONDUIT
- (1) CONDUIT RUN NUMBER
- [1] SIGNAL HEAD NUMBER
- (S1) SIGN LABEL
- (R1) PROPOSED PRESENCE RADAR DETECTOR AND LABEL
- (R1) PROPOSED ADVANCE RADAR DETECTOR AND LABEL
- (C1) PROPOSED CCTV CAMERA
- (S) PROPOSED ELECTRICAL SERVICE
- P-■ PROPOSED TRAFFIC SIGNAL POLE NUMBER

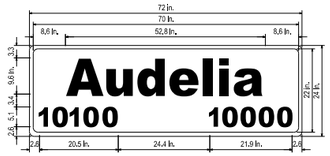
02/24/2023

PROPOSED SIGNS

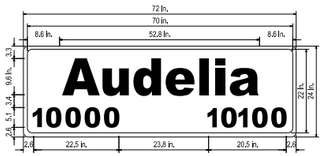


(S3) 1.5" Radius, 1" Border, White on Green; "Church", Clearview Hwy 3W; "9700", Clearview Hwy 3W; "9800", Clearview Hwy 3W;

(S1) 1.5" Radius, 1" Border, White on Green; "Church", Clearview Hwy 3W; "9800", Clearview Hwy 3W; "9700", Clearview Hwy 3W;



(S2) 1.5" Radius, 1" Border, White on Green; "Audelia", Clearview Hwy 3W; "10100", Clearview Hwy 3W; "10000", Clearview Hwy 3W;



(S4) 1.5" Radius, 1" Border, White on Green; "Audelia", Clearview Hwy 3W; "10000", Clearview Hwy 3W; "10100", Clearview Hwy 3W;

PROPOSED SIGNS

R10-3EL

(S5) (S7) (S9) (S11)

R10-3ER

(S6) (S8) (S10) (S12)

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED CONDITIONS - TRAFFIC SIGNAL LAYOUT

AUDELIA RD AT CHURCH RD

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS ACC	6	(SEE TITLE SHEET)		CS
CHECK JJM	CONTROL	DISTRICT	COUNTY	SHEET NO.
	TEXAS	DALLAS	DALLAS	26
CHECK JJM	CONTROL	SECTION	JOB	
	Ø918	47	342, ETC	

CONDUIT AND CABLE CHART
WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	ITEM 618 CONDUIT												CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS								ITEM 684 TRAFFIC SIGNAL CABLES										ETHERNET CABLE		RADAR COMMUNICATION CABLE		TOTAL LENGTH OF RUN	RUN NO
		2" PVC SCH 80 (RISER)		2" PVC SCH 80 (TRENCHED)		3" PVC SCH 80 (TRENCHED)		3" PVC SCH 80 (BORED)		4" PVC SCH 80 (TRENCHED)		4" PVC SCH 80 (BORED)			NO. 6 XHHW WIRE (POWER)		NO. 6 XHHW WIRE (GROUND)		NO. 8 XHHW WIRE		NO. 12 XHHW WIRE		TY C 2 CNDR NO. 12		TY A 5 CNDR NO. 14		TY A 7 CNDR NO. 14		TY A 10 CNDR NO. 14		TY A 20 CNDR NO. 14							
		Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len		Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len		
1	I	1	20	1	190									I	2	380	1	190																			190	1
2	I									1	20			I			1	20					8	160					4	80							20	2
	I									1	20			I			1	20													4	80	1	20	6	120	20	
3	I			1	50									I	1	50	1	50																			50	3
4	I			1	35									I	3	105	1	35																			35	4
5	I					1	15							I			1	15													1	15			2	30	15	5
	I					1	15							I	SPARE CONDUIT TO POLE																							15	
6	I											1	105	I	3	315	1	105					4	420					2	210	2	210	1	105	3	315	105	6
	I							1	115					I	FUTURE COMMUNICATION CONDUIT - TERMINATE IN ITS GROUND BOX																							115	
7	I					1	10							I	1	10	1	10					2	20					1	10	1	10			1	10	10	7
	I					1	10							I	SPARE CONDUIT TO POLE																							10	
8	I											1	80	I	1	80	1	80					2	160					1	80	1	80	1	80	2	160	80	8
9	I					1	20							I	1	20	1	20					2	40					1	20							20	9
10	I					1	15							I	1	15	1	15													1	15	1	15	2	30	15	10
	I					1	15							I	SPARE CONDUIT TO POLE																							15	
11	I											1	105	I			1	105																			105	11
12	I					1	10							I			1	10					2	20					1	10							10	12
13	I											1	75	I			1	75					2	150					1	75							75	13
	I							1	90					I	FUTURE COMMUNICATION CONDUIT - TERMINATE IN ITS GROUND BOX																							90	
14	I					1	20							I	1	20	1	20					2	40					1	20	1	20			1	20	20	14
	I					1	20							I	SPARE CONDUIT TO POLE																							20	
15	I					1	20							I	FUTURE COMMUNICATION CONDUIT																							20	15
16	I					1	25							I	FUTURE COMMUNICATION CONDUIT																							25	16
SUBTOTAL			20		275		130		205		40		365			1015		770		0		0		1010		0		0		505		430		220		685		
P-1	P													I												110		70								50	VARIES	P-1
P-2	P													I							80			10		175									25	VARIES	P-2
P-3	P													I							80			10		30										VARIES	P-3
P-4	P													I							80					60								30		45	VARIES	P-4
P-5	P													I										10		30		70									VARIES	P-5
P-6	P													I							80			10		75									25	VARIES	P-6
SUBTOTAL																0		0		0		320		40		480		140		0		0		30		145		
TOTAL			20		275		130		205		40		365			1015		770		0		320		1050		480		140		505		430		280		830		

CONDUIT STATUS: E=EXISTING; I=INSTALL; A=ABANDON; AC=AERIAL CABLE; R=REMOVE AND SALVAGE; P=INSTALL WIRE INSIDE STEEL POLE

* - THE CONTRACTOR SHALL INSTALL A 2" PVC CONDUIT FROM THE POINT OF DELIVERY TO THE PEDESTAL METER.
P-# - REFERS TO WIRING WITHIN THE SIGNAL POLE AND MAST ARM

NOTES:

11. CONTRACTOR SHALL COORDINATE THE TRAFFIC SIGNAL POLE FOUNDATION WORK WITH THE CURB RAMP AND SIDEWALK INSTALLATION. IF CURB RAMPS ARE CONSTRUCTED FIRST, CONTRACTOR SHALL NOTIFY THE CITY AND ENGINEER SO A FIELD MEETING CAN BE SCHEDULED TO DETERMINE IF FOUNDATIONS NEED TO BE SHIFTED TO BE ADJACENT TO THE LANDING AREAS. IF SIGNAL POLE FOUNDATIONS ARE INSTALLED FIRST, THE CURB RAMPS AND SIDEWALKS SHALL BE MODIFIED SO THAT THE CURB RAMP LANDING AREAS ARE ADJACENT TO THE PUSH BUTTONS AND THE SIDE REACH TO THE PUSH BUTTONS ARE 10" OR LESS.

12. ALL SIGNAL CABLES SHALL BE WIRED IN ACCORDANCE WITH THE CABINET PREPARATION NOTES SUPPLIED BY THE CITY OF DALLAS.

13. PROPOSED APS UNITS SHALL BE PLACED ADJACENT TO A LEVEL LANDING AREA (2% MAX IN ANY DIRECTION). IF THE DISTANCE FROM THE PUSH BUTTON TO THE EDGE OF ACCESSIBLE PATH EXCEEDS 10", THE CONTRACTOR SHALL FURNISH AND INSTALL A PUSH BUTTON EXTENDER TO MAKE THE REACH 10" OR LESS. MEASUREMENT AND PAYMENT SHALL BE CONSIDERED SUBSIDIARY TO THE INSTALLATION OF THE TRAFFIC SIGNAL EQUIPMENT.

14. IF SIGNAL POLES CANNOT BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLANS, THE CONTRACTOR SHALL CONTACT THE CITY AND ENGINEER TO MEET ON SITE TO DISCUSS NEW LOCATIONS.

15. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.

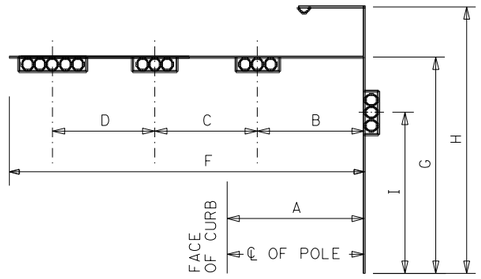
16. CONTRACTOR TO MAINTAIN FULL ACCESS TO A MINIMUM OF TWO PEDESTRIAN CROSSINGS AT ALL TIMES DURING CONSTRUCTION.

17. CONTRACTOR TO PROCURE AND INSTALL A POWER OVER ETHERNET CCTV CAMERA AND ETHERNET CABLE. CCTV CAMERA SHALL BE ONVIF AND NTCIP COMPLIANT. ETHERNET CABLE IS TO BE INSTALLED FROM CAMERA TO TRAFFIC SIGNAL CABINET AND SUBSIDIARY TO ITEM 6010 6002.

18. CONTRACTOR SHALL ADJUST SIGNAL HEAD ALIGNMENT VERTICALLY ON MAST ARMS USING "ASTRO-BRAC" OR APPROVED EQUAL TO ENSURE MAXIMUM SIGNAL HEAD VISIBILITY WHEN HORIZONTAL OVERHEAD UTILITY LINES BLOCK LENS DISPLAY. IN CIRCUMSTANCES WITH SIGNIFICANT VIABILITY CONSTRAINTS, INSTALLNG HEADS VERTICALLY IS POSSIBLE; HOWEVER, IT MUST BE APPROVED BY CITY ENGINEER.

19. FRONT SIDE OF THE TRAFFIC SIGNAL CONTROLLER CABINET SHALL BE INSTALLED TO ORIENT SUCH THAT THE INTERSECTION MAY BE SEEN WHEN VIEWING THE CONTROLLER FRONT PANEL.

20. IF THE PLANS DO NOT INDICATE SPACING OF THE CABINET FOUNDATION FROM THE CURB, PROVIDE FOR A 48" MINIMUM CLEARANCE FROM CURB. LOCATION OF THE CONCRETE APRON FOR THE BATTERY BACKUP SYSTEM MAY NEED TO BE ADJUSTED BASED ON CLEARANCE FROM THE CURB AND AVAILABLE RIGHT-OF-WAY.



SIGNAL HEAD AND POLE PLACEMENT (FT)

POLE NUMBER	STATUS	A (FT)	B (FT)	C (FT)	D (FT)	F (FT)	G (FT)	H (FT)	I (FT)	NO. OF HEADS (EA)*	LUM	DRILLED SHAFT LENGTH (FT) 24" DIA SUB TO ITEM 687	30" DIA TYPE A ITEM 416	30" DIA ILLUM. ITEM 416	36" DIA TYPE A ITEM 416	48" DIA TYPE A ITEM 416	FDN. TYPE WIND ZONE 80 MPH
P-1	I	5	18	10	14	48	19	-	13	3	N				13		36-A
P-2	I	10	16	9	-	32	19	30	13	2	Y		11				30-A
P-3	I	12	LUMINAIRE POLE SA 20T-4				13.5	-	-	-	Y			8			30
P-4	I	3	14	10	16	48	19	30	13	3	Y				13		36-A
P-5	I	8	PEDESTRIAN POLE			15	-	-	-	-	N	6					24-A
P-6	I	8	37	9	-	48	19	30	-	2	Y				13		36-A
									TOTAL:			6	11	8	39	0	

SIGNAL POLE STATUS: I=INSTALL; E=EXISTING; REM=REMOVE; F=INSTALL IN FUTURE PHASE
*- DOES NOT INCLUDE VERTICAL SIDEMOUNT SIGNAL HEADS OR PEDESTRIAN SIGNAL HEADS

ELECTRICAL SERVICE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT **SIZE	SERVICE CONDUCTORS NO. / SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE / AMPS	TWO-POLE CONTACTOR AMPS	PANELBD / LOADCENTER AMP RATING (MIN)	BRANCH CIRCUIT ID	BRANCH CKT. BRK. POLE / AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
TY D (120/240) 070 (NS) SS (E) PS (U)	2"	3 / #4	N/A	2P / 100	30	100	T.S.	1P / 50	23	<7.1
							LIGHTING	2P / 20	3	

** - VERIFY SERVICE CONDUIT SIZE WITH UTILITY. SIZE MAY CHANGE DUE TO THE UTILITY METER REQUIREMENTS. ENSURE CONDUIT SIZE MEETS THE NATIONAL ELECTRICAL CODE.

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED
PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

AUDELIA RD AT CHURCH RD

SHEET 1 OF 3

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	27
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

CABLE TERMINATION CHART							
CNDR. NO.	CONDUCTOR COLOR	CABLE 1 20 CNDR.	CABLE 2 20 CNDR.	CABLE 3 10 CNDR.	CABLE 4 20 CNDR.	CABLE 5 10 CNDR.	CABLE 6 20 CNDR.
		FROM P-1 TO CNTRL.	FROM P-2 TO CNTRL.	FROM P-3 TO CNTRL.	FROM P-4 TO CNTRL.	FROM P-5 TO CNTRL.	FROM P-6 TO CNTRL.
1	WHITE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
2	BLACK	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON
3	RED	SH 1, 2, 3 - Ø2 R	SH 5, 6, 7 - Ø8 R	SPARE	SH 8, 9, 10 - Ø6 R	SPARE	SH 12, 13 - Ø4 R
4	GREEN	SH 1, 2, 3 - Ø2 G	SH 5, 6, 7 - Ø8 G	SPARE	SH 8, 9, 10 - Ø6 G	SPARE	SH 12, 13 - Ø4 G
5	ORANGE	SH 1, 2, 3 - Ø2 Y	SH 5, 6, 7 - Ø8 Y	SPARE	SH 8, 9, 10 - Ø6 Y	SPARE	SH 12, 13 - Ø4 Y
6	BLUE	SPARE	SH 16 - Ø6 W	SH 18 - Ø4 W	SPARE	SH 20 - Ø2 W	SH 14 - Ø8 W
7	WHITE/BLACK	SPARE	SH 16 - Ø6 DW	SH 18 - Ø4 DW	SPARE	SH 20 - Ø2 DW	SH 14 - Ø8 DW
8	RED/BLACK	SH 4 - OLC R(ARROW)	SPARE	SH 19 - Ø6 DW	SH 11 - OLA R(ARROW)	SH 21 - Ø4 DW	SPARE
9	GREEN/BLACK	SH 4 - OLC FY(ARROW)	SPARE	SH 19 - Ø6 W	SH 11 - OLA FY(ARROW)	SH 21 - Ø4 W	SPARE
10	ORANGE/BLACK	SH 4 - OLC Y(ARROW)	SPARE	SPARE	SH 11 - OLA Y(ARROW)	SPARE	SPARE
11	BLUE/BLACK	SPARE	SH 17 - Ø8 W		SPARE		SH 15 - Ø2 W
12	BLACK/WHITE	SPARE	SH 17 - Ø8 DW		SPARE		SH 15 - Ø2 DW
13	RED/WHITE	SPARE	SPARE		SPARE		SPARE
14	GREEN/WHITE	SH 4 - Ø5 G(ARROW)	SPARE		SH 11 - Ø1 G(ARROW)		SPARE
15	BLUE/WHITE	SPARE	SPARE		SPARE		SPARE
16	BLACK/RED	SPARE	SPARE		SPARE		SPARE
17	WHITE/RED	SPARE	SPARE		SPARE		SPARE
18	ORANGE/RED	SPARE	SPARE		SPARE		SPARE
19	BLUE/RED	SPARE	SPARE		SPARE		SPARE
20	RED/GREEN	SPARE	SPARE		SPARE		SPARE

*NOTE: HOME RUN 2 CONDR. TO ALL POLES WITH PED HEADS FOR PED CALL

SIGNS SUMMARY					
SIGN *	SIGN TYPE	SIGN LEGEND	STATUS	SUPPORT	SIGN DIMENSION (in x in)
SN1	STREET NAME	CHURCH	I	P-1	24"x72"
SN2	STREET NAME	AUDELIA	I	P-2	24"x72"
SN3	STREET NAME	CHURCH	I	P-4	24"x72"
SN4	STREET NAME	AUDELIA	I	P-6	24"x72"
SN5	R10-3EL	APS UNIT	I	P-6	9"x15"
SN6	R10-3ER	APS UNIT	I	P-6	9"x15"
SN7	R10-3EL	APS UNIT	I	P-2	9"x15"
SN8	R10-3ER	APS UNIT	I	P-2	9"x15"
SN9	R10-3EL	APS UNIT	I	P-3	9"x15"
SN10	R10-3ER	APS UNIT	I	P-3	9"x15"
SN11	R10-3EL	APS UNIT	I	P-5	9"x15"
SN12	R10-3ER	APS UNIT	I	P-5	9"x15"

STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=EXISTING TO BE RELOCATED

GROUND BOX SUMMARY			
ITEM NO.	DESCRIPTION	UNIT	QTY.
0624	GROUND BOX TY D (162922) W/APRON	EA	4
6186	GROUND BOX TY 1 (243624) W/APRON	EA	1

02/24/2023

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

AUDELIA RD AT
CHURCH RD

SHEET 2 OF 3

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS ACC	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	28
	CONTROL	SECTION	JOB	
CHECK JJM	Ø918	47	342, ETC.	

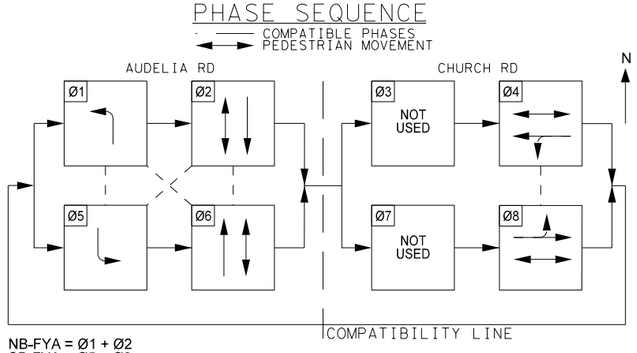
SIGNAL HEADS (ITEM 682)											
SIGNAL HEAD NUMBER	12" LED SIGNAL INDICATION										PED SIG SEC (LED) (COUNTDOWN)
	SIGNAL HEAD TYPE	STATUS	BACK PLATE		LED SIGNAL LAMPS						
			3 SEC	5 SEC	<-G-	G	<-Y-	Y	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA
1	V3	I	1			1		1		1	
2	H3	I	1			1		1		1	
3	H3	I	1			1		1		1	
4	H5FYA	I		1	1		2		2		
5	V3	I	1			1		1		1	
6	H3	I	1			1		1		1	
7	H3	I	1			1		1		1	
8	V3	I	1			1		1		1	
9	H3	I	1			1		1		1	
10	H3	I	1			1		1		1	
11	H5FYA	I		1	1		2		2		
12	H3	I	1			1		1		1	
13	H3	I	1			1		1		1	
14	PED	I									1
15	PED	I									1
16	PED	I									1
17	PED	I									1
18	PED	I									1
19	PED	I									1
20	PED	I									1
21	PED	I									1
TOTAL (NEW)			11	2	2	11	4	11	4	11	8

STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=RELOCATE

RADAR DETECTION ZONE DETAILS						
RADAR PANEL NUMBER	MOUNTING LOCATION	MOUNTING HEIGHT	ZONE LOCATIONS	ZONE	SETBACK DISTANCE	DISTANCE: NEAREST TO FARTHEST LANE
R1	P-1	18'	STOP BAR	NB + NBLT	N/A	45' TO 100'
R2	P-2	18'	STOP BAR	WB	N/A	35' TO 60'
R3	P-3	18'	STOP BAR	SB + SBLT	N/A	40' TO 85'
R4	P-6	18'	STOP BAR	EB	N/A	10' TO 35'
R5	P-1	19'	SET BACK	SB	400'	-
R6	P-4	19'	SET BACK	NB	400'	-

APS MESSAGE CHART			
POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-2	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS CHURCH ROAD AT AUDELIA ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS CHURCH ROAD AT AUDELIA ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	CHURCH ROAD, WALK SIGN IS ON TO CROSS CHURCH ROAD
P-2	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS AUDELIA ROAD AT CHURCH ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS AUDELIA ROAD AT CHURCH ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	AUDELIA ROAD, WALK SIGN IS ON TO CROSS AUDELIA ROAD
P-3	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS CHURCH ROAD AT AUDELIA ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS CHURCH ROAD AT AUDELIA ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	CHURCH ROAD, WALK SIGN IS ON TO CROSS CHURCH ROAD
P-3	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS AUDELIA ROAD AT CHURCH ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS AUDELIA ROAD AT CHURCH ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	AUDELIA ROAD, WALK SIGN IS ON TO CROSS AUDELIA ROAD
P-5	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS CHURCH ROAD AT AUDELIA ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS CHURCH ROAD AT AUDELIA ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	CHURCH ROAD, WALK SIGN IS ON TO CROSS CHURCH ROAD
P-5	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS AUDELIA ROAD AT CHURCH ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS AUDELIA ROAD AT CHURCH ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	AUDELIA ROAD, WALK SIGN IS ON TO CROSS AUDELIA ROAD
P-6	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS CHURCH ROAD AT AUDELIA ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS CHURCH ROAD AT AUDELIA ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	CHURCH ROAD, WALK SIGN IS ON TO CROSS CHURCH ROAD
P-6	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS AUDELIA ROAD AT CHURCH ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS AUDELIA ROAD AT CHURCH ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	AUDELIA ROAD, WALK SIGN IS ON TO CROSS AUDELIA ROAD

PHASE SEQUENCE



NB-FYA = Ø1 + Ø2
SB-FYA = Ø5 + Ø6

02/24/2023

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

AUDELIA RD AT
CHURCH RD

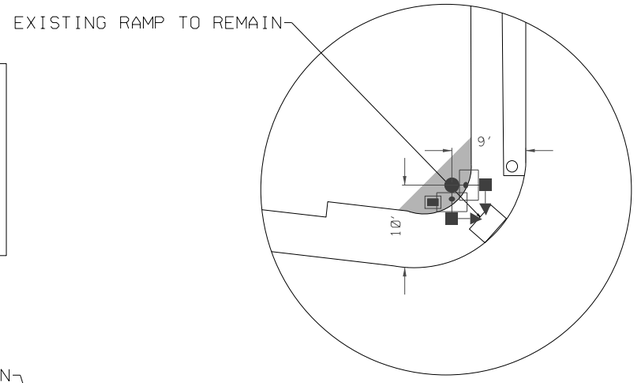
SHEET 3 OF 3

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	29
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

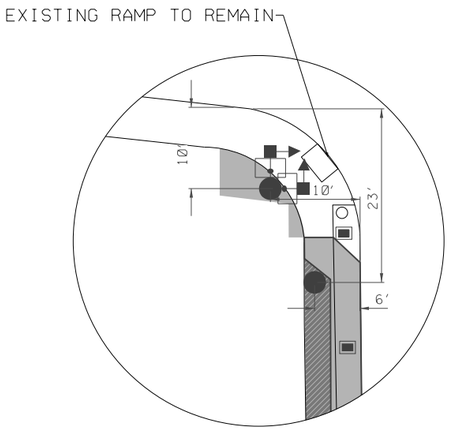
LEGEND

PEDESTRIAN RAMPS

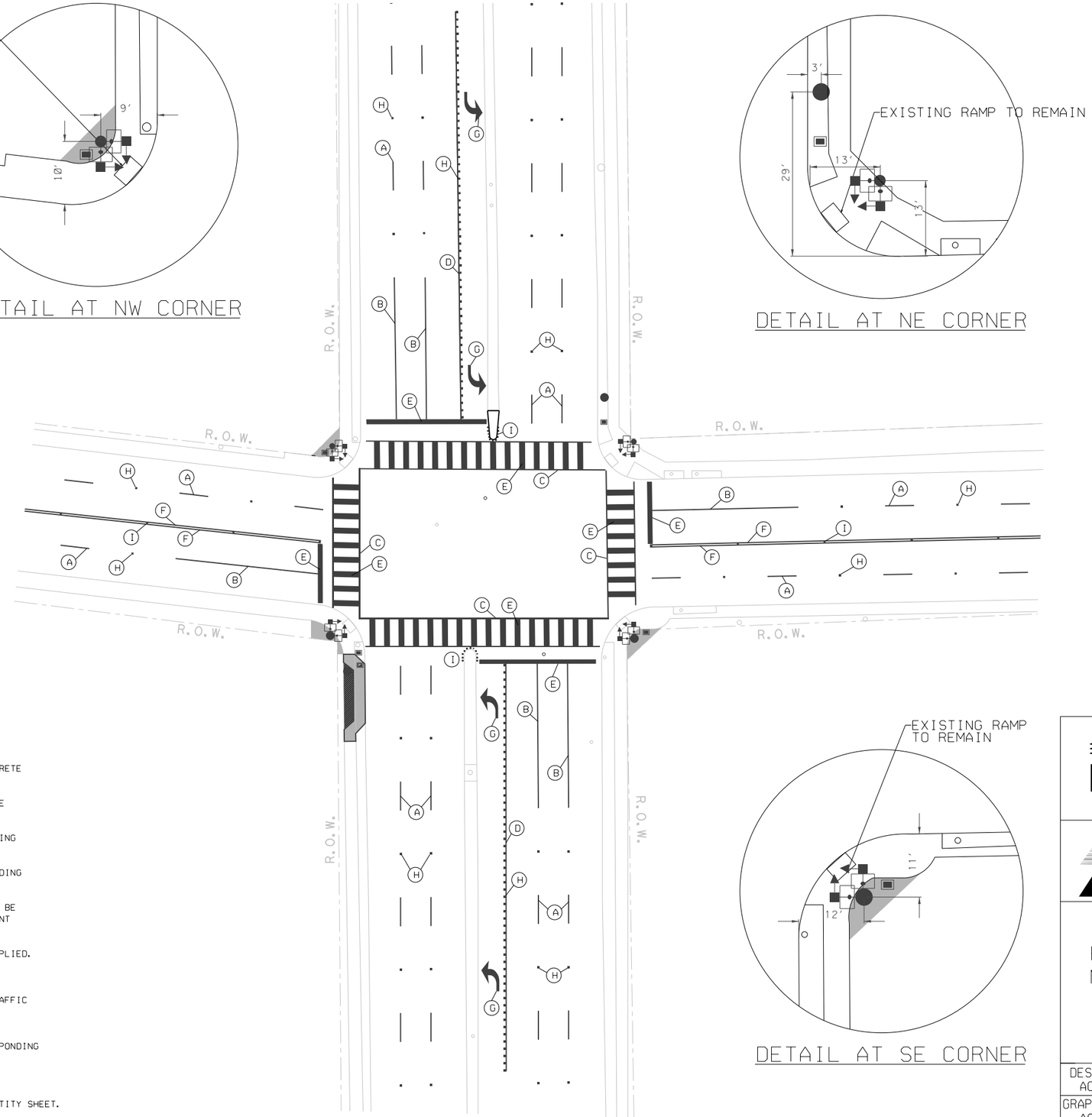
- INSTALL OR REPLACE CONCRETE
- REMOVE CONCRETE



DETAIL AT NW CORNER

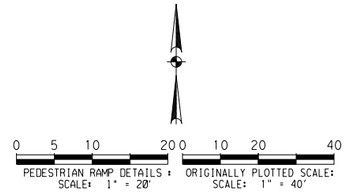


DETAIL AT SW CORNER



DETAIL AT NE CORNER

DETAIL AT SE CORNER



LEGEND

PAVEMENT MARKING

- (A) RE PM W/ RET REQ TY I (W) 4" (BRK) (100MIL)
- (B) RE PM W/ RET REQ TY I (W) 4" (SLD) (100MIL)
- (C) RE PM W/ RET REQ TY I (W) 6" (SLD) (100MIL)
- (D) RE PM W/ RET REQ TY I (W) 8" (SLD) (100MIL)
- (E) RE PM W/ RET REQ TY I (W) 24" (SLD) (100MIL)
- (F) RE PM W/ RET REQ TY I (Y) 4" (SLD) (100MIL)
- (G) PREFAB PAV MRK TY I (W) ARROW
- (H) REFL PAV MRK TY II A-A
- (I) REFL PAV MRK TY II C-R

02/24/2023

NOTES:

1. INSTALLATION AND PAYMENT FOR PROPOSED RAMPS AND SIDEWALKS SHALL INCLUDE ALL INCIDENTAL WORK, INCLUDING EXCAVATION, REMOVAL AND DISPOSAL OF EXISTING CONCRETE CURB AND SIDEWALK, PROPOSED CURB ALONG SIDEWALKS, AND OTHER MISCELLANEOUS MATERIAL NECESSARY TO CONSTRUCT THE PROPOSED RAMPS AND SIDEWALKS. SIDEWALK QUANTITIES PROVIDED ARE ESTIMATES ONLY. PAYMENT FOR SIDEWALK SHALL BE FOR THE QUANTITY APPROVED BY THE ENGINEER AND CONSTRUCTED ON SITE.
2. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.
3. REFER TO THE CITY OF DALLAS 251-D STANDARDS FOR ADDITIONAL INFORMATION REGARDING TYPICAL PAVEMENT MARKING PLACEMENT.
4. LANE WIDTHS SHALL MATCH EXISTING LANES. ALL PROPOSED PAVEMENT MARKINGS SHALL BE TIED TO EXISTING MARKINGS WHERE APPLICABLE TO REFRESH THE INTERSECTION PAVEMENT MARKINGS.
5. CONTRACTOR SHALL APPLY PAVEMENT SEALER IN AREAS WHERE NEW THERMO IS TO BE APPLIED.
6. ALL EXISTING SIGNS AND PAVEMENT MARKINGS TO REMAIN UNLESS OTHERWISE NOTED.
7. STRIPING CONTRACTOR SHALL CONTACT COD TRANSPORTATION OPERATIONS AND TxDOT TRAFFIC SIGNAL OFFICE AT LEAST 24 HOURS IN ADVANCE OF MOBILIZATION. COD STAFF MUST BE PRESENT TO CONFIRM LAYOUT PRIOR TO THE APPLICATION OF ANY PAVEMENT MARKINGS.
8. CONTRACTOR SHALL ENSURE THAT ALL PED RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE EQUIPMENT, RAMP OR GUTTER AREA.
9. INSTALL PAVEMENT MARKINGS 200' IN EACH DIRECTION FROM STOP BAR.
10. SEE SUMMARY OF PEDESTRIAN RAMPS AND PAVEMENT MARKING TABLE ON PROPOSED QUANTITY SHEET.

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED CONDITIONS - PAVEMENT MARKINGS AND PEDESTRIAN RAMPS

AUDELIA RD AT CHURCH RD

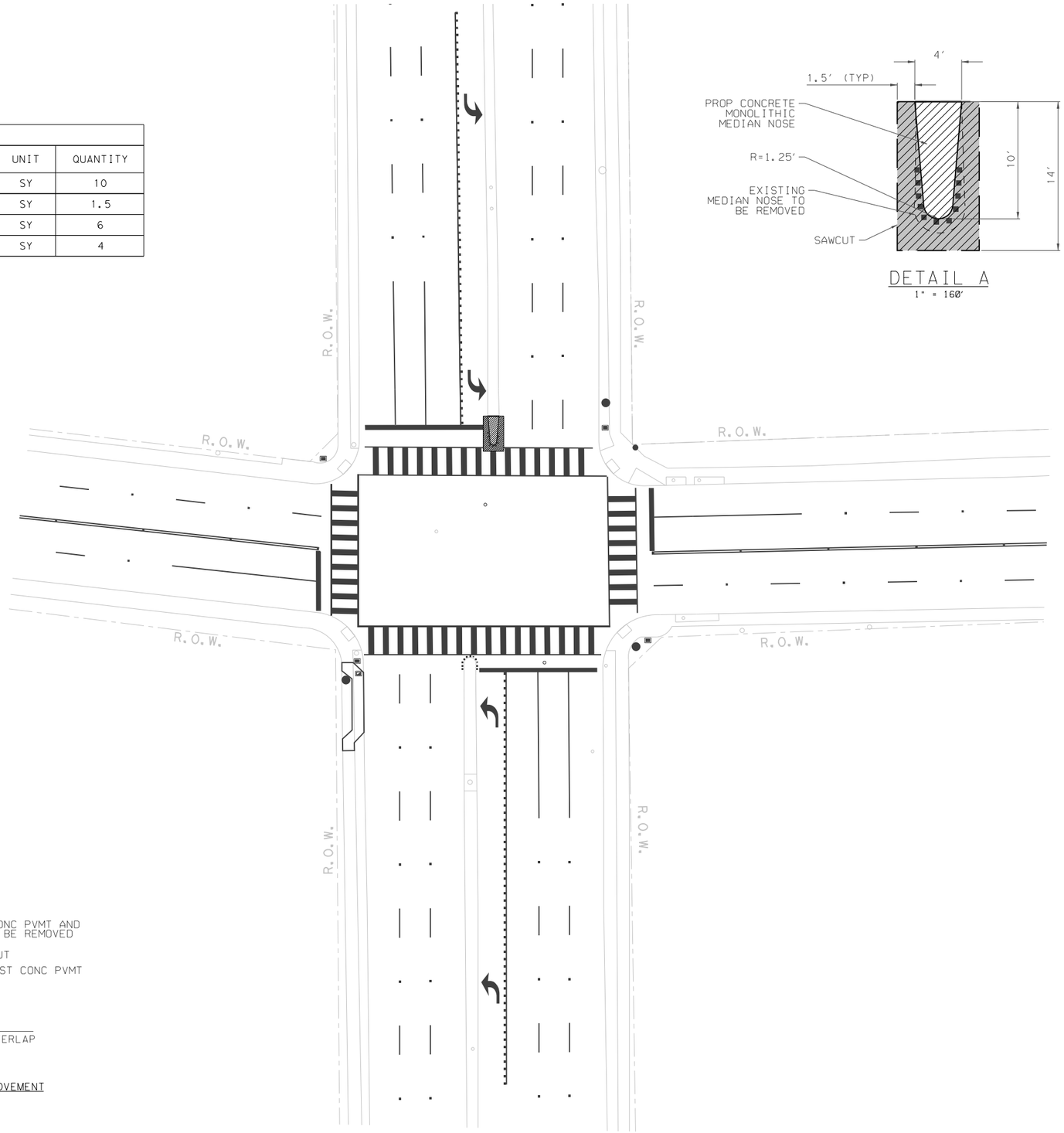
DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	30
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC	

NOTES:

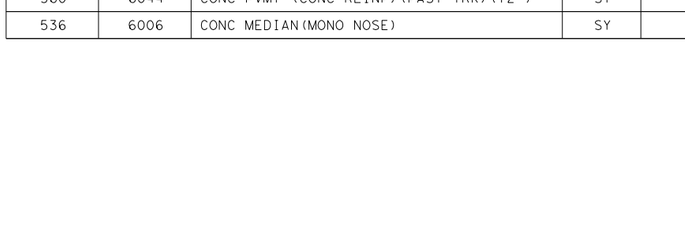
1. REFER TO EXISTING CONDITIONS AND REMOVALS SHEET FOR ADDITIONAL INFORMATION.

2. REFER TO PROPOSED CONDITION SHEET FOR ADDITIONAL INFORMATION.

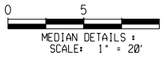
MEDIAN QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6001	REMOVING CONC (PAV)	SY	10
251	6034	REWORK BS MTL (TY C)(8")(ORD COMP)	SY	1.5
360	6044	CONC PVMT (CONC REINF)(FAST TRK)(12")	SY	6
536	6006	CONC MEDIAN(MONO NOSE)	SY	4



DETAIL A
1" = 160'



TYPICAL CROSS SECTION FOR MONOLITHIC MEDIAN NOSE IMPROVEMENT
(NOT TO SCALE)



LEGEND

REMOVAL OF EXISTING CONCRETE PAVEMENT, CURB, AND RIPRAP.

CONCRETE PAVEMENT

02/24/2023

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED MEDIAN DETAILS

AUDELIA RD AT CHURCH RD

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	31
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

PEDESTRIAN RAMP / SIDEWALK				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6015	REMOVING CONC (SIDEWALKS)	SY	14
531	6003	CONC SIDEWALKS (6")	SY	32

PAVEMENT MARKING SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6045	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	290
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	610
666	6224	PAVEMENT SEALER (4")	LF	1565
666	6225	PAVEMENT SEALER (6")	LF	525
666	6226	PAVEMENT SEALER (8")	LF	290
666	6230	PAVEMENT SEALER (24")	LF	610
666	6231	PAVEMENT SEALER (ARROW)	EA	4
666	6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	500
666	6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	LF	300
666	6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	525
666	6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	765
668	6077	PREFAB PAV MRK TY C (W)(ARROW)	EA	4
672	6009	REFL PAV MRKR TY II-A-A	EA	40
672	6010	REFL PAV MRKR TY II-C-R	EA	165
677	6001	ELIM EXT PAV MRK & MKRS (4")	LF	710
677	6002	ELIM EXT PAV MRK & MKRS (6")	LF	510
677	6003	ELIM EXT PAV MRK & MKRS (8")	LF	245
677	6006	ELIM EXT PAV MRK & MKRS (18")	LF	125
677	6007	ELIM EXT PAV MRK & MKRS (24")	LF	415
677	6008	ELIM EXT PAV MRK & MKRS (ARROWS)	EA	4
678	6001	PAV SURF PREP FOR MRK (4")	LF	1565
678	6002	PAV SURF PREP FOR MRK (6")	LF	525
678	6004	PAV SURF PREP FOR MRK (8")	LF	290
678	6008	PAV SURF PREP FOR MRK (24")	LF	610
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	205

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

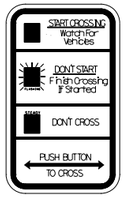
PROPOSED QUANTITIES - PAVING

AUDELIA RD AT
CHURCH RD

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	32
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC.	

EXISTING SIGNS

R10-3B



S6 S7 S8 S9 S10 S11 S12 S13

S1

S3

S2

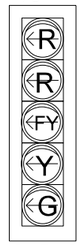
S4

R3-8

S5

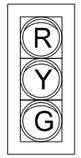
EXISTING SIGNALS

V5FYA



SH 5, 10

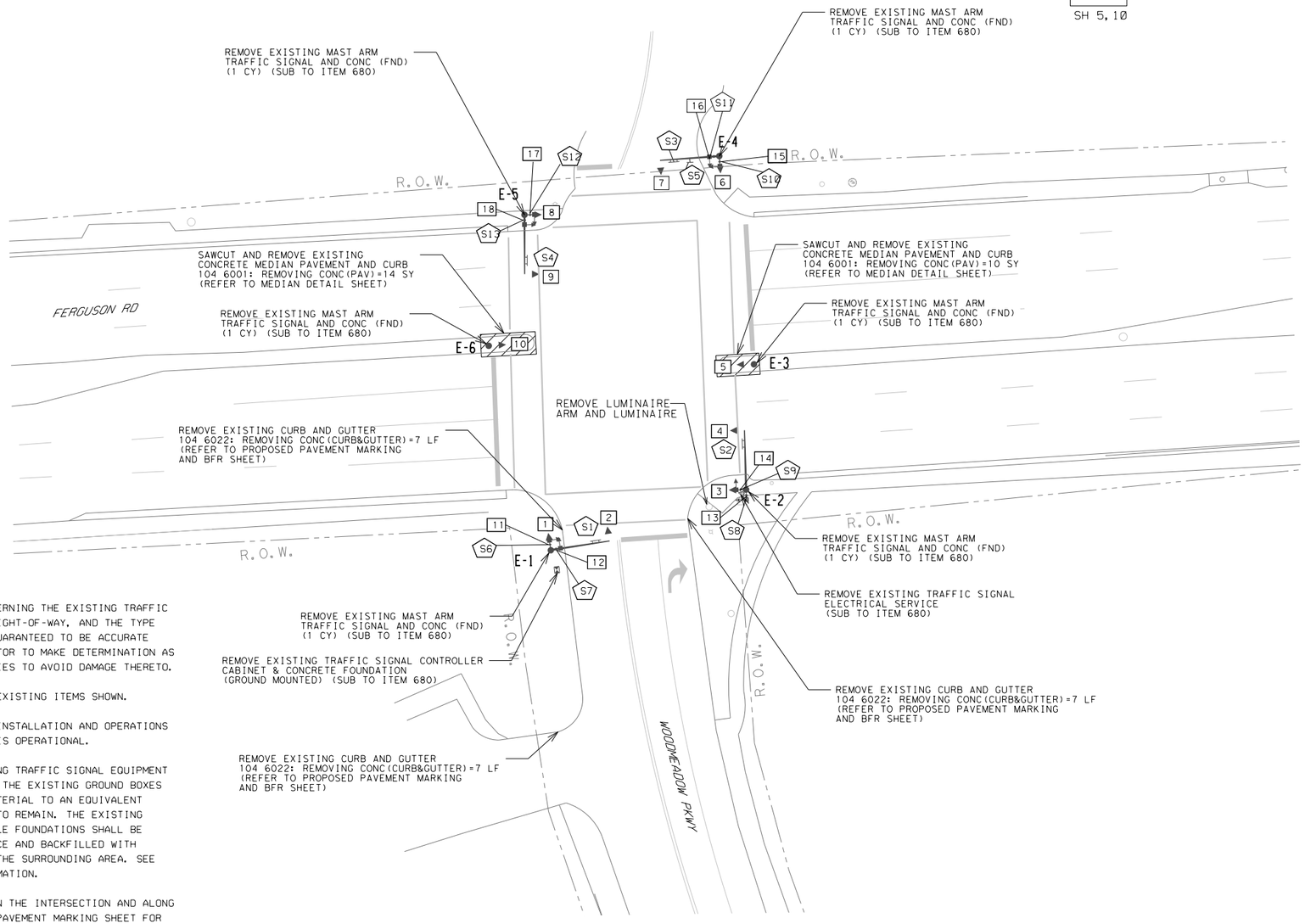
V3

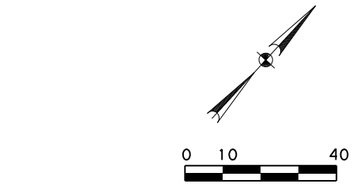


SH 1, 2, 3, 4, 6, 7, 8, 9

COUNTDOWN PEDESTRIAN SIGNAL HEAD

SH 11, 12, 13, 14, 15, 16, 17, 18





LEGEND

- TYPICAL EXISTING MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, AND SIGNAGE
- EXISTING TRAFFIC SIGNAL CONTROLLER CABINET
- EXISTING CONDUIT
- EXISTING ELECTRICAL SERVICE
- SIGNAL HEAD NUMBER
- SIGN LABEL
- EXISTING TRAFFIC SIGNAL POLE NUMBER
- PRESENCE RADAR
- REMOVAL

NOTES:

1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE EXISTING TRAFFIC SIGNAL HARDWARE, PAVEMENT MARKINGS, SIGNING, RIGHT-OF-WAY, AND THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.

2. THE ENGINEER DOES NOT CONFIRM OR VALIDATE THE EXISTING ITEMS SHOWN.

3. CONTRACTOR SHALL MAINTAIN THE EXISTING SIGNAL INSTALLATION AND OPERATIONS AT THIS INTERSECTION UNTIL THE PROPOSED SIGNAL IS OPERATIONAL.

4. CONTRACTOR SHALL REMOVE AND SALVAGE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT AFTER PROPOSED SIGNAL EQUIPMENT IS OPERATIONAL. THE EXISTING GROUND BOXES SHALL BE REMOVED AND BACKFILLED WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION UNLESS IT IS IDENTIFIED IN THE PLANS TO REMAIN. THE EXISTING FOUNDATIONS SHALL BE REMOVED, AND THE SIGNAL POLE FOUNDATIONS SHALL BE REMOVED TO A MINIMUM OF 2' BELOW EXISTING SURFACE AND BACKFILLED WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION IN THE SURROUNDING AREA. SEE GENERAL NOTES AND SPECIFICATIONS FOR MORE INFORMATION.

5. ELIMINATE ALL EXISTING PAVEMENT MARKINGS WITHIN THE INTERSECTION AND ALONG 200' IN EACH DIRECTION FROM STOP BAR. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.

6. EXISTING SIGNS S1-S13 SHALL BE REMOVED WITH TRAFFIC SIGNAL EQUIPMENT.

7. CURB RAMP AND SIDEWALK REMOVALS SHALL BE SUBSIDIARY TO THE INSTALLATION OF NEW OF NEW CURB RAMP OR CONCRETE SIDEWALK (SEE ITEM 531 QTYS AND PROPOSED PEDESTRIAN RAMP AND SIDEWALK LAYOUT).

02/24/2023

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

EXISTING CONDITIONS AND REMOVALS

FERGUSON RD AT WOODMEADOW PKWY

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS ACC	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	33
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

NOTES:

1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.

2. CONTRACTOR TO CONTACT CITY OF DALLAS TRAFFIC MANAGEMENT CENTER AT (214-670-3095) AND TxDOT TRAFFIC SIGNAL OFFICE AT (214-320-6682) 48 HOURS IN ADVANCE TO COORDINATE WORK. CONTRACTOR TO COORDINATE WITH CITY OF DALLAS TO PULL REQUIRED PERMITS, PRIOR TO STARTING WORK.

3. THE LOCATION OF THE PROPOSED SIGNAL POLES, SIGNAL HEADS, RADAR DETECTORS, CONDUIT, GROUND BOXES, AND CONDUCTORS ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMODATE FIELD CONDITIONS.

4. CONTRACTOR SHALL COORDINATE WITH ONCOR CONCERNING TRAFFIC SIGNAL ELECTRICAL SERVICE. CONTACT ONCOR (ITHMAR PAZ AT 469-785-3098) REGARDING POINT OF DELIVERY AND DISTRIBUTION TO ELECTRICAL PEDESTAL SERVICE. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION.

5. THE FOLLOWING ITEMS WILL BE FURNISHED BY THE CITY OF DALLAS AND INSTALLED BY THE CONTRACTOR:
SIGNAL CABINET AND INTERNAL HARDWARE, AND RADAR AND RADAR CABLE. CONTACT MR. ALFRED LEMON AT 214-670-4812 (OFFICE) OR 214-213-6121 (MB)

6. INSTALL BASE MOUNTED CONTROLLER CABINET (ATC CABINET) AND FOUNDATION.

7. SIGNAL POLES SHALL BE GALVANIZED STEEL FINISH.

8. SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BLACK POWDERCOATED ALUMINUM VISORS AND RETROREFLECTIVE NON-VENTED BACK PLATES.

9. RADAR DETECTION ZONES TO BE PROGRAMMED BY THE CITY OF DALLAS. CONTACT SRINIVASA VEERAMALLU AT 214-670-5892 WITH 2 WEEK NOTICE TO SCHEDULE PROGRAMMING AND SIGNAL ACTIVATION.

10. EXISTING RAMP UNDER CONSTRUCTION FINAL PEDESTRIAN POLE LOCATION TO BE CONFIRMED AFTER COMPLETION OF CONSTRUCTION.

NOTES CONTINUE ON NEXT SHEET.

PROPOSED SIGNS

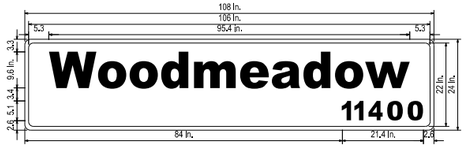
S3 — 1.5" Radius, 1" Border, White on Green;
"Ferguson", ClearviewHwy-3-W;
"11600", ClearviewHwy-3-W; "11700", ClearviewHwy-3-W;

S1 — 1.5" Radius, 1" Border, White on Green;
"Ferguson", ClearviewHwy-3-W;
"11700", ClearviewHwy-3-W; "11600", ClearviewHwy-3-W;

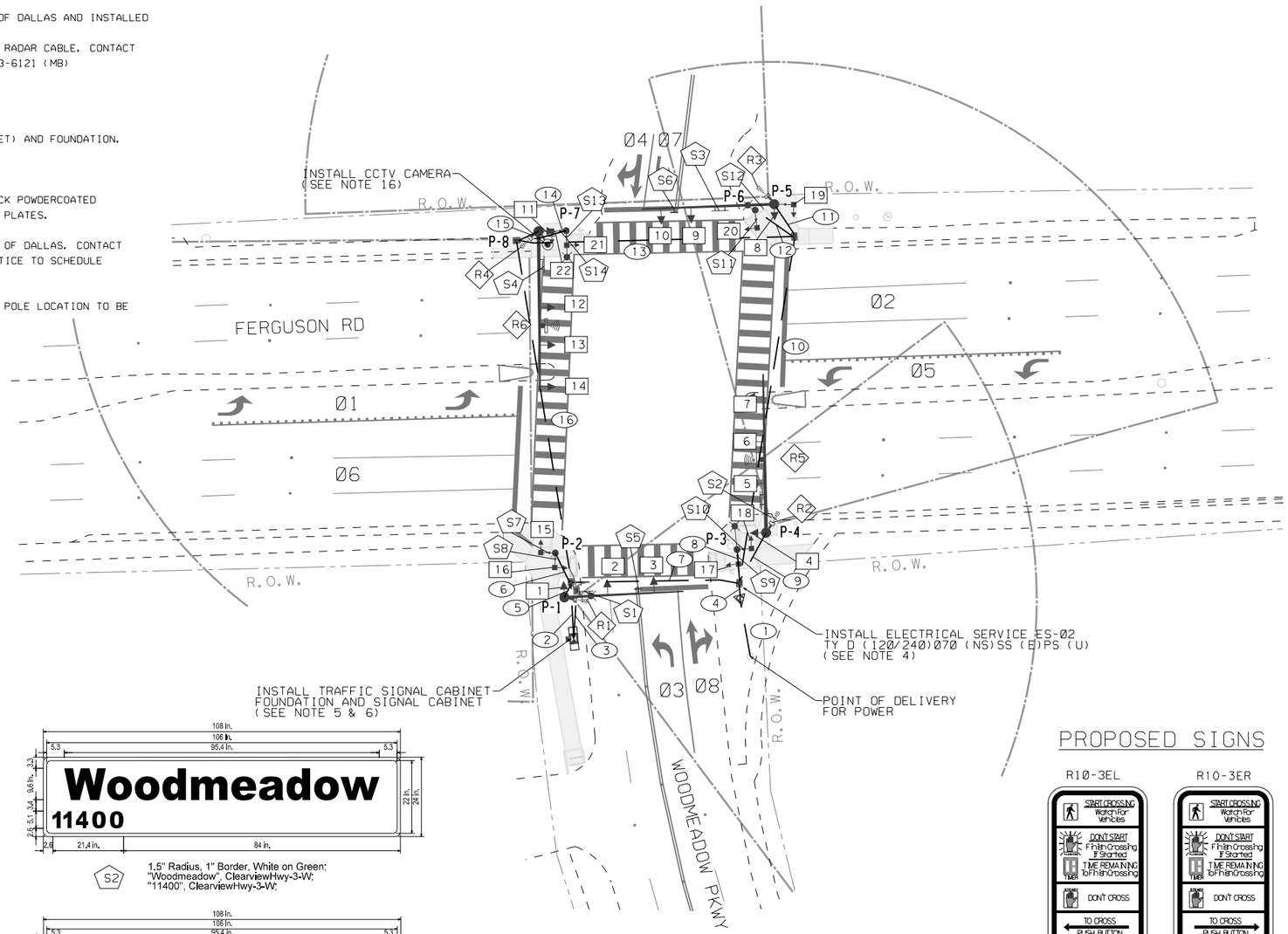
R3-8

S5 S6

S2 — 1.5" Radius, 1" Border, White on Green;
"Woodmeadow", ClearviewHwy-3-W;
"11400", ClearviewHwy-3-W;

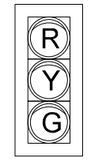


S4 — 1.5" Radius, 1" Border, White on Green;
"Woodmeadow", ClearviewHwy-3-W;
"11400", ClearviewHwy-3-W;



PROPOSED SIGNALS

V3

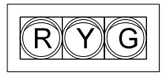


SH 1, 4, 8, 11

H5FYA

SH 3, 7, 10, 14

H3

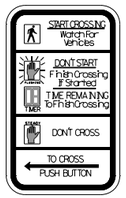


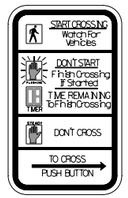
SH 2, 5, 6, 9, 12, 13

LED COUNTDOWN PEDESTRIAN SIGNAL HEAD

SH 15, 16, 7, 18, 19, 20, 21, 22

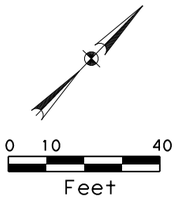
PROPOSED SIGNS



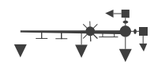


S7 S9 S10 S11 S12 S14

S8 S13



LEGEND



TYPICAL PROPOSED MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, LED LUMINAIRE AND SIGNAGE

TRAFFIC SIGNAL CONTROLLER CABINET AND CONCRETE PAD

EXISTING GROUND BOX

PROPOSED TYPE 1 GROUND BOX W/ APRON

PROPOSED TYPE D GROUND BOX W/ APRON

PROPOSED CONDUIT

(1) CONDUIT RUN NUMBER

[1] SIGNAL HEAD NUMBER

S1 SIGN LABEL

R1 PROPOSED PRESENCE RADAR DETECTOR AND LABEL

R1 PROPOSED ADVANCE RADAR DETECTOR AND LABEL

C1 PROPOSED CCTV CAMERA

S PROPOSED ELECTRICAL SERVICE

P-■ PROPOSED TRAFFIC SIGNAL POLE NUMBER

02/24/2023

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED CONDITIONS - TRAFFIC SIGNAL LAYOUT

FERGUSON RD AT WOODMEADOW PKWY

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS ACC	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	34
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

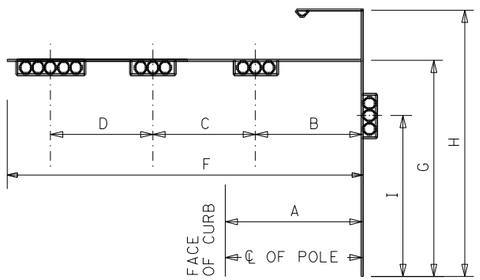
CONDUIT AND CABLE CHART
WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	2" PVC SCH 80 (RISER)		2" PVC SCH 80 (TRENCH)		3" PVC SCH 80 (TRENCH)		3" PVC SCH 80 (BORE)		4" PVC SCH 80 (TRENCH)		4" PVC SCH 80 (BORE)		CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS: NO. 6 XHHW WIRE (POWER)		NO. 6 XHHW WIRE (GROUND)		NO. 8 XHHW WIRE		NO. 12 XHHW WIRE		ITEM 684 TRAFFIC SIGNAL CABLES: TY C 2 CNDR NO. 12		TY A 5 CNDR NO. 14		TY A 7 CNDR NO. 14		TY A 20 CNDR NO. 14		TY A 20 CNDR NO. 14		ETHERNET CABLE		RADAR COMM. CABLE		TOTAL LENGTH OF RUN	RUN NO
		Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len		Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len		
1	I	1	20	1	25									I	2	90	1	45																			45	1
2	I			1	25									I	1	25	1	25																			25	2
	I									1	25			I			1	25					8	200					4	100							25	
	I									1	25			I			1	25													4	100	1	25	6	150	25	
3	I					1	20							I	FUTURE COMMUNICATION CONDUIT																							20	3
4	I			1	10									I	1	10	1	10																			10	4
5	I					1	10							I			1	10													1	10			1	10	10	5
	I					1	10							I	SPARE CONDUIT TO POLE																							10	
6	I					1	15							I									2	30					1	15							15	6
7	I											1	60	I	4	240	1	60					2	120					1	60	1	60			2	120	60	7
	I							1	60					I	FUTURE COMMUNICATION CONDUIT - TERMINATE IN ITS GROUND BOX																							60	
8	I					1	15							I	1	15	1	15					2	30					1	15							15	8
9	I					1	25							I			1	25													1	25			2	50	25	9
	I					1	25							I	SPARE CONDUIT TO POLE																							25	
10	I											1	110	I			1	110																			110	10
11	I					1	20							I	1	20	1	20					1	20							1	20			1	20	20	11
	I					1	20							I	SPARE CONDUIT TO POLE																							20	
12	I					1	20							I			1	20					1	20					1	20							20	12
13	I											1	90	I	1	90	1	90					2	180					1	90	1	90			1	90	90	13
14	I					1	20							I	1	20	1	20					1	20					1	20							15	14
15	I					1	15							I			1	15					1	15							1	15	1	15	2	30	15	15
	I					1	15							I	SPARE CONDUIT TO POLE																							20	
16	I											1	110	I	2	220	1	110					4	440					2	220	2	220	1	110	3	330	110	16
	I							1	120					I	FUTURE COMMUNICATION CONDUIT - TERMINATE IN ITS GROUND BOX																							120	
SUBTOTAL			20		60		230		180		50		370			730		640		0		0		1075		0		0		540		540		150		800		
P-1	P													I								80				60		55								25	VARIES	P-1
P-2	P													I										10		20											VARIES	P-2
P-3	P													I								80		10		20											VARIES	P-3
P-4	P													I												120		70								75	VARIES	P-4
P-5	P													I								80		5		80		60								25	VARIES	P-5
P-6	P													I										5		10											VARIES	P-6
P-7	P													I								80		10		20											VARIES	P-7
P-8	P													I												110		70								35	70	VARIES	P-8
SUBTOTAL			-		-		-		-		-		-			0		0		0		320		40		440		255		0		0		35		195		
TOTAL			20		60		230		180		50		370			730		640		0		320		1115		440		255		540		540		185		995		

CONDUIT STATUS: E=EXISTING; I=INSTALL; A=ABANDON; AC=AERIAL CABLE; R=REMOVE AND SALVAGE; P=INSTALL WIRE INSIDE STEEL POLE

P-# - REFERS TO WIRING WITHIN THE SIGNAL POLE AND MAST ARM

* - THE CONTRACTOR SHALL INSTALL A 2" PVC CONDUIT FROM THE POINT OF DELIVERY TO THE PEDESTAL METER.



SIGNAL HEAD AND POLE PLACEMENT (FT)

POLE NUMBER	STATUS	A (FT)	B (FT)	C (FT)	D (FT)	F (FT)	G (FT)	H (FT)	I (FT)	NO. OF HEADS (EA)*	LUM	DRILLED SHAFT LENGTH (FT): 24" DIA SUB TO ITEM 687	30" DIA TYPE A ITEM 416	30" DIA ILLUM. ITEM 416	36" DIA TYPE A ITEM 416	48" DIA TYPE A ITEM 416	FDN. TYPE WIND ZONE 80 MPH
P-1	I	5	13	14	-	36	19	30	13	2	Y				13		36-A
P-2	I	9	PEDESTRIAN POLE				15	-	-	-	N	6					24-A
P-3	I	9	LUMINAIRE POLE SA 20T-4				13.5	20	-	-	Y			8			30-A
P-4	I	11	21	13	11	48	19	-	13	3	N				13		36-A
P-5	I	11	25	9	-	40	19	-	13	2	N				13		36-A
P-6	I	4	PEDESTRIAN POLE				15	-	-	-	N	6					24-A
P-7	I	8	LUMINAIRE POLE SA 20T-4				13.5	20	-	-	Y			8			30-A
P-8	I	7	16	12	15	48	19	30	13	3	Y				13		36-A
										TOTAL:		12	0	16	52	0	

SIGNAL POLE STATUS: I=INSTALL; E=EXISTING; REM=REMOVE; F=INSTALL IN FUTURE PHASE

*- DOES NOT INCLUDE VERTICAL SIDEMOUNT SIGNAL HEADS OR PEDESTRIAN SIGNAL HEADS

ELECTRICAL SERVICE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT **SIZE	SERVICE CONDUCTORS NO. / SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE / AMPS	TWO-POLE CONTACTOR AMPS	PANELBD / LOADCENTER AMP RATING (MIN)	BRANCH CIRCUIT ID	BRANCH CKT. BRK. POLE / AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
TY D (120/240) 070 (NS) SS (E) PS (U)	2"	3 / #4	N/A	2P / 100	30	100	T.S. LIGHTING	1P / 50 2P / 20	23 3	<7.1

** - VERIFY SERVICE CONDUIT SIZE WITH UTILITY. SIZE MAY CHANGE DUE TO THE UTILITY METER REQUIREMENTS. ENSURE CONDUIT SIZE MEETS THE NATIONAL ELECTRICAL CODE.

NOTES:

11. CONTRACTOR SHALL COORDINATE THE TRAFFIC SIGNAL POLE FOUNDATION WORK WITH THE CURB RAMP AND SIDEWALK INSTALLATION. IF CURB RAMPS ARE CONSTRUCTED FIRST, CONTRACTOR SHALL NOTIFY THE CITY AND ENGINEER SO A FIELD MEETING CAN BE SCHEDULED TO DETERMINE IF FOUNDATIONS NEED TO BE SHIFTED TO BE ADJACENT TO THE LANDING AREAS. IF SIGNAL POLE FOUNDATIONS ARE INSTALLED FIRST, THE CURB RAMPS AND SIDEWALKS SHALL BE MODIFIED SO THAT THE CURB RAMP LANDING AREAS ARE ADJACENT TO THE PUSH BUTTONS AND THE SIDE REACH TO THE PUSH BUTTONS ARE 10" OR LESS.

12. ALL SIGNAL CABLES SHALL BE WIRED IN ACCORDANCE WITH THE CABINET PREPARATION NOTES SUPPLIED BY THE CITY OF DALLAS.

13. PROPOSED APS UNITS SHALL BE PLACED ADJACENT TO A LEVEL LANDING AREA (2% MAX IN ANY DIRECTION). IF THE DISTANCE FROM THE PUSH BUTTON TO THE EDGE OF ACCESSIBLE PATH EXCEEDS 10", THE CONTRACTOR SHALL FURNISH AND INSTALL A PUSH BUTTON EXTENDER TO MAKE THE REACH 10" OR LESS. MEASUREMENT AND PAYMENT SHALL BE CONSIDERED SUBSIDIARY TO THE INSTALLATION OF THE TRAFFIC SIGNAL EQUIPMENT.

14. IF SIGNAL POLES CANNOT BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLANS, THE CONTRACTOR SHALL CONTACT THE CITY AND ENGINEER TO MEET ON SITE TO DISCUSS NEW LOCATIONS.

15. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.

16. CONTRACTOR TO MAINTAIN FULL ACCESS TO A MINIMUM OF TWO PEDESTRIAN CROSSINGS AT ALL TIMES DURING CONSTRUCTION.

17. CONTRACTOR TO PROCURE AND INSTALL A POWER OVER ETHERNET CCTV CAMERA AND ETHERNET CABLE. CCTV CAMERA SHALL BE ONVIF AND NTCIP COMPLIANT. ETHERNET CABLE IS TO BE INSTALLED FROM CAMERA TO TRAFFIC SIGNAL CABINET AND SUBSIDIARY TO ITEM 6010 6002.

18. CONTRACTOR SHALL ADJUST SIGNAL HEAD ALIGNMENT VERTICALLY ON MAST ARMS USING "ASTRO-BRAC" OR APPROVED EQUAL TO ENSURE MAXIMUM SIGNAL HEAD VISIBILITY WHEN HORIZONTAL OVERHEAD UTILITY LINES BLOCK LENS DISPLAY. IN CIRCUMSTANCES WITH SIGNIFICANT VIABILITY CONSTRAINTS, INSTALLNG HEADS VERTICALLY IS POSSIBLE; HOWEVER, IT MUST BE APPROVED BY CITY ENGINEER.

19. FRONT SIDE OF THE TRAFFIC SIGNAL CONTROLLER CABINET SHALL BE INSTALLED TO ORIENT SUCH THAT THE INTERSECTION MAY BE SEEN WHEN VIEWING THE CONTROLLER FRONT PANEL.

20. IF THE PLANS DO NOT INDICATE SPACING OF THE CABINET FOUNDATION FROM THE CURB, PROVIDE FOR A 48" MINIMUM CLEARANCE FROM CURB. LOCATION OF THE CONCRETE APRON FOR THE BATTERY BACKUP SYSTEM MAY NEED TO BE ADJUSTED BASED ON CLEARANCE FROM THE CURB AND AVAILABLE RIGHT-OF-WAY.

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

FERGUSON RD AT WOODMEADOW PKWY
SHEET 1 OF 3

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	35
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

CABLE TERMINATION CHART

CNDR. NO.	CONDUCTOR COLOR	CABLE 1 20 CNDR. FROM P-1 TO CNTRL.	CABLE 2 10 CNDR. FROM P-2 TO CNTRL.	CABLE 3 10 CNDR. FROM P-3 TO CNTRL.	CABLE 4 20 CNDR. FROM P-4 TO CNTRL.	CABLE 5 20 CNDR. FROM P-5 TO CNTRL.	CABLE 6 10 CNDR. FROM P-6 TO CNTRL.	CABLE 7 10 CNDR. FROM P-7 TO CNTRL.	CABLE 8 20 CNDR. FROM P-8 TO CNTRL.
1	WHITE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
2	BLACK	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON
3	RED	SH 1, 2 - Ø4 R	SPARE	SPARE	SH 3, 4, 5 - Ø6 R	SH 8, 9 - Ø8 R	SPARE	SPARE	SH 11, 12, 13 - Ø2 R
4	GREEN	SH 1, 2 - Ø4 G	SPARE	SPARE	SH 3, 4, 5 - Ø6 G	SH 8, 9 - Ø8 G	SPARE	SPARE	SH 11, 12, 13 - Ø2 G
5	ORANGE	SH 1, 2 - Ø4 Y	SPARE	SPARE	SH 3, 4, 5 - Ø6 Y	SH 8, 9 - Ø8 Y	SPARE	SPARE	SH 11, 12, 13 - Ø2 Y
6	BLUE	SPARE	SH 15 - Ø4 W	SH 17 - Ø6 W	SPARE	SH 19 - Ø8 W	SH 20 - Ø2 W	SH 21 - Ø2 DW	SPARE
7	WHITE/BLACK	SPARE	SH 15 - Ø4 DW	SH 17 - Ø6 DW	SPARE	SH 19 - Ø8 DW	SH 20 - Ø2 DW	SH 21 - Ø2 W	SPARE
8	RED/BLACK	SH 3 - OLD R (ARROW)	SH 16 - Ø6 DW	SPARE	SH 7 - OLA R (ARROW)	SH 10 - OLB R (ARROW)	SPARE	SPARE	SH 14 - OLC R (ARROW)
9	GREEN/BLACK	SH 3 - OLD FY (ARROW)	SH 16 - Ø6 W	SPARE	SH 7 - OLA FY (ARROW)	SH 10 - OLB FY (ARROW)	SPARE	SPARE	SH 14 - OLC FY (ARROW)
10	ORANGE/BLACK	SH 3 - OLD Y (ARROW)	SPARE	SPARE	SH 7 - OLA Y (ARROW)	SH 10 - OLB Y (ARROW)	SPARE	SPARE	SH 14 - OLC Y (ARROW)
11	BLUE/BLACK	SPARE			SH 18 - Ø8 W	SPARE			SH 22 - Ø4 W
12	BLACK/WHITE	SPARE			SH 18 - Ø8 DW	SPARE			SH 22 - Ø4 DW
13	RED/WHITE	SPARE			SPARE	SPARE			SPARE
14	GREEN/WHITE	SH 3 - Ø7 G(ARROW)			SH 7 - Ø1 G(ARROW)	SH 10 - Ø3 G(ARROW)			SH 14 - Ø5 G(ARROW)
15	BLUE/WHITE	SPARE			SPARE	SPARE			SPARE
16	BLACK/RED	SPARE			SPARE	SPARE			SPARE
17	WHITE/RED	SPARE			SPARE	SPARE			SPARE
18	ORANGE/RED	SPARE			SPARE	SPARE			SPARE
19	BLUE/RED	SPARE			SPARE	SPARE			SPARE
20	RED/GREEN	SPARE			SPARE	SPARE			SPARE

*NOTE: HOME RUN 2 CONDR. TO ALL POLES WITH PED HEADS FOR PED CALL

SIGNS SUMMARY

SIGN *	SIGN TYPE	SIGN LEGEND	STATUS	SUPPORT	SIGN DIMENSION (in x in)
SN1	STREET NAME	FERGUSON	I	P-1	24"x84"
SN2	STREET NAME	WOODMEADOW	I	P-4	24"x108"
SN3	STREET NAME	FERGUSON	I	P-5	24"x84"
SN4	STREET NAME	WOODMEADOW	I	P-7	24"x108"
SN5	R3-8	ADVANCE INTERSECTION LANE CONTROL	I	P-1	30"x30"
SN6	R3-8	ADVANCE INTERSECTION LANE CONTROL	I	P-5	30"x30"
SN7	R10-3EL	APS UNIT	I	P-2	9"x15"
SN8	R10-3ER	APS UNIT	I	P-2	9"x15"
SN9	R10-3EL	APS UNIT	I	P-3	9"x15"
SN10	R10-3EL	APS UNIT	I	P-4	9"x15"
SN11	R10-3EL	APS UNIT	I	P-6	9"x15"
SN12	R10-3EL	APS UNIT	I	P-6	9"x15"
SN13	R10-3ER	APS UNIT	I	P-7	9"x15"
SN14	R10-3EL	APS UNIT	I	P-8	9"x15"

STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=EXISTING TO BE RELOCATED

GROUND BOX SUMMARY

ITEM NO.	DESCRIPTION	UNIT	QTY.
0624	GROUND BOX TY D (162922) W/APRON	EA	4
6186	GROUND BOX TY 1 (243624) W/APRON	EA	1

02/24/2023

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

FERGUSON RD AT WOODMEADOW PKWY

SHEET 2 OF 3

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	36
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC	

SIGNAL HEADS (ITEM 682)

SIGNAL HEAD NUMBER	12" LED SIGNAL INDICATION										PED SIG SEC (LED) (COUNTDOWN)
	SIGNAL HEAD TYPE	STATUS	BACK PLATE		LED SIGNAL LAMPS						
			3 SEC	5 SEC	<-G-	G	<-Y-	Y	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA
1	V3	I	1			1		1		1	
2	H3	I	1			1		1		1	
3	H5FYA	I		1	1		2		2		
4	V3	I	1			1		1		1	
5	H3	I	1			1		1		1	
6	H3	I	1			1		1		1	
7	H5FYA	I		1	1		2		2		
8	V3	I	1			1		1		1	
9	H3	I	1			1		1		1	
10	H5FYA	I		1	1		2		2		
11	V3	I	1			1		1		1	
12	H3	I	1			1		1		1	
13	H3	I	1			1		1		1	
14	H5FYA	I		1	1		2		2		
15	PED	I									1
16	PED	I									1
17	PED	I									1
18	PED	I									1
19	PED	I									1
20	PED	I									1
21	PED	I									1
22	PED	I									1
	TOTAL (NEW)		10	4	4	10	8	10	8	10	8

STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=RELOCATE

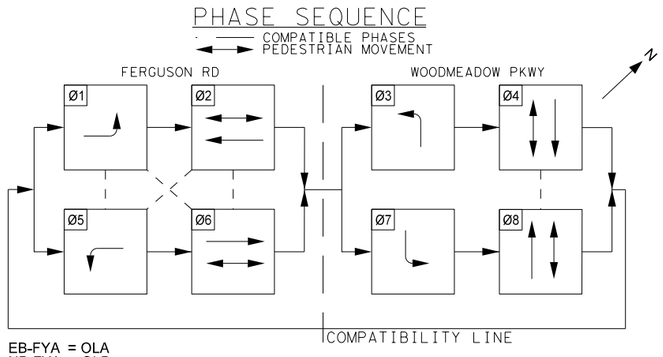
RADAR DETECTION ZONE DETAILS

RADAR PANEL NUMBER	MOUNTING LOCATION	MOUNTING HEIGHT	ZONE LOCATIONS	ZONE	SETBACK DISTANCE	DISTANCE: NEAREST TO FARTHEST LANE
R1	P-1	18'	STOP BAR	NB + NBLT	N/A	20' TO 45'
R2	P-4	18'	STOP BAR	WB + WBLT	N/A	50' TO 105'
R3	P-5	18'	STOP BAR	SB + SBLT	N/A	25' TO 45'
R4	P-7	18'	STOP BAR	EB + EBLT	N/A	50' TO 105'
R5	P-4 MAST ARM	19'	SET BACK	EB	400'	-
R6	P-7 MAST ARM	19'	SET BACK	NB	400'	-

APS MESSAGE CHART

POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-2	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS FERGUSON ROAD AT WOODMEADOW PARKWAY
		EXTENDED BUTTON PUSH	WAIT TO CROSS FERGUSON ROAD AT WOODMEADOW PARKWAY
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	FERGUSON ROAD, WALK SIGN IS ON TO CROSS FERGUSON ROAD
P-2	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS WOODMEADOW PARKWAY AT FERGUSON ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS WOODMEADOW PARKWAY AT FERGUSON ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	WOODMEADOW PARKWAY, WALK SIGN IS ON TO CROSS WOODMEADOW PARKWAY
P-3	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS WOODMEADOW PARKWAY AT FERGUSON ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS WOODMEADOW PARKWAY AT FERGUSON ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	WOODMEADOW PARKWAY, WALK SIGN IS ON TO CROSS WOODMEADOW PARKWAY
P-3	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS FERGUSON ROAD AT WOODMEADOW PARKWAY
		EXTENDED BUTTON PUSH	WAIT TO CROSS FERGUSON ROAD AT WOODMEADOW PARKWAY
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	FERGUSON ROAD, WALK SIGN IS ON TO CROSS FERGUSON ROAD
P-6	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS WOODMEADOW PARKWAY AT FERGUSON ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS WOODMEADOW PARKWAY AT FERGUSON ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	WOODMEADOW PARKWAY, WALK SIGN IS ON TO CROSS WOODMEADOW PARKWAY
P-5	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS FERGUSON ROAD AT WOODMEADOW PARKWAY
		EXTENDED BUTTON PUSH	WAIT TO CROSS FERGUSON ROAD AT WOODMEADOW PARKWAY
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	FERGUSON ROAD, WALK SIGN IS ON TO CROSS FERGUSON ROAD
P-7	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS WOODMEADOW PARKWAY AT FERGUSON ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS WOODMEADOW PARKWAY AT FERGUSON ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	WOODMEADOW PARKWAY, WALK SIGN IS ON TO CROSS WOODMEADOW PARKWAY
P-7	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS FERGUSON ROAD AT WOODMEADOW PARKWAY
		EXTENDED BUTTON PUSH	WAIT TO CROSS FERGUSON ROAD AT WOODMEADOW PARKWAY
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	FERGUSON ROAD, WALK SIGN IS ON TO CROSS FERGUSON ROAD

PHASE SEQUENCE



EB-FYA = OLA
NB-FYA = OLB
WB-FYA = OLC
SB-FYA = OLD

02/24/2023

STATE OF TEXAS
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DEPARTMENT OF TRANSPORTATION

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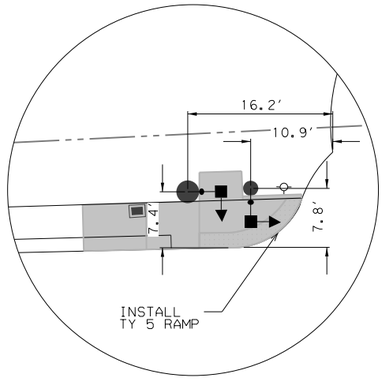
TRAFFIC SAFETY IMPROVEMENTS

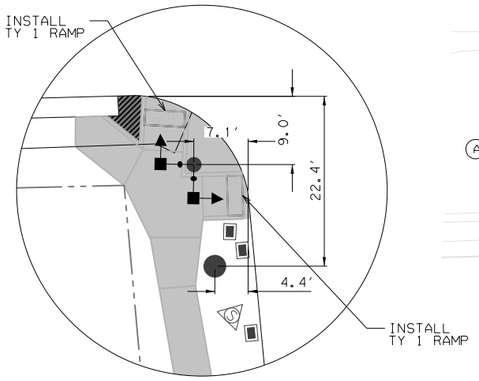
PROPOSED QUANTITIES

FERGUSON RD AT
WOODMEADOW PKWY
SHEET 3 OF 3

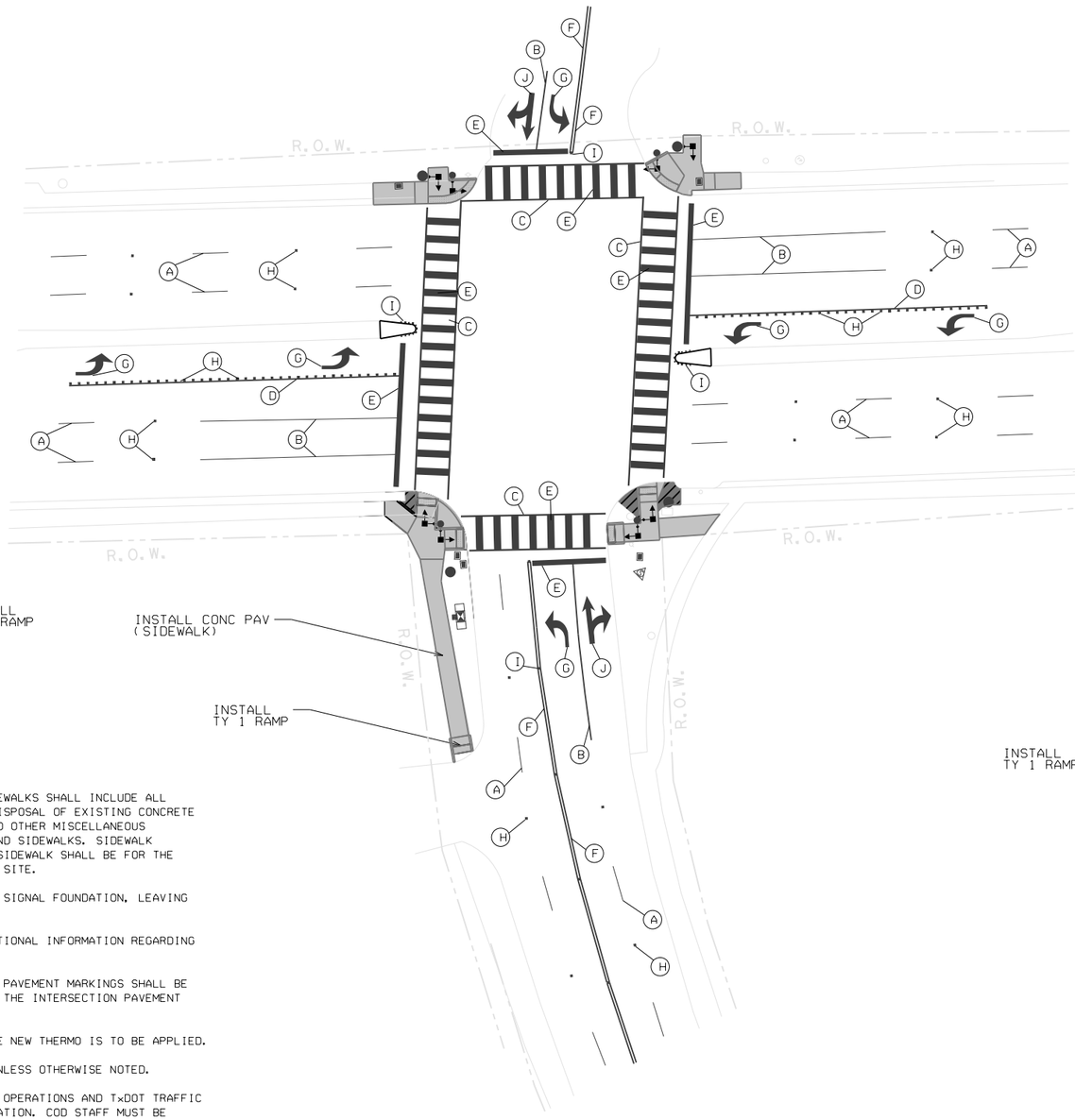
DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS ACC	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	37
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC	

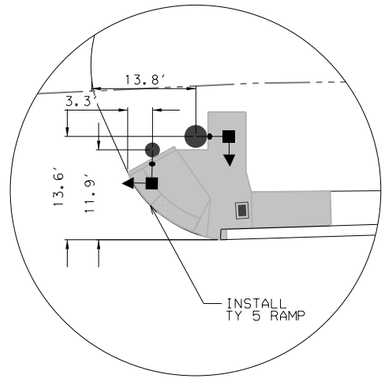


DETAIL AT NW CORNER

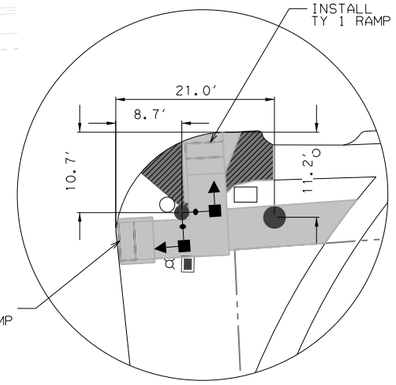


DETAIL AT SW CORNER





DETAIL AT NE CORNER



DETAIL AT SE CORNER

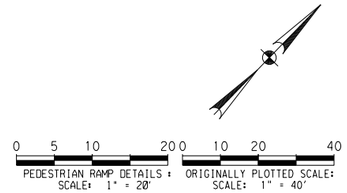
NOTES:

1. INSTALLATION AND PAYMENT FOR PROPOSED RAMPS AND SIDEWALKS SHALL INCLUDE ALL INCIDENTAL WORK, INCLUDING EXCAVATION, REMOVAL AND DISPOSAL OF EXISTING CONCRETE CURB AND SIDEWALK, PROPOSED CURB ALONG SIDEWALKS, AND OTHER MISCELLANEOUS MATERIAL NECESSARY TO CONSTRUCT THE PROPOSED RAMPS AND SIDEWALKS. SIDEWALK QUANTITIES PROVIDED ARE ESTIMATES ONLY. PAYMENT FOR SIDEWALK SHALL BE FOR THE QUANTITY APPROVED BY THE ENGINEER AND CONSTRUCTED ON SITE.
2. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.
3. REFER TO THE CITY OF DALLAS 251-D STANDARDS FOR ADDITIONAL INFORMATION REGARDING TYPICAL PAVEMENT MARKING PLACEMENT.
4. LANE WIDTHS SHALL MATCH EXISTING LANES. ALL PROPOSED PAVEMENT MARKINGS SHALL BE TIED TO EXISTING MARKINGS WHERE APPLICABLE TO REFRESH THE INTERSECTION PAVEMENT MARKINGS.
5. CONTRACTOR SHALL APPLY PAVEMENT SEALER IN AREAS WHERE NEW THERMO IS TO BE APPLIED.
6. ALL EXISTING SIGNS AND PAVEMENT MARKINGS TO REMAIN UNLESS OTHERWISE NOTED.
7. STRIPING CONTRACTOR SHALL CONTACT COD TRANSPORTATION OPERATIONS AND TxDOT TRAFFIC SIGNAL OFFICE AT LEAST 24 HOURS IN ADVANCE OF MOBILIZATION. COD STAFF MUST BE PRESENT TO CONFIRM LAYOUT PRIOR TO THE APPLICATION OF ANY PAVEMENT MARKINGS.
8. CONTRACTOR SHALL ENSURE THAT ALL PED RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE EQUIPMENT, RAMP OR GUTTER AREA.
9. INSTALL PAVEMENT MARKINGS 200' IN EACH DIRECTION FROM STOP BAR.
10. SEE SUMMARY OF PEDESTRIAN RAMPS AND PAVEMENT MARKING TABLE ON PROPOSED QUANTITY SHEET.

LEGEND

PEDESTRIAN RAMPS

- INSTALL OR REPLACE CONCRETE
- REMOVE CONCRETE



LEGEND

PAVEMENT MARKING

- (A) RE PM W/ RET REQ TY I (W) 4" (BRK) (100MIL)
- (B) RE PM W/ RET REQ TY I (W) 4" (SLD) (100MIL)
- (C) RE PM W/ RET REQ TY I (W) 6" (SLD) (100MIL)
- (D) RE PM W/ RET REQ TY I (W) 8" (SLD) (100MIL)
- (E) RE PM W/ RET REQ TY I (W) 24" (SLD) (100MIL)
- (F) RE PM W/ RET REQ TY I (Y) 4" (SLD) (100MIL)
- (G) PREFAB PAV MRK TY I (W) ARROW
- (H) REFL PAV MRK TY II A-A
- (I) REFL PAV MRK TY II C-R
- (J) PREFAB PAV MRK TY I (W) DBL ARROW

02/24/2023

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED CONDITIONS - PAVEMENT MARKINGS AND PEDESTRIAN RAMPS

FERGUSON RD AT WOODMEADOW PKWY

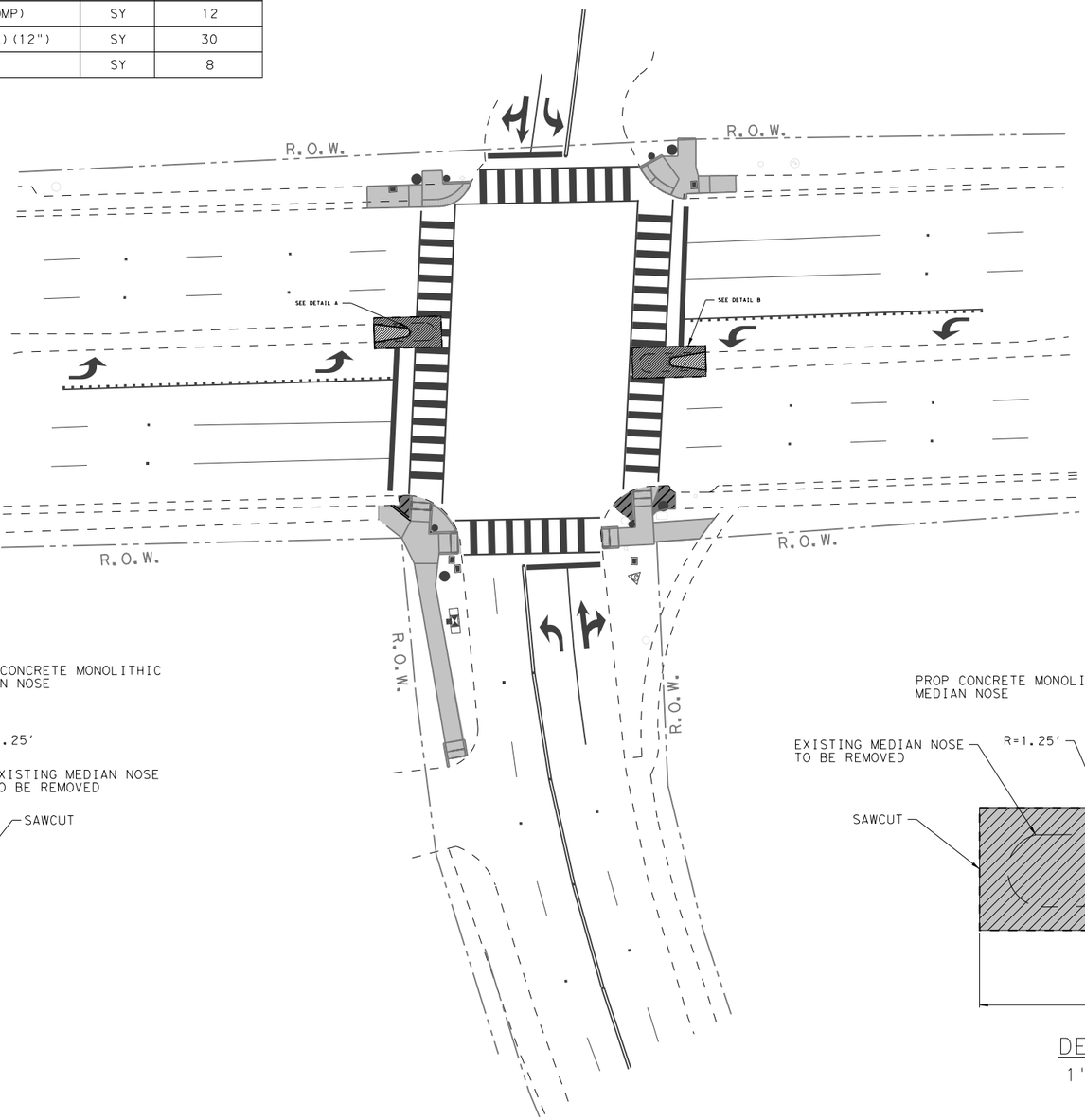
DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	38
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC.	

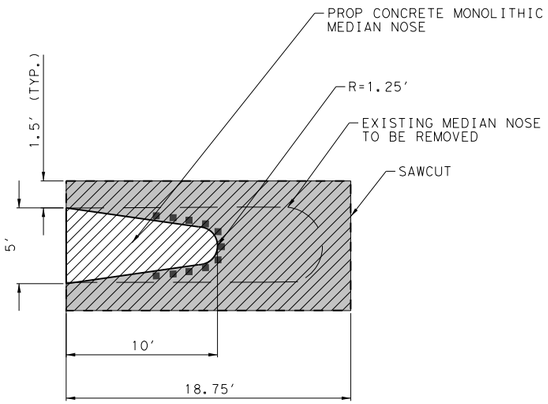
NOTES:

1. REFER TO EXISTING CONDITIONS AND REMOVALS SHEET FOR ADDITIONAL INFORMATION.

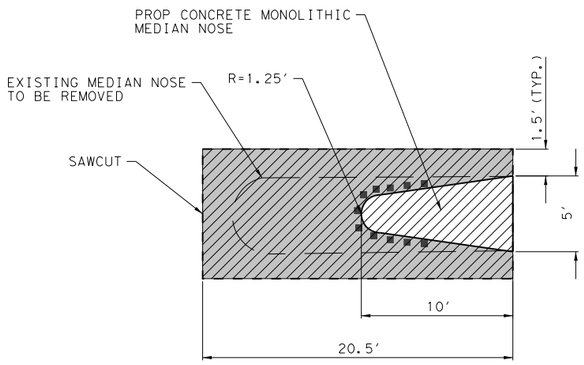
2. REFER TO PROPOSED CONDITION SHEET FOR ADDITIONAL INFORMATION.

MEDIAN QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6001	REMOVING CONC (PAV)	SY	38
251	6034	REWORK BS MTL (TY C)(8")(ORD COMP)	SY	12
360	6044	CONC PVMT (CONC REINF)(FAST TRK)(12")	SY	30
536	6006	CONC MEDIAN(MONO NOSE)	SY	8

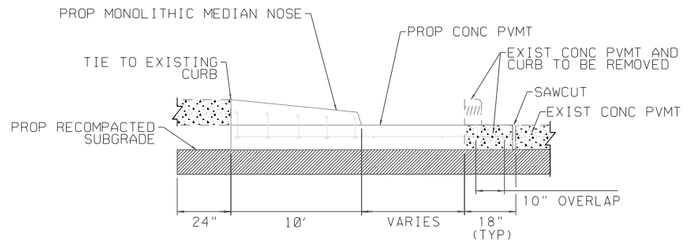




DETAIL A
1" = 160'



DETAIL B
1" = 160'



TYPICAL CROSS SECTION FOR MONOLITHIC MEDIAN NOSE IMPROVEMENT
(NOT TO SCALE)

LEGEND

REMOVAL OF EXISTING CONCRETE PAVEMENT, CURB, AND RIPRAP.

CONCRETE PAVEMENT

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED MEDIAN DETAILS

FERGUSON RD AT WOODMEADOW PKWY

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS ACC	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	39
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

PEDESTRIAN RAMP / SIDEWALK				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6015	REMOVING CONC (SIDEWALKS)	SY	50
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	105
529	6008	CONC CURB & GUTTER (TY II)	LF	46.5
531	6003	CONC SIDEWALKS (6")	SY	140
531	6004	CURB RAMPS (TY 1)	EA	5
531	6008	CURB RAMPS (TY 5)	EA	2

		PAVEMENT MARKING SUMMARY		
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	180
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	585
666	6224	PAVEMENT SEALER (4")	LF	1140
666	6225	PAVEMENT SEALER (6")	LF	500
666	6226	PAVEMENT SEALER (8")	LF	180
666	6230	PAVEMENT SEALER (24")	LF	585
666	6231	PAVEMENT SEALER (ARROW)	EA	6
666	6234	PAVEMENT SEALER (DBL ARROW)	EA	2
666	6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	400
666	6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	LF	295
666	6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	500
666	6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	445
668	6077	PREFAB PAV MRK TY C (W)(ARROW)	EA	6
668	6078	PREFAB PAV MRK TY C (W)(DBL ARROW)	EA	2
672	6009	REFL PAV MRKR TY II-A-A	EA	35
672	6010	REFL PAV MRKR TY II-C-R	EA	110
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1125
677	6002	ELIM EXT PAV MRK & MRKS (6")	LF	645
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	0
677	6006	ELIM EXT PAV MRK & MRKS (18")	LF	115
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	0
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	1
678	6001	PAV SURF PREP FOR MRK (4")	LF	1140
678	6002	PAV SURF PREP FOR MRK (6")	LF	500
678	6004	PAV SURF PREP FOR MRK (8")	LF	180
678	6008	PAV SURF PREP FOR MRK (24")	LF	585
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	6
678	6010	PAV SURF PREP FOR MRK (DBL ARROW)	EA	5
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	145

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
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PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES - PAVING

FERGUSON RD AT WOODMEADOW PKWY

DESIGN ACC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS ACC	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	40
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

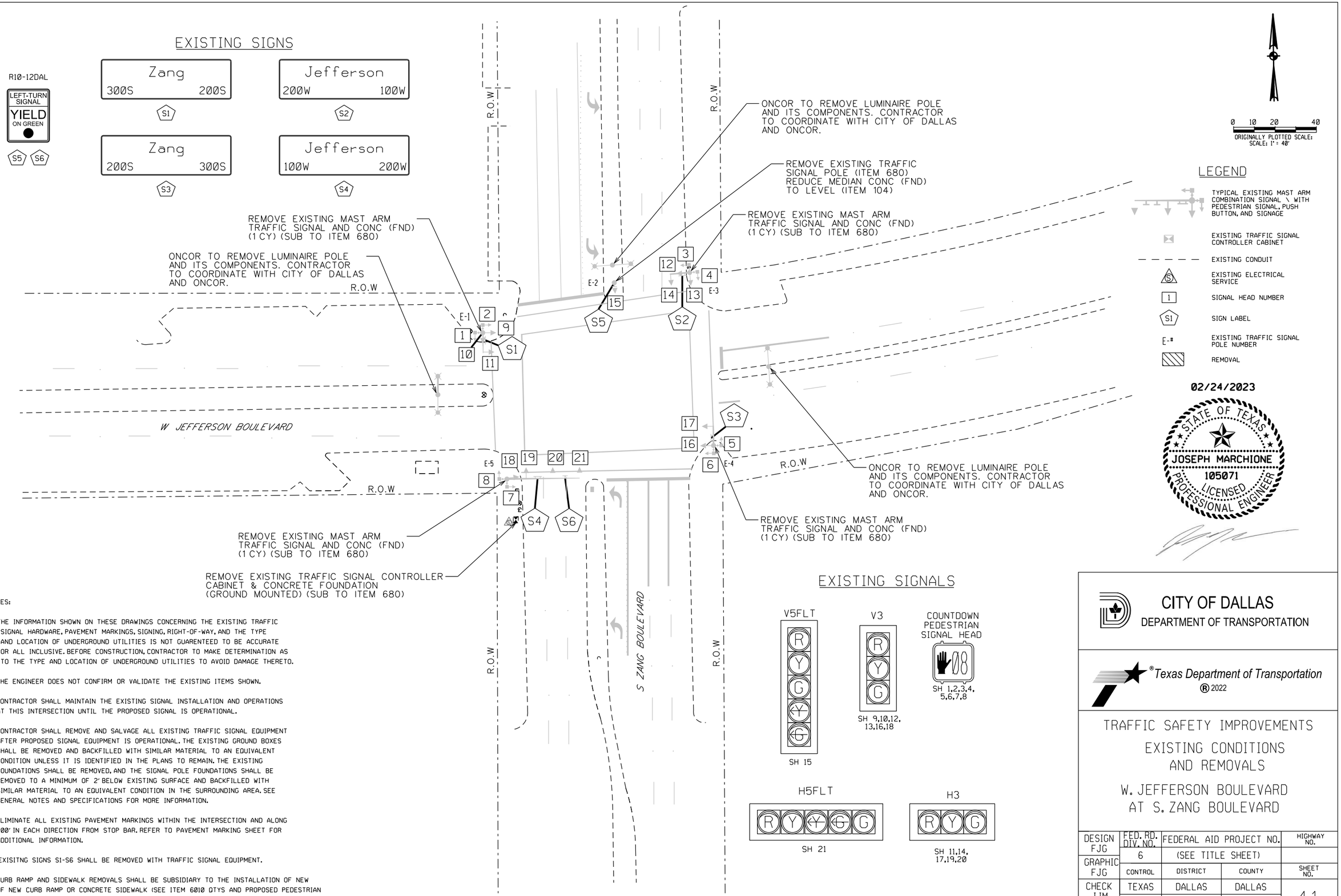
EXISTING SIGNS

R10-12DAL

LEFT-TURN SIGNAL
YIELD
ON GREEN

S5 S6

Zang 300S 200S (S1)	Jefferson 200W 100W (S2)
Zang 200S 300S (S3)	Jefferson 100W 200W (S4)



0 10 20 40
ORIGINALLY PLOTTED SCALE:
SCALE: 1" = 40'

LEGEND

- TYPICAL EXISTING MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, AND SIGNAGE
- EXISTING TRAFFIC SIGNAL CONTROLLER CABINET
- EXISTING CONDUIT
- (S) EXISTING ELECTRICAL SERVICE
- 1 SIGNAL HEAD NUMBER
- S1 SIGN LABEL
- E-# EXISTING TRAFFIC SIGNAL POLE NUMBER
- REMOVAL

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED
PROFESSIONAL ENGINEER

NOTES:

1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE EXISTING TRAFFIC SIGNAL HARDWARE, PAVEMENT MARKINGS, SIGNING, RIGHT-OF-WAY, AND THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARENTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.
2. THE ENGINEER DOES NOT CONFIRM OR VALIDATE THE EXISTING ITEMS SHOWN.
3. CONTRACTOR SHALL MAINTAIN THE EXISTING SIGNAL INSTALLATION AND OPERATIONS AT THIS INTERSECTION UNTIL THE PROPOSED SIGNAL IS OPERATIONAL.
4. CONTRACTOR SHALL REMOVE AND SALVAGE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT AFTER PROPOSED SIGNAL EQUIPMENT IS OPERATIONAL. THE EXISTING GROUND BOXES SHALL BE REMOVED AND BACKFILLED WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION UNLESS IT IS IDENTIFIED IN THE PLANS TO REMAIN. THE EXISTING FOUNDATIONS SHALL BE REMOVED, AND THE SIGNAL POLE FOUNDATIONS SHALL BE REMOVED TO A MINIMUM OF 2' BELOW EXISTING SURFACE AND BACKFILLED WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION IN THE SURROUNDING AREA. SEE GENERAL NOTES AND SPECIFICATIONS FOR MORE INFORMATION.
5. ELIMINATE ALL EXISTING PAVEMENT MARKINGS WITHIN THE INTERSECTION AND ALONG 200' IN EACH DIRECTION FROM STOP BAR. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.
6. EXISITNG SIGNS S1-S6 SHALL BE REMOVED WITH TRAFFIC SIGNAL EQUIPMENT.
7. CURB RAMP AND SIDEWALK REMOVALS SHALL BE SUBSIDIARY TO THE INSTALLATION OF NEW OF NEW CURB RAMP OR CONCRETE SIDEWALK (SEE ITEM 6010 QTYS AND PROPOSED PEDESTRIAN RAMP AND SIDEWALK LAYOUT).

EXISTING SIGNALS

V5FLT (R Y G Y G) — SH 15

V3 (R Y G) — SH 9,10,12, 13,16,18

COUNTDOWN PEDESTRIAN SIGNAL HEAD (08) — SH 1,2,3,4, 5,6,7,8

H5FLT (R Y Y G G) — SH 21

H3 (R Y G) — SH 11,14, 17,19,20

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

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TRAFFIC SAFETY IMPROVEMENTS
EXISTING CONDITIONS AND REMOVALS
W. JEFFERSON BOULEVARD AT S. ZANG BOULEVARD

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
FJG	6	(SEE TITLE SHEET)		
GRAPHIC FJG	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	41
	CONTROL	SECTION	JOB	
CHECK JJM	TEXAS	DALLAS	DALLAS	

NOTES:

1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.

2. CONTRACTOR TO CONTACT CITY OF DALLAS TRAFFIC MANAGEMENT CENTER AT (214-670-3095) AND TxDOT TRAFFIC SIGNAL OFFICE AT (214-320-6682) 48 HOURS IN ADVANCE TO COORDINATE WORK. CONTRACTOR TO COORDINATE WITH CITY OF DALLAS TO PULL REQUIRED PERMITS, PRIOR TO STARTING WORK.

3. THE LOCATION OF THE PROPOSED SIGNAL POLES, SIGNAL HEADS, RADAR DETECTORS, CONDUIT, GROUND BOXES, AND CONDUCTORS ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMODATE FIELD CONDITIONS.

4. CONTRACTOR SHALL COORDINATE WITH ONCOR CONCERNING TRAFFIC SIGNAL ELECTRICAL SERVICE. CONTACT ONCOR REGARDING POINT OF DELIVERY AND DISTRIBUTION TO ELECTRICAL PEDESTAL SERVICE. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION.

5. THE FOLLOWING ITEMS WILL BE FURNISHED BY THE CITY OF DALLAS AND INSTALLED BY THE CONTRACTOR:
SIGNAL CABINET AND INTERNAL HARDWARE, AND RADAR AND RADAR CABLE. CONTACT MR. ALFRED LEMON AT 214-670-4812 (OFFICE) OR 214-213-6121 (MB) AND MR. FAVIAN GIRALDO (FAVIAN.GIRALDO@DALLAS.GOV) TO SCHEDULE PICK-UP OF MATERIALS. PROVIDE WITH A 6-WEEK NOTICE AND AT LEAST 48-HOUR NOTICE OF INTENT TO PICK-UP MATERIALS FROM THE CITY OF DALLAS.

6. INSTALL BASE MOUNTED CONTROLLER CABINET (ATC CABINET) AND FOUNDATION.

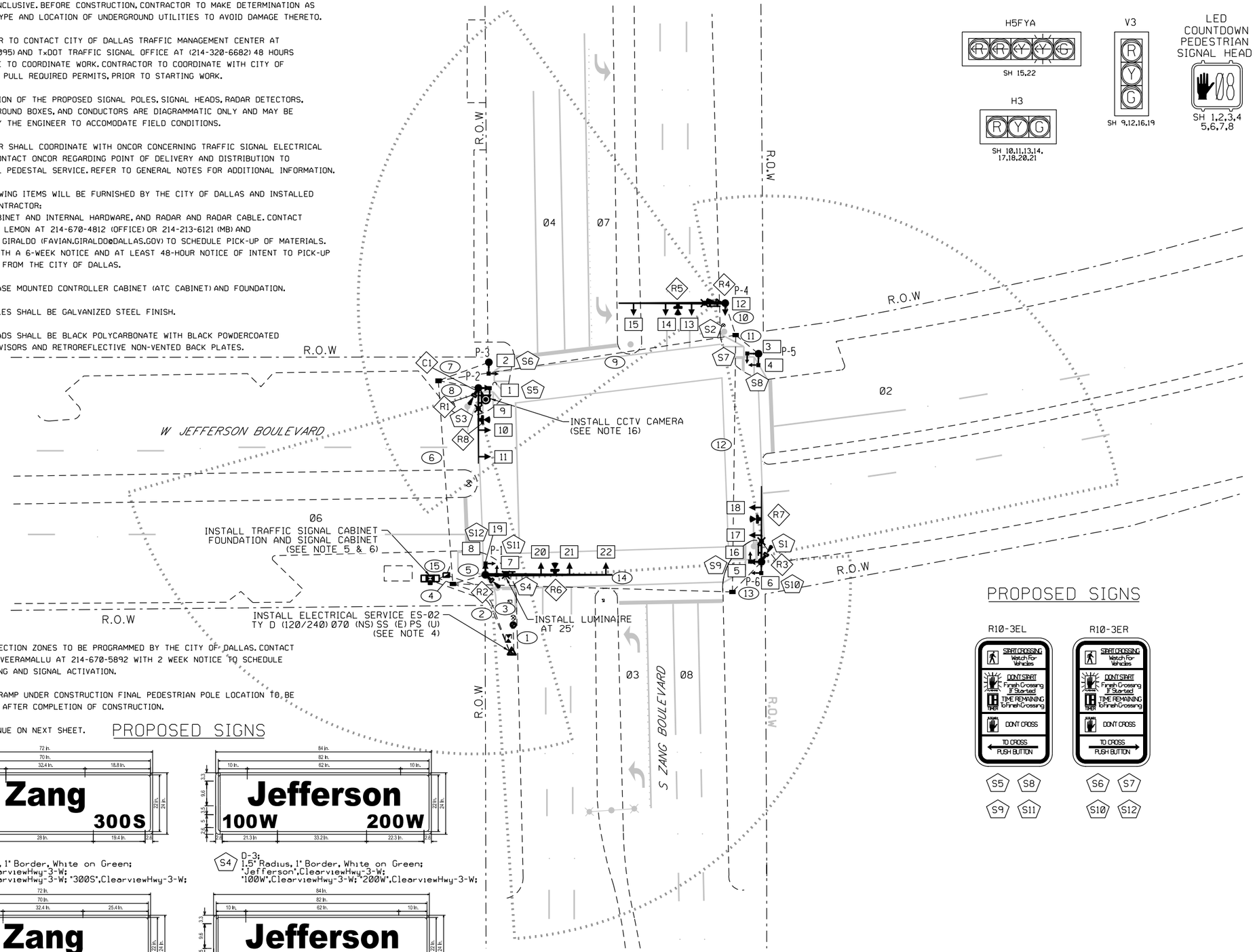
7. SIGNAL POLES SHALL BE GALVANIZED STEEL FINISH.

8. SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BLACK POWDERCOATED ALUMINUM VISORS AND RETROREFLECTIVE NON-VENTED BACK PLATES.

9. RADAR DETECTION ZONES TO BE PROGRAMMED BY THE CITY OF DALLAS. CONTACT SRINIVASA VEERAMALLU AT 214-670-5892 WITH 2 WEEK NOTICE TO SCHEDULE PROGRAMMING AND SIGNAL ACTIVATION.

10. EXISTING RAMP UNDER CONSTRUCTION FINAL PEDESTRIAN POLE LOCATION TO BE CONFIRMED AFTER COMPLETION OF CONSTRUCTION.

NOTES CONTINUE ON NEXT SHEET.



PROPOSED SIGNALS

0 10 20 40
ORIGINALLY PLOTTED SCALE:
SCALE: 1" = 40'

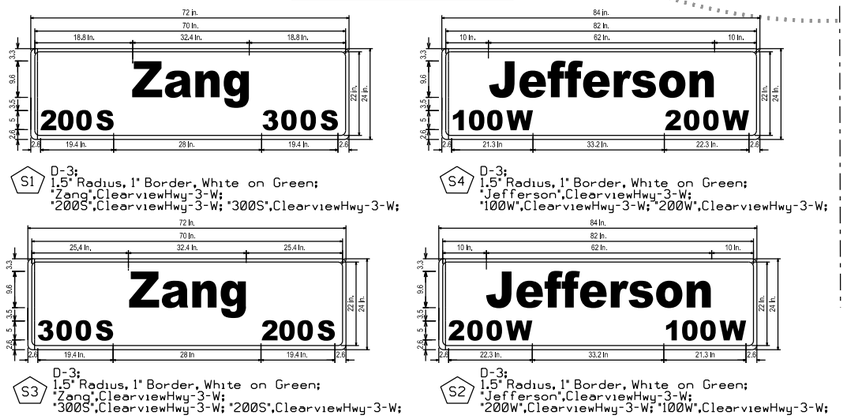
LEGEND

- TYPICAL PROPOSED MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, LED LUMINAIRE AND SIGNAGE
- TRAFFIC SIGNAL CONTROLLER CABINET AND CONCRETE PAD
- EXISTING GROUND BOX
- PROPOSED TYPE 1 GROUND BOX W/ APRON
- PROPOSED TYPE D GROUND BOX W/ APRON
- PROPOSED CONDUIT
- (1) CONDUIT RUN NUMBER
- [1] SIGNAL HEAD NUMBER
- (S1) SIGN LABEL
- (R1) PROPOSED PRESENCE RADAR DETECTOR AND LABEL
- (R1) PROPOSED ADVANCE RADAR DETECTOR AND LABEL
- (C1) PROPOSED CCTV CAMERA
- (S) PROPOSED ELECTRICAL SERVICE
- P-# PROPOSED TRAFFIC SIGNAL POLE NUMBER

02/24/2023

PROPOSED SIGNS

PROPOSED SIGNS



(S1) D-3; 1.5" Radius, 1" Border, White on Green; "Zang",ClearviewHwy-3-W; "200S",ClearviewHwy-3-W; "300S",ClearviewHwy-3-W;

(S4) D-3; 1.5" Radius, 1" Border, White on Green; "Jefferson",ClearviewHwy-3-W; "100W",ClearviewHwy-3-W; "200W",ClearviewHwy-3-W;

(S3) D-3; 1.5" Radius, 1" Border, White on Green; "Zang",ClearviewHwy-3-W; "300S",ClearviewHwy-3-W; "200S",ClearviewHwy-3-W;

(S2) D-3; 1.5" Radius, 1" Border, White on Green; "Jefferson",ClearviewHwy-3-W; "200W",ClearviewHwy-3-W; "100W",ClearviewHwy-3-W;

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

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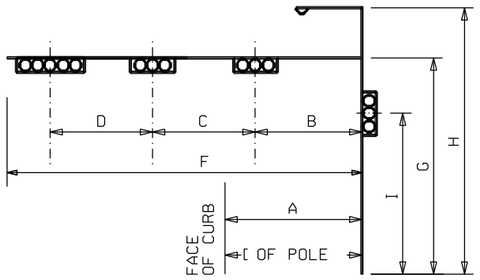
TRAFFIC SAFETY IMPROVEMENTS

PROPOSED CONDITIONS

W. JEFFERSON BOULEVARD AT S. ZANG BOULEVARD

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
FJG	6	(SEE TITLE SHEET)		CS
GRAPHICS FJG	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	42
	CONTROL	SECTION	JOB	
CHECK JJM	TEXAS	DALLAS	DALLAS	



CONDUIT AND CABLE CHART
WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	ITEM 618 CONDUIT												CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS								ITEM 684 TRAFFIC SIGNAL CABLES										ETHERNET CABLE		RADAR COMMUNICATION CABLE		TOTAL LENGTH OF RUN	RUN NO
		2" PVC SCH 80 (RISER)		2" PVC SCH 80 (TRENCHED)		3" PVC SCH 80 (TRENCHED)		3" PVC SCH 80 (BORED)		4" PVC SCH 80 (TRENCHED)		4" PVC SCH 80 (BORED)			NO. 6 XHHW WIRE (POWER)		NO. 6 XHHW WIRE (GROUND)		NO. 8 XHHW WIRE		NO. 12 XHHW WIRE		TY C 2 CNDR NO. 12		TY A 5 CNDR NO. 14		TY A 7 CNDR NO. 14		TY A 10 CNDR NO. 14		TY A 20 CNDR NO. 14							
		Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len		Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len			
1	I	1	10	1	10									I	TO BE INSTALLED BY OTHERS																					10	1
2	I			1	45									I	1	45	1	45																		45	2
3	I			1	40									I	4	160	1	40																		40	3
4	I									1	10			I			1	10					8	80					2	20						10	4
	I									1	10			I			1	10													4	40	1	10	8	80	10	
5	I					1	15							I	1	15	1	15					2	30							1	15			2	30	15	5
	I					1	15							I	SPARE TO POLE																					15	
6	I											1	80	I	2	160	1	80					4	320					2	160	2	160	1	80	4	320	80	6
	I							1	75					I	FUTURE COMMS - TERMINATE TO I.T.S. BOX																					75	
7	I					1	25							I			1	25					1	25					1	25						25	7
8	I					1	20							I	1	20	1	20					1	20							1	20	1	20	2	40	20	8
	I					1	20							I	SPARE TO POLE																					20	
9	I											1	120	I	1	120	1	120					2	240					1	120	1	120			2	240	120	9
10	I					1	15							I	1	15	1	15													1	15			2	30	15	10
	I					1	15							I	SPARE TO POLE																					15	
11	I					1	15							I			1	15					2	30					1	15						15	11
12	I											1	100	I			1	100																		100	12
13	I					1	20							I	1	20	1	20					2	40							1	20			2	40	20	13
	I					1	20							I	SPARE TO POLE																					20	
14	I											1	110	I	1	110	1	110					2	220							1	110			2	220	110	14
	I							1	115					I	FUTURE COMMS - TERMINATE TO I.T.S. BOX																					115	
15	I							1	5					I	FUTURE COMMS - TERMINATE TO I.T.S. BOX																					5	15
SUBTOTAL			10		95		180		195		20		410			665		625		0		0		1005		0		0		340		500		110		1000		
P-1	P													I								80		10		140		70						30		80	VARIES	P-1
P-2	P													I								80		5		115										60	VARIES	P-2
P-3	P													I										5		10											VARIES	P-3
P-4	P													I								80				100		80								70	VARIES	P-4
P-5	P													I										10		20											VARIES	P-5
P-6	P													I								80		10		100										60	VARIES	P-6
SUBTOTAL			0		0		0		0		0		0			0		0		0		320		40		485		150		0		0		30		270		
TOTAL			10		95		180		195		20		410			665		625		0		320		1045		485		150		340		500		140		1270		

CONDUIT STATUS: E=EXISTING; I=INSTALL; A=ABANDON; AC=AERIAL CABLE; R=REMOVE AND SALVAGE; P=INSTALL WIRE INSIDE STEEL POLE

P-* - REFERS TO WIRING WITHIN THE SIGNAL POLE AND MAST ARM

* - THE CONTRACTOR SHALL INSTALL A 2" PVC CONDUIT FROM THE POINT OF DELIVERY TO THE PEDESTAL METER.

NOTES:

11. CONTRACTOR SHALL COORDINATE THE TRAFFIC SIGNAL POLE FOUNDATION WORK WITH THE CURB RAMP AND SIDEWALK INSTALLATION. IF CURB RAMPS ARE CONSTRUCTED FIRST, CONTRACTOR SHALL NOTIFY THE CITY AND ENGINEER SO A FIELD MEETING CAN BE SCHEDULED TO DETERMINE IF FOUNDATIONS NEED TO BE SHIFTED TO BE ADJACENT TO THE LANDING AREAS. IF SIGNAL POLE FOUNDATIONS ARE INSTALLED FIRST, THE CURB RAMPS AND SIDEWALKS SHALL BE MODIFIED SO THAT THE CURB RAMP LANDING AREAS ARE ADJACENT TO THE PUSH BUTTONS AND THE SIDE REACH TO THE PUSH BUTTONS ARE 10" OR LESS.

12. ALL SIGNAL CABLES SHALL BE WIRED IN ACCORDANCE WITH THE CABINET PREPARATION NOTES SUPPLIED BY THE CITY OF DALLAS.

13. PROPOSED APS UNITS SHALL BE PLACED ADJACENT TO A LEVEL LANDING AREA (2% MAX IN ANY DIRECTION). IF THE DISTANCE FROM THE PUSH BUTTON TO THE EDGE OF ACCESSIBLE PATH EXCEEDS 10", THE CONTRACTOR SHALL FURNISH AND INSTALL A PUSH BUTTON EXTENDER TO MAKE THE REACH 10" OR LESS. MEASUREMENT AND PAYMENT SHALL BE CONSIDERED SUBSIDIARY TO THE INSTALLATION OF THE TRAFFIC SIGNAL EQUIPMENT.

14. IF SIGNAL POLES CANNOT BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLANS, THE CONTRACTOR SHALL CONTACT THE CITY AND ENGINEER TO MEET ON SITE TO DISCUSS NEW LOCATIONS.

15. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.

16. CONTRACTOR TO MAINTAIN FULL ACCESS TO A MINIMUM OF TWO PEDESTRIAN CROSSINGS AT ALL TIMES DURING CONSTRUCTION.

17. CONTRACTOR TO PROCURE AND INSTALL A POWER OVER ETHERNET CCTV CAMERA AND ETHERNET CABLE. CCTV CAMERA SHALL BE ONVIF AND NTCIP COMPLIANT. ETHERNET CABLE IS TO BE INSTALLED FROM CAMERA TO TRAFFIC SIGNAL CABINET AND SUBSIDIARY TO ITEM 6010 6002.

18. CONTRACTOR SHALL ADJUST SIGNAL HEAD ALIGNMENT VERTICALLY ON MAST ARMS USING "ASTRO-BRAC" OR APPROVED EQUAL TO ENSURE MAXIMUM SIGNAL HEAD VISIBILITY WHEN HORIZONTAL OVERHEAD UTILITY LINES BLOCK LENS DISPLAY. IN CIRCUMSTANCES WITH SIGNIFICANT VIABILITY CONSTRAINTS, INSTALLNG HEADS VERTICALLY IS POSSIBLE; HOWEVER, IT MUST BE APPROVED BY CITY ENGINEER.

19. FRONT SIDE OF THE TRAFFIC SIGNAL CONTROLLER CABINET SHALL BE INSTALLED TO ORIENT SUCH THAT THE INTERSECTION MAY BE SEEN WHEN VIEWING THE CONTROLLER FRONT PANEL.

20. IF THE PLANS DO NOT INDICATE SPACING OF THE CABINET FOUNDATION FROM THE CURB, PROVIDE FOR A 48" MINIMUM CLEARANCE FROM CURB. LOCATION OF THE CONCRETE APRON FOR THE BATTERY BACKUP SYSTEM MAY NEED TO BE ADJUSTED BASED ON CLEARANCE FROM THE CURB AND AVAILABLE RIGHT-OF-WAY.

SIGNAL HEAD AND POLE PLACEMENT (FT)

POLE NUMBER	STATUS	A (FT)	B (FT)	C (FT)	D (FT)	F (FT)	G (FT)	H (FT)	I (FT)	NO. OF HEADS (EA)*	LUM	DRILLED SHAFT LENGTH (FT)				FDN. TYPE WIND ZONE 80 MPH
												24" DIA SUB TO ITEM 687	30" DIA TYPE A ITEM 416	36" DIA TYPE A ITEM 416	48" DIA TYPE A ITEM 416	
P-1	I	10	22	11	14	48	19	30	13	3	Y			13		36-A
P-2	I	10	16	11	-	28	19	30	13	2	Y		11			30-A
P-3	I	10	PEDESTRIAN SIGNAL POLE			15	-	-	-	-	6					24-A
P-4	I	4	13	10	13	40	19	30	13	3	Y			13		36-A
P-5	I	8	PEDESTRIAN SIGNAL POLE			15	-	-	-	-	6					24-A
P-6	I	8	11	11	-	28	19	30	13	2	Y		11			30-A
									TOTAL:			12	22	26		

SIGNAL POLE STATUS: I=INSTALL; E=EXISTING; REM=REMOVE; F=INSTALL IN FUTURE PHASE

* - DOES NOT INCLUDE VERTICAL SIDEMOUNT SIGNAL HEADS OR PEDESTRIAN SIGNAL HEADS

ELECTRICAL SERVICE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT **SIZE	SERVICE CONDUCTORS NO. / SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE / AMPS	TWO-POLE CONTACTOR AMPS	PANELBD / LOADCENTER AMP RATING (MIN)	BRANCH CIRCUIT ID	BRANCH CKT. BRK. POLE / AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
TY D (120/240) 070 (NS) SS (E) PS (U)	2"	3 / #4	N/A	2P / 70	30	100	T.S.	1P / 50 2P / 20	23 3	<7.1

** - VERIFY SERVICE CONDUIT SIZE WITH UTILITY. SIZE MAY CHANGE DUE TO THE UTILITY METER REQUIREMENTS. ENSURE CONDUIT SIZE MEETS THE NATIONAL ELECTRICAL CODE.

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED
PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

W. JEFFERSON BOULEVARD
AT S. ZANG BOULEVARD
SHEET 1 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
FJG	6	(SEE TITLE SHEET)		CS
GRAPHICS FJG	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	43
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

CABLE TERMINATION CHART

CNDR. NO.	CONDUCTOR COLOR	CABLE 1 20 CNDR. FROM P-1 TO CNTRL.	CABLE 2 20 CNDR. FROM P-2 TO CNTRL.	CABLE 3 10 CNDR. FROM P-3 TO CNTRL.	CABLE 4 20 CNDR. FROM P-4 TO CNTRL.	CABLE 5 10 CNDR. FROM P-5 TO CNTRL.	CABLE 6 20 CNDR. FROM P-6 TO CNTRL.
1	WHITE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
2	BLACK	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON
3	RED	SH 19,20,21 - 04 R	SH 9,10,11 - 02 R	SPARE	SH 12,13,14 - 08 R	SPARE	SH 16,17,18 - •4 R
4	GREEN	SH 19,20,21 - 04 G	SH 9,10,11 - 02 G	SPARE	SH 12,13,14 - 08 G	SPARE	SH 16,17,18 - •4 G
5	ORANGE	SH 19,20,21 - 04 Y	SH 9,10,11 - 02 Y	SPARE	SH 12,13,14 - 08 Y	SPARE	SH 16,17,18 - •4 Y
6	BLUE	SH 7 - 04 W	SPARE	SH 2 - 02 W	SPARE	SH 3 - 08 W	SH 6 - 06 W
7	WHITE/BLACK	SH 7 - 04 DW	SPARE	SH 2 - 02 DW	SPARE	SH 3 - 08 DW	SH 6 - 06 DW
8	RED/BLACK	SH 22 - OLD R(ARROW)	SPARE	SPARE	SH 15 - OLB R(ARROW)	SH 4 - 02 DW	SPARE
9	GREEN/BLACK	SH 22 - OLD FY(ARROW)	SPARE	SPARE	SH 15 - OLB FY(ARROW)	SH 4 - 02 W	SPARE
10	ORANGE/BLACK	SH 22 - OLD Y(ARROW)	SPARE	SPARE	SH 15 - OLB Y(ARROW)	SPARE	SPARE
11	BLUE/BLACK	SH 8 - 06 W	SH 1 - 04 W		SPARE		SH 5 - 08 W
12	BLACK/WHITE	SH 8 - 06 DW	SH 1 - 04 DW		SPARE		SH 5 - 08 DW
13	RED/WHITE	SPARE	SPARE		SPARE		SPARE
14	GREEN/WHITE	SH 22 - 07 G(ARROW)	SPARE		SH 15 - 03 G(ARROW)		SPARE
15	BLUE/WHITE	SPARE	SPARE		SPARE		SPARE
16	BLACK/RED	SPARE	SPARE		SPARE		SPARE
17	WHITE/RED	SPARE	SPARE		SPARE		SPARE
18	ORANGE/RED	SPARE	SPARE		SPARE		SPARE
19	BLUE/RED	SPARE	SPARE		SPARE		SPARE
20	RED/GREEN	SPARE	SPARE		SPARE		SPARE

•NOTE: HOME RUN 2 CONDR. TO ALL POLES WITH PED HEADS FOR PED CALL

SIGNS SUMMARY

SIGN •	SIGN TYPE	SIGN LEGEND	STATUS	SUPPORT	SIGN DIMENSION (in x in)
S1	STREET NAME	ZANG	I	P-6	24"x72"
S2	STREET NAME	JEFFERSON	I	P-4	24"x84"
S3	STREET NAME	ZANG	I	P-2	24"x72"
S4	STREET NAME	JEFFERSON	I	P-1	24"x84"
S5	R10-3EL	APS UNIT	I	P-2	9"x15"
S6	R10-3ER	APS UNIT	I	P-3	9"x15"
S7	R10-3ER	APS UNIT	I	P-5	9"x15"
S8	R10-3EL	APS UNIT	I	P-5	9"x15"
S9	R10-3EL	APS UNIT	I	P-6	9"x15"
S10	R10-3ER	APS UNIT	I	P-6	9"x15"
S11	R10-3EL	APS UNIT	I	P-1	9"x15"
S12	R10-3ER	APS UNIT	I	P-1	9"x15"

STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=EXISTING TO BE RELOCATED

GROUND BOX SUMMARY

ITEM NO.	DESCRIPTION	UNIT	QTY.
0624	GROUND BOX TY D (162922) W/APRON	EA	4
6186	GROUND BOX TY 1 (243624) W/APRON	EA	1

02/24/2023

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

W. JEFFERSON BOULEVARD
AT S. ZANG BOULEVARD
SHEET 2 OF 3

DESIGN FJG	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS FJG	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	44
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC	

SIGNAL HEADS (ITEM 682)

SIGNAL HEAD NUMBER	12" LED SIGNAL INDICATION										PED SIG SEC (LED) (COUNTDOWN)
	SIGNAL HEAD TYPE	STATUS	BACK PLATE		LED SIGNAL LAMPS						
			3 SEC	5 SEC	<-G-	G	<-Y-	Y	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA
1	PED	I									1
2	PED	I									1
3	PED	I									1
4	PED	I									1
5	PED	I									1
6	PED	I									1
7	PED	I									1
8	PED	I									1
9	V3	I	1			1		1		1	
10	H3	I	1			1		1		1	
11	H3	I	1			1		1		1	
12	V3	I	1			1		1		1	
13	H3	I	1			1		1		1	
14	H3	I	1			1		1		1	
15	H5FLT	I		1	1		2		2		
16	V3	I	1			1		1		1	
17	H3	I	1			1		1		1	
18	H3	I	1			1		1		1	
19	V3	I	1			1		1		1	
20	H3	I	1			1		1		1	
21	H3	I	1			1		1		1	
22	H5FLT	I		1	1		2		2		
TOTAL (NEW)			12	2	2	12	4	12	4	12	8

STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=RELOCATE

RADAR DETECTION ZONE DETAILS

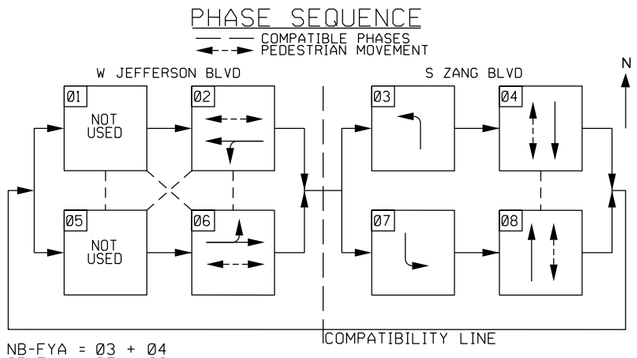
RADAR PANEL NUMBER	MOUNTING LOCATION	MOUNTING HEIGHT	ZONE LOCATIONS	ZONE(S)	SETBACK DISTANCE	DISTANCE: NEAREST TO FARTHEST LANE
R1	MAST ARM P-2	18'	STOP BAR	EB	N/A	55' TO 65'
R2	MAST ARM P-1	18'	STOP BAR	NB + NBLT	N/A	75' TO 115'
R3	MAST ARM P-6	18'	STOP BAR	WB	N/A	60' TO 85'
R4	MAST ARM P-4	18'	STOP BAR	SB + SBLT	N/A	45' TO 65'
R5	MAST ARM P-4	19'	SETBACK	NB	400'	-
R6	MAST ARM P-1	19'	SETBACK	SB	400'	-
R7	MAST ARM P-6	19'	SETBACK	EB	400'	-
R8	MAST ARM P-2	19'	SETBACK	WB	400'	-

02/24/2023

APS MESSAGE CHART

POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-1	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS ZANG BOULEVARD AT JEFFERSON BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS ZANG BOULEVARD AT JEFFERSON BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ZANG BOULEVARD, WALK SIGN IS ON TO CROSS ZANG BOULEVARD
P-1	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS JEFFERSON BOULEVARD AT ZANG BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS JEFFERSON BOULEVARD AT ZANG BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	JEFFERSON BOULEVARD, WALK SIGN IS ON TO CROSS JEFFERSON BOULEVARD
P-2	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS JEFFERSON BOULEVARD AT ZANG BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS JEFFERSON BOULEVARD AT ZANG BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	JEFFERSON BOULEVARD, WALK SIGN IS ON TO CROSS JEFFERSON BOULEVARD
P-3	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS ZANG BOULEVARD AT JEFFERSON BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS ZANG BOULEVARD AT JEFFERSON BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ZANG BOULEVARD, WALK SIGN IS ON TO CROSS ZANG BOULEVARD
P-5	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS ZANG BOULEVARD AT JEFFERSON BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS ZANG BOULEVARD AT JEFFERSON BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ZANG BOULEVARD, WALK SIGN IS ON TO CROSS ZANG BOULEVARD
P-5	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS JEFFERSON BOULEVARD AT ZANG BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS JEFFERSON BOULEVARD AT ZANG BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	JEFFERSON BOULEVARD, WALK SIGN IS ON TO CROSS JEFFERSON BOULEVARD
P-6	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS JEFFERSON BOULEVARD AT ZANG BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS JEFFERSON BOULEVARD AT ZANG BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	JEFFERSON BOULEVARD, WALK SIGN IS ON TO CROSS JEFFERSON BOULEVARD
P-6	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS ZANG BOULEVARD AT JEFFERSON BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS ZANG BOULEVARD AT JEFFERSON BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ZANG BOULEVARD, WALK SIGN IS ON TO CROSS ZANG BOULEVARD

PHASE SEQUENCE



NB-FYA = Ø3 + Ø4
SB-FYA = Ø7 + Ø8

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

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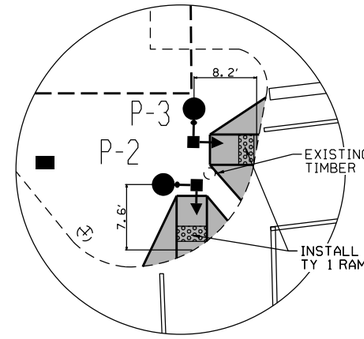
TRAFFIC SAFETY IMPROVEMENTS

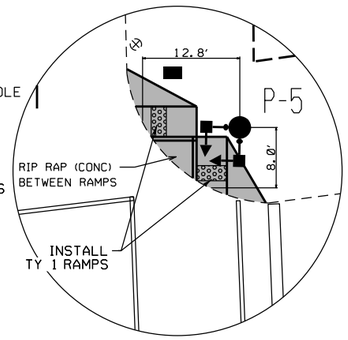
PROPOSED QUANTITIES

W. JEFFERSON BOULEVARD
AT S. ZANG BOULEVARD
SHEET 3 OF 3

DESIGN FJG	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS FJG	6	(SEE TITLE SHEET)		CS
CHECK JJM	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	45
	CONTROL	SECTION	JOB	
	0918	47	342, ETC	



DETAIL AT NW CORNER



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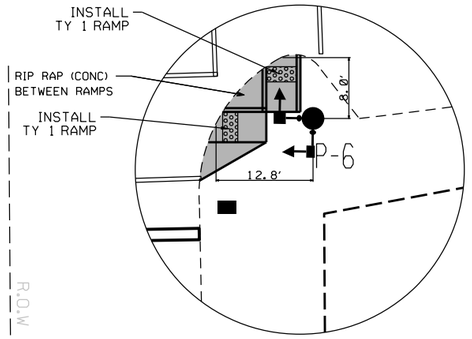
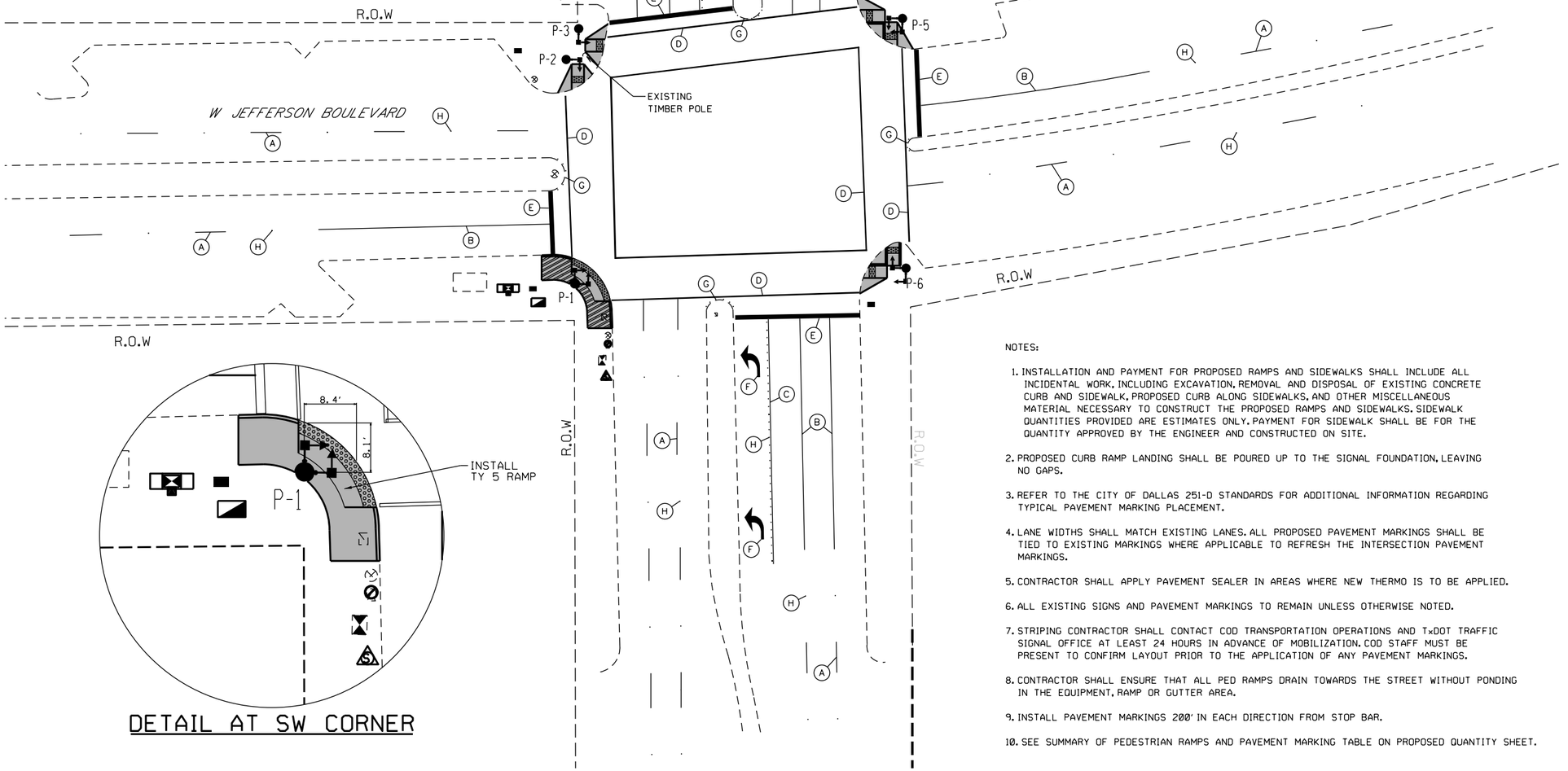


DETAIL AT SE CORNER



DETAIL AT SW CORNER

NOTES:

1. INSTALLATION AND PAYMENT FOR PROPOSED RAMPS AND SIDEWALKS SHALL INCLUDE ALL INCIDENTAL WORK, INCLUDING EXCAVATION, REMOVAL AND DISPOSAL OF EXISTING CONCRETE CURB AND SIDEWALK, PROPOSED CURB ALONG SIDEWALKS, AND OTHER MISCELLANEOUS MATERIAL NECESSARY TO CONSTRUCT THE PROPOSED RAMPS AND SIDEWALKS. SIDEWALK QUANTITIES PROVIDED ARE ESTIMATES ONLY. PAYMENT FOR SIDEWALK SHALL BE FOR THE QUANTITY APPROVED BY THE ENGINEER AND CONSTRUCTED ON SITE.
2. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.
3. REFER TO THE CITY OF DALLAS 251-D STANDARDS FOR ADDITIONAL INFORMATION REGARDING TYPICAL PAVEMENT MARKING PLACEMENT.
4. LANE WIDTHS SHALL MATCH EXISTING LANES. ALL PROPOSED PAVEMENT MARKINGS SHALL BE TIED TO EXISTING MARKINGS WHERE APPLICABLE TO REFRESH THE INTERSECTION PAVEMENT MARKINGS.
5. CONTRACTOR SHALL APPLY PAVEMENT SEALER IN AREAS WHERE NEW THERMO IS TO BE APPLIED.
6. ALL EXISTING SIGNS AND PAVEMENT MARKINGS TO REMAIN UNLESS OTHERWISE NOTED.
7. STRIPING CONTRACTOR SHALL CONTACT COD TRANSPORTATION OPERATIONS AND TxDOT TRAFFIC SIGNAL OFFICE AT LEAST 24 HOURS IN ADVANCE OF MOBILIZATION. COD STAFF MUST BE PRESENT TO CONFIRM LAYOUT PRIOR TO THE APPLICATION OF ANY PAVEMENT MARKINGS.
8. CONTRACTOR SHALL ENSURE THAT ALL PED RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE EQUIPMENT, RAMP OR GUTTER AREA.
9. INSTALL PAVEMENT MARKINGS 200' IN EACH DIRECTION FROM STOP BAR.
10. SEE SUMMARY OF PEDESTRIAN RAMPS AND PAVEMENT MARKING TABLE ON PROPOSED QUANTITY SHEET.

LEGEND

PEDESTRIAN RAMPS

INSTALL OR REPLACE CONCRETE

0 5 10 20
PEDESTRIAN RAMP DETAILS : SCALE: 1" = 20'

0 10 20 40
ORIGINALLY PLOTTED SCALE: SCALE: 1" = 40'

LEGEND

PAVEMENT MARKING

(A) RE PM W/ RET REQ TY I (W) 4" (BRK) (100MIL)
(B) RE PM W/ RET REQ TY I (W) 4" (SLD) (100MIL)
(C) RE PM W/ RET REQ TY I (W) 8" (SLD) (100MIL)
(D) RE PM W/ RET REQ TY I (W) 12" (SLD) (100MIL)
(E) RE PM W/ RET REQ TY I (W) 24" (SLD) (100MIL)
(F) PREFAB PAV MRK TY I (W) ARROW
(G) REFL PAV MRK TY II A-A
(H) REFL PAV MRK TY II C-R

02/24/2023

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED PAVEMENT MARKINGS AND PEDESTRIAN RAMPS

W. JEFFERSON BOULEVARD AT S. ZANG BOULEVARD

DESIGN FJG	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS FJG	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	46
	CONTROL	SECTION	JOB	
CHECK JJM	TEXAS	DALLAS	DALLAS	

PEDESTRIAN RAMP / SIDEWALK				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
432	6003	RIPRAP (CONC)(6 IN)	CY	1.5
529	6008	CONC CURB & GUTTER (TY II)	LF	121
531	6003	CONC SIDEWALKS (6")	SY	65
531	6004	CURB RAMPS (TY 1)	EA	6
531	6008	CURB RAMPS (TY 5)	EA	1

REMOVAL SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6013	REMOVING CONC (FOUNDATIONS)	SY	1
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	121
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	770
677	6002	ELIM EXT PAV MRK & MRKS (6")	LF	770
677	6006	ELIM EXT PAV MRK & MRKS (18")	LF	130
677	6008	ELIM EXT PAV MRK & MRKS (ARROWS)	EA	4
680	6004	REMOVING TRAFFIC SIGNALS	EA	1

PAVEMENT MARKING SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	200
666	6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	570
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	130
666	6224	PAVEMENT SEALER (4")	LF	770
666	6226	PAVEMENT SEALER (8")	LF	200
666	6228	PAVEMENT SEALER (12")	LF	570
666	6230	PAVEMENT SEALER (24")	LF	130
666	6231	PAVEMENT SEALER (ARROW)	EA	4
666	6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	320
666	6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	LF	450
668	6077	PREFAB PAV MRK TY C (W)(ARROW)	EA	4
672	6009	RELF PAV MRKR TY II-A-A	EA	25
672	6010	RELF PAV MRKR TY II-C-R	EA	85
678	6001	PAV SURF PREP FOR MRK (4")	LF	770
678	6004	PAV SURF PREP FOR MRK (8")	LF	200
678	6006	PAV SURF PREP FOR MRK (12")	LF	570
678	6008	PAV SURF PREP FOR MRK (24")	LF	130
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	110

02/24/2023

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES - PAVING

W. JEFFERSON BOULEVARD
AT S. ZANG BOULEVARD

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
FJG	6	(SEE TITLE SHEET)		CS
GRAPHICS FJG	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	47
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC.	

EXISTING SIGNS

R10-3B

S2 S3 S6 S7 S9 S10 S13 S14

S1

S8

S4

S11

R3-8

S5 S12

EXISTING SIGNALS

H5FYA

SH 1, 7, 11, 17

V3

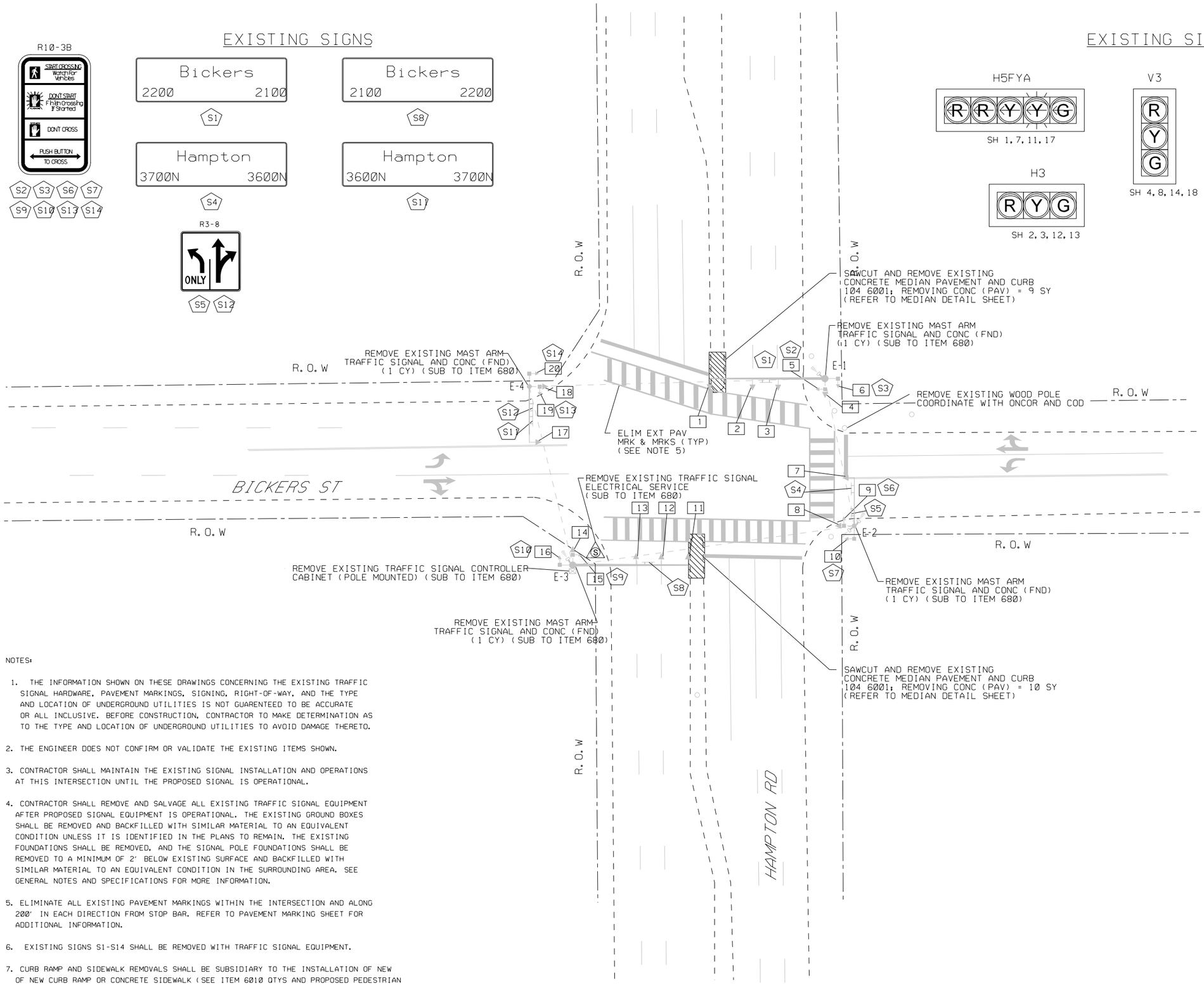
SH 4, 8, 14, 18

COUNTDOWN PEDESTRIAN SIGNAL HEAD

SH 5, 6, 9, 10
15, 16, 19, 20

H3

SH 2, 3, 12, 13



0 10 20 40
ORIGINALLY PLOTTED SCALE:
SCALE: 1" = 40'

LEGEND

- TYPICAL EXISTING MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, AND SIGNAGE
- EXISTING TRAFFIC SIGNAL CONTROLLER CABINET
- EXISTING CONDUIT
- (S) EXISTING ELECTRICAL SERVICE
- 1 SIGNAL HEAD NUMBER
- S1 SIGN LABEL
- E-# EXISTING TRAFFIC SIGNAL POLE NUMBER
- PRESENCE RADAR
- REMOVAL

NOTES:

1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE EXISTING TRAFFIC SIGNAL HARDWARE, PAVEMENT MARKINGS, SIGNING, RIGHT-OF-WAY, AND THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARENTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.

2. THE ENGINEER DOES NOT CONFIRM OR VALIDATE THE EXISTING ITEMS SHOWN.

3. CONTRACTOR SHALL MAINTAIN THE EXISTING SIGNAL INSTALLATION AND OPERATIONS AT THIS INTERSECTION UNTIL THE PROPOSED SIGNAL IS OPERATIONAL.

4. CONTRACTOR SHALL REMOVE AND SALVAGE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT AFTER PROPOSED SIGNAL EQUIPMENT IS OPERATIONAL. THE EXISTING GROUND BOXES SHALL BE REMOVED AND BACKFILLED WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION UNLESS IT IS IDENTIFIED IN THE PLANS TO REMAIN. THE EXISTING FOUNDATIONS SHALL BE REMOVED, AND THE SIGNAL POLE FOUNDATIONS SHALL BE REMOVED TO A MINIMUM OF 2' BELOW EXISTING SURFACE AND BACKFILLED WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION IN THE SURROUNDING AREA. SEE GENERAL NOTES AND SPECIFICATIONS FOR MORE INFORMATION.

5. ELIMINATE ALL EXISTING PAVEMENT MARKINGS WITHIN THE INTERSECTION AND ALONG 200' IN EACH DIRECTION FROM STOP BAR. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.

6. EXISTING SIGNS S1-S14 SHALL BE REMOVED WITH TRAFFIC SIGNAL EQUIPMENT.

7. CURB RAMP AND SIDEWALK REMOVALS SHALL BE SUBSIDIARY TO THE INSTALLATION OF NEW OF NEW CURB RAMP OR CONCRETE SIDEWALK (SEE ITEM 6010 QTYS AND PROPOSED PEDESTRIAN RAMP AND SIDEWALK LAYOUT).

02/24/2023

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DEPARTMENT OF TRANSPORTATION

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TRAFFIC SAFETY IMPROVEMENTS

EXISTING CONDITIONS AND REMOVALS

BICKERS STREET AT HAMPTON ROAD

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
DRD	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
RAE	TEXAS	DALLAS	DALLAS	48
CHECK	CONTROL	SECTION	JOB	
JJM	0918	47	342, ETC.	
CHECK				
JJM				

NOTES:

1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.

2. CONTRACTOR TO CONTACT CITY OF DALLAS TRAFFIC MANAGEMENT CENTER AT (214-670-3095) AND TxDOT TRAFFIC SIGNAL OFFICE AT (214-320-6682) 48 HOURS IN ADVANCE TO COORDINATE WORK. CONTRACTOR TO COORDINATE WITH CITY OF DALLAS TO PULL REQUIRED PERMITS, PRIOR TO STARTING WORK.

3. THE LOCATION OF THE PROPOSED SIGNAL POLES, SIGNAL HEADS, RADAR DETECTORS, CONDUIT, GROUND BOXES, AND CONDUCTORS ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMODATE FIELD CONDITIONS.

4. CONTRACTOR SHALL COORDINATE WITH ONCOR CONCERNING TRAFFIC SIGNAL ELECTRICAL SERVICE. CONTACT ONCOR REGARDING POINT OF DELIVERY AND DISTRIBUTION TO ELECTRICAL PEDESTAL SERVICE. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION.

5. THE FOLLOWING ITEMS WILL BE FURNISHED BY THE CITY OF DALLAS AND INSTALLED BY THE CONTRACTOR:
SIGNAL CABINET AND INTERNAL HARDWARE, AND RADAR AND RADAR CABLE. CONTACT MR. ALFRED LEMON AT 214-670-4812 (OFFICE) OR 214-213-6124 (MB) MR. FAVIAN GIRALDO (FAVIAN.GIRALDO@DALLAS.GOV) TO SCHEDULE PICK-UP OF MATERIALS. PROVIDE WITH A 6-WEEK NOTICE AND AT LEAST 48-HOUR NOTICE OF INTENT TO PICK-UP MATERIALS FROM THE CITY OF DALLAS.

6. INSTALL BASE MOUNTED CONTROLLER CABINET (ATC CABINET) AND FOUNDATION.

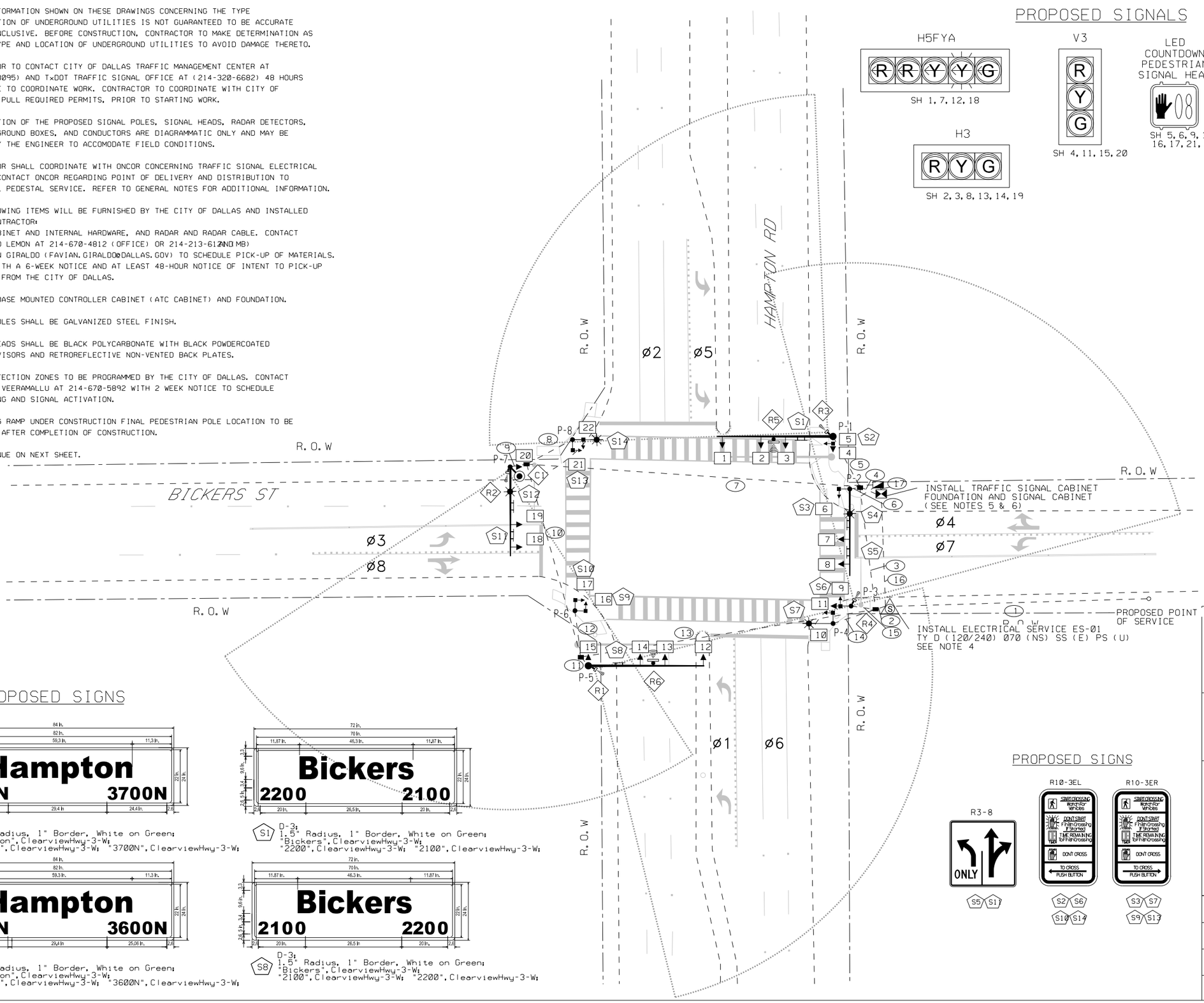
7. SIGNAL POLES SHALL BE GALVANIZED STEEL FINISH.

8. SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BLACK POWDERCOATED ALUMINUM VISORS AND RETROREFLECTIVE NON-VENTED BACK PLATES.

9. RADAR DETECTION ZONES TO BE PROGRAMMED BY THE CITY OF DALLAS. CONTACT SRINIVASA VEERAMALLU AT 214-670-5892 WITH 2 WEEK NOTICE TO SCHEDULE PROGRAMMING AND SIGNAL ACTIVATION.

10. EXISTING RAMP UNDER CONSTRUCTION FINAL PEDESTRIAN POLE LOCATION TO BE CONFIRMED AFTER COMPLETION OF CONSTRUCTION.

NOTES CONTINUE ON NEXT SHEET.



PROPOSED SIGNALS

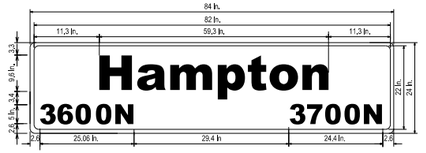
H5FYA — SH 1, 7, 12, 18

V3 — SH 4, 11, 15, 20

LED COUNTDOWN PEDESTRIAN SIGNAL HEAD — SH 5, 6, 9, 10, 16, 17, 21, 22

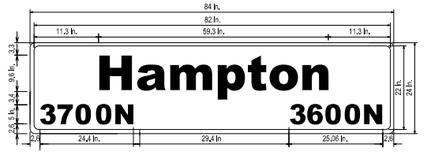
H3 — SH 2, 3, 8, 13, 14, 19

PROPOSED SIGNALS



S12 D-3; 1.5" Radius, 1" Border, White on Green; "Hampton", ClearviewHwy-3-W; "3600N", ClearviewHwy-3-W; "3700N", ClearviewHwy-3-W;

S1 D-3; 1.5" Radius, 1" Border, White on Green; "Bickers", ClearviewHwy-3-W; "2200", ClearviewHwy-3-W; "2100", ClearviewHwy-3-W;



S4 D-3; 1.5" Radius, 1" Border, White on Green; "Hampton", ClearviewHwy-3-W; "3700N", ClearviewHwy-3-W; "3600N", ClearviewHwy-3-W;

S8 D-3; 1.5" Radius, 1" Border, White on Green; "Bickers", ClearviewHwy-3-W; "2100", ClearviewHwy-3-W; "2200", ClearviewHwy-3-W;

PROPOSED SIGNALS

S5 S1 — S2 S6 — S10 S14 — S3 S7 — S9 S13

0 10 20 40
ORIGINALLY PLOTTED SCALE:
SCALE: 1" = 40'

LEGEND

- TYPICAL PROPOSED MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, LED LUMINAIRE AND SIGNAGE
- TRAFFIC SIGNAL CONTROLLER CABINET AND CONCRETE PAD
- EXISTING GROUND BOX
- PROPOSED TYPE 1 GROUND BOX W/ APRON
- PROPOSED TYPE D GROUND BOX W/ APRON
- PROPOSED CONDUIT
- (1) CONDUIT RUN NUMBER
- [1] SIGNAL HEAD NUMBER
- S1 SIGN LABEL
- R1 PROPOSED PRESENCE RADAR DETECTOR AND LABEL
- R1 PROPOSED ADVANCE RADAR DETECTOR AND LABEL
- C1 PROPOSED CCTV CAMERA
- (S) PROPOSED ELECTRICAL SERVICE
- P-# PROPOSED TRAFFIC SIGNAL POLE NUMBER

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED CONDITIONS

BICKERS STREET AT HAMPTON ROAD

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
DRD	6	(SEE TITLE SHEET)		CS
GRAPHICS	CONTROL	DISTRICT	COUNTY	SHEET NO.
DRD	TEXAS	DALLAS	DALLAS	
CHECK	CONTROL	SECTION	JOB	49
JJM	0918	47	342, ETC.	
CHECK				
JJM				

CONDUIT AND CABLE CHART
WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	ITEM 618 CONDUIT: 2" PVC SCH 80 (RISER) Qty	2" PVC SCH 80 (RISER) Len	2" PVC SCH 80 (TRENCHED) Qty	2" PVC SCH 80 (TRENCHED) Len	2" PVC SCH 80 (BORED) Qty	2" PVC SCH 80 (BORED) Len	3" PVC SCH 80 (TRENCHED) Qty	3" PVC SCH 80 (TRENCHED) Len	3" PVC SCH 80 (BORED) Qty	3" PVC SCH 80 (BORED) Len	4" PVC SCH 80 (TRENCHED) Qty	4" PVC SCH 80 (TRENCHED) Len	4" PVC SCH 80 (BORED) Qty	4" PVC SCH 80 (BORED) Len	CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS: NO. 6 XHHW WIRE (POWER) Qty	NO. 6 XHHW WIRE (POWER) Len	NO. 6 XHHW WIRE (GROUND) Qty	NO. 6 XHHW WIRE (GROUND) Len	NO. 8 XHHW WIRE Qty	NO. 8 XHHW WIRE Len	NO. 12 XHHW WIRE Qty	NO. 12 XHHW WIRE Len	ITEM 684 TRAFFIC SIGNAL CABLES: TY C 2 CNDR NO. 12 Qty	TY C 2 CNDR NO. 12 Len	TY A 5 CNDR NO. 14 Qty	TY A 5 CNDR NO. 14 Len	TY A 7 CNDR NO. 14 Qty	TY A 7 CNDR NO. 14 Len	TY A 10 CNDR NO. 14 Qty	TY A 10 CNDR NO. 14 Len	TY A 20 CNDR NO. 14 Qty	TY A 20 CNDR NO. 14 Len	ETHERNET CABLE Qty	ETHERNET CABLE Len	RADAR COMMUNICATION CABLE Qty	RADAR COMMUNICATION CABLE Len	TOTAL LENGTH OF RUN	RUN NO
1	I	1	20	1	105											I	TO BE INSTALLED BY OTHERS																					105	1
2	I			1	5											I	1	5	1	5																				5	2
3	I									1	60					I	FUTURE COMMUNICATION CONDUIT - TERMINATE IN ITS GROUND BOX																					60	3
	I													1	55	I	1	55	1	55					4	220					3	165	1	55			3	165	55	
4	I											1	10			I			1	10					8	80					4	40							10	4
	I											1	10			I			1	10													4	40	1	10	6	60	10	
5	I							1	25							I	SPARE CONDUIT TO POLE																					25	5
	I							1	25							I			1	25					1	25							1	25			2	50	25	
6	I							1	5							I	SPARE CONDUIT TO POLE																					5	6
	I							1	5							I	1	5	1	5					1	5							1	5					5	
7	I									1	150					I	FUTURE COMMUNICATION CONDUIT - TERMINATE IN ITS GROUND BOX																					150	7
	I													1	140	I	2	280	1	140					2	280					1	140	1	140	1	140	1	140	140	
8	I							1	25							I	1	25	1	25					2	50					1	25							25	8
9	I							1	10							I	1	10	1	10													1	10	1	10	1	10	10	9
	I							1	10							I	SPARE CONDUIT TO POLE																					10	
10	I													1	85	I			1	85																			85	10
11	I							1	5							I			1	5													1	5			2	10	5	11
	I							1	5							I	SPARE CONDUIT TO POLE																					5	
12	I							1	20							I			1	20					2	40					1	20							20	12
13	I													1	125	I			1	125					2	250					1	125	1	125			2	250	125	13
14	I							1	20							I	1	20	1	20					1	20					1	20							20	14
15	I							1	15							I			1	15					1	15					1	15					1	15	15	15
16	I					1	50									I	1	50	1	50																			50	16
17	I							1	5							I	FUTURE COMMUNICATION CONDUIT - TERMINATE IN ITS GROUND BOX																					5	17
SUBTOTAL			20		110		50		175		210		20		405			450		605		0		0		985		0		0		550		405		160		700		
P-1	P															I										5		120		70								75	VARIES	P-1
P-2	P															I							80			5		50		60									VARIES	P-2
P-3	P															I										5		30										30	VARIES	P-3
P-4	P															I							80			5		10											VARIES	P-4
P-5	P															I												110		70								80	VARIES	P-5
P-6	P															I										10		20											VARIES	P-6
P-7	P															I							80					65		60					30			30	VARIES	P-7
P-8	P															I										10		20											VARIES	P-8
SUBTOTAL																		0		0		0		240		40		425		260		0		0		30		215		
TOTAL			20		110		50		175		210		20		405			450		605		0		240		1025		425		260		550		405		190		915		

CONDUIT STATUS: E=EXISTING; I=INSTALL; A=ABANDON; AC=AERIAL CABLE; R=REMOVE AND SALVAGE; P=INSTALL WIRE INSIDE STEEL POLE

* - THE CONTRACTOR SHALL INSTALL A 2" PVC CONDUIT FROM THE POINT OF DELIVERY TO THE PEDESTAL METER.
P-# - REFERS TO WIRING WITHIN THE SIGNAL POLE AND MAST ARM

NOTES:

11. CONTRACTOR SHALL COORDINATE THE TRAFFIC SIGNAL POLE FOUNDATION WORK WITH THE CURB RAMP AND SIDEWALK INSTALLATION. IF CURB RAMPS ARE CONSTRUCTED FIRST, CONTRACTOR SHALL NOTIFY THE CITY AND ENGINEER SO A FIELD MEETING CAN BE SCHEDULED TO DETERMINE IF FOUNDATIONS NEED TO BE SHIFTED TO BE ADJACENT TO THE LANDING AREAS. IF SIGNAL POLE FOUNDATIONS ARE INSTALLED FIRST, THE CURB RAMPS AND SIDEWALKS SHALL BE MODIFIED SO THAT THE CURB RAMP LANDING AREAS ARE ADJACENT TO THE PUSH BUTTONS AND THE SIDE REACH TO THE PUSH BUTTONS ARE 10" OR LESS.

12. ALL SIGNAL CABLES SHALL BE WIRED IN ACCORDANCE WITH THE CABINET PREPARATION NOTES SUPPLIED BY THE CITY OF DALLAS.

13. PROPOSED APS UNITS SHALL BE PLACED ADJACENT TO A LEVEL LANDING AREA (2% MAX IN ANY DIRECTION). IF THE DISTANCE FROM THE PUSH BUTTON TO THE EDGE OF ACCESSIBLE PATH EXCEEDS 10", THE CONTRACTOR SHALL FURNISH AND INSTALL A PUSH BUTTON EXTENDER TO MAKE THE REACH 10" OR LESS. MEASUREMENT AND PAYMENT SHALL BE CONSIDERED SUBSIDIARY TO THE INSTALLATION OF THE TRAFFIC SIGNAL EQUIPMENT.

14. IF SIGNAL POLES CANNOT BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLANS, THE CONTRACTOR SHALL CONTACT THE CITY AND ENGINEER TO MEET ON SITE TO DISCUSS NEW LOCATIONS.

15. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.

16. CONTRACTOR TO MAINTAIN FULL ACCESS TO A MINIMUM OF TWO PEDESTRIAN CROSSINGS AT ALL TIMES DURING CONSTRUCTION.

17. CONTRACTOR TO PROCURE AND INSTALL A POWER OVER ETHERNET CCTV CAMERA AND ETHERNET CABLE. CCTV CAMERA SHALL BE ONVIF AND NTCIP COMPLIANT. ETHERNET CABLE IS TO BE INSTALLED FROM CAMERA TO TRAFFIC SIGNAL CABINET AND SUBSIDIARY TO ITEM 6010 6002.

18. CONTRACTOR SHALL ADJUST SIGNAL HEAD ALIGNMENT VERTICALLY ON MAST ARMS USING "ASTRO-BRAC" OR APPROVED EQUAL TO ENSURE MAXIMUM SIGNAL HEAD VISIBILITY WHEN HORIZONTAL OVERHEAD UTILITY LINES BLOCK LENS DISPLAY. IN CIRCUMSTANCES WITH SIGNIFICANT VIABILITY CONSTRAINTS, INSTALLNG HEADS VERTICALLY IS POSSIBLE; HOWEVER, IT MUST BE APPROVED BY CITY ENGINEER.

19. FRONT SIDE OF THE TRAFFIC SIGNAL CONTROLLER CABINET SHALL BE INSTALLED TO ORIENT SUCH THAT THE INTERSECTION MAY BE SEEN WHEN VIEWING THE CONTROLLER FRONT PANEL.

20. IF THE PLANS DO NOT INDICATE SPACING OF THE CABINET FOUNDATION FROM THE CURB, PROVIDE FOR A 48" MINIMUM CLEARANCE FROM CURB. LOCATION OF THE CONCRETE APRON FOR THE BATTERY BACKUP SYSTEM MAY NEED TO BE ADJUSTED BASED ON CLEARANCE FROM THE CURB AND AVAILABLE RIGHT-OF-WAY.

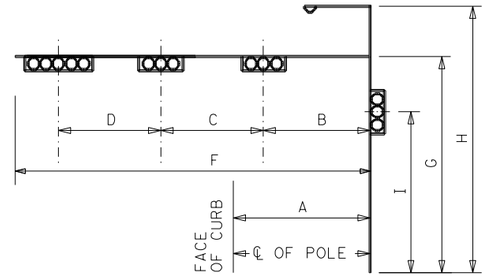
SIGNAL HEAD AND POLE PLACEMENT (FT)

POLE NUMBER	STATUS	A (FT)	B (FT)	C (FT)	D (FT)	F (FT)	G (FT)	H (FT)	I (FT)	NO. OF HEADS (EA)*	LUM	DRILLED SHAFT LENGTH (FT): 24" DIA SUB TO ITEM 687	30" DIA ITEM 416 (RDWY ILL POLE)	36" DIA TYPE A ITEM 416	48" DIA TYPE A ITEM 416	FDN. TYPE WIND ZONE 80 MPH
P-1	I	10	20	10	16	48	19	-	13	3	N			13		36-A
P-2	I	9	21	10	-	36	19	30	-	2	Y			13		36-A
P-3	I	3	PEDESTRIAN SIGNAL POLE				20	-	13	-	-	6				24-A
P-4	I	6	LUMINAIRE POLE SA 20T-4				13.5	20	-	-	Y		8			30
P-5	I	12	22	10	16	48	19	-	13	3	N			13		36-A
P-6	I	7	PEDESTRIAN SIGNAL POLE				15	-	-	-	-	6				24-A
P-7	I	5	24	10	-	36	19	30	13	2	Y			13		36-A
P-8	I	9	LUMINAIRE POLE SA 20T-4				13.5	20	-	-	Y		8			30
									TOTAL:			12	16	52		

SIGNAL POLE STATUS: I=INSTALL; E=EXISTING; REM=REMOVE; F=INSTALL IN FUTURE PHASE
* - DOES NOT INCLUDE VERTICAL SIDEMOUNT SIGNAL HEADS OR PEDESTRIAN SIGNAL HEADS

ELECTRICAL SERVICE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT **SIZE	SERVICE CONDUCTORS NO. / SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE / AMPS	TWO-POLE CONTACTOR AMPS	PANELBD / LOADCENTER AMP RATING (MIN)	BRANCH CIRCUIT ID	BRANCH CKT. BRK. POLE / AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
TY D (120/240) 070 (NS) SS (E) PS	(U)2"	3 / #4	N/A	2P / 70	30	100	T.S.	1P / 50 2P / 20	23 3	<7.1

** - VERIFY SERVICE CONDUIT SIZE WITH UTILITY. SIZE MAY CHANGE DUE TO THE UTILITY METER REQUIREMENTS. ENSURE CONDUIT SIZE MEETS THE NATIONAL ELECTRICAL CODE.



02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

BICKERS STREET AT HAMPTON ROAD
SHEET 1 OF 3

DESIGN DRD	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS DRD	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	50
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

CABLE TERMINATION CHART

CNDR. NO.	CONDUCTOR COLOR	CABLE 1 20 CNDR. FROM P-1 TO CNTRL.	CABLE 2 20 CNDR. FROM P-2 TO CNTRL.	CABLE 3 10 CNDR. FROM P-3 TO CNTRL.	CABLE 4 10 CNDR. FROM P-4 TO CNTRL.	CABLE 5 20 CNDR. FROM P-5 TO CNTRL.	CABLE 6 10 CNDR. FROM P-6 TO CNTRL.	CABLE 7 20 CNDR. FROM P-7 TO CNTRL.	CABLE 8 10 CNDR. FROM P-8 TO CNTRL.
1	WHITE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
2	BLACK	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON
3	RED	SH 2, 3, 4 - 06 R	SH 8 - 08 R	SH 11 - 08 R	SPARE	SH 13, 14, 15 - 02 R	SPARE	SH 19, 20 - 04 R	SPARE
4	GREEN	SH 2, 3, 4 - 06 G	SH 8 - 08 G	SH 11 - 08 G	SPARE	SH 13, 14, 15 - 02 G	SPARE	SH 19, 20 - 04 G	SPARE
5	ORANGE	SH 2, 3, 4 - 06 Y	SH 8 - 08 Y	SH 11 - 08 Y	SPARE	SH 13, 14, 15 - 02 Y	SPARE	SH 19, 20 - 04 Y	SPARE
6	BLUE	SH 5 - 04 W	SH 6 - 06 W	SH 9 - 06 W	SH 10 - 08 W	SPARE	SH 16 - 02 W	SPARE	SH 22 - 02 W
7	WHITE/BLACK	SH 5 - 04 DW	SH 6 - 06 DW	SH 9 - 06 DW	SH 10 - 08 DW	SPARE	SH 16 - 02 DW	SPARE	SH 22 - 02 DW
8	RED/BLACK	SH 1 - OLA R(ARROWS)	SH 7 - OLB R(ARROWS)	SPARE	SPARE	SH 12 - OLC R(ARROWS)	SH 17 - 08 W	SH 18 - OLD R(ARROWS)	SH 21 - 04 W
9	GREEN/BLACK	SH 1 - OLA FY(ARROW)	SH 7 - OLB FY(ARROW)	SPARE	SPARE	SH 12 - OLC FY(ARROW)	SH 17 - 08 DW	SH 18 - OLD R(ARROW)	SH 21 - 04 DW
10	ORANGE/BLACK	SH 1 - OLA Y(ARROW)	SH 7 - OLB Y(ARROW)	SPARE	SPARE	SH 12 - OLC Y(ARROW)	SPARE	SH 18 - OLD R(ARROW)	SPARE
11	BLUE/BLACK	SPARE	SPARE			SPARE		SPARE	
12	BLACK/WHITE	SPARE	SPARE			SPARE		SPARE	
13	RED/WHITE	SPARE	SPARE			SPARE		SPARE	
14	GREEN/WHITE	SH 1 - 01 G(ARROW)	SH 7 - 03 G(ARROW)			SH 12 - 05 G(ARROW)		SH 18 - 07 G(ARROW)	
15	BLUE/WHITE	SPARE	SPARE			SPARE		SPARE	
16	BLACK/RED	SPARE	SPARE			SPARE		SPARE	
17	WHITE/RED	SPARE	SPARE			SPARE		SPARE	
18	ORANGE/RED	SPARE	SPARE			SPARE		SPARE	
19	BLUE/RED	SPARE	SPARE			SPARE		SPARE	
20	RED/GREEN	SPARE	SPARE			SPARE		SPARE	

*NOTE: HOME RUN 2 CONDR. TO ALL POLES WITH PED HEADS FOR PED CALL

GROUND BOX SUMMARY

ITEM NO.	DESCRIPTION	UNIT	QTY.
0624	GROUND BOX TY D (162922) W/ APRON	EA	4
6186	GROUND BOX TY 1 (243624) W/ APRON	EA	1

SIGNS SUMMARY

SIGN *	SIGN TYPE	SIGN LEGEND	STATUS	SUPPORT	SIGN DIMENSION (in x in)
S1	STREET NAME	BICKERS	I	P-1	24"x72"
S2	R10-3EL	APS UNIT	I	P-1	9"x15"
S3	R10-3ER	APS UNIT	I	P-2	9"x15"
S4	STREET NAME	HAMPTON	I	P-2	24"x84"
S5	R3-8LK	LANE ASSIGNMENT: LEFT ONLY/THRU RIGHT	I	P-2	30"x30"
S6	R10-3EL	APS UNIT	I	P-3	9"x15"
S7	R10-3ER	APS UNIT	I	P-4	9"x15"
S8	STREET NAME	BICKERS	I	P-5	24"x72"
S9	R10-3ER	APS UNIT	I	P-6	9"x15"
S10	R10-3EL	APS UNIT	I	P-6	9"x15"
S11	R3-8LK	LANE ASSIGNMENT: LEFT ONLY/THRU RIGHT	I	P-7	30"x30"
S12	STREET NAME	HAMPTON	I	P-7	24"x84"
S13	R10-3ER	APS UNIT	I	P-7	9"x15"
S14	R10-3EL	APS UNIT	I	P-8	9"x15"

STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=EXISTING TO BE RELOCATED

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED
PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

BICKERS STREET AT
HAMPTON ROAD
SHEET 2 OF 3

DESIGN DRD	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS DRD	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	51
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC	

SIGNAL HEADS (ITEM 682)

SIGNAL HEAD NUMBER	12" LED SIGNAL INDICATION										PED SIG SEC (LED) (COUNTDOWN)
	SIGNAL HEAD TYPE	STATUS	BACK PLATE		LED SIGNAL LAMPS						
			3 SEC	5 SEC	<-G-	G	<-Y-	Y	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA
1	H5FLT	I		1	1		2		2		
2	H3	I	1			1		1		1	
3	H3	I	1			1		1		1	
4	V3	I	1			1		1		1	
5	PED	I									1
6	PED	I									1
7	H5FLT	I		1	1		2		2		
8	H3	I	1			1		1		1	
9	PED	I									1
10	PED	I									1
11	V3	I	1			1		1		1	
12	H5FLT	I		1	1		2		2		
13	H3	I	1			1		1		1	
14	H3	I	1			1		1		1	
15	V3	I	1			1		1		1	
16	PED	I									1
17	PED	I									1
18	H5FLT	I		1	1		2		2		
19	H3	I	1			1		1		1	
20	V3	I	1			1		1		1	
21	PED	I									1
22	PED	I									1
TOTAL (NEW)			10	4	4	10	8	10	8	10	8

STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=RELOCATE

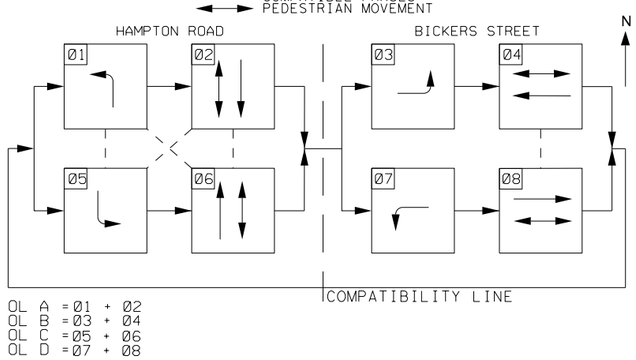
RADAR DETECTION ZONE DETAILS

RADAR PANEL NUMBER	MOUNTING LOCATION	MOUNTING HEIGHT	ZONE LOCATIONS	ZONE(S)	SETBACK DISTANCE	DISTANCE: NEAREST TO FARTHEST LANE
R1	MAST ARM P-5	18'	STOP BAR	NB + NBLT	N/A	65' TO 100'
R2	MAST ARM P-7	18'	STOP BAR	EB + EBLT	N/A	30' TO 40'
R3	MAST ARM P-1	18'	STOP BAR	SB + SBLT	N/A	75' TO 115'
R4	PED POLE P-3	18'	STOP BAR	WB + WBLT	N/A	25' TO 40'
R5	MAST ARM P-1	19'	SETBACK	NB	400'	-
R6	MAST ARM P-5	19'	SETBACK	SB	400'	-

APS MESSAGE CHART

POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-2	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS BICKERS STREET AT HAMPTON ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS BICKERS STREET AT HAMPTON ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	BICKERS STREET, WALK SIGN IS ON TO CROSS BICKERS STREET
P-1	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS HAMPTON ROAD AT BICKERS STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS HAMPTON ROAD AT BICKERS STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	HAMPTON ROAD, WALK SIGN IS ON TO CROSS HAMPTON ROAD
P-8	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS HAMPTON ROAD AT BICKERS STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS HAMPTON ROAD AT BICKERS STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	HAMPTON ROAD, WALK SIGN IS ON TO CROSS HAMPTON ROAD
P-8	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS BICKERS STREET AT HAMPTON ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS BICKERS STREET AT HAMPTON ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	BICKERS STREET, WALK SIGN IS ON TO CROSS BICKERS STREET
P-6	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS BICKERS STREET AT HAMPTON ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS BICKERS STREET AT HAMPTON ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	BICKERS STREET, WALK SIGN IS ON TO CROSS BICKERS STREET
P-6	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS HAMPTON ROAD AT BICKERS STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS HAMPTON ROAD AT BICKERS STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	HAMPTON ROAD, WALK SIGN IS ON TO CROSS HAMPTON ROAD
P-4	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS HAMPTON ROAD AT BICKERS STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS HAMPTON ROAD AT BICKERS STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	HAMPTON ROAD, WALK SIGN IS ON TO CROSS HAMPTON ROAD
P-3	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS BICKERS STREET AT HAMPTON ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS BICKERS STREET AT HAMPTON ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	BICKERS STREET, WALK SIGN IS ON TO CROSS BICKERS STREET

PHASE SEQUENCE



OL A = Ø1 + Ø2
OL B = Ø3 + Ø4
OL C = Ø5 + Ø6
OL D = Ø7 + Ø8

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED
PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

BICKERS STREET AT HAMPTON ROAD
SHEET 3 OF 3

DESIGN DRD	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS DRD	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	52
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC	

NOTES:

1. INSTALLATION AND PAYMENT FOR PROPOSED RAMPS AND SIDEWALKS SHALL INCLUDE ALL INCIDENTAL WORK, INCLUDING EXCAVATION, REMOVAL AND DISPOSAL OF EXISTING CONCRETE CURB AND SIDEWALK, PROPOSED CURB ALONG SIDEWALKS, AND OTHER MISCELLANEOUS MATERIAL NECESSARY TO CONSTRUCT THE PROPOSED RAMPS AND SIDEWALKS. SIDEWALK QUANTITIES PROVIDED ARE ESTIMATES ONLY. PAYMENT FOR SIDEWALK SHALL BE FOR THE QUANTITY APPROVED BY THE ENGINEER AND CONSTRUCTED ON SITE.

2. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.

3. REFER TO THE CITY OF DALLAS 251-D STANDARDS FOR ADDITIONAL INFORMATION REGARDING TYPICAL PAVEMENT MARKING PLACEMENT.

4. LANE WIDTHS SHALL MATCH EXISTING LANES. ALL PROPOSED PAVEMENT MARKINGS SHALL BE TIED TO EXISTING MARKINGS WHERE APPLICABLE TO REFRESH THE INTERSECTION PAVEMENT MARKINGS.

5. CONTRACTOR SHALL APPLY PAVEMENT SEALER IN AREAS WHERE NEW THERMO IS TO BE APPLIED.

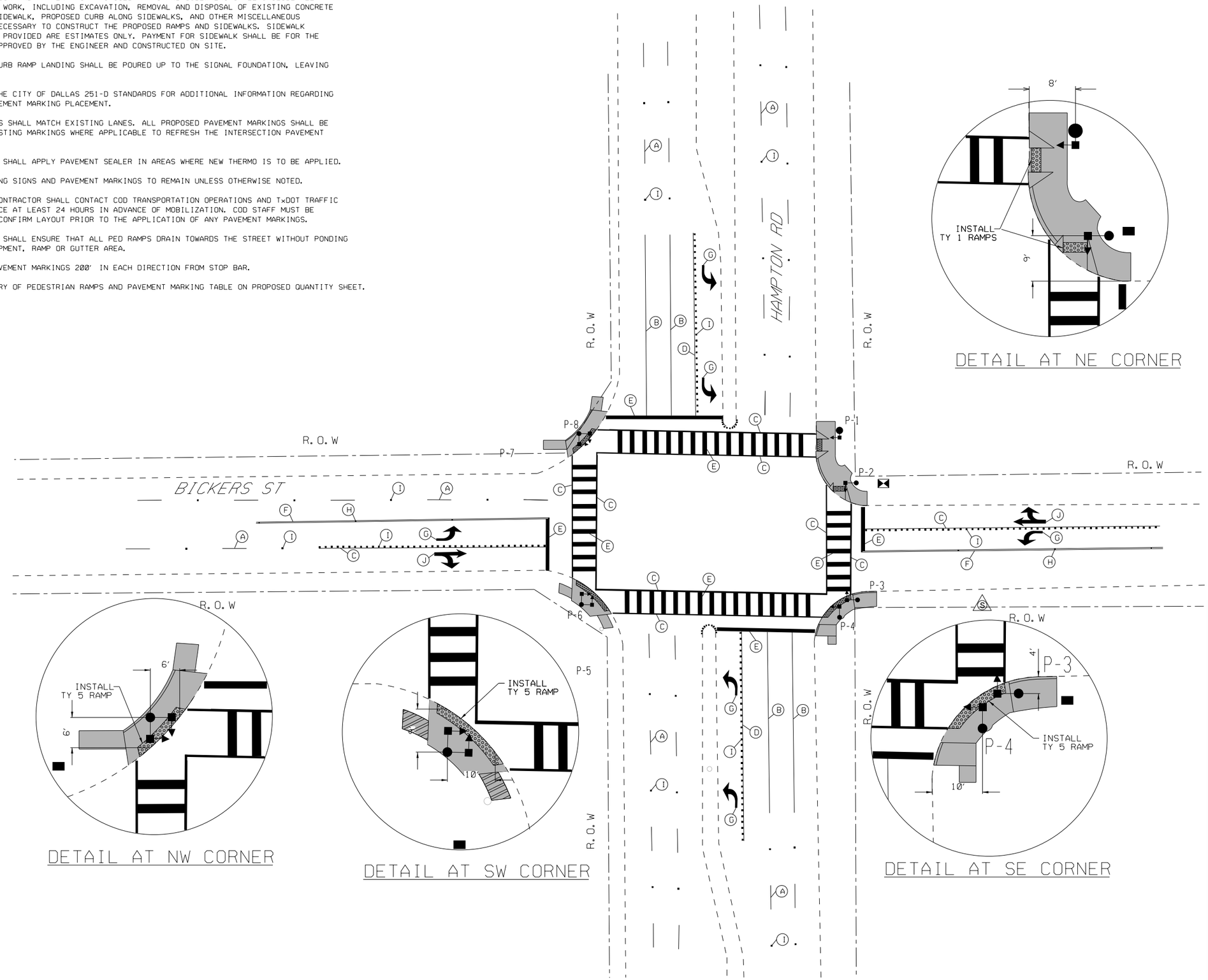
6. ALL EXISTING SIGNS AND PAVEMENT MARKINGS TO REMAIN UNLESS OTHERWISE NOTED.

7. STRIPING CONTRACTOR SHALL CONTACT COD TRANSPORTATION OPERATIONS AND TxDOT TRAFFIC SIGNAL OFFICE AT LEAST 24 HOURS IN ADVANCE OF MOBILIZATION. COD STAFF MUST BE PRESENT TO CONFIRM LAYOUT PRIOR TO THE APPLICATION OF ANY PAVEMENT MARKINGS.

8. CONTRACTOR SHALL ENSURE THAT ALL PED RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE EQUIPMENT, RAMP OR GUTTER AREA.

9. INSTALL PAVEMENT MARKINGS 200' IN EACH DIRECTION FROM STOP BAR.

10. SEE SUMMARY OF PEDESTRIAN RAMPS AND PAVEMENT MARKING TABLE ON PROPOSED QUANTITY SHEET.



0 5 10 20 0 10 20 40

PEDESTRIAN RAMP DETAILS : SCALE: 1" = 20'

ORIGINALLY PLOTTED SCALE: SCALE: 1" = 40'

DETAIL AT NE CORNER

LEGEND

PAVEMENT MARKING

- (A) RE PM W/ RET REQ TY I (W) 4" (BRK) (100MIL)
- (B) RE PM W/ RET REQ TY I (W) 4" (SLD) (100MIL)
- (C) RE PM W/ RET REQ TY I (W) 6" (SLD) (100MIL)
- (D) RE PM W/ RET REQ TY I (W) 8" (SLD) (100MIL)
- (E) RE PM W/ RET REQ TY I (W) 24" (SLD) (100MIL)
- (F) RE PM W/ RET REQ TY I (Y) 4" (SLD) (100MIL)
- (G) PREFAB PAV MRK TY I (W) ARROW
- (H) REFL PAV MRK TY II A-A
- (I) REFL PAV MRK TY II C-R
- (J) PREFAB PAV MRK TY I (W) DBL ARROW

02/24/2023

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DETAIL AT NW CORNER

DETAIL AT SW CORNER

DETAIL AT SE CORNER

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DEPARTMENT OF TRANSPORTATION

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED PAVEMENT MARKINGS AND PEDESTRIAN RAMPS

BICKERS STREET AT HAMPTON ROAD

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
DRD	6	(SEE TITLE SHEET)		CS
GRAPHICS	CONTROL	DISTRICT	COUNTY	SHEET NO.
DRD				
CHECK	TEXAS	DALLAS	DALLAS	
JJM	CONTROL	SECTION	JOB	53
CHECK	0918	47	342, ETC.	
JJM				

NOTES:

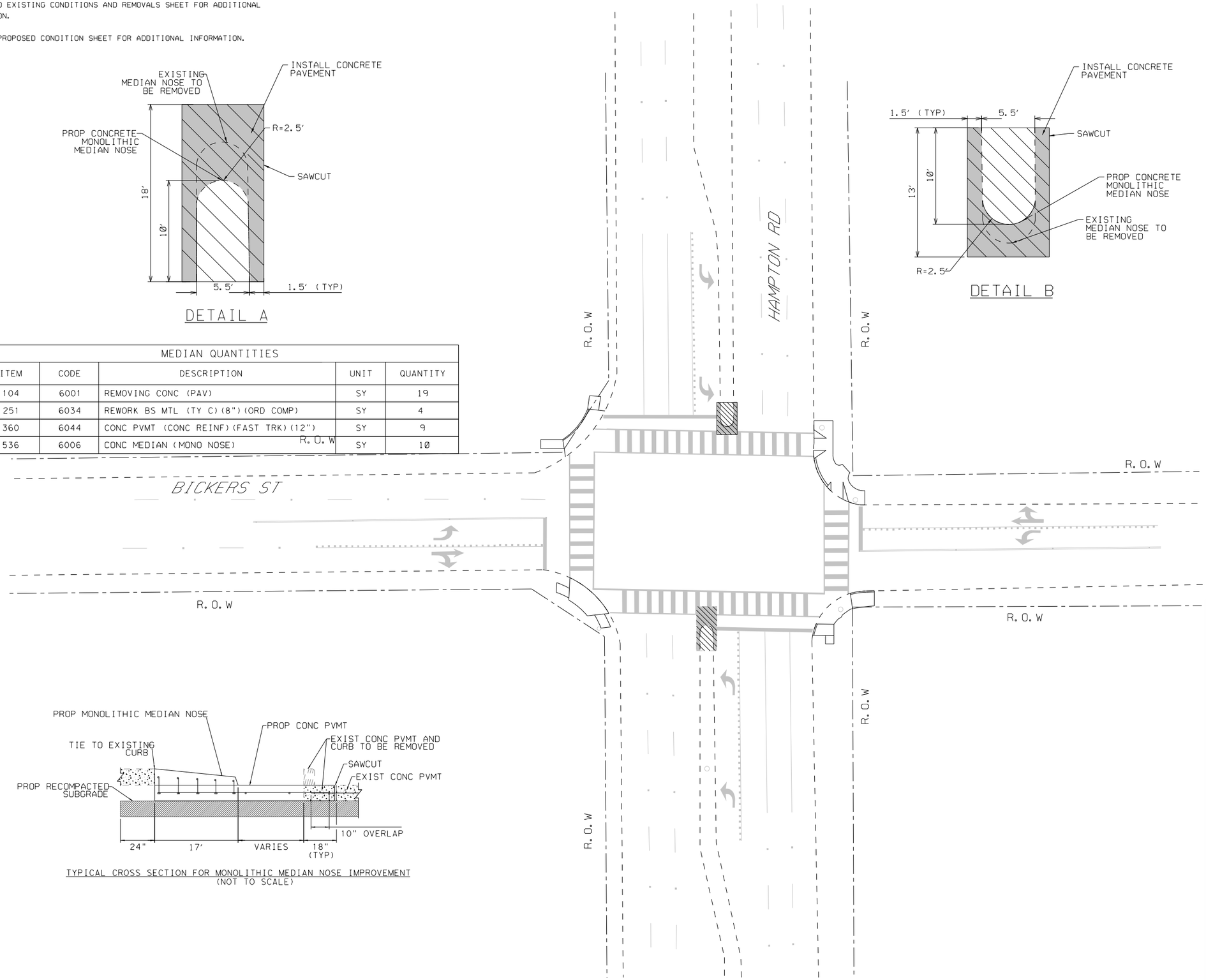
1. REFER TO EXISTING CONDITIONS AND REMOVALS SHEET FOR ADDITIONAL INFORMATION.

2. REFER TO PROPOSED CONDITION SHEET FOR ADDITIONAL INFORMATION.

DETAIL A

MEDIAN QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6001	REMOVING CONC (PAV)	SY	19
251	6034	REWORK BS MTL (TY C)(8")(ORD COMP)	SY	4
360	6044	CONC PVMT (CONC REINF)(FAST TRK)(12")	SY	9
536	6006	CONC MEDIAN (MONO NOSE)	SY	10

DETAIL B



TYPICAL CROSS SECTION FOR MONOLITHIC MEDIAN NOSE IMPROVEMENT
(NOT TO SCALE)

0 5 10
MEDIAN DETAILS :
SCALE: 1" = 10'

0 10 20 40
ORIGINALLY PLOTTED SCALE:
SCALE: 1" = 40'

LEGEND

REMOVAL OF EXISTING CONCRETE PAVEMENT, CURB, AND RIPRAP.

CONCRETE PAVEMENT

02/24/2023

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED MEDIAN DETAILS

BICKERS STREET AT HAMPTON ROAD

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RAE	6	(SEE TITLE SHEET)		CS
GRAPHICS RAE	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	54
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

PEDESTRIAN RAMP / SIDEWALK				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6015	REMOVING CONC (SIDEWALKS)	SY	90
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	127
529	6008	CONC CURB & GUTTER (TY II)	LF	127
531	6003	CONC SIDEWALKS (6")	SY	103
531	6004	CURB RAMPS (TY 1)	EA	2
531	6008	CURB RAMPS (TY 5)	EA	3

		PAVEMENT MARKING SUMMARY		
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	160
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	610
666	6224	PAVEMENT SEALER (4")	LF	1100
666	6225	PAVEMENT SEALER (6")	LF	770
666	6226	PAVEMENT SEALER (8")	LF	160
666	6230	PAVEMENT SEALER (24")	LF	610
666	6231	PAVEMENT SEALER (ARROW)	EA	6
666	6234	PAVEMENT SEALER (DBL ARROW)	EA	2
666	6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	310
666	6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	LF	300
666	6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	770
666	6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	490
668	6077	PREFAB PAV MRK TY C (W)(ARROW)	EA	6
668	6078	PREFAB PAV MRK TY C (W)(DBL ARROW)	EA	2
672	6009	REFL PAV MRKR TY II-A-A	EA	30
672	6010	REFL PAV MRKR TY II-C-R	EA	185
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1120
677	6002	ELIM EXT PAV MRK & MRKS (6")	LF	435
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	0
677	6006	ELIM EXT PAV MRK & MRKS (18")	LF	105
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	370
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	2
678	6001	PAV SURF PREP FOR MRK (4")	LF	1100
678	6002	PAV SURF PREP FOR MRK (6")	LF	770
678	6004	PAV SURF PREP FOR MRK (8")	LF	160
678	6008	PAV SURF PREP FOR MRK (24")	LF	610
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	6
678	6010	PAV SURF PREP FOR MRK (DBL ARROW)	EA	2
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	215

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES - PAVING

BICKERS STREET AT
HAMPTON ROAD

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RAE	6	(SEE TITLE SHEET)		CS
GRAPHICS	CONTROL	DISTRICT	COUNTY	SHEET NO.
RAE	TEXAS	DALLAS	DALLAS	
CHECK	CONTROL	SECTION	JOB	55
JJM	0918	47	342, ETC.	
CHECK				
JJM				

EXISTING SIGNS

R10-3B

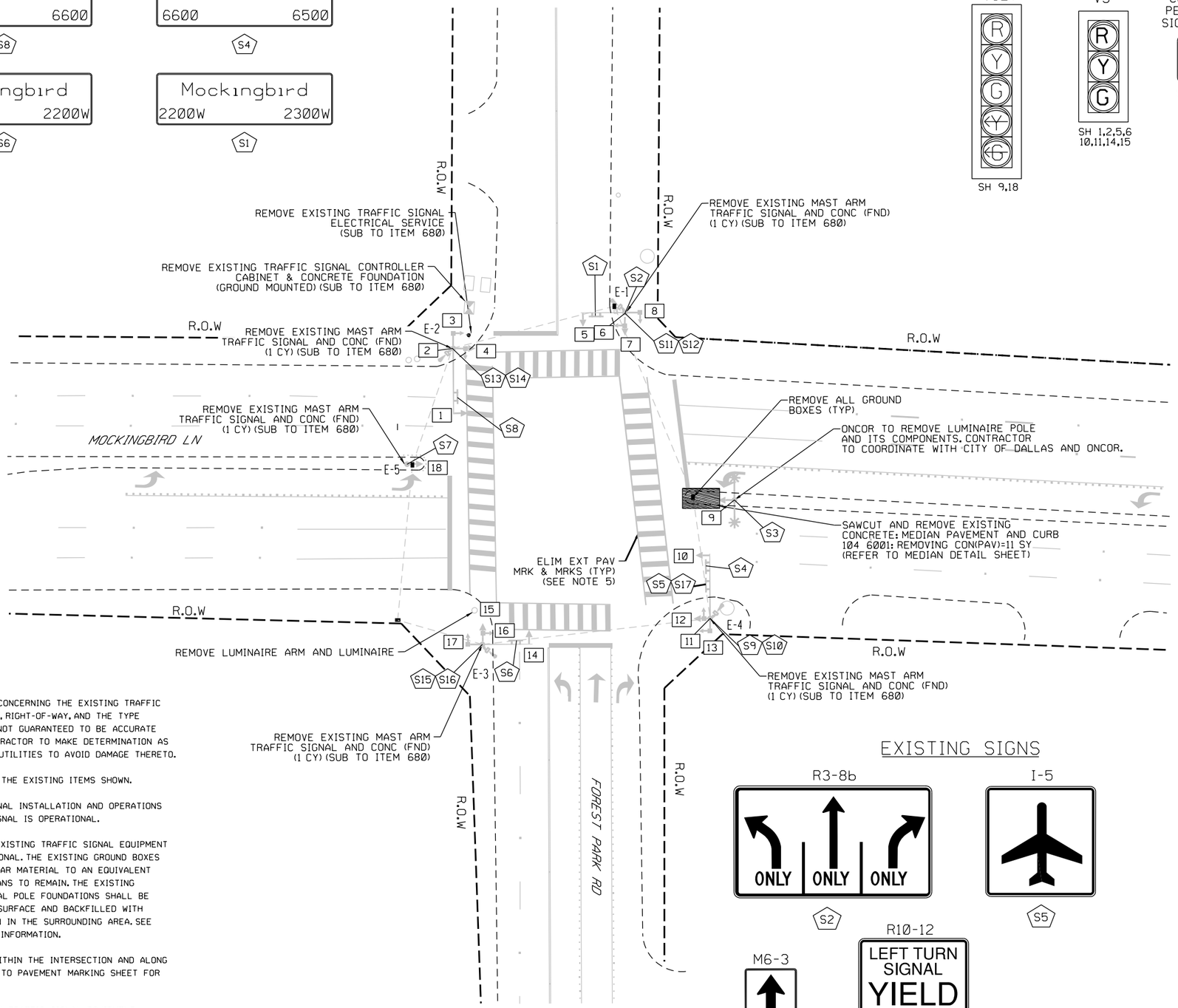
S9 S10 S11 S12
S13 S14 S15 S16

EXISTING SIGNALS

SH 9,18

SH 1,2,5,6
10,11,14,15

SH 3,4,7,8
12,13,16,17



EXISTING SIGNS

S2

S5

S17

S5

NOTES:

1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE EXISTING TRAFFIC SIGNAL HARDWARE, PAVEMENT MARKINGS, SIGNING, RIGHT-OF-WAY, AND THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.
2. THE ENGINEER DOES NOT CONFIRM OR VALIDATE THE EXISTING ITEMS SHOWN.
3. CONTRACTOR SHALL MAINTAIN THE EXISTING SIGNAL INSTALLATION AND OPERATIONS AT THIS INTERSECTION UNTIL THE PROPOSED SIGNAL IS OPERATIONAL.
4. CONTRACTOR SHALL REMOVE AND SALVAGE ALL EXISTING TRAFFIC SIGNAL EQUIPMENT AFTER PROPOSED SIGNAL EQUIPMENT IS OPERATIONAL. THE EXISTING GROUND BOXES SHALL BE REMOVED AND BACKFILLED WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION UNLESS IT IS IDENTIFIED IN THE PLANS TO REMAIN. THE EXISTING FOUNDATIONS SHALL BE REMOVED, AND THE SIGNAL POLE FOUNDATIONS SHALL BE REMOVED TO A MINIMUM OF 2' BELOW EXISTING SURFACE AND BACKFILLED WITH SIMILAR MATERIAL TO AN EQUIVALENT CONDITION IN THE SURROUNDING AREA. SEE GENERAL NOTES AND SPECIFICATIONS FOR MORE INFORMATION.
5. ELIMINATE ALL EXISTING PAVEMENT MARKINGS WITHIN THE INTERSECTION AND ALONG 200' IN EACH DIRECTION FROM STOP BAR. REFER TO PAVEMENT MARKING SHEET FOR ADDITIONAL INFORMATION.
6. EXISTING SIGNS S1-S17 SHALL BE REMOVED WITH TRAFFIC SIGNAL EQUIPMENT.
7. CURB RAMP AND SIDEWALK REMOVALS SHALL BE SUBSIDIARY TO THE INSTALLATION OF NEW OF NEW CURB RAMP OR CONCRETE SIDEWALK (SEE ITEM 6010 QTYS AND PROPOSED PEDESTRIAN RAMP AND SIDEWALK LAYOUT).

0 10 20 40
ORIGINALLY PLOTTED SCALE:
SCALE: 1" = 40'

LEGEND

- TYPICAL EXISTING MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, AND SIGNAGE
- EXISTING TRAFFIC SIGNAL CONTROLLER CABINET
- EXISTING CONDUIT
- EXISTING ELECTRICAL SERVICE
- EXISTING GROUND BOX
- SIGNAL HEAD NUMBER
- SIGN LABEL
- E-# EXISTING TRAFFIC SIGNAL POLE NUMBER
- PRESENCE RADAR
- REMOVAL

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TRAFFIC SAFETY IMPROVEMENTS

EXISTING CONDITIONS AND REMOVALS

FOREST PARK ROAD AT MOCKINGBIRD LANE

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RAE	6	(SEE TITLE SHEET)		CS
GRAPHICS RAE	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	56
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

NOTES:

1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.

2. CONTRACTOR TO CONTACT CITY OF DALLAS TRAFFIC MANAGEMENT CENTER AT (214-670-3095) AND TxDOT TRAFFIC SIGNAL OFFICE AT (214-320-6682) 48 HOURS IN ADVANCE TO COORDINATE WORK. CONTRACTOR TO COORDINATE WITH CITY OF DALLAS TO PULL REQUIRED PERMITS, PRIOR TO STARTING WORK.

3. THE LOCATION OF THE PROPOSED SIGNAL POLES, SIGNAL HEADS, RADAR DETECTORS, CONDUIT, GROUND BOXES, AND CONDUCTORS ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMODATE FIELD CONDITIONS.

4. CONTRACTOR SHALL COORDINATE WITH ONCOR CONCERNING TRAFFIC SIGNAL ELECTRICAL SERVICE. CONTACT ONCOR ITHMAR PAZ AT 469-785-3098 AREGARDING POINT OF DELIVERY AND DISTRIBUTION TO ELECTRICAL PEDESTAL SERVICE. REFER TO GENERAL NOTED FOR ADDITIONAL INFORMATION.

5. THE FOLLOWING ITEMS WILL BE FURNISHED BY THE CITY OF DALLAS AND INSTALLED BY THE CONTRACTOR: SIGNAL CABINET AND INTERNAL HARDWARE, AND RADAR AND RADAR CABLE. CONTACT MR. ALFRED LEMON AT 214-670-4812 (OFFICE) OR 214-213-6121 (MB) AND MR. FAVIAN GIRALDO (FAVIAN.GIRALDO@DALLAS.GOV) TO SCHEDULE PICK-UP OF MATERIALS. PROVIDE WITH A 6-WEEK NOTICE AND AT LEAST 48-HOUR NOTICE OF INTENT TO PICK-UP MATERIALS FROM THE CITY OF DALLAS

6. INSTALL BASE MOUNTED CONTROLLER CABINET (ATC CABINET) AND FOUNDATION.

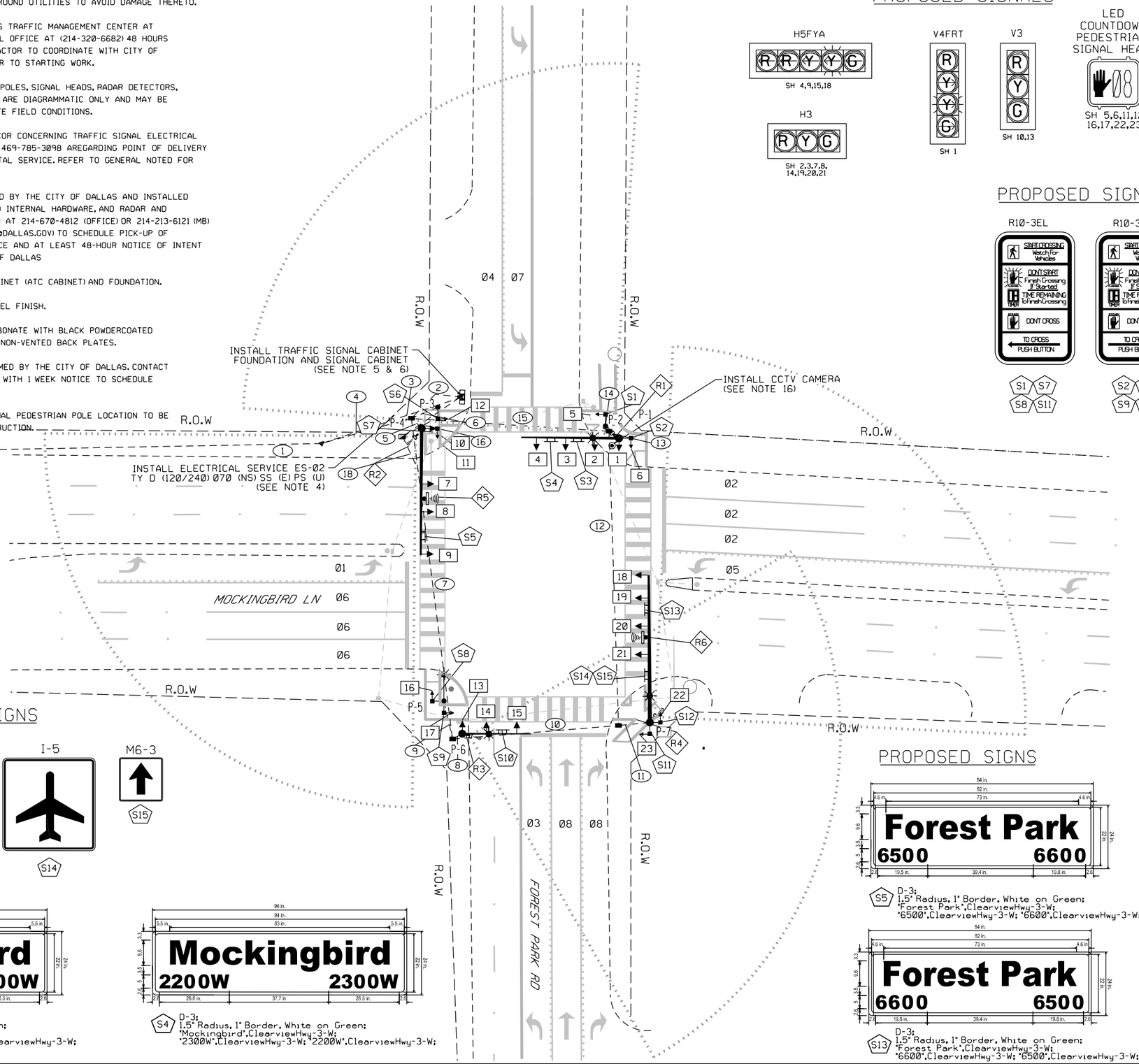
7. SIGNAL POLES SHALL BE GALVANIZED STEEL FINISH.

8. SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BLACK POWDERCOATED ALUMINUM VISORS AND RETROREFLECTIVE NON-VENTED BACK PLATES.

9. RADAR DETECTION ZONES TO BE PROGRAMMED BY THE CITY OF DALLAS. CONTACT SRINIVASA VEERAMALLU AT 214-670-5892 WITH 1 WEEK NOTICE TO SCHEDULE PROGRAMMING AND SIGNAL ACTIVATION.

10. EXISTING RAMP UNDER CONSTRUCTION FINAL PEDESTRIAN POLE LOCATION TO BE CONFIRMED AFTER COMPLETION OF CONSTRUCTION.

NOTES CONTINUE ON NEXT SHEET.



PROPOSED SIGNALS

H5FYA

SH 4,9,15,18

H3

SH 2,3,7,8, 14,19,20,21

V4FRT

SH 1

V3

SH 10,13

LED COUNTDOWN PEDESTRIAN SIGNAL HEAD

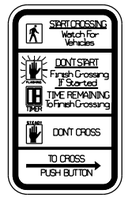
SH 5,6,11,12 16,17,22,23

PROPOSED SIGNS

R10-3EL

S1 S7 S8 S11

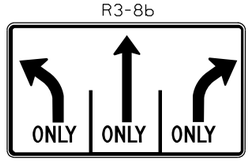
R10-3ER



S2 S6 S9 S12

PROPOSED SIGNS

R3-8b



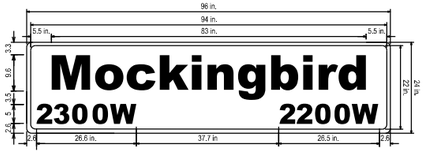
S3

I-5

S14

M6-3

S15



S10 D-3: 1.5" Radius, 1" Border, White on Green: "Mockingbird",ClearviewHwy-3-W; "2300W",ClearviewHwy-3-W; "2200W",ClearviewHwy-3-W;

S4 D-3: 1.5" Radius, 1" Border, White on Green: "Mockingbird",ClearviewHwy-3-W; "2300W",ClearviewHwy-3-W; "2200W",ClearviewHwy-3-W;

PROPOSED SIGNS

S5 D-3: 1.5" Radius, 1" Border, White on Green: "Forest Park",ClearviewHwy-3-W; "6500",ClearviewHwy-3-W; "6600",ClearviewHwy-3-W;

S13 D-3: 1.5" Radius, 1" Border, White on Green: "Forest Park",ClearviewHwy-3-W; "6600",ClearviewHwy-3-W; "6500",ClearviewHwy-3-W;

0 10 20 40

ORIGINALLY PLOTTED SCALE: SCALE: 1" = 40'

LEGEND

- TYPICAL PROPOSED MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, LED LUMINAIRE AND SIGNAGE
- TRAFFIC SIGNAL CONTROLLER CABINET AND CONCRETE PAD
- EXISTING GROUND BOX
- PROPOSED TYPE 1 GROUND BOX W/ APRON
- PROPOSED TYPE D GROUND BOX W/ APRON
- PROPOSED CONDUIT
- (1) CONDUIT RUN NUMBER
- [1] SIGNAL HEAD NUMBER
- S1 SIGN LABEL
- R1 PROPOSED PRESENCE RADAR DETECTOR AND LABEL
- R1 PROPOSED ADVANCE RADAR DETECTOR AND LABEL
- C1 PROPOSED CCTV CAMERA
- S PROPOSED ELECTRICAL SERVICE
- P-# PROPOSED TRAFFIC SIGNAL POLE NUMBER

02/24/2023

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED CONDITIONS

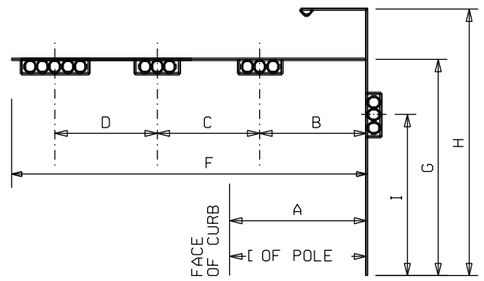
FOREST PARK ROAD AT MOCKINGBIRD LANE

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RAE	6	(SEE TITLE SHEET)		CS
GRAPHICS RAE	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	57
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

CONDUIT AND CABLE CHART
WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	ITEM 618 CONDUIT												CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS								ITEM 684 TRAFFIC SIGNAL CABLES										RADAR COMM CABLE		ETHERNET CABLE		TOTAL LENGTH OF RUN	RUN NO
		2" PVC SCH 80 (RISER)		2" PVC SCH 80 (TRENCHED)		3" PVC SCH 80 (TRENCHED)		3" PVC SCH 80 (BORED)		4" PVC SCH 80 (TRENCHED)		4" PVC SCH 80 (BORED)			NO. 6 XHHW WIRE (POWER)		NO. 6 XHHW WIRE (GROUND)		NO. 8 XHHW WIRE		NO. 12 XHHW WIRE		TY C 2 CNDR NO. 12		TY A 5 CNDR NO. 14		TY A 7 CNDR NO. 14		TY A 10 CNDR NO. 14		TY A 20 CNDR NO. 14							
		Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len		Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len	Qty	Len		
1	I	1	10	1	135										2	270	1	135																			135	1
2	I									1	30			I			1	30					8	240					3	90							30	2
	I									1	30			I			1	30													4	120	6	180	1	30	30	
3	I			1	60									I	1	60	1	60																			60	3
4	I			1	40									I	4	160	1	40																			40	4
5	I					1	10							I			1	10					1	10							1	10	2	20			10	5
	I					1	10							I	SPARE CONDUIT TO POLE																							10	
6	I					1	15							I			1	15					1	15					1	15							15	6
7	I							1	115					I	FUTURE COMMUNICATION CONDUIT - TERMINATE IN ITS GROUND BOX																							115	7
	I											1	130	I	3	390	1	130					4	520					1	130	2	260	3	390			130	
8	I					1	10							I	SPARE CONDUIT TO POLE																							10	8
	I					1	10							I	1	10	1	10													1	10	1	10			10	
9	I					1	20							I	1	20	1	20					2	40					1	20							20	9
10	I											1	70	I	1	70	1	70					2	140							1	70	2	140			70	10
11	I					1	20							I	1	20	1	20					2	40							1	20	2	40			20	11
	I					1	20							I	SPARE CONDUIT TO POLE																							20	
12	I											1	120	I			1	120																			120	12
13	I							1	10					I	1	10	1	10					1	10							1	10	1	10	1	10	10	13
	I							1	10					I	SPARE CONDUIT TO POLE																							10	
14	I							1	10					I			1	10					1	10					1	10							10	14
15	I							1	85					I	FUTURE COMMUNICATION CONDUIT - TERMINATE IN ITS GROUND BOX																							85	15
	I											1	80	I	1	80	1	80					2	160					1	80	1	80	1	80	1	80	80	
16	I					1	35							I	FUTURE COMMUNICATION CONDUIT - TERMINATE IN ITS GROUND BOX																							35	16
SUBTOTAL			10		235		150		230		60		400			1090		790		0		0		1185		0		0		345		580		870		120		
P-1	P													I								80		5		90		75						30		30	VARIES	P-1
P-2	P													I										5		10											VARIES	P-2
P-3	P													I										5		10											VARIES	P-3
P-4	P													I										5		105		70						80			VARIES	P-4
P-5	P													I								80		10		20											VARIES	P-5
P-6	P													I								80				50		45						30			VARIES	P-6
P-7	P													I								80		10		195		70						85			VARIES	P-7
SUBTOTAL			0		0		0		0		0		0			0		0		0		320		40		470		265		0		0		225		30		
TOTAL			10		235		150		230		60		400			1090		790		0		320		1225		470		265		345		580		1095		150		

CONDUIT STATUS: E=EXISTING; I=INSTALL; A=ABANDON; AC=AERIAL CABLE; R=REMOVE AND SALVAGE; P=INSTALL WIRE INSIDE STEEL POLE
P-* - REFERS TO WIRING WITHIN THE SIGNAL POLE AND MAST ARM
* - THE CONTRACTOR SHALL INSTALL A 2" PVC CONDUIT FROM THE POINT OF DELIVERY TO THE PEDESTAL METER.



NOTES:

11. CONTRACTOR SHALL COORDINATE THE TRAFFIC SIGNAL POLE FOUNDATION WORK WITH THE CURB RAMP AND SIDEWALK INSTALLATION. IF CURB RAMPS ARE CONSTRUCTED FIRST, CONTRACTOR SHALL NOTIFY THE CITY AND ENGINEER SO A FIELD MEETING CAN BE SCHEDULED TO DETERMINE IF FOUNDATIONS NEED TO BE SHIFTED TO BE ADJACENT TO THE LANDING AREAS. IF SIGNAL POLE FOUNDATIONS ARE INSTALLED FIRST, THE CURB RAMPS AND SIDEWALKS SHALL BE MODIFIED SO THAT THE CURB RAMP LANDING AREAS ARE ADJACENT TO THE PUSH BUTTONS AND THE SIDE REACH TO THE PUSH BUTTONS ARE 10" OR LESS.

12. ALL SIGNAL CABLES SHALL BE WIRED IN ACCORDANCE WITH THE CABINET PREPARATION NOTES SUPPLIED BY THE CITY OF DALLAS.

13. PROPOSED APS UNITS SHALL BE PLACED ADJACENT TO A LEVEL LANDING AREA (2% MAX IN ANY DIRECTION). IF THE DISTANCE FROM THE PUSH BUTTON TO THE EDGE OF ACCESSIBLE PATH EXCEEDS 10", THE CONTRACTOR SHALL FURNISH AND INSTALL A PUSH BUTTON EXTENDER TO MAKE THE REACH 10" OR LESS. MEASUREMENT AND PAYMENT SHALL BE CONSIDERED SUBSIDIARY TO THE INSTALLATION OF THE TRAFFIC SIGNAL EQUIPMENT.

14. IF SIGNAL POLES CANNOT BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLANS, THE CONTRACTOR SHALL CONTACT THE CITY AND ENGINEER TO MEET ON SITE TO DISCUSS NEW LOCATIONS.

15. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.

16. CONTRACTOR TO MAINTAIN FULL ACCESS TO A MINIMUM OF TWO PEDESTRIAN CROSSINGS AT ALL TIMES DURING CONSTRUCTION.

17. CONTRACTOR TO PROCURE AND INSTALL A POWER OVER ETHERNET CCTV CAMERA AND ETHERNET CABLE. CCTV CAMERA SHALL BE ONVIF AND NTCIP COMPLIANT. ETHERNET CABLE IS TO BE INSTALLED FROM CAMERA TO TRAFFIC SIGNAL CABINET AND SUBSIDIARY TO ITEM 6010 6002.

18. CONTRACTOR SHALL ADJUST SIGNAL HEAD ALIGNMENT VERTICALLY ON MAST ARMS USING "ASTRO-BRAC" OR APPROVED EQUAL TO ENSURE MAXIMUM SIGNAL HEAD VISIBILITY WHEN HORIZONTAL OVERHEAD UTILITY LINES BLOCK LENS DISPLAY. IN CIRCUMSTANCES WITH SIGNIFICANT VIABILITY CONSTRAINTS, INSTALLNG HEADS VERTICALLY IS POSSIBLE; HOWEVER, IT MUST BE APPROVED BY CITY ENGINEER.

19. FRONT SIDE OF THE TRAFFIC SIGNAL CONTROLLER CABINET SHALL BE INSTALLED TO ORIENT SUCH THAT THE INTERSECTION MAY BE SEEN WHEN VIEWING THE CONTROLLER FRONT PANEL.

20. IF THE PLANS DO NOT INDICATE SPACING OF THE CABINET FOUNDATION FROM THE CURB, PROVIDE FOR A 48" MINIMUM CLEARANCE FROM CURB. LOCATION OF THE CONCRETE APRON FOR THE BATTERY BACKUP SYSTEM MAY NEED TO BE ADJUSTED BASED ON CLEARANCE FROM THE CURB AND AVAILABLE RIGHT-OF-WAY.

SIGNAL HEAD AND POLE PLACEMENT (FT)

POLE NUMBER	STATUS	A (FT)	B (FT)	C (FT)	D (FT)	E (FT)	F (FT)	G (FT)	H (FT)	I (FT)	NO. OF HEADS (EA)*	LUM	DRILLED SHAFT LENGTH (FT)					FDN. TYPE WIND ZONE 80 MPH
													24" DIA SUB TO ITEM 687	30" DIA TYPE A ITEM 416	30" DIA ITEM 416 (RDWY ILL POLE)	36" DIA TYPE A ITEM 416	48" DIA TYPE A ITEM 416	
P-1	I	10	10	10	11	-	36	19	30	13	3	Y				13		36-A
P-2	I	5	PEDESTRIAN POLE					15	-	-	-		6					24-A
P-3	I	10	PEDESTRIAN POLE					15	-	-	-		6					24-A
P-4	I	9	21	11	14	-	48	19		13	3					13		36-A
P-5	I	9	LUMINAIRE POLE SA 20T-4					13.5	20	-	-	Y			8			30
P-6	I	3	9	12	-	-	28	19	30	13	2	Y		11				30-A
P-7	I	10	27	10	11	7	55	19	30		4	Y					22	48-A
											TOTAL:		12	11	8	26	22	

SIGNAL POLE STATUS: I=INSTALL; E=EXISTING; REM=REMOVE; F=INSTALL IN FUTURE PHASE
* - DOES NOT INCLUDE VERTICAL SIDEMOUNT SIGNAL HEADS OR PEDESTRIAN SIGNAL HEADS

ELECTRICAL SERVICE DESCRIPTION (SEE ED(5)-14)	SERVICE CONDUIT **SIZE	SERVICE CONDUCTORS NO. / SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE / AMPS	TWO-POLE CONTACTOR AMPS	PANELBD / LOADCENTER AMP RATING (MIN)	BRANCH CIRCUIT ID	BRANCH CKT. BRK. POLE / AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
TY D (120/240) 070 (NS) SS (E) PS (U)	2"	3 / #4	N/A	2P / 70	30	100	T.S. LIGHTING	1P / 50 2P / 20	23 3	<7.1

** - VERIFY SERVICE CONDUIT SIZE WITH UTILITY. SIZE MAY CHANGE DUE TO THE UTILITY METER REQUIREMENTS. ENSURE CONDUIT SIZE MEETS THE NATIONAL ELECTRICAL CODE.

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

FOREST PARK ROAD AT MOCKINGBIRD LANE
SHEET 1 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RAE	6	(SEE TITLE SHEET)		CS
GRAPHICS RAE	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	58
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

CABLE TERMINATION CHART								
CNDR. NO.	CONDUCTOR COLOR	CABLE 1 20 CNDR. FROM P-1 TO CNTRL.	CABLE 2 10 CNDR. FROM P-2 TO CNTRL.	CABLE 3 10 CNDR. FROM P-3 TO CNTRL.	CABLE 4 20 CNDR. FROM P-4 TO CNTRL.	CABLE 5 10 CNDR. FROM P-5 TO CNTRL.	CABLE 6 20 CNDR. FROM P-6 TO CNTRL.	CABLE 7 20 CNDR. FROM P-7 TO CNTRL.
1	WHITE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
2	BLACK	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON	COMMON
3	RED	SH 2,3 - 08 R	SPARE	SPARE	SH 7,8,10 - 02 R	SPARE	SH 13,14 - 04 R	SH 19,20,21 - 06 R
4	GREEN	SH 2,3 - 08 G	SPARE	SPARE	SH 7,8,10 - 02 G	SPARE	SH 13,14 - 04 G	SH 19,20,21 - 06 G
5	ORANGE	SH 2,3 - 08 Y	SPARE	SPARE	SH 7,8,10 - 02 Y	SPARE	SH 13,14 - 04 Y	SH 19,20,21 - 06 Y
6	BLUE	SH 6 - 08 W	SPARE	SH 12 - 02 W	SPARE	SH 16 - 04 W	SPARE	SH 23 - 06 W
7	WHITE/BLACK	SH 6 - 08 DW	SPARE	SH 12 - 02 DW	SPARE	SH 16 - 04 DW	SPARE	SH 23 - 06 DW
8	RED/BLACK	SH 4 - OLB R(ARROW)	SH 5 - 02 DW	SPARE	SH 9 - OLC R(ARROW)	SH 17 - 06 DW	SH 15 - OLD R(ARROW)	SH 18 - OLA R(ARROW)
9	GREEN/BLACK	SH 4 - OLB FY(ARROW)	SH 5 - 02 W	SPARE	SH 9 - OLC FY(ARROW)	SH 17 - 06 W	SH 15 - OLD FY(ARROW)	SH 18 - OLA FY(ARROW)
10	ORANGE/BLACK	SH 4 - OLB Y(ARROW)	SPARE	SPARE	SH 9 - OLC Y(ARROW)	SPARE	SH 15 - OLD Y(ARROW)	SH 18 - OLA Y(ARROW)
11	BLUE/BLACK	SPARE			SH 11 - 04 W		SPARE	SH 22 - 08 W
12	BLACK/WHITE	SPARE			SH 11- 04 DW		SPARE	SH 22 - 08 DW
13	RED/WHITE	SH 1 - OLE G(ARROW)			SPARE		SPARE	SPARE
14	GREEN/WHITE	SH 4 - 03 G(ARROW)			SH 9 - 05 G(ARROW)		SH 15 - 07 G(ARROW)	SH 18 - 01 G(ARROW)
15	BLUE/WHITE	SPARE			SPARE		SPARE	SPARE
16	BLACK/RED	SH 1 - OLE R			SPARE		SPARE	SPARE
17	WHITE/RED	SH 1 - OLE FY(ARROW)			SPARE		SPARE	SPARE
18	ORANGE/RED	SH 1 - OLE Y(ARROW)			SPARE		SPARE	SPARE
19	BLUE/RED	SH 1 - OLE G(ARROW)			SPARE		SPARE	SPARE
20	RED/GREEN	SPARE			SPARE		SPARE	SPARE

•NOTE: HOME RUN 2 CONDR. TO ALL POLES WITH PED HEADS FOR PED CALL

GROUND BOX SUMMARY			
ITEM NO.	DESCRIPTION	UNIT	QTY.
0624	GROUND BOX TY D (162922) W/APRON	EA	4
6186	GROUND BOX TY 1 (243624) W/APRON	EA	1

SIGNS SUMMARY					
SIGN •	SIGN TYPE	SIGN LEGEND	STATUS	SUPPORT	SIGN DIMENSION (in x in)
SN1	R10-3EL	APS UNIT	I	P-2	9"x15"
SN2	R10-3ER	APS UNIT	I	P-1	9"x15"
SN3	R3-8b	ADVANCE INTERSECTION LANE CONTROL	I	P-1	40"x30"
SN4	STREET NAME	MOCKINGBIRD	I	P-1	24"x96"
SN5	STREET NAME	FOREST PARK	I	P-4	24"x84"
SN6	R10-3ER	APS UNIT	I	P-3	9"x15"
SN7	R10-3EL	APS UNIT	I	P-4	9"x15"
SN8	R10-3EL	APS UNIT	I	P-5	9"x15"
SN9	R10-3ER	APS UNIT	I	P-5	9"x15"
SN10	STREET NAME	MOCKINGBIRD		P-6	24"x96"
SN11	R10-3EL	APS UNIT	I	P-7	9"x15"
SN12	R10-3ER	APS UNIT	I	P-7	9"x15"
SN13	STREET NAME	FOREST PARK	I	P-7	24"x84"
SN14	I-5	AIRPORT	I	P-7	24"x24"
SN15	M6-3	DIRECTIONAL ARROW	I	P-7	21"x15"

STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=EXISTING TO BE RELOCATED

02/24/2023

STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED
PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

FOREST PARK ROAD AT
MOCKINGBIRD LANE
SHEET 2 OF 3

DESIGN RAE	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS RAE	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	59
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC	

SIGNAL HEADS (ITEM 682)

SIGNAL HEAD NUMBER	12" LED SIGNAL INDICATION										PED SIG SEC (LED) (COUNTDOWN)
	SIGNAL HEAD TYPE	STATUS	BACK PLATE		LED SIGNAL LAMPS						
			3 SEC	5 SEC	<-G-	G	<-Y-	Y	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA
1	V4FRT	I		1	1		2			1	
2	H3	I	1			1		1		1	
3	H3	I	1			1		1		1	
4	H5FLT	I		1	1		2		2		
5	PED	I									1
6	PED	I									1
7	H3	I	1			1		1		1	
8	H3	I	1			1		1		1	
9	H5FLT	I		1	1		2		2		
10	V3	I	1			1		1		1	
11	PED	I									1
12	PED	I									1
13	V3	I	1			1		1		1	
14	H3	I	1			1		1		1	
15	H5FLT	I		1	1		2		2		
16	PED	I									1
17	PED	I									1
18	H5FLT			1	1		2		2		
19	H3	I	1			1		1		1	
20	H3	I	1			1		1		1	
21	H3	I	1			1		1		1	
22	PED	I									1
23	PED	I									1
TOTAL (NEW)			10	5	5	10	8	10	8	11	8

STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=RELOCATE

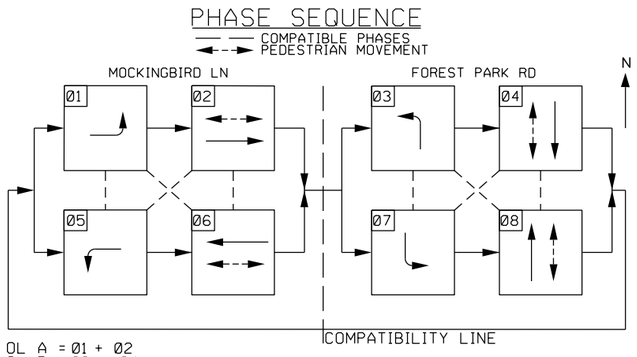
RADAR DETECTION ZONE DETAILS

RADAR PANEL NUMBER	MOUNTING LOCATION	MOUNTING HEIGHT	ZONE LOCATIONS	ZONE(S)	SETBACK DISTANCE	DISTANCE: NEAREST TO FARTHEST LANE
R1	MAST ARM P-2	18'	STOP BAR	SB+SBLT	N/A	40' TO 55'
R2	MAST ARM P-1	18'	STOP BAR	EB+EBLT	N/A	62' TO 95'
R3	MAST ARM P-6	18'	STOP BAR	NB+NBLT+NBRT	N/A	25' TO 50'
R4	MAST ARM P-4	18'	STOP BAR	WB+WBLT	N/A	60' TO 95'
R5	MAST ARM P-4	19'	SETBACK	WB	400'	-
R6	MAST ARM P-1	19'	SETBACK	EB	400'	-

APS MESSAGE CHART

POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-1	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS MOCKINGBIRD LANE AT FOREST PARK ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS MOCKINGBIRD LANE AT FOREST PARK ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MOCKINGBIRD LANE, WALK SIGN IS ON TO CROSS MOCKINGBIRD LANE
P-2	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS FOREST PARK ROAD AT MOCKINGBIRD LANE
		EXTENDED BUTTON PUSH	WAIT TO CROSS FOREST PARK ROAD AT MOCKINGBIRD LANE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	FOREST PARK ROAD, WALK SIGN IS ON TO CROSS FOREST PARK ROAD
P-3	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS FOREST PARK ROAD AT MOCKINGBIRD LANE
		EXTENDED BUTTON PUSH	WAIT TO CROSS FOREST PARK ROAD AT MOCKINGBIRD LANE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	FOREST PARK ROAD, WALK SIGN IS ON TO CROSS FOREST PARK ROAD
P-4	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS MOCKINGBIRD LANE AT FOREST PARK ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS MOCKINGBIRD LANE AT FOREST PARK ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MOCKINGBIRD LANE, WALK SIGN IS ON TO CROSS MOCKINGBIRD LANE
P-5	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS MOCKINGBIRD ROAD AT FOREST PARK ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS MOCKINGBIRD LANE AT FOREST PARK ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MOCKINGBIRD LANE, WALK SIGN IS ON TO CROSS MOCKINGBIRD LANE
P-5	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS FOREST PARK ROAD AT MOCKINGBIRD LANE
		EXTENDED BUTTON PUSH	WAIT TO CROSS FOREST PARK ROAD AT MOCKINGBIRD LANE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	FOREST PARK LANE, WALK SIGN IS ON TO CROSS FOREST PARK LANE
P-7	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS MOCKINGBIRD LANE AT FOREST PARK ROAD
		EXTENDED BUTTON PUSH	WAIT TO CROSS MOCKINGBIRD LANE AT FOREST PARK ROAD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MOCKINGBIRD LANE, WALK SIGN IS ON TO CROSS MOCKINGBIRD LANE
P-7	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS FOREST PARK ROAD AT MOCKINGBIRD LANE
		EXTENDED BUTTON PUSH	WAIT TO CROSS FOREST PARK ROAD AT MOCKINGBIRD LANE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	FOREST PARK ROAD, WALK SIGN IS ON TO CROSS FOREST PARK ROAD

PHASE SEQUENCE



OL A = Ø1 + Ø2
OL B = Ø3 + Ø4
OL C = Ø5 + Ø6
OL D = Ø7 + Ø8
OL E = Ø3 + Ø5

02/24/2023

STATE OF TEXAS
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Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES

FOREST PARK ROAD AT MOCKINGBIRD LANE
SHEET 3 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RAE	6	(SEE TITLE SHEET)		CS
GRAPHICS RAE	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	60
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

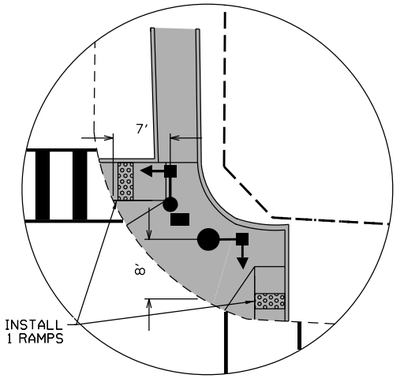
NOTES:

1. INSTALLATION AND PAYMENT FOR PROPOSED RAMPS AND SIDEWALKS SHALL INCLUDE ALL INCIDENTAL WORK, INCLUDING EXCAVATION, REMOVAL AND DISPOSAL OF EXISTING CONCRETE CURB AND SIDEWALK. PROPOSED CURB ALONG SIDEWALKS, AND OTHER MISCELLANEOUS MATERIAL NECESSARY TO CONSTRUCT THE PROPOSED RAMPS AND SIDEWALKS. SIDEWALK QUANTITIES PROVIDED ARE ESTIMATES ONLY. PAYMENT FOR SIDEWALK SHALL BE FOR THE QUANTITY APPROVED BY THE ENGINEER AND CONSTRUCTED ON SITE.
2. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.
3. REFER TO THE CITY OF DALLAS 251-D STANDARDS FOR ADDITIONAL INFORMATION REGARDING TYPICAL PAVEMENT MARKING PLACEMENT.
4. LANE WIDTHS SHALL MATCH EXISTING LANES. ALL PROPOSED PAVEMENT MARKINGS SHALL BE TIED TO EXISTING MARKINGS WHERE APPLICABLE TO REFRESH THE INTERSECTION PAVEMENT MARKINGS.
5. CONTRACTOR SHALL APPLY PAVEMENT SEALER IN AREAS WHERE NEW THERMO IS TO BE APPLIED.
6. ALL EXISTING SIGNS AND PAVEMENT MARKINGS TO REMAIN UNLESS OTHERWISE NOTED.
7. STRIPING CONTRACTOR SHALL CONTACT COD TRANSPORTATION OPERATIONS AND TxDOT TRAFFIC SIGNAL OFFICE AT LEAST 24 HOURS IN ADVANCE OF MOBILIZATION. COD STAFF MUST BE PRESENT TO CONFIRM LAYOUT PRIOR TO THE APPLICATION OF ANY PAVEMENT MARKINGS.
8. CONTRACTOR SHALL ENSURE THAT ALL PED RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE EQUIPMENT, RAMP OR GUTTER AREA.
9. INSTALL PAVEMENT MARKINGS 200' IN EACH DIRECTION FROM STOP BAR.
10. SEE SUMMARY OF PEDESTRIAN RAMPS AND PAVEMENT MARKING TABLE ON PROPOSED QUANTITY SHEET.

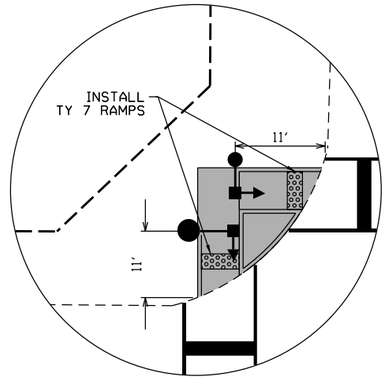
LEGEND

PEDESTRIAN RAMPS

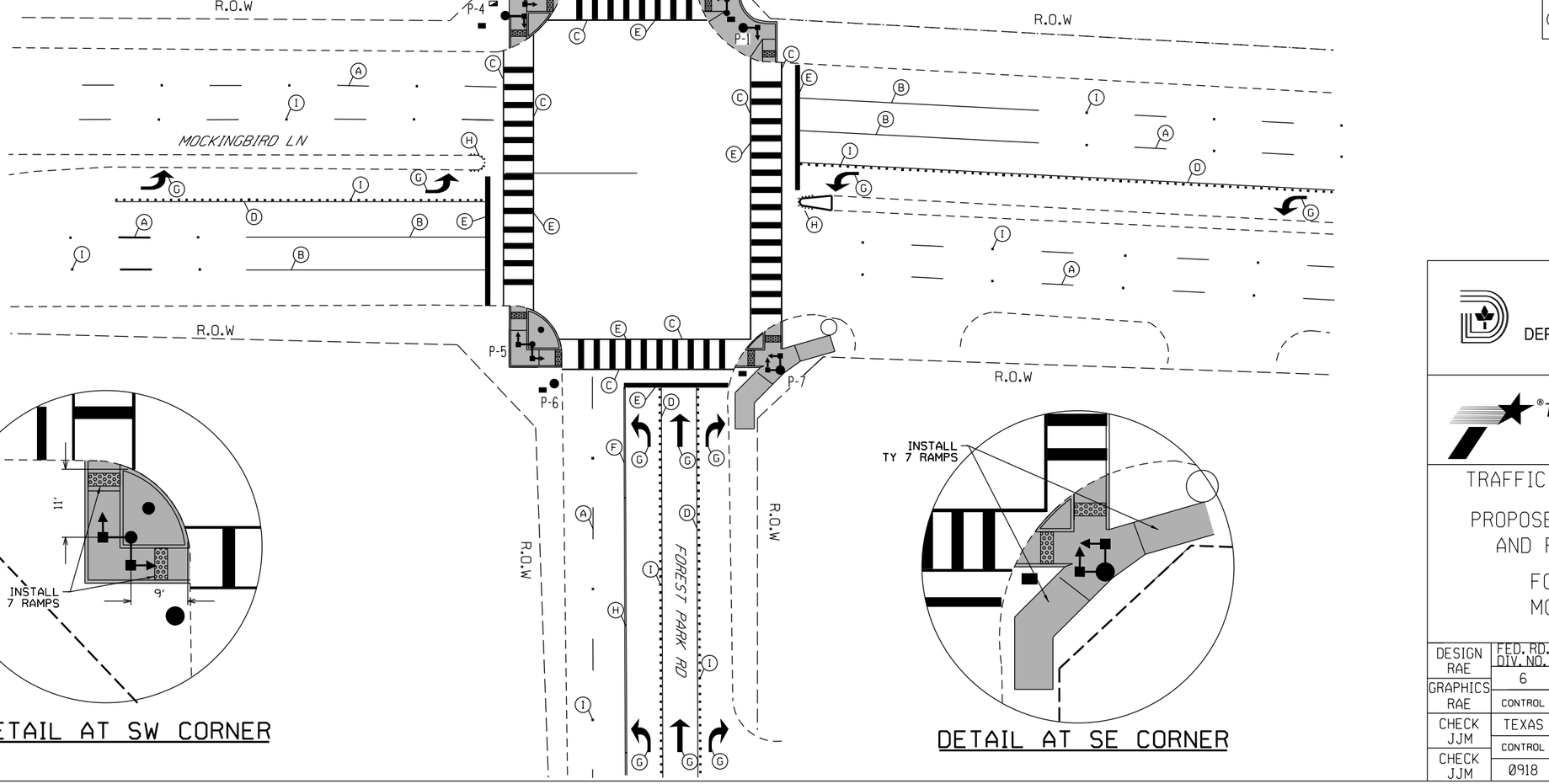
INSTALL OR REPLACE CONCRETE

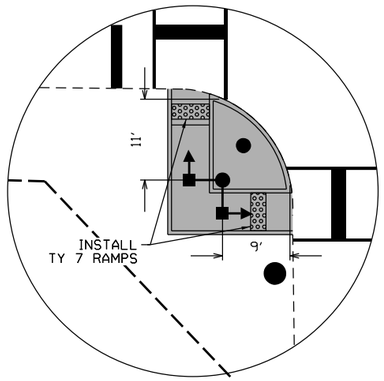


DETAIL AT NE CORNER



DETAIL AT NW CORNER





DETAIL AT SW CORNER

DETAIL AT SE CORNER

LEGEND

PAVEMENT MARKING

- (A) RE PM W/ RET REQ TY I (W) 4" (BRK) (100MIL)
- (B) RE PM W/ RET REQ TY I (W) 4" (SLD) (100MIL)
- (C) RE PM W/ RET REQ TY I (W) 6" (SLD) (100MIL)
- (D) RE PM W/ RET REQ TY I (W) 8" (SLD) (100MIL)
- (E) RE PM W/ RET REQ TY I (W) 24" (SLD) (100MIL)
- (F) RE PM W/ RET REQ TY I (Y) 4" (SLD) (100MIL)
- (G) PREFAB PAV MRK TY I (W) ARROW
- (H) REFL PAV MRK TY II A-A
- (I) REFL PAV MRK TY II C-R

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED PAVEMENT MARKINGS AND PEDESTRIAN RAMPS

FOREST PARK ROAD AT MOCKINGBIRD LANE

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RAE	6	(SEE TITLE SHEET)		CS
GRAPHICS RAE	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	61
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

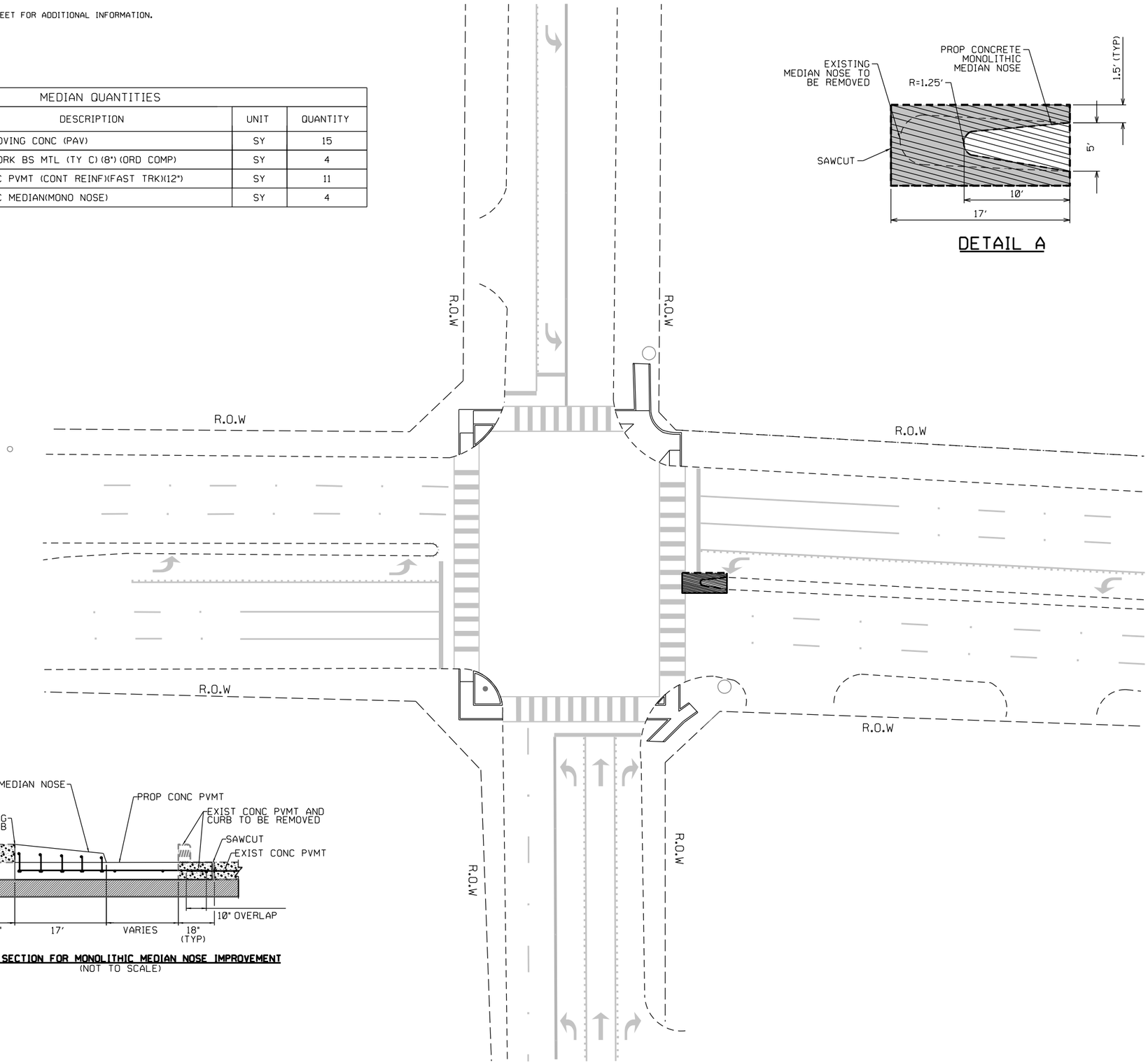
NOTES:

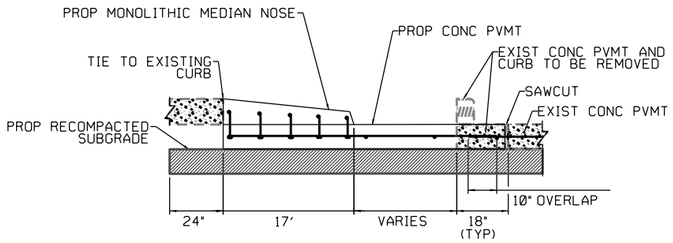
1. REFER TO EXISTING CONDITIONS AND REMOVALS SHEET FOR ADDITIONAL INFORMATION.

2. REFER TO PROPOSED OCNDITION SHEET FOR ADDITIONAL INFORMATION.

MEDIAN QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6001	REMOVING CONC (PAV)	SY	15
251	6034	REWORK BS MTL (TY C)(8")(ORD COMP)	SY	4
360	6044	CONC PVMT (CONT REINF)(FAST TRK)(12")	SY	11
536	6006	CONC MEDIAN(MONO NOSE)	SY	4

DETAIL A





TYPICAL CROSS SECTION FOR MONOLITHIC MEDIAN NOSE IMPROVEMENT
(NOT TO SCALE)

0 5 10
MEDIAN DETAILS : SCALE: 1" = 20'

0 10 20 40
ORIGINALLY PLOTTED SCALE: SCALE: 1" = 40'

LEGEND

REMOVAL OF EXISTING CONCRETE PAVEMENT, CURB, AND RIPRAP.

CONCRETE PAVEMENT

02/24/2023

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JOSEPH MARCHIONE
105071
LICENSED PROFESSIONAL ENGINEER

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TRAFFIC SAFETY IMPROVEMENTS

PROPOSED MEDIAN DETAILS

FOREST PARK ROAD AT MOCKINGBIRD LANE

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RAE	6	(SEE TITLE SHEET)		CS
GRAPHICS RAE	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	62
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

PEDESTRIAN RAMP / SIDEWALK				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
529	6008	CONC CURB & GUTTER (TY II)	LF	102
531	6003	CONC SIDEWALKS (6")	SY	68
531	6004	CURB RAMPS (TY 1)	EA	2
531	6010	CURB RAMPS (TY 7)	EA	6

REMOVAL SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	102
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1,110
677	6002	ELIM EXT PAV MRK & MRKS (6")	LF	1,270
677	6006	ELIM EXT PAV MRK & MRKS 18")	LF	145
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	410
677	6008	ELIM EXT PAV MRK & MRKS (ARROWS)	LF	10
680	6004	REMOVING TRAFFIC SIGNALS	LF	6

PAVEMENT MARKING SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	690
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	555
666	6224	PAVEMENT SEALER (4")	LF	1,110
666	6225	PAVEMENT SEALER (6")	LF	580
666	6226	PAVEMENT SEALER (8")	LF	690
666	6230	PAVEMENT SEALER (24")	LF	555
666	6231	PAVEMENT SEALER (ARROW)	EA	12
666	6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)	LF	260
666	6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	LF	300
666	6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	580
666	6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	550
668	6077	PREFAB PAV MRK TY C (W)(ARROW)	EA	12
672	6009	RELF PAV MRKR TY II-A-A	EA	30
672	6010	RELF PAV MRKR TY II-C-R	EA	300
678	6001	PAV SURF PREP FOR MRK (4")	LF	1,110
678	6002	PAV SURF PREP FOR MRK (6")	LF	580
678	6004	PAV SURF PREP FOR MRK (8")	LF	690
678	6008	PAV SURF PREP FOR MRK (24")	LF	555
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	12
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	330

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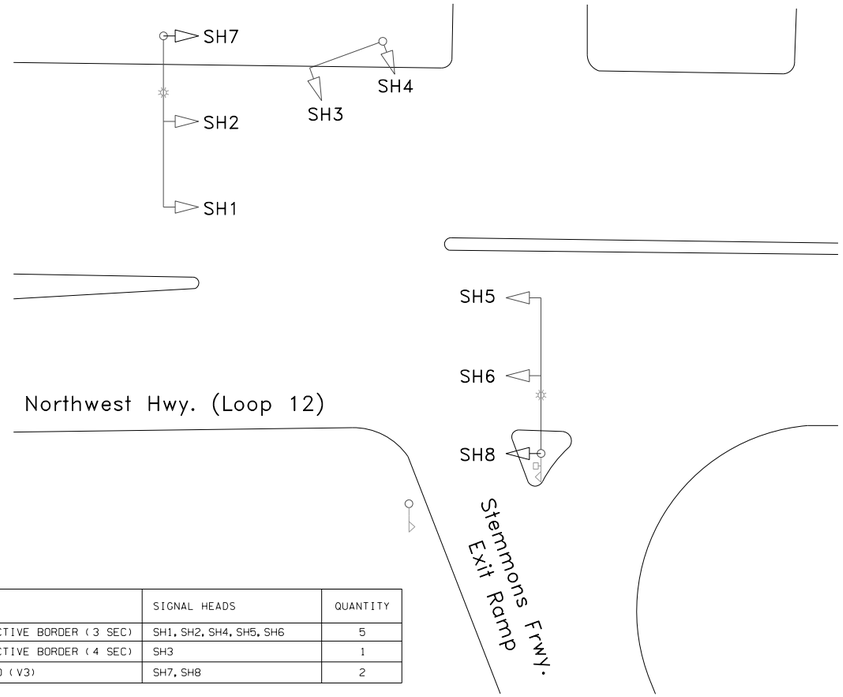
TRAFFIC SAFETY IMPROVEMENTS

PROPOSED QUANTITIES - PAVING

FOREST PARK ROAD AT MOCKINGBIRD LANE

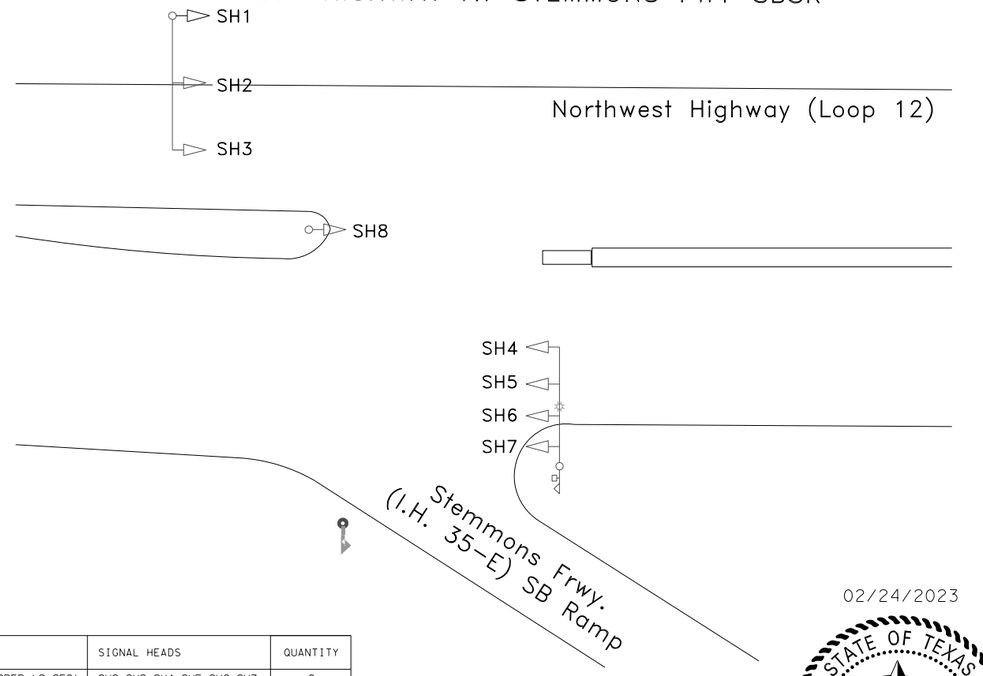
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RAE	6	(SEE TITLE SHEET)		CS
GRAPHICS RAE	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	63
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC.	

NORTHWEST HIGHWAY AT N STEMMONS FWY RAMP



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH1, SH2, SH4, SH5, SH6	5
BACKPLATE W/ REFLECTIVE BORDER (4 SEC)	SH3	1
ADD NEW SIGNAL HEAD (V3)	SH7, SH8	2

NORTHWEST HIGHWAY AT STEMMONS FWY SBSR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH2, SH3, SH4, SH5, SH6, SH7	6
ADD NEW SIGNAL HEAD (V3)	SH1	1

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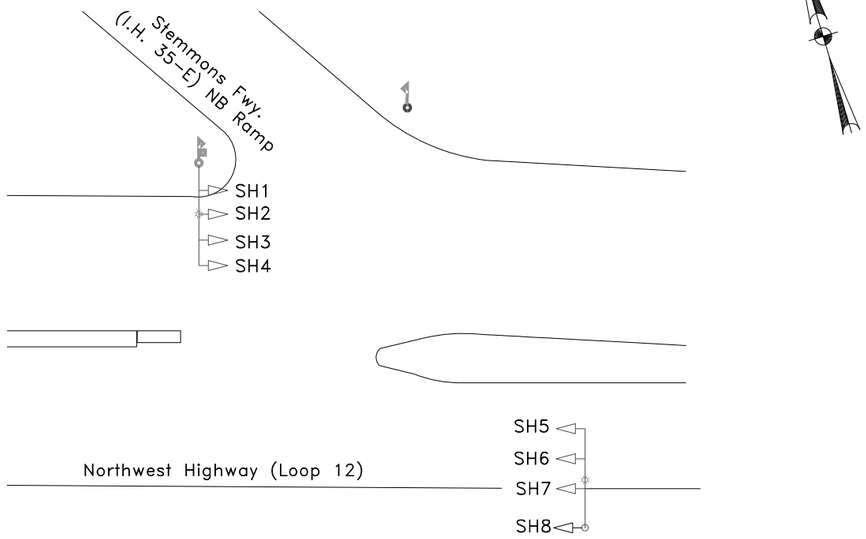
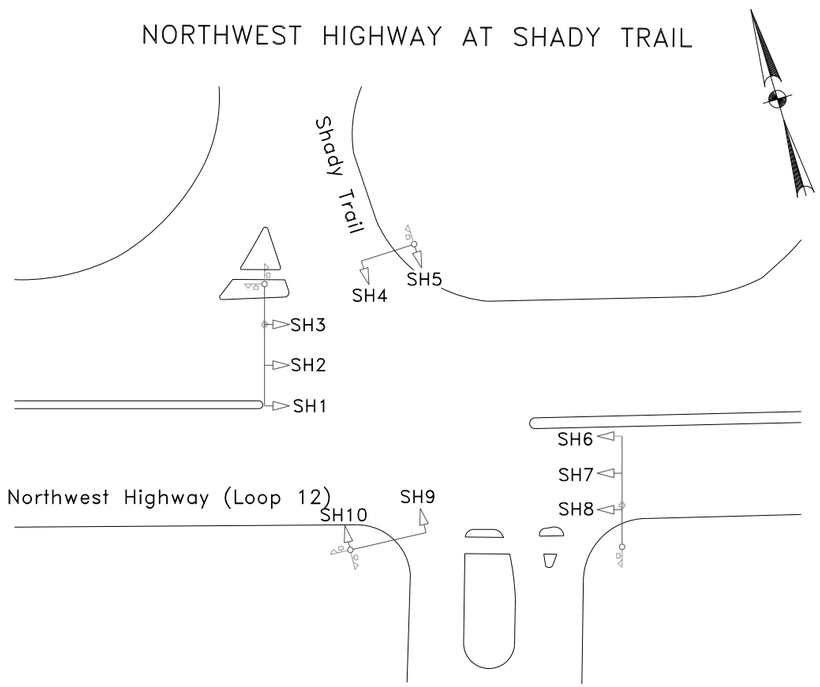
NORTHWEST HIGHWAY AT STEMMONS FWY NBSR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH1, SH2, SH3, SH4, SH6, SH7	6
BACKPLATE W/ REFLECTIVE BORDER (5 SEC)	SH5	1
ADD NEW SIGNAL HEAD (V3)	SH8	1

NORTHWEST HIGHWAY AT SHADY TRAIL



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH2, SH3, SH5, SH7, SH8, SH10	6
BACKPLATE W/ REFLECTIVE BORDER (5 SEC)	SH1, SH4, SH6, SH9	4

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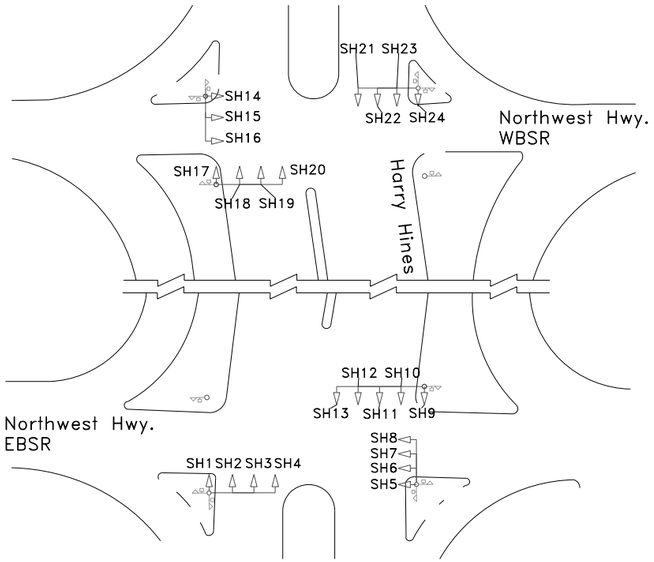
TRAFFIC SAFETY IMPROVEMENTS
SL 12 SIGNAL HEAD UPGRADES
CSJ 0353-04-119

SHEET 1 OF 1

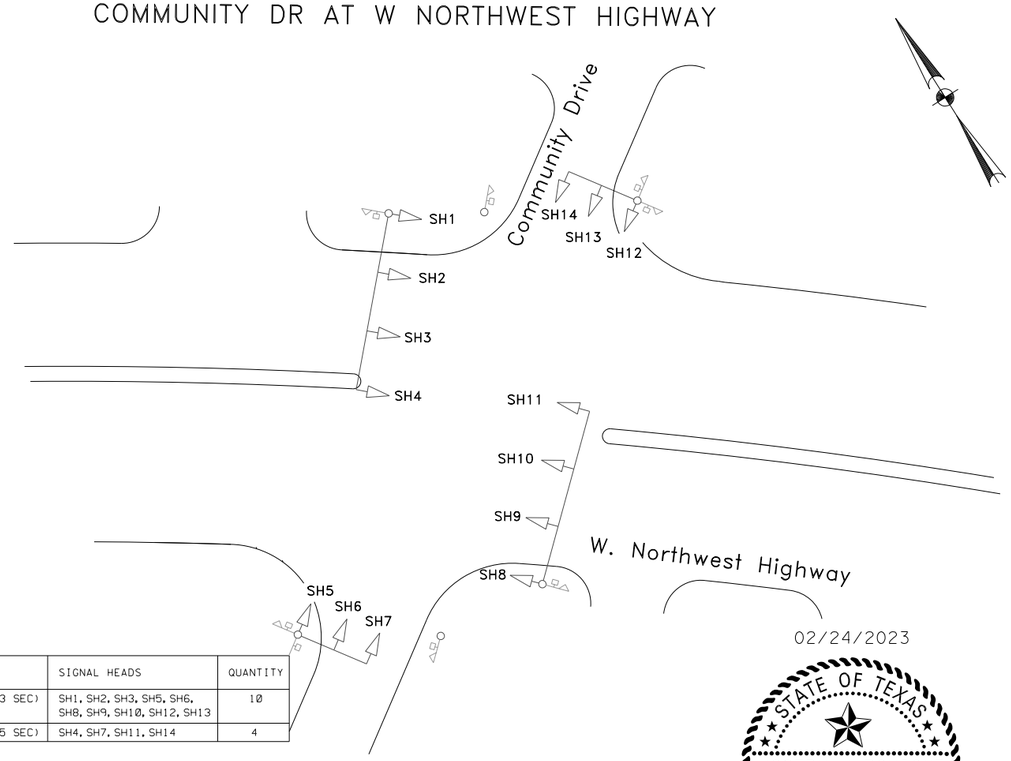
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS SLA	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

HARRY HINES BLVD AT W NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH1, SH2, SH3, SH5, SH6, SH7, SH8, SH9, SH10, SH11, SH12, SH13, SH14 SH15, SH16, SH17, SH18, SH19, SH20, SH22, SH23, SH24	22
BACKPLATE W/ REFLECTIVE BORDER (5 SEC)	SH4, SH21	2

COMMUNITY DR AT W NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH1, SH2, SH3, SH5, SH6, SH8, SH9, SH10, SH12, SH13	10
BACKPLATE W/ RELFECTIVE BORDER (5 SEC)	SH4, SH7, SH11, SH14	4

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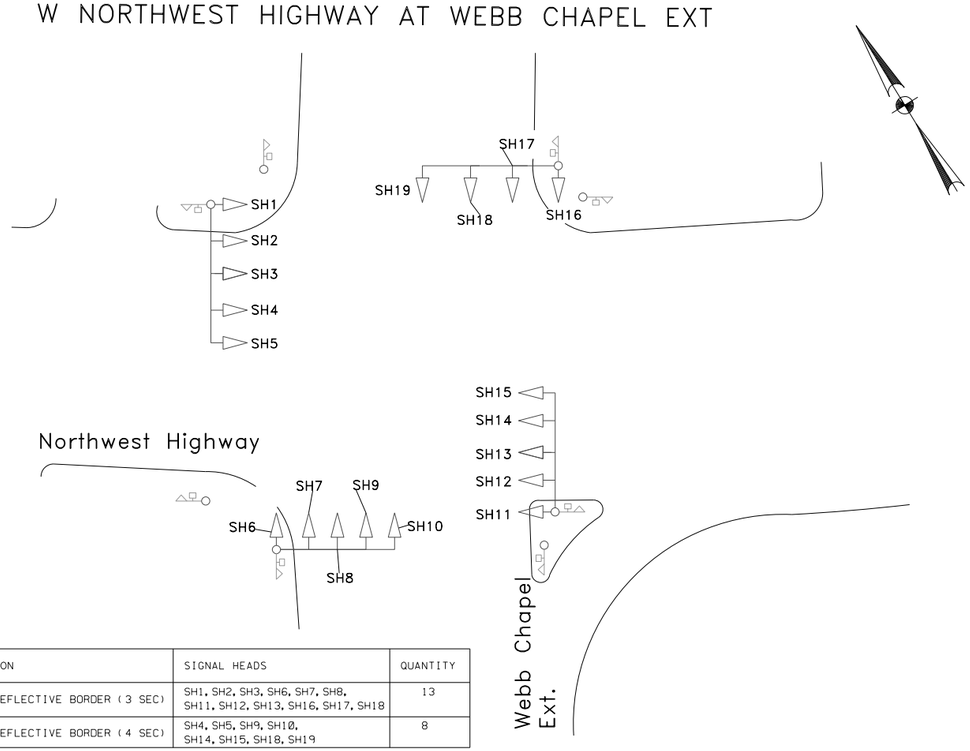
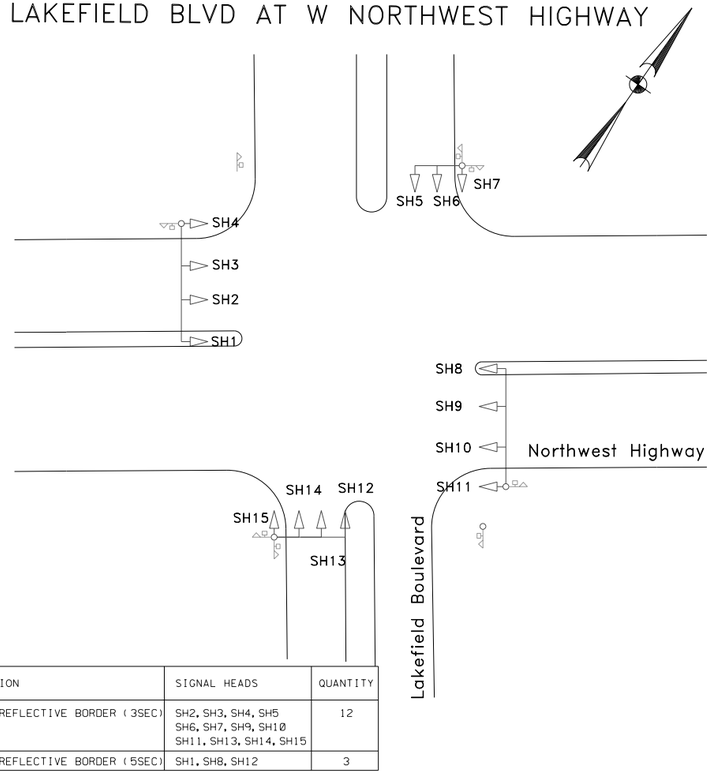
W NORTHWEST HIGHWAY AT WEBB CHAPEL EXT



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH1, SH2, SH3, SH6, SH7, SH8, SH11, SH12, SH13, SH16, SH17, SH18	13
BACKPLATE W/ REFLECTIVE BORDER (4 SEC)	SH4, SH5, SH9, SH10, SH14, SH15, SH18, SH19	8

LAKEFIELD BLVD AT W NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH5 SH6, SH7, SH9, SH10 SH11, SH13, SH14, SH15	12
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH8, SH12	3

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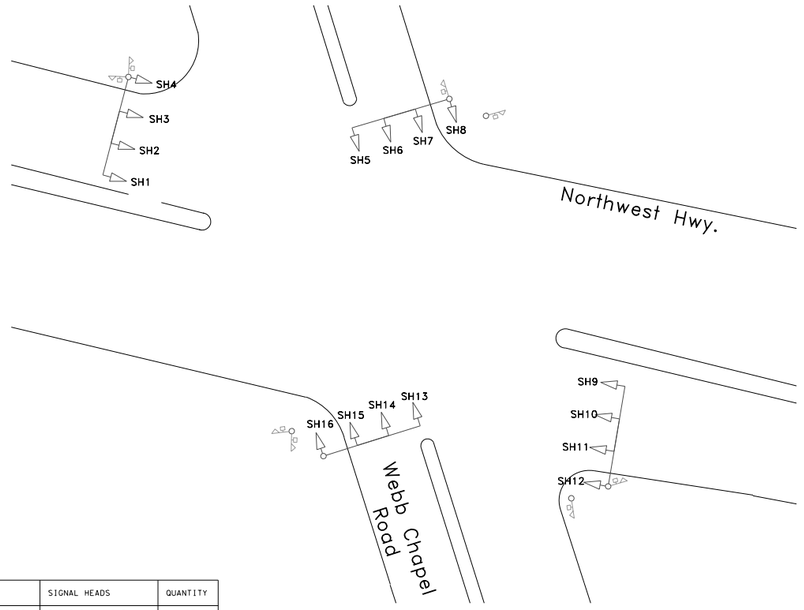
TRAFFIC SAFETY IMPROVEMENTS
SL 12 SIGNAL HEAD UPGRADES
CSJ 0353-05-130

SHEET 1 OF 6

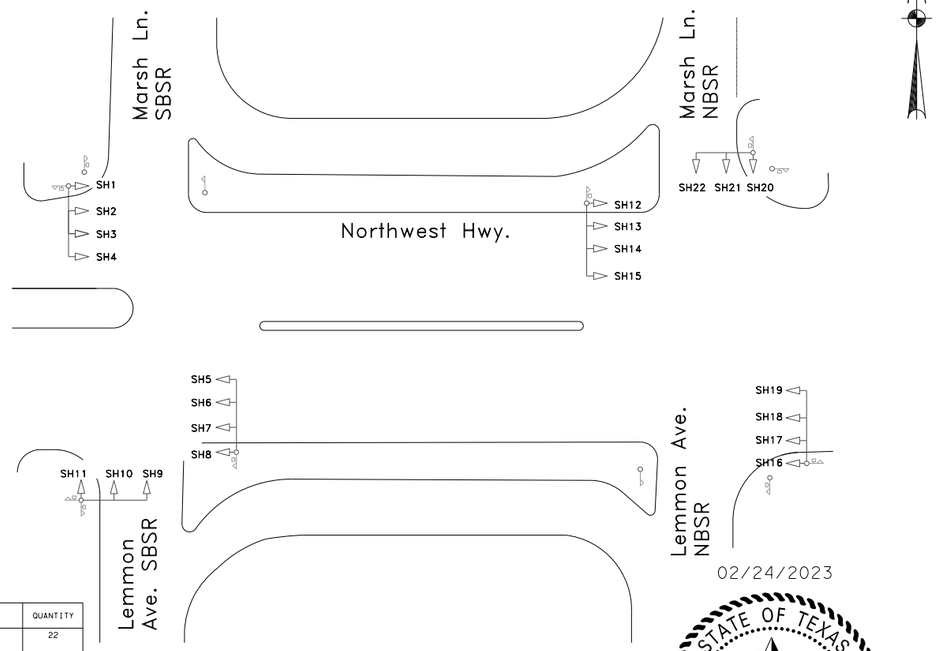
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64A
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

W NORTHWEST HIGHWAY AT WEBB CHAPEL RD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH6 SH7, SH8, SH10, SH11 SH12, SH14, SH15, SH16	12
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH5, SH9, SH13	4

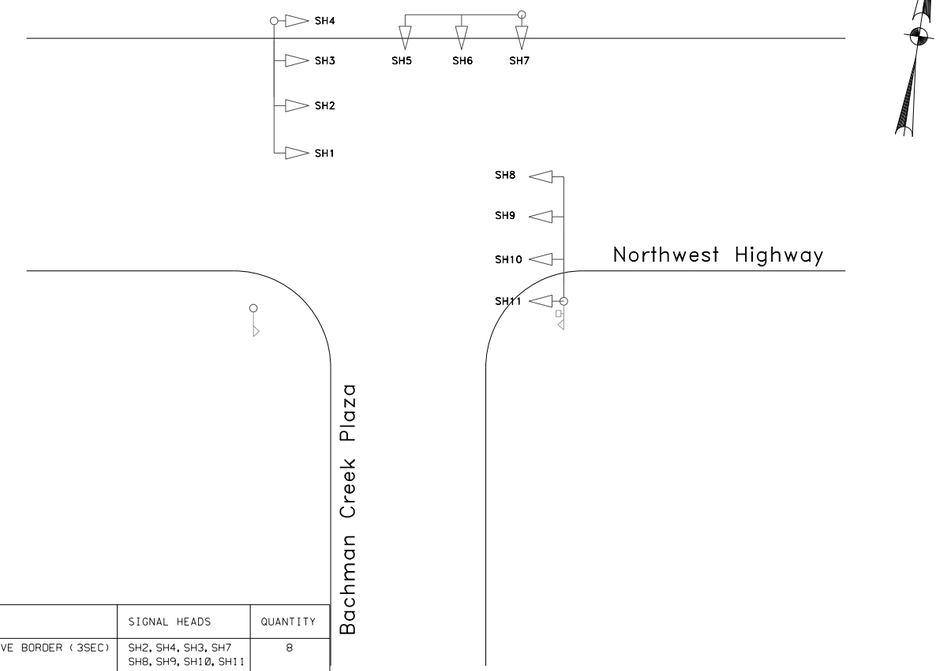
LEMMON AVE/MARSH LN AT W NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH3, SH6 SH7, SH8, SH10, SH11, SH12, SH13, SH14, SH16, SH17, SH18, SH20, SH21	22
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH4, SH19	2

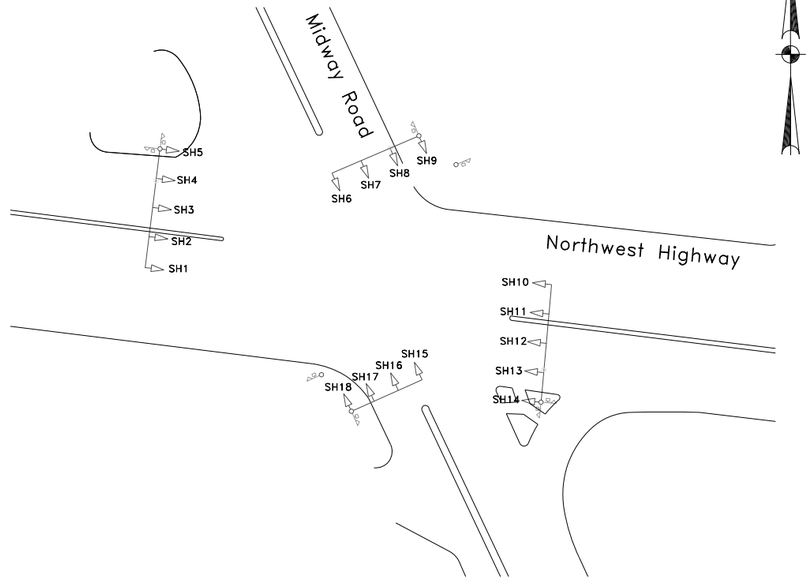
02/24/2023

BACHMAN CREEK PLAZA AT W NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH4, SH3, SH7 SH8, SH9, SH10, SH11	8
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH5, SH6	2
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1	1

MIDWAY RD AT NOTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH3, SH4, SH5, SH7 SH9, SH12, SH13, SH16 SH14, SH17, SH18	9
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH1, SH2, SH10, SH11	4
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH6, SH15	2

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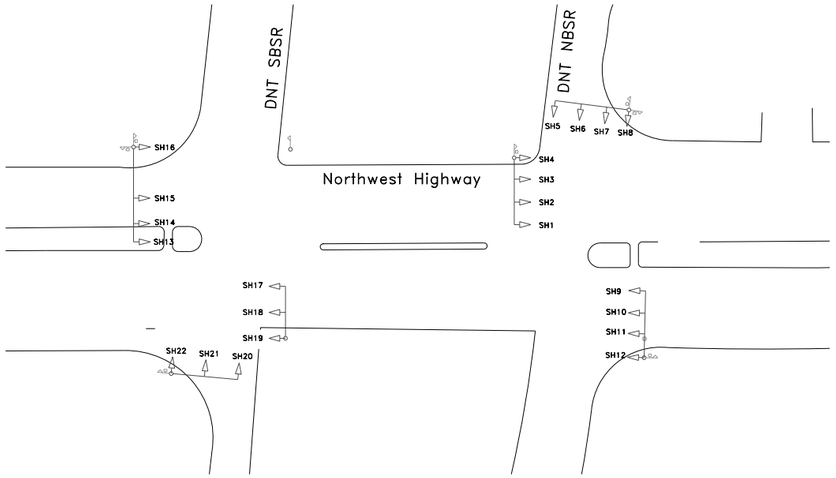
SL 12 SIGNAL HEAD UPGRADES
CSJ 0353-05-130

SHEET 2 OF 6

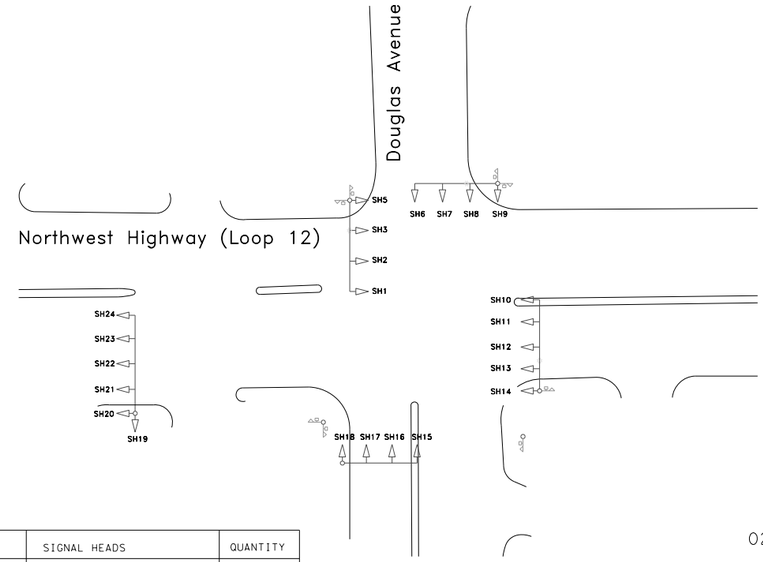
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64B
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

DALLAS NORTH TOLLWAY AT W NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH3, SH4, SH5, SH6, SH7, SH8, SH10, SH11 SH12, SH14, SH15, SH16, SH17, SH18, SH19, SH21	18
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH9, SH13, SH20	3

DOUGLAS AT NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH5, SH7, SH8 SH9, SH11, SH12, SH13, SH14 SH16, SH17, SH19, SH20 SH21, SH22, SH23	18
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH6, SH10, SH15	4

02/24/2023

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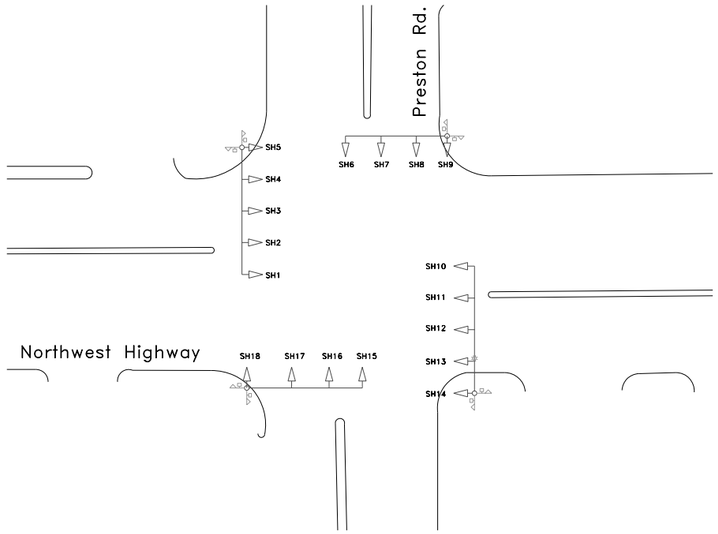
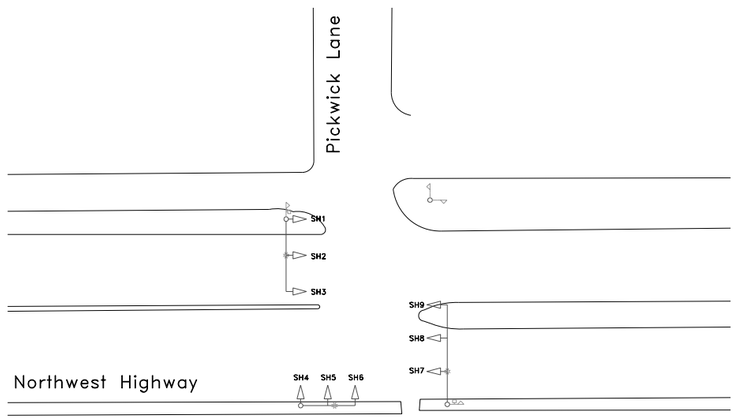
NORTHWEST HIGHWAY AT PRESTON RD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH3, SH4, SH5, SH7 SH8, SH9, SH12, SH13 SH14, SH16, SH17, SH18	8
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH1, SH2, SH10, SH11	4
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH6, SH15	2

NORTHWEST HIGHWAY AT PICKWICK LN



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH3, SH4 SH5, SH6, SH7, SH8	8
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH9	1

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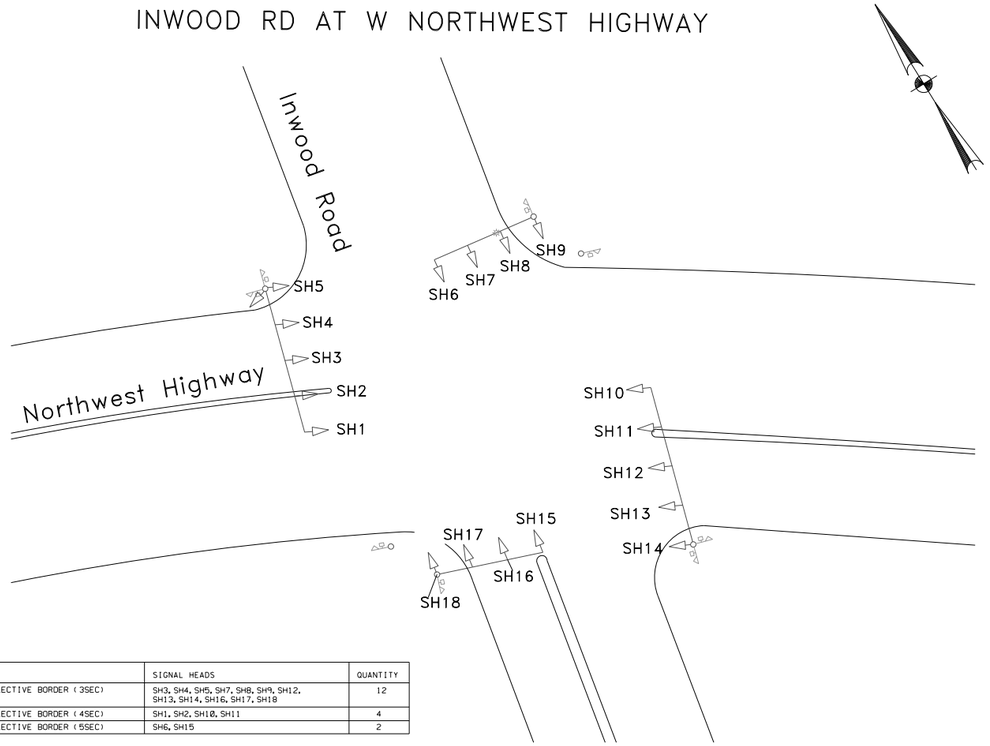
TRAFFIC SAFETY IMPROVEMENTS
SL 12 SIGNAL HEAD UPGRADES
CSJ 0353-05-130

SHEET 3 OF 6

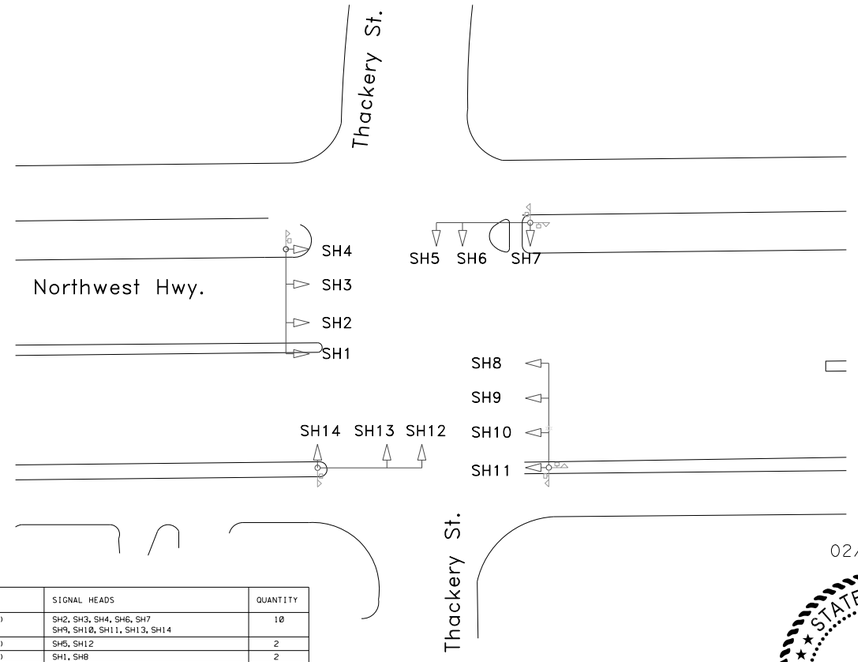
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
CHECK JJM	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64C
	CONTROL	SECTION	JOB	
	0918	47	342, ETC.	

INWOOD RD AT W NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH3, SH4, SH5, SH7, SH8, SH9, SH12, SH13, SH14, SH16, SH17, SH18	12
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH1, SH2, SH10, SH11	4
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH6, SH15	2

NORTHWEST HIGHWAY AT THACKERY ST



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH6, SH7 SH9, SH10, SH11, SH13, SH14	10
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH5, SH12	2
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH8	2

02/24/2023

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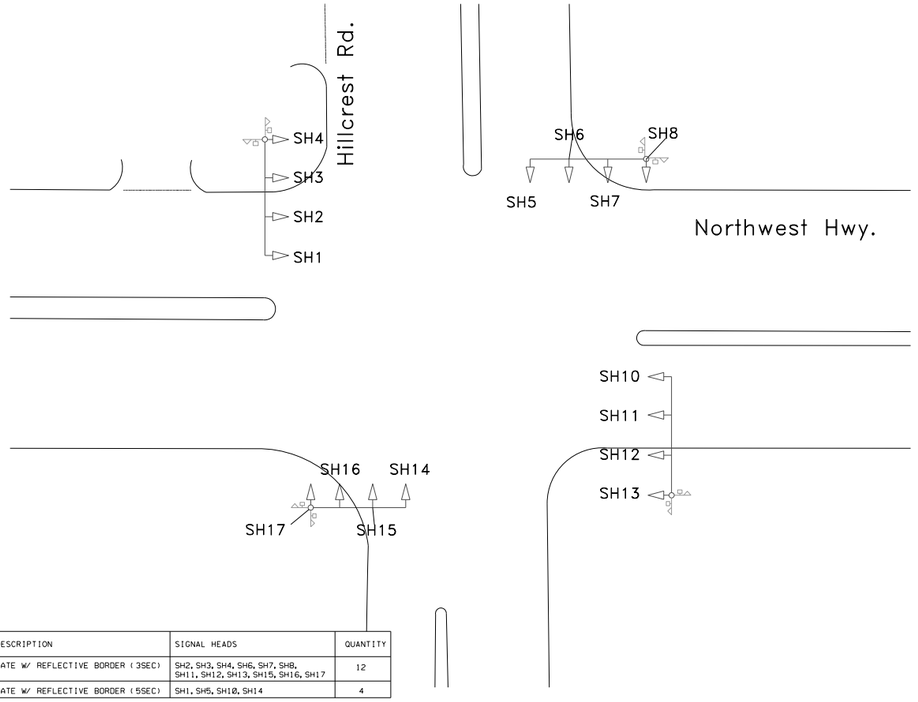
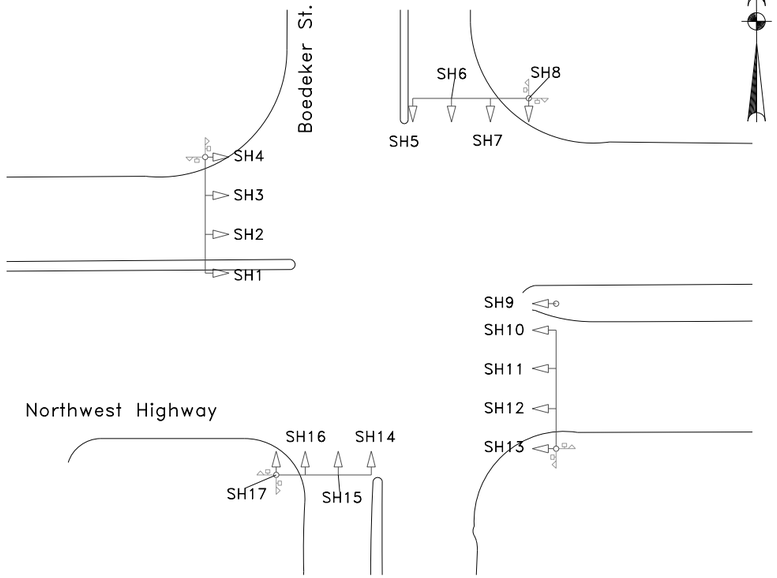
HILLCREST RD AT W NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH6, SH7, SH8, SH11, SH12, SH13, SH15, SH16, SH17	12
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH5, SH10, SH14	4

BOEDEKER ST AT NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH6, SH7, SH8, SH11, SH12, SH13, SH15, SH16, SH17	12
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH5, SH9, SH10, SH14	4
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1	1

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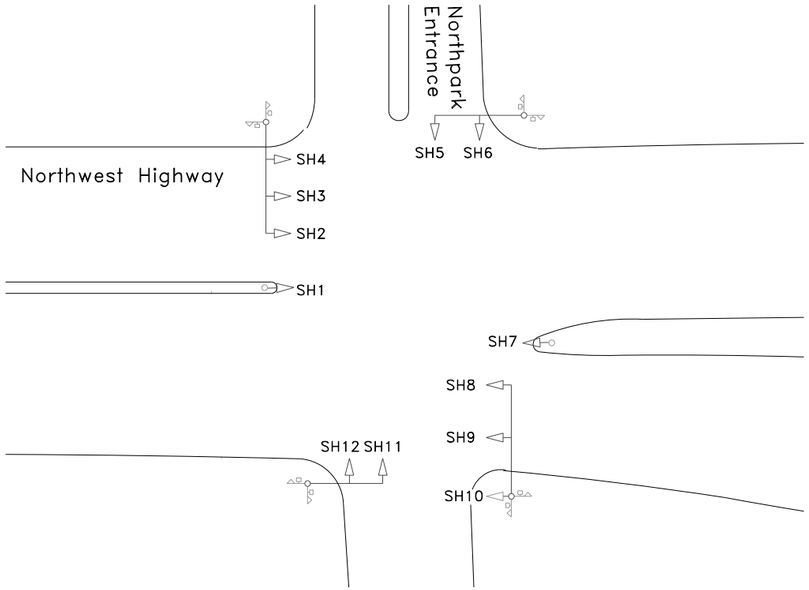
TRAFFIC SAFETY IMPROVEMENTS
SL 12 SIGNAL HEAD UPGRADES
CSJ 0353-05-130

SHEET 4 OF 6

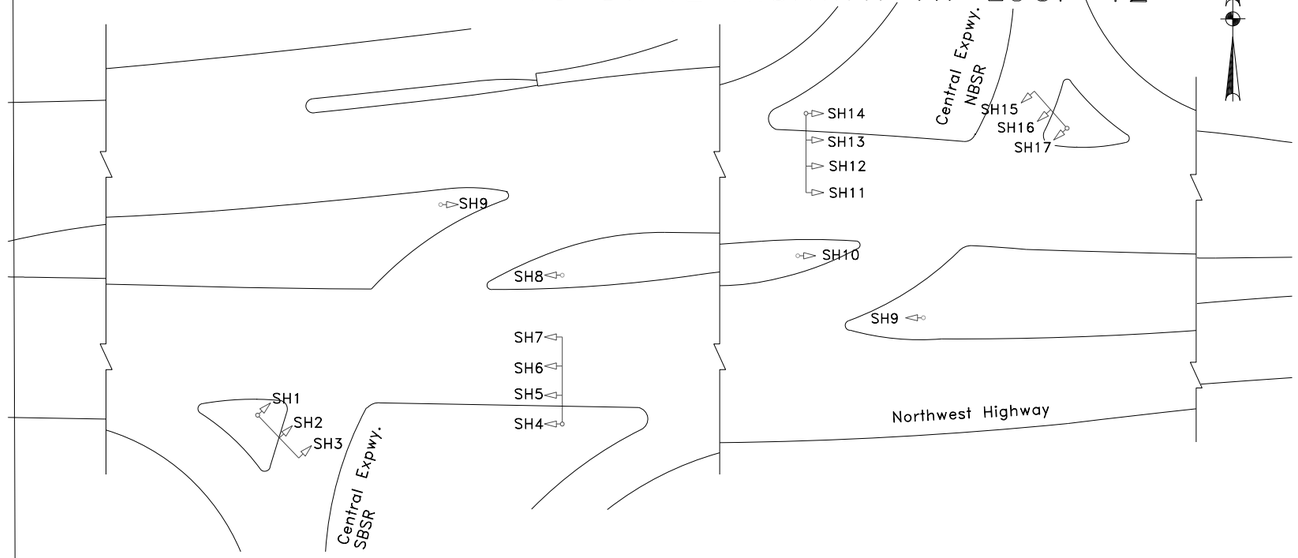
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS SLA	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64D
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

NORTHWEST HIGHWAY AT NORTHPARK/LINCOLN PARK



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH2, SH3, SH4, SH6, SH8, SH9, SH10, SH12	8
BACKPLATE W/ REFLECTIVE BORDER (5 SEC)	SH1, SH5, SH7, SH11	4

US 75 STATE HIGHWAY AT LOOP 12



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH1, SH2, SH3, SH4, SH5, SH6, SH7, SH8, SH9, SH10, SH11, SH12, SH13, SH14, SH15, SH16, SH17	17

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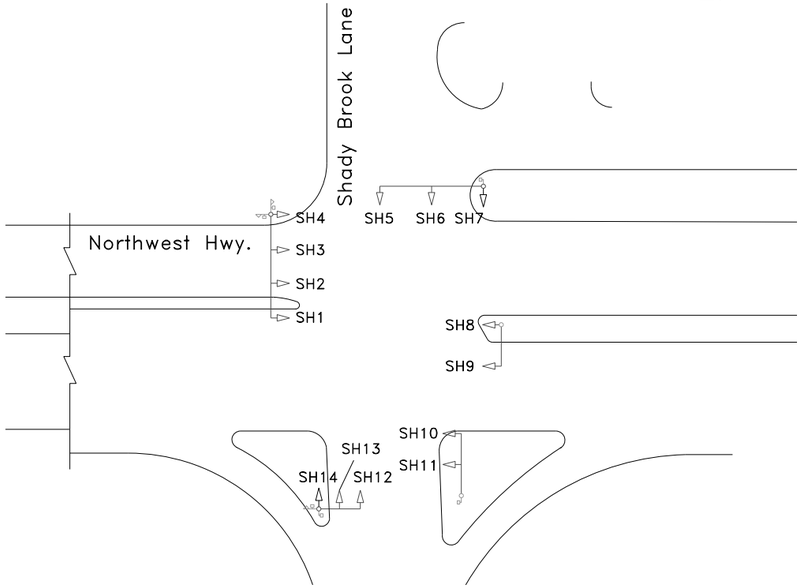
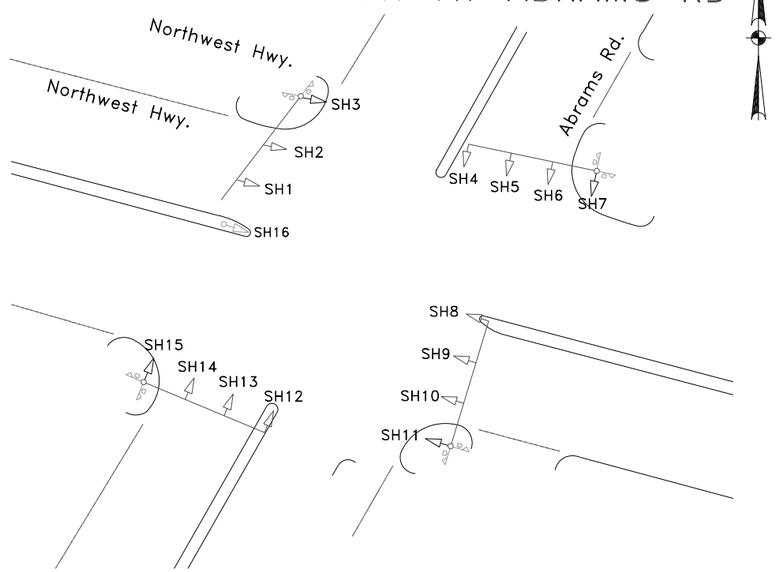
NORTHWEST HIGHWAY AT SHADY BROOK LN



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH2, SH3, SH4, SH6, SH9, SH10, SH11, SH13	8
BACKPLATE W/ REFLECTIVE BORDER (4 SEC)	SH1, SH8	2
BACKPLATE W/ REFLECTIVE BORDER (5 SEC)	SH5, SH12	2
ADD NEW SIGNAL HEAD (V3)	SH3, SH7, SH11, SH15	4

NORTHWEST HIGHWAY AT ABRAMS RD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH1, SH2, SH3, SH4, SH5, SH6, SH7, SH8, SH9, SH10, SH11, SH12, SH13, SH14, SH15, SH16	16
ADD NEW SIGNAL HEAD (V3)	SH3, SH7, SH11, SH15	4

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SL 12 SIGNAL HEAD UPGRADES

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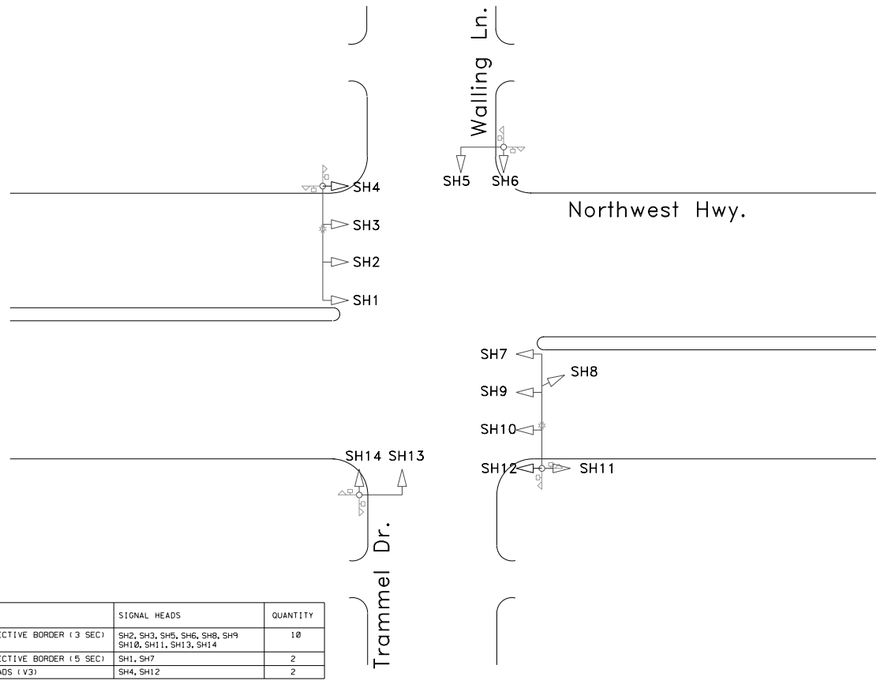
SHEET 5 OF 6

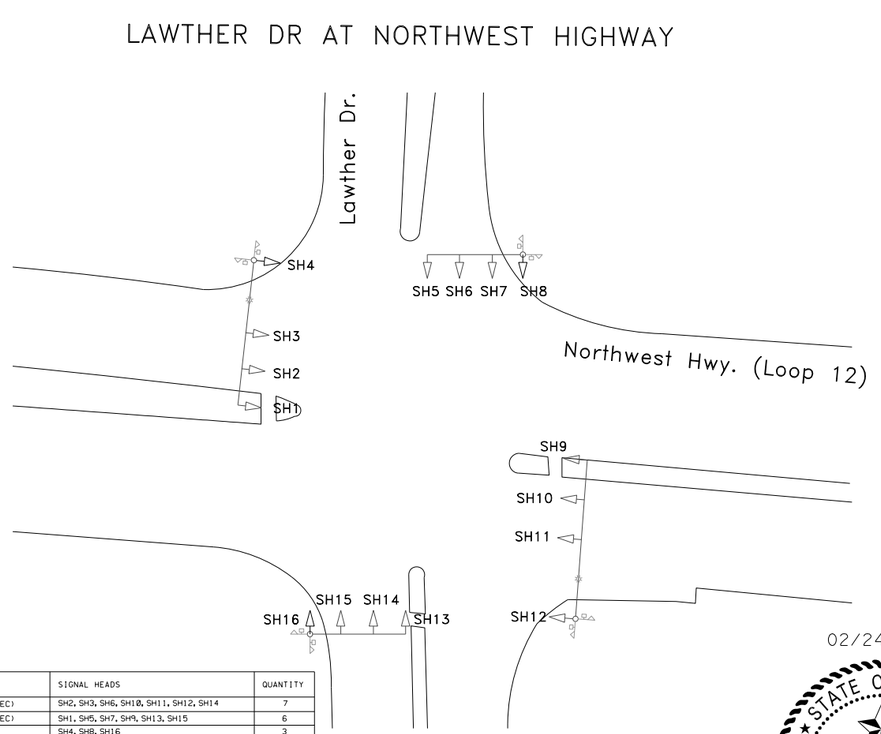
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS SLA	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64E
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342, ETC.	

NORTHWEST HIGHWAY AT TRAMMEL DR/WALLING LN



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH2, SH3, SH5, SH6, SH8, SH9 SH10, SH11, SH13, SH14	10
BACKPLATE W/ REFLECTIVE BORDER (5 SEC)	SH1, SH7	2
ADD NEW SIGNAL HEADS (V3)	SH4, SH12	2

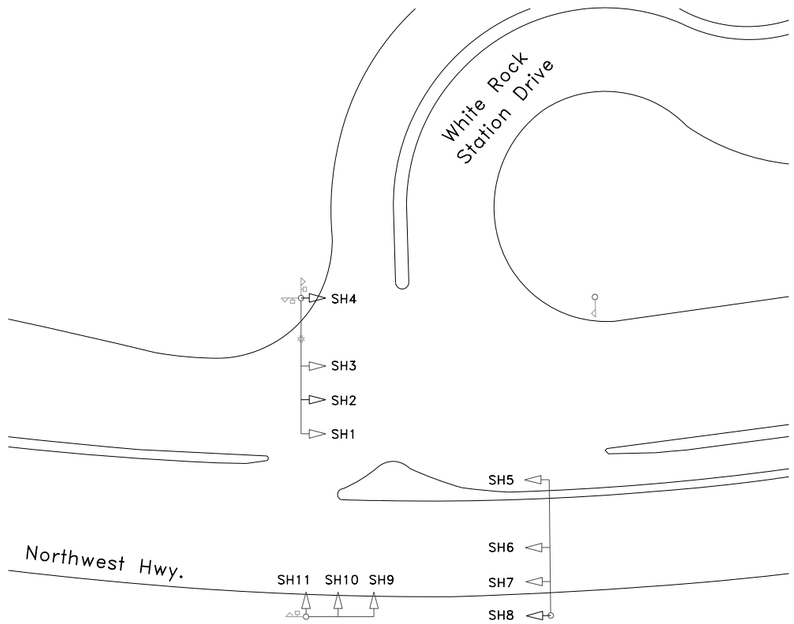
LAWTHER DR AT NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH2, SH3, SH6, SH10, SH11, SH12, SH14	7
BACKPLATE W/ REFLECTIVE BORDER (5 SEC)	SH1, SH5, SH7, SH9, SH13, SH15	6
ADD NEW SIGNAL HEADS (V3)	SH4, SH8, SH16	3

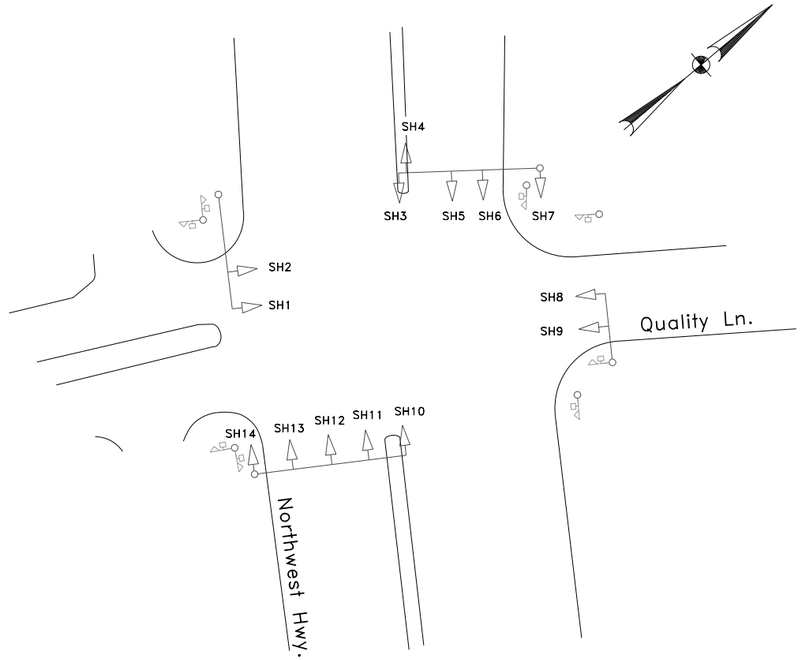
02/24/2023

NORTHWEST HIGHWAY AT WHITE ROCK STATION



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH1, SH3, SH6, SH7, SH9, SH10, SH11	7
BACKPLATE W/ REFLECTIVE BORDER (5 SEC)	SH5	1
ADD NEW SIGNAL HEADS (V3)	SH2, SH4, SH8	3

QUALITY LN AT NORTHWEST HIGHWAY



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3 SEC)	SH1, SH2, SH4, SH5, SH6, SH7 SH8, SH9, SH11, SH12, SH13, SH14	12
BACKPLATE W/ REFLECTIVE BORDER (5 SEC)	SH3, SH10	2

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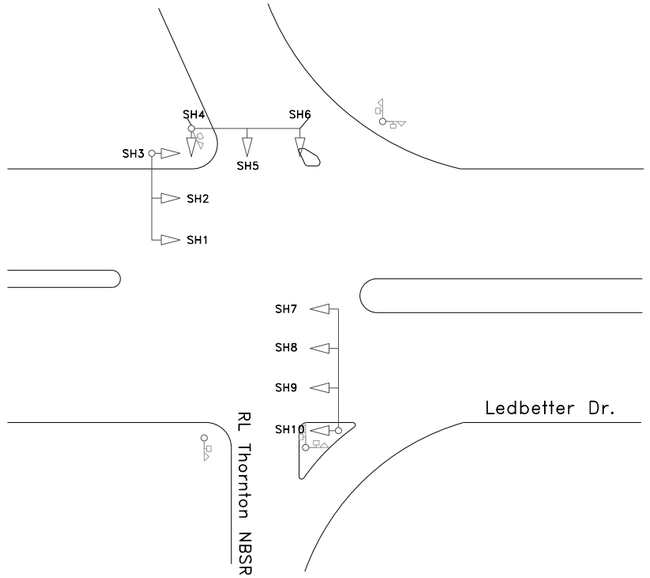
SHEET 6 OF 6

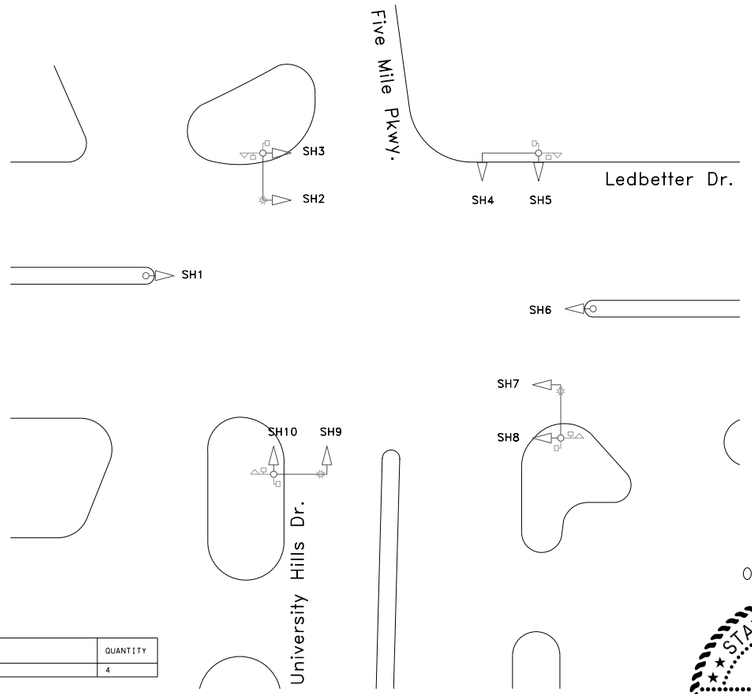
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64F
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

LEDBETTER DR AT R.L. THORNTON NBSR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH3, SH4, SH5, SH6, SH8, SH9, SH10	9
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH7	1

EAST LEDBETTER DR AT UNIVERSITY HILLS BLVD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH4, SH5, SH7, SH8	4

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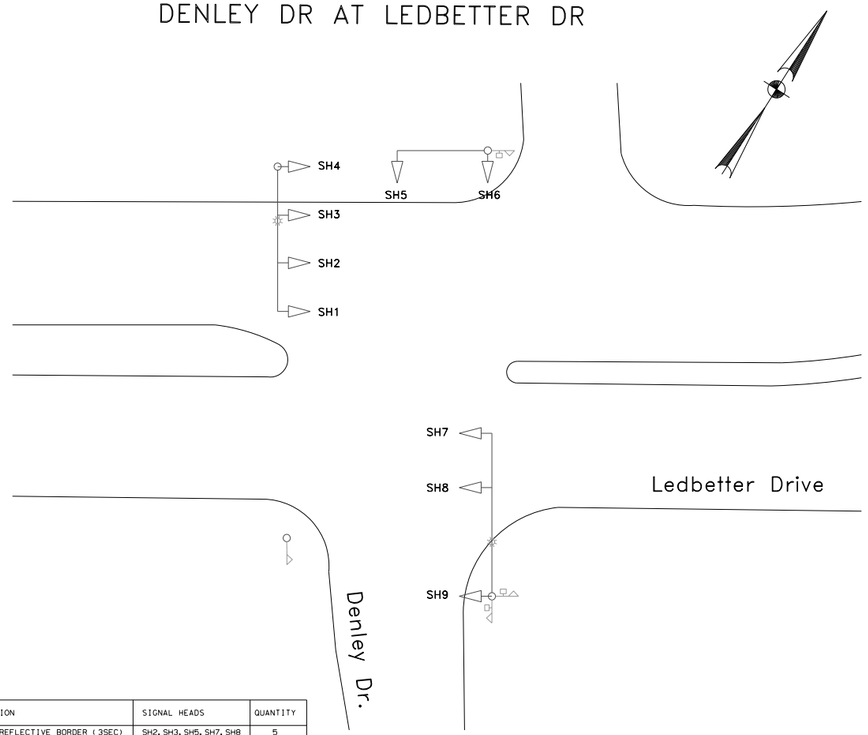
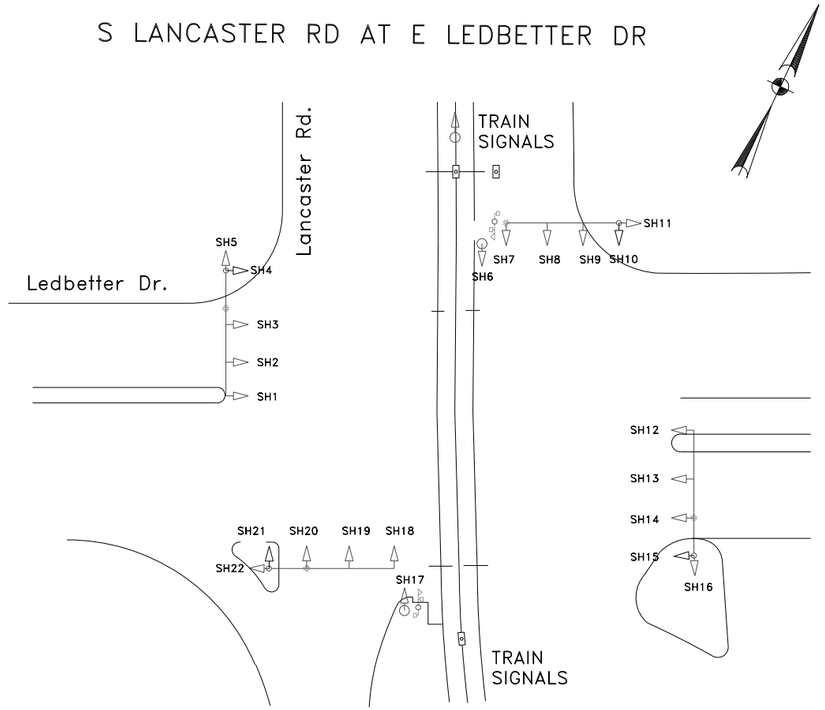
DENLEY DR AT LEDBETTER DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH5, SH7, SH8	5
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH6	2
ADD SIGNAL HEAD (V3)	SH4, SH9	2

S LANCASTER RD AT E LEDBETTER DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH5, SH8, SH9, SH11 SH13, SH14, SH16, SH19, SH20, SH22	12
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH1, SH6, SH7, SH12, SH17, SH18	6
ADD NEW SIGNAL HEADS (V3)	SH4, SH10, SH15, SH21	4

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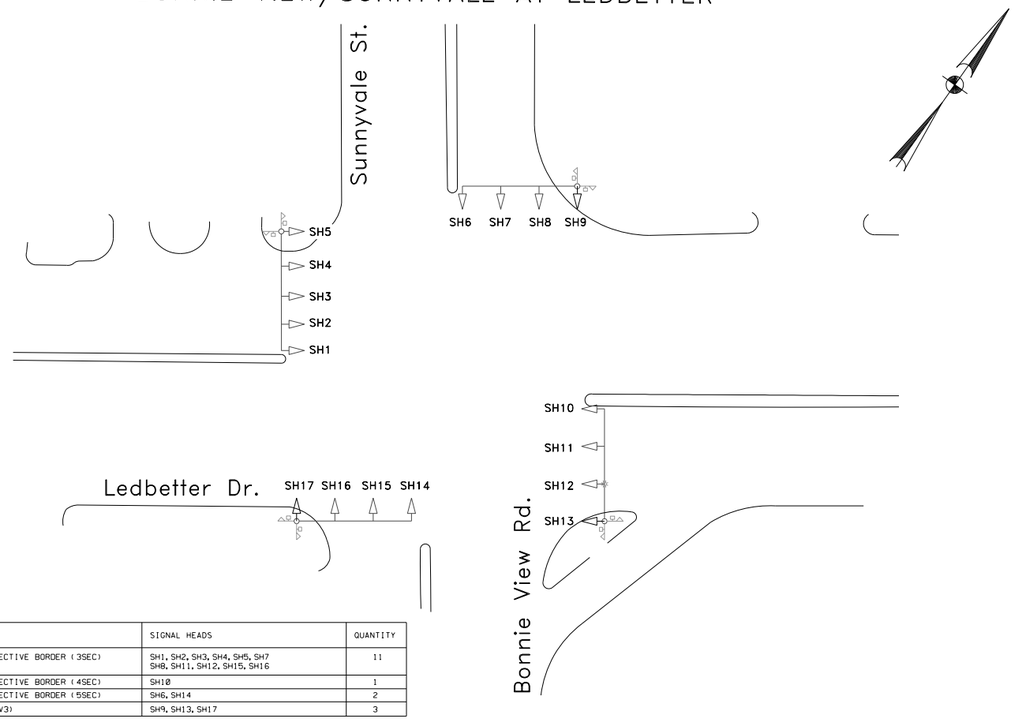
SHEET 1 OF 9

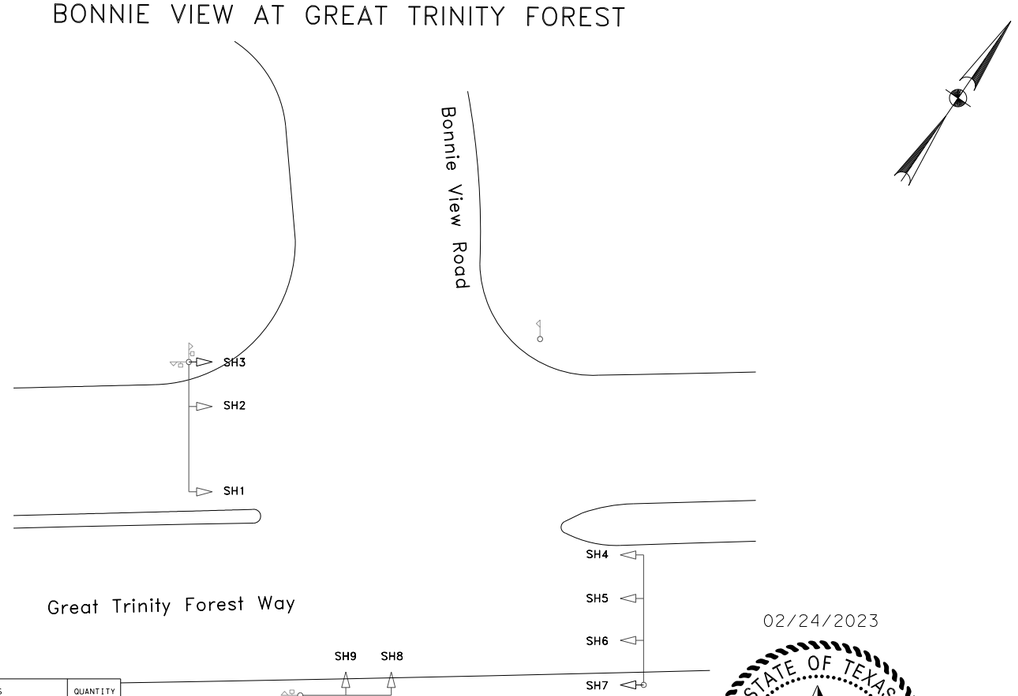
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	646
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

BONNIE VIEW/SUNNYVALE AT LEDBETTER



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH3, SH4, SH5, SH7 SH8, SH11, SH12, SH15, SH16	11
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH10	1
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH6, SH14	2
ADD SIGNAL HEAD (V3)	SH9, SH13, SH17	3

BONNIE VIEW AT GREAT TRINITY FOREST



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH5, SH6, SH8, SH9	6
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH4	1
ADD SIGNAL HEAD (V3)	SH3, SH7	2

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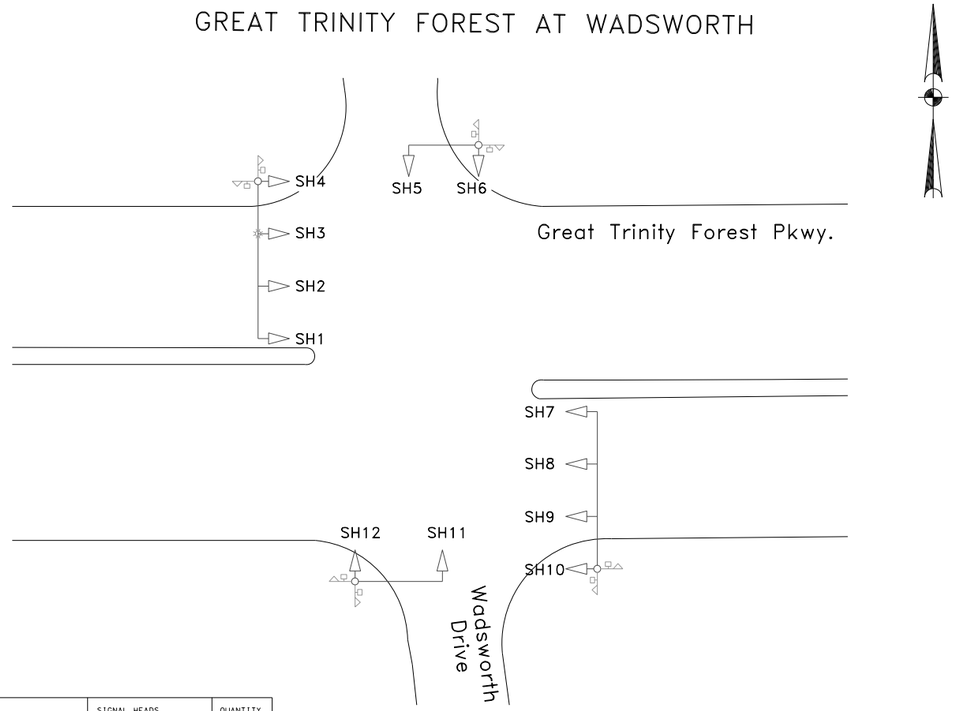
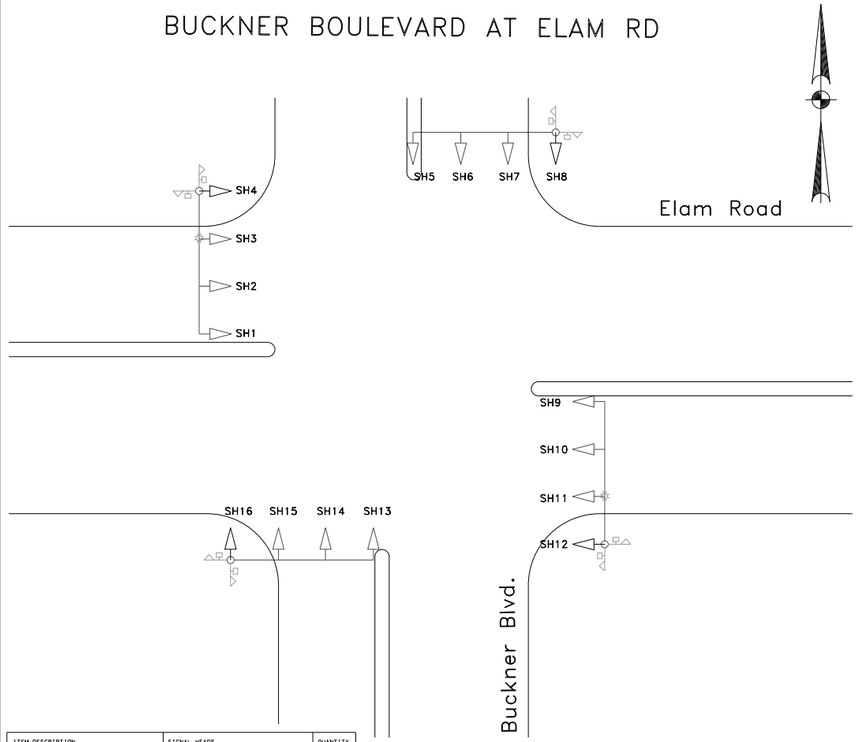
GREAT TRINITY FOREST AT WADSWORTH



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH5, SH6 SH8, SH9, SH11, SH12	8
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH7	2
ADD NEW SIGNAL HEADS (V3)	SH4, SH10	2

BUCKNER BOULEVARD AT ELAM RD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH6, SH7, SH10, SH11, SH14, SH15	8
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH5, SH9, SH13	4
ADD NEW SIGNAL HEADS (V3)	SH4, SH8, SH12, SH16	4

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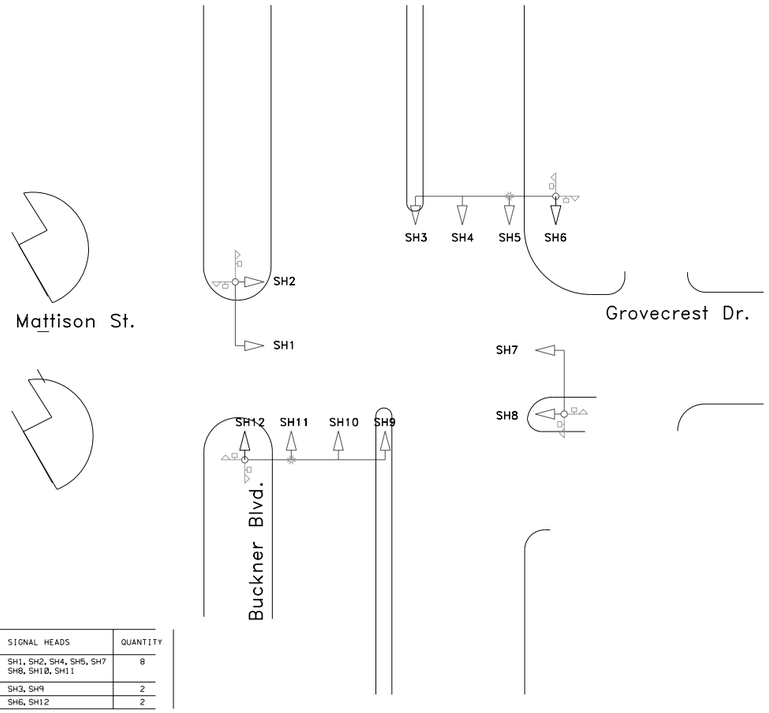
SHEET 2 OF 9

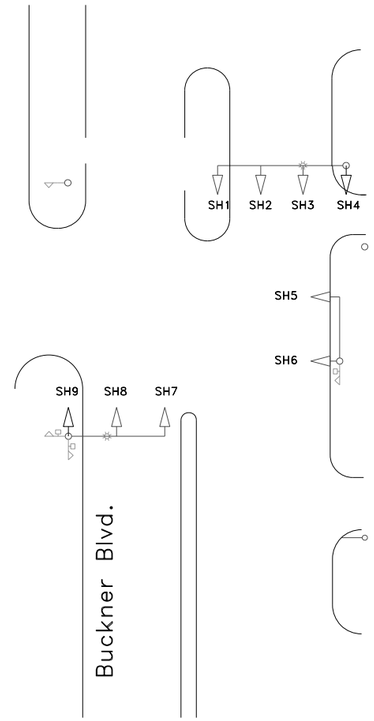
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64H
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

BUCKNER BOULEVARD AT GROVECREST DR/MATTISON DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH4, SH5, SH7 SH8, SH10, SH11	8
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH3, SH9	2
ADD NEW SINGAL HEADS (V3)	SH6, SH12	2

BUCKENER BOULEVARD AT SECO BOULEVARD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH5, SH6, SH7, SH8	6
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1	1
ADD NEW SIGNAL HEADS (V3)	SH4, SH14	2

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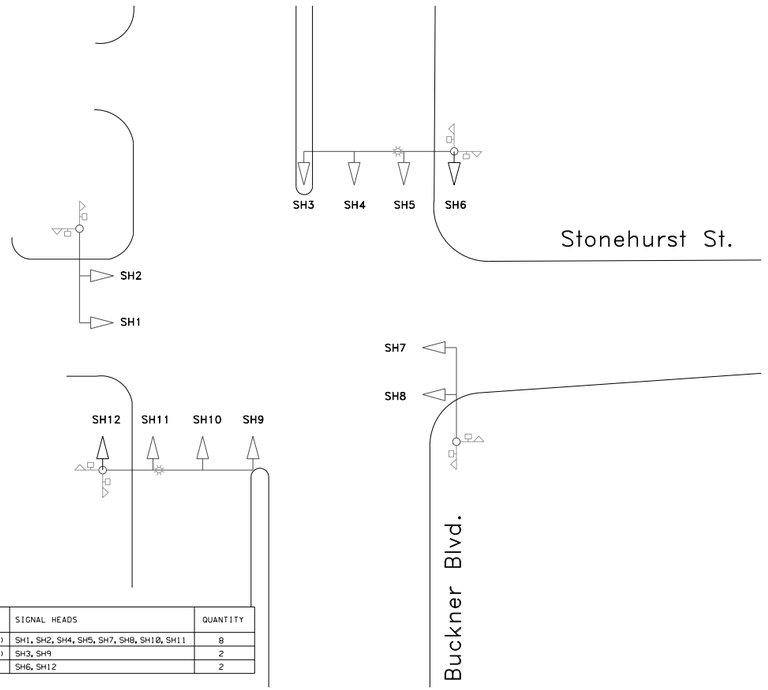
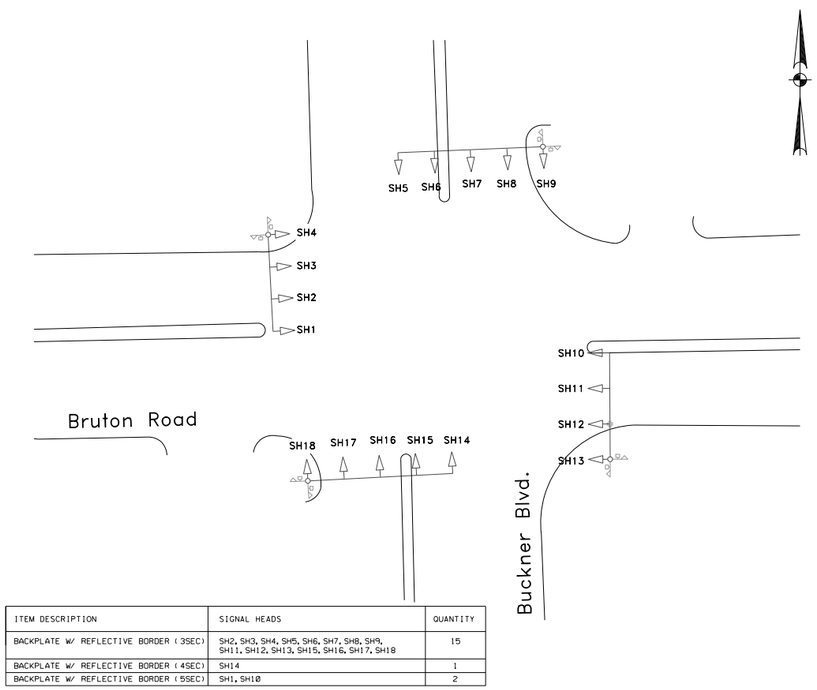
BUCKNER BOULEVARD AT STONEHURST RD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH4, SH5, SH7, SH8, SH10, SH11	8
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH3, SH9	2
ADD NEW SINGAL HEADS (V3)	SH6, SH12	2

BRUTON RD AT BUCKNER BOULEVARD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH5, SH6, SH7, SH8, SH9, SH11, SH12, SH13, SH15, SH16, SH17, SH18	15
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH14	1
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH10	2

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SL 12 SIGNAL HEAD UPGRADES
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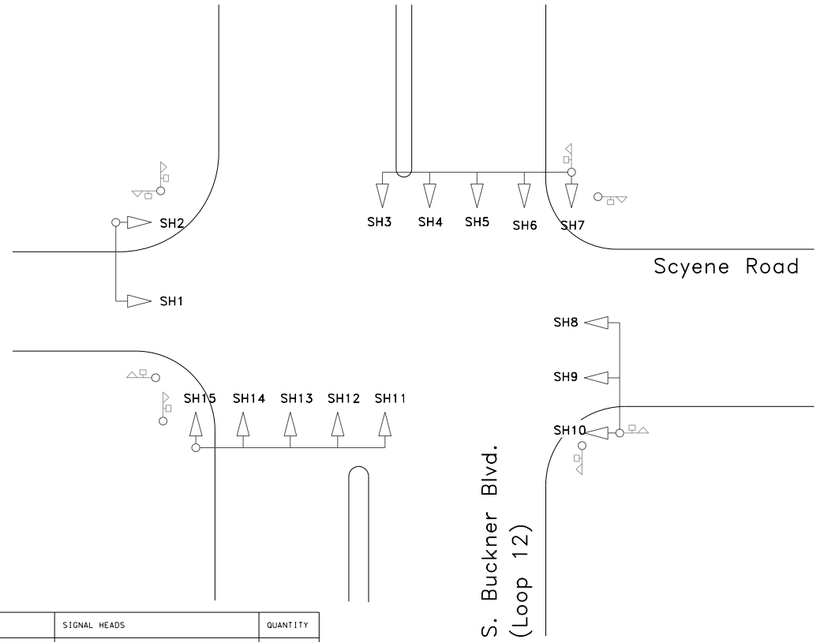
SHEET 3 OF 9

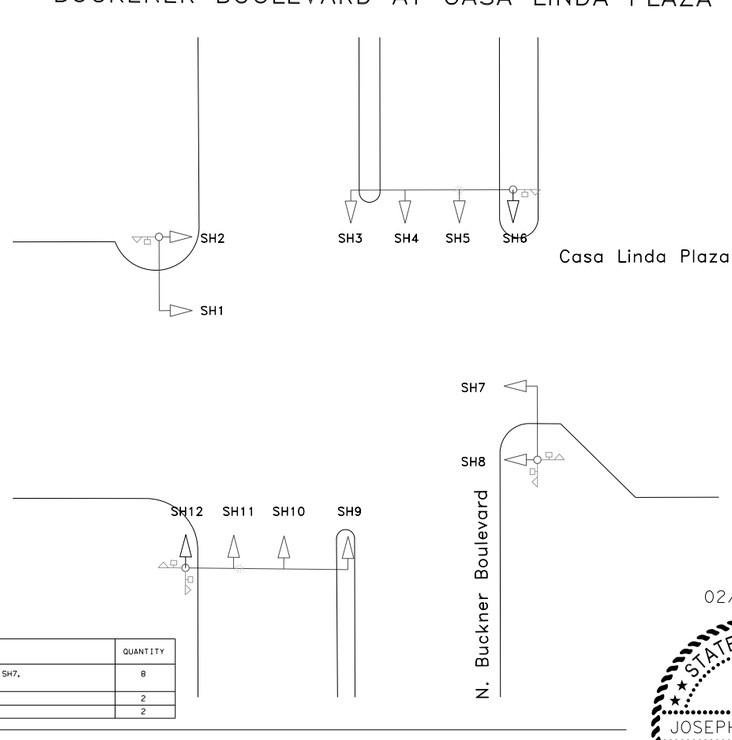
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64I
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

BUCKNER BOULEVARD AT SCYENE ROAD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH4, SH5, SH6, SH7, SH9 SH10, SH12, SH13, SH14, SH15	11
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH1, SH8	2
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH3, SH11	2

BUCKNER BOULEVARD AT CASA LINDA PLAZA



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH4, SH5, SH7, SH8, SH10, SH11	8
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH3, SH9	2
ADD NEW SIGNALS (V3)	SH6, SH12	2

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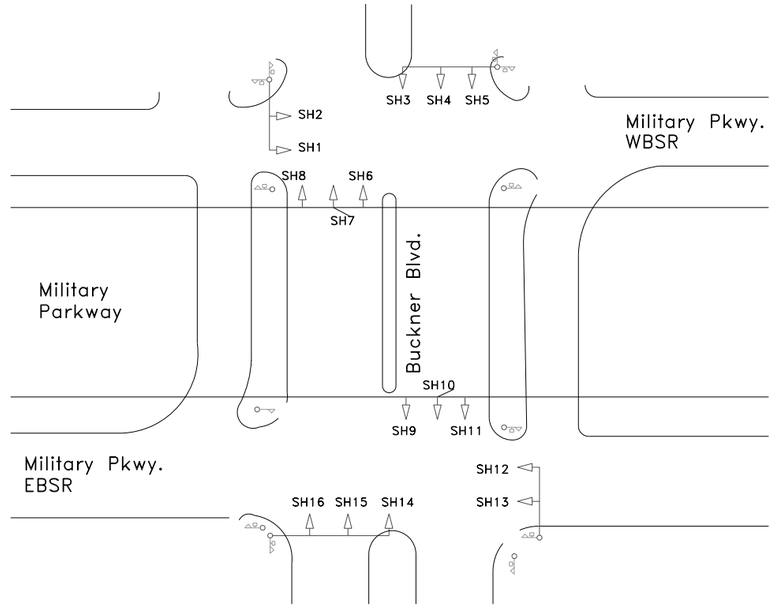
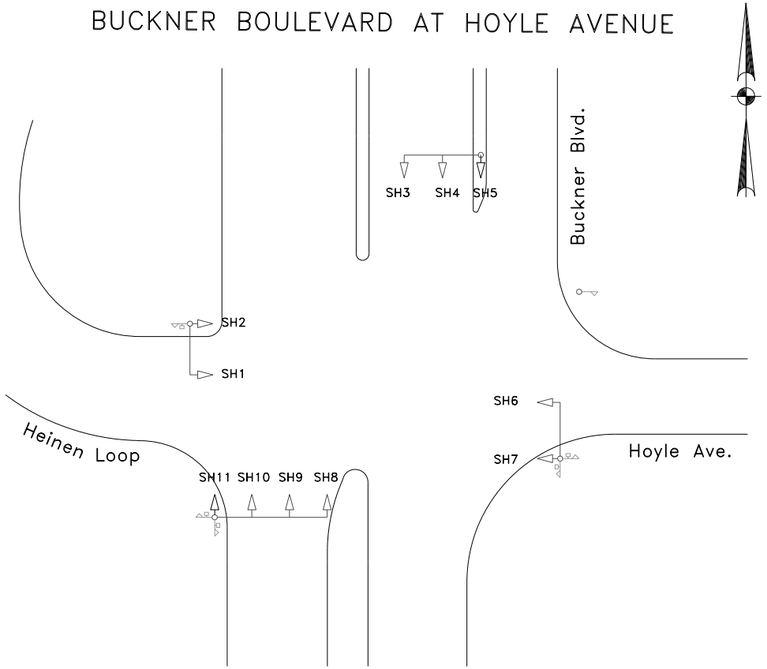
MILITARY PKWY AT BUCKNER BOULEVARD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH4, SH5, SH6, SH7, SH8, SH9, SH10, SH11, SH12, SH13, SH15, SH16	14
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH3, SH14	2

BUCKNER BOULEVARD AT HOYLE AVENUE



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH3, SH4, SH9, SH10	5
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH2	1
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH6, SH7, SH8	3
ADD NEW SIGNALS (V3)	SH5, SH11	2

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TRAFFIC SAFETY IMPROVEMENTS
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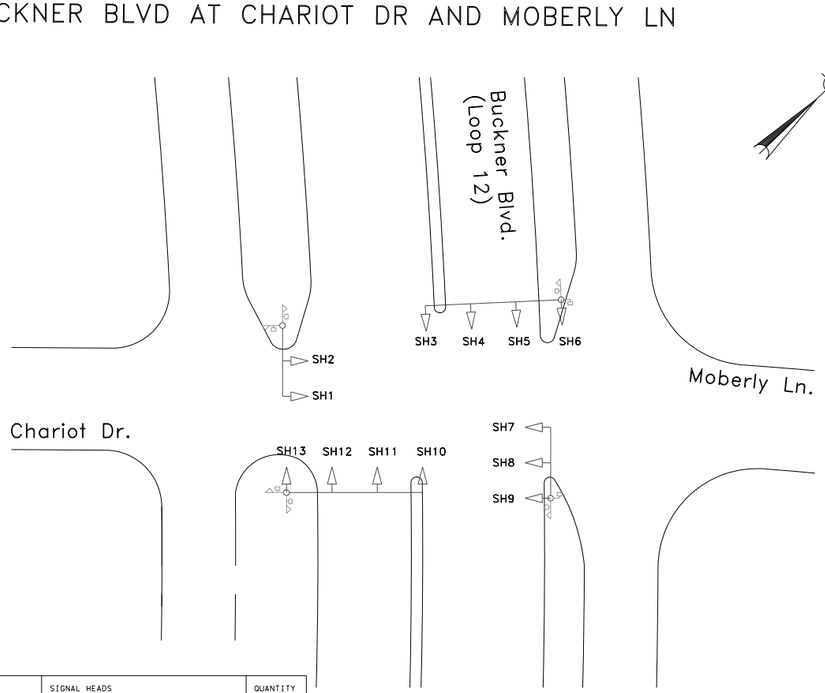
SHEET 4 OF 9

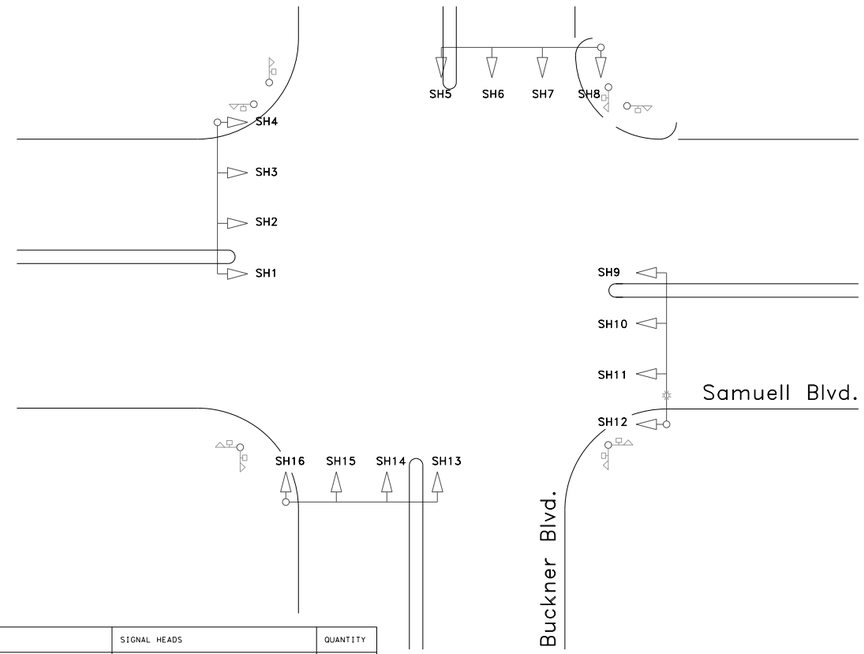
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
CHECK JJM	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64J
	CONTROL	SECTION	JOB	
	0918	47	342, ETC.	

BUCKNER BLVD AT CHARIOT DR AND MOBERLY LN



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH4, SH5, SH6 SH8, SH9, SH11, SH12, SH13	10
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH3, SH7, SH10	3

BUCKNER BLVD AT SAMUELL BLVD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH6, SH7, SH8 SH10, SH11, SH12, SH14, SH15, SH16	12
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH5, SH9, SH13	4

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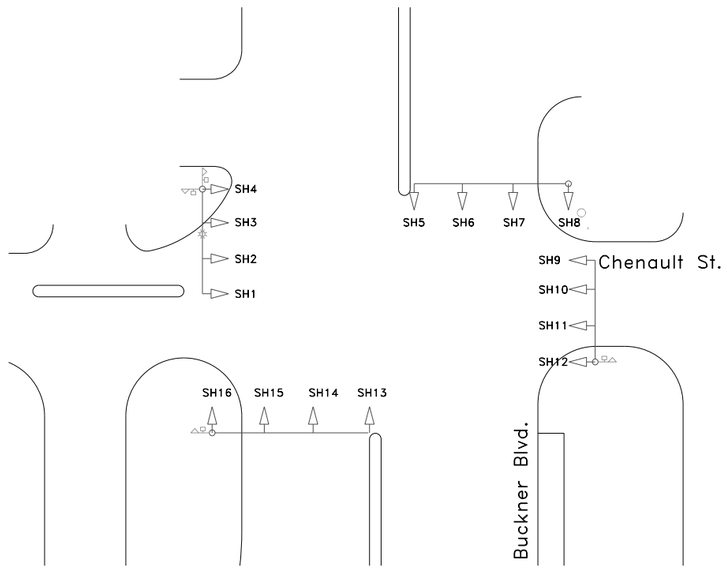
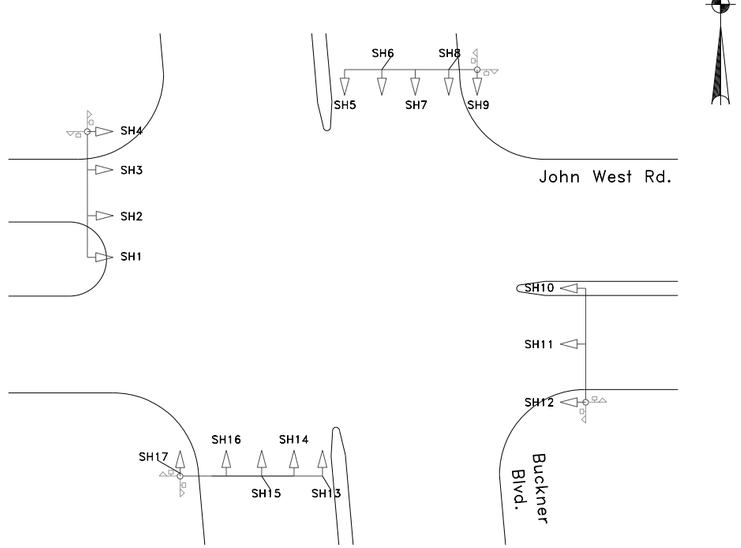
N BUCKNER BLVD AT CHENAULT ST



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH5, SH6, SH7, SH8, SH10, SH11, SH12, SH14, SH15, SH16	12
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH5, SH9, SH13	4

N BUCKNER BLVD AT JOHN WEST RD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH6, SH7, SH8, SH9, SH10 SH11, SH12, SH14, SH15, SH16, SH17	14
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH5, SH10, SH13	4

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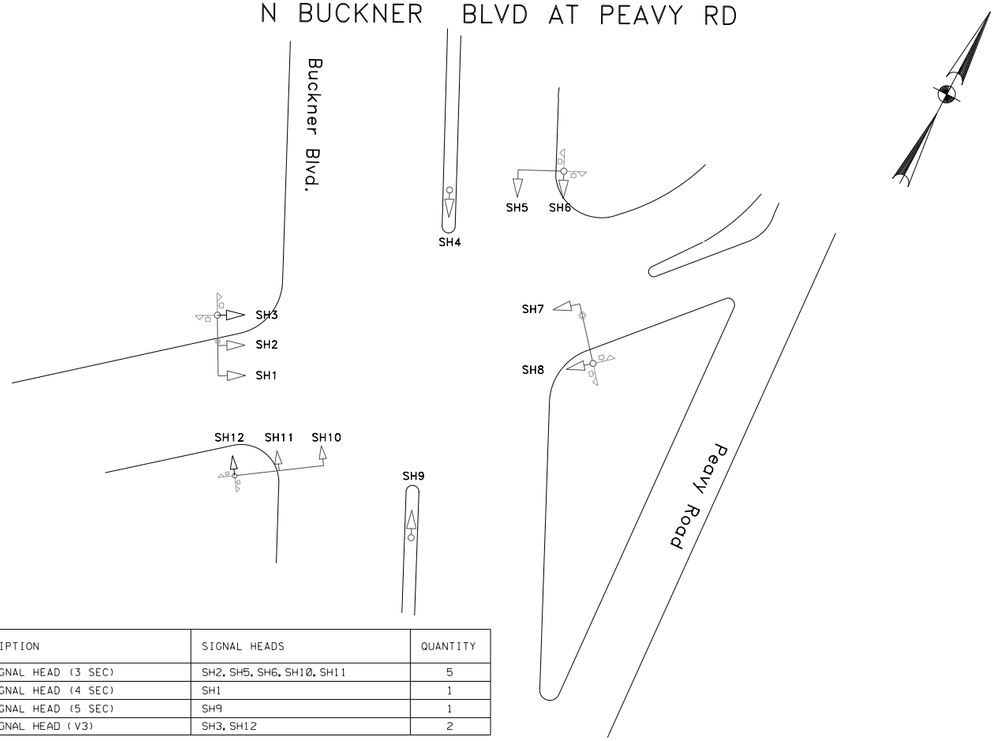
SHEET 5 OF 9

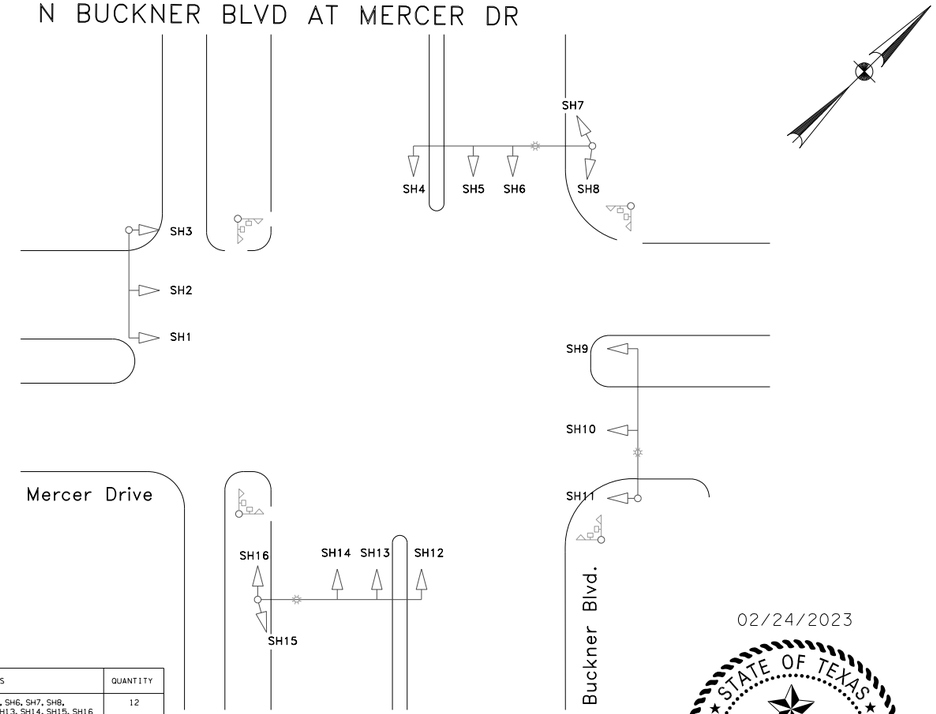
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64K
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

N BUCKNER BLVD AT PEAVY RD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
REPLACE SIGNAL HEAD (3 SEC)	SH2, SH5, SH6, SH10, SH11	5
REPLACE SIGNAL HEAD (4 SEC)	SH1	1
REPLACE SIGNAL HEAD (5 SEC)	SH9	1
ADD NEW SIGNAL HEAD (V3)	SH3, SH12	2

N BUCKNER BLVD AT MERCER DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH5, SH6, SH7, SH8, SH10, SH11, SH13, SH14, SH15, SH16	12
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH4, SH9, SH12	4

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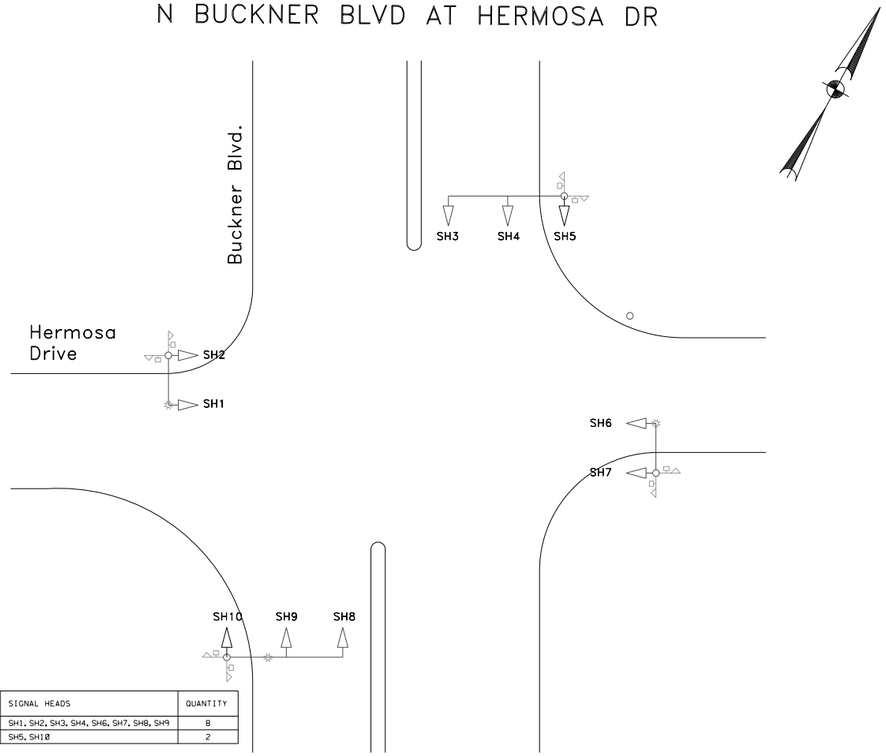
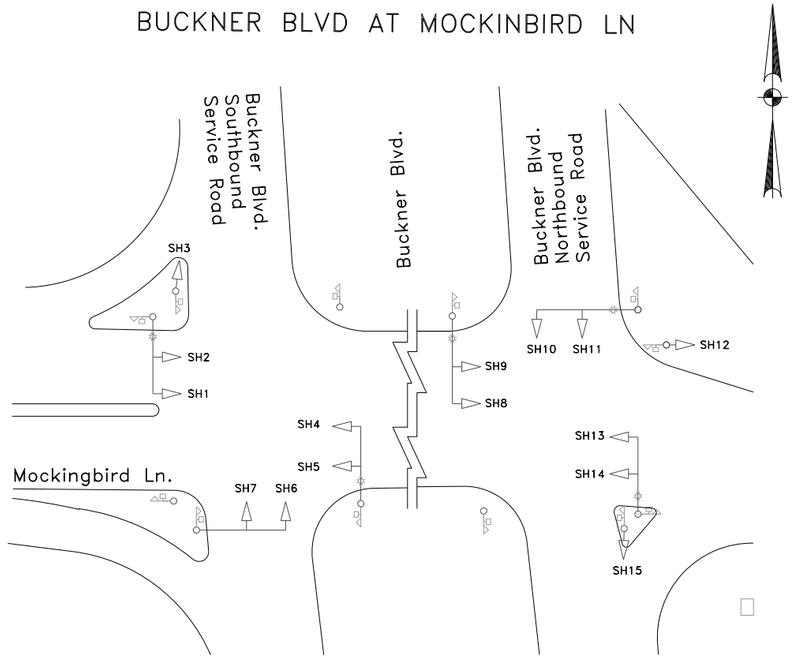
N BUCKNER BLVD AT HERMOSA DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH3, SH4, SH6, SH7, SH8, SH9	8
ADD NEW SIGNAL HEAD (H3)	SH5, SH10	2

BUCKNER BLVD AT MOCKINBIRD LN



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH5, SH6, SH7, SH8 SH9, SH10, SH11, SH12, SH14, SH15	13
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH13	2

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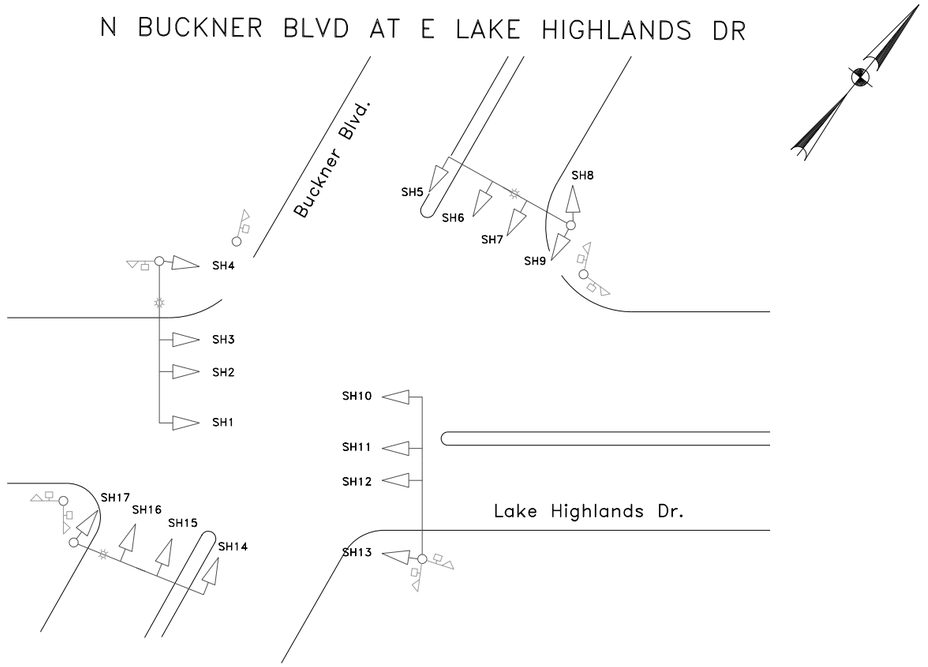
SHEET 6 OF 9

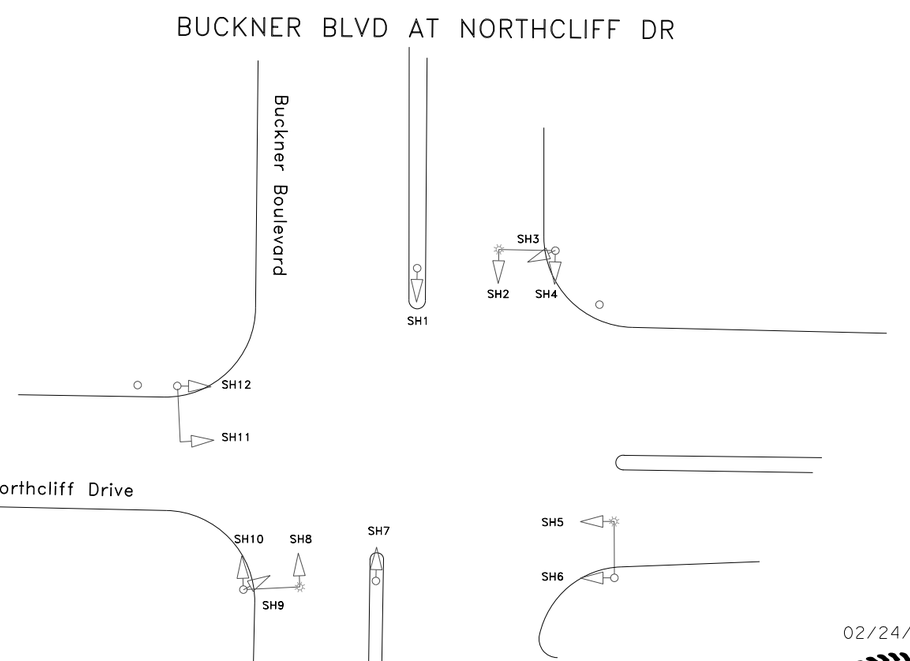
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
SLA	6	(SEE TITLE SHEET)		CS
GRAPHICS SLA	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64L
CHECK JJM	CONTROL	SECTION	JOB	
	0918	47	342,ETC.	

N BUCKNER BLVD AT E LAKE HIGHLANDS DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH6, SH7, SH8 SH11, SH12, SH13, SH15, SH16	12
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH5, SH10, SH14, SH15, SH17	5

BUCKNER BLVD AT NORTHCLIFF DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
REPLACE SIGNAL HEAD (3SEC)	SH2, SH3, SH4, SH5, SH6, SH8, SH9, SH10, SH11, SH12	10
REPLACE SIGNAL HEAD (5SEC)	SH1, SH7	2

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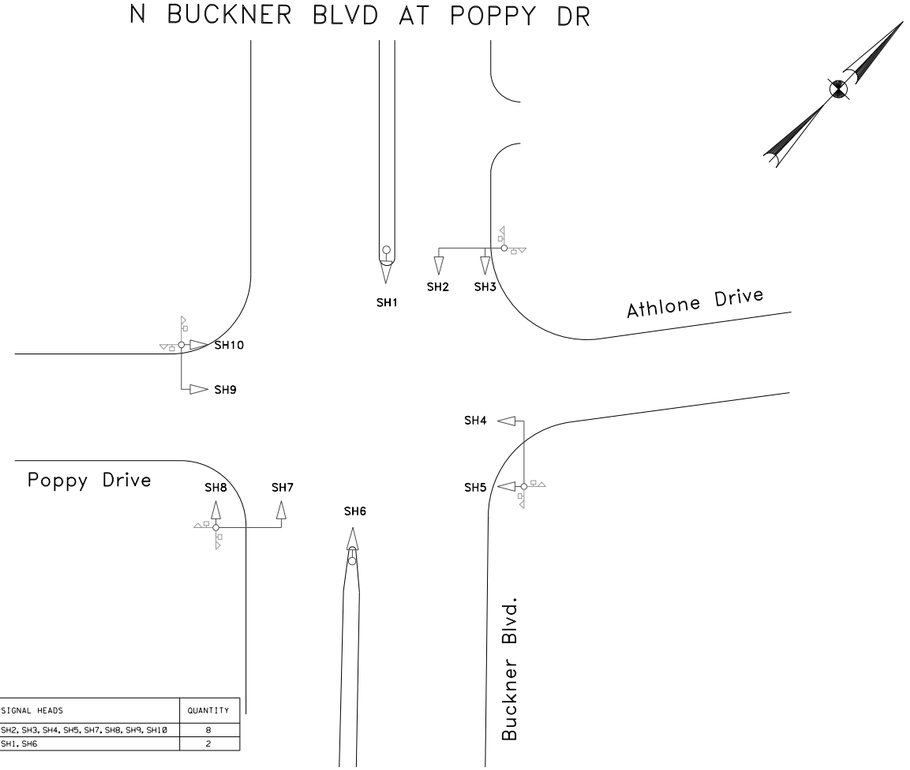
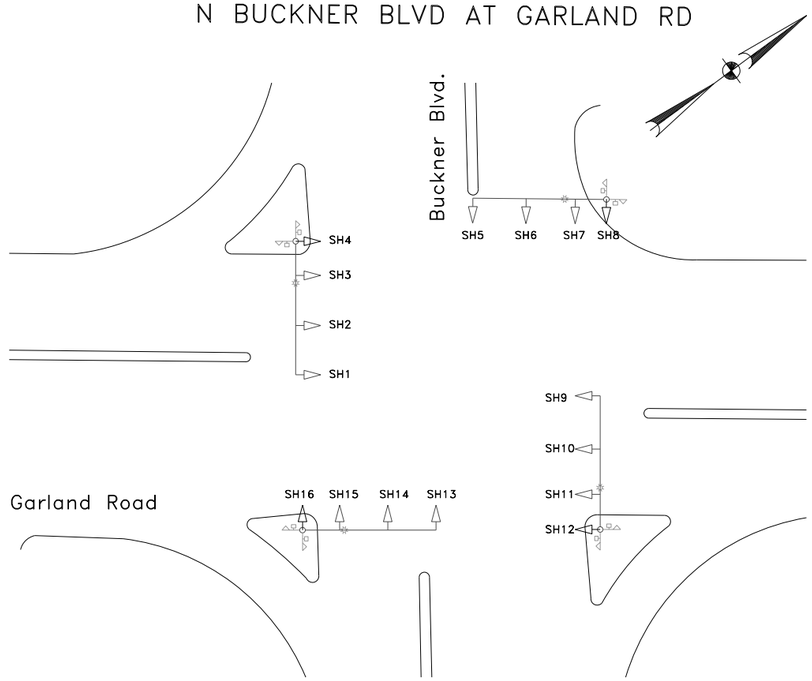
N BUCKNER BLVD AT POPPY DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
REPLACE SIGNAL HEAD (3SEC)	SH2, SH3, SH4, SH5, SH7, SH8, SH9, SH10	8
REPLACE SIGNAL HEAD (5SEC)	SH1, SH6	2

N BUCKNER BLVD AT GARLAND RD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH6, SH7, SH10, SH11, SH14, SH15	8
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH1, SH5, SH9, SH13	4
ADD NEW SIGNAL HEAD (V3)	SH4, SH8, SH12, SH16	4

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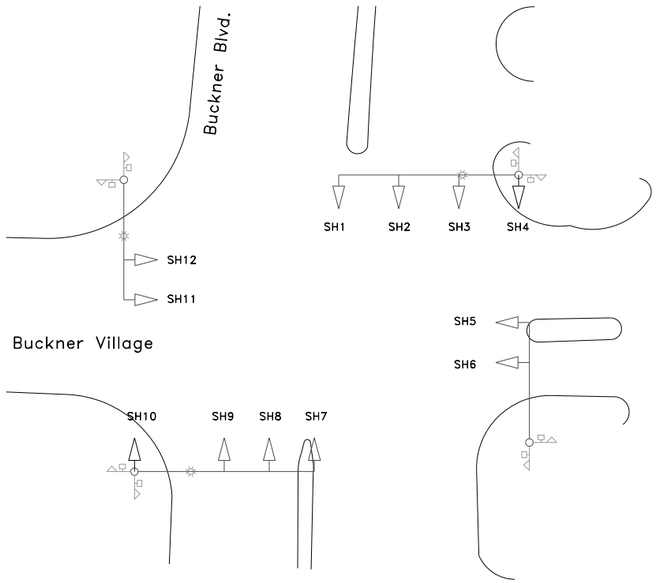
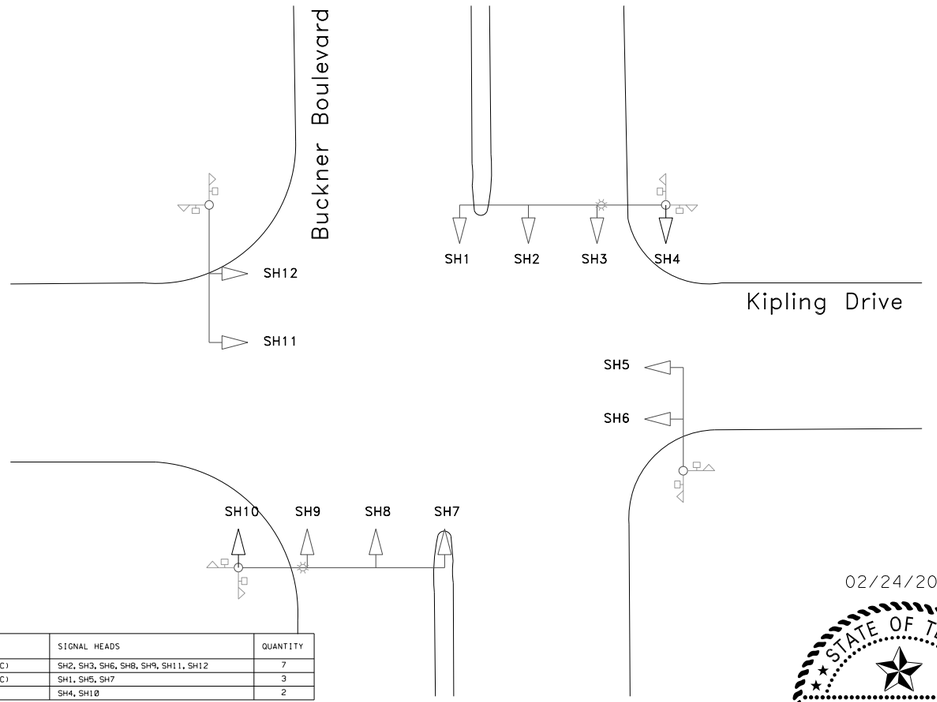
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64M
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

BUCKNER BLVD AT BUCKNER MARKET PLACE



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH5, SH6, SH8, SH9, SH11, SH12	8
BACKPLATE W/ RELFECTIVE BORDER (SEC5)	SH1, SH7	2
ADD NEW SIGNAL HEADS (V3)	SH4, SH10	2

S BUCKNER BLVD AT KIPLING DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH6, SH8, SH9, SH11, SH12	7
BACKPLATE W/ RELFECTIVE BORDER (5SEC)	SH1, SH5, SH7	3
ADD NEW SIGNAL HEADS (V3)	SH4, SH10	2

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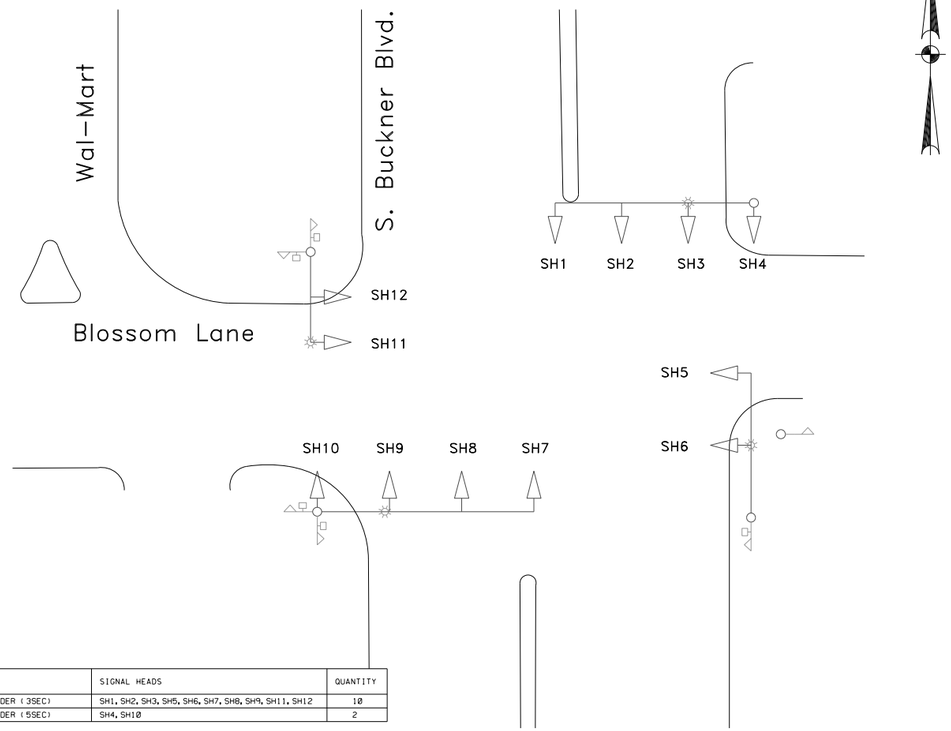
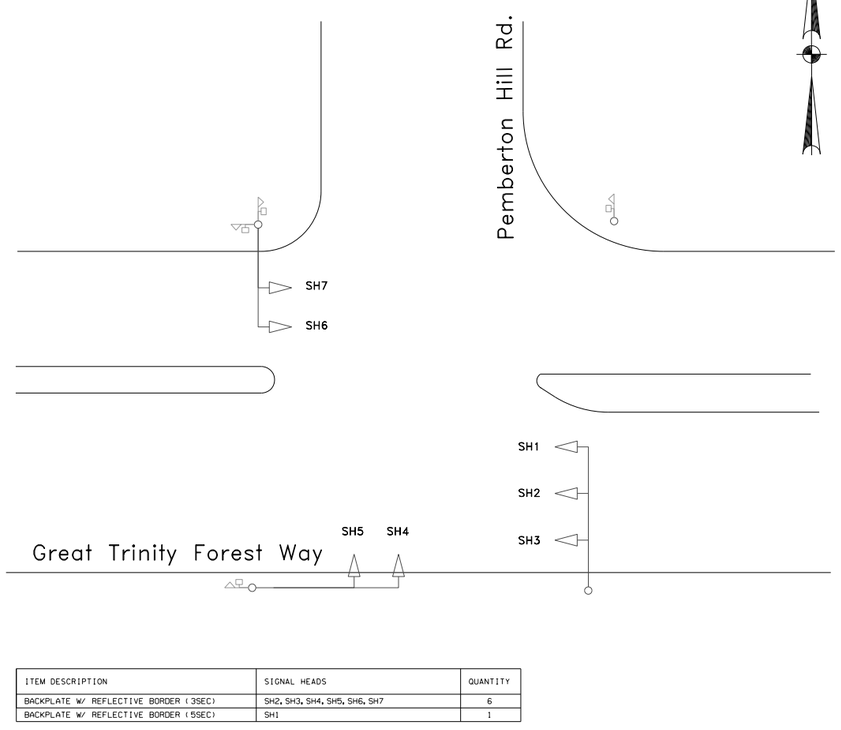
BLOSSOM LN AT S BUCKNER BLVD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH3, SH5, SH6, SH7, SH8, SH9, SH11, SH12	10
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH4, SH10	2

GREAT TRINITY FOREST AT PEMBERTON HILL



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH5, SH6, SH7	6
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1	1

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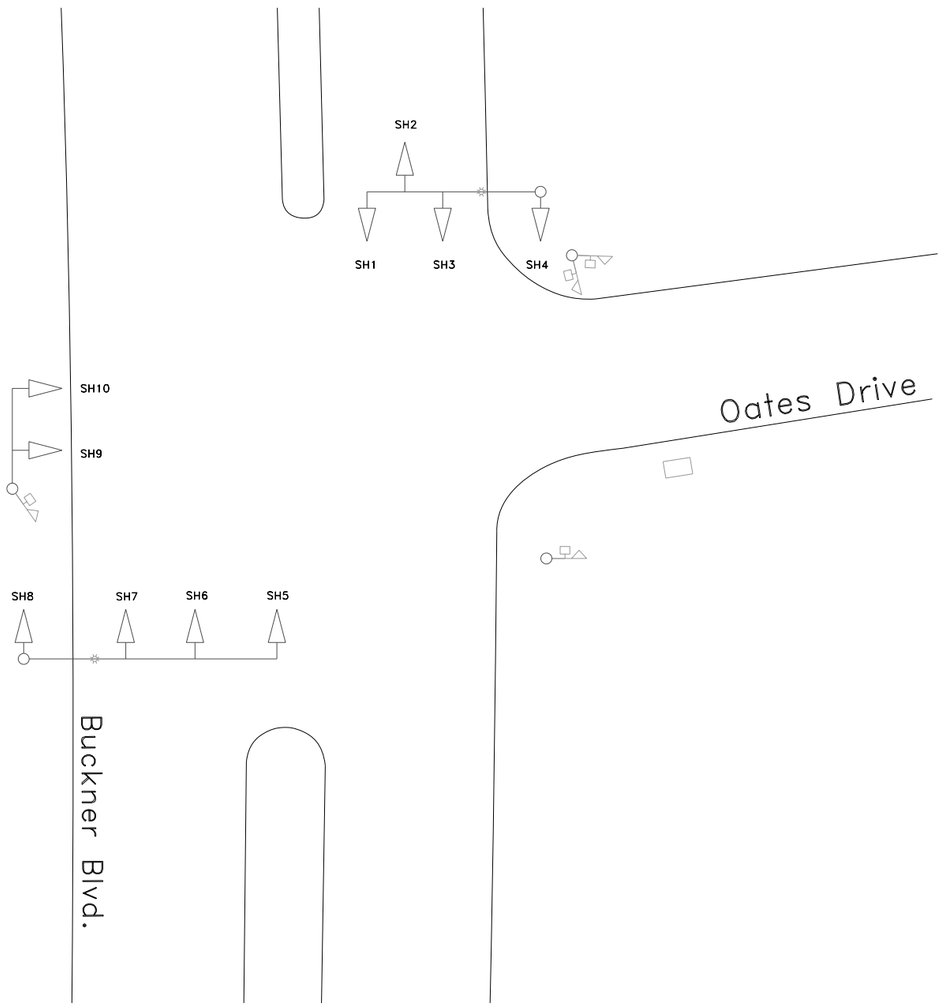
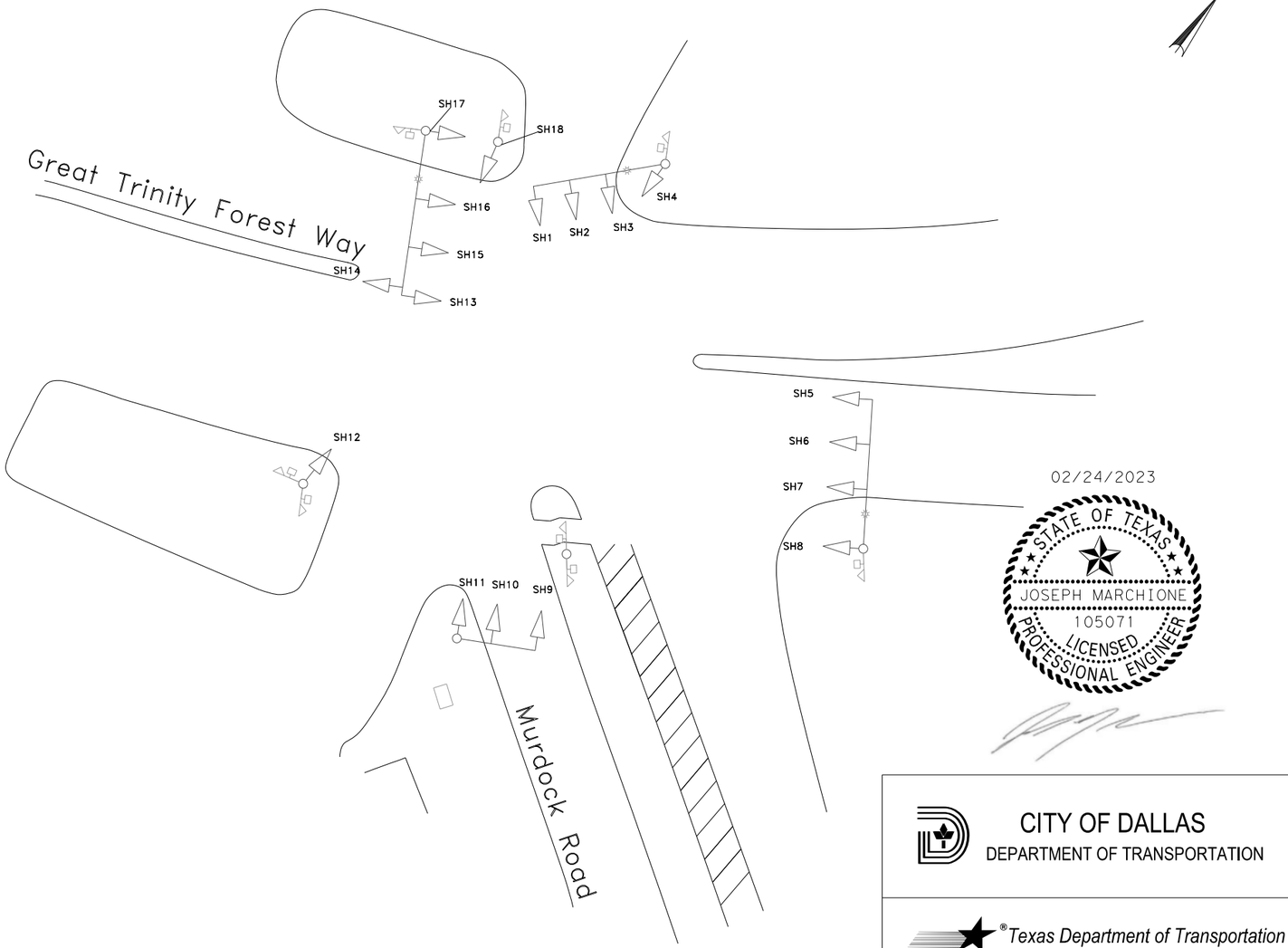
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64N
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

N BUCKNER BLVD AT OATES DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH3, SH6, SH7, SH8, SH9, SH10	8
BACKPLATE W/ RELFECTIVE BORDER (5SEC)	SH5	1

S GREAT TRINITY FOREST WAY AT MURDOCK RD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH4, SH6, SH7, SH8, SH9, SH10, SH11, SH12, SH14, SH15, SH16, SH17	14
BACKPLATE W/ RELFECTIVE BORDER (4SEC)	SH3, SH18	2
BACKPLATE W/ RELFECTIVE BORDER (5SEC)	SH5, SH13	2

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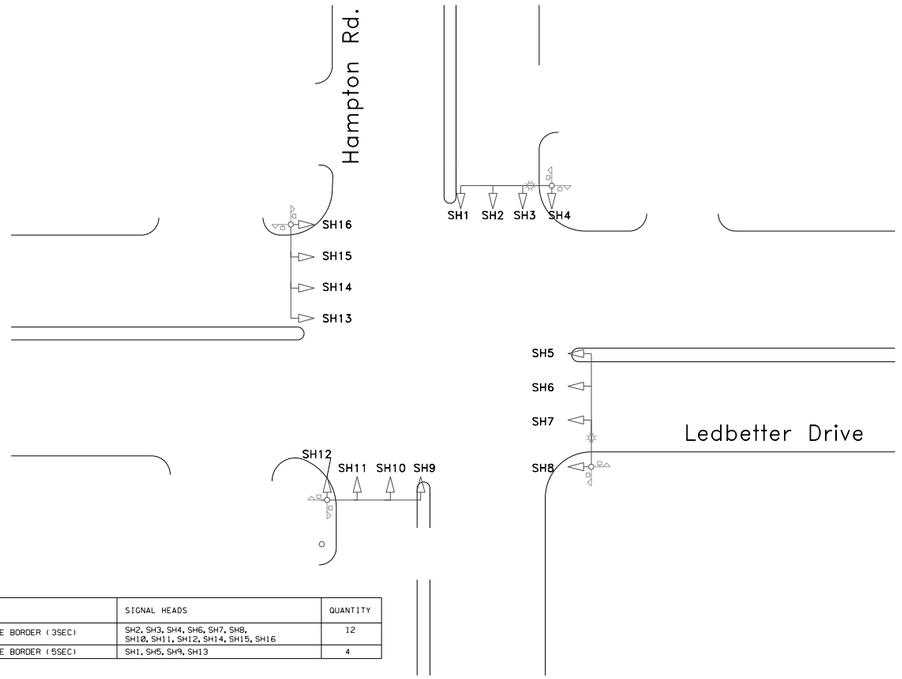
SHEET 9 OF 9

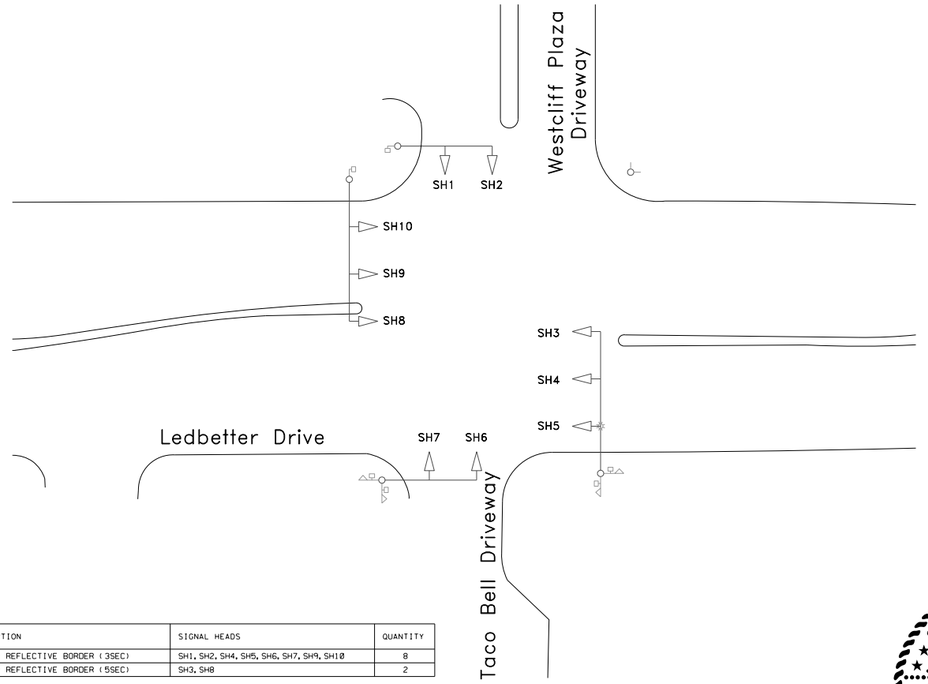
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	640
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

HAMPTON RD AT LEDBETTER DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH6, SH7, SH8, SH10, SH11, SH12, SH14, SH15, SH16	12
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH5, SH9, SH13	4

LEDBETTER DR AT WESTCLIFF PLAZA



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH4, SH5, SH6, SH7, SH9, SH10	8
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH3, SH8	2

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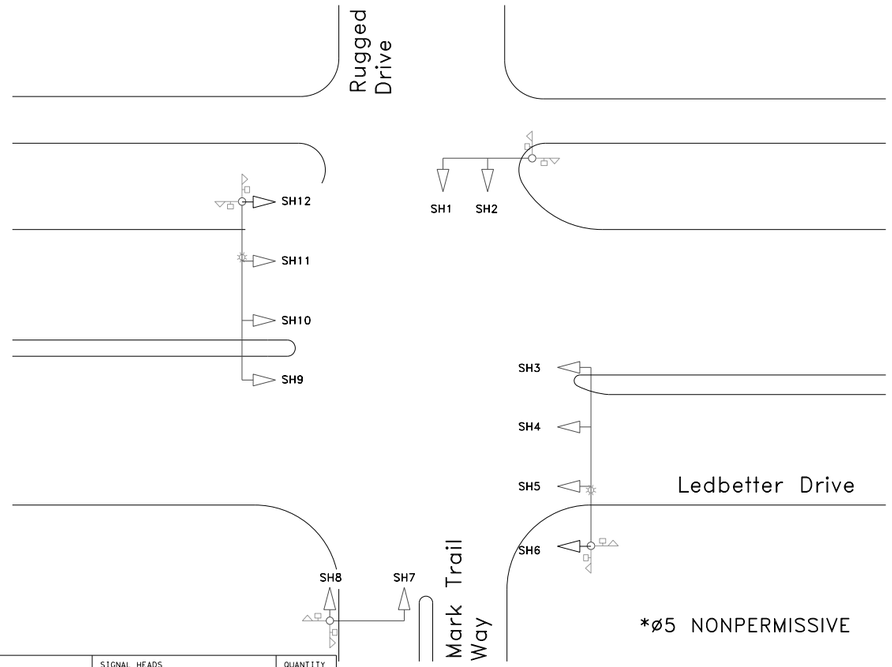
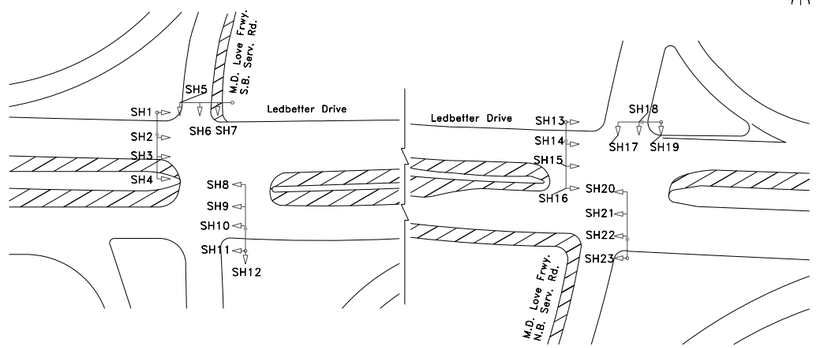
LEDBETTER DR AT MARK TRAIL WAY AND RUGGED DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH4, SH5, SH7, SH8, SH10, SH11	8
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH9	1
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH3	1
ADD NEW SIGNAL HEADS (V3)	SH6, SH12	2

LEDBETTER DR AT MARVIN D LOVE



ITEM DESCRIPTION (S.B.S.R.)	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH5, SH6, SH7 SH9, SH10, SH13, SH19, SH23	11
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH8	1

ITEM DESCRIPTION (N.B.S.R.)	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH3, SH4, SH7, SH8, SH12, SH13, SH16, SH17, SH20	9
ADD NEW SIGNAL HEADS (V3)	SH5, SH9, SH14, SH18	4

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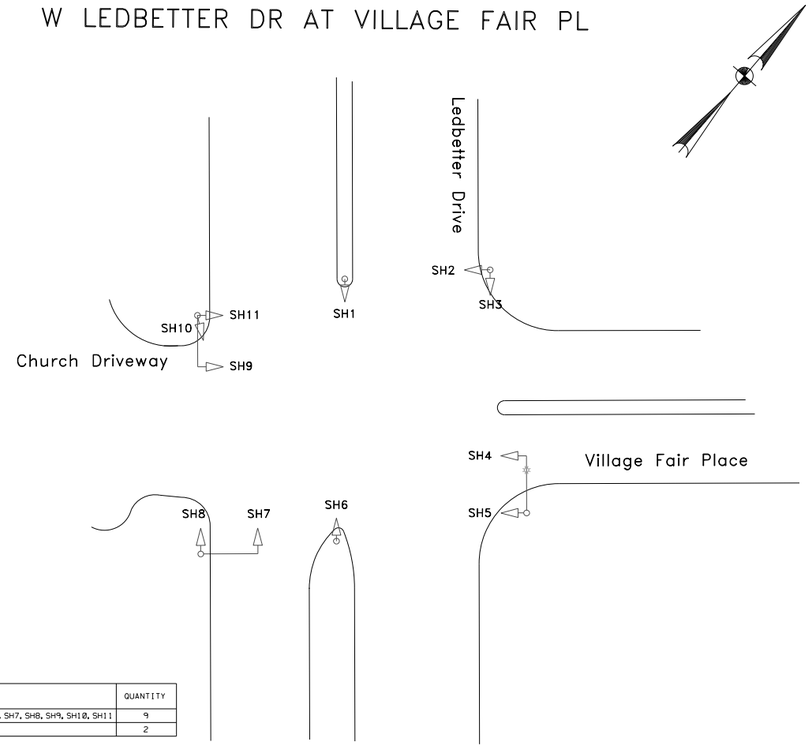
SHEET 1 OF 4

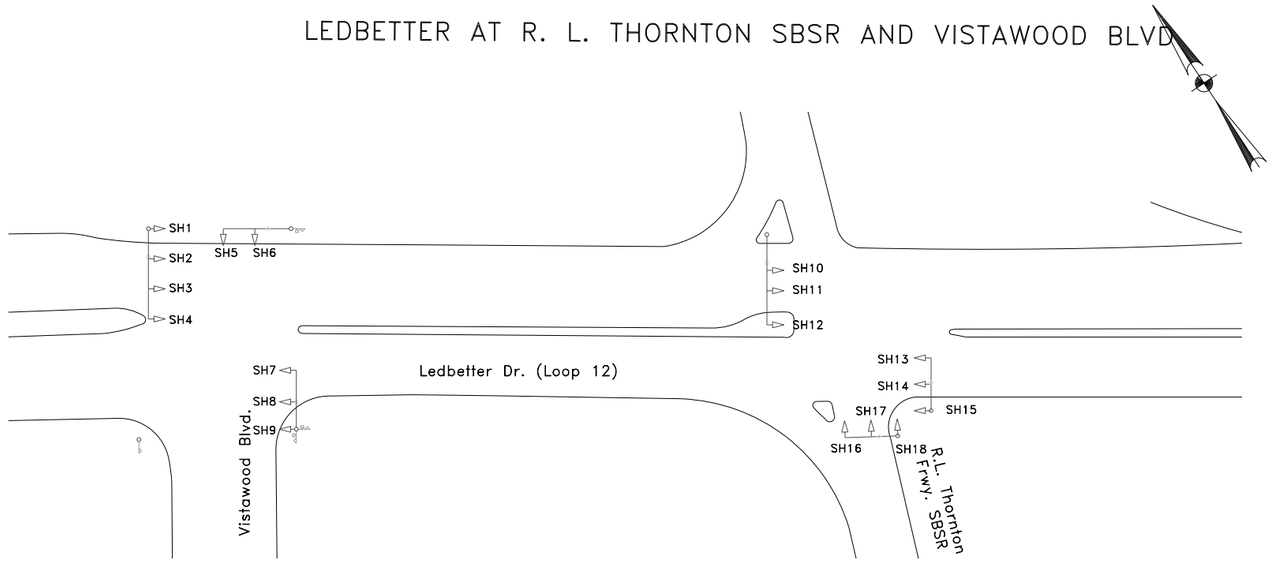
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
CHECK JJM	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64P
	CONTROL	SECTION	JOB	
	0918	47	342, ETC.	

W LEDBETTER DR AT VILLAGE FAIR PL



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
REPLACE SIGNAL HEAD (3SEC)	SH2, SH3, SH4, SH5, SH7, SH8, SH9, SH10, SH11	9
REPLACE SIGNAL HEAD (5SEC)	SH1, SH6	2

LEDBETTER AT R. L. THORNTON SBSR AND VISTAWOOD BLVD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH3, SH5, SH6, SH7, SH8, SH9, SH10 SH11, SH13, SH14, SH15, SH16, SH17, SH18	16
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH4, SH12	2

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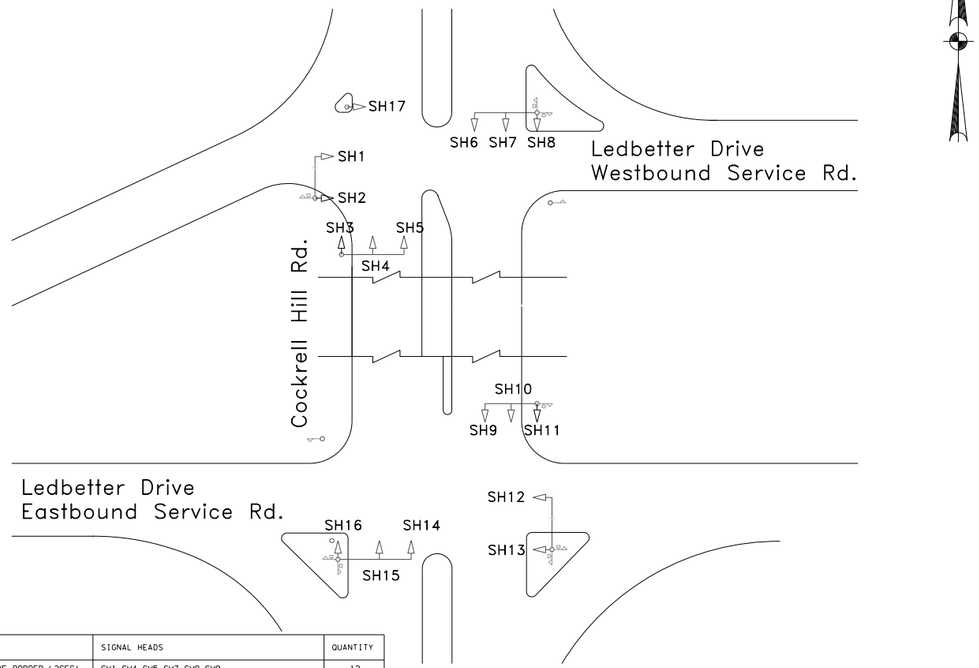
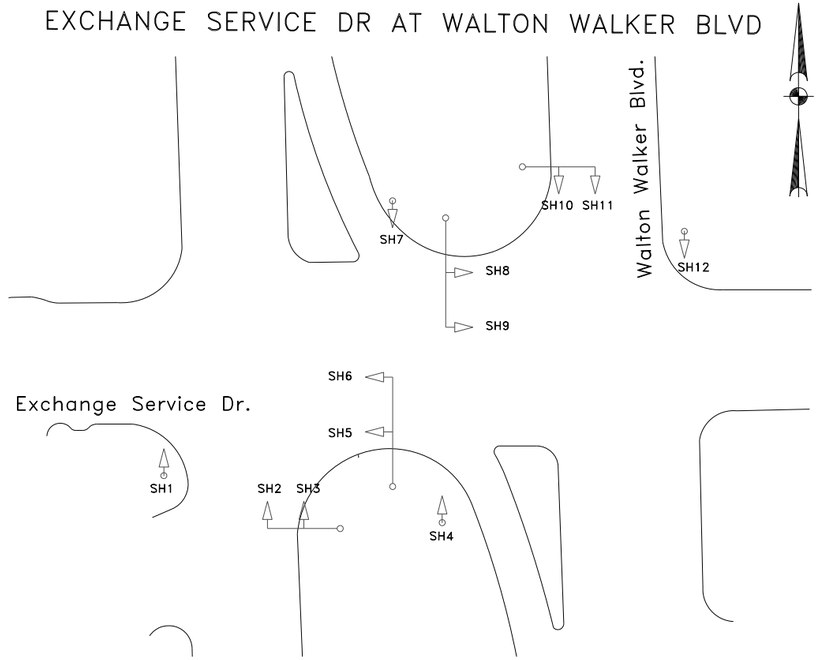
S COCKRELL HILL RD AT W LEDBETTER DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH4, SH5, SH7, SH8, SH9, SH10, SH12, SH13, SH14, SH15, SH16	13
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH6, SH14	2
ADD NEW SIGNAL HEADS (H3)	SH2, SH3, SH11	3

EXCHANGE SERVICE DR AT WALTON WALKER BLVD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH2, SH3, SH5, SH6, SH8 SH9, SH10, SH11, SH12	3
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH4, SH7	2

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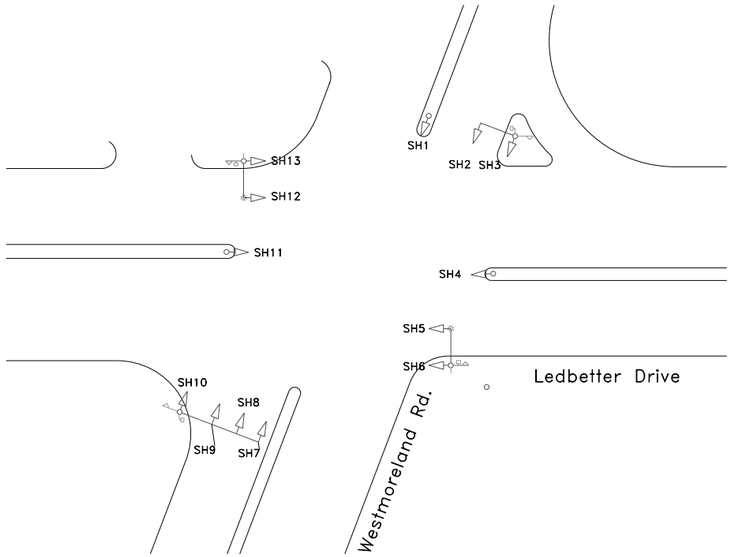
SHEET 2 OF 4

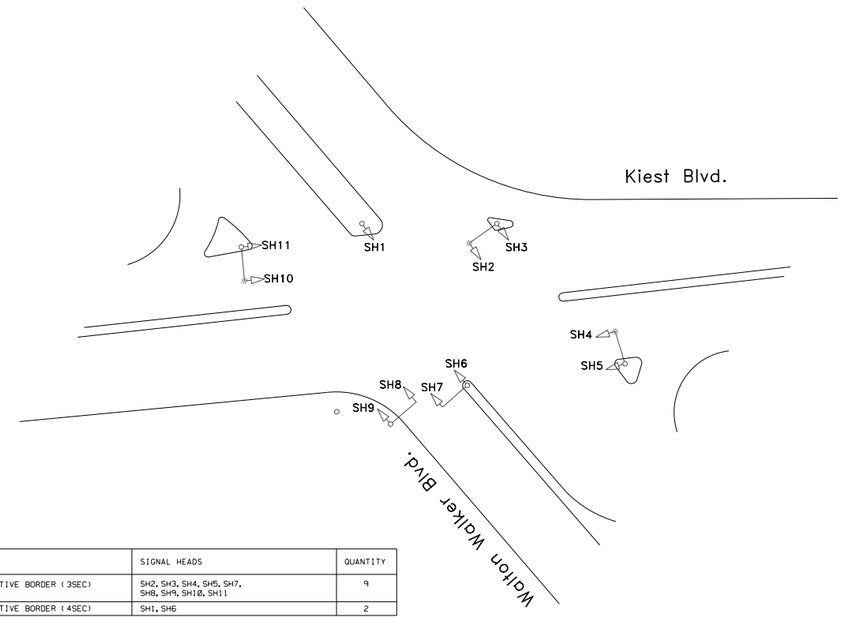
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	640
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

W LEDBETTER DR AT S WESTMORELAND RD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
REPLACE SIGNAL HEAD (3SEC)	SH2, SH3, SH5, SH6, SH8 SH9, SH10, SH12, SH13	12
REPLACE SIGNAL HEAD (4SEC)	SH1	1
REPLACE SIGNAL HEAD (5SEC)	SH4, SH7, SH11	3

W KIEST BLVD AT S WALTON WALKER BLVD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH4, SH5, SH7, SH8, SH9, SH10, SH11	9
BACKPLATE W/ REFLECTIVE BORDER (4SEC)	SH1, SH6	2

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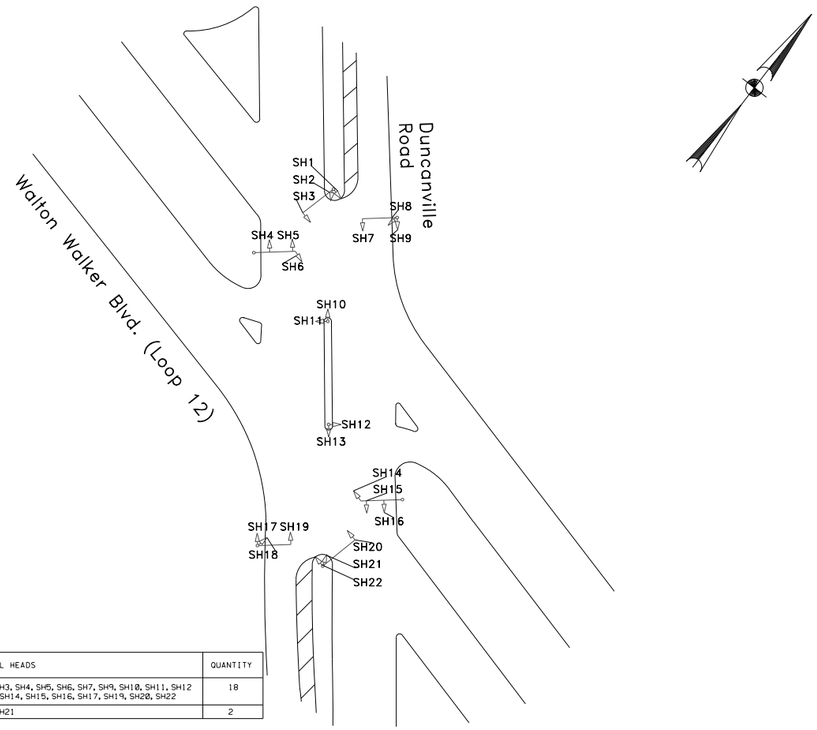
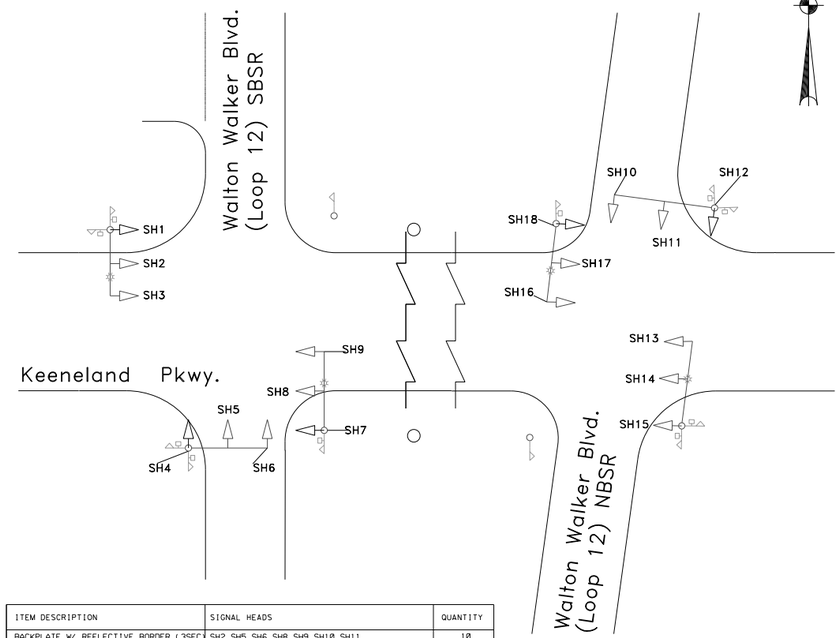
PROFESSIONAL ENGINEER

DUNCANVILLE RD AT S WALTON WALKER BLVD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH3, SH4, SH5, SH6, SH7, SH9, SH10, SH11, SH12 SH13, SH14, SH15, SH16, SH17, SH19, SH20, SH22	18
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH2, SH21	2

KEENELAND PKWY AT S WALTON WALKER BLVD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH5, SH6, SH8, SH9, SH10, SH11, SH14, SH15, SH16, SH17	10
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH3, SH13	2
ADD NEW SIGNAL HEADS (V3)	SH1, SH4, SH7, SH12, SH18	5

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

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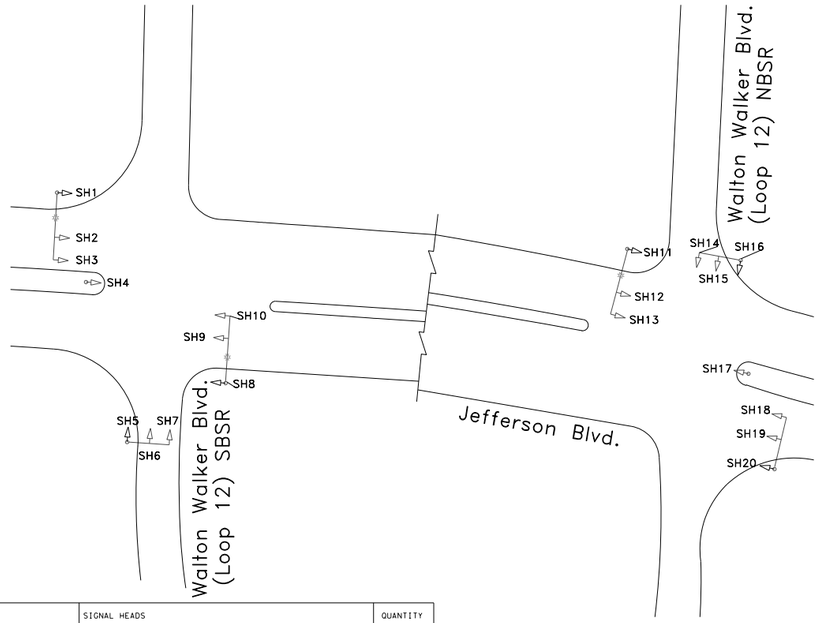
TRAFFIC SAFETY IMPROVEMENTS
SL 12 SIGNAL HEAD UPGRADES
CSJ 0581-02-159

SHEET 3 OF 4

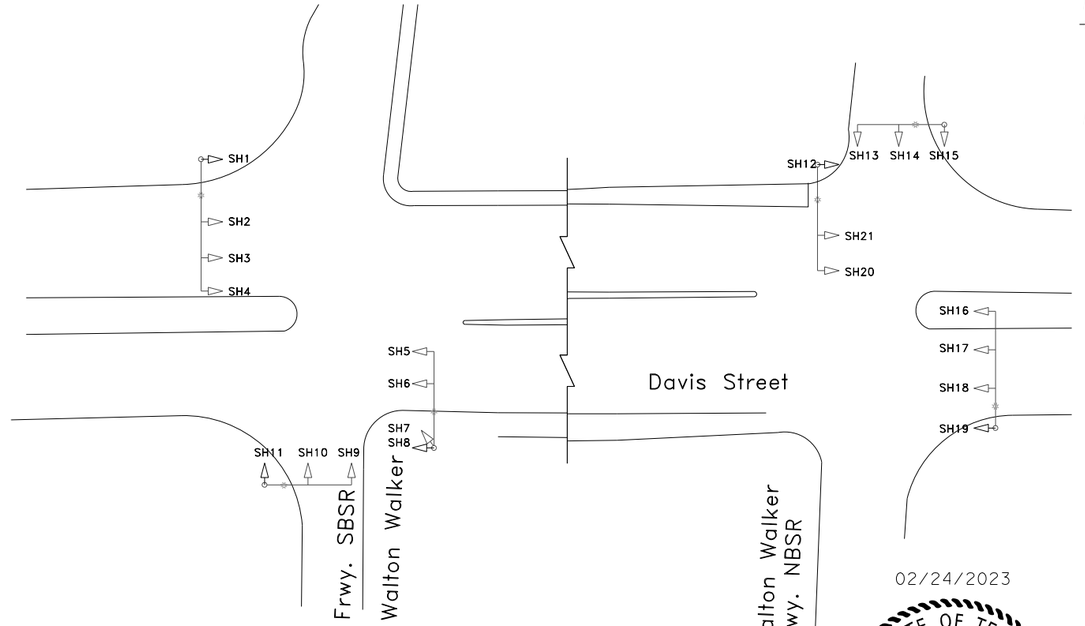
DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64R
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

W JEFFERSON BLVD AT S WALTON WALKER BLVD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH6, SH7, SH9, SH10, SH12, SH13, SH14, SH15, SH18, SH19	12
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH1, SH2, SH10, SH11	4
ADD NEW SIGNAL HEAD (V3)	SH1, SH5, SH8, SH11, SH16, SH20	6

W DAVIS ST AT N WALTON WALKER BLVD

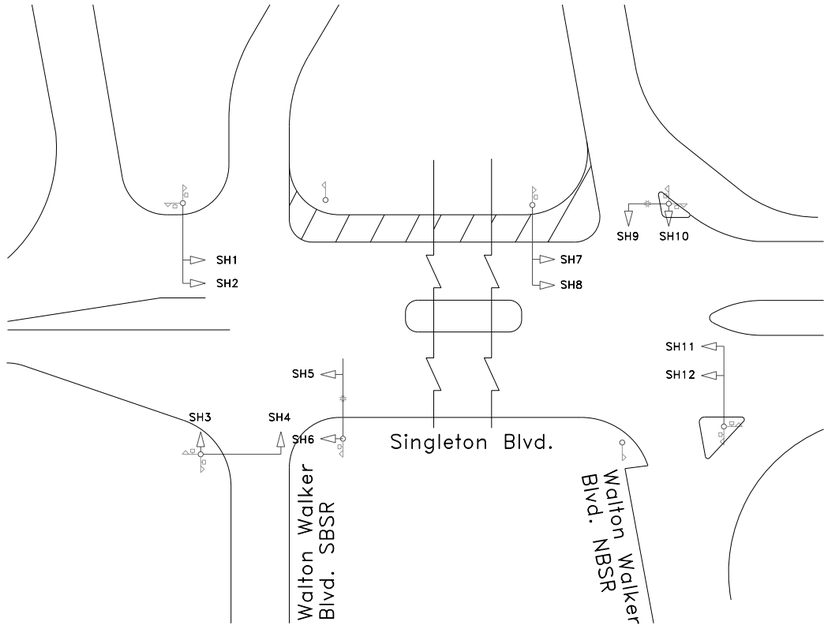


ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH3, SH5, SH6, SH9, SH10, SH13, SH14, SH17, SH18, SH20, SH21	12
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH4, SH16	2
ADD NEW SIGNAL HEAD (V3)	SH1, SH8, SH11, SH12, SH19	5

02/24/2023

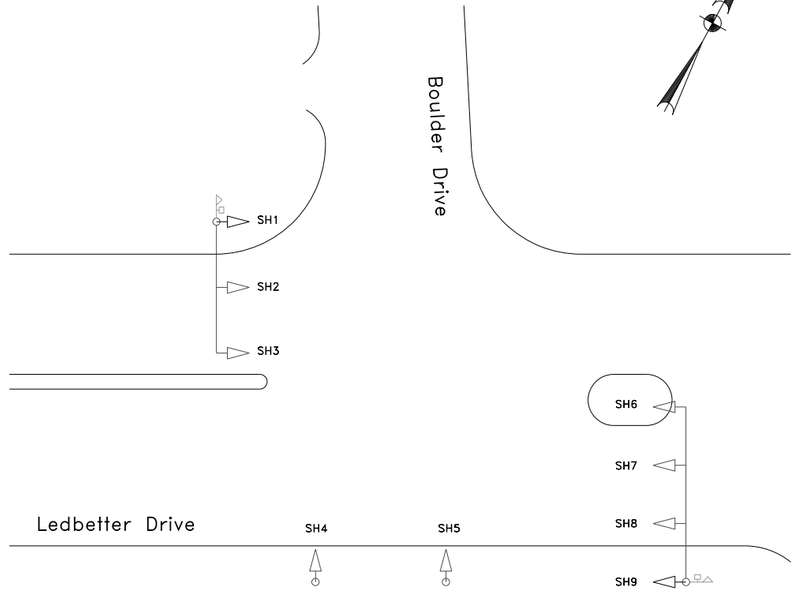
STATE OF TEXAS
JOSEPH MARCHIONE
105071
LICENSED
PROFESSIONAL ENGINEER

SINGLETON BLVD AT N WALTON WALKER BLVD



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH1, SH3, SH4, SH5, SH6 SH7, SH8, SH9, SH10, SH12	10
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH2, SH11	2

BOULDER DR AT LEDBETTER DR



ITEM DESCRIPTION	SIGNAL HEADS	QUANTITY
BACKPLATE W/ REFLECTIVE BORDER (3SEC)	SH2, SH4, SH5, SH7, SH8	5
BACKPLATE W/ REFLECTIVE BORDER (5SEC)	SH6	1
ADD NEW SIGNAL HEADS (V3)	SH1, SH9	2

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DEPARTMENT OF TRANSPORTATION

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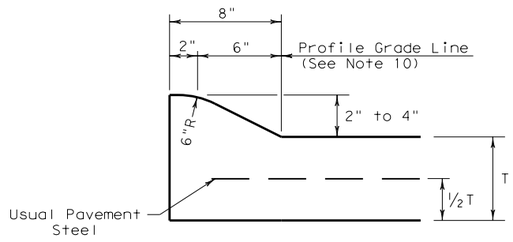
TRAFFIC SAFETY IMPROVEMENTS
SL 12 SIGNAL HEAD UPGRADES
CSJ 0581-02-159

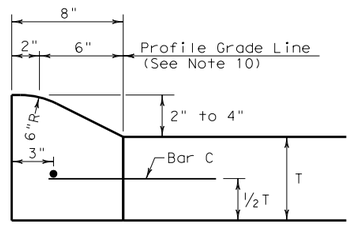
SHEET 4 OF 4

DESIGN SLA	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS SLA	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK JJM	TEXAS	DALLAS	DALLAS	64S
	CONTROL	SECTION	JOB	
CHECK JJM	0918	47	342, ETC.	

DATE:
FILE:



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



TYPE I CURB
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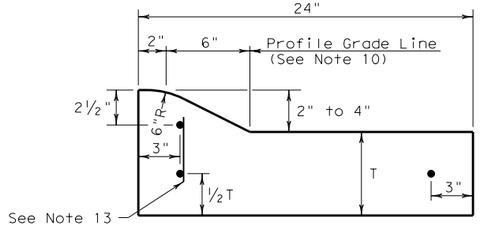
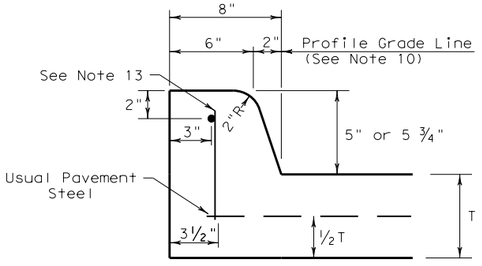
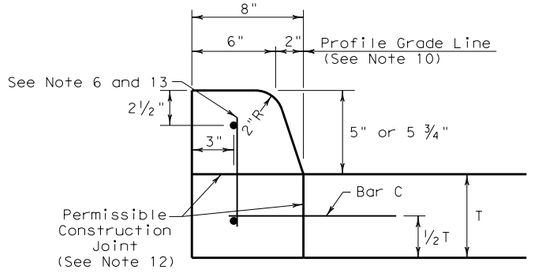


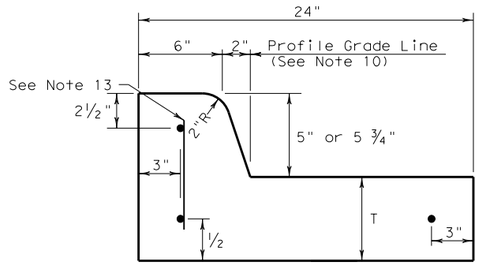
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



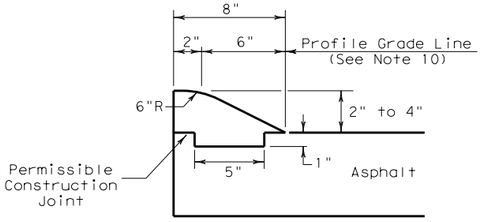
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



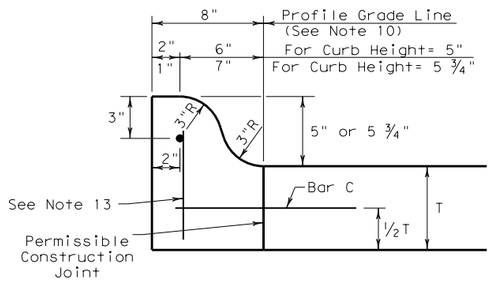
TYPE II CURB
5" - 5 ¾" HEIGHT



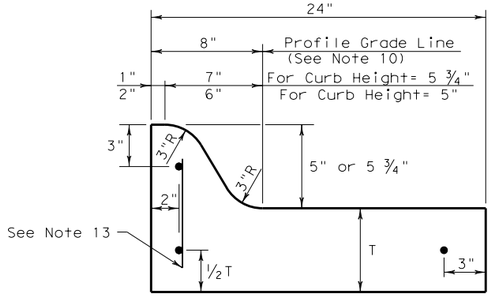
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



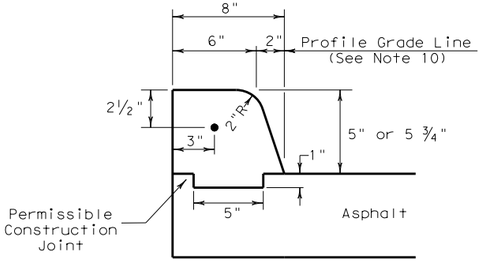
TYPE III CURB (KEYED)
2" - 4" HEIGHT



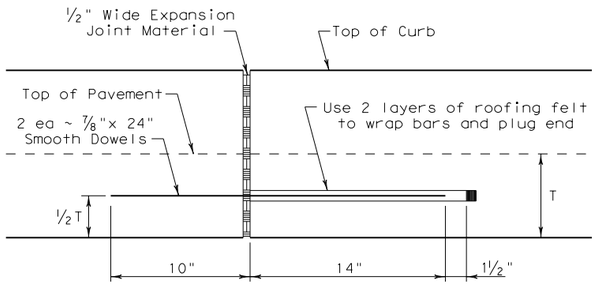
TYPE IIa CURB
5" - 5 ¾" HEIGHT



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

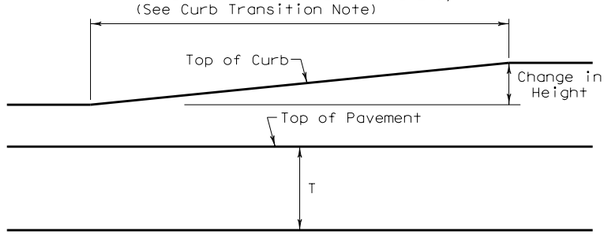


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

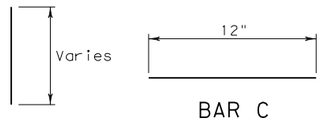
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C~C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B

BAR C

Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

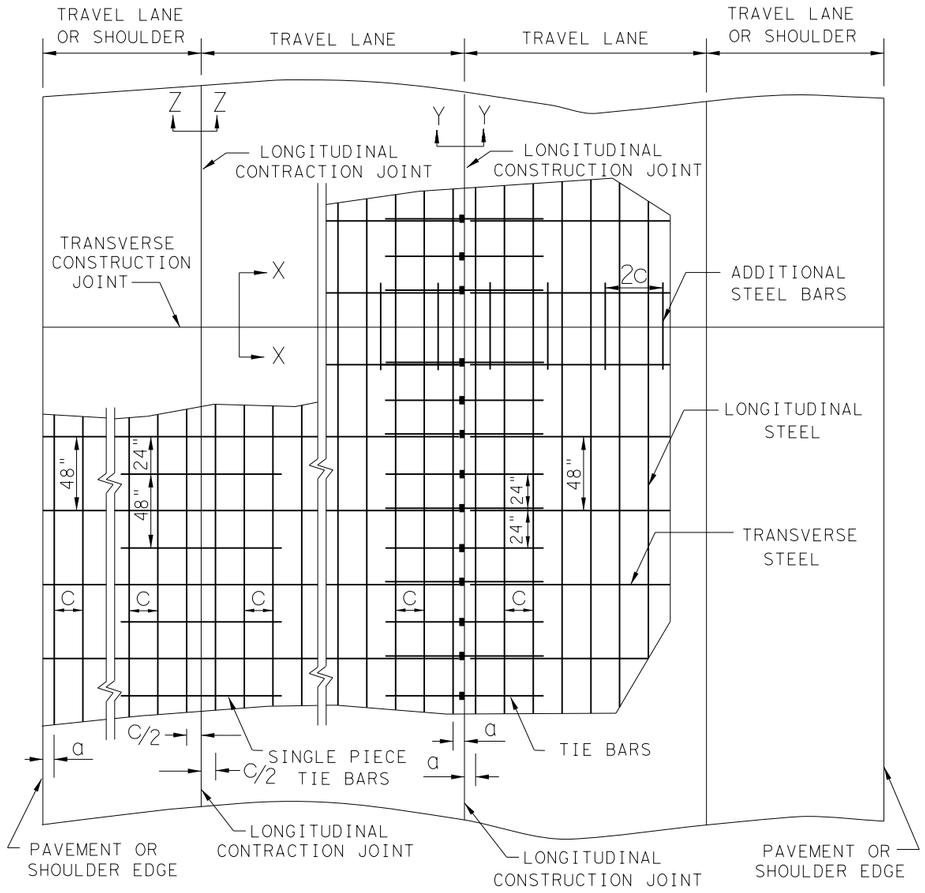
CCCG-22

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		65

DATE:
FILE:

TABLE NO.1 LONGITUDINAL STEEL					
SLAB THICKNESS AND BAR SIZE		REGULAR STEEL BARS	FIRST SPACING AT EDGE OR JOINT	ADDITIONAL STEEL BARS AT TRANSVERSE CONSTRUCTION JOINT (SECTION X-X)	
T (IN.)	BAR SIZE	SPACING C (IN.)	SPACING a (IN.)	SPACING 2 X C (IN.)	LENGTH L (IN.)
7.0	#5	6.5	3 TO 4	13	50
7.5	#5	6.0	3 TO 4	12	50
8.0	#6	9.0	3 TO 4	18	50
8.5	#6	8.5	3 TO 4	17	50
9.0	#6	8.0	3 TO 4	16	50
9.5	#6	7.5	3 TO 4	15	50
10.0	#6	7.0	3 TO 4	14	50
10.5	#6	6.75	3 TO 4	13.5	50
11.0	#6	6.5	3 TO 4	13	50
11.5	#6	6.25	3 TO 4	12.5	50
12.0	#6	6.0	3 TO 4	12	50
12.5	#6	5.75	3 TO 4	11.5	50
13.0	#6	5.5	3 TO 4	11	50

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

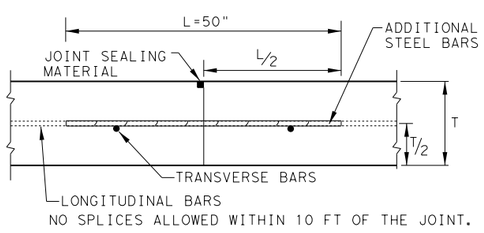


TYPICAL PAVEMENT LAYOUT

PLAN VIEW (NOT TO SCALE)

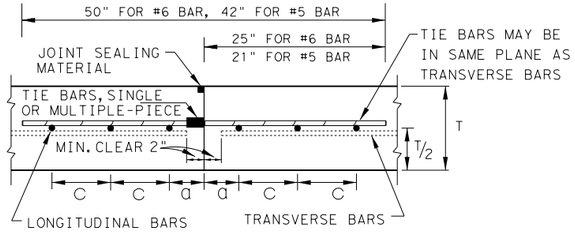
GENERAL NOTES

1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT ARE NOT COVERED BY THIS STANDARD.
2. USE COARSE AGGREGATES WITH A RATED COEFFICIENT OF THERMAL EXPANSION (CoTE) OF NOT MORE THAN 5.5 X 10^{-6} IN/IN/ °F AS LISTED IN THE CONCRETE RATED SOURCE QUALITY CATALOG (CRSQC).
3. ALL THE REINFORCING STEEL AND TIE BARS SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615 (GRADE 60) OR ASTM A 996 (GRADE 60) OR ABOVE. STEEL BAR SIZES AND SPACINGS SHALL CONFORM TO TABLE NO.1 AND TABLE NO.2.
4. STEEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1 IN. HORIZONTALLY AND +/- 0.5 IN. VERTICALLY. CALCULATED AVERAGE BAR SPACING (CONCRETE PLACEMENT WIDTH / NUMBER OF LONGITUDINAL BARS) SHALL CONFORM TO TABLE NO.1
5. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
6. THE SAW CUT DEPTH FOR THE LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z) SHALL BE ONE THIRD OF THE SLAB THICKNESS (T/3).
7. WHEN TYING CONCRETE GUTTER AT A LONGITUDINAL JOINT, THE TIE BAR LENGTH OR POSITION MAY BE ADJUSTED. PROVIDE 3 IN. OF CONCRETE COVER FROM THE BACK OF GUTTER TO THE END OF TIE BAR.
8. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN.10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
9. OMIT TIE BARS LOCATED WITHIN 18-IN. OF THE TRANSVERSE CONSTRUCTION JOINTS (SECTION X-X). USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
10. LONGITUDINAL REINFORCING STEEL SPLICES SHALL BE A MINIMUM OF 25 IN. STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT.
11. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."



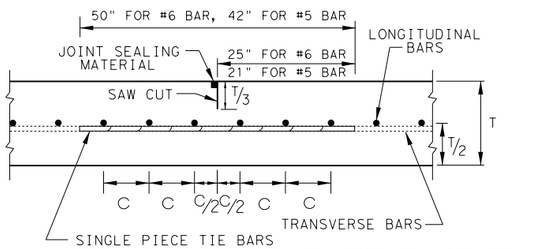
TRANSVERSE CONSTRUCTION JOINT

SECTION X - X



LONGITUDINAL CONSTRUCTION JOINT

SECTION Y - Y



LONGITUDINAL CONTRACTION JOINT

SECTION Z - Z

SHEET 1 OF 2

Texas Department of Transportation | Design Division Standard

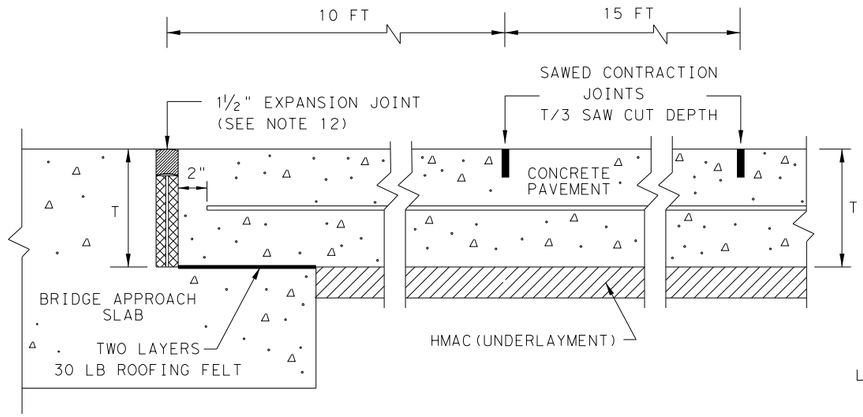
CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

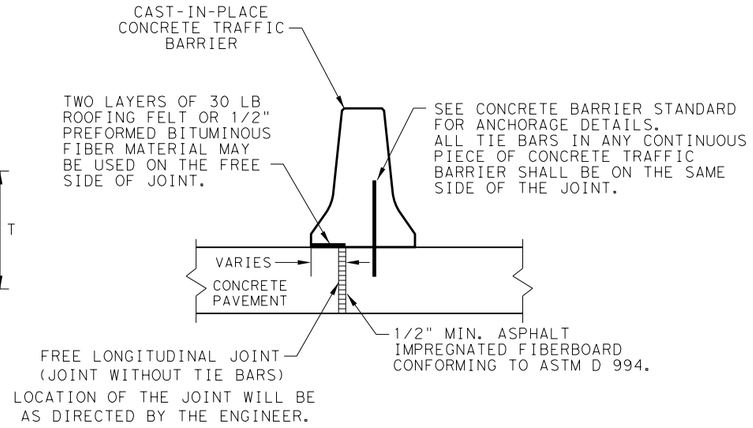
CRCP(1)-20

FILE: crcp120.dgn	DN: TxDOT	CK:KM	DW: AN	CK:VP	
© TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0918	47	342,ETC.	CS	
10/10/2011 ADD GN #12 04/09/2013 REMOVE 6" AND 6.5" ADD CTE REQUIREMENTS 05/05/2017 CoTE AS RATED 4.3	DIST	COUNTY		SHEET NO.	
	DAL	DALLAS		66	

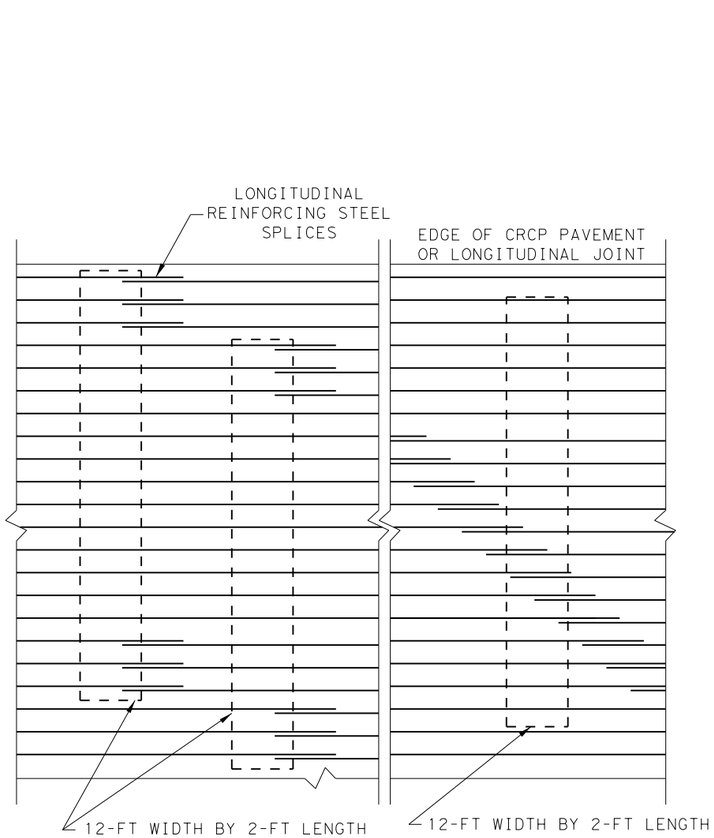
DATE:
FILE:



TRANSVERSE EXPANSION JOINT DETAIL
AT BRIDGE APPROACH

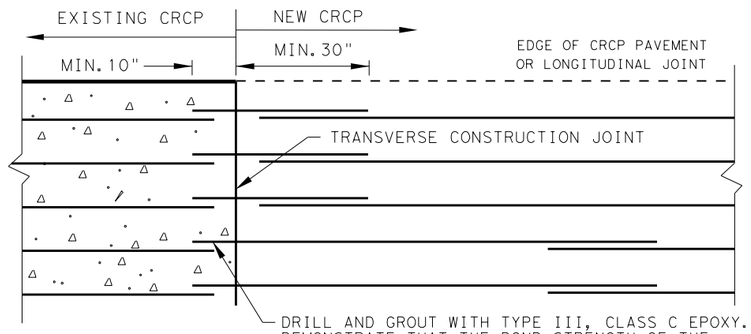


FREE LONGITUDINAL JOINT DETAIL

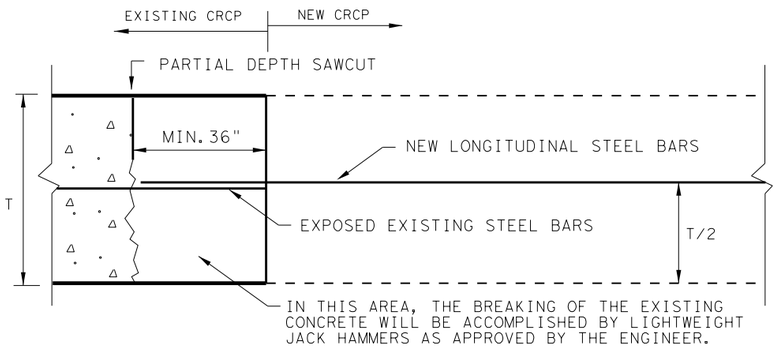


STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1/3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

EXAMPLES OF LAP CONFIGURATION
PLAN VIEW (NOT TO SCALE)

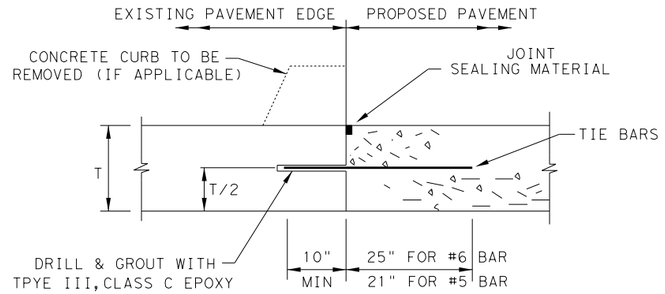


OPTION A: DRILL AND EPOXY
PLAN VIEW (NOT TO SCALE)



OPTION B: BREAKBACK AND LAP

TRANSVERSE TIE JOINT DETAIL
EXISTING CRCP TO NEW CRCP



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

LONGITUDINAL WIDENING JOINT DETAIL

Texas Department of Transportation

Design Division Standard

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

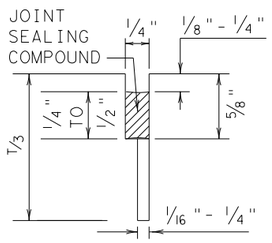
ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

CRCP(1)-20

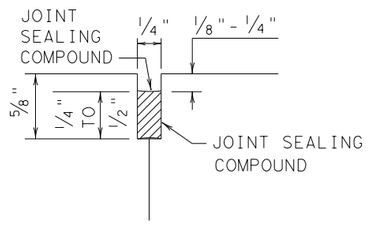
FILE: crcp120.dgn	DN: TxDOT	CK: KM	DW: AN	CK: VP
© TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 03/16/2020 REMOVED TABLE 1A	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		67

DATE:
FILE:

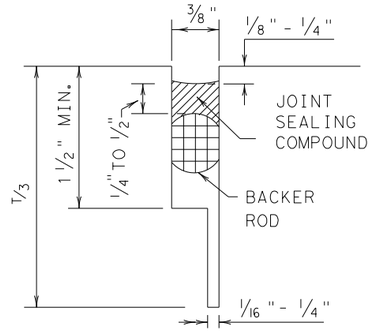
METHOD B: JOINT SEALING COMPOUND



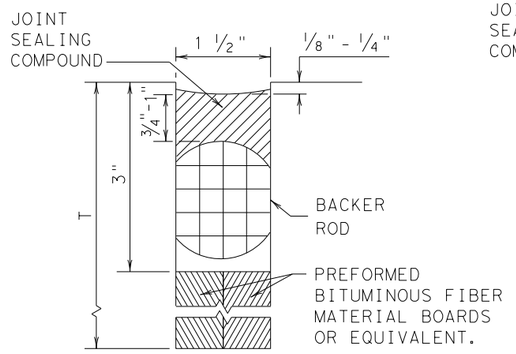
LONGITUDINAL SAWED CONTRACTION JOINT



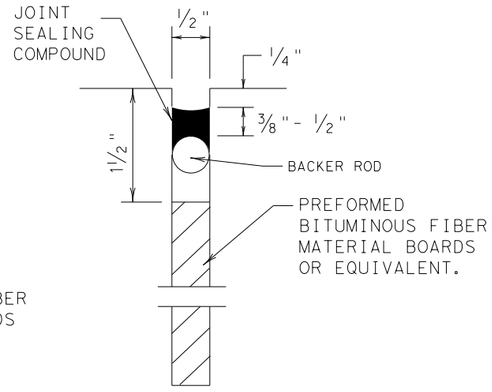
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

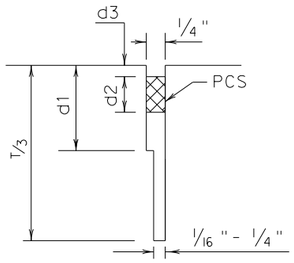


TRANSVERSE FORMED EXPANSION JOINT

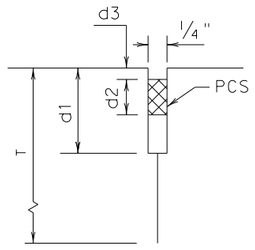


FORMED ISOLATION JOINT

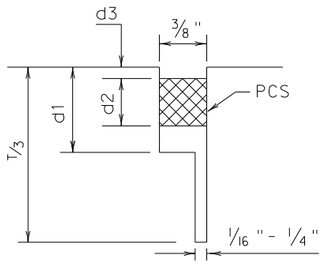
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



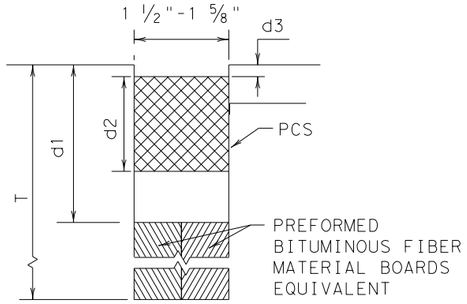
LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



TRANSVERSE FORMED EXPANSION JOINT

GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
2. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
3. THE JOINT RESERVOIR FOR SEALANT OR PCS SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINTS AND THE SAWED JOINTS.
4. DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
5. REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
6. FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
7. FOR TRANSVERSE SAWED CONTRACTION, TRANSVERSE FORMED EXPANSION JOINT, AND ISOLATION JOINT USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4,5,7,OR 8 FOR MAINTAINING EXISTING JOINTS.
8. THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 "CLEANING AND SEALING JOINTS" OR ITEM 713 "CLEANING AND SEALING JOINTS AND CRACKS (CONCRETE PAVEMENT)".
9. ISOLATION JOINTS ACCOMMODATE HORIZONTAL AND VERTICAL MOVEMENTS THAT OCCUR BETWEEN A PAVEMENT AND A STRUCTURE. ISOLATION JOINTS MAY BE USED FOR BRIDGE ABUTMENTS, INTERSECTIONS, CURB AND GUTTER, OLD AND NEW PAVEMENTS, OR AROUND DRAINAGE INLETS, MANHOLES, FOOTINGS AND LIGHTING STRUCTURES.

Texas Department of Transportation

Design Division Standard

CONCRETE PAVING DETAILS

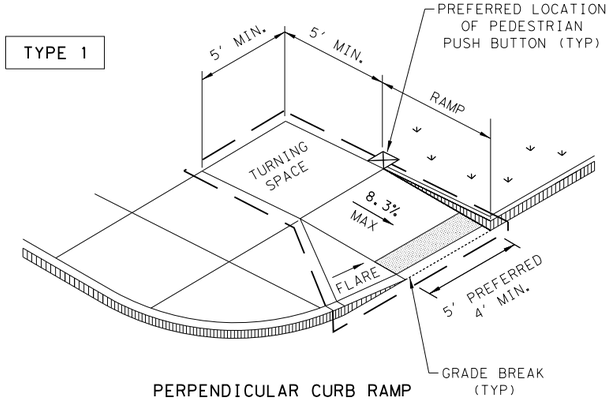
JOINT SEALS

JS-14

FILE: js14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
©TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		68

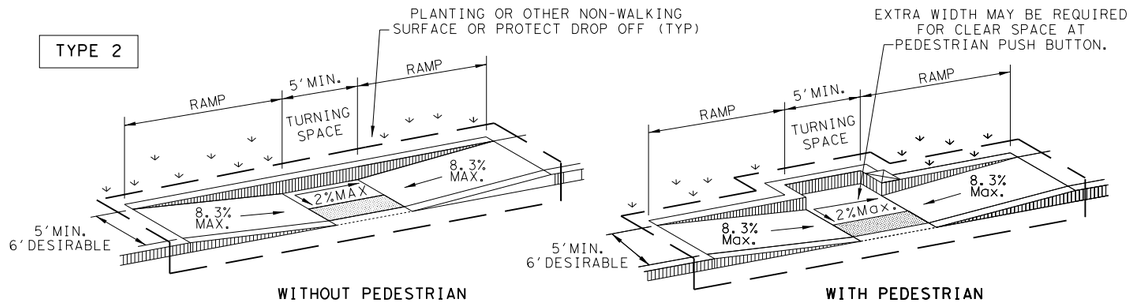
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

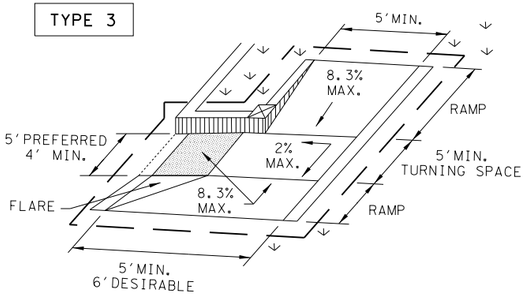


WITHOUT PEDESTRIAN PUSH BUTTON

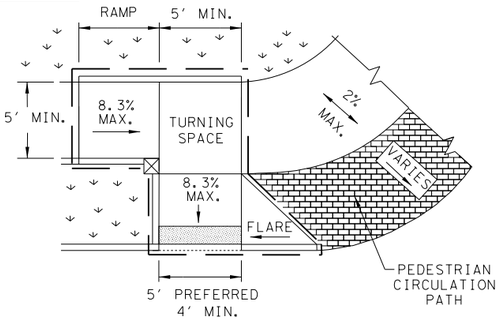
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

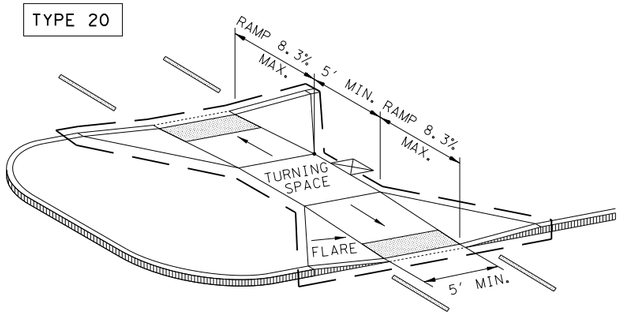


TYPE 6



COMBINATION CURB RAMPS

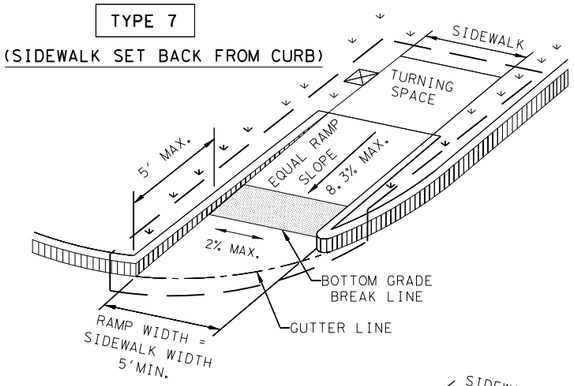
TYPE 20



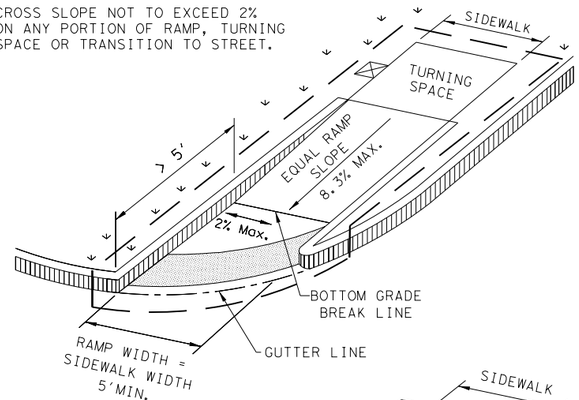
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

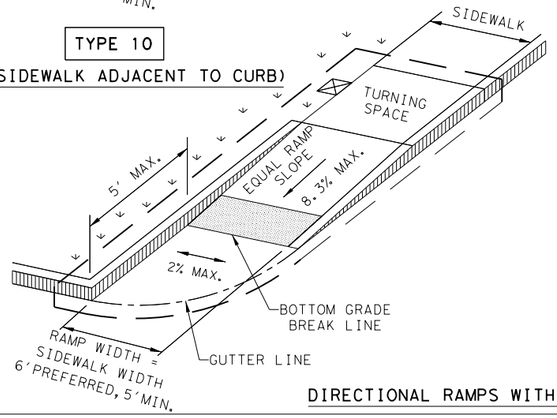


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

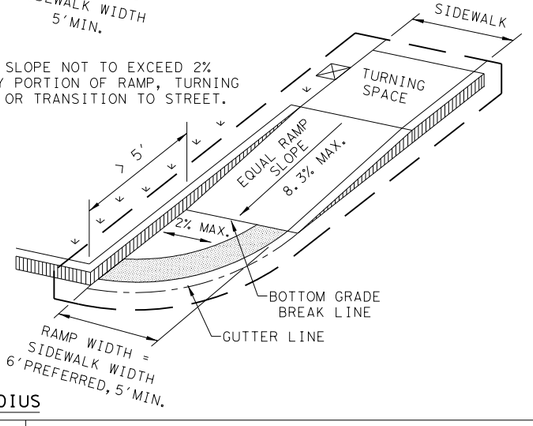


TYPE 10

(SIDEWALK ADJACENT TO CURB)

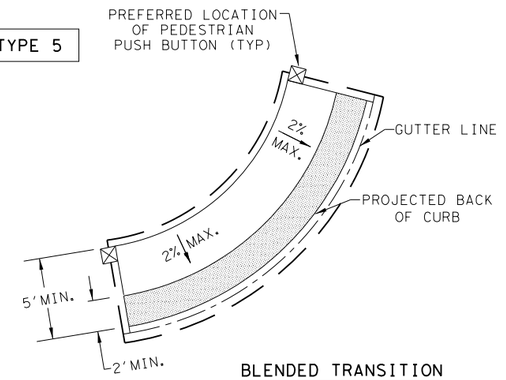


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

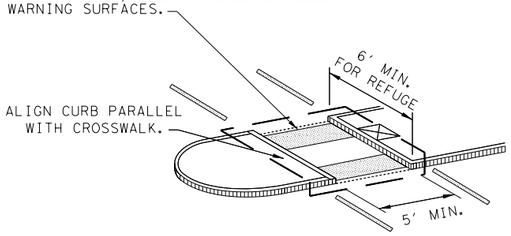
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

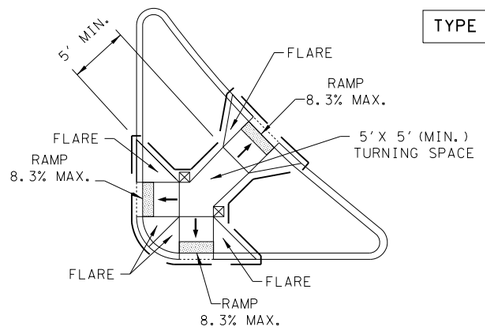
INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.

TYPE 21



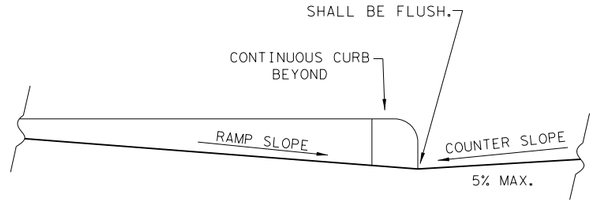
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

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

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	0918	47	342, ETC.	CS
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		69

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

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

DETECTABLE WARNING MATERIAL

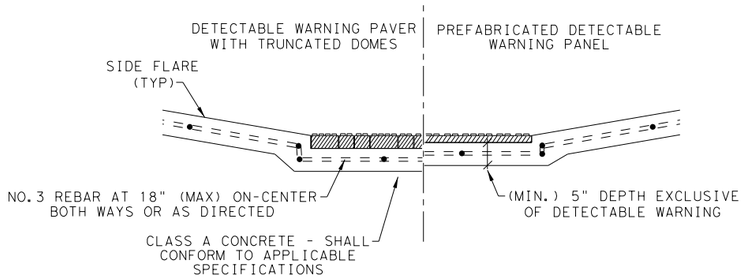
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

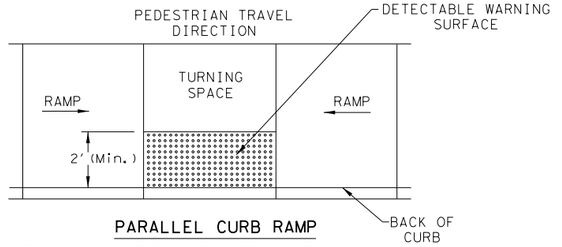
SIDEWALKS

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.



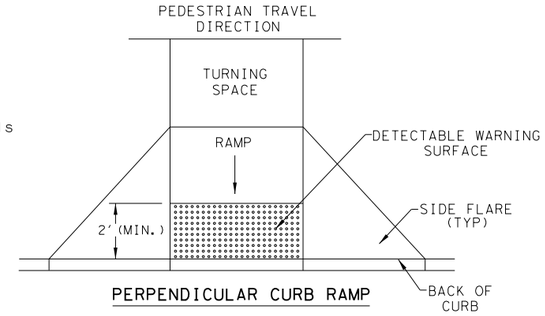
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



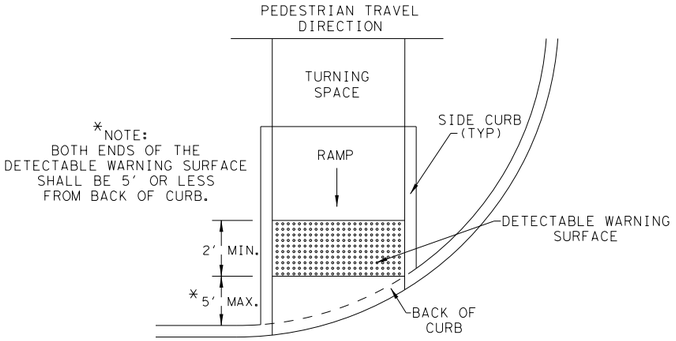
PARALLEL CURB RAMP

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

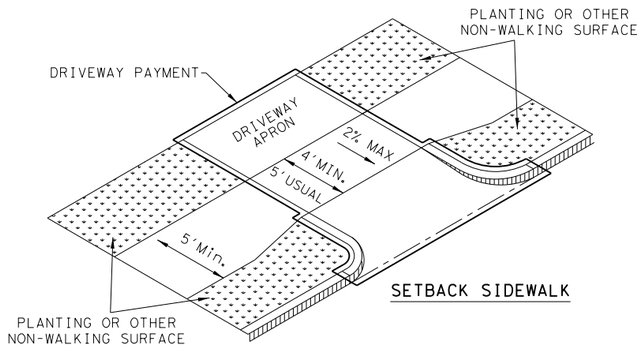
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

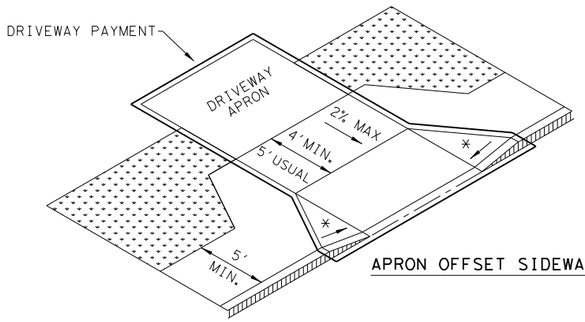
FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0918	47	342, ETC.		CS	
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.	
	DAL	DALLAS			70	

DATE:
FILE:

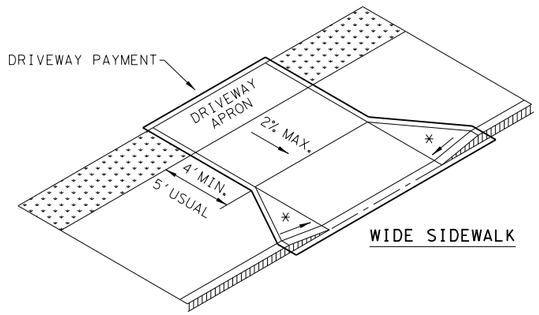
SIDEWALK TREATMENT AT DRIVEWAYS



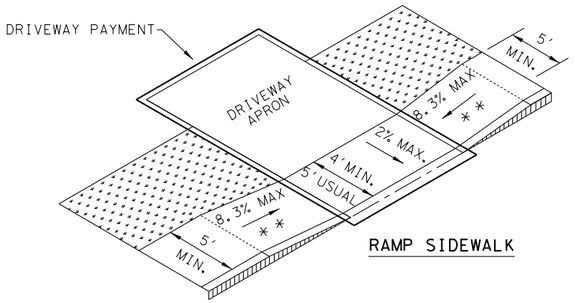
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

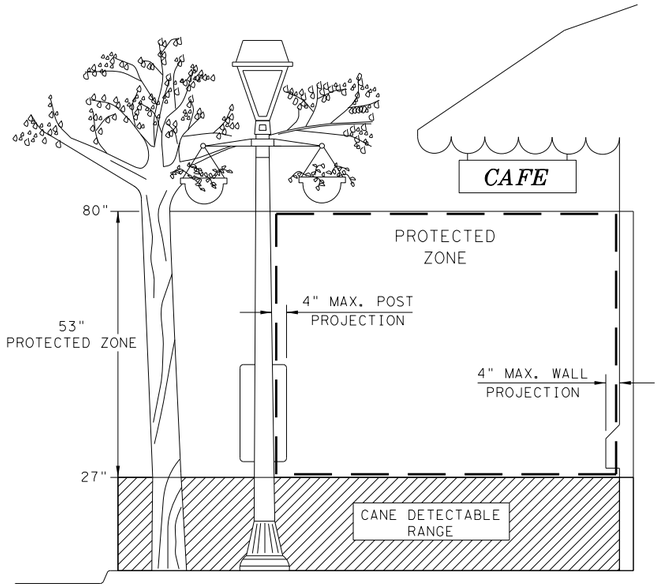


RAMP SIDEWALK

NOTES:

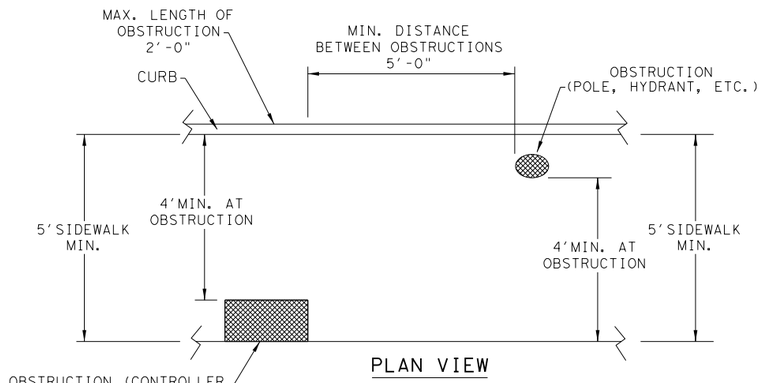
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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



PROTECTED ZONE

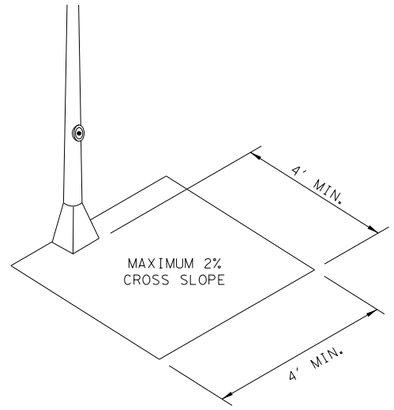
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



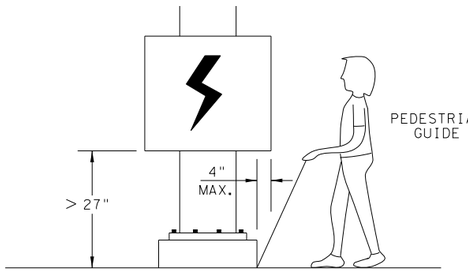
PLAN VIEW

PLACEMENT OF STREET FIXTURES

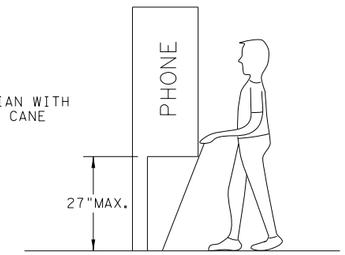
NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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

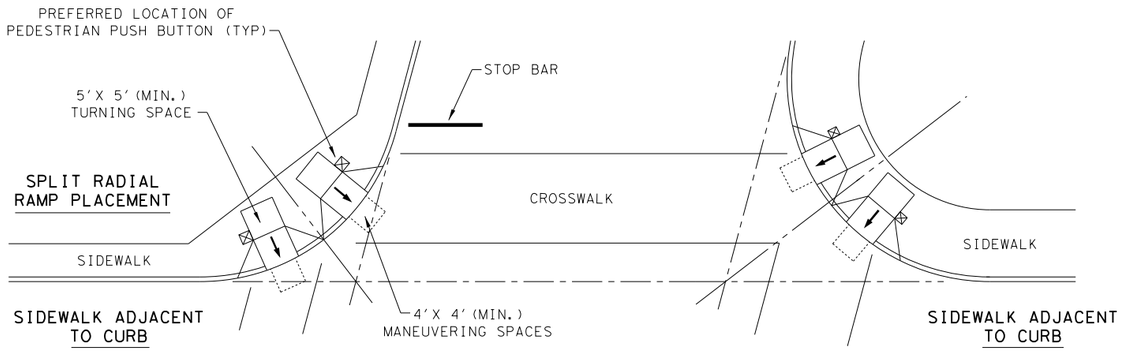
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0918	47	342, ETC.		CS
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
	DAL	DALLAS			71

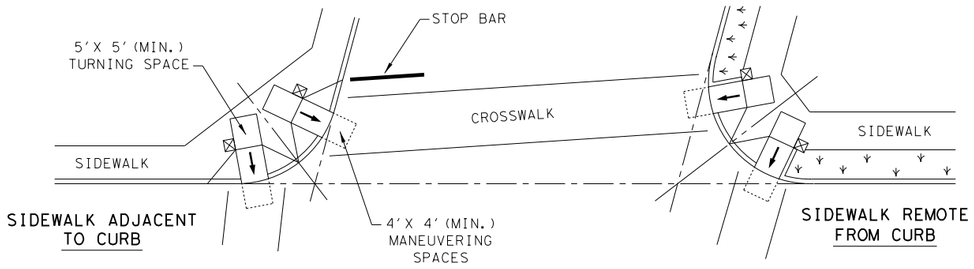
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

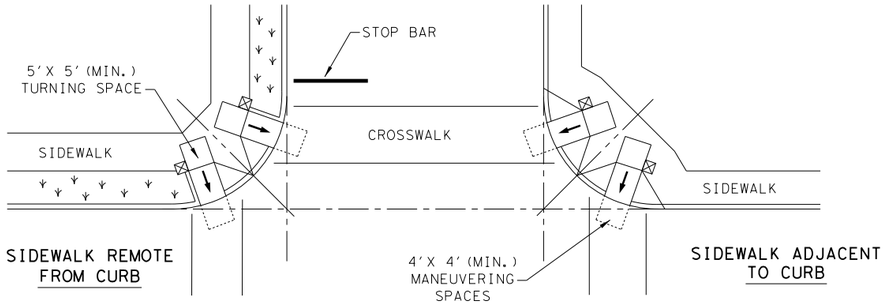
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



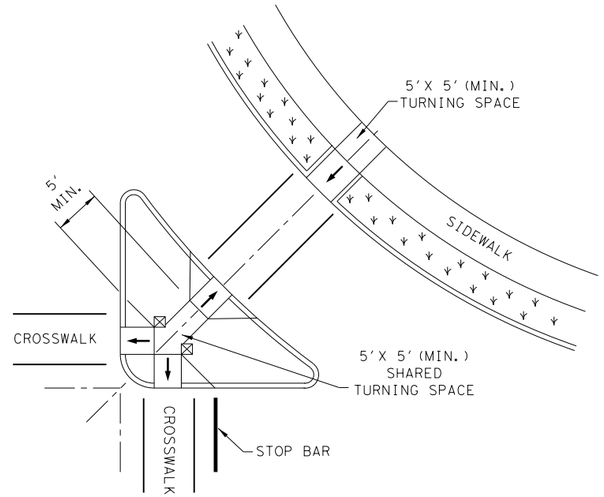
SKEWED INTERSECTION WITH "LARGE" RADIUS



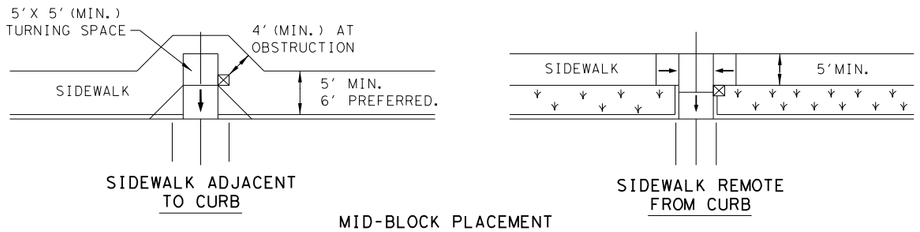
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

SHEET 4 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	0918	47	342, ETC.		CS
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
	DAL	DALLAS			72

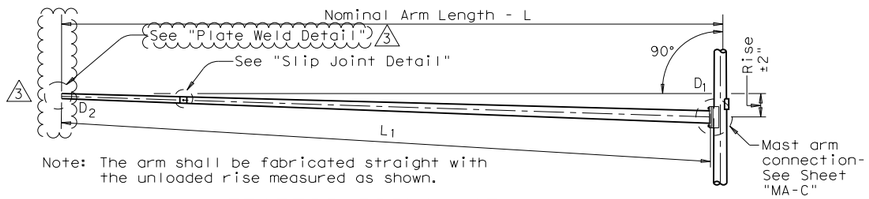
Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D_B	D_{19}	D_{24}	D_{30}	① thk	D_B	D_{19}	D_{24}	D_{30}	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	10.5	7.8	7.1	6.3	.179	11.5	8.5	7.7	6.8	.179	30-A
24	11.0	8.3	7.6	6.8	.179	12.0	9.0	8.2	7.3	.179	30-A
28	11.5	8.8	8.1	7.3	.179	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.

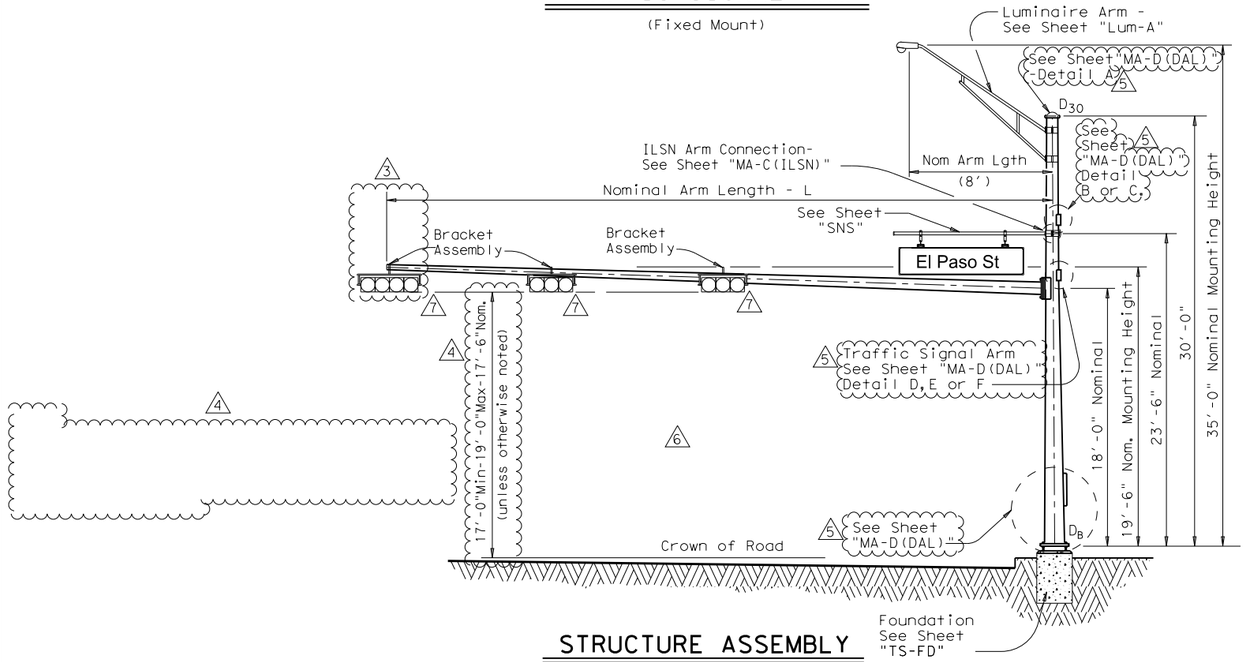
② D_2 may be increased by up to 1" for polygonal arms.



Note: The arm shall be fabricated straight with the unloaded rise measured as shown.

TRAFFIC SIGNAL ARM

(Fixed Mount)



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	3	28S-80		28-80	
32	32L-80	1	32S-80		32-80	
36	36L-80	4	36S-80		36-80	
40	40L-80	1	40S-80		40-80	1
44	44L-80		44S-80		44-80	
48	48L-80	4	48S-80		48-80	5

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 1 Bracket Assembly		2 Bracket Assemblies		3 Bracket Assemblies	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80	3		
32			32II-80		32III-80	1
36			36II-80		36III-80	4
40			2 40II-80		40III-80	1
44			44II-80		44III-80	
48					48III-80	4

Luminaire Arms (1 per 30′ pole)

Nominal Arm Length	Quantity
8′ Arm	13

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"	4
1 ¾"	3′-10"	15

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.

MODIFICATIONS:

1 REPLACED CGB CONNECTOR WITH BRACKET ASSEMBLY. (2/12)

2 ADDITIONAL OPTION. (3/12)

3 REPLACED TENON DETAIL WITH PLATE WELD DETAIL. (2/12)

4 REVISED MINIMUM SIGNAL HEIGHT. (3/12)

5 REPLACED "MA-D" WITH "MA-D(DAL)". (2/12)

6 REMOVED TABLE OF DIMENSIONS "A". (2/12)

7 REMOVED CGB CONNECTORS. (2/12)

Texas Department of Transportation

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

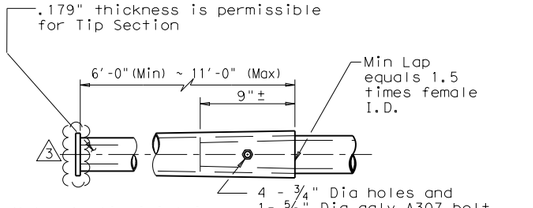
SMA-80(1)-12(DAL)

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
11-99
1-12

CONT	SECT	JOB	HIGHWAY
0918	47	342,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		73

122A



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

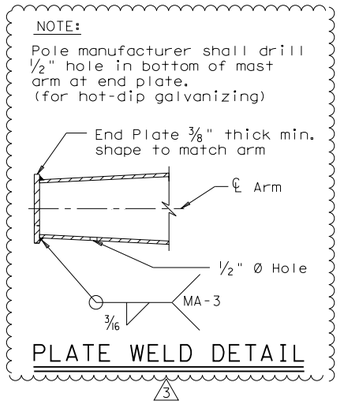


PLATE WELD DETAIL

Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 ½" Dia Threaded Coupling.

BRACKET ASSEMBLY

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.

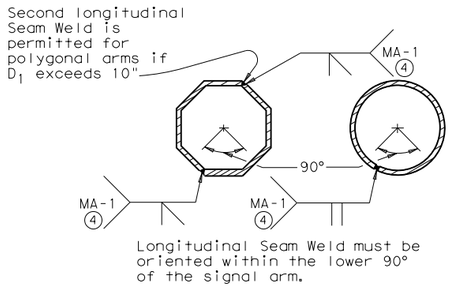
Poles are designed to support one 8'-0" luminaire arm, one 9'-0" internally lighted street name sign and one traffic signal arm with a length as tabulated. The specified luminaire load applied at the end of the luminaire arm equals 60 lbs vertical dead load plus the horizontal wind load on an effective 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).

5 See Standard Sheet "MA-D(DAL)" 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)".

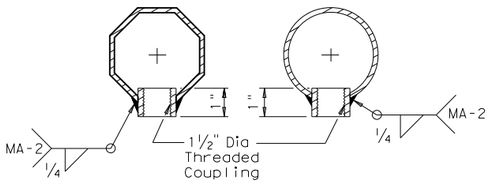
Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

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.



ARM WELD DETAIL

4 60% Min. penetration 100% pemetration within 6" of circumferential base welds.



ARM COUPLING DETAILS

3 REPLACED TENON DETAIL WITH PLATE WELD DETAIL(2/12).

5 REPLACED "MA-D" WITH "MA-D(DAL)"(2/12).

Texas Department of Transportation

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY

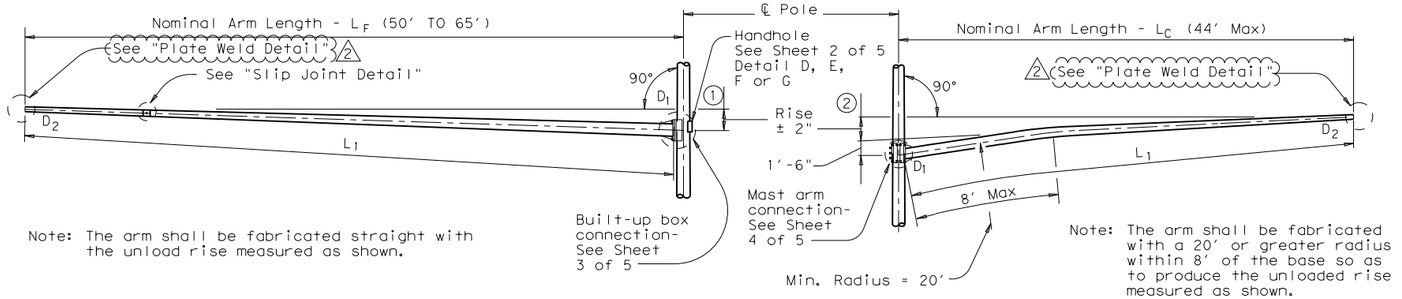
(80 MPH WIND ZONE)

SMA-80(2)-12(DAL)

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
1-12

CONT	SECT	JOB	HIGHWAY
0918	47	342,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		74



Note: The arm shall be fabricated straight with the unload rise measured as shown.

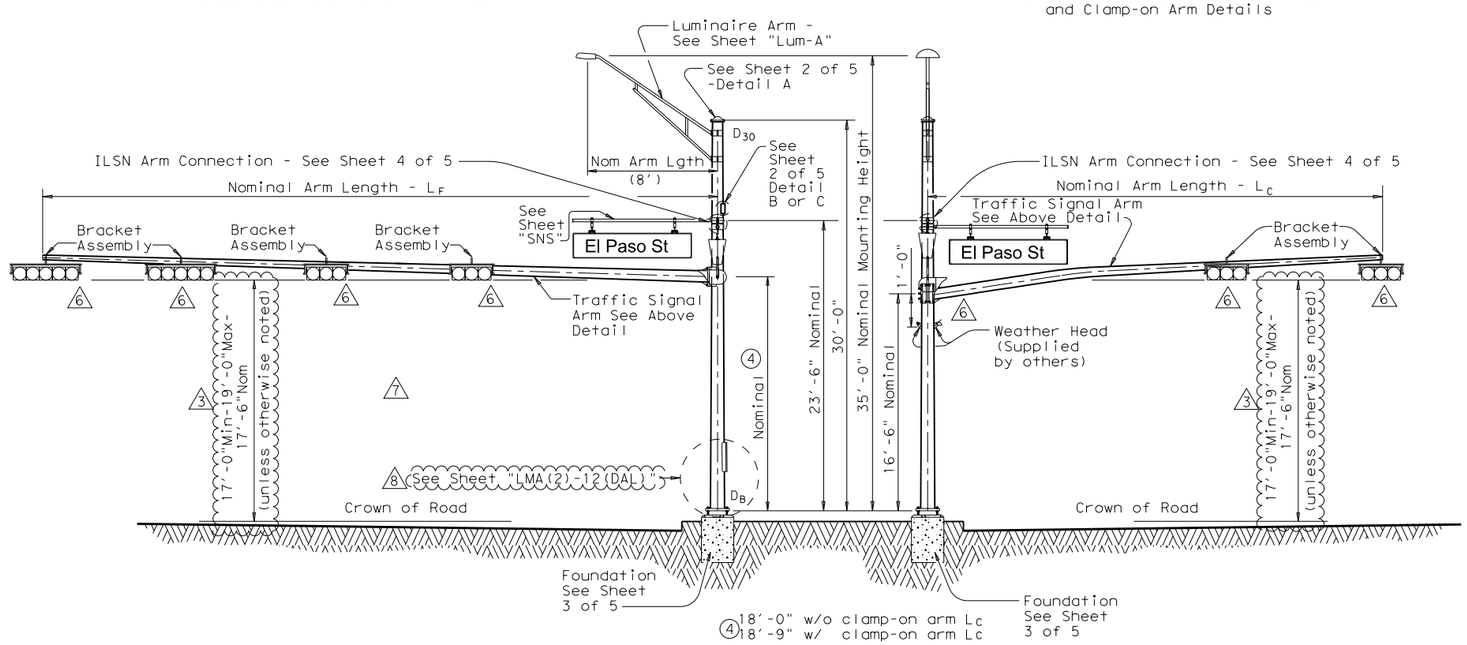
Note: The arm shall be fabricated with a 20' or greater radius within 8' of the base so as to produce the unloaded rise measured as shown.

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)

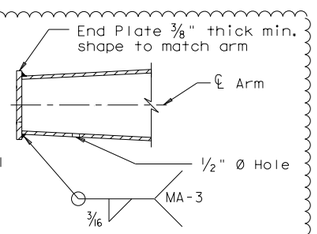
STRUCTURE ASSEMBLY

ELEVATION (Showing clamp-on arm)

MODIFICATIONS:

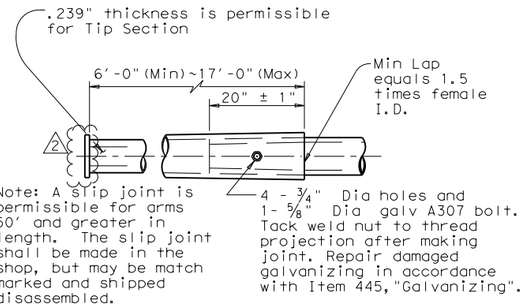
1. NOT USED
2. REPLACED TENON DETAIL WITH PLATE WELD DETAIL. (2/12)
3. REVISED MINIMUM SIGNAL HEIGHT. (3/12)
4. REMOVED "MA-D" REFERENCE. (2/12)
5. REMOVED TABLE OF DIMENSIONS "A". (2/12)
6. REMOVED CGB CONNECTORS. (2/12)
7. REMOVED THREADED COUPLING FOR CGB CONNECTOR. (2/12)
8. REVISED THE ELEVATION OF ACCESS COMPARTMENT. (3/12)

5



NOTE:
Pole manufacturer shall drill ½" hole in bottom of mast arm at end plate. (for hot-dip galvanizing)

PLATE WELD 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.

4 Except as noted in Sheet 1 thru 5 of 5, other details not covered shall refer to Standard Sheet "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 SIGNAL SUPPORT STRUCTURES

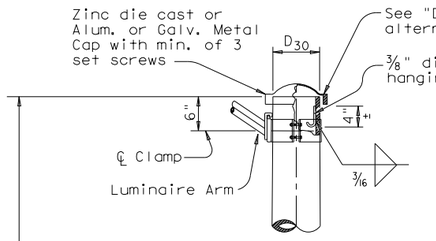
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE) LMA(1)-12(DAL)

Sheet 1 of 5

DN: JK	CK: GRB	DW: FDN	CK: CAL

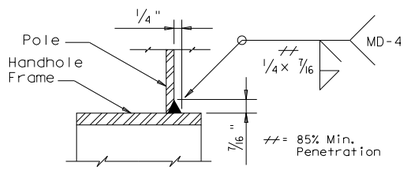
REVISIONS
4-20-01
1-12

CONT	SECT	JOB	HIGHWAY
0918	47	342,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		75

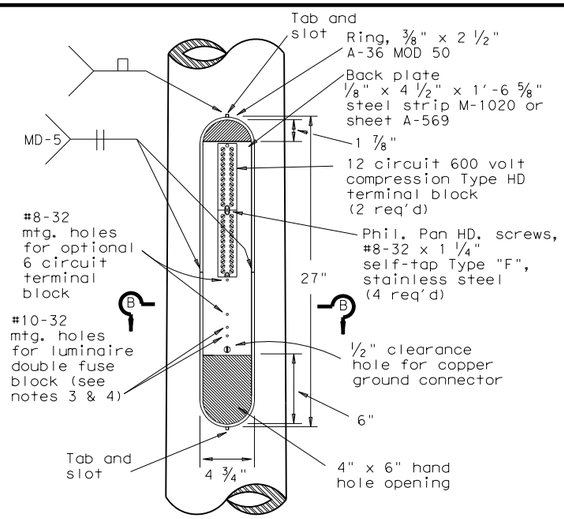


DETAIL A

(for pole with luminaire)



DETAIL H

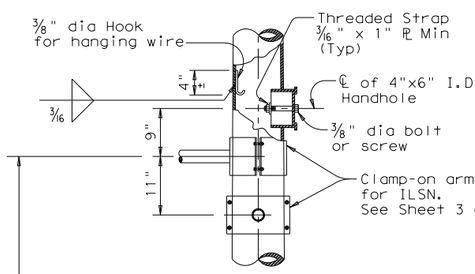


ACCESS COMPARTMENT

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

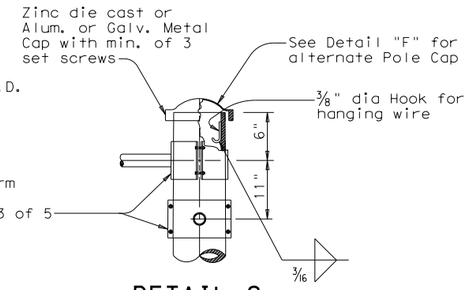
(7) ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F, or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

(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.

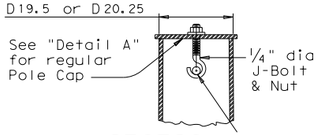


DETAIL B

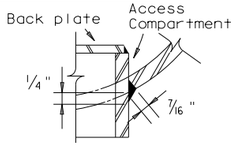
(If ILSN applied)



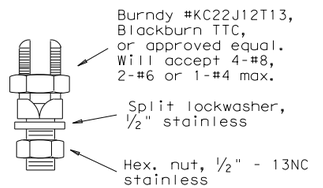
DETAIL C



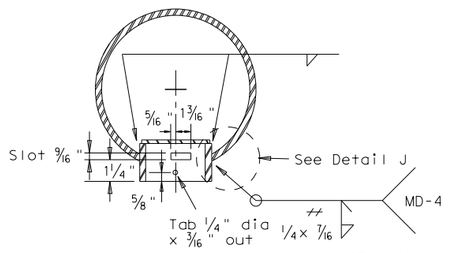
SECTION Y-Y



DETAIL J

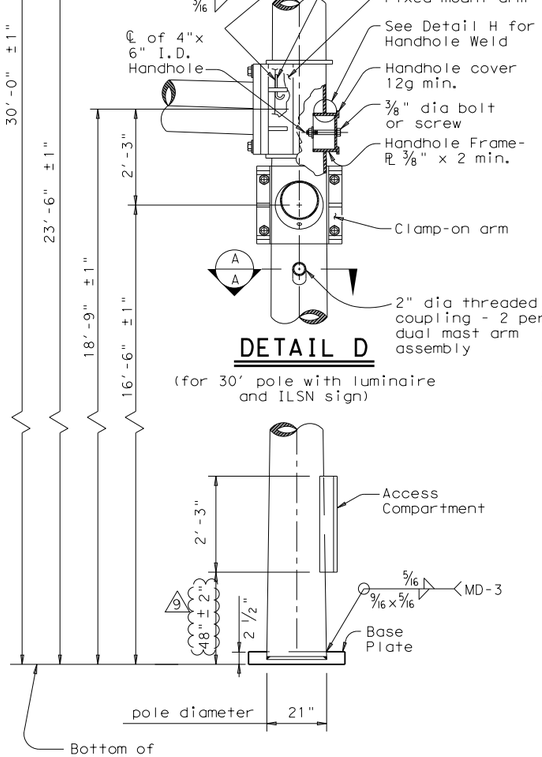


COPPER GROUND CONNECTOR



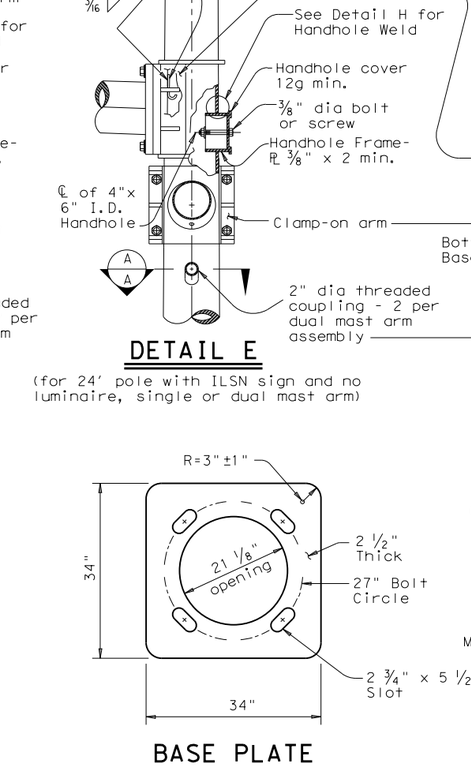
SECTION B-B

Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.



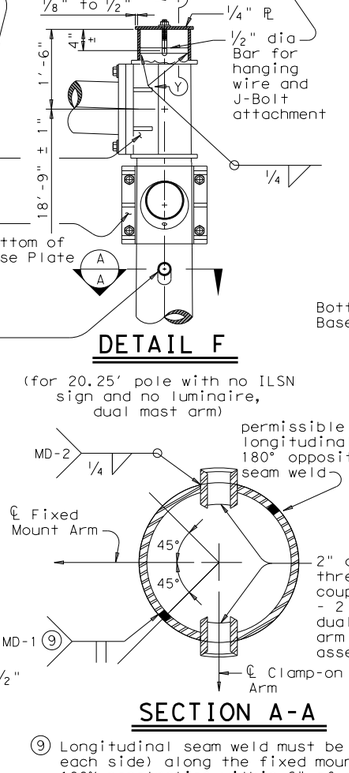
DETAIL D

(for 30' pole with luminaire and ILSN sign)



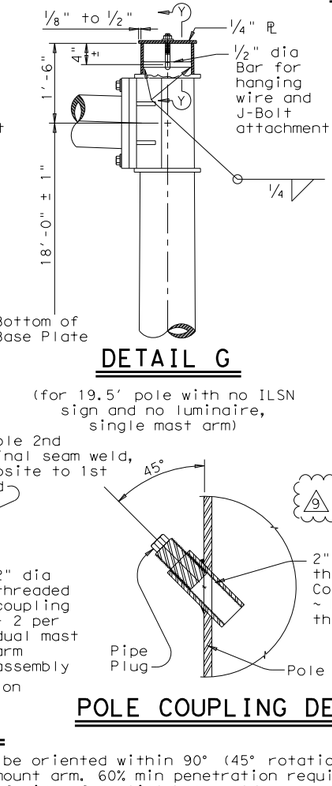
DETAIL E

(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)

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.

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.

(9) REVISED THE ELEVATION OF ACCESS COMPARTMENT(2/12).

Texas Department of Transportation

TRAFFIC SIGNAL SUPPORT STRUCTURES

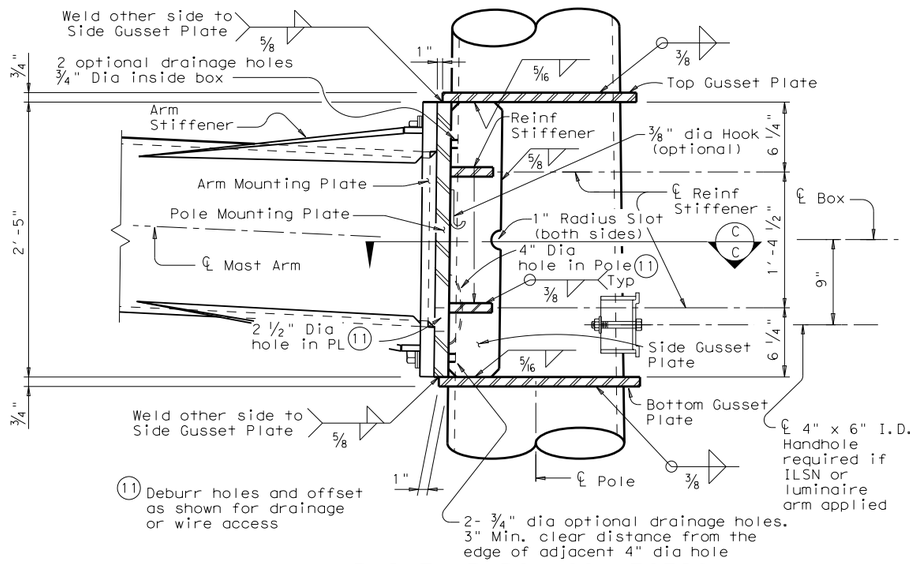
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)

Sheet 2 of 5 LMA(2)-12(DAL)

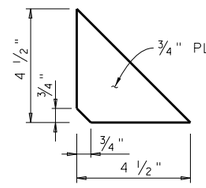
DN: JK	CK: GRB	DW: FDN	CK: CAL

REVISIONS	CONT	SECT	JOB	HIGHWAY
4-20-01	0918	47	342,ETC.	CS
1-12	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		76

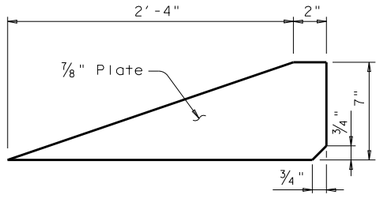
131B



BUILT-UP BOX CONNECTION

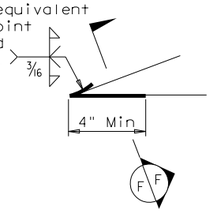


REINFORCING STIFFENER



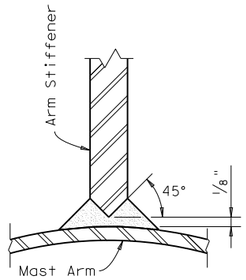
ARM STIFFENER
(Cut to match arm inclination and taper)

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

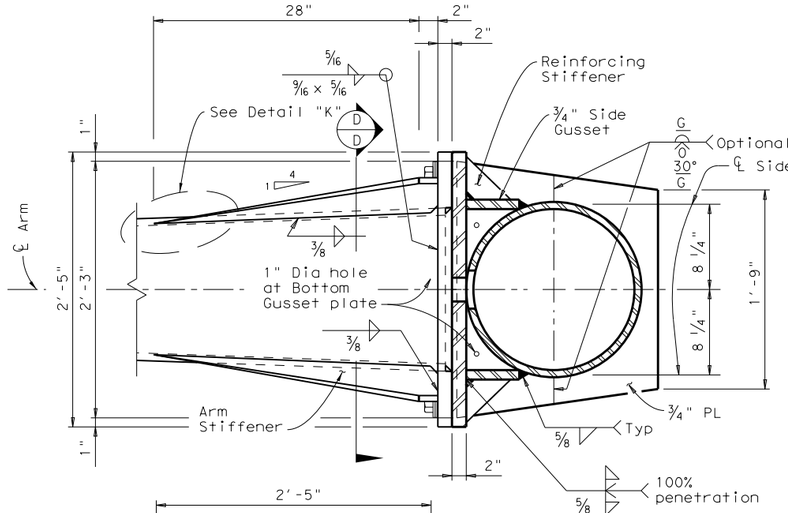
Fixed Mount Arm L_F	ROUND POLES (13)					Foundation Type
	D_B	$D_{19.5}$ or $D_{20.25}$	D_{24}	D_{30}	(12) thk	
ft.	in.	in.	in.	in.	in.	
50', 55' 60', 65'	21.0	18.2	17.6	16.8	.3125	48-A

Fixed Mount Arm L_F	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"

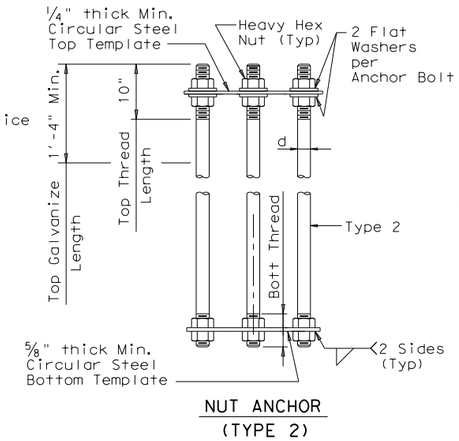
D_B = Pole Base O.D.
$D_{19.5}$ = Pole Top O.D. with no Luminaire and no ILSN (single mast arm)
$D_{20.25}$ = Pole Top O.D. with no Luminaire and no ILSN (dual mast arm)
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire
D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = 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.

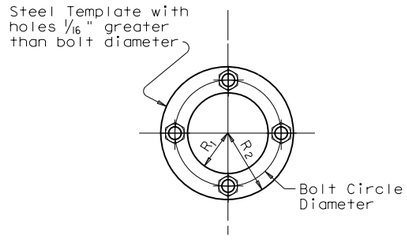


SECTION C-C

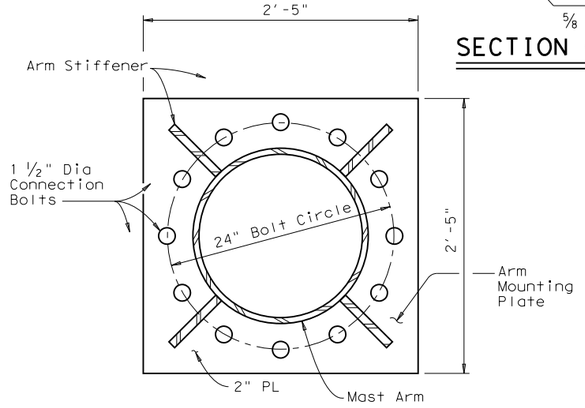


NUT ANCHOR
(TYPE 2)

ANCHOR BOLT ASSEMBLY



TEMPLATE DETAIL



SECTION D-D

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.

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 1/32 in., 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.

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

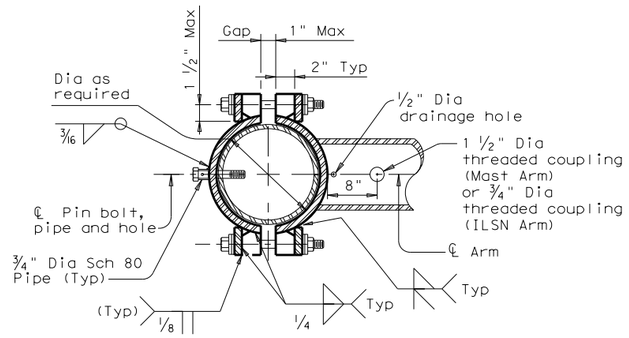
TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)

Sheet 3 of 5 LMA(3)-12

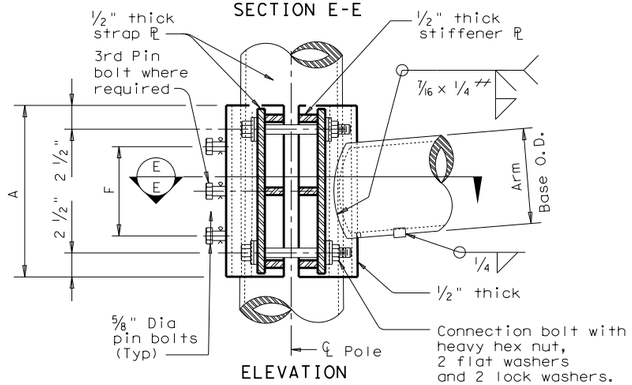
DN: JK	CK: GRB	DW: FDN	CK: CAL

REVISIONS
4-20-01
1-12

CONT	SECT	JOB	HIGHWAY
0918	47	342,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		77



SECTION E-E



ELEVATION
(Mast Arm or ILSN Arm to pole)

= 85% Min. Penetration

CLAMP-ON CONNECTION

80 MPH WIND

Clamp-on Arm Lc	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 Lc	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"

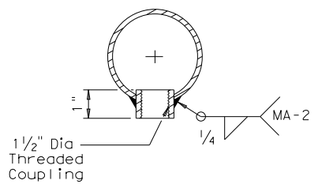
D1 = Arm Base O.D.
D2 = Arm End O.D.
L1 = Shaft Length
Lc = Clamp-on Arm Length

(12) Thickness shown is minimum, thicker materials may be used.

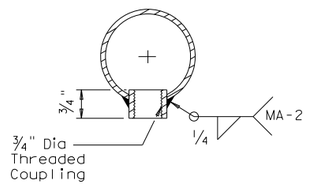
CLAMP-ON ARM CONNECTION

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	¾	2

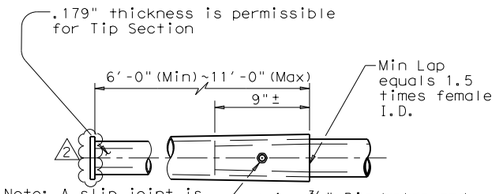
Mast Arm Size		A	F	4 Conn. Bolts	5/8" Dia. Pin Bolts
Base Dia	Thick			Dia	No.
in.	in.	in.	in.	in.	ea
6.5	.179	12	6	1	2
7.5	.179	14	8	1	2
8.0	.179	14	8	1	2
9.0	.179	16	10	1	2
9.5	.179	18	12	1 ¼	3
9.5	.239	18	12	1 ¼	3
10.0	.239	18	12	1 ¼	3
10.5	.239	18	12	1 ¼	3
11.0	.239	18	12	1 ¼	3
11.5	.239	18	12	1 ¼	3



ARM COUPLING DETAIL



ILSN ARM COUPLING DETAIL

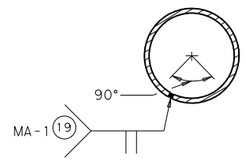


Note: A slip joint is permissible for arms 40' and greater in length. The slip joint shall be made in the shop, but may be match marked and shipped disassembled.

SLIP JOINT DETAIL (CLAMP-ON ARM)

Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 ½" 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.

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 1 ½" 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 1 ½" 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.

2 REPLACED TENON DETAIL WITH PLATE WELD DETAIL (2/12).

Texas Department of Transportation

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(DAL)

REVISIONS
4-20-01
1-12

DN: JK	CK: GRB	DW: FDN	CK: CAL

CONT	SECT	JOB	HIGHWAY
0918	47	342,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		78

131D

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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	
55	55L	1	55S		55	
60	60L		60S		60	
65	65L		65S		65	
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	

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): 1 4 Bracket Assemblies	
ft.	Designation	Quantity
50	50IV	
55	55III	1
60	60IV	
65	65IV	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	1

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): 1 1 Bracket Assembly and 1clamp w/bolts and washers		Type II Arm (2 Signals): 2 Bracket Assemblies and 1clamp w/bolts and washers		Type III Arm (3 Signals): 3 Bracket Assemblies and 1clamp 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): 1 1 Bracket Assembly and 1clamp w/bolts and washers		Type II Arm (2 Signals): 2 Bracket Assemblies and 1clamp w/bolts and washers		Type III Arm (3 Signals): 3 Bracket Assemblies and 1clamp w/bolts and washers	
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"	1

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.

Foundation Summary Table **

Location Ident.	Avg. N Blow/ft.	No. Each	Drill Shaft *** Length (feet)
			48-A
FOREST PARK AT MOCKINGBIRD	10	1	22
Total Drill Shaft Length			22

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.

Abbreviations
Lf= Fixed Arm Length
Lc= Clamp-on Arm Length (44' Max.)

1 REPLACED CGB CONNECTOR WITH BRACKET ASSEMBLY(2/12).

Texas Department of Transportation

LONG MAST ARM ASSEMBLY PARTS LIST LMA(5)-12(DAL)

Sheet 5 of 5

DN: JK	CK: GRB	DW: FDN	CK: CAL

REVISIONS
4-20-01
1-12

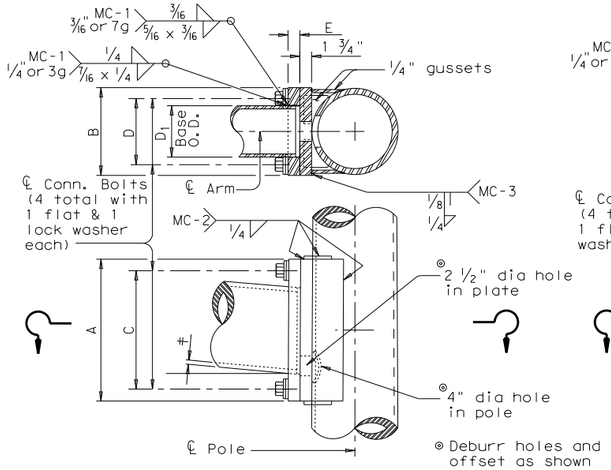
CONT	SECT	JOB	HIGHWAY
0918	47	342,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		79

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.

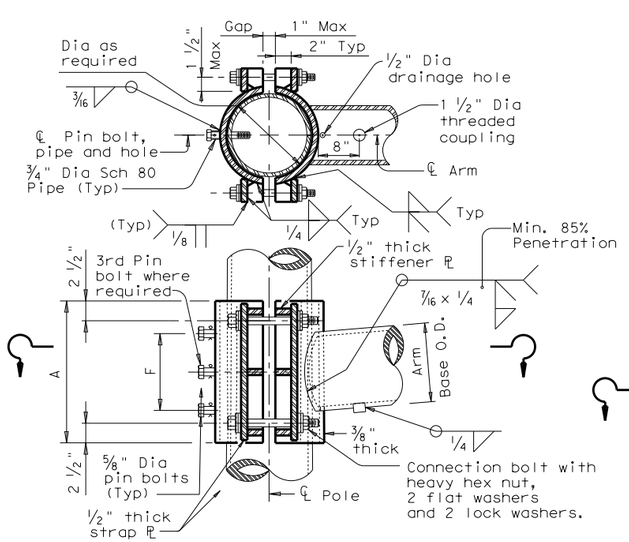
DATE:
FILE:

ARM SIZE D_1 in.	ARM SIZE ǂ in.	A in.	B in.	C in.	D in.	E in.	CONN BOLT DIA in.
6.5	.179	12	9	9	6	1 ¾	1
7.5	.179	13	9	10	6	1 ¾	1
8.0	.179	14	10	11	7	2	1 ¼
9.0	.179	16	11	13	8	2	1 ¼
9.5	.179	17	12	14	9	2	1 ¼
9.5	.239	18	12	15	9	2	1 ¼
10.0	.239	18	12	15	9	2	1 ¼
10.5	.239	18	13	15	10	3	1 ½
11.0	.239	18	13	15	10	3	1 ½



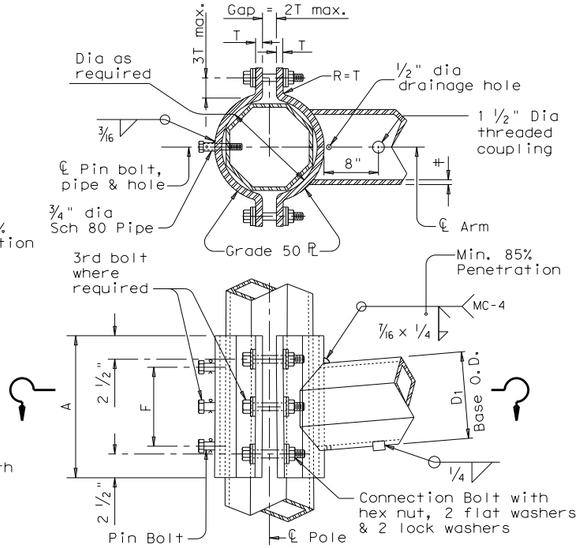
FIXED MOUNT DETAIL 1

ARM SIZE D_1 in.	ARM SIZE ǂ in.	A in.	F in.	CONN. BOLTS No. ea.	CONN. BOLTS Dia in.	PIN BOLTS No. ea.	PIN BOLTS Dia 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 ¼	3	5/8
9.5	.239	18	12	4	1 ¼	3	5/8
10.0	.239	18	12	4	1 ¼	3	5/8

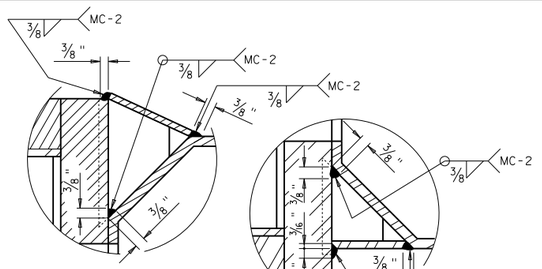


CLAMP-ON DETAIL 1

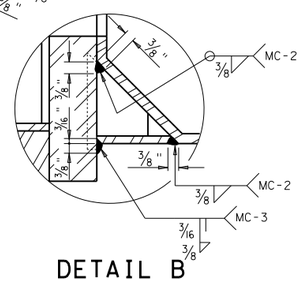
ARM SIZE D_1 in.	ARM SIZE ǂ in.	A in.	F in.	T in.	CONN. BOLTS No. ea.	CONN. BOLTS Dia in.	PIN BOLTS No. ea.	PIN BOLTS Dia in.
7.0	.179	12	6	¾	4	¾	2	5/8
7.5	.179	14	8	¾	4	¾	2	5/8
8.0	.179	14	8	¾	4	¾	2	5/8
9.0	.179	16	10	⅞	4	1	2	5/8
10.0	.179	18	10	⅞	4	1	2	5/8
9.5	.239	18	10	1	6	1	3	5/8
10.0	.239	18	10	1	6	1	3	5/8



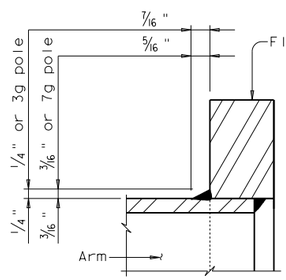
CLAMP-ON DETAIL 2



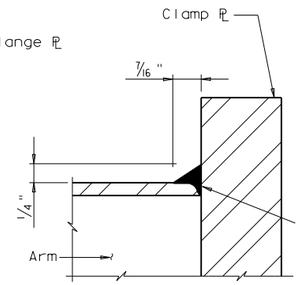
DETAIL A



DETAIL B



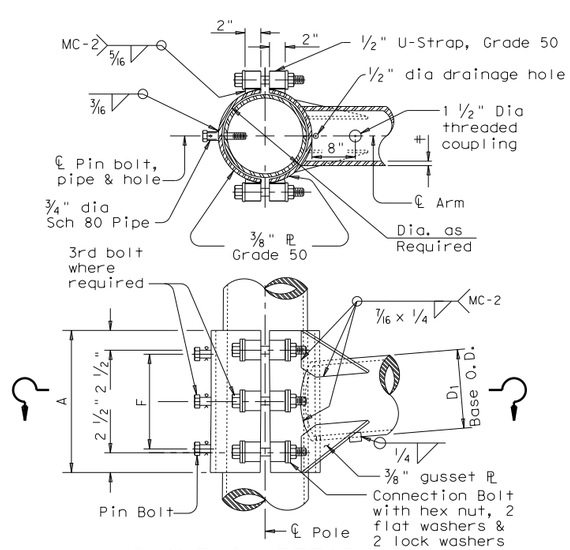
FIXED MOUNT ARM



CLAMP-ON ARM

ARM BASE WELD DETAILS

ARM SIZE D_1 in.	ARM SIZE ǂ in.	A in.	F in.	CONN. BOLTS No. ea.	CONN. BOLTS Dia in.	PIN BOLTS No. ea.	PIN BOLTS Dia 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

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 ½" 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 ¾" dia pipe shall have 5/16" dia holes for a 1/8" dia galvanized cotter pin. Back clamp plate shall be furnished with a ¾" 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

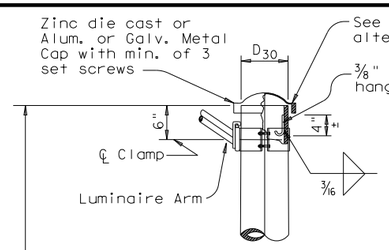
MA-C-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
5-09
1-12

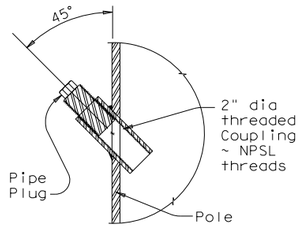
CONT	SECT	JOB	HIGHWAY
0918	47	342,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		80

126A

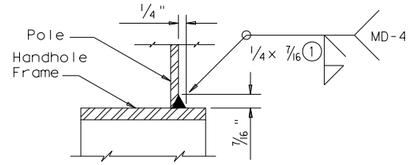


DETAIL A

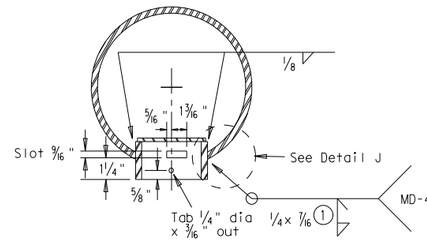
(for pole with luminaire)



POLE COUPLING DETAIL

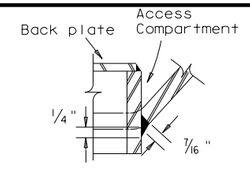


DETAIL G

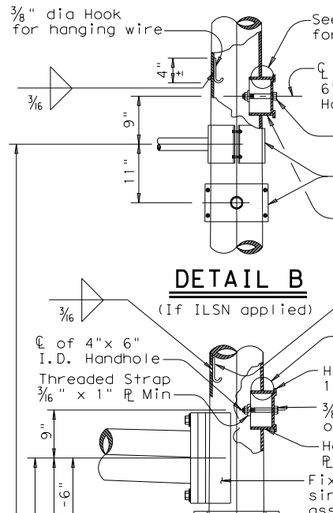


SECTION X-X

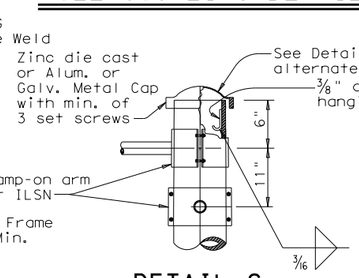
Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.



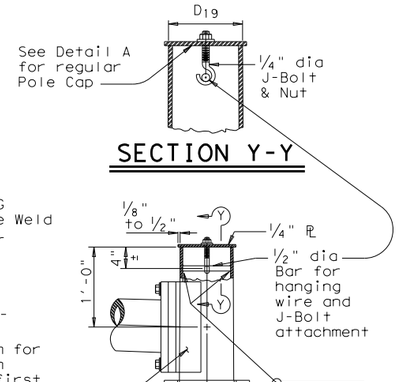
DETAIL J



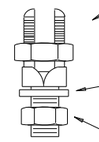
DETAIL B



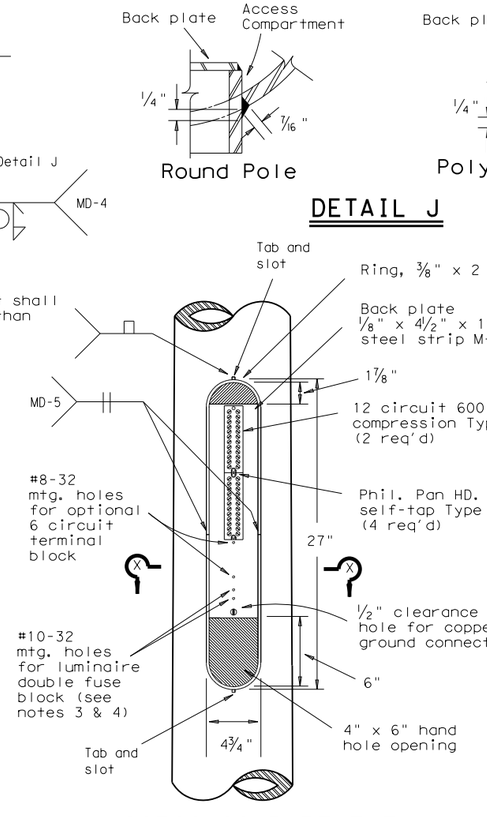
DETAIL C



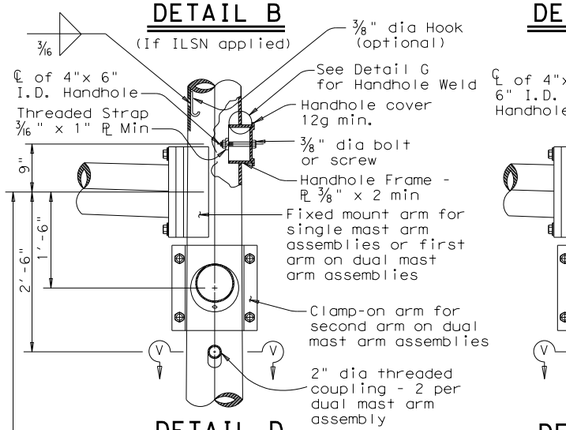
SECTION Y-Y



COPPER GROUND CONNECTOR

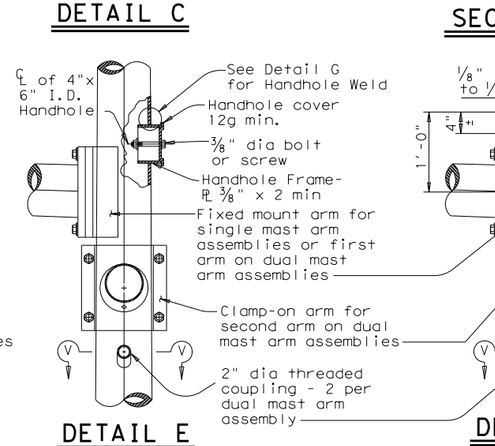


ACCESS COMPARTMENT



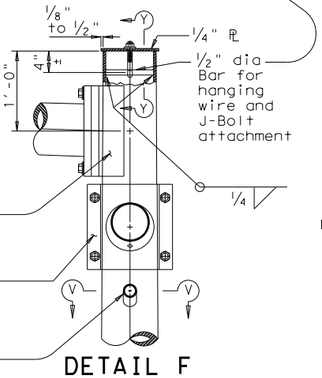
DETAIL D

(for 30' pole with luminaire and ILSN sign)



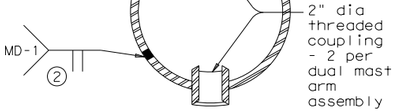
DETAIL E

(for 24' pole with ILSN sign and no luminaire)



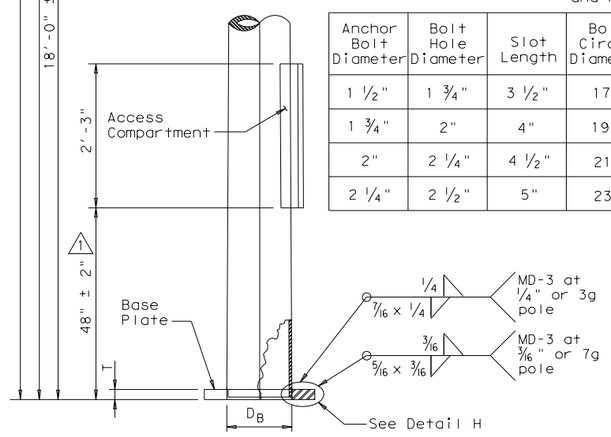
DETAIL F

(for 19' pole with no ILSN sign and no luminaire)

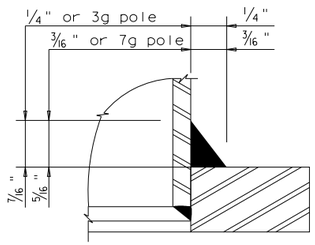


SECTION V-V

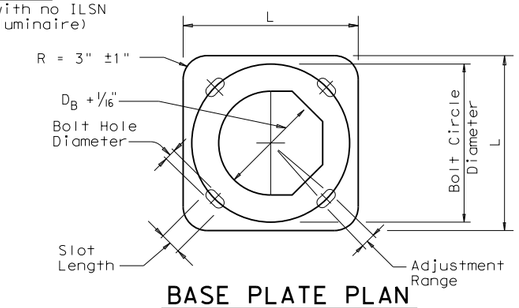
Anchor Bolt Diameter	Bolt Hole Diameter	Slot Length	Bolt Circle Diameter	Base ℞ Dim. L x T	Adjust. Range
1 1/2"	1 3/4"	3 1/2"	17"	18" x 1 1/2"	13.4°
1 3/4"	2"	4"	19"	20" x 1 3/4"	13.5°
2"	2 1/4"	4 1/2"	21"	22" x 2"	13.6°
2 1/4"	2 1/2"	5"	23"	24" x 2 1/4"	13.7°



POLE ELEVATION



DETAIL H



BASE PLATE PLAN

(1) 85% Min. penetration

(2) 60% Min. penetration 100% pemetration within 6" of circumferential base welds.

(1) REVISED THE ELEVATION OF ACCESS COMPARTMENT (2/12).

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 SIGNAL SUPPORT STRUCTURES MAST ARM POLE DETAILS

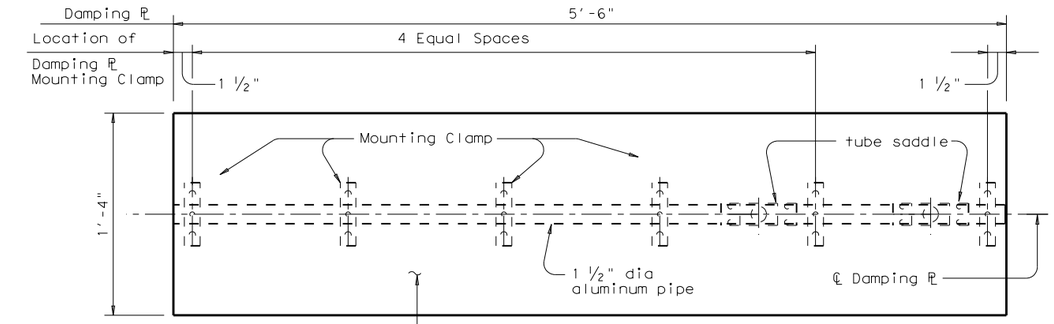
MA-D-12(DAL)

DN: MS	CK: JSY	DW: FDN	CK: CAL

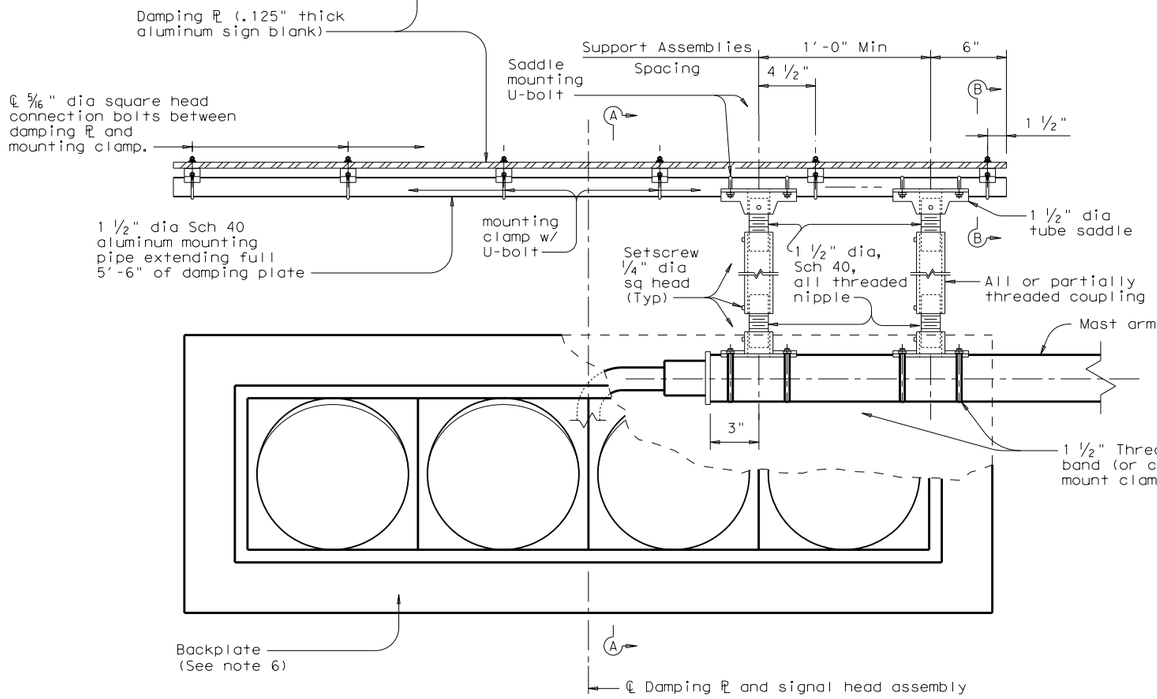
REVISIONS
8-99
1-12

CONT	SECT	JOB	HIGHWAY
0918	47	342,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		81

DATE:
FILE:



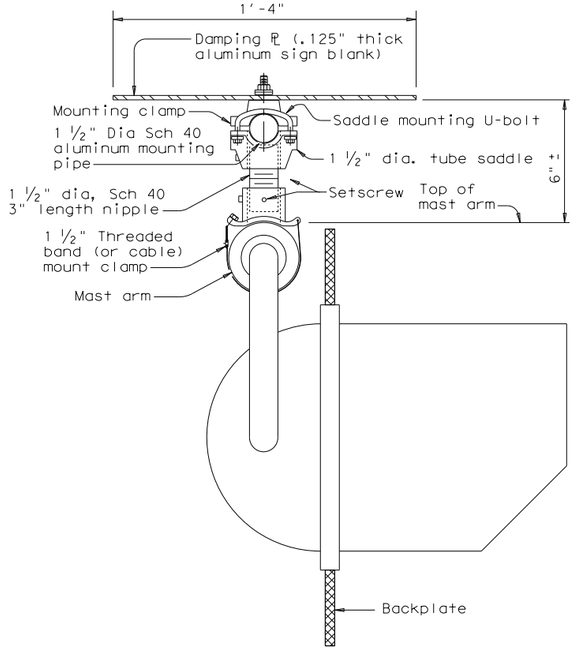
PLAN



ELEVATION

DAMPING PLATE MOUNTING DETAILS

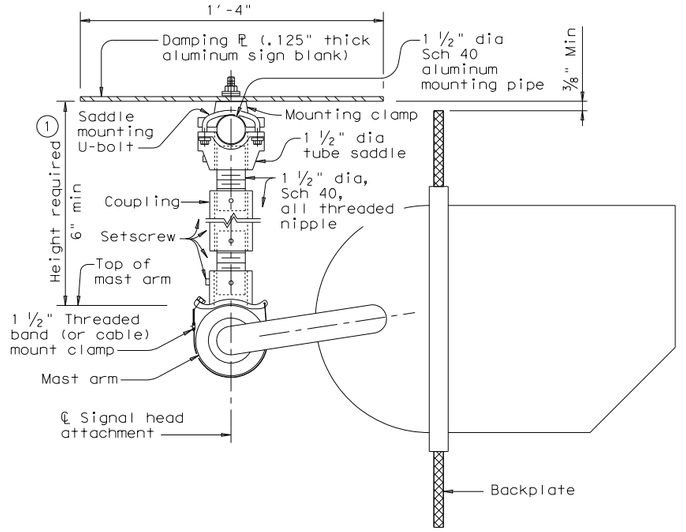
(Showing alternate placement of signal head)



SECTION A-A

(Showing standard placement of signal head)

(Mounting clamp U-bolt is not shown for clarity)

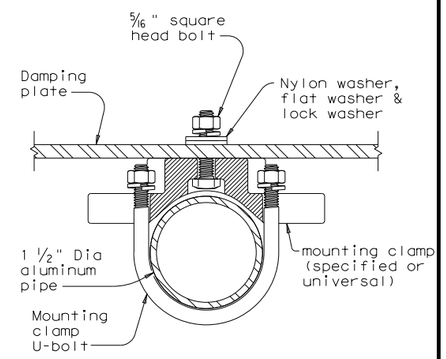


SECTION A-A

(Showing alternate placement of signal head)

(Mounting clamp U-bolt is not shown for clarity)

① Recommended supporting assemblies to achieve required height for horizontal section heads			
Height required	One nipple each length	Two nipples each length plus	One coupling each length
6"-6 ¾"	3"	-	-
7"-8 ½"	4"	-	-
9"-10 ½"	6"	-	-
11"-15 ½"	-	4"	5"
16"-24"	-	6"	10"



SECTION B-B

(Showing damping plate attachment)

GENERAL NOTES:

1. In accordance with the findings of TxDOT sponsored research, the installation of a damping plate in accordance with the details shown here at the end of signal mast arms of SMA and DMA standard structures reduces excessive harmonic vertical vibration, and thus fatigue damage. Any deviation from these details may reduce the effectiveness of this damping device.

2. Aluminum sign blank for damping plate will conform to Departmental Material Specifications DMS-7110. Materials for mast arm mounting clamp and tube saddle will be aluminum castings or aluminum alloys as in accordance with manufacturers' stipulations. Mounting pipe, pipe nipple and coupling will be aluminum alloy 6061-T6 or 6063-T6. Damping plate mounting clamp and u-bolt assemblies will conform to Standard sheet SMD(GEN). U-bolts for saddle mounting will have a minimum yield strength of 36 ksi.

3. Damping plate will be mounted horizontally. Position centerline of damping plate to align with centerline of mast arm or horizontal signal head assembly. Vertical clearance between signal head (with or without backing plate) and bottom of damping plate will be maintained as shown. The attachments shown here are examples only, other supporting details which meet both alignment and vertical clearance requirements are also acceptable.

4. Unless stipulated by the manufacturers, all steel parts will be galvanized finish in accordance with Standard Specification Item 445, "Galvanizing".

5. Contractor will verify applicable field dimensions before the installation.

6. Backplates are optional for traffic signals. When backplates are used, Backplates will have a 2-inch fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 "Sign Face Materials." See Sheet TS-BP-20 for backplate details.

Texas Department of Transportation

Traffic Safety Division Standard

MAST ARM DAMPING PLATE DETAILS

MA-DPD-20

FILE: ma-dpd-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342,ETC.	CS
6-20	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		82

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:
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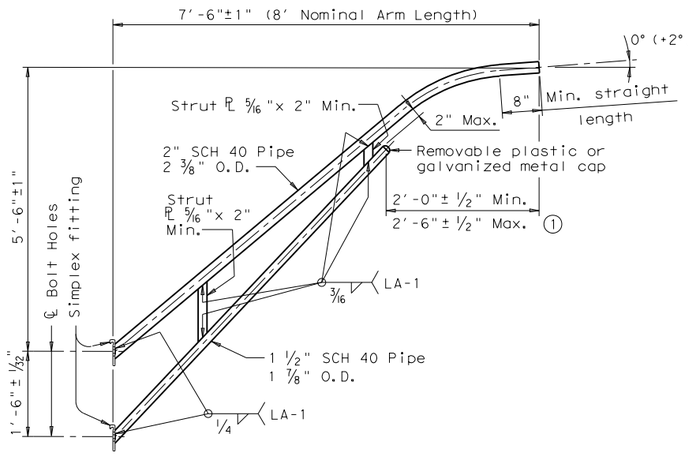
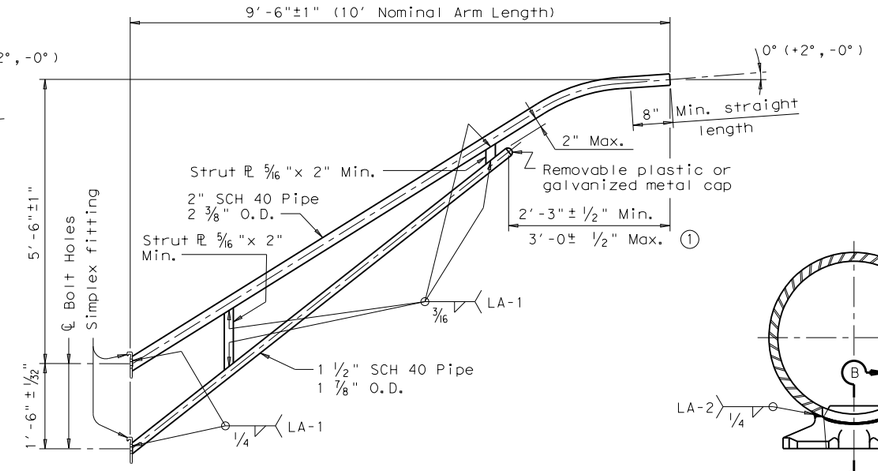
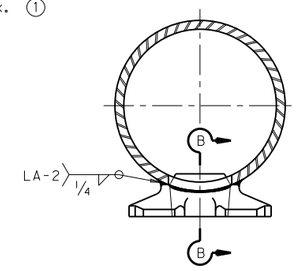


8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM



DIRECT ATTACHMENT DETAIL

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr.65-35 or A148 Gr.80-50, A576 Gr.1021 (3), or A36 (Arm only)
Arm Pipes	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50 (4), or A1011 HSLAS-F Gr.50 (4)
Arm Strut Plates (2)	ASTM A36, A572 Gr.50 (4), or A588
Misc.	ASTM designations as noted

(1) Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

(2) Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

(3) A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

(4) ASTM A572, A1008 HSLAS-F, and A1011 HSLAS-F may have higher yield strengths but shall not have less elongation than the grade indicated.

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. Design Wind Speed equals 90 mph plus a 1.3 gust factor. Arms are designed to support a 60 lb. luminaire having an effective projected area (actual area times drag coefficient) of 1.6 sq. ft.

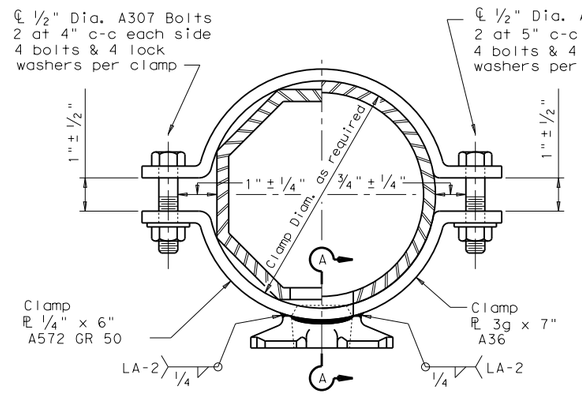
Materials and fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. In the absense of specified Fabricaton tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.

Unless otherwise noted, all parts shall be galvanized after fabrication in accordance with Item 445, "Galvanizing".

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

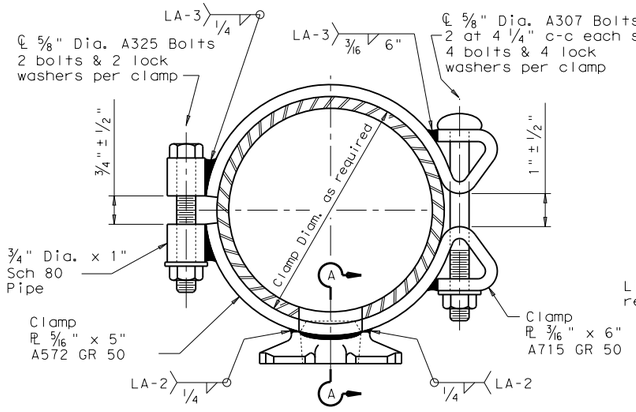
Each pole simplex fitting shall be supplied with 2 ASTM A325 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans. When clamp attachment is specified, the Fabricator shall ship the clamp assembly securely attached to the pole at the location shown on the plans.

If clamp assemblies are ordered without poles, the Fabricator shall ship one upper and one lower clamp assembly together in a single package, including all nuts and washers required for the clamps and simplex fittings.



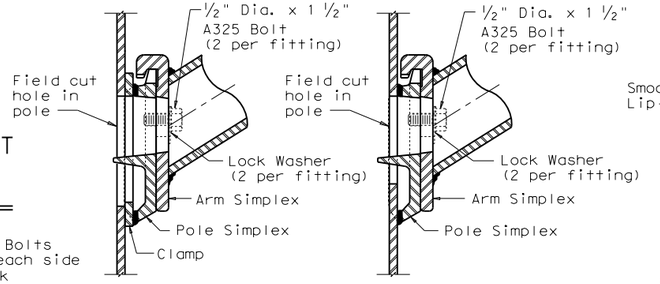
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



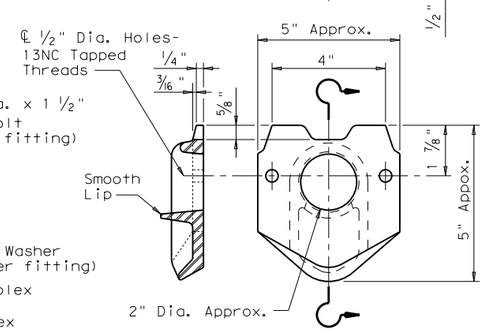
CLAMP ATTACHMENT DETAIL NO. 3 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)

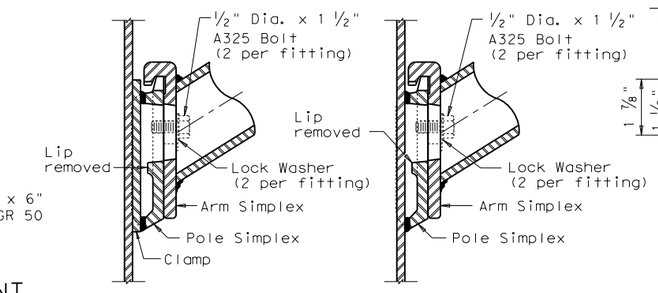


UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING



POLE SIMPLEX DETAIL

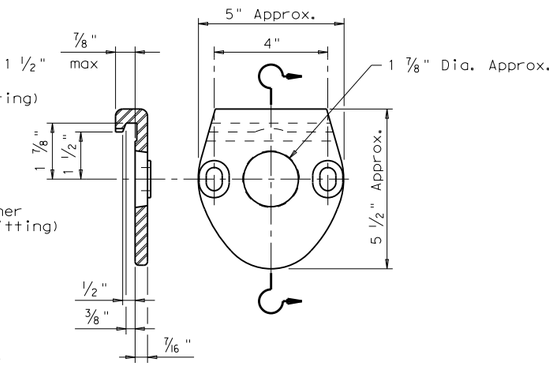


LOWER SIMPLEX FITTING

LOWER SIMPLEX FITTING

SECTON A-A

SECTON B-B



ARM SIMPLEX DETAIL

Texas Department of Transportation
Traffic Operations Division

STANDARD ASSEMBLY DRAWINGS FOR LUMINAIRE SUPPORT STRUCTURES

ARM DETAILS

LUM-A-12

DN: LEH	CK: JSY	DW: LTT	CK: TEB

REVISIONS
5-96
1-99
1-12

CONT	SECT	JOB	HIGHWAY
0918	47	342,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		83

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.

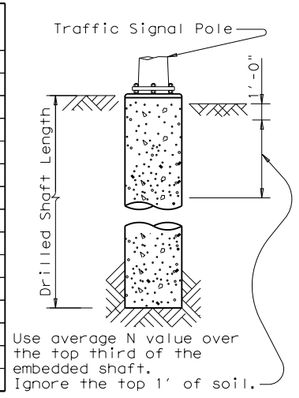
⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

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
AUDELIA-CHURCH								
	10	24-A	1	6				
	10	30-A	2		19			
	10	36-A	3			39		
FERGUSON-WOODMEADOW								
	10	24-A	2	12				
	10	30-A	2		16			
	10	36-A	4			52		
JEFFERSON-ZANG								
	10	24-A	2	12				
	10	30-A	2		22			
	10	36-A	2			26		
BICKERS-HAMPTON								
	10	24-A	4	12				
	10	30-A	3		16			
	10	36-A	4			52		
FOREST PARK-MOCKINGBIRD								
	10	24-A	2	12				
	10	30-A	2		19			
	10	36-A	2			26		
TOTAL DRILLED SHAFT LENGTHS				54	92	195		

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'

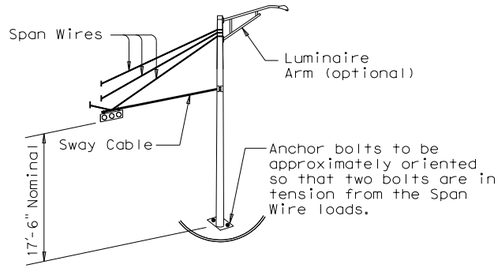


ANCHOR BOLT & TEMPLATE SIZES

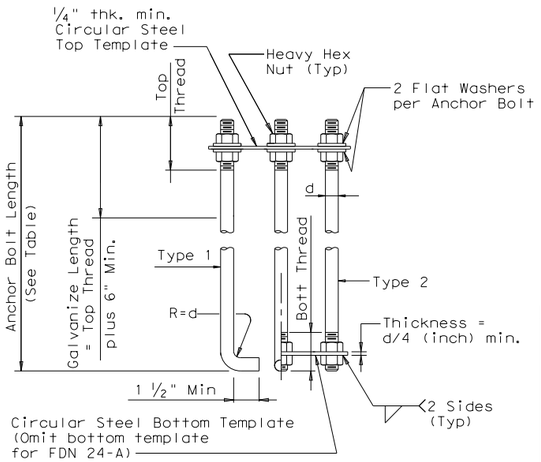
BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

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.



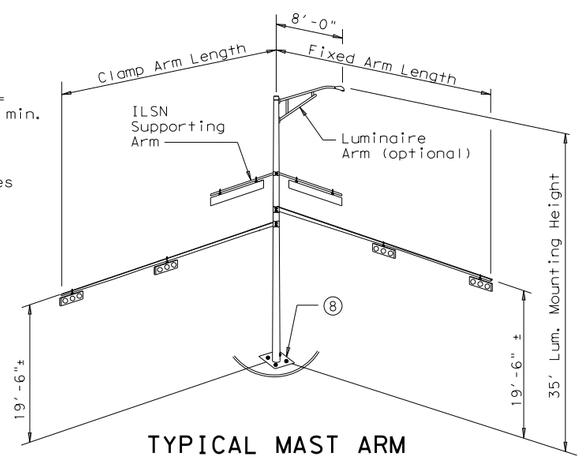
TYPICAL STRAIN POLE ASSEMBLY



HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

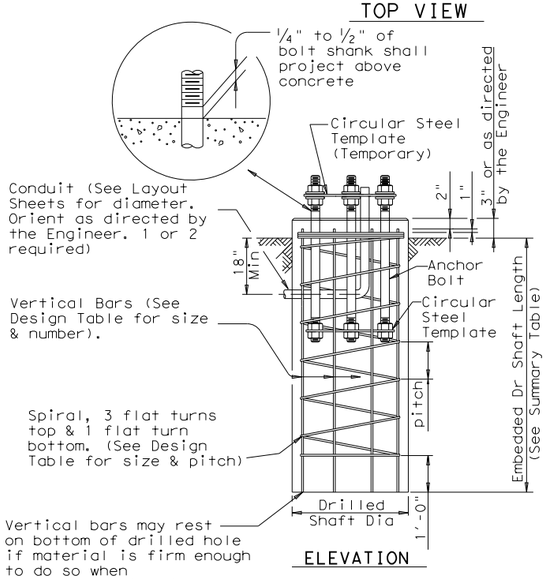
ANCHOR BOLT ASSEMBLY

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".

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
0918	47	342, ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		84

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

DATE:
FILE:

ROADWAY ILLUMINATION ASSEMBLY NOTES

1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the State such warranties or guarantees.

2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.

3. 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, Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection.

4. Provide Roadway Illumination Light Fixtures as per TxDOT Departmental Material Specification (DMS) 11010, Item 610, and as shown on the Material Producers List (MPL) for Roadway Illumination and Electrical Supplies.

5. Fabricate steel roadway illumination poles in accordance with Roadway Illumination Poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.

   a. Alternate designs to RIP standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" on the TxDOT web site.

   b. Limitations on use of the RIP standard: The RIP standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25′ above the elevation of the surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 6th Edition (2013) of the AASHTO Design Specifications. For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25′ above the surrounding terrain, provide poles meeting the following requirements:

      i. Submittals. Following the electronic shop drawing submittal process (see Guide to Electronic Shop Drawing Submittal on the TxDOT web site), submit to the Engineer for approval fabrication drawings and calculations for the poles, sealed by a Texas licensed professional engineer (P.E.).

      ii. Luminaire Structural Support Requirements. Provide light poles, arms, and anchor bolt assemblies with a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the 6th edition (2013) of the AASHTO Design Specifications. For transformer base poles, include transformer base and connecting hardware in calculations and shop drawing submittals. Structurally test all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished with the shop drawings. Show breakaway base model number, manufacturer's name, and logo on shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.

6. For both transformer and shoe-base type illumination poles, provide and install double-pole breakaway fuse holders as specified by DMS-11040. Breakaway fuse holders are listed on the MPL for Roadway Illumination and Electrical Supplies under Items 610 & 620. Provide 10 amp time delay fuses for breakaway connectors in light poles, or inside the light fixture for underpass luminaires. In each pole, connect luminaires to the breakaway connector with continuous stranded 12 AWG copper conductors as listed on the MPL. Bond all equipment grounding conductors together and to the ground lug in the transformer base or hand hole.

7. Tighten anchor bolts for shoe base, concrete traffic barrier base, and bridge mount roadway illumination poles, in accordance with Item 449.

8. Install T-Base with following procedure:

   a. Anchor Bolt Tightening.

      i. Coat the threads of the anchor bolts with electrically conductive lubricant.

      ii. Place the T-base over the anchor bolts. Foundation must be level and flat. The maximum permissible gap under any one corner of the t-base is 1/8" before nuts are tightened.

      iii. Coat the bearing surfaces of the nuts and washers with electrically conductive lubricant. Install (1) 1/2" hold down washer, (1) lock washer, and (1) nut on each anchor bolt. Turn the nuts onto the bolts so that each is hand-tight against the washer.

      iv. Using a torque wrench, tighten each nut to 150 ft-lb. Uniform contact is required between the foundation and the T-base in the corner regions of the T-base, and all corner gaps must be closed after applying torque. If a gap still exists after torquing to 150 ft-lbs, continue torquing each bolt incrementally until gap is closed or maximum allowable torque of 250 ft. pound is reached, whichever comes first. If 250 ft-lbs is not enough to close the gap the foundation must be leveled. Gaps along the straight sides of the T-bases and the foundation are permissible. Ensure that no high point of contact occurs between the straight sides of the T-base and the foundation.

      v. Check top of T-base for level. If not level then foundation must be leveled.

   b. Top Bolt Procedure

      i. Erect pole over T-base with crane. Coat bolts, nuts, washers, and lock washers with electrically conductive lubricant.

      ii. Install bolts and 1/2" connecting washers from the inside of the T-base, thread up through the pole base. Install flat washers, lock washers and nuts snug tight according to Item 447, "Structural Bolting."

      iii. Tighten each nut to 150 ft-lb. using a torque wrench.

   c. Level and Plumb

      i. Ensure pole is plumb and mast arm is perpendicular to the roadway according to plans to within 5 degrees.

9. Construct luminaire pole foundations in accordance with Item 416, "Drilled Shaft Foundations," and TxDOT standard sheet RID(2).

10. Provide and install underpass luminaires in accordance with Item 610, DMS-11010, and TxDOT standard sheet RID(3). Typical luminaire size for underpass luminaires is 150W HPS or 150W EQ LED.

11. Mount luminaires on arms level as shown by the luminaire level indicator.

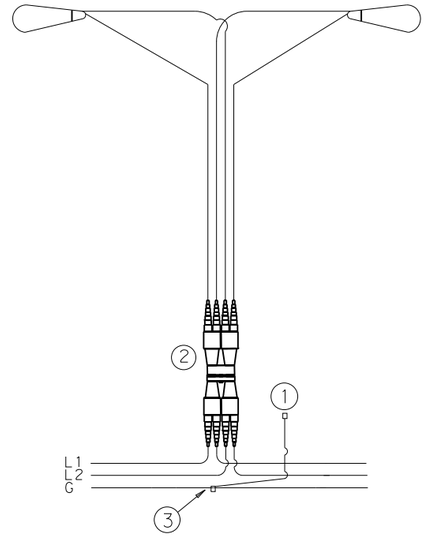
12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.

Wiring Diagram Notes:

(1) Use 1/2 in.-13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.

(2) Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unfused and marked white.

(3) Split Bolt or other connector.



L1, L2 = Hot Conductors
G = Grounding Conductor

TYPICAL WIRING DIAGRAM

LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.

Decorative LED Lighting Notes:

1. LED Drivers in Remote Outdoor enclosures (for drivers that do not include an enclosure as part of a factory assembly):

   a. Provide NEMA 3R outdoor enclosure or as approved.

   b. Install enclosure at least 12" above ground or other horizontal surface. Mount vertically or on ceiling, and avoid direct sun where possible.

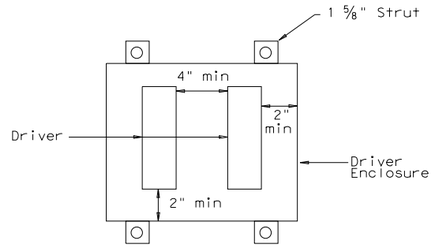
   c. Install drivers with at least 2 inches of space from enclosure walls.

   d. For multiple drivers in an enclosure, provide at least 4 inches side to side and 1 inch end to end from other drivers or electronic equipment

   e. For drivers mounted on back wall of enclosure, mount enclosure on 1 5/8" strut or other standoff to dissipate heat, or mount driver to side of the enclosure or to the metal cover.

   f. Provide remote drivers with a maximum of 100 watts

   g. Provide drivers with documentation of 100,000 hr lifetime at Tcase of 65C or higher.



Driver Spacing In Remote Enclosure

Texas Department of Transportation

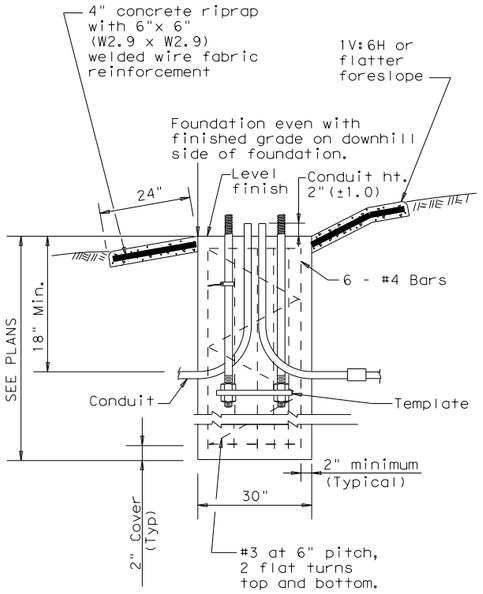
Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS

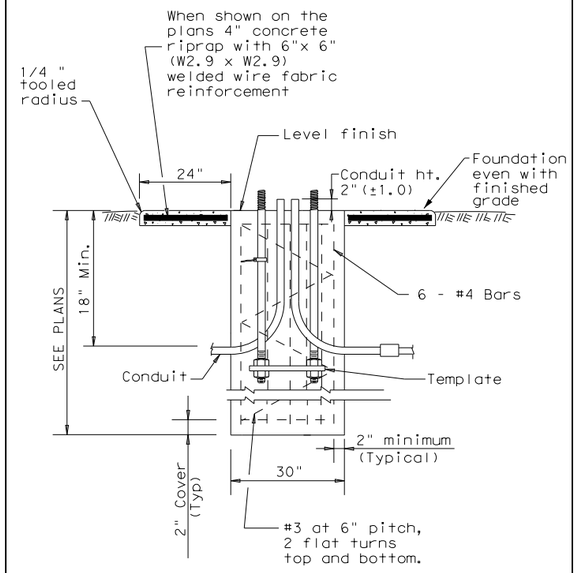
RID(1)-20

FILE: rid1-20.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342,ETC.	CS
7-17	DIST	COUNTY		SHEET NO.
12-20	DAL	DALLAS		85

72A



SECTION A-A
SHOWING SLOPED GRADE



SECTION A-A
SHOWING CONSTANT GRADE

TABLE 1

ANCHOR BOLTS

POLE MOUNTING HEIGHT	BOLT CIRCLE		ANCHOR BOLT SIZE
	Shoe Base	T-Base	
<40 ft.	13 in.	14 in.	1in. x 30in.
40-50 ft.	15 in.	17 ¼in.	1 ¼in. x 30in.

TABLE 2

RECOMMENDED FOUNDATION LENGTHS (See note 1)

MOUNTING HEIGHT	TEXAS CONE PENETROMETER N Blows/ft		
	10	15	40
≤20 ft.	6′	6′	6′
>20 ft. to 30 ft.	8′	6′	6′
>30 ft. to 40 ft.	8′	8′	6′
>40 ft. to 50 ft.	10′	8′	6′

TABLE 3

PAY QUANTITY OF RIPRAP PER FOUNDATION (Install only when shown on the plans)

Foundation Diameter	RIPRAP DIAMETER	RIPRAP (CONC) (CL B)
30 in.	78 in.	0.35 CY

GENERAL NOTES:

1. "Recommended Foundation Lengths" table is for information purposes only. Foundation lengths shall be as shown on the plans, or as directed by the Engineer. Foundations will be paid for under Item 416, "Drilled Shaft Foundations," unless otherwise shown on the plans.
2. Erect roadway illumination assembly poles plumb and true. Form and level the top 6" of the foundation so the pole will be plumb. Use leveling nuts to plumb shoe base poles. Do not use shims or leveling nuts under transformer bases. Do not grout between baseplate and the foundation.
3. Ensure Class 2A and 2B fit for anchor bolts and nuts. Tap and chase nuts after galvanizing. Anchor bolt body with rolled threads need not be full size.
4. Use appropriate class of concrete as specified in Items 416 and 432. Concrete for riprap may be upgraded to Class C at no extra cost to the Department.
5. Place riprap around the foundation when called for elsewhere in the plans. Riprap will be paid for under Item 432.
6. Locate breakaway roadway illumination assemblies as shown in the placement table, unless otherwise dimensioned on the plans. Protect non-breakaway illumination assemblies from vehicular impact (i.e. 2.5 ft. behind guard rail or mounted on traffic barrier), or located outside the clear zone, except that 2.5 ft. from curb face is minimum desired for light poles on city streets, 45 mph or less. See Roadway Design Manual for further information.
7. Use 4 hold down and 4 connecting washers on transformer base poles as recommended by the manufacturer and supplied with base.
8. Install a minimum of 2 conduits in each foundation. See lighting layout sheets for locations of foundations with more than 2 conduits. Cap unused conduits in foundations on both ends.
9. Conduit location in foundations is critical for breakaway devices. Place conduits 2 in. apart on centerline as shown.
10. Bond anchor bolt to rebar cage with #6 bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. The bonded steel in the foundation creates a concrete encased grounding electrode which replaces the ground rod.
11. Grade earthwork around T-base foundations even with the finished grade as shown in Section A-A to ensure proper function of the breakaway device. Use riprap on T-base foundations that are located on sloped grades, and as shown on the plans for level grades.

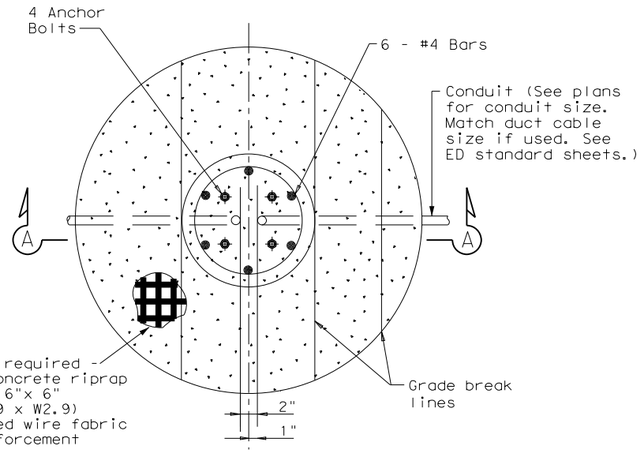
TABLE 4

BREAKAWAY POLE PLACEMENT (See note 6)

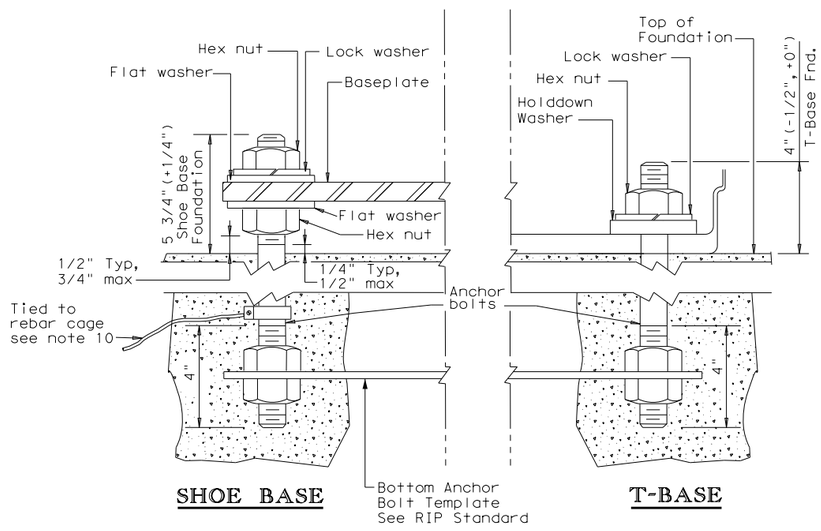
ROADWAY FUNCTIONAL CLASSIFICATION	** POLE OFFSET (DISTANCE TO FACE OF TRANSFORMER BASE)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum*(15 ft. desirable) from lane edge

* or as close to ROW line as is practical

** provide 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on the other travel lanes. See design guidelines.



FOUNDATION DETAIL



ANCHOR BOLT DETAIL

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS
(RDWY ILLUM FOUNDATIONS)
RID(2)-20

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SHIPPING PARTS LIST - POLES AND LUMINAIRE ARMS

Nominal Mounting Ht. (ft)	Shoe Base Designation				Quantity	T-Base Designation				Quantity	CSB/SSCB Mounted Designation				Quantity
	Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire	
20	(Type SA 20 S - 4)			(150W EQ) LED		(Type SA 20 T - 4)			(150W EQ) LED						
	(Type SA 20 S - 4 - 4)			(150W EQ) LED		(Type SA 20 T - 4 - 4)			(150W EQ) LED						
30	(Type SA 30 S - 4)			(250W EQ) LED		(Type SA 30 T - 4)			(250W EQ) LED		(Type SP 28 S - 4)			(250W EQ) LED	
	(Type SA 30 S - 4 - 4)			(250W EQ) LED		(Type SA 30 T - 4 - 4)			(250W EQ) LED		(Type SP 28 S - 4 - 4)			(250W EQ) LED	
	(Type SA 30 S - 8)			(250W EQ) LED		(Type SA 30 T - 8)			(250W EQ) LED		(Type SP 28 S - 8)			(250W EQ) LED	
	(Type SA 30 S - 8 - 8)			(250W EQ) LED		(Type SA 30 T - 8 - 8)			(250W EQ) LED		(Type SP 28 S - 8 - 8)			(250W EQ) LED	
40	(Type SA 40 S - 4)			(250W EQ) LED		(Type SA 40 T - 4)			(250W EQ) LED		(Type SP 38 S - 4)			(250W EQ) LED	
	(Type SA 40 S - 4 - 4)			(250W EQ) LED		(Type SA 40 T - 4 - 4)			(250W EQ) LED		(Type SP 38 S - 4 - 4)			(250W EQ) LED	
	(Type SA 40 S - 8)			(250W EQ) LED		(Type SA 40 T - 8)			(250W EQ) LED		(Type SP 38 S - 8)			(250W EQ) LED	
	(Type SA 40 S - 8 - 8)			(250W EQ) LED		(Type SA 40 T - 8 - 8)			(250W EQ) LED		(Type SP 38 S - 8 - 8)			(250W EQ) LED	
	(Type SA 40 S - 10)			(250W EQ) LED		(Type SA 40 T - 10)			(250W EQ) LED		(Type SP 38 S - 10)			(250W EQ) LED	
	(Type SA 40 S - 10 - 10)			(250W EQ) LED		(Type SA 40 T - 10 - 10)			(250W EQ) LED		(Type SP 38 S - 10 - 10)			(250W EQ) LED	
	(Type SA 40 S - 12)			(250W EQ) LED		(Type SA 40 T - 12)			(250W EQ) LED		(Type SP 38 S - 12)			(250W EQ) LED	
	(Type SA 40 S - 12 - 12)			(250W EQ) LED		(Type SA 40 T - 12 - 12)			(250W EQ) LED		(Type SP 38 S - 12 - 12)			(250W EQ) LED	
50	(Type SA 50 S - 4)			(400W EQ) LED		(Type SA 50 T - 4)			(400W EQ) LED		(Type SP 48 S - 4)			(400W EQ) LED	
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	(Type SA 50 S - 8)			(400W EQ) LED		(Type SA 50 T - 8)			(400W EQ) LED		(Type SP 48 S - 8)			(400W EQ) LED	
	(Type SA 50 S - 8 - 8)			(400W EQ) LED		(Type SA 50 T - 8 - 8)			(400W EQ) LED		(Type SP 48 S - 8 - 8)			(400W EQ) LED	
	(Type SA 50 S - 10)			(400W EQ) LED		(Type SA 50 T - 10)			(400W EQ) LED		(Type SP 48 S - 10)			(400W EQ) LED	
	(Type SA 50 S - 10 - 10)			(400W EQ) LED		(Type SA 50 T - 10 - 10)			(400W EQ) LED		(Type SP 48 S - 10 - 10)			(400W EQ) LED	
	(Type SA 50 S - 12)			(400W EQ) LED		(Type SA 50 T - 12)			(400W EQ) LED		(Type SP 48 S - 12)			(400W EQ) LED	
	(Type SA 50 S - 12 - 12)			(400W EQ) LED		(Type SA 50 T - 12 - 12)			(400W EQ) LED		(Type SP 48 S - 12 - 12)			(400W EQ) LED	

OTHER Designation				Quantity
Pole	A1	A2	Luminaire	

GENERAL NOTES:

1. All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the Department such warranties or guarantees.

2. The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.

3. Standard Steel Pole Designs. Steel poles fabricated in accordance with the details and dimensions shown herein, shall be considered standard designs. Submission of shop drawings and design calculations for standard designs is not required.

4. Optional Steel Pole Designs. Multi-sided steel poles may be allowed as optional designs, if steel poles are permitted or required, pending approval by the Department as outlined below.

   a. Shop Drawings. Optional designs require submission of shop drawings and design calculations bearing the seal of an engineer licensed in the State of Texas, in accordance with Item 441, "Steel Structures." The Department may elect to pre-approve some shop drawings for optionally designed poles. Submission of shop drawings and design calculations is not required for structures fabricated in accordance with the details of shop drawings on the pre-approved list maintained by the TxDOT Traffic Operations Division. Any deviation from the pre-approved shop drawings will require submission of shop drawings of the complete assembly and design calculations as described above.
   b. Structural Support Design for Luminaires. Lighting support structures shall be designed for a 25 year design life in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. All poles shall be designed for 110 mph 3-second gust wind speeds. The Gust Factor, G, and Wind Importance Factor, Ir, shall be applied as per the AASHTO Specifications assuming a 25-year design life. The design wind pressure for hurricane wind velocities greater than 100 mph shall not be less than the design wind pressure using 100 mph with the non-hurricane Wind Importance Factor, Ir, value. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. All transformer bases shall have been structurally tested to resist the theoretical plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.
   c. Mast Arm Attachments. All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 60-pound luminaire having an effective projected area of 1.6 square feet.
   d. Anchor Bolt Assembly. Anchor bolt assemblies for optionally designed poles shall be the same as those shown herein.

5. Aluminum Pole Designs. Aluminum pole designs may be allowed, if aluminum poles are permitted or required, pending approval by the Department as outlined below.

   a. Meet all of the requirements stated above for optional steel pole designs and the following:
      1. Aluminum poles shall be fabricated in accordance with "Structural Welding Code-Aluminum" AWS D1.2.
      2. Aluminum pole designs shall use the same anchor bolt assembly and be subject to the same geometric restraints and other requirements for steel poles specified herein.
      3. Aluminum poles shall be equipped with vibration mitigation devices, as approved by the engineer.
      4. Pole components shall be constructed using the following material:
         Shaft: ASTM B221 or B241 Alloy 6063-T6, ASTM B209 Alloy 5086-H34, ASTM B221 Alloy 6005-T5.
         Base Flange: ASTM B26 Alloy 356.0-T6 or ASTM B108 Alloy 356.0-T6 (Yield strength test required).
         Mast Arm Fitting: ASTM B209 Alloy 6061-T6 or ASTM B221 Alloy 6005-T5.
         Mast Arms: ASTM B241 Alloy 6061-T6 or Alloy 6063-T6.
         Pole Cap: ASTM B209 Alloy 5086-H32 or ASTM B108 or B26 Alloy 356.0-T6.
         Bolts: Stainless Steel AISI 300 series. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seez Compound, Permatex 133K or equal.

6. Special Designs. Poles with architectural treatments shall meet the requirements shown elsewhere in the plans.

7. Luminaire Mounting Height. Actual luminaire mounting height shall be the nominal mounting height given on RIP(2) for all pole-arm combinations except for poles with 4 ft. luminaire arms, which shall be 3'-0" lower than the nominal height, unless otherwise shown or directed.

EXPLANATION OF ROADWAY ILLUMINATION ASSEMBLY DESIGNATIONS

(TYPE SA 50 T - X - X) (400W EQ) LED

- SA: Pole and mast arm may be steel or aluminum.
- ST: Pole and mast arm must be steel.
- AL: Pole and mast arm must be aluminum.
- SP: Special (ovalized) steel or aluminum pole for installing on CSB or SSCB. See standard sheet CSB (4), or SSCB (4).

Two numerical digits denote nominal mounting height in feet.

Next letter denotes type of base, (S-Shoe Base, T-Transformer Base, or B-Bridge/Ret.Wall Mount)

First number denotes length of mast arm in feet.

Use of second mast arm is indicated by second dashed number which denotes length in feet.

Luminaire rating in watts (i.e. 400W). Equivalent wattage LED fixtures will include EQ (i.e. 400W EQ)

Last letters indicate light source (S - High Pressure Sodium; LED - LED luminaire)

SHEET 1 OF 4

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Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

RIP(1)-19

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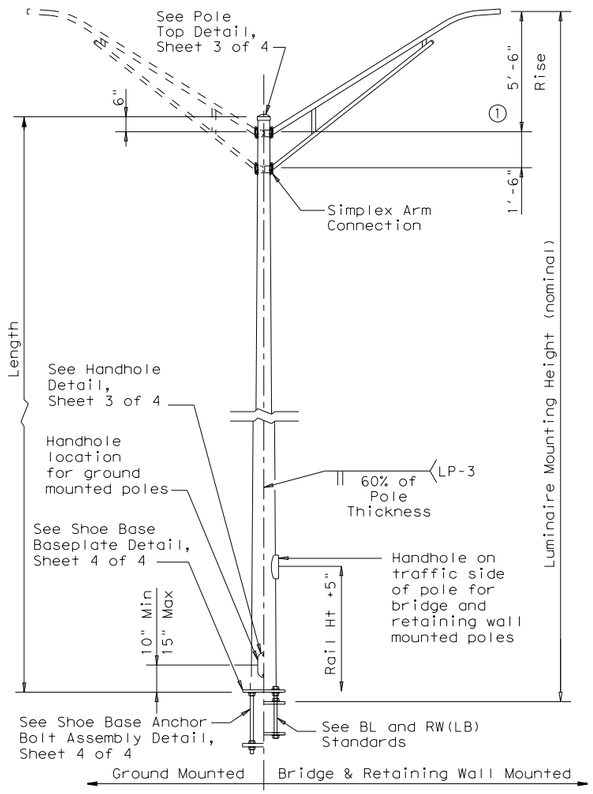
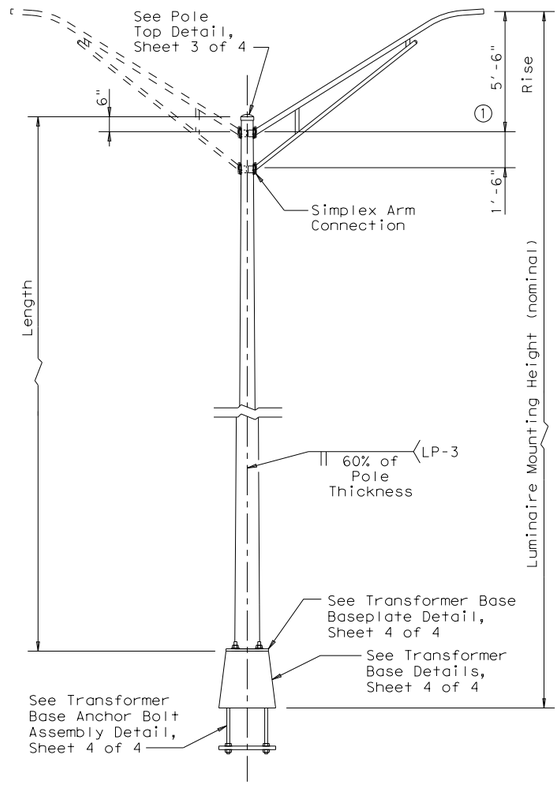


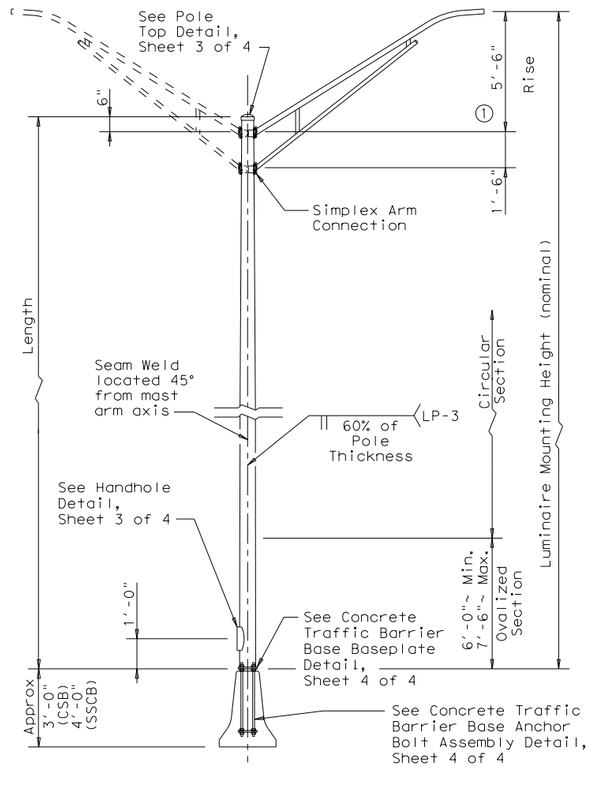
SHOE BASE POLE

SHOE BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	4.90	15.00	0.1196	7.1
30.00	7.50	4.00	25.00	0.1196	13.2
31.00-39.00	8.00	4.36-3.24	26.00-34.00	0.1196	20.7
40.00	8.50	3.60	35.00	0.1196	20.7
50.00	10.50	4.20	45.00	0.1196	30.3



TRANSFORMER BASE POLE

TRANSFORMER BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	5.11	13.50	0.1196	7.1
30.00	7.50	4.21	23.50	0.1196	13.2
31.00-39.00	8.00	4.57-3.45	24.50-32.50	0.1196	20.7
40.00	8.50	3.81	33.50	0.1196	20.7
50.00	10.00	3.91	43.50	0.1196	30.3



CONCRETE TRAFFIC BARRIER BASE POLE

CONCRETE TRAFFIC BARRIER BASE POLE (CSB/SSCB)						
Luminaire Mounting Height (Nominal) (ft)	Base ② Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)	
					About ℄ of Rail	Perp. to Rail
28.00	9.00	5.78	23.00	0.1196	10.3	13.2
38.00	9.00	4.38	33.00	0.1196	16.6	20.8
48.00	10.50	4.48	43.00	0.1345	25.1	30.5

MATERIAL DATA		
COMPONENT	ASTM DESIGNATION	MIN. YIELD (ksi)
Pole Shaft (0.14"/ft. Taper)	A572 Gr 50, A595 Gr A, A1011 HSLAS Gr 50 Cl 2 ③, or A1008 HSLAS Gr 50 Cl 2	50
Base Plate and Handhole Frame	A572 Gr.50, or A36	36
T-Base Connecting Bolts	F3125 Gr A325	92
Anchor Bolts	F1554 Gr 55, A193-B7 or A321	55 105
Anchor Bolt Templates	A36	36
Heavy Hex (H.H.) Nuts	A194 Gr 2H, or A563 Gr DH	
Flat Washers	F436	

NOTES:

① 2'-6" rise for 4 ft. luminaire arms.

② Before ovalized as shown on Concrete Traffic Barrier Base Baseplate details, Sheet 4 of 4.

③ A1011 SS Gr 50 may be used instead of HSLAS, provided the material meets the elongation requirements for HSLAS.

POLE ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Shaft length	+1"
I.D. of outside piece of slip fitting pieces	+1/8", -1/16"
O.D. of inside piece of slip fitting pieces	+1/32", -1/8"
Shaft diameter: other	+3/16"
Out of "round"	1/4"
Straightness of shaft	±1/4" in 10 ft
Twist in multi-sided shaft	4° in 50 ft
Perpendicular to baseplate	1/8" in 24"
Pole centered on baseplate	±1/4"
Location of Attachments	±1/4"
Bolt hole spacing	±1/16"

GENERAL NOTES:

1. Designs conform to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals , 6th Edition (2013) and Interim Revisions thereto. Design 3-Second Gust Wind Speed equals 110 mph with a 1.14 gust factor. A wind importance factor of 0.80 is applied to adjust the wind speed to a 25 year recurrence interval. Design moments listed in tables assume base of pole is 25' above natural ground level.
2. Structures are designed to support two 12' luminaire mast arms and luminaires. Mast arms are designed to support a 60-pound luminaire having an effective projected area of 1.6 square feet.
3. Fabrication shall be in accordance with the Specifications and with the details, dimensions, and weld procedures shown herein. Do not submit shop drawings for roadway illumination pole assemblies fabricated in accordance 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 these sheets and the Specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
4. For mounting heights between values shown in the tables, use base diameter and thickness values for the larger height.
5. Unless otherwise noted, all steel parts shall be galvanized in accordance with Item 445, "Galvanizing."
6. Steel poles shall be fabricated in accordance with Item 441, "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with AWS D1.1, Structural Welding Code-Steel.
7. Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint.
8. Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
9. Lubricate and tighten anchor bolts, when erecting shoe base poles and concrete traffic barrier base poles, in accordance with Item 449, "Anchor Bolts."
10. All poles, except Transformer Base Poles, shall have hand holes with reinforcing frames and covers. For ground mounted shoe base poles, hand holes shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaire arms, all hand holes shall be on the same side of the barrier. For poles mounted on a bridge lighting bracket or a retaining wall lighting bracket, hand hole shall be on traffic side of the pole, at a height that will clear the barrier.
11. The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, and other damaged galvanized areas on poles and mast arms shall be repaired in accordance with Item 445, "Galvanizing."
12. Pole length is based on a 5'-6" luminaire arm rise. 4 ft. luminaire arms have a 2'-6" rise. A pole with 4 ft. luminaire arms will have an actual mounting height 3'-0" less than the nominal mounting height. Increasing the pole length to meet the nominal mounting height is allowed, but unnecessary unless otherwise directed by the engineer.
13. Erect transformer base poles in accordance with sheet RID(1).

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ROADWAY ILLUMINATION POLES

RIP(2)-19

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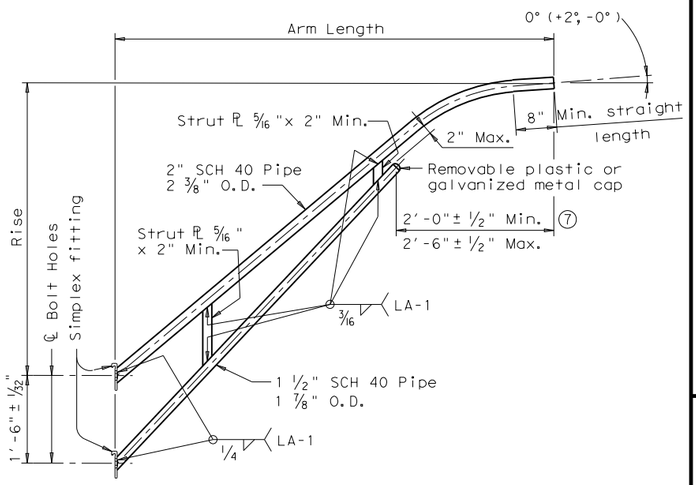
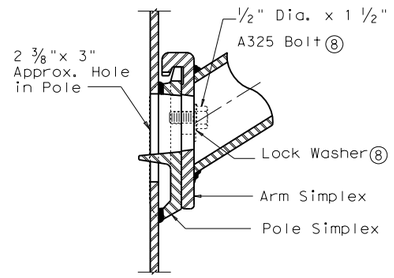


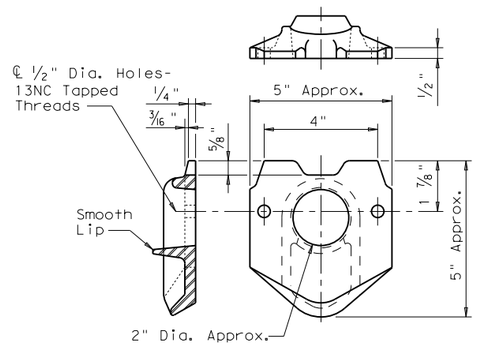
LUMINAIRE ARM

LUMINAIRE ARM DIMENSIONS		
Nominal Arm Length	Arm Length	Rise
4'-0"	3'-6"	2'-6"
6'-0"	5'-6"	5'-6"
8'-0"	7'-6"	5'-6"
10'-0"	9'-6"	5'-6"
12'-0"	11'-6"	5'-6"

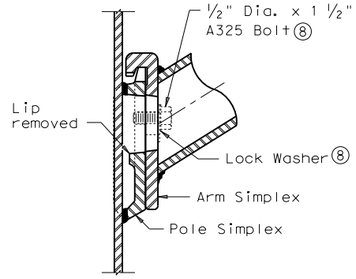
ARM ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Arm Length	±1"
Arm Rise	±1"
Deviation from flat	1/8" in 12"
Spacing between holes	±1/32"



UPPER SIMPLEX FITTING
(Gusset not shown for clarity)

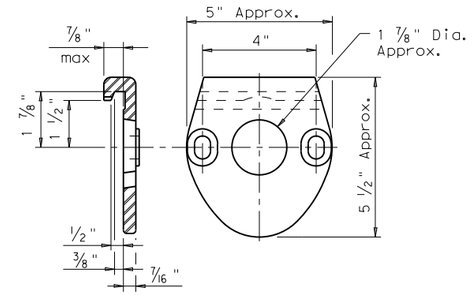


POLE SIMPLEX DETAIL ⑨



LOWER SIMPLEX FITTING
(Gusset not shown for clarity)

SECTION B-B



ARM SIMPLEX DETAIL ⑨

NOTES:

④ Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

⑤ 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.

⑥ A572, A1008 HSLAS-F, and A1011 HSLAS-F materials may have higher yield strengths but shall not have less elongation than the grade indicated.

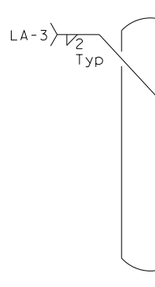
⑦ Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

⑧ Each pole simplex fitting shall be supplied with 2 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.

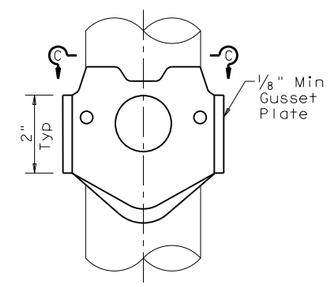
⑨ Proposed deviations in arm simplex dimensions or materials must be submitted to the Department for approval.

⑩ A welded handhole frame is permissible. Maximum of two (2) CJP weld splices is allowed.

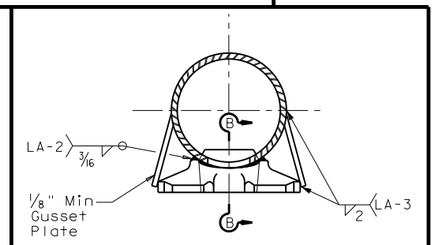
MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr 65-35 or Gr 70-36, A148 Gr 80-50, A576 Gr 1021 ⑤, or A36 (Arm only)
Arm Pipes	ASTM A53 Gr A or B, A500 Gr B, A501, A 1008 HSLAS-F Gr 50 ⑥, or A1011 HSLAS-F Gr 50 ⑥
Arm Struts and Gusset Plates ④	ASTM A36, A572 Gr 50 ⑥, or A588
Misc.	ASTM designations as noted



SIDE

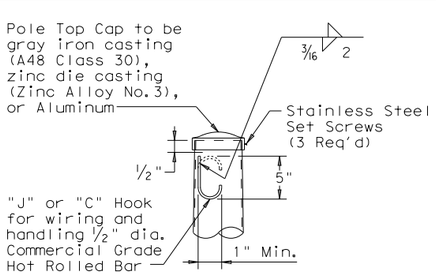


ELEVATION

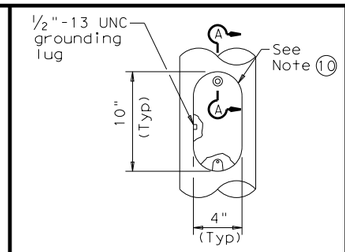


SECTION C-C

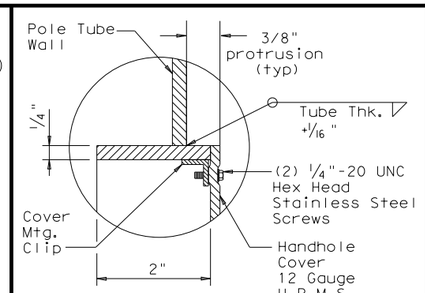
SIMPLEX ATTACHMENT DETAIL



POLE TOP



ELEVATION



SECTION A-A

HANDHOLE

Texas Department of Transportation

Traffic Safety Division Standard

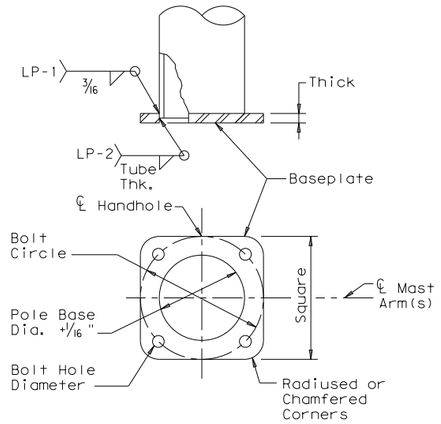
ROADWAY ILLUMINATION POLES

RIP(3)-19

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342,ETC.	CS
7-17	DIST	COUNTY		SHEET NO.
12-19	DAL	DALLAS		89

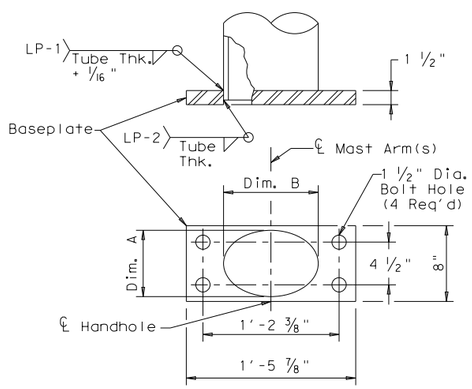
73C

DATE:
FILE:



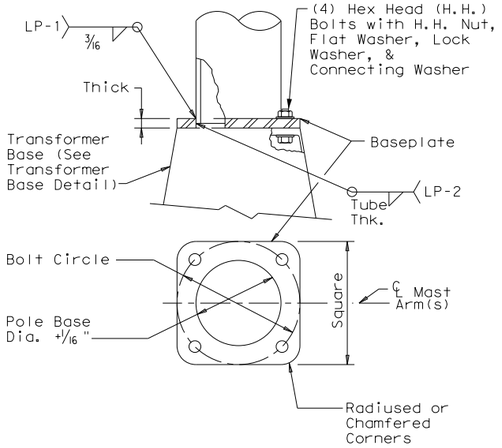
SHOE BASE BASEPLATE

SHOE BASE BASEPLATE TABLE				
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	BOLT HOLE DIAMETER
20′ - 39′	13"	13"	1 1/4"	1 1/4"
40′	15"	15"	1 1/4"	1 1/2"
50′	15"	15"	1 1/2"	1 1/2"



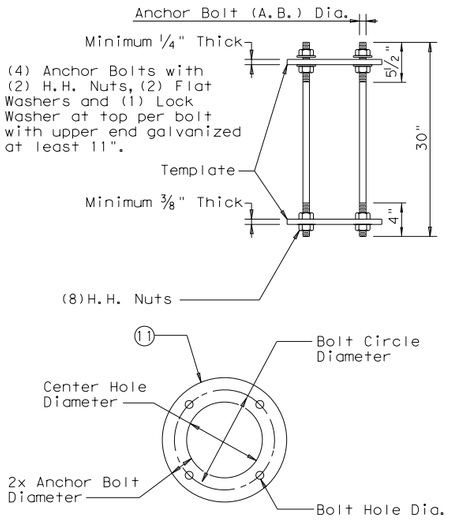
CONCRETE TRAFFIC BARRIER BASE BASEPLATE

CONCRETE TRAFFIC BARRIER BASE BASEPLATE TABLE			
MOUNTING HEIGHTS (nominal)	POLE DIA.(12)	DIM. A	DIM. B
28′ - 38′	9"	7" ± 1/4"	10" ± 1/4"
48′	10 1/2"	7" ± 1/4"	13" ± 1/4"



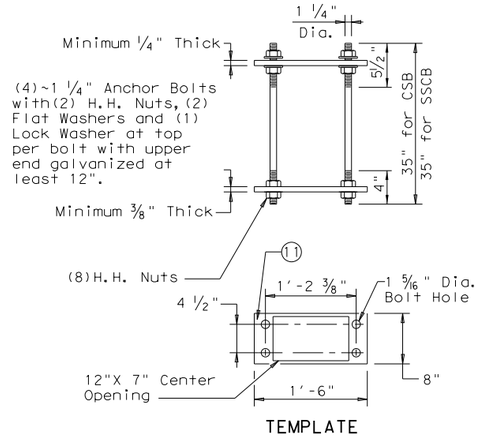
TRANSFORMER BASE BASEPLATE

TRANSFORMER BASE BASEPLATE TABLE						
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	CONNECTING BOLT DIA.	BOLT HOLE DIAMETER	TRANSFOMER BASE TYPE
20′ - 39′	13"	13"	1 1/4"	1"	1 1/4"	A
40′	15"	15"	1 1/4"	1 1/4"	1 1/2"	B
50′	15"	15"	1 1/2"	1 1/4"	1 1/2"	B



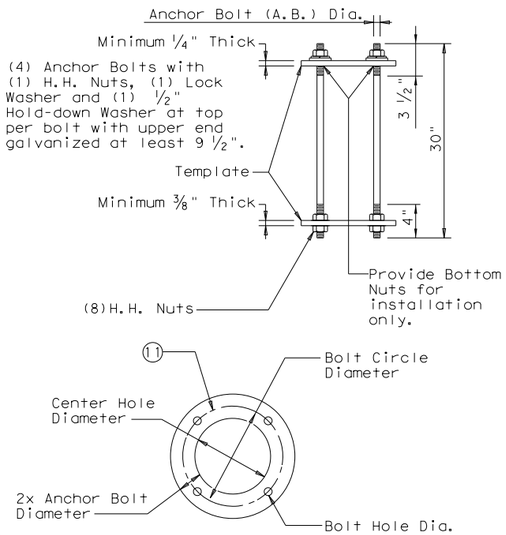
SHOE BASE ANCHOR BOLT ASSEMBLY

SHOE BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20′-39′	1"	13"	11"	1 1/16"
40′-50′	1 1/4"	15"	12 1/2"	1 5/16"



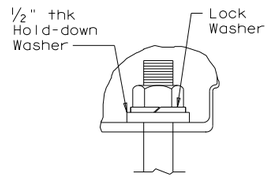
CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY

TRANSFORMER BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20′- 39′	1"	14"	12"	1 1/16"
40′- 50′	1 1/4"	17 1/4"	14 3/4"	1 5/16"

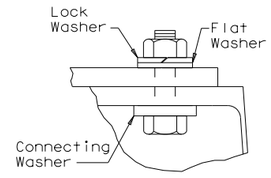


TRANSFORMER BASE ANCHOR BOLT ASSEMBLY

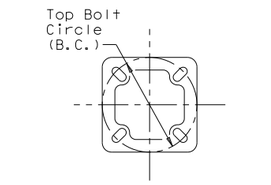
TRANSFORMER BASE TABLE		
TYPE	TOP B.C.	BTM. B.C.
A	13"	14"
B	15"	17 1/4"



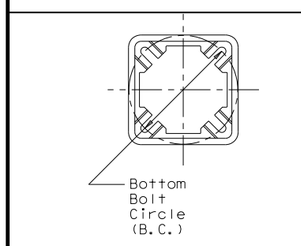
DETAIL A



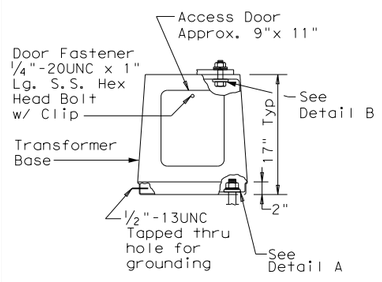
DETAIL B



TOP PLAN



BOTTOM PLAN



ELEVATION

TRANSFORMER BASE DETAILS

GENERAL NOTES:

1. For mounting heights between those shown in the table, use the values in the table for the larger mounting height.
2. All breakaway bases shall meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
3. Transformer bases shall be cast from aluminum, ASTM B108 or B26 Alloy 356.0-T6, or other material approved by the Engineer. Four Hex Head (H.H.) bolts with four H.H. nuts, four lock washers, four flat washers, and connecting and hold-down washers as recommended by the manufacturer, galvanized to ASTM A153 Class C or D, or B695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A563 grade DH galvanized.
4. Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
5. Doors for transformer bases shall be made of plastic, fiberglass or other non-metallic material approved by the Engineer and shall be attached with stainless steel screws or bolts. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

NOTES:

(11) Anchor Bolt Templates do not need to be galvanized.

(12) Pole diameter before ovalized.

ANCHOR BOLT FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Length	± 1/2"
Threaded length	± 1/2"
Galvanized length (if required)	- 1/4"

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

RIP(4)-19

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
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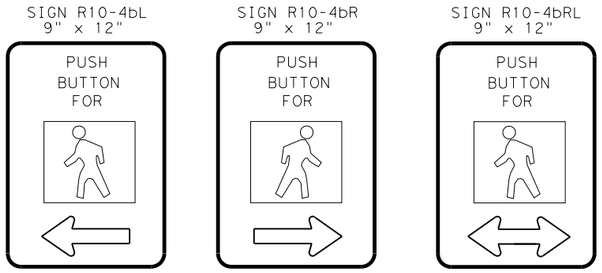
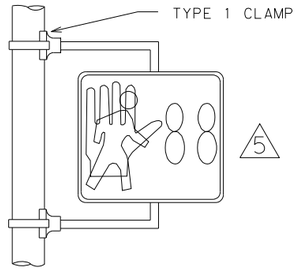
REVISIONS 7-17 12-19	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		90

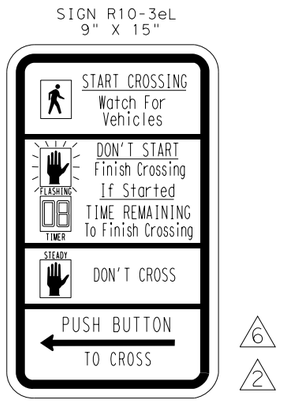
73D

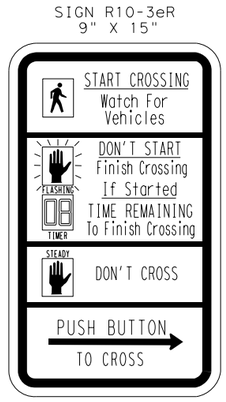


PEDESTRIAN PUSHBUTTON
SIGN DETAILS

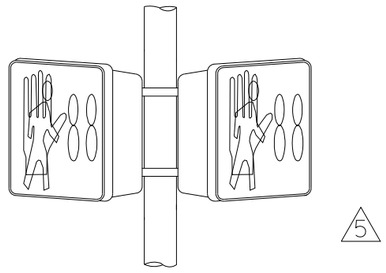


PEDESTRIAN SIGNAL HEAD MOUNTING
FOR ONE PEDESTRIAN SIGNAL HEAD
152A

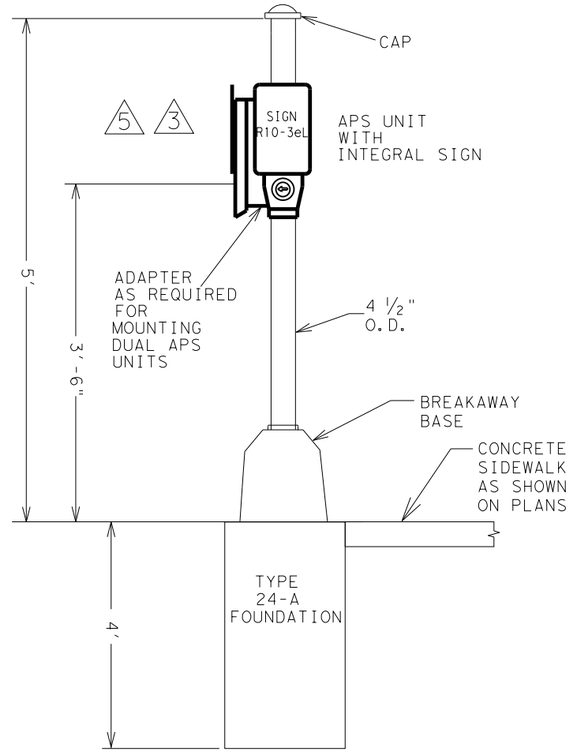




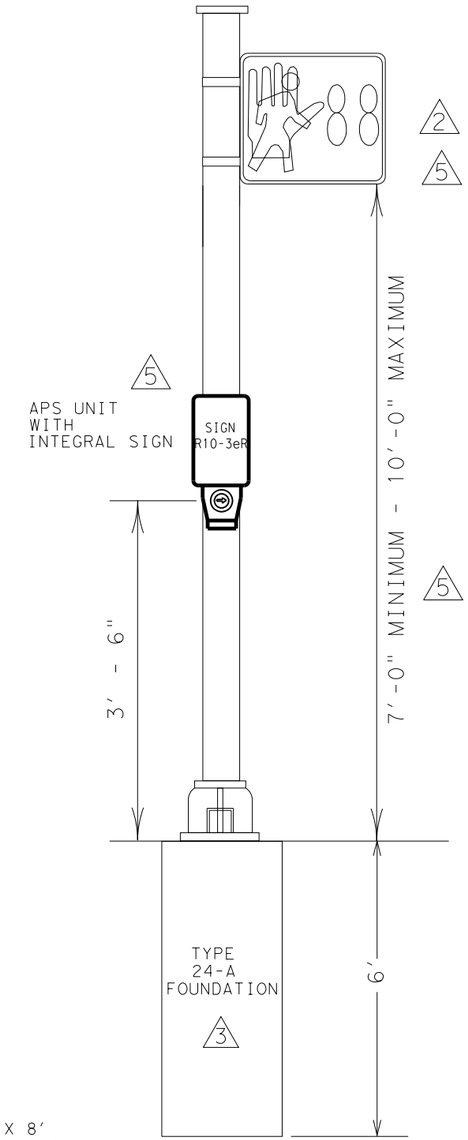
COUNTDOWN PEDESTRIAN PUSHBUTTON
SIGN DETAILS



PEDESTRIAN SIGNAL HEAD MOUNTING
FOR TWO PEDESTRIAN SIGNAL HEADS
143C



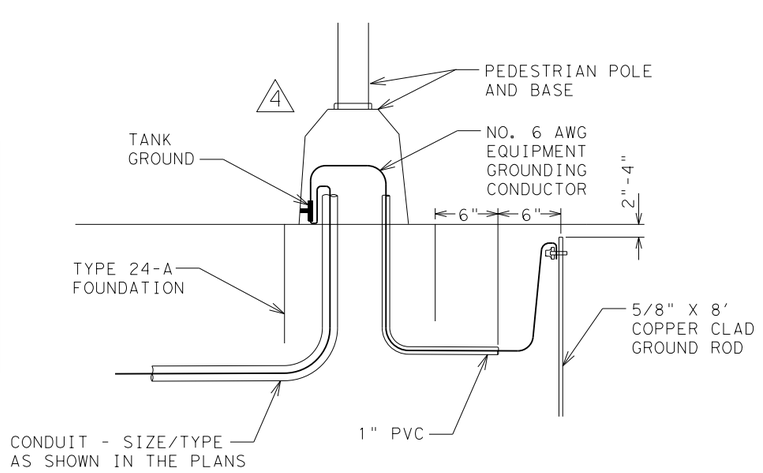
PEDESTRIAN PUSH BUTTON POLE



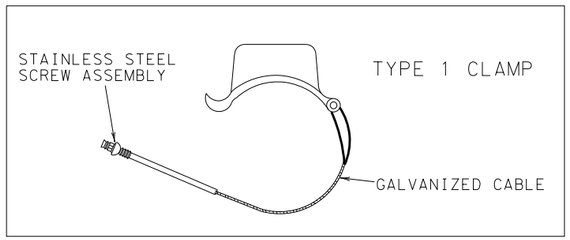
PEDESTAL POLE

NOTE:

THE POLES ON THIS DRAWING ARE SHOWN AS AN EXAMPLE ONLY. POLES OF SIMILAR DESIGN FOR ANY CROSS SECTION WHICH MEET THE SPECIFICATIONS AND REQUIREMENTS SHOWN ON THESE DRAWINGS AND ARE APPROVED BY THE ENGINEER WILL BE DEEMED ACCEPTABLE.



PEDESTRIAN PUSH BUTTON POLE
GROUNDING DETAILS



1 NOTE: EITHER TYPE 1 CLAMPS OR CLAM SHELL MOUNTING HARDWARE MAY BE USED AS APPROVED BY THE ENGINEER. FOR CLAM SHELLS, USE ICC P/N 4805 OR McCAIN QUICKMOUNT OR APPROVED EQUAL.

5

1 ALTERNATIVE MOUNTING METHOD
revised 12-92

2 ALTERNATIVE PEDESTRIAN SIGNAL HEAD AND SIGNING
revised 10-08

3 PEDESTRIAN PUSH BUTTON POLE
revised 01-11

4 PEDESTRIAN PUSH BUTTON POLE GROUNDING DETAILS
revised 09-15

5 APS UNIT ADDED
"SYMBOLS ONLY" PEDESTRIAN SIGNAL HEAD REMOVED
MOUNTING HARDWARE NOTES REVISED
MOUNTING HEIGHT REVISED
revised 06-17

6 APS SIGN REVISED
revised 11-20

NOTES:

5
1. ALL PEDESTRIAN SIGNAL HEADS SHALL BE INSTALLED ON THE AWAY-FROM-TRAFFIC SIDE OF THE PEDESTAL OR MAST ARM POLE.
2. ALL WIRING FOR PEDESTRIAN SIGNALS SHALL BE TOTALLY ENCLOSED WITHIN THE SIGNAL MOUNTING HARDWARE.
3. ALL PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON SIGNS SHALL DISPLAY THE SYMBOLIZED MESSAGES SHOWN ABOVE.

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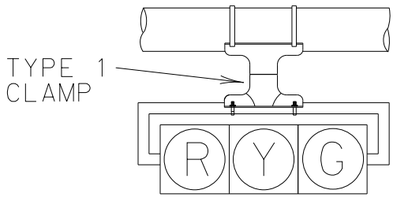
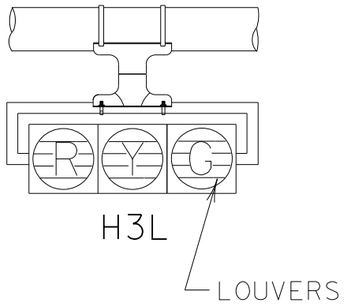
CONT.	SECT.	JOB	HIGHWAY NO.
0918	47	342,ETC.	CS

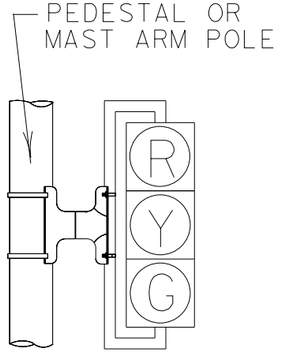
PEDESTRIAN SIGNAL HEAD DETAILS (DAL)



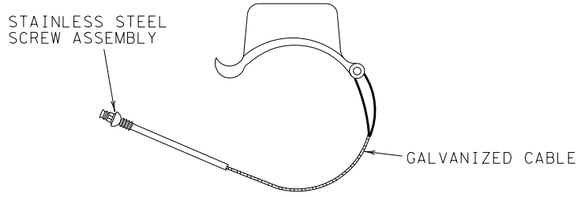
H3



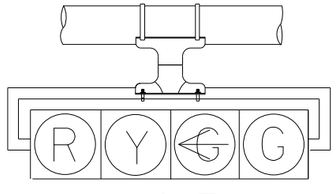
H3L



V3



TYPE 1 AND 2 CLAMPS



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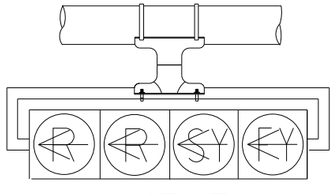

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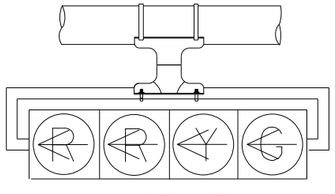
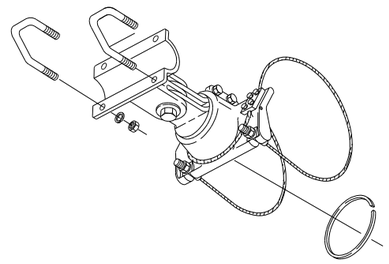
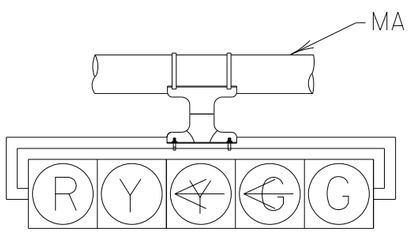


H4PLT

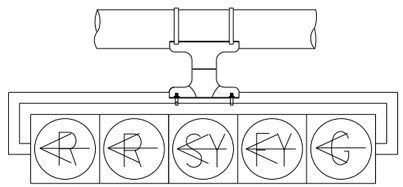


TYPE 2 CLAMP KIT

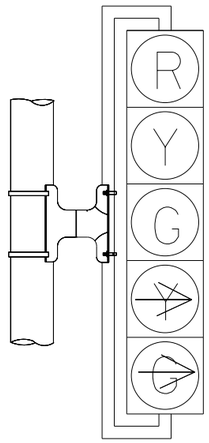
SHALL BE INSTALLED WHEN ROTATION ABOUT
THE HORIZONTAL AND VERTICAL AXES ARE NEEDED.



H5LT



H5FLT



V5RT

NOTES:

1. VEHICLE SIGNAL HEADS SHALL BE MOUNTED WITH TYPE 1 CLAMP AND APPROPRIATE TUBING.
2. ALL POLE MOUNTED VEHICLE HEADS SHALL BE INSTALLED ON THE AWAY-FROM-TRAFFIC SIDE OF THE PEDESTAL OR MAST ARM POLE.
3. THE SIGNAL HEADS SHOWN ARE NOT MEANT TO REFLECT ALL POSSIBLE SIGNAL HEADS, BUT ARE REPRESENTATIVE OF SIGNAL HEADS COMMONLY IN USE. SEE THE TRAFFIC SIGNAL LAYOUT FOR REQUIRED SIGNAL HEADS, AND THE NUMBER AND ORIENTATION OF LOUVERS.

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CONT.	SECT.	JOB	HIGHWAY NO.
0918	47	342,ETC.	CS

TRAFFIC SIGNAL HEAD DETAILS (DAL)

DATE:
FILE:

GENERAL NOTES FOR ALL ELECTRICAL WORK

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

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

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

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

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		DIST	COUNTY			SHEET NO.	
		DAL	DALLAS			93	

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.

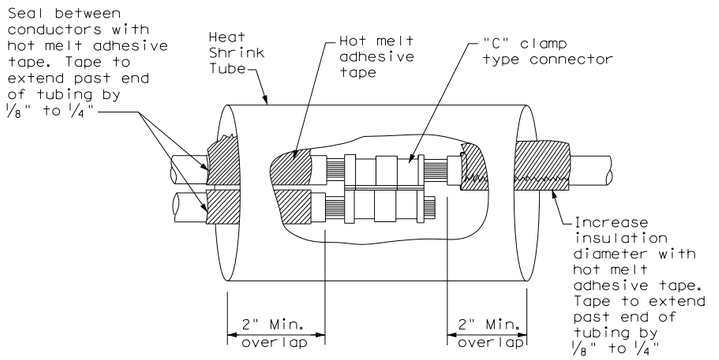
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

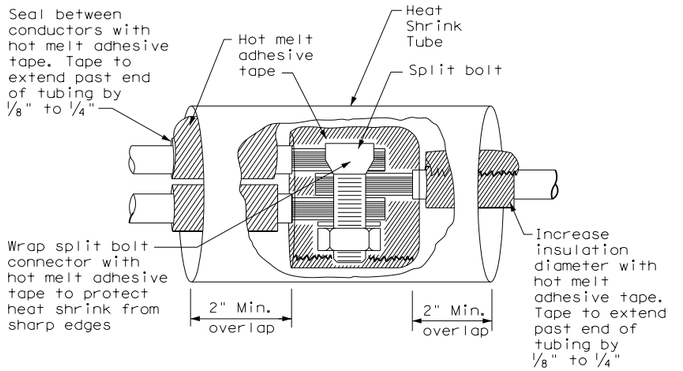
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

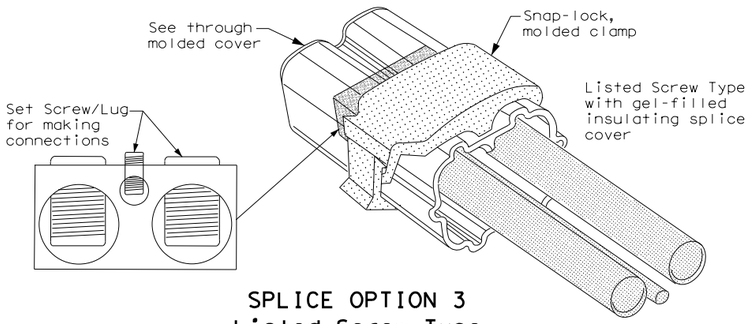
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, 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

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ELECTRICAL DETAILS CONDUCTORS

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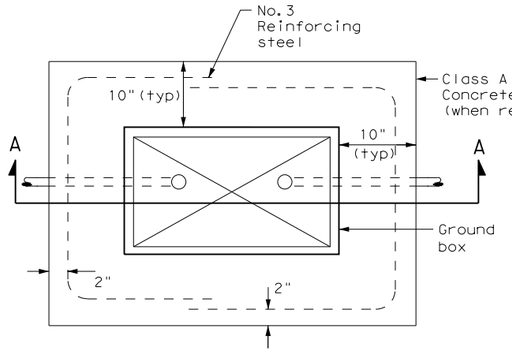
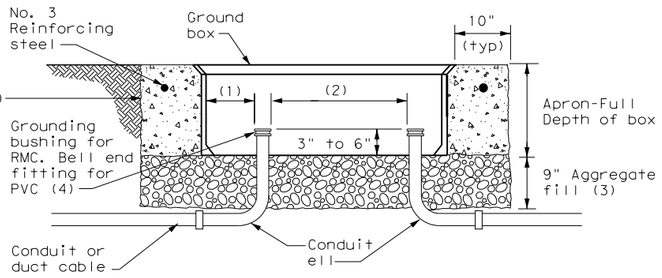


PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

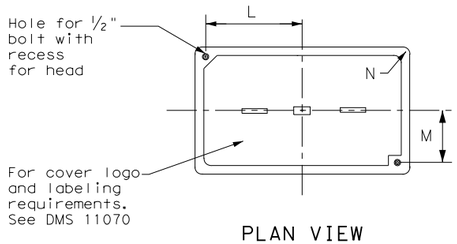
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

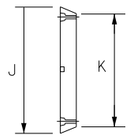
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

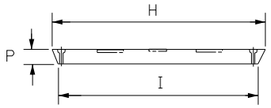
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

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ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

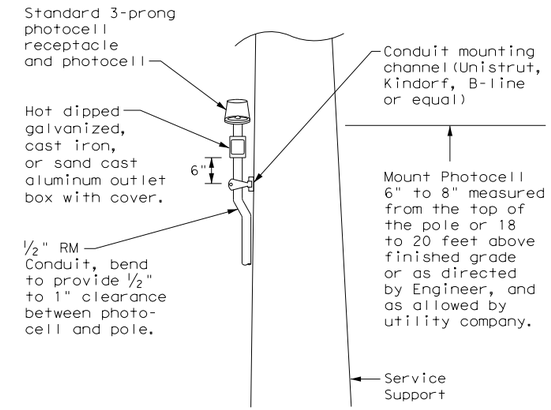
* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

- Schematic Type
- Service Voltage V / V
- Disconnect Amp Rating
  000 indicates main lug only/
  Typically Type T
- (SS)= Safety Switch Ahead of Meter-Check with Utility
- (NS)= No safety Switch Ahead of Meter-Check with Utility
- Enclosure Type
  - GS= Galvanized steel("off the shelf")
  - SS= Stainless steel(Custom Enclosure)See MPL
  - AL= Aluminum (Custom Enclosure)See MPL
- Photocell Mounting Location
  - (E)= Inside Service/Enclosure Mounted
  - (T)= Top of pole
  - (L)= Luminaire mounted
  - (N)= None/No Photocell or Lighting Contactor Required
- Service Support Type
  - GC= Granite concrete
  - OC= Other concrete
  - TP= Timber pole
  - SP= Steel pole
  - SF= Steel frame
  - OT= Pole by others or paid for separately
  - EX= Existing pole
  - TS= Service on traffic signal pole
  - PS= Pedestal Service
- O= Overhead Service Feed from Utility
- U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

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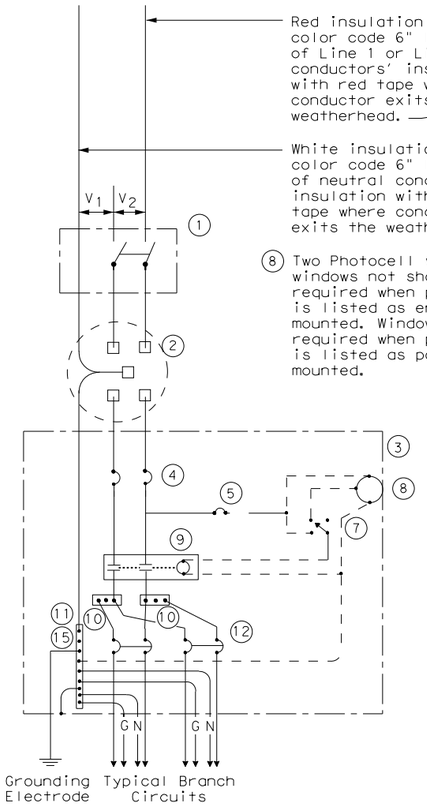
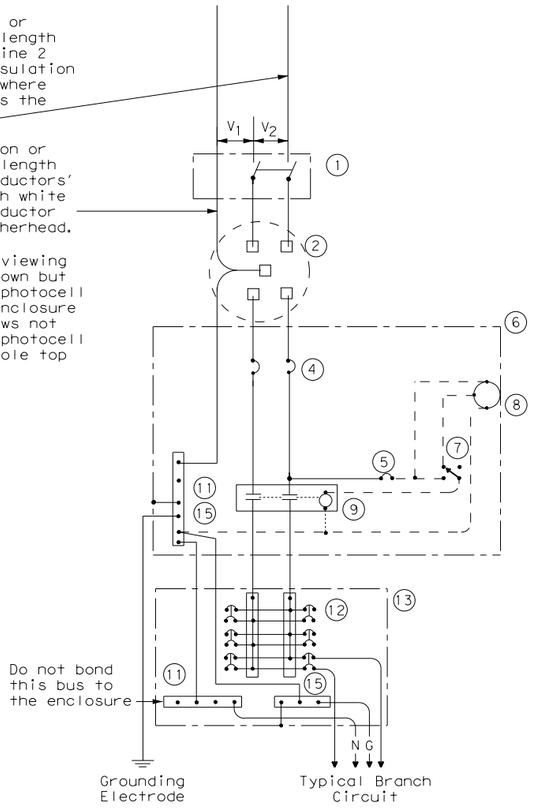
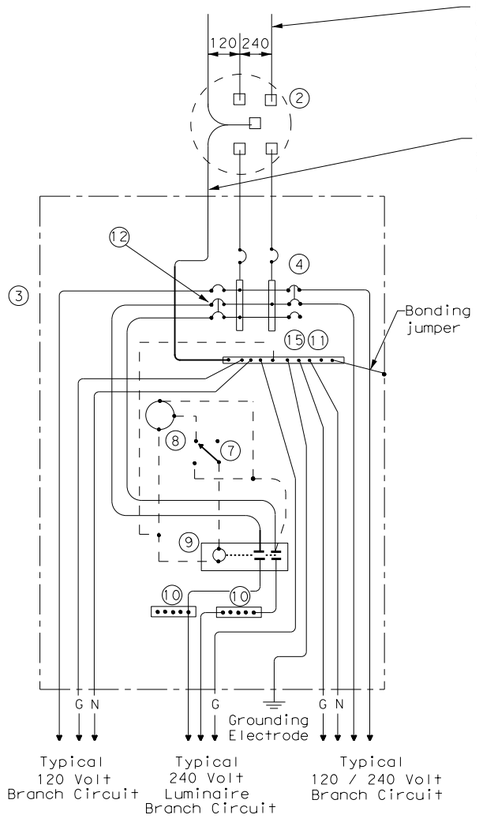


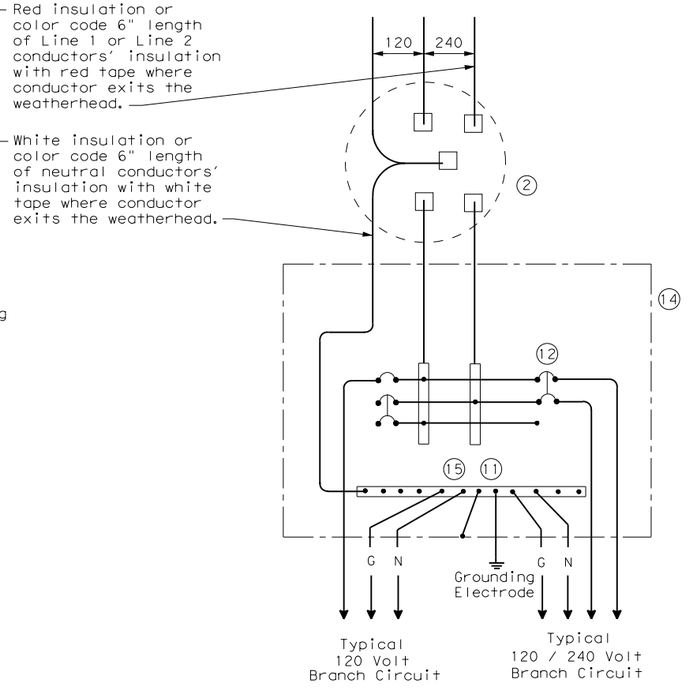
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
– – – –	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

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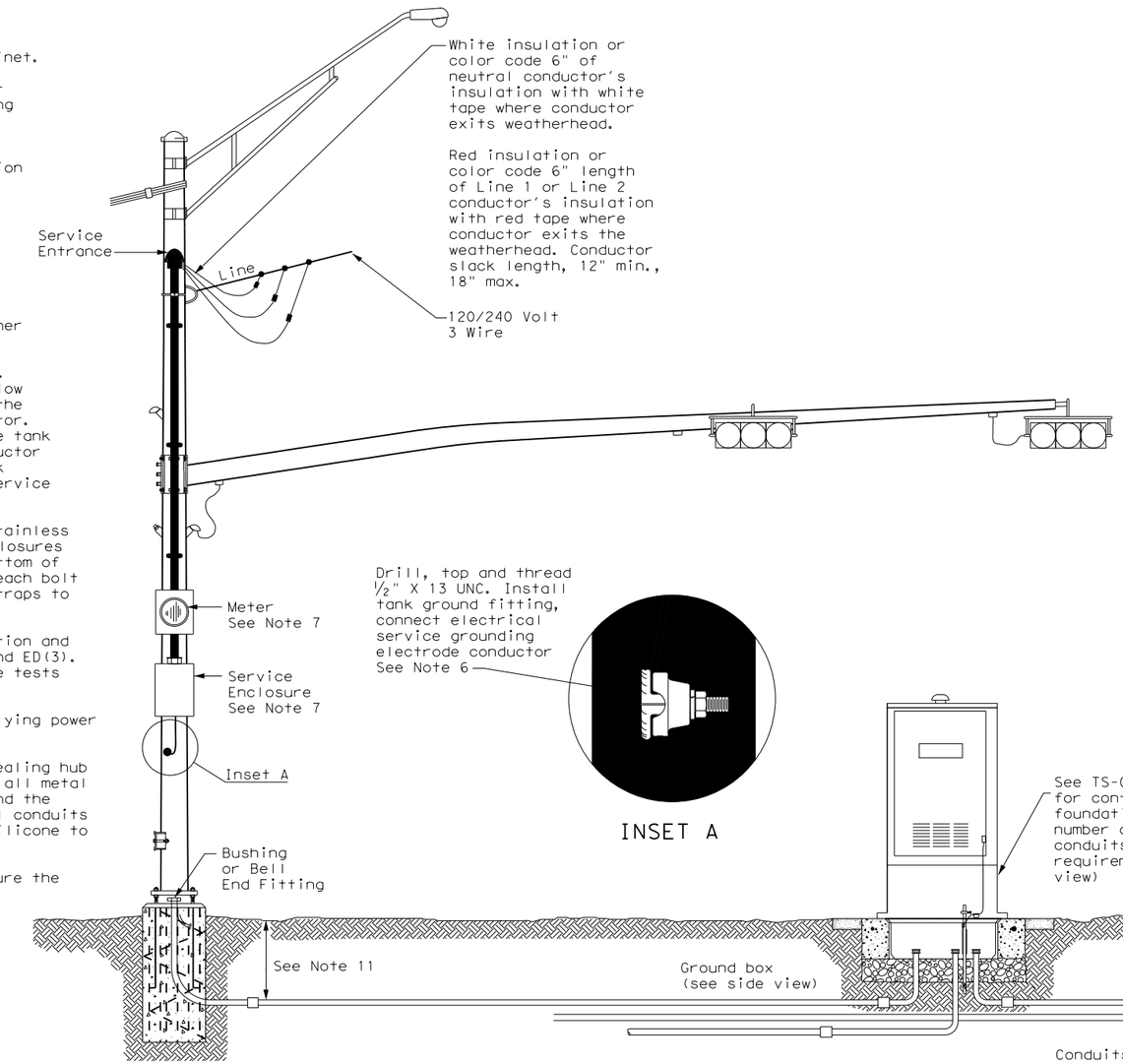
TRAFFIC SIGNAL NOTES

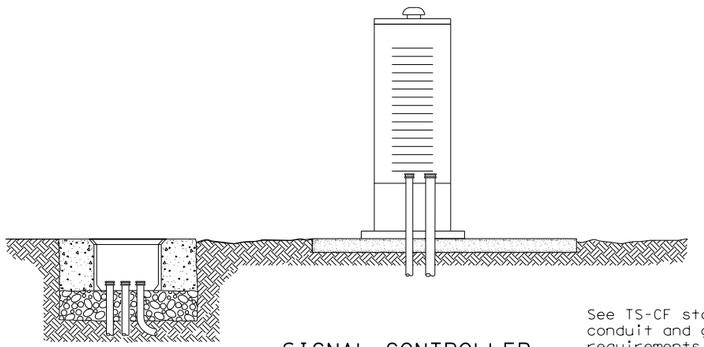
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".



SIGNAL POLE WITH SERVICE

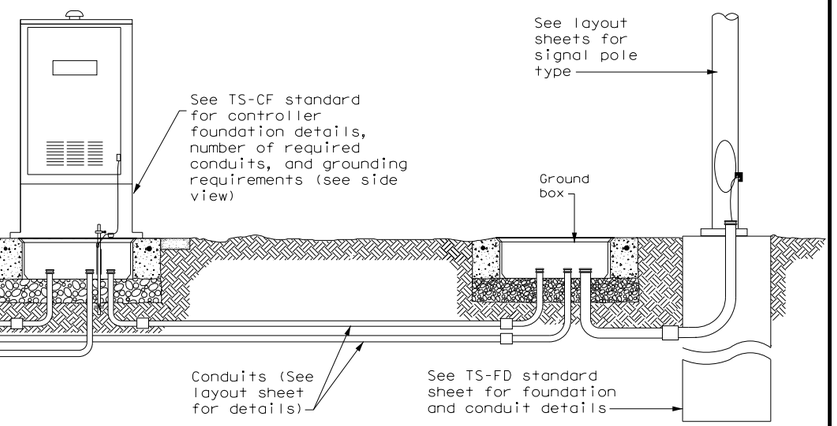
Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

INSET A



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.



SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(8)-14

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PEDESTAL SERVICE NOTES

1. Manufacture pedestal electrical services in accordance with Departmental Material Specifications (DMS)11080 "Electrical Services", 11085 "Electrical Services-Pedestal (PS)" and Item 628 "Electrical Services. "Provide pedestal electrical services as listed on the Material Producers list (MPL) on the Department's web site under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.

2. When a meter socket is required, provide a socket with a minimum 100 amp rating that complies with local utility requirements.

3. Provide Class A or C concrete for pedestal service foundations in accordance with Item 420, "Concrete Substructures," except that concrete will not be paid for directly but is considered subsidiary to Item 628.

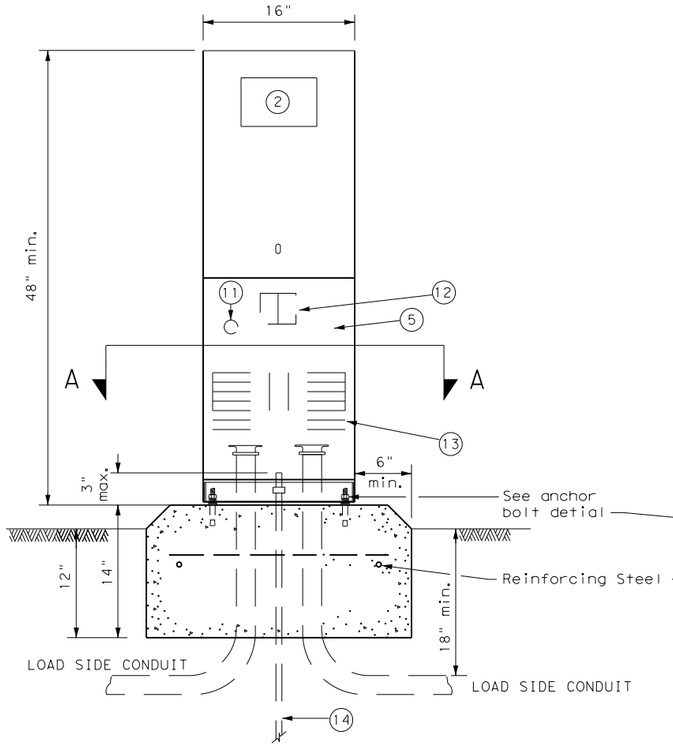
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

5. Install ½ in. X 2 ⅛ in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Anchor location to match mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a ½ in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.

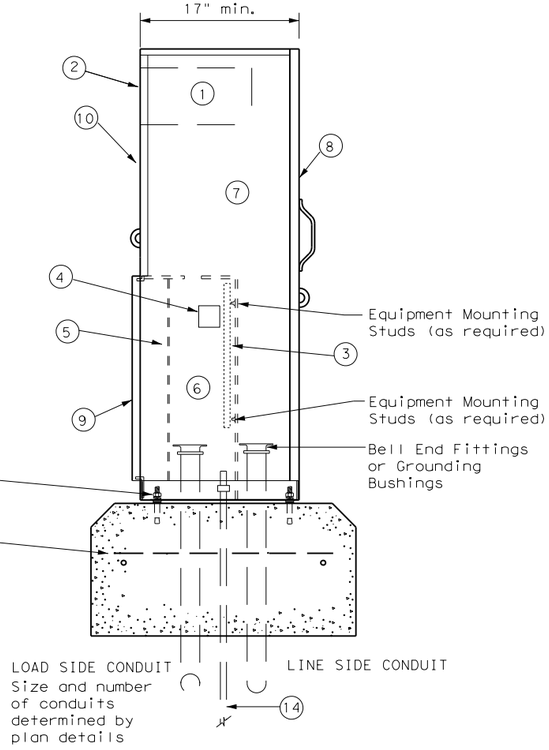
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than ⅛ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within ¼ in. Repair rocking or movement of the service enclosure at no additional cost to the department.

7. Do not use liquidtight flexible metal conduit (LFMC) on pedestal type services.

8. Ensure all elbows in the foundation are sized as per utility provider's conduit requirements for underground conduit and feeders. PVC extensions may be installed provided the ends of the rigid metal conduits are more than 2 in. below the top of the concrete foundation. Where extension conduits are metal, grounding bushings must be installed with a bonding jumper properly terminated.

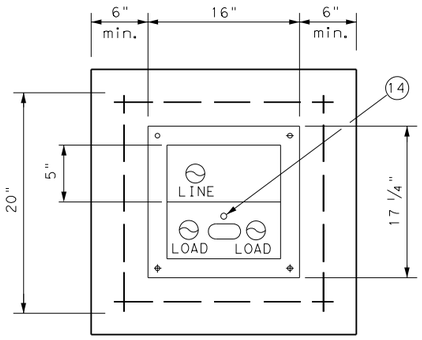


FRONT VIEW

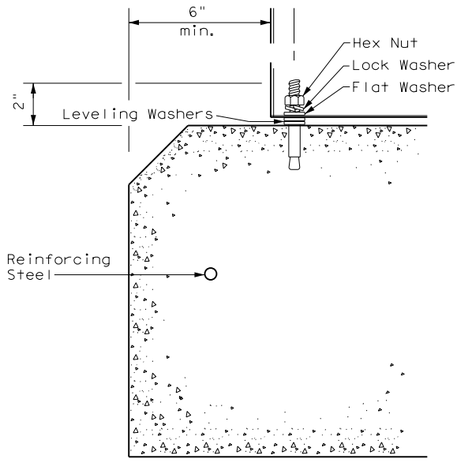


SIDE VIEW

TYPE C shown, TYPE A similar except that TYPE A shall have individual circuit breakers (CB) mounted on an equipment mounting panel. CB Handles shall protrude through hinged deadfront trim.



SECTION A-A



ANCHOR BOLT DETAIL

LEGEND	
1	Meter Socket, (when required)
2	Meter Socket Window, (when required)
3	Equipment Mounting Panel
4	Photo Electric Control Window, (When required)
5	Hinged Deadfront Trim
6	Load Side Conduit Trim
7	Line Side Conduit Area
8	Utility Access Door, with handle
9	Pedestal Door
10	Hinged Meter Access
11	Control Station (H-O-A Switch)
12	Main Disconnect
13	Branch Circuit Breakers
14	Copper Clad Ground Rod - 5/8" X 10'

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS

ED(9)-14

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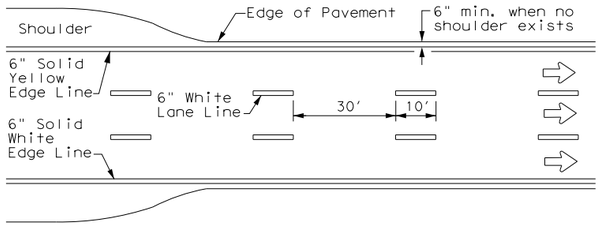
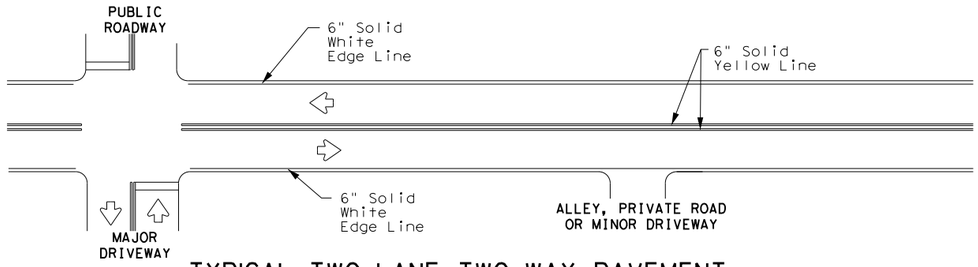
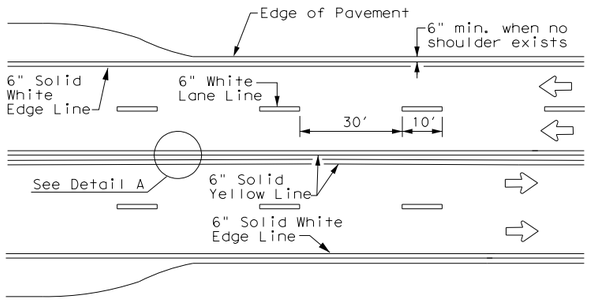
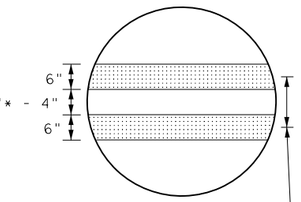


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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





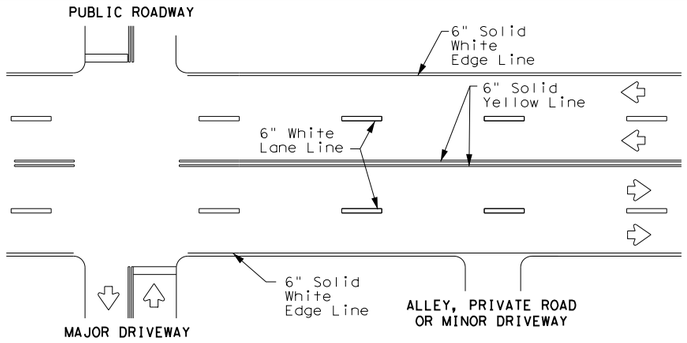
DETAIL "A"

9"** min. - 10" typ.
(18" max. for traveled way greater than 48' only)

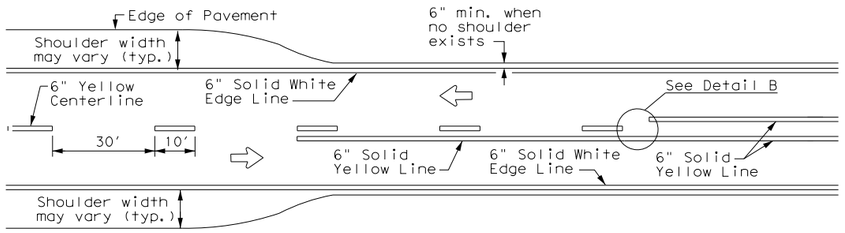
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

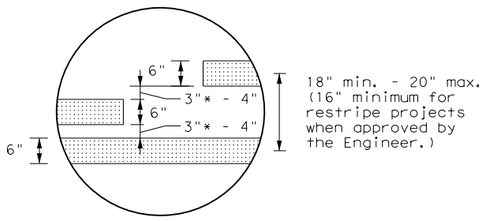
** 8" minimum for restripe projects when approved by the Engineer.



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

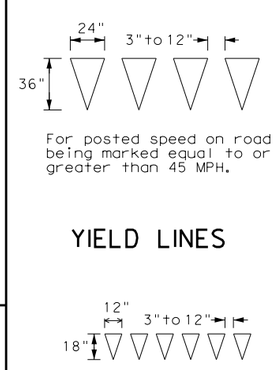


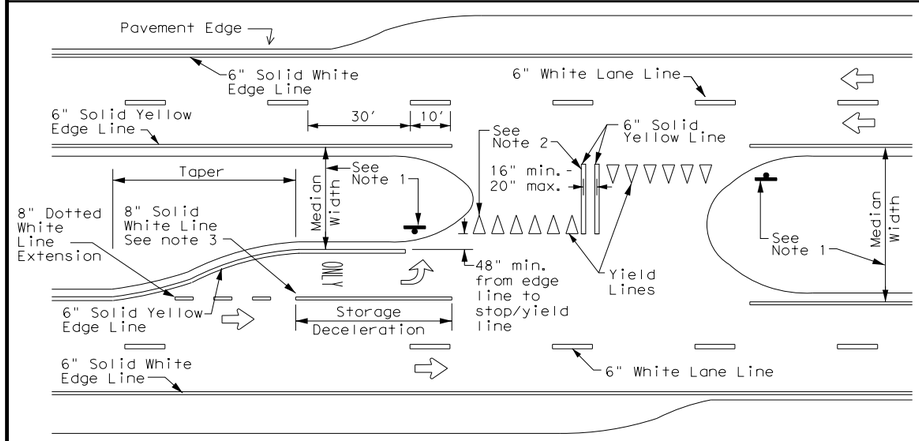
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



DETAIL "B"

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





FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

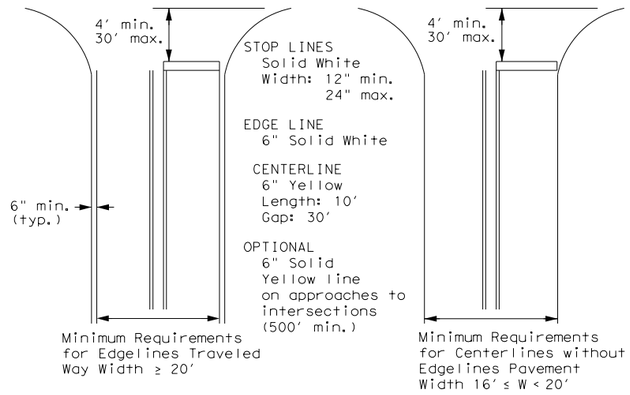
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

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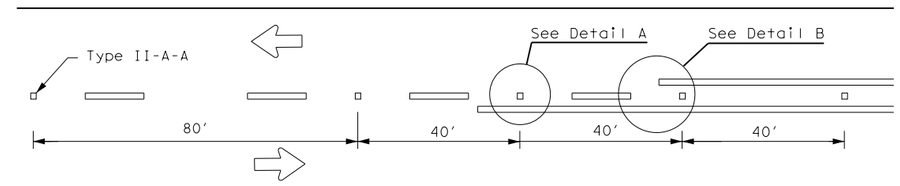
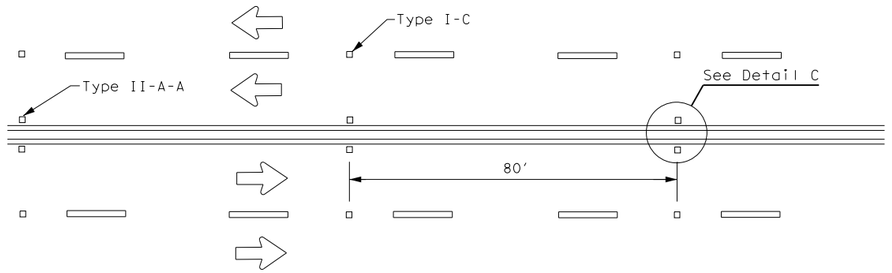
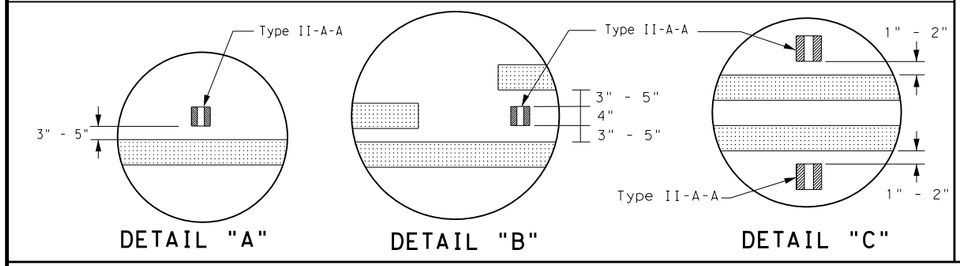
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



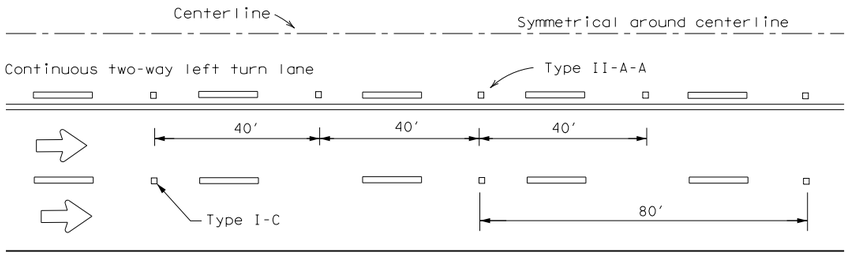
CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



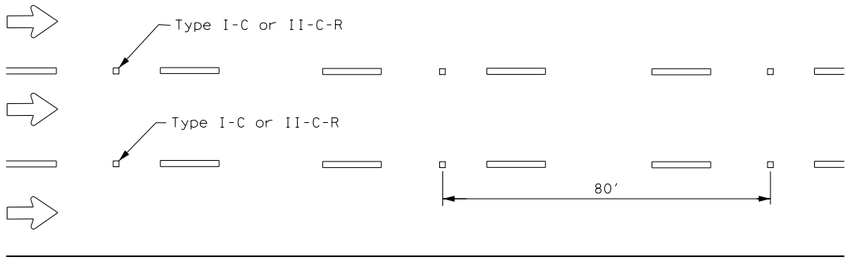
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS



DETAIL "A" DETAIL "B" DETAIL "C"



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



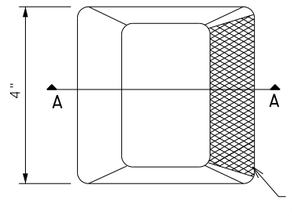
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

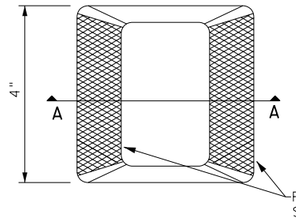
See Note 3.

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

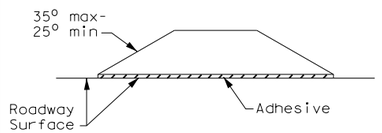
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

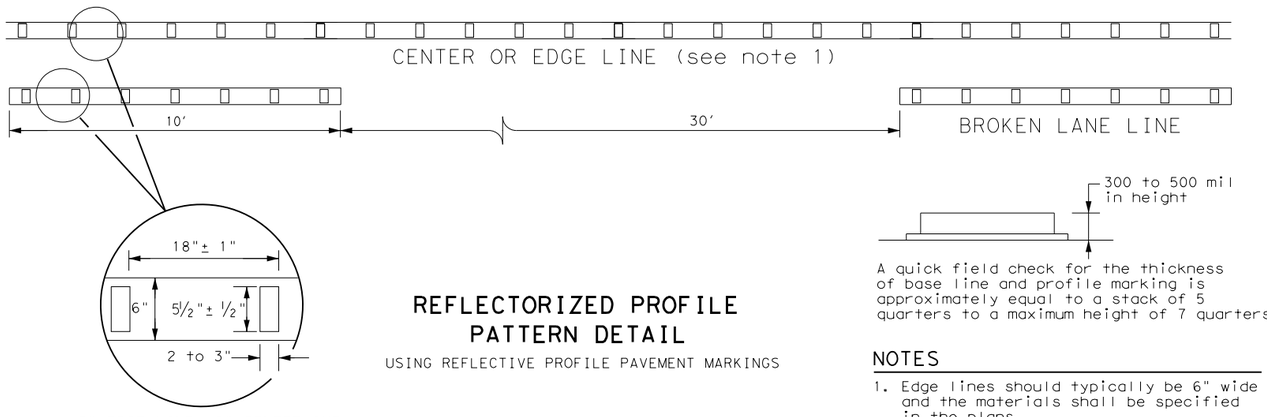


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



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

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

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

NOTES

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

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

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342,ETC.	CS
4-77 8-00 6-20	DIST	COUNTY		SHEET NO.
4-92 2-10 12-22	DAL	DALLAS		101
5-00 2-12				

22B

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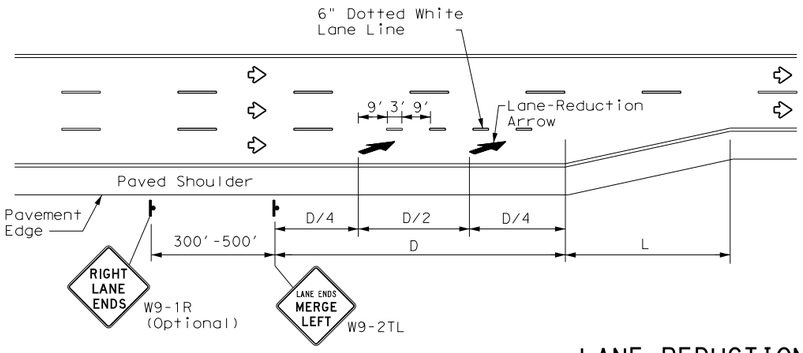
DATE:
FILE:

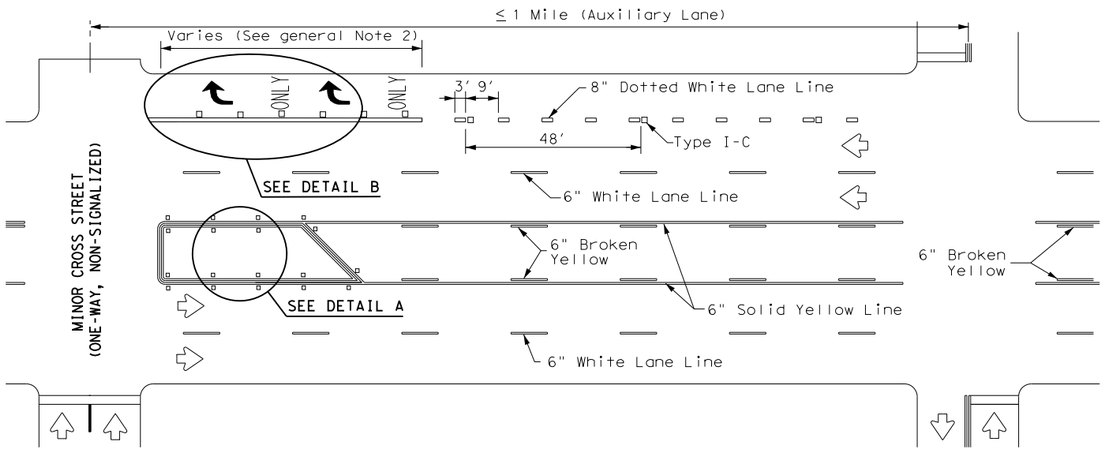


LANE REDUCTION

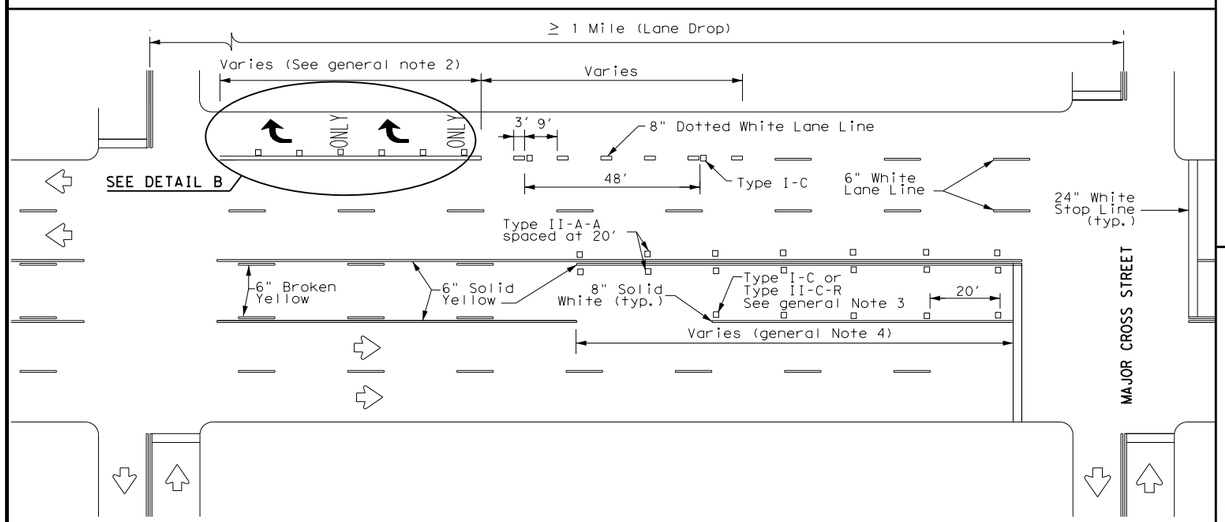
NOTES

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

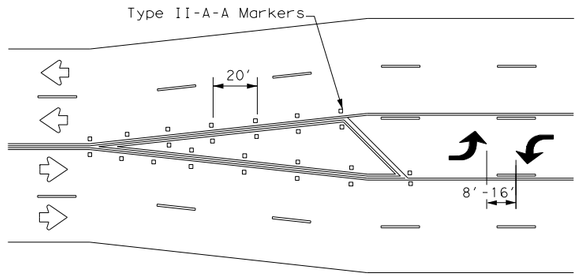
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



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



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



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

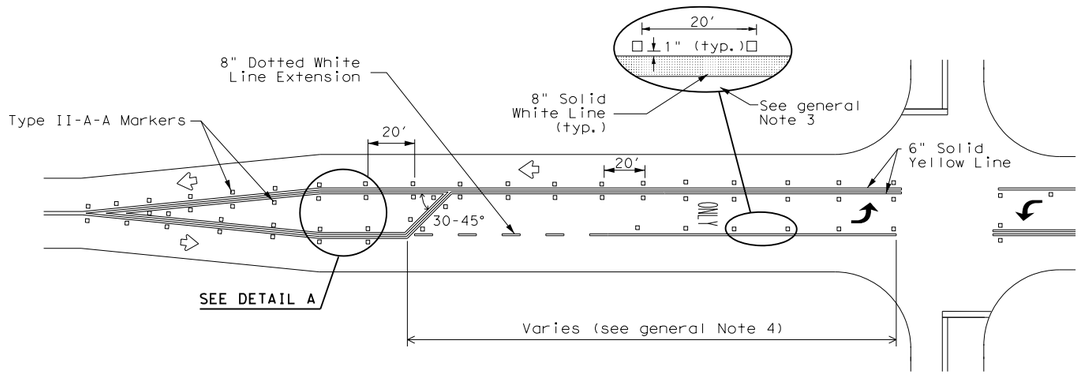
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

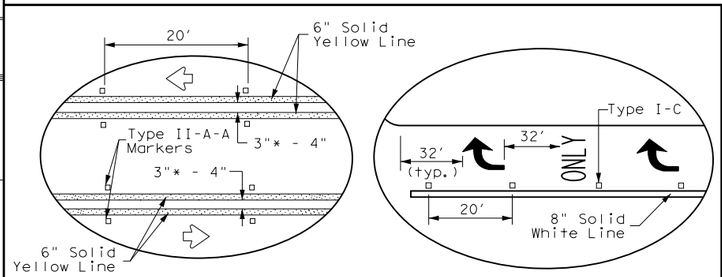
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn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

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

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



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



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

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
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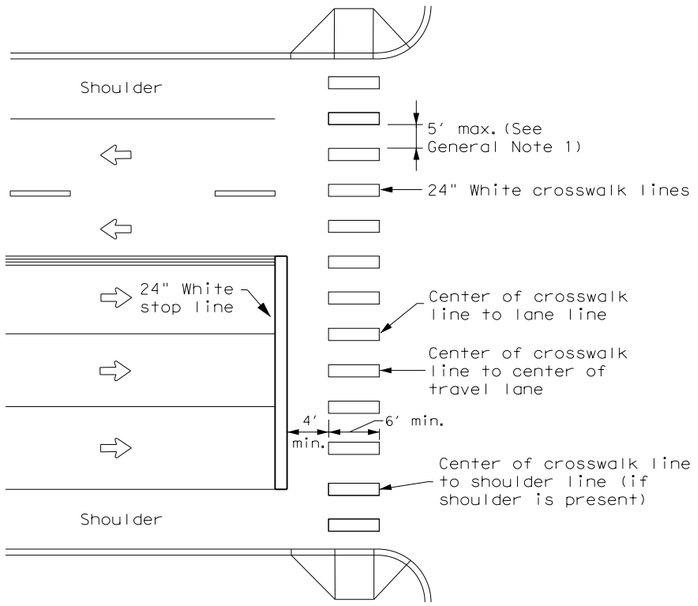
REVISIONS 4-98 3-03 6-20	0918	47	342,ETC.	CS
5-00 2-10 12-22	DIST	COUNTY		SHEET NO.
8-00 2-12	DAL	DALLAS		102

22C

DATE:
FILE:

DATE:
FILE:



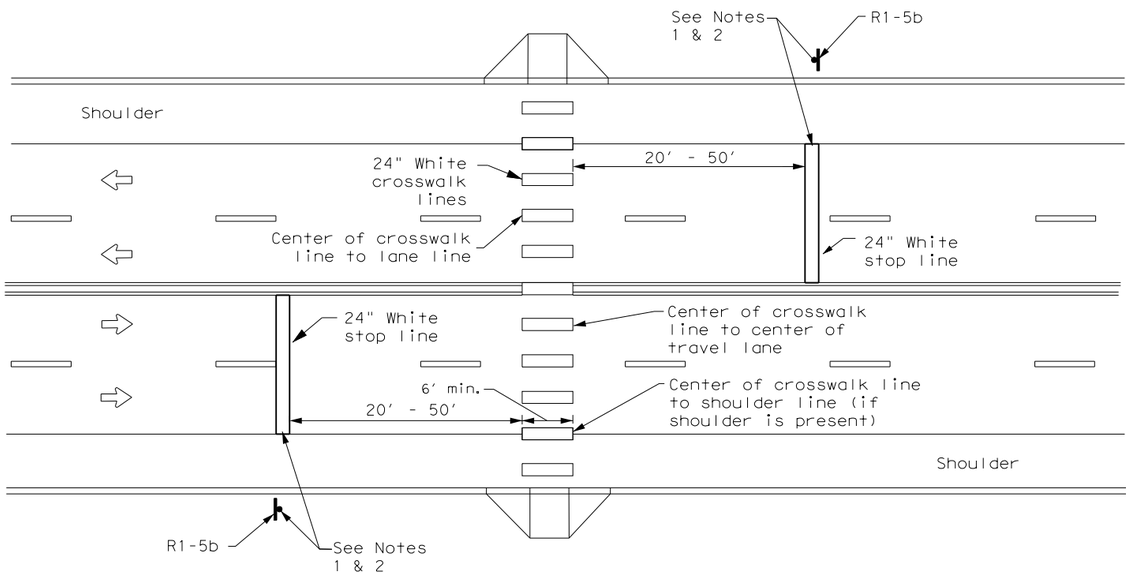
HIGH-VISIBILITY LONGITUDINAL CROSSWALK
AT CONTROLLED APPROACH

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 MIDBLOCK HIGH-VISIBILITY
LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) 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)-22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	342,ETC.	CS
6-20	DIST	COUNTY		SHEET NO.
6-22	DAL	DALLAS		103
12-22				

220

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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)

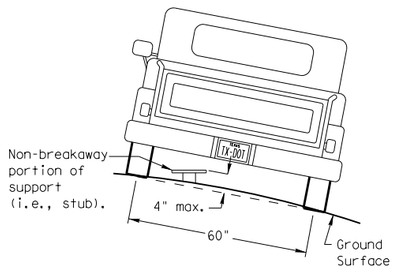
Anchor Type

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

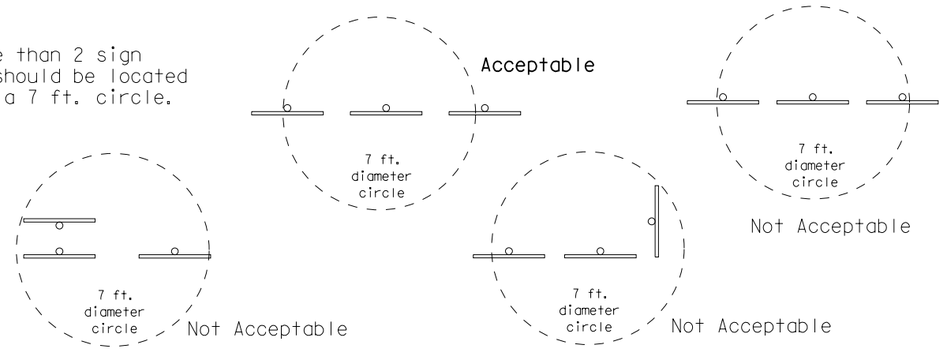
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))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

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



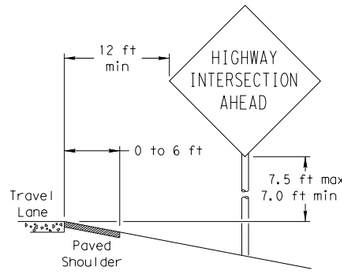
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

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



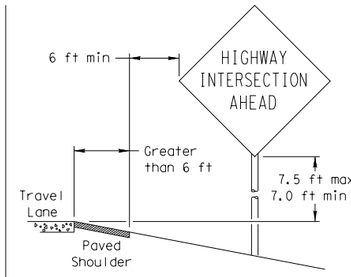
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

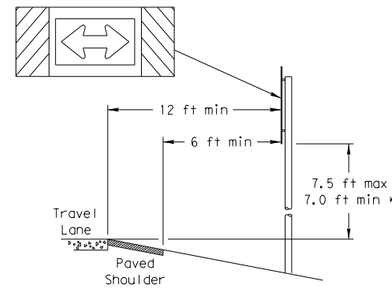
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



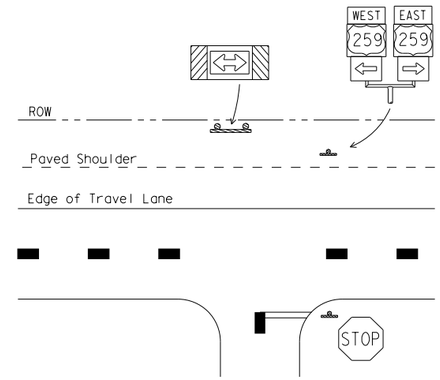
GREATER THAN 6 FT. WIDE

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.

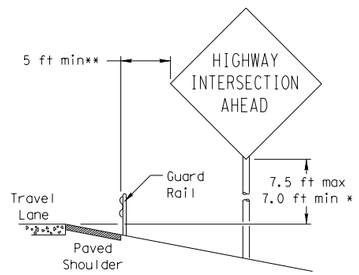
T-INTERSECTION



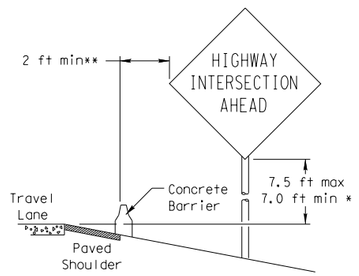
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

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

* 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.

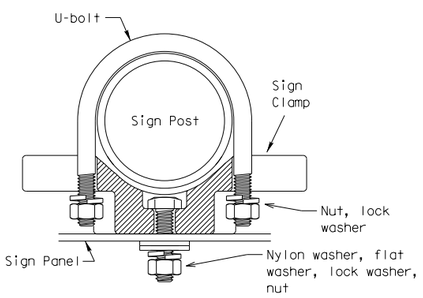
The maximum values may be increased when directed by the Engineer.

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

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

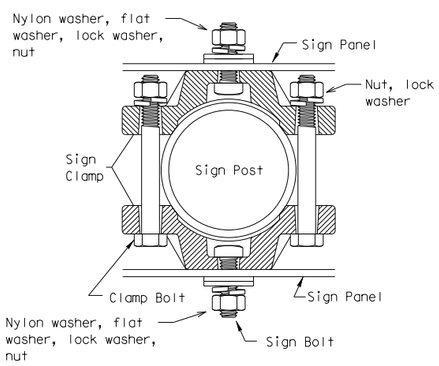


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

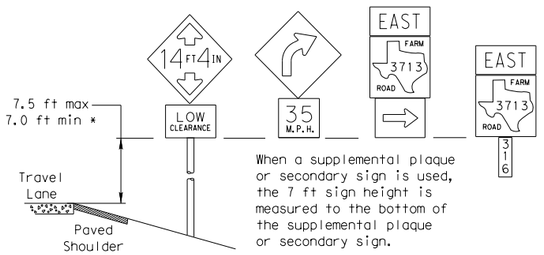
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



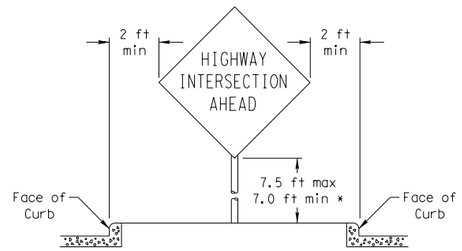
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



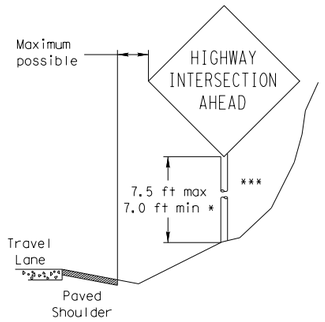
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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.

Texas Department of Transportation
Traffic Operations Division

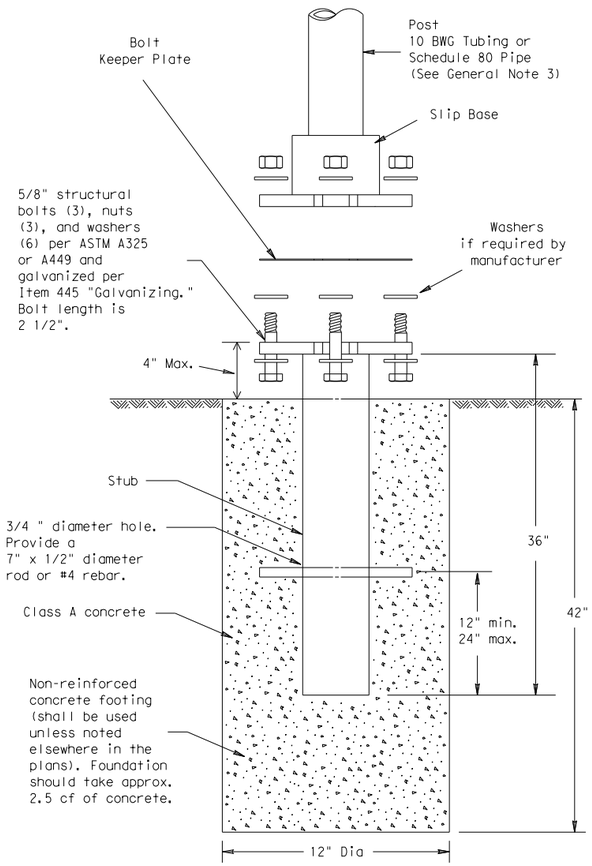
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		104

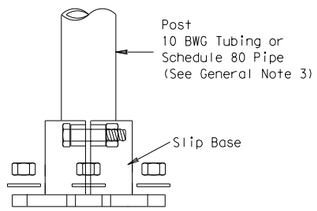
DATE:
FILE:

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS

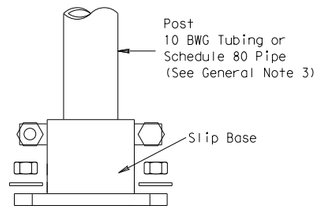


SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

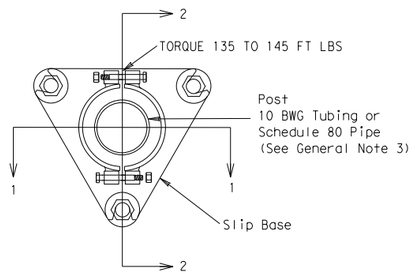
NOTE
The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.



SIDE VIEW 1-1



SIDE VIEW 2-2



TOP VIEW

DETAIL A

GENERAL NOTES:

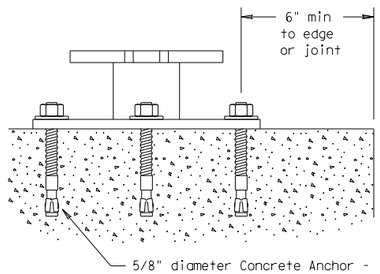
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   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.

ADDED DETAIL A FOR CLAMP BASE
10-2010

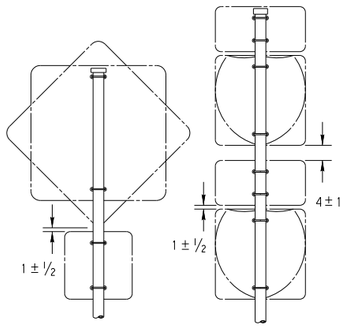
Texas Department of Transportation
Dallas District Standard

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

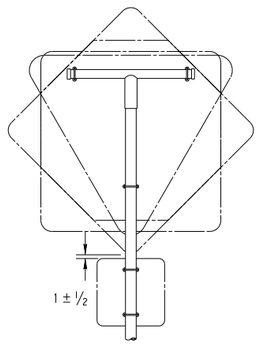
SMD(SLIP-1)-08(DAL)

© TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
12-10 (DISTRICT) ADDED CLAMP BASE DETAIL FOR SLIP BASE INSTALLATION	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		105

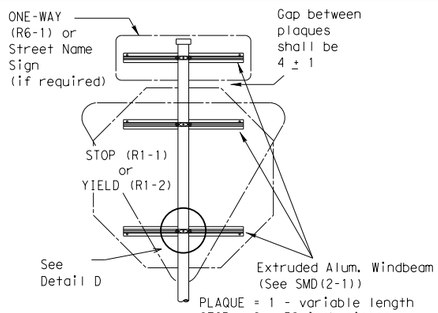
DATE:
FILE:



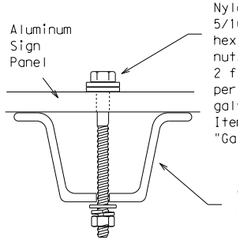
SM RD SGN ASSM TY XXXXX(1)XX(P)



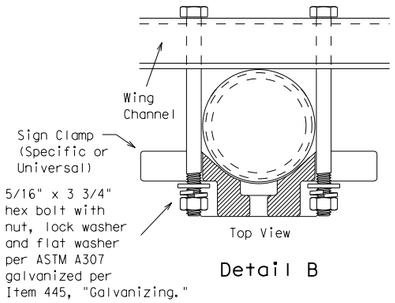
SM RD SGN ASSM TY XXXXX(1)XX(T)



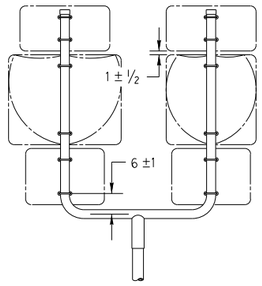
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



Detail A



Detail B



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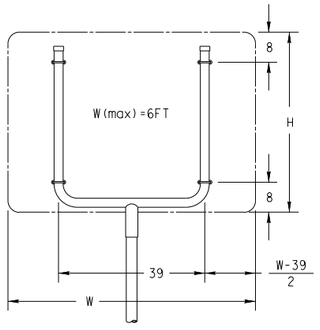

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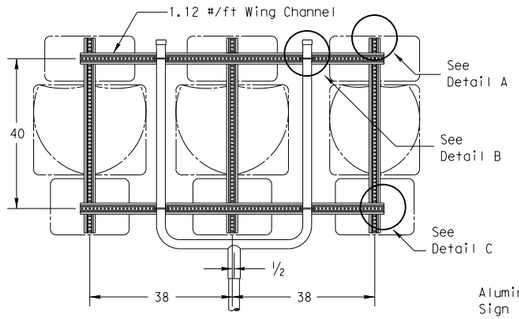
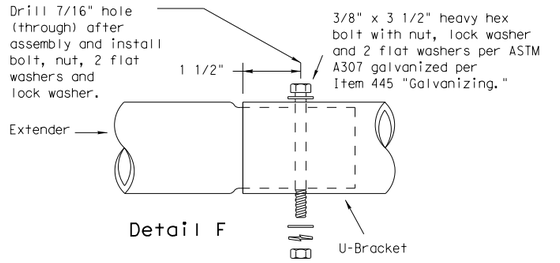
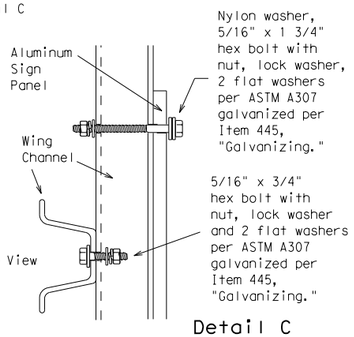


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

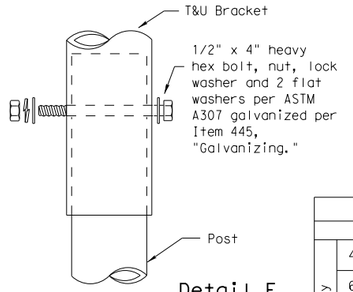


Detail F

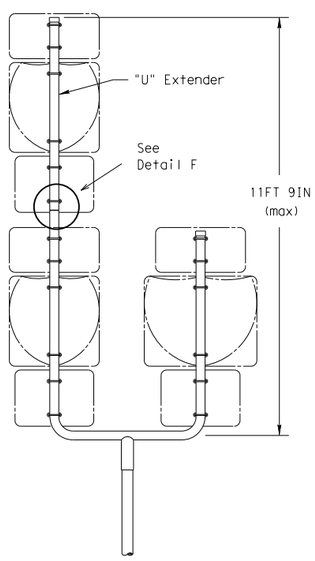
Splices shall only be allowed behind the sign substrate.



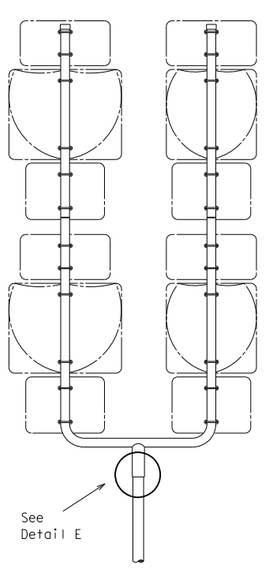
Detail C



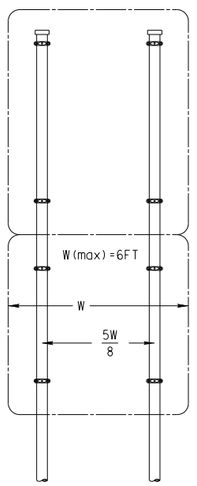
Detail E



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

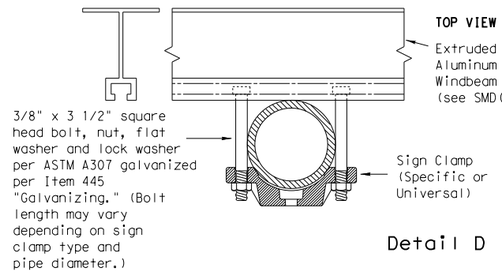


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

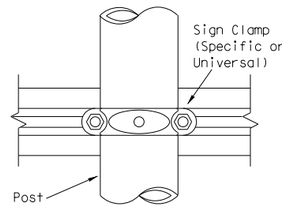


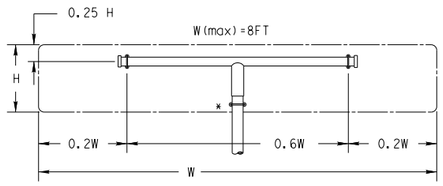
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW



Detail D

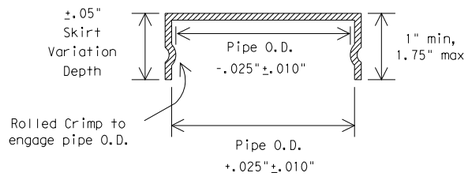




All dimensions are in english
unless detailed otherwise.

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.

GENERAL NOTES:

1.

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

2. 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.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. 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.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. 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.
7. 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.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. 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."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. 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.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

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)

Texas Department of Transportation
Traffic Operations Division

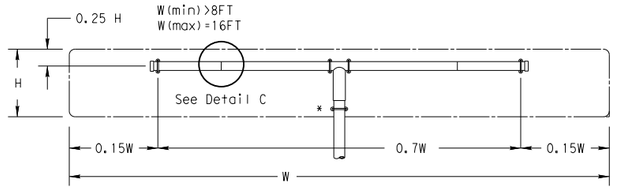
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

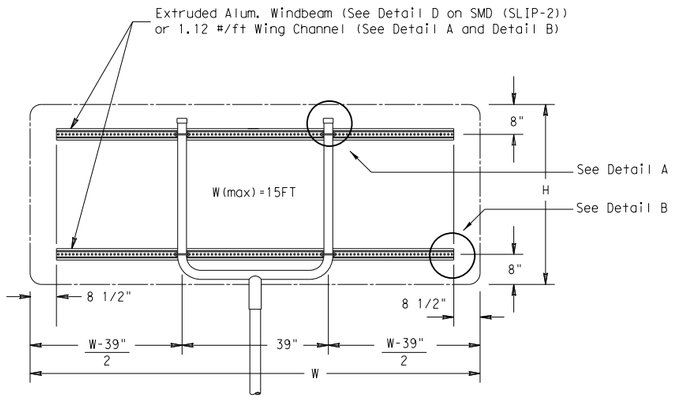
REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		106

DATE:
FILE:

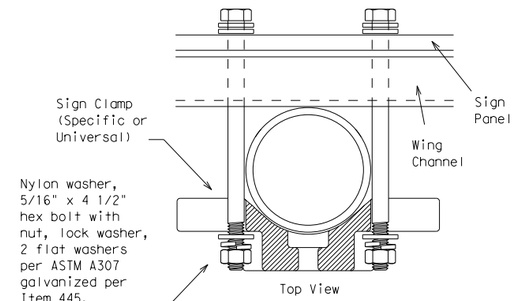


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)

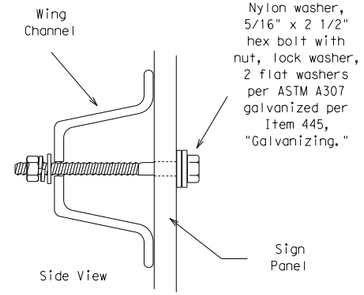
(* - See Note 12)



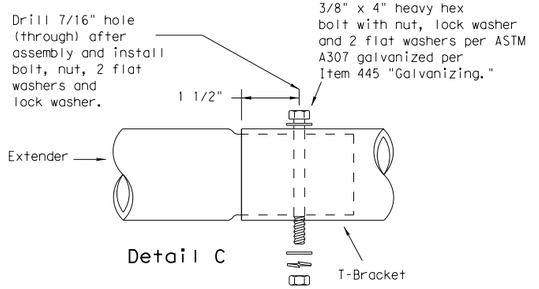
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



Detail A

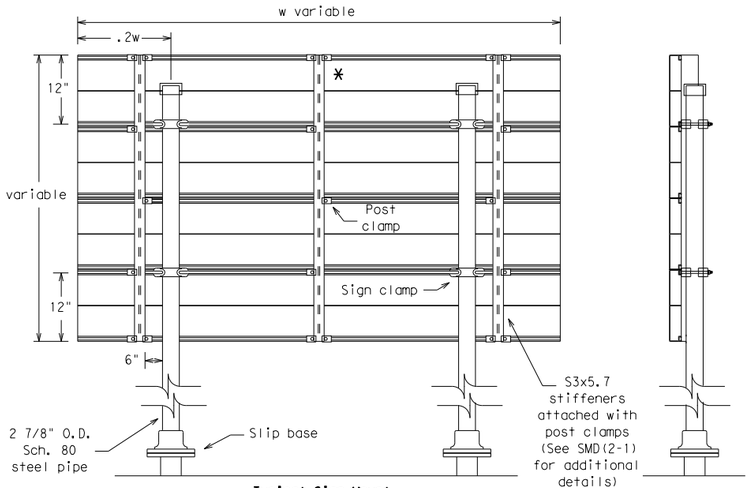


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

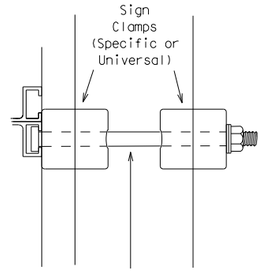


Typical Sign Mount

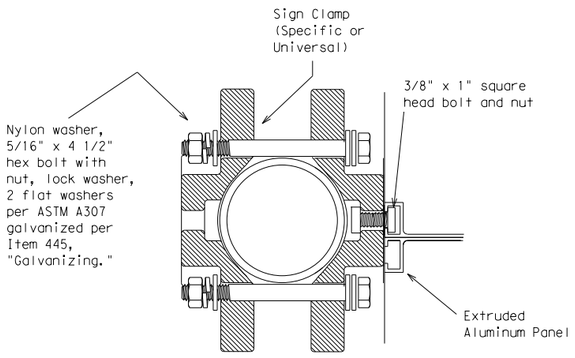
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

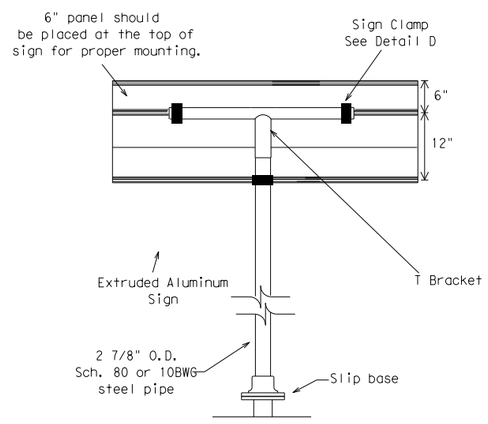
See Detail E
for clamp installation



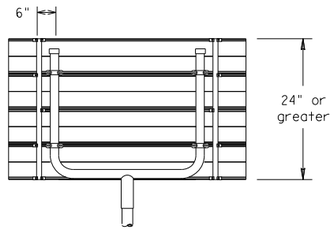
Detail E



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

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. Sign blanks shall be the sizes and shapes shown on the plans.
10. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with Friction Caps.

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)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
9-08

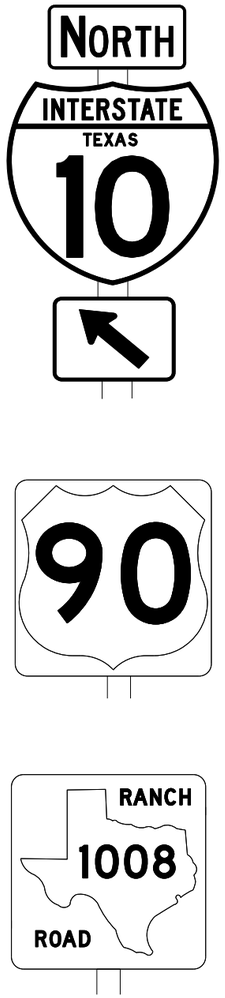
CONT	SECT	JOB	HIGHWAY
0918	47	342,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		107

DATE:
FILE:

DATE:
FILE:

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

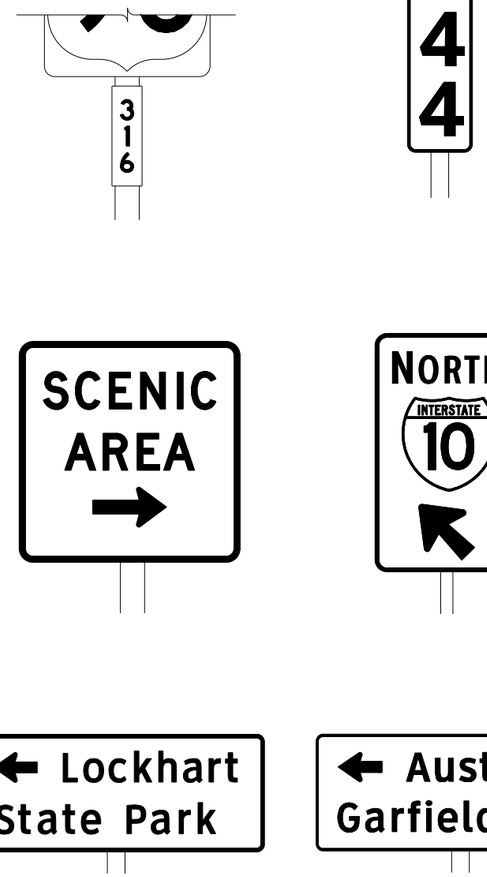
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).

2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).

4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.

5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.

6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

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

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

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

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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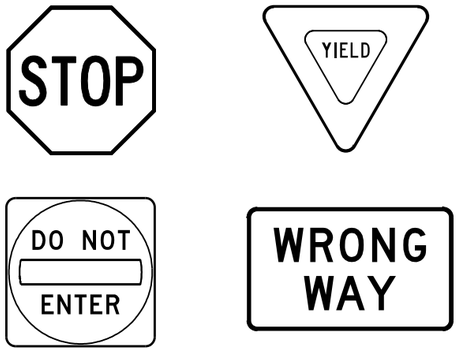
9-08	DAL	DALLAS		108

3

DATE:
FILE:

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

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

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

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

GENERAL NOTES

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

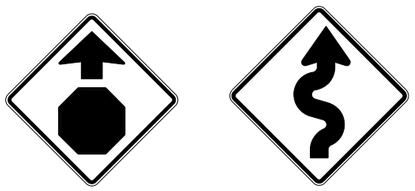
ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

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

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

http://www.txdot.gov/

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

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

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

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

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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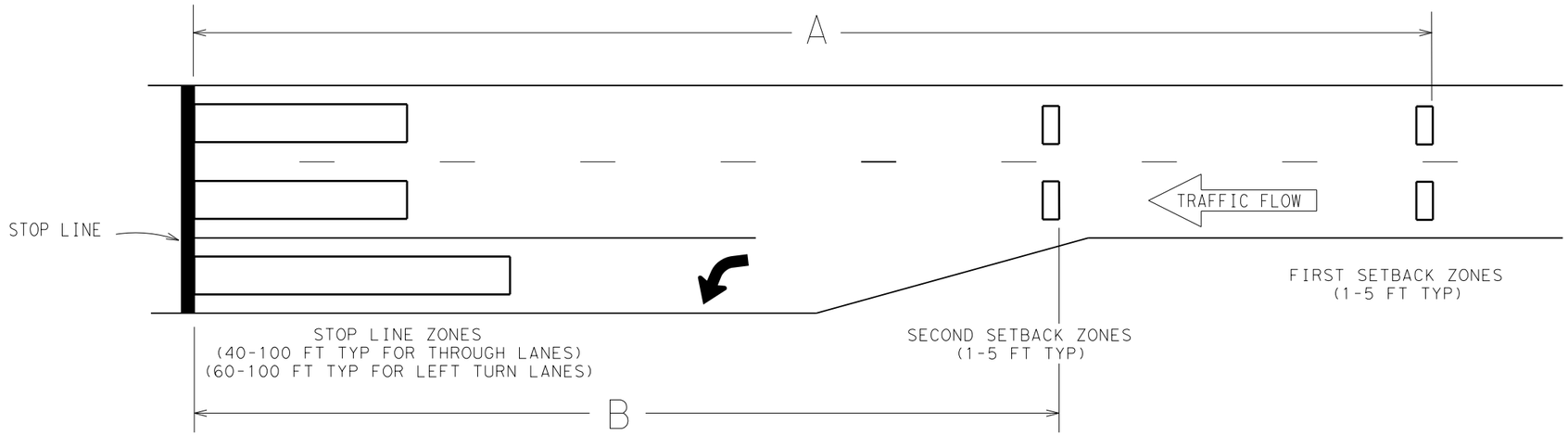
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	DAL	DALLAS		109

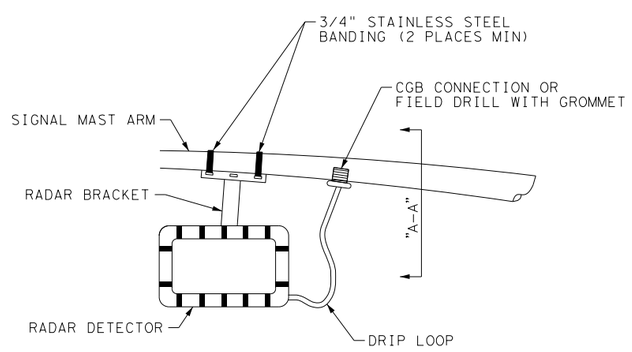
4

RADAR DETECTION ZONE LOCATIONS

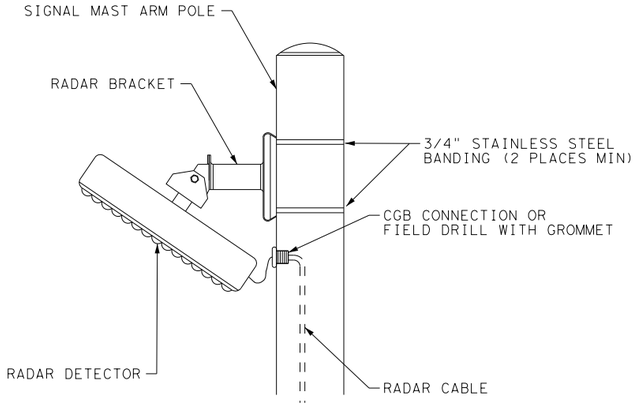


APPROACH SPEED LIMIT (MPH)	DISTANCE A (FT)	DISTANCE B (FT)	MINIMUM RANGE OF DETECTION (LF)
45	360	245	400
50	405	300	440
55	445	325	490
60	485	355	530
65	525	380	575
70	565	410	620

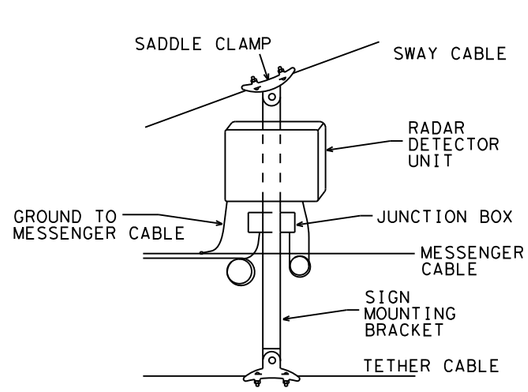
RADAR DETECTION INSTALLATION DETAILS



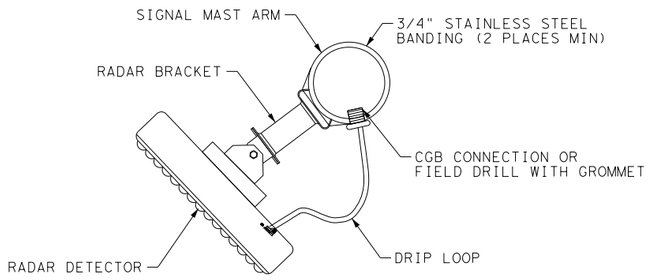
MAST ARM MOUNT



POLE MOUNT



SPAN WIRE MOUNT FOR ADVANCE RADAR



SECTION "A-A"

NOTES:

1. THE RADAR SENSOR MOUNTING BRACKET MUST BE ADJUSTABLE TO TILT UP, DOWN, LEFT, RIGHT, AND TO ROTATE.

2. THE RADAR DETECTOR UNITS SHOWN ARE NOT INTENDED TO REPRESENT ANY SPECIFIC BRAND OR PRODUCT, AND ALTERNATE MOUNTING METHODS MAY BE SUBMITTED FOR APPROVAL.

DALLAS DISTRICT STANDARD

Texas Department of Transportation

Dallas District

RADAR VEHICLE DETECTION SYSTEM
RVDS-18 (DAL)

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	6	(SEE TITLE SHEET)		CS
	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	DAL	DALLAS	110
	CONTROL	SECTION	JOB	
	0918	47	342,ETC.	

DATE:
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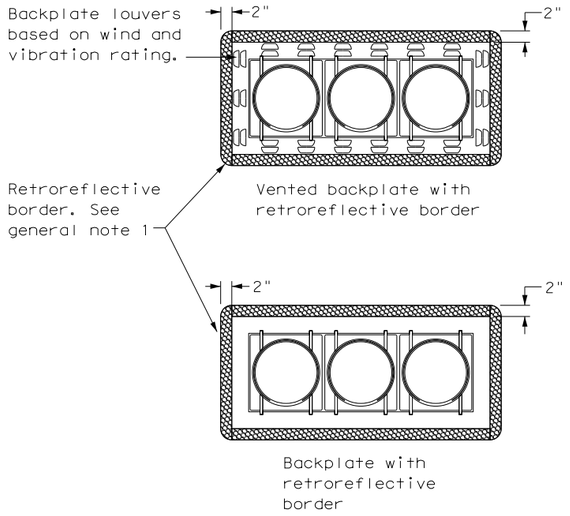
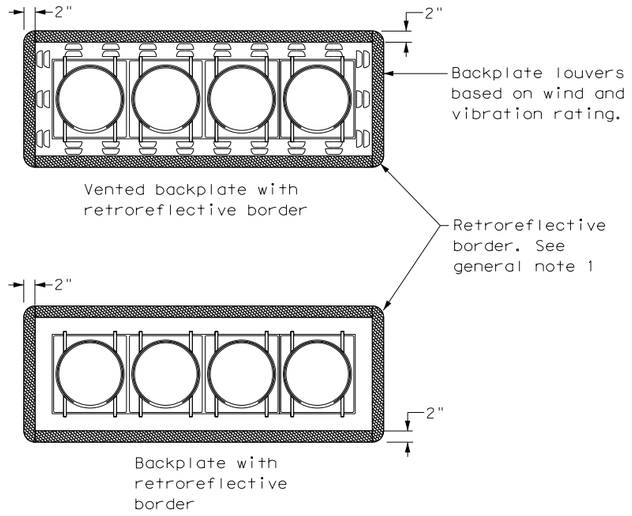
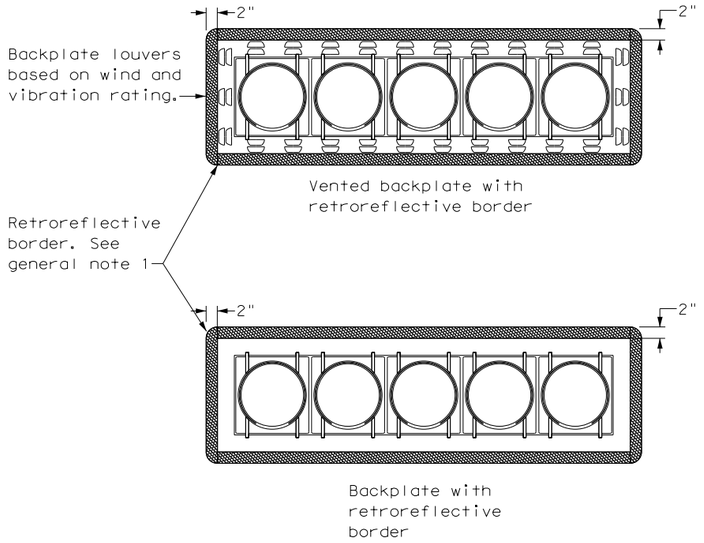


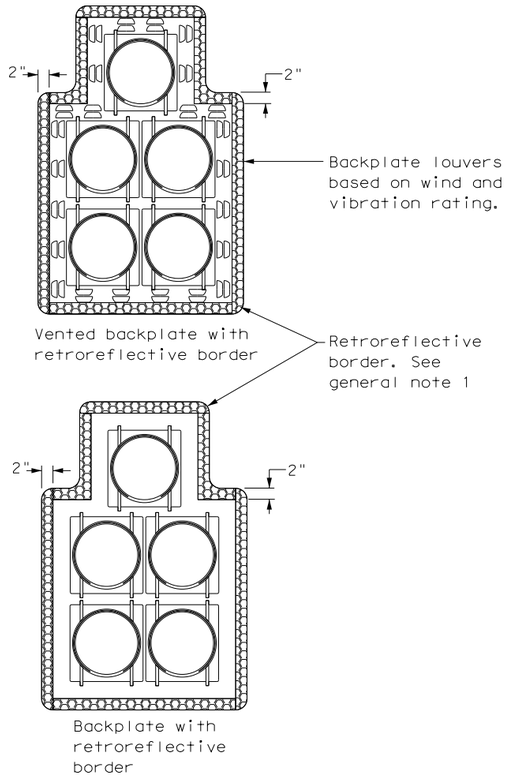
THREE-SECTION HEAD
HORIZONTAL OR VERTICAL



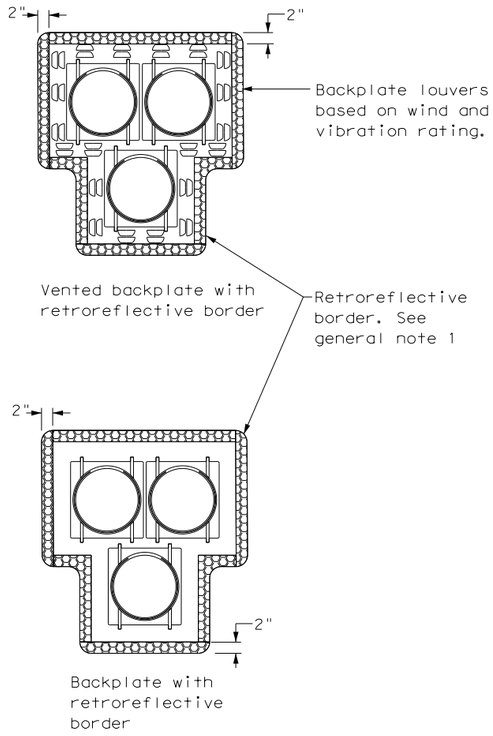
FOUR-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
CLUSTER



PEDESTRIAN HYBRID
BEACON

GENERAL NOTES:

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

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC SIGNAL HEAD WITH BACKPLATE

TS-BP-20

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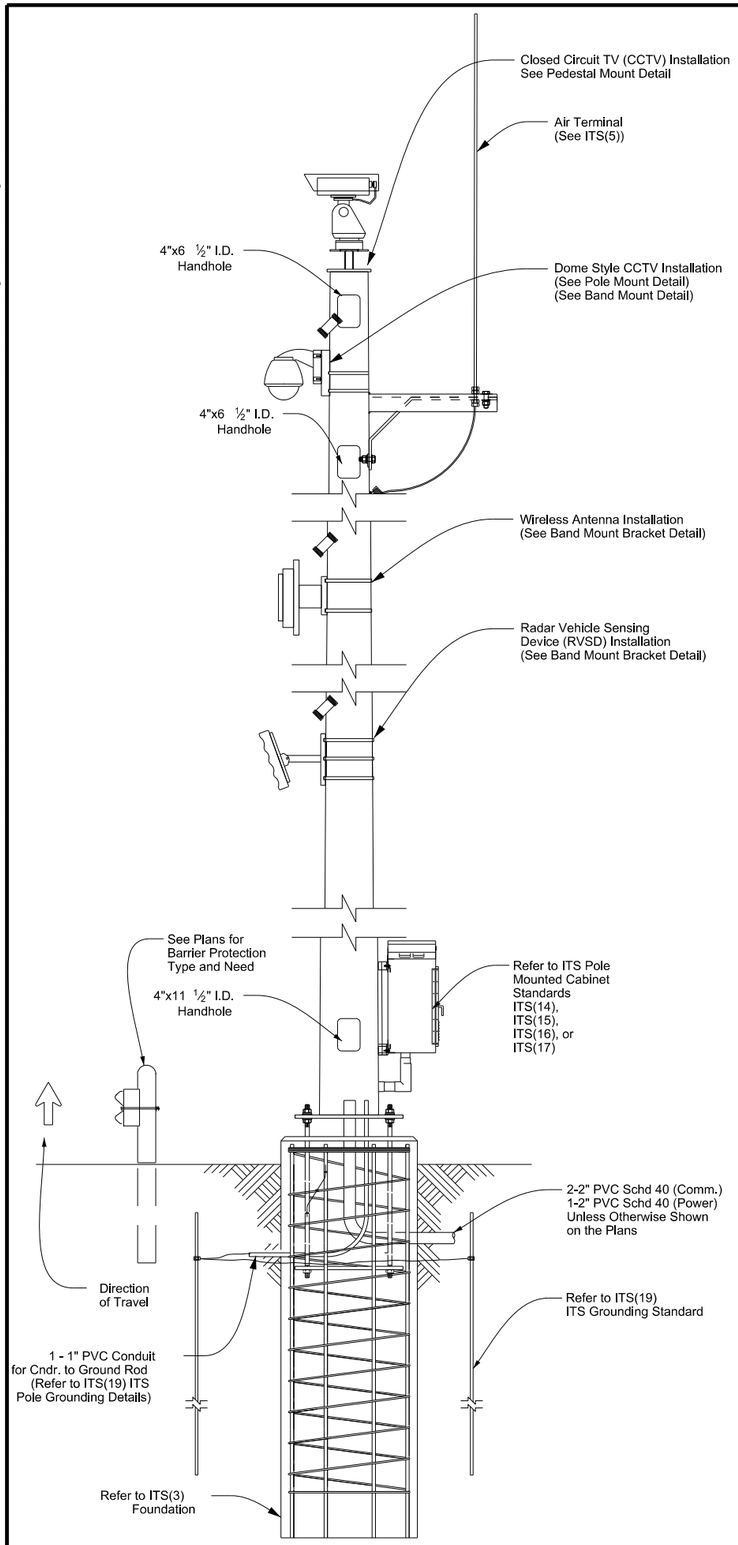
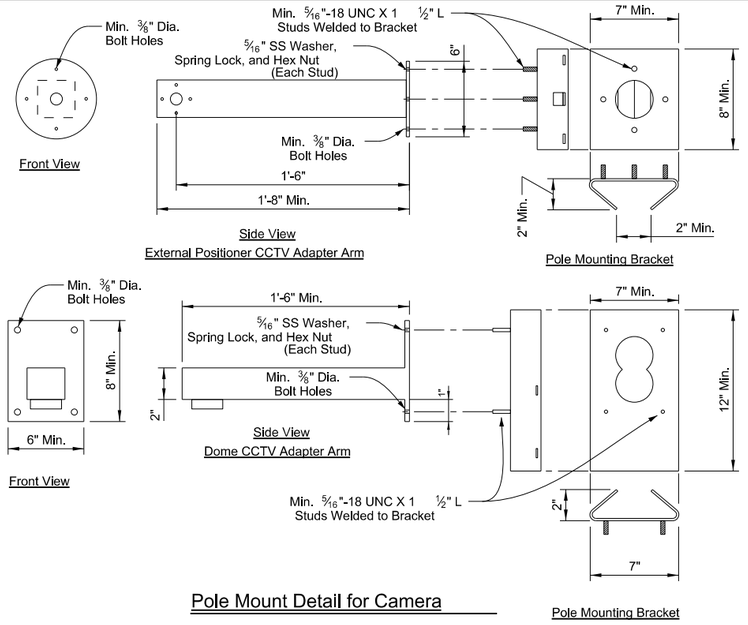
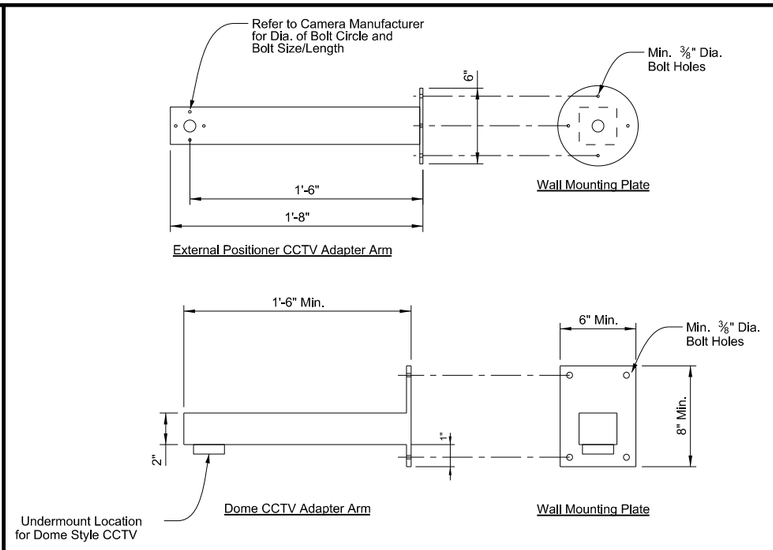


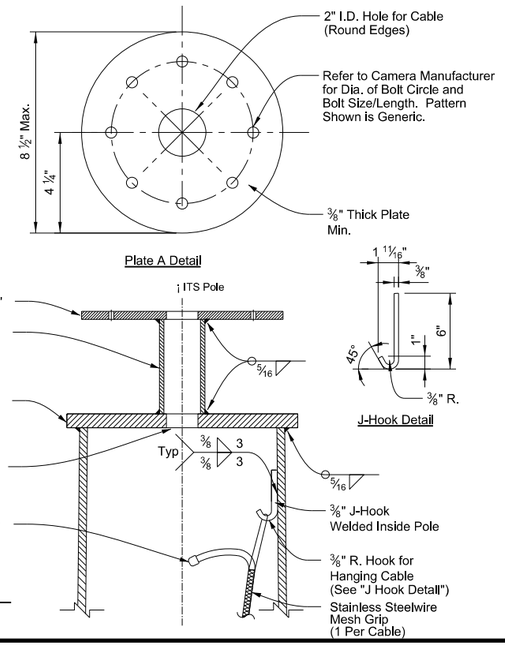
ITS Pole with Cabinet



Pole Mount Detail for Camera

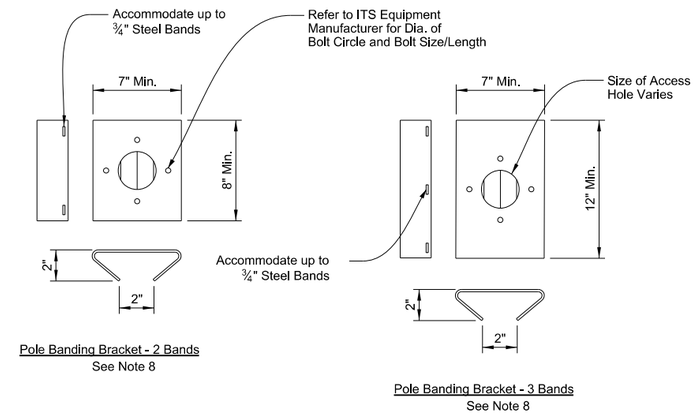


Wall Mount Detail



Pedestal Mount

Pole Top Detail



Band Mount Bracket Details

General Notes:

1. Designed according to Sixth Edition AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications.
2. Hang all cabling inside ITS pole structure with stainless steel wire mesh grips.
3. Bolt positioning in the pedestal top plate (Plate "A") for the pan/tilt base must be determined in the field per camera manufacturers recommendations. This will allow positioning of the camera to maximize coverage area. The Engineer will determine the camera's blind zone at each location.
4. Provide pedestal top plate and Plate "A" that conform to ASTM A36.
5. Make all welds conform to Item 441 and AWSD 1.1 (Structural Welding). Repair damaged galvanized coating per Item 445, "Galvanizing."
6. Galvanize parts in accordance with Item 445, "Galvanizing" unless otherwise noted.
7. The type of ITS equipment shown to be mounted to the ITS pole is intended to represent the most common ITS equipment applications and should not be treated as all inclusive. Other ITS equipment applications may exist that are project specific.
8. Mounting brackets are intended to be diagrammatic and for information only, and are not all inclusive. Contractor responsible for submitting mounting bracket design for approval by the Engineer prior to fabrication. Mounting bracket designed to support a maximum 35 Lbs. Off-the-shelf mounting brackets are acceptable and shall be submitted by shop drawing for approval.
9. Mounting heights to be determined in the field based on manufacturer recommendations.

Texas Department of Transportation

Traffic Operations Division Standard

ITS POLE EQUIPMENT MOUNTING DETAILS

ITS(6)-15

FILE: its(6)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	DAL	DALLAS		112

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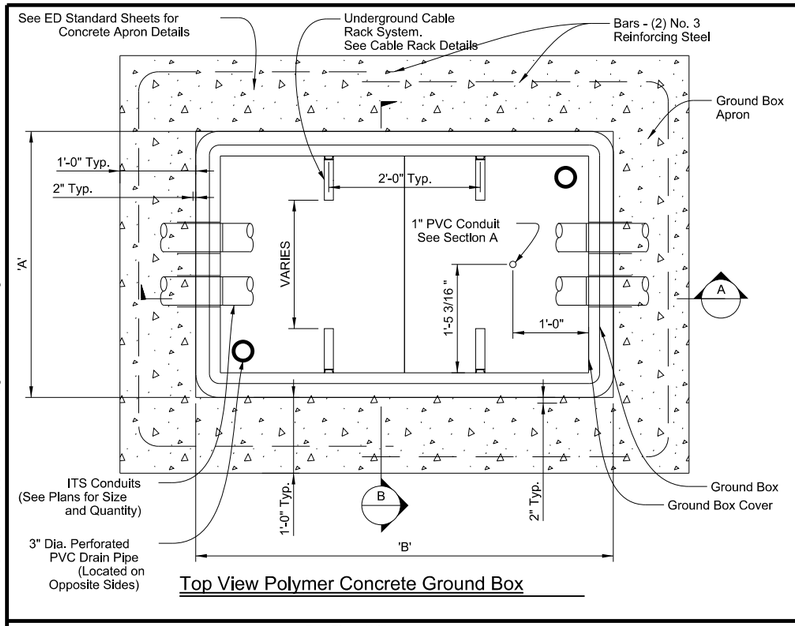
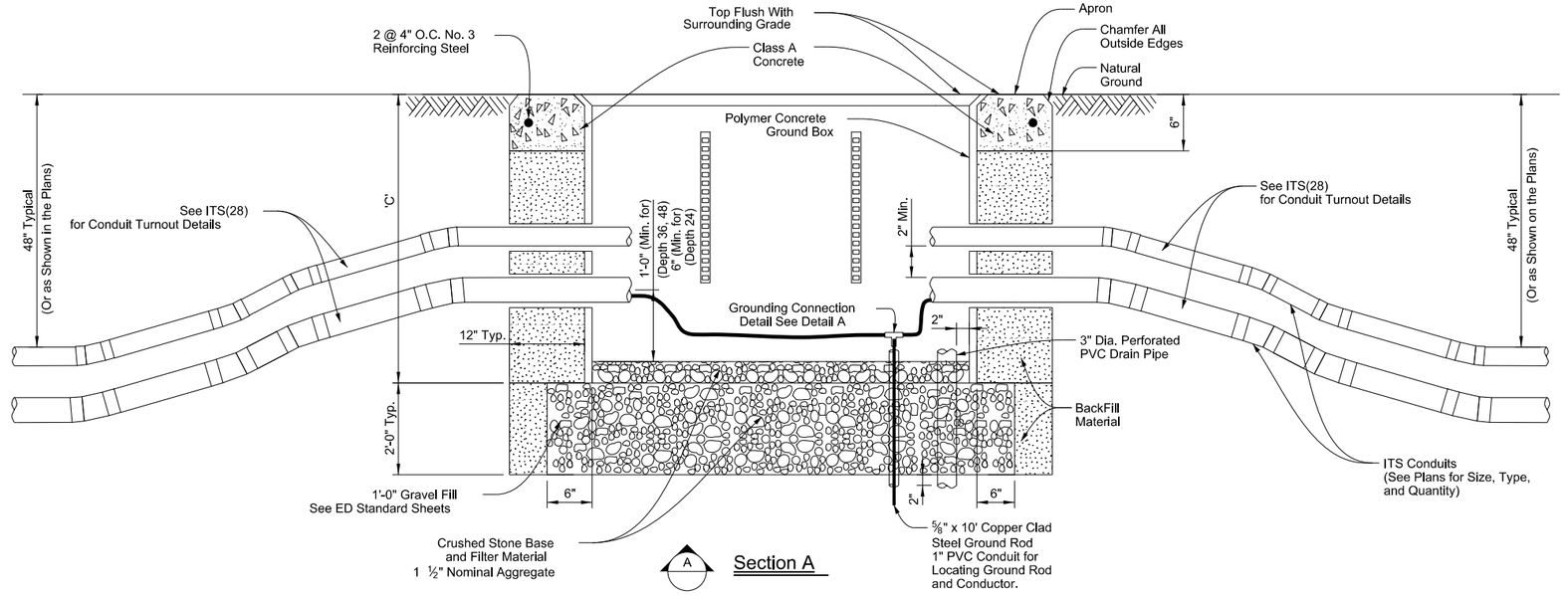
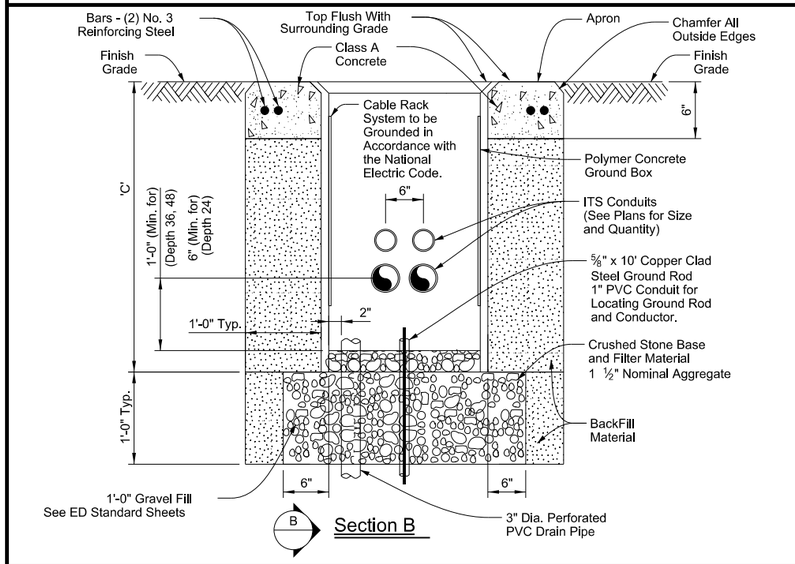


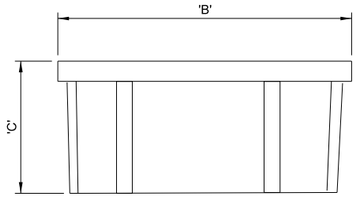
Top View Polymer Concrete Ground Box



Section A



Section B

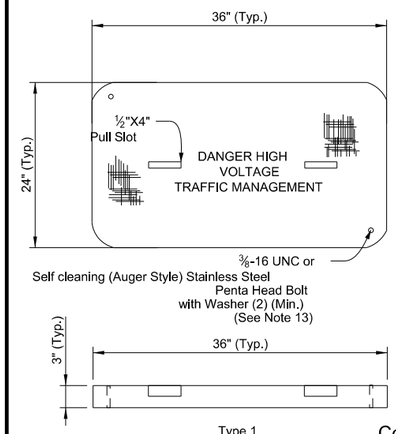


Ground Box Schedule

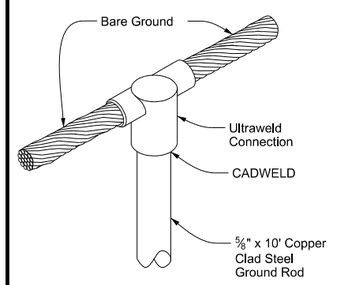
Ground Box Type	'A' * Width (Outside) (Inches)	'B' * Length (Outside) (Inches)	'C' Depth (Outside) (Inches)	Size #3 Bars (Apron)	
				Length	Weight
Type 1	26	38	24, 36, 48	24'-0"	9.12
Type 2	40	63	24, 36, 48	32'-8"	12.45

* - Tolerance of +/- 1.5"

Side View
Typical Ground Box



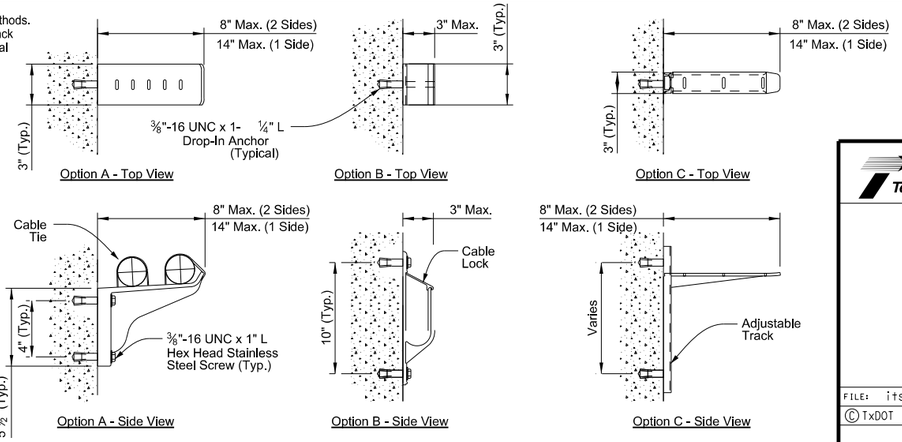
Cover
Top View and Side View



Note - All grounding connections to be CADWELD or approved equal. This work will not be paid for directly, but is considered incidental to ITS ground box.

Detail A
Grounding Connection Detail

Note:
Options Shown for Cable Racks and Attachment Methods. Furnish Shop Drawings of Cable Rack and Cable Rack Grounding System (If Applicable) for Engineer Approval Prior to Installation.



Cable Rack Details

General Notes:

1. Conduit shown is for example only. Additional conduits may be required as shown on the plans.
2. Provide polymer concrete ground box and cover.
3. Provide Type "2" ground boxes when splice enclosure is required, as shown on the plans.
4. Terminate conduits through the side of the ground box.
5. Provide terminators for conduits cast in the walls and placed symmetrically about the centerline of the box at the depths shown, unless otherwise noted, for the number of conduits identified on the plans to enter the box.
6. Provide terminators appropriately sized for the conduits indicated on the plans. Provide terminators with an air tight and water tight connection.
7. Provide ground box with open bottom. Provide two 3" Dia. perforated PVC drain pipes on opposite corners and extend 2" below bottom of gravel bed to optimize water drainage.
8. Install ground box on a 12-inch base of crushed stone which extends 6 inches in all directions from the perimeter of the box. Crushed stone will be subsidiary to special specification, "ITS Ground Box."
9. When additional conduit entry points are needed to accommodate existing conduit, core drill conduit knockouts in the field of the appropriate number and size of conduit at each location, as directed by the Engineer.
10. Provide a bell fitting on the end of each conduit to ensure a flush fit inside the ground box.
11. Concrete grout around the knockout (inside and out) and around the conduit and bell fitting to ensure a neat watertight fit after the conduit and bell fitting have been placed in a knockout. Ensure all openings in the ground box are sealed prior to grouting operations.
12. Label top of cover with the words "DANGER HIGH VOLTAGE TRAFFIC MANAGEMENT."
13. Equip all covers with a bolting system that will positively secure the cover in place.
14. Backfill in accordance with Item 400, "Excavation and Backfill for Structures."
15. Provide p
16. Provide steel (ASTM A-153), glass reinforced nylon, or equivalent cable rack assemblies designed to support the amount of cable storage slack and splice enclosures identified in the plans. Locate cable rack system on any side but allow for sufficient access to the inside of the ground box. Cable racks may be installed at the factory or in the field. When mounting cable racks in the field, seal all penetrations to the side wall to prevent moisture penetration. Ground metallic cable rack systems to grounding system inside ground box in accordance with the National Electrical Code.

Sheet Details
Not to Scale

Texas Department of Transportation

Traffic Operations Division Standard

ITS GROUND BOX POLYMER CONCRETE

ITS(41)-16

FILE: its(41)-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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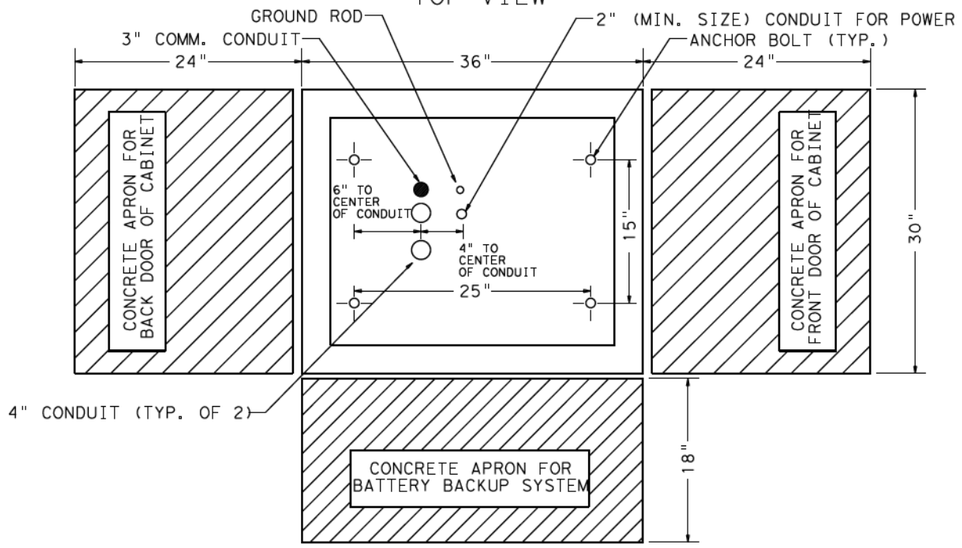
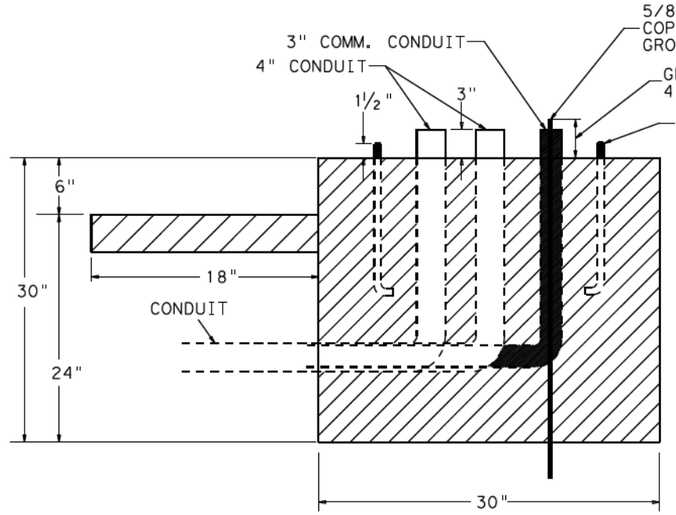
REVISIONS	0918	47	342,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		113

BASE MOUNTED CONTROLLER CABINET FOUNDATION DETAILS

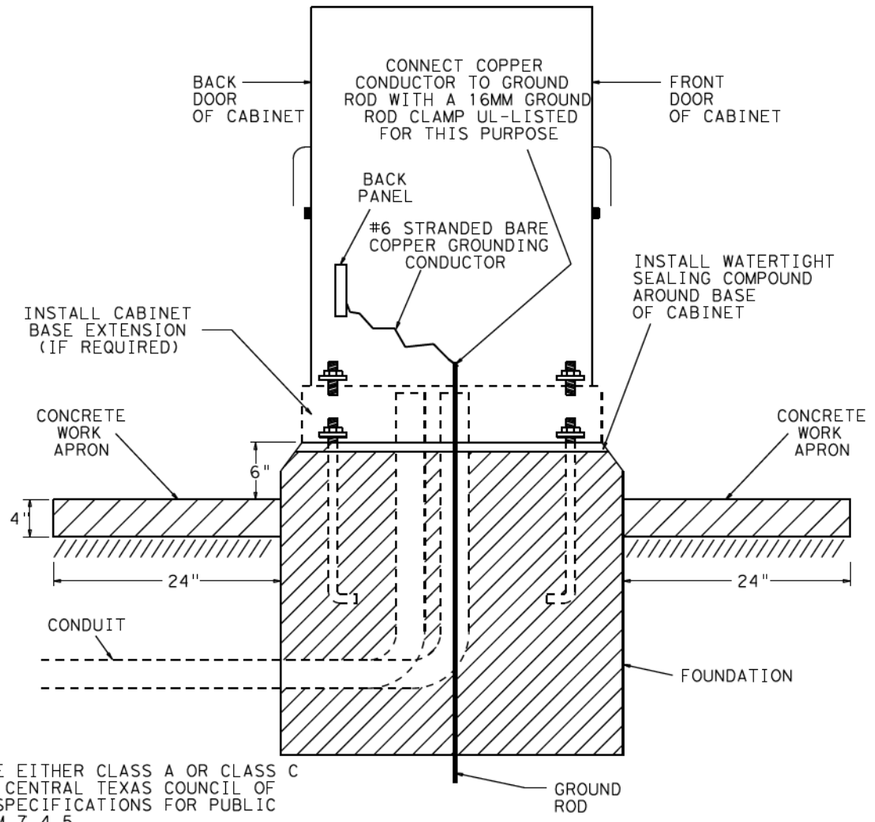
(FOR TYPE 332, 352i CONTROLLER CABINETS)

TOP VIEW





FRONT VIEW



SIDE VIEW

NOTES:

1) ALL CONCRETE SHALL BE EITHER CLASS A OR CLASS C AS DEFINED IN THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS' "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" ITEM 7.4.5

2) ADDITIONAL GROUND RODS MAY BE NEEDED TO ACHIEVE LESS THAN 5 OHMS RESISTANCE TO GROUND.

3) THE FRONT SIDE OF THE TRAFFIC SIGNAL CONTROLLER CABINET SHALL BE ORIENTED SUCH THAT THE INTERSECTION MAY BE SEEN WHEN VIEWING THE CONTROLLER FRONT PANEL.

4) IF THE PLANS TO NOT INDICATE SPACING OF THE CABINET FROM THE CURB, PROVIDE FOR A 48" MINIMUM CLEARANCE FROM CURB.

5) LOCATION OF THE CONCRETE APRON FOR THE BATTERY BACKUP SYSTEM MAY NEED TO BE ADJUSTED BASED ON CLEARANCE FROM THE CURB AND AVAILABLE RIGHT-OF-WAY.

VERSION 1.3

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

CITY OF DALLAS
2022 TRAFFIC SIGNAL CONSTRUCTION DESIGN SPECIFICATIONS

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

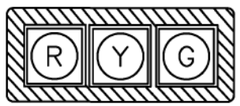
TRAFFIC SAFETY IMPROVEMENTS

CITY OF DALLAS
EXHIBIT B

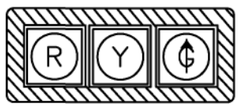
TRAFFIC SIGNAL
CABINET FOUNDATION DETAIL

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	114
CHECK	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

TRAFFIC SIGNAL HEAD IDENTIFICATION CHART



H3



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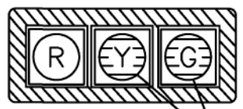
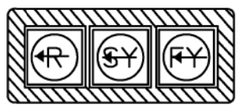


H3L

LOUVER INSTALLED WITH BLADES HORIZONTAL



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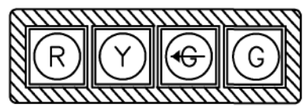
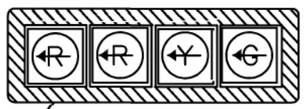
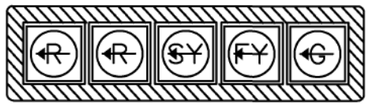


H4S

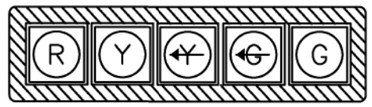


5" BACKPLATE

H4LT



H5FYA



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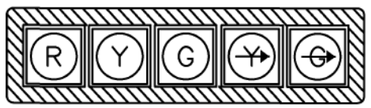
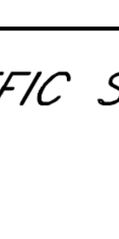


H5RT

V3

V3U

V3L



V3FYA

V4LT

V4RT

V4S

V5LT

V5FYA

V5RT

COUNTDOWN PEDESTRIAN SIGNAL HEADS

HAWK

NOTE: ALL SIGNAL HEAD LENSES SHALL BE 12" IN DIAMETER.

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS

2018 TRAFFIC SIGNAL
CONSTRUCTION SPECIFICATION

EXHIBIT D

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
® 2022

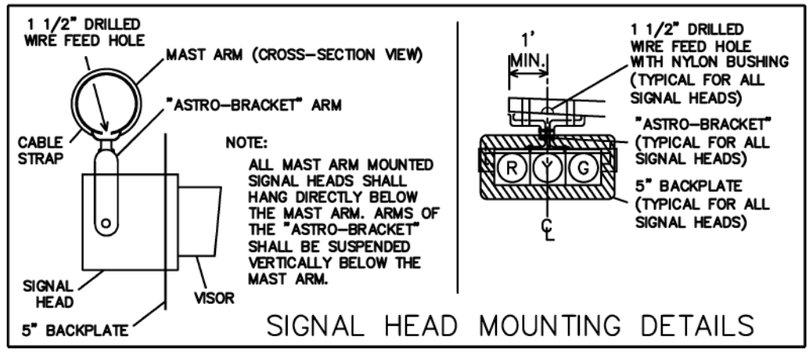
TRAFFIC SAFETY IMPROVEMENTS

CITY OF DALLAS
EXHIBIT D

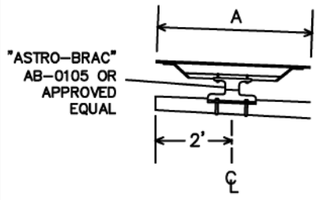
TRAFFIC SIGNAL
HEAD IDENTIFICATION

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	115
CHECK	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

DETAILS FOR MOUNTING SIGNAL AND SIGN HARDWARE ON MAST ARMS

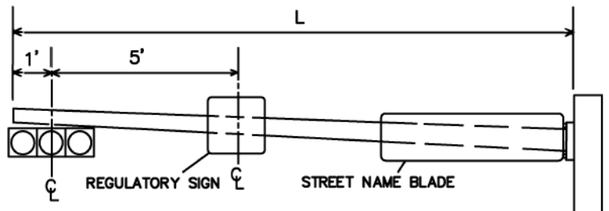


SIGNAL HEAD MOUNTING DETAILS

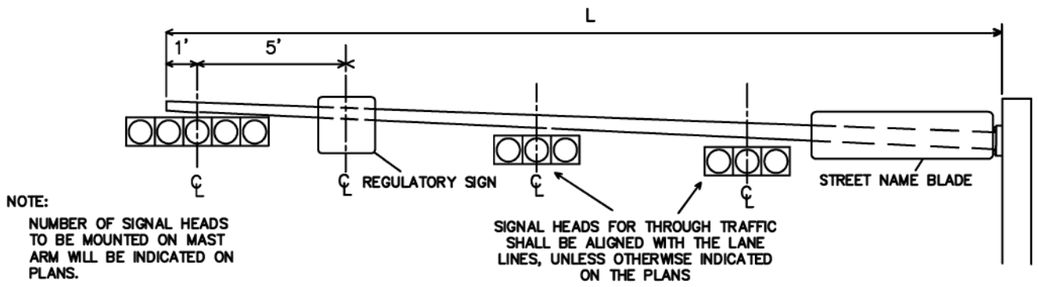


DIMENSION "A"	
MAST ARM UP TO 48 FT.	48"
MAST ARM OVER 48 FT.	66"

DAMPENING PLATE MOUNTING DETAILS



TYPICAL SIGNAL HEAD AND SIGN SPACING FOR MAST ARMS LESS THAN 24 FT. IN LENGTH (L = 15 FT. THROUGH 20 FT.)



TYPICAL SIGNAL HEAD AND SIGN SPACING FOR MAST ARMS 24 FT. AND LONGER (L = 24 FT. THROUGH 65 FT.)

1. ALL WIRE FEED HOLES SHALL BE DRILLED IN THE FIELD BY THE VENDOR. TORCHING WILL NOT BE PERMITTED. DRILLED HOLES SHALL BE TOUCHED UP WITH ONE COAT OF COLD GALVANIZING COMPOUND, ALLOWING ADEQUATE DRYING TIME BEFORE MOUNTING ANY SIGNAL OR SIGN HARDWARE.
2. SIGNAL AND SIGN HARDWARE SHALL BE MOUNTED AT THE LOCATIONS SHOWN ON THE DIAGRAMS ABOVE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.
3. IF THE VEHICLE SIGNAL HEAD IS SKEWED WITH RESPECT TO THE MAST ARM, THE VENDOR MAYBE REQUIRED TO PROVIDE EXTENDED (12") "ASTRO-BRACKET" ARMS SO THAT THE BACKPLATE CLEARS THE MAST ARM.
4. 1 1/2" DIAMETER HOLES SHALL BE DRILLED ON THE BOTTOM FACE OF NEW GALVANIZED MAST ARMS WHEN MOUNTING HORIZONTAL SIGNAL HEADS. (WHEN MOUNTING VERTICAL SIGNAL HEADS ON THE MAST ARM, THE HOLES SHALL BE DRILLED ON THE FRONT FACE OF THE ARM.)
5. NYLON BUSHINGS SHALL BE INSTALLED IN ALL WIRE FEED HOLES TO PROTECT THE WIRE INSULATION.

GENERAL NOTES

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS

2018 TRAFFIC SIGNAL CONSTRUCTION SPECIFICATION

EXHIBIT E

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

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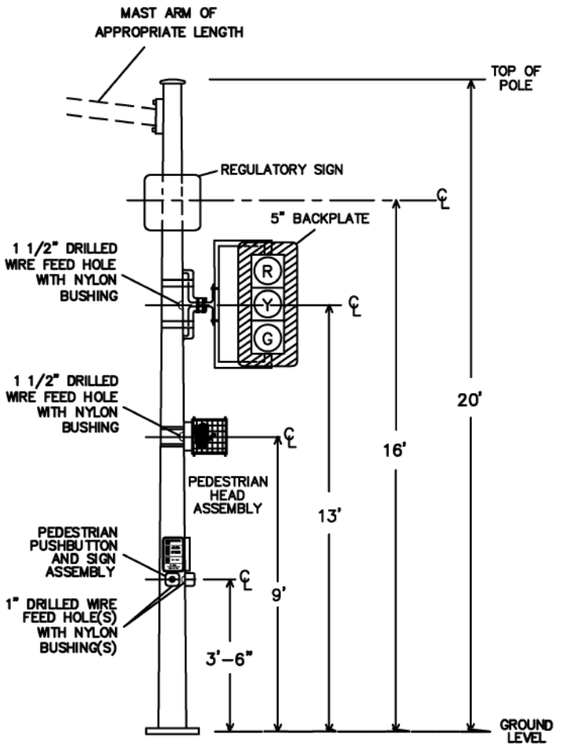
TRAFFIC SAFETY IMPROVEMENTS

CITY OF DALLAS
EXHIBIT E

TRAFFIC SIGNAL AND SIGN MOUNTING DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	116
CHECK	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

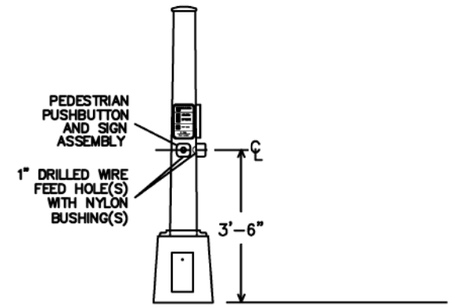
DETAILS FOR MOUNTING SIGNAL AND SIGN HARDWARE ON POLES



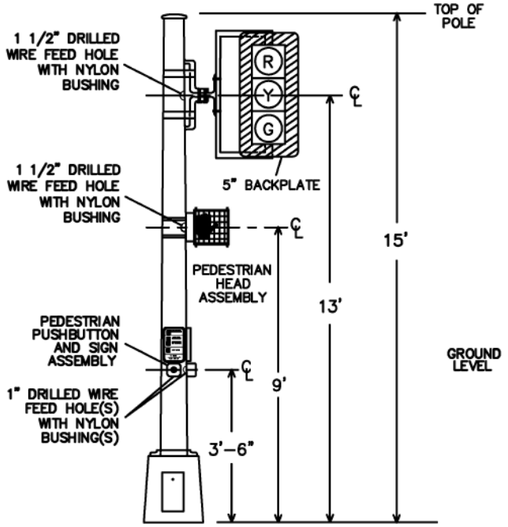
MAST ARM POLE

NOTE:

SIGNS, VEHICLE SIGNAL HEADS, PEDESTRIAN SIGNAL HEADS AND PEDESTRIAN PUSHBUTTONS SHALL BE INSTALLED ON STRAIN POLES AT HEIGHTS SHOWN ABOVE.



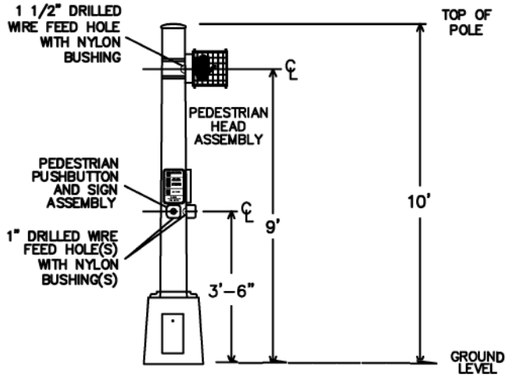
5' PEDESTAL POLE (TYPE III)



15' PEDESTAL POLE (TYPE I)

1. ALL HOLES SHALL BE DRILLED IN THE FIELD BY THE VENDOR. TORCHING WILL NOT BE PERMITTED. DRILLED HOLES SHALL BE TOUCHED UP WITH ONE COAT OF COLD GALVANIZING COMPOUND. ALLOWING ADEQUATE DRYING TIME BEFORE MOUNTING ANY SIGNAL OR SIGN HARDWARE.
2. NYLON BUSHINGS SHALL BE INSTALLED IN ALL WIRE FEED HOLES TO PROTECT THE WIRE INSULATION.
3. ALL SIGNAL AND SIGN HARDWARE SHALL BE MOUNTED AT THE DISTANCES SHOWN ON THE DIAGRAMS BELOW UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.
4. IF THE DISTANCE BETWEEN THE SIDE MOUNT VEHICLE SIGNAL HEAD AND THE MAST ARM POLE IS NOT SUFFICIENT TO INSTALL A BACK PLATE THE CONTRACTOR MAY BE REQUIRED TO PROVIDE EXTENDED (12") "ASTRO-BRACKET" ARMS.
5. A TWO-WAY UNIVERSAL MOUNTING BRACKET SHALL BE USED WHENEVER TWO PEDESTRIAN SIGNAL HEADS ARE TO BE INSTALLED ON THE SAME POLE. AND A ONE-WAY UNIVERSAL MOUNTING BRACKET SHALL BE USED WHENEVER A SINGLE PEDESTRIAN HEAD IS MOUNTED ON A POLE.
6. ALL PEDESTRIAN PUSHBUTTON SIGNS SHALL DISPLAY THE MESSAGE SHOWN BELOW. (WITH ARROW POINTING IN APPROPRIATE DIRECTION).

R10-3e



10' PEDESTAL POLE (TYPE II)

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS

2018 TRAFFIC SIGNAL CONSTRUCTION SPECIFICATION

EXHIBIT F

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation
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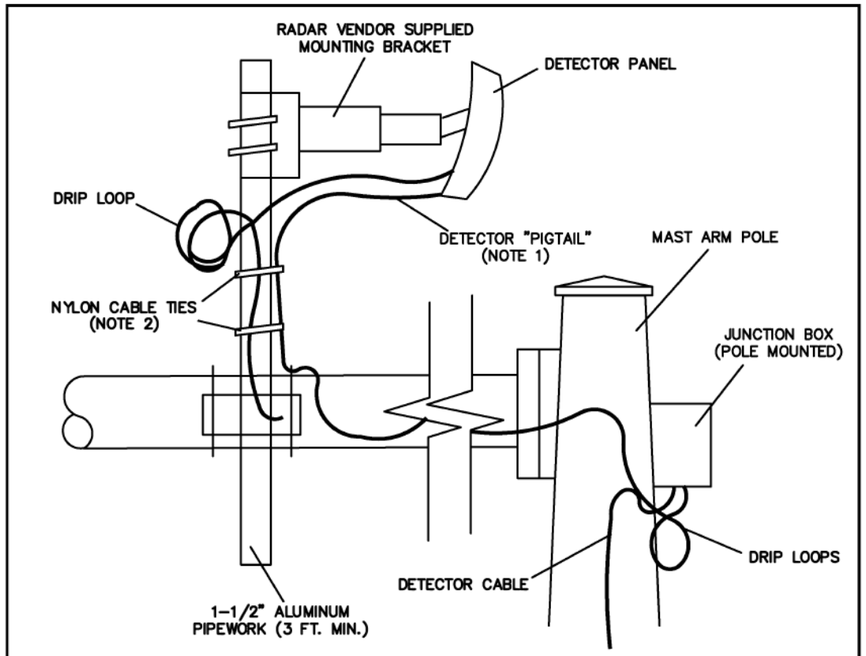
TRAFFIC SAFETY IMPROVEMENTS

CITY OF DALLAS
EXHIBIT F

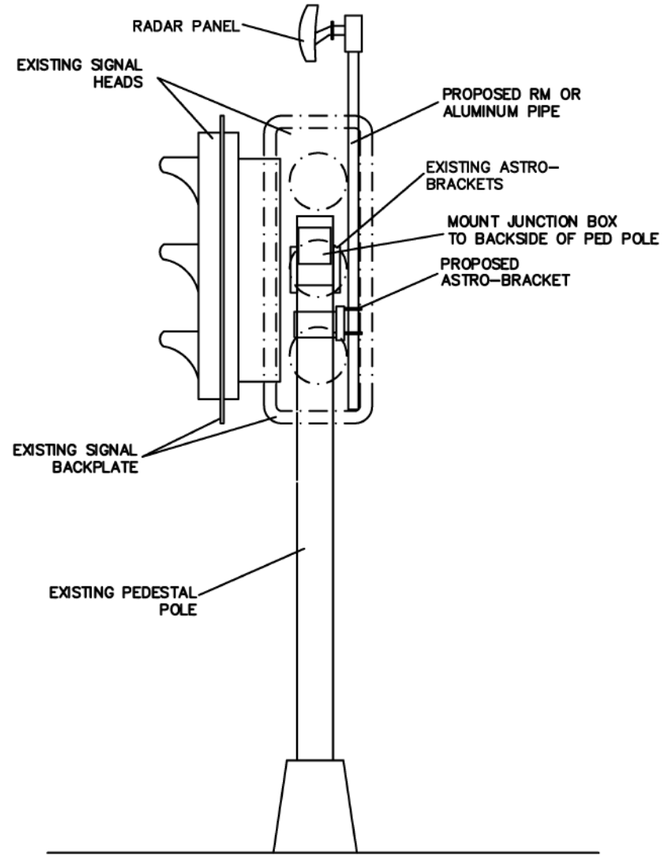
TRAFFIC SIGNAL AND SIGN MOUNTAIN ON POLE DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	117
CHECK	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

DETAILS FOR MOUNTING RADAR VEHICLE DETECTOR PANELS



DETAIL "A" PIPEWORK RISER ON MAST ARM



DETAIL "B" PEDESTAL POLE MOUNTING DETAIL

NOTES:

1. DETECTOR PIGTAIL SHALL RUN CONTINUOUSLY FROM DETECTOR PANEL, FORMED INTO A 3-LOOP DRIP LOOP, ROUTED INTO THE 1-1/2" PIPE, THROUGH THE ASTRO-BRACKET, THROUGH THE MAST ARM OR POLE, AND THROUGH A HOLE DRILLED BELOW THE JUNCTION BOX MOUNTING POINT ON THE POLE. A DRIP LOOP SHALL BE PROVIDED FOR BOTH THE PIGTAIL AND DETECTOR CABLE BELOW THE JUNCTION BOX.

2. GROUND CONDUCTOR FOR RADAR PANEL SHALL BE NEATLY STRAPPED TO THE EXTERIOR OF THE PIPEWORK WITH NYLON CABLE TIES ATTACHED TO THE SIGNAL POLE/ARM NEAR THE ASTRO-BRACKET WITH A SELF-TAPPING STAINLESS STEEL SCREW.

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS

2018 TRAFFIC SIGNAL CONSTRUCTION SPECIFICATION

EXHIBIT N

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

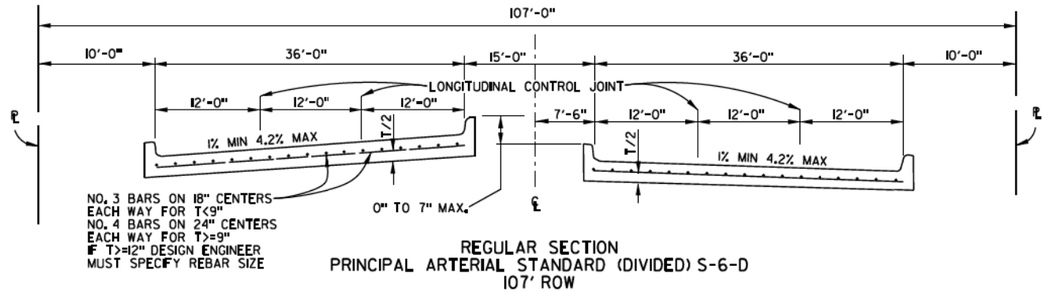
Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

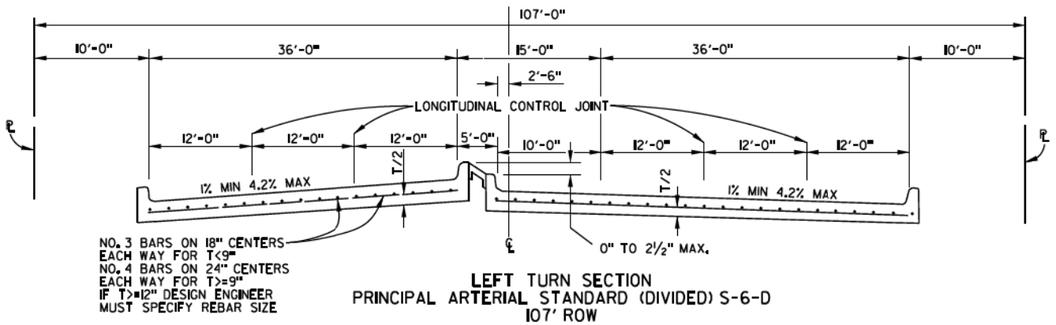
CITY OF DALLAS
EXHIBIT N

DETAILS FOR MOUNTING RADAR VEHICLE DETECTOR PANELS

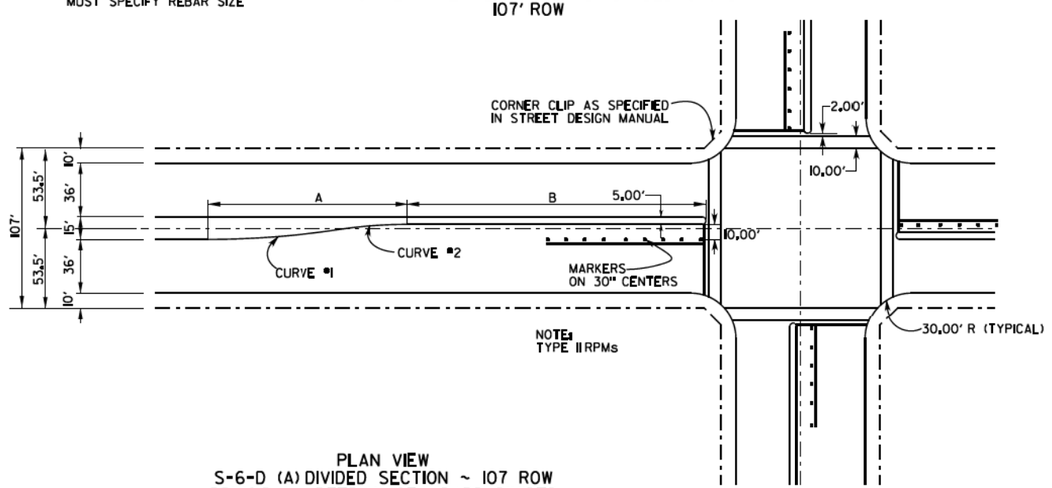
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	118
	CONTROL	SECTION	JOB	
CHECK	0918	47	342, ETC	



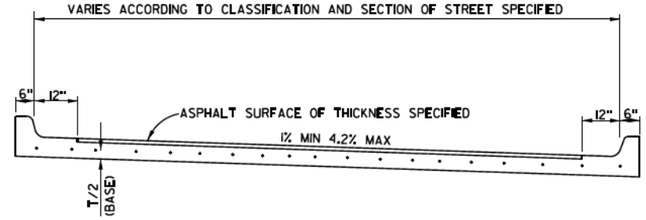
REGULAR SECTION
PRINCIPAL ARTERIAL STANDARD (DIVIDED) S-6-D
107' ROW



LEFT TURN SECTION
PRINCIPAL ARTERIAL STANDARD (DIVIDED) S-6-D
107' ROW



PLAN VIEW
S-6-D (A) DIVIDED SECTION ~ 107 ROW
PRINCIPAL ARTERIAL STANDARD DIVIDED



SPECIAL PAVING SECTION
SCHEMATIC HALF-SECTION
REINFORCED CONCRETE BASE WITH INTEGRAL CURB
AND GUTTER AND ASPHALT SURFACE COURSE

NOTES:

1. ALL STEEL SHALL BE CLEAN AND RUST FREE GRADE 60 DEFORMED REINFORCING BARS.
2. GENERAL NOTES PROVIDED ON SHEET No. 1006 APPLY.
3. REDWOOD EXPANSION JOINTS SHALL BE PLACED AT OR NEAR THE RADIUS POINTS OF ALL INTERSECTIONS, AT ALL ABRUPT CHANGES IN ALIGNMENT OR WIDTH, OR AT MAX. DISTANCE OF 150 FT. REDWOOD EXPANSION JOINT WILL CONTINUE THROUGH MEDIAN PAVING AND SIDEWALK AND WALL WHEREVER APPLICABLE.
4. FOR ANY THICKNESS MORE THAN 12" THE DESIGN ENGINEER MUST SPECIFY THE REBAR SIZE.
5. CONCRETE SHALL BE 4000 PSI WITH MACHINE FINISH AND 4500 PSI BY HAND FINISH.
6. FOR ADDITIONAL REBAR INFORMATION SEE SHEET 1007B.
7. THE STANDARD CROSSWALK WIDTH IS 10' WITHIN THE CITY, BUT MAY BE SMALLER NO LESS THAN 6' FOR UNSIGNALIZED LOCATIONS IF APPROVED BY THE CITY TRAFFIC ENGINEER. CROSSWALK WIDTHS LARGER THAN 10' MAY BE REQUIRED BASED ON NEED.
8. SWEPT PATH ANALYSIS OF THE DESIGN VEHICLE AND CONTROL VEHICLE SHALL BE USED TO DETERMINE LANE WIDTH(S). SWEPT PATH OF THE DESIGN VEHICLE, POSITIONED AT THE CENTER OF THE LANE, SHALL NOT ENCROACH INTO ADJACENT LANES DURING A LANE SHIFT OR A TURNING MANEUVER.
9. THE TRANSITION LENGTH A, MINIMUM STORAGE B, CURVE 1 AND CURVE 2 RADII MUST BE OBTAINED FROM THE GEOMETRIC DESIGN SECTION OF THE MOST CURRENT STREET DESIGN MANUAL.

PAVING DETAILS

PAVING SECTIONS AND STREET
LAYOUTS WITH MEDIAN DETAILS

DEPARTMENT OF PUBLIC WORKS
CITY OF DALLAS, TEXAS

DRAWINGS NOT TO SCALE
REVISED: DECEMBER 2021

SHEET No.
1001

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

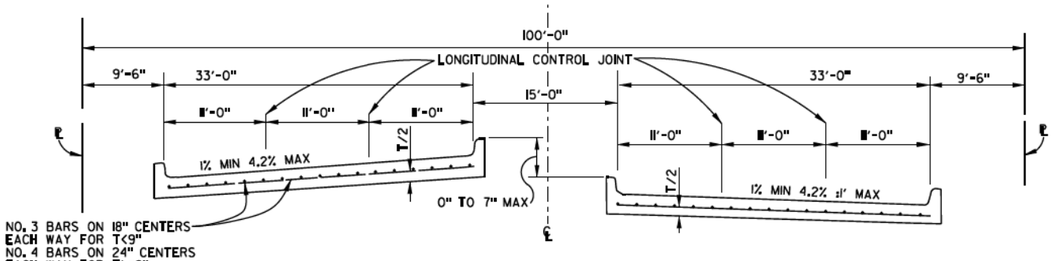
Texas Department of Transportation

TRAFFIC SAFETY IMPROVEMENTS

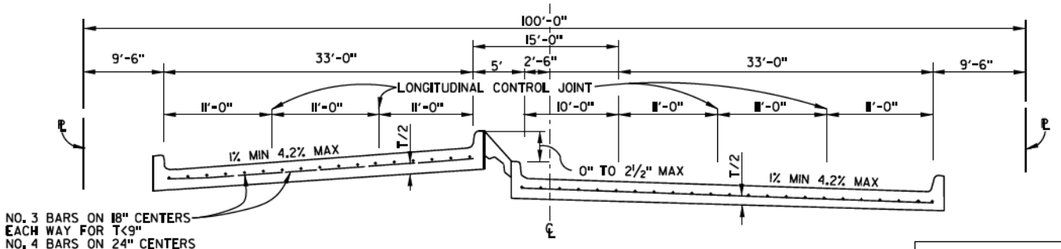
CITY OF DALLAS
251-D

PAVING DETAILS
SHEET 1 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	119
	CONTROL	SECTION	JOB	
CHECK	0918	47	342, ETC	

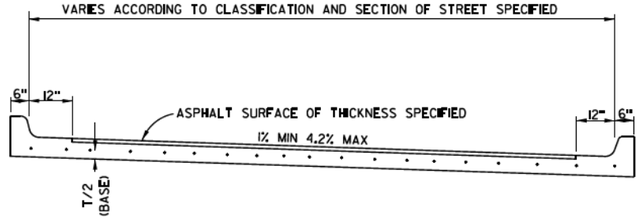


REGULAR SECTION
PRINCIPAL ARTERIAL STANDARD (DIVIDED) M-6-D (A)
100' ROW



LEFT TURN SECTION
PRINCIPAL ARTERIAL STANDARD (DIVIDED) M-6-D (A)
100' ROW

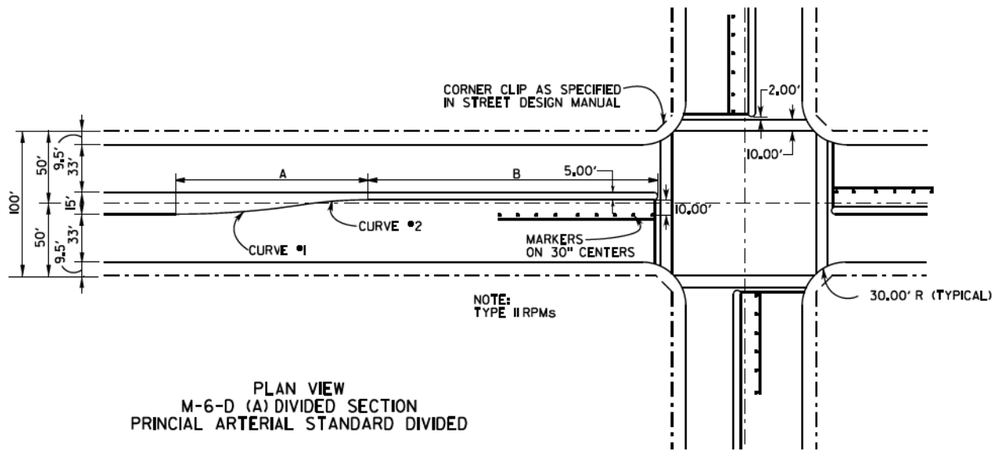
• SEE SHEET No. 1007 FOR ALTERNATE DESIGN USING PARABOLIC SECTIONS



SPECIAL PAVING SECTION
SCHEMATIC HALF-SECTION
REINFORCED CONCRETE BASE WITH INTEGRAL CURB
AND GUTTER AND ASPHALT SURFACE COURSE

NOTES:

1. ALL STEEL SHALL BE CLEAN AND RUST FREE GRADE 60 DEFORMED REINFORCING BARS.
2. GENERAL NOTES PROVIDED ON SHEET No. 1006 APPLY.
3. REDWOOD EXPANSION JOINTS SHALL BE PLACED AT OR NEAR THE RADIUS POINTS OF ALL INTERSECTIONS. AT ALL ABRUPT CHANGES IN ALIGNMENT OR WIDTH, OR AT MAX. DISTANCE OF 150 FT. REDWOOD EXPANSION JOINT WILL CONTINUE THROUGH MEDIAN PAVING AND SIDEWALK AND WALL WHEREVER APPLICABLE.
4. FOR ANY THICKNESS MORE THAN 12" THE DESIGN ENGINEER MUST SPECIFY THE REBAR SIZE.
5. CONCRETE SHALL BE 4000 PSI WITH MACHINE FINISH AND 4500 PSI BY HAND FINISH.
6. FOR ADDITIONAL REBAR INFORMATION SEE SHEET 1007B.
7. THE STANDARD CROSSWALK WIDTH IS 10' WITHIN THE CITY, BUT MAY BE SMALLER NO LESS THAN 6' FOR UNSIGNALIZED LOCATIONS IF APPROVED BY THE CITY TRAFFIC ENGINEER. CROSSWALK WIDTHS LARGER THAN 10' MAY BE REQUIRED BASED ON NEED.
8. SWEPT PATH ANALYSIS OF THE DESIGN VEHICLE AND CONTROL VEHICLE SHALL BE USED TO DETERMINE LANE WIDTH(S). SWEPT PATH OF THE DESIGN VEHICLE, POSITIONED AT THE CENTER OF THE LANE, SHALL NOT ENCROACH INTO ADJACENT LANES DURING A LANE SHIFT OR A TURNING MANEUVER.
9. THE TRANSITION LENGTH A, MINIMUM STORAGE B, CURVE 1 AND CURVE 2 RADII MUST BE OBTAINED FROM THE GEOMETRIC DESIGN SECTION OF THE MOST CURRENT STREET DESIGN MANUAL.



PLAN VIEW
M-6-D (A) DIVIDED SECTION
PRINCIAL ARTERIAL STANDARD DIVIDED

PAVING DETAILS

PAVING SECTIONS AND STREET LAYOUTS WITH MEDIAN DETAILS

DEPARTMENT OF PUBLIC WORKS
CITY OF DALLAS, TEXAS

DRAWINGS NOT TO SCALE
REVISED: DECEMBER 2021

SHEET No. 1001A

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

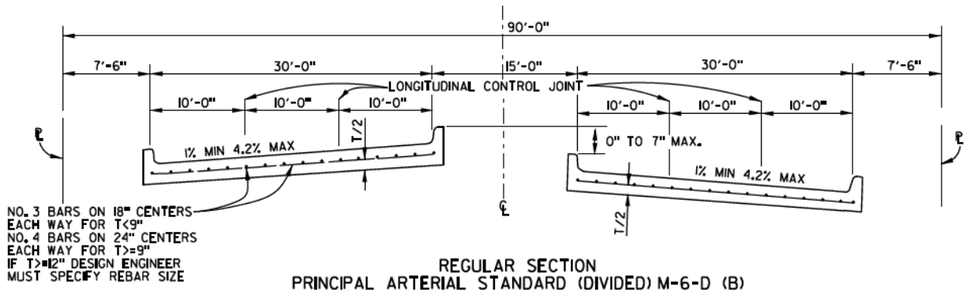
Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

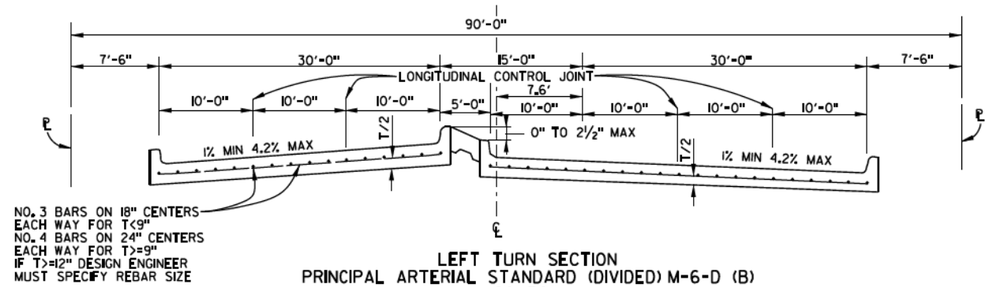
CITY OF DALLAS
251-D

PAVING DETAILS
SHEET 2 OF 6

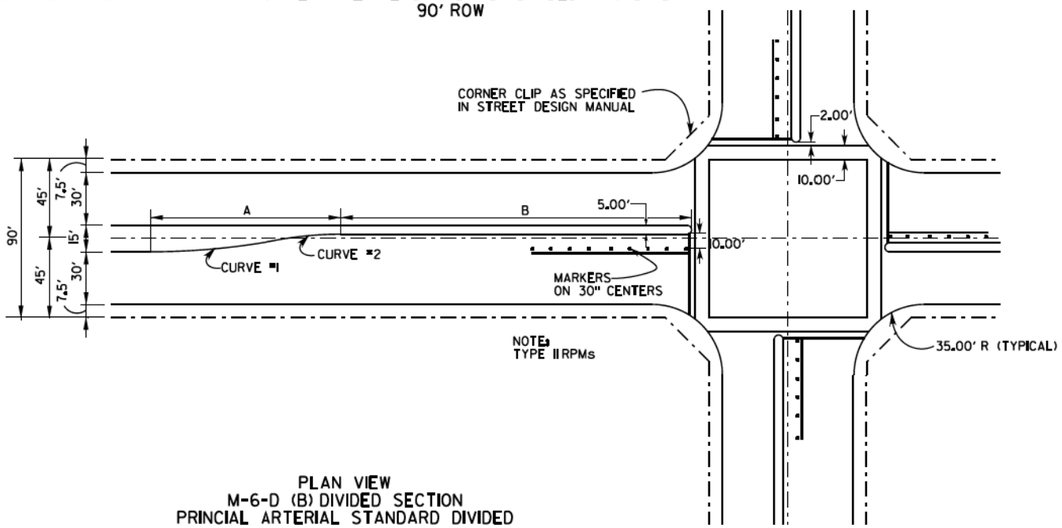
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	120
CHECK	CONTROL	SECTION	JOB	
	0918	47	342, ETC	



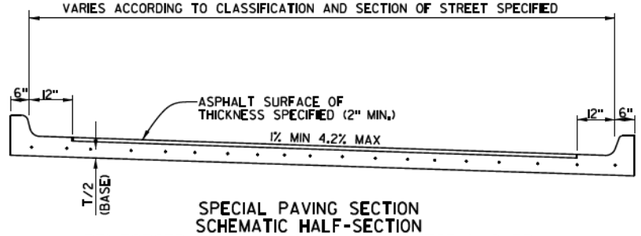
REGULAR SECTION
PRINCIPAL ARTERIAL STANDARD (DIVIDED) M-6-D (B)
90' ROW



LEFT TURN SECTION
PRINCIPAL ARTERIAL STANDARD (DIVIDED) M-6-D (B)
90' ROW



PLAN VIEW
M-6-D (B) DIVIDED SECTION
PRINCIAL ARTERIAL STANDARD DIVIDED



SPECIAL PAVING SECTION
SCHEMATIC HALF-SECTION
REINFORCED CONCRETE BASE WITH INTEGRAL CURB
AND GUTTER AND ASPHALT SURFACE COURSE

NOTES:

1. ALL STEEL SHALL BE CLEAN AND RUST FREE GRADE 60 DEFORMED REINFORCING BARS.
2. GENERAL NOTES PROVIDED ON SHEET No. 1006 APPLY.
3. REDWOOD EXPANSION JOINTS SHALL BE PLACED AT OR NEAR THE RADIUS POINTS OF ALL INTERSECTIONS, AT ALL ABRUPT CHANGES IN ALIGNMENT OR WIDTH, OR AT MAX. DISTANCE OF 150 FT. REDWOOD EXPANSION JOINT WILL CONTINUE THROUGH MEDIAN PAVING AND SIDEWALK AND WALL WHEREVER APPLICABLE.
4. FOR ANY THICKNESS MORE THAN 12" THE DESIGN ENGINEER MUST SPECIFY THE REBAR SIZE.
5. CONCRETE SHALL BE 4000 PSI WITH MACHINE FINISH AND 4500 PSI BY HAND FINISH.
6. FOR ADDITIONAL REBAR INFORMATION SEE SHEET 1007B.
7. THE STANDARD CROSSWALK WIDTH IS 10' WITHIN THE CITY, BUT MAY BE SMALLER NO LESS THAN 6' FOR UNSIGNALIZED LOCATIONS IF APPROVED BY THE CITY TRAFFIC ENGINEER. CROSSWALK WIDTHS LARGER THAN 10' MAY BE REQUIRED BASED ON NEED.
8. SWEPT PATH ANALYSIS OF THE DESIGN VEHICLE AND CONTROL VEHICLE SHALL BE USED TO DETERMINE LANE WIDTH(S). SWEPT PATH OF THE DESIGN VEHICLE, POSITIONED AT THE CENTER OF THE LANE, SHALL NOT ENCROACH INTO ADJACENT LANES DURING A LANE SHIFT OR A TURNING MANEUVER.
9. THE TRANSITION LENGTH A, MINIMUM STORAGE B, CURVE 1 AND CURVE 2 RADII MUST BE OBTAINED FROM THE GEOMETRIC DESIGN SECTION OF THE MOST CURRENT STREET DESIGN MANUAL.

PAVING DETAILS	
PAVING SECTIONS AND STREET LAYOUTS WITH MEDIAN DETAILS	
DEPARTMENT OF PUBLIC WORKS CITY OF DALLAS, TEXAS	
DRAWINGS NOT TO SCALE REVISED: DECEMBER 2021	SHEET No. 1001B

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

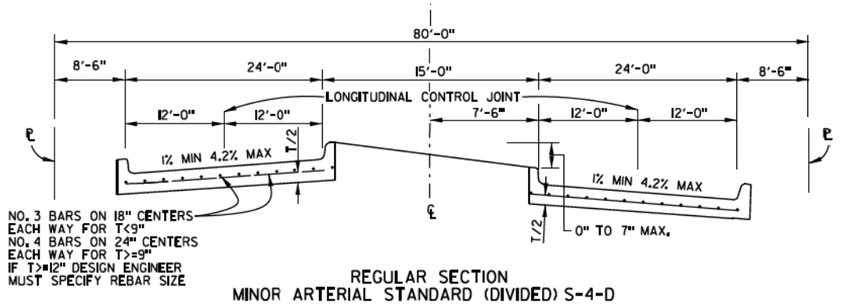
Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

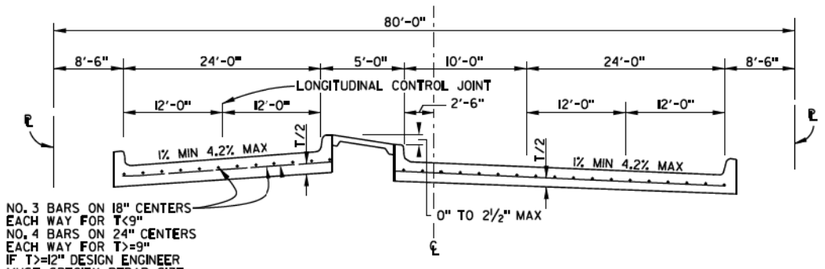
CITY OF DALLAS
251-D

PAVING DETAILS
SHEET 3 OF 6

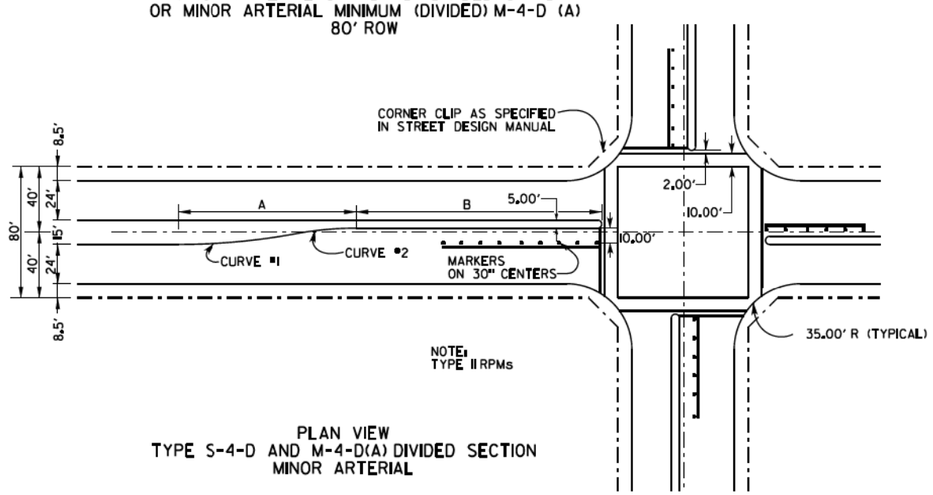
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	121
	CONTROL	SECTION	JOB	
CHECK	0918	47	342, ETC	



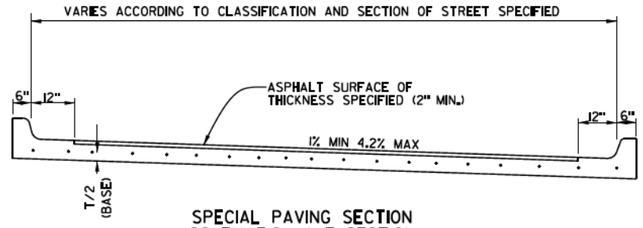
REGULAR SECTION
MINOR ARTERIAL STANDARD (DIVIDED) S-4-D
OR MINOR ARTERIAL MINIMUM (DIVIDED) M-4-D (A)
80' ROW



LEFT TURN SECTION
MINOR ARTERIAL STANDARD (DIVIDED) S-4-D
OR MINOR ARTERIAL MINIMUM (DIVIDED) M-4-D (A)
80' ROW



PLAN VIEW
TYPE S-4-D AND M-4-D(A) DIVIDED SECTION
MINOR ARTERIAL



SPECIAL PAVING SECTION
SCHEMATIC HALF-SECTION
REINFORCED CONCRETE BASE WITH INTEGRAL CURB
AND GUTTER AND ASPHALT SURFACE COURSE

NOTES:

1. ALL STEEL SHALL BE CLEAN AND RUST FREE GRADE 60 DEFORMED REINFORCING BARS.
2. GENERAL NOTES PROVIDED ON SHEET No. 1006 APPLY.
3. REDWOOD EXPANSION JOINTS SHALL BE PLACED AT OR NEAR THE RADIUS POINTS OF ALL INTERSECTIONS, AT ALL ABRUPT CHANGES IN ALIGNMENT OR WIDTH, OR AT MAX. DISTANCE OF 150 FT. REDWOOD EXPANSION JOINT WILL CONTINUE THROUGH MEDIAN PAVING AND SIDEWALK AND WALL WHEREVER APPLICABLE.
4. FOR ANY THICKNESS MORE THAN 12" THE DESIGN ENGINEER MUST SPECIFY THE REBAR SIZE.
5. CONCRETE SHALL BE 4000 PSI WITH MACHINE FINISH AND 4500 PSI BY HAND FINISH.
6. FOR ADDITIONAL REBAR INFORMATION SEE SHEET 1007B.
7. THE STANDARD CROSSWALK WIDTH IS 10' WITHIN THE CITY, BUT MAY BE SMALLER NO LESS THAN 6' FOR UNSIGNALIZED LOCATIONS IF APPROVED BY THE CITY TRAFFIC ENGINEER. CROSSWALK WIDTHS LARGER THAN 10' MAY BE REQUIRED BASED ON NEED.
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PAVING DETAILS	
PAVING SECTIONS AND STREET LAYOUTS WITH MEDIAN DETAILS	
DEPARTMENT OF PUBLIC WORKS CITY OF DALLAS, TEXAS	
DRAWINGS NOT TO SCALE REVISED: DECEMBER 2021	SHEET No. 1001C

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

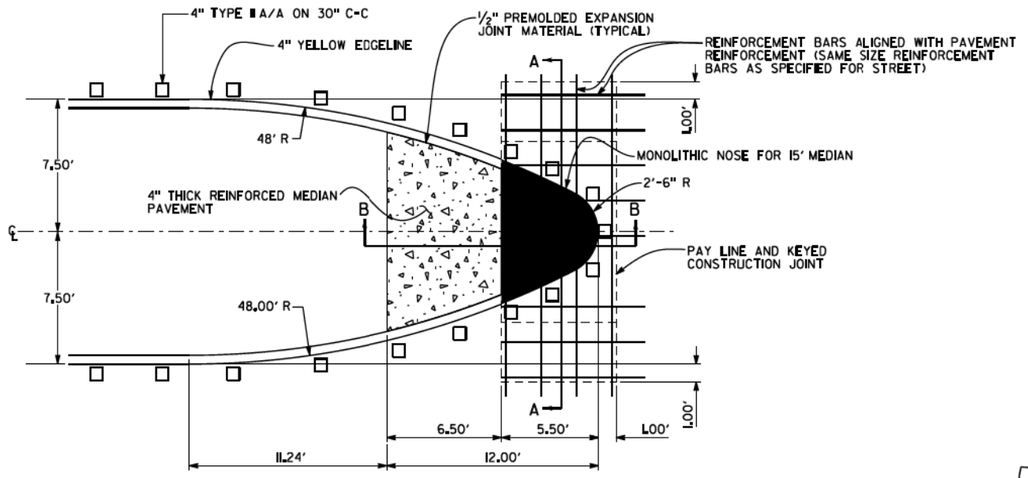
Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

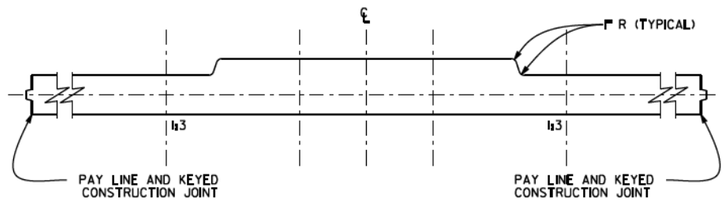
CITY OF DALLAS
251-D

PAVING DETAILS
SHEET 4 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	122
	CONTROL	SECTION	JOB	
CHECK	0918	47	342, ETC	

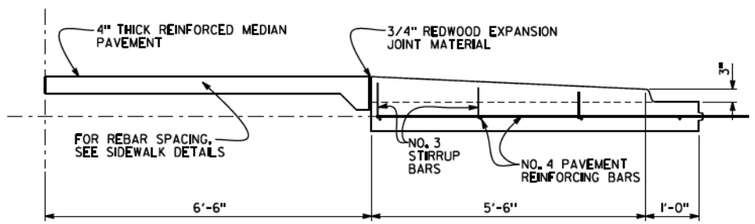


MONOLITHIC MEDIAN NOSE ~ 15' MEDIAN



NOTE:
SUBGRADE - COMPACT TO 98% STANDARD PROCTOR DENSITY AS DIRECTED BY CITY

MONOLITHIC MEDIAN NOSE ~ SECTION A-A



NOTE:
MONOLITHIC NOSE AND PAVEMENT WITHIN PAY LINES SHALL BE PAID PER EACH, COMPLETE AND IN PLACE.

MONOLITHIC MEDIAN NOSE ~ SECTION B-B

NOTES:

1. ALL STEEL SHALL BE CLEAN AND RUST FREE GRADE 60 DEFORMED REINFORCING BARS.
2. GENERAL NOTES PROVIDED ON SHEET No. 1006 APPLY.
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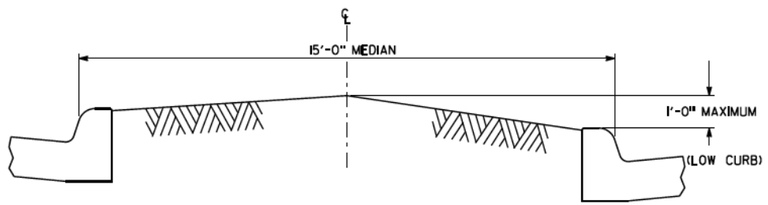
4. ALL MARKERS, MEDIAN NOSE BUTTONS AND MEDIAN EDGELINES SHALL BE INSTALLED AND ORIENTED AS SHOWN ON TYPICAL PAVEMENT MARKINGS DETAILS SHEET.



NOTE:
BACK-FILL FOR MEDIAN SHALL CONSIST OF EXCESS EXCAVATION. THERE SHALL BE NO PAY ITEM FOR ANY FILL MATERIAL PLACED WITHIN THE MEDIAN. MAXIMUM FILL SHALL NOT EXCEED 1'-0" AND SHALL BE CROWNED IN THE MIDDLE FOR PROPER DRAINAGE.

15 FOOT WIDE MEDIAN FILL

REINFORCED MEDIAN PAVEMENT

PAVING DETAILS

MONOLITHIC MEDIAN NOSE

DEPARTMENT OF PUBLIC WORKS
CITY OF DALLAS, TEXAS

DRAWINGS NOT TO SCALE
REVISED: DECEMBER 2021

SHEET No. 1002

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

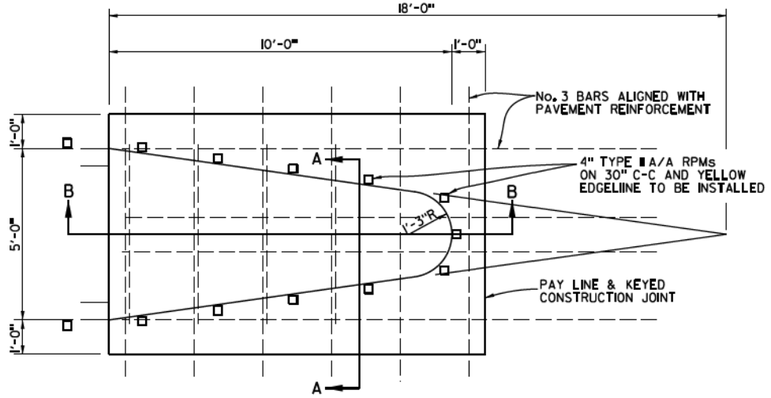
Texas Department of Transportation ® 2022

TRAFFIC SAFETY IMPROVEMENTS

CITY OF DALLAS
251-D

PAVING DETAILS
SHEET 5 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	123
	CONTROL	SECTION	JOB	
CHECK	0918	47	342, ETC	



MONOLITHIC MEDIAN NOSE

NOTES:

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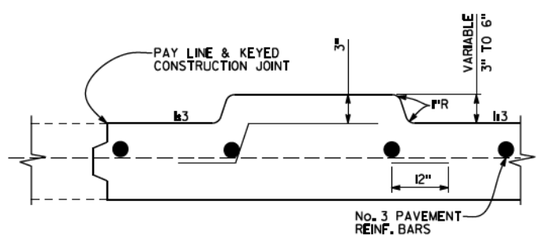
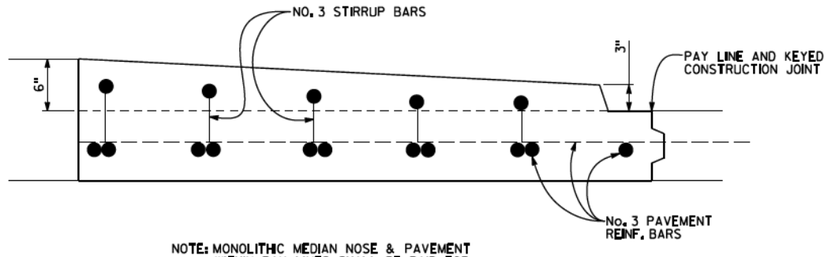
2. GENERAL NOTES PROVIDED ON SHEET No. 1006 APPLY.
3. REDWOOD EXPANSION JOINTS SHALL BE PLACED AT OR NEAR THE RADIUS POINTS OF ALL INTERSECTIONS, AT ALL ABRUPT CHANGES IN ALIGNMENT OR WIDTH, OR AT MAX. DISTANCE OF 150 FT. REDWOOD EXPANSION JOINT WILL CONTINUE THROUGH MEDIAN PAVING AND SIDEWALK AND WALL WHEREVER APPLICABLE.
4. ALL MARKERS, MEDIAN NOSE BUTTONS AND MEDIAN EDGELINES SHALL BE INSTALLED AND ORIENTED AS SHOWN ON TYPICAL PAVEMENT MARKINGS DETAILS SHEET.

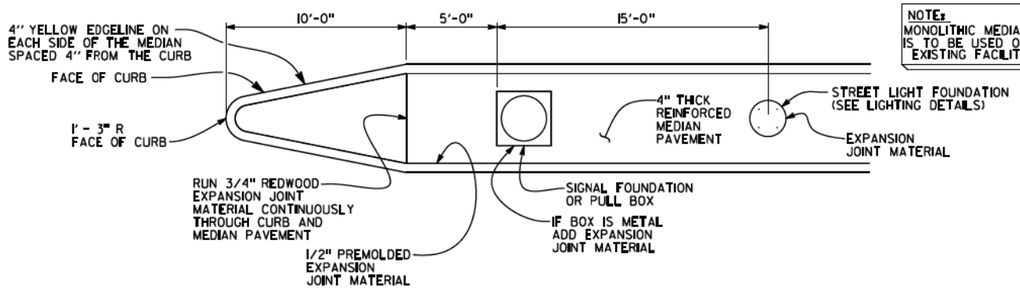


SECTION A-A



NOTE: MONOLITHIC MEDIAN NOSE & PAVEMENT WITHIN PAY LINES SHALL BE PAID FOR PER EACH, COMPLETE IN PLACE.

SECTION B-B



NOTE:
MONOLITHIC MEDIAN NOSE IS STANDARD (ROUNDED NOSE IS TO BE USED ONLY AT DIRECTION OF ENGINEER TO MATCH EXISTING FACILITIES).

DETAIL OF 5' MEDIAN PAVEMENT

PAVING DETAILS	
MONOLITHIC MEDIAN NOSE	
DEPARTMENT OF PUBLIC WORKS CITY OF DALLAS, TEXAS	
DRAWINGS NOT TO SCALE REVISED: DECEMBER 2021	SHEET No. 1002A

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

®Texas Department of Transportation
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TRAFFIC SAFETY IMPROVEMENTS

CITY OF DALLAS
251-D

PAVING DETAILS
SHEET 6 OF 6

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	124
CHECK	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

DESCRIPTION AND APPLICATION OF PAVEMENT MARKING LINES

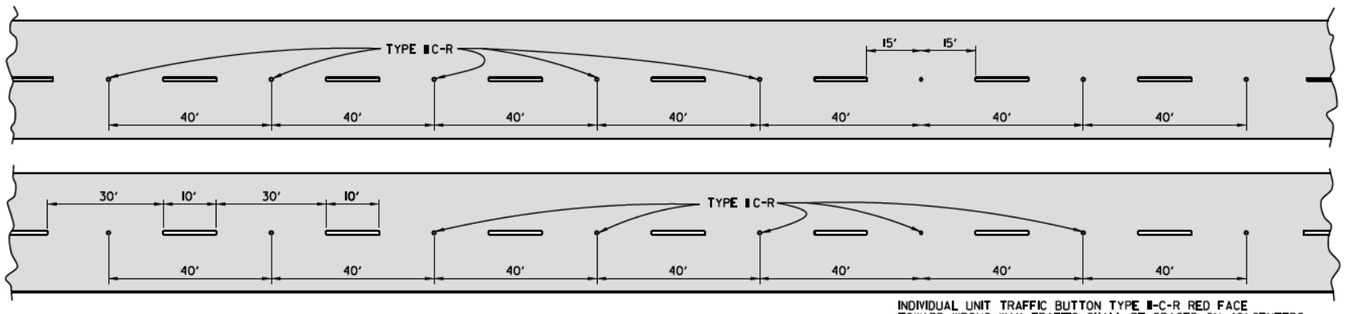
LINE SERIES	COLOR	DESCRIPTION	WIDTH INCHES	TYPICAL APPLICATIONS
	WHITE	BROKEN (10' STRIPE WITH 30' GAP)	4"	LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHEN CHANGING OF LANES IS PERMITTED.
	WHITE	SOLID	4"	EDGE LINES TO DELINEATE THE RIGHT EDGE OF THE ROADWAY.
			6"	LEFT EDGE OF BICYCLE LANE AND LANE LINES BETWEEN TRAVEL LANES IN THE SAME DIRECTION WHERE CHANGING OF LANES IS DISCOURAGED.
			6", 24"	PERPENDICULAR CROSSWALK LINES.
			18"	STOP BARS AT INTERSECTIONS (SIGNALIZED AND UNSIGNALIZED).
			12", 24"	6" DIAGONAL HATCHING USED IN GORES BETWEEN SAME DIRECTION OF TRAVEL LANES.
	WHITE	GUIDE (2' STRPE WITH 6' GAP)	6"	GUIDE LINES THROUGH INTERSECTIONS, TAPER LINES FOR TURN LANES, GUIDE LINES FOR BICYCLE LANES.
	YELLOW	SOLID	4"	EDGE LINES TO DELINEATE THE LEFT EDGE OF A DIVIDE ROADWAY OR A ONE-WAY ROAD.
			12", 24"	6" DIAGONAL HATCHING USED IN GORES BETWEEN OPPOSING DIRECTION OF TRAVEL LANES.
	YELLOW	DOUBLE SOLID	4" - (4") - 4" (GAP)	CENTERLINE THAT SEPARATES OPPOSING TRAVEL LANES AND DELINEATION OF MEDIAN ISLANDS.
	YELLOW	DOUBLE BROKEN	4" - (4") - 4" (GAP)	DEFINES THE EDGES OF CENTER REVERSIBLE LANES THAT ARE USE AS TWLTL'S DURING INTERMITTENT PERIODS.
	YELLOW	BROKEN (10' STRIPE WITH 30' GAP)	4"	SEPARATES TRAVEL LANES IN OPPOSITE DIRECTIONS WHERE PASSING IS PERMITTED IN BOTH DIRECTIONS OF TRAVEL.
YIELD LINE	WHITE	TRIANGLE	12" X 18" 24" X 36"	IN DESIGNATED AREAS

NOTES:

1. ALL LINES ARE 125 MIL THICK THERMOPLASTIC OR 3M 380 TAPE.
2. ALL THERMOPLASTIC LINES AND PAVEMENT LEGENDS ARE 125 MIL THICK UNLESS OTHERWISE SHOWN.
3. ALL HOT APPLIED THERMOPLASTIC MUST MEET TxDOT SPECIFICATION DMS-8220
4. CROSSWALKS WITHIN TxDOT ROW SHALL FOLLOW TxDOT STANDARDS. COORDINATE WITH THE CITY OF DALLAS TRANSPORTATION FIELD OPERATIONS DEPARTMENT.

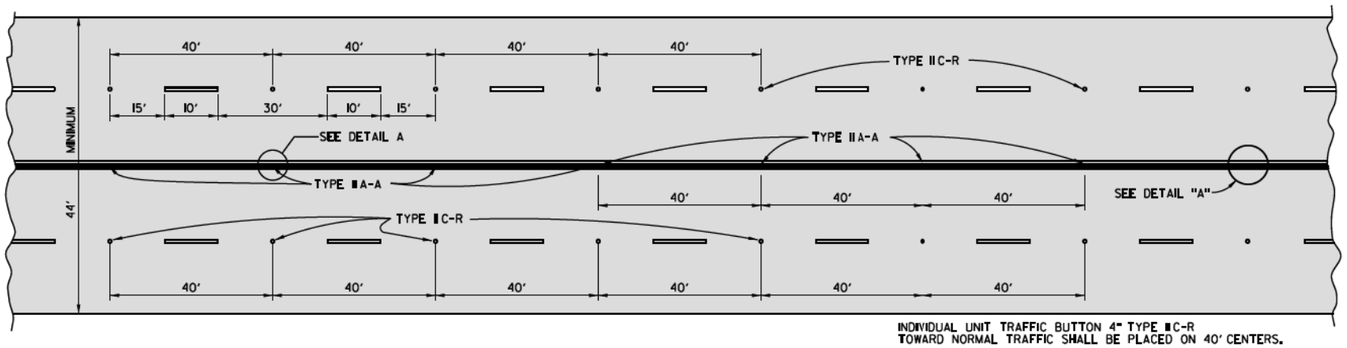
GENERAL NOTES:

1. ALL MATERIAL AND WORK SHALL CONFORM TO THE LATEST EDITION OF CITY OF DALLAS STANDARDS 251D-1AS AMENDED, CITY OF DALLAS DEPARTMENT OF TRANSPORTATION (DDOT) TRAFFIC SIGNS STANDARDS AND TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) STANDARD PLANS; UNLESS OTHERWISE APPROVED BY THE CITY.
2. ALL TRAFFIC STRIPES, PAVEMENT MARKINGS, AND SIGNS SHALL BE REFLECTORIZED AND IN STANDARD SIZE AS ACCORDING\ TO TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
3. THE CONTRACTOR SHALL REMOVE ALL CONFLICTING STRIPES, PAVEMENT MARKINGS, AND RAISED PAVEMENT MARKERS IN ACCORDANCE WITH THE PLANS AND AS DIRECTED BY THE ENGINEER. WORD OR SYMBOL PAVEMENT MARKINGS SHALL BE REMOVED BY SANDBLASTING OR GRINDING A RECTANGULAR AREA COVERING THE WHOLE MARKING.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TRAFFIC STRIPES, RAISED PAVEMENT MARKERS (RPMS), CERAMIC BUTTONS, PAVEMENT MARKINGS, TRAFFIC CALMING DEVICES AND SIGNS IN ACCORDANCE WITH THE PLANS AND AS DIRECTED BY THE ENGINEER.
5. ALL PAVEMENT MARKINGS INCLUDING CROSSWALKS, LIMIT LINES, AND STOP BARS SHALL BE APPLIED WITH THERMOPLASTIC MATERIAL.
6. ALL RPMS AND CERAMIC BUTTONS SHALL BE INSTALLED WITHIN SEVEN WORKING DAYS OF ROADWAY STRIPING. ALL EXISTING RPMS AND CERAMIC BUTTONS WITHIN THE PROJECT AREA SHALL BE REPLACED IN KIND OR REMOVED IN ACCORDANCE WITH THE PLANS, OR AS DIRECTED BY THE ENGINEER. ALL EXISTING CAST IRON BUTTONS SHALL BE REMOVED AND NOT REPLACED.
7. THE CONTRACTOR SHALL REPLACE ALL SIGNING WITHIN PROJECT LIMITS DAMAGED OR ALTERED BY THE PROJECT, AS DETERMINED BY THE DDOT PAVEMENT MARKING SECTION REPRESENTATIVE.



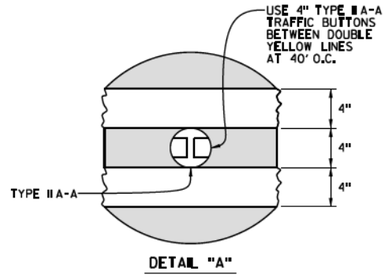
INDIVIDUAL UNIT TRAFFIC BUTTON TYPE II-C-R RED FACE TOWARD WRONG WAY TRAFFIC SHALL BE SPACED ON 40' CENTERS.

LANE LINES FOR DIVIDED THOROUGHFARE



INDIVIDUAL UNIT TRAFFIC BUTTON 4" TYPE IIC-R TOWARD NORMAL TRAFFIC SHALL BE PLACED ON 40' CENTERS.

LANE LINES AND CENTER LINES FOR UNDIVIDED MINOR ARTERIALS
(44' OR MORE IN WIDTH)



DETAIL "A"

TYPICAL PAVEMENT MARKINGS
LANE LINES AND CENTER LINES
FOR CITY STREETS
DEPARTMENT OF PUBLIC WORKS
CITY OF DALLAS, TEXAS

DRAWINGS NOT TO SCALE
REVISED: DECEMBER 2021

SHEET No.
5001

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

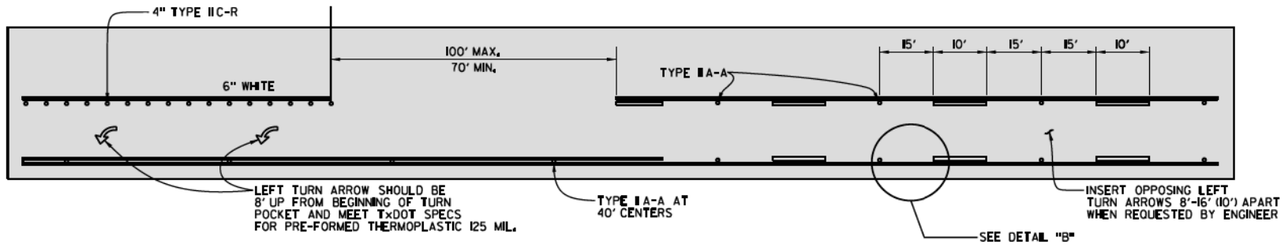
Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

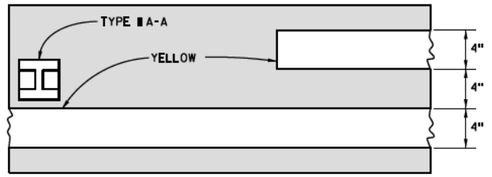
CITY OF DALLAS
251-D

TYPICAL PAVEMENT MARKINGS
SHEET 1 OF 4

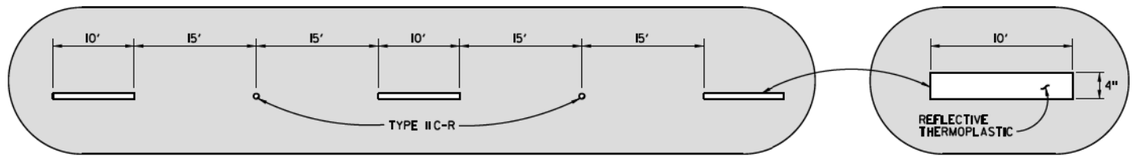
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	125
CHECK	CONTROL	SECTION	JOB	
	Ø918	47	342, ETC	



CONTINUOUS LEFT TURN LANE MARKINGS

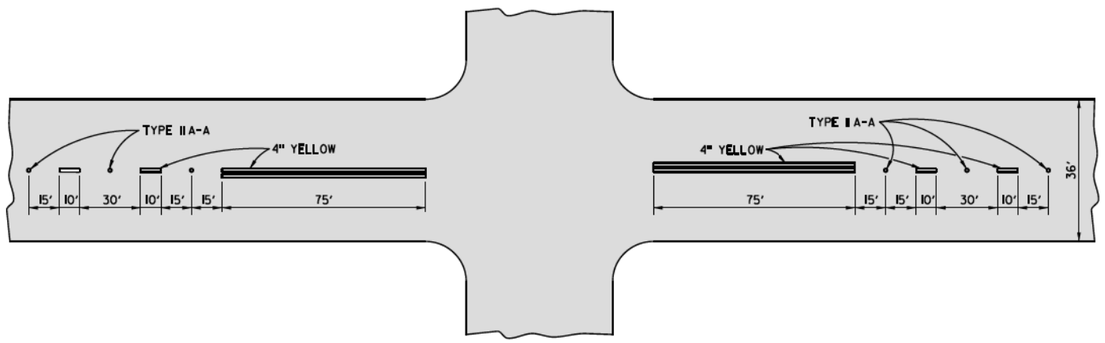


DETAIL "B"



NOTE:
TRAFFIC BUTTONS 4" TYPE IIC-R SHALL BE SPACED ON 40' CENTERS WITH A CLEAR FACE TOWARD NORMAL TRAFFIC AND THE RED FACE TOWARD WRONG WAY TRAFFIC.

TRAFFIC LANE LINE MARKINGS (TYPICAL)



PAVEMENT MARKINGS 36' LOCAL AND COLLECTOR STREETS

TYPICAL PAVEMENT MARKINGS	
LANE LINES AND CENTER LINES	
FOR CITY STREETS	
DEPARTMENT OF PUBLIC WORKS CITY OF DALLAS, TEXAS	
DRAWINGS NOT TO SCALE REVISED: DECEMBER 2021	SHEET No. 5001A

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

®Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

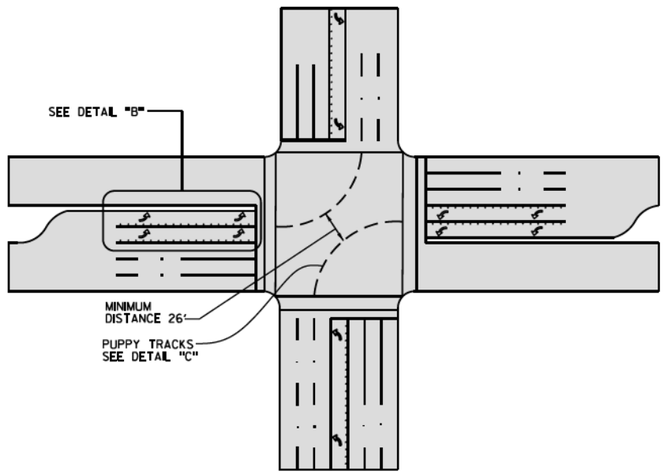
CITY OF DALLAS
251-D

TYPICAL PAVEMENT MARKINGS
SHEET 2 OF 4

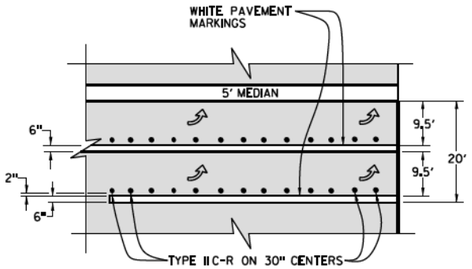
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	126
CHECK	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

NOTES:

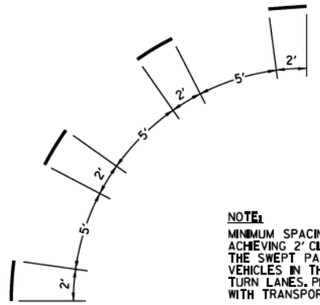
1. ALL ARROWS IN A TURN POCKET ARE 8' UP FROM BEGINNING OF A TURN POCKET. WHEN THERE ARE TWO ARROWS IN A TURN POCKET THEN ONE IS 8' FROM BEGINNING OF TURN POCKET AND THE SECOND IS 8' BACK FROM THE END OF THE TURN POCKET. A TURN POCKET WITH 80' OR LESS ONE LEFT ARROW. A TURN POCKET WITH 100' PLUS TWO ARROWS AND ADD ONE ARROW EVERY 100'.
2. LEFT TURN ARROW PLACEMENTS ARE SUBJECT TO DISCRETION OF THE ENGINEER.



TYPICAL "PUPPY TRACK" PAVEMENT MARKING LAYOUT

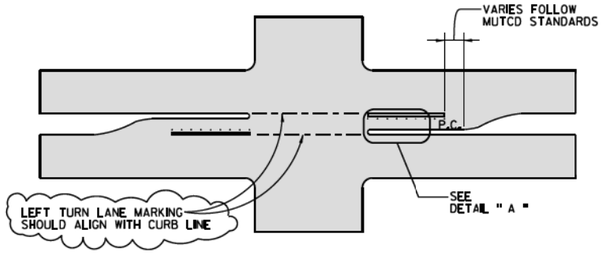


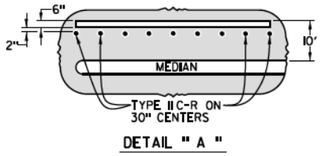
DETAIL " B "



NOTE:
MINIMUM SPACING SHOULD BE BASED ON ACHIEVING 2' CLEARANCE BETWEEN THE SWEPT PATH FOR THE DESIGN VEHICLES IN THE OUTSIDE (2ND) LEFT TURN LANES. PLEASE COORDINATE WITH TRANSPORTATION DEPARTMENT.

DETAIL " C "





DETAIL " A "

STANDARD LEFT TURN LANE MARKINGS

TYPICAL PAVEMENT MARKINGS	
LEFT TURN LANES	
DEPARTMENT OF PUBLIC WORKS CITY OF DALLAS, TEXAS	
DRAWINGS NOT TO SCALE REVISED: DECEMBER 2021	SHEET No. 5002

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

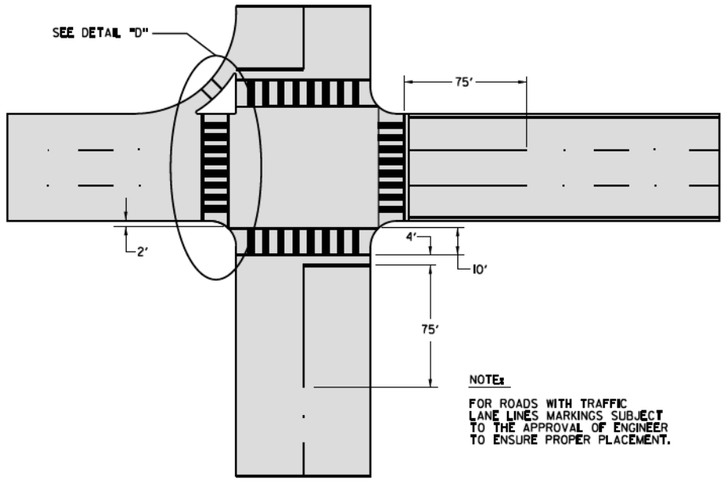
Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

CITY OF DALLAS
251-D

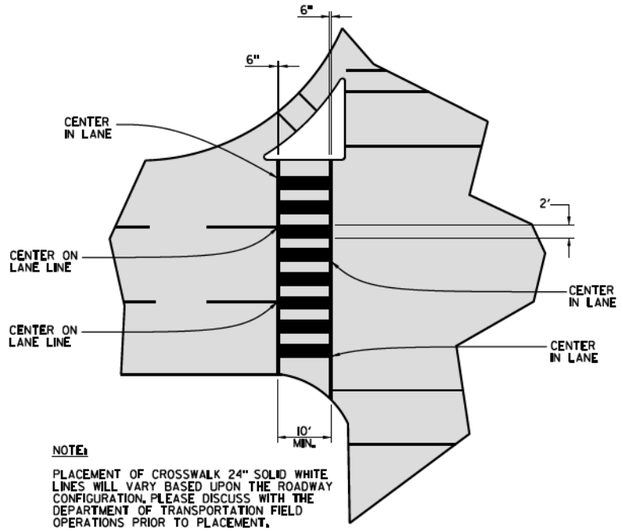
TYPICAL PAVEMENT MARKINGS
SHEET 3 OF 4

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	127
CHECK	CONTROL	SECTION	JOB	
	0918	47	342, ETC	



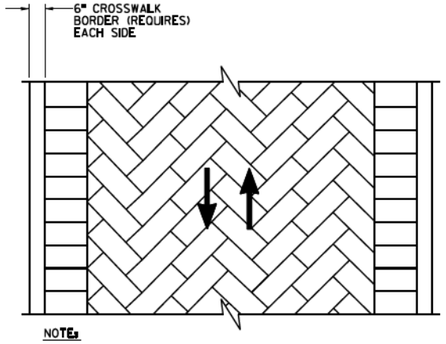
NOTE:
FOR ROADS WITH TRAFFIC LANE LINES MARKINGS SUBJECT TO THE APPROVAL OF ENGINEER TO ENSURE PROPER PLACEMENT.

TYPICAL CROSSWALK LAYOUT



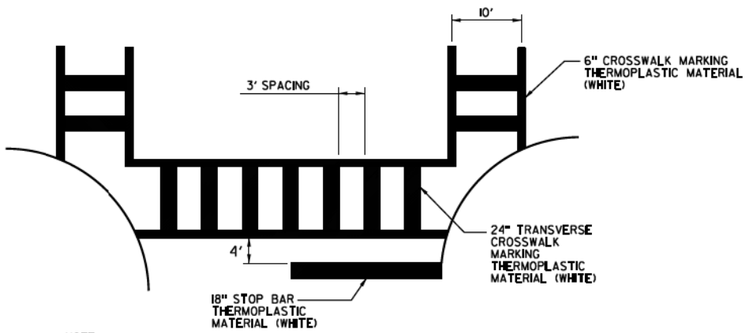
NOTE:
PLACEMENT OF CROSSWALK 24" SOLID WHITE LINES WILL VARY BASED UPON THE ROADWAY CONFIGURATION, PLEASE DISCUSS WITH THE DEPARTMENT OF TRANSPORTATION FIELD OPERATIONS PRIOR TO PLACEMENT.

DETAIL D



NOTE:
DECORATIVE CROSSWALK COLOR AND PATTERNS SHALL BE APPROVED BY THE DEPARTMENT OF TRANSPORTATION PRIOR TO INSTALLATION.

DECORATIVE CROSSWALK



NOTE:
FOR ROADS WITHOUT TRAFFIC LANE LINES MARKINGS.

CROSSWALK DETAIL

TYPICAL PAVEMENT MARKINGS	
CROSSWALK DETAILS	
DEPARTMENT OF PUBLIC WORKS CITY OF DALLAS, TEXAS	
DRAWINGS NOT TO SCALE REVISED: DECEMBER 2021	SHEET No. 5004

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

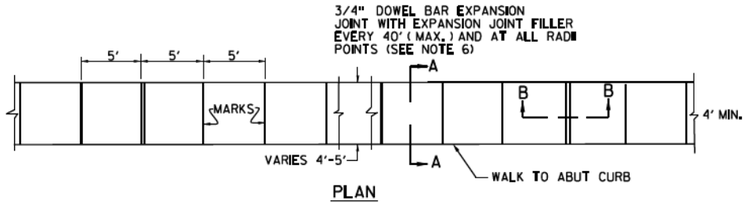
Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

CITY OF DALLAS
251-D

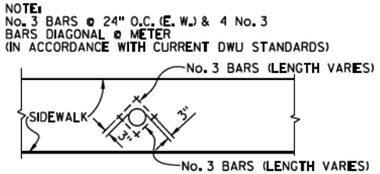
TYPICAL PAVEMENT MARKINGS
SHEET 4 OF 4

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	128
CHECK	CONTROL	SECTION	JOB	
	0918	47	342, ETC	

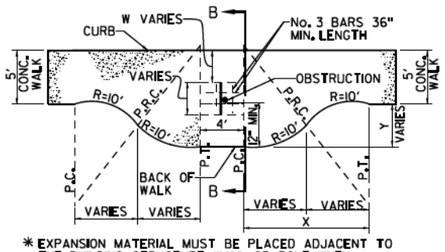


PLAN

REINFORCED CONCRETE SIDEWALK



REINFORCING DETAIL AT WATER METERS IN SIDEWALK

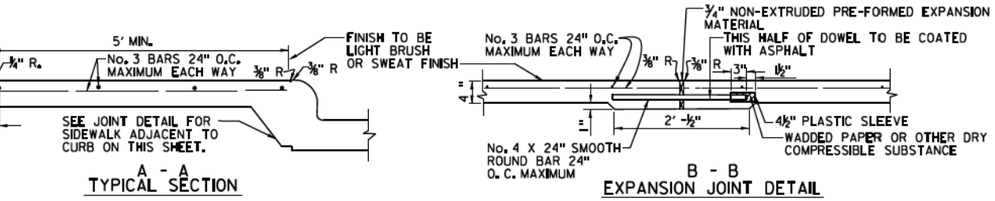


* EXPANSION MATERIAL MUST BE PLACED ADJACENT TO THE BUILDING, STRUCTURE, WALL OR POLE WHEN SIDEWALK IS POURED ADJACENT TO THESE ITEMS.

NOTES:
1. IF "W" > MEETS ADA NO WIDENING NECESSARY EXCEPT POSSIBLY TO OBTAIN MINIMUM DISTANCE OF 1' TO EDGE OF SIDEWALK.
2. SAME WIDENING PLAN WILL BE USED FOR WALK NOT ABUTTING CURB.

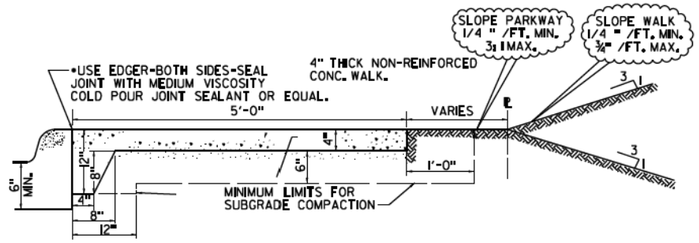
Y=1'	X= 6.24'
Y=2'	X= 8.72'
Y=3'	X= 10.54'
Y=4'	X= 12.00'
Y=5'	X= 13.23'

SIDEWALK WIDENING REQUIRED AROUND OBSTACLES IN SIDEWALK



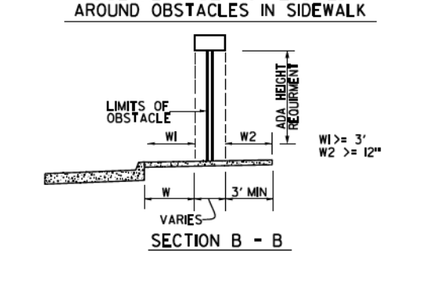
MINIMUM CONCRETE STRENGTH FOR SIDEWALK IS 3000 PSI

NOTES:
1. ALL HONEYCOMB IN BACK OF CURB TO BE TROWEL- PLASTERED BEFORE POURING SIDEWALK.
2. FOR SIDEWALKS AGAINST EXISTING CURB, KEYWAY SHALL BE REPLACED WITH 12" LONG NO. 3 DEFORMED BARS DRILLED 4" INTO EXISTING BACK CURB AND EPOXY GROUTED ON 24" CENTERS.
3. PAYMENT FOR KEYWAY SUBSIDIARY TO SIDEWALK LUG PAY ITEM.
4. PAYMENT FOR EXCAVATION, BORROW AND COMPACTION IS SUBSIDIARY TO CONCRETE SIDEWALK PAY ITEM.
5. ALL BACKFILL SHALL BE COMPACTED IN LIFTS NOT TO EXCEED 6 INCHES TO 95% DENSITY WITH A MOISTURE WITHIN -2% TO -4% OF OPTIMUN MOISTURE.
6. 3/4" EXPANSION JOINTS SHALL BE PROVIDED AT STREET EXPANSION JOINTS AND AT A MAXIMUM 40 FOOT SPACING IN LINE WITH STREET SAW JOINTS; A TOOL MARKED GROOVE SHALL BE PROVIDED IN LINE WITH INTERMEDIATE STREET SAW JOINTS.
7. FOR SIDEWALK WIDTH, REFER TO CITY OF DALLAS STREET DESIGN MANUAL.
8. MINIMUM CONCRETE STRENGTH FOR SIDEWALK IS 3000 PSI.



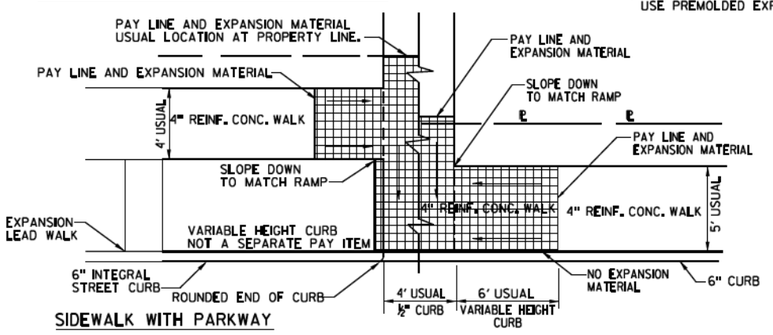
JOINT DETAIL FOR SIDEWALK ADJACENT TO CURB

SAME DETAIL FOR MEDIAN PAVEMENT- USE PREMOLDED EXPANSION JOINT



SECTION B - B

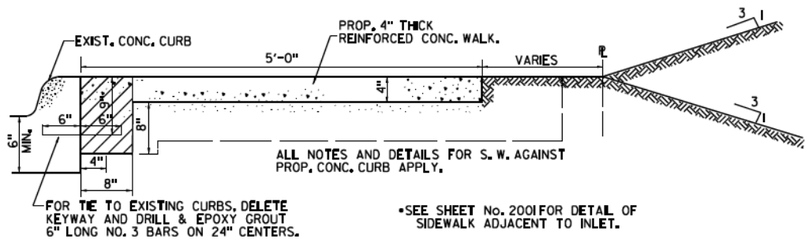
BARRIER FREE RAMPS AT LEAD WALKS



SIDEWALK WITH PARKWAY

SIDEWALK ABUTTING CURB

NOTES:
1. NO SLOPE TO EXCEED 1" PER 1'
2. ACTUAL LOCATIONS OF RAMP LIMITS WILL BE DETERMINED BY SLOPE OF RAMP AND GRADE OF STREET.
3. WALK REINFORCEMENT WILL BE No. 3 BARS SPACED 24" O.C. MAX. EACH WAY
4. BROOM FINISH NEEDED.



SIDEWALKS AGAINST EXIST. CONC. CURB

NOTE:
FOR ANY SPECIAL RAMP FOR EXISTING CONDITION DESIGN ENGINEER MUST INCLUDE DESIGN OF RAMP

PAVING DETAILS

REINFORCED SIDEWALKS

DEPARTMENT OF PUBLIC WORKS
CITY OF DALLAS, TEXAS

DRAWINGS NOT TO SCALE
REVISED: DECEMBER 2021

SHEET No. 1015

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

®Texas Department of Transportation
® 2022

TRAFFIC SAFETY IMPROVEMENTS

CITY OF DALLAS
251-D

BARRIER FREE RAMP AND SIDEWALK DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	6	(SEE TITLE SHEET)		CS
GRAPHICS	CONTROL	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	129
	CONTROL	SECTION	JOB	
CHECK	0918	47	342, ETC	

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 damage resulting from its use.

I. STORMWATER POLLUTION PREVENTION PLAN-CLEAN WATER ACT SECTION 402

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

List adjacent MS 4 Operator(s) that receive discharges from this project. They need to be notified prior to construction activities.
(Note: Leave blank only if no adjacent MS 4 Operator(s) are affected.)

1. City of Dallas Phase I MS4 contact Kevin Hurley

2.

☐ No Action Required ☒ Required Action

Action Number:

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

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

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas. No equipment is allowed in any sream channel below the ordinary High Water Mark except on approved temporary stream crossings or drill pads.

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

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

Required Actions: List Waters of the US Permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.
1.

2.

3.

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

Best Management Practices for applicable 401 General Conditions:
(Note: If CORP Permit not required, do not check boxes.)

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

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action Number:

1.

2.

3.

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 Number:

1.

2.

3.

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

☐ No Action Required ☒ Required Action

Action Number:

1. Follow Special Notes.

Special Notes:

1. Avoid harming all wildlife species if encountered and allow them to safely leave the project site. Due diligence should be used to avoid killing or harming any wildlife species in the implementation of transportation projects.

2. 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.

3. The Migratory Bird Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade or transport any migratory bird, nest, young, feather or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations. The contractor would remove all old migratory bird nests from any structure or trees where work would be done from October 1 to February 15. In addition, the contractor would be prepared to prevent migratory birds from building nest(s) between February 15 to October 1. In the event that migratory birds are encountered on-site during project construction, efforts to avoid adverse impacts on protected birds, active nests, eggs and/or young would be observed.

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

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

Obtain and keep on-site Safety Data Sheets (SDS) 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 SDS. In the event of a spill, take actions to mitigate the spill as indicated in the SDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

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

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

☐ Yes ☒ No

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

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

☐ Yes ☐ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action Number:

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action Number:

1.

GENERAL NOTE:

Any change orders and/or deviations from the final design must be reported to the Engineer prior to commencement of construction activities, as additional environmental clearance may be required.

LAST REVISION: 1/15/15

 Texas Department of Transportation
Dallas District

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		CS
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	Dallas	
CONTROL	SECTION	JOB	SHEET NO.
0918	47	342, etc.	130

Notes 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 its relative position.*
3. *All areas should be addressed thoroughly and verify the necessary pay items are set up to support actions needed.*

Filled Out: xx/xx/xxxx
Prepared by: Name/Section

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

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

This SWP3 is consistent with requirements specified in applicable stormwater plans, and the project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0918-47-342, ETC.

1.2 PROJECT LIMITS:

From: Various Intersections

To: In City of Dallas

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 32.886091, (Long) -96.717931

END: (Lat) 32.825837, (Long) -96.847511

1.4 TOTAL PROJECT AREA (Acres): 4.0

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0.4

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Traffic signal installation and improvements to pedestrian facilities at all intersections consisting of: removal of existing pavement for median improvements, drill shaft installations, conduit installation, ground box and controller cabinet installations, etc.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Eddy-Urban land complex, 4 to 8% slopes	Eddy soil 50%, Urban land 30%, Minor components 20%, Well-drained, Medium rate of runoff, Moderately low erosion potential
Houston Black-Urban land complex, 0 to 4% slopes	Houston black 55%, Urban land 35% Minor components 10%, Moderately well-drained, Very high rate of runoff, Moderately low erosion potential
Urban land	100% urban land
Trinity-Urban land complex, 0 to 1% slopes, occasionally flooded	Trinity soil 65%, Urban land 20%, Minor components 15%, Moderately well-drained High rate of runoff, Moderately low erosion potential
Urban land	100% urban land

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

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

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

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.3.)

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

☐ Sediment laden stormwater from stormwater conveyance over disturbed area
☐ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
☐ Solvents, paints, adhesives, etc. from various construction activities
☐ Transported soils from offsite vehicle tracking
☐ Construction debris and waste from various construction activities
☐ Contaminated water from excavation or dewatering pump-out water
☐ Sanitary waste from onsite restroom facilities
☐ Trash from various construction activities/receptacles
☐ Long-term stockpiles of material and waste
☒ Other: NOT APPLICABLE
☐ Other: _____
☐ Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
NOT APPLICABLE	

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

1.12 ROLES AND RESPONSIBILITIES: TxDOT

☒ Development of plans and specifications
☒ Perform SWP3 inspections
☒ Maintain SWP3 records and update to reflect daily operations
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

☒ Day To Day Operational Control
☒ Maintain schedule of major construction activities
☒ Install, maintain and modify BMPs
☐ Other: _____
☐ Other: _____
☐ Other: _____

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6	(SEE TITLE SHEET)	131

STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
0918	47	342, ETC.	CS

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ ☐ Permanent Planting, Sodding or Seeding
- X ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
NONE		

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☐ Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- ☐ Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- X ☐ Other: NOT APPLICABLE
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☐ Chemical Management
- ☐ Concrete and Materials Waste Management
- ☐ Debris and Trash Management
- ☐ Dust Control
- ☐ Sanitary Facilities
- X ☐ Other: NOT APPLICABLE
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To
NONE		

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- X Fire hydrant flushings
- X Irrigation drainage
- X Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- X Potable water sources
- X Springs
- X Uncontaminated groundwater
- X Water used to wash vehicles or control dust
- X Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3 .

2.9 MAINTENANCE:

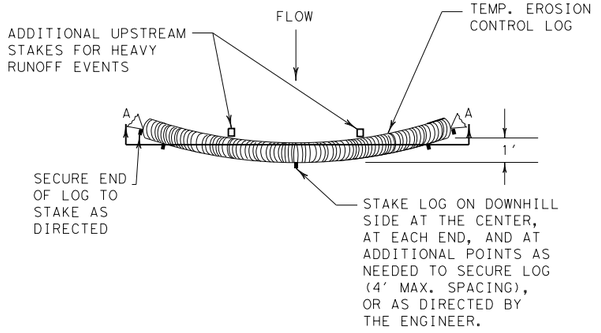
Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

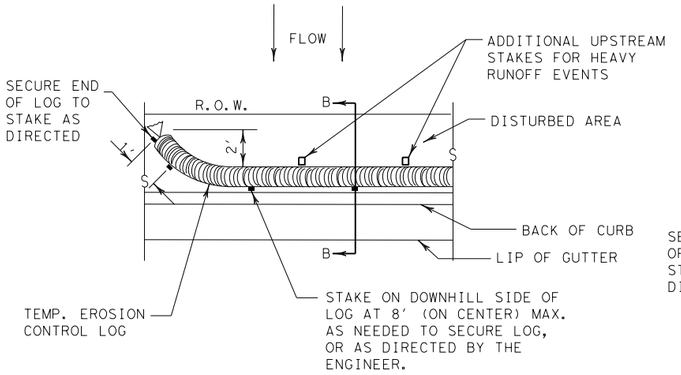
Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	(SEE TITLE SHEET)		132
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
0918	47	342,ETC.	CS

DATE:
FILE:



PLAN VIEW



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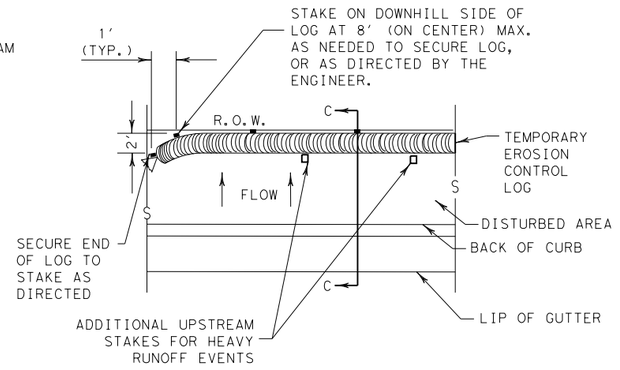
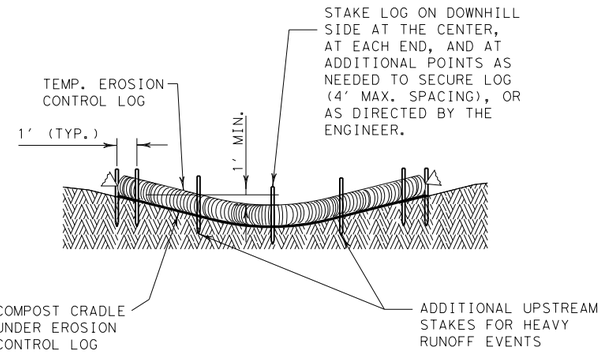


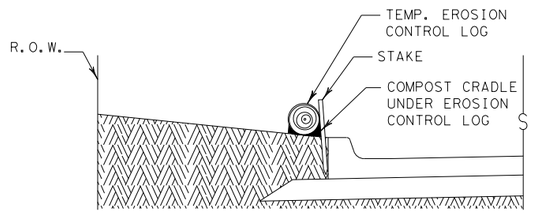
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

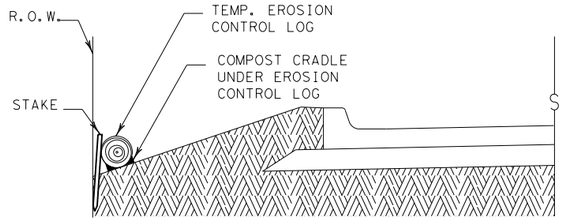
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



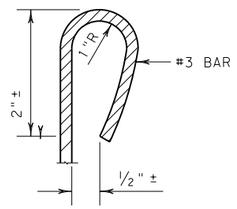
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW

LEGEND

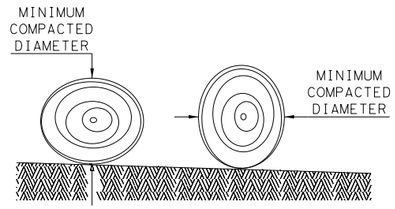
- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL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



REBAR STAKE DETAIL

GENERAL NOTES:

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



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SEDIMENT BASIN & TRAP USAGE GUIDELINES

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

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

Control logs should be placed in the following locations:

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

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

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

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916		DN: TxDOT		CK: KM	DW: LS/PT		CK: LS
© TxDOT: JULY 2016		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0918	47	342,ETC.		CS	
		DIST	COUNTY				SHEET NO.
		DAL	DALLAS				133

DATE:
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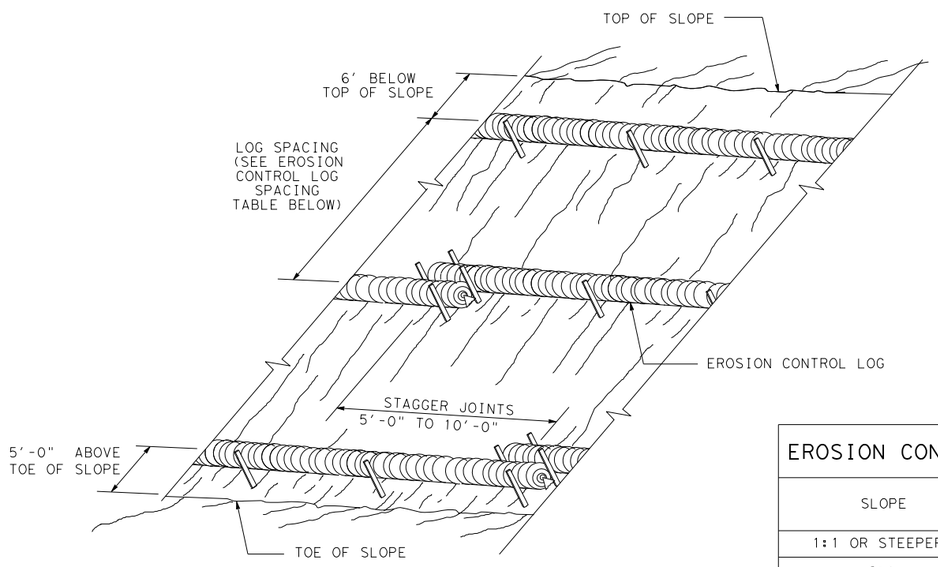
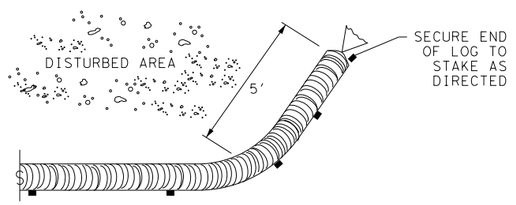


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

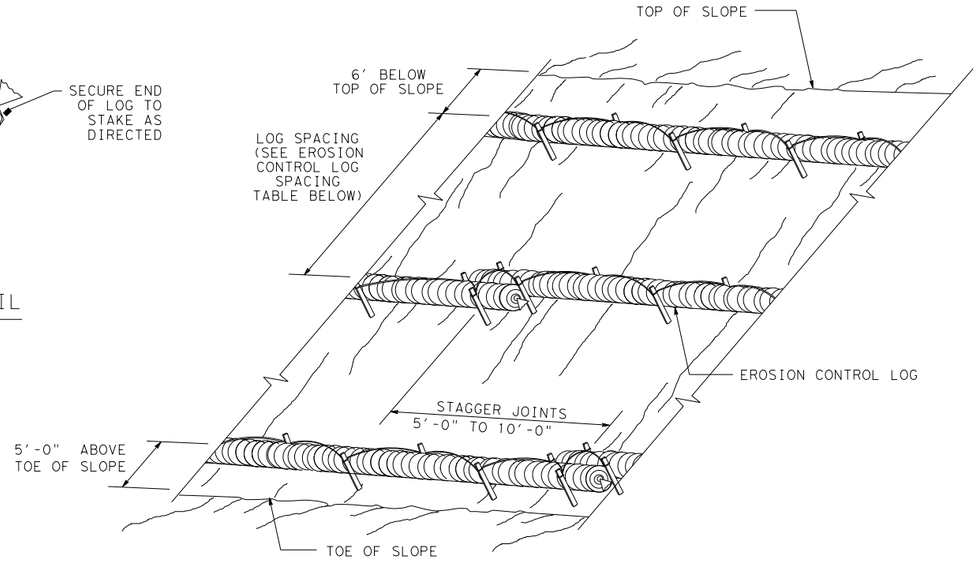
CL-SST



END SECTION RAP DETAIL

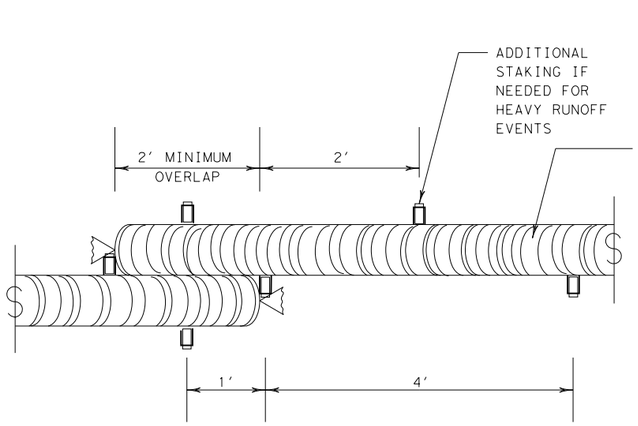
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

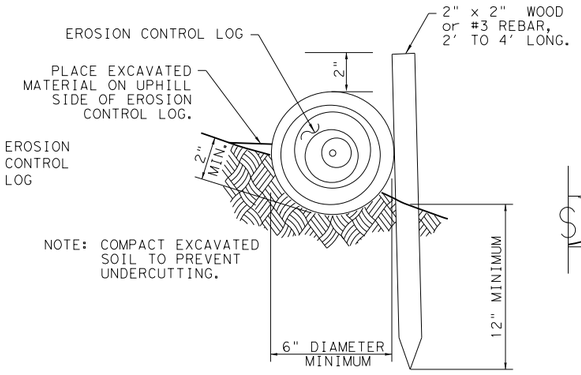
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

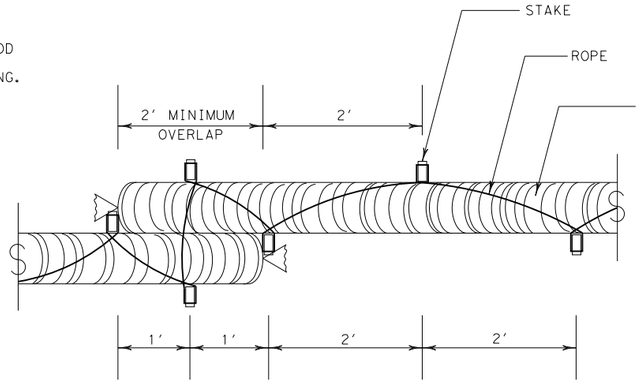




STAKE AND TRENCHING ANCHORING DETAIL

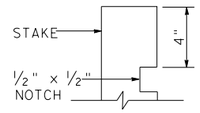
CL-SST

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

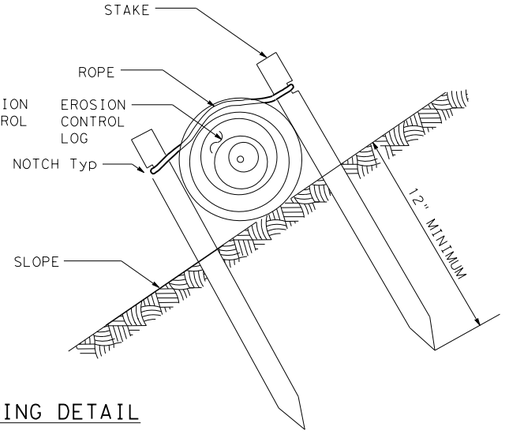


STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL



Texas Department of Transportation | Design Division Standard

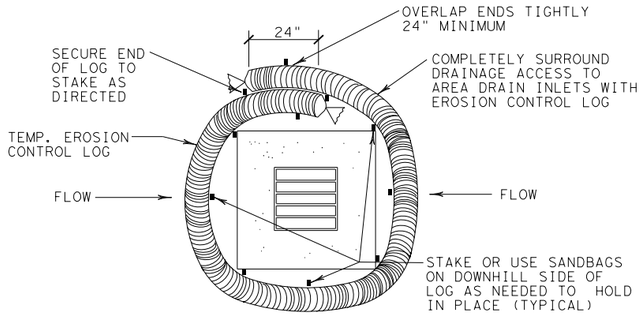
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

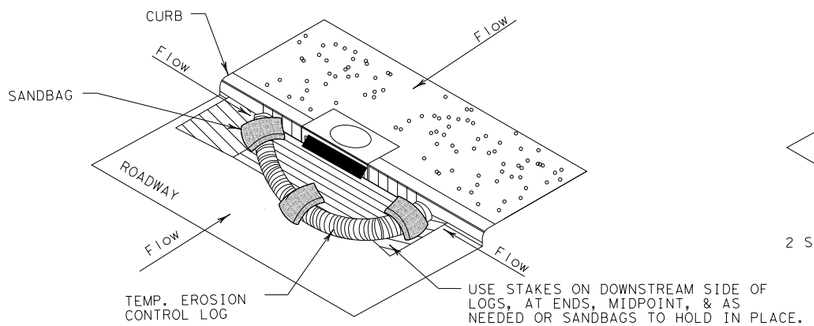
FILE: ec116	DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0918	47	342,ETC.		CS	
	DIST		COUNTY			SHEET NO.
	DAL		DALLAS			134

DATE:
FILE:



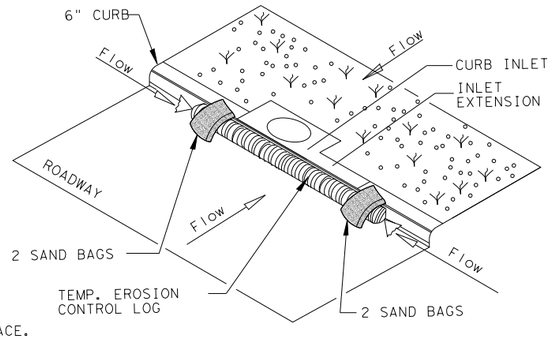
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

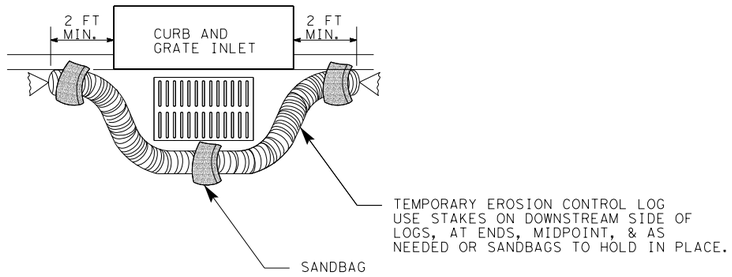
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

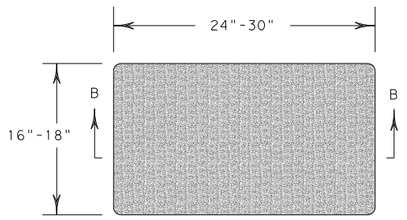
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

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	0918	47	342,ETC.	CS			
	DIST	COUNTY		SHEET NO.			
	DAL	DALLAS		135			