FINAL PLANS

NAME OF CONTRACTOR: _____

DATE OF LETTING: _____

DATE WORK BEGAN: _____

DATE WORK COMPLETED: _____

DATE WORK ACCEPTED: _____

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

CCSJ: 0918-47-247
STP 2021(611)HES
HARRY HINES BLVD AT
MARKET CENTER BLVD

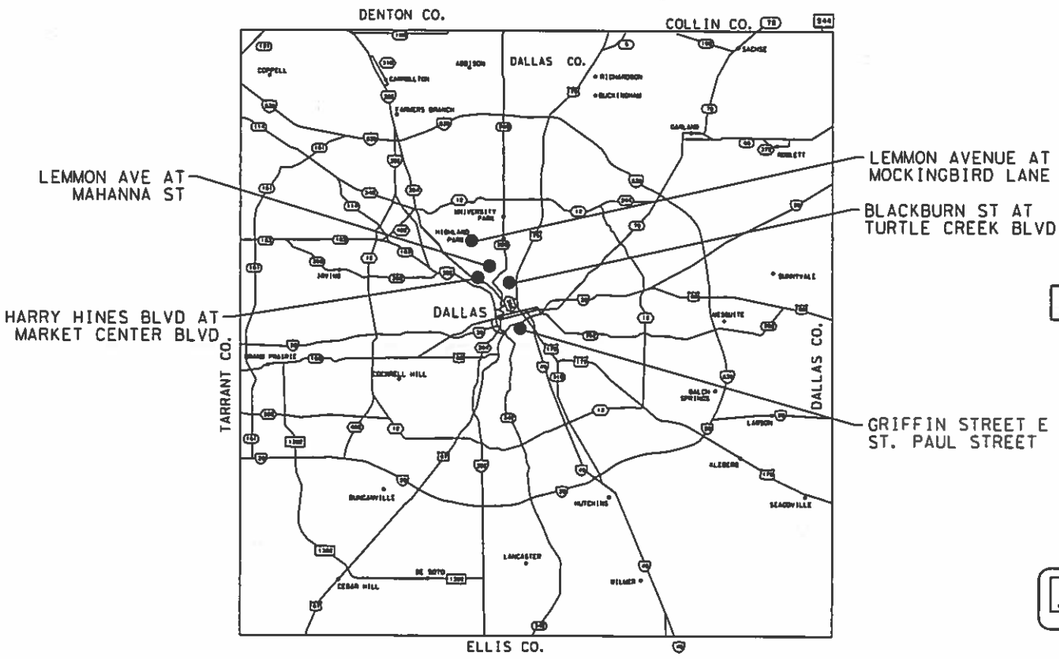
CSJ: 0918-47-254
STP 2021(611)HES
BLACKBURN ST AT
TURTLE CREEK BLVD

CSJ: 0918-47-261
STP 2021(611)HES
LEMMON AVE AT
MAHANNA ST

CSJ: 0918-47-264
STP 2021(611)HES
GRIFFIN ST E AT
ST. PAUL ST

CSJ: 0918-47-266
STP 2021(611)HES
LEMMON AVE AT
MOCKINGBIRD LN

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



DALLAS COUNTY
DALLAS DISTRICT

NO RAILROAD
NO EXCEPTIONS
NO EQUATIONS

WORK WAS COMPLETED ACCORDING TO THE PLANS AND CONTRACT

_____, P.E.
Signature of Registrant & Date

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	STP 2021(611)HES		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DAL	DALLAS	
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247, ETC.	1
APPROVED				
NCN				

NOTE:

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

REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION REQUIRED. TDLR NO: TABS2021012065

PLANS PREPARED BY:

Kimley»Horn
TBPE FIRM F-928

13455 NOEL ROAD
TWO GALLERIA OFFICE TOWER, SUITE 700
DALLAS, TEXAS 75240
PH (972) 770-1300
CONTACT: NATHAN NEW, P.E.

4/1/2021

STATE OF TEXAS
NATHAN C. NEW
101204
LICENSED
PROFESSIONAL ENGINEER

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

CONCURRENCE Apr 4, 2021 20
CITY MANAGER, CITY OF DALLAS

RECOMMENDED FOR LETTING Apr 4, 2021 20
, P.E.
INTERIM DIRECTOR, CITY OF DALLAS DEPARTMENT OF TRANSPORTATION

TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED FOR LETTING 4/5/2021
Docusigned by: Alan McNeil , P.E.
TRAFFIC DESIGN SUPERVISOR
42603C6AC8204EB...

RECOMMENDED FOR LETTING 4/6/2021
Docusigned by: JEFFREY BUSH , P.E.
DIRECTOR OF OPERATIONS
345B765EB03F406...

RECOMMENDED FOR LETTING 4/5/2021
Docusigned by: Christopher D. Blain, PE
DISTRICT TRANSPORTATION OPERATIONS ENGINEER
5E3...

APPROVED FOR LETTING 4/6/2021
Docusigned by: , P.E.
DISTRICT ENGINEER
E2527653E8DE475...

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Signature of Registrant , P.E. & Date 4/1/2021

4/1/2021

STATE OF TEXAS
NATHAN C. NEW
101204
LICENSED
PROFESSIONAL ENGINEER

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS

INDEX OF SHEETS

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GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	2
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_002_INDEX_06-21 LETTING.dgn
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BY: Marianna.Barrego

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 0918-47-247), 0.08 AC (CSJ 0918-47-254), 0.08 AC (CSJ 0918-47-261), 0.08 AC (CSJ 0918-47-264), and 0.08 AC (CSJ 0918-47-266) 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.

Contractor questions on this project are to be addressed to the following individual(s):
Engineer's Email: Brandi.Bush@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. Once a response is developed, it will be posted to TxDOT's Public FTP at the following Address: https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/

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

CCSJ: 0918-47-247, ETC. **Sheet 3**

County: Dallas

Highway: CS

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 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.

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 (noon on December 31 thru 10:00 pm January 1)
- Easter Holiday weekend (noon on Friday thru 10:00 pm Sunday)
- Memorial Day weekend (noon on Friday thru 10:00pm Monday)
- Independence Day (noon on July 3 thru 10:00 pm on July 5)
- Labor Day weekend (noon on Friday thru 10:00 pm Monday)
- Thanksgiving Holiday (noon on Wednesday thru 10:00 pm Sunday)
- Christmas Holiday (noon 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.

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:

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.

CCSJ: 0918-47-247, ETC. **Sheet 3A**

County: Dallas

Highway: CS

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 440:

Fiber Reinforced Concrete (FRC) can be used as a substitute for Non-Structural Class Reinforced Concrete in Mow-Strip and Rip Rap Items as approved. FRC may also be used for other Non-Structural Class Reinforced Concrete Items as approved.

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 and adhere to the Freeway Lane Closure Table. 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.

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.

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 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").

CCSJ: 0918-47-247, ETC. **Sheet 3B**

County: Dallas

Highway: CS

Furnish and install a non-metallic mule tape in conduit runs in excess of 50 feet. Also furnish and install non-metallic mule tape in conduit installed for future use and cap using standard weather-tight conduit caps, as approved. Furnish 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.

Existing conduit is proposed for reuse in this project. Conduit prep will be paid for under Item 6027 as directed by the Engineer.

When using existing conduit, ensure that all conduits have bushings and are cleaned of mud and debris. Re-strap conduit that is being relocated to new timber poles as if it were a new installation. This work will not be paid for directly, but is subsidiary to this Item.

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. Field meetings with the utility company should also be coordinated with City of Dallas Traffic Signal staff, Mr. Alfred Lemon (Alfred.Lemon@dallascityhall.com) and Mr. Favian Giraldo (Favian.Giraldo@dallascityhall.com). 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 be required to install all electrical services.

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.

CCSJ: 0918-47-247, ETC. **Sheet 3C**

County: Dallas

Highway: CS

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 engineer at (214) 671-9958 one week before beginning any work involving traffic signals.
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. Have a qualified technician and a representative from the controller supplier on the project site to place the traffic signals in operation. 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, Ms. Hazel Baker, at (214) 670-3772 with at least 24-hour notice of intent to pick-up materials from the City of Dallas.

7. The contractor to procure and install street name sign panels, all other signs, and hardware for mounting on signal poles, mast arms, or span wires.
8. Provide 250W Equivalent LED Fixtures with 120-volt electronic LED drivers as shown on the Material Producers List.
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 the existing traffic signals at all intersections as shown on the plans. Salvage poles, cabinets, service poles and equipment, and any other equipment as directed. This 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.

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 polycarbonate pedestrian and vehicle signal heads in the following color: Black. Provide non-painted aluminum tubing. Provide back plates, louvers, and the inside of visors with a flat black finish. Provide aluminum back plates for all traffic signal heads. All backplates to be retroreflective.

CCSJ: 0918-47-247, ETC. **Sheet 3D**

County: Dallas

Highway: CS

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.

Item 684:

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 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.

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	
(1-1)-18 / (1-2)-18			1	
(1-3)-18	A	B	1	2
(1-4)-18 / (1-5)-18 / (1-6)-18			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:

All additional items such as poles, conduit, cable, etc. required to achieve the detection specified in the plans will not be paid for separately, but will be considered subsidiary to this item.

CCSJ: 0918-47-247, ETC. **Sheet 3E**

County: Dallas

Highway: CS

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.

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: 0918-47-247: HARRY HINES BLVD AT MARKET CENTER BLVD

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 Regulatory Sign Panel	EA	8
Procure and Install Street Name Sign Assembly	EA	4

CSJ 0918-47-254: BLACKBURN ST AT TURTLE CREEK BLVD

Description	UNIT	QUANTITY
250W 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	3
Procure and Install Street Name Sign Assembly	EA	4

CSJ 0918-47-261: LEMMON AVE AT MAHANNA ST

Description	UNIT	QUANTITY
250W 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	5
Procure and Install Street Name Sign Assembly	EA	4

CSJ 0918-47-264: GRIFFIN ST E AT ST. PAUL ST

Description	UNIT	QUANTITY
250W 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	5
Procure and Install Street Name Sign Assembly	EA	2

CCSJ: 0918-47-247, ETC. **Sheet 3F**

County: Dallas

Highway: CS

CSJ 0918-47-266: LEMMON AVE AT MOCKINGBIRD LN

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 Regulatory Sign Panel	EA	4
Procure and Install Street Name Sign Assembly	EA	4

LIST OF MATERIAL
FURNISHED BY THE CITY OF DALLAS

CSJ: 0918-47-247: HARRY HINES BLVD AT MARKET CENTER BLVD

Description	UNIT	QUANTITY
332 Signal Controller Cabinet	EA	1
2070 Controller & Ethernet Communication Device	EA	1
Radar Presence Detector	EA	3
Radar Advanced Detector	EA	2
Radar Communication Cable	LF	900

CSJ 0918-47-254: BLACKBURN ST AT TURTLE CREEK BLVD

Description	UNIT	QUANTITY
332 Signal Controller Cabinet	EA	1
2070 Controller & Ethernet Communication Device	EA	1
Radar Presence Detector	EA	4
Radar Advanced Detector	EA	2
Radar Communication Cable	LF	1135

CSJ 0918-47-261: LEMMON AVE AT MAHANNA ST

Description	UNIT	QUANTITY
332 Signal Controller Cabinet	EA	1
2070 Controller & Ethernet Communication Device	EA	1
Radar Presence Detector	EA	4
Radar Advanced Detector	EA	2
Radar Communication Cable	LF	1190

CSJ 0918-47-264: GRIFFIN ST E AT ST. PAUL ST

Description	UNIT	QUANTITY
332 Signal Controller Cabinet	EA	1
2070 Controller & Ethernet Communication Device	EA	1
Radar Presence Detector	EA	2
Radar Communication Cable	LF	355

CCSJ: 0918-47-247, ETC. **Sheet 3G**

County: Dallas

Highway: CS

CSJ 0918-47-266: LEMMON AVE AT MOCKINGBIRD LN

Description	UNIT	QUANTITY
332 Signal Controller Cabinet	EA	1
2070 Controller & Ethernet Communication Device	EA	1
Radar Presence Detector	EA	4
Radar Advanced Detector	EA	4
Radar Communication Cable	LF	1555

LIST OF MATERIAL
FURNISHED BY THE DISTRICT

None

QUANTITY SHEET

CONTROLLING PROJECT ID 0918-47-247 **DISTRICT** Dallas **COUNTY** Dallas
HIGHWAY BLACKBURN ST, GRIFFIN ST E, HARRY HINES, LEMMON AVE

			CONTROL SECTION JOB		**0918-47-247**		**0918-47-254**		**0918-47-261**		**0918-47-264**		**0918-47-266**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00066499**		**A00066455**		**A00066380**		**A00066489**		**A00066386**			
			COUNTY		**Dallas**		**Dallas**		**Dallas**		**Dallas**		**Dallas**			
			HIGHWAY		**HARRY HINES**		**BLACKBURN ST**		**LEMMON AVE**		**GRIFFIN ST E**		**LEMMON AVE**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	104-6001	REMOVING CONC (PAV)	SY			135.000		23.000				70.000		228.000	
	104-6013	REMOVING CONC (FOUNDATIONS)	SY									4.000		4.000	
	104-6015	REMOVING CONC (SIDEWALKS)	SY			48.000				18.000				66.000	
	104-6021	REMOVING CONC (CURB)	LF			154.000								154.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF	50.000				36.000		36.000		54.000		176.000	
	105-6005	REMOVING STAB BASE AND ASPH PAV (3")	SY									70.000		70.000	
	110-6001	EXCAVATION (ROADWAY)	CY			39.000						61.000		100.000	
	162-6002	BLOCK SODDING	SY			19.000								19.000	
	168-6001	VEGETATIVE WATERING	MG			1.000								1.000	
	251-6034	REWORK BS MTL (TY C) (8") (ORD COMP)	SY			10.000		13.000				80.000		103.000	
	360-6044	CONC PVMT (CONT REINF)(FAST TRK)(12")	SY			19.000		13.000				129.000		161.000	
	416-6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF			8.000		16.000						24.000	
	416-6031	DRILL SHAFT (TRF SIG POLE) (30 IN)	LF	11.000				22.000						33.000	
	416-6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	39.000		26.000		26.000		33.000		39.000		163.000	
	416-6034	DRILL SHAFT (TRF SIG POLE) (48 IN)	LF			44.000						22.000		66.000	
	432-6003	RIPRAP (CONC)(6 IN)	CY	7.000		2.500		5.000		3.000		6.500		24.000	
	479-6001	ADJUSTING MANHOLES	EA			1.000						1.000		2.000	
	500-6001	MOBILIZATION	LS	20.00%		20.00%		20.00%		20.00%		20.00%		100.00%	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	4.000		4.000		4.000		4.000		4.000		20.000	
	506-6042	BIODEG EROSN CONT LOGS (INSTL) (18")	LF	60.000		60.000		45.000		60.000		60.000		285.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	60.000		60.000		45.000		60.000		60.000		285.000	
	529-6002	CONC CURB (TY II)	LF	32.000		6.000		65.000						103.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF	50.000		156.000		68.000		52.000		141.000		467.000	
	531-6003	CONC SIDEWALKS (6")	SY	64.000		64.000		27.000		23.000		86.000		264.000	
	531-6004	CURB RAMPS (TY 1)	EA	2.000										2.000	
	531-6005	CURB RAMPS (TY 2)	EA	1.000				1.000				1.000		3.000	
	531-6006	CURB RAMPS (TY 3)	EA							1.000				1.000	
	531-6008	CURB RAMPS (TY 5)	EA			2.000		1.000		5.000		2.000		10.000	
	531-6010	CURB RAMPS (TY 7)	EA	3.000		4.000		5.000				2.000		14.000	
	531-6017	CURB RAMPS (TY 22)	EA									1.000		1.000	
	536-6006	CONC MEDIAN(MONO NOSE)	SY			4.000						26.000		30.000	
	610-6162	IN RD IL (TY SA) 30T-8 (250W EQ) LED	EA			1.000		2.000						3.000	
	618-6046	CONDT (PVC) (SCH 80) (2")	LF	40.000		85.000		155.000		40.000		65.000		385.000	
	618-6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF			190.000				105.000				295.000	
	618-6053	CONDT (PVC) (SCH 80) (3")	LF	205.000		175.000		290.000		65.000		145.000		880.000	
	618-6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	320.000		410.000		395.000		60.000		510.000		1,695.000	
	618-6058	CONDT (PVC) (SCH 80) (4")	LF	10.000		20.000		20.000		20.000		20.000		90.000	

QUANTITY SHEET

CONTROLLING PROJECT ID 0918-47-247 **DISTRICT** Dallas **COUNTY** Dallas
HIGHWAY BLACKBURN ST, GRIFFIN ST E, HARRY HINES, LEMMON AVE

				0918-47-247		0918-47-254		0918-47-261		0918-47-264		0918-47-266		TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB													
		PROJECT ID		**A00066499**		**A00066455**		**A00066380**		**A00066489**		**A00066386**			
		COUNTY		**Dallas**		**Dallas**		**Dallas**		**Dallas**		**Dallas**			
		HIGHWAY		**HARRY HINES**		**BLACKBURN ST**		**LEMMON AVE**		**GRIFFIN ST E**		**LEMMON AVE**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	618-6059	CONDT (PVC) (SCH 80) (4") (BORE)	LF	320.000		315.000		395.000		60.000		510.000		1,600.000	
	620-6004	ELEC CONDR (NO.12) INSULATED	LF	320.000		160.000		160.000		80.000		320.000		1,040.000	
	620-6008	ELEC CONDR (NO.8) INSULATED	LF	900.000		850.000		920.000		200.000		1,050.000		3,920.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF	555.000		605.000		650.000		225.000		710.000		2,745.000	
	620-6010	ELEC CONDR (NO.6) INSULATED	LF	20.000		270.000		30.000		60.000		40.000		420.000	
	624-6010	GROUND BOX TY D (162922)W/APRON	EA	7.000		4.000		6.000		2.000		3.000		22.000	
	624-6028	REMOVE GROUND BOX	EA	5.000		6.000						5.000		16.000	
	628-6187	ELC SRV TY D 120/240 070(NS)SS(E)PS(U)	EA	1.000		1.000		1.000		1.000		1.000		5.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	6.000		5.000		2.000						13.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1.000						1.000				2.000	
	666-6035	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	585.000		745.000		225.000		100.000		200.000		1,855.000	
	666-6041	REFL PAV MRK TY I (W)12"(SLD)(090MIL)	LF							85.000				85.000	
	666-6047	REFL PAV MRK TY I (W)24"(SLD)(090MIL)	LF	425.000		585.000		340.000		250.000		790.000		2,390.000	
	666-6224	PAVEMENT SEALER 4"	LF	1,415.000		1,430.000		1,425.000		510.000		1,140.000		5,920.000	
	666-6225	PAVEMENT SEALER 6"	LF	24.000		40.000				45.000				109.000	
	666-6226	PAVEMENT SEALER 8"	LF	585.000		745.000		225.000		100.000		200.000		1,855.000	
	666-6228	PAVEMENT SEALER 12"	LF							85.000				85.000	
	666-6230	PAVEMENT SEALER 24"	LF	425.000		585.000		340.000		250.000		790.000		2,390.000	
	666-6231	PAVEMENT SEALER (ARROW)	EA	5.000		11.000		4.000		3.000		6.000		29.000	
	666-6232	PAVEMENT SEALER (WORD)	EA	5.000								2.000		7.000	
	666-6234	PAVEMENT SEALER (DBL ARROW)	EA					2.000		2.000		2.000		6.000	
	666-6243	PAVEMENT SEALER (YLD TRI)	EA	19.000										19.000	
	666-6299	RE PM W/RET REQ TY I (W)4"(BRK)(090MIL)	LF	280.000		820.000		400.000		100.000		720.000		2,320.000	
	666-6302	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)	LF	1,135.000		210.000		225.000		410.000		420.000		2,400.000	
	666-6305	RE PM W/RET REQ TY I (W)6"(BRK)(090MIL)	LF	24.000		40.000				45.000				109.000	
	666-6314	RE PM W/RET REQ TY I (Y)4"(SLD)(090MIL)	LF			400.000		800.000						1,200.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	5.000		11.000		4.000		3.000		6.000		29.000	
	668-6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA					2.000		2.000		2.000		6.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	5.000								2.000		7.000	
	668-6091	PREFAB PAV MRK TY C (W) (18")(YLD TRI)	EA	19.000										19.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA			9.000		30.000						39.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA	62.000		298.000		128.000		50.000		172.000		710.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	1,325.000		1,405.000		400.000		130.000		1,140.000		4,400.000	
	677-6002	ELIM EXT PAV MRK & MRKS (6")	LF	12.000		570.000		290.000						872.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	480.000		745.000		145.000		415.000		200.000		1,985.000	
	677-6005	ELIM EXT PAV MRK & MRKS (12")	LF							235.000		640.000		875.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	55.000		555.000		295.000		80.000		150.000		1,135.000	

QUANTITY SHEET

CONTROLLING PROJECT ID 0918-47-247 **DISTRICT** Dallas **COUNTY** Dallas
HIGHWAY BLACKBURN ST, GRIFFIN ST E, HARRY HINES, LEMMON AVE

				0918-47-247		0918-47-254		0918-47-261		0918-47-264		0918-47-266		TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB													
		PROJECT ID		A00066499		A00066455		A00066380		A00066489		A00066386			
		COUNTY		Dallas		Dallas		Dallas		Dallas		Dallas			
		HIGHWAY		HARRY HINES		BLACKBURN ST		LEMMON AVE		GRIFFIN ST E		LEMMON AVE			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	4.000		5.000		4.000		2.000				15.000	
	677-6009	ELIM EXT PAV MRK & MRKS (DBL ARROW)	EA							1.000				1.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	4.000		1.000								5.000	
	678-6001	PAV SURF PREP FOR MRK (4")	LF	1,415.000		1,430.000		1,425.000		510.000		1,140.000		5,920.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF	24.000		40.000				45.000				109.000	
	678-6004	PAV SURF PREP FOR MRK (8")	LF	585.000		745.000		225.000		100.000		200.000		1,855.000	
	678-6006	PAV SURF PREP FOR MRK (12")	LF							85.000				85.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF	425.000		585.000		340.000		250.000		790.000		2,390.000	
	678-6009	PAV SURF PREP FOR MRK (ARROW)	EA	5.000		11.000		4.000		3.000		6.000		29.000	
	678-6010	PAV SURF PREP FOR MRK (DBL ARROW)	EA					2.000		2.000		2.000		6.000	
	678-6016	PAV SURF PREP FOR MRK (WORD)	EA	5.000								2.000		7.000	
	678-6022	PAV SURF PREP FOR MRK (18")(YLD TRI)	EA	19.000										19.000	
	678-6033	PAV SURF PREP FOR MRK (RPM)	EA	62.000		307.000		146.000		50.000		172.000		737.000	
	680-6004	REMOVING TRAFFIC SIGNALS	EA	1.000		1.000		1.000		1.000		1.000		5.000	
	680-6005	INS HY TRF SIG (DPT SUP CNT & CAB)(ISO)	EA	1.000		1.000		1.000		1.000		1.000		5.000	
	682-6001	VEH SIG SEC (12")LED(GRN)	EA	12.000		11.000		12.000		3.000		15.000		53.000	
	682-6002	VEH SIG SEC (12")LED(GRN ARW)	EA	2.000		5.000		4.000		3.000		2.000		16.000	
	682-6003	VEH SIG SEC (12")LED(YEL)	EA	15.000		11.000		12.000		6.000		15.000		59.000	
	682-6004	VEH SIG SEC (12")LED(YEL ARW)	EA	3.000		10.000		4.000				3.000		20.000	
	682-6005	VEH SIG SEC (12")LED(RED)	EA	16.000		12.000		12.000		6.000		15.000		61.000	
	682-6006	VEH SIG SEC (12")LED(RED ARW)	EA	1.000		8.000		4.000				4.000		17.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	4.000		8.000		6.000		6.000		8.000		32.000	
	682-6047	LOUVER (12") (ADJUSTABLE)	EA	3.000										3.000	
	682-6051	BACKPLATE W/REFL BRDR(3 SEC)ALUM	EA	16.000		11.000		12.000		6.000		15.000		60.000	
	682-6052	BACKPLATE W/REFL BRDR(4 SEC)ALUM	EA	1.000		1.000		2.000				1.000		5.000	
	682-6053	BACKPLATE W/REFL BRDR(5 SEC)ALUM	EA			4.000		2.000				1.000		7.000	
	684-6031	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	LF	635.000		495.000		315.000		325.000		690.000		2,460.000	
	684-6033	TRF SIG CBL (TY A)(14 AWG)(7 CONDR)	LF	20.000		290.000		195.000				135.000		640.000	
	684-6036	TRF SIG CBL (TY A)(14 AWG)(10 CONDR)	LF	695.000		440.000		750.000		460.000		620.000		2,965.000	
	684-6046	TRF SIG CBL (TY A)(14 AWG)(20 CONDR)	LF	605.000		630.000		620.000		90.000		615.000		2,560.000	
	684-6079	TRF SIG CBL (TY C)(12 AWG)(2 CONDR)	LF	550.000		1,175.000		875.000		615.000		1,280.000		4,495.000	
	686-6021	INS TRF SIG PL AM (S)1 ARM(20')	EA					1.000						1.000	
	686-6023	INS TRF SIG PL AM (S)1 ARM(20')LUM	EA					1.000						1.000	
	686-6035	INS TRF SIG PL AM(S)1 ARM(32')LUM	EA	1.000										1.000	
	686-6039	INS TRF SIG PL AM(S)1 ARM(36')LUM	EA	1.000										1.000	
	686-6043	INS TRF SIG PL AM(S)1 ARM(40')LUM	EA	2.000				1.000				1.000		4.000	
	686-6045	INS TRF SIG PL AM(S)1 ARM(44')	EA			1.000		1.000						2.000	

QUANTITY SHEET

CONTROLLING PROJECT ID 0918-47-247 **DISTRICT** Dallas **COUNTY** Dallas
HIGHWAY BLACKBURN ST, GRIFFIN ST E, HARRY HINES, LEMMON AVE

				0918-47-247		0918-47-254		0918-47-261		0918-47-264		0918-47-266		TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB													
		PROJECT ID		A00066499		A00066455		A00066380		A00066489		A00066386			
		COUNTY		Dallas		Dallas		Dallas		Dallas		Dallas			
		HIGHWAY		HARRY HINES		BLACKBURN ST		LEMMON AVE		GRIFFIN ST E		LEMMON AVE			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	686-6047	INS TRF SIG PL AM(S)1 ARM(44')LUM	EA									1.000		1.000	
	686-6049	INS TRF SIG PL AM(S)1 ARM(48')	EA			1.000								1.000	
	686-6051	INS TRF SIG PL AM(S)1 ARM(48')LUM	EA									1.000		1.000	
	686-6055	INS TRF SIG PL AM(S)1 ARM(50')LUM	EA			1.000								1.000	
	686-6059	INS TRF SIG PL AM(S)1 ARM(55')LUM	EA			1.000								1.000	
	686-6063	INS TRF SIG PL AM(S)1 ARM(60')LUM	EA									1.000		1.000	
	686-6167	INS TRF SIG PL AM(S)2 ARM(44-36')LUM	EA							1.000				1.000	
	687-6001	PED POLE ASSEMBLY	EA	4.000		3.000		3.000		2.000		4.000		16.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA	4.000		8.000		6.000		6.000		8.000		32.000	
	688-6003	PED DETECTOR CONTROLLER UNIT	EA	1.000		1.000		1.000		1.000		1.000		5.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	10.000		10.000		10.000		10.000		10.000		50.000	
	6010-6002	CCTV FIELD EQUIPMENT (DIGITAL)	EA	1.000		1.000		1.000		1.000		1.000		5.000	
	6010-6004	CCTV MOUNT (POLE)	EA	1.000		1.000		1.000		1.000		1.000		5.000	
	6027-6003	CONDUIT (PREPARE)	LF							230.000				230.000	
	6027-6008	GROUND BOX (PREPARE)	EA							3.000				3.000	
	6185-6002	TMA (STATIONARY)	DAY	6.000		6.000		6.000		6.000		6.000		30.000	
	6186-6014	ITS GND BOX (POLY) TY 1 (243624)W/APRN	EA	1.000		1.000		1.000		1.000		1.000		5.000	
	6292-6004	RVDS(PRESENCE DET ONLY)(INSTALL ONLY)	EA	2.000		2.000		2.000		2.000				8.000	
	6292-6006	RVDS(PRES AND ADV DET)(INSTALL ONLY)	EA	2.000		2.000		2.000				4.000		10.000	
	14	PUBLIC UTILITY FORCE ACCT WORK (PARTICIPATING)	LS	1.000		1.000		1.000		1.000		1.000		5.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000		1.000		1.000		1.000		5.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000		1.000		1.000		1.000		5.000	
	31	MATERIALS FURNISHED BY CITY (PARTICIPATING)	LS	1.000		1.000		1.000		1.000		1.000		5.000	

SUMMARY OF QUANTITIES				0918-47-247	0918-47-254	0918-47-261	0918-47-264	0918-47-266	PROJECT TOTAL
ITEM NO.	CODE	DESCRIPTION	UNIT	HARRY HINES AT MARKET CENTER	BLACKBURN AT TURTLE CREEK	LEMMON AVE AT MAHANNA ST	GRIFFIN ST E AT ST. PAUL ST	LEMMON AVE AT MOCKINGBIRD LN	
104	6001	REMOVING CONC (PAV)	SY		135	23		70	228
104	6013	REMOVING CONC (FOUNDATIONS)	SY					4	4
104	6015	REMOVING CONC (SIDEWALKS)	SY		48		18		66
104	6021	REMOVING CONC (CURB)	LF		154				154
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	50		36	36	54	176
105	6005	REMOVING STAB BASE AND ASPH PAV (3")	SY					70	70
110	6001	EXCAVATION (ROADWAY)	CY		39			61	100
162	6002	BLOCK SODDING	SY		19				19
168	6001	VEGETATIVE WATERING	MG		1				1
251	6034	REWORK BS MTL (TY C) (8") (ORD COMP)	SY		10	13		80	103
360	6044	CONC PVMT (CONT REINF)(FAST TRK)(12")	SY		19	13		129	161
416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF		8	16			24
416	6031	DRILL SHAFT (TRF SIG POLE) (30 IN)	LF	11		22			33
416	6032	DRILL SHAFT (TRF SIG POLE) (36 IN)	LF	39	26	26	33	39	163
416	6034	DRILL SHAFT (TRF SIG POLE) (48 IN)	LF		44			22	66
432	6003	RIPRAP (CONC)(6 IN)	CY	7	2.5	5	3	6.5	24
479	6001	ADJUSTING MANHOLES	EA		1			1	2
500	6001	MOBILIZATION	LS	0.2	0.2	0.2	0.2	0.2	1
502	6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	4	4	4	4	4	20
506	6042	BIODEG EROSN CONT LOGS (INSTL) (18")	LF	60	60	45	60	60	285
506	6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	60	60	45	60	60	285
529	6002	CONC CURB (TY II)	LF	32	6	65			103
529	6008	CONC CURB & GUTTER (TY II)	LF	50	156	68	52	141	467
531	6003	CONC SIDEWALKS (6")	SY	64	64	27	23	86	264
531	6004	CURB RAMPS (TY 1)	EA	2					2
531	6005	CURB RAMPS (TY 2)	EA	1		1		1	3
531	6006	CURB RAMPS (TY 3)	EA				1		1
531	6008	CURB RAMPS (TY 5)	EA		2	1	5	2	10
531	6010	CURB RAMPS (TY 7)	EA	3	4	5		2	14
531	6017	CURB RAMPS (TY 22)	EA					1	1
536	6006	CONC MEDIAN(MONO NOSE)	SY		4			26	30
610	6162	IN RD IL (TY SA) 30T-8 (250W EQ) LED	EA		1	2			3
618	6046	CONDT (PVC) (SCH 80) (2")	LF	40	85	155	40	65	385
618	6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF		190		105		295
618	6053	CONDT (PVC) (SCH 80) (3")	LF	205	175	290	65	145	880
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	320	410	395	60	510	1695
618	6058	CONDT (PVC) (SCH 80) (4")	LF	10	20	20	20	20	90
618	6059	CONDT (PVC) (SCH 80) (4") (BORE)	LF	320	315	395	60	510	1600
620	6004	ELEC CONDR (NO.12) INSULATED	LF	320	160	160	80	320	1040
620	6008	ELEC CONDR (NO.8) INSULATED	LF	900	850	920	200	1050	3920
620	6009	ELEC CONDR (NO.6) BARE	LF	555	605	650	225	710	2745
620	6010	ELEC CONDR (NO.6) INSULATED	LF	20	270	30	60	40	420
624	6010	GROUND BOX TY D (162922)W/APRON	EA	7	4	6	2	3	22
624	6028	REMOVE GROUND BOX	EA	5	6			5	16
628	6187	ELC SRV TY D 120/240 070(NS)SS(E)PS(U)	EA	1	1	1	1	1	5
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	6	5	2			13
644	6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1			1		2
666	6035	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	585	745	225	100	200	1855
666	6041	REFL PAV MRK TY I (W)12"(SLD)(090MIL)	LF				85		85
666	6047	REFL PAV MRK TY I (W)24"(SLD)(090MIL)	LF	425	585	340	250	790	2390
666	6224	PAVEMENT SEALER 4"	LF	1415	1430	1425	510	1140	5920
666	6225	PAVEMENT SEALER 6"	LF	24	40		45		109
666	6226	PAVEMENT SEALER 8"	LF	585	745	225	100	200	1855
666	6228	PAVEMENT SEALER 12"	LF				85		85
666	6230	PAVEMENT SEALER 24"	LF	425	585	340	250	790	2390
666	6231	PAVEMENT SEALER (ARROW)	EA	5	11	4	3	6	29
666	6232	PAVEMENT SEALER (WORD)	EA	5				2	7
666	6234	PAVEMENT SEALER (DBL ARROW)	EA			2	2	2	6
666	6243	PAVEMENT SEALER (YLD TRI)	EA	19					19
666	6299	RE PM W/RET REQ TY I (W)4"(BRK)(090MIL)	LF	280	820	400	100	720	2320
666	6302	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)	LF	1135	210	225	410	420	2400
666	6305	RE PM W/RET REQ TY I (W)6"(BRK)(090MIL)	LF	24	40		45		109
666	6314	RE PM W/RET REQ TY I (Y)4"(SLD)(090MIL)	LF		400	800			1200
668	6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	5	11	4	3	6	29
668	6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA			2	2	2	6
668	6085	PREFAB PAV MRK TY C (W) (WORD)	EA	5				2	7
668	6091	PREFAB PAV MRK TY C (W) (18")(YLD TRI)	EA	19					19
672	6009	REFL PAV MRKR TY II-A-A	EA		9	30			39
672	6010	REFL PAV MRKR TY II-C-R	EA	62	298	128	50	172	710
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1325	1405	400	130	1140	4400
677	6002	ELIM EXT PAV MRK & MRKS (6")	LF	12	570	290			872
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	480	745	145	415	200	1985
677	6005	ELIM EXT PAV MRK & MRKS (12")	LF				235	640	875
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	55	555	295	80	150	1135
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	4	5	4	2		15
677	6009	ELIM EXT PAV MRK & MRKS (DBL ARROW)	EA				1		1
677	6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	4	1				5
678	6001	PAV SURF PREP FOR MRK (4")	LF	1415	1430	1425	510	1140	5920
678	6002	PAV SURF PREP FOR MRK (6")	LF	24	40		45		109
678	6004	PAV SURF PREP FOR MRK (8")	LF	585	745	225	100	200	1855
678	6006	PAV SURF PREP FOR MRK (12")	LF				85		85
678	6008	PAV SURF PREP FOR MRK (24")	LF	425	585	340	250	790	2390

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS

SUMMARY OF QUANTITIES

SHEET 1 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	5
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247, ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
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40.0000 ft / in.
BY: Marianna.Borrego

SUMMARY OF QUANTITIES				0918-47-247	0918-47-254	0918-47-261	0918-47-264	0918-47-266	PROJECT TOTAL
ITEM NO.	CODE	DESCRIPTION	UNIT	HARRY HINES AT MARKET CENTER	BLACKBURN AT TURTLE CREEK	LEMMON AVE AT MAHANNA ST	GRIFFIN ST E AT ST. PAUL ST	LEMMON AVE AT MOCKINGBIRD LN	
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	5	11	4	3	6	29
678	6010	PAV SURF PREP FOR MRK (DBL ARROW)	EA			2	2	2	6
678	6016	PAV SURF PREP FOR MRK (WORD)	EA	5				2	7
678	6022	PAV SURF PREP FOR MRK (18")(YLD TRI)	EA	19					19
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	62	307	146	50	172	737
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	12	11	12	3	15	53
682	6002	VEH SIG SEC (12")LED(GRN ARW)	EA	2	5	4	3	2	16
682	6003	VEH SIG SEC (12")LED(YEL)	EA	15	11	12	6	15	59
682	6004	VEH SIG SEC (12")LED(YEL ARW)	EA	3	10	4		3	20
682	6005	VEH SIG SEC (12")LED(RED)	EA	16	12	12	6	15	61
682	6006	VEH SIG SEC (12")LED(RED ARW)	EA	1	8	4		4	17
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	4	8	6	6	8	32
682	6051	BACKPLATE W/REFL BRDR(3 SEC)ALUM	EA	16	11	12	6	15	60
682	6052	BACKPLATE W/REFL BRDR(4 SEC)ALUM	EA	1	1	2		1	5
682	6053	BACKPLATE W/REFL BRDR(5 SEC)ALUM	EA		4	2		1	7
682	6047	LOUVER (12") (ADJUSTABLE)	EA	3					3
684	6031	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	LF	635	495	315	325	690	2460
684	6033	TRF SIG CBL (TY A)(14 AWG)(7 CONDR)	LF	20	290	195		135	640
684	6036	TRF SIG CBL (TY A)(14 AWG)(10 CONDR)	LF	695	440	750	460	620	2965
684	6046	TRF SIG CBL (TY A)(14 AWG)(20 CONDR)	LF	605	630	620	90	615	2560
684	6079	TRF SIG CBL (TY C)(12 AWG)(2 CONDR)	LF	550	1175	875	615	1280	4495
686	6021	INS TRF SIG PL AM (S)1 ARM(20')	EA			1			1
686	6023	INS TRF SIG PL AM (S)1 ARM(20')LUM	EA			1			1
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					1
686	6043	INS TRF SIG PL AM(S)1 ARM(40')LUM	EA	2		1		1	4
686	6045	INS TRF SIG PL AM(S)1 ARM(44')	EA		1	1			2
686	6047	INS TRF SIG PL AM(S)1 ARM(44')LUM	EA					1	1
686	6049	INS TRF SIG PL AM(S)1 ARM(48')	EA		1				1
686	6051	INS TRF SIG PL AM(S)1 ARM(48')LUM	EA					1	1
686	6055	INS TRF SIG PL AM(S)1 ARM(50')LUM	EA		1				1
686	6059	INS TRF SIG PL AM(S)1 ARM(55')LUM	EA		1				1
686	6063	INS TRF SIG PL AM(S)1 ARM(60')LUM	EA					1	1
686	6167	INS TRF SIG PL AM(S)2 ARM(44-36')LUM	EA				1		1
687	6001	PED POLE ASSEMBLY	EA	4	3	3	2	4	16
688	6001	PED DETECT PUSH BUTTON (APS)	EA	4	8	6	6	8	32
688	6003	PED DETECTOR CONTROLLER UNIT	EA	1	1	1	1	1	5
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
6027	6003	CONDUIT (PREPARE)	LF				230		230
6027	6008	GROUND BOX (PREPARE)	EA				3		3
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	2		4	10

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS

SUMMARY OF QUANTITIES

SHEET 2 OF 2

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	6
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247, ETC.	

PLOTTED: 4/1/2021
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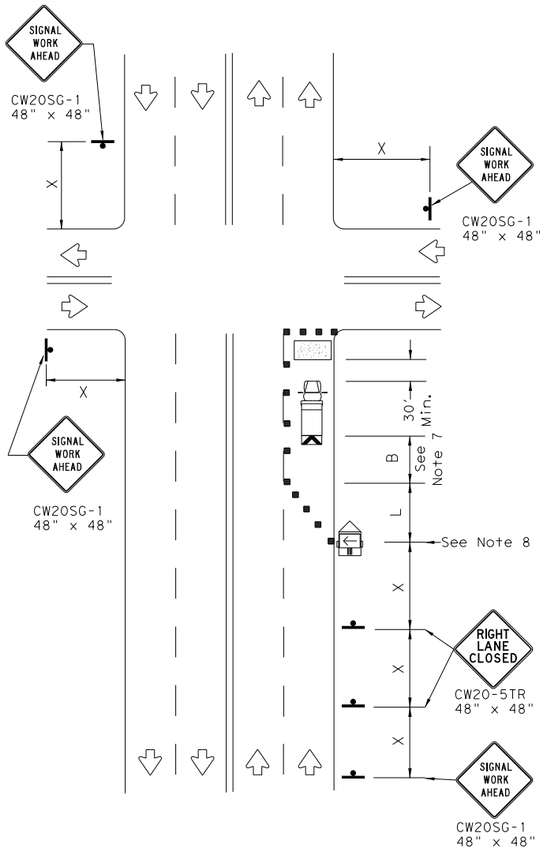
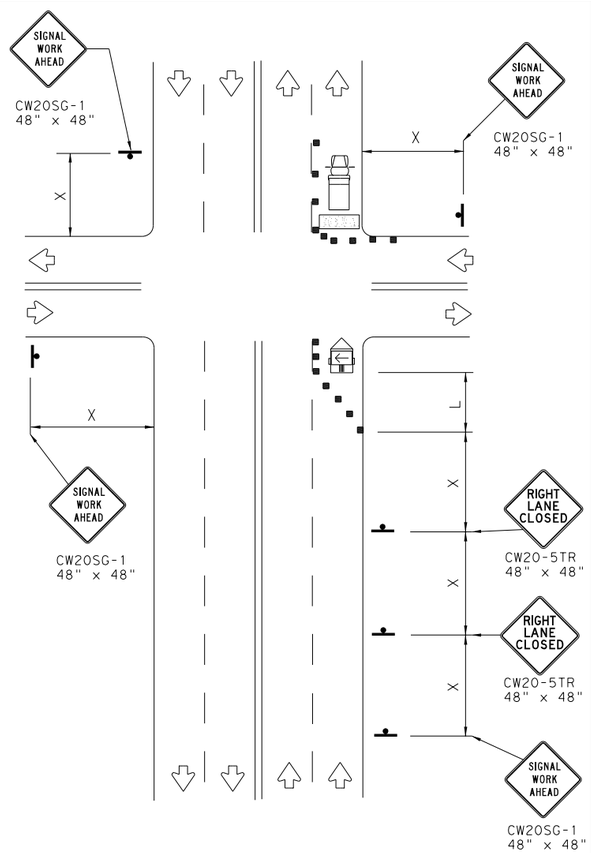
40.0000 ft / in.
BY: Marianna.Borrego

DATE:
FILE:



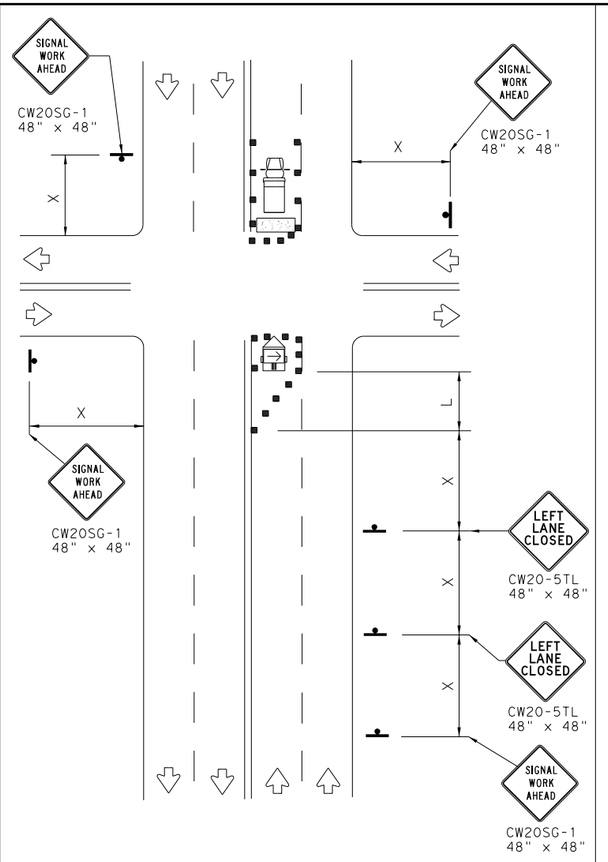
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



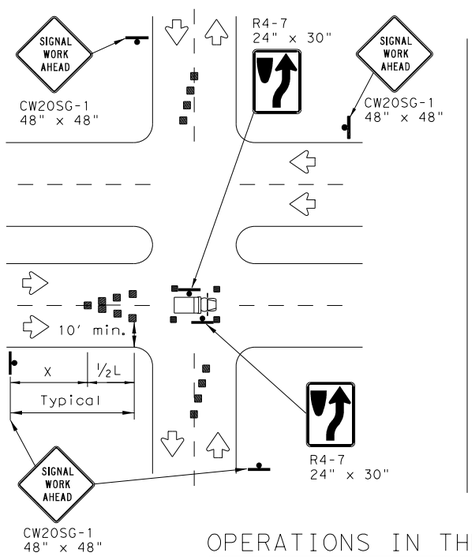
FAR SIDE RIGHT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



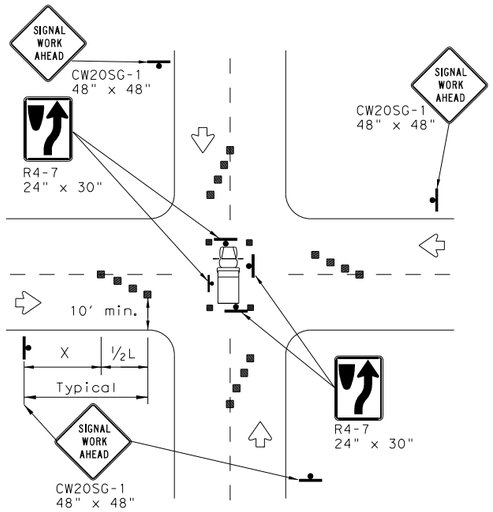
FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



OPERATIONS IN THE INTERSECTION

SHORT DURATION



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.

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

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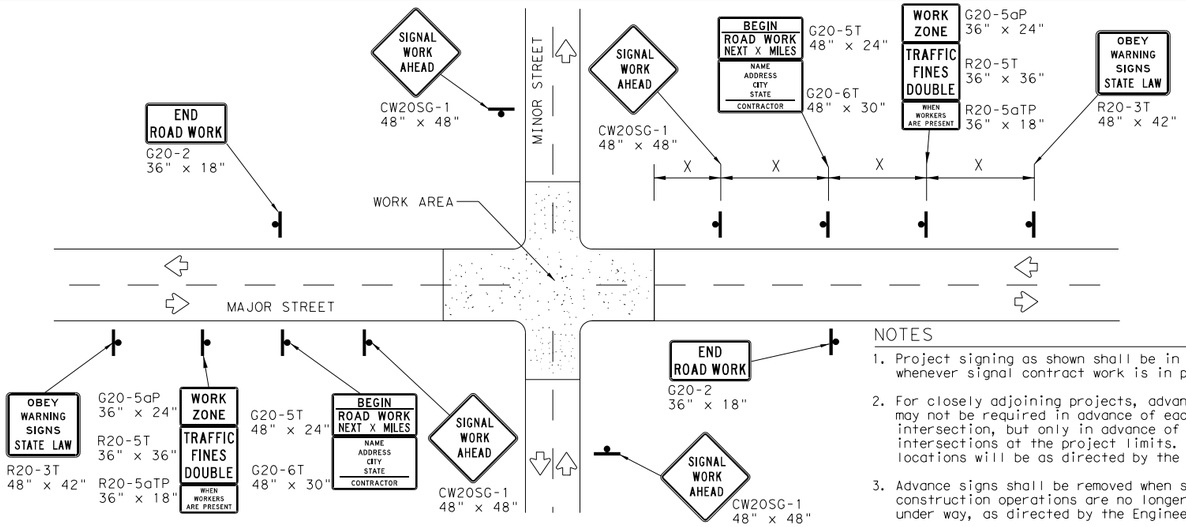


TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

DURATION OF WORK

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

SIGN MOUNTING HEIGHT

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

REMOVING OR COVERING

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

REFLECTIVE SHEETING

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

SIGN SUPPORT WEIGHTS

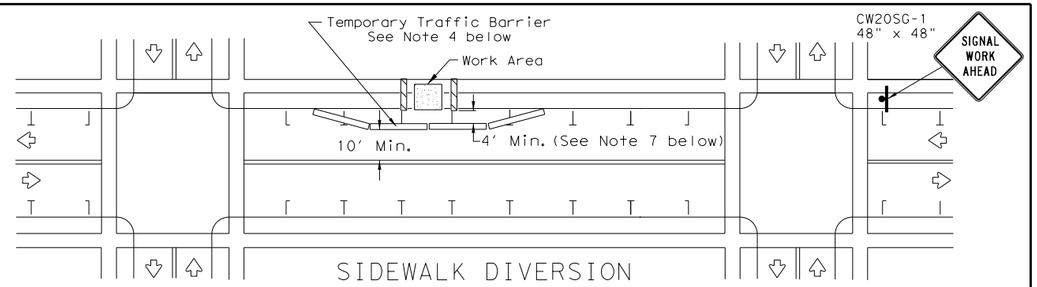
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

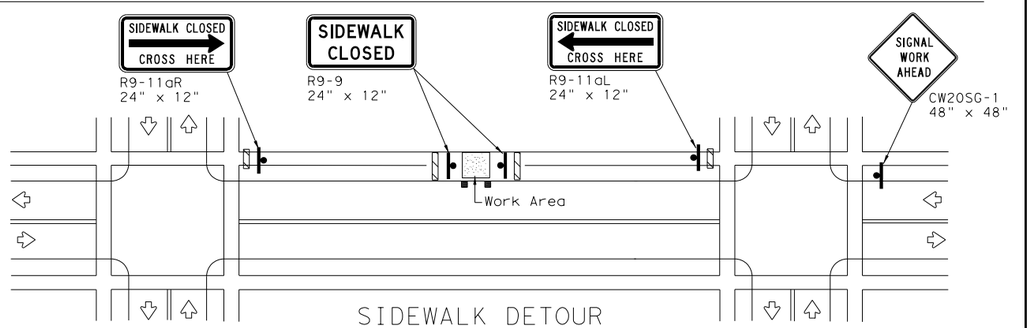
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

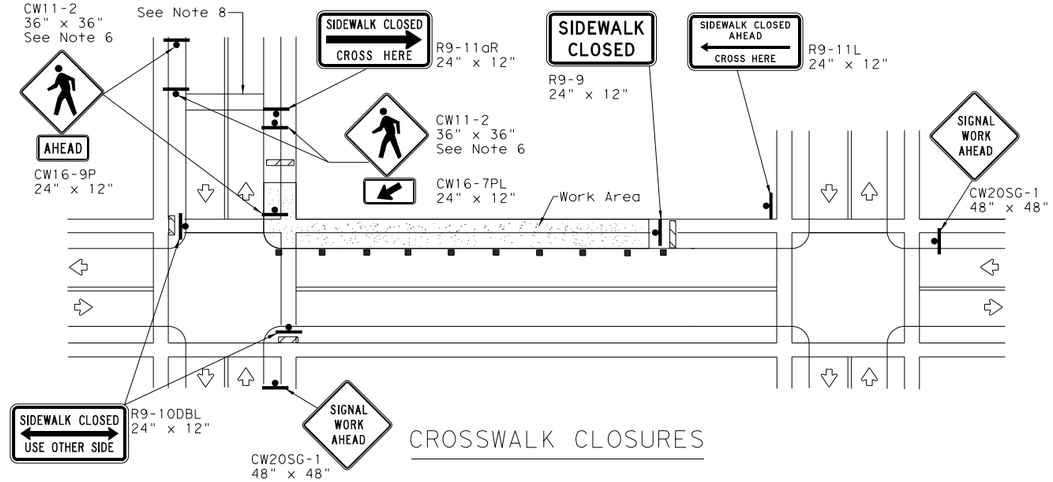
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

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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. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

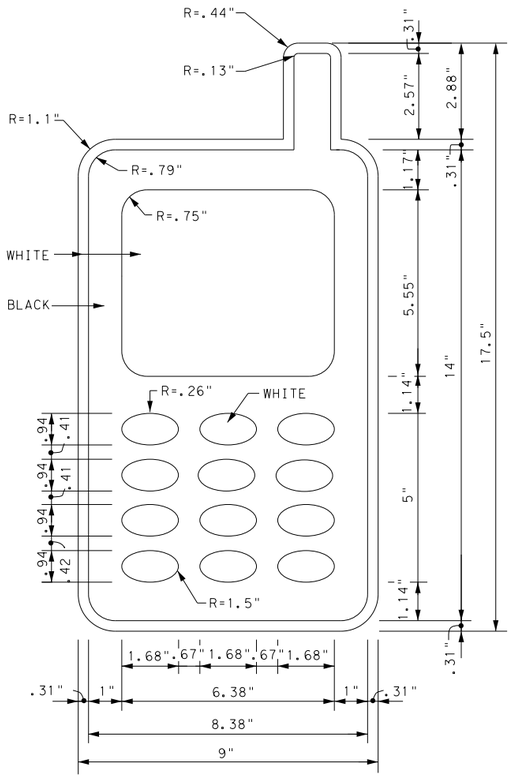
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

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 APPAREL 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.



3.0" Radius, 1.25" Border, 0.75" Indent, Black on Yellow;
℄STAY ALERT℄ Font: D
3.0" Radius, 1.25" Border, 0.75" Indent, Black on Orange;
℄TALK OR TEXT LATER℄ Font: C specified length;

SIGN DETAIL (G20-10T)

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

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 Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-14

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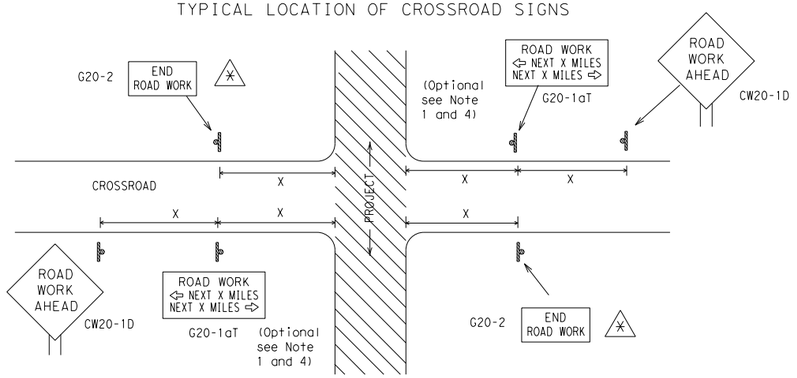
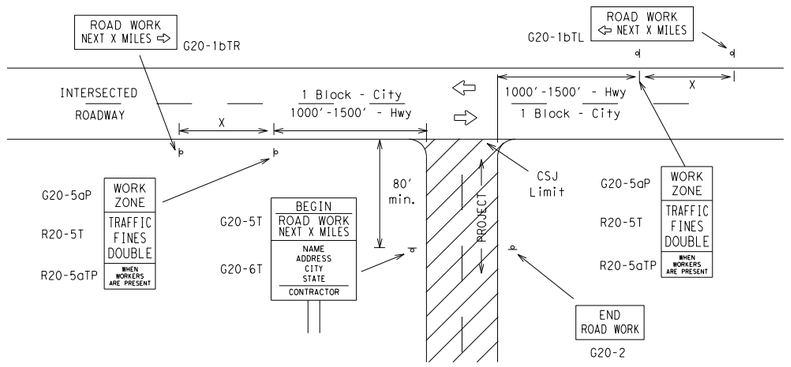
TYPICAL LOCATION OF CROSSROAD SIGNS



⁂ 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. 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			SPACING	
Sign Number or Series	Conventional Road	Expressway/ Freeway	Posted Speed	Sign Spacing "X" △
			MPH	Feet (Apprx.)
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"	30	120
			35	160
			40	240
			45	320
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	50	400
			55	500[2]
			60	600[2]
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	65	700[2]
			70	800[2]
			75	900[2]
			80	1000[2]
			⁂	⁂ [3]

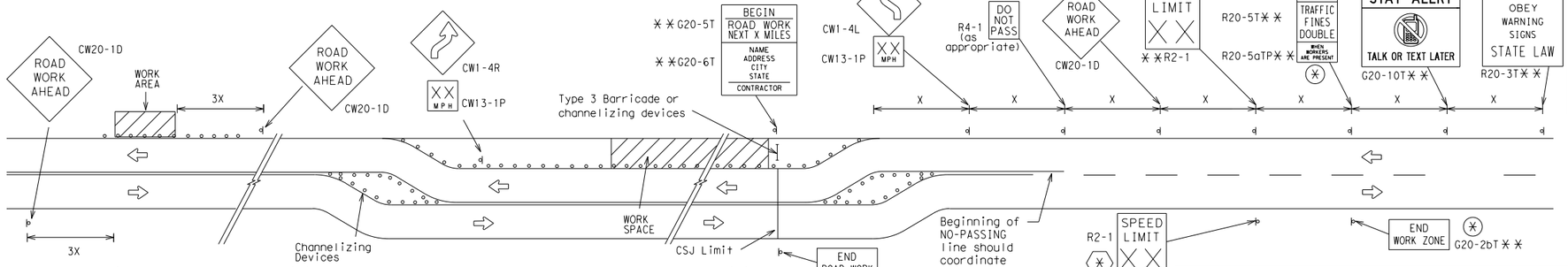
⁂ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

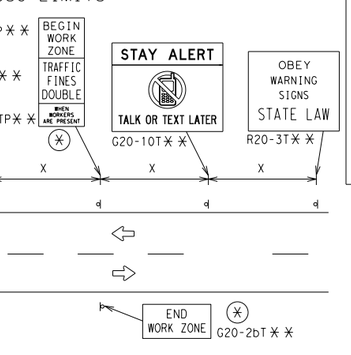
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer. 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

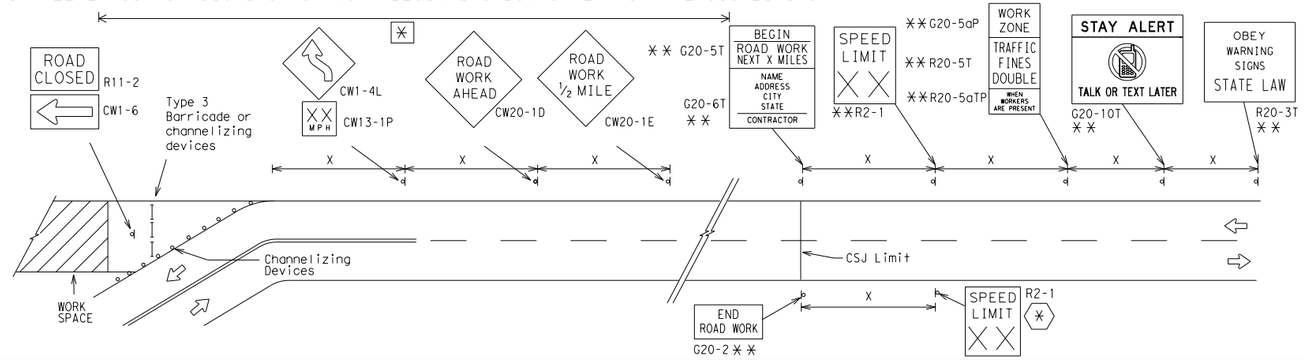


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

⁂⁂ Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

⁂ 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 Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

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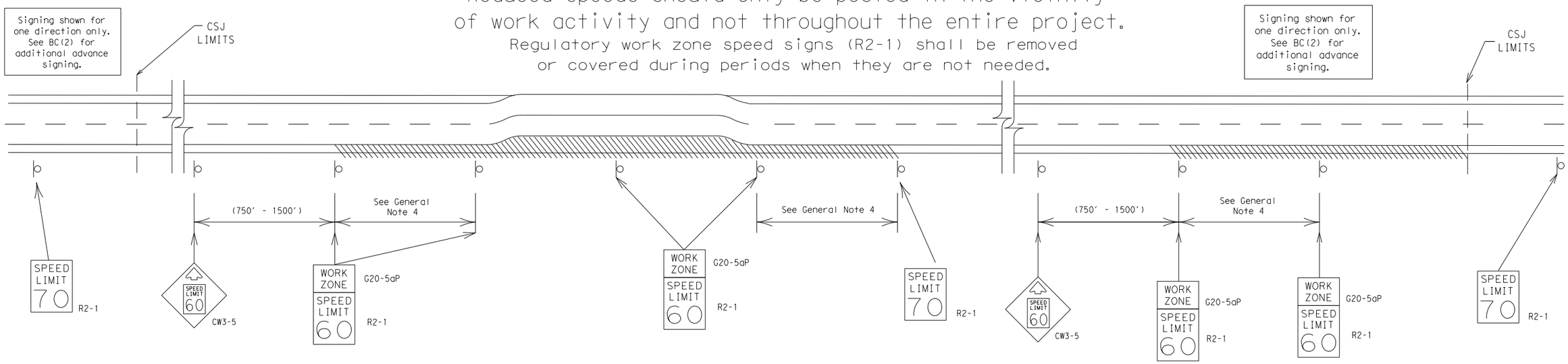
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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 travelled 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 Operations Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-14

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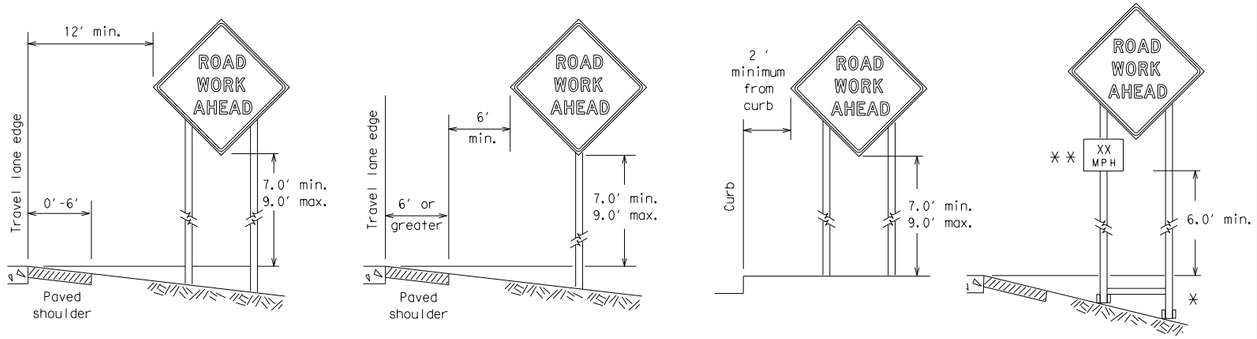
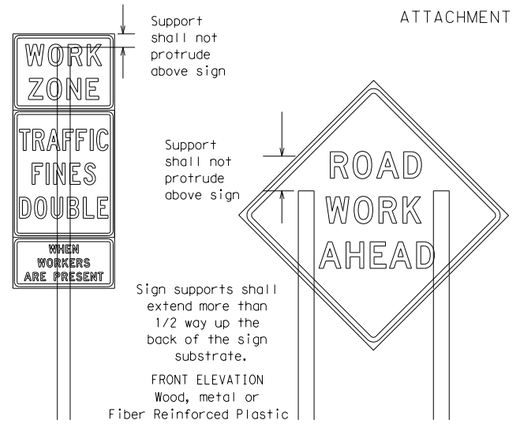
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

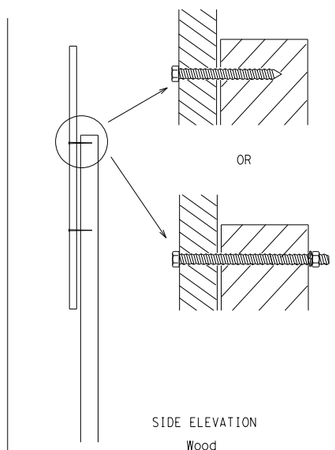


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ 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





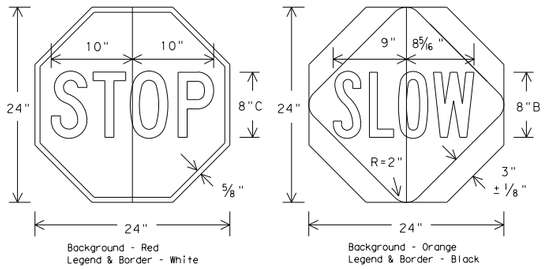
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectorized.
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.



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, 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.
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 sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards 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). 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 Operations Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		12

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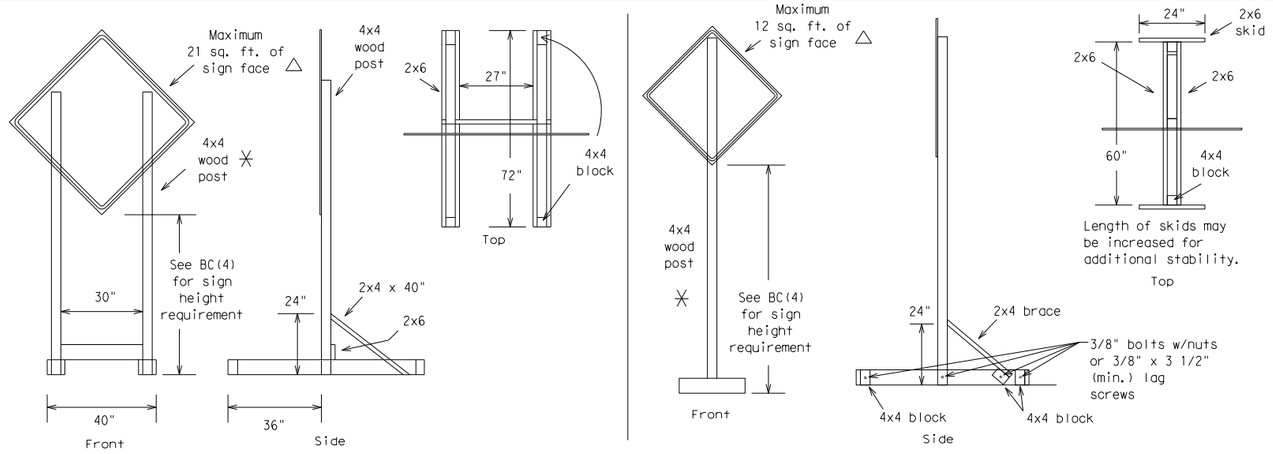
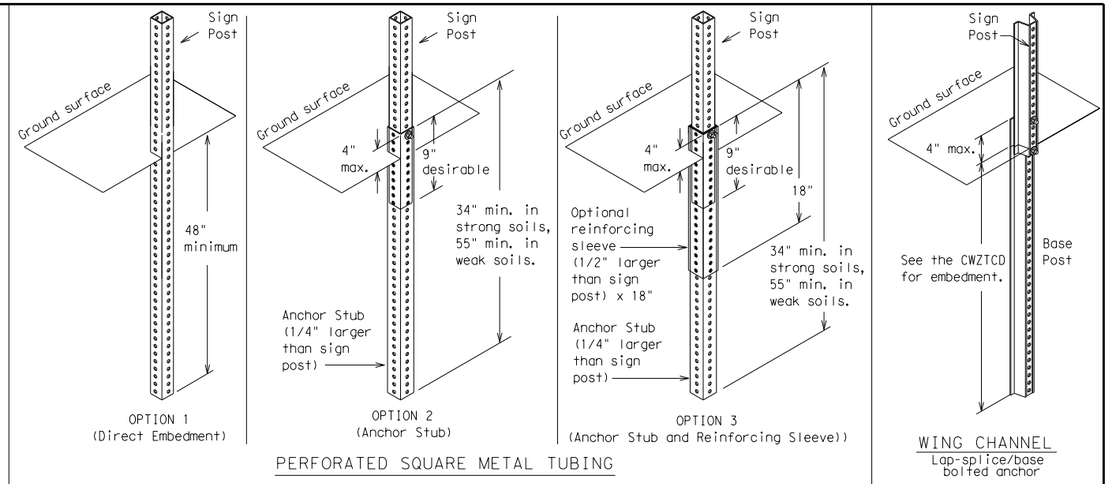


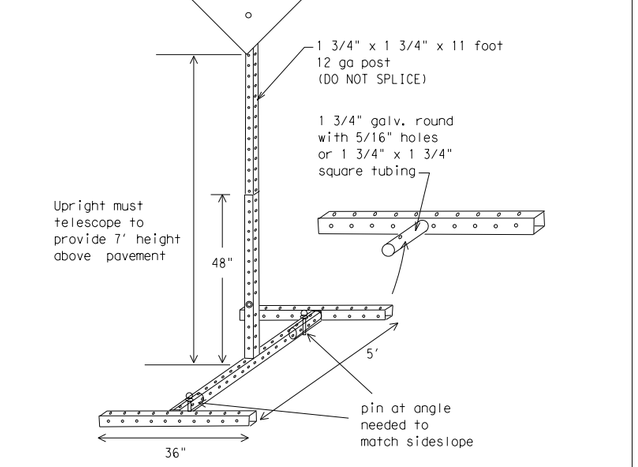
SKID MOUNTED WOOD SIGN SUPPORTS

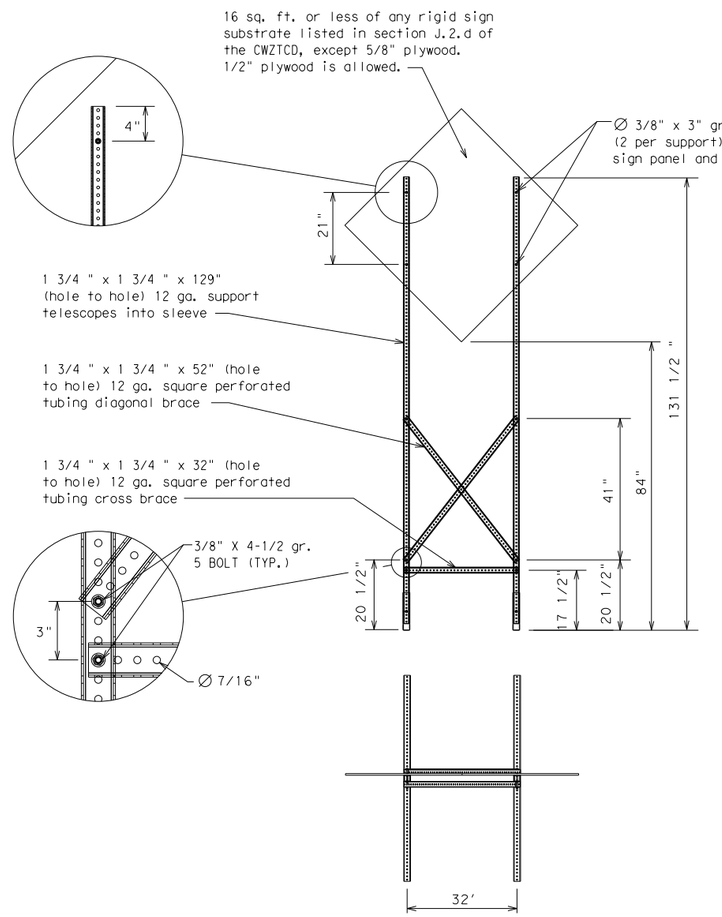
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □



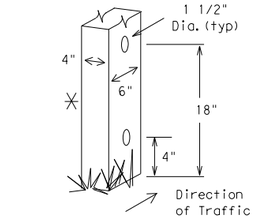
GROUND MOUNTED SIGN SUPPORTS

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.



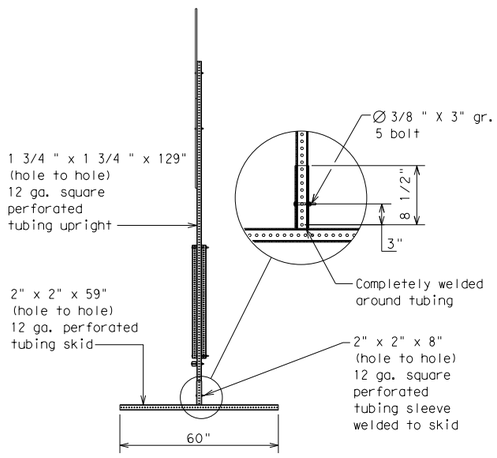


SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS



Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

WOOD POST SYSTEM FOR GROUND 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 Operations Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 9-07 8-14 7-13	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		13

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-14

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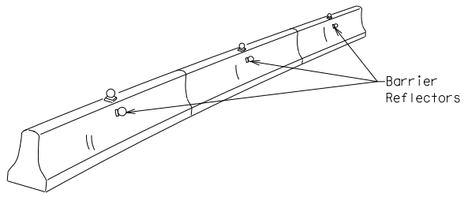
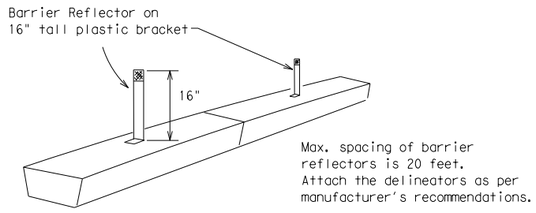
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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

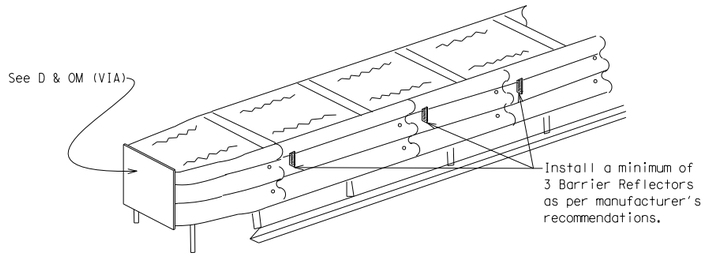


CONCRETE TRAFFIC BARRIER (CTB)

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



LOW PROFILE CONCRETE BARRIER (LPCB)

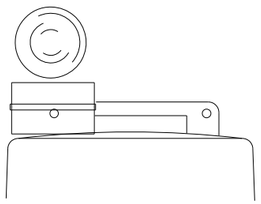


DELINEATION OF END TREATMENTS

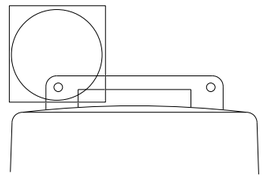
END TREATMENTS FOR
CTB'S USED
IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. 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

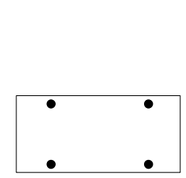
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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.

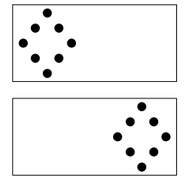
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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:

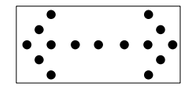


4 CORNER CAUTION

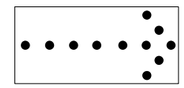
OR



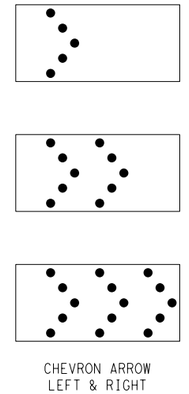
ALTERNATING DIAMOND CAUTION



DOUBLE ARROW



LEFT & RIGHT



CHEVRON ARROW
LEFT & RIGHT

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 National Cooperative Highway Research Report No. 350 (NCHRP 350) or 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 Operations Division Standard

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

BC(7)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	DAL	DALLAS		15

101

DATE:
FILE:

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:

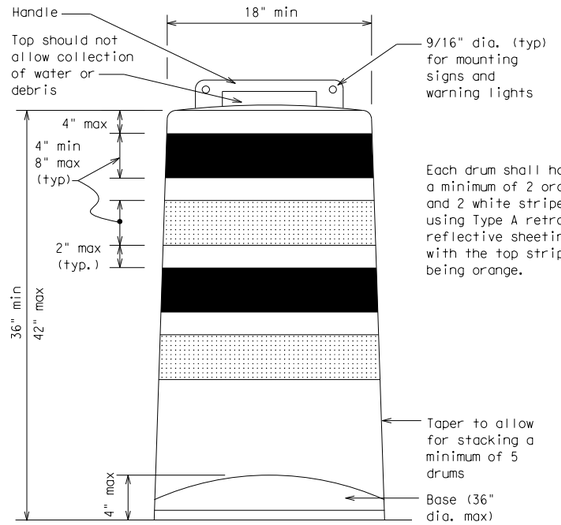
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

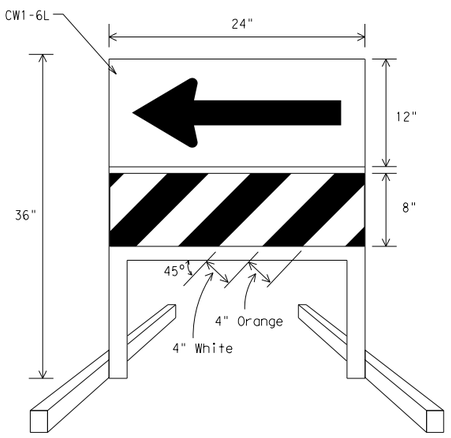
RETROREFLECTIVE SHEETING

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 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.





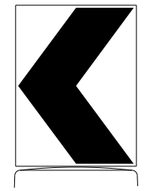
DIRECTION INDICATOR BARRICADE

1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type B_{FL} or Type C_{FL} Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

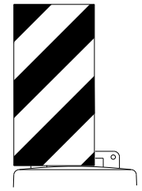
This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades

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.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
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 for Buildings and Facilities (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 may 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 Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	DAL	DALLAS		16

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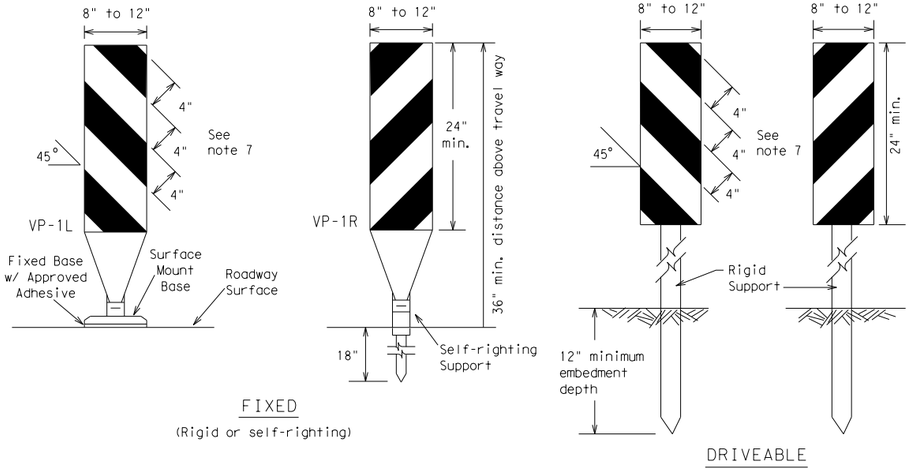
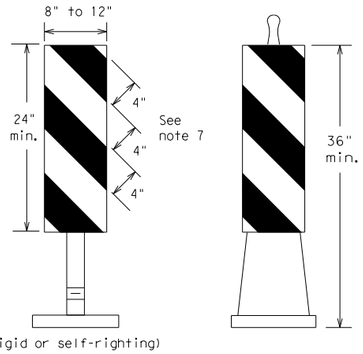


FIXED

(Rigid or self-righting)

DRIVEABLE

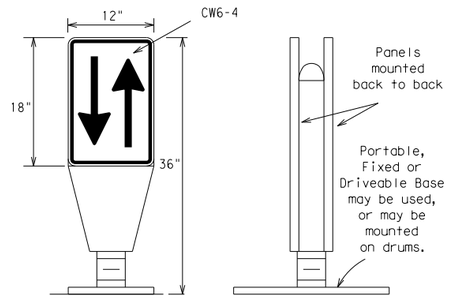


(Rigid or self-righting)

PORTABLE

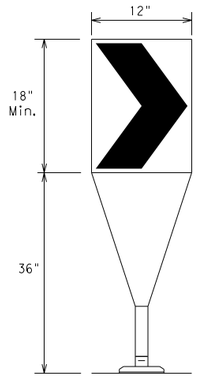
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of 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 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)



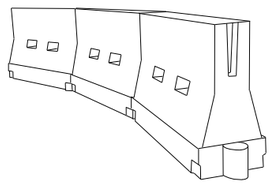
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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) placed 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 NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

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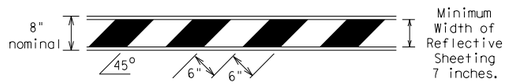
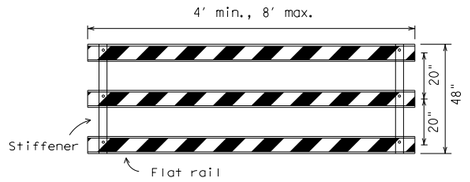
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



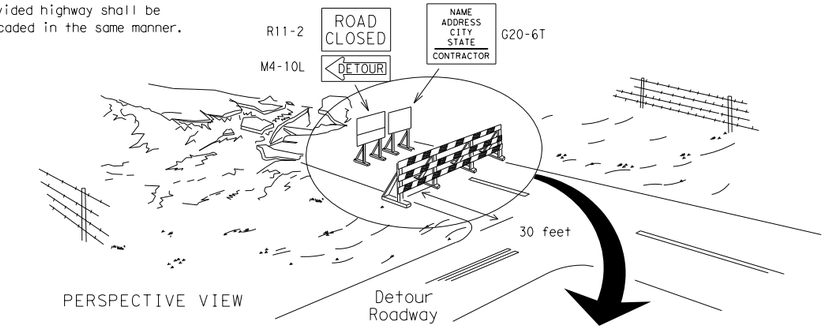
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

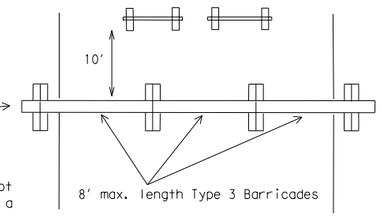
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

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

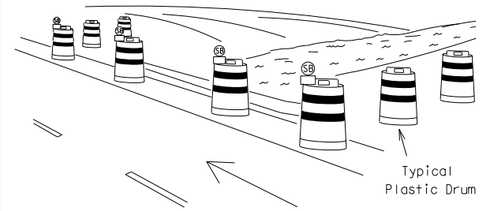
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

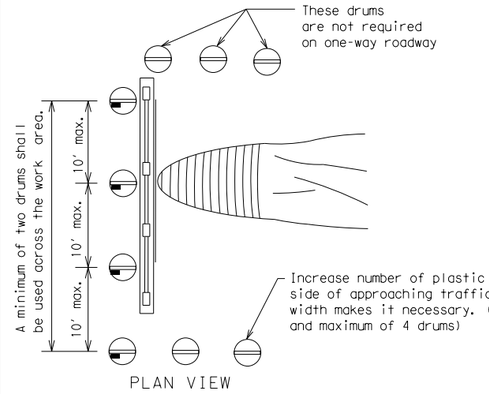
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

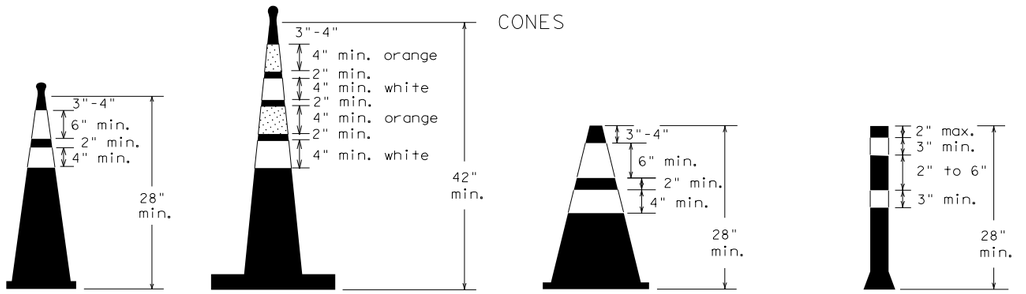
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



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

PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones

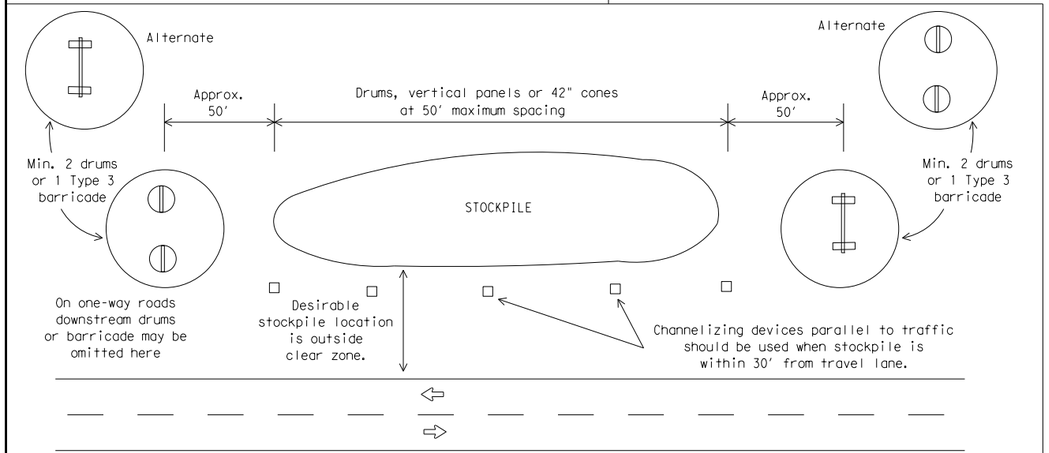
One-Piece cones

Tubular Marker

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

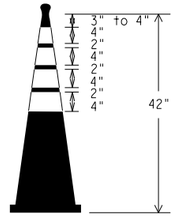
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers used at night 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.
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

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-14

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

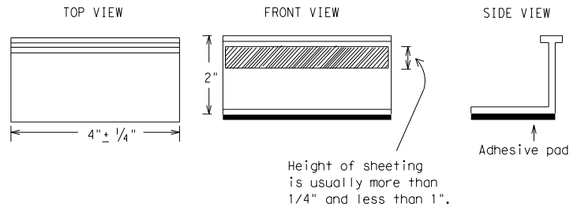
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

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Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-14

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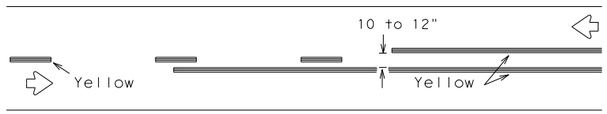
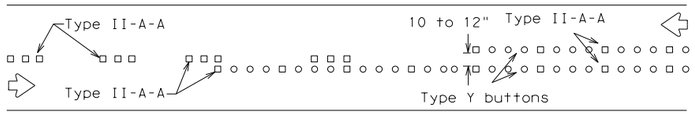
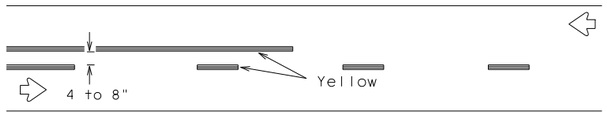
PAVEMENT MARKING PATTERNS



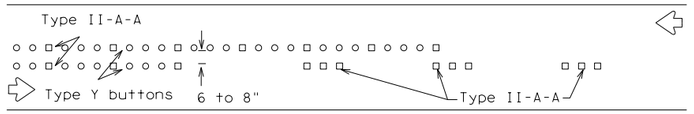
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



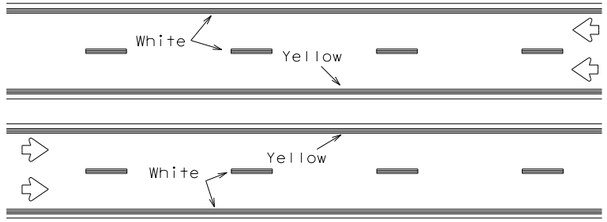
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



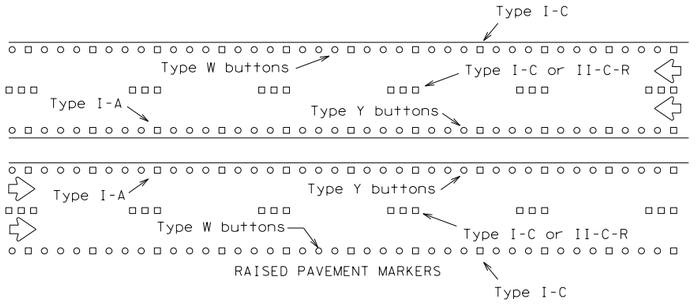
RAISED PAVEMENT MARKERS - PATTERN B

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

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



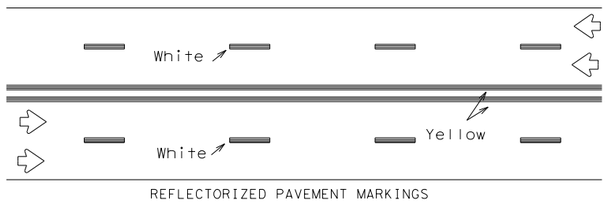
REFLECTORIZED PAVEMENT MARKINGS



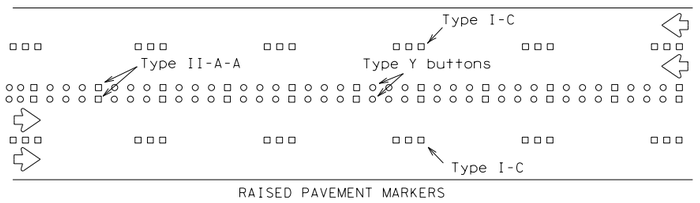
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



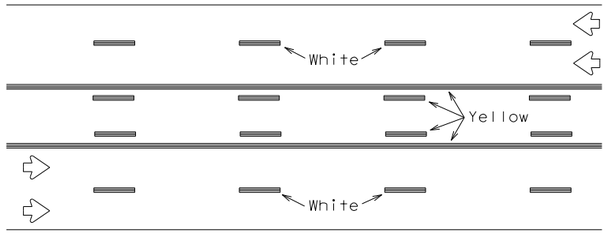
REFLECTORIZED PAVEMENT MARKINGS



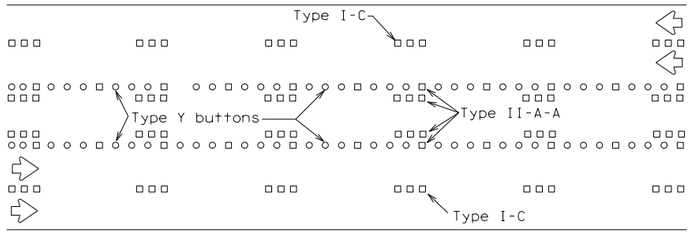
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

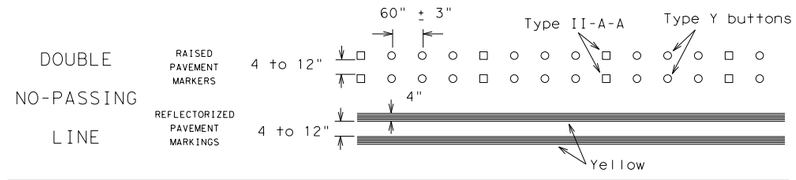
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

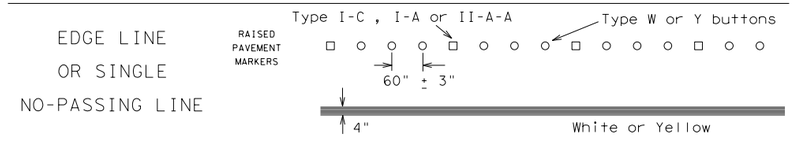
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

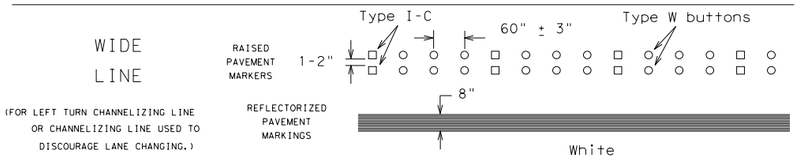


EDGE LINE OR SINGLE NO-PASSING LINE



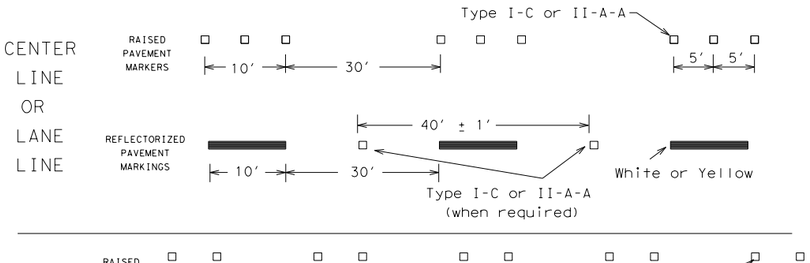
WIDE LINE

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

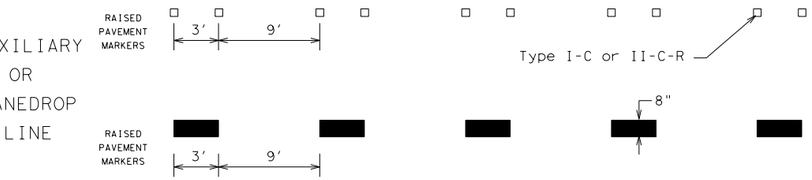


BROKEN LINES

CENTER LINE OR LANE LINE

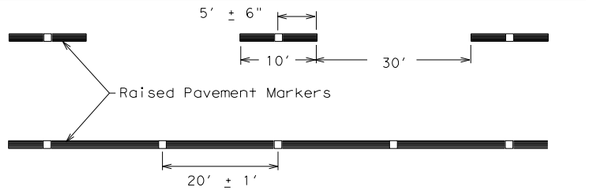


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

SHEET 12 OF 12

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
1-97 9-07	DIST	COUNTY		SHEET NO.
2-98 7-13	DAL	DALLAS		20
11-02 8-14				

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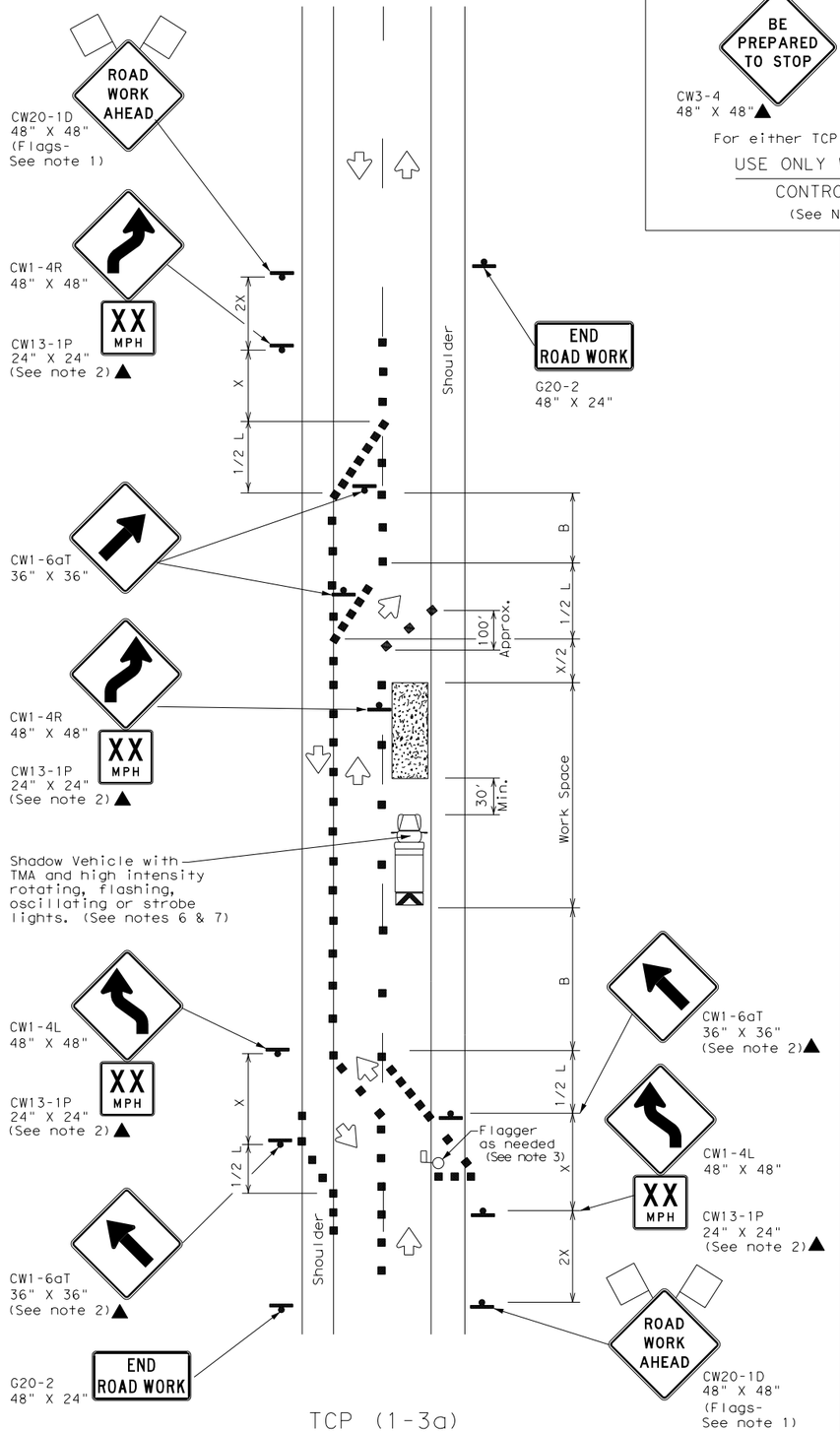
DATE: DATE TIME
FILE: DOCUMENT NAME



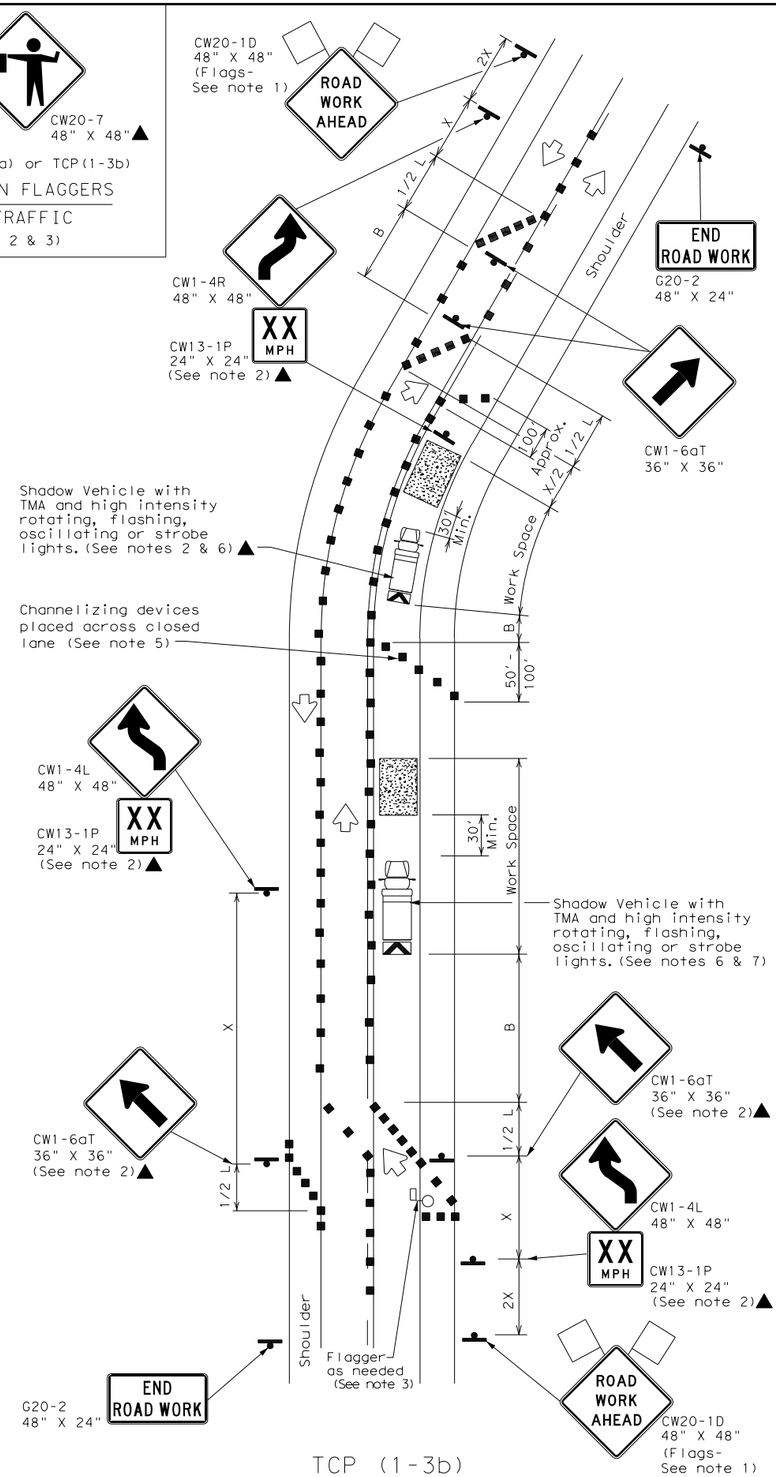
TCP (1-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW

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

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

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



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

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON TWO LANE ROADS

TCP(1-3)-18

FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,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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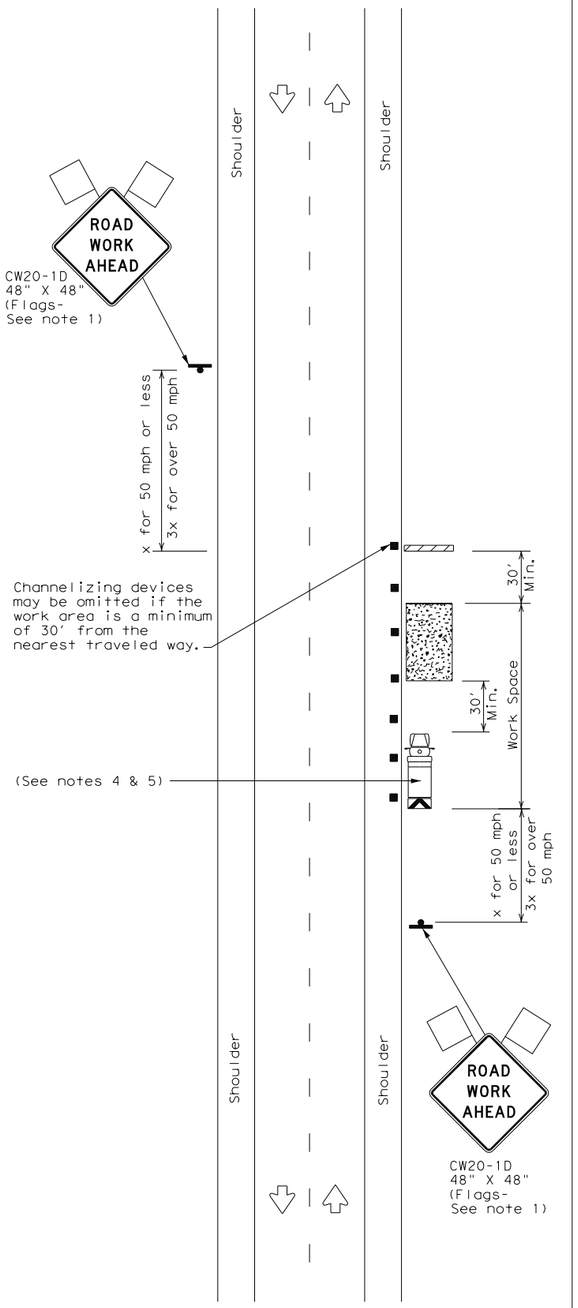
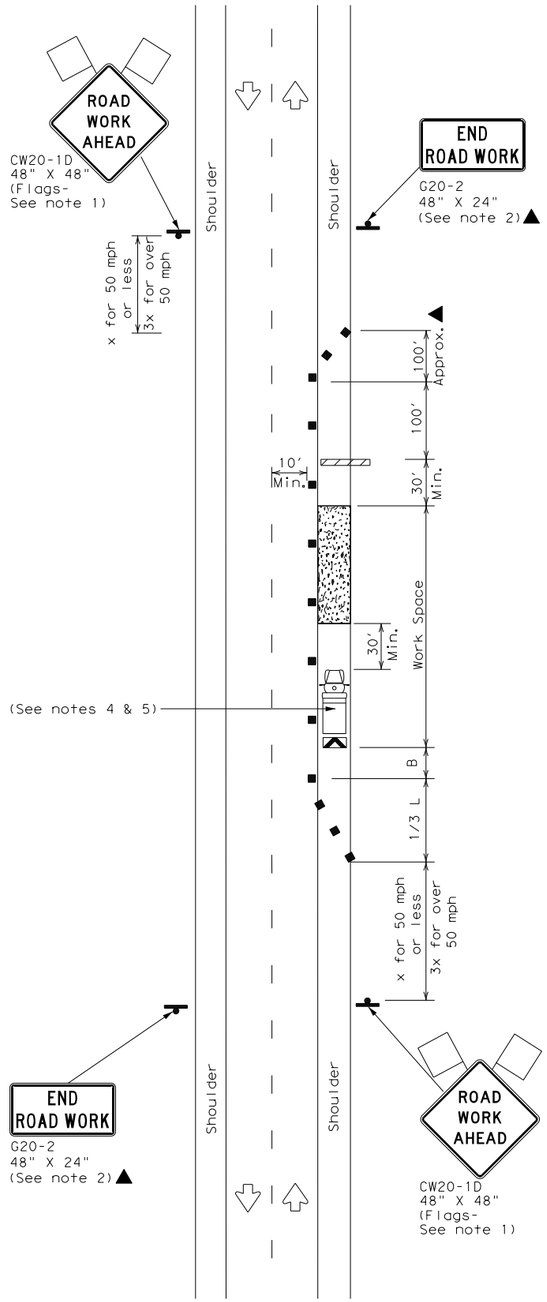


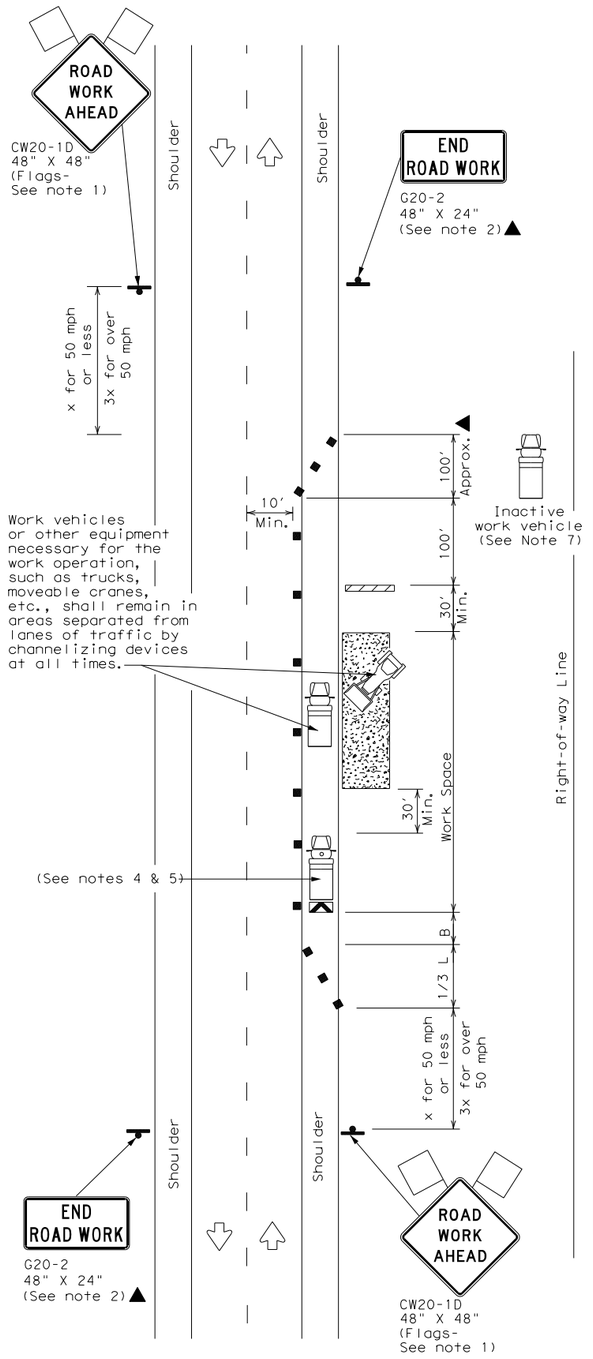
TCP (2-1a)

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		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	0918	47	247,ETC.	CS
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	DAL	DALLAS		22
1-97 2-18				

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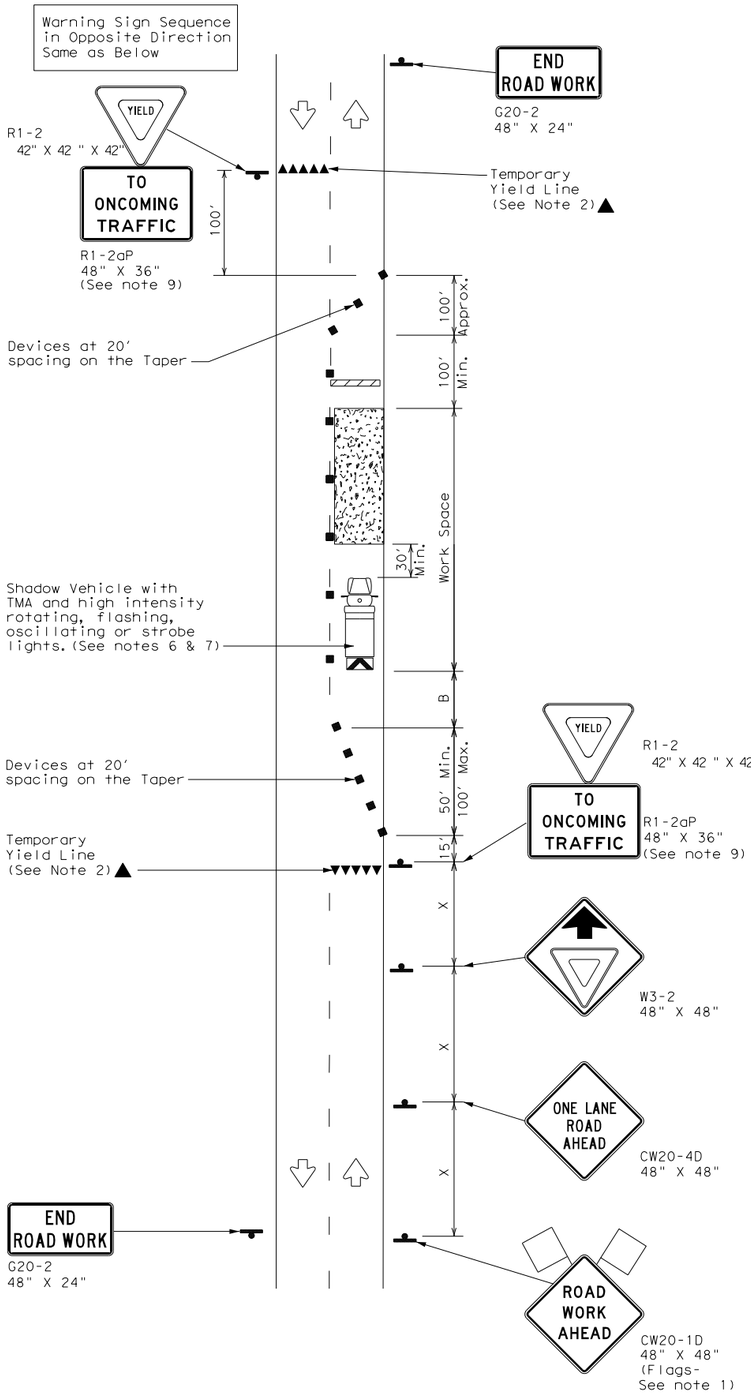
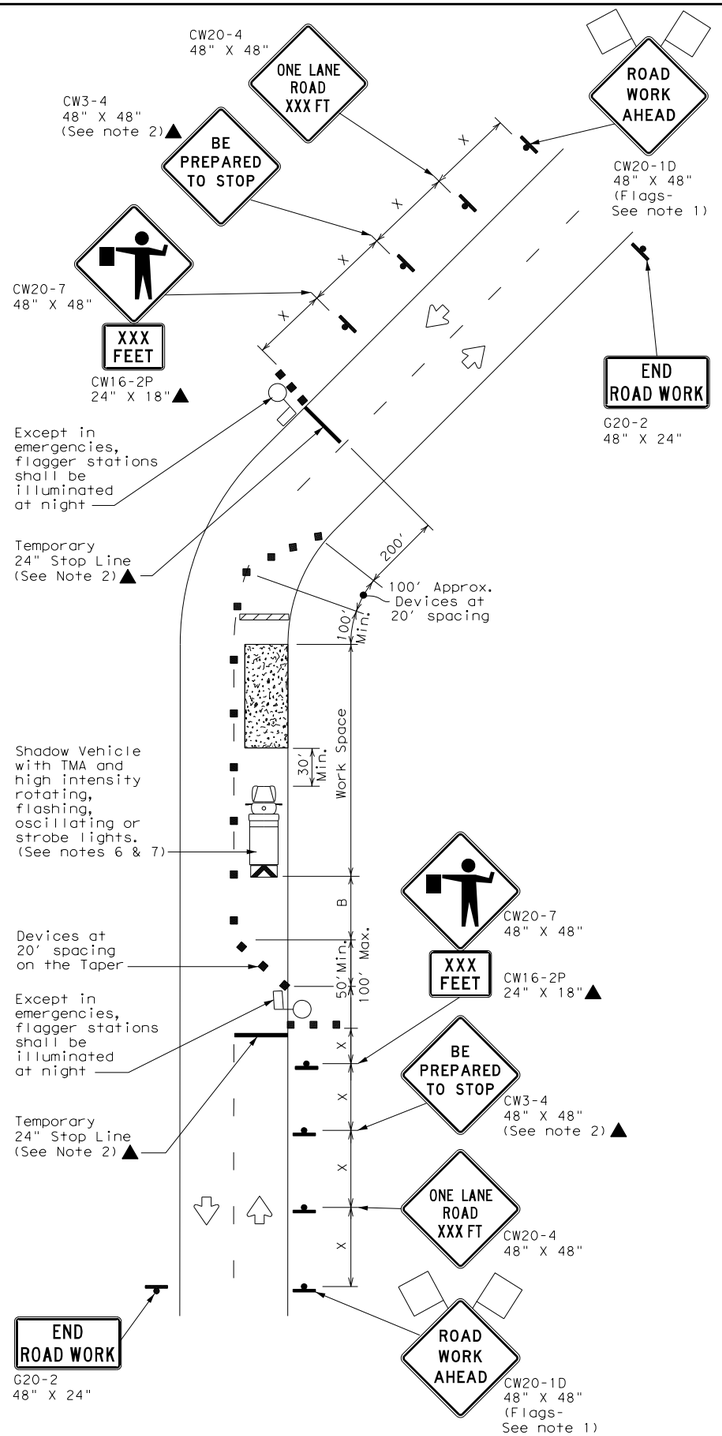
DATE: DATE TIME
FILE: DOCUMENT NAME

0 0 0 0

DATE: DATE TIME
FILE: DOCUMENT NAME



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	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		23

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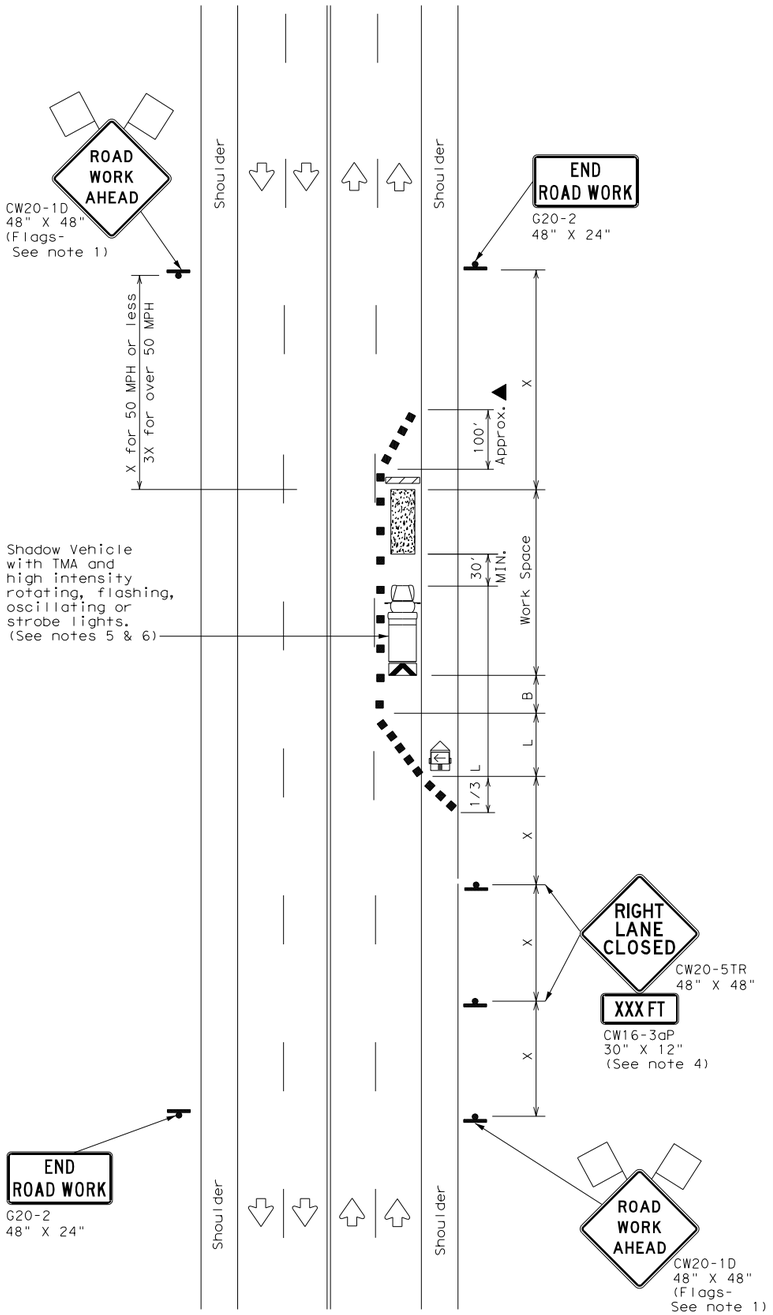
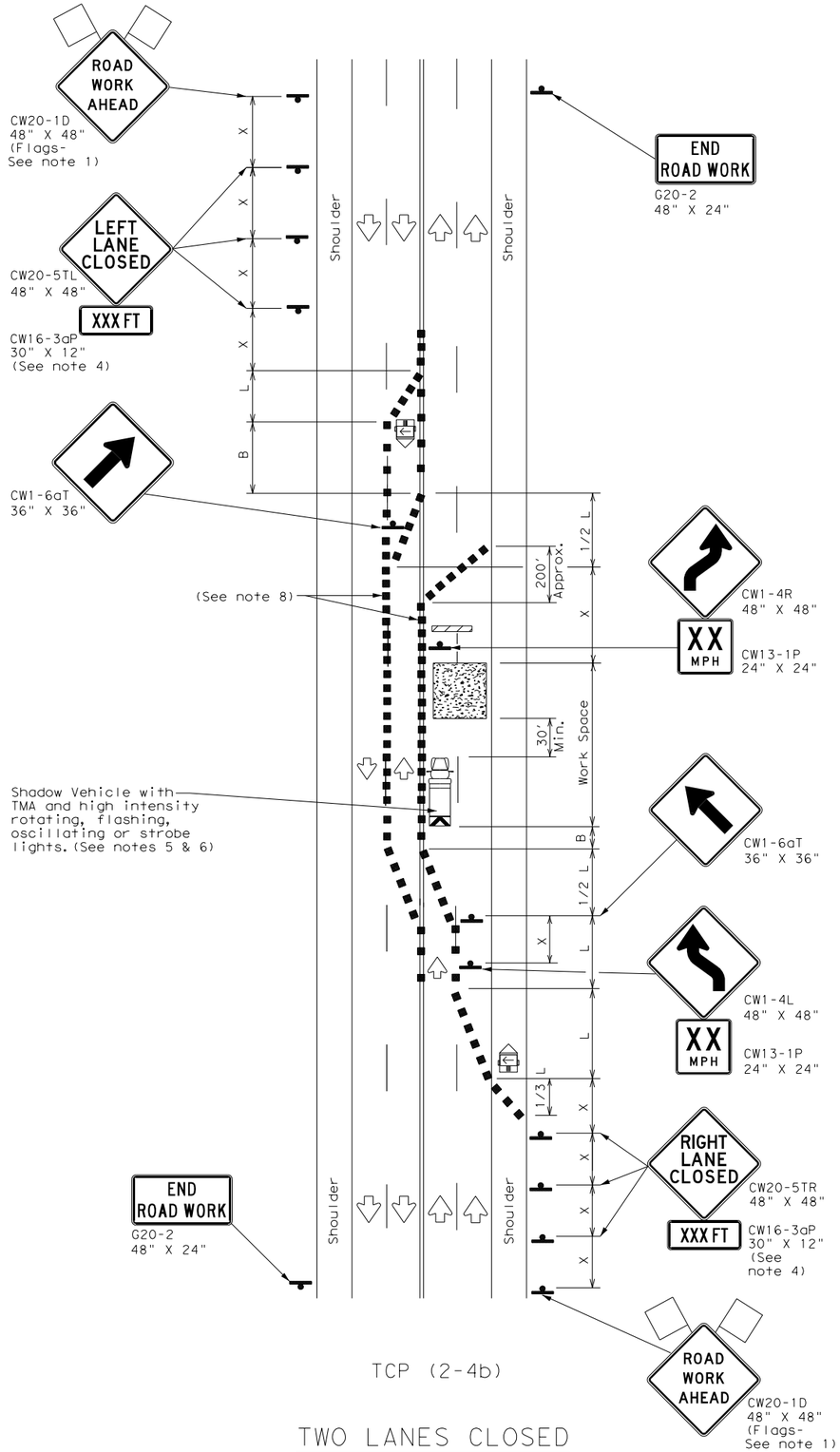
DATE: DATE TIME
FILE: DOCUMENT NAME



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	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The 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	247,ETC.	CS
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	DAL	DALLAS		24

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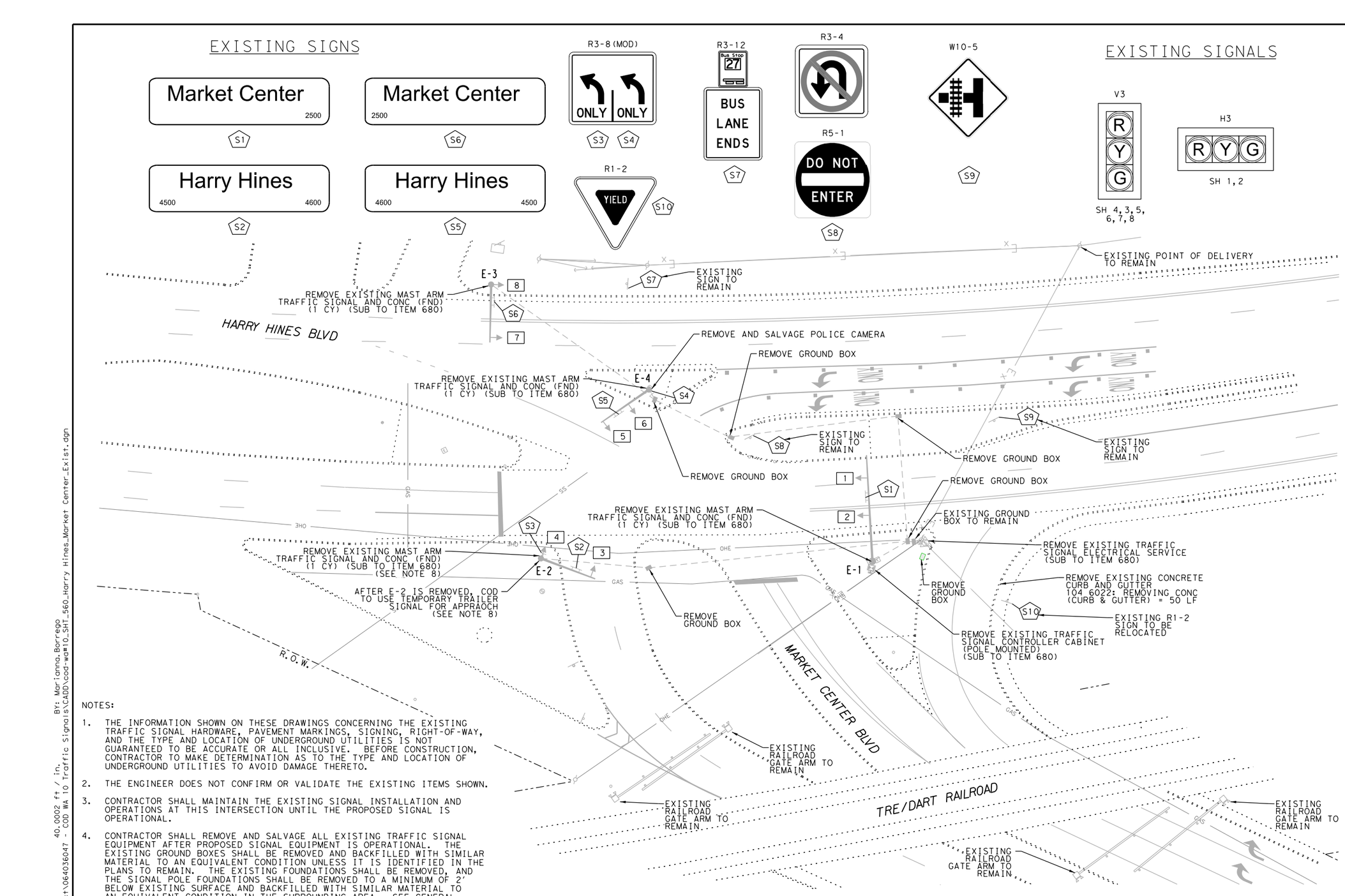
EXISTING SIGNS

EXISTING SIGNALS

SH 4, 3, 5, 6, 7, 8

SH 1, 2



LEGEND

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

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

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-S6 SHALL BE REMOVED WITH TRAFFIC SIGNAL EQUIPMENT.
7. CURB RAMP AND SIDEWALK REMOVALS SHALL BE SUBSIDIARY TO THE INSTALLATION OF NEW CURB RAMP OR CONCRETE SIDEWALK (SEE ITEM 531 QTYS AND PROPOSED PEDESTRIAN RAMP AND SIDEWALK LAYOUT).
8. FOR THE PURPOSES OF THIS PROJECT REMOVAL OF E-2 HAS BEEN INCLUDED; HOWEVER, IF POLE IS ALREADY REMOVED (AS PART OF THE TRINITY STRAND TRAIL PROJECT) CONTRACTOR SHALL NOT BE PAID.

REMOVAL SUMMARY

ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	50
624	6028	REMOVE GROUND BOX	EA	5
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1325
677	6002	ELIM EXT PAV MRK & MRKS (6")	LF	12
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	480
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	55
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	4
677	6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	4
680	6004	REMOVING TRAFFIC SIGNALS	EA	1

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation

TRAFFIC SAFETY IMPROVEMENTS

EXISTING CONDITIONS AND REMOVALS

HARRY HINES BLVD AT MARKET CENTER BLVD

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	25
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247, ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\Iproject\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_560_Harry Hines_Market Center_Exist.dgn
40.0002 ft / in.
BY: Marianna.Borrego

NOTES:

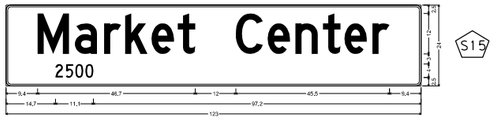
1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.
2. CONTRACTOR TO 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.
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 ACCOMMODATE FIELD CONDITIONS.
4. CONTRACTOR SHALL COORDINATE WITH ONCOR CONCERNING TRAFFIC SIGNAL ELECTRICAL SERVICE. CONTACT ONCOR (TBD) REGARDING POINT OF DELIVERY AND DISTRIBUTION TO ELECTRICAL PEDESTAL SERVICE. REFER TO GENERAL NOTES FOR ADDITIONAL INFORMATION.

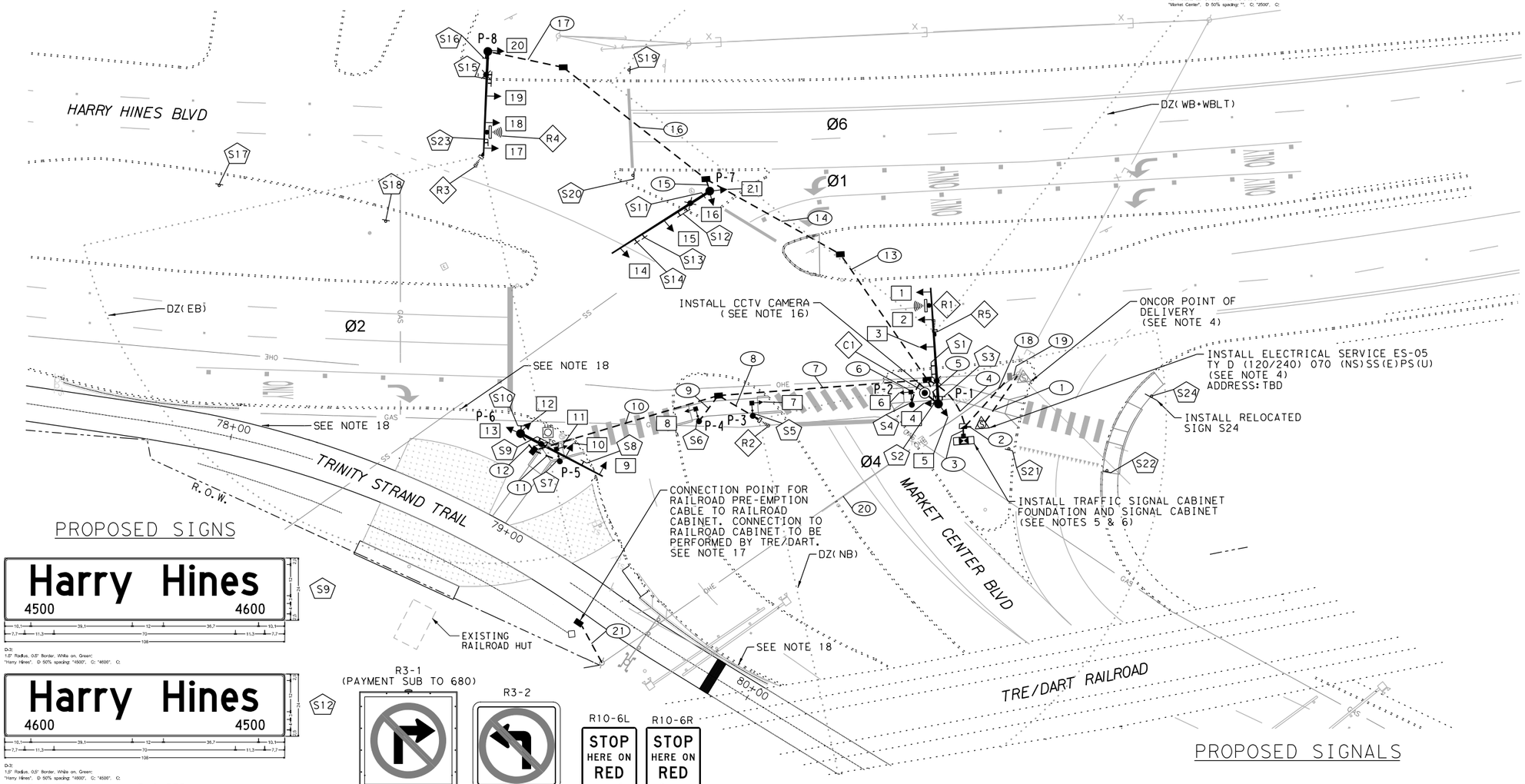
NOTES (CONTINUED):

5. THE FOLLOWING ITEMS WILL BE FURNISHED BY THE CITY OF DALLAS AND INSTALLED BY THE CONTRACTOR:
   SIGNAL CABINET AND INTERNAL HARDWARE, RADAR AND RADAR CABLE. CONTACT MR. ALFRED LEMON AT 214-670-4812 (OFFICE) OR 214-213-6121(MB) TO SCHEDULE PICK-UP OF MATERIALS.
6. INSTALL BASE MOUNTED CONTROLLER CABINET (TYPE 332 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 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.

NOTES CONTINUED ON NEXT SHEET.

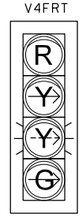
PROPOSED SIGNS

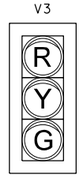


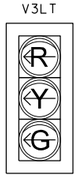


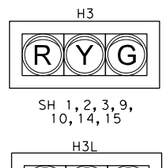
PROPOSED SIGNS

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 (250W E.Q.), 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 ADVANCED RADAR DETECTOR AND LABEL
- C1 PROPOSED CCTV CAMERA
- (S) PROPOSED ELECTRICAL SERVICE
- P-# PROPOSED TRAFFIC SIGNAL POLE NUMBER

4/1/2021

STATE OF TEXAS
NATHAN C. NEW
101204
LICENSED
PROFESSIONAL ENGINEER

Kimley»Horn F-928
13455 Noel Road
Two Galleria Office Tower, Suite 700
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Fax No. (972) 239-3820

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED CONDITIONS

HARRY HINES BLVD
AT MARKET CENTER BLVD

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS MB	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK HMF	TEXAS	DALLAS	DALLAS	26
CHECK NCN	CONTROL	SECTION	JOB	
	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wo#10_SHT_561_Harry Hines_Market Center_Proposed.dgn
40.0000 ft / in.
BY: Marianna.Borrego

CONDUIT AND CABLE CHART
WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	ITEM 618 CONDUIT (SCH 80)												CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS								ITEM 684 TRAFFIC SIGNAL CABLES														ITEM 6010		ITEM 6292		TOTAL LENGTH OF RUN	RUN NO
		2" PVC SCH 80 (RISER)		2" PVC (TRENCHED)		3" PVC (TRENCHED)		3" PVC (BORED)		4" PVC (TRENCHED)		4" PVC (BORED)			NO. 6 XHHW WIRE		NO. 6 BARE WIRE		NO. 8 XHHW WIRE		NO. 12 XHHW WIRE		TY C 2 CNDR NO. 12		TY C 2 CNDR NO. 12 (BLANK OUT SIGN)		TY A 5 CNDR NO. 14		TY A 7 CNDR NO. 14		TY A 10 CNDR NO. 14		TY A 10 CNDR NO. 14 (PREEMPTION CABLE)		TY A 20 CNDR NO. 14		ETHERNET CABLE		RADAR COMM CABLE			
		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	Qty	Len	Qty	Len		
1	I	1	10	1	20									I	TO BE INSTALLED BY OTHERS																											20	1
2	I			1	5									I	2	10	1	5	4	20																					5	2
3	I			1	5									I	2	10	1	5																							5	3
	I									1	5			I			1	30					4	20	1	5					4	20										
	I									1	5			I			1	30															1	5	4	20	1	5	5	25		
	I					1	5							I	FUTURE COMMUNICATION CONDUIT																												
4	I					1	25							I			1	20	4	100			4	100	1	25					4	100			4	100	1	25	5	125	25	4
	I					1	25							I	FUTURE COMMUNICATION CONDUIT																												
5	I					1	10							I			1	10	4	40					1	10							1	10	1	10	2	20	10	5
6	I					1	10							I			1	5					1	10					1	10									10	6
7	I											1	75	I			1	75	2	150			3	225							3	225			1	75			1	75	75	7
	I							1	75					I	FUTURE COMMUNICATION CONDUIT																												
8	I					1	15							I			1	15					1	15							1	15							1	15	15	8
9	I					1	15							I			1	15					1	15							1	15									15	9
10	I											1	70	I			1	70	2	140			1	70							1	70			1	70					70	10
	I							1	70					I	FUTURE COMMUNICATION CONDUIT																												
11	I					1	10							I			1	10					1	10							1	10									10	11
12	I					1	10							I			1	10	2	20															1	10					10	12
13	I											1	55	I			1	55	2	110															2	110			2	110	55	13
	I							1	55					I	FUTURE COMMUNICATION CONDUIT																												
14	I											1	55	I			1	55	2	110															2	110			2	110	55	14
	I							1	55					I	FUTURE COMMUNICATION CONDUIT																												
15	I					1	5							I			1	5	4	20															1	5					5	15
16	I											1	65	I			1	65	2	130															1	65			2	130	65	16
	I							1	65					I	FUTURE COMMUNICATION CONDUIT																												
17	I					1	30							I			1	30	2	60															1	30			2	60	30	17
18	I					1	25							I			1	25															1	25							25	18
19	E													I																			1	5							5	19
20	AC													I																			1	175							175	20
21	I					1	20							I			1	20															1	20							20	21
SUBTOTAL			10		30		205		320		10		320			20		555		900		0		465		40		0		0		465		230		605		40		670			
P-1	P													I								80				25		170		20								30		100	VARIES	P-1
P-2	P													I										5				10													VARIES	P-2
P-3	P													I										5				10												20	VARIES	P-3
P-4	P													I										5				10													VARIES	P-4
P-5	P													I										5				10													VARIES	P-5
P-6	P													I								80						130													VARIES	P-6
P-7	P													I								80						140													VARIES	P-7
P-8	P													I								80						155												105	VARIES	P-8
SUBTOTAL			0		0		0		0		0		0			0		0		0		320		20		25		635		20		0		0		0		30		225			
TOTAL			10		30		205		320		10		320			20		555		900		320		485		65		635		20		465		230		605		70		895			

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 PEDETSTAL METER. ONCOR WILL INSTALL THE ELECTRICAL CONDUCTORS FROM THE POINT OF DELIVERY TO THE PEDESTAL METER.

\- EMPTY 3" CONDUIT FOR FUTURE COMMUNICATION WITH PULL ROPE INSIDE.

NOTES CONTINUED:

10. 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.
11. ALL SIGNAL CABLES SHALL BE WIRED IN ACCORDANCE WITH THE CABINET PREPARATION NOTES SUPPLIED BY THE CITY OF DALLAS.
12. 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.
13. IF SIGNAL POLES CANNOT BE INSTALL IN THE LOCATIONS SHOWN ON THE PLANS, THE CONTRACTOR SHALL CONTACT THE CITY AND ENGINEER TO MEET ON SITE TO DISCUSS NEW LOCATIONS.
14. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.
15. CONTRACTOR TO MAINTAIN FULL ACCESS TO A MINIMUM OF TWO PEDESTRIAN CROSSINGS AT ALL TIMES DURING CONSTRUCTION.
16. CONTRACTOR TO PROCURE AND INSTALL CCTV CAMERA. ETHERNET CABLE IS TO BE INSTALLED FROM CAMERA TO TRAFFIC SIGNAL CONTROLLER AND SUBSIDIARY TO ITEM 6010 6002.
17. CONTRACTOR TO INSTALL RAILROAD PREEMPTION CABLE FROM THE TRAFFIC SIGNAL CABINET TO RUN NUMBER 21 AND COIL. CONNECTION FROM GROUND BOX NEXT TO RUN NUMBER 21 TO RAILROAD CABINET TO BE INSTALLED BY DART. CONTRACTOR TO COORDINATE WITH DART REGARDING PREEMPTION CABLE SWITCH OVER FROM EXISTING TO PROPOSED EQUIPMENT TO MINIMIZE DOWN TIME.
18. TRINITY STRAND TRAIL AND RIGHT TURN DECELERATION BAY TO BE CONSTRUCTED BY OTHERS. SHOWN FOR REFERENCE PURPOSES ONLY. CONTRACTOR TO COORDINATE WITH RICHARD RITZ (RICHARD.RITZ@DALLASCITYHALL.COM) WITH THE COD PARK AND RECREATION DEPARTMENT PRIOR TO STARTING CONSTRUCTION.

SIGNAL HEAD AND POLE PLACEMENT (FT)

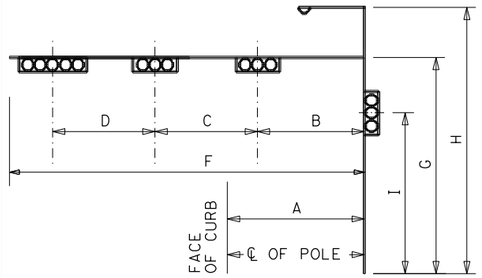
POLE NUMBER	STATUS	A (FT)	B (FT)	C (FT)	D (FT)	E (FT)	F (FT)	G (FT)	H (FT)	I (FT)	NO. OF HEADS (EA)*	ITEM 6292		LUM	DRILLED SHAFT LENGTH (FT)			FDN. TYPE WIND ZONE 80 MPH
												RADAR PRESENCE DET. (EA)	RADAR ADVANCED DET. (EA)		24" DIA SUB TO ITEM 687	30" DIA TYPE A ITEM 416	36" DIA TYPE A ITEM 416	
P-1	I	12	20	9	9	-	40	19	30	13	3	1	1	Y	-	-	13	36-A
P-2	I	7	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	24-A
P-3	I	10	PEDESTRIAN POLE SIGNAL					20	-	-	-	1	-	N	6	-	-	24-A
P-4	I	8	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	24-A
P-5	I	9	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	24-A
P-6	I	28	18	13	-	-	32	19	30	13	2	-	-	Y	-	11	-	30-A
P-7	I	11	20	16	-	-	40	19	30	13	2	-	-	Y	-	-	13	36-A
P-8	I	9	15	9	9	-	36	19	30	13	3	1	1	Y	-	-	13	36-A
										TOTAL:		3	2		24	11	39	

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 DATA

ELEC. SERVICE ID	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
ES-05	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 4	<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.



4/1/2021
STATE OF TEXAS
NATHAN C. NEW
101204
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PROFESSIONAL ENGINEER

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Fax No. (972) 239-3820

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

HARRY HINES BLVD
AT MARKET CENTER BLVD

SHEET 1 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	27
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_562_Harry Hines_Market Center_Quantity 1 of 3.dgn
40.0000 ft / in.
BY: Marianna.Borrego

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 10 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.	CABLE 8 20 CNDR. FROM P-8 TO CNTRL.
1	BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
2	WHITE	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM
3	RED	SH 1, 2, 3, 4 - Ø2 R	SPARE	SPARE	SPARE	SPARE	SH 9, 10, 12 - Ø1 R	SH 14, 15, 16 - Ø4 R	SH 17, 18, 19, 20 - Ø6 R
4	GREEN	SH 1, 2, 3 - Ø2 G	SPARE	SPARE	SPARE	SPARE	SH 9, 10, 12 - Ø1 G	SH 14, 15, 16 - Ø4 G	SH 17, 18, 19, 20 - Ø6 G
5	ORANGE	SH 1, 2, 3 - Ø2 Y	SPARE	SPARE	SPARE	SPARE	SH 9, 10, 12 - Ø1 Y	SH 14, 15, 16 - Ø4 Y	SH 17, 18, 19, 20 - Ø6 Y
6	BLUE	SPARE	SH 6 - Ø2 DW	SH 7 - Ø2 DW	SH 8 - Ø2	SH 11 - Ø2 DW	SPARE	SPARE	SPARE
7	WHITE/BLACK	SPARE	SH 6 - Ø2 W	SH 7 - Ø2 W	SH 8 - Ø2 W	SH 11 - Ø2 W	SPARE	SPARE	SPARE
8	RED/BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
9	GREEN/BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
10	ORANGE/BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
11	BLUE/BLACK	SPARE					SPARE	SPARE	SPARE
12	BLACK/WHITE	SPARE					SPARE	SPARE	SPARE
13	RED/WHITE	SH 4 - OLA Y (RT ARW)					SH 13 - Ø2 R	SH 21 - Ø1 R (LT ARW)	SPARE
14	GREEN/WHITE	SH 4 - OLA FY (RT ARW)					SH 13 - Ø2 G	SH 21 - Ø1 G (LT ARW)	SPARE
15	BLUE/WHITE	SH 4 - Ø4 G (RT ARW)					SH 13 - Ø2 Y	SH 21 - Ø1 Y (LT ARW)	SPARE
16	BLACK/RED	SPARE					SPARE	SPARE	SPARE
17	WHITE/RED	SPARE					SPARE	SPARE	SPARE
18	ORANGE/RED	SH 5 - Ø4 R					SPARE	SPARE	SPARE
19	BLUE/RED	SH 5 - Ø4 G					SPARE	SPARE	SPARE
20	RED/GREEN	SH 5 - Ø4 Y					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	MARKET CENTER	I	P-1	24"x VA
S2	R3-1	ACTIVATED BLANK-OUT NO RIGHT TURN ACROSS TRACKS	I	P-1	30"x 36"
S3	R9-3	NO PEDESTRIAN CROSSING	I	P-1	18"x18"
S4	R10-3ER	PED PUSH BUTTON	I	P-2	9"x15"
S5	R10-3EL	PED PUSH BUTTON	I	P-3	9"x15"
S6	R10-3ER	PED PUSH BUTTON	I	P-4	9"x15"
S7	R10-3EL	PED PUSH BUTTON	I	P-5	9"x15"
S8	R3-8(LL)	LANE ASSIGNMENT	I	P-6	VAx 30"
S9	STREET NAME	HARRY HINES	I	P-6	24"x VA
S10	R9-3	NO PEDESTRIAN CROSSING	I	P-6	18"x18"
S11	R9-3	NO PEDESTRIAN CROSSING	I	P-7	18"x18"
S12	STREET NAME	HARRY HINES	I	P-7	24"x VA
S13	R3-8(LL)	LANE ASSIGNMENT	I	P-7	VAx 30"
S14	R3-4	NO U-TURN	I	P-7	36"x 36"
S15	STREET NAME	MARKET CENTER	I	P-8	24"x VA
S16	R9-3	NO PEDESTRIAN CROSSING	I	P-8	18"x18"
S17	R6-2R	ONE WAY (RIGHT)	I	GROUND MOUNTED	30"x36"
S18	R6-2R	ONE WAY (RIGHT)	I	GROUND MOUNTED	30"x36"
S19	R10-6L	STOP HERE ON RED	I	GROUND MOUNTED	24"x36"
S20	R10-6R	STOP HERE ON RED	I	GROUND MOUNTED	24"x36"
S21	R5-1R	YIELD TO PEDS HERE (RIGHT)	I	GROUND MOUNTED	36"x36"
S22	R5-1L	YIELD TO PEDS HERE (LEFT)	I	GROUND MOUNTED	36"x36"
S23	R3-2	NO LEFT TURN	I	P-8	36"x 36"
S24	R1-2	YIELD	REL	GROUND MOUNTED	48" x 48" x 48"

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

* - ALL SIGNS ARE TO BE PROVIDED AND INSTALLED BY THE CONTRACTOR (SUB TO ITEM 680).

GROUND BOX SUMMARY

ITEM NO.	DESCRIPTION	UNIT	QTY.
0624	GROUND BOX TY D (162922)W/APRON	EA	7
6186	ITS GND BOX TY 1 (243624)W/APRON	EA	1

4/1/2021

STATE OF TEXAS
NATHAN C. NEW
101204
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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

HARRY HINES BLVD
AT MARKET CENTER BLVD

SHEET 2 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	
CHECK	CONTROL	SECTION	JOB	28
HMF	0918	47	247, ETC.	
CHECK				
NCN				

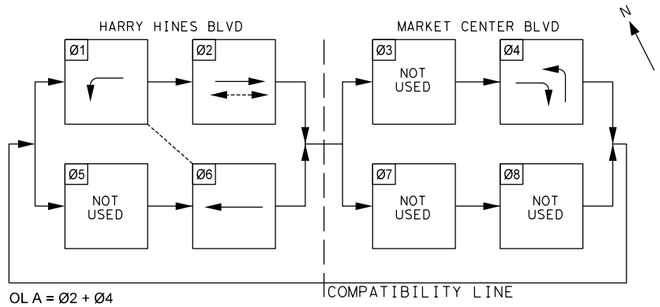
PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\06403604?_COD WA 10 Traffic Signals\CADD\cad-wa10_SHT_563_Harry Hines_Market Center_Quantity 2 of 3.dgn
40.0000 ft / in.
BY: Marianna.Borrego

APS MESSAGE CHART

POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-2	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS HARRY HINES AT MARKET CENTER
		EXTENDED BUTTON PUSH	WAIT TO CROSS HARRY HINES AT MARKET CENTER
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MARKET CENTER BLVD, WALK SIGN IS ON TO CROSS MARKET CENTER BLVD
P-3	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS HARRY HINES AT MARKET CENTER
		EXTENDED BUTTON PUSH	WAIT TO CROSS HARRY HINES AT MARKET CENTER
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MARKET CENTER BLVD, WALK SIGN IS ON TO CROSS MARKET CENTER BLVD
P-4	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS HARRY HINES AT MARKET CENTER
		EXTENDED BUTTON PUSH	WAIT TO CROSS HARRY HINES AT MARKET CENTER
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MARKET CENTER BLVD, WALK SIGN IS ON TO CROSS MARKET CENTER BLVD
P-5	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS HARRY HINES AT MARKET CENTER
		EXTENDED BUTTON PUSH	WAIT TO CROSS HARRY HINES AT MARKET CENTER
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MARKET CENTER BLVD, WALK SIGN IS ON TO CROSS MARKET CENTER BLVD

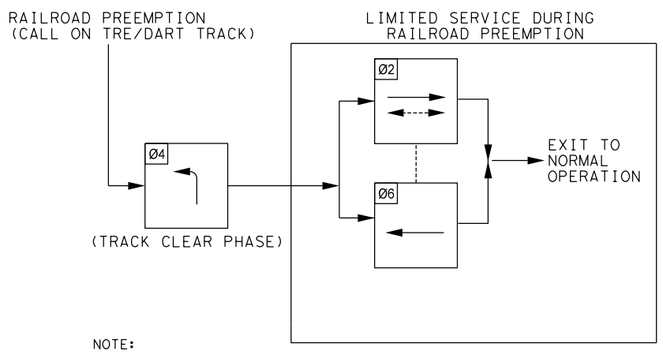
NORMAL PHASE SEQUENCE

— — COMPATIBLE PHASES
◄--► PEDESTRIAN MOVEMENT



PREEMPTION PHASE SEQUENCE

— — COMPATIBLE PHASES
◄--► PEDESTRIAN MOVEMENT



NOTE:

1. CONTRACTOR TO ADD THE FOLLOWING CIRCUITS (SINGLE BREAK) TO THE SIGNAL CABINET:
   - AVP (ADVANCE VEHICLE PREEMPTION)
   - SIMULTANEOUS
   - GATE-DOWN

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	4 SEC	<-G-	-G->	G	G (LOUVERED)	<-Y-	-Y->	Y	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
1	H3	I	1				1				1		1	
2	H3	I	1				1				1		1	
3	H3	I	1				1				1		1	
4	V4FRT	I		1		1				2			1	
5	V3	I	1				1				1		1	
6	PED	I												1
7	PED	I												1
8	PED	I												1
9	H3	I	1				1				1		1	
10	H3	I	1				1				1		1	
11	PED	I												1
12	V3	I	1				1				1		1	
13	V3	I	1				1				1		1	
14	H3	I	1				1				1		1	
15	H3	I	1				1				1		1	
16	V3	I	1				1				1		1	
17	H3L	I	1					1			1		1	
18	H3L	I	1					1			1		1	
19	H3L	I	1					1			1		1	
20	V3	I	1				1				1		1	
21	V3LT	I	1		1				1			1		
	TOTAL (NEW)		16	1	1	1	12	3	1	2	15	1	16	4

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-1	19'	SET BACK	EB	400'	-
R2	P-3	18'	STOP BAR	NB	N/A	55' TO 75'
R3	MAST ARM P-8	19'	STOP BAR	EB	N/A	25' TO 45'
R4	MAST ARM P-8	19'	SET BACK	WB	400'	-
R5	POLE P-1	19'	STOP BAR	WB+WBLT	N/A	70' TO 100'

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

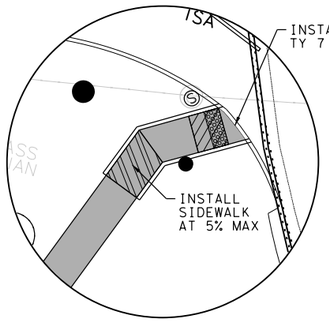
TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

HARRY HINES BLVD
AT MARKET CENTER BLVD

SHEET 3 OF 3

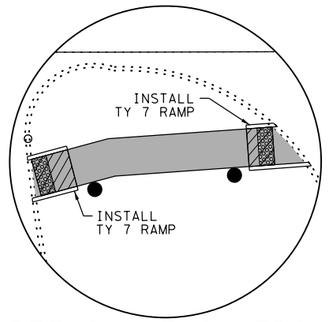
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	29
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_564_Harry Hines_Market Center_Quantity 3 of 3.dgn
40.0000 ft / in.
BY: Marianna.Borrego



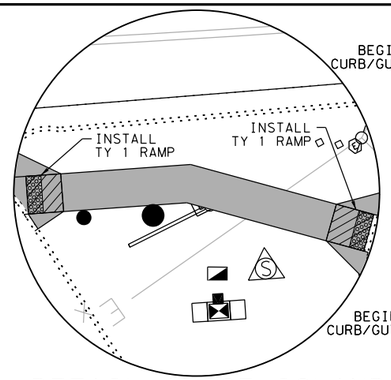
DETAIL AT SW CORNER

531 6003: CONC SIDEWALKS (6") = 16 SY



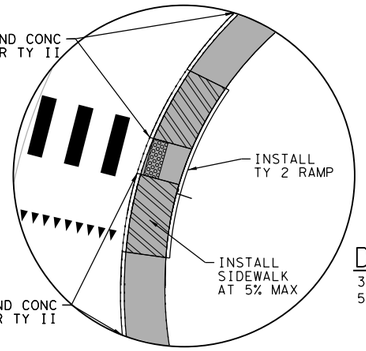
DETAIL AT S MEDIAN

531 6003: CONC SIDEWALKS (6") = 13 SY



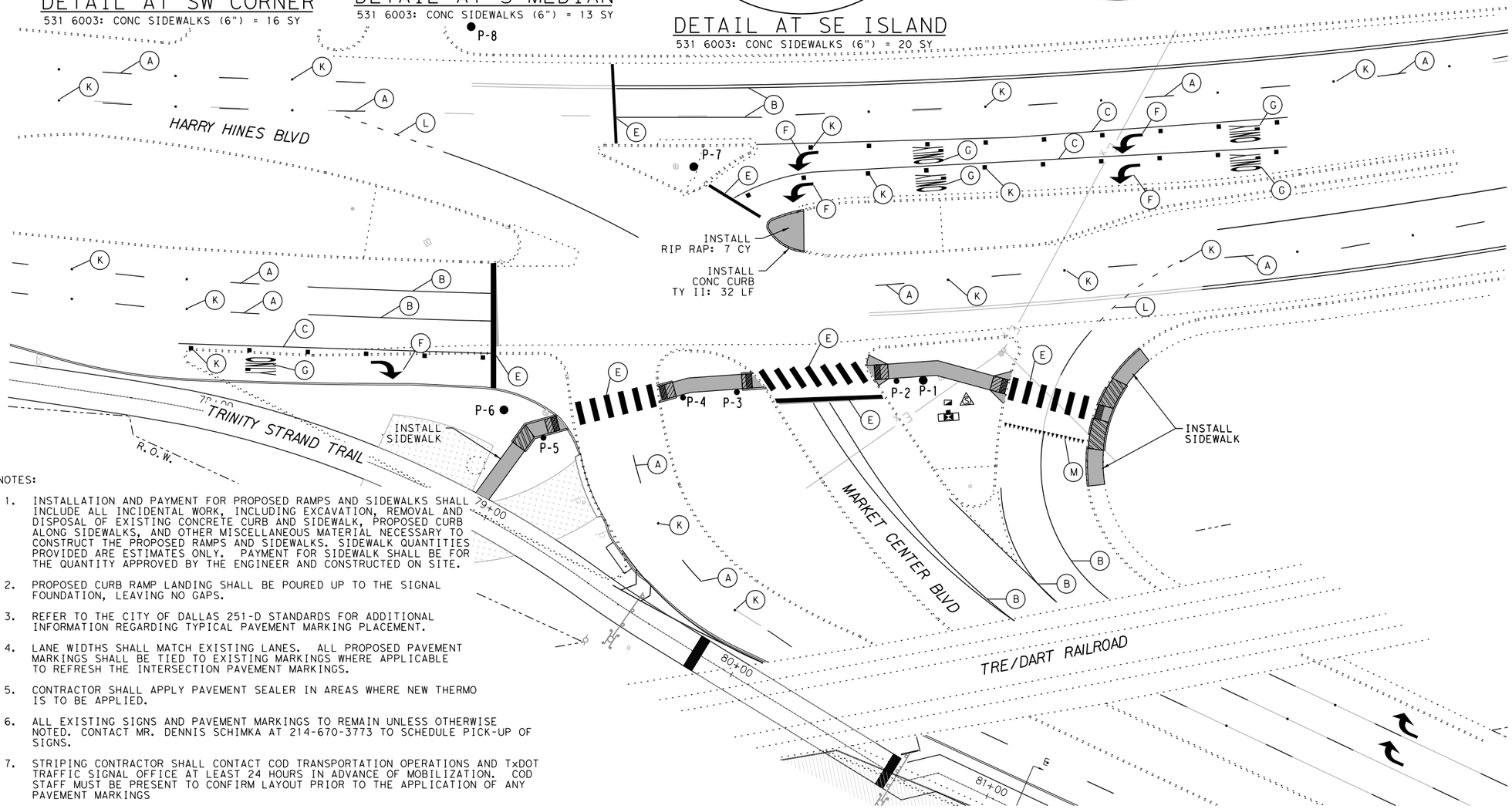
DETAIL AT SE ISLAND

531 6003: CONC SIDEWALKS (6") = 20 SY



DETAIL AT SE CORNER

392 6008: CONC CURB & GUTTER II = 50 LF
531 6003: CONC SIDEWALKS (6") = 15 SY



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. CONTACT MR. DENNIS SCHIMKA AT 214-670-3773 TO SCHEDULE PICK-UP OF SIGNS.
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 IS RESPONSIBLE FOR REPAIRS AND SUBSTITUTION OF ANY DAMAGED IRRIGATION EQUIPMENT.
9. INSTALL PAVEMENT MARKINGS 200' IN EACH DIRECTION FROM STOP BAR.
10. SEE SUMMARY OF PEDESTRIAN RAMPS AND PAVEMENT MARKING TABLES ON PROPOSED QUANTITY SHEET.
11. CONTRACTOR SHALL ENSURE THAT ALL PED RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE RAMP OR GUTTER AREA.
12. RAMP LANDINGS AND PROPOSED SIDEWALKS SHALL NOT EXCEED 2% MAX CROSS SLOPE AND 2% RUNNING SLOPE.

LEGEND
PEDESTRIAN RAMPS

- 8.3% MAX RUNNING SLOPE, 2% MAX CROSS SLOPE
- 5% MAX RUNNING SLOPE, 2% MAX CROSS SLOPE

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

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

LEGEND
PAVEMENT MARKING

A	RE PM W/RET REQ TY I (W) 4" (BRK) (090MIL)
B	RE PM W/RET REQ TY I (W) 4" (SLD) (090MIL)
C	REFL PAV MRK TY I (W) 8" (SLD) (090MIL)
D	REFL PAV MRK TY I (W) 12" (SLD) (090MIL)
E	REFL PAV MRK TY I (W) 24" (SLD) (090MIL)
F	PREFAB PAV MRK TY C (W) (ARROW)
G	PREFAB PAV MRK TY C (W) (WORD)
H	RE PM W/RET REQ TY I (Y) 4" (SLD) (090MIL)
I	REFL PAV MRK TY I (Y) 24" (SLD) (090MIL)
J	REFL PAV MRK TY II A-A
K	REFL PAV MRK TY II-C-R
L	REFL PAV MRK TY I (W) 6" (BRK) (090MIL) (PUPPY TRACKS)
M	REFL PAV MRK TY I (W) 18" (YLD TRI) (≤40mph)

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED PAVEMENT MARKINGS AND PEDESTRIAN RAMPS

HARRY HINES BLVD
AT MARKET CENTER BLVD

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	30
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\Project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_565_Harry Hines_Market Center_Striping.dgn
40.0195 ft / in.
BY: Marianna.Borrego

PEDESTRIAN RAMP / SIDEWALK SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
432	6003	RIPRAP (CONC)(6 IN)	CY	7
529	6002	CONC CURB (TY II)	LF	32
529	6008	CONC CURB & GUTTER (TY II)	LF	50
531	6003	CONC SIDEWALKS (6")	SY	64
531	6004	CURB RAMPS (TY 1)	EA	2
531	6005	CURB RAMPS (TY 2)	EA	1
531	6010	CURB RAMPS (TY 7)	EA	3

PAVEMENT MARKING SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6035	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	585
666	6047	REFL PAV MRK TY I (W)24"(SLD)(090MIL)	LF	425
666	6224	PAVEMENT SEALER 4"	LF	1415
666	6225	PAVEMENT SEALER 6"	LF	24
666	6226	PAVEMENT SEALER 8"	LF	585
666	6230	PAVEMENT SEALER 24"	LF	425
666	6231	PAVEMENT SEALER (ARROW)	EA	5
666	6232	PAVEMENT SEALER (WORD)	EA	5
666	6243	PAVEMENT SEALER (YLD TRI)	EA	19
666	6299	RE PM W/RET REQ TY I (W)4"(BRK)(090MIL)	LF	280
666	6302	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)	LF	1135
666	6305	RE PM W/RET REQ TY I (W)6"(BRK)(090MIL)	LF	24
668	6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	5
668	6085	PREFAB PAV MRK TY C (W) (WORD)	EA	5
668	6091	PREFAB PAV MRK TY C (W) (18")(YLD TRI)	EA	19
672	6010	REFL PAV MRKR TY II-C-R	EA	62
678	6001	PAV SURF PREP FOR MRK (4")	LF	1415
678	6002	PAV SURF PREP FOR MRK (6")	LF	24
678	6004	PAV SURF PREP FOR MRK (8")	LF	585
678	6008	PAV SURF PREP FOR MRK (24")	LF	425
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	5
678	6016	PAV SURF PREP FOR MRK (WORD)	EA	5
678	6022	PAV SURF PREP FOR MRK (18")(YLD TRI)	EA	19
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	62

VARIOUS PAVEMENT MARKING QUANTITIES INCLUDED IN THIS TABLE ARE BEYOND THE LIMITS OF THIS SHEET AND MAY NOT BE SHOWN IN THIS LAYOUT

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

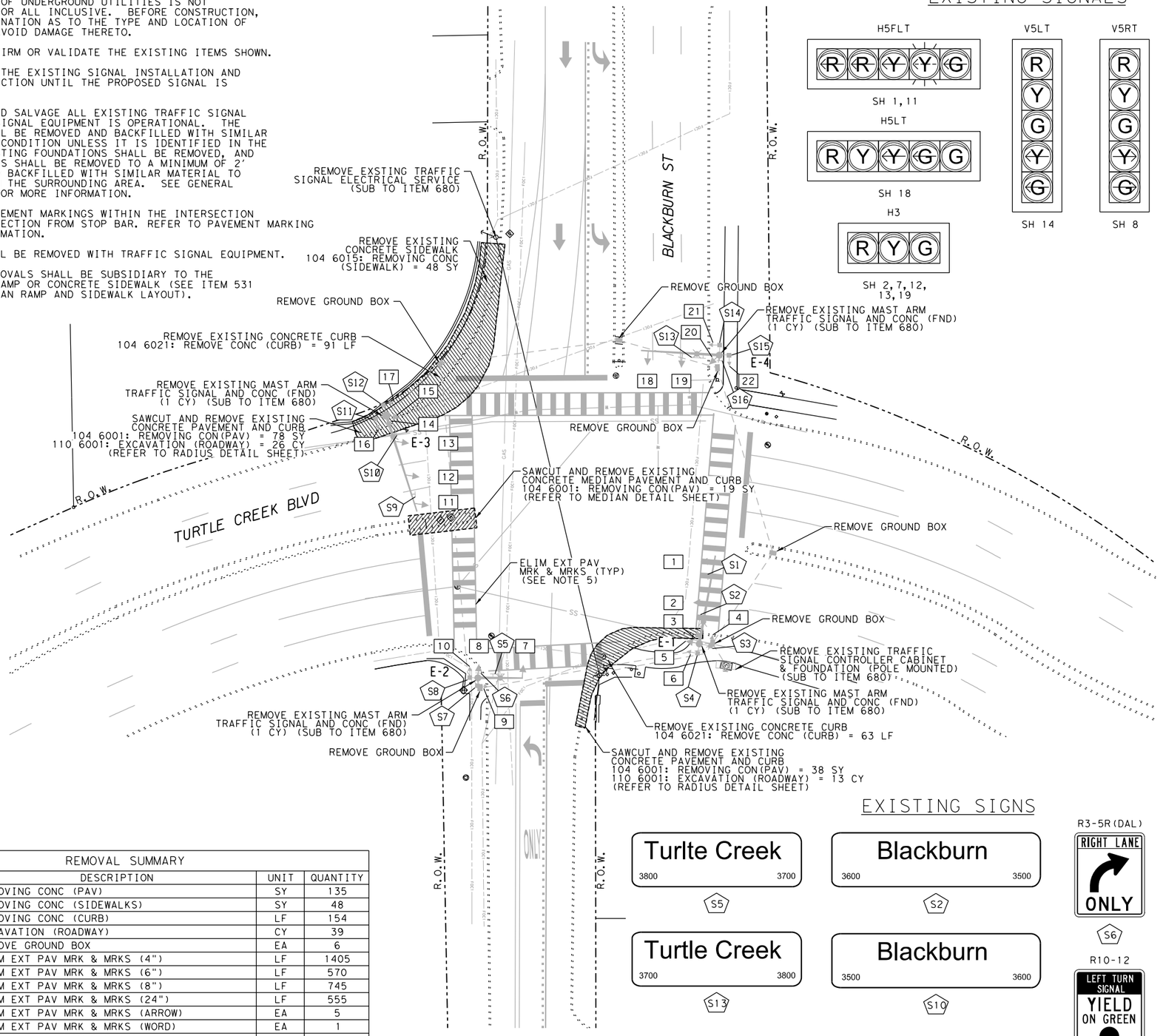
HARRY HINES BLVD
AT MARKET CENTER BLVD

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	31
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

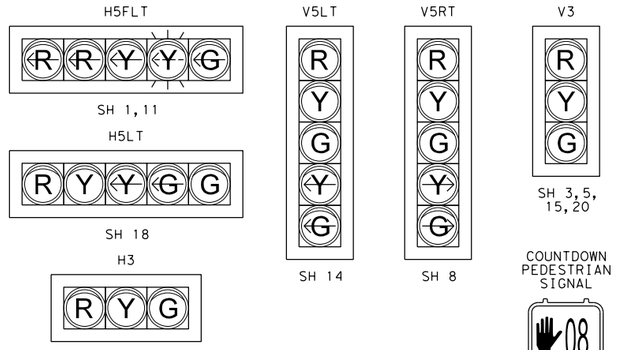
PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa10_SHT_567_Harry Hines_Market Center_Quantity 1 of 1.dgn
40.0000 ft / in.
BY: Marianna.Borrego

NOTES:

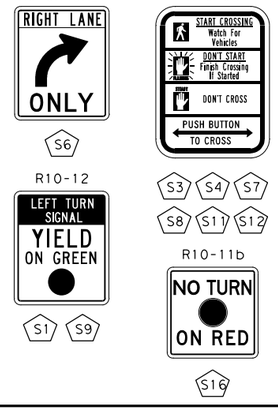
1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE EXISTING TRAFFIC SIGNAL HARDWARE, PAVEMENT MARKINGS, SIGNING, RIGHT-OF-WAY, AND THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE 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-S16 SHALL BE REMOVED WITH TRAFFIC SIGNAL EQUIPMENT.
7. CURB RAMP AND SIDEWALK REMOVALS SHALL BE SUBSIDIARY TO THE INSTALLATION OF NEW CURB RAMP OR CONCRETE SIDEWALK (SEE ITEM 531 QTYS AND PROPOSED PEDESTRIAN RAMP AND SIDEWALK LAYOUT).



EXISTING SIGNALS



EXISTING SIGNS



REMOVAL SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6001	REMOVING CONC (PAV)	SY	135
104	6015	REMOVING CONC (SIDEWALKS)	SY	48
104	6021	REMOVING CONC (CURB)	LF	154
110	6001	EXCAVATION (ROADWAY)	CY	39
624	6028	REMOVE GROUND BOX	EA	6
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1405
677	6002	ELIM EXT PAV MRK & MRKS (6")	LF	570
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	745
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	555
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	5
677	6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	1
680	6004	REMOVING TRAFFIC SIGNALS	EA	1

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

LEGEND

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

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation

TRAFFIC SAFETY IMPROVEMENTS

EXISTING CONDITIONS AND REMOVALS

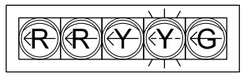
BLACKBURN ST AT TURTLE CREEK BOULEVARD

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	32
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247, ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_497_Blackburn_Turtle Creek_Exist.dgn
BY: Marianna.Borrego
40.0000 ft / in.

PROPOSED SIGNALS

H5FLT



SH 4, 9, 15, 21

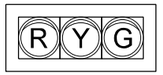
V3

SH 3, 20, 24

LED COUNTDOWN PEDESTRIAN SIGNAL

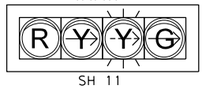
SH 1, 2, 7, 8, 12, 13, 18, 19

H3

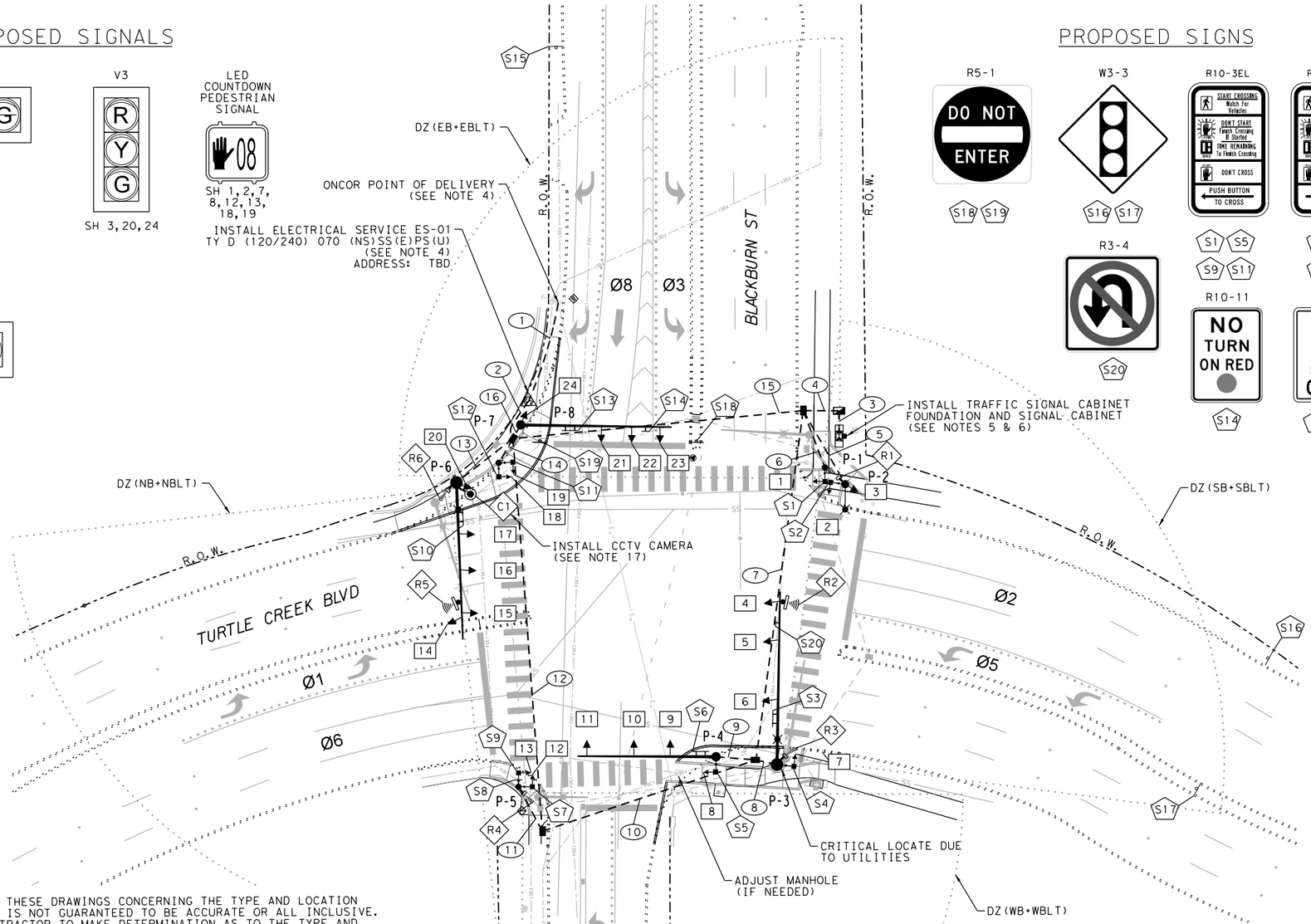


SH 5, 6, 10, 14 16, 17, 22, 23

H4FRT



SH 11



PROPOSED SIGNS

R5-1

S18 S19

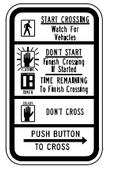
W3-3

S16 S17

R10-3EL

S1 S5 S9 S11

R10-3ER



S2 S4 S7 S12

R3-4

S20

R10-11

S14

R3-5R

S8 S15

LEGEND

- TYPICAL PROPOSED MAST ARM COMBINATION SIGNAL WITH PEDESTRIAN SIGNAL, PUSH BUTTON, LED LUMINAIRE (250W E.Q.), 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 ADVANCED RADAR DETECTOR AND LABEL
- (C1) PROPOSED CCTV CAMERA
- (S) PROPOSED ELECTRICAL SERVICE
- P-# PROPOSED TRAFFIC SIGNAL POLE NUMBER

0 10 20 40

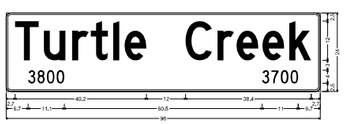
ORIGINALLY PLOTTED SCALE: SCALE: 1" = 40'

NOTES:

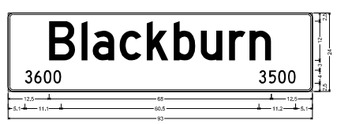
1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.
2. CONTRACTOR TO 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.
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 ACCOMMODATE FIELD CONDITIONS.
4. CONTRACTOR SHALL COORDINATE WITH ONCOR CONCERNING TRAFFIC SIGNAL ELECTRICAL SERVICE. CONTACT ONCOR (TBD) 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) TO SCHEDULE PICK-UP OF MATERIALS.
6. INSTALL BASE MOUNTED CONTROLLER CABINET (TYPE 332 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 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.

NOTES CONTINUED ON NEXT SHEET.

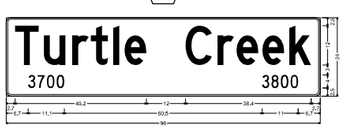
PROPOSED SIGNS



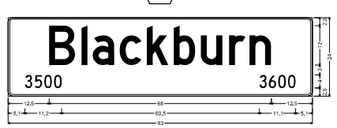
S6



S3



S13



S10

4/1/2021

STATE OF TEXAS
NATHAN C. NEW
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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED CONDITIONS

BLACKBURN ST
AT TURTLE CREEK BOULEVARD

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	33
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\Iproject\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_498_Blackburn_Turtle Creek_Proposed.dgn
40.0000 ft / in.
BY: Marianna.Borrego

CONDUIT AND CABLE CHART
WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	ITEM 618 CONDUIT (SCH 80)														CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS								ITEM 684 TRAFFIC SIGNAL CABLES										ITEM 6292		ITEM 6010		TOTAL LENGTH OF RUN	RUN NO
		2" PVC SCH 80 (RISER)		2" PVC (TRENCHED)		2" PVC (BORED)		3" PVC (TRENCHED)		3" PVC (BORED)		4" PVC (TRENCHED)		4" PVC (BORED)			NO. 6 XHHW WIRE		NO. 6 BARE WIRE		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		RADAR COMM CABLE		ETHERNET CABLE			
		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	35											I	TO BE INSTALLED BY OTHERS																						35	1
2	I			1	15											I	2	30	1	15	4	60																15	2
3	I			1	10											I	2	20	1	10																		10	3
	I											1	10			I			1	10											5	50	6	60	1	10		
	I											1	10			I			1	10					8	80					3	30						
	I							1	10							I	FUTURE COMMUNICATION CONDUIT																								
4	I			1	15											I	2	30																				15	4
	I							1	15							I			1	15					8	120					3	45	5	75	6	90	1	15		
	I							1	15							I	FUTURE COMMUNICATION CONDUIT																								
5	I							1	30							I			1	30	2	60			1	30							1	30	1	30			30	5
6	I							1	20							I			1	20					1	20					1	20							20	6
7	I													1	115	I			1	115	2	230			4	460							2	230	2	230			115	7
	I									1	115					I	FUTURE COMMUNICATION CONDUIT																								
8	I							1	10							I			1	10	2	20			1	10							1	10	2	20			10	8
9	I							1	15							I			1	15					1	15							1	15					15	9
10	I													1	75	I			1	75					2	150													75	10
	I									1	75					I	FUTURE COMMUNICATION CONDUIT																								
11	I							1	20							I			1	20					2	40					1	20			1	20			20	11
12	I													1	125	I			1	125											1	20			1	125			125	12
	I									1	125					I	FUTURE COMMUNICATION CONDUIT																								
13	I							1	25							I			1	25	4	100											1	25	2	50	1	25	25	13
14	I							1	10							I			1	10					2	20					1	10							10	14
15	I					1	95									I	2	190																				
	I					1	95									I			1	95	4	380			2	190					2	190	2	190	3	285	1	95	95	15
	I									1	95					I	FUTURE COMMUNICATION CONDUIT																								
16	I							1	5							I			1	5											1	5							5	16
SUBTOTAL			10		75		190		175		410		20		315			270		605		850		0		1135		0		0		440		630		910		145		
P-1	P															I										5													VARIES	P-1
P-2	P															I										5		30								30		VARIES	P-2
P-3	P															I								80		5		105		75						95		VARIES	P-3
P-4	P															I										5		50		100								VARIES	P-4
P-5	P															I										10									20			VARIES	P-5
P-6	P															I								80				170		65						80		30	VARIES	P-6
P-7	P															I										10												VARIES	P-7
P-8	P															I												140		50								VARIES	P-8
SUBTOTAL			0		0		0		0		0		0		0			0		0		0		160		40		495		290		0		0		225		30		
TOTAL			10		75		190		175		410		20		315			270		605		850		160		1175		495		290		440		630		1135		175		

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. ONCOR WILL INSTALL THE ELECTRICAL CONDUCTORS FROM THE POINT OF DELIVERY TO THE PEDESTAL METER.

\- EMPTY 3" CONDUIT FOR FUTURE COMMUNICATION WITH PULL ROPE INSIDE.

\- NO.8XHHW IN LUMINAIRE POLE (P-2) IS SUBSIDIARY TO ITEM 610 6162.

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)*	ITEM 6292		LUM	DRILLED SHAFT LENGTH (FT)				FDN. TYPE WIND ZONE 80 MPH
												RADAR PRESENCE DET. (EA)	RADAR ADVANCED DET. (EA)		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	7	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	-	24-A
P-2	I	7	LUMINAIRE POLE					-	30	13	-	1	-	Y	-	8	-	-	30-A
P-3	I	4	19	11	21	-	55	19	30	-	3	1	1	Y	-	-	-	22	48-A
P-4	I	11	15	12	12	-	44	19	-	-	3	-	-	N		-	13	-	36-A
P-5	I	5	PEDESTRIAN POLE SIGNAL					20	-	-	-	1	-	N	6	-	-	-	24-A
P-6	I	9	16	12	14	2	50	19	30	13	4	1	1	Y	-	-	-	22	48-A
P-7	I	10	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	-	24-A
P-8	I	11	27	10	9	-	48	19	-	13	3	-	-	N		-	13	-	36-A
											TOTAL:	4	2		18	8	26	44	

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 DATA

ELEC. SERVICE ID	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
ES-01	TY D (120/240) 070 (NS) SS (E) PS (U)	2"	3 / #4	N/A	2P / 70	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.

NOTES CONTINUED:

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.

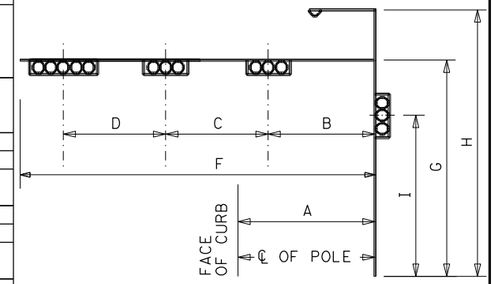
13. PROPOSED APS UNITS SHALL BE PLACED ADJACENT TO A LEVEL LANDING AREA (2% MAX IN ANY DIRECTION). IF THE DISTANCE FROM THE PUSH BUTTON TO THE EDGE OF ACCESSIBLE PATH EXCEEDS 10", THE CONTRACTOR SHALL FURNISH AND INSTALL A PUSH BUTTON EXTENDER TO MAKE THE REACH 10" OR LESS. MEASUREMENT AND PAYMENT SHALL 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 CCTV CAMERA. ETHERNET CABLE IS TO BE INSTALLED FROM CAMERA TO TRAFFIC SIGNAL CONTROLLER AND SUBSIDIARY TO ITEM 6010 6002.



4/1/2021

STATE OF TEXAS
NATHAN C. NEW
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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

BLACKBURN ST
AT TURTLE CREEK BOULEVARD

SHEET 1 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	34
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\Project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_499_Blackburn_Turtle Creek_Quantity 1 of 3.dgn
40.0000 ft / in.
BY: Marianna.Borrego

CABLE TERMINATION CHART									
CNDR. NO.	CONDUCTOR COLOR	CABLE 1 10 CNDR.	CABLE 2 20 CNDR.	CABLE 3 20 CNDR.	CABLE 4 20 CNDR.	CABLE 5 10 CNDR.	CABLE 6 20 CNDR.	CABLE 7 10 CNDR.	CABLE 8 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.	FROM P-7 TO CNTRL.	FROM P-8 TO CNTRL.
1	BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
2	WHITE	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM
3	RED	SPARE	SH 3 - Ø2 R	SH 5,6 - Ø6 R	SH 10 - Ø8 R	SPARE	SH 16,17,20 - Ø2 R	SPARE	SH 22,23 - Ø4 R
4	GREEN	SPARE	SH 3 - Ø2 G	SH 5,6 - Ø6 G	SH 10 - Ø8 G	SPARE	SH 16,17,20 - Ø2 G	SPARE	SH 22,23 - Ø4 G
5	ORANGE	SPARE	SH 3 - Ø2 Y	SH 5,6 - Ø6 Y	SH 10 - Ø8 Y	SPARE	SH 16,17,20 - Ø2 Y	SPARE	SH 22,23 - Ø4 Y
6	BLUE	SH 1 - Ø2 DW	SH 2 - Ø4 DW	SH 7 - Ø4 DW	SH 8 - Ø6 DW	SH 12 - Ø8 DW	SPARE	SH 18 - Ø2 DW	SPARE
7	WHITE/BLACK	SH 1 - Ø2 W	SH 2 - Ø4 W	SH 7 - Ø4 W	SH 8 - Ø6 W	SH 12 - Ø8 W	SPARE	SH 18 - Ø2 W	SPARE
8	RED/BLACK	SPARE	SPARE	SPARE	SH 11 - OLE R	SPARE	SH 14 - Ø6 R	SPARE	SH 24 - Ø8 R
9	GREEN/BLACK	SPARE	SPARE	SPARE	SH 11 - Ø1 G (RT ARW)	SH 13 - Ø6 DW	SH 14 - Ø6 G	SH 19 - Ø8 DW	SH 24 - Ø8 G
10	ORANGE/BLACK	SPARE	SPARE	SPARE	SH 11 - OLE FY (RT ARW)	SH 13 - Ø6 W	SH 14 - Ø6 Y	SH 19 - Ø8 W	SH 24 - Ø8 Y
11	BLUE/BLACK		SPARE	SPARE	SPARE		SPARE		SPARE
12	BLACK/WHITE		SPARE	SPARE	SPARE		SPARE		SPARE
13	RED/WHITE		SPARE	SH 4 - OLA R (LT ARW)	SH 9 - OLB R (LT ARW)		SH 15 - OLC R (LT ARW)		SH 21 - OLD R (LT ARW)
14	GREEN/WHITE		SPARE	SH 4 - Ø1 G (LT ARW)	SH 9 - Ø3 G (LT ARW)		SH 15 - Ø5 G (LT ARW)		SH 21 - Ø7 G (LT ARW)
15	BLUE/WHITE		SPARE	SH 4 - OLA Y (LT ARW)	SH 9 - OLB Y (LT ARW)		SH 15 - OLC Y (LT ARW)		SH 21 - OLD Y (LT ARW)
16	BLACK/RED		SPARE	SPARE	SPARE		SPARE		SPARE
17	WHITE/RED		SPARE	SPARE	SPARE		SPARE		SPARE
18	ORANGE/RED		SPARE	SPARE	SPARE		SPARE		SPARE
19	BLUE/RED		SPARE	SH 4 - OLA FY (LT ARW)	SH 9 - OLB FY (LT ARW)		SH 15 - OLC FY (LT ARW)		SH 21 - OLD FY (LT ARW)
20	RED/GREEN		SPARE	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	R10-3EL	PED PUSH BUTTON	I	P-1	9"x15"
S2	R10-3ER	PED PUSH BUTTON	I	P-2	9"x15"
S3	STREET NAME	BLACKBURN	I	P-3	24"x VA
S4	R10-3ER	PED PUSH BUTTON	I	P-3	9"x15"
S5	R10-3EL	PED PUSH BUTTON	I	P-4	9"x15"
S6	STREET NAME	TURTLE CREEK	I	P-4	24"x VA
S7	R10-3ER	PED PUSH BUTTON	I	P-5	9"x15"
S8	R3-5R	RIGHT LANE ONLY	I	P-5	30"x 36"
S9	R10-3EL	PED PUSH BUTTON	I	P-5	9"x15"
S10	STREET NAME	BLACKBURN	I	P-6	24"x VA
S11	R10-3EL	PED PUSH BUTTON	I	P-7	9"x15"
S12	R10-3ER	PED PUSH BUTTON	I	P-7	9"x15"
S13	STREET NAME	TURTLE CREEK	I	P-8	24"x VA
S14	R10-11	NO TURN ON RED	I	P-8	36"x 36"
S15	R3-5R	RIGHT LANE ONLY	I	GROUND MOUNTED	30"x 36"
S16	W3-3	SIGNAL AHEAD	I	GROUND MOUNTED	36"x 36"
S17	W3-3	SIGNAL AHEAD	I	GROUND MOUNTED	36"x 36"
S18	R5-1	DO NOT ENTER	I	GROUND MOUNTED	36"x 36"
S19	R5-1	DO NOT ENTER	I	GROUND MOUNTED	36"x 36"
S20	R3-4	NO U-TURN	I	P-3	36"x 36"

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

* - ALL SIGNS TO BE FURNISH AND INSTALL BY THE CONTRACTOR.

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

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

BLACKBURN ST
AT TURTLE CREEK BOULEVARD

SHEET 2 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	35
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247,ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_500_Blackburn_Turtle Creek_Quantity 2 of 3.dgn
40.0000 ft / in.
BY: Marianna.Borrego

APS MESSAGE CHART

POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-1	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS BLACKBURN STREET AT TURTLE CREEK BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS BLACKBURN STREET AT TURTLE CREEK BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	BLACKBURN STREET, WALK SIGN IS ON TO CROSS BLACKBURN STREET
P-2	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS TURTLE CREEK BOULEVARD AT BLACKBURN STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS TURTLE CREEK BOULEVARD AT BLACKBURN STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	TURTLE CREEK BOULEVARD, WALK SIGN IS ON TO CROSS TURTLE CREEK BOULEVARD
P-3	Phase 4	BUTTON PUSH ON DW	WAIT
		EXTENDED BUTTON PUSH	WAIT TO CROSS TURTLE CREEK BOULEVARD AT BLACKBURN STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	RAPID TICK
P-4	Phase 6	BUTTON PUSH ON DW	WAIT
		EXTENDED BUTTON PUSH	WAIT TO CROSS BLACKBURN STREET AT TURTLE CREEK BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	RAPID TICK
P-5	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS BLACKBURN STREET AT TURTLE CREEK BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS BLACKBURN STREET AT TURTLE CREEK BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	BLACKBURN STREET, WALK SIGN IS ON TO CROSS BLACKBURN STREET
P-5	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS TURTLE CREEK BOULEVARD AT BLACKBURN STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS TURTLE CREEK BOULEVARD AT BLACKBURN STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	TURTLE CREEK BOULEVARD, WALK SIGN IS ON TO CROSS TURTLE CREEK BOULEVARD
P-7	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS TURTLE CREEK BOULEVARD AT BLACKBURN STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS TURTLE CREEK BOULEVARD AT BLACKBURN STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	TURTLE CREEK BOULEVARD, WALK SIGN IS ON TO CROSS TURTLE CREEK BOULEVARD
P-7	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS BLACKBURN STREET AT TURTLE CREEK BOULEVARD
		EXTENDED BUTTON PUSH	WAIT TO CROSS BLACKBURN STREET AT TURTLE CREEK BOULEVARD
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	BLACKBURN STREET, WALK SIGN IS ON TO CROSS BLACKBURN STREET

SIGNAL HEADS (ITEM 682)

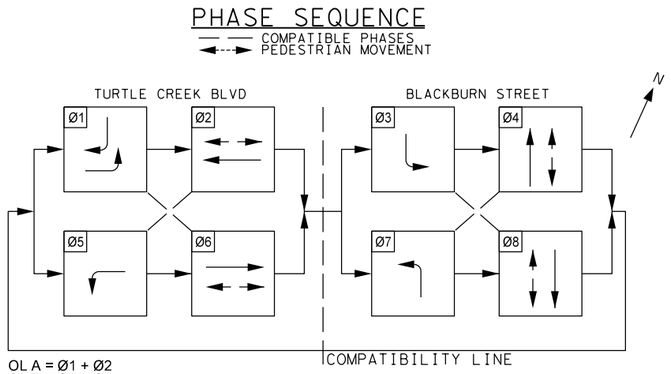
SIGNAL HEAD NUMBER	12" LED SIGNAL INDICATION													PED SIG SEC (LED) (COUNTDOWN)
	SIGNAL HEAD TYPE	STATUS	BACK PLATE			LED SIGNAL LAMPS								
			3 SEC	4 SEC	5 SEC	<-G-	G	-G->	<-Y-	Y	-Y->	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
1	PED	I												1
2	PED	I												1
3	V3	I	1				1			1			1	
4	H5FLT	I			1	1			2			2		
5	H3	I	1				1			1			1	
6	H3	I	1				1			1			1	
7	PED	I												1
8	PED	I												1
9	H5FLT	I			1	1			2			2		
10	H3	I	1				1			1			1	
11	H4FRT	I		1				1			2		1	
12	PED	I												1
13	PED	I												1
14	H3	I	1				1			1			1	
15	H5FLT	I			1	1			2			2		
16	H3	I	1				1			1			1	
17	H3	I	1				1			1			1	
18	PED	I												1
19	PED	I												1
20	V3	I	1				1			1			1	
21	H5FLT	I			1	1			2			2		
22	H3	I	1				1			1			1	
23	H3	I	1				1			1			1	
24	V3	I	1				1			1			1	
	TOTAL (NEW)		11	1	4	4	11	1	8	11	2	8	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	POLE P-2	18'	STOP BAR	EB + EBLT	N/A	55' TO 85'
R2	MAST ARM P-3	19'	SET BACK	SB	400'	-
R3	POLE P-3	18'	STOP BAR	SB + SBLT	N/A	45' TO 75'
R4	POLE P-5	18'	STOP BAR	WB + WBLT	N/A	30' TO 40'
R5	MAST ARM P-6	19'	SET BACK	NB	400'	-
R6	POLE P-6	18'	STOP BAR	NB + NBLT	N/A	55' TO 85'

PHASE SEQUENCE



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

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

BLACKBURN ST
AT TURTLE CREEK BOULEVARD

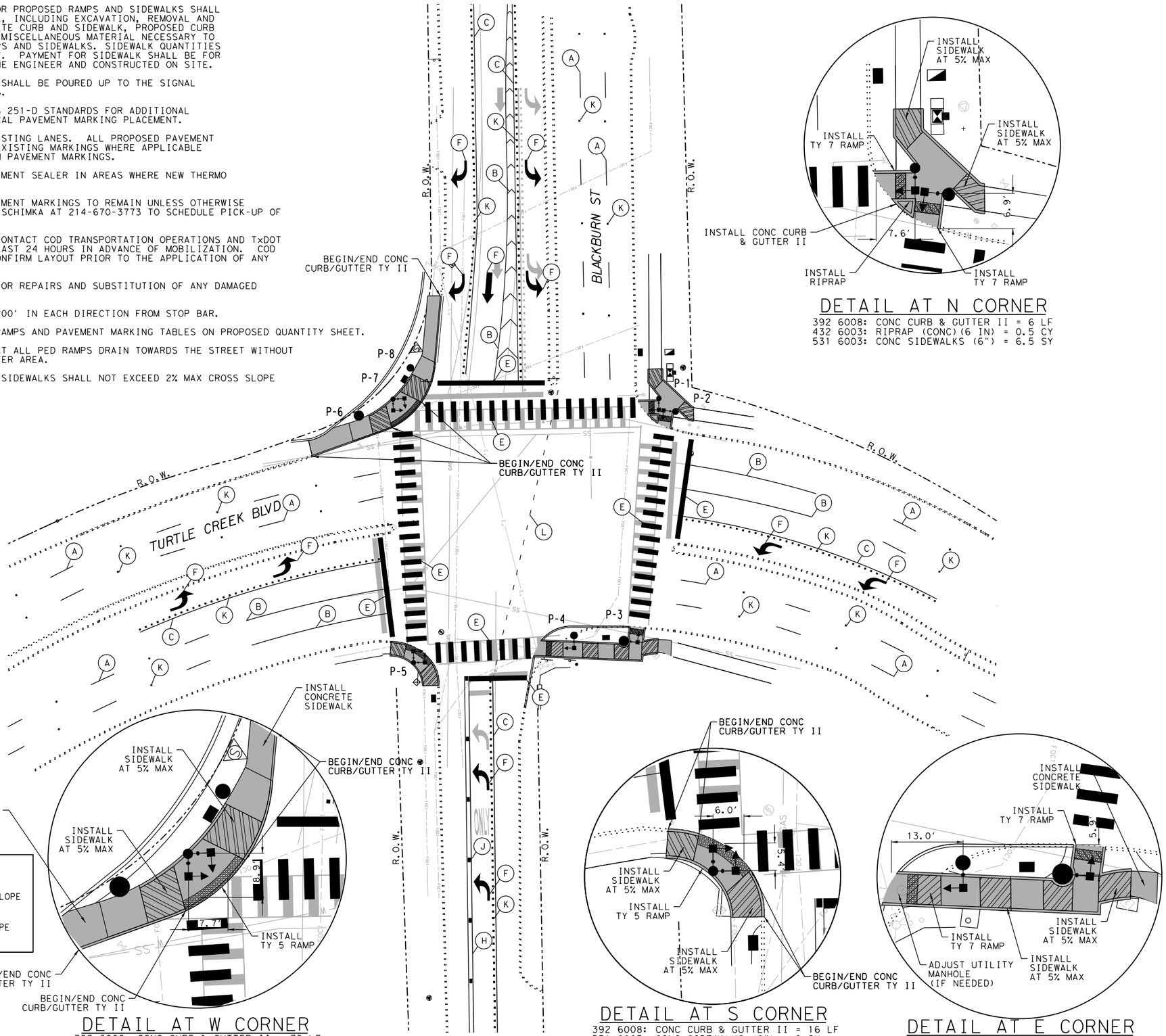
SHEET 3 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	36
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247,ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_501_Blackburn_Turtle Creek_Quantity 3 of 3.dgn
40.0000 ft / in.
BY: Marianna.Barrego

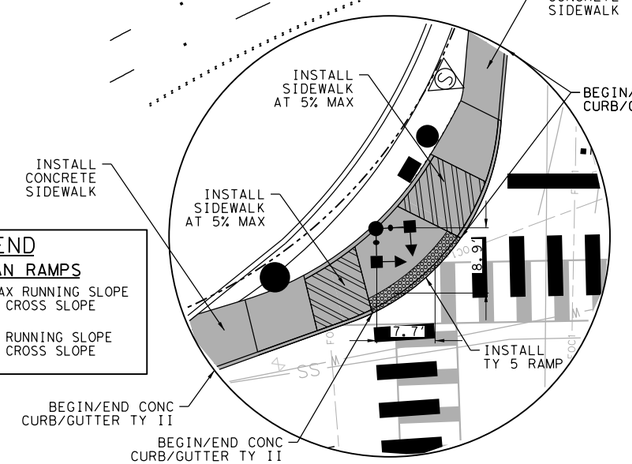
NOTES:

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. CONTACT MR. DENNIS SCHIMKA AT 214-670-3773 TO SCHEDULE PICK-UP OF SIGNS.
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 IS RESPONSIBLE FOR REPAIRS AND SUBSTITUTION OF ANY DAMAGED IRRIGATION EQUIPMENT.
9. INSTALL PAVEMENT MARKINGS 200' IN EACH DIRECTION FROM STOP BAR.
10. SEE SUMMARY OF PEDESTRIAN RAMPS AND PAVEMENT MARKING TABLES ON PROPOSED QUANTITY SHEET.
11. CONTRACTOR SHALL ENSURE THAT ALL PED RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE RAMP OR GUTTER AREA.
12. RAMP LANDINGS AND PROPOSED SIDEWALKS SHALL NOT EXCEED 2% MAX CROSS SLOPE AND 2% RUNNING SLOPE.



DETAIL AT N CORNER

392 6008: CONC CURB & GUTTER II = 6 LF
432 6003: RIPRAP (CONC)(6 IN) = 0.5 CY
531 6003: CONC SIDEWALKS (6") = 6.5 SY



DETAIL AT W CORNER

392 6008: CONC CURB & GUTTER II = 78 LF
531 6003: CONC SIDEWALKS (6") = 33 SY

DETAIL AT S CORNER

392 6008: CONC CURB & GUTTER II = 16 LF
531 6003: CONC SIDEWALKS (6") = 8 SY

DETAIL AT E CORNER

531 6003: CONC SIDEWALKS (6") = 16.5 SY

LEGEND
PEDESTRIAN RAMPS

- 8.3% MAX RUNNING SLOPE, 2% MAX CROSS SLOPE
- 5% MAX RUNNING SLOPE, 2% MAX CROSS SLOPE

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)(090MIL)
B	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)
C	REFL PAV MRK TY I (W)8"(SLD)(090MIL)
D	REFL PAV MRK TY I (W)12"(SLD)(090MIL)
E	REFL PAV MRK TY I (W)24"(SLD)(090MIL)
F	PREFAB PAV MRK TY C (W)(ARROW)
G	PREFAB PAV MRK TY C (W)(WORD)
H	RE PM W/RET REQ TY I (Y)4"(SLD)(090MIL)
I	REFL PAV MRK TY I (Y)24"(SLD)(090MIL)
J	REFL PAV MRK TY II A-A
K	REFL PAV MRK TY II-C-R
L	REFL PAV MRK TY I (W)6"(BRK)(090MIL) (PUPPY TRACKS)
M	REFL PAV MRK TY I (W)18"(YLD TRI) (≤40mph)

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

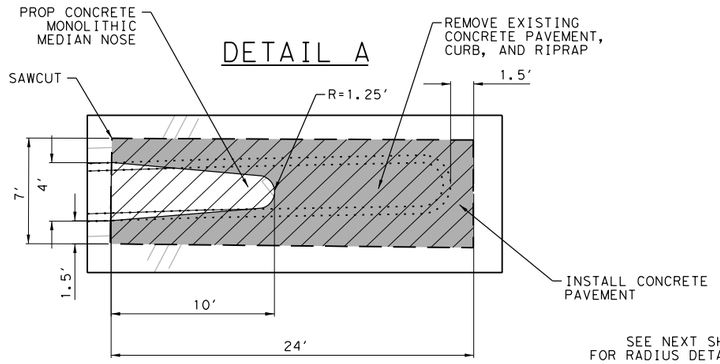
TRAFFIC SAFETY IMPROVEMENTS

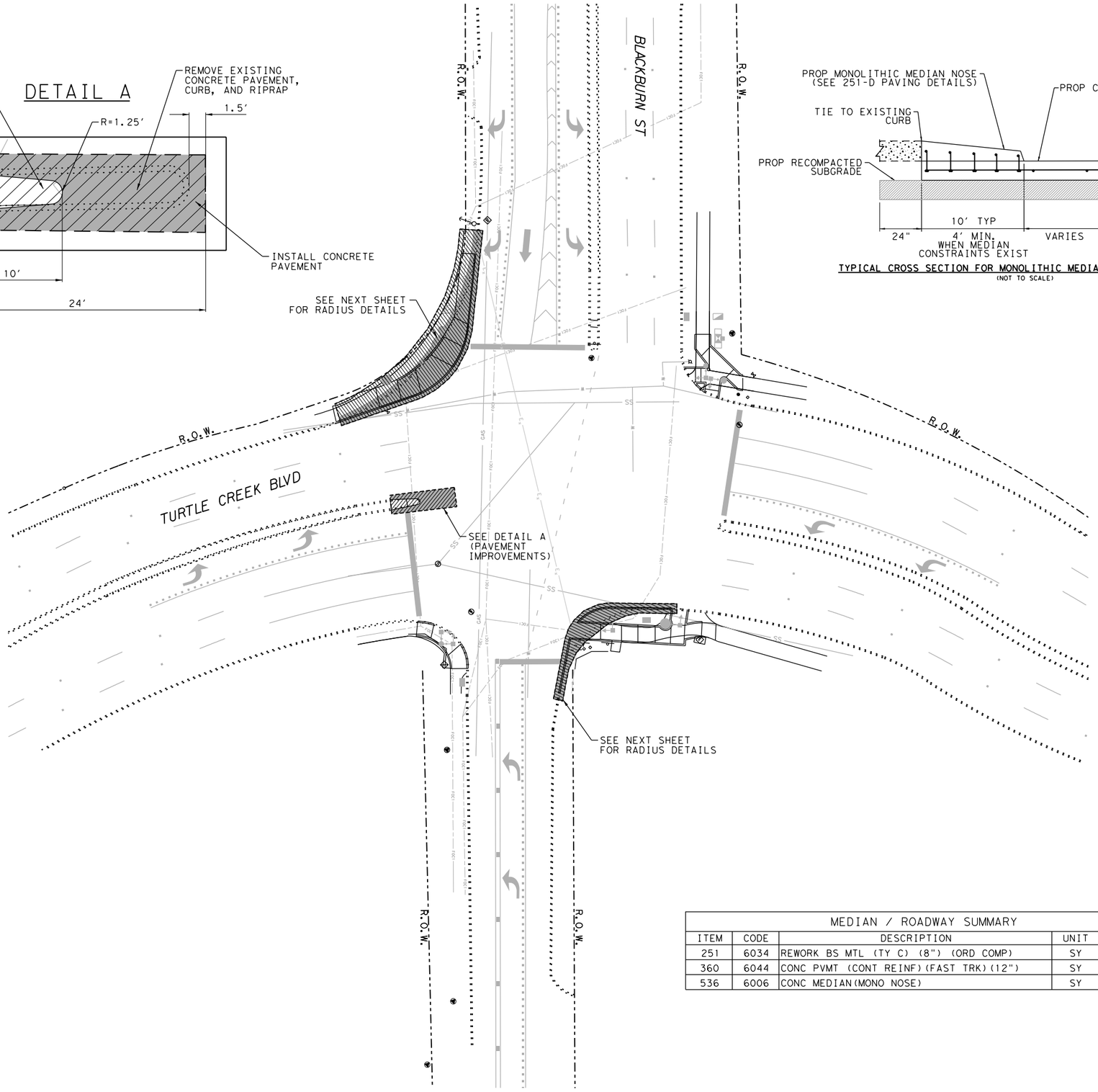
PROPOSED PAVEMENT MARKINGS AND PEDESTRIAN RAMPS

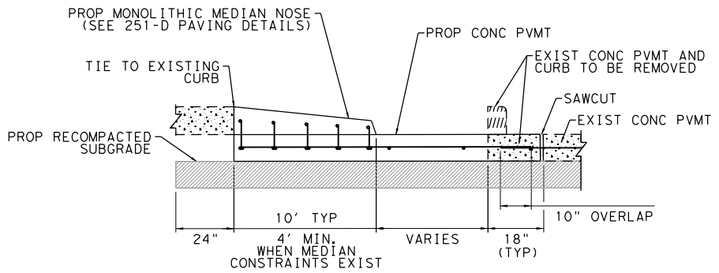
BLACKBURN ST
AT TURTLE CREEK BOULEVARD

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	37
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa10_SHT_502_Blackburn_Turtle Creek_Striping.dgn
BY: Marianna.Borrego
40.0000 ft / in.







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

NOTES:

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

MEDIAN / ROADWAY SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
251	6034	REWORK BS MTL (TY C) (8") (ORD COMP)	SY	10
360	6044	CONC PVMT (CONT REINF)(FAST TRK)(12")	SY	19
536	6006	CONC MEDIAN(MONO NOSE)	SY	4

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

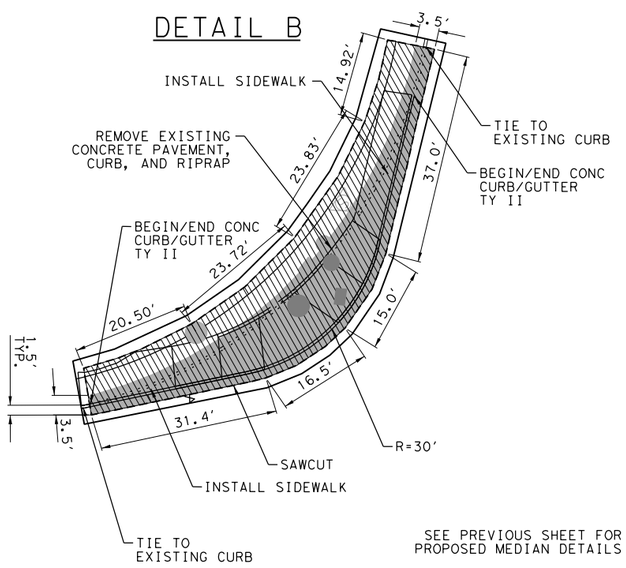
Texas Department of Transportation

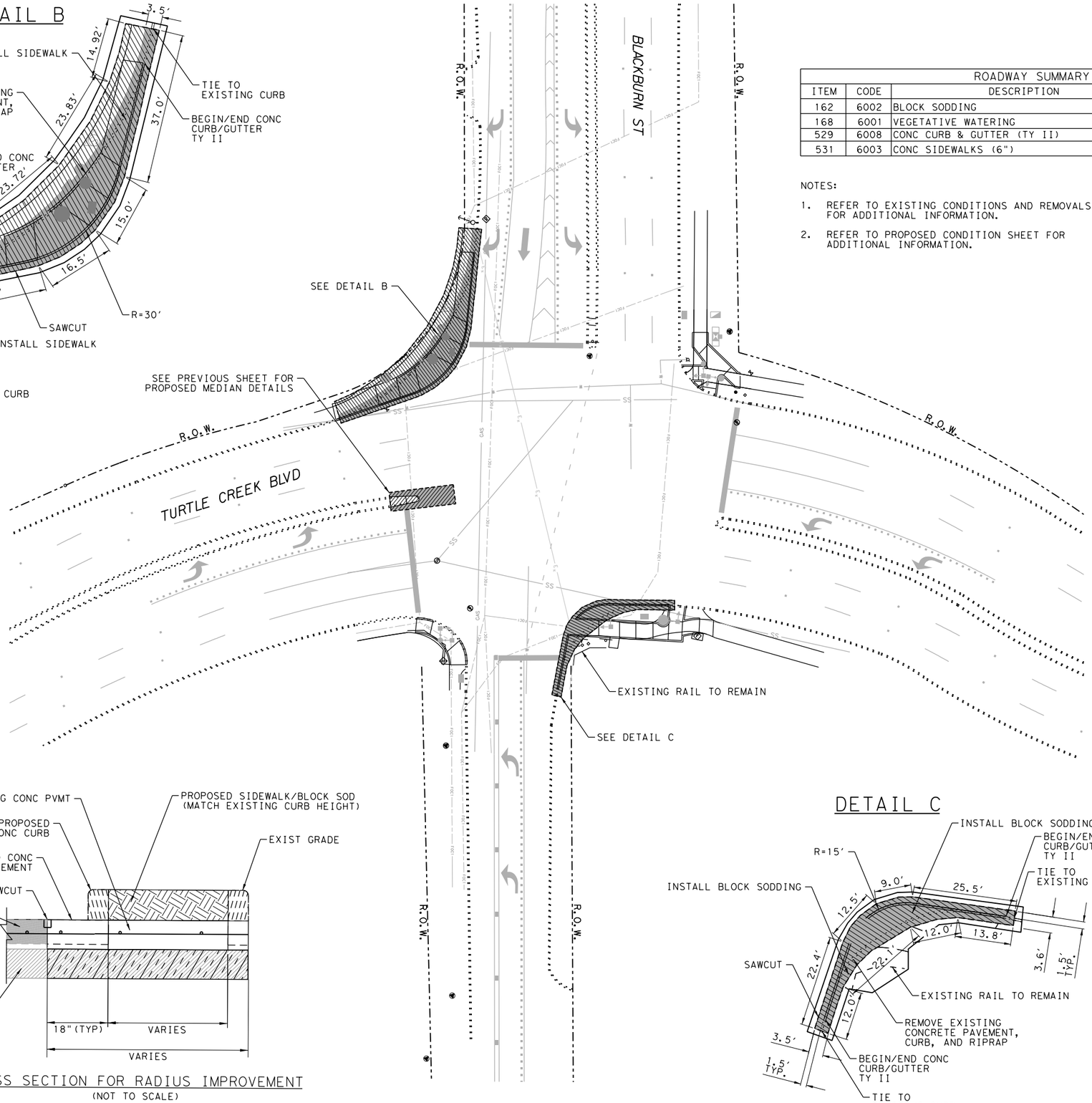
TRAFFIC SAFETY IMPROVEMENTS
PROPOSED MEDIAN DETAILS

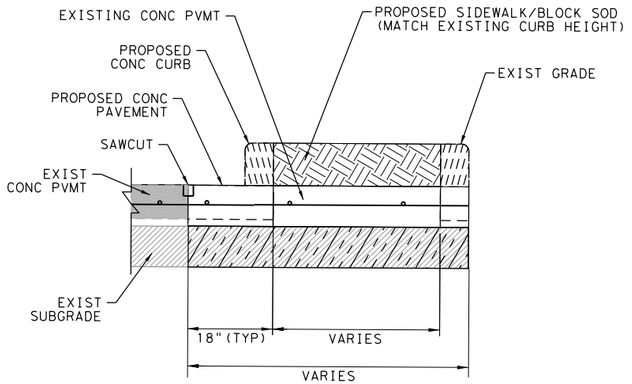
BLACKBURN ST
AT TURTLE CREEK BOULEVARD

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	38
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247, ETC.	
CHECK				
NCN				

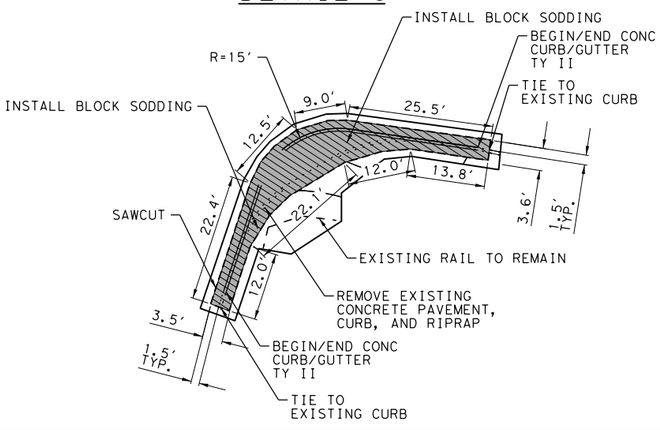
PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\0640360047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_503_Blackburn_Turtle Creek_Median.dgn
40.0000 ft / in.
BY: Marianna.Borrego







CROSS SECTION FOR RADIUS IMPROVEMENT
(NOT TO SCALE)



ROADWAY SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
162	6002	BLOCK SODDING	SY	19
168	6001	VEGETATIVE WATERING	MG	1
529	6008	CONC CURB & GUTTER (TY II)	LF	134
531	6003	CONC SIDEWALKS (6")	SY	28

NOTES:

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

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

0 10 20 30
ORIGINALLY PLOTTED SCALE:
SCALE: 1" = 30'

LEGEND

REMOVAL OF EXISTING CONCRETE PAVEMENT, CURB, AND RIPRAP.

CONCRETE PAVEMENT

NOTES:

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

4/1/2021

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TRAFFIC SAFETY IMPROVEMENTS
PROPOSED RADIUS DETAILS

BLACKBURN ST
AT TURTLE CREEK BOULEVARD

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	39
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\lproject\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_503A_Blackburn_Turtle Creek_Median.dgn
40.0000 ft / in.
BY: Marianna.Borrego

PEDESTRIAN RAMP / SIDEWALK / ROADWAY SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
162	6002	BLOCK SODDING	SY	19
168	6001	VEGETATIVE WATERING	MG	1
432	6003	RIPRAP (CONC)(6 IN)	CY	0.5
529	6002	CONC CURB (TY II)	LF	6
529	6008	CONC CURB & GUTTER (TY II)	LF	156
531	6003	CONC SIDEWALKS (6")	SY	64
531	6008	CURB RAMPS (TY 5)	EA	2
531	6010	CURB RAMPS (TY 7)	EA	4

PAVEMENT MARKING SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6035	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	745
666	6047	REFL PAV MRK TY I (W)24"(SLD)(090MIL)	LF	585
666	6224	PAVEMENT SEALER 4"	LF	1430
666	6225	PAVEMENT SEALER 6"	LF	40
666	6226	PAVEMENT SEALER 8"	LF	745
666	6230	PAVEMENT SEALER 24"	LF	585
666	6231	PAVEMENT SEALER (ARROW)	EA	11
666	6299	RE PM W/RET REQ TY I (W)4"(BRK)(090MIL)	LF	820
666	6302	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)	LF	210
666	6305	RE PM W/RET REQ TY I (W)6"(BRK)(090MIL)	LF	40
666	6314	RE PM W/RET REQ TY I (Y)4"(SLD)(090MIL)	LF	400
668	6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	11
672	6009	REFL PAV MRKR TY II-A-A	EA	9
672	6010	REFL PAV MRKR TY II-C-R	EA	298
678	6001	PAV SURF PREP FOR MRK (4")	LF	1430
678	6002	PAV SURF PREP FOR MRK (6")	LF	40
678	6004	PAV SURF PREP FOR MRK (8")	LF	745
678	6008	PAV SURF PREP FOR MRK (24")	LF	585
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	11
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	307

VARIOUS PAVEMENT MARKING QUANTITIES INCLUDED IN THIS TABLE ARE BEYOND THE LIMITS OF THIS SHEET AND MAY NOT BE SHOWN IN THIS LAYOUT

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

BLACKBURN ST
AT TURTLE CREEK BOULEVARD

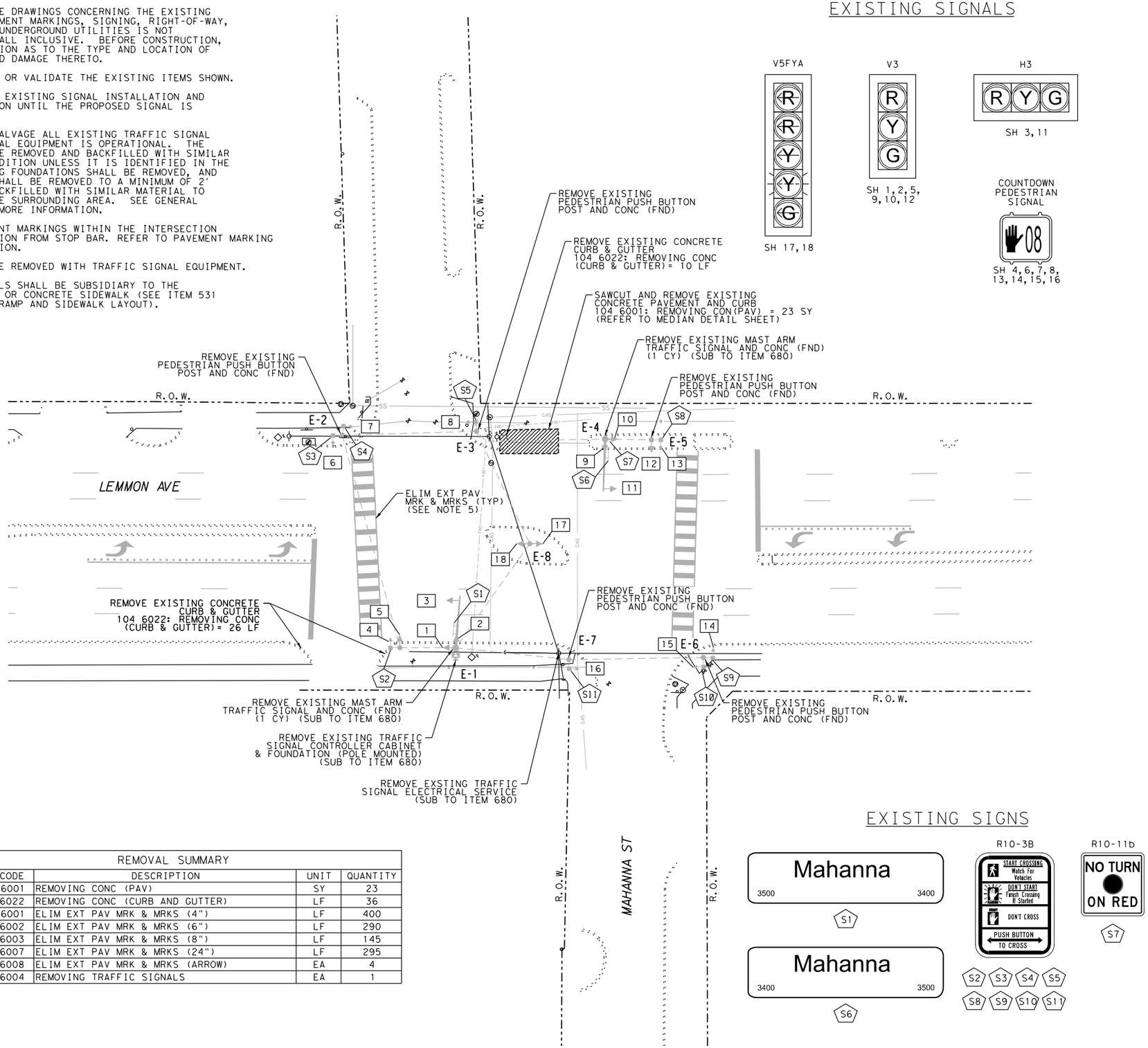
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	40
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247,ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_504_Blackburn_Turtle Creek_Quantity 1 of 1.dgn
40.0000 ft / in.
BY: Marianna.Barrego

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-S11 SHALL BE REMOVED WITH TRAFFIC SIGNAL EQUIPMENT.
7. CURB RAMP AND SIDEWALK REMOVALS SHALL BE SUBSIDIARY TO THE INSTALLATION OF NEW CURB RAMP OR CONCRETE SIDEWALK (SEE ITEM 531 QTYS AND PROPOSED PEDESTRIAN RAMP AND SIDEWALK LAYOUT).

EXISTING SIGNALS



V5FYA

SH 17,18

V3

SH 1,2,5, 9,10,12

H3

SH 3,11

COUNTDOWN PEDESTRIAN SIGNAL

SH 4,6,7,8, 13,14,15,16

EXISTING SIGNS

S1

S6

R10-3B

S2 S3 S4 S5 S8 S9 S10 S11

R10-11b

S7

REMOVAL SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6001	REMOVING CONC (PAV)	SY	23
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	36
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	400
677	6002	ELIM EXT PAV MRK & MRKS (6")	LF	290
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	145
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	295
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	4
680	6004	REMOVING TRAFFIC SIGNALS	EA	1

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

LEGEND

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

4/1/2021

STATE OF TEXAS
NATHAN C. NEW
101204
LICENSED
PROFESSIONAL ENGINEER

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS

EXISTING CONDITIONS AND REMOVALS

LEMMON AVENUE
AT MAHANNA STREET

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS MB	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK HMF	TEXAS	DALLAS	DALLAS	41
CHECK NCN	CONTROL	SECTION	JOB	
	0918	47	247,ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_505_Lemmon_Mahanna_Exist.dgn
40.0000 ft / in.
BY: Marianna.Borrego

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.
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 ACCOMMODATE FIELD CONDITIONS.
4. CONTRACTOR SHALL COORDINATE WITH ONCOR CONCERNING TRAFFIC SIGNAL ELECTRICAL SERVICE. CONTACT ONCOR (TBD) 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) TO SCHEDULE PICK-UP OF MATERIALS.
6. INSTALL BASE MOUNTED CONTROLLER CABINET (TYPE 332 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 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.

NOTES CONTINUED ON NEXT SHEET.

PROPOSED SIGNALS

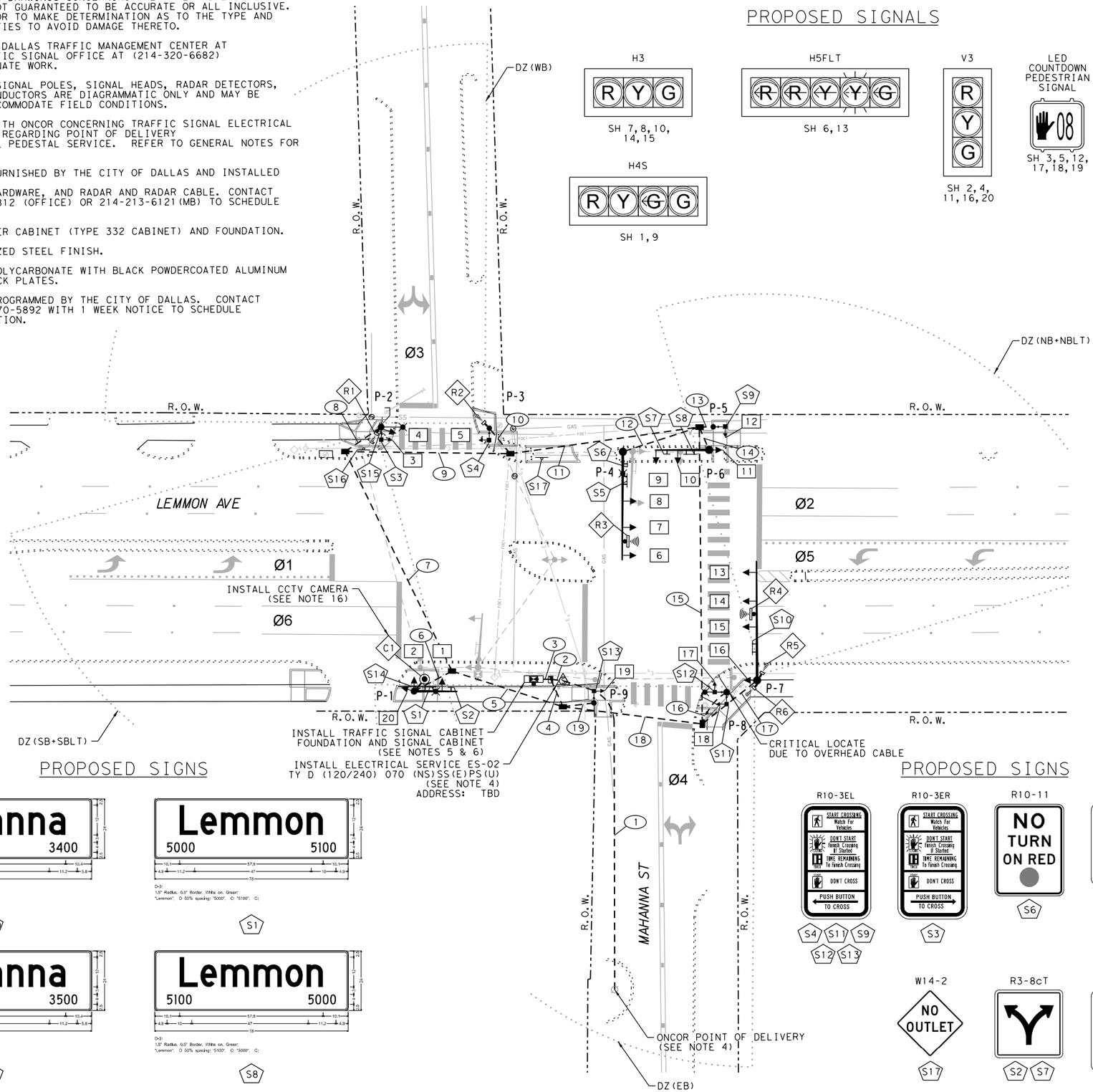
H3 — SH 7, 8, 10, 14, 15

H5FLT — SH 6, 13

V3 — SH 2, 4, 11, 16, 20

LED COUNTDOWN PEDESTRIAN SIGNAL — SH 3, 5, 12, 17, 18, 19

H4S — SH 1, 9



PROPOSED SIGNS

PROPOSED SIGNS

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

LEGEND

- TYPICAL PROPOSED MAST ARM COMBINATION SIGNAL WITH PEDESTRIAN SIGNAL, PUSH BUTTON, LED LUMINAIRE (250W E.Q.), 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 ADVANCED RADAR DETECTOR AND LABEL
- (C1) PROPOSED CCTV CAMERA
- (S) PROPOSED ELECTRICAL SERVICE
- P-# PROPOSED TRAFFIC SIGNAL POLE NUMBER

4/1/2021

STATE OF TEXAS
NATHAN C. NEW
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LICENSED
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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED CONDITIONS

LEMMON AVENUE
AT MAHANNA STREET

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	42
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247, ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_506_Lemmon_Mahanna_Proposed.dgn
40.0000 ft / in.
BY: Marianna.Borrego

CONDUIT AND CABLE CHART
WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	ITEM 618 CONDUIT (SCH 80)														CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS								ITEM 684 TRAFFIC SIGNAL CABLES										ITEM 6292		ITEM 6010		TOTAL LENGTH OF RUN	RUN NO
		2" PVC SCH 80 (RISER)		2" PVC (TRENCHED)		2" PVC (BORED)		3" PVC (TRENCHED)		3" PVC (BORED)		4" PVC (TRENCHED)		4" PVC (BORED)			NO. 6 XHHW WIRE		NO. 6 BARE WIRE		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		RADAR COMM CABLE		ETHERNET CABLE			
		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	130									I	TO BE INSTALLED BY OTHERS																					130	1
2	I			1	5											I	2	10	1	5	4	20															5	2
3	I			1	10											I	2	20	1	10																	10	3
	I											1	10			I			1	10						6	60					4	40			1	10		
	I											1	10			I			1	10										5	50			6	60				
	I							1	10							I	FUTURE COMMUNICATION CONDUIT																								
4	I							1	15							I			1	15	4	60			6	90					5	75	4	60	6	90	1	15	15	4
	I							1	15							I	FUTURE COMMUNICATION CONDUIT																								
5	I							1	45							I			1	45	2	90			2	90					2	90	1	45	2	90	1	45	45	5
	I							1	45							I	FUTURE COMMUNICATION CONDUIT																								
6	I							1	20							I			1	20	4	80											1	20			1	20	20	6
7	I													1	90	I			1	90	2	180			2	180					2	180			2	180			90	7
	I									1	90					I	FUTURE COMMUNICATION CONDUIT																								
8	I							1	20							I			1	20	2	40			1	20					1	20			1	20			20	8
9	I													1	65	I			1	65					1	65					1	65			1	65			65	9
	I									1	65					I	FUTURE COMMUNICATION CONDUIT																								
10	I							1	15							I			1	15					1	15					1	15			1	15			15	10
11	I													1	75	I			1	75																			75	11
	I									1	75					I	FUTURE COMMUNICATION CONDUIT																								
12	I							1	30							I			1	30	2	60											1	30	1	30			30	12
13	I							1	5							I			1	5					1	5					1	5							5	13
14	I							1	10							I			1	10													1	10					10	14
15	I													1	110	I			1	110	2	220			1	110					1	110	2	220	1	110			110	15
	I									1	110					I	FUTURE COMMUNICATION CONDUIT																								
16	I							1	15							I			1	15	4	60			2	30					1	15							15	16
17	I							1	30							I			1	30													1	30	3	90			30	17
18	I													1	55	I			1	55	2	110			3	165					2	110	3	165	4	220			55	18
	I									1	55					I	FUTURE COMMUNICATION CONDUIT																								
19	I							1	15							I			1	15					1	15					1	15							15	19
SUBTOTAL			10		15		130		290		395		20		395			30		650		920		0		845		0		0		750		620		970		90		
P-1	P															I								80				40		35							30	VARIES	P-1
P-2	P															I										5		20						30			VARIES	P-2
P-3	P															I										5								30			VARIES	P-3
P-4	P															I								80				90		60					55			VARIES	P-4
P-5	P															I										5											VARIES	P-5
P-6	P															I												55		40							VARIES	P-6
P-7	P															I												110		60				105			VARIES	P-7
P-8	P															I										10											VARIES	P-8
P-9	P															I										5											VARIES	P-9
SUBTOTAL			0		0		0		0		0		0		0			0		0		0		160		30		315		195		0		0		220		30		
TOTAL			10		15		130		290		395		20		395			30		650		920		160		875		315		195		750		620		1190		120		

CONDUIT STATUS: I=INSTALL; E=EXISTING; P=WIRE TO BE INSTALLED INSIDE STEEL POLE; A=ABANDON; REM=REMOVE AND SALVAGE

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. ONCOR WILL INSTALL THE ELECTRICAL CONDUCTORS FROM THE POINT OF DELIVERY TO THE PEDESTAL METER.

\- EMPTY 3" CONDUIT FOR FUTURE COMMUNICATION WITH PULL ROPE INSIDE.

\- NO.8 XHHW WIRE IN LUMINAIRE POLES (P-2,P-8) IS SUBSIDIARY TO ITEM 610 6162.

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)*	ITEM 6292		LUM	DRILLED SHAFT LENGTH (FT)				FDN. TYPE WIND ZONE 80 MPH
												RADAR PRESENCE DET. (EA)	RADAR ADVANCED DET. (EA)		24" DIA SUB TO ITEM 687	30" DIA TYPE A ITEM 416-6029	30" DIA TYPE A ITEM 416-6031	36" DIA TYPE A ITEM 416	
P-1	I	7	10	-	-	-	20	19	30	13	1	-	-	Y	-	-	11	-	30-A
P-2	I	5	LUMINAIRE POLE					-	30	13	-	1	-	Y	-	8	-	-	30-A
P-3	I	5	PEDESTRIAN POLE SIGNAL					20	-	-	-	1	-	N	6	-	-	-	24-A
P-4	I	4	18	10	10	-	40	19	30	13	3	-	1	Y	-	-	-	13	36-A
P-5	I	13	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	-	24-A
P-6	I	5	12	8	-	-	20	19	-	13	2	-	-	N	-	-	11	-	30-A
P-7	I	6	20	10	11	-	44	19	-	13	3	2	1	N	-	-	-	13	36-A
P-8	I	8	LUMINAIRE POLE					-	30	-	-	-	-	Y	-	8	-	-	30-A
P-9	I	10	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	-	24-A
											TOTAL:	4	2		18	16	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

NOTES CONTINUED:

10. 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.

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

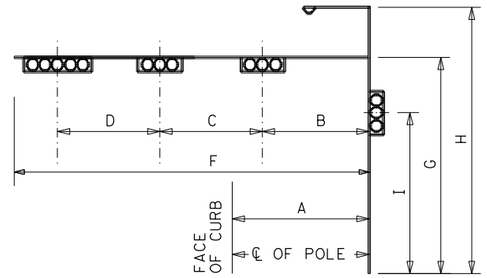
12. PROPOSED APS UNITS SHALL BE PLACED ADJACENT TO A LEVEL LANDING AREA (2% MAX IN ANY DIRECTION). IF THE DISTANCE FROM THE PUSH BUTTON TO THE EDGE OF ACCESSIBLE PATH EXCEEDS 10", THE CONTRACTOR SHALL FURNISH AND INSTALL A PUSH BUTTON EXTENDER TO MAKE THE REACH 10" OR LESS. MEASUREMENT AND PAYMENT SHALL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

13. 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.

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

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

16. CONTRACTOR TO PROCURE AND INSTALL CCTV CAMERA. ETHERNET CABLE IS TO BE INSTALLED FROM CAMERA TO TRAFFIC SIGNAL CONTROLLER AND SUBSIDIARY TO ITEM 6010 6002.



4/1/2021

STATE OF TEXAS
NATHAN C. NEW
101204
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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

LEMMON AVENUE
AT MAHANNA STREET

SHEET 1 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	43
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_507_Lemmon_Mahanna_Quantity 1 of 3.dgn
40.0000 ft / in.
BY: Marianna.Borrego

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.	CABLE 8 10 CNDR. FROM P-8 TO CNTRL.	CABLE 9 10 CNDR. FROM P-9 TO CNTRL.
1	BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
2	WHITE	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM
3	RED	SH 1,2 - Ø3 R	SH 4 - Ø2 R	SPARE	SH 7,8 - Ø2 R	SPARE	SH 9,10 - Ø4 R	SH 14,15,16 - Ø6 R	SPARE	SPARE
4	GREEN	SH 1,2 - Ø3 G	SH 4 - Ø2 G	SPARE	SH 7,8 - Ø2 G	SPARE	SH 9,10 - Ø4 G	SH 14,15,16 - Ø6 G	SPARE	SPARE
5	ORANGE	SH 1,2 - Ø3 Y	SH 4 - Ø2 Y	SPARE	SH 7,8 - Ø2 Y	SPARE	SH 9,10 - Ø4 Y	SH 14,15,16 - Ø6 Y	SPARE	SPARE
6	BLUE	SPARE	SH 3 - Ø2 DW	SH 5 - Ø2 DW	SPARE	SH 12 - Ø4 DW	SPARE	SPARE	SH 17 - Ø4 DW	SH 19 - Ø6 DW
7	WHITE/BLACK	SPARE	SH 3 - Ø2 W	SH 5 - Ø2 W	SPARE	SH 12 - Ø4 W	SPARE	SPARE	SH 17 - Ø4 W	SH 19 - Ø6 W
8	RED/BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
9	GREEN/BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SH 18 - Ø6 DW	SPARE
10	ORANGE/BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SH 18 - Ø6 W	SPARE
11	BLUE/BLACK	SH 20 - Ø6 R			SPARE		SH 11 - Ø2 R	SPARE		
12	BLACK/WHITE	SH 20 - Ø6 G			SPARE		SH 11 - Ø2 G	SPARE		
13	RED/WHITE	SH 20 - Ø6 Y			SH 6 - OLC R (LT ARW)		SH 11 - Ø2 Y	SH 13 - OLA R (LT ARW)		
14	GREEN/WHITE	SH 1 - Ø3 G (LT ARW)			SH 6 - Ø5 G (LT ARW)		SH 9 - Ø4 G (LT ARW)	SH 13 - Ø1 G (LT ARW)		
15	BLUE/WHITE	SPARE			SH 6 - OLC Y (LT ARW)		SPARE	SH 13 - OLA Y (LT ARW)		
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			SH 6 - OLC FY (LT ARW)		SPARE	SH 13 - OLA FY (LT ARW)		
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	LEMMON	I	P-1	24"x VA
S2	R3-8cT	LANE ASSIGNMENT	I	P-1	VAx 30"
S3	R10-3ER	PED PUSH BUTTON	I	P-2	9"x15"
S4	R10-3EL	PED PUSH BUTTON	I	P-3	9"x15"
S5	STREET NAME	MAHANNA	I	P-4	24"x VA
S6	R10-11	NO TURN ON RED	I	P-4	30"x 36"
S7	R3-8cT	LANE ASSIGNMENT	I	P-6	VAx 30"
S8	STREET NAME	LEMMON	I	P-6	24"x VA
S9	R10-3EL	PED PUSH BUTTON	I	P-5	9"x15"
S10	STREET NAME	MAHANNA	I	P-7	24"x VA
S11	R10-3EL	PED PUSH BUTTON	I	P-8	9"x15"
S12	R10-3EL	PED PUSH BUTTON	I	P-8	9"x15"
S13	R10-3EL	PED PUSH BUTTON	I	P-9	9"x15"
S14	R9-3	NO PEDESTRIAN CROSSING	I	P-1	18"x18"
S15	R9-3	NO PEDESTRIAN CROSSING	I	P-2	18"x18"
S16	R3-2	NO LEFT TURN	I	GROUND MOUNTED	36"x 36"
S17	W14-2	NO OUTLET	I	GROUND MOUNTED	30"x 30"

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

*- ALL SIGNS TO BE FURNISH AND INSTALL BY THE CONTRACTOR.

GROUND BOX SUMMARY

ITEM NO.	DESCRIPTION	UNIT	QTY.
0624	GROUND BOX TY D (162922)W/APRON	EA	6
6186	ITS GND BOX TY 1 (243624)W/APRON	EA	1

4/1/2021

STATE OF TEXAS
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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

LEMMON AVENUE
AT MAHANNA STREET

SHEET 2 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	44
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_508_Lemmon_Mahanna_Quantity 2 of 3.dgn
40.0000 ft / in.
BY: Marianna.Borrego

APS MESSAGE CHART

POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-2	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS MAHANNA STREET AT LEMMON AVENUE
		EXTENDED BUTTON PUSH	WAIT TO CROSS MAHANNA STREET AT LEMMON AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MAHANNA STREET, WALK SIGN IS ON TO CROSS MAHANNA STREET
P-3	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS MAHANNA STREET AT LEMMON AVENUE
		EXTENDED BUTTON PUSH	WAIT TO CROSS MAHANNA STREET AT LEMMON AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MAHANNA STREET, WALK SIGN IS ON TO CROSS MAHANNA STREET
P-5	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS LEMMON AVENUE AT MAHANNA STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS LEMMON AVENUE AT MAHANNA STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	LEMMON AVENUE, WALK SIGN IS ON TO CROSS LEMMON AVENUE
P-8	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS LEMMON AVENUE AT MAHANNA STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS LEMMON AVENUE AT MAHANNA STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	LEMMON AVENUE, WALK SIGN IS ON TO CROSS LEMMON AVENUE
P-8	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS MAHANNA STREET AT LEMMON AVENUE
		EXTENDED BUTTON PUSH	WAIT TO CROSS MAHANNA STREET AT LEMMON AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MAHANNA STREET, WALK SIGN IS ON TO CROSS MAHANNA STREET
P-9	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS MAHANNA STREET AT LEMMON AVENUE
		EXTENDED BUTTON PUSH	WAIT TO CROSS MAHANNA STREET AT LEMMON AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	MAHANNA STREET, WALK SIGN IS ON TO CROSS MAHANNA STREET

SIGNAL HEADS (ITEM 682)

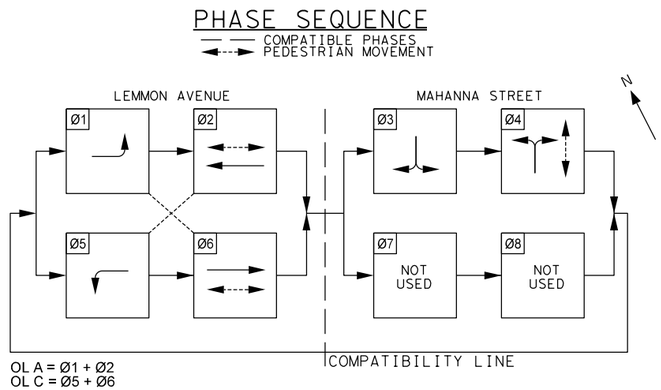
SIGNAL HEAD NUMBER	SIGNAL HEAD TYPE	STATUS	12" LED SIGNAL INDICATION									PED SIG SEC (LED) (COUNTDOWN)
			BACK PLATE			LED SIGNAL LAMPS						
			3 SEC	4 SEC	5 SEC	<-G-	G	<-Y-	Y	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
1	H4S	I		1		1	1		1		1	
2	V3	I	1				1		1		1	
3	PED	I										1
4	V3	I	1				1		1		1	
5	PED	I										1
6	H5FLT	I			1	1		2		2		
7	H3	I	1				1		1		1	
8	H3	I	1				1		1		1	
9	H4S	I		1		1	1		1		1	
10	H3	I	1				1		1		1	
11	V3	I	1				1		1		1	
12	PED	I										1
13	H5FLT	I			1	1		2		2		
14	H3	I	1				1		1		1	
15	H3	I	1				1		1		1	
16	V3	I	1				1		1		1	
17	PED	I										1
18	PED	I										1
19	PED	I										1
20	V3	I	1				1		1		1	
TOTAL (NEW)			12	2	2	4	12	4	12	4	12	6

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	POLE P-2	18'	STOP BAR	SB + SBLT	N/A	50' TO 80'
R2	POLE P-3	18'	STOP BAR	WB	N/A	25'
R3	MAST ARM P-4	19'	SET BACK	NB	400'	-
R4	MAST ARM P-7	19'	SET BACK	SB	400'	-
R5	POLE P-7	18'	STOP BAR	NB + NBLT	N/A	45' TO 75'
R6	POLE P-7	18'	STOP BAR	EB	N/A	30'

PHASE SEQUENCE



OL A = Ø1 + Ø2
OL C = Ø5 + Ø6

ELECTRICAL SERVICE DATA

ELEC. SERVICE ID	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
ES-02	TY D (120/240) 070 (NS) SS (E) PS (U)	2"	3 / #4	N/A	2P / 70	30	100	T.S.	1P / 50	23	<7.1
								LIGHTING	2P / 20	4	

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

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

LEMMON AVENUE
AT MAHANNA STREET

SHEET 3 OF 3

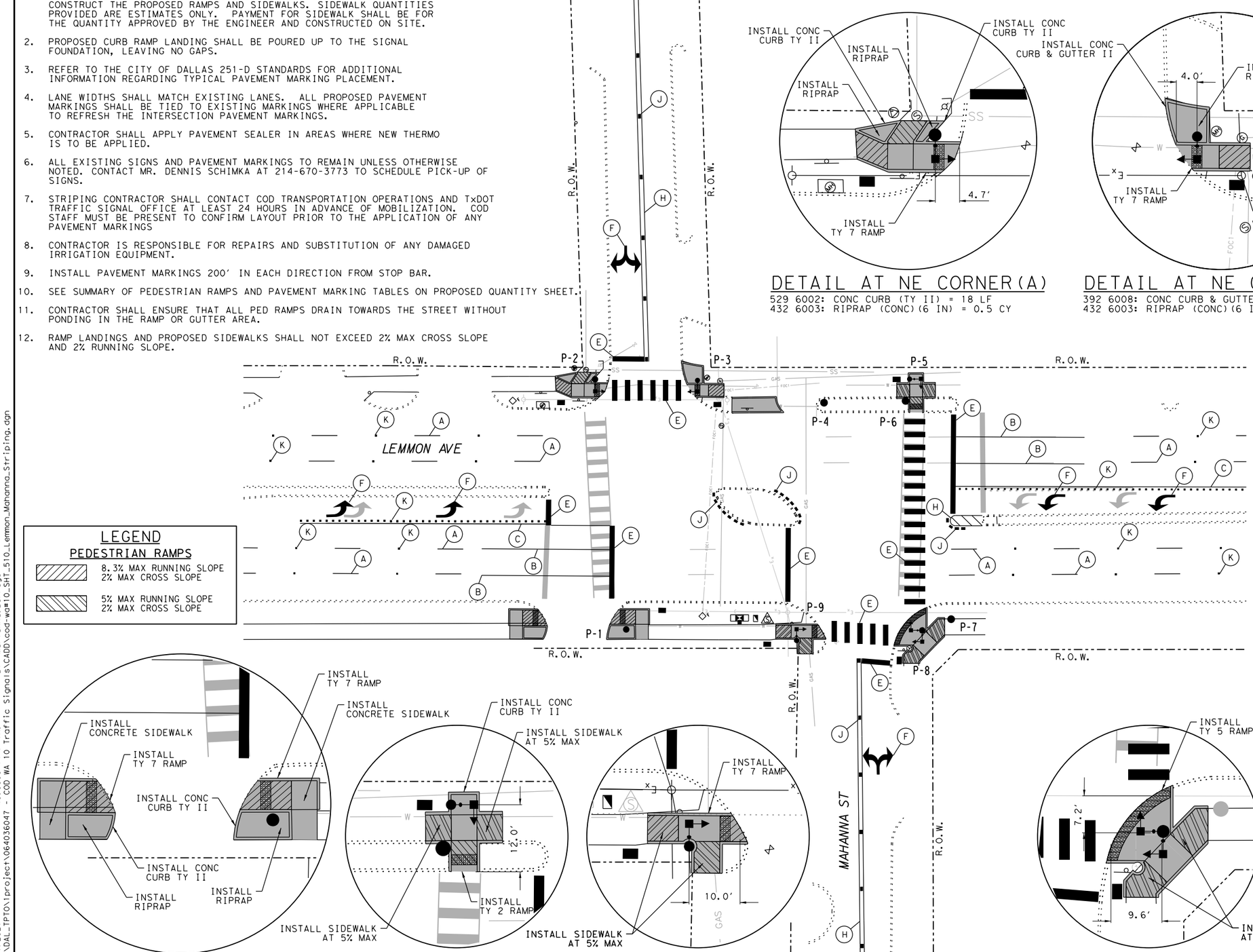
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	45
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

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. CONTACT MR. DENNIS SCHIMKA AT 214-670-3773 TO SCHEDULE PICK-UP OF SIGNS.
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 IS RESPONSIBLE FOR REPAIRS AND SUBSTITUTION OF ANY DAMAGED IRRIGATION EQUIPMENT.
9. INSTALL PAVEMENT MARKINGS 200′ IN EACH DIRECTION FROM STOP BAR.
10. SEE SUMMARY OF PEDESTRIAN RAMPS AND PAVEMENT MARKING TABLES ON PROPOSED QUANTITY SHEET.
11. CONTRACTOR SHALL ENSURE THAT ALL PED RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE RAMP OR GUTTER AREA.
12. RAMP LANDINGS AND PROPOSED SIDEWALKS SHALL NOT EXCEED 2% MAX CROSS SLOPE AND 2% RUNNING SLOPE.

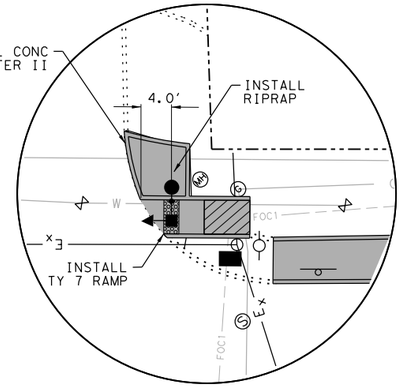
0 5 10 20 — PEDESTRIAN RAMP DETAILS : SCALE: 1" = 20'

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



DETAIL AT NE CORNER(A)

529 6002: CONC CURB (TY II) = 18 LF
432 6003: RIPRAP (CONC)(6 IN) = 0.5 CY



DETAIL AT NE CORNER(B)

392 6008: CONC CURB & GUTTER II = 23 LF
432 6003: RIPRAP (CONC)(6 IN) = 1 CY

LEGEND

PAVEMENT MARKING

- (A) RE PM W/RET REQ TY I (W)4"(BRK)(090MIL)
- (B) RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)
- (C) REFL PAV MRK TY I (W)8"(SLD)(090MIL)
- (D) REFL PAV MRK TY I (W)12"(SLD)(090MIL)
- (E) REFL PAV MRK TY I (W)24"(SLD)(090MIL)
- (F) PREFAB PAV MRK TY C (W)(ARROW)
- (G) PREFAB PAV MRK TY C (W)(WORD)
- (H) RE PM W/RET REQ TY I (Y)4"(SLD)(090MIL)
- (I) REFL PAV MRK TY I (Y)24"(SLD)(090MIL)
- (J) REFL PAV MRK TY II A-A
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W)6"(BRK)(090MIL) (PUPPY TRACKS)
- (M) REFL PAV MRK TY I (W)18"(YLD TRI) (≤40mph)

LEGEND

PEDESTRIAN RAMPS

- 8.3% MAX RUNNING SLOPE 2% MAX CROSS SLOPE
- 5% MAX RUNNING SLOPE 2% MAX CROSS SLOPE

DETAIL AT DRIVEWAY

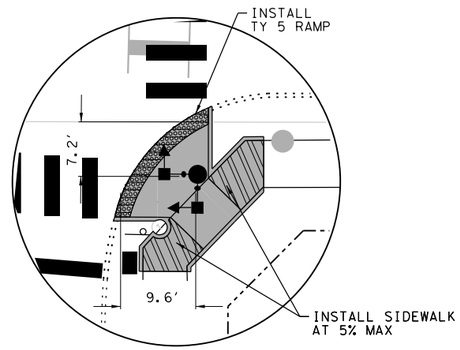
529 6002: CONC CURB (TY II) = 32 LF
432 6003: RIPRAP (CONC)(6 IN) = 1.5 CY
531 6003: CONC SIDEWALKS (6") = 6 SY

DETAIL AT SE CORNER

531 6003: CONC SIDEWALKS (6") = 6 SY
529 6002: CONC CURB (TY II) = 15 LF

DETAIL AT NW CORNER

531 6003: CONC SIDEWALKS (6") = 7 SY



DETAIL AT SW CORNER

531 6003: CONC SIDEWALKS (6") = 8 SY

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

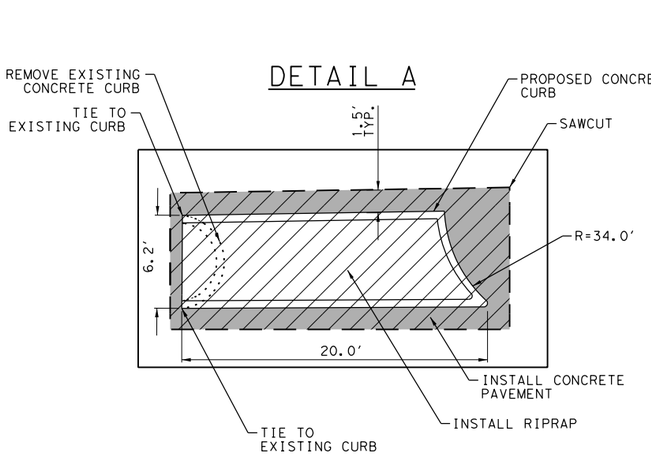
TRAFFIC SAFETY IMPROVEMENTS

PROPOSED PAVEMENT MARKINGS AND PEDESTRIAN RAMPS

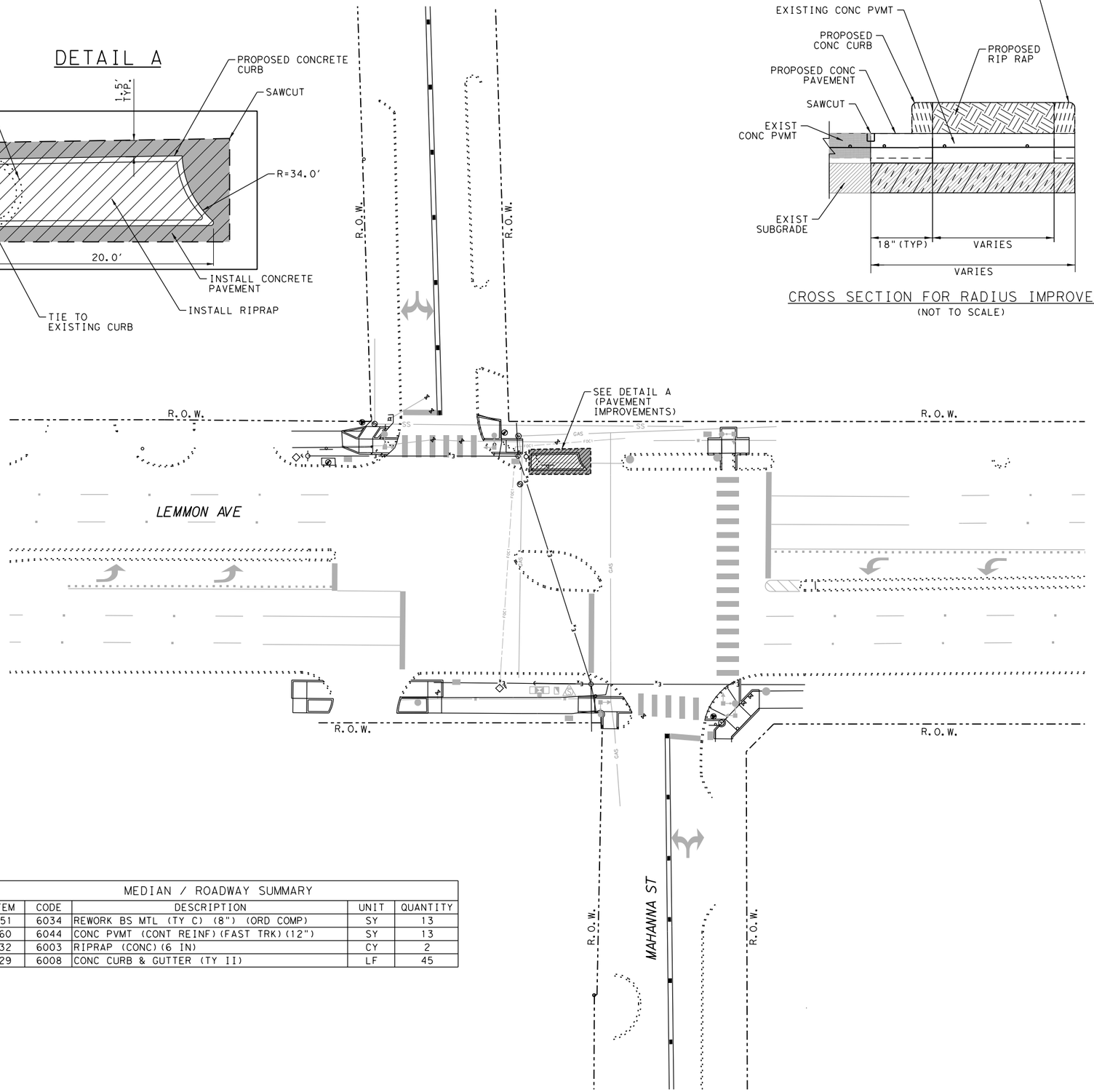
LEMMON AVENUE
AT MAHANNA STREET

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	46
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247, ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_510_Lemmon_Mahanna_Striping.dgn
40.0000 ft / in.
BY: Marianna.Borrego



CROSS SECTION FOR RADIUS IMPROVEMENT
(NOT TO SCALE)



MEDIAN / ROADWAY SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
251	6034	REWORK BS MTL (TY C) (8") (ORD COMP)	SY	13
360	6044	CONC PVMT (CONT REINF)(FAST TRK)(12")	SY	13
432	6003	RIPRAP (CONC)(6 IN)	CY	2
529	6008	CONC CURB & GUTTER (TY II)	LF	45

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

NOTES:

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

4/1/2021

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TRAFFIC SAFETY IMPROVEMENTS
PROPOSED RADIUS DETAILS

LEMMON AVENUE
AT MAHANNA STREET

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	47
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa10_SHT_511_Lemmon_Mahanna_Median.dgn
40.0000 ft / in.
BY: Marianna.Borrego

PEDESTRIAN RAMP / SIDEWALK / ROADWAY SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
432	6003	RIPRAP (CONC)(6 IN)	CY	5
529	6002	CONC CURB (TY II)	LF	65
529	6008	CONC CURB & GUTTER (TY II)	LF	68
531	6003	CONC SIDEWALKS (6")	SY	27
531	6005	CURB RAMPS (TY 2)	EA	1
531	6008	CURB RAMPS (TY 5)	EA	1
531	6010	CURB RAMPS (TY 7)	EA	5

PAVEMENT MARKING SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6035	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	225
666	6047	REFL PAV MRK TY I (W)24"(SLD)(090MIL)	LF	340
666	6224	PAVEMENT SEALER 4"	LF	1425
666	6226	PAVEMENT SEALER 8"	LF	225
666	6230	PAVEMENT SEALER 24"	LF	340
666	6231	PAVEMENT SEALER (ARROW)	EA	4
666	6234	PAVEMENT SEALER (DBL ARROW)	EA	2
666	6299	RE PM W/RET REQ TY I (W)4"(BRK)(090MIL)	LF	400
666	6302	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)	LF	225
666	6314	RE PM W/RET REQ TY I (Y)4"(SLD)(090MIL)	LF	800
668	6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	4
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	128
678	6001	PAV SURF PREP FOR MRK (4")	LF	1425
678	6004	PAV SURF PREP FOR MRK (8")	LF	225
678	6008	PAV SURF PREP FOR MRK (24")	LF	340
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	4
678	6010	PAV SURF PREP FOR MRK (DBL ARROW)	EA	2
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	146

VARIOUS PAVEMENT MARKING QUANTITIES INCLUDED IN THIS TABLE ARE BEYOND THE LIMITS OF THIS SHEET AND MAY NOT BE SHOWN IN THIS LAYOUT

4/1/2021

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CITY OF DALLAS
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TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

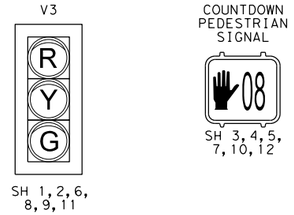
LEMMON AVENUE
AT MAHANNA STREET

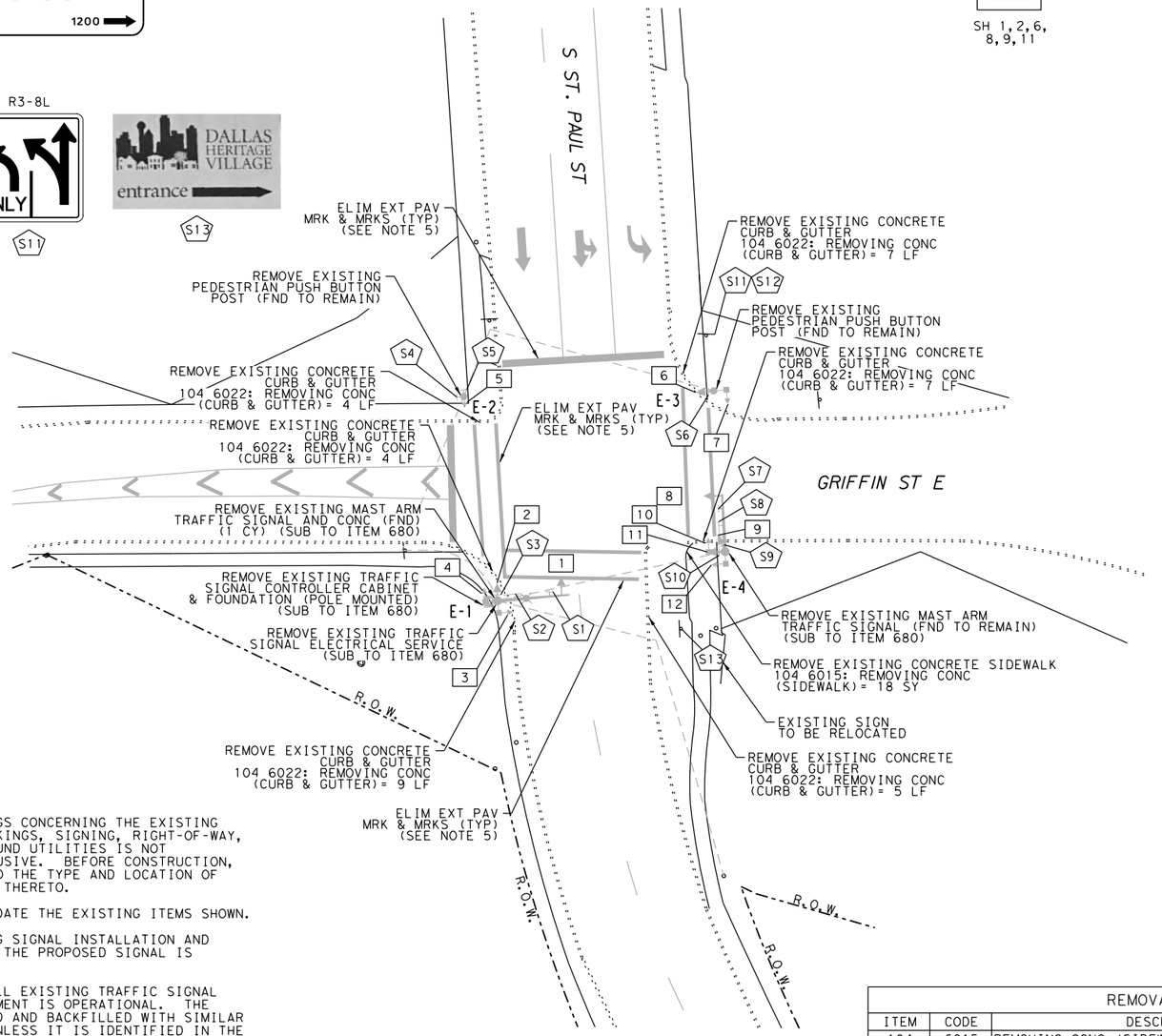
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	48
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247, ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_512_Lemmon_Mahanna_Quantity 1 of 1.dgn
40.0000 ft / in.
BY: Marianna.Borrego

EXISTING SIGNS

EXISTING SIGNALS





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-S12 SHALL BE REMOVED WITH TRAFFIC SIGNAL EQUIPMENT.
7. CURB RAMP AND SIDEWALK REMOVALS SHALL BE SUBSIDIARY TO THE INSTALLATION OF NEW CURB RAMP OR CONCRETE SIDEWALK (SEE ITEM 531 QTYS AND PROPOSED PEDESTRIAN RAMP AND SIDEWALK LAYOUT).

REMOVAL SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6015	REMOVING CONC (SIDEWALKS)	SY	18
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	36
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	130
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	415
677	6005	ELIM EXT PAV MRK & MRKS (12")	LF	235
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	80
677	6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	2
677	6009	ELIM EXT PAV MRK & MRKS (DBL ARROW)	EA	1
680	6004	REMOVING TRAFFIC SIGNALS	EA	1

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

LEGEND

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

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation

TRAFFIC SAFETY IMPROVEMENTS

EXISTING CONDITIONS AND REMOVALS

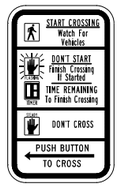
GRIFFIN STREET EAST AT ST. PAUL STREET

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	49
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_481_Griffin EB_St Paul_Exist.dgn
40.0000 ft / in.
BY: Marianna.Borrego

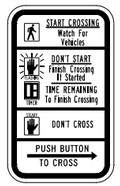
PROPOSED SIGNS

R10-3EL



S4 S5 S9

R10-3ER



S3 S6 S10

R10-15L

S12

S15

R6-2L

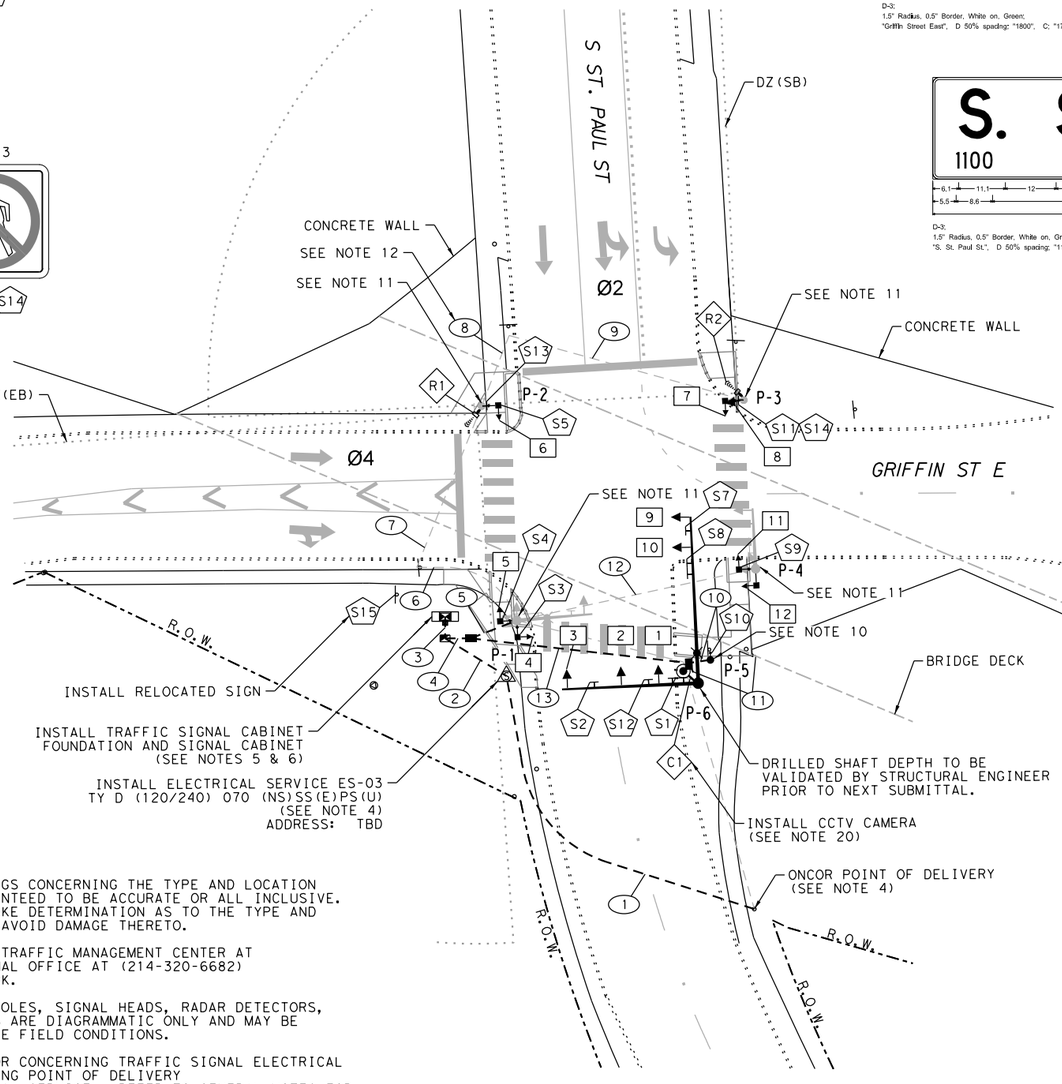
S2

R6-2R

S7 S11

R9-3

S13 S14

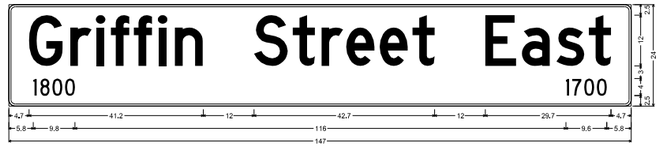


NOTES:

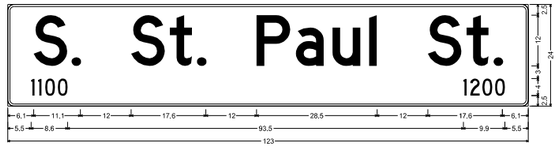
1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. BEFORE CONSTRUCTION, CONTRACTOR TO MAKE DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES TO AVOID DAMAGE THERETO.
2. CONTRACTOR TO 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.
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 ACCOMMODATE FIELD CONDITIONS.
4. CONTRACTOR SHALL COORDINATE WITH ONCOR CONCERNING TRAFFIC SIGNAL ELECTRICAL SERVICE. CONTACT ONCOR (TBD) 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, RADAR AND RADAR CABLE. CONTACT MR. ALFRED LEMON AT 214-670-4812 (OFFICE) OR 214-213-6121 (MB) TO SCHEDULE PICK-UP OF MATERIALS.
6. INSTALL BASE MOUNTED CONTROLLER CABINET (TYPE 332 CABINET) AND FOUNDATION.
7. SIGNAL POLES SHALL BE GALVANIZED STEEL FINISH.
8. SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH FLAT BLACK FINISH ALUMINUM VISORS AND RETROFLECTIVE BACK PLATES.

NOTES CONTINUED ON NEXT SHEET.

PROPOSED SIGNS



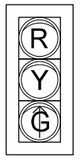
S1



S8

PROPOSED SIGNALS

V3U

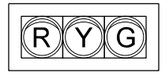


SH 8

COUNTDOWN PEDESTRIAN SIGNAL

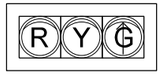
SH 4, 5, 6, 7, 11, 12

H3



SH 1, 2, 10

H3U



SH 3, 9

0 10 20 40

ORIGINALLY PLOTTED SCALE:
SCALE: 1" = 40'

LEGEND

- TYPICAL PROPOSED MAST ARM COMBINATION SIGNAL\ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, LED LUMINAIRE (250W E.Q.), 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 ADVANCED RADAR DETECTOR AND LABEL
- C1 PROPOSED CCTV CAMERA
- (S) PROPOSED ELECTRICAL SERVICE
- P-# PROPOSED TRAFFIC SIGNAL POLE NUMBER

4/1/2021

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NATHAN C. NEW
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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED CONDITIONS

GRIFFIN STREET EAST
AT ST. PAUL STREET

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	50
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247, ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_482_Griffin EB_St Paul_Proposed.dgn
40.0000 ft / in.
BY: Marianna.Borrego

CONDUIT AND CABLE CHART
WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	ITEM 618 CONDUIT (SCH 80)														CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS								ITEM 684 TRAFFIC SIGNAL CABLES										ITEM 6292		ITEM 6010		TOTAL LENGTH OF RUN	RUN NO
		2" PVC SCH 80 (RISER)		2" PVC (TRENCHED)		2" PVC (BORED)		3" PVC (TRENCHED)		3" PVC (BORED)		4" PVC (TRENCHED)		4" PVC (BORED)			NO. 6 XHHW WIRE		NO. 6 BARE WIRE		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		RADAR COMM CABLE		ETHERNET CABLE			
		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	Qty	Len		
1	I	1	10			1	105									I	TO BE INSTALLED BY OTHERS																							105	1
2	I			1	20											I	2	40	1	20	2	40																	20	2
3	I			1	10											I	2	20	1	10																			10	3
	I											1	10			I			1	10											1	10	2	20	1	10				
	I											1	10			I			1	10					6	60					4	40								
	I							1	10							I	FUTURE COMMUNICATION CONDUIT																								
4	I							1	10							I			1	10	2	20			6	60					4	40	1	10	2	20	1	10	10	4
	I							1	10							I	FUTURE COMMUNICATION CONDUIT																								
5	I							1	15							I			1	15					5	75					4	60			2	30			15	5
6	E															I									2	70					2	70			2	70			35	6
7	E															I									2	100					2	100			2	100			50	7
8	E															I									1	20					1	20			1	20			20	8
9	E															I									1	65					1	65			1	65			65	9
10	I							1	10							I			1	10					1	10													10	10
11	I							1	10							I			1	10	2	20											1	10			1	10	10	11
12	E															I									1	65					1	65							65	12
13	I													1	60	I			1	60	2	120			1	60							1	60			1	60	60	13
	I									1	60					I	FUTURE COMMUNICATION CONDUIT																								
SUBTOTAL			10		30		105		65		60		20		60			60		225		200		0		585		0		0		460		90		325		90			
P-1	P															I										10		20											VARIES	P-1
P-2	P															I										5		10								15			VARIES	P-2
P-3	P															I										5		25								15			VARIES	P-3
P-4	P															I										5		20											VARIES	P-4
P-5	P															I										5													VARIES	P-5
P-6	P															I								80				250											30	VARIES	P-6
SUBTOTAL			0		0		0		0		0		0		0			0		0		0		80		30		325		0		0		0		30		30		
TOTAL			10		30		105		65		60		20		60			60		225		200		80		615		325		0		460		90		355		120		

CONDUIT STATUS: I=INSTALL; E=EXISTING; P=WIRE TO BE INSTALLED INSIDE STEEL POLE; A=ABANDON; REM=REMOVE AND SALVAGE

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. ONCOR WILL INSTALL THE ELECTRICAL CONDUCTORS FROM THE POINT OF DELIVERY TO THE PEDESTAL METER.

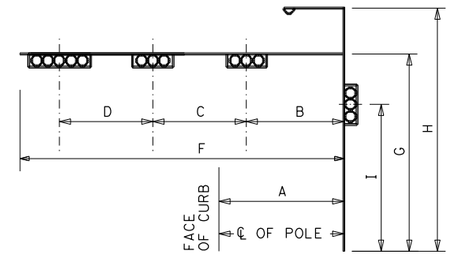
\- EMPTY 3" CONDUIT FOR FUTURE COMMUNICATION WITH PULL ROPE INSIDE.

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)*	ITEM 6292 RADAR PRESENCE DET. (EA)	LUM	DRILLED SHAFT LENGTH (FT) 24" DIA SUB TO ITEM 687	DRILLED SHAFT LENGTH (FT) 36" DIA TYPE B ITEM 416	FDN. TYPE WIND ZONE 80 MPH
P-1	E	4	PEDESTRIAN POLE SIGNAL				15	-	-	-	-	N	EXISTING		
P-2	E	7	PEDESTRIAN POLE SIGNAL				15	-	-	-	1	N	EXISTING		
P-3	E	4	PEDESTRIAN POLE SIGNAL				15	-	13	-	1	N	EXISTING		
P-4	E	3	PEDESTRIAN POLE SIGNAL				15	-	-	-	-	N	EXISTING		
P-5	I	10	PEDESTRIAN PUSH BUTTON POLE				5	-	-	-	-	N	11	-	24-A
P-6	I	6	36	8	-	44	19	30	-	2	-	N	-	33	36-B
			10	10	14	36				3	-	Y			
										TOTAL:	2		11	33	

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



NOTES CONTINUED:

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. CONTRACTOR TO HAND DIG FOUNDATION PIT AT P-5 AND USE EXTREME CAUTION WHEN INSTALLING PROPOSED FOUNDATION DUE TO ADJACENT RETAINING WALL.
11. CONTRACTOR TO INSTALL PEDESTRIAN POLE ASSEMBLY ON EXISTING FOUNDATION FOR P-1, P-2, P-3, AND P-4.
12. EXISTING CONDUIT ROUTING SHOWN IS NOT GUARANTEED. CONTRACTOR TO CONFIRM CONDUIT ROUTING PRIOR TO CONSTRUCTION.
13. 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.
14. ALL SIGNAL CABLES SHALL BE WIRED IN ACCORDANCE WITH THE CABINET PREPARATION NOTES SUPPLIED BY THE CITY OF DALLAS.
15. 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.
16. 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.
17. 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.
18. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.
19. CONTRACTOR TO MAINTAIN FULL ACCESS TO A MINIMUM OF TWO PEDESTRIAN CROSSINGS AT ALL TIMES DURING CONSTRUCTION.
20. CONTRACTOR TO PROCURE AND INSTALL CCTV CAMERA. ETHERNET CABLE IS TO BE INSTALLED FROM CAMERA TO TRAFFIC SIGNAL CONTROLLER AND SUBSIDIARY TO ITEM 6010 6002.

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

GRIFFIN STREET EAST
AT ST. PAUL STREET

SHEET 1 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	51
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247,ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_483_Griffin EB_St Paul_Quantity 1 of 3.dgn
40.0000 ft / in.
BY: Marianna.Barrego

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

*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	GRIFFIN	I	P-6	24"x VA
S2	R6-2L	ONE WAY	I	P-6	30"x 36"
S3	R10-3ER	APS UNIT	I	P-1	9"x15"
S4	R10-3EL	APS UNIT	I	P-1	9"x15"
S5	R10-3EL	APS UNIT	I	P-2	9"x15"
S6	R10-3ER	APS UNIT	I	P-3	9"x15"
S7	R6-2R	ONE WAY	I	P-6	30"x 36"
S8	STREET NAME	ST. PAUL	I	P-6	24"x VA
S9	R10-3EL	APS UNIT	I	P-4	9"x15"
S10	R10-3ER	APS UNIT	I	P-5	9"x15"
S11	R6-2R	ONE WAY	I	P-3	30"x 36"
S12	R10-15L	TURNING VEHICLES YIELD TO PEDESTRIANS	I	P-6	30"x 30"
S13	R9-3	NO PEDESTRIAN CROSSING	I	P-2	18"x18"
S14	R9-3	NO PEDESTRIAN CROSSING	I	P-3	18"x18"
S15	CUSTOM	DALLAS HERITAGE VILLAGE ENTRANCE	REL	GROUND MOUNTED	VAxVA

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

*- ALL SIGNS TO BE FURNISH AND INSTALL BY THE CONTRACTOR.

GROUND BOX SUMMARY			
ITEM NO.	DESCRIPTION	UNIT	QTY.
0624	GROUND BOX TY D (162922)W/APRON	EA	2
6186	ITS GND BOX TY 1 (243624)W/APRON	EA	1

ELECTRICAL SERVICE DATA											
ELEC. SERVICE ID	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
ES-03	TY D (120/240) 070 (NS) SS (E) PS (U)	2"	3 / #4	N/A	2P / 70	30	100	T.S.	1P / 50	23	<7.1
								LIGHTING	2P / 20	1	

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

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

GRIFFIN STREET EAST
AT ST. PAUL STREET

SHEET 2 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	52
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_484_Griffin EB_St Paul_Quantity 2 of 3.dgn
40.0000 ft / in.
BY: Marianna.Borrego

APS MESSAGE CHART			
POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-1	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS ST. PAUL STREET AT GRIFFIN STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS ST. PAUL STREET AT GRIFFIN STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ST. PAUL STREET, WALK SIGN IS ON TO CROSS ST. PAUL STREET
P-1	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS GRIFFIN STREET AT ST. PAUL STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS GRIFFIN STREET AT ST. PAUL STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	GRIFFIN STREET, WALK SIGN IS ON TO CROSS GRIFFIN STREET
P-2	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS GRIFFIN STREET AT ST. PAUL STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS GRIFFIN STREET AT ST. PAUL STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	GRIFFIN STREET, WALK SIGN IS ON TO CROSS GRIFFIN STREET
P-3	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS GRIFFIN STREET AT ST. PAUL STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS GRIFFIN STREET AT ST. PAUL STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	GRIFFIN STREET, WALK SIGN IS ON TO CROSS GRIFFIN STREET
P-4	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS GRIFFIN STREET AT ST. PAUL STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS GRIFFIN STREET AT ST. PAUL STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	GRIFFIN STREET, WALK SIGN IS ON TO CROSS GRIFFIN STREET
P-5	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS ST. PAUL STREET AT GRIFFIN STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS ST. PAUL STREET AT GRIFFIN STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ST. PAUL STREET, WALK SIGN IS ON TO CROSS ST. PAUL STREET

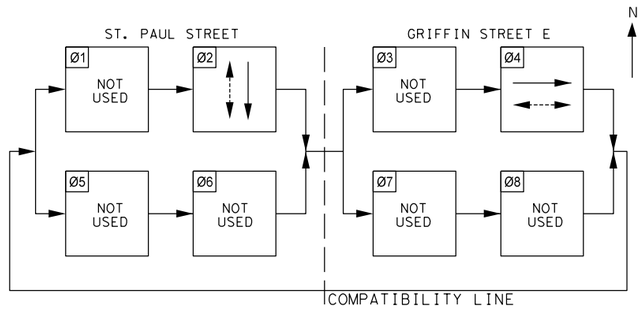
SIGNAL HEADS (ITEM 682)								
SIGNAL HEAD NUMBER	12" LED SIGNAL INDICATION							PED SIG SEC (LED) (COUNTDOWN)
	SIGNAL HEAD TYPE	STATUS	BACK PLATE	LED SIGNAL LAMPS				
			3 SEC	Ⓒ	G	Y	R	
			EA	EA	EA	EA	EA	EA
1	H3	I	1		1	1	1	
2	H3	I	1		1	1	1	
3	H3U	I	1	1		1	1	
4	PED	I						1
5	PED	I						1
6	PED	I						1
7	PED	I						1
8	V3U	I	1	1		1	1	
9	H3U	I	1	1		1	1	
10	H3	I	1		1	1	1	
11	PED	I						1
12	PED	I						1
TOTAL (NEW)			6	3	3	6	6	6

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	SETBACK DISTANCE
R1	POLE P-2	15'	STOP BAR	EB	N/A	40' TO 65'
R2	POLE P-3	15'	STOP BAR	SB	N/A	20' TO 55'

PHASE SEQUENCE

— — COMPATIBLE PHASES
◄--► PEDESTRIAN MOVEMENT



4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

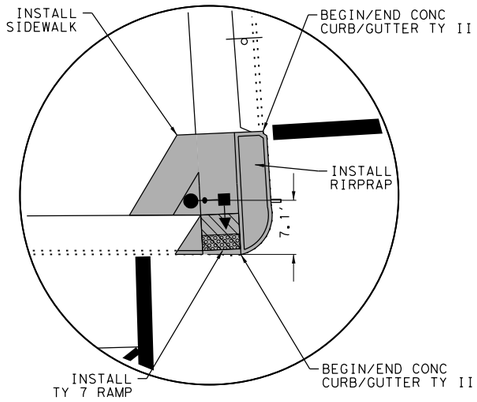
TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

GRIFFIN STREET EAST
AT ST. PAUL STREET

SHEET 3 OF 3

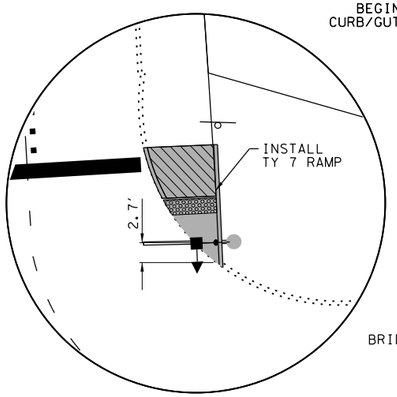
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	53
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wo#10_SHT_485_Griffin EB_St Paul_Quantity 3 of 3.dgn
40.0000 ft / in.
BY: Marianna.Barrego



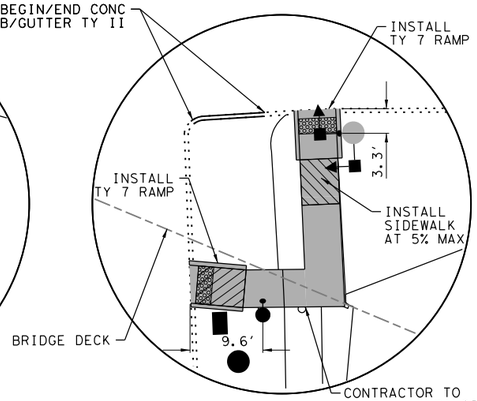
DETAIL AT NW CORNER

392 6008: CONC CURB & GUTTER II = 20 LF
432 6003: RIPRAP (CONC)(6") = 2 CY
531 6003: CONC SIDEWALKS (6") = 7 SY



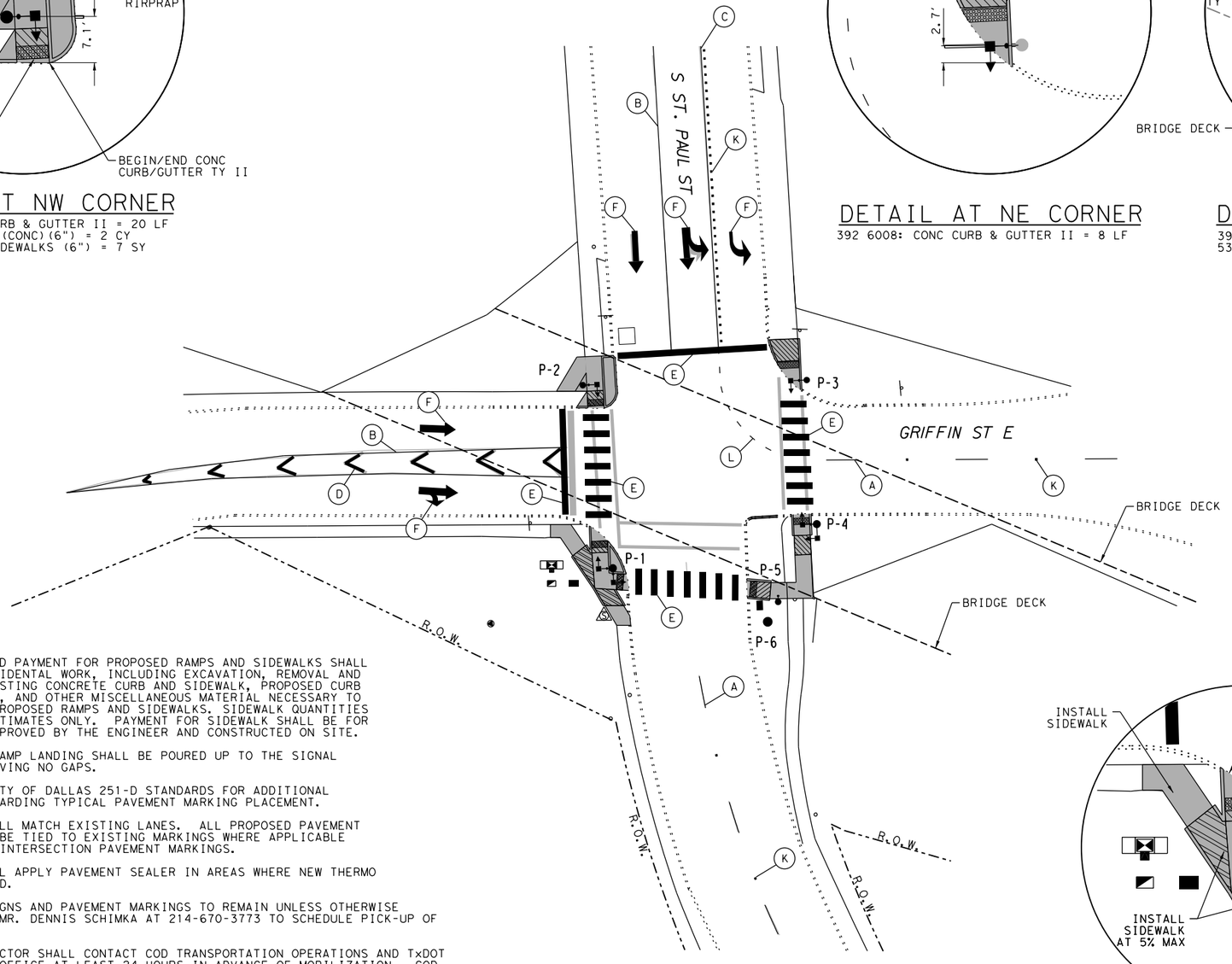
DETAIL AT NE CORNER

392 6008: CONC CURB & GUTTER II = 8 LF



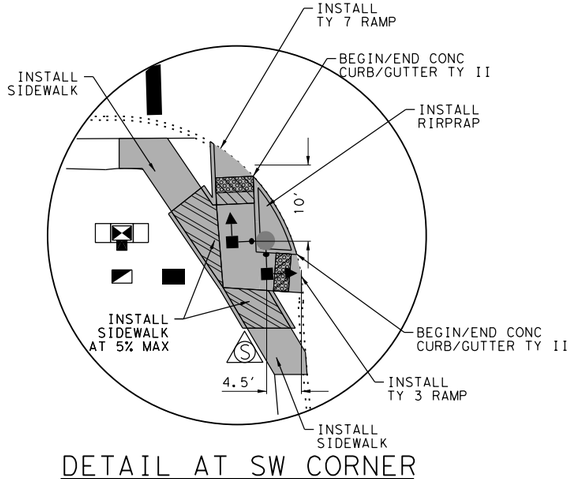
DETAIL AT SE CORNER

392 6008: CONC CURB & GUTTER II = 7 LF
531 6003: CONC SIDEWALKS (6") = 9 SY



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. CONTACT MR. DENNIS SCHIMKA AT 214-670-3773 TO SCHEDULE PICK-UP OF SIGNS.
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 IS RESPONSIBLE FOR REPAIRS AND SUBSTITUTION OF ANY DAMAGED IRRIGATION EQUIPMENT.
9. INSTALL PAVEMENT MARKINGS 200' IN EACH DIRECTION FROM STOP BAR.
10. SEE SUMMARY OF PEDESTRIAN RAMPS AND PAVEMENT MARKING TABLES ON NEXT SHEET.
11. CONTRACTOR SHALL ENSURE THAT ALL PED RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE RAMP OR GUTTER AREA.
12. RAMP LANDINGS AND PROPOSED SIDEWALKS SHALL NOT EXCEED 2% MAX CROSS SLOPE AND 2% RUNNING SLOPE.



DETAIL AT SW CORNER

392 6008: CONC CURB & GUTTER II = 17 LF
432 6003: RIPRAP (CONC)(6") = 1 CY
531 6003: CONC SIDEWALKS (6") = 7 SY

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)(090MIL)
- (B) RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)
- (C) REFL PAV MRK TY I (W)8"(SLD)(090MIL)
- (D) REFL PAV MRK TY I (W)12"(SLD)(090MIL)
- (E) REFL PAV MRK TY I (W)24"(SLD)(090MIL)
- (F) PREFAB PAV MRK TY C (W)(ARROW)
- (G) PREFAB PAV MRK TY C (W)(WORD)
- (H) RE PM W/RET REQ TY I (Y)4"(SLD)(090MIL)
- (I) REFL PAV MRK TY I (Y)24"(SLD)(090MIL)
- (J) REFL PAV MRK TY II A-A
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W)6"(BRK)(090MIL) (PUPPY TRACKS)
- (M) REFL PAV MRK TY I (W)18"(YLD TRI) (≤40mph)

LEGEND

PEDESTRIAN RAMPS

- 8.3% MAX RUNNING SLOPE, 2% MAX CROSS SLOPE
- 5% MAX RUNNING SLOPE, 2% MAX CROSS SLOPE

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS

PROPOSED PAVEMENT MARKINGS AND PEDESTRIAN RAMPS

GRIFFIN STREET EAST AT ST. PAUL STREET

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	54
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa10_SHT_486_Griffin EB_St Paul_Striping.dgn
40.0000 ft / in.
BY: Marianna.Barrego

PEDESTRIAN RAMP / SIDEWALK SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
432	6003	RIPRAP (CONC)(6 IN)	CY	3
529	6008	CONC CURB & GUTTER (TY II)	LF	52
531	6003	CONC SIDEWALKS (6")	SY	23
531	6006	CURB RAMPS (TY 3)	EA	1
531	6010	CURB RAMPS (TY 7)	EA	5

PAVEMENT MARKING SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6035	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	100
666	6041	REFL PAV MRK TY I (W)12"(SLD)(090MIL)	LF	85
666	6047	REFL PAV MRK TY I (W)24"(SLD)(090MIL)	LF	250
666	6224	PAVEMENT SEALER 4"	LF	510
666	6225	PAVEMENT SEALER 6"	LF	45
666	6226	PAVEMENT SEALER 8"	LF	100
666	6228	PAVEMENT SEALER 12"	LF	85
666	6230	PAVEMENT SEALER 24"	LF	250
666	6231	PAVEMENT SEALER (ARROW)	EA	3
666	6234	PAVEMENT SEALER (DBL ARROW)	EA	2
666	6299	RE PM W/RET REQ TY I (W)4"(BRK)(090MIL)	LF	100
666	6302	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)	LF	410
666	6305	RE PM W/RET REQ TY I (W)6"(BRK)(090MIL)	LF	45
668	6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	3
668	6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA	2
672	6010	REFL PAV MRKR TY II-C-R	EA	50
678	6001	PAV SURF PREP FOR MRK (4")	LF	510
678	6002	PAV SURF PREP FOR MRK (6")	LF	45
678	6004	PAV SURF PREP FOR MRK (8")	LF	100
678	6006	PAV SURF PREP FOR MRK (12")	LF	85
678	6008	PAV SURF PREP FOR MRK (24")	LF	250
678	6009	PAV SURF PREP FOR MRK (ARROW)	EA	3
678	6010	PAV SURF PREP FOR MRK (DBL ARROW)	EA	2
678	6033	PAV SURF PREP FOR MRK (RPM)	EA	50

VARIOUS PAVEMENT MARKING QUANTITIES INCLUDED IN THIS TABLE ARE BEYOND THE LIMITS OF THIS SHEET AND MAY NOT BE SHOWN IN THIS LAYOUT

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

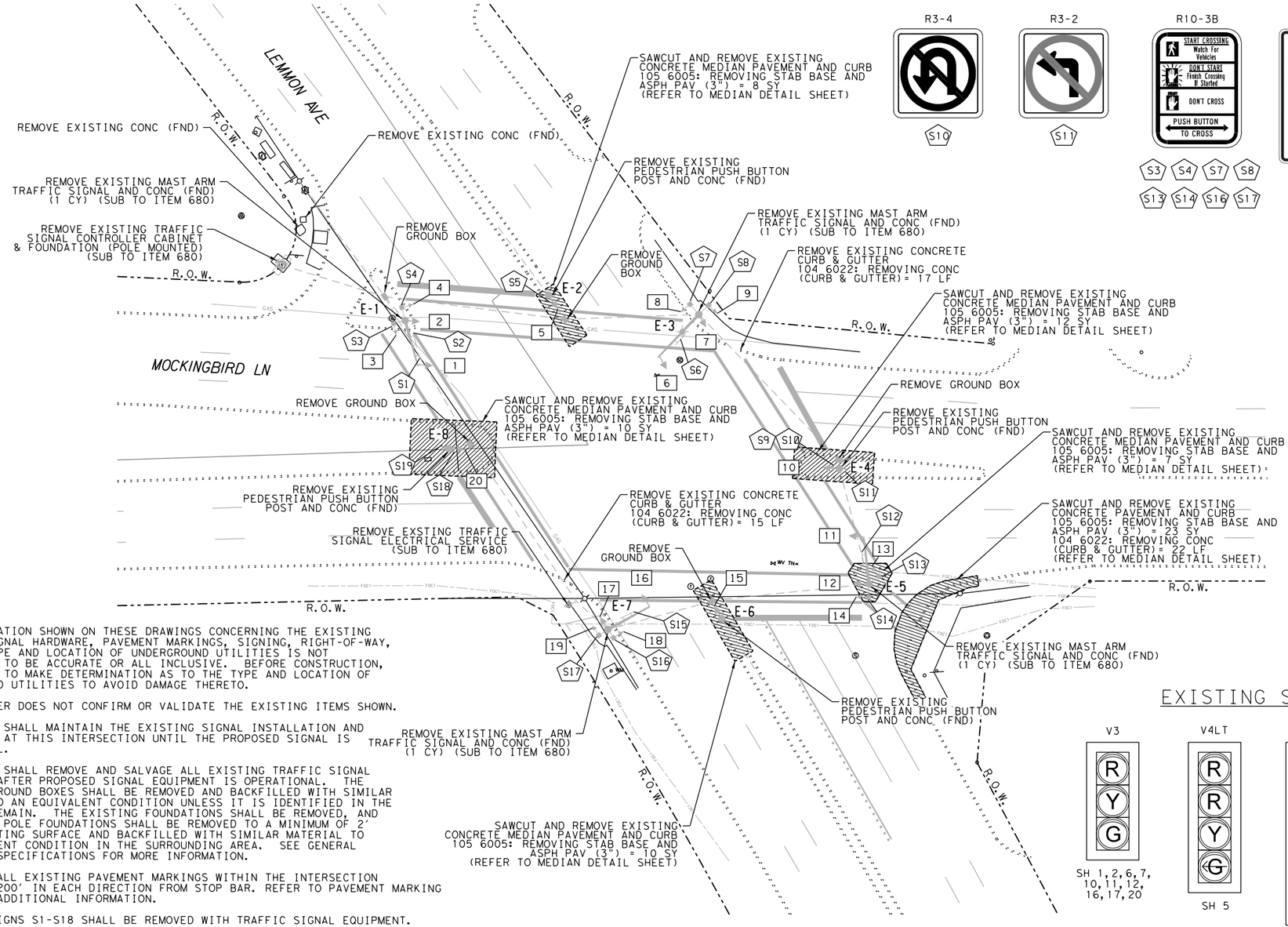
TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

GRIFFIN STREET EAST
AT ST. PAUL STREET

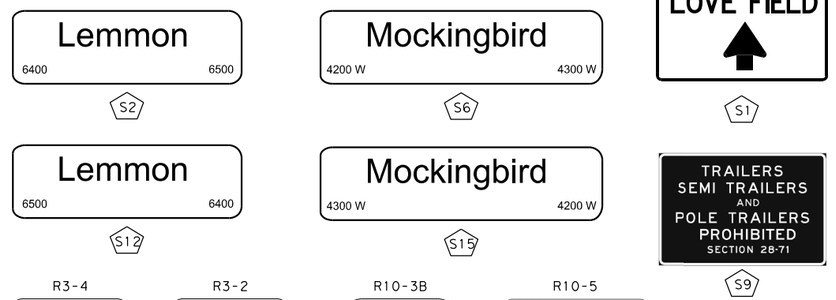
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	55
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247,ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_488_Griffin EB_St Paul_Quantity 1 of 1.dgn
40.0000 ft / in.
BY: Marianna.Barrego

REMOVAL SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
104	6001	REMOVING CONC (PAV)	SY	70
104	6013	REMOVING CONC (FOUNDATIONS)	SY	4
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	54
105	6005	REMOVING STAB BASE AND ASPH PAV (3")	SY	70
110	6001	EXCAVATION (ROADWAY)	CY	61
624	6028	REMOVE GROUND BOX	EA	5
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	1140
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	200
677	6005	ELIM EXT PAV MRK & MRKS (12")	LF	640
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	150
680	6004	REMOVING TRAFFIC SIGNALS	EA	1



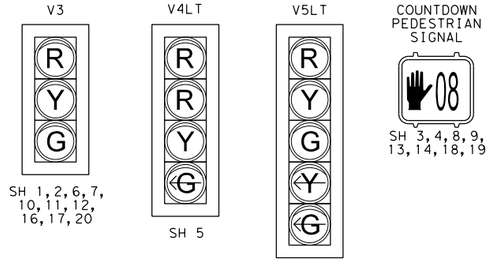
EXISTING SIGNS



LEGEND

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

EXISTING SIGNALS



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-S18 SHALL BE REMOVED WITH TRAFFIC SIGNAL EQUIPMENT.
7. CURB RAMP AND SIDEWALK REMOVALS SHALL BE SUBSIDIARY TO THE INSTALLATION OF NEW CURB RAMP OR CONCRETE SIDEWALK (SEE ITEM 531 QTYS AND PROPOSED PEDESTRIAN RAMP AND SIDEWALK LAYOUT).

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

4/1/2021
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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS

EXISTING CONDITIONS AND REMOVALS

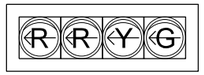
LEMMON AVENUE
AT MOCKINGBIRD LANE

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS MB	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK HMF	TEXAS	DALLAS	DALLAS	56
CHECK NCN	CONTROL	SECTION	JOB	
	0918	47	247,ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\06403647 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_489_Lemmon_Mockingbird_Exist.dgn
40.0000 ft / in.
BY: Marianna.Borrego

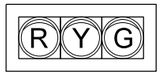
PROPOSED SIGNALS

H4LT



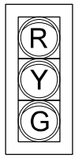
SH 20

H3



SH 1, 2, 3, 8, 9, 10, 14, 15, 16, 21, 22

V3

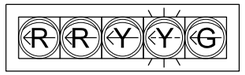


SH 4, 11, 18, 23

LED COUNTDOWN PEDESTRIAN SIGNAL

SH 5, 6, 12, 13, 17, 19, 24, 25

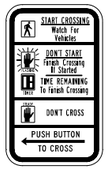
H5FLT



SH 7

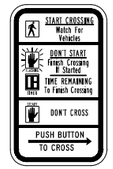
PROPOSED SIGNS

R10-3EL



S5 S8 S17

R10-3ER



S4 S7 S12 S13 S16

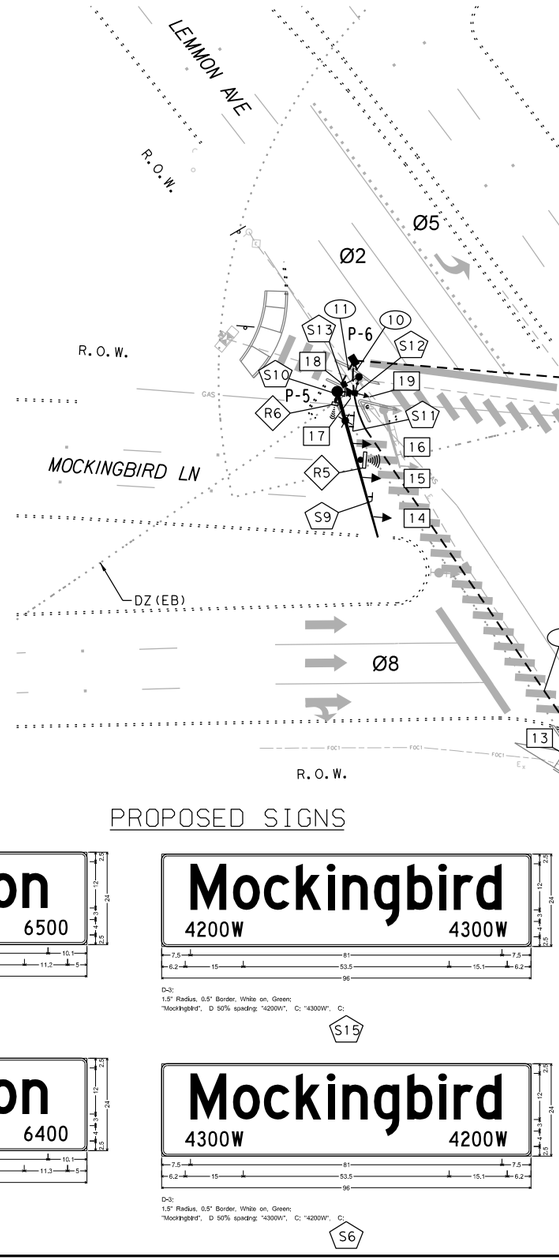
R3-18

S1 S9

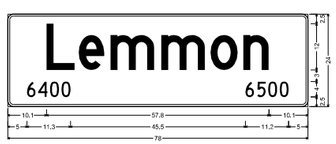
R10-5L

S14

S10

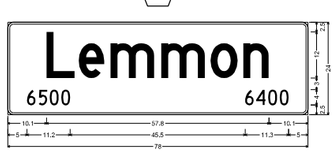


PROPOSED SIGNS



S11

S15



S3

S6

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.
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 ACCOMMODATE FIELD CONDITIONS.
4. CONTRACTOR SHALL COORDINATE WITH ONCOR CONCERNING TRAFFIC SIGNAL ELECTRICAL SERVICE. CONTACT ONCOR (TBD) REGARDING POINT OF DELIVERY AND DISTRIBUTION TO ELECTRICAL PEDESTAL SERVICE (ONCOR WORK REQUEST NUMBER: WO TBD). 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) TO SCHEDULE PICK-UP OF MATERIALS.
6. INSTALL BASE MOUNTED CONTROLLER CABINET (TYPE 332 CABINET) AND FOUNDATION.
7. SIGNAL POLES SHALL BE GALVANIZED STEEL FINISH.
8. SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH FLAT BLACK FINISH ALUMINUM VISORS AND RETROREFLECTIVE 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.

NOTES CONTINUED ON NEXT SHEET.

0 10 20 40

ORIGINALLY PLOTTED SCALE: SCALE: 1" = 40'

LEGEND

- TYPICAL PROPOSED MAST ARM COMBINATION SIGNAL\ WITH PEDESTRIAN SIGNAL, PUSH BUTTON, LED LUMINAIRE (250W E.Q.), 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 ADVANCED RADAR DETECTOR AND LABEL
- (C1) PROPOSED CCTV CAMERA
- (S) PROPOSED ELECTRICAL SERVICE
- P-# PROPOSED TRAFFIC SIGNAL POLE NUMBER

4/1/2021

STATE OF TEXAS
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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED CONDITIONS

LEMMON AVENUE
AT MOCKINGBIRD LANE

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	57
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_490_Lemmon_Mockingbird_Proposed.dgn
40.0000 ft / in.
BY: Marianna.Borrego

CONDUIT AND CABLE CHART
WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	ITEM 618 CONDUIT (SCH 80)												CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS								ITEM 684 TRAFFIC SIGNAL CABLES										ITEM 6010		ITEM 6292		TOTAL LENGTH OF RUN	RUN NO
		2" PVC SCH 80 (RISER)		2" PVC (TRENCHED)		3" PVC (TRENCHED)		3" PVC (BORED)		4" PVC (TRENCHED)		4" PVC (BORED)			NO. 6 XHHW WIRE		NO. 6 BARE WIRE		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		ETHERNET CABLE		RADAR COMM CABLE			
		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	35									I	TO BE INSTALLED BY OTHERS																					35	1
2	I			1	10									I	2	20	1	10	4	40																10	2
3	I			1	10									I	2	20	1	10																		10	3
	I									1	10			I			1	30															1	10	8	80		
	I									1	10			I			1	30					8	80							4	40						
	I					1	10							I	FUTURE COMMUNICATION CONDUIT																								
4	I					1	35							I			1	20	4	140											1	35	1	35	2	70	35	4
5	I					1	30							I			1	30					2	60					1	30							30	5
6	I											1	115	I			1	115	2	230			4	460					2	230	2	230			4	460	115	6
	I							1	115					I	FUTURE COMMUNICATION CONDUIT																								
7	I					1	10							I			1	10	4	40											1	10			2	20	10	7
8	I					1	20							I			1	20					2	40					1	20							20	8
9	I											1	135	I			1	135	2	270			2	270					1	135	1	135			2	270	135	9
	I							1	135					I	FUTURE COMMUNICATION CONDUIT																								
10	I					1	5							I			1	5					2	10					1	5							5	10
11	I					1	10							I			1	10	2	20											1	10			2	20	10	11
12	I											1	115	I			1	115																			115	12
	I							1	115					I	FUTURE COMMUNICATION CONDUIT																								
13	I					1	10							I			1	10	2	20											1	10			2	20	10	13
14	I					1	15							I			1	15					2	30					1	15							15	14
15	I											1	145	I			1	145	2	290			2	290					1	145	1	145			2	290	145	15
	I							1	145					I	FUTURE COMMUNICATION CONDUIT																								
SUBTOTAL			10		55		145		510		20		510			40		710		1050		0		1240		0		0		620		615		45		1230		
P-1	P													I								80				180									30		80	VARIES	P-1
P-2	P													I										10		20											VARIES	P-2
P-3	P													I								80				175		75								100	VARIES	P-3
P-4	P													I										10		20											VARIES	P-4
P-5	P													I								80				150										70	VARIES	P-5
P-6	P													I										10		20											VARIES	P-6
P-7	P													I								80				105		60								75	VARIES	P-7
P-8	P													I										10		20											VARIES	P-8
SUBTOTAL			0		0		0		0		0		0			0		0		0		320		40		690		135		0		0		30		325		
TOTAL			10		55		145		510		20		510			40		710		1050		320		1280		690		135		620		615		75		1555		

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 PEDETSTAL METER. ONCOR WILL INSTALL THE ELECTRICAL CONDUCTORS FROM THE POINT OF DELIVERY TO THE PEDESTAL METER.

\- EMPTY 3" CONDUIT FOR FUTURE COMMUNICATION WITH PULL ROPE INSIDE.

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)*	ITEM 6292 RADAR PRESENCE DET. (EA)	ITEM 6292 RADAR ADVANCED DET. (EA)	LUM	DRILLED SHAFT LENGTH (FT) 24" DIA SUB TO ITEM 687	36" DIA TYPE A ITEM 416	48" DIA TYPE A ITEM 416	FDN. TYPE WIND ZONE 80 MPH
P-1	I	12	25	9	11	-	48	19	30	13	3	1	1	Y	-	13	-	36-A
P-2	I	11	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	24-A
P-3	I	14	22	13	10	11	60	19	30	13	4	1	1	Y	-	-	22	48-A
P-4	I	3	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	24-A
P-5	I	8	14	9	11	-	40	19	30	13	3	1	1	Y	-	13	-	36-A
P-6	I	4	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	24-A
P-7	I	7	19	10	11	-	44	19	30	13	3	1	1	Y	-	13	-	36-A
P-8	I	6	PEDESTRIAN POLE SIGNAL					15	-	-	-	-	-	N	6	-	-	24-A
										TOTAL:	4	4		24	39	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

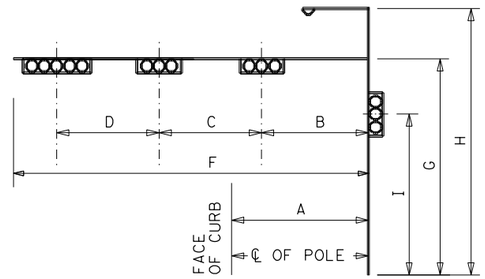
ELECTRICAL SERVICE DATA

ELEC. SERVICE ID	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
ES-04	TY D (120/240) 070 (NS) SS (E) PS (U)	2"	3 / #4	N/A	2P / 70	30	100	T.S.	1P / 50	23	<7.1
								LIGHTING	2P / 20	4	

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

NOTES CONTINUED:

10. 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.
11. ALL SIGNAL CABLES SHALL BE WIRED IN ACCORDANCE WITH THE CABINET PREPARATION NOTES SUPPLIED BY THE CITY OF DALLAS.
12. 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.
13. 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.
14. PROPOSED CURB RAMP LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.
15. CONTRACTOR TO MAINTAIN FULL ACCESS TO A MINIMUM OF TWO PEDESTRIAN CROSSINGS AT ALL TIMES DURING CONSTRUCTION.
16. CONTRACTOR TO PROCURE AND INSTALL CCTV CAMERA. ETHERNET CABLE IS TO BE INSTALLED FROM CAMERA TO TRAFFIC SIGNAL CONTROLLER AND SUBSIDIARY TO ITEM 6010 6002.



4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

LEMMON AVENUE
AT MOCKINGBIRD LANE

SHEET 1 OF 3

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	58
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247, ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_491_Lemmon_Mockingbird_Quantity 1 of 3.dgn
40.0000 ft / in.
BY: Marianna.Borrego

CABLE TERMINATION CHART									
CNDR. NO.	CONDUCTOR COLOR	CABLE 1 20 CNDR.	CABLE 2 10 CNDR.	CABLE 3 20 CNDR.	CABLE 4 10 CNDR.	CABLE 5 20 CNDR.	CABLE 6 10 CNDR.	CABLE 7 20 CNDR.	CABLE 8 10 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.	FROM P-7 TO CNTRL.	FROM P-8 TO CNTRL.
1	BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
2	WHITE	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM	SH COM
3	RED	SH 1,2,3,4 - Ø8 R	SPARE	SH 8,9,10,11 - Ø2 R	SPARE	SH 14,15,16,18 - Ø4 R	SPARE	SH 21,22,23 - Ø6 R	SPARE
4	GREEN	SH 1,2,3,4 - Ø8 G	SPARE	SH 8,9,10,11 - Ø2 G	SPARE	SH 14,15,16,18 - Ø4 G	SPARE	SH 21,22,23 - Ø6 G	SPARE
5	ORANGE	SH 1,2,3,4 - Ø8 Y	SPARE	SH 8,9,10,11 - Ø2 Y	SPARE	SH 14,15,16,18 - Ø4 Y	SPARE	SH 21,22,23 - Ø6 Y	SPARE
6	BLUE	SPARE	SH 5 - Ø6 DW	SPARE	SH 12 - Ø8 DW	SPARE	SH 17 - Ø2 DW	SPARE	SH 24 - Ø6 DW
7	WHITE/BLACK	SPARE	SH 5 - Ø6 W	SPARE	SH 12 - Ø8 W	SPARE	SH 17 - Ø2 W	SPARE	SH 24 - Ø6 W
8	RED/BLACK	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
9	GREEN/BLACK	SPARE	SH 6 - Ø8 DW	SPARE	SH 13 - Ø2 DW	SPARE	SH 19 - Ø4 DW	SPARE	SH 25 - Ø4 DW
10	ORANGE/BLACK	SPARE	SH 6 - Ø8 W	SPARE	SH 13 - Ø2 W	SPARE	SH 19 - Ø4 W	SPARE	SH 25 - Ø4 W
11	BLUE/BLACK	SPARE		SPARE		SPARE		SPARE	
12	BLACK/WHITE	SPARE		SPARE		SPARE		SPARE	
13	RED/WHITE	SPARE		SH 7 - OLC R (LT ARW)		SPARE		SH 20 - Ø1 R (LT ARW)	
14	GREEN/WHITE	SPARE		SH 7 - Ø5 G (LT ARW)		SPARE		SH 20 - Ø1 G (LT ARW)	
15	BLUE/WHITE	SPARE		SH 7 - OLC Y (LT ARW)		SPARE		SH 20 - Ø1 Y (LT ARW)	
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		SH 7 - OLC FY (LT ARW)		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	R3-18	NO U-TURN/NO LEFT TURN	I	P-1	36"x 36"
S2	OMITTED				
S3	STREET NAME	LEMMON	I	P-1	24"x VA
S4	R10-3ER	PED PUSH BUTTON	I	P-2	9"x15"
S5	R10-3EL	PED PUSH BUTTON	I	P-2	9"x15"
S6	STREET NAME	MOCKINGBIRD	I	P-3	24"x VA
S7	R10-3ER	PED PUSH BUTTON	I	P-4	9"x15"
S8	R10-3EL	PED PUSH BUTTON	I	P-4	9"x15"
S9	R3-18	NO U-TURN/NO LEFT TURN	I	P-5	36"x 36"
S10	M6-3 (MOD)	LOVE FIELD	I	P-5	21"x 15"
S11	STREET NAME	LEMMON	I	P-5	24"x VA
S12	R10-3ER	PED PUSH BUTTON	I	P-6	9"x15"
S13	R10-3ER	PED PUSH BUTTON	I	P-6	9"x15"
S14	R10-5L	LEFT ON GREEN ARROW ONLY	I	P-7	30"x 36"
S15	STREET NAME	MOCKINGBIRD	I	P-7	24"x VA
S16	R10-3ER	PED PUSH BUTTON	I	P-8	9"x15"
S17	R10-3EL	PED PUSH BUTTON	I	P-8	9"x15"

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

*- ALL SIGNS ARE TO BE PROVIDED AND INSTALLED BY THE CONTRACTOR (SUB TO ITEM 680).

GROUND BOX SUMMARY			
ITEM NO.	DESCRIPTION	UNIT	QTY.
0624	GROUND BOX TY D (162922)W/APRON	EA	3
6186	ITS GROUND BOX TY 1 (243624)W/APRON	EA	1

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

LEMMON AVENUE
AT MOCKINGBIRD LANE

SHEET 2 OF 3

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	59
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

APS MESSAGE CHART

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

SIGNAL HEADS (ITEM 682)

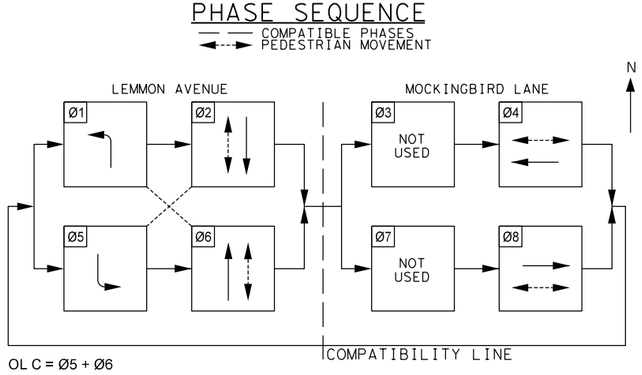
SIGNAL HEAD NUMBER	SIGNAL HEAD TYPE	STATUS	12" LED SIGNAL INDICATION									PED SIG SEC (LED) (COUNTDOWN)
			BACK PLATE			LED SIGNAL LAMPS						
			3 SEC	4 SEC	5 SEC	<-G-	G	<-Y-	Y	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
1	H3	I	1				1		1		1	
2	H3	I	1				1		1		1	
3	H3	I	1				1		1		1	
4	V3	I	1				1		1		1	
5	PED	I										1
6	PED	I										1
7	H5FLT	I			1	1		2		2		
8	H3	I	1				1		1		1	
9	H3	I	1				1		1		1	
10	H3	I	1				1		1		1	
11	V3	I	1				1		1		1	
12	PED	I										1
13	PED	I										1
14	H3	I	1				1		1		1	
15	H3	I	1				1		1		1	
16	H3	I	1				1		1		1	
17	PED	I										1
18	V3	I	1				1		1		1	
19	PED	I										1
20	H4LT	I		1		1		1		2		
21	H3	I	1				1		1		1	
22	H3	I	1				1		1		1	
23	V3	I	1				1		1		1	
24	PED	I										1
25	PED	I										1
	TOTAL (NEW)		15	1	1	2	15	3	15	4	15	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-1	19'	SET BACK	EB	400'	-
R2	POLE P-1	18'	STOP BAR	WB	N/A	55' TO 75'
R3	MAST ARM P-3	19'	SET BACK	SB	400'	-
R4	POLE P-3	18'	STOP BAR	NB + NBLT	N/A	60' TO 100'
R5	MAST ARM P-5	19'	SET BACK	WB	400'	-
R6	POLE P-5	18'	STOP BAR	EB	N/A	65' TO 85'
R7	MAST ARM P-7	19'	SET BACK	NB	400'	-
R8	POLE P-7	18'	STOP BAR	SB + SBLT	N/A	50' TO 80'

PHASE SEQUENCE



OL C = Ø5 + Ø6

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

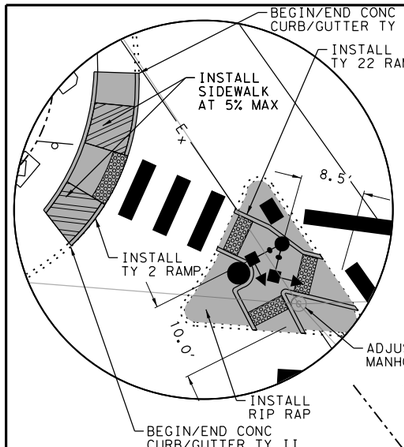
TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

LEMMON AVENUE
AT MOCKINGBIRD LANE

SHEET 3 OF 3

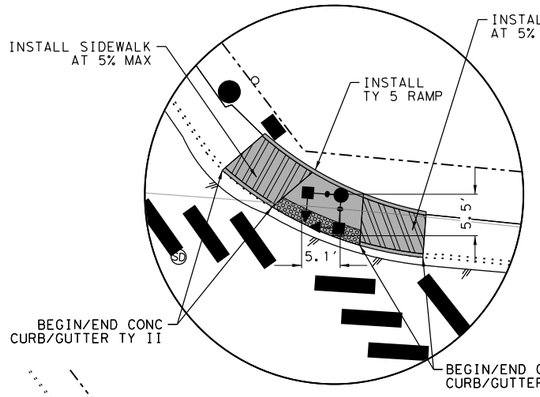
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	60
CHECK HMF	CONTROL	SECTION	JOB	
CHECK NCN	0918	47	247,ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wo#10_SHT_493_Lemmon_Mockingbird_Quantity 3 of 3.dgn
40.0000 ft / in.
BY: Marianna.Borrego



DETAIL AT NW CORNER

392 6008: CONC CURB & GUTTER II = 18 LF
432 6003: RIPRAP (CONC)(6 IN) = 4.5 CY
531 6003: CONC SIDEWALKS (6") = 10 SY

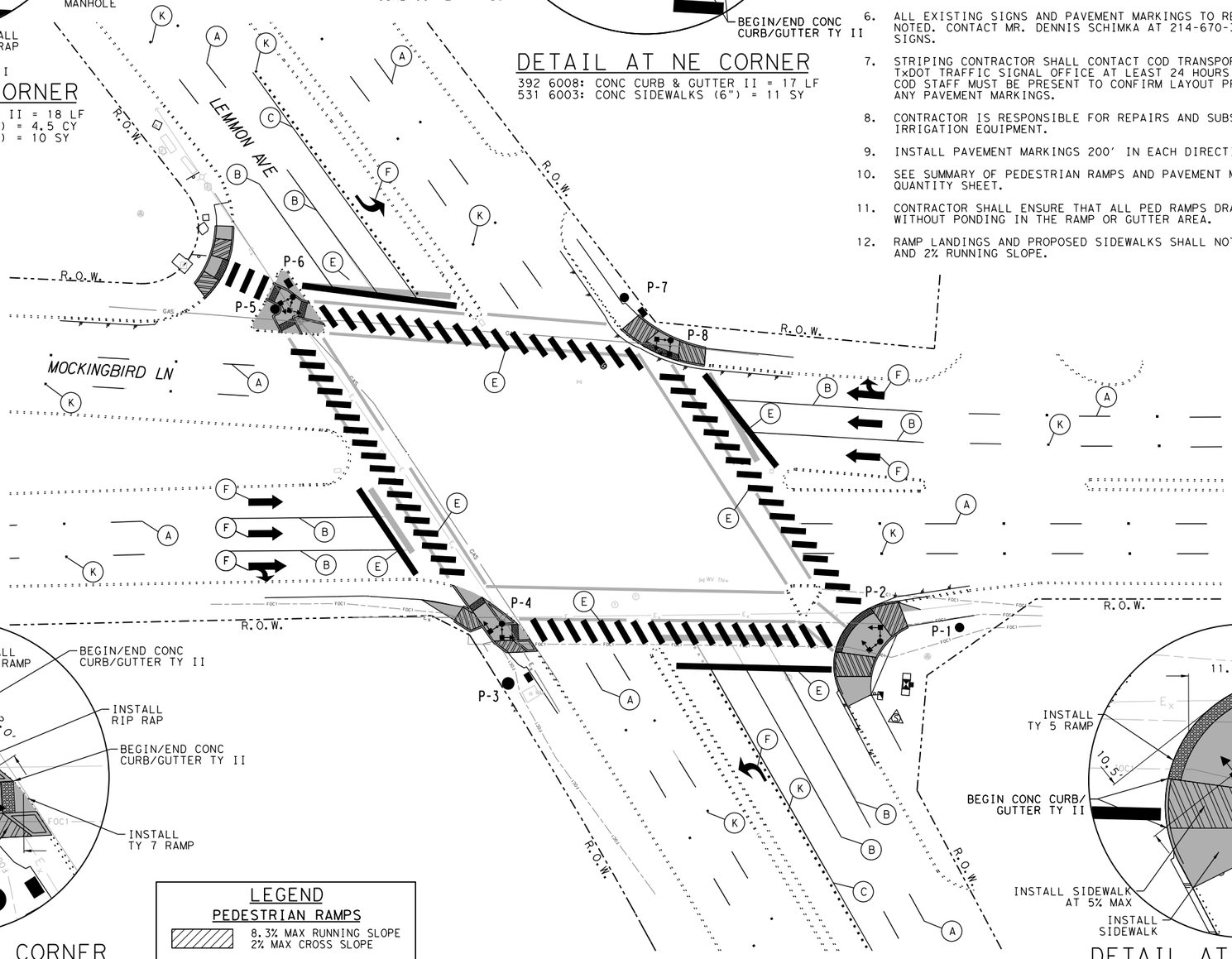


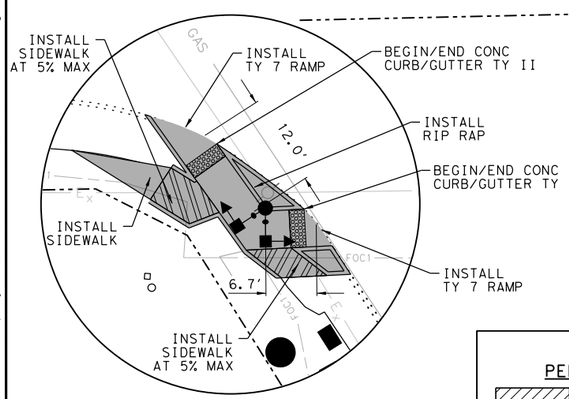
DETAIL AT NE CORNER

392 6008: CONC CURB & GUTTER II = 17 LF
531 6003: CONC SIDEWALKS (6") = 11 SY

NOTES:

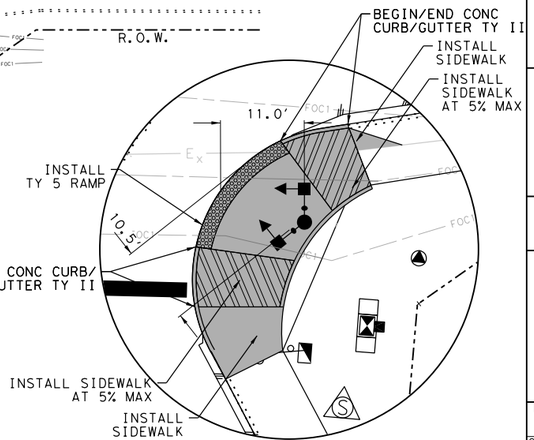
1. INSTALLATION AND PAYMENT FOR PROPOSED RAMPS AND SIDEWALKS SHALL INCLUDE ALL INCIDENTAL WORK, INCLUDING EXCAVATION, REMOVAL AND DISPOSAL OF EXISTING CONCRETE CURB AND SIDEWALK, PROPOSED CURB ALONG SIDEWALKS, AND OTHER MISCELLANEOUS MATERIAL NECESSARY TO CONSTRUCT THE PROPOSED RAMPS AND SIDEWALKS. SIDEWALK 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. CONTACT MR. DENNIS SCHIMKA AT 214-670-3773 TO SCHEDULE PICK-UP OF SIGNS.
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 IS RESPONSIBLE FOR REPAIRS AND SUBSTITUTION OF ANY DAMAGED IRRIGATION EQUIPMENT.
9. INSTALL PAVEMENT MARKINGS 200' IN EACH DIRECTION FROM STOP BAR.
10. SEE SUMMARY OF PEDESTRIAN RAMPS AND PAVEMENT MARKING TABLES ON PROPOSED QUANTITY SHEET.
11. CONTRACTOR SHALL ENSURE THAT ALL PED RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE RAMP OR GUTTER AREA.
12. RAMP LANDINGS AND PROPOSED SIDEWALKS SHALL NOT EXCEED 2% MAX CROSS SLOPE AND 2% RUNNING SLOPE.





DETAIL AT SW CORNER

392 6008: CONC CURB & GUTTER II = 18 LF
432 6003: RIPRAP (CONC)(6 IN) = 2 CY
531 6003: CONC SIDEWALKS (6") = 10 SY



DETAIL AT SE CORNER

392 6008: CONC CURB & GUTTER II = 29 LF
531 6003: CONC SIDEWALKS (6") = 29 SY

LEGEND

PAVEMENT MARKING

- (A) RE PM W/RET REQ TY I (W)4"(BRK)(090MIL)
- (B) RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)
- (C) REFL PAV MRK TY I (W)8"(SLD)(090MIL)
- (D) REFL PAV MRK TY I (W)12"(SLD)(090MIL)
- (E) REFL PAV MRK TY I (W)24"(SLD)(090MIL)
- (F) PREFAB PAV MRK TY C (W)(ARROW)
- (G) PREFAB PAV MRK TY C (W)(WORD)
- (H) RE PM W/RET REQ TY I (Y)4"(SLD)(090MIL)
- (I) REFL PAV MRK TY I (Y)24"(SLD)(090MIL)
- (J) REFL PAV MRK TY II A-A
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W)6"(BRK)(090MIL)(PUPPY TRACKS)
- (M) REFL PAV MRK TY I (W)18"(YLD TRI)(≤40mph)

LEGEND

PEDESTRIAN RAMPS

- 8.3% MAX RUNNING SLOPE, 2% MAX CROSS SLOPE
- 5% MAX RUNNING SLOPE, 2% MAX CROSS SLOPE

0 5 10 20 — PEDESTRIAN RAMP DETAILS : SCALE: 1" = 20'
0 10 20 40 — ORIGINALLY PLOTTED SCALE: SCALE: 1" = 40"

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

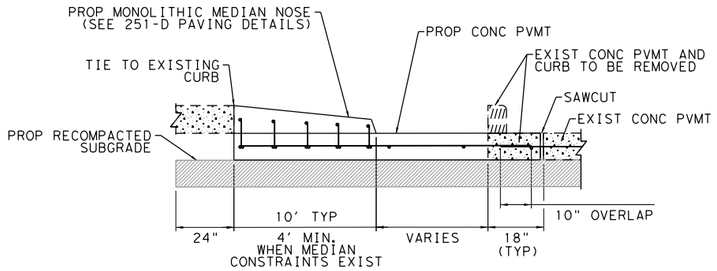
TRAFFIC SAFETY IMPROVEMENTS

PROPOSED PAVEMENT MARKINGS AND PEDESTRIAN RAMPS

LEMMON AVENUE
AT MOCKINGBIRD LANE

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	61
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

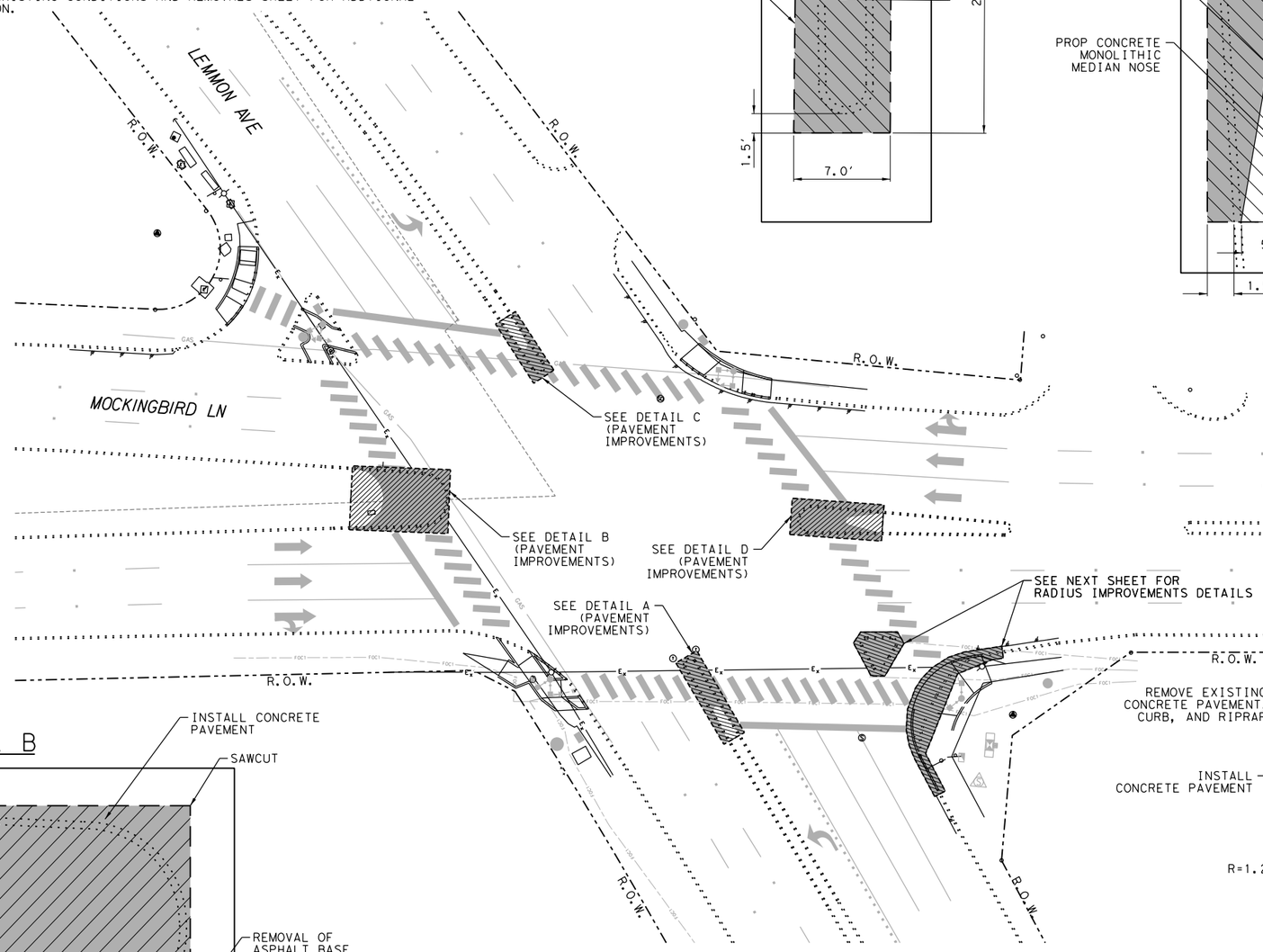
PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_494_Lemmon_Mockingbird_Striping.dgn
40.0000 ft / in.
BY: Marianna.Borrego



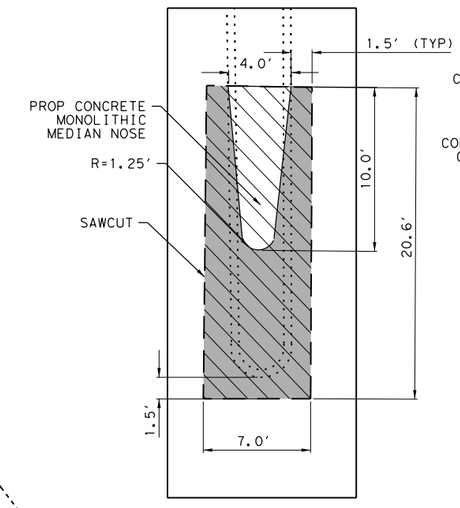
TYPICAL CROSS SECTION FOR MONOLITHIC MEDIAN NOSE IMPROVEMENT
(NOT TO SCALE)

NOTES:

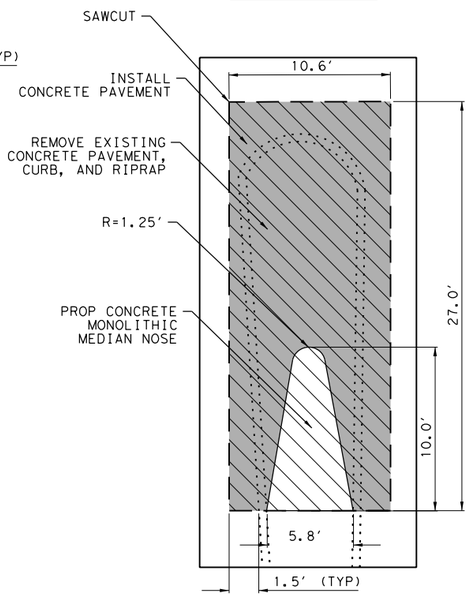
1. REFER TO EXISTING CONDITIONS AND REMOVALS SHEET FOR ADDTIONAL INFORMATION.



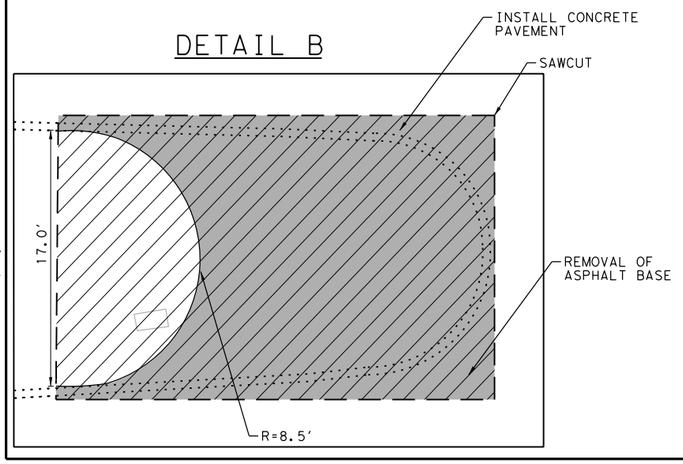
DETAIL C



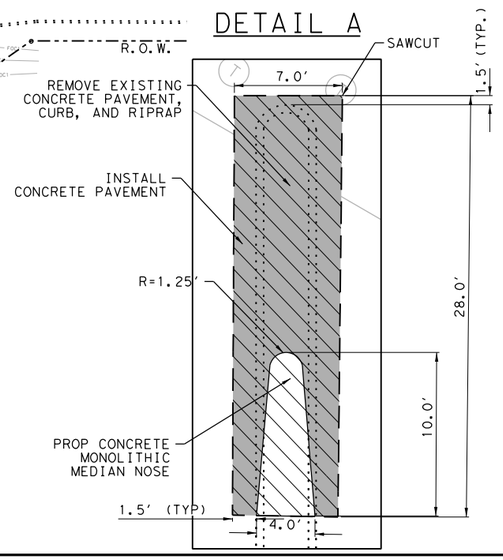
DETAIL D



DETAIL B



DETAIL A



MEDIAN / ROADWAY SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
251	6034	REWORK BS MTL (TY C) (8") (ORD COMP)	SY	65
360	6044	CONC PVMT (CONT REINF) (FAST TRK) (12")	SY	91
536	6006	CONC MEDIAN (MONO NOSE)	SY	26

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

NOTES:

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

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
PROPOSED MEDIAN DETAILS

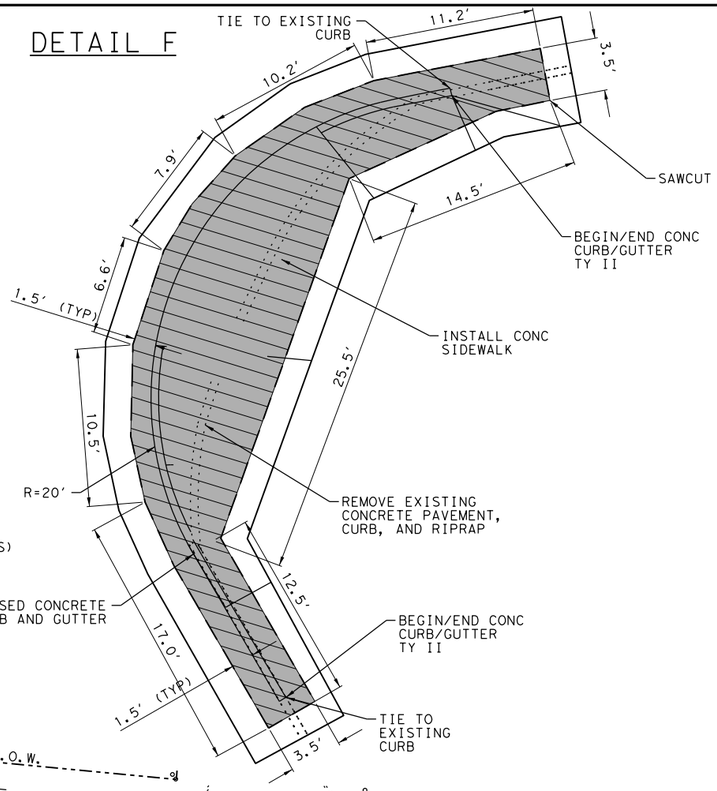
LEMMON AVENUE
AT MOCKINGBIRD LANE

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	62
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

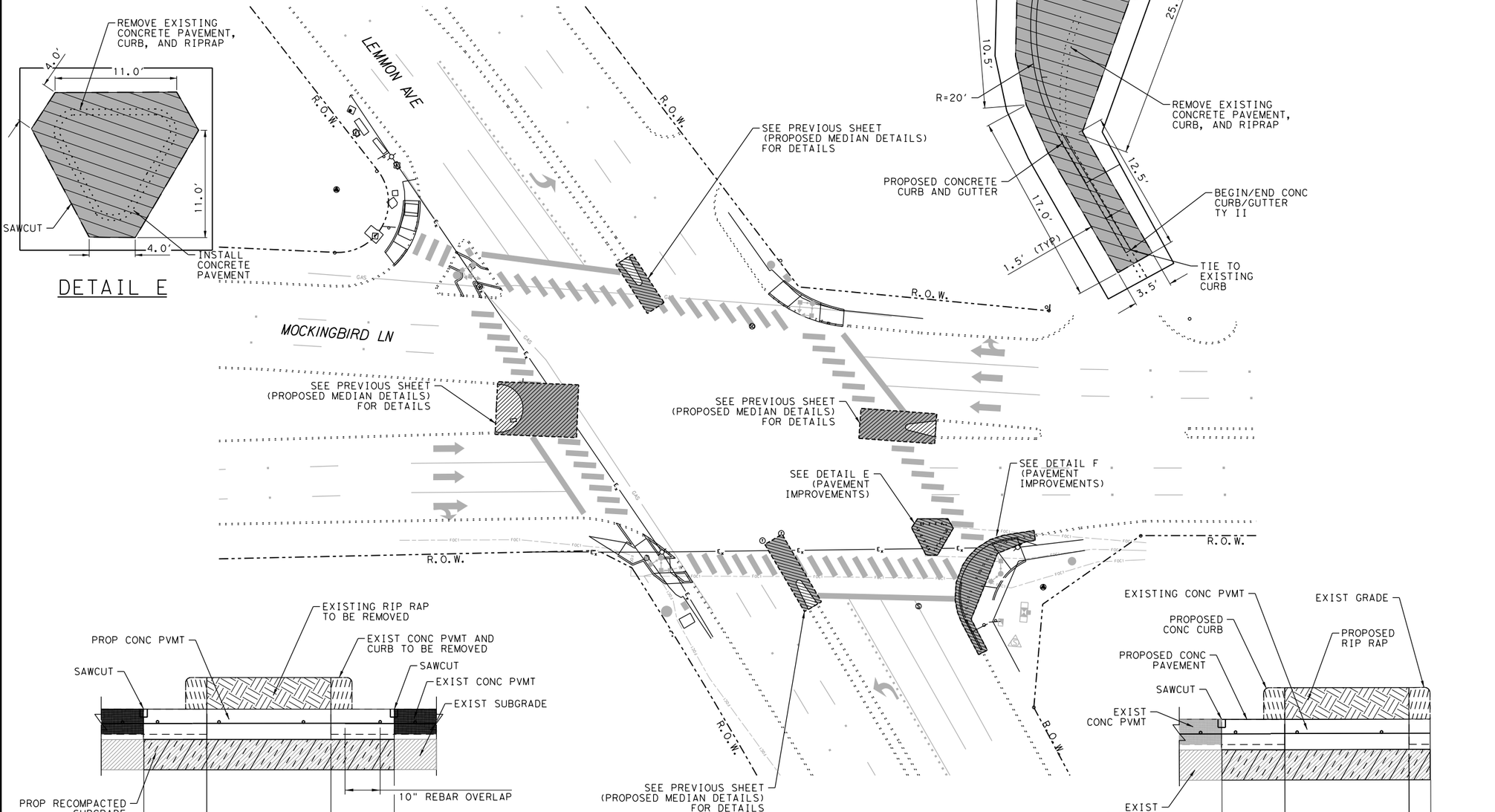
PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\Project\064036047 - COD WA 10 Traffic Signals\CADD\cod-wa#10_SHT_495_Lemmon_Mockingbird_Median.dgn
40.0000 ft / in.
BY: Marianna.Borrego

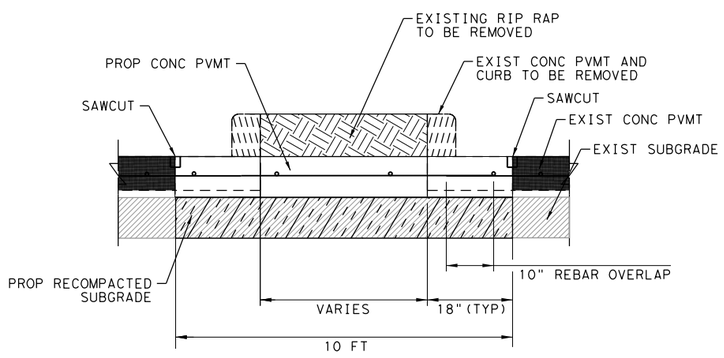
MEDIAN / ROADWAY SUMMARY				
529	6008	CONC CURB & GUTTER (TY II)	LF	59
251	6034	REWORK BS MTL (TY C) (8") (ORD COMP)	SY	18
360	6044	CONC PVMT (CONT REINF)(FAST TRK)(12")	SY	18
531	6003	CONC SIDEWALKS (6")	SY	26

DETAIL E

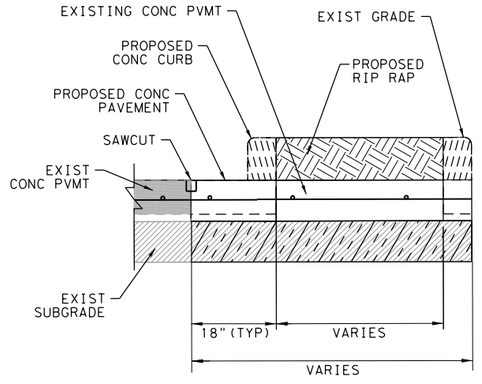


DETAIL F





CROSS SECTION FOR ISLAND IMPROVEMENT
(NOT TO SCALE)



CROSS SECTION FOR RADIUS 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

NOTES:

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

4/1/2021

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PROPOSED ISLAND DETAILS

LEMMON AVENUE
AT MOCKINGBIRD LANE

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS MB	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK HMF	TEXAS	DALLAS	DALLAS	63
CHECK NCN	CONTROL	SECTION	JOB	
	0918	47	247,ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_495A_Lemmon_Mockingbird_Median.dgn
40.0000 ft / in.
BY: Marianna.Borrego

PEDESTRIAN RAMP / SIDEWALK / ROADWAY SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
432	6003	RIPRAP (CONC)(6 IN)	CY	6.5
529	6008	CONC CURB & GUTTER (TY II)	LF	141
531	6003	CONC SIDEWALKS (6")	SY	86
531	6005	CURB RAMPS (TY 2)	EA	1
531	6008	CURB RAMPS (TY 5)	EA	2
531	6010	CURB RAMPS (TY 7)	EA	2
531	6017	CURB RAMPS (TY 22)	EA	1

PAVEMENT MARKING SUMMARY				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6035	REFL PAV MRK TY I (W)8"(SLD)(090MIL)	LF	200
666	6047	REFL PAV MRK TY I (W)24"(SLD)(090MIL)	LF	790
666	6224	PAVEMENT SEALER 4"	LF	1140
666	6226	PAVEMENT SEALER 8"	LF	200
666	6230	PAVEMENT SEALER 24"	LF	790
666	6231	PAVEMENT SEALER (ARROW)	EA	6
666	6232	PAVEMENT SEALER (WORD)	EA	2
666	6234	PAVEMENT SEALER (DBL ARROW)	EA	2
666	6299	RE PM W/RET REQ TY I (W)4"(BRK)(090MIL)	LF	720
666	6302	RE PM W/RET REQ TY I (W)4"(SLD)(090MIL)	LF	420
668	6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	6
668	6078	PREFAB PAV MRK TY C (W) (DBL ARROW)	EA	2
668	6085	PREFAB PAV MRK TY C (W) (WORD)	EA	2
672	6010	REFL PAV MRKR TY II-C-R	EA	172
678	6001	PAV SURF PREP FOR MRK (4")	LF	1140
678	6004	PAV SURF PREP FOR MRK (8")	LF	200
678	6008	PAV SURF PREP FOR MRK (24")	LF	790
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	172

VARIOUS PAVEMENT MARKING QUANTITIES INCLUDED IN THIS TABLE ARE BEYOND THE LIMITS OF THIS SHEET AND MAY NOT BE SHOWN IN THIS LAYOUT

4/1/2021

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

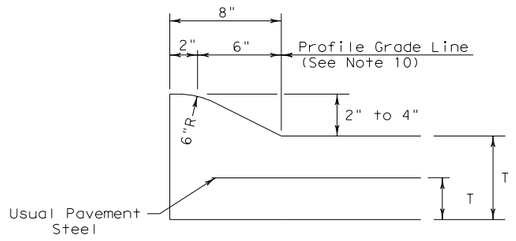
TRAFFIC SAFETY IMPROVEMENTS
PROPOSED QUANTITIES

LEMMON AVENUE
AT MOCKINGBIRD LANE

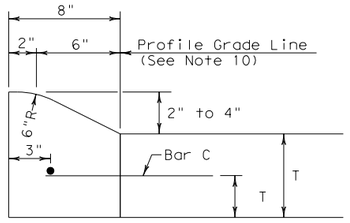
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	64
CHECK	CONTROL	SECTION	JOB	
HMF	0918	47	247,ETC.	
CHECK				
NCN				

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\cad-wa#10_SHT_496_Lemmon_Mockingbird_Quantity 1 of 1.dgn
40.0000 ft / in.
BY: Marianna.Borrego

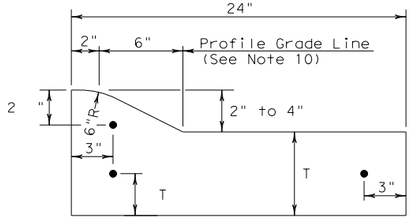
DATE:
FILE:



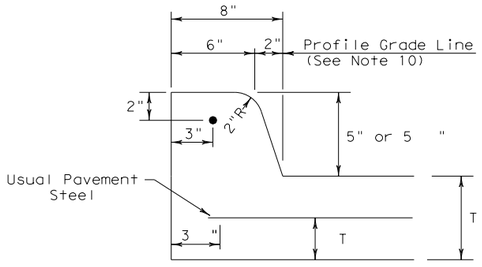
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



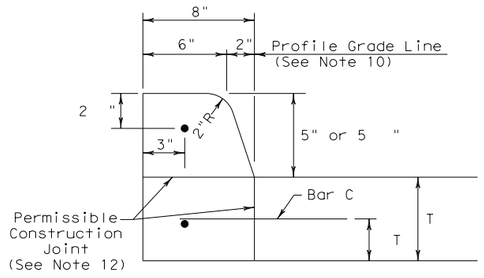
TYPE I CURB
2" - 4" HEIGHT



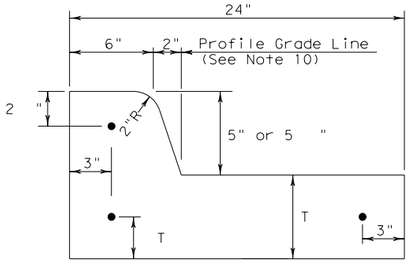
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



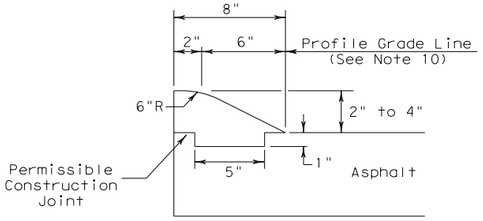
TYPE II CURB (MONOLITHIC)
5" - 5 " HEIGHT



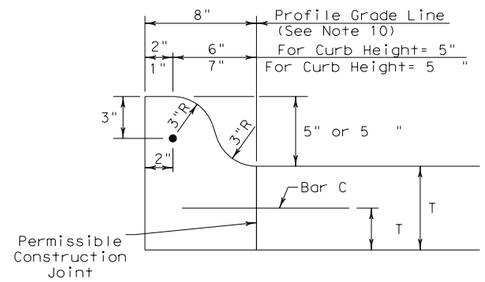
TYPE II CURB
5" - 5 " HEIGHT



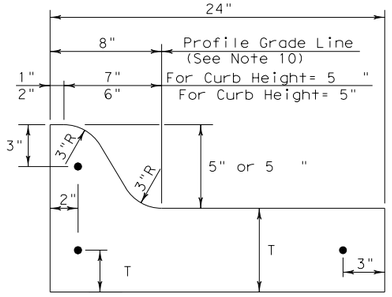
TYPE II CURB AND GUTTER
5" - 5 " HEIGHT



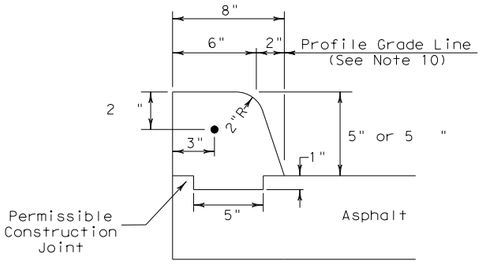
TYPE III CURB (KEYED)
2" - 4" HEIGHT



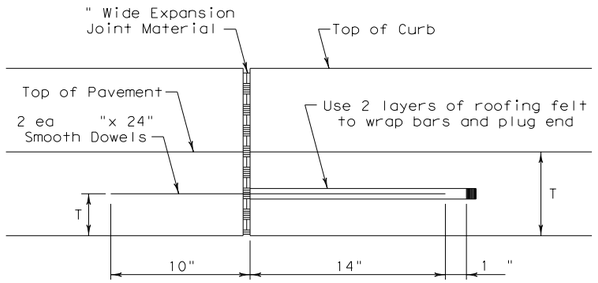
TYPE IIa CURB
5" - 5 " HEIGHT



TYPE IIa CURB AND GUTTER
5" - 5 " HEIGHT

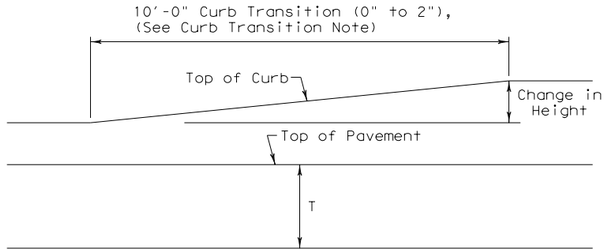


TYPE IV CURB (KEYED)
5" - 5 " HEIGHT



EXPANSION JOINT DETAIL

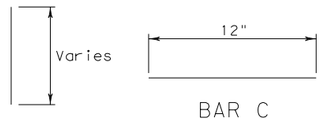
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



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 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 the 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 used as needed 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

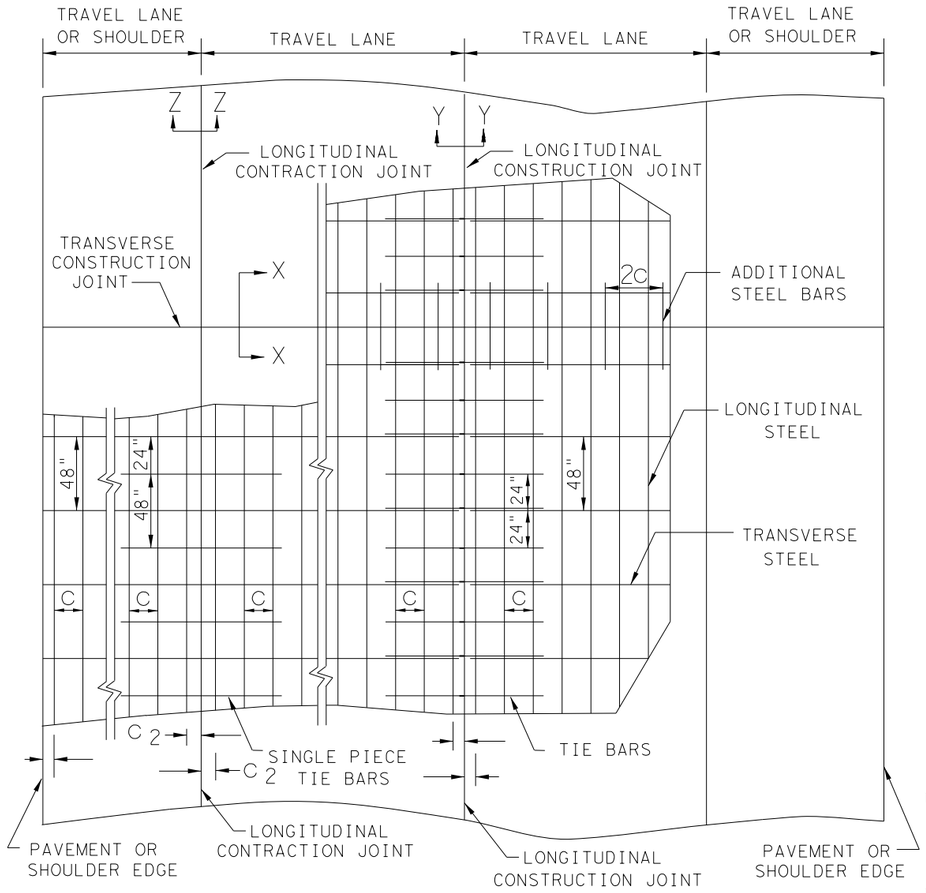
CCCG-21

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: SS	CK: KM	
© TxDOT: FEBRUARY 2021 REVISIONS	CONT	SECT	JOB	HIGHWAY	
	0918	47	247,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 (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

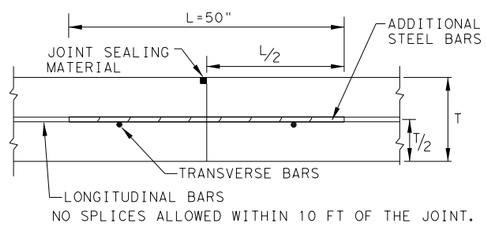


TYPICAL PAVEMENT LAYOUT

PLAN VIEW (NOT TO SCALE)

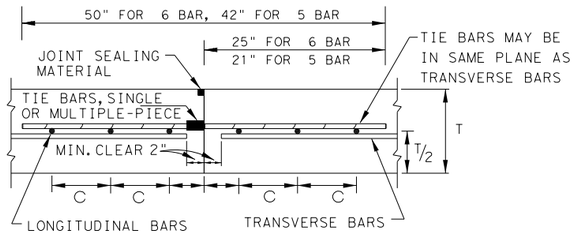
GENERAL NOTES

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."



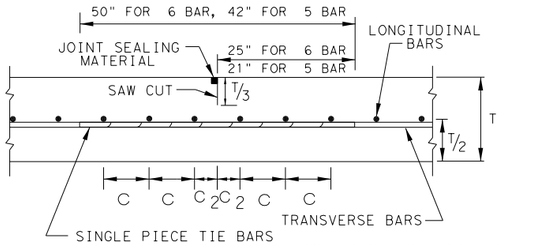
TRANSVERSE CONSTRUCTION JOINT

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

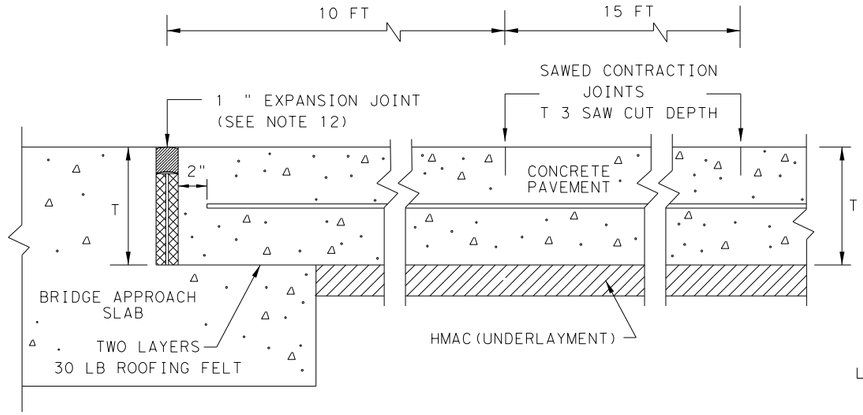
CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

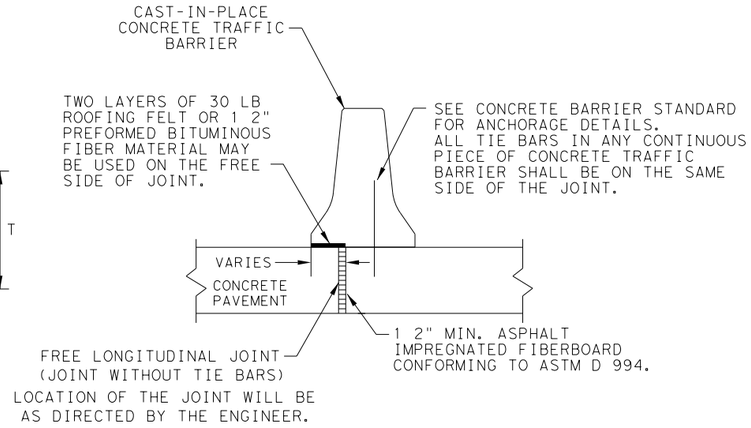
CRCP(1)-20

FILE: crcp120.dgn	DN: TxDOT	CK:KM	DW: AN	CK:VP
© TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,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

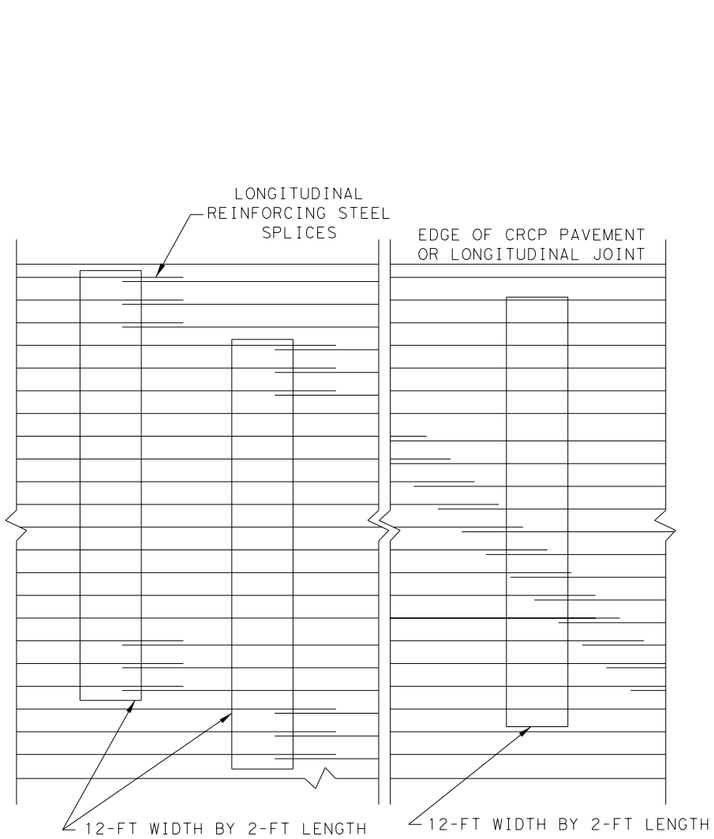
DATE:
FILE:



TRANSVERSE EXPANSION JOINT DETAIL
AT BRIDGE APPROACH

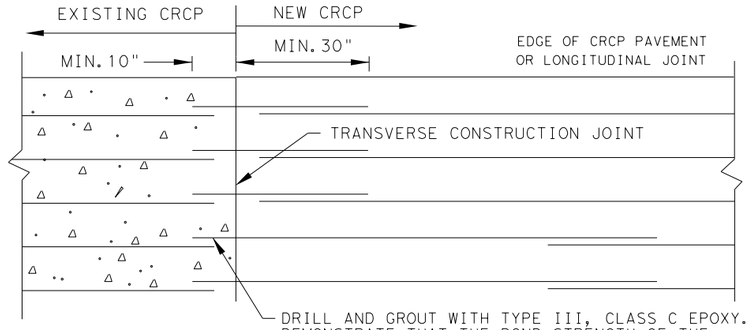


FREE LONGITUDINAL JOINT DETAIL

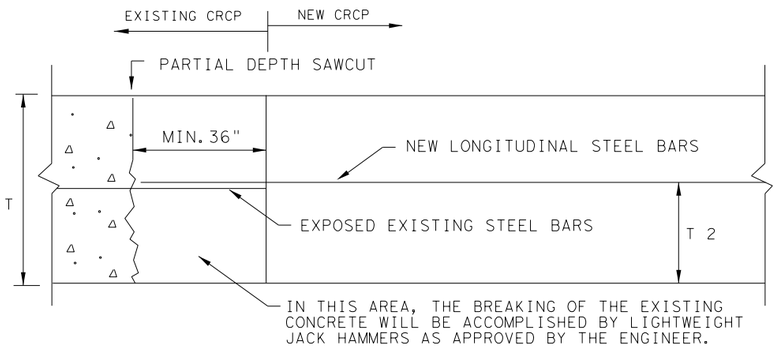


STAGGER THE LAP LOCATIONS SO THAT NO MORE THAN 1 3 OF THE LONGITUDINAL STEEL IS SPLICED IN ANY GIVEN 12-FT. WIDTH AND 2-FT. LENGTH OF THE PAVEMENT. ANY OTHER LAP CONFIGURATION MEETING THIS REQUIREMENT WILL BE ALLOWED.

EXAMPLES OF LAP CONFIGURATION
PLAN VIEW (NOT TO SCALE)

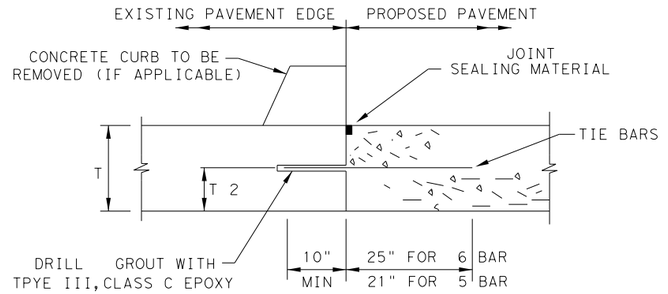


OPTION A: DRILL AND EPOXY
PLAN VIEW (NOT TO SCALE)



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

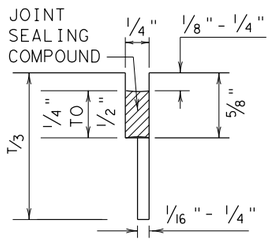
ONE LAYER STEEL BAR PLACEMENT
T - 7 to 13 INCHES

CRCP(1)-20

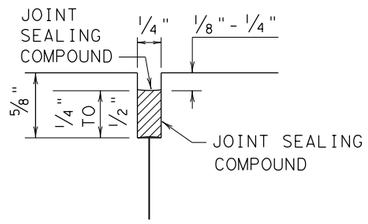
FILE: crcp120.dgn	DN: TxDOT	CK: KM	DW: AN	CK: VP	
© TxDOT: APRIL 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0918	47	247,ETC.	CS	
03 16 2020 REMOVED TABLE 1A	DIST	COUNTY		SHEET NO.	
	DAL	DALLAS		67	

DATE:
FILE:

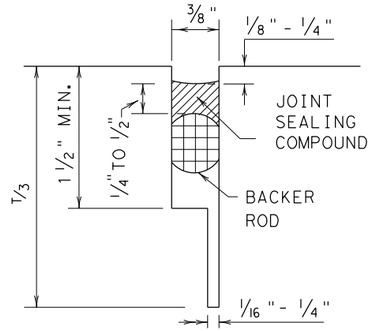
METHOD B: JOINT SEALING COMPOUND



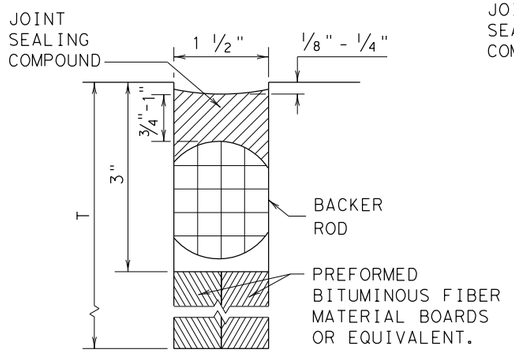
LONGITUDINAL SAWED CONTRACTION JOINT



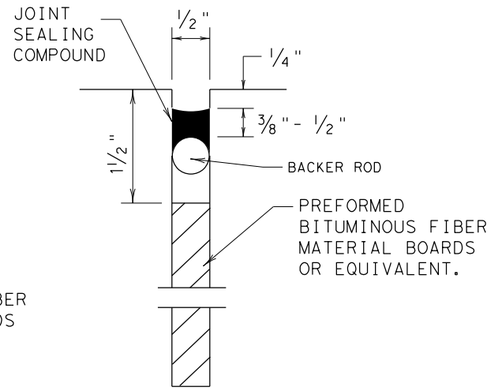
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

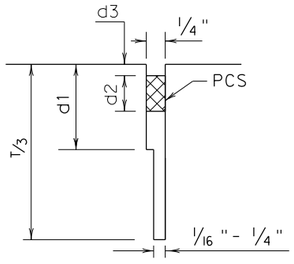


TRANSVERSE FORMED EXPANSION JOINT

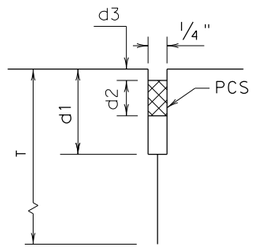


FORMED ISOLATION JOINT

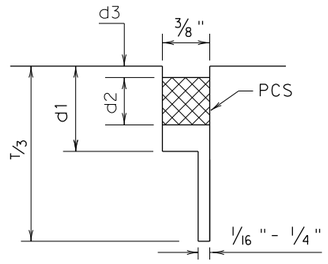
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



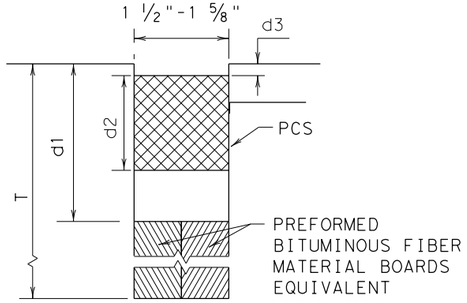
LONGITUDINAL SAWED CONTRACTION JOINT



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

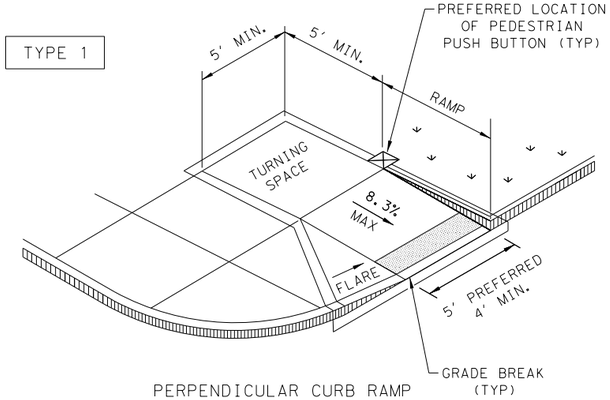
JOINT SEALS

JS-14

FILE: js14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
© TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		68

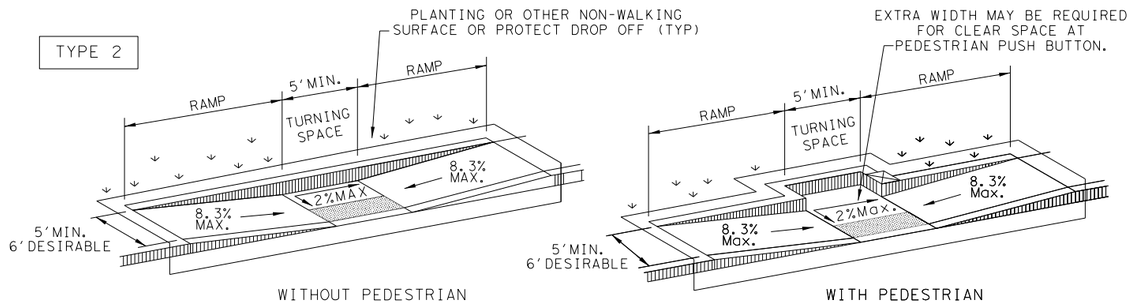
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

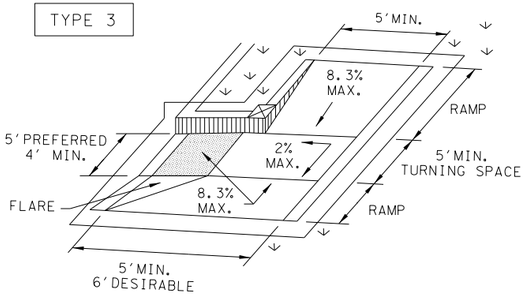


WITHOUT PEDESTRIAN PUSH BUTTON

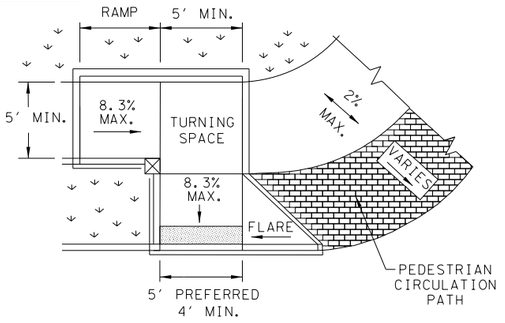
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

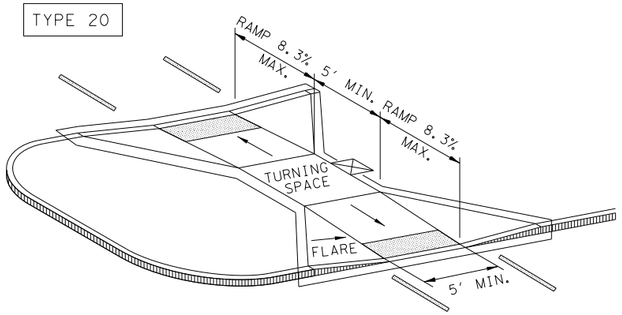


TYPE 6



COMBINATION CURB RAMPS

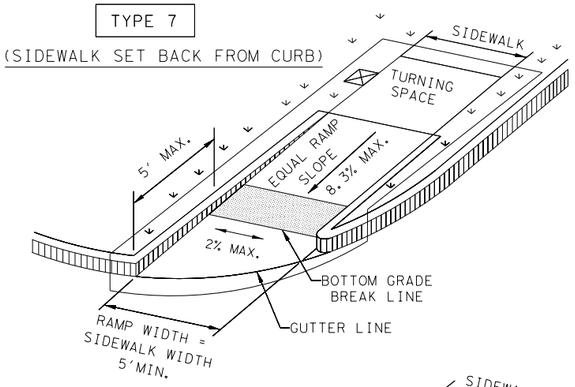
TYPE 20



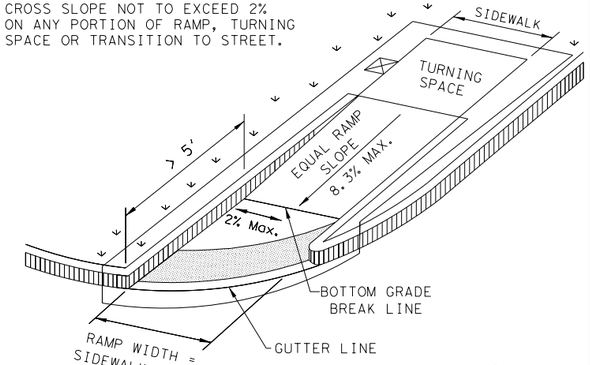
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

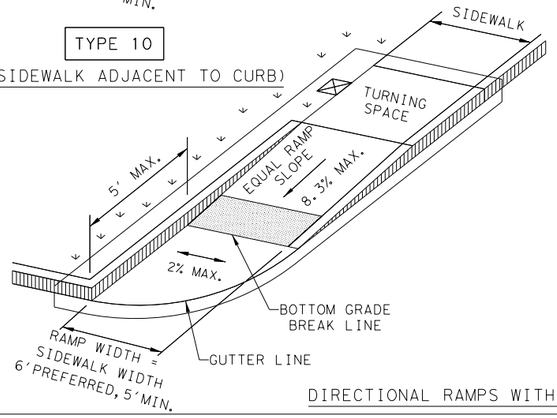


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

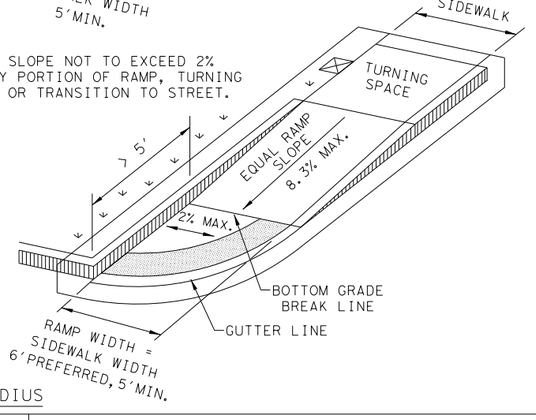


TYPE 10

(SIDEWALK ADJACENT TO CURB)

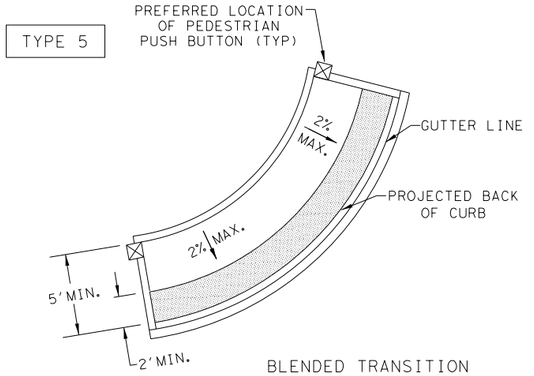


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

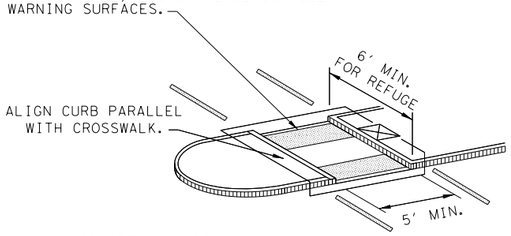
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

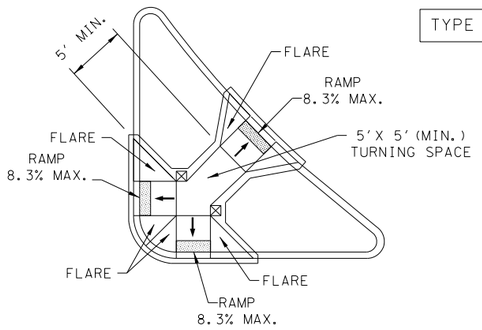
INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.

TYPE 21



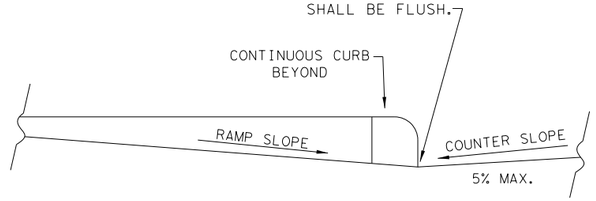
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

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

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,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

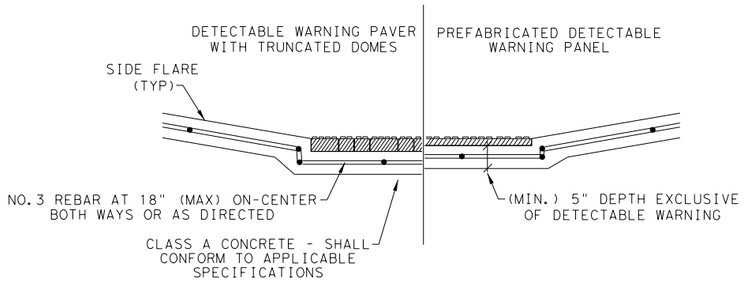
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

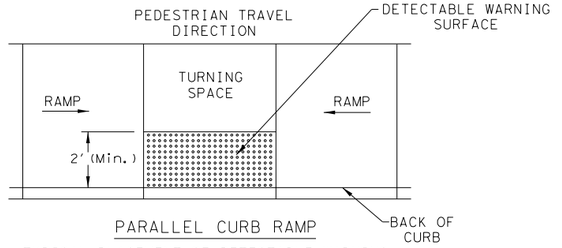
SIDEWALKS

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.



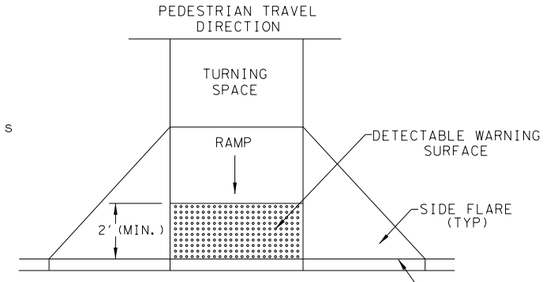
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



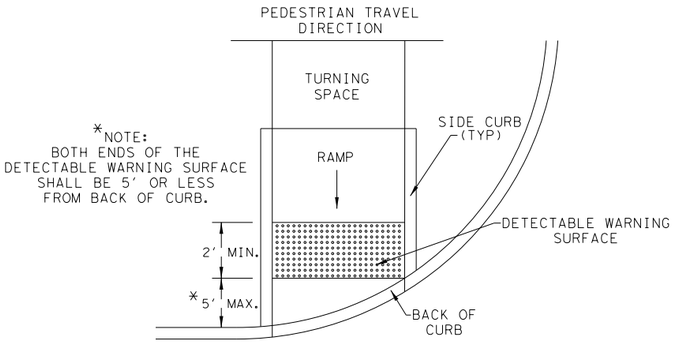
PARALLEL CURB RAMP

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

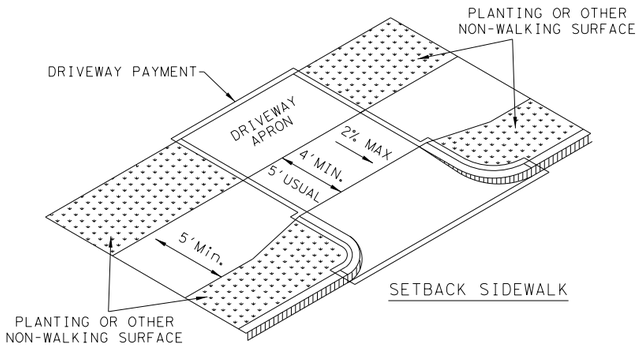
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

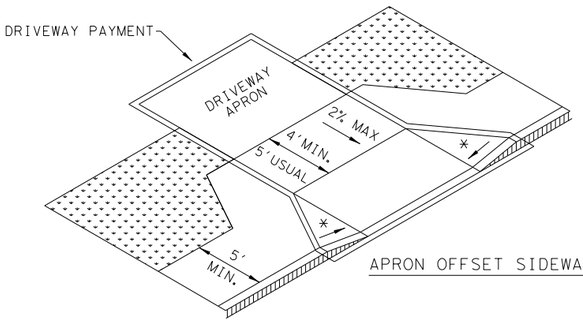
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY	
REVISIONS REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	0918	47	247,ETC.	CS	
	DIST	COUNTY		SHEET NO.	
	DAL	DALLAS		70	

DATE:
FILE:

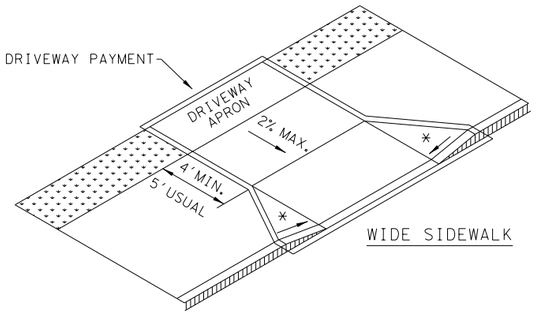
SIDEWALK TREATMENT AT DRIVEWAYS



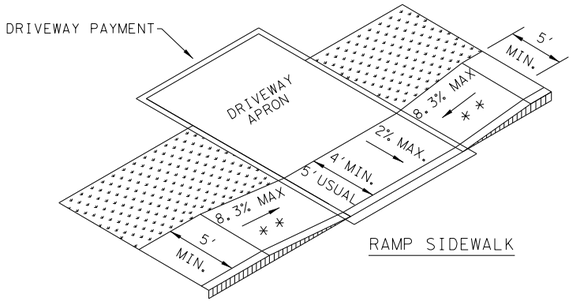
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

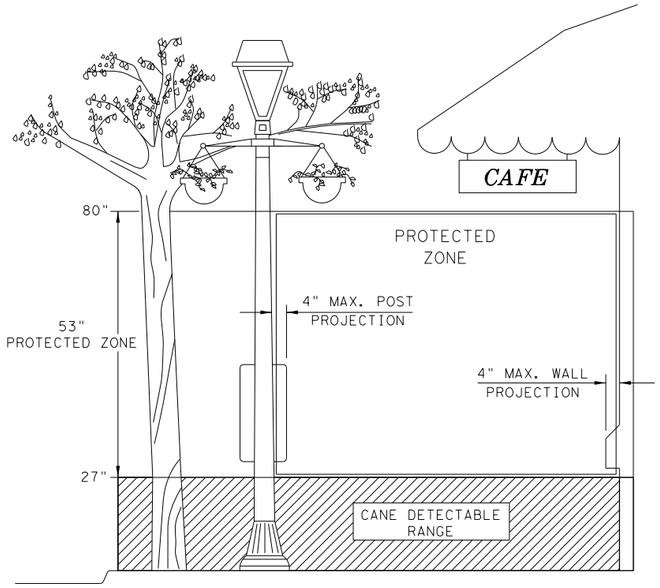


RAMP SIDEWALK

NOTES:

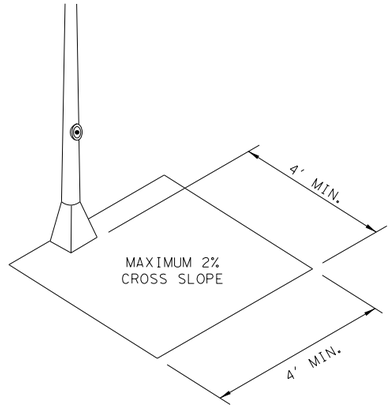
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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

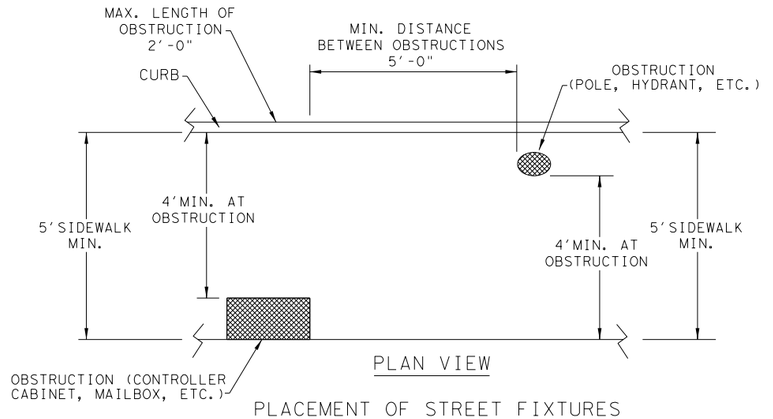


PROTECTED ZONE

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



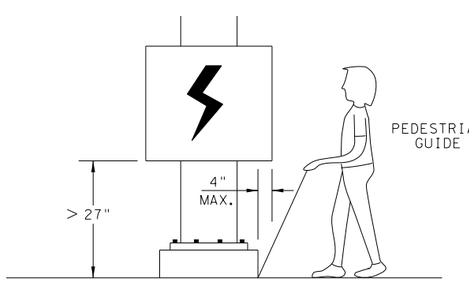
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



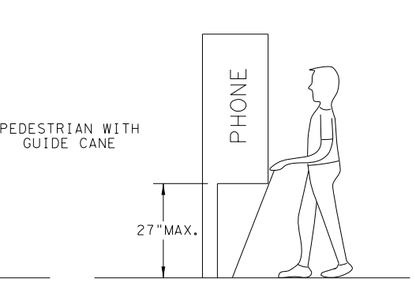
PLAN VIEW

PLACEMENT OF STREET FIXTURES

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



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



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

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

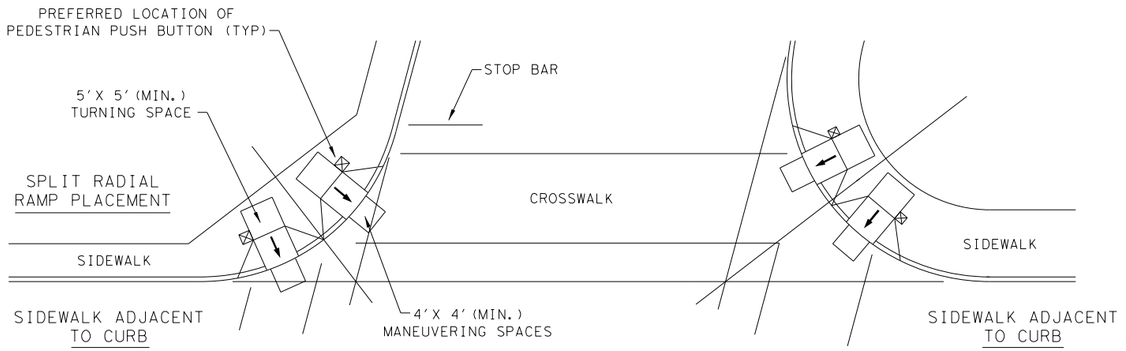
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		71

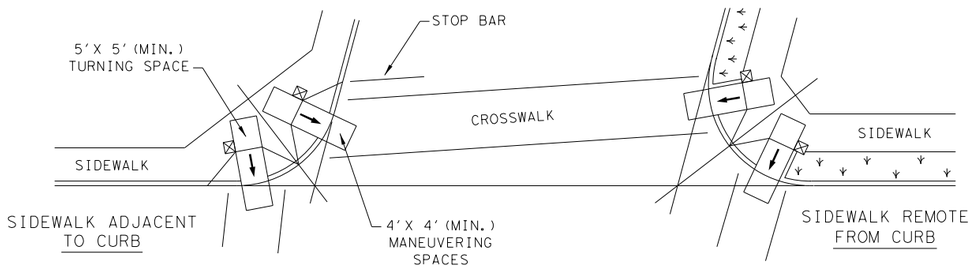
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

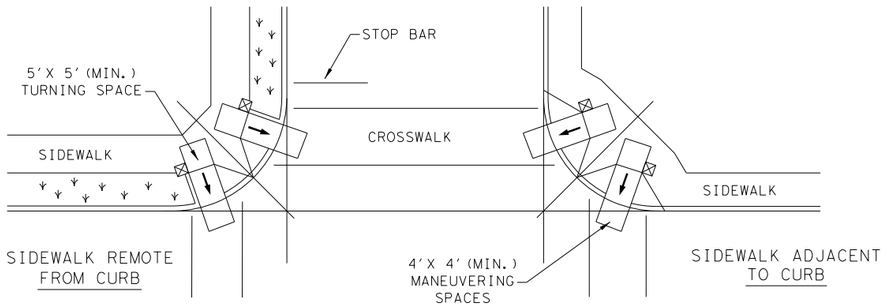
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



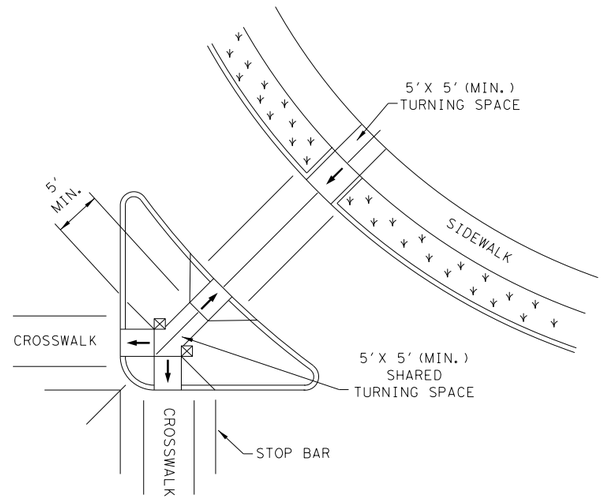
SKEWED INTERSECTION WITH "LARGE" RADIUS



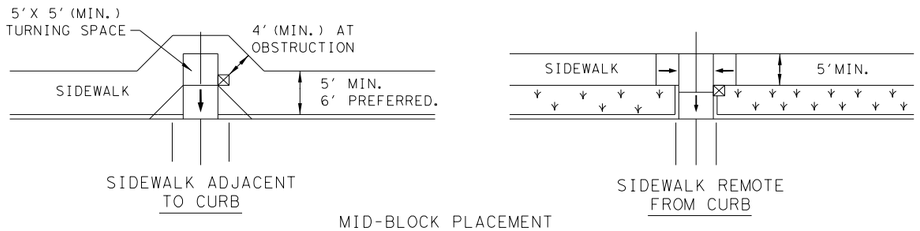
SKEWED INTERSECTION WITH "SMALL" RADIUS



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
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REVISIONS	0918	47	247,ETC.	CS
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		72

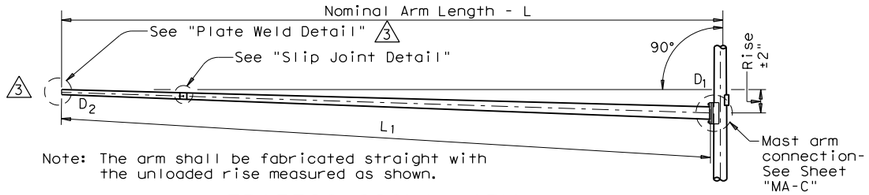
Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D_B	D_{19}	D_{24}	D_{30}	① thk	D_B	D_{19}	D_{24}	D_{30}	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	10.5	7.8	7.1	6.3	.179	11.5	8.5	7.7	6.8	.179	30-A
24	11.0	8.3	7.6	6.8	.179	12.0	9.0	8.2	7.3	.179	30-A
28	11.5	8.8	8.1	7.3	.179	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.

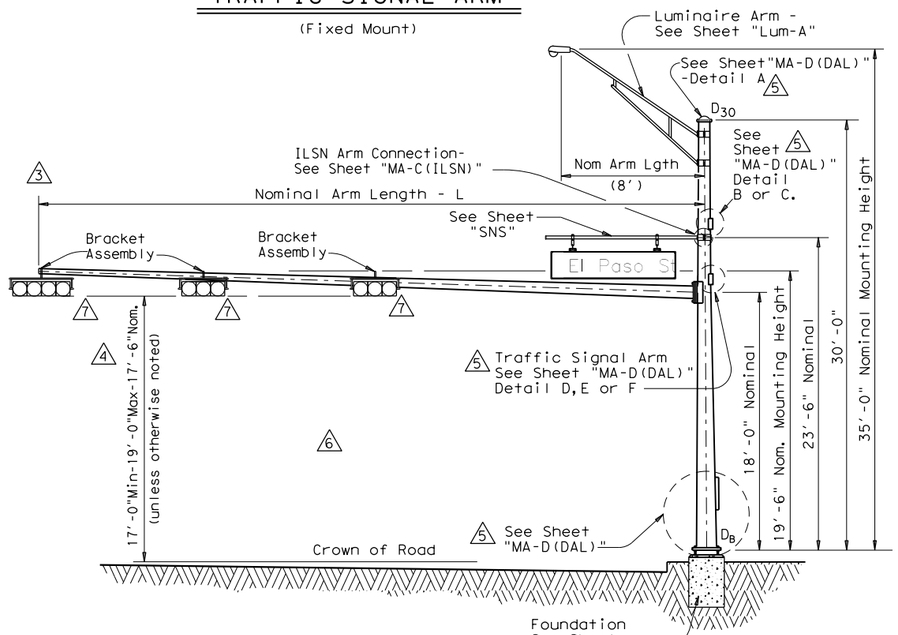
② D_2 may be increased by up to 1" for polygonal arms.



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	1	20S-80		20-80	
24	24L-80		24S-80		24-80	
28	28L-80		28S-80		28-80	
32	32L-80	1	32S-80		32-80	
36	36L-80	1	36S-80		36-80	
40	40L-80	4	40S-80		40-80	
44	44L-80	1	44S-80		44-80	2
48	48L-80	1	48S-80		48-80	1

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	1				
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80	1	32III-80	
36			36II-80		36III-80	1
40			2 40II-80	1	40III-80	3
44			44II-80		44III-80	3
48			48II-80		48III-80	2

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	9

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"	3
1 ¾"	3'-10"	10

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)

REVISIONS
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1-12

DN: MS	CK: JSY	DW: MMF	CK: JSY
CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		73

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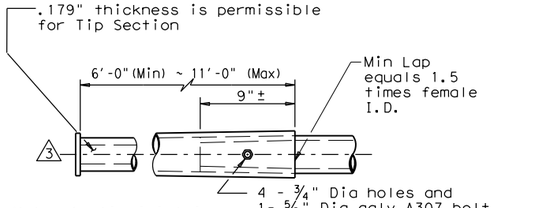


Note: A slip joint is permissible for arms 40' and greater in length. The slip joint shall be made in the shop, but may be match marked and shipped disassembled.

SLIP JOINT DETAIL

NOTE:

Pole manufacturer shall drill ½" hole in bottom of mast arm at end plate. (for hot-dip galvanizing)

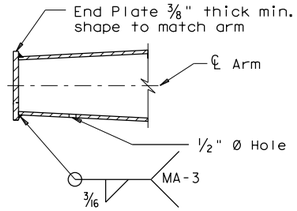


PLATE WELD DETAIL

3

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.

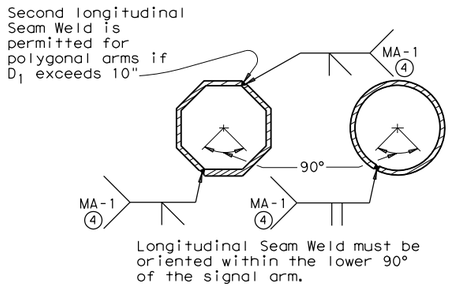
Poles are designed to support one 8'-0" luminaire arm, one 9'-0" internally lighted street name sign and one traffic signal arm with a length as tabulated. The specified luminaire load applied at the end of the luminaire arm equals 60 lbs vertical dead load plus the horizontal wind load on an effective 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)".

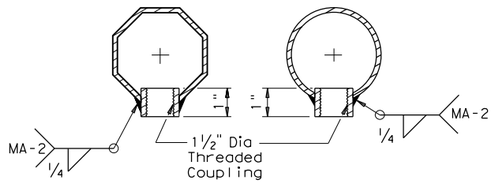
Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

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
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CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		74

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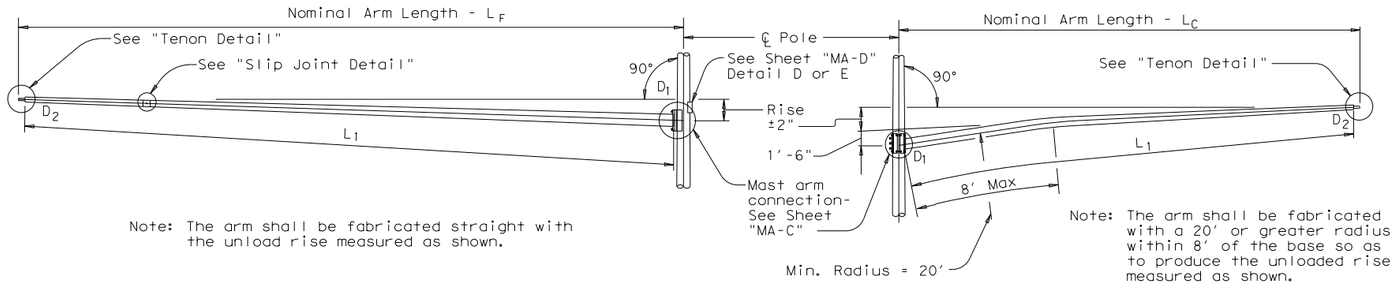
DATE:
FILE:

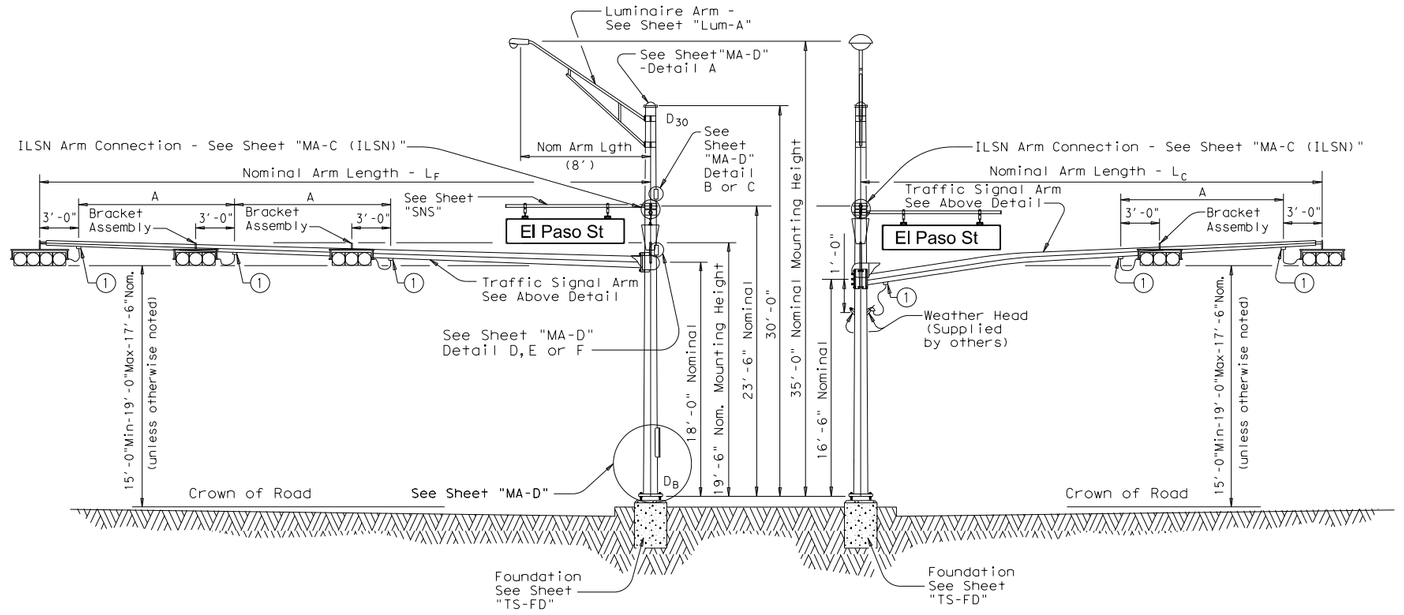


Note: The arm shall be fabricated straight with the unload rise measured as shown.

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

CLAMP-ON TRAFFIC SIGNAL ARM



ELEVATION

(Showing fixed mount arm)

STRUCTURE ASSEMBLY

(1) Threaded Coupling for CGB Connector
See "ARM COUPLING DETAILS" Sheet 2 of 3

ELEVATION

(Showing clamp mount arm)

TABLE OF DIMENSIONS "A"						
Arm Length	24'	28'	32'	36'	40'	44'
Arm Type II	10'	11'	12'	13'		
Arm Type III			10'	11'	12'	12'

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. 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 signs and two traffic signal arms with length combinations as tabulated. The specified luminaire load applied at the end of 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 applied 4'-6" from the centerline of the pole equals 85 lbs vertical dead load plus the horizontal wind load on an effective projected area of 11.5 sq ft. The specified signal load applied at the end of the traffic signal arm equals 180 lbs vertical dead load plus the horizontal wind load on an effective projected area of 32.4 sq ft (actual area times drag coefficient).

See Standard Sheet "MA-D" for pole details, "MA-C" for traffic signal arm connection details, "MA-C (ILSN)" for internally lighted street name sign arm connection details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details. See "MA-C" for material specifications.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

DUAL MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

DMA-80 (1)-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

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CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		75

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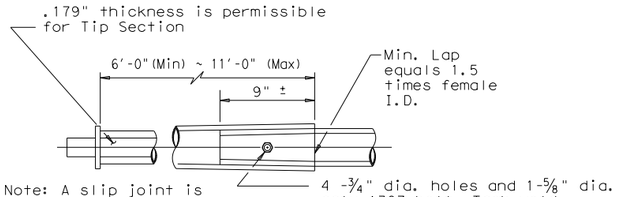
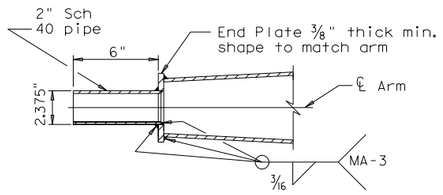
DATE:
FILE:



SLIP JOINT DETAIL



TENON 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

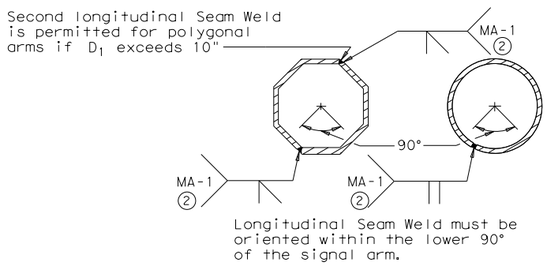
Mast Arms of SMA and DMA structures and clamp-on Arms of LMA structures of approximately 40 ft or longer are subject to harmonic vertical vibrations in light wind conditions due to the aeroelastic characteristics of a few of the myriads of possible combinations of the following: signal numbers, weights 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.

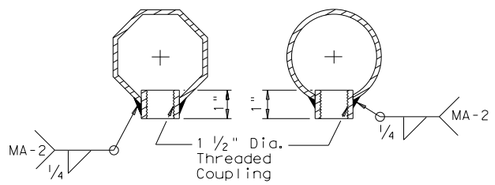
The traffic signal mast arms shall be visually inspected in 5 to 20 mph wind conditions after installation of signal heads and any attachments, including any required backpates. If vertical movements with a total excursion (maximum upward excursion to maximum downward excursion) of more than approximately 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.



ARM WELD DETAIL

(2) 60% Min. penetration
100% pemetration within 6" of circumferential base welds.



ARM COUPLING DETAILS

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

DUAL MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

DMA-80 (2)-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
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CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		76

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DATE:
FILE:

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	
		See note above plus: one (or two if ILSN attached) small hand hole, clamp-on simplex		See note above plus one small hand hole		See note above	
LF	Lc						
ft.	ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20	2020L-80		2020S-80		2020-80	
24	20	2420L-80		2420S-80		2420-80	
	24	2424L-80		2424S-80		2424-80	
28	20	2820L-80		2820S-80		2820-80	
	24	2824L-80		2824S-80		2824-80	
	28	2828L-80		2828S-80		2828-80	
32	20	3220L-80		3220S-80		3220-80	
	24	3224L-80		3224S-80		3224-80	
	28	3228L-80		3228S-80		3228-80	
	32	3232L-80		3232S-80		3232-80	
36	20	3620L-80		3620S-80		3620-80	
	24	3624L-80		3624S-80		3624-80	
	28	3628L-80		3628S-80		3628-80	
	32	3632L-80		3632S-80		3632-80	
	36	3636L-80		3636S-80		3636-80	
40	20	4020L-80		4020S-80		4020-80	
	24	4024L-80		4024S-80		4024-80	
	28	4028L-80		4028S-80		4028-80	
	32	4032L-80		4032S-80		4032-80	
	36	4036L-80		4036S-80		4036-80	
44	20	4420L-80		4420S-80		4420-80	
	24	4424L-80		4424S-80		4424-80	
	28	4428L-80		4428S-80		4428-80	
	32	4432L-80		4432S-80		4432-80	
	36	4436L-80	1	4436S-80		4436-80	

Traffic Signal Arms (Fixed Mount) (1 per pole) Ship each arm w/ the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	1 CGB connector		1 Bracket Assembly and 2 CGB Connectors		2 Bracket Assemblies and 3 CGB Connectors	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80		32III-80	
36			36II-80		36III-80	
40					40III-80	
44					44III-80	1

Traffic Signal Arms (Clamp-On Mount) (1 per pole) Ship each arm w/ the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal)		Type II Arm (2 Signals)		Type III Arm (3 Signals)	
	2 CGB connector and 1 clamp w/bolts and washers		1 Bracket Assembly, 3 CGB Connectors, and 1 clamp w/bolts and washers		2 Bracket Assemblies, 4 CGB Connectors, and 1 clamp w/bolts and washers	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24II-80			
28	28I-80		28II-80			
32			32II-80		32III-80	
36			36II-80	1	36III-80	

Luminaire Arms (1 per 30′ pole)

Nominal Arm Length	Quantity
8′ Arm	1

ILSN Arm (1 or 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 1/2"	3′-4"	
1 3/4"	3′-10"	
2"	4′-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.

ARMS		ROUND POLES					POLYGONAL POLES					Foundation Type
LF	Lc	D_B	D_{19}	D_{24}	D_{30}	③ thk	D_B	D_{19}	D_{24}	D_{30}	③ thk	
ft.	ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	20	11.5	8.8	8.1	7.3	.179	12.5	9.5	8.7	7.8	.179	30-A
24	20	12.0	9.3	8.6	7.8	.179	13.0	10.0	9.2	8.3	.179	30-A
	24	12.0	9.3	8.6	7.8	.179	13.0	10.0	9.2	8.3	.239	30-A
28	20	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
	24	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
	28	13.0	10.3	9.6	8.8	.179	12.5	9.5	8.7	7.8	.239	30-A
32	20	13.0	10.3	9.6	8.8	.179	12.5	9.5	8.7	7.8	.239	30-A
	24	13.0	10.3	9.6	8.8	.179	12.5	9.5	8.7	7.8	.239	30-A
	28	12.0	9.3	8.6	7.8	.239	13.0	10.0	9.2	8.3	.239	30-A
	32	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
36	20	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
	24	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
	28	12.5	9.8	9.1	8.3	.239	13.5	10.5	9.7	8.8	.239	36-A
	32	12.5	9.8	9.1	8.3	.239	13.5	10.5	9.7	8.8	.239	36-A
	36	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
40	20	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
	24	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
	28	13.0	10.3	9.6	8.8	.239	14.0	11.0	10.2	9.3	.239	36-A
	32	13.0	10.3	9.6	8.8	.239	15.0	12.0	11.2	10.3	.239	36-A
	36	13.5	10.8	10.1	9.3	.239	15.0	12.0	11.2	10.3	.239	36-A
44	20	13.5	10.8	10.1	9.3	.239	15.0	12.0	11.2	10.3	.239	36-A
	24	13.5	10.8	10.1	9.3	.239	15.0	12.0	11.2	10.3	.239	36-A
	28	13.5	10.8	10.1	9.3	.239	15.0	12.0	11.2	10.3	.239	36-A
	32	14.0	11.3	10.6	9.8	.239	15.5	12.5	11.7	10.8	.239	36-B
	36	14.0	11.3	10.6	9.8	.239	15.5	12.5	11.7	10.8	.239	36-B

Arm L_F or L_C	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	③ thk	Rise	L_1	D_1	④ D_2	③ 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"

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_F = Fixed Arm Length
L_C = Clamp-on Arm Length (36′ Max)

③ Thickness shown are minimums, thicker materials may be used.

④ D_2 may be increased by up to 1.0" for polygonal arms.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

DUAL MAST ARM ASSEMBLY

(80 MPH WIND ZONE)

DMA-80 (3)-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
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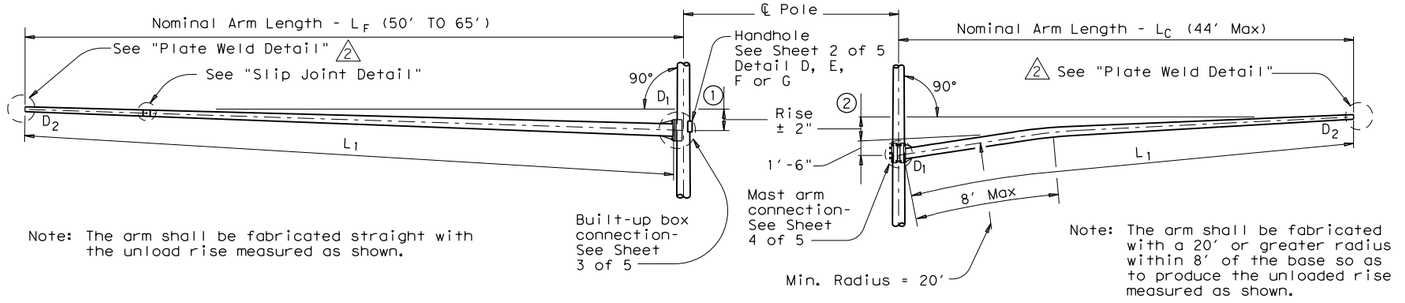
CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		77

124C



Note: The arm shall be fabricated straight with the unload rise measured as shown.

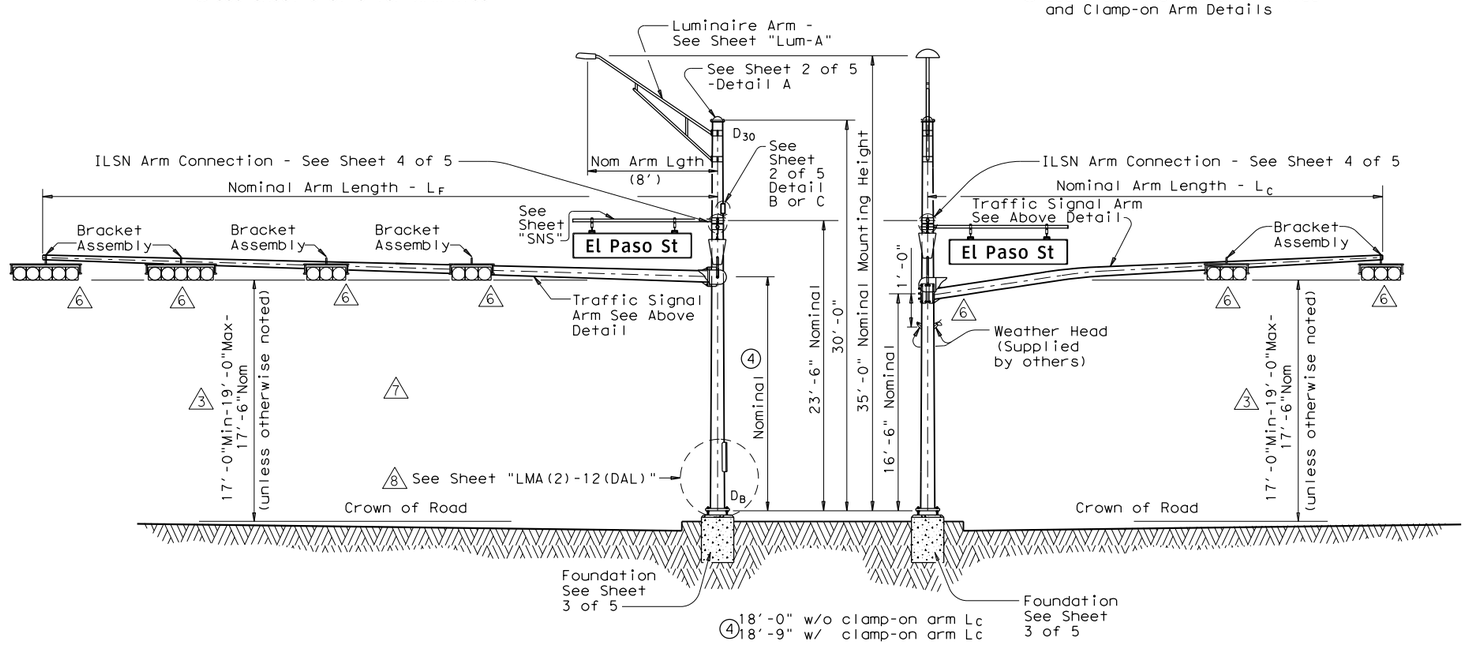
Note: The arm shall be fabricated with a 20' or greater radius within 8' of the base so as to produce the unloaded rise measured as shown.

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)

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 5 6
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.

MODIFICATIONS:

1 REPLACED CGB CONNECTOR WITH BRACKET ASSEMBLY. (2/12)

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)

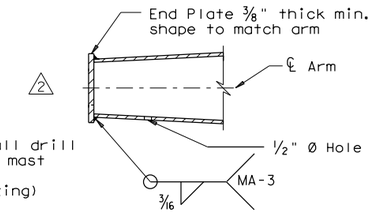
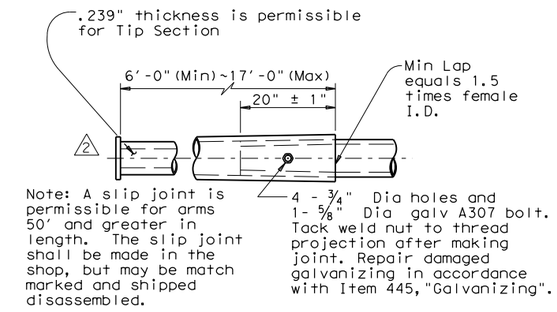


PLATE WELD DETAIL



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)

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)

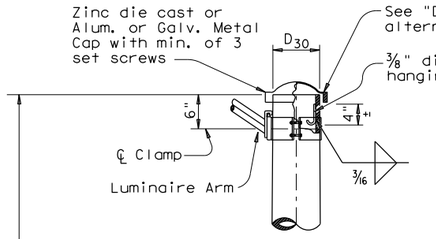
Sheet 1 of 5

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

REVISIONS
4-20-01
1-12

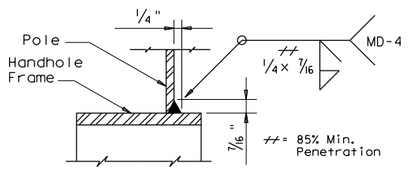
CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		78

131A

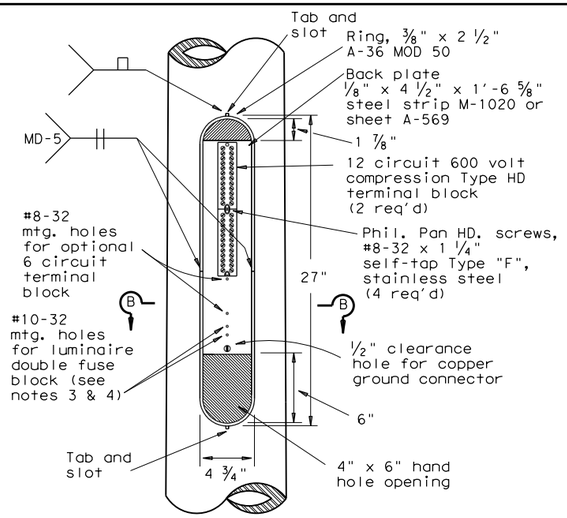


DETAIL A

(for pole with luminaire)



DETAIL H

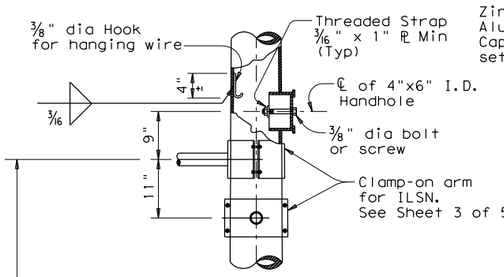


ACCESS COMPARTMENT

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

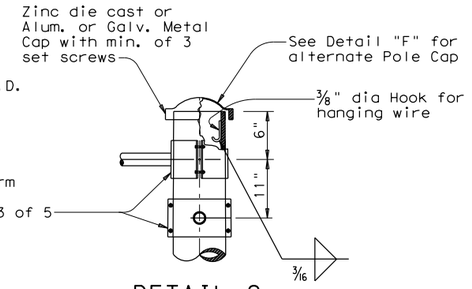
(7) ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F, or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

(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.

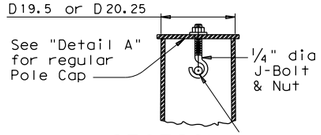


DETAIL B

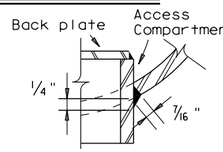
(If ILSN applied)



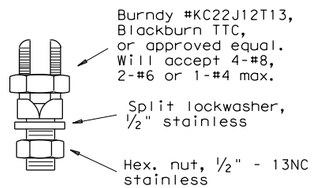
DETAIL C



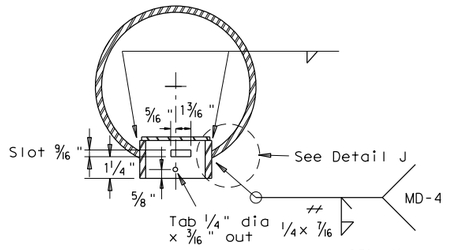
SECTION Y-Y



DETAIL J

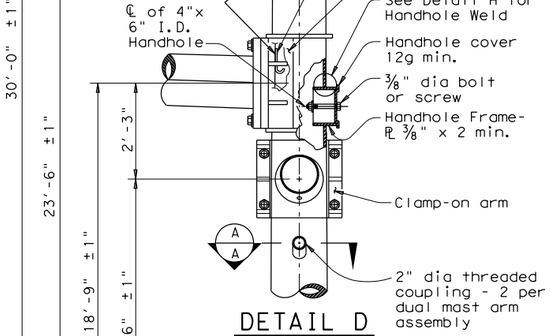


COPPER GROUND CONNECTOR



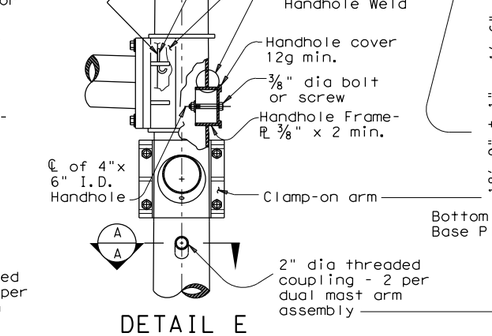
SECTION B-B // = 85% Min. Penetration

Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.



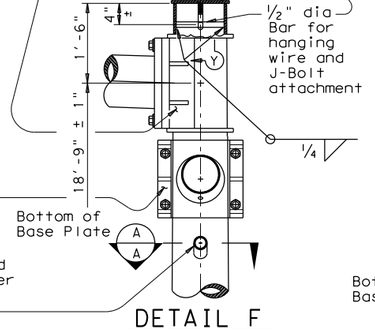
DETAIL D

(for 30' pole with luminaire and ILSN sign)



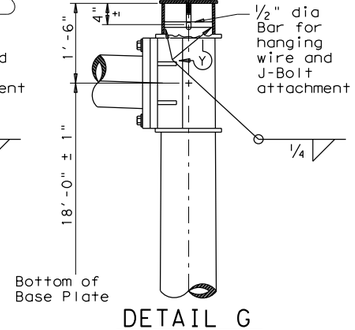
DETAIL E

(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)

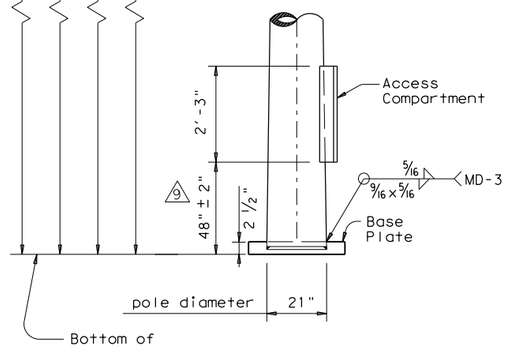


DETAIL G

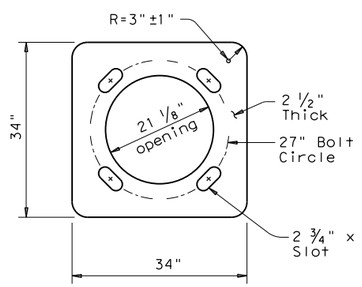
(for 19.5' pole with no ILSN sign and no luminaire, single mast arm)

ACCESS COMPARTMENT NOTES:

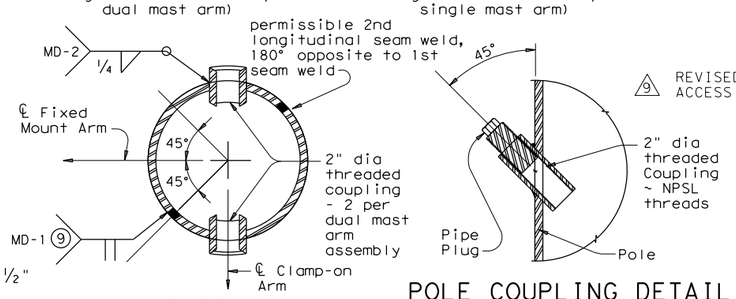
1. The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 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)

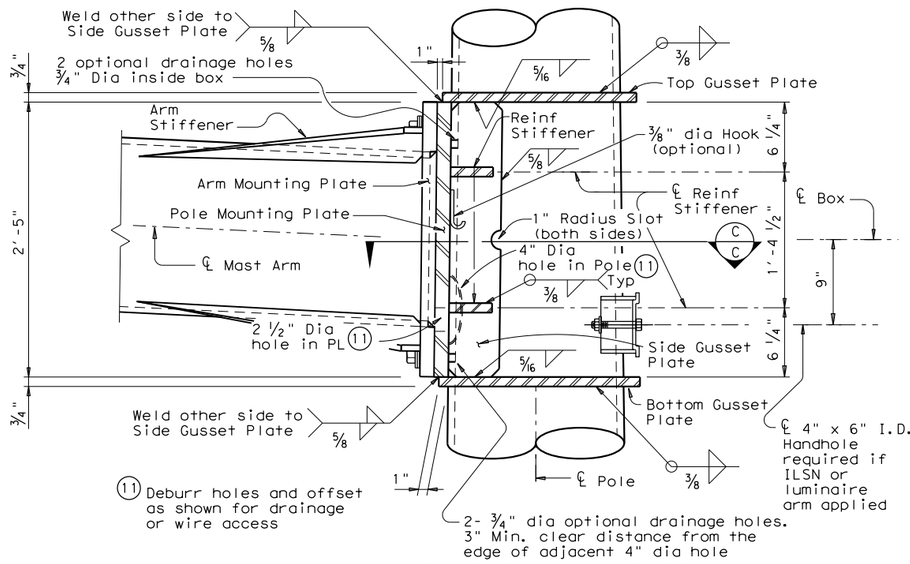
Sheet 2 of 5 LMA(2)-12(DAL)

DN: JSY	CK: ARC	DW: TGG	CK: JSY

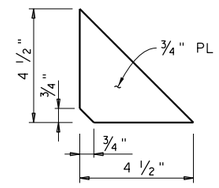
REVISIONS
4-20-01
1-12

CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		79

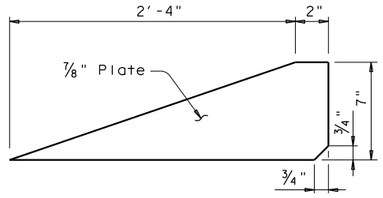
131B



BUILT-UP BOX CONNECTION

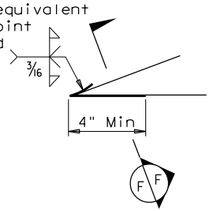


REINFORCING STIFFENER



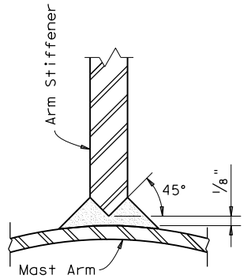
ARM STIFFENER
(Cut to match arm inclination and taper)

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

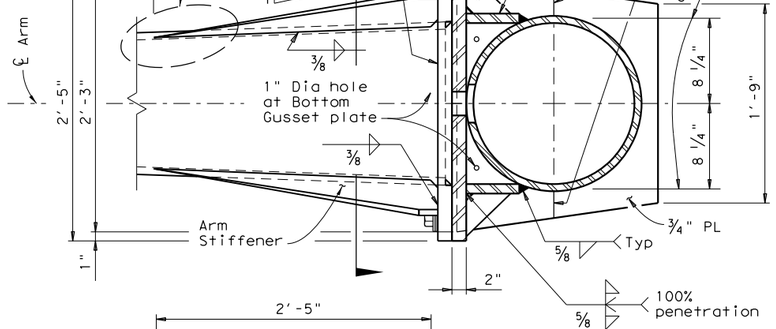
Fixed Mount Arm L_F	ROUND POLES (13)					Foundation Type
	D_B	$D_{19.5}$ or $D_{20.25}$	D_{24}	D_{30}	(12) thk	
ft.	in.	in.	in.	in.	in.	
50', 55' 60', 65'	21.0	18.2	17.6	16.8	.3125	48-A

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"

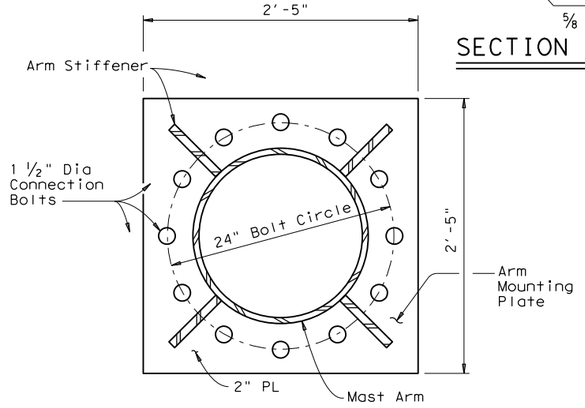
D_B = Pole Base O.D.
$D_{19.5}$ = Pole Top O.D. with no Luminaire and no ILSN (single mast arm)
$D_{20.25}$ = Pole Top O.D. with no Luminaire and no ILSN (dual mast arm)
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire
D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = 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.



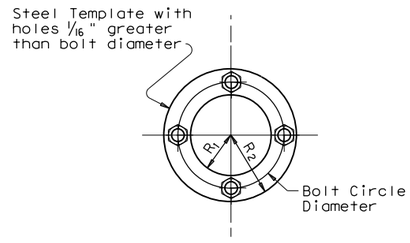
SECTION C-C



SECTION D-D

NUT ANCHOR
(TYPE 2)

ANCHOR BOLT ASSEMBLY



TEMPLATE DETAIL

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.

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.

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

REVISIONS	DN: JSY	CK: ARC	DW: TGG	CK: JSY
4-20-01 1-12	CONT	SECT	JOB	HIGHWAY
	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		80

131C

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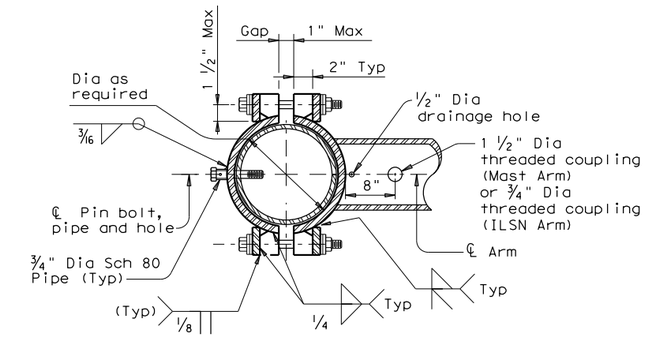
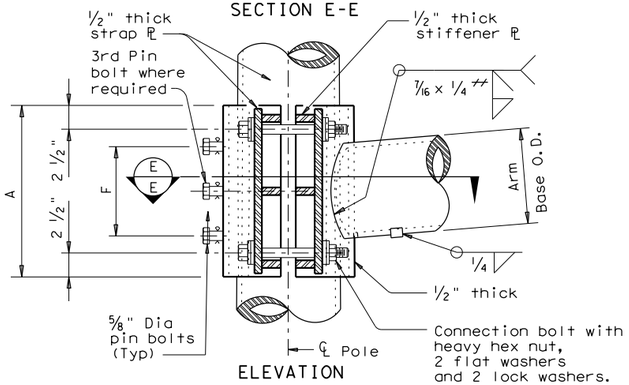


SECTION E-E



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"

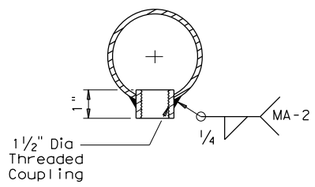
D1 = Arm Base O.D.
D2 = Arm End O.D.
L1 = Shaft Length
Lc = Clamp-on Arm Length

(12) Thickness shown is minimum, thicker materials may be used.

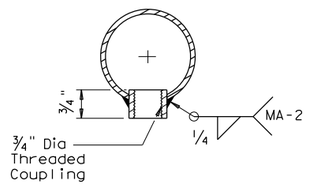
CLAMP-ON ARM CONNECTION

ILSN Arm Size		A	F	4 Conn. Bolts	⅝" 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	⅝" 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



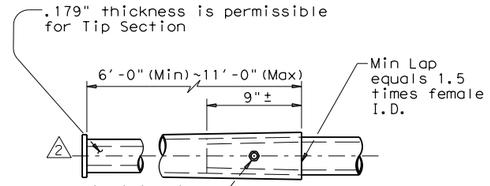
ILSN ARM COUPLING DETAIL

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.

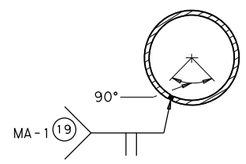
Pin bolts are required to prevent rotation of clamp-on arms under design wind forces. Pin bolts shall be ASTM A325 with threads excluded from the shear plane. Pin bolt and ¾" diameter pipe shall have 3/16" diameter holes for a ⅛" diameter galvanized cotter pin. Back clamp plate shall be furnished with 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.



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.

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	247,ETC.	CS

DIST	COUNTY	SHEET NO.
DAL	DALLAS	81

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.	30' Poles with Luminaire: Designation	Quantity	24' Poles with ILSN: Designation	Quantity	19.50'/20.25' Poles: Designation	Quantity
50	50L	1	50S		50	
55	55L	1	55S		55	
60	60L	1	60S		60	
65	65L		65S		65	

Dual Mast Arm

Lf ft.	Lc ft.	30' Poles with Luminaire: Designation	Quantity	24' Poles with ILSN: Designation	Quantity	19.50'/20.25' Poles: Designation	Quantity
50	20	5020L		5020S		5020	
	24	5024L		5024S		5024	
	28	5028L		5028S		5028	
	32	5032L		5032S		5032	
	36	5036L		5036S		5036	
	40	5040L		5040S		5040	
	44	5044L		5044S		5044	
55	20	5520L		5520S		5520	
	24	5524L		5524S		5524	
	28	5528L		5528S		5528	
	32	5532L		5532S		5532	
	36	5536L		5536S		5536	
	40	5540L		5540S		5540	
	44	5544L		5544S		5544	
60	20	6020L		6020S		6020	
	24	6024L		6024S		6024	
	28	6028L		6028S		6028	
	32	6032L		6032S		6032	
	36	6036L		6036S		6036	
	40	6040L		6040S		6040	
	44	6044L		6044S		6044	
65	20	6520L		6520S		6520	
	24	6524L		6524S		6524	
	28	6528L		6528S		6528	
	32	6532L		6532S		6532	
	36	6536L		6536S		6536	
	40	6540L		6540S		6540	
	44	6544L		6544S		6544	

Foundation Summary Table **

Location Ident.	Avg. N Blow/ft.	No. Each	Drill Shaft *** Length (feet) 48-A
BLACKBURN AT TURTLE CREEK	10	2	44
LEMMON AT MOCKINGBIRD	10	1	22
Total Drill Shaft Length			66

Notes

** Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

*** Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

Shipping Parts List

Traffic Signal Arms (Fixed Mount) (1 per pole)
Ship each arm with listed equipment attached

Nominal Arm Length ft.	Type IV Arm (4 Signals) △1 4 Bracket Assemblies: Designation	Quantity
50	50IV	1
55	55IV	1
60	60IV	1
65	65IV	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	3

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 △1 ft.	Type I Arm (1 Signal): 1 Bracket Assembly and 1clamp w/bolts and washers: Designation	Quantity	Type II Arm (2 Signals): 2 Bracket Assemblies and 1clamp w/bolts and washers: Designation	Quantity	Type III Arm (3 Signals): 3 Bracket Assemblies and 1clamp w/bolts and washers: 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 △1 ft.	Type I Arm (1 Signal): 1 Bracket Assembly and 1clamp w/bolts and washers: Designation	Quantity	Type II Arm (2 Signals): 2 Bracket Assemblies and 1clamp w/bolts and washers: Designation	Quantity	Type III Arm (3 Signals): 3 Bracket Assemblies and 1clamp w/bolts and washers: 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"	3

Each anchor bolt assembly consists of the following: Top and bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers and 4 nut anchor devices (type 2) per Standard Drawing "TS-FD". Templates may be removed for shipment.

Abbreviations
Lf= Fixed Arm Length
Lc= Clamp-on Arm Length (44' Max.)

△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	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		82

131E

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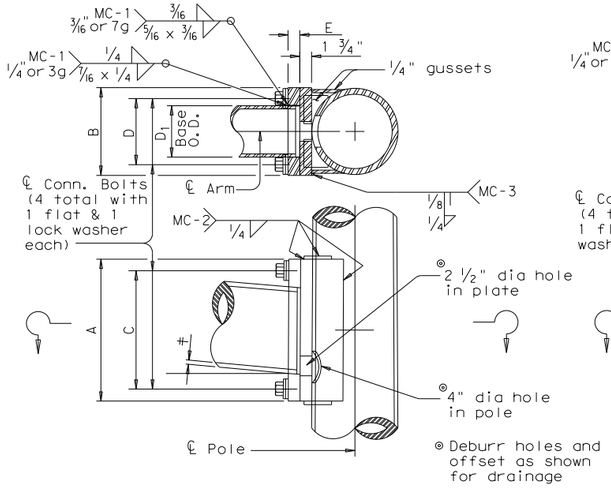
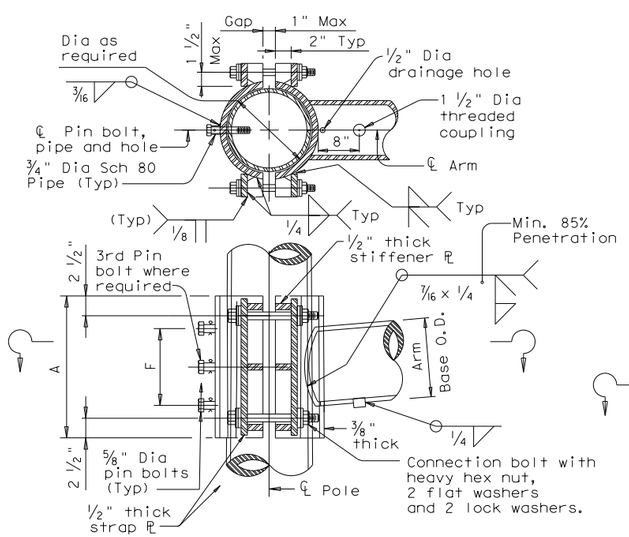
DATE:
FILE:

ARM SIZE D_1 in.	ARM SIZE ŧ 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



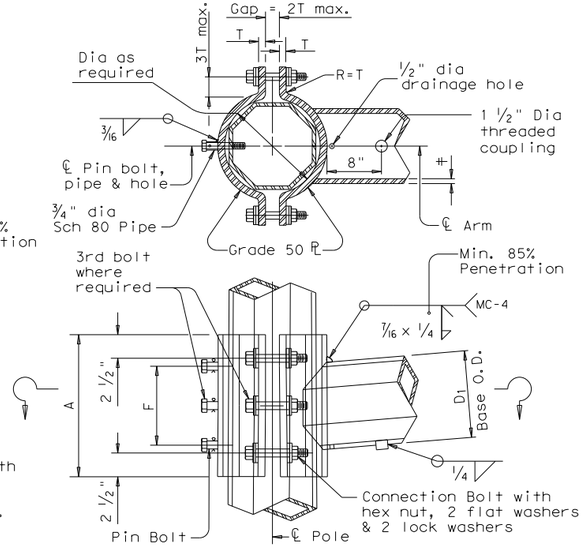
FIXED MOUNT DETAIL 1

ARM SIZE D_1 in.	ARM SIZE ŧ 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 1/4	3	5/8
9.5	.239	18	12	4	1 1/4	3	5/8
10.0	.239	18	12	4	1 1/4	3	5/8



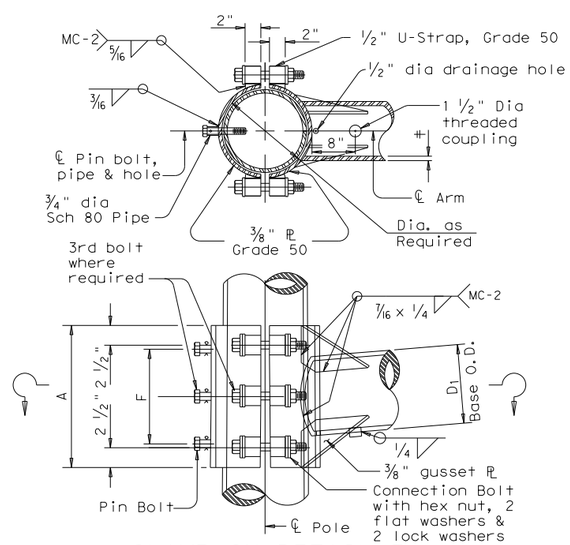
CLAMP-ON DETAIL 1

ARM SIZE D_1 in.	ARM SIZE ŧ 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

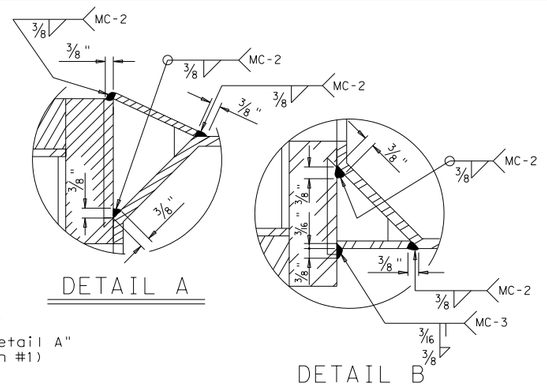


CLAMP-ON DETAIL 2

ARM SIZE D_1 in.	ARM SIZE ŧ 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

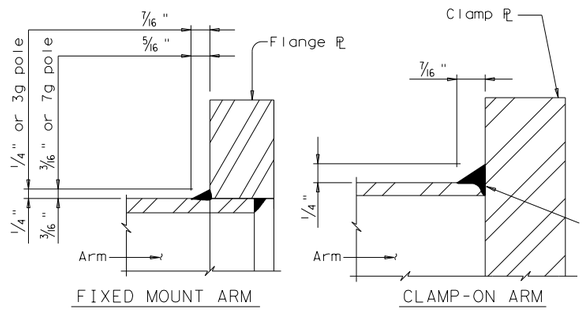


CLAMP-ON DETAIL 3



DETAIL A

DETAIL B



FIXED MOUNT ARM

CLAMP-ON ARM

ARM BASE WELD DETAILS

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

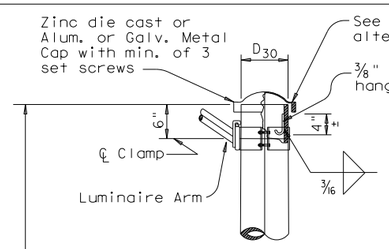
MA-C-12

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
5-09
1-12

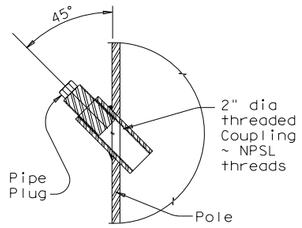
CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		83

126A

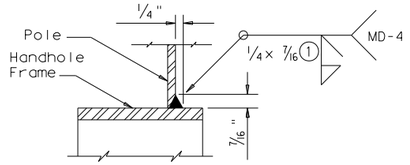


DETAIL A

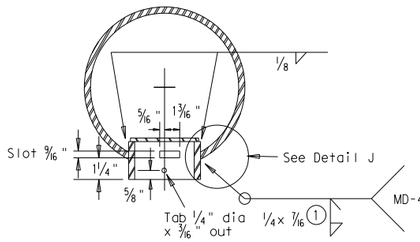
(for pole with luminaire)



POLE COUPLING DETAIL

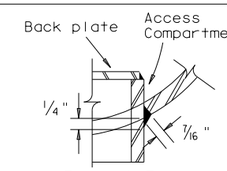


DETAIL G

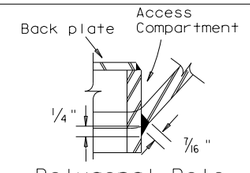


SECTION X-X

Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.

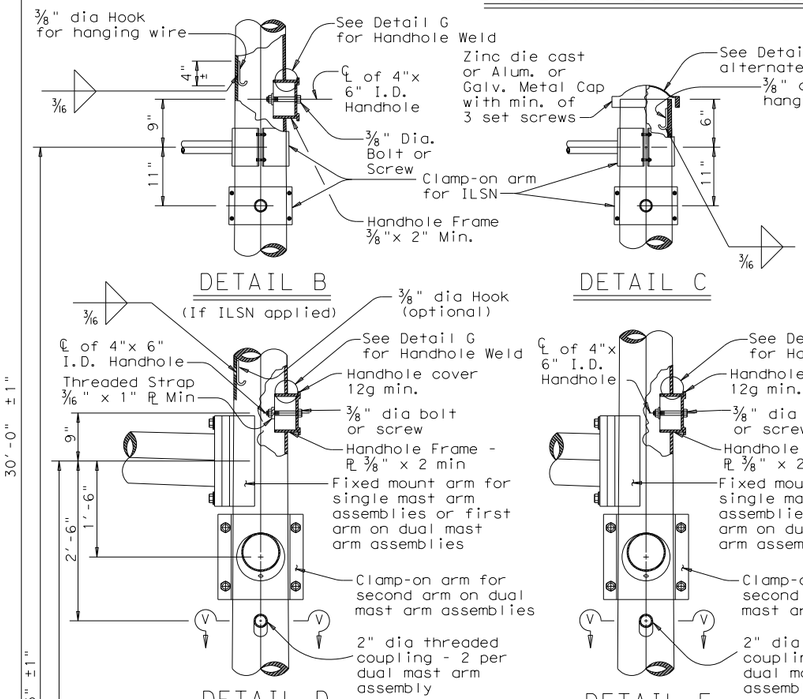


Round Pole



Polygonal Pole

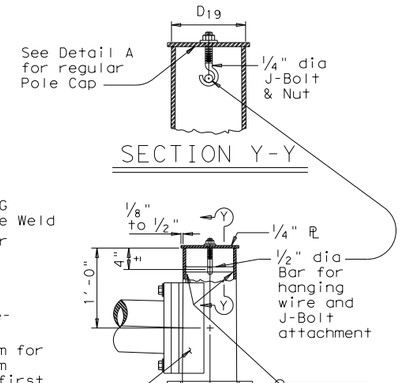
DETAIL J



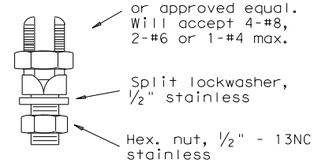
DETAIL B

(If ILSN applied)

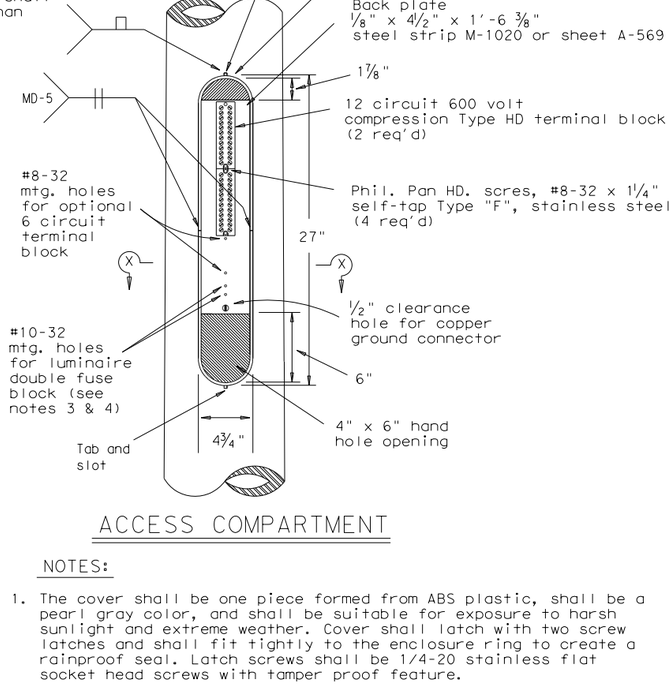
DETAIL C



SECTION Y-Y



COPPER GROUND CONNECTOR



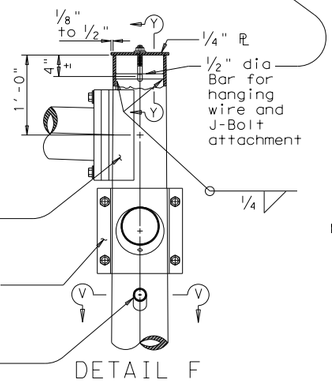
ACCESS COMPARTMENT

DETAIL D

(for 30' pole with luminaire and ILSN sign)

DETAIL E

(for 24' pole with ILSN sign and no luminaire)

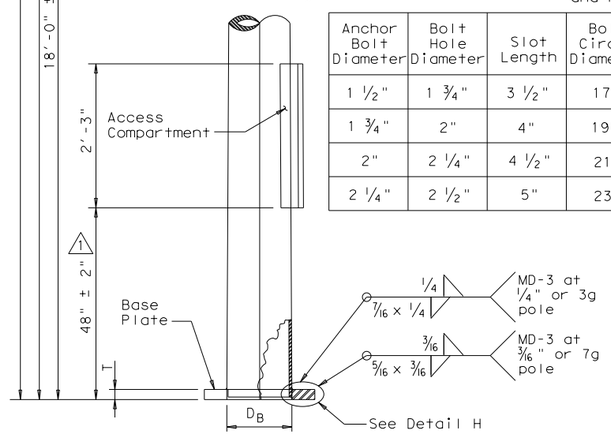


DETAIL F

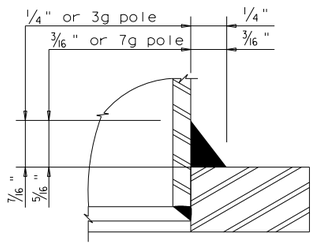
(for 19' pole with no ILSN sign and no luminaire)

SECTION V-V

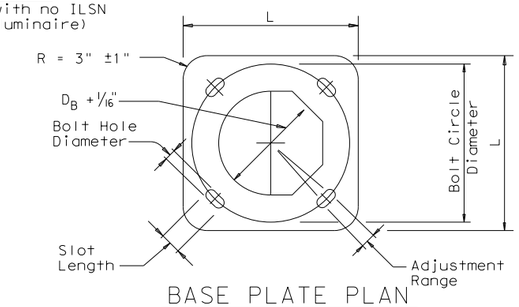
Anchor Bolt Diameter	Bolt Hole Diameter	Slot Length	Bolt Circle Diameter	Base ℞ Dim. L x T	Adjust. Range
1 1/2"	1 3/4"	3 1/2"	17"	18" x 1 1/2"	13.4°
1 3/4"	2"	4"	19"	20" x 1 3/4"	13.5°
2"	2 1/4"	4 1/2"	21"	22" x 2"	13.6°
2 1/4"	2 1/2"	5"	23"	24" x 2 1/4"	13.7°



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

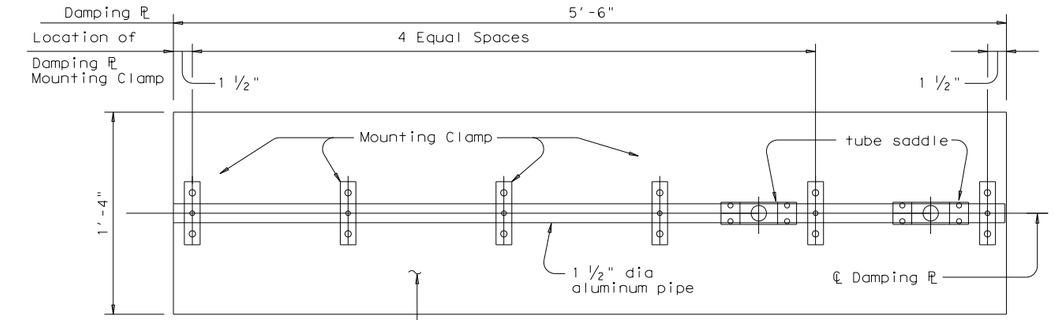
MA-D-12(DAL)

DN: MS	CK: JSY	DW: FDN	CK: CAL

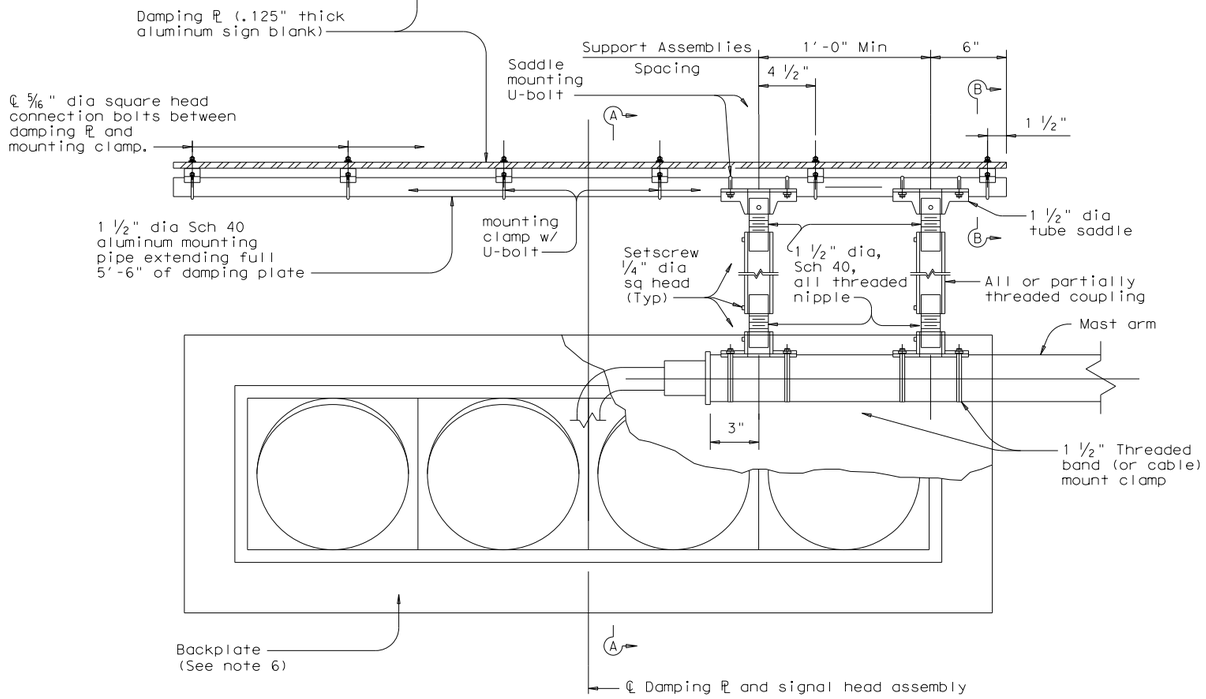
REVISIONS

8-99
1-12

CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		84



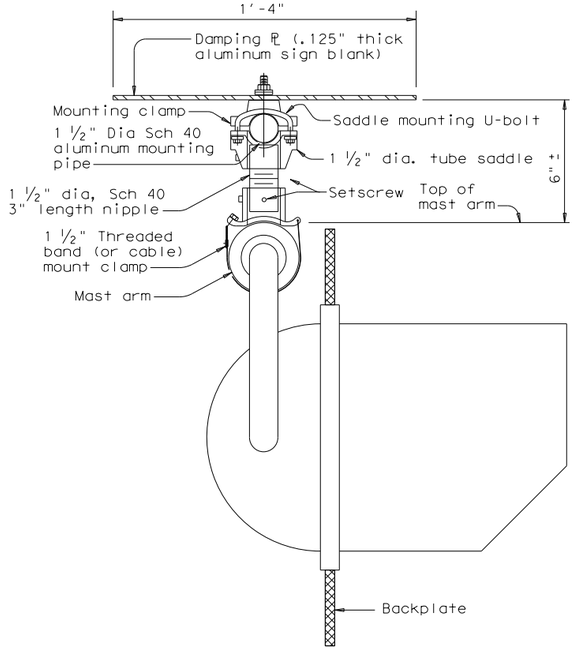
PLAN



ELEVATION

DAMPING PLATE MOUNTING DETAILS

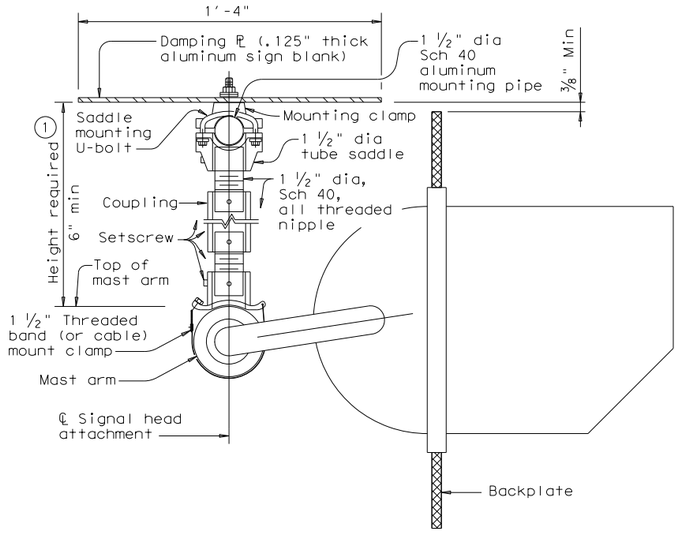
(Showing alternate placement of signal head)



SECTION A-A

(Showing standard placement of signal head)

(Mounting clamp U-bolt is not shown for clarity)

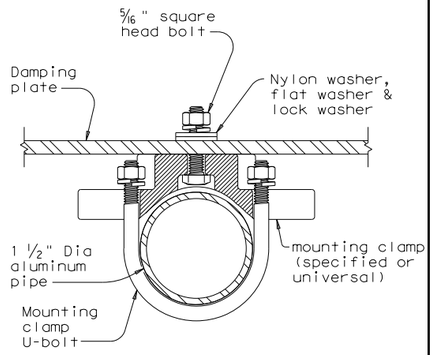


SECTION A-A

(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

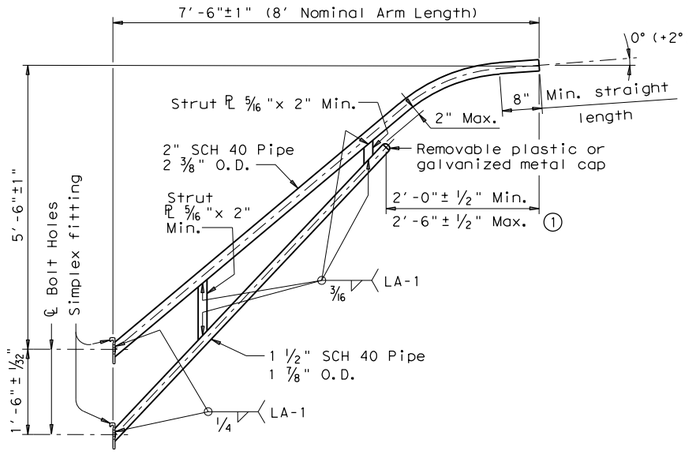
MAST ARM DAMPING PLATE DETAILS

MA-DPD-20

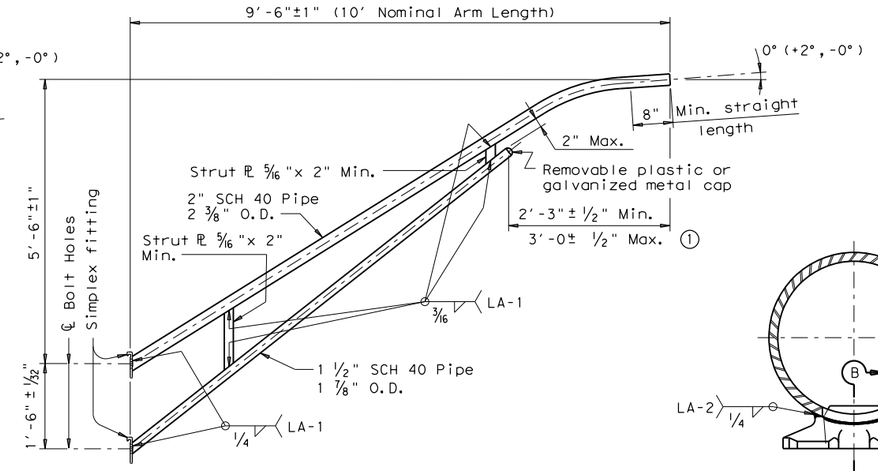
FILE: ma-dpd-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
6-20	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		85

DATE: DATE TIME
FILE: DOCUMENT NAME

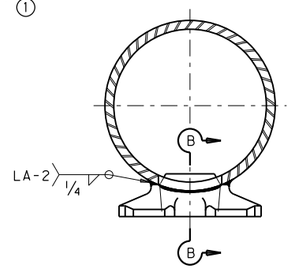
DATE:
FILE:



8-FOOT LUMINAIRE ARM



10-FOOT LUMINAIRE ARM



DIRECT ATTACHMENT DETAIL

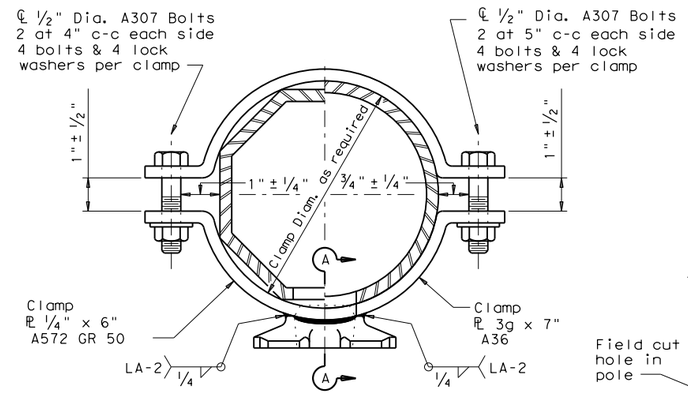
MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr.65-35 or A148 Gr.80-50, A576 Gr.1021 (3), or A36 (Arm only)
Arm Pipes	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50 (4), or A1011 HSLAS-F Gr.50 (4)
Arm Strut Plates (2)	ASTM A36, A572 Gr.50 (4), or A588
Misc.	ASTM designations as noted

(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.

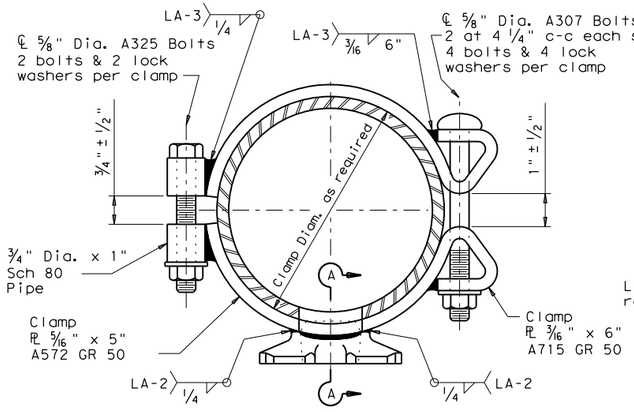
(3) A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

(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.



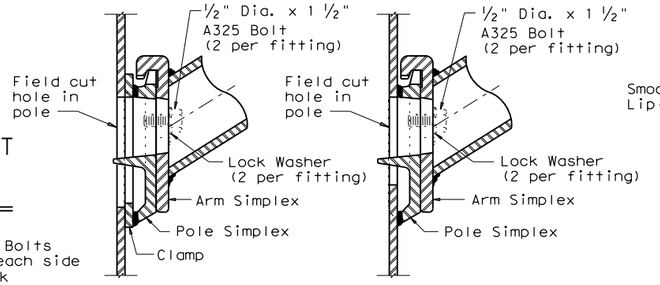
CLAMP ATTACHMENT DETAIL NO. 1 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 2 (HALF SECTION)



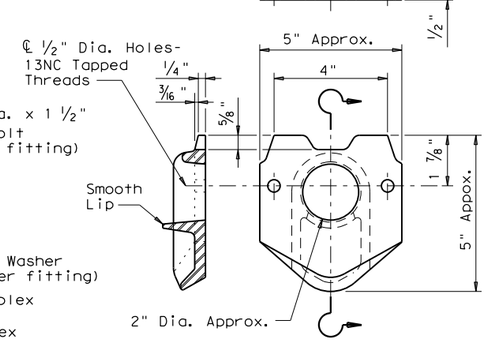
CLAMP ATTACHMENT DETAIL NO. 3 (HALF SECTION)

CLAMP ATTACHMENT DETAIL NO. 4 (HALF SECTION)

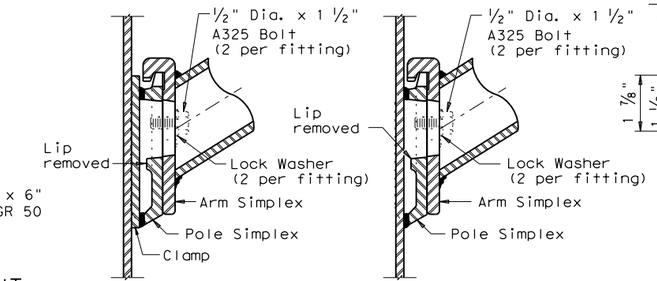


UPPER SIMPLEX FITTING

UPPER SIMPLEX FITTING



POLE SIMPLEX DETAIL

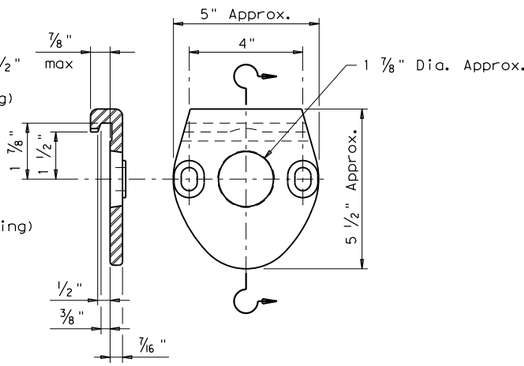


LOWER SIMPLEX FITTING

LOWER SIMPLEX FITTING

SECTON A-A

SECTON B-B



ARM SIMPLEX DETAIL

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.

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	247,ETC.	CS

DIST	COUNTY	SHEET NO.
DAL	DALLAS	86

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DATE:
FILE:

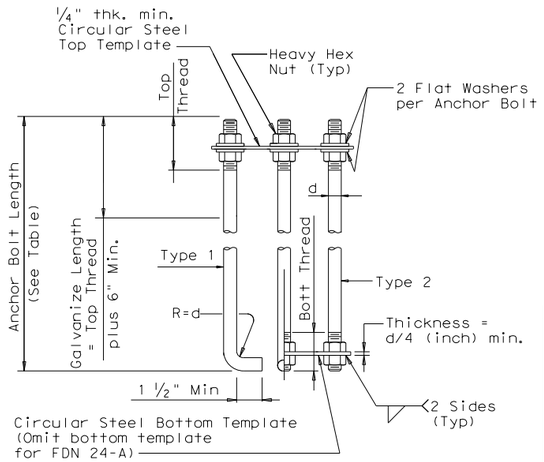
FOUNDATION DESIGN TABLE

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)

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'

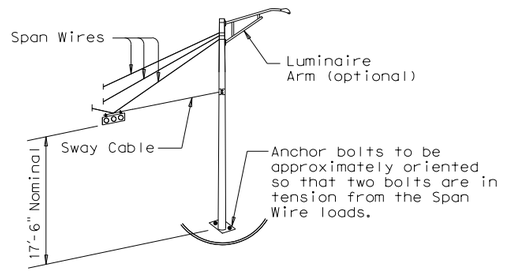
EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



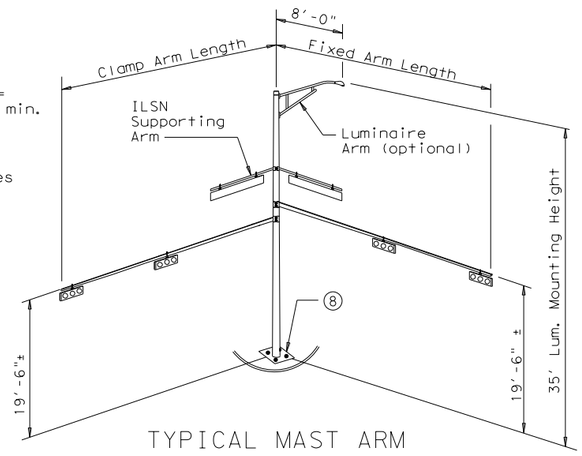
HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY

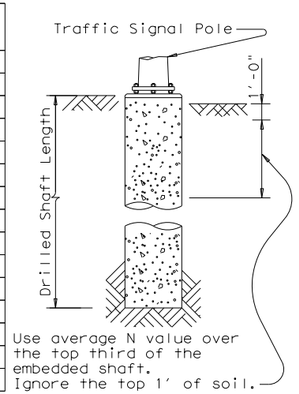
⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



TYPICAL STRAIN POLE ASSEMBLY



TYPICAL MAST ARM ASSEMBLY



NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

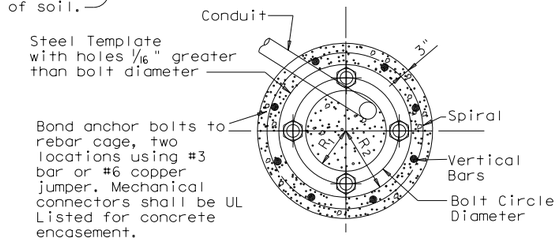
⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

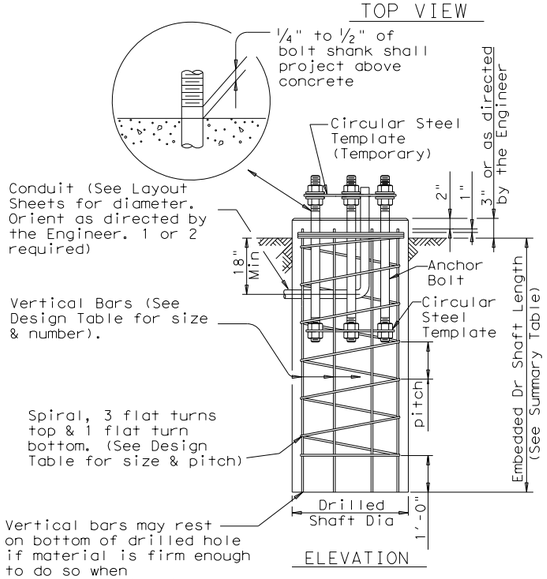
ANCHOR BOLT & TEMPLATE SIZES

BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
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.



TOP VIEW



ELEVATION

FOUNDATION DETAILS

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
HARRY HINES BLVD AT MARKET CENTER BLVD	10	24-A	4	24				
	10	30-A	1		11			
	10	36-A	3			39		
BLACKBURN ST AT TURTLE CREEK BLVD	10	24-A	3	18				
	10	36-A	2			26		
LEMMON AVE AT MAHANNA ST	10	24-A	3	18				
	10	30-A	2		22			
	10	36-A	2			26		
GRIFFIN ST E AT ST. PAUL ST	10	24-A	1	11				
	10	36-B	1				33	
LEMMON AVE AT MOCKINGBIRD LN	10	24-A	4	24				
	10	36-A	3			39		
TOTAL DRILLED SHAFT LENGTHS				95	33	130	33	

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".

4/1/2021
STATE OF TEXAS
NATHAN C. NEW
101204
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

REVISIONS	DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB
5-96 11-99 1-12	CONT	SECT	JOB	HIGHWAY
	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		87

DATE: DATE TIME
FILE: DOCUMENT NAME

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.

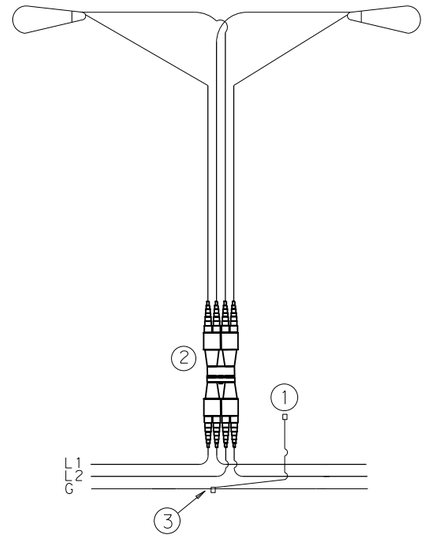
12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.

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.

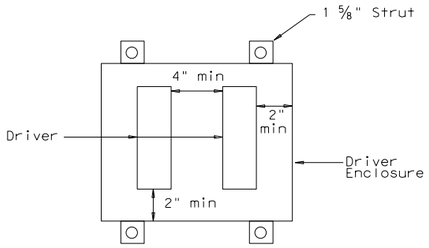
   c. Install drivers with at least 2 inches of space from enclosure walls.

   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

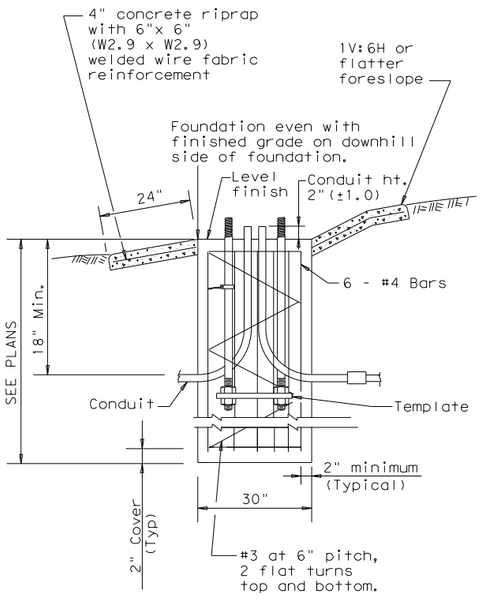
Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS

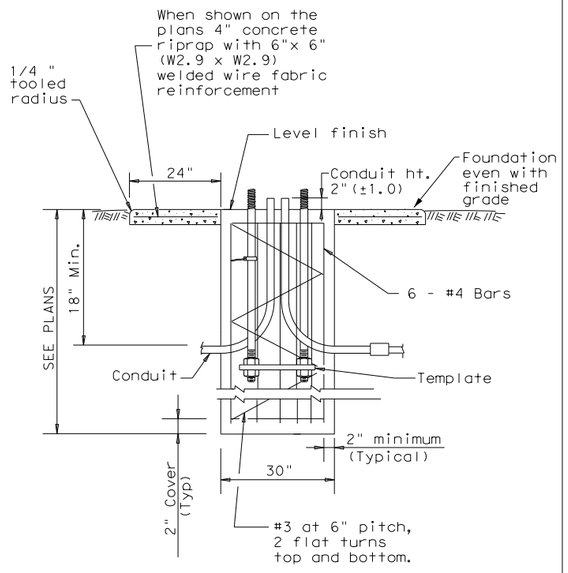
RID(1)-20

FILE: rid1-20.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
7-17	DIST	COUNTY		SHEET NO.
12-20	DAL	DALLAS		88

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.

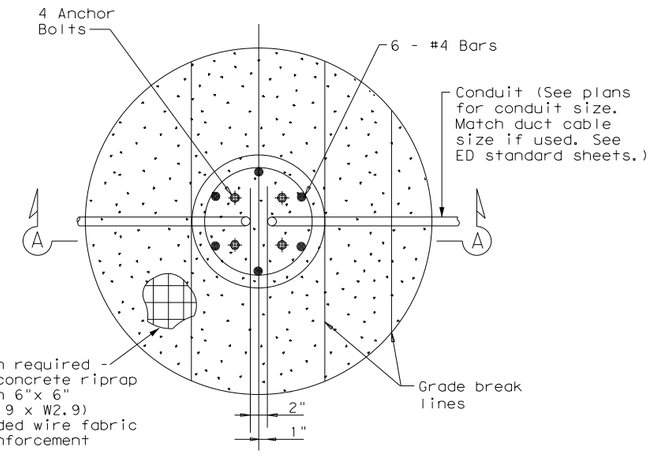
TABLE 4

BREAKAWAY POLE PLACEMENT (See note 6)

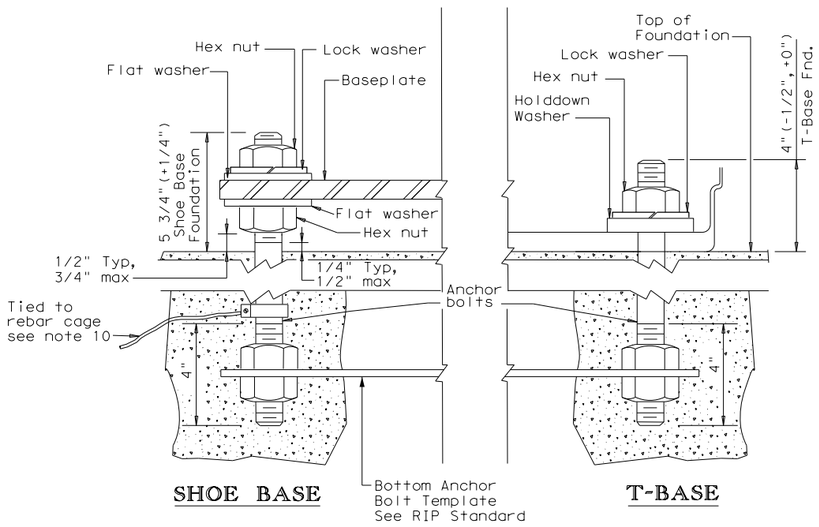
ROADWAY FUNCTIONAL CLASSIFICATION	** POLE OFFSET (DISTANCE TO FACE OF TRANSFORMER BASE)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum*(15 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

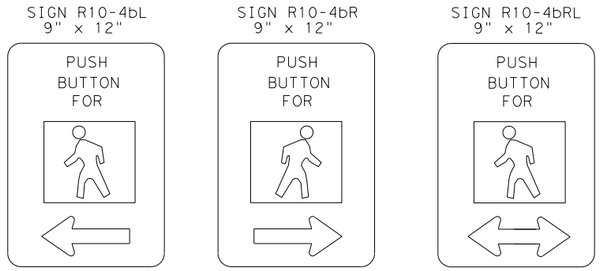
ROADWAY ILLUMINATION DETAILS
(RDWY ILLUM FOUNDATIONS)

RID(2)-20

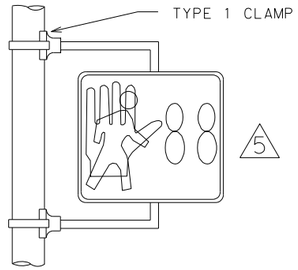
FILE: rid2-20.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-11 7-17 12-20	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		89

72B

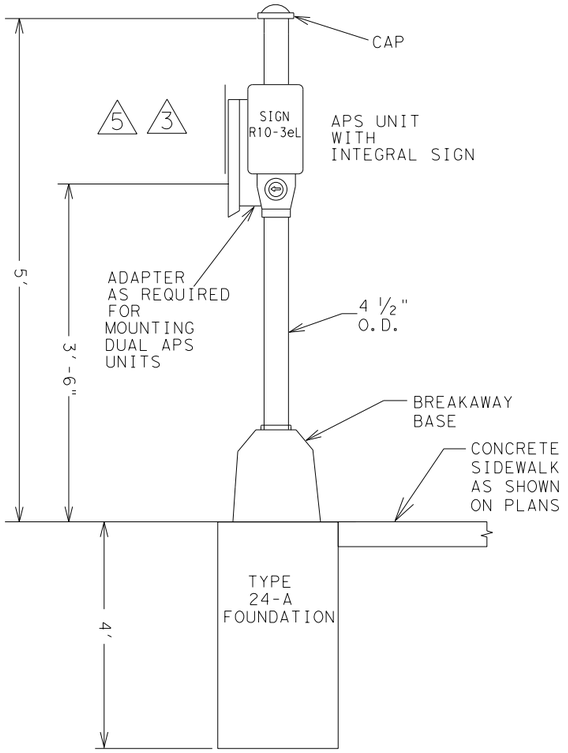
DATE: DATE TIME
FILE: DOCUMENT NAME



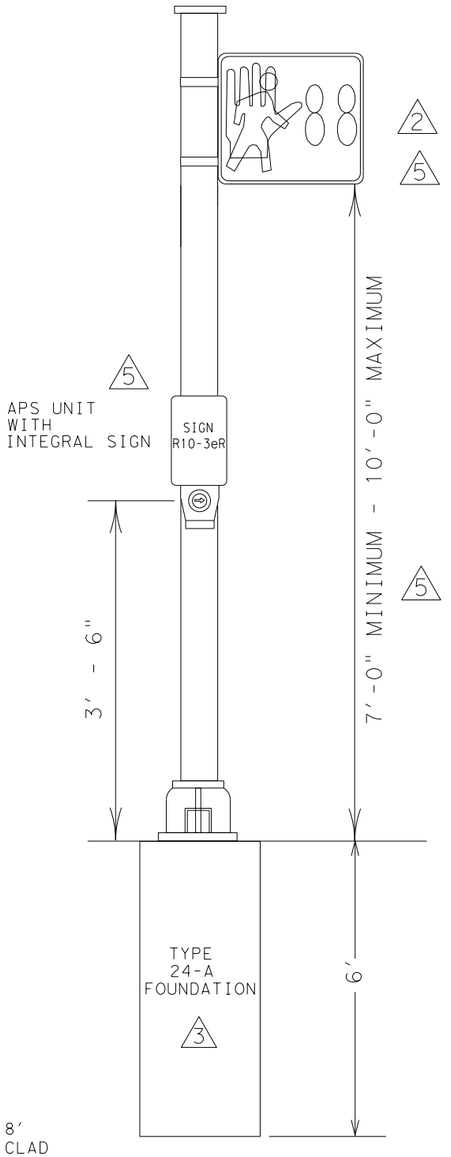
PEDESTRIAN PUSHBUTTON
SIGN DETAILS



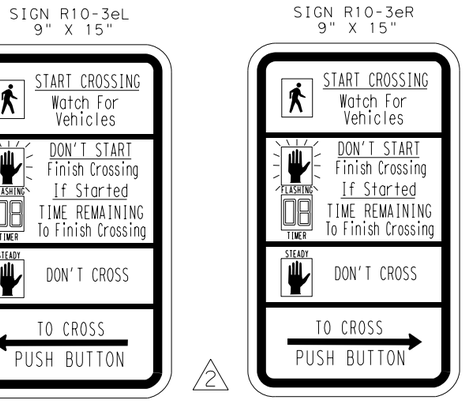
PEDESTRIAN SIGNAL HEAD MOUNTING
FOR ONE PEDESTRIAN SIGNAL HEAD
152A



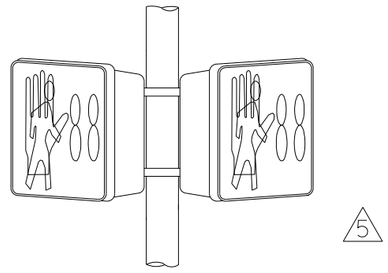
PEDESTRIAN PUSH BUTTON POLE



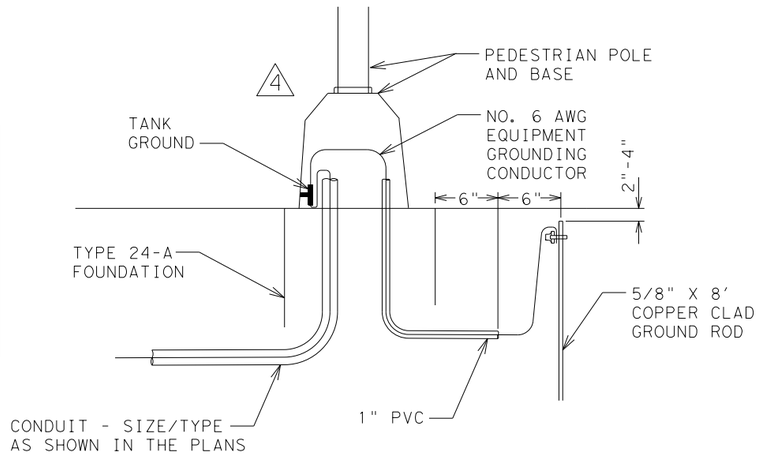
PEDESTAL POLE



COUNTDOWN PEDESTRIAN PUSHBUTTON
SIGN DETAILS



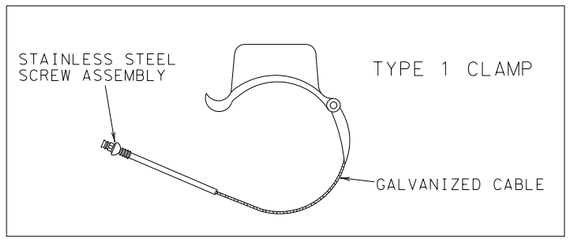
PEDESTRIAN SIGNAL HEAD MOUNTING
FOR TWO PEDESTRIAN SIGNAL HEADS
143C



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

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.

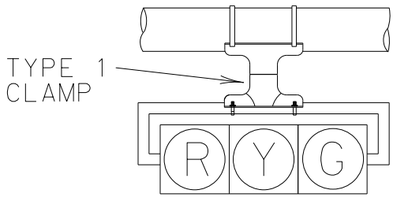
NOTE:

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.

DALLAS DISTRICT STANDARD

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE TITLE SHEET)		90
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0918	47	247,ETC.	CS

PEDESTRIAN SIGNAL HEAD DETAILS (DAL)



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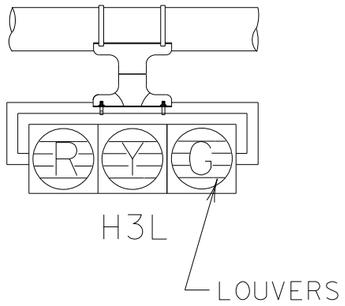

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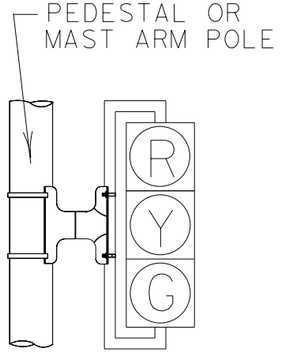

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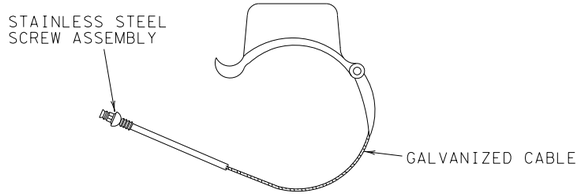
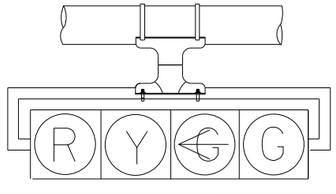


TYPE 1 AND 2 CLAMPS



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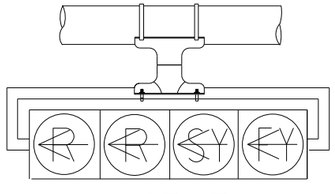

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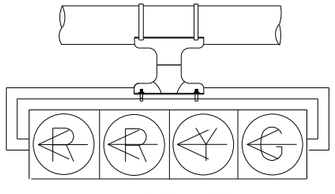

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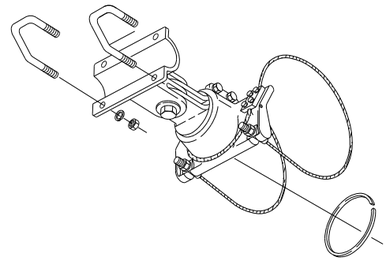
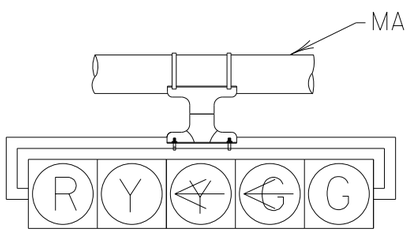


TYPE 2 CLAMP KIT

SHALL BE INSTALLED WHEN ROTATION ABOUT
THE HORIZONTAL AND VERTICAL AXES ARE NEEDED.



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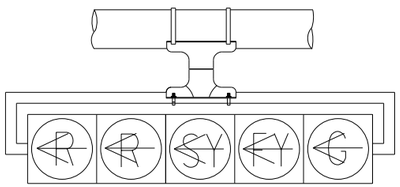

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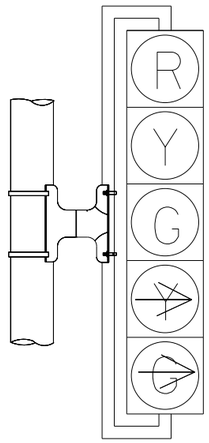

V5RT

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.

DALLAS DISTRICT STANDARD

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	(SEE TITLE SHEET)		91
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS, ETC.	
CONT.	SECT.	JOB	HIGHWAY NO.
0918	47	247,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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REVISIONS		0918	47	247,ETC.	CS
		DIST	COUNTY		SHEET NO.
		DAL	DALLAS		92

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.

2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.

3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.

4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.

2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.

3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.

4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.

5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.

6. Support conductors in illumination poles with a J-hook at the top of the pole.

7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.

8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.

9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.

10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.

11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.

2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.

3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.

4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.

5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.

2. Do not place ground rods in the same drilled hole as a timber pole.

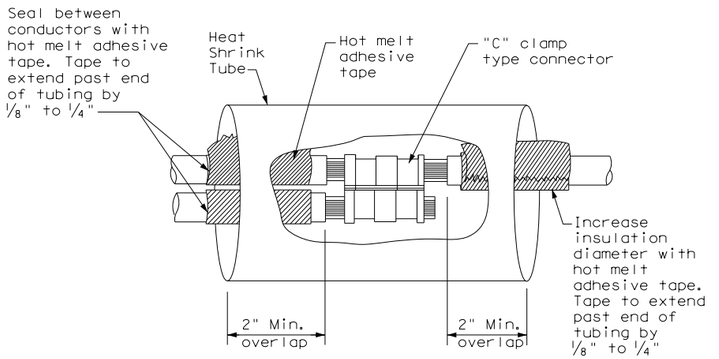
3. Install ground rods so the imprinted part number is at the upper end of the rod.

4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.

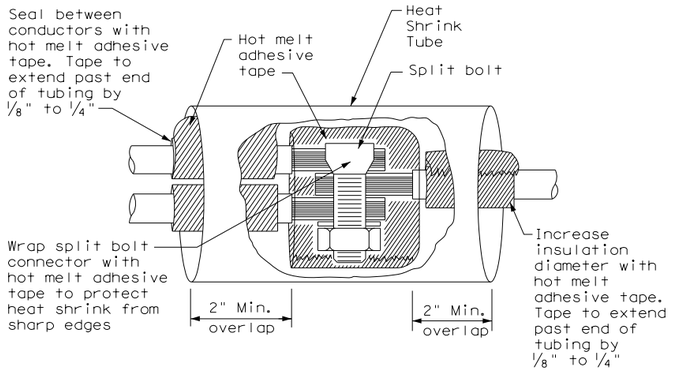
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.

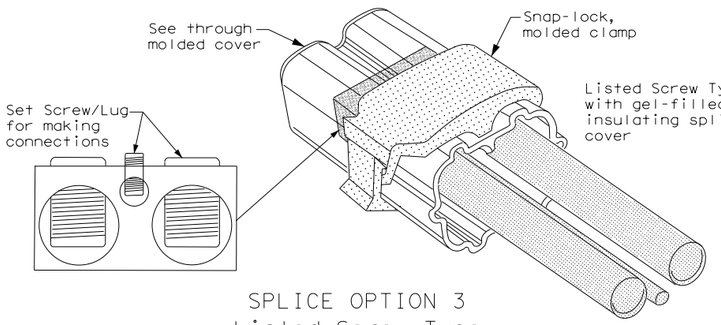
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

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ELECTRICAL DETAILS
CONDUCTORS

ED(3)-14

FILE:	ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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		DAL	DALLAS		93

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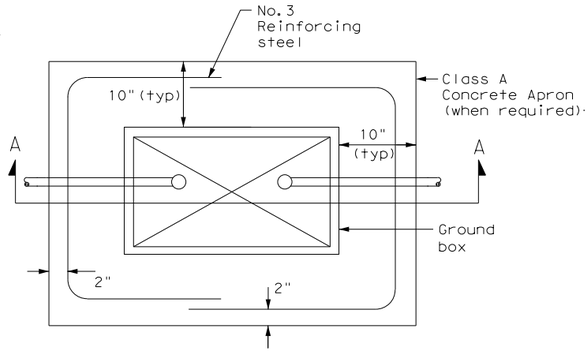
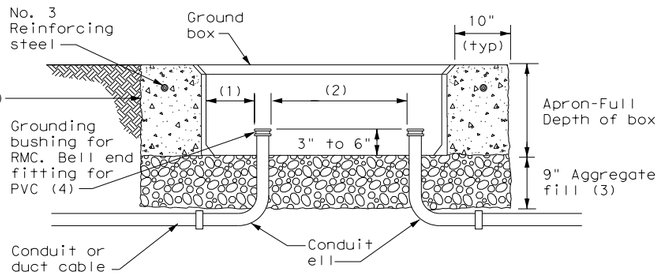


PLAN VIEW



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.

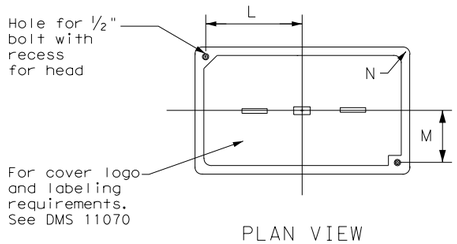
(2) Maintain sufficient space between conduits to allow for proper installation of bushings.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

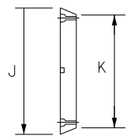
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND 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

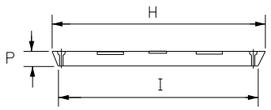
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



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.

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Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-14

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REVISIONS	0918	47	247,ETC.	CS
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	DAL	DALLAS		94

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ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

Schematic Type

Service Voltage V / V

Disconnect Amp Rating
000 indicates main lug only/
Typically Type T

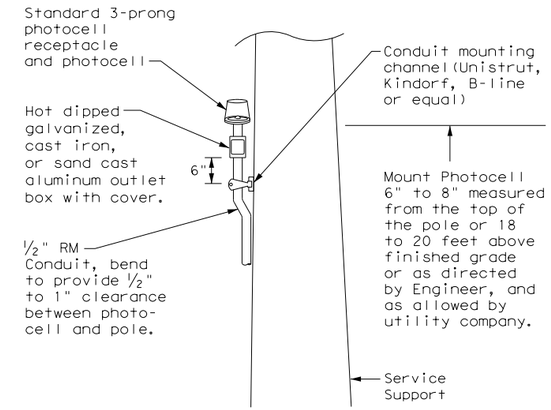
(SS)= Safety Switch Ahead of Meter-Check with Utility
(NS)= No safety Switch Ahead of Meter-Check with Utility

Enclosure Type
GS= Galvanized steel("off the shelf")
SS= Stainless steel(Custom Enclosure)See MPL
AL= Aluminum (Custom Enclosure)See MPL

Photocell Mounting Location
(E)= Inside Service/Enclosure Mounted
(T)= Top of pole
(L)= Luminaire mounted
(N)= None/No Photocell or Lighting Contactor Required

Service Support Type
GC= Granite concrete
OC= Other concrete
TP= Timber pole
SP= Steel pole
SF= Steel frame
OT= Pole by others or paid for separately
EX= Existing pole
TS= Service on traffic signal pole
PS= Pedestal Service

O= Overhead Service Feed from Utility
U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	DAL	DALLAS		95

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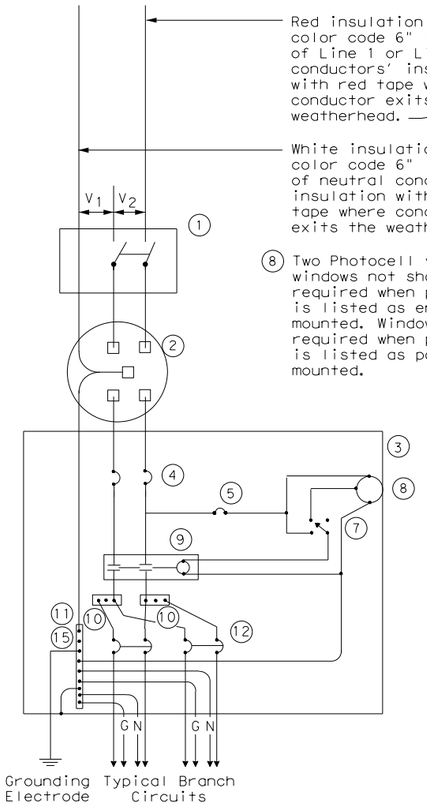
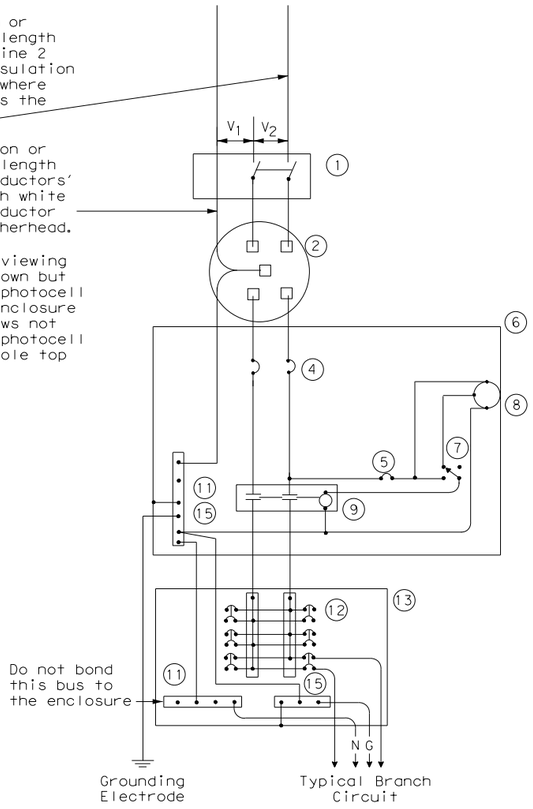
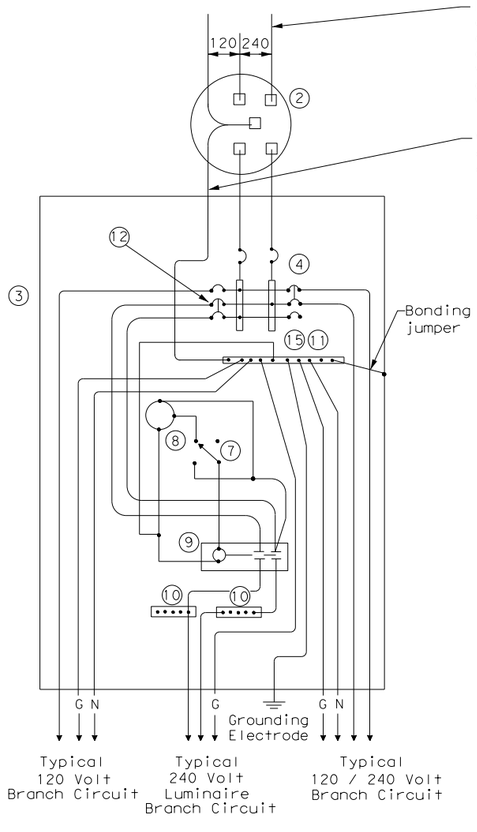


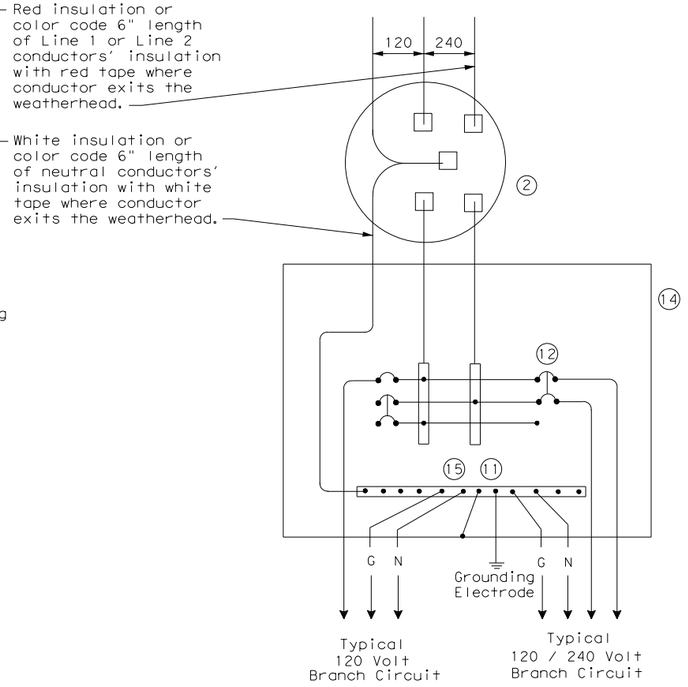
SCHEMATIC TYPE A
THREE WIRE



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

FILE: ed6-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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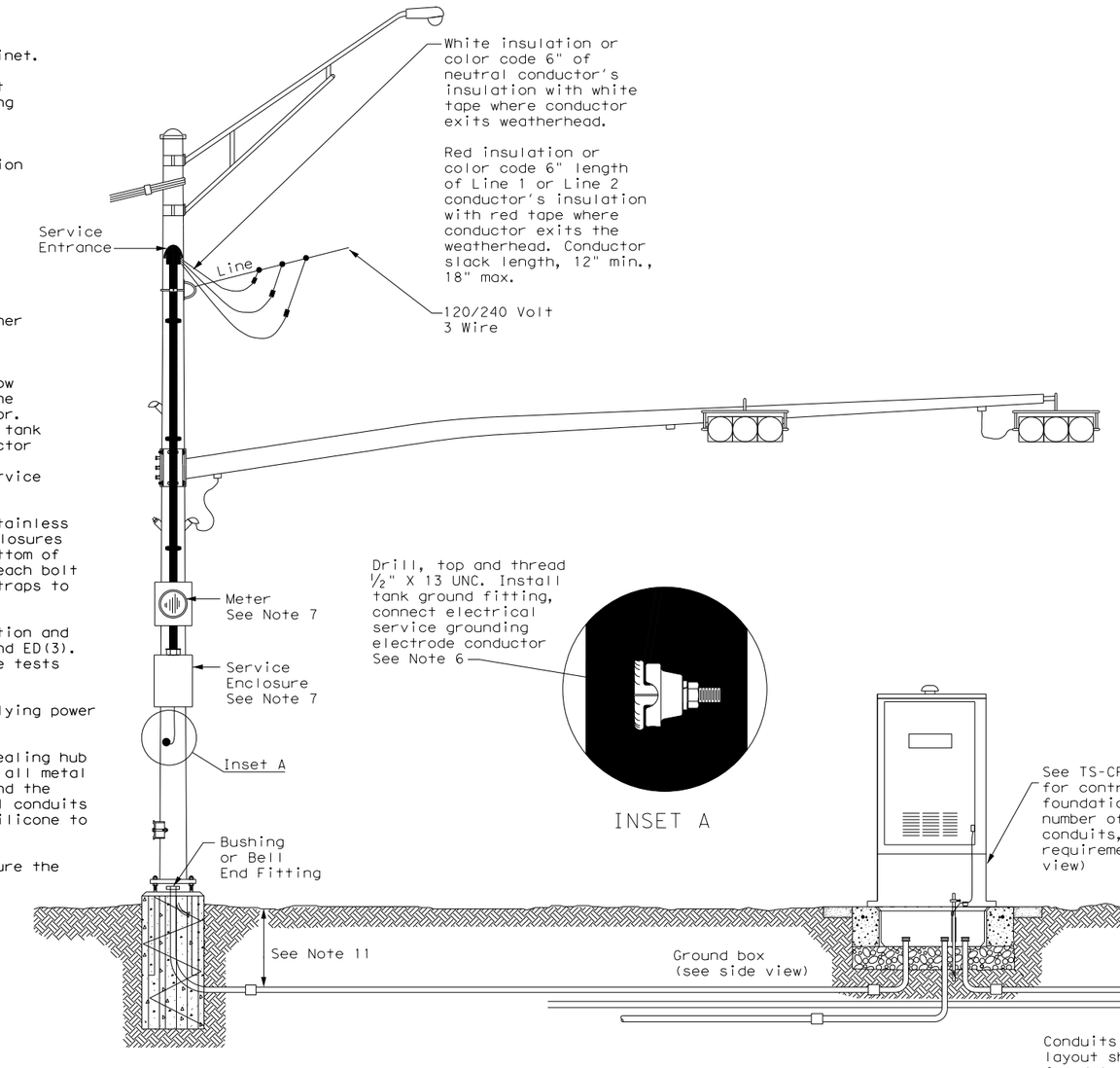
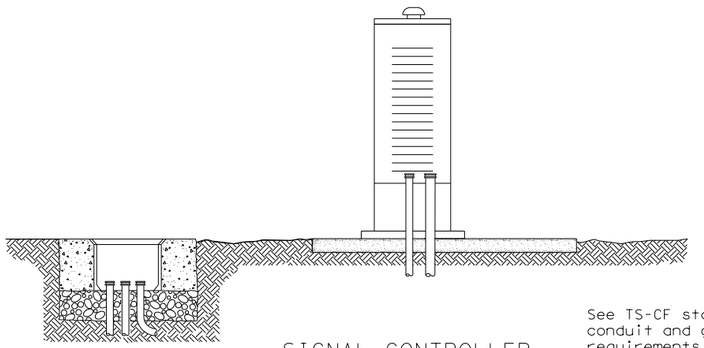
TRAFFIC SIGNAL NOTES

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

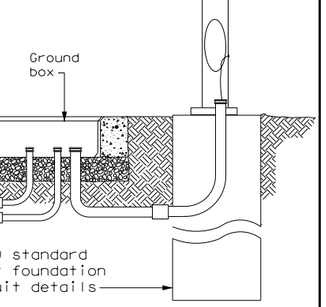
Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.



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

FILE: ed8-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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PEDESTAL SERVICE NOTES

1. Manufacture pedestal electrical services in accordance with Departmental Material Specifications (DMS)11080 "Electrical Services", 11085 "Electrical Services-Pedestal (PS)" and Item 628 "Electrical Services. "Provide pedestal electrical services as listed on the Material Producers list (MPL) on the Department's web site under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.

2. When a meter socket is required, provide a socket with a minimum 100 amp rating that complies with local utility requirements.

3. Provide Class A or C concrete for pedestal service foundations in accordance with Item 420, "Concrete Substructures," except that concrete will not be paid for directly but is considered subsidiary to Item 628.

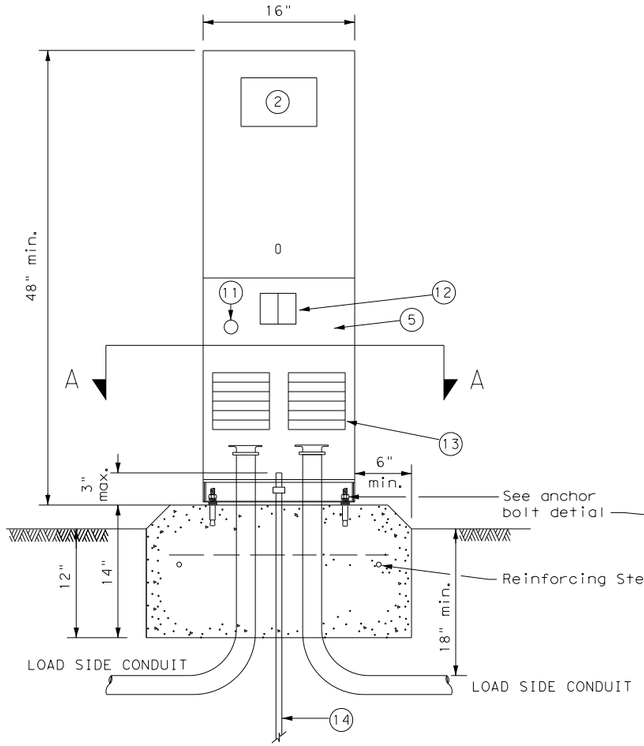
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

5. Install ½ in. X 2 1/16 in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Anchor location to match mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a ½ in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.

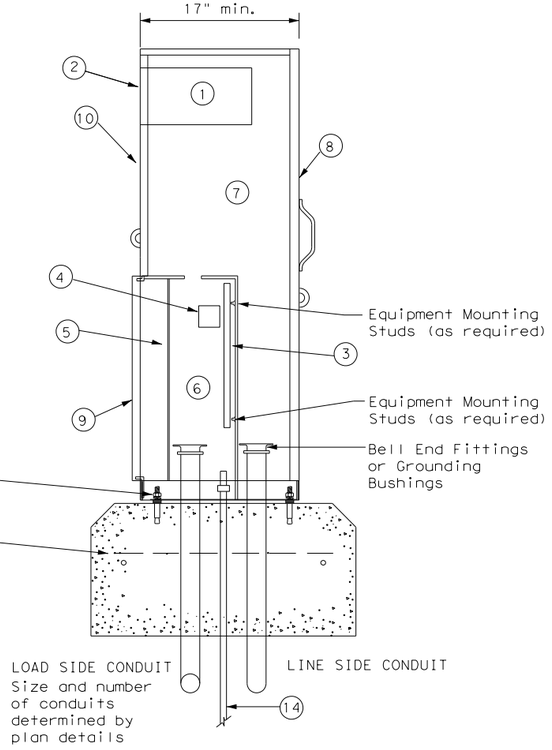
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than ⅛ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within ¼ in. Repair rocking or movement of the service enclosure at no additional cost to the department.

7. Do not use liquidtight flexible metal conduit (LFMC) on pedestal type services.

8. Ensure all elbows in the foundation are sized as per utility provider's conduit requirements for underground conduit and feeders. PVC extensions may be installed provided the ends of the rigid metal conduits are more than 2 in. below the top of the concrete foundation. Where extension conduits are metal, grounding bushings must be installed with a bonding jumper properly terminated.

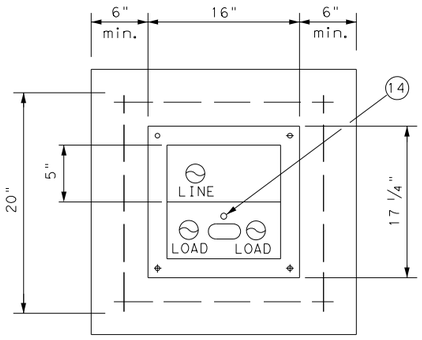


FRONT VIEW

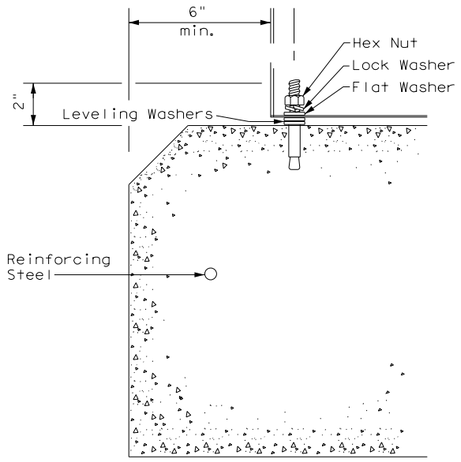


SIDE VIEW

TYPE C shown, TYPE A similar except that TYPE A shall have individual circuit breakers (CB) mounted on an equipment mounting panel. CB Handles shall protrude through hinged deadfront trim.



SECTION A-A



ANCHOR BOLT DETAIL

LEGEND	
1	Meter Socket, (when required)
2	Meter Socket Window, (when required)
3	Equipment Mounting Panel
4	Photo Electric Control Window, (When required)
5	Hinged Deadfront Trim
6	Load Side Conduit Trim
7	Line Side Conduit Area
8	Utility Access Door, with handle
9	Pedestal Door
10	Hinged Meter Access
11	Control Station (H-O-A Switch)
12	Main Disconnect
13	Branch Circuit Breakers
14	Copper Clad Ground Rod - 5/8" X 10'

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS

ED(9)-14

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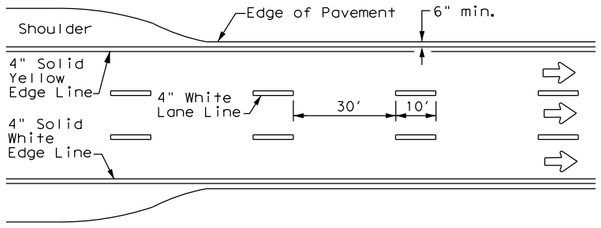
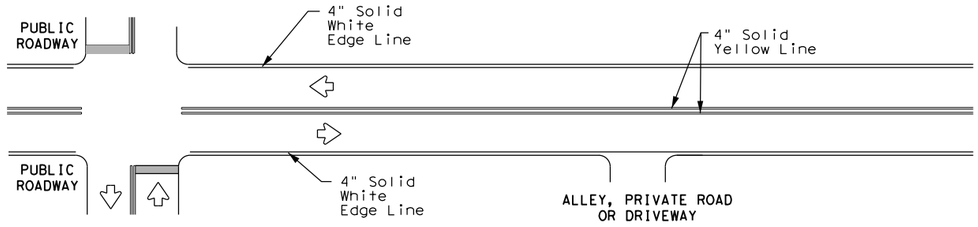
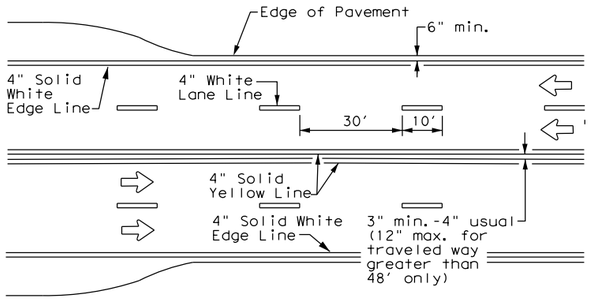


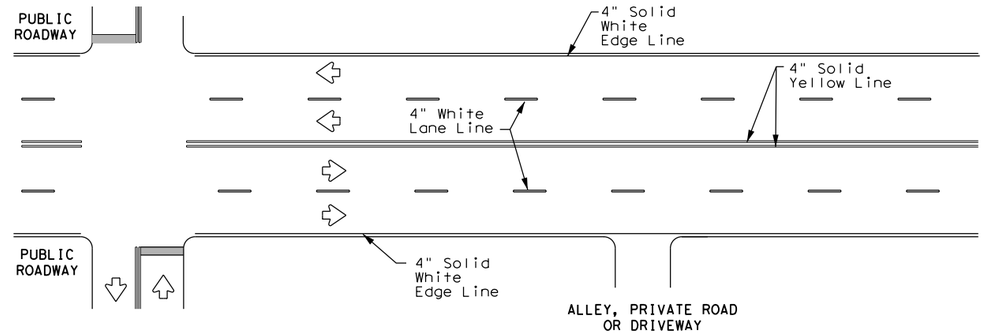
EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



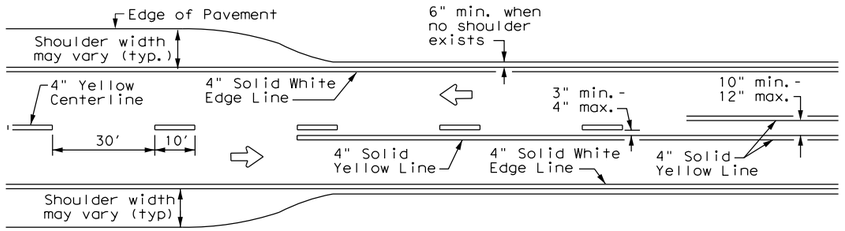
TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS



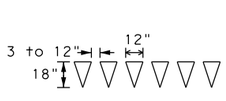
CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



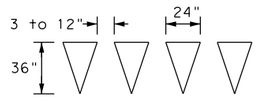
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS

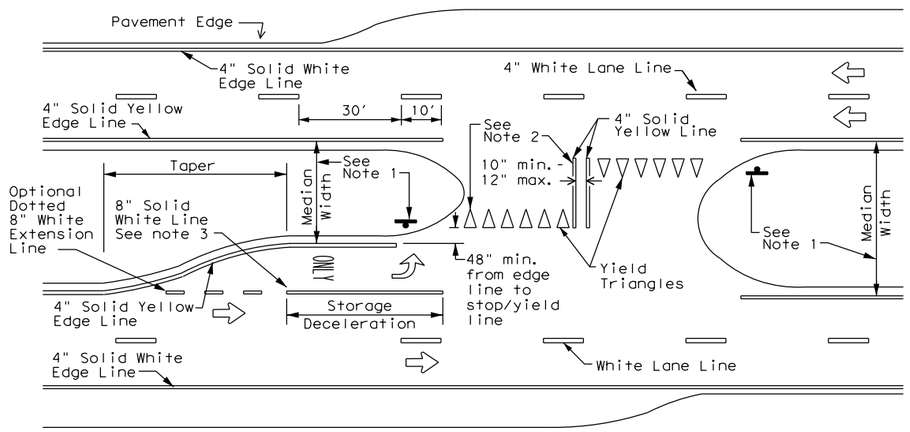


For posted speed on road being marked equal to or less than 40 MPH.



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

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

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

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

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

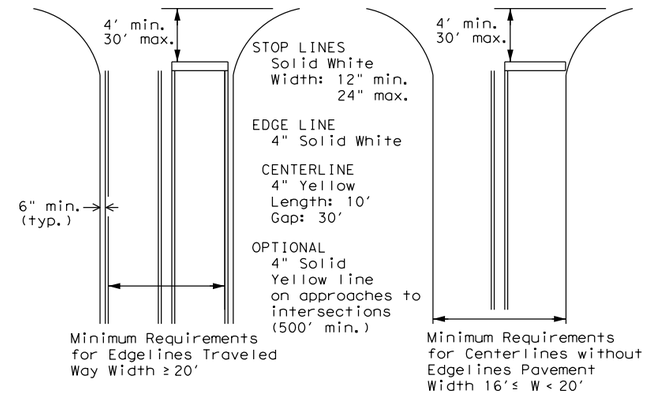
GENERAL NOTES

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

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

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

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



GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths
for Undivided Highways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-20

FILE: pm1-20.dgn	DN:	CK:	DW:	CK:
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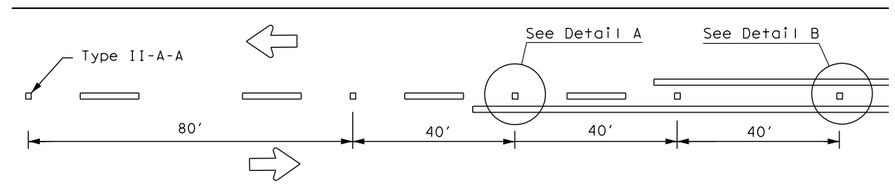
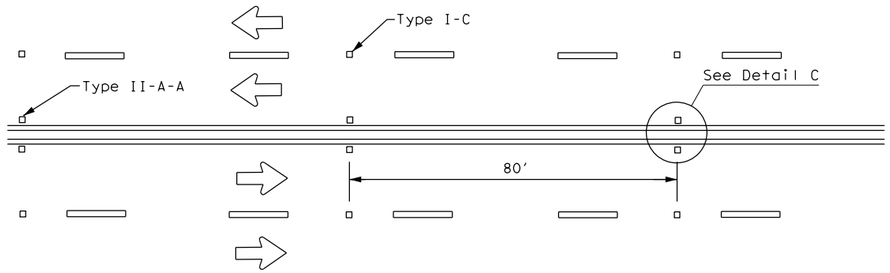
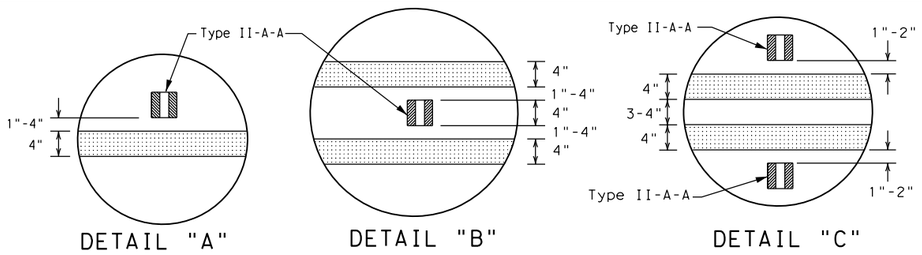
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



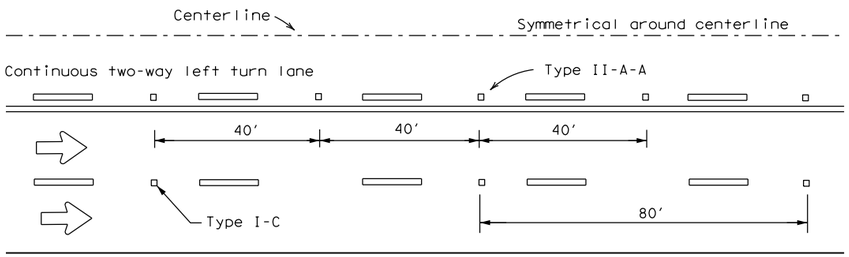
CENTERLINE FOR ALL TWO LANE ROADWAYS



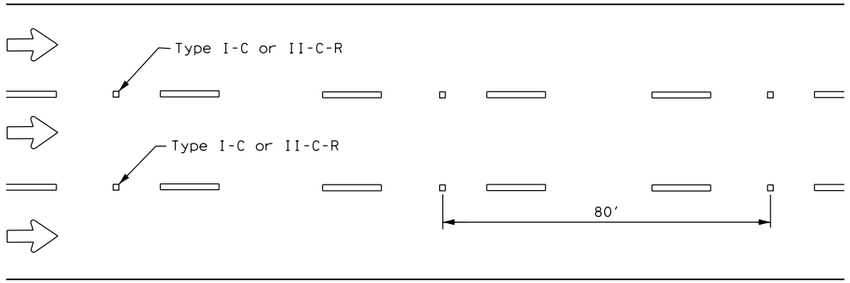
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS



DETAIL "A" DETAIL "B" DETAIL "C"



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

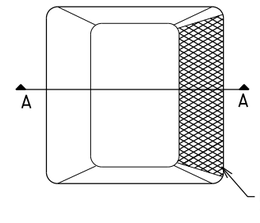


LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

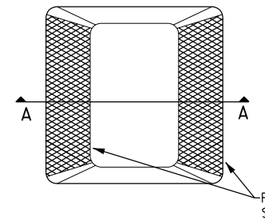
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

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

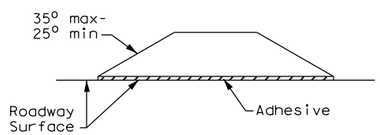
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

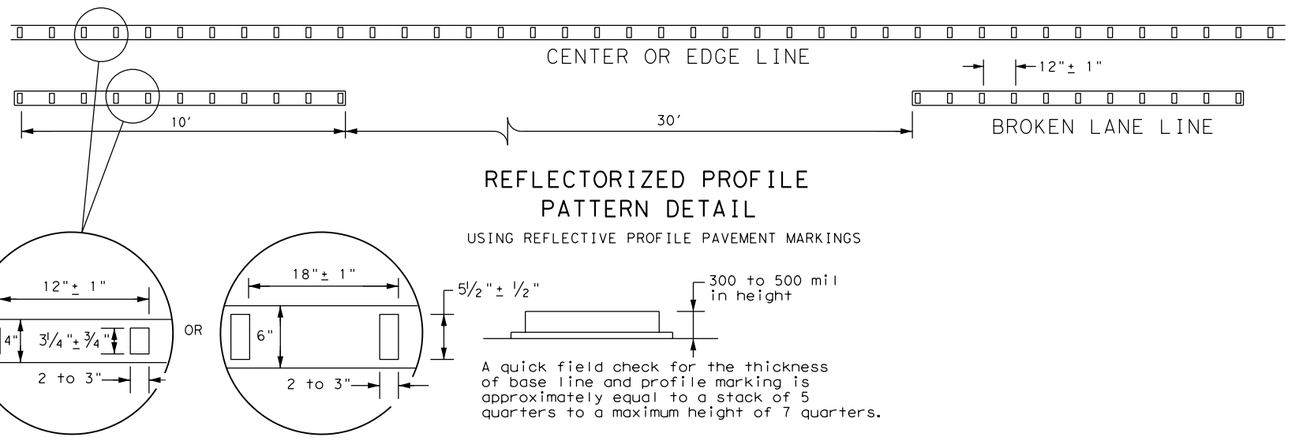


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

4" EDGE LINE, CENTER LINE OR LANE LINE

OPTIONAL 6" EDGE LINE, CENTER LINE OR LANE LINE

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

NOTE

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

GENERAL NOTES

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

Texas Department of Transportation

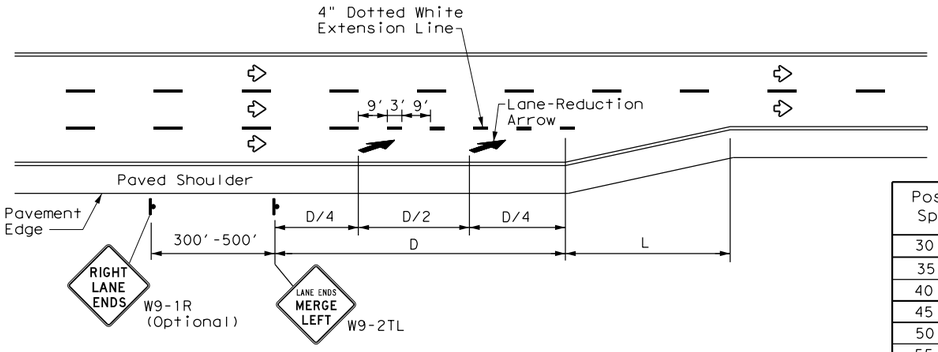
Traffic Safety Division Standard

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

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-92 2-10	0918	47	247,ETC.	CS
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	DAL	DALLAS		100

22B

DATE: DATE TIME
FILE: DOCUMENT NAME

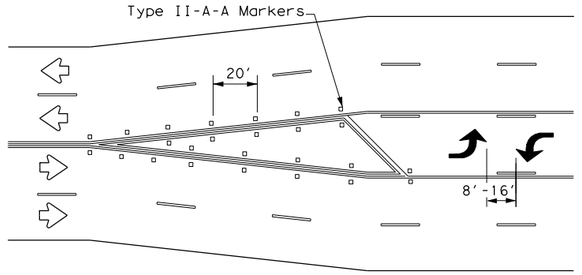


LANE REDUCTION

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

NOTES

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



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

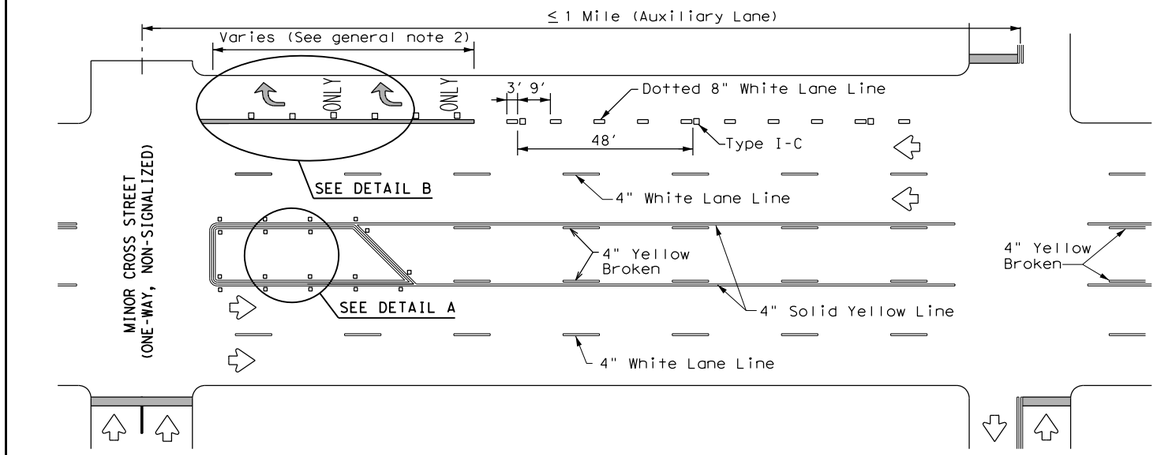
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

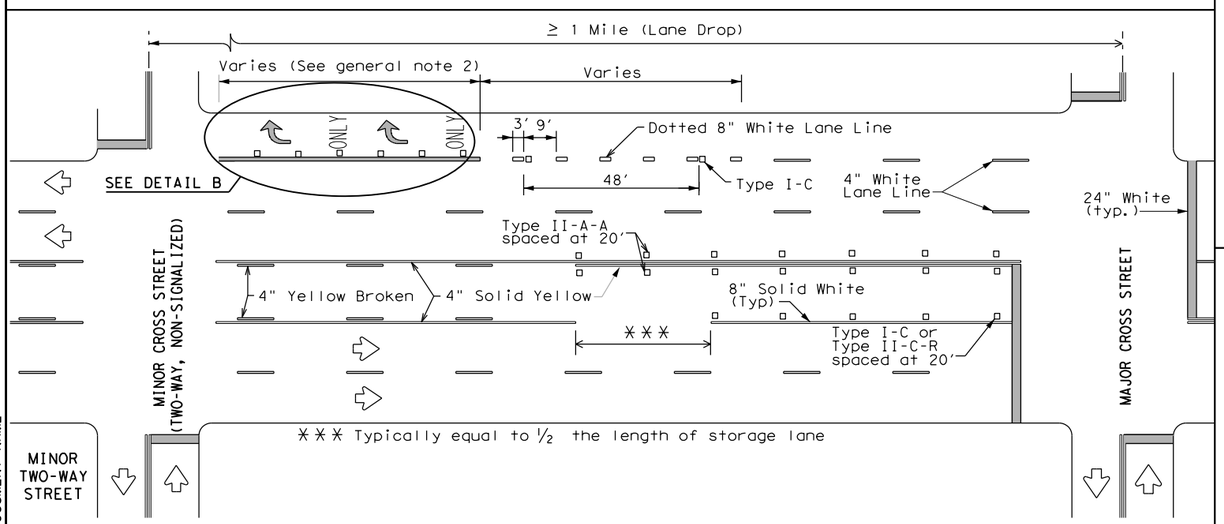
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn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

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

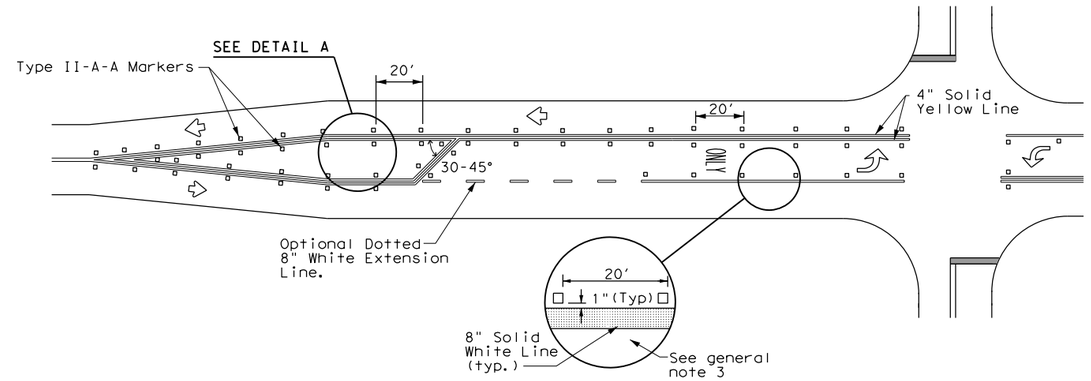
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



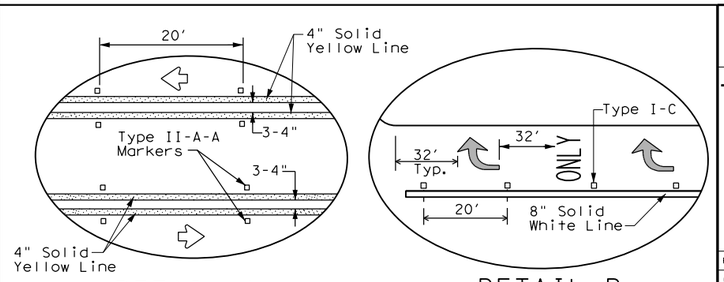
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



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



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



Texas Department of Transportation

Traffic Safety Division Standard

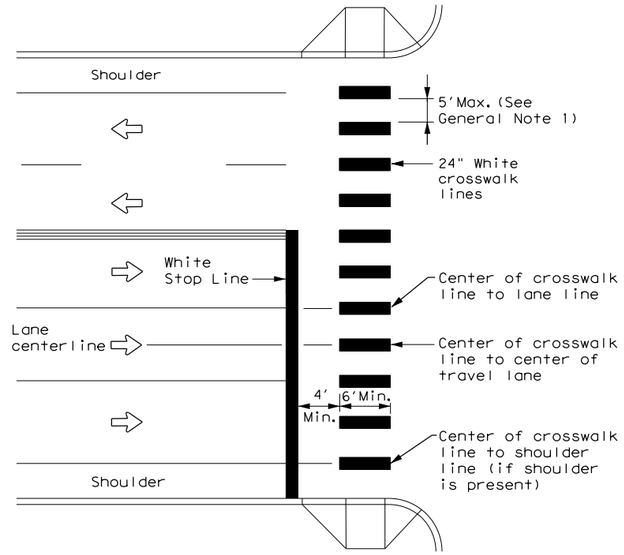
TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-20

FILE: pm3-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
5-00 2-10	DIST	COUNTY		SHEET NO.
8-00 2-12	DAL	DALLAS		101
3-03 6-20				

22C

DATE: DATE TIME
FILE: DOCUMENT NAME

DATE: DATE TIME
FILE: DOCUMENT NAME



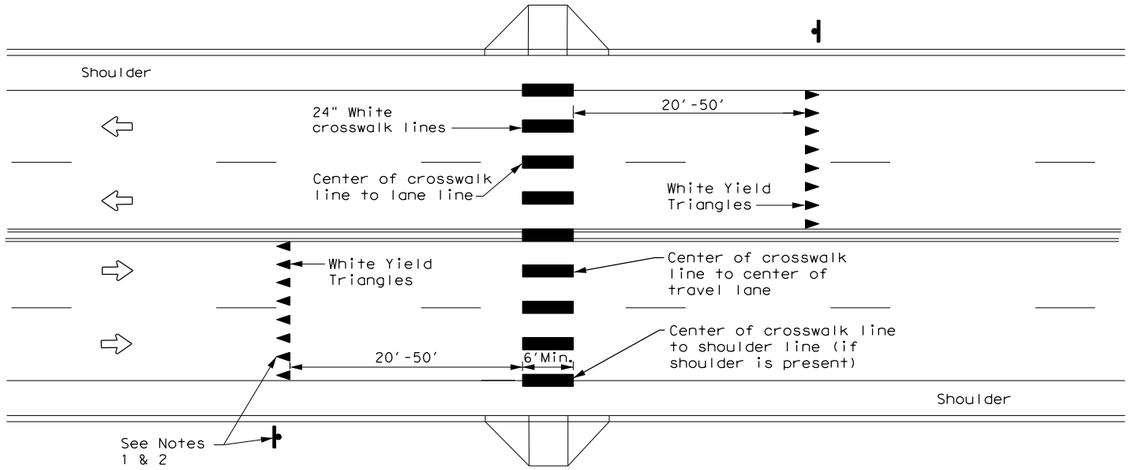
HIGH-VISIBILITY LONGITUDINAL CROSSWALK
AT CONTROLLED APPROACH

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/Yield Triangles and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED MID BLOCK HIGH-VISIBILITY
LONGITUDINAL CROSSWALK

NOTES

1. Use yield triangles with "Yield Here to Pedestrians" signs at unsignalized mid block crosswalks.
2. Use stop bars with "Stop Here on Red" signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-20

FILE: pm4-20.dgn	DN:	CK:	DW:	CK:
© TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		102

22D

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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)

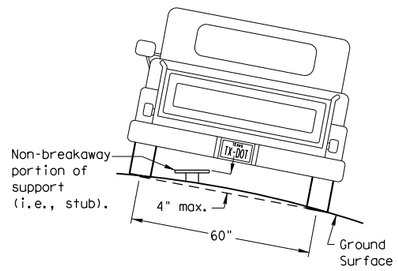
Anchor Type

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

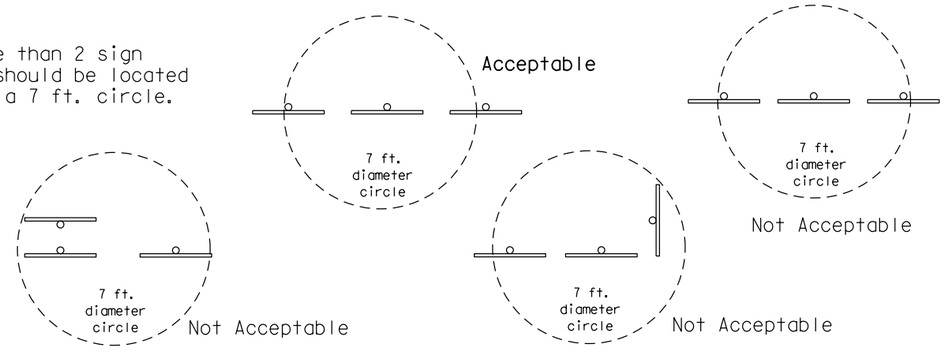
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
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



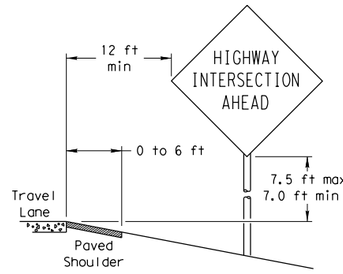
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

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



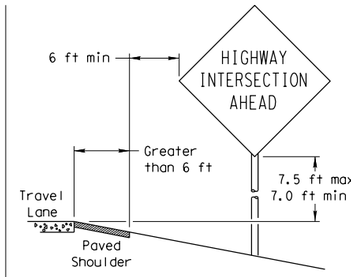
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

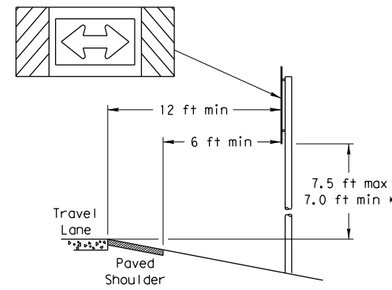
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



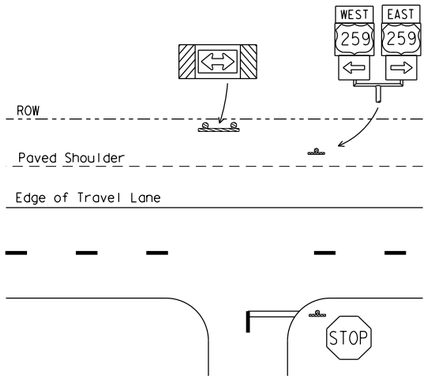
GREATER THAN 6 FT. WIDE

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.

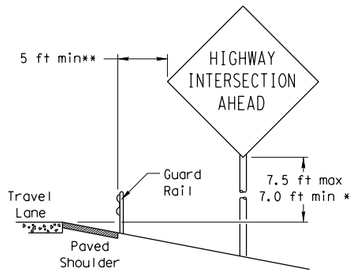
T-INTERSECTION



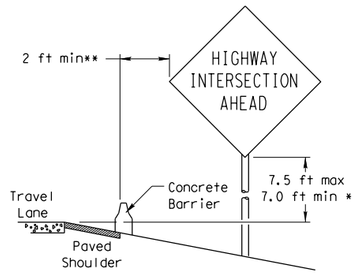
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



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.

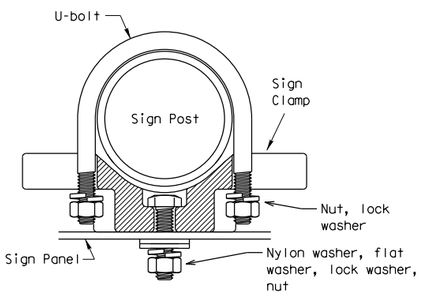
The maximum values may be increased when directed by the Engineer.

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

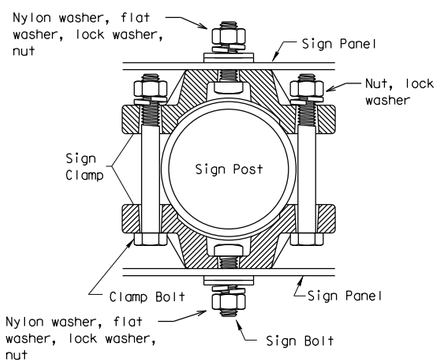
The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



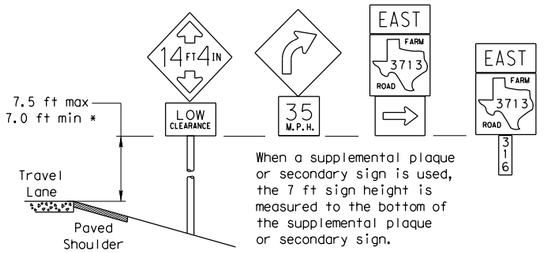
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

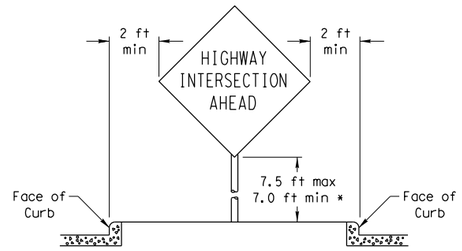
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



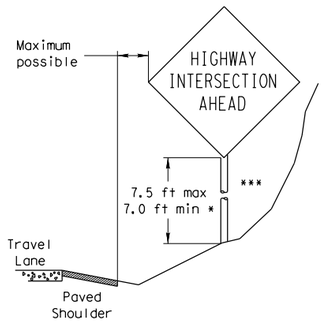
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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

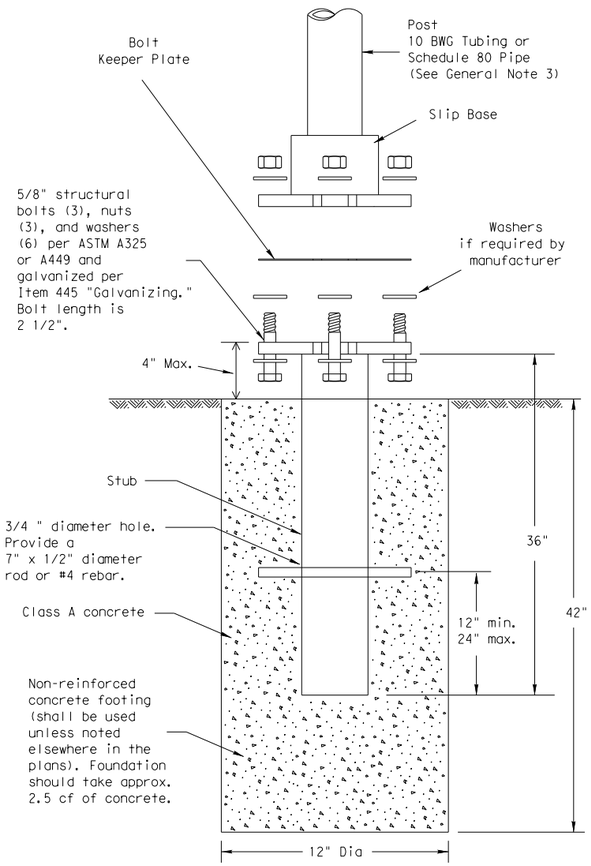
REVISIONS
9-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		103

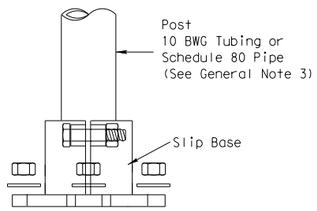
DATE:
FILE:

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS

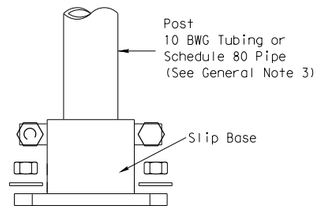


SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

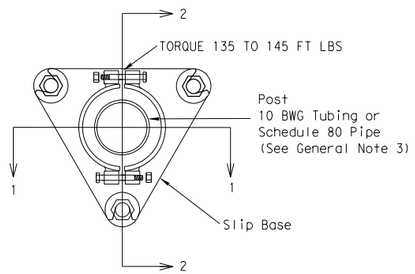
NOTE
The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.



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.

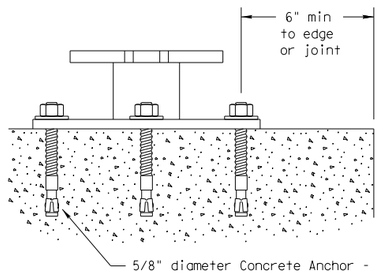
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum 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)

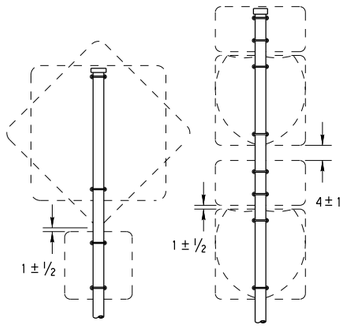
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

9-08 REVISIONS
12-10 (DISTRICT) ADDED CLAMP BASE DETAIL FOR SLIP BASE INSTALLATION

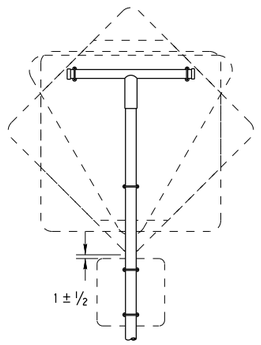
CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS
DIST	COUNTY		SHEET NO.
DAL	DALLAS		104

26B

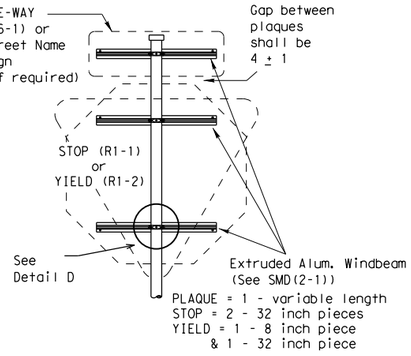
DATE:
FILE:



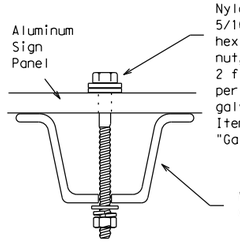
SM RD SGN ASSM TY XXXXX(1)XX(P)



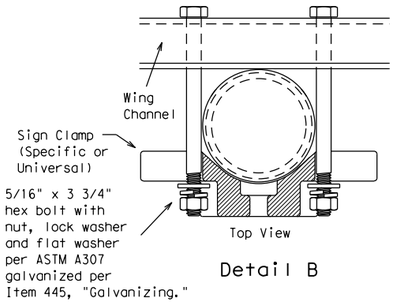
SM RD SGN ASSM TY XXXXX(1)XX(T)



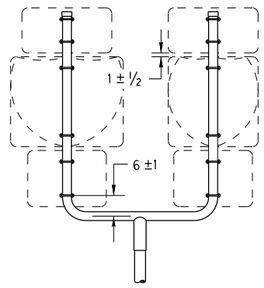
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



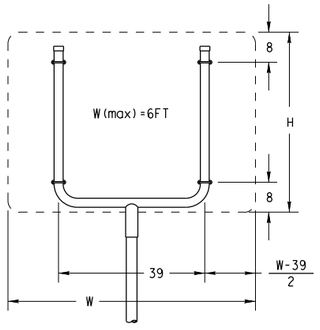
Detail A



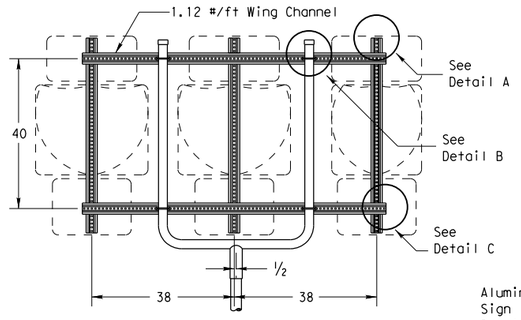
Detail B



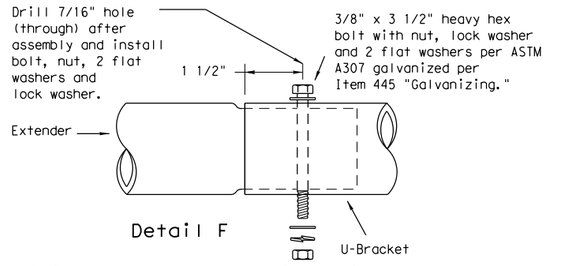
SM RD SGN ASSM TY XXXXX(1)XX(U)



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

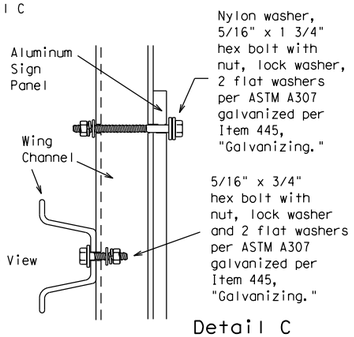


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

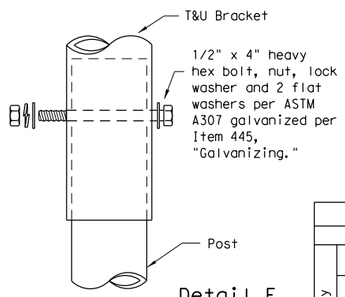


Detail F

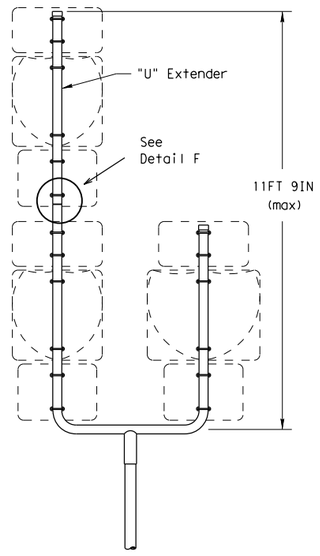
Splices shall only be allowed behind the sign substrate.



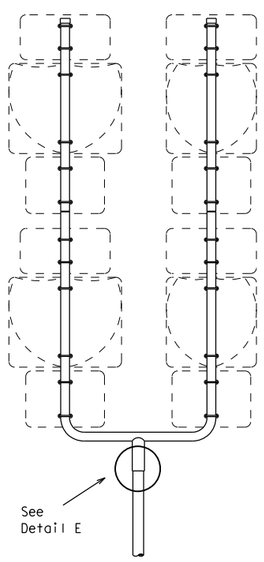
Detail C



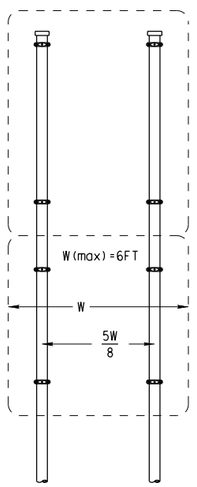
Detail E



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

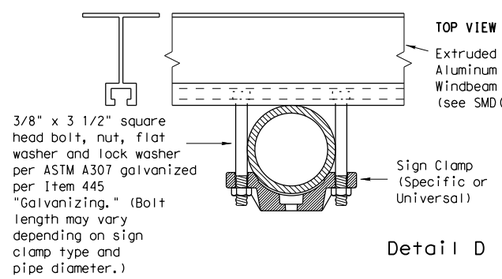


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

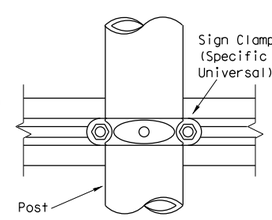


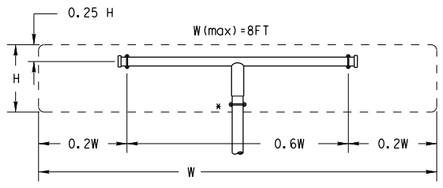
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW



Detail D

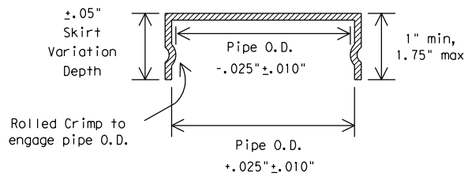




All dimensions are in english
unless detailed otherwise.

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

FRICTION CAP DETAIL



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

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

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

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

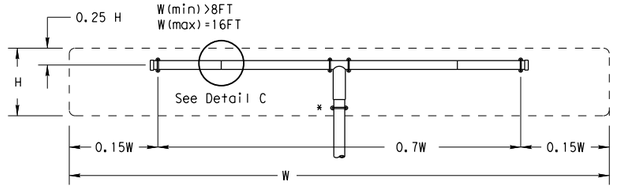
SMD(SLIP-2)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		105

DATE:
FILE:

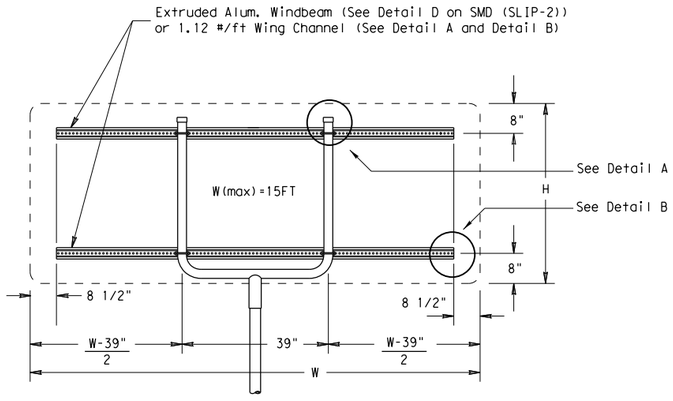
26C

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.

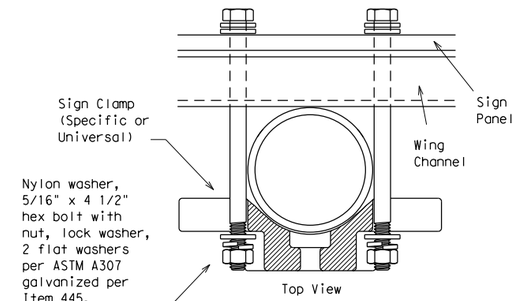


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)

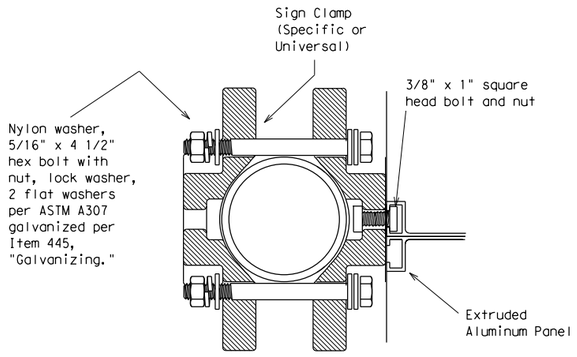
(* - See Note 12)



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

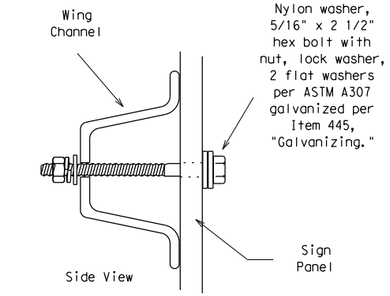


Detail A

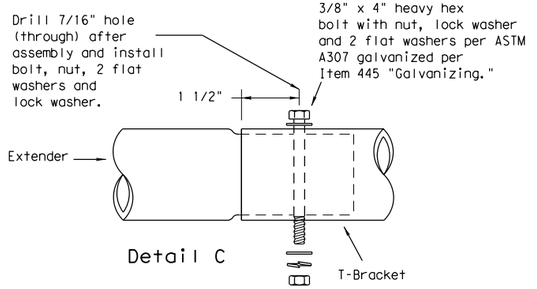


Detail D

EXTRUDED ALUMINUM SIGN WITH T BRACKET

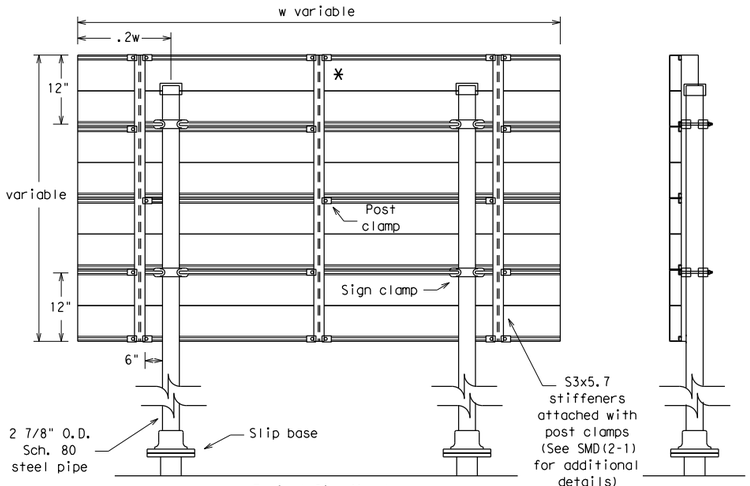


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

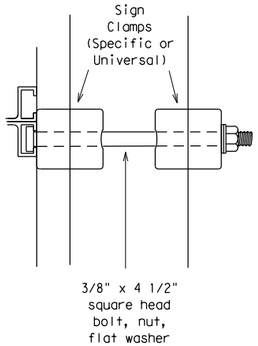


Typical Sign Mount

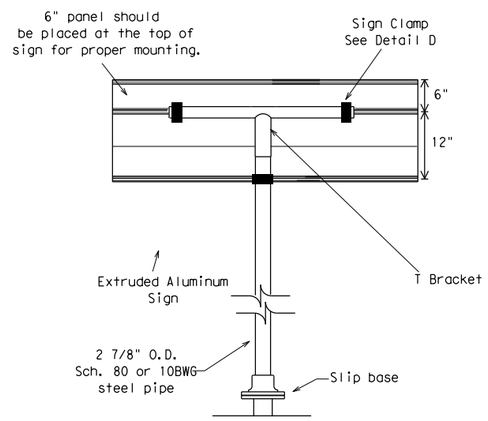
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

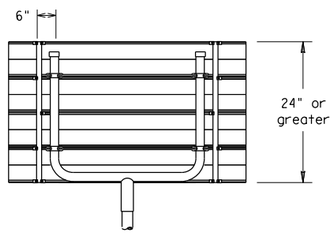
See Detail E
for clamp installation



Detail E



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:

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. Sign blanks shall be the sizes and shapes shown on the plans.
11. 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.
12. 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

REVISIONS

9-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0918	47	247,ETC.	CS

DIST	COUNTY	SHEET NO.
DAL	DALLAS	106

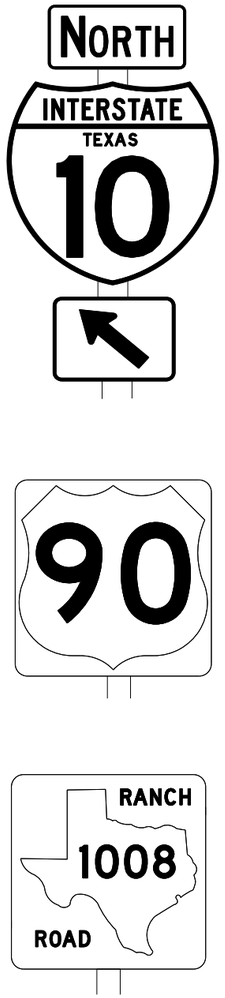
26D

DATE:
FILE:

DATE:
FILE:

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

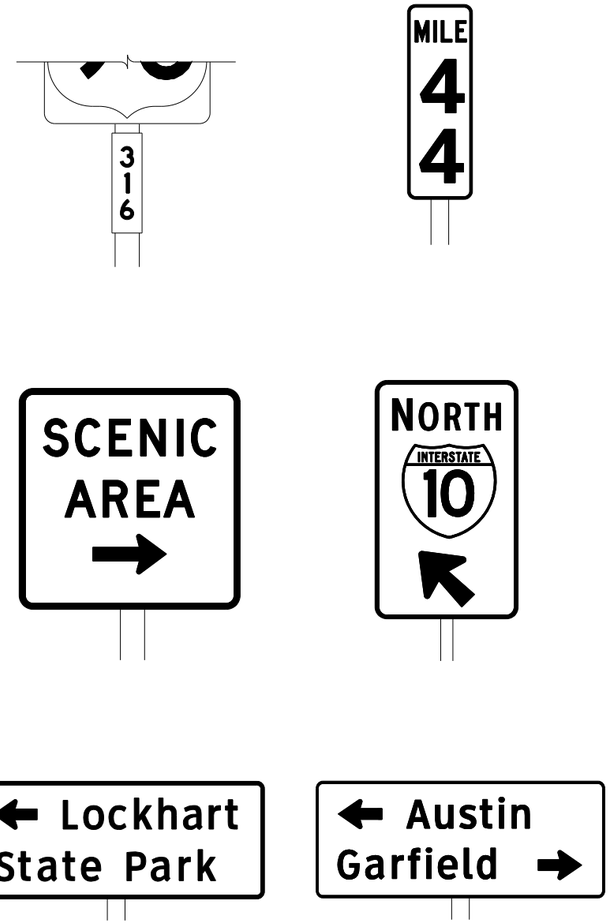
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



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

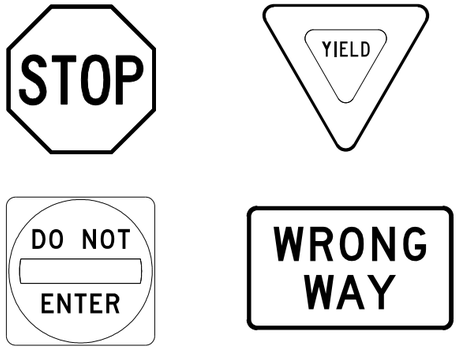
TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	DAL	DALLAS		107

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

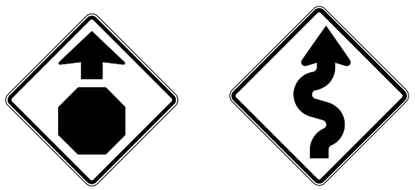
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(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

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

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/

Texas Department of Transportation

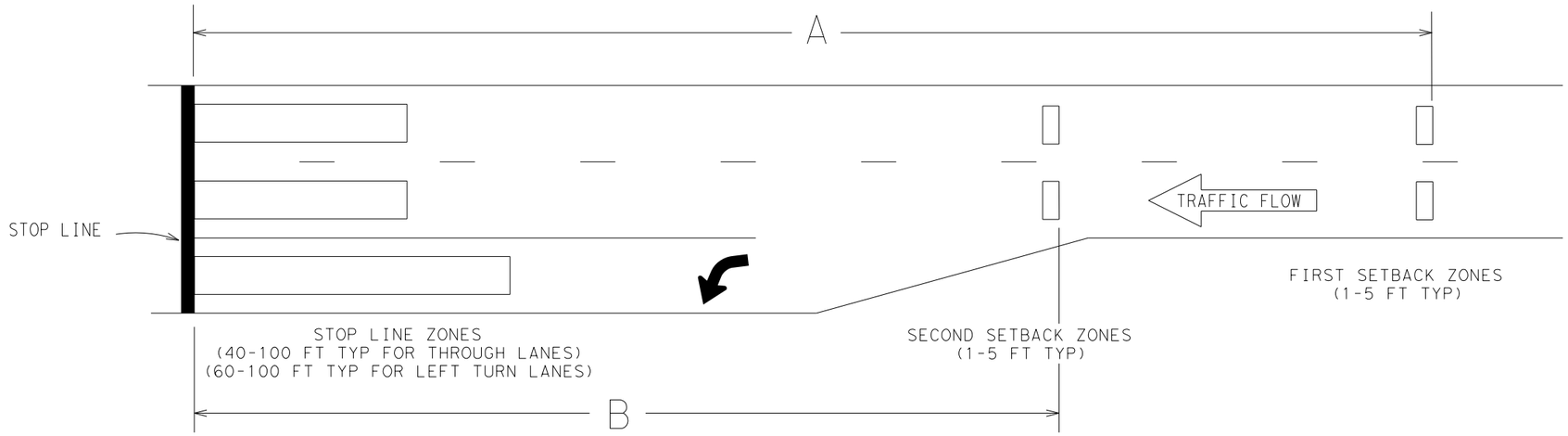
Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

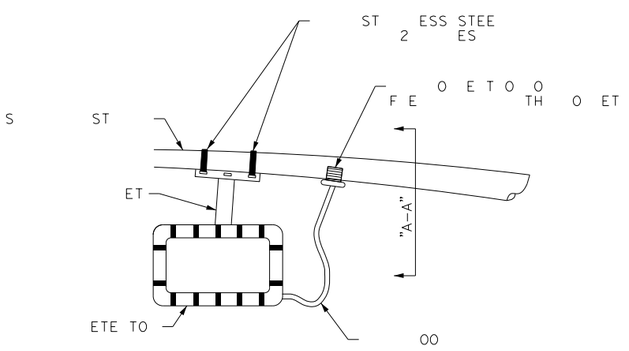
FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-03 7-13 9-08	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		108

RADAR DETECTION ZONE LOCATIONS

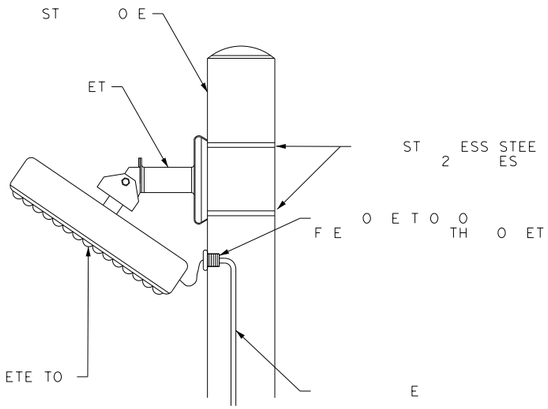


APPROACH SPEED LIMIT (MPH)	DISTANCE A (FT)	DISTANCE B (FT)	MINIMUM RANGE OF DETECTION (LF)
45	360	245	400
50	405	300	440
55	445	325	490
60	485	355	530
65	525	380	575
70	565	410	620

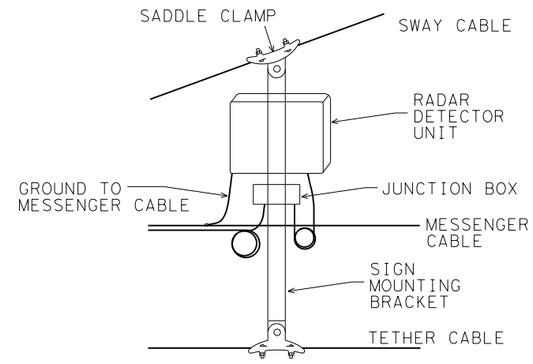
RADAR DETECTION INSTALLATION DETAILS



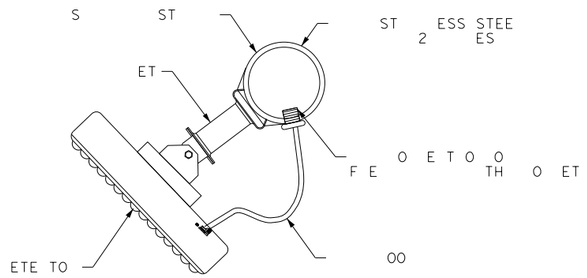
MAST ARM MOUNT



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

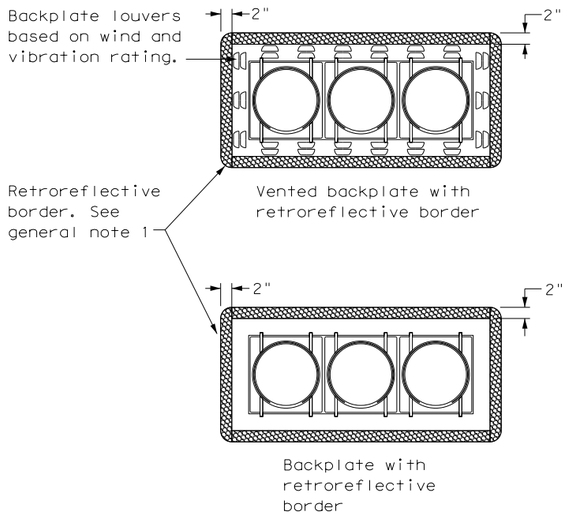
©2018

RADAR VEHICLE DETECTION SYSTEM

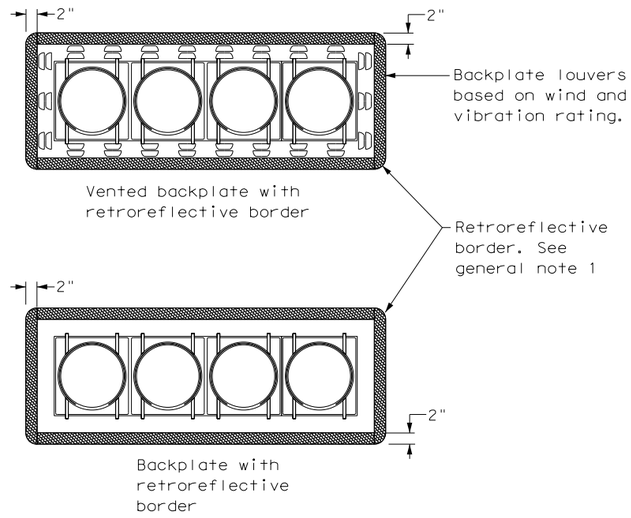
RVDS-18 (DAL)

©TxDOT May 2018		DN: EF	CK: ---	DW: EF	CK: TRF-Aus.
REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.			HIGHWAY NO.
	6	(SEE TITLE SHEET)			CS
	STATE	DISTRICT	COUNTY		SHEET NO.
	TEXAS	DAL	DALLAS, ETC.		109
	CONTROL	SECTION	JOB		
	0918	47	247, ETC.		

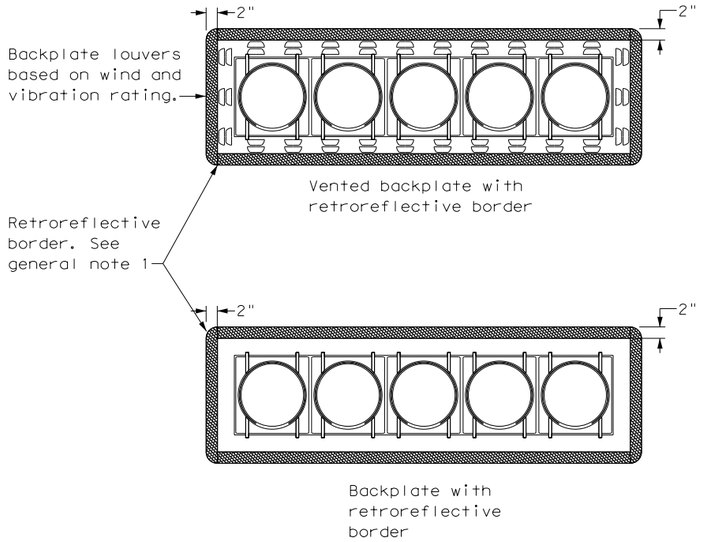
DATE: DATE TIME
FILE: DOCUMENT NAME



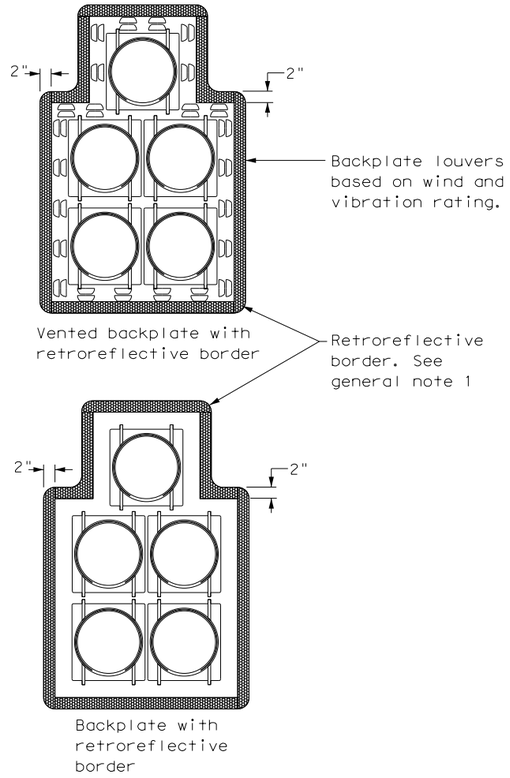
THREE-SECTION HEAD
HORIZONTAL OR VERTICAL



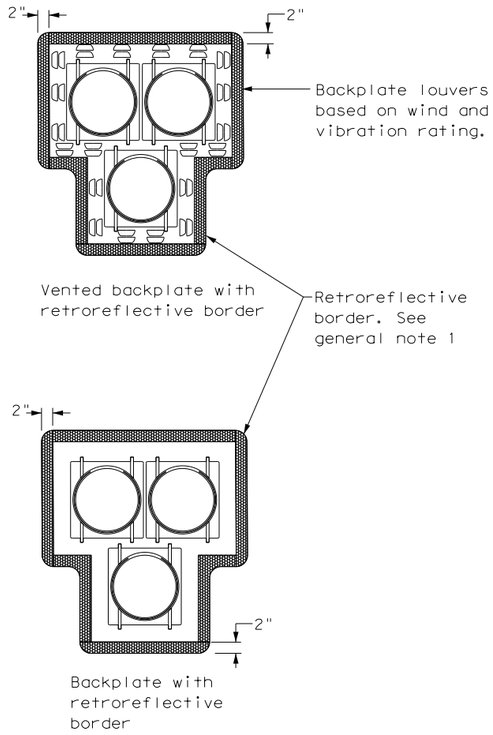
FOUR-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
CLUSTER



PEDESTRIAN HYBRID
BEACON

GENERAL NOTES:

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

Texas Department of Transportation

Traffic Safety Division Standard

TRAFFIC SIGNAL HEAD WITH BACKPLATE

TS-BP-20

FILE: ts-bp-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		110

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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.

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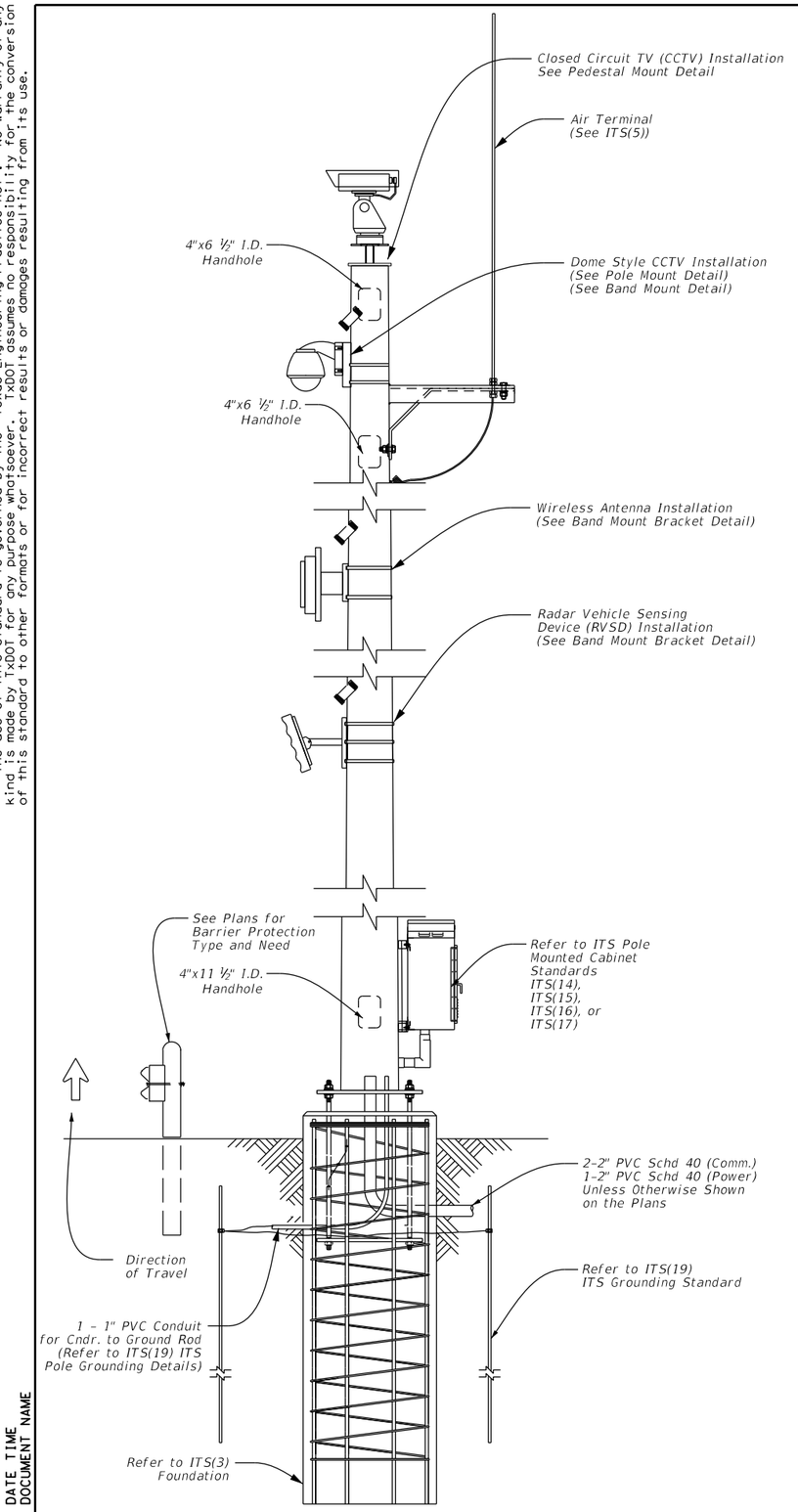
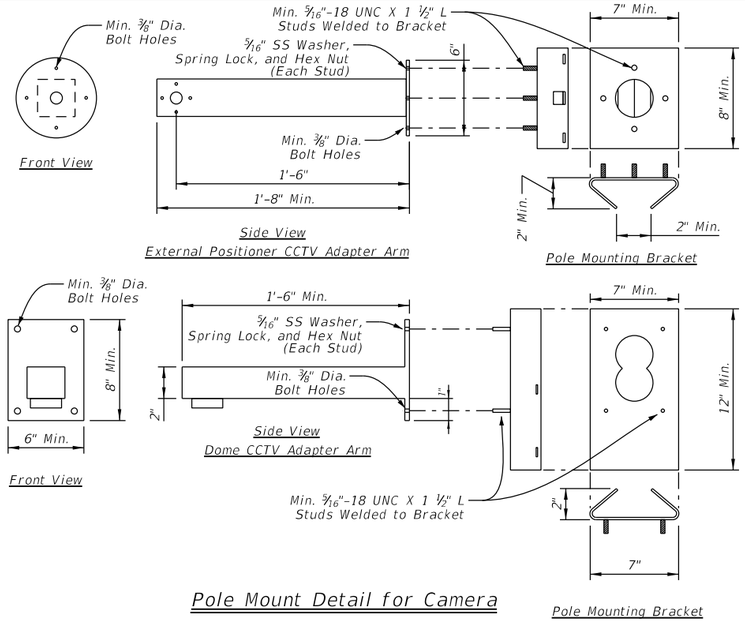
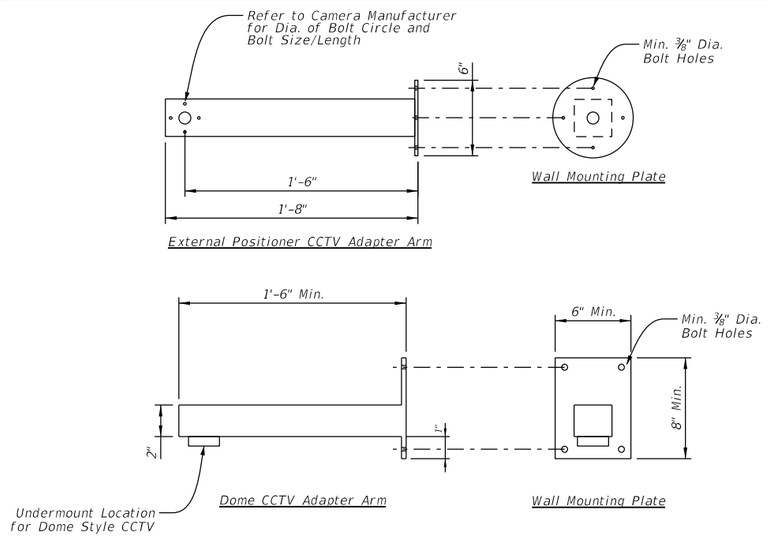
FILE: DOCUMENT NAME



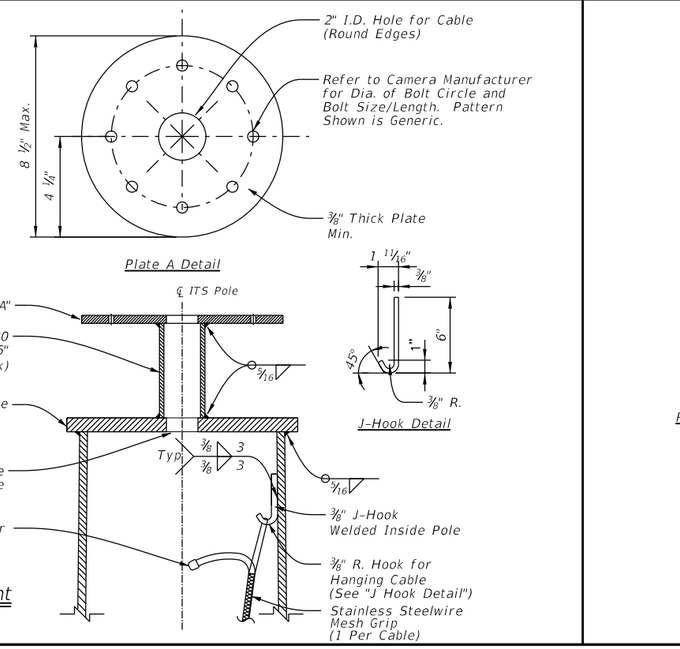
ITS Pole with Cabinet



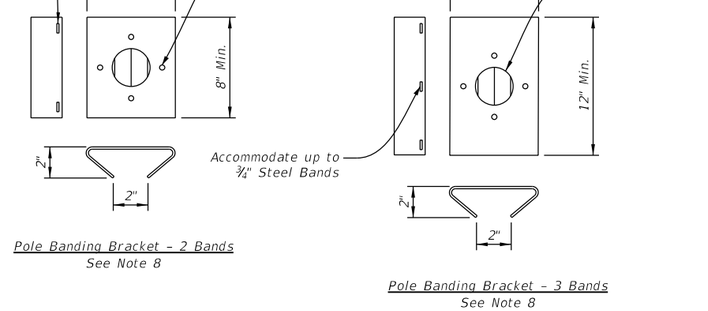
Pole Mount Detail for Camera



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

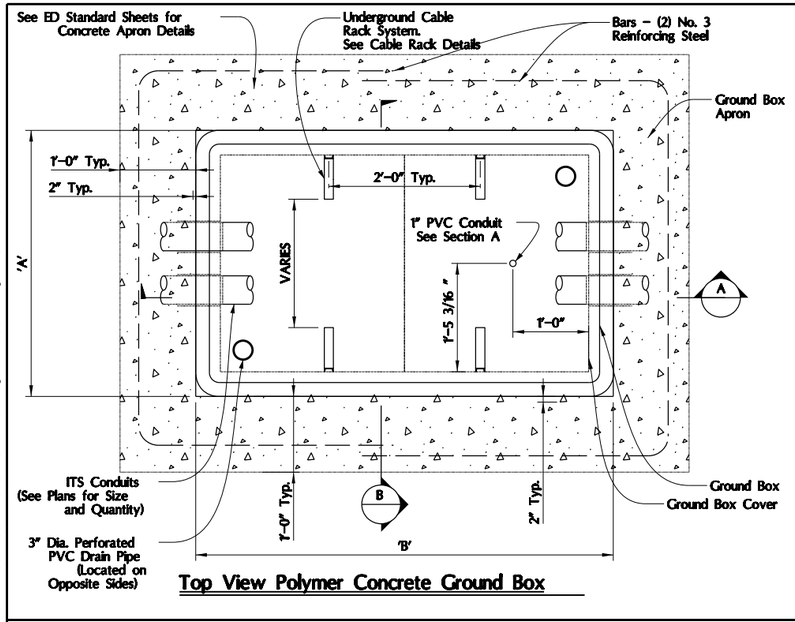
Traffic Operations Division Standard

ITS POLE EQUIPMENT MOUNTING DETAILS

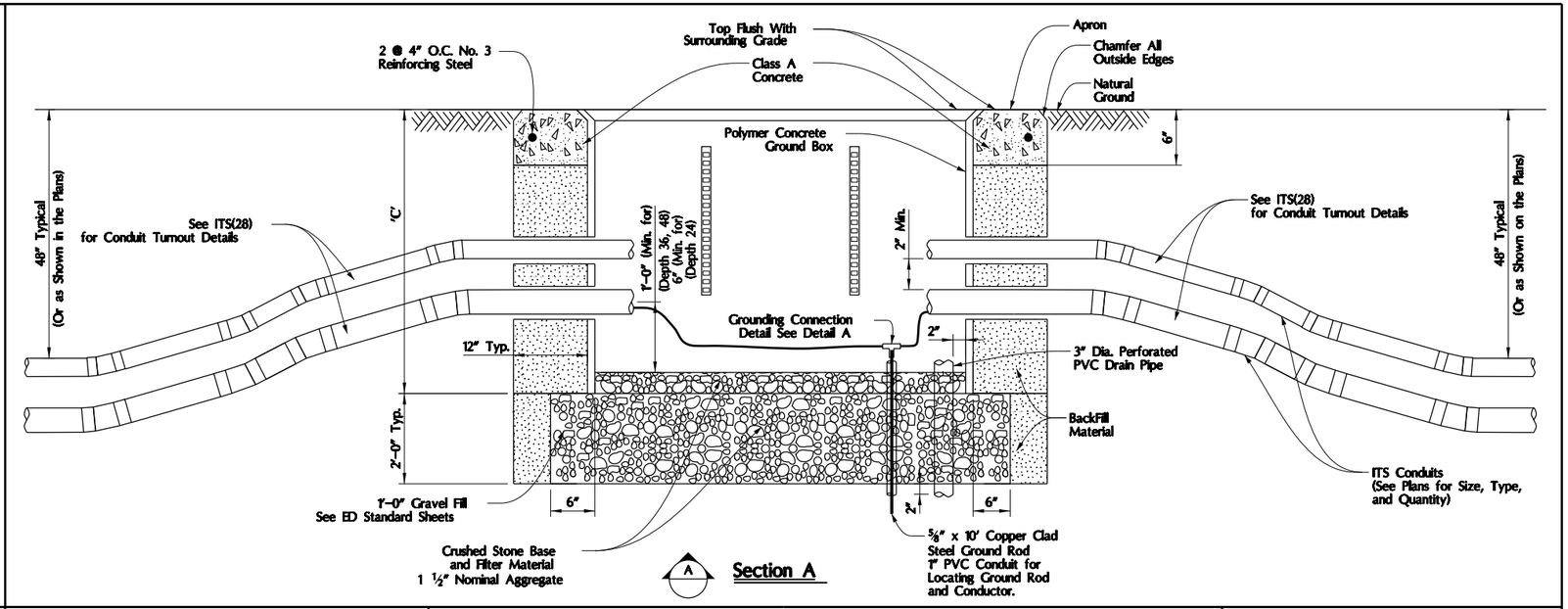
ITS(6)-15

FILE: its(6)-15.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT June 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		111

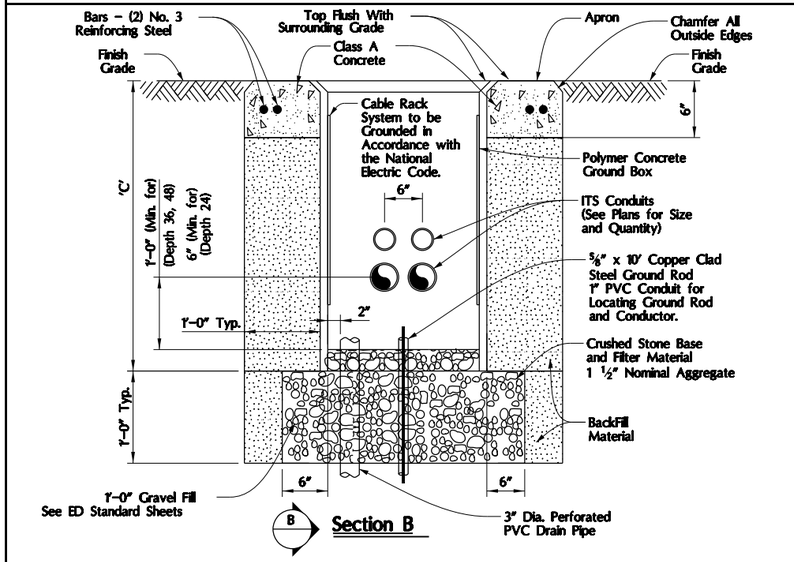
DATE: DATE TIME
FILE: DOCUMENT NAME



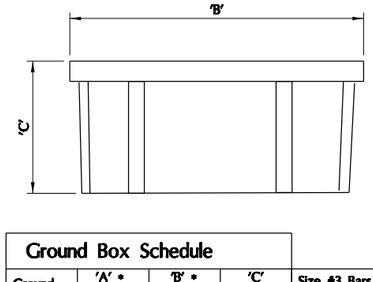
Top View Polymer Concrete Ground Box



Section A



Section B

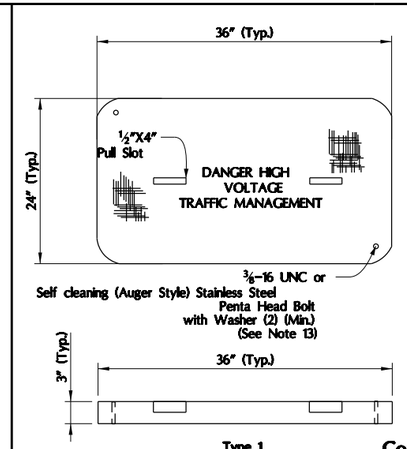


Ground Box Schedule

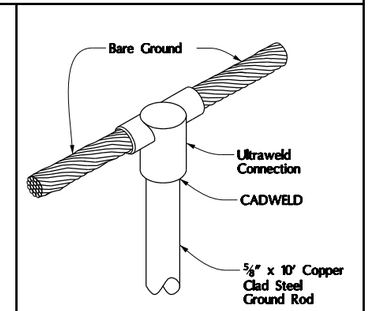
Ground Box Type	'A' * Width (Outside) (Inches)	'B' * Length (Outside) (Inches)	'C' Depth (Outside) (Inches)	Size #3 Bars (Apron)	
				Length	Weight
Type 1	26	38	24, 36, 48	24'-0"	9.12
Type 2	40	63	24, 36, 48	32'-8"	12.45

* – Tolerance of +/– 1.5"

Side View Typical Ground Box



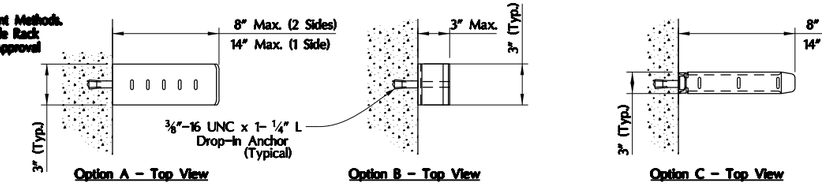
Cover Top View and Side View



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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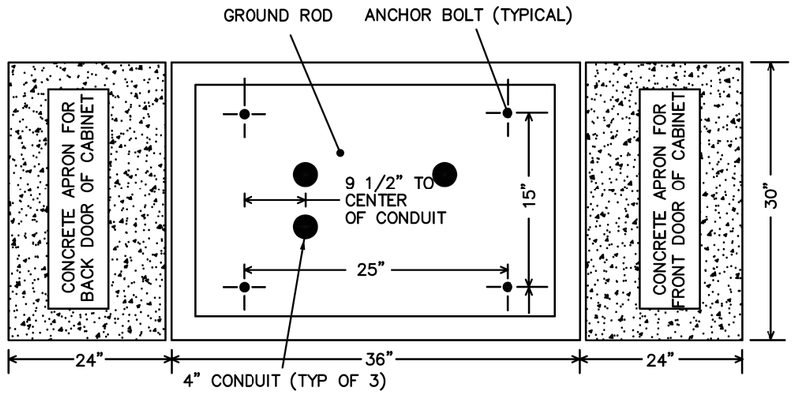
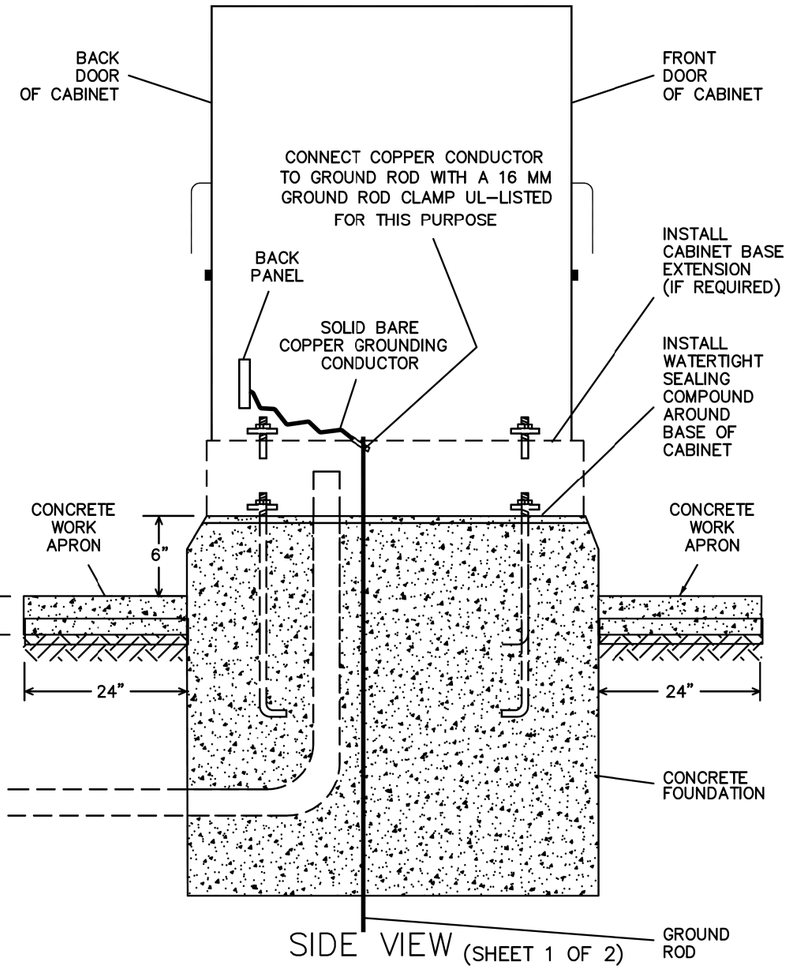
REVISIONS	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		112

BASE-MOUNTED CONTROLLER CABINET FOUNDATION DETAILS

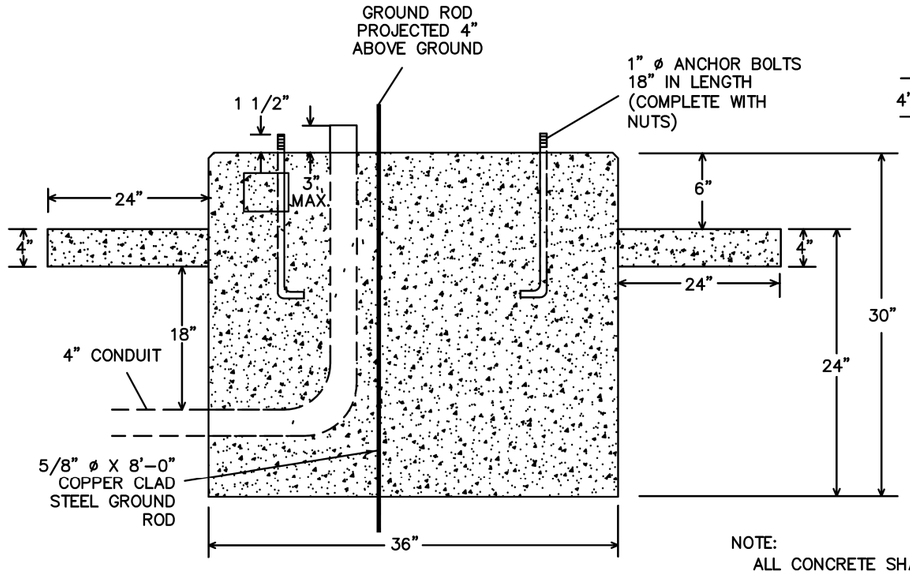
(FOR TYPE 332 CONTROLLER CABINET)



TOP VIEW



SIDE VIEW (SHEET 1 OF 2)



FRONT VIEW

NOTE:
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

CITY OF DALLAS
DEPARTMENT OF STREET SERVICES
TRANSPORTATION OPERATIONS

2014 GENERAL SIGNAL CONSTRUCTION PRICE AGREEMENT SPECIFICATION

EXHIBIT B

Kimley»Horn
F-928
13455 Noel Road
Two Galleria Office Tower, Suite 700
Dallas, Texas 75240
Tel. No. (972) 770-1300
Fax No. (972) 239-3820

CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
CITY OF DALLAS
EXHIBIT B
TRAFFIC SIGNAL CONTROLLER CABINET FOUNDATION DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	DALLAS	113
CHECK	CONTROL	SECTION	JOB	
	0918	47	247, ETC.	

PLOTTED: 4/1/2021
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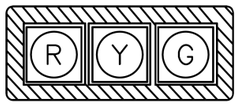
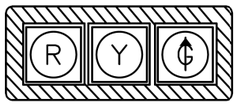
40.0000 ft / in.
BY: marianna.borrego

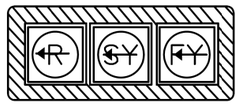
TRAFFIC SIGNAL HEAD IDENTIFICATION CHART



H3



H3U



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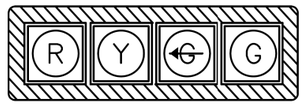

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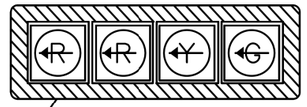
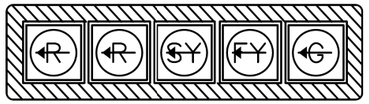


5" BACKPLATE

H4PLT



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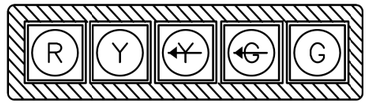

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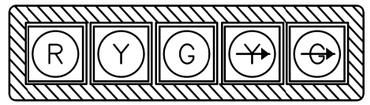

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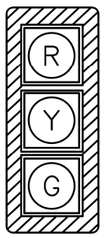

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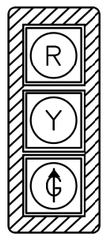

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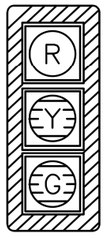

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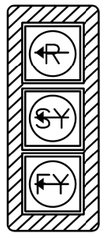

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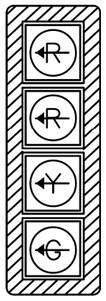

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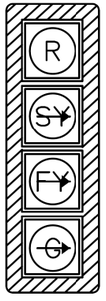

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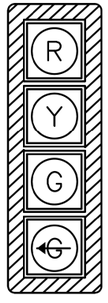

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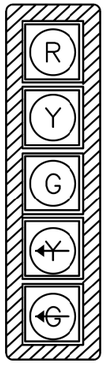

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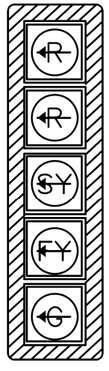

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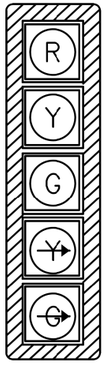

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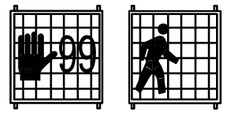
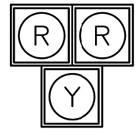


COUNTDOWN PEDESTRIAN SIGNAL HEADS



HAWK

NOTE: ALL SIGNAL HEAD LENSES SHALL BE 12" IN DIAMETER.

CITY OF DALLAS
DEPARTMENT OF STREET SERVICES
TRANSPORTATION OPERATIONS

2014 GENERAL SIGNAL CONSTRUCTION
PRICE AGREEMENT SPECIFICATION

EXHIBIT D

Kimley»Horn F-928
13455 Noel Road
Two Galleria Office Tower, Suite 700
Dallas, Texas 75240
Tel. No. (972) 770-1300
Fax No. (972) 239-3820

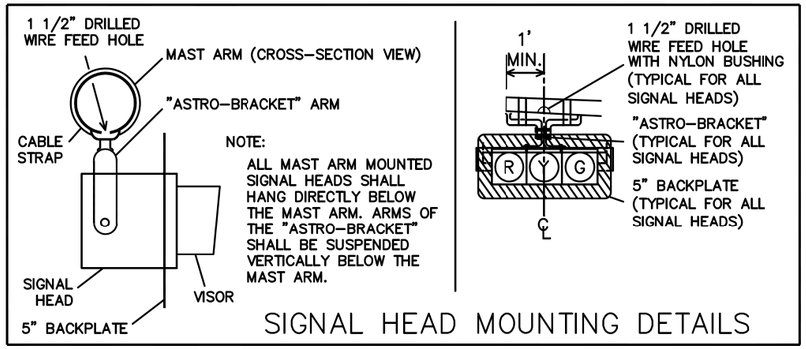
CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
CITY OF DALLAS
EXHIBIT D
TRAFFIC SIGNAL
HEAD IDENTIFICATION

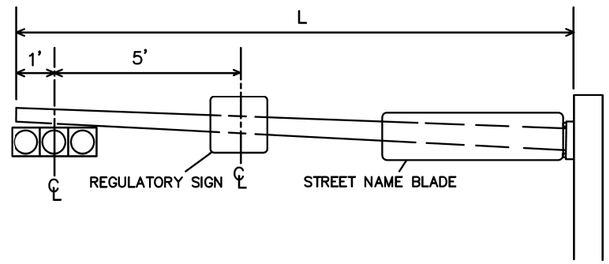
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	DALLAS	114
CHECK	CONTROL	SECTION	JOB	
	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\COD-STD-Exhibit_D.dgn
40.0000 ft / in.
BY: marianna.barrego

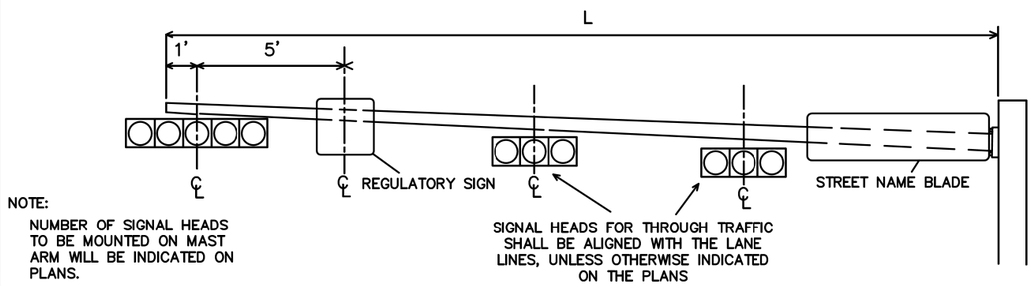
DETAILS FOR MOUNTING SIGNAL AND SIGN HARDWARE ON MAST ARMS



SIGNAL HEAD 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 STREET SERVICES
TRANSPORTATION OPERATIONS

2014 GENERAL SIGNAL CONSTRUCTION
PRICE AGREEMENT SPECIFICATION

EXHIBIT E

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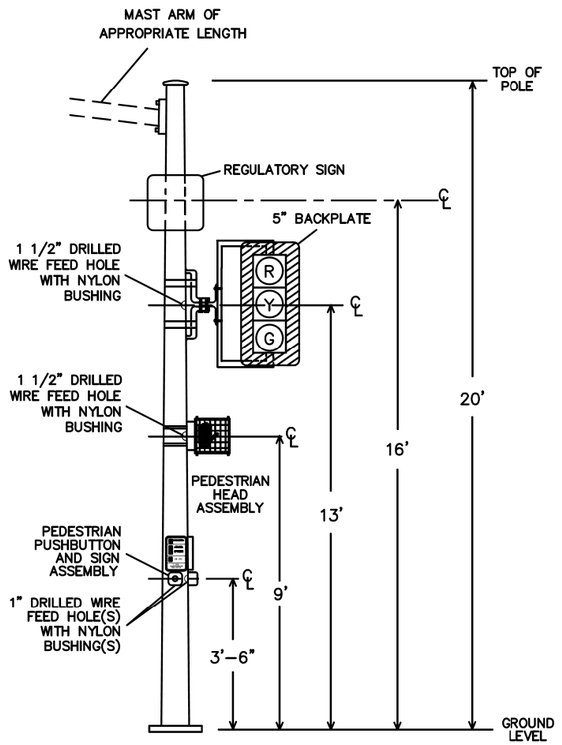
CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

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.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	DALLAS	115
	CONTROL	SECTION	JOB	
CHECK	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\Iproject\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\COD-STD-Exhibit_E.dgn
40.0000 ft / in.
BY: marianna.borrego

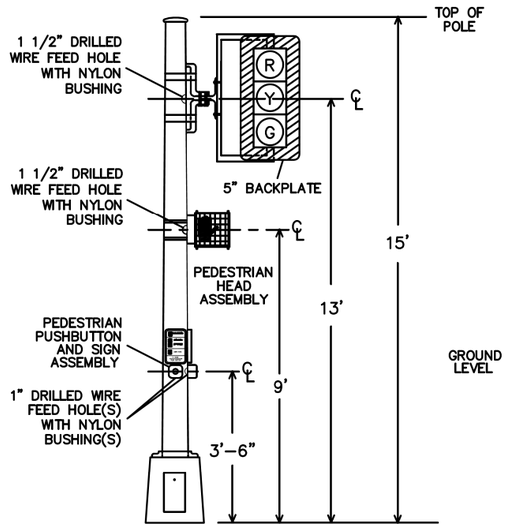
DETAILS FOR MOUNTING SIGNAL AND SIGN HARDWARE ON POLES



MAST ARM POLE

NOTE:

SIGNS, VEHICLE SIGNAL HEADS, PEDESTRIAN SIGNAL HEADS AND PEDESTRIAN PUSHBUTTONS SHALL BE INSTALLED ON STRAIN POLES AT HEIGHTS SHOWN ABOVE.



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

CITY OF DALLAS
DEPARTMENT OF STREET SERVICES
TRANSPORTATION OPERATIONS

2014 GENERAL SIGNAL CONSTRUCTION
PRICE AGREEMENT SPECIFICATION

EXHIBIT F

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Two Galleria Office Tower, Suite 700
Dallas, Texas 75240
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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

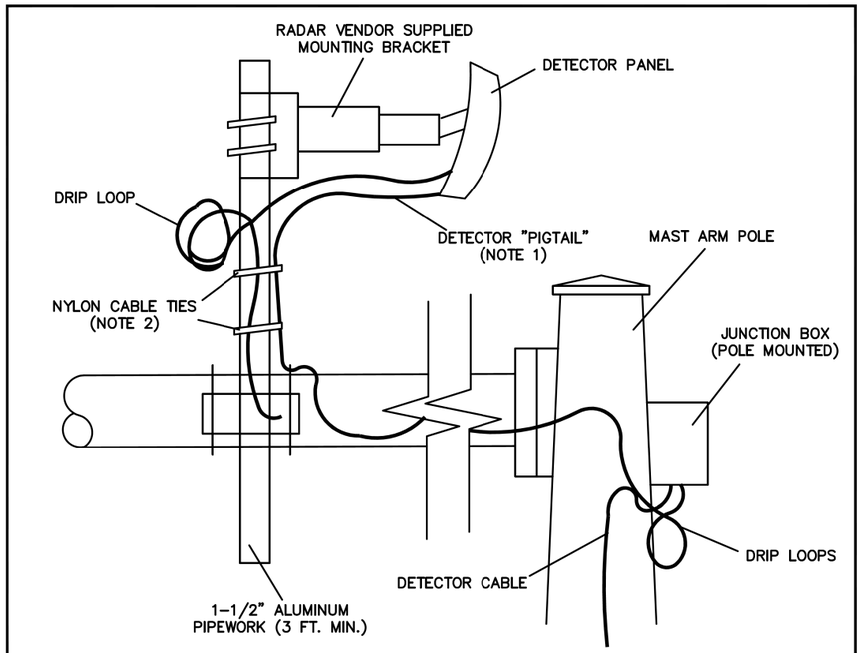
TRAFFIC SAFETY IMPROVEMENTS
CITY OF DALLAS
EXHIBIT F

TRAFFIC SIGNAL AND SIGN MOUNTING ON POLE DETAILS

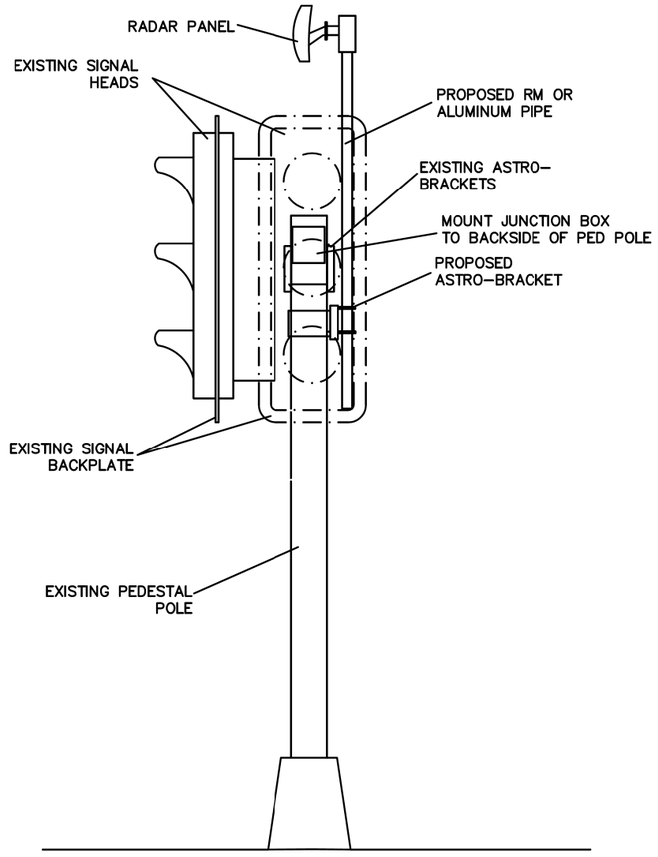
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	DALLAS	116
CHECK	CONTROL	SECTION	JOB	
	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\Iproject\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\COD-STD-Exhibit_F.dgn
40.0000 ft / in.
BY: marianna.borrego

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 PUBLIC WORKS AND TRANSPORTATION

2014 GENERAL SIGNAL CONSTRUCTION
PRICE AGREEMENT SPECIFICATION

EXHIBIT N

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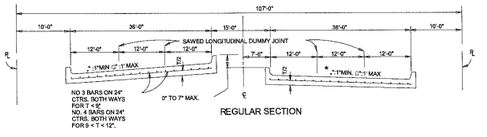
CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

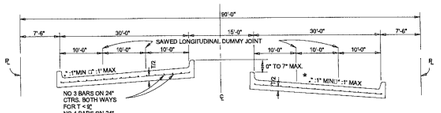
TRAFFIC SAFETY IMPROVEMENTS
CITY OF DALLAS
EXHIBIT N
DETAILS FOR MOUNTING RADAR VEHICLE DETECTOR PANELS

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	DALLAS	
CHECK	CONTROL	SECTION	JOB	117
	0918	47	247,ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\COD-STD-Exhibit_N.dgn
40.0000 ft / in.
BY: marianna.borrego



REGULAR SECTION



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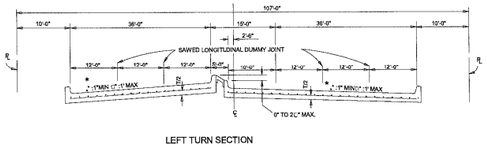

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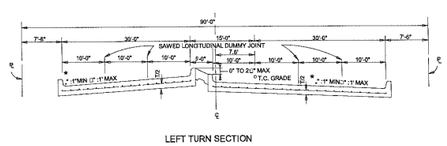
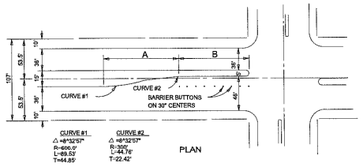
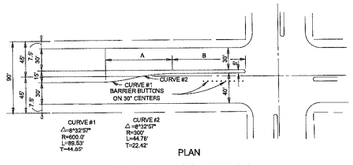


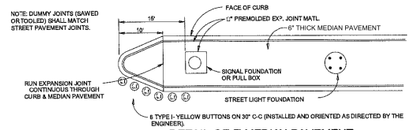
LEFT TURN SECTION



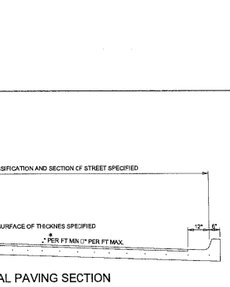
TYPE S-6-D SECTION



TYPE M-6-D(B) SECTION



DETAIL OF 5' MEDIAN PAVEMENT



SPECIAL PAVING SECTION
SCHEMATIC HALF-SECTION

REINFORCED CONCRETE BASE W/ INTEGRAL CURB AND GUTTER & ASPHALT SURFACE COURSE

(TO BE USED ONLY WHEN SPECIFICALLY SHOWN ON THE PLAN)

EXCEPT AS INDICATED ABOVE ALL PLAN AND SECTION DETAILS SHALL BE IDENTICAL TO THOSE SHOWN ELSEWHERE ON THIS SHEET FOR SECTIONS S-6-D, M-6-D(A), M-6-D(B), S-4-D FOR CURB AND GUTTER DETAILS. SEE PAGE 1006

NOTE: (SEE PAGE 1002)
MONOLITHIC MEDIAN NOSE IS STANDARD (ROUNDED NOSE IS TO BE USED ONLY AT DIRECTION OF ENGINEER TO MATCH EXISTING FACILITIES).

NOTES:

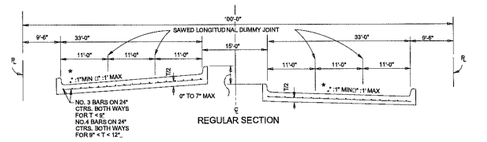
1. ALL STEEL SHALL BE GRADE 40 DEFORMED REINFORCING BARS.
2. GENERAL NOTES PROVIDED ON SHEET 1005 APPLY.
3. FOR SUBSTITUTING FOR #3 BAR REINFORCING, THE SIZE OF THE WIRE FABRIC SHALL BE 12 X 12 - W3.5 X W3.5 WITH A NOMINAL DIAMETER OF 0.211 IN. AND NOMINAL WEIGHT OF 0.119 LBS PER LIN. FT.
4. FOR SUBSTITUTION FOR #4 BAR REINFORCING, THE SIZE OF THE WIRE SHALL BE 12 x 12 - W6 X W6 WITH A NOMINAL DIAMETER OF 0.276 INCHES AND A NOMINAL WEIGHT OF 0.204 LBS/LIN. FT.
5. REDWOOD EXPANSION JOINTS SHALL BE PLACED AT OR NEAR THE RAD.US 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.

TYPE S-6-D SECTION

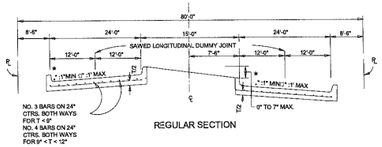
CROSS STREET	TRANSITION LENGTH 'A'	MINIMUM STORAGE 'B'	CURVE #1 RAD.US	CURVE #2 RAD.US	LANE WIDTH(S)
LOCAL	109.09'	90'	400'	200'	10'
COLLECTOR	109.09'	100'	400'	200'	10'
MINOR ARTERIAL	133.79'	150'	600'	300'	10'
PRINCIPAL ARTERIAL	133.79'	200'	600'	300'	10'
SPECIAL MOVEMENTS					
STANDARD DOUBLE LEFT TURN	197.78'	150'	600'	300'	2-11'
MINIMUM DOUBLE LEFT TURN	188.68'	150'	600'	300'	2-10'
RIGHT TURN	109.09'	90'	400'	200'	10'

TYPE M-6-D(A) SECTION

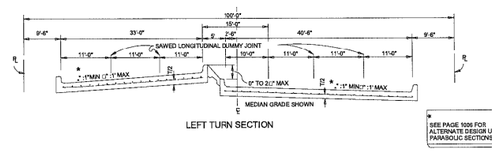
CROSS STREET	TRANSITION LENGTH 'A'	MINIMUM STORAGE 'B'	CURVE #1 RAD.US	CURVE #2 RAD.US	LANE WIDTH(S)
LOCAL	109.09'	90'	400'	200'	10'
COLLECTOR	109.09'	100'	400'	200'	10'
MINOR ARTERIAL	109.09'	150'	400'	200'	10'
PRINCIPAL ARTERIAL	133.79'	200'	600'	300'	10'
SPECIAL MOVEMENTS					
STANDARD DOUBLE LEFT TURN	197.78'	150'	600'	300'	2-11'
MINIMUM DOUBLE LEFT TURN	188.68'	150'	600'	300'	2-10'
RIGHT TURN	109.09'	90'	400'	200'	10'



REGULAR SECTION

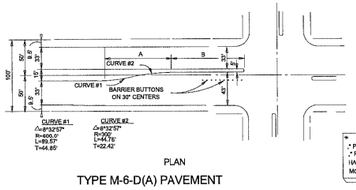


REGULAR SECTION

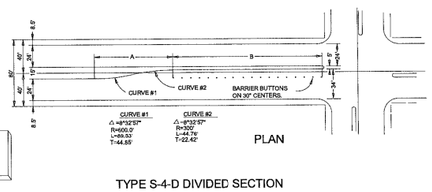


LEFT TURN SECTION

SEE PAGE 1006 FOR ALTERNATE DESIGN USING PARABOLIC SECTIONS

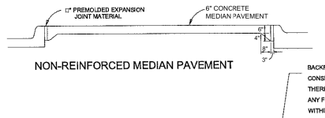


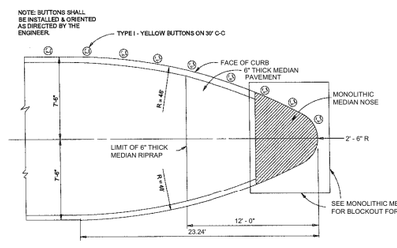
TYPE M-6-D(A) PAVEMENT



TYPE S-4-D DIVIDED SECTION

* PER FOOT NORMAL MINIMUM.
** PER FOOT ONLY ON STREETS HAVING GRADES OF 1.00% OR MORE.





DETAIL OF NOSE FOR 15' WIDTH MEDIAN ISLAND

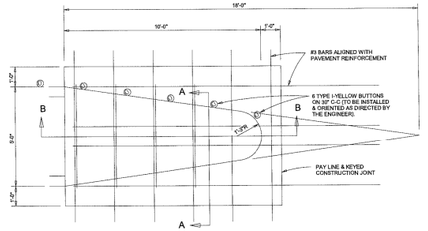
TYPE M-6-D(B) SECTION

CROSS STREET	TRANSITION LENGTH 'A'	MINIMUM STORAGE 'B'	CURVE #1 RADIUS	CURVE #2 RADIUS	LANE WIDTH(S)
LOCAL	94.34'	90'	300'	150'	10'
COLLECTOR	94.34'	100'	300'	150'	10'
MINOR ARTERIAL	94.34'	150'	300'	150'	10'
PRINCIPAL ARTERIAL	109.09'	200'	400'	200'	10'
SPECIAL MOVEMENTS					
STANDARD DOUBLE LEFT TURN	188.68'	150'	600'	300'	2-11'
MINIMUM DOUBLE LEFT TURN	188.68'	150'	600'	300'	2-10'
RIGHT TURN	94.34'	90'	300'	150'	10'

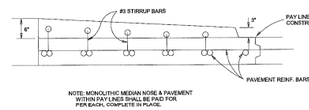
TYPE S-4-D SECTION

CROSS STREET	TRANSITION LENGTH 'A'	MINIMUM STORAGE 'B'	CURVE #1 RADIUS	CURVE #2 RADIUS	LANE WIDTH(S)
LOCAL	109.09'	90'	400'	200'	10'
COLLECTOR	109.09'	100'	400'	200'	10'
MINOR ARTERIAL	109.09'	150'	400'	200'	10'
PRINCIPAL ARTERIAL	133.79'	150'	600'	300'	10'
SPECIAL MOVEMENTS					
STANDARD DOUBLE LEFT TURN	197.78'	100'	600'	300'	2-11'
MINIMUM DOUBLE LEFT TURN	188.68'	100'	600'	300'	2-10'
RIGHT TURN	109.09'	90'	400'	200'	10'

TYPICAL SECTIONS-DIVIDED ARTERIAL STREETS

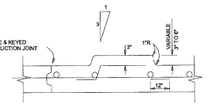


MONOLITHIC MEDIAN NOSE



NOTE: MONOLITHIC MEDIAN NOSE & PAVEMENT WITHIN PAY LINES SHALL BE PAID FOR PER EACH, COMPLETE IN PLACE.

SECTION B-B



SECTION A-A

PAVING DETAILS

PAVING SECTIONS AND STREET LAYOUTS WITH MEDIAN DETAILS					
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION					
CITY OF DALLAS, TEXAS					
DESIGN	DRAWN	DATE	FILE	NO.	PAGE NO.
C. O. D.	A. B. & A.	APRIL 1997	251D	1	1001

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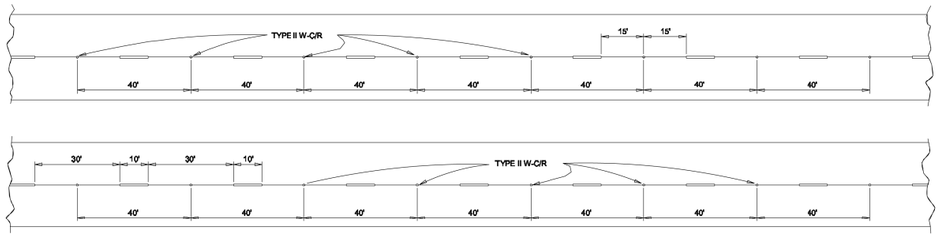
CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
CITY OF DALLAS
251-D
PAVING DETAILS

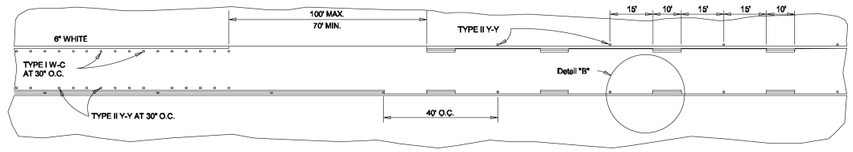
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	DALLAS	118
CHECK	CONTROL	SECTION	JOB	
	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\Iproject\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\COD-STD-251D-1001.dgn
40.0000 ft / in.
BY: marianna.borrego

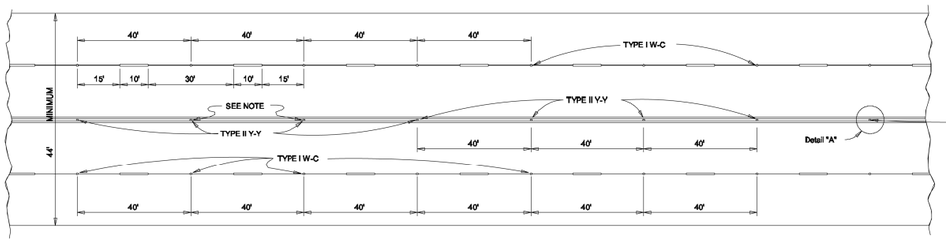


LANE LINES FOR DIVIDED ARTERIALS

INDIVIDUAL UNIT TRAFFIC BUTTONS TYPE II W-C/R RED FACE TOWARD WRONG WAY TRAFFIC SHALL BE SPACED ON 40' CENTERS.

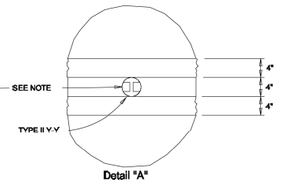


CONTINUOUS LEFT TURN LANE MARKINGS

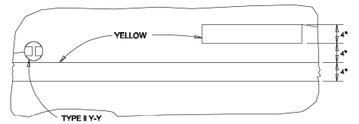


LANE LINES & CENTER LINES FOR UNDIVIDED MINOR ARTERIALS (44' or more in width)

INDIVIDUAL UNIT TRAFFIC BUTTONS TYPE I W-C, CLEAR FACE TOWARD NORMAL TRAFFIC, SHALL BE SPACED ON 40' CENTERS.

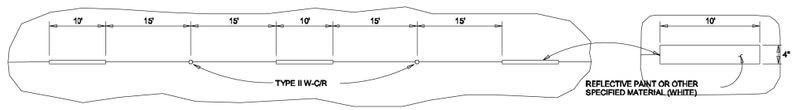


Detail "A"



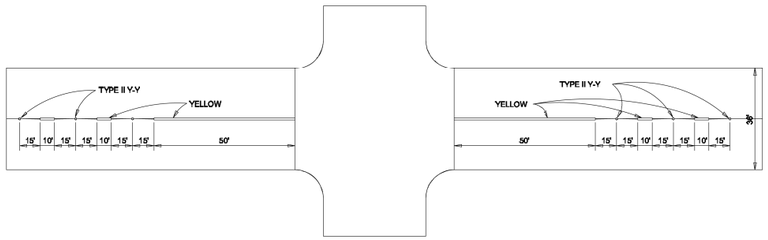
Detail "B"

NOTE: USE 4" TYPE II Y-Y TRAFFIC BUTTONS BETWEEN DOUBLE YELLOW LINES AT 40' O.C.



TRAFFIC LANE LINE MARKINGS (Typical)

TRAFFIC BUTTONS TYPE II W-C/R SHALL BE SPACED ON 40' CENTERS WITH A CLEAR FACE TOWARD NORMAL TRAFFIC AND THE RED FACE TOWARD WRONG WAY TRAFFIC.



PAVEMENT MARKINGS 36' LOCAL & COLLECTOR STREETS

TYPICAL PAVEMENT MARKINGS					
FOR					
CITY STREETS					
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION					
CITY OF DALLAS, TEXAS					
DESIGN	DRAWN	DATE	FILE	NO.	PAGE NO.
C. O. D.	A. B. & A.	APRIL 1997	251D	1	5003

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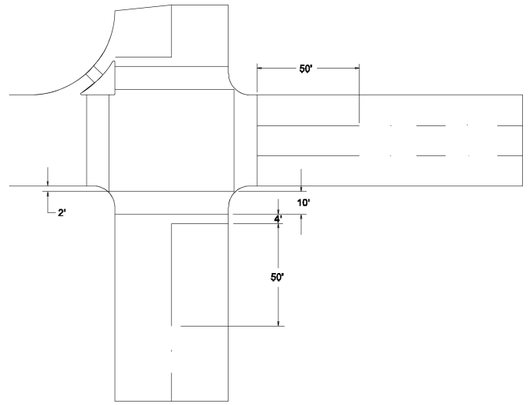
CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

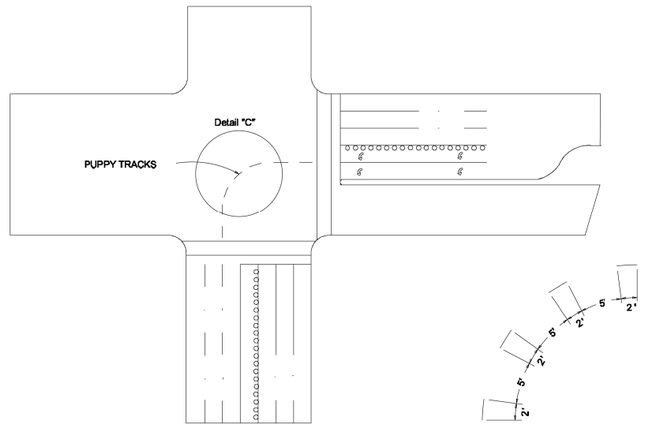
TRAFFIC SAFETY IMPROVEMENTS
CITY OF DALLAS 251-D
MISCELLANEOUS DETAILS

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	DALLAS	119
CHECK	CONTROL	SECTION	JOB	
	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\COD-STD-251D-5003.dgn
40.0000 ft / in.
BY: marianna.borrego



TYPICAL CROSSWALK LAYOUT



TYPICAL " PUPPY TRACK " PVM'T. MARKING LAYOUT

DETAIL " C "

NO SCALE

TYPICAL PAVEMENT MARKING DETAILS					
DESCRIPTION					
DESCRIPTION					
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION					
CITY OF DALLAS, TEXAS					
DESIGN	DRAWN	DATE	FILE	NO.	PAGE NO.
C. O. D.	A. B. & A.	APRIL 1997			5004

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS

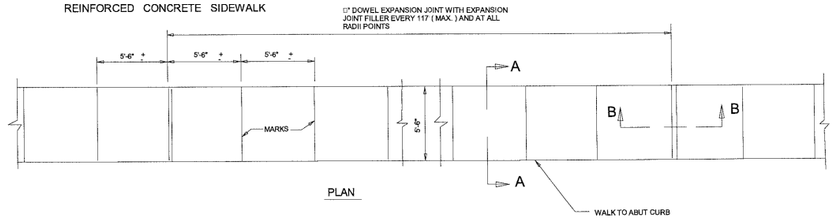
CITY OF DALLAS
251-D

TYPICAL PAVEMENT MARKINGS

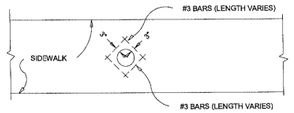
DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	DALLAS	120
CHECK	CONTROL	SECTION	JOB	
	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\COD-STD-251D-5004.dgn
40.0000 ft / in.
BY: marianna.barrego

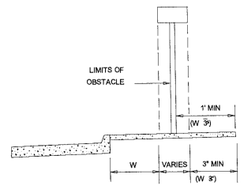
REINFORCED CONCRETE SIDEWALK



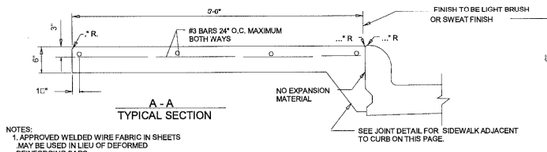
PLAN



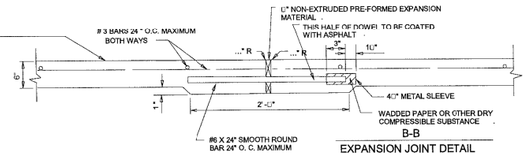
REINFORCING DETAIL AT WATER METERS IN SIDEWALK



THIS SIDEWALK DESIGN IS APPROVED BY THE PARK DEPARTMENT FOR USE ALONG CITY PARK PROPERTY.

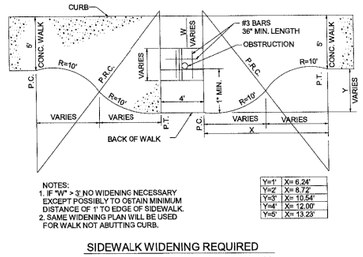


A - A
TYPICAL SECTION



B-B
EXPANSION JOINT DETAIL

NOTES:
1. APPROVED WELDED WIRE FABRIC IN SHEETS MAY BE USED IN LIEU OF DEFORMED REINFORCING BARS.
2. THE WIRE FABRIC SHALL BE SUPPORTED BY APPROVED BAR CHAIRS ON 36" CENTERS.
3. THE SIZE OF THE WIRE FABRIC SHALL BE 12 X 12-W4 X W4 WITH A NOMINAL DIAMETER OF 0.225 INCHES AND A NOMINAL WEIGHT OF 0.136 LBS./LIN. FT.

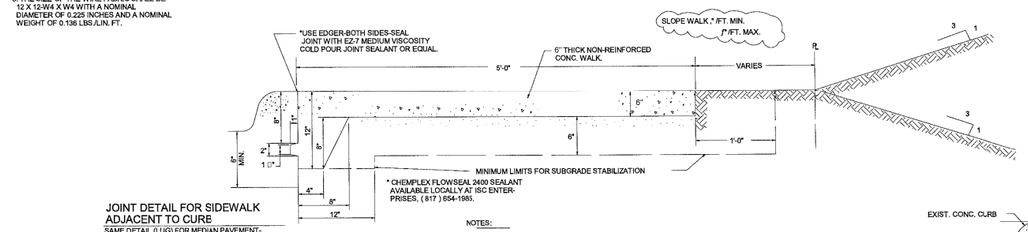


Y=1'	X= 6.24'
Y=2'	X= 8.72'
Y=3'	X= 10.54'
Y=4'	X= 12.00'
Y=5'	X= 13.23'

NOTES:
1. IF "W" > 3' 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.

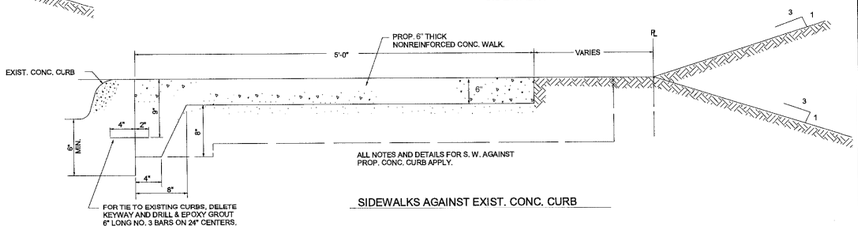
SIDEWALK WIDENING REQUIRED AROUND OBSTACLES IN SIDEWALK

✳ EXPANSION MATERIAL MUST BE PLACED ADJACENT THE BUILDING, STRUCTURE, WALL OR POLE WHEN SIDEWALK IS POURED ADJACENT THESE ITEMS.



JOINT DETAIL FOR SIDEWALK ADJACENT TO CURB
SAME DETAIL (LUG) FOR MEDIAN PAVEMENT- USE PREMOLDED EXPANSION JOINT

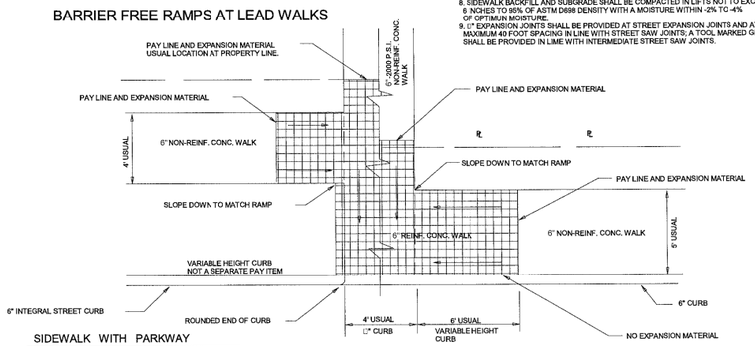
NOTES:
1. ALL HONEYCOMB IN BACK OF CURB TO BE TROWEL- PLASTERED BEFORE POURING SIDEWALK
2. LUG MAY BE FORMED BY SHAPING SUBGRADE TO APPROXIMATE DIMENSIONS SHOWN.
3. FOR SIDEWALKS AGAINST EXISTING CURB, KEYWAY SHALL BE REPLACED WITH 6" LONG #3 BARS DRILLED 4" INTO EXISTING BACK CURB AND EPOXY GROUTED ON 24" CENTERS.
4. PAYMENT FOR KEYWAY SUBSIDIARY TO SIDEWALK LUG PAY ITEM.
5. PAYMENT FOR EXCAVATION, BORROW, SUBGRADE STABILIZATION, AND COMPACTION IS SUBSIDIARY TO CONCRETE SIDEWALK PAY ITEM.
6. LIME STABILIZATION OR SELECT BORROW MATERIAL FOR SUBGRADE IS REQUIRED WHEN SOIL P.I. IS GREATER THAN 18. LIMITS OF SUBGRADE STABILIZATION ARE MINIMUM REQUIRED.
7. BACKFILL FOR SIDEWALK SUBGRADE SHALL BE LIME STABILIZED SOIL OR SELECT BORROW MATERIAL HAVING A P.I. NOT LESS THAN 10 NOR GREATER THAN 18.
8. SIDEWALK BACKFILL AND SUBGRADE SHALL BE COMPACTED IN LIFTS NOT TO EXCEED 6 INCHES TO 95% OF ASTM D698 DENSITY WITH A MOISTURE WITHIN -2% TO +5% OF OPTIMUM MOISTURE.
9. ½" 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 LIME WITH INTERMEDIATE STREET SAW JOINTS.



SIDEWALKS AGAINST EXIST. CONC. CURB

✳ SEE PAGE 2001 FOR DETAIL OF SIDEWALK ADJACENT TO INLET.

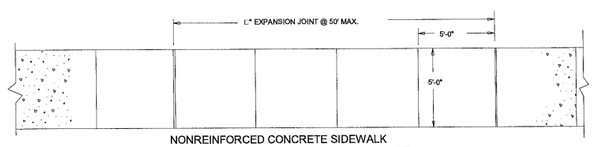
BARRIER FREE RAMPS AT LEAD WALKS



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 #3 BARS SPACED 24" O.C. MAX. BOTH WAYS OR 6 GA. 6" X 6" WIRE MESH.
4. BROOM OR RAKE FINISH NEEDED.



NONREINFORCED CONCRETE SIDEWALK

MISCELLANEOUS DETAILS					
REINFORCED SIDEWALKS AND BARRIER FREE RAMPS					
DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION					
CITY OF DALLAS, TEXAS					
DESIGN	DRAWN	DATE	FILE	NO.	PAGE NO.
C. O. D.	A. B. & A.	APRIL 1997	251D	1	9005

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CITY OF DALLAS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SAFETY IMPROVEMENTS
CITY OF DALLAS 251-D
TYPICAL PAVEMENT MARKING DETAILS

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	(SEE TITLE SHEET)		CS
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DAL	DALLAS	121
CHECK	CONTROL	SECTION	JOB	
	0918	47	247, ETC.	

PLOTTED: 4/1/2021
FILENAME: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\COD-STD-251D-9005.dgn
40.0000 ft / in.
BY: marianna.borrego

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I. STORMWATER POLLUTION PREVENTION PLAN-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Perrmit 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 - Contact Sue Alvarez, Senior Program Manager

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# _____

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.

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
☒ BMP's not required	☒ BMP's not required	☒ BMP's not required
☐ 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.

4.

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.

2.

3.

4.

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

Special Note: 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 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 appropiate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the 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 notifiy 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	DAL	DALLAS	
CONTROL	SECTION	JOB	SHEET NO.
0918	47	247, ETC.	122

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

A. GENERAL SITE DATA

1. PROJECT LIMITS: *SIX INTERSECTIONS WITHIN DALLAS COUNTY*

Harry Hines Blvd at Market Center Blvd: N: 32° 48' 21.70" W: 96° 49' 47.18"
Blackburn St at Turtle Creek Blvd: N: 32° 48' 47.51" W: 96° 48' 03.10"
Lemmon Ave at Mahanna St: N: 32° 49' 26.76" W: 96° 49' 11.24"
Griffin St E at St. Paul St: N: 32° 46' 26.05" W: 96° 47' 27.96"
Lemmon Ave at Mockingbird Ln: N: 32° 50' 11.71" W: 96° 49' 53.78"

2. PROJECT SITE MAPS:

- *Project Location Map: The Title Sheet*
- *Drainage Patterns: Drainage Area Maps N/A*
- *Slopes Anticipated After Major Gradings or Areas of Soil Disturbance: Typical Sections N/A*
- *Location of Erosion and Sediment Controls: SW3P Site Maps SEE EROSION CONTROL LOGS SHEETS*
- *Surface Waters and Discharge Locations: Drainage and Culvert Layouts N/A*
- *Project Specific Locations: To be specified by the Project Field Office during construction and located in the Project SW3P File. Reference item #10 below.*

3. PROJECT DESCRIPTION:

TRAFFIC SIGNAL INSTALLATION AND IMPROVEMENTS TO PEDESTRIAN FACILITIES AT ALL INTERSECTIONS.

4. MAJOR SOIL DISTURBING ACTIVITIES:

REMOVAL OF EXISTING PAVEMENT FOR MEDIAN IMPORVEMENTS, DRILL SHAFT INSTALLATIONS, CONDUIT INSTALLATION, GROUND BOX AND CONTROLLER CABINET INSTALLATIONS, ETC.

5. EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:

N/A

6. TOTAL PROJECT AREA: 4.0 Acres

Harry Hines Blvd at Market Center Blvd= 0.8 Acres
Blackburn St at Turtle Creek Blvd= 0.8 Acres
Lemmon Ave at Mahanna St= 0.8 Acres
Griffin St E at St. Paul St= 0.8 Acres
Lemmon Ave at Mockingbird Ln= 0.8 Acres

7. TOTAL AREA TO BE DISTURBED: 0.40 Acres (10.0%)

Harry Hines Blvd at Market Center Blvd= 0.08 Acres
Blackburn St at Turtle Creek Blvd= 0.08 Acres
Lemmon Ave at Mahanna St= 0.08 Acres
Griffin St E at St. Paul St= 0.08 Acres
Lemmon Ave at Mockingbird Ln= 0.08 Acres

8. WEIGHTED RUNOFF COEFFICIENT

BEFORE CONSTRUCTION: *N/A*
AFTER CONSTRUCTION: *N/A*

9. NAME OF RECEIVING WATERS:

N/A

10. PROJECT SW3P FILE:

A. For projects disturbing one to five acres, TxDOT will maintain SW3P file at the project field office which contains the followowing: Index Sheet, TCEQ Signature Authority, TCEQ Small Construction Site Notice, SW3P Inspector Qualification Statements, Inspection and Maintenance Reports, EPIC Sheet, SW3P Sheet, Site Location Maps, Stored Material Lists specifying associated control measures, and the Appendix which contains the TPDES Construction General Permit and the Construction PSL Permits per all applicable requirements.

B. For projects disturbing 5 acres or more, TxDOT will follow the actions listed in (10.A.) above with the addition of the following: Notice Of Intent (N.O.I.) and Fee Payment Form, TCEQ Large Construction Site Notice (to be used instead of Small Site Notice), and TPDES Permit Coverage Notice.

C. For projects disturbing less than one acre, actions described in (10.A.) and (10.B.) above are not required.

FILE NAME
DATE
DESIGNER

B. EROSION AND SEDIMENT CONTROLS

1. SOIL STABILIZATION PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

____ TEMPORARY SEEDING
____ MULCHING (Hay or Straw)
____ BUFFER ZONES
____ PLANTING
____ SEEDING
____ SODDING
____ PRESERVATION OF NATURAL RESOURCES
____ FLEXIBLE CHANNEL LINER
____ RIGID CHANNEL LINER
____ SOIL RETENTION BLANKET
____ COMPOST MANUFACTURED TOPSOIL
____ VERTICAL TRACKING
____ OTHER: *(Specify Practice)*

2. STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, as applicable)

____ SILT FENCES
_X_ EROSION CONTROL LOGS
____ EROSION CONTROL COMPOST BERMS (Low Velocity)
____ ROCK FILTER DAMS
____ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
____ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
____ DIVERSION DIKE AND SWALE COMBINATIONS
____ PIPE SLOPE DRAINS
____ PAVED FLUMES
____ ROCK BEDDING AT CONSTRUCTION EXIT
____ TIMBER MATTING AT CONSTRUCTION EXIT
____ CHANNEL LINERS
____ SEDIMENT TRAPS
____ SEDIMENT BASINS
____ STORM INLET SEDIMENT TRAP
____ STONE OUTLET STRUCTURES
____ CURBS AND GUTTERS
____ STORM SEWERS
____ VELOCITY CONTROL DEVICES
____ OTHER: *(Specify Practice)*

NOTE: TOP OF BMP'S SHOULD NOT BE HIGHER THAN ROADWAY ELEVATION AS NOT TO FLOOD ROADWAY UNLESS PRIOR APPROVAL FROM ENGINEER IS OBTAINED.

3. STORM WATER MANAGEMENT: *(Example Below - May be used as applicable, or revised)*

A. Storm water drainage will be provided by ditches, inlets, and storm water systems which carry drainage within the R.O.W. to the lows within the roadway and project site which drains to natural facilities.

B. Other permanent erosion controls include hydraulic design to limit structure outlet velocities and grading design generally consisting of 4 :1 or flatter slopes with permanent vegetative cover.

4. STORM WATER MANAGEMENT ACTIVITIES: (Sequence of Construction)

N/A

5. NON-STORM WATER DISCHARGES:

Filter non-storm water discharges, or hold in retention basins, before being allowed to mix with storm water. These discharges consist of, but not limited to, non-polluted ground water, spring water, foundation or footing drain water, water used for dust control or pavement washing and vehicle wastwater containing no detergents.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:

Maintain all erosion and sediment controls in good working order. Perform any necessary cleaning/repairs/replacements at the earliest possible date prior to next rain event, but no later than 7 calendar days. Ensure the surrounding ground has dried sufficiently to prevent damage from equipment. "Too Wet" is the only reason for not adhering to timeframes described. When construction activities permanently or temporarily cease and are not expected to resume for 14 or more days on a disturbed portion of the site, stabilization measures must be initiated immediately.

2. INSPECTION:

A TxDOT Inspector will perform a regularly scheduled SW3P inspection every 7 calendar days. An Inspection and Maintenance Report, signed by the TxDOT Inspector and the Contractor, will be filed for each Inspection. Revise/clean/repair/replace each BMP control device in accordance with the current Field Inspection and Maintenance Report (Form 2118) and Item 1 (Maintenance) above.

3. WASTE MATERIALS:

On a daily basis, or as may be directed, collect all waste materials, trash and debris from the construction site and deposit into a metal dumpster having a secure cover and which meets all state and local city solid waste management requirements. Empty the dumpster as required by regulation, or as may be directed, at a local approved landfill site. Do not bury construction waste on the construction project site.

4. HAZARDOUS WASTE & SPILL REPORTING:

As a minimum, any products in the following categories are considered to be hazardous: Paints, Acids, Solvents, Fuels, Asphalt Products, Chemical Additives for Soil Stabilization, and Concrete Curing Compounds or Additives. When storing hazardous material on the project site, or at a Project Specific Location, take all practicable precaution to prevent and/or contain any spillage of these materials. In the event of a spill, contact the spill coordinator immediately.

5. SANITARY WASTE:

Use a licensed sanitary waste management contractor to collect all sanitary waste from portable units as may be required by local regulation, or as directed.

6. CONSTRUCTION VEHICLE TRACKING:

On a regular basis, or as may be directed, dampen haul roads for dust control and construct construction entrances/exits. Provide for a motorized broom or vacuum type sweeper to be available on a daily basis, or as may be directed, to remove sediment from paved roadways on project, abutting and traversing the project site.

7. MANAGEMENT PRACTICES:

A. Construct disposal areas, stockpiles, haul roads and PSL's in a manner that will minimize and control the amount of sediment that may enter receiving waters. Do not locate disposal areas in any wetland, waterbody or streambed.
B. Locate construction staging areas, vehicle maintenance and PSL's areas in a manner to minimize the runoff of pollutants.
C. When working in or near a wetland, install and maintain operating soil erosion and sediment controls at all times during construction and isolate the work from the wetland.
D. Clear all waterways as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are not a part of the finished work.
E. Procedures and/or practices should be taken to control dust.
F. Sediment to be removed from roadways daily or when work begins after weather events if construction activities have ceased due to weather event.

Kimley»Horn F-928
113455 Noel Road, Suite 700 Tel. No. (972) 770-1300
Two Galleria Office Tower, Dallas, Texas 75240 Fax No. (972) 239-3820

4/2/2021

STATE OF TEXAS
NATHAN C. NEW
101204
LICENSED
PROFESSIONAL ENGINEER

, P.E.
Signature of Registrant & Date

Texas Department of Transportation

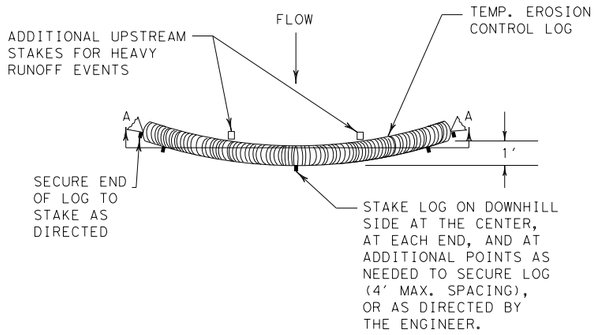
DALLAS DISTRICT ENVIRONMENTAL

STORM WATER POLLUTION PREVENTION PLAN (SW3P)

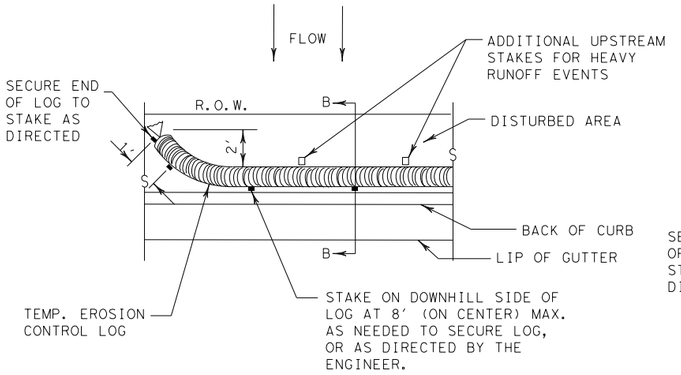
► TEMPLATE REVISION DATE: 02/07/18

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY
HMF	6	(SEE TITLE SHEET)		CS
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MB	TEXAS	DALLAS	DALLAS	
CHECK	CONTROL	SECTION	JOB	123
HMF	0918	47	247,ETC.	
CHECK				
NCN				

DATE: 4/1/2021
FILE: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\EC(9)_1-16.dgn



PLAN VIEW



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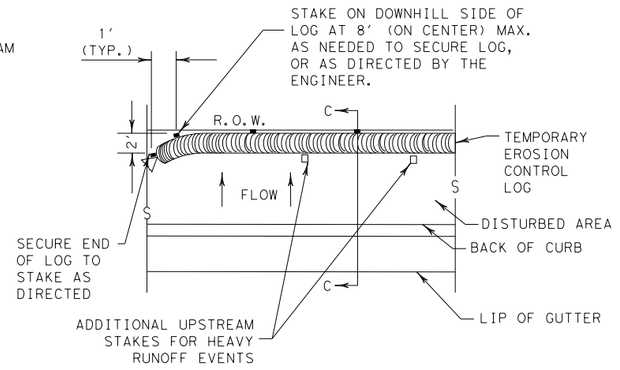
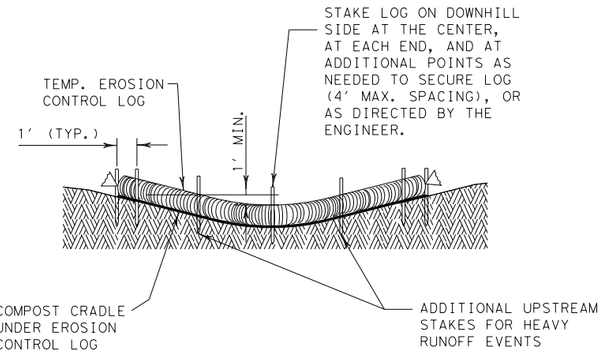


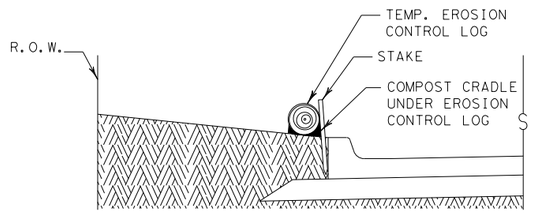
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

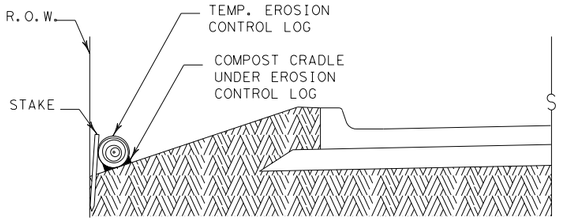
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



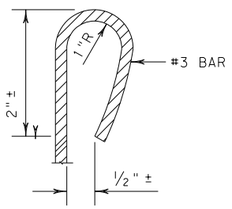
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW

LEGEND

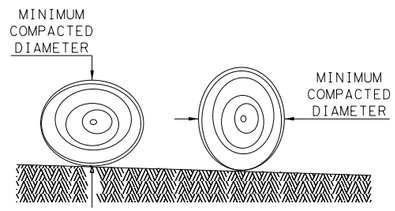
- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL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

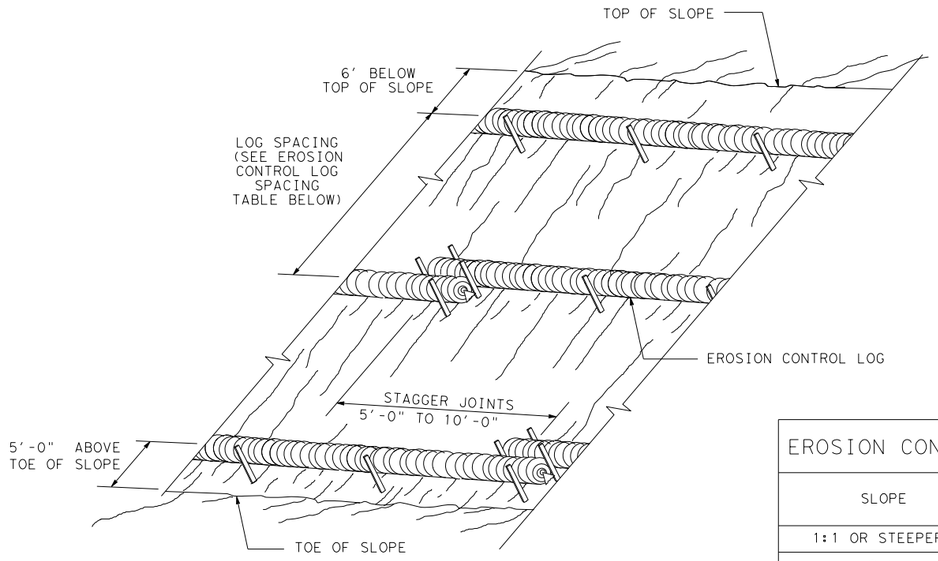
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

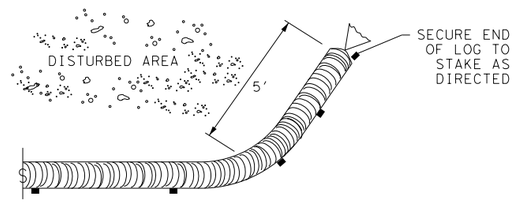
FILE: ec916		DN: TxDOT		CK: KM	DW: LS/PT		CK: LS
© TxDOT: JULY 2016		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0918	47	247,ETC.		CS	
		DIST		COUNTY			SHEET NO.
		DAL		DALLAS			124

DATE: 4/1/2021
FILE: K:\DAL_TPTO\project\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\EC(9)_2-16.dgn



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

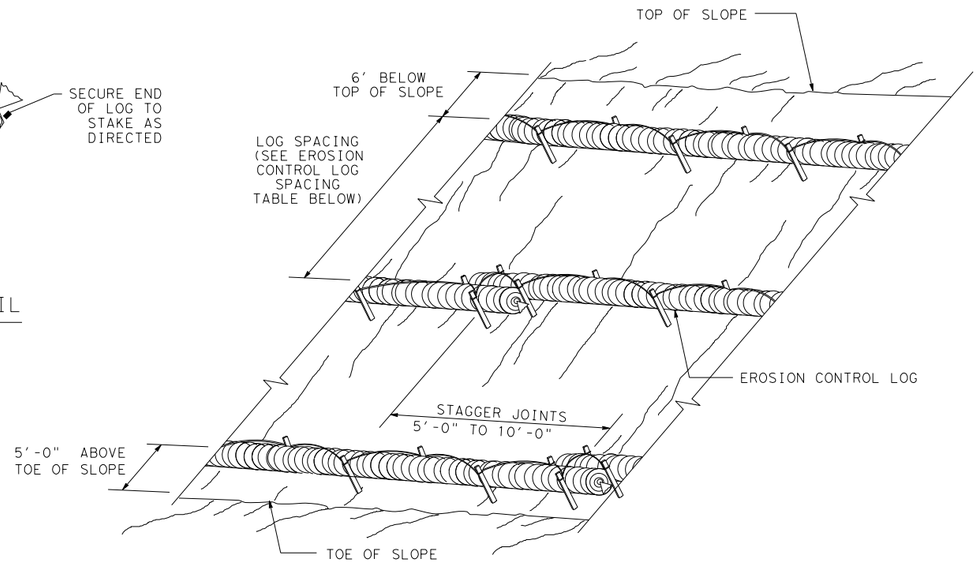
CL-SST



END SECTION RAP DETAIL

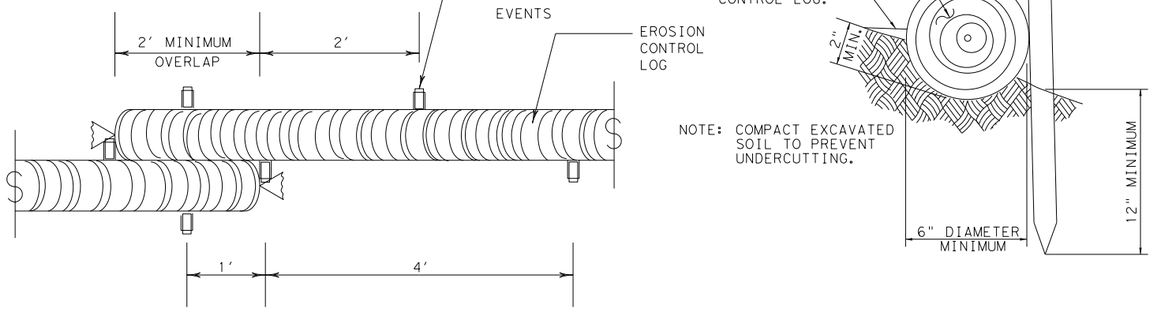
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

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



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

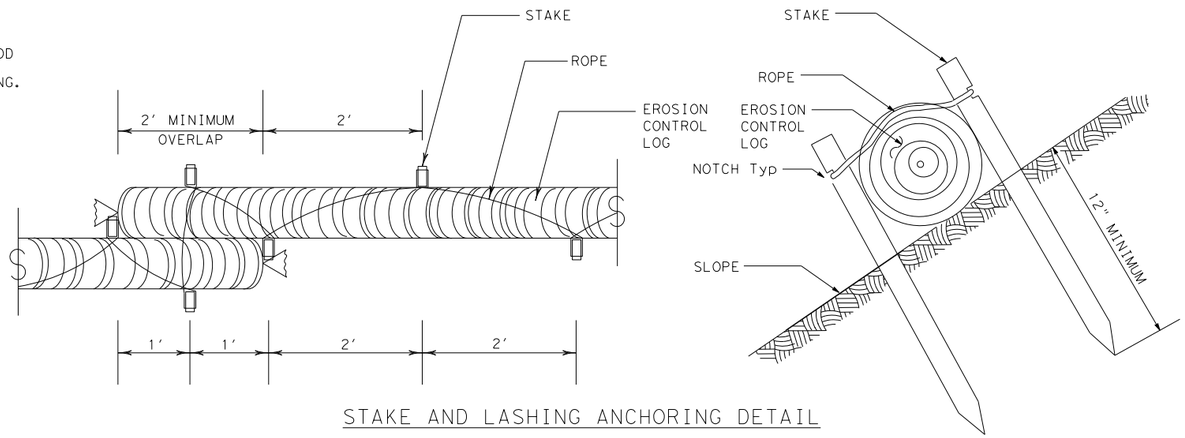
CL-SSL



STAKE AND TRENCHING ANCHORING DETAIL

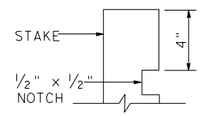
CL-SST

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



STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation

Design Division Standard

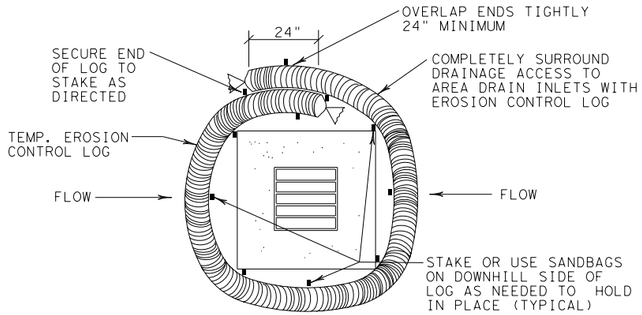
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

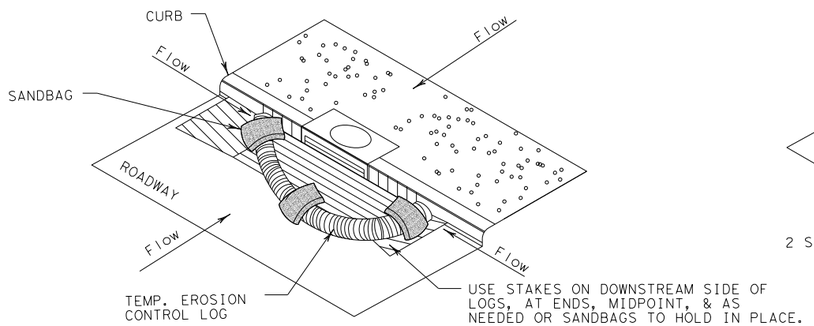
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	47	247,ETC.	CS
	DIST	COUNTY		SHEET NO.
	DAL	DALLAS		125

DATE: 4/1/2021
FILE: K:\DAL_TPTO\1project\064036047 - COD WA 10 Traffic Signals\CADD\Standards - HSIP_06-21 Letting\EC(9)_3-16.dgn



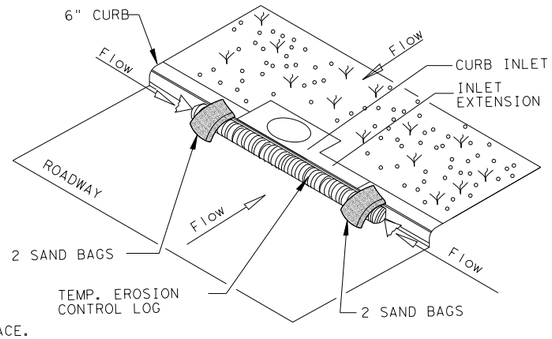
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

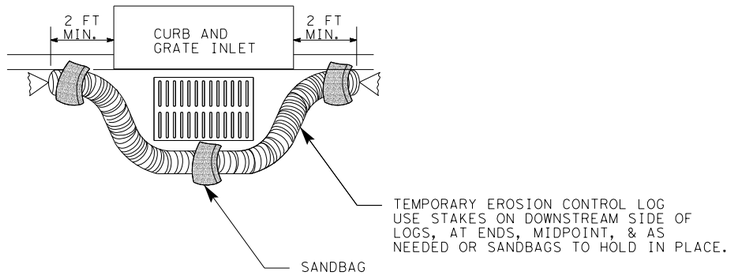
CL-CI



EROSION CONTROL LOG AT CURB INLET

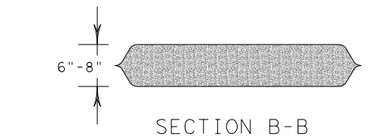
CL-CI

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

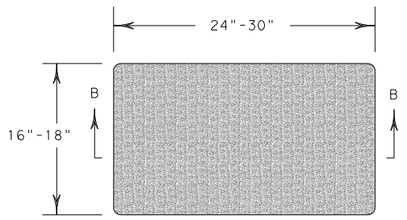


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS			
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0918	47	247,ETC.		CS		
	DIST	COUNTY			SHEET NO.		
	DAL	DALLAS			126		