INDEX OF SHEETS

SEE SHEET 2

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT NO.			
STP 2023 (467)TAPS			
CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		1

DESIGN SPEED = 30 MPH
A.D.T. (2024) = 10,000
A.D.T. (2044) = 13,900
URBAN MINOR ARTERIAL

FEDERAL AID PROJECT NO. STP 2023 (467)TAPS

SE 10TH AVENUE/SL 395
POTTER COUNTY

NET LENGTH OF ROADWAY	=	3279.19	*FT.* =	0.63 *MI.*
NET LENGTH OF BRIDGE	=	0	*FT.* =	0 *MI.*
NET LENGTH OF PROJECT	=	3279.19	*FT.* =	0.63 *MI.*

LIMITS: FROM GARFIELD STREET TO ROSS STREET

CONSTRUCTION OF: DRIVING LANES, SIDEWALK, SHARED USE PATH, DRIVEWAYS, CURB & GUTTER, AND STREETSCAPE ELEMENTS

CONSISTING OF: GRADING, PAVING, SIGNING AND PAVEMENT MARKINGS

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS COMPLETED & ACCEPTED: _____

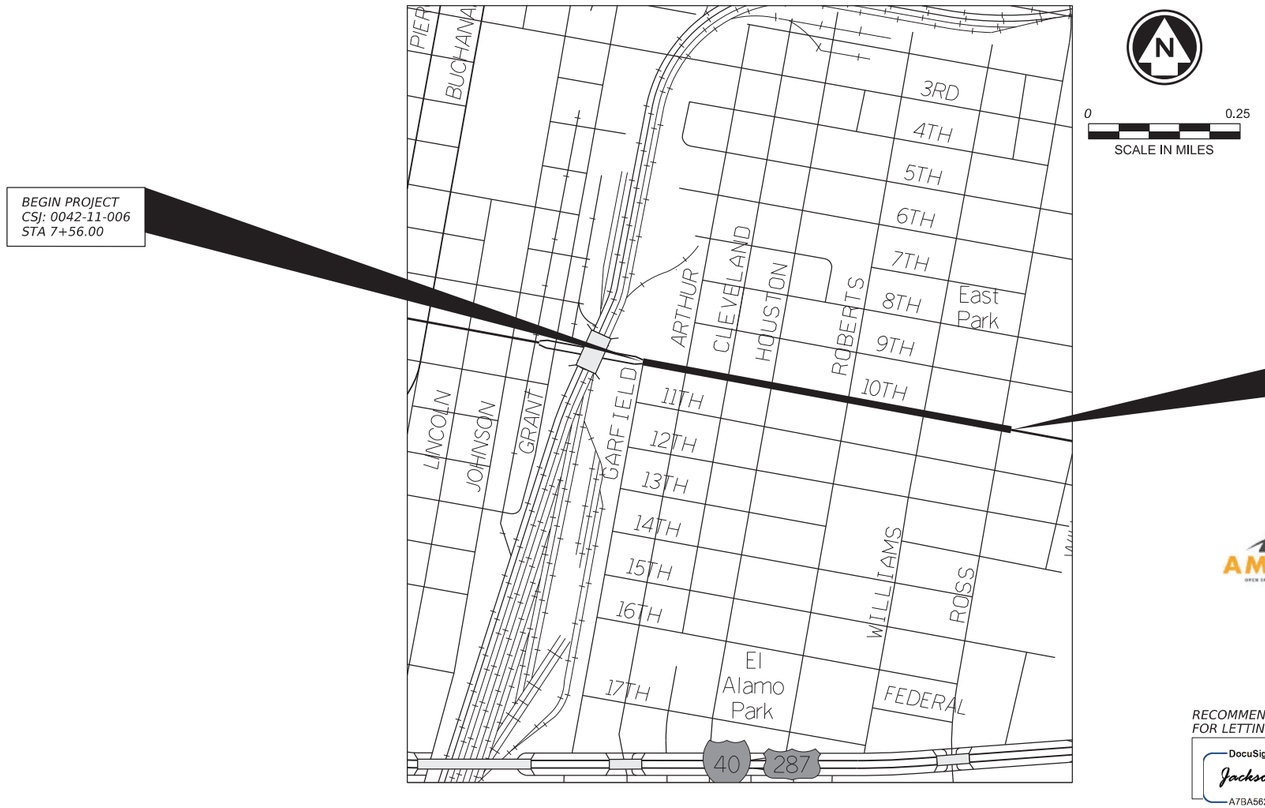
FINAL CONTRACT COST: $ _____

CONTRACTOR : _____

AE SIGNATURE: _____ *DATE:* _____

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH BC (1)- 21 THRU BC (12)- 21 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

TDLR INSPECTION REQUIRED
TABS2024012505



NO EXCEPTIONS
NO EQUATIONS
NO RAILROAD CROSSING

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 23, 2023)

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CITY OF AMARILLO — OPEN SPACES · ENDLESS POSSIBILITIES

2024 Texas Department of Transportation

SUBMITTED FOR LETTING: 3/21/2024
DocuSigned by: Joe Cunpell 2A500C249D094BA...
AREA ENGINEER

RECOMMENDED FOR LETTING: 3/20/2024
DocuSigned by: Jackson Zaharia A7BA562089184FC...
CITY ENGINEER

RECOMMENDED FOR LETTING: 4/3/2024
DocuSigned by: Kit Black 9B5A6EA6AE8B46E...
DISTRICT DIRECTOR OF TRANSPORTATION PLANNING AND DEVELOPMENT

RECOMMENDED FOR LETTING: 3/15/2024
DocuSigned by: Kyle Schniederjan 7B0CF0C60E49485...
CAPITAL ... ERING DIRECTOR

RECOMMENDED FOR LETTING: 4/5/2024
DocuSigned by: Blair Johnson 8B80E3AEB2BC43A...
DISTRICT ENGINEER

DW: EIA
CK: SAW
DW: EIA
CK: SAW

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2		INDEX OF SHEETS
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5		PROPOSED TYPICAL SECTIONS
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52-55	*	PED-18
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86	*	PB
87	*	PJB
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		ENVIRONMENTAL STANDARDS
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STATE OF TEXAS
STEPHEN A. NAVA
135543
LICENSED PROFESSIONAL ENGINEER

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE BY A *
HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

P.E. 03/01/2024
DATE

REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GRASS
3549
STATE OF TEXAS

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE BY A **
HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

PLA 03/01/2024
DATE

STATE OF TEXAS
KATHERINE A. UTECHT
0021532
LICENSED IRRIGATOR

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE BY A #
HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

PLA 03/01/2024
DATE

STATE OF TEXAS
HIRON M. FERNANDO
123288
LICENSED PROFESSIONAL ENGINEER

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE BY A ##
HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

P.E. 03/01/2024
DATE

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

INDEX OF SHEETS

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CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		2

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DW:	EIA

N

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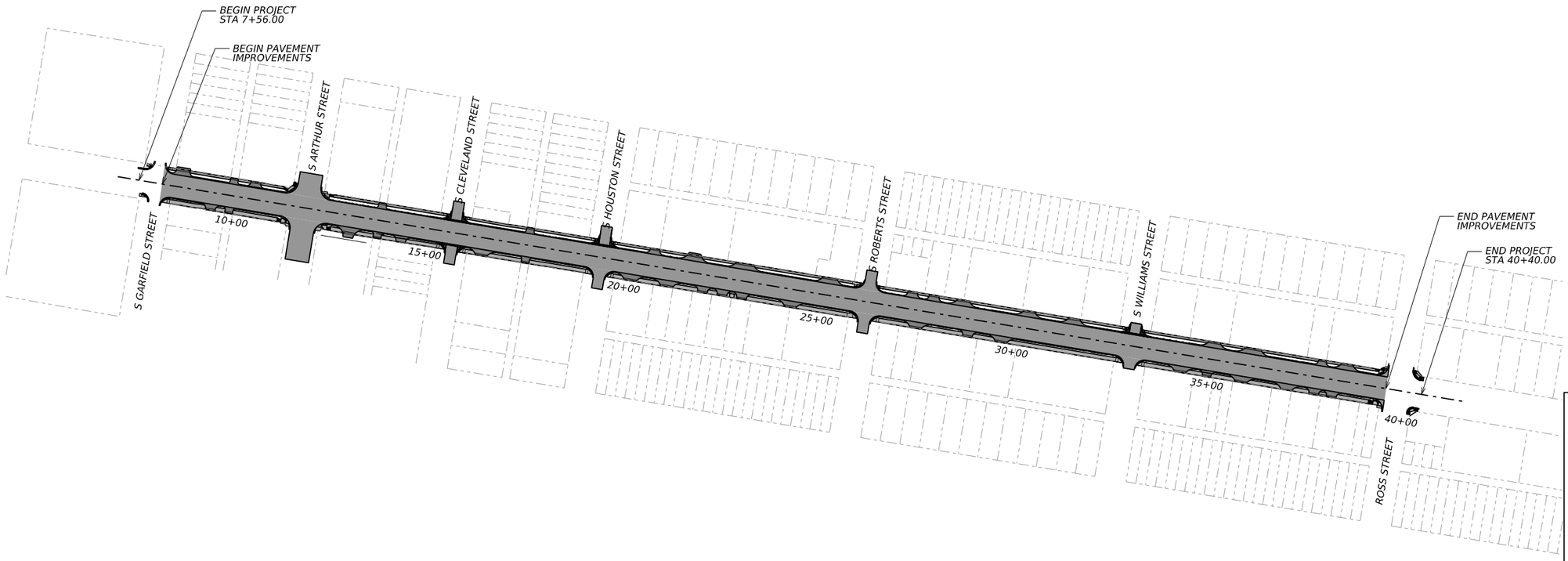
SCALE IN FEET

SE 10TH AVENUE



STATE OF TEXAS
STEPHEN A. NAVA
135543
LICENSED
PROFESSIONAL ENGINEER

2/29/2024

100% PLANS

Kimley»Horn F-928

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SE 10TH AVE

PROJECT LAYOUT

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		3

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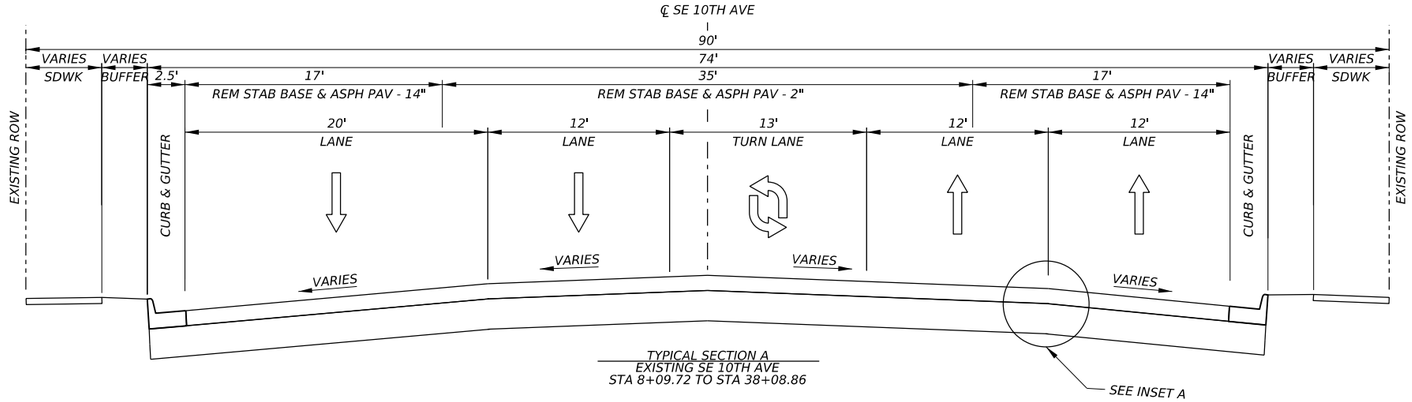
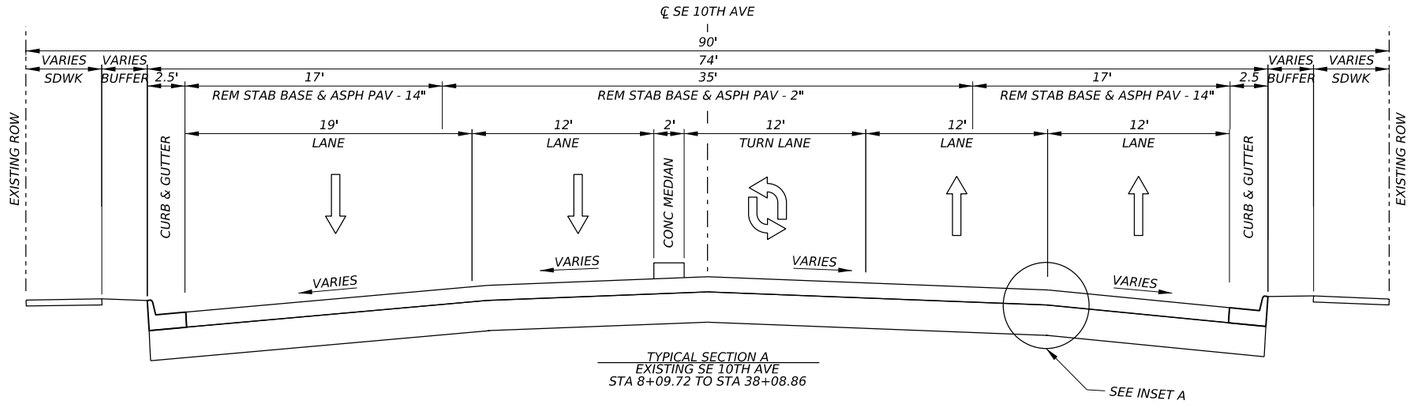
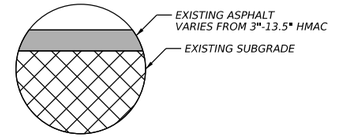


TYPICAL SECTION A
EXISTING SE 10TH AVE
STA 8+09.72 TO STA 38+08.86



TYPICAL SECTION A
EXISTING SE 10TH AVE
STA 8+09.72 TO STA 38+08.86

0 10 HORZ
0 5 VERT
SCALE IN FEET



INSET A

NOTES:

1.EXISTING PAVEMENT VARIES 3" TO 13.5" THROUGHOUT CORRIDOR. REFERENCE GEOTECHNICAL REPORT FOR FURTHER INFORMATION.

2.EXISTING PAVEMENT HAS A PARABOLIC CROSS SECTION. OUTSIDE LANES HAVE A STEEPER CROSS SLOPE (4.5% USUAL) THAN THE MIDDLE THREE LANES (1.0% USUAL).

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

EXISTING TYPICAL SECTIONS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		4

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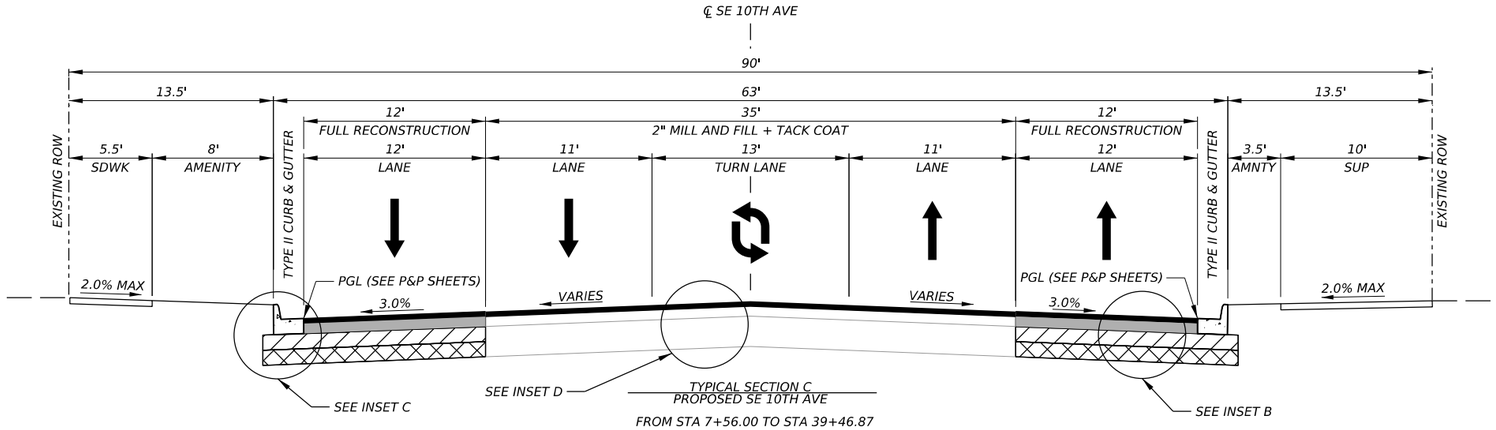
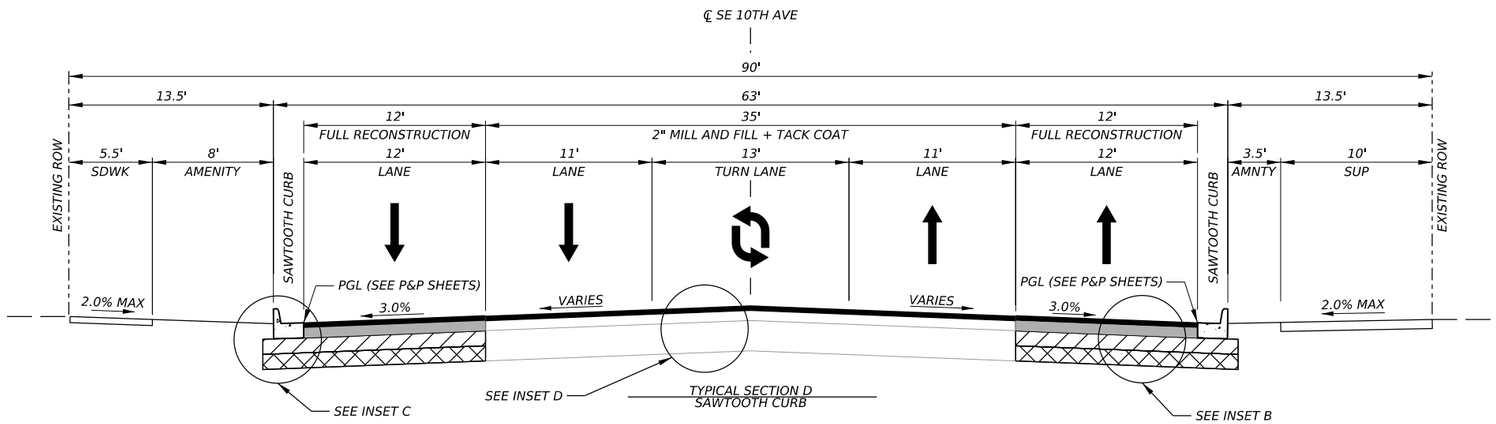
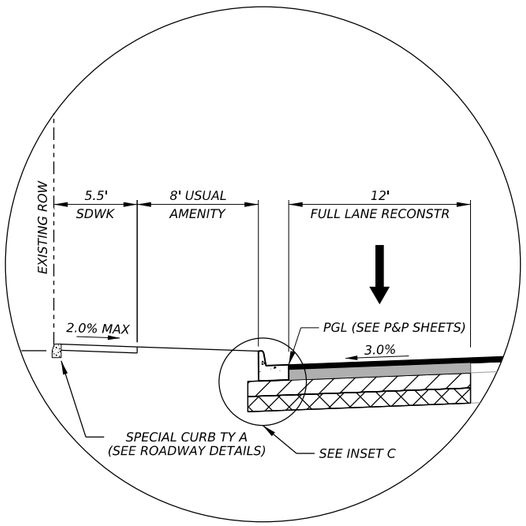
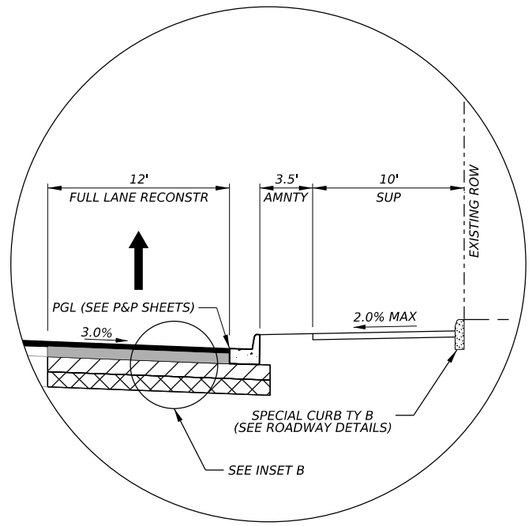




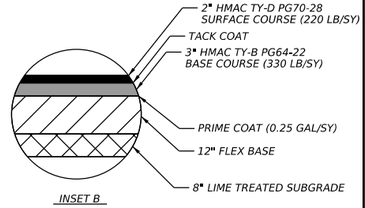


OPTION A
SPECIAL CURB TY A

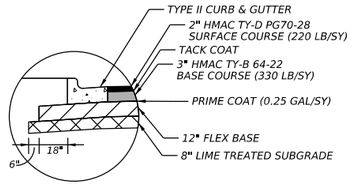
NOTE: SAWTOOTH CURB & SPECIAL CURB CONFIGURATIONS MAY NOT BE APPLICABLE TO BOTH LEFT AND RIGHT SIDES OF TYPICAL SECTION. SEE P&P SHEETS AND ROADWAY DETAIL SHEETS FOR EXACT LOCATIONS.



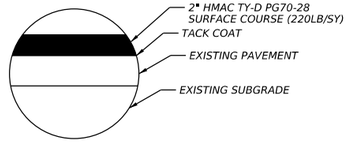
OPTION B
SPECIAL CURB TY B



INSET B



INSET C



INSET D

STATE OF TEXAS
STEPHEN A. NAVA
135543
LICENSED
PROFESSIONAL ENGINEER
2/29/2024

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

PROPOSED TYPICAL SECTIONS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		5

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DW: EIA CK: SAW
DW: EIA CK: SAW

GENERAL NOTES

CSJ: 0042-11-006

BASIS OF ESTIMATE FOR CONSTRUCTION

Item	Description	Unit	Rate	
260	LIME (HYD, COM, OR QK (SLURRY))	TON	3% Lime at 21.6 LBS/SY	
310	PRIME COAT (MC-30)	GAL	0.25 GAL/SY	
3076	TACK COAT	GAL	0.14 GAL/SY	
3076(1)	D-GR HMA	TON	3”	330 LB/SY/2000
		TON	2”	220 LB/SY/2000

NOTE:

(1)	D-GR HMA TY-B & TY-D Weight Based On 110Lbs/SY/In

General

Contractor questions on this project are to be addressed to the following individual(s):

TO:	Amarillo Area Engineer	Joe.Chappell@txdot.gov
CC:	Assistant Area Engineer	CC.Sysombath@txdot.gov
	Director of Construction	Kit.Black@txdot.gov (interim)
	Construction Manager	Darrel.Caldwell@txdot.gov

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

For Q&A’s on Proposals navigate to:

https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors

Use the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink of the project you want to view the Q&A for and click on the link in the window that pops up.

All relevant project documentation including CTD and cross sections will be posted to TxDOT District’s FTP website.

https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/

Verify all survey control prior to beginning construction. Notify Engineer of any discrepancies in control prior to beginning construction.

There are no "reference markers" within the project limits.

If Contractor damages any sprinkler heads, risers or water lines that are not to be relocated, he or she is required to replace or repair all damage at his or her own expense and to the Engineer’s satisfaction.

If portions of the right-of-way is used to store materials, equipment, and other uses with the approval of the Engineer, materials, equipment, etc., must either be located outside the 30 feet traffic safety clearance zone or be adequately protected.

Contractor facilities, such as asphalt plants, concrete plants, rock crushers, etc. are not allowed to be located within Department right of way.

The slopes indicated on the typical sections may be varied when fixed features required slopes are re-established as directed by the Engineer.

Dust caused by construction operations is to be controlled by applying water in conformance with the requirements of Item 204, "Sprinkling". Sprinkling for dust control will not be paid for directly, but will be considered as subsidiary work to the various bid items.

Any work necessary to provide temporary ingress and egress during construction (such as building gravel ramps, etc.) Will not be paid for directly, but will be considered as subsidiary work to the various bid items.

Verify all existing grades, elevations, and cross slopes that will connect to any proposed grades and elevations. If adjustments are warranted, the Contractor is to submit proposed changes to the Engineer for verification.

Item 6 Control of Materials

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

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

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

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

Item 7 Legal Relations and Responsibilities

No significant traffic generator events identified.

The total area disturbed for this project is approximately 7.3 acres. The disturbed area in this project, all project locations in the Contract, and the Contractor Project Specific Locations (PSLs), within 1 mile of the project limits, for the Contract will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer and to the local government that operates a separate storm sewer system.

Item 8 Prosecution and Progress

Create, maintain, and submit for acceptance, a Critical Path Method (CPM) project schedule and a Project Schedule Summary Report (PSSR) using computer software that is fully compatible with the latest version of Primavera Systems, Inc. or Primavera P6.

Prosecute the work following the sequence shown in the traffic control plan narrative and corresponding traffic control plan. Prosecuting the work in concurrent phases is not allowed unless approved in writing by the Engineer.

Item 100 Preparing Right Of Way

All tree removal activities are to take place outside nesting season. See EPIC for nesting season.

Remove trees of various diameters as shown on the plans, or as directed. Remove tree stumps to at least 12 in. below the surrounding terrain. Before backfilling holes treat the remainder of the stump with the following herbicide: Manufacture - Dow AgroScience; Product - Remedy or other as approved by the Engineer. Follow manufacture recommendations for herbicide. Backfill holes with acceptable material and compact flush with surrounding areas.
Identify each individual tree proposed to be removed. Obtain approval from the Engineer in the field for each individual tree proposed to be removed prior to any tree being removed.

Item 247 Flexible Base

SPECIFICATION FOR FLEX BASE TY A, B OR D, GR 4								
GRADING REQUIREMENTS PERCENT RETAINED – SIEVES SIEVE SIZES INCHES					***SOIL CONSTANTS***		***MAX WET BALL ****	***MAX % INCREASE IN PASSING # 40 ****
1 3/4	***7/8***	***3/8***	***# 4***	***# 40***	*L.L. MAX*	*P.I. MAX*		
0	*17-32*	*40-60*	*50-70*	*70-85*	*40*	*12*	*45*	*20*

*Applies to TY A & D material only.

Item 260 Lime Treatment (Road-Mixed)

All required moisture added for mixing and compaction operations is to be injected through the mixing process. Sprinkle the subgrade or base to prevent excessive loss of moisture as directed by the Engineer.

Spread the lime with a vane feeder system approved by the Engineer that is capable of spreading the lime uniformly to within 5 percent of the specified rate.

Item 416 Drilled Shaft Foundations

A stabilization method is to be used to prevent caving of the material and is to be submitted as part of the Contractor's Safety Plan.

Calculate signal head clearance and report to the Engineer. Obtain Engineer's approval of location before installing foundation.

Item 421 Hydraulic Cement Concrete

The sand equivalent value of fine aggregate is not to be less than 85 when subjected to test method tex-203-F.

100% virgin polypropylene fibrillated fibers (macro fibers typical length 1 ½" or greater) are to be added to all (HPC) concrete at a rate of 1.5 lbs/cy

The Engineer will perform all job control testing for acceptance.

The Engineer will provide strength-testing equipment when required in accordance with the Contract-controlling tests.

Furnish and maintain the following testing equipment:
- ♦ Test Molds

All cast-in-place concrete except for drilled shafts are to be air-entrained. Pre-cast and drilled shaft concrete may be air-entrained at the Contractor's option.

Item 464 Reinforced Concrete Pipe

Joint material for all pipes will be cold applied plastic asphalt sewer joint compound.

Bedding for pipe culverts is to be 6 inches of sand. The excavation required to place the sand will not be paid for directly but will be considered subsidiary to this item.

Backfill pipe up to the springline with granular material. The ponding method of backfilling will be allowed for the granular material only.

Item 465 Manholes and Inlets

Place concrete inverts in all inlets & manholes/Jct Boxes. This work will not be paid for directly but will be considered subsidiary to this item.

Item 502 Barricades, Signs, and Traffic Handling

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.

The Contractor is to have the option of using either plastic drums, vertical panels, grabber cones or a combination where drums are shown as channelizing devices, as approved by the Engineer. Plastic drums are to be used in all transition areas in accordance with BC(8)-21.

Furnish and install "soft shoulder" signs as directed by the Engineer. This work will not be paid for directly, but will be considered as subsidiary to item 502, "Barricades, Signs and Traffic Handling".

Provide a 3:1 backfill "safety slope" at the end of the day for any drop off exceeding 2" that is adjacent to a travel lane.

Notify the Engineer 24 hours prior to any lane closure.

Any work being done above travel lanes will require the lanes to be closed for traffic safety.

Item 504 Field Office and Laboratory

The following building(s) will be required for this project:

One Type (D) structure, asphalt mix control laboratory

Each building is to be provided before work is begun on the pertinent construction items for which it is needed.
Any laboratory furnished is to be a minimum of 10 ft in width.

All-weather parking area and chain link security fence will not be required.

The Type D structures are to be equipped with the following in addition to requirements specified under item 504:

a. Safety equipment
   (1) One eye wash station
   (2) One fire extinguisher
   (3) One first aid kit

Furnish a Type D structure for the asphalt mix control laboratory for the Engineer's exclusive use. In addition to requirements of item 504, this structure is to have a minimum height of 8 feet and provide a minimum 400 square feet gross floor area for permanently located plants or 200 square feet for temporary located plants serving one project. The floor area will be partitioned into a minimum of two interconnected rooms, each room furnished with an exterior door and a minimum of two windows. The floor is to have sufficient strength to support the testing equipment and have an impervious covering.

The Type D structures are to be adequately air conditioned and be furnished with a minimum of one desk and three chairs. The structure is to be provided with a 240-volt electrical service entrance. The service is to consist of a minimum of 4 - 120 volt circuits with 20 amp breakers and no more than two grounded convenience outlets per circuit and provisions for a minimum of two 220-volt ovens with vents to the outside. The structure is to have a minimum of 2 convenience outlets per wall, and a utility sink with an adequate clean potable water supply for testing. The state building is to be equipped with at minimum a hot water dispenser or hot water heater capable of generating 1 gallon of water per use at 140° F with adequate water pressure. Space heaters for heating the structure are unacceptable. Portable structures are to be support blocked for stability and are to be tied down.

For this project, asphalt content will be determined utilizing the ignition method so the structure is to provide for the following in lieu of the item 504 requirements for asphalt content by extraction. The room to contain the ignition oven is to be adequately power ventilated and contain a NEMA 6-50r (208/240 v, 50 a) outlet within 2.5 feet of the ignition oven location and an independent exhaust outlet to the outside no further than 8 feet from the oven. The surface for the ignition oven location is to be level, sturdy, and fireproof with at least 6-inch clearance between the furnace and other vertical surfaces.

If needed, each building is to be moved to a new location as directed by the Engineer. Any building that is no longer required on the job after completion of the pertinent construction items may be released to the Contractor upon consent of the Engineer.

Item 506 Temporary Erosion, Sedimentation, and Environmental Controls

Erosion control devices are to be installed as needed in coordination with the work progress, or as directed by the Engineer.

Item 529 Concrete Curb, Gutter, and Combined Curb and Gutter

Expansion joints are to be at least one-half inch thick and spaced at maximum intervals of 40 feet. Planes of weakness are to be spaced at approximately ten feet intervals. Joint material will comply with ASTM-D 1751.

Item 610 Roadway Illumination Assemblies

Contractor shall coordinate with Xcel Energy, for Xcel Energy to remove all existing illumination poles within the corridor which conflict with the proposed work. Xcel Energy shall be responsible to remove poles and wiring, and bring back surrounding areas to as-is condition.

Contractor will need to remove the foundation under existing illumination utilizing item 610.

Item 618 Conduit

The locations of conduit as shown are for diagrammatic purposed only and may be varied to meet local conditions, subject to approval. Backfill all open trenches before the end of the workday and do not leave any trench open overnight.

Item 620 Electrical Conductors

Provide breakaway electrical connectors for breakaway poles. Use Bussman HEBW, Littlefuse LEB, Ferraz-Shawmut FEB, or equal on ungrounded conductors. For grounded conductors, use Bussman HET, Littlefuse LET, Ferraz-Shawmut FEBN, or equal. These breakaway connectors have a white colored marking and a permanently installed solid neutral. See the latest RID (2) standard for additional details.

Clearly and permanently mark each illumination conductor installed in a signal pole as "ILLUMINATION" where it can be clearly seen from the hand hole. Use plastic zip ties with labeling plate to mark conductor.

Item 624 Ground Boxes

Do not place ground boxes in driveways or wheelchair ramps. Alternate ground box locations will be as directed.

Item 628 Electrical Services

Notify the utility company as soon as possible in order to minimize delay and coordinate the work necessary for the utility company to provide power.

The Contractor is responsible for submitting application(s) to applicable utility company which will be set up in the Contractor's name with 911 address(es) for service location(s).
Costs and charges from the utility company will be paid by the Department in accordance with the standard specification.

Once the project is complete and accepted by the Department, the Department will transfer utility services into the Department's name using the corresponding 911 addresses and meter numbers.

Item 644 Small Roadside Sign Supports and Assemblies

	Square Feet	Minimum Thickness
ALUMINUM SIGN BLANKS THICKNESS	Less than 7.5	0.100
	7.5 or Greater	0.125

All slip base signs will have a triangular slip base with a 2-bolt clamp to prevent rotation of signpost. Set screw type slip base will not be allowed.

A 7" x 1/2" diameter galvanized rod or #4 rebar is to be installed in the sign stub as shown on SMD(SLIP-1)-08 to prevent rotation of the sign stub in the concrete footing.

The exact locations of the large and small roadside signs are to be as designated by the Engineer.

The existing riprap aprons are to be removed and disposed of as approved by the Engineer. This work is not to be paid for directly, but will be considered subsidiary to the removal of foundations under this item.

Probe before drilling for foundations to determine the location of all utilities and structures. This work will not be paid for directly, but will be considered subsidiary to bid items involved.

Details for standard signs not shown on the signing standards of the signing detail plan sheets are to be in conformance with the department's "Standard Highway Sign Designs for Texas" Manual, Latest Edition.

Install a wrap of retroreflective sheeting conforming to DMS-8300 on all posts for small road sign assemblies. Sign post wraps will not be paid for directly, but are considered subsidiary to Item 644.

Install red sheeting on the posts containing the following signs:
Stop, Yield, Wrong Way & Do Not Enter

Install yellow sheeting on all other small sign posts.

Install all retroreflective wraps at a height of 4 ft. from bottom of the wrap to the edge of the travel lane surface. All retroreflective wraps will cover the full circumference of the sign post for a vertical width of 12 inches.

Item 666 Reflectorized Pavement Markings

Retroreflectivity Requirements:

All Type I markings must meet the minimum retroreflectivity values for edgeline markings, centerline or no passing barrier-line, and lane lines when measured any time after 3 days, but not later than 10 days after application:

- White markings: 250 millicandelas per square meter per lux ($mcd/m^2/lx$)

- Yellow markings: 175 mcd/m^2/lx

Retroreflectivity Measurements: Mobile or portable retroreflectometers may be used at the Contractor's discretion.

All Type I markings must meet the minimum retroreflectivity values for edgeline markings, centerline or no passing barrier-line, and lane lines when measured any time after 3 days, but not later than 10 days after application.

Item 680 Highway Traffic Signals

Furnish and install all required materials, incidentals and equipment necessary for a fully operational traffic signal. The proposed equipment is to be compatible with the existing traffic control systems in use by the local traffic signal operating and maintaining agency. Refer to TxDOT's Website for prequalified products list regarding cameras, vehicle LED traffic signal lamp unit, symbolic pedestrian signal head, symbolic pedestrian signal lamp, conduit, conductors, ground boxes and electric service. Check website periodically for current updates.

Furnish and install illumination fixtures mounted on Traffic Signal Pole luminaire arms. Use 250W equivalent LED luminaires.

Regulatory and street name signs shown to be mounted on the mast arms will be furnished and installed by the Contractor. All brackets and miscellaneous material will be furnished by the Contractor.

The Contractor will be responsible for adjustments in project construction which may be needed because of conflicts with utilities. In addition to calling Texas811 at all locations shown on the plans, contact the Amarillo District Headquarters signal shop at least 2 weeks in advance of work at the proposed locations. A representative from the signal shop will verify that no existing TxDOT electrical systems will interfere with the proposed work.

If overhead or underground power lines need to be de-energized, contact the electrical service provider to perform this work. Cost associated with de-energizing the power lines or other protective measures required will be at no expense to the Department. If working near power lines, comply with the appropriate sections of Texas state law and federal regulations relating to the type of work involved.

Once the integrity and /or function of an existing traffic signal(s) are altered by the Contractor, maintain and operate the existing traffic signal(s) until the traffic signal work is accepted by the department. Pursue the work at that location without delay or interruption to restore operation to its original or final operational design.
When work requires the removal of power from the controller and cabinet assembly, erect temporary stop signs. Remove the stop signs after the traffic signals are in operation.

The Contractor will not put signals in operation. Authorized TxDOT personnel must be onsite for controller start up.

Removing Traffic Signals - TxDOT will determine if signal components are designated for reuse. Other traffic signal materials salvaged from this project will become the property of the Contractor. Remove these salvaged materials from the project and dispose of in accordance with all applicable State and Local laws and regulations.

Item 682 Vehicle and Pedestrian Signal Heads

Cover new signal heads so that the faces cannot be seen from the time of installation until the signal are placed in operation. Trash bags, paper, etc. will not be acceptable for use in covering signal heads. Signal head covers will be made of burlap or other out-door fabric which will be weather resistant as approved by the Engineer.

Signal heads are to be installed level and plumb and aimed as directed.

Item 684 Traffic Signal Cables

For each traffic signal installation where signal cable is required, provide a minimum length of 5 feet for each conductor terminating in the controller.

Label all traffic signal cables, vehicle detector cables, and pedestrian signal cables terminating in the controller with marker ties and permanent markers.

Item 1002 Landscape Amenity

Excavation, Embankment and/or Base material needed to facilitate construction as shown in the plans or directed by the Engineer will be considered subsidiary to Amenity bid items.

Item 3076 Dense Graded Hot Mix Asphalt

Use aggregate that meets the SAC requirement of class A.

Use of RAS is not allowed.

Provide a laboratory mixture design with the minimum target asphalt binder content shown below:

D-GR HMA TY B 4.6%

D-GR HMA TY D 5.6%

All D-GR TY D on this project is considered surface mix. The Contractor may use a substitute PG binder one grade below the PG binder originally specified; however, the mixture made with the substitute PG binder must meet the minimum number of passes on the Hamburg Wheel test (TEX-242-F) for the originally specified PG binder grade as shown in Table 11.

When laying ACP on a roadway that has two or more lanes and the work is being done under traffic, then the adjacent lane or lanes are to be overlaid by the end of the following day.

Make a smooth, clean, minimum 1 inch deep butt joint where each end of the new pavement joins the existing pavement. Any method approved by the Engineer can be used to make the joint.

The District Lab will perform a maximum of 2(two) design verification tests. If additional verification tests are needed, the Contractor will be billed $3,500.00 per each additional verification test required to obtain an approved asphaltic concrete pavement mix design.

If lime is not used as an antistrip agent, then the production and placement testing frequency for the Boil test (TEX-530-C) shown in the table below.

Description	Test Method	Minimum Contractor Testing Frequency	Minimum Engineer Testing Frequency
Boil test	Tex-530-C	1 per lot	1 per 12 sublots

If used, the IR bar read out screen must be visible at all times to the Engineer.

Item 3096 Asphalts, Oils, and Emulsions

Asphalt from different sources is not to be blended.

The "Open" seasons for applying asphaltic materials and mixtures for the listed items are to be as follows, unless authorized otherwise in writing by the Engineer:

ITEMS	OPEN SEASON
310	All Year
3076	From April 15th through October 31st

Item 6185 Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)

In addition to the shadow vehicles with truck mounted attenuator (TMA) that are specified as being required on the traffic control plan for this project, provide 1 additional shadow vehicle(s) with TMA for TCP(1-1)-18, (2-1)-18, (2-2)-18, (2-3)-18, (7-1)- as detailed on the General Notes of this standard sheets.

Therefore, 2 total shadow vehicles 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.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0042-11-006 **DISTRICT** Amarillo **COUNTY** Potter
HIGHWAY SL 395

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0042-11-006**			
		PROJECT ID		**A00183870**			
		COUNTY		**Potter**			
		HIGHWAY		**SL 395**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6013	PREP ROW (TREE) (2" TO 12" DIA)	EA	5.000		5.000	
	104-6011	REMOVING CONC (MEDIANS)	SY	35.000		35.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	2,659.000		2,659.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF	4,332.000		4,332.000	
	104-6028	REMOVING CONC (MISC)	SY	32.000		32.000	
	104-6036	REMOVING CONC (SIDEWALK OR RAMP)	SY	2,751.000		2,751.000	
	105-6019	REMOVING STAB BASE & ASPH PAV(14")	SY	11,992.000		11,992.000	
	105-6035	REMOVING STAB BASE & ASPH PAV (0-2")	SY	14,164.000		14,164.000	
	170-6001	IRRIGATION SYSTEM	LS	1.000		1.000	
	192-6004	PLANT MATERIAL (5-GAL)	EA	92.000		92.000	
	192-6016	PLANT BED PREPARATION	SY	50.000		50.000	
	192-6017	VEGETATION BARRIER	SY	461.000		461.000	
	192-6026	PLANT MATERIAL (65 GAL) (TREE)	EA	35.000		35.000	
	192-6063	PLANT BED PREP (TYPE I)	SY	461.000		461.000	
	192-6088	PLANT SOIL MIX (TY 1)	CY	307.000		307.000	
	247-6238	FL BS (CMP IN PLC)(TY A GR 4)(12")	SY	9,494.000		9,494.000	
	260-6002	LIME (HYDRATED LIME (SLURRY))	TON	107.000		107.000	
	260-6027	LIME TRT (EXST MATL)(8")	SY	9,846.000		9,846.000	
	310-6009	PRIME COAT (MC-30)	GAL	2,462.000		2,462.000	
	351-6002	FLEXIBLE PAVEMENT STRUCTURE REPAIR(6")	SY	1,417.000		1,417.000	
	402-6001	TRENCH EXCAVATION PROTECTION	LF	135.000		135.000	
	416-6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	568.000		568.000	
	432-6047	RIPRAP (MOW STRIP)(6 IN)	CY	30.500		30.500	
	464-6018	RC PIPE (CL IV)(24 IN)	LF	61.000		61.000	
	465-6005	JCTBOX(COMPL)(PJB)(3FTX3FT)	EA	2.000		2.000	
	465-6006	JCTBOX(COMPL)(PJB)(4FTX4FT)	EA	3.000		3.000	
	465-6007	JCTBOX(COMPL)(PJB)(3FTX5FT)	EA	1.000		1.000	
	465-6009	JCTBOX(COMPL)(PJB)(5FTX5FT)	EA	1.000		1.000	
	465-6020	INLET (COMPL)(PCO)(4FT)(BOTH)	EA	7.000		7.000	
	479-6010	ADJUSTING MANHOLES (ELECTRIC BOX)	EA	5.000		5.000	
	496-6002	REMOV STR (INLET)	EA	7.000		7.000	
	496-6030	REMOVE STR (BOLLARD)	EA	5.000		5.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	9.000		9.000	
	506-6042	BIODEG EROSN CONT LOGS (INSTL) (18")	LF	1,260.000		1,260.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	1,260.000		1,260.000	
	528-6004	LANDSCAPE PAVERS	SY	1,891.000		1,891.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0042-11-006 **DISTRICT** Amarillo **COUNTY** Potter
HIGHWAY SL 395

							TOTAL EST.	TOTAL FINAL
			CONTROL SECTION JOB		**0042-11-006**			
			PROJECT ID		**A00183870**			
			COUNTY		**Potter**			
			HIGHWAY		**SL 395**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**		EST.	FINAL		
	528-6011	LANDSCAPE PAVERS (TYPE I)	SY		6.000		6.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF		3,119.000		3,119.000	
	529-6012	CONC CURB (SLOTTED)	LF		751.000		751.000	
	529-6030	CONC CURB & GUTTER (VALLEY GUTTER)	LF		312.000		312.000	
	529-6036	CONCRETE CURB (SPECIAL)	LF		564.000		564.000	
	530-6004	DRIVEWAYS (CONC)	SY		2,651.000		2,651.000	
	531-6001	CONC SIDEWALKS (4")	SY		1,311.000		1,311.000	
	531-6003	CONC SIDEWALKS (6")	SY		2,215.000		2,215.000	
	531-6008	CURB RAMPS (TY 5)	EA		2.000		2.000	
	531-6010	CURB RAMPS (TY 7)	EA		33.000		33.000	
	531-6013	CURB RAMPS (TY 10)	EA		1.000		1.000	
	610-6007	REMOVE RD IL ASM (SHOE-BASE)	EA		36.000		36.000	
	610-6208	IN RD IL (TY SA) 40S-10 (250W EQ) LED	EA		18.000		18.000	
	618-6023	CONDT (PVC) (SCH 40) (2")	LF		4,410.000		4,410.000	
	618-6024	CONDT (PVC) (SCH 40) (2") (BORE)	LF		2,750.000		2,750.000	
	618-6029	CONDT (PVC) (SCH 40) (3")	LF		215.000		215.000	
	618-6070	CONDT (RM) (2")	LF		15.000		15.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF		7,260.000		7,260.000	
	620-6010	ELEC CONDR (NO.6) INSULATED	LF		15,660.000		15,660.000	
	624-6002	GROUND BOX TY A (122311)W/APRON	EA		4.000		4.000	
	628-6044	ELC SRV TY A 240/480 060(NS)SS(E)PS(U)	EA		1.000		1.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA		1.000		1.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA		20.000		20.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF		312.000		312.000	
	666-6225	PAVEMENT SEALER 6"	LF		7,959.000		7,959.000	
	666-6226	PAVEMENT SEALER 8"	LF		312.000		312.000	
	666-6230	PAVEMENT SEALER 24"	LF		1,781.000		1,781.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF		1,321.000		1,321.000	
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF		1,142.000		1,142.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF		5,496.000		5,496.000	
	668-6018	PREFAB PAV MRK TY B (W)(24")(SLD)	LF		1,781.000		1,781.000	
	668-6019	PREFAB PAV MRK TY B (W)(ARROW)	EA		20.000		20.000	
	668-6115	PREFAB PAV MRK TY C (MULTI) (SHIELD)	EA		6.000		6.000	
	680-6004	REMOVING TRAFFIC SIGNALS	EA		2.000		2.000	
	680-6011	INSTALL HWY TRF SIG (UPGRADE)	EA		2.000		2.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA		16.000		16.000	
	684-6031	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	LF		140.000		140.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0042-11-006 **DISTRICT** Amarillo **COUNTY** Potter
HIGHWAY SL 395

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0042-11-006**			
		PROJECT ID		**A00183870**			
		COUNTY		**Potter**			
		HIGHWAY		**SL 395**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	684-6036	TRF SIG CBL (TY A)(14 AWG)(10 CONDR)	LF	1,360.000		1,360.000	
	684-6079	TRF SIG CBL (TY C)(12 AWG)(2 CONDR)	LF	2,340.000		2,340.000	
	687-6001	PED POLE ASSEMBLY	EA	10.000		10.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA	16.000		16.000	
	688-6003	PED DETECTOR CONTROLLER UNIT	EA	2.000		2.000	
	1002-6002	LANDSCAPE AMENITY (TY 1)	EA	12.000		12.000	
	1002-6003	LANDSCAPE AMENITY (TY 2)	EA	10.000		10.000	
	1002-6004	LANDSCAPE AMENITY (TY 3)	EA	6.000		6.000	
	1004-6001	TREE PROTECTION	EA	105.000		105.000	
	1005-6001	LOOSE AGGR FOR GROUNDCOVER (TYPE I)	CY	65.000		65.000	
	3076-6001	D-GR HMA TY-B PG64-22	TON	1,394.000		1,394.000	
	3076-6044	D-GR HMA TY-D PG70-28	TON	2,548.000		2,548.000	
	3076-6066	TACK COAT	GAL	3,240.000		3,240.000	
	6027-6003	CONDUIT (PREPARE)	LF	825.000		825.000	
	6027-6008	GROUND BOX (PREPARE)	EA	10.000		10.000	
	6185-6002	TMA (STATIONARY)	DAY	260.000		260.000	
	6185-6003	TMA (MOBILE OPERATION)	HR	2,080.000		2,080.000	
	6370-6001	INSTALL DECORATIVE LIGHTING ASSEMBLY	EA	53.000		53.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		ELECTRICAL: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

CK: SAW
DW: EIA
CK: SAW
DW: EIA

SUMMARY OF REMOVAL ITEMS

LOCATION	100 6013	104 6011	104 6017	104 6022	104 6028	104 6036	105 6019	105 6035	496 6002	496 6030
	PREP ROW (TREE) (2" TO 12" DIA)	REMOVING CONC (MEDIANS)	REMOVING CONC (DRIVEWAYS)	REMOVING CONC (CURB AND GUTTER)	REMOVING CONC (MISC)	REMOVING CONC (SIDEWALK OR RAMP)	REMOVING STAB BASE & ASPH PAV(14")	REMOVING STAB BASE & ASPH PAV (0-2")	REMOV STR (INLET)	REMOVE STR (BOLLARD)
	EA	SY	SY	LF	SY	SY	SY	SY	EA	EA
REMOVAL LAYOUT - SHEET 1 OF 2	0	0	1450	2301	25	1526	6437	8086	4	5
REMOVAL LAYOUT - SHEET 2 OF 2	5	35	1209	2031	7	1225	5555	6078	3	0
PROJECT TOTALS	**5**	**35**	**2659**	**4332**	**32**	**2751**	**11992**	**14164**	**7**	**5**

SUMMARY OF ROADWAY ITEMS

LOCATION	247 6238	260 6002	260 6027	310 6009	351 6002	529 6008	529 6012	529 6030	529 6036	530 6004	531 6001	531 6003	531 6008	531 6010	531 6013	3076 6001	3076 6044	3076 6066
	FL BS (CMP IN PLC)(TY A GR 4)(12")	LIME (HYDRATED LIME (SLURRY))	LIME TRT (EXST MATL)(8")(3% BY WEIGHT)	PRIME COAT (MC-30) (0.25 GAL/SY)	FLEXIBLE PAVEMENT STRUCTURE REPAIR(6") *	CONC CURB & GUTTER (TY II)	CONC CURB (SLOTTED)	CONC CURB & GUTTER (VALLEY GUTTER)	CONCRETE CURB (SPECIAL)	DRIVEWAYS (CONC)	CONC SIDEWALKS (4")	CONC SIDEWALKS (6")	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	D-GR HMA TY-B PG64-22 (330 LB/SY)	D-GR HMA TY-D PG70-28 (220 LB/SY)	TACK COAT (0.14 GAL/SY)
	SY	TON	SY	GAL	SY	LF	LF	LF	LF	SY	SY	SY	EA	EA	EA	TON	TON	GAL
PLAN & PROFILE - SHEET 1 OF 4	1461	16	1515	379		660	55	0	254	299	157	287	0	11	1	215	474	603
PLAN & PROFILE - SHEET 2 OF 4	3600	40	3734	934		1149	273	234	250	1042	560	824	0	8	0	528	947	1204
PLAN & PROFILE - SHEET 3 OF 4	3600	40	3734	934		991	352	0	27	1022	486	948	0	10	0	528	933	1186
PLAN & PROFILE - SHEET 4 OF 4	833	9	863	216		319	71	78	33	288	108	156	2	4	0	123	194	246
PROJECT TOTALS	**9494**	**107**	**9846**	**2462**	**1417**	**3119**	**751**	**312**	**564**	**2651**	**1311**	**2215**	**2**	**33**	**1**	**1394**	**2548**	**3240**

SUMMARY OF DRAINAGE ITEMS

LOCATION	402 6001	464 6018	465 6005	465 6006	465 6007	465 6009	465 6020
	TRENCH EXCAVATION PROTECTION	RC PIPE (CL IV)(24 IN)	JCTBOX(COMPL)(PJB)(3FTX3FT)	JCTBOX(COMPL)(PJB)(4FTX4FT)	JCTBOX(COMPL)(PJB)(3FTX5FT)	JCTBOX(COMPL)(PJB)(5FTX5FT)	INLET (COMPL)(PCO)(4FT)(BOTH)
	LF	LF	EA	EA	EA	EA	EA
PLAN & PROFILE - SHEET 1 OF 3	75	41.5	2	0	1	0	3
PLAN & PROFILE - SHEET 2 OF 3	30	10	0	2	0	0	2
PLAN & PROFILE - SHEET 3 OF 3	30	9.5	0	1	0	0	2
PROJECT TOTALS	**135**	**61**	**2**	**3**	**1**	**1**	**7**

* FLEXIBLE PAVEMENT STRUCTURE REPAIR QUANTITY WAS CALCULATED AS 10% OF 2" MILLED AREA. SEE "FULL DEPTH PAVEMENT REPAIR DETAIL" FOR MORE INFORMATION.

SUMMARY OF SIGNING AND PAVEMENT MARKING ITEMS

LOCATION	644 6001	644 6068	666 6036	666 6225	666 6226	666 6230	666 6321	666 6306	666 6318	668 6018	668 6019
	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	RELOCATE SM RD SN SUP&AM TY 10BWG	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	PAVEMENT SEALER 6"	PAVEMENT SEALER 8"	PAVEMENT SEALER 24"	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	PREFAB PAV MRK TY B (W)(24")(SLD)	PREFAB PAV MRK TY B (W)(ARROW)
	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	EA
PLAN - SHEET 1 OF 2	0	12	206	4146	206	918	2886	692	568	918	12
PLAN - SHEET 2 OF 2	1	7	106	3813	106	863	2610	629	574	863	8
PROJECT TOTALS	**1**	**20**	**312**	**7959**	**312**	**1781**	**5496**	**1321**	**1142**	**1781**	**20**

SUMMARY OF EROSION CONTROL ITEMS

LOCATION	506 6042	506 6043
	BIODEG EROSN CONT LOGS (INSTL) (18")	BIODEG EROSN CONT LOGS (REMOVE)
	LF	LF
PLAN - SHEET 1 OF 4	360	360
PLAN - SHEET 2 OF 4	360	360
PLAN - SHEET 3 OF 4	360	360
PLAN - SHEET 4 OF 4	180	180
PROJECT TOTALS	**1260**	**1260**

100% PLANS

Kimley»Horn F-928

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Texas Department of Transportation

SE 10TH AVE

QUANTITY SUMMARY

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		8

DATE: 3/8/2024 11:51:46 AM
FILE: c:\pw\kh1\d0254330\ABS_GEN_QTYSUM_01.dgn

DW:	EIA
CK:	SAN
DW:	EIA
CK:	SAN
DW:	EIA

SUMMARY OF ILLUMINATION ITEMS

LOCATION	416 6029	610 6208	618 6023	618 6024	618 6070	620 6009	620 6010	624 6002	628 6044	6370 6001
	DRILL SHAFT (RDWY ILL POLE) (30 IN)	IN RD IL (TY SA) 40S-10 (250W EQ) LED	CONDT (PVC) (SCH 40) (2")	CONDT (PVC) (SCH 40) (2") (BORE)	CONDT (RM) (2")	ELEC CONDR (NO.6) BARE	ELEC CONDR (NO.6) INSULATED	GROUND BOX TY A (122311)W/APRON	ELC SRV TY A 240/480 060(NS)SS(E)PS(U)	INSTALL DECORATIVE LIGHTING ASSEMBLY
	LF	EA	LF	LF	LF	LF	LF	EA	EA	EA
SE 10TH AVE	568	18	4410	2750	15	7045	15660	4	1	53
PROJECT TOTALS	**568**	**18**	**4410**	**2750**	**15**	**7045**	**15660**	**4**	**1**	**53**

SUMMARY OF TRAFFIC SIGNAL ITEMS

LOCATION	479 6010	618 6029	620 6009	680 6004	680 6011	682 6018	684 6031	684 6036	684 6079	687 6001	688 6001	688 6003	6027 6003	6027 6008
	ADJUSTING MANHOLES (ELECTRIC BOX)	CONDT (PVC) (SCH 40) (3")	ELEC CONDR (NO.6) BARE	REMOVING TRAFFIC SIGNALS	INSTALL HWY TRF SIG (UPGRADE)	PED SIG SEC (LED)(COUNT DOWN)	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	TRF SIG CBL (TY A)(14 AWG)(10 CONDR)	TRF SIG CBL (TY C)(12 AWG)(2 CONDR)	PED POLE ASSEMBLY	PED DETECT PUSH BUTTON (APS)	PED DETECTOR CONTROLLER UNIT	CONDUIT (PREPARE)	GROUND BOX (PREPARE)
	EA	LF	LF	EA	EA	EA	LF	LF	LF	EA	EA	EA	LF	EA
SE 10TH AVE AT ARTHUR ST	2	115	115	1	1	8	60	785	1235	5	8	1	425	5
SE 10TH AVE AT ROSS ST	3	100	100	1	1	8	80	575	1105	5	8	1	400	5
PROJECT TOTALS	**5**	**215**	**215**	**2**	**2**	**16**	**140**	**1360**	**2340**	**10**	**16**	**2**	**825**	**10**

SUMMARY OF HARDSCAPE ITEMS (NON-REIMBURSABLE)

LOCATION	668 6115	432 6047	1002 6002	1002 6003	1002 6004
	PREFAB PAV MRK TY C (MULTI) (SHIELD) (1)	RIPRAP (MOW STRIP)(6 IN)	LANDSCAPE AMENITY (TY 1) (2)	LANDSCAPE AMENITY (TY 2) (3)	LANDSCAPE AMENITY (TY 3) (4)
	EA	CY	EA	EA	EA
HARDSCAPE PLAN - SHEET 1 OF 4	0	7.5	4	3	2
HARDSCAPE PLAN - SHEET 2 OF 4	4	7	2	3	1
HARDSCAPE PLAN - SHEET 3 OF 4	2	8.5	4	2	1
HARDSCAPE PLAN - SHEET 4 OF 4	0	7.5	2	2	2
PROJECT TOTALS	**6**	**30.5**	**12**	**10**	**6**

SUMMARY OF HARDSCAPE ITEMS (REIMBURSABLE)

LOCATION	528 6004	528 6011
	LANDSCAPE PAVERS	LANDSCAPE PAVERS (TYPE I)
	SY	SY
HARDSCAPE PLAN - SHEET 1 OF 4	434	0
HARDSCAPE PLAN - SHEET 2 OF 4	486	6
HARDSCAPE PLAN - SHEET 3 OF 4	483	0
HARDSCAPE PLAN - SHEET 4 OF 4	488	0
PROJECT TOTALS	**1891**	**6**

SUMMARY OF LANDSCAPE ITEMS (NON-REIMBURSABLE)

LOCATION	1004 6001	192 6016	192 6063	192 6088	192 6026	192 6004	192 6017	1005 6001	170 6001
	TREE PROTECTION	PLANT BED PREPARATION	PLANT BED PREP (TYPE I)	PLANT SOIL MIX (TY 1)	PLANT MATERIAL (65 GAL) (TREE)	PLANT MATERIAL (5-GAL)	VEGETATION BARRIER	LOOSE AGGR FOR GROUNDCOVER (TYPE I)	IRRIGATION SYSTEM
	EA	EA	SY	CY	EA	EA	SY	CY	LS
LANDSCAPE PLAN - SHEET 1 OF 4	30	13	115	77	10	19	115	16	
LANDSCAPE PLAN - SHEET 2 OF 4	27	12	108	71	9	19	108	15	
LANDSCAPE PLAN - SHEET 3 OF 4	15	11	126	84	5	35	126	18	
LANDSCAPE PLAN - SHEET 4 OF 4	33	14	112	75	11	19	112	16	
PROJECT TOTALS	**105**	**50**	**461**	**307**	**35**	**92**	**461**	**65**	**1**

LEGEND

1. SPECIAL CROSSWALK EMBLEM
2. BENCH INSTALLATION ONLY
3. BIKE RACKS
4. TRASH RECEPTACLE

100% PLANS

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Texas Department of Transportation

SE 10TH AVE

QUANTITY SUMMARY

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		9

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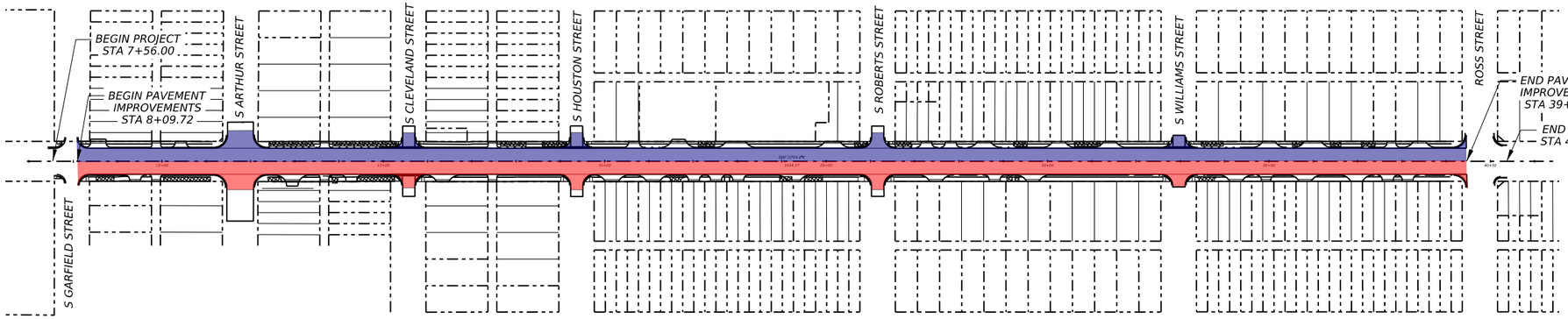
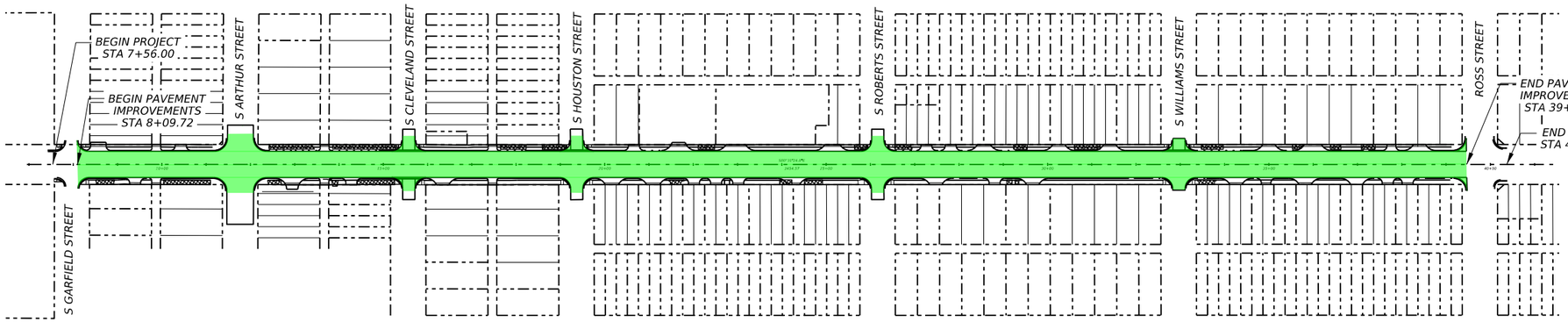




0 150 300
SCALE IN FEET

LEGEND

- PHASE 1 CONSTRUCTION LIMITS
- PHASE 2 CONSTRUCTION LIMITS
- PHASE 3 CONSTRUCTION LIMITS

SE 10TH AVENUE TCP NARRATIVE

THE FOLLOWING NARRATIVE IS A CONCEPTUAL TRAFFIC CONTROL PLAN (TCP). THE CONTRACTOR SHALL SUBMIT A DETAILED TCP FOR SE 10TH AVENUE. THE CITY WILL FORWARD REQUEST TO TXDOT FOR APPROVAL PRIOR TO CONSTRUCTION.

THE GENERAL CRITERIA FOR SE 10TH AVENUE TRAFFIC MANAGEMENT IS TO MAINTAIN ONE OPEN LANE IN BOTH DIRECTIONS AT ALL TIMES. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS, SIDE STREETS, AND ALLEYS AT ALL TIMES UNLESS CLOSURES ARE COORDINATED AND APPROVED BY THE PROJECT ENGINEER.

CONTRACTOR TO PROVIDE ALL ADVANCE WARNING SIGNS PER TXDOT STANDARDS BC(1)-21.

CONTRACTOR SHALL FIELD VERIFY EXISTING UTILITIES AND NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED/REPLACED AT CONTRACTOR'S EXPENSE.

CONTRACTOR TO PROVIDE POSITIVE DRAINAGE AT ALL TIMES.

PHASE 1 - CONSTRUCT NORTH HALF OF SE 10TH AVE

TRAFFIC:
TRAFFIC ON SE 10TH AVENUE WILL BE SHIFTED TO THE SOUTH SIDE OF THE EXISTING LANES WITH ONE EASTBOUND LANE AND ONE WESTBOUND LANE TO PROVIDE APPROPRIATE BUFFER SPACE FOR CONTRACTOR.

CONSTRUCTION:

1. PLACE TRAFFIC CHANNELIZING DEVICES, BARRIERS, TEMP SIGNING AND STRIPING ON SOUTH SIDE OF SE 10TH AVENUE FROM GARFIELD STREET TO ROSS STREET.
2. SHIFT TRAFFIC TO THE SOUTHERN HALF OF SE 10TH AVENUE.
3. CONSTRUCT THE PAVEMENT LIMITS, SIDEWALK, AMENITY SPACES, AND DRAINAGE STRUCTURES FOR THE NORTHERN HALF OF SE 10TH AVENUE FROM GARFIELD STREET TO ROSS STREET

PHASE 2 - CONSTRUCT SOUTH HALF OF SE 10TH AVE

TRAFFIC:
TRAFFIC ON SE 10TH AVENUE WILL BE SHIFTED TO THE NORTH SIDE OF THE EXISTING LANES WITH ONE EASTBOUND LANE AND ONE WESTBOUND LANE TO PROVIDE APPROPRIATE BUFFER SPACE FOR CONTRACTOR.

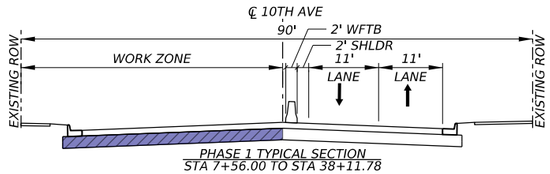
CONSTRUCTION:

1. PLACE TRAFFIC CHANNELIZING DEVICES, BARRIERS, TEMP SIGNING AND STRIPING ON NORTH SIDE OF SE 10TH AVENUE FROM GARFIELD STREET TO ROSS STREET.
2. SHIFT TRAFFIC TO THE NORTHERN HALF OF SE 10TH AVENUE.
3. CONSTRUCT THE PAVEMENT LIMITS, SHARED USE PATH, AMENITY SPACE, AND DRAINAGE STRUCTURES FOR THE SOUTHERN HALF OF SE 10TH AVENUE FROM GARFIELD STREET TO ROSS STREET.
4. REMOVE EXISTING PAVEMENT MARKINGS PER PLAN FOR THE FULL PROJECT LIMITS.

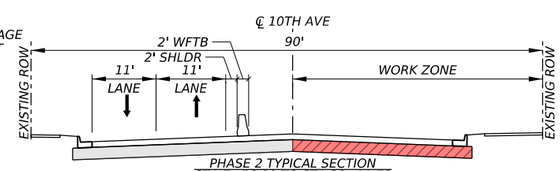
PHASE 3 - FINAL PAVEMENT OVERLAY

CONSTRUCTION:

1. CLOSE LANES USING DAILY LANE CLOSURES FOR THIS PHASE.
2. CONSTRUCT FINAL 2" LIFT OF HMAC SURFACE COURSE OF FULL WIDTH OF ROADWAY.
3. CONSTRUCT 1"-4" HMAC SURFACE COURSE OF FULL WIDTH OF ROADWAY IN THE TxDOT ROW, AS WELL AS 2" IN MILL AND OVERLAY ON SIDE STREETS.
4. INSTALL PAVEMENT MARKINGS PER PLAN FOR THE FULL LIMITS OF RECONSTRUCTION.



PHASE 1 TYPICAL SECTION
STA 7+56.00 TO STA 38+11.78



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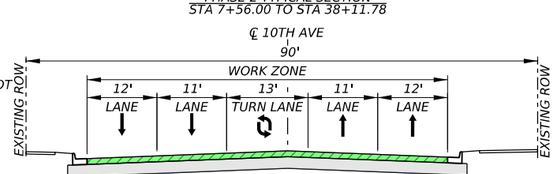

PHASE 3 TYPICAL SECTION
STA 7+56.00 TO STA 38+11.78

2/29/2024

100% PLANS

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SE 10TH AVE

TCP NARRATIVE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		10

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13	0042	11	006	SL 395
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	AMA	POTTER		11

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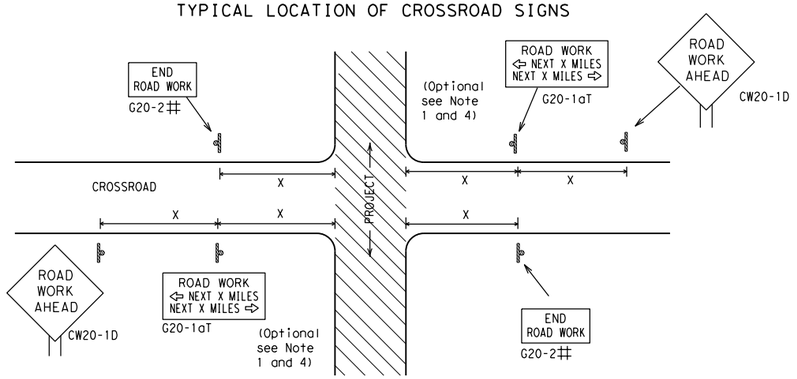
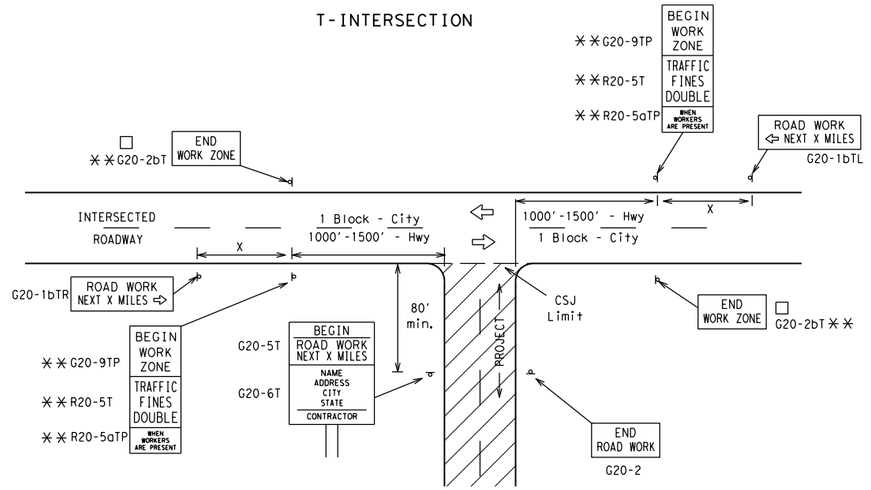
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

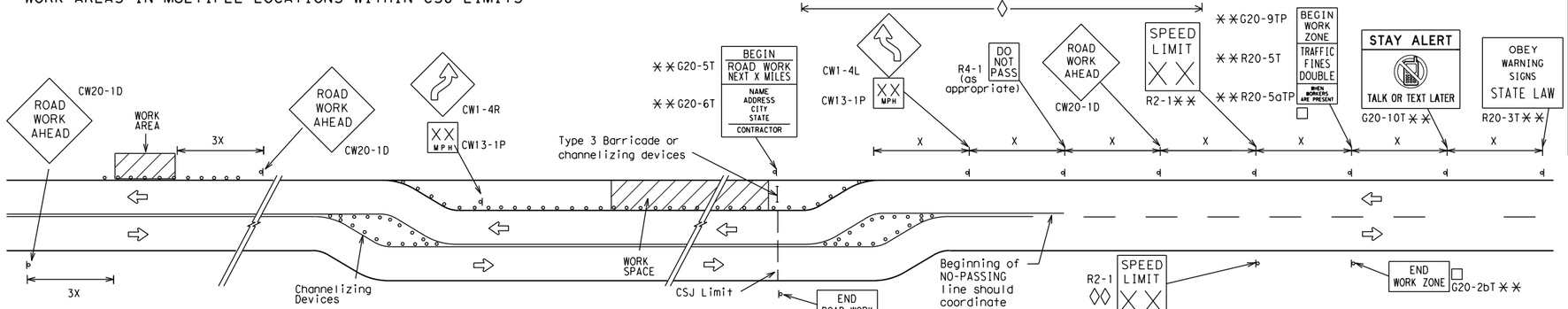
✳ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

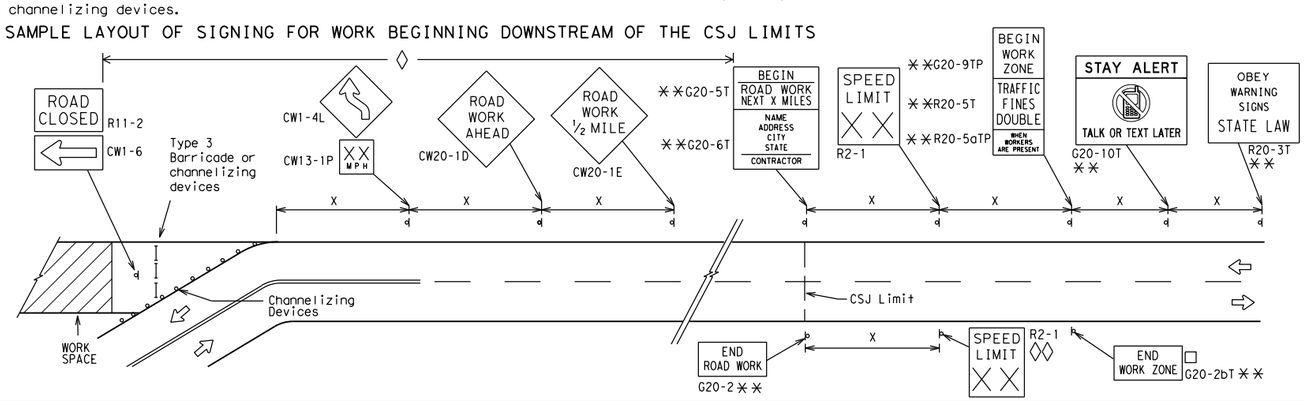
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



NOTES

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

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	AMA	POTTER		12

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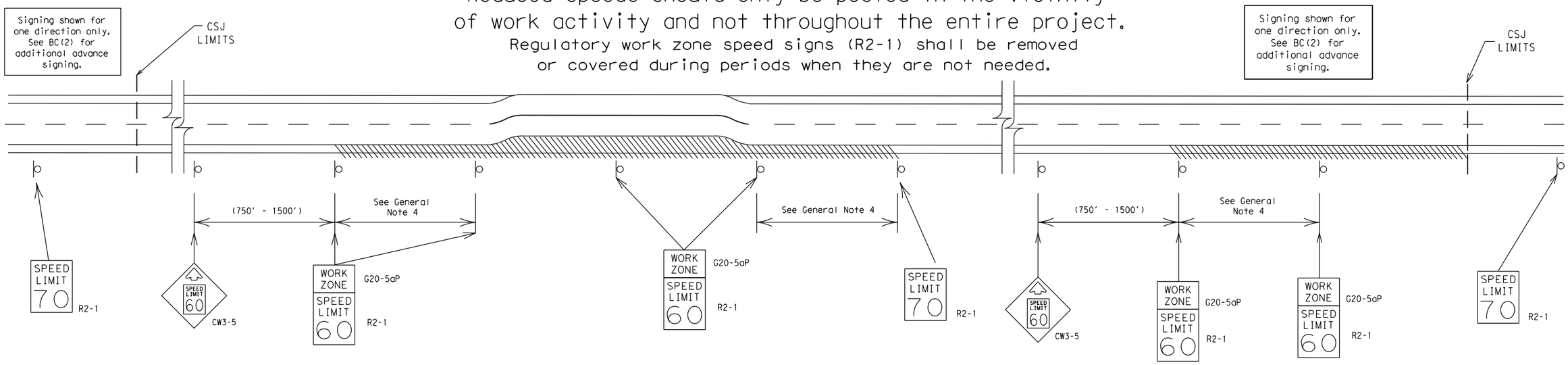
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21	0042	11	006	SL 395
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		13

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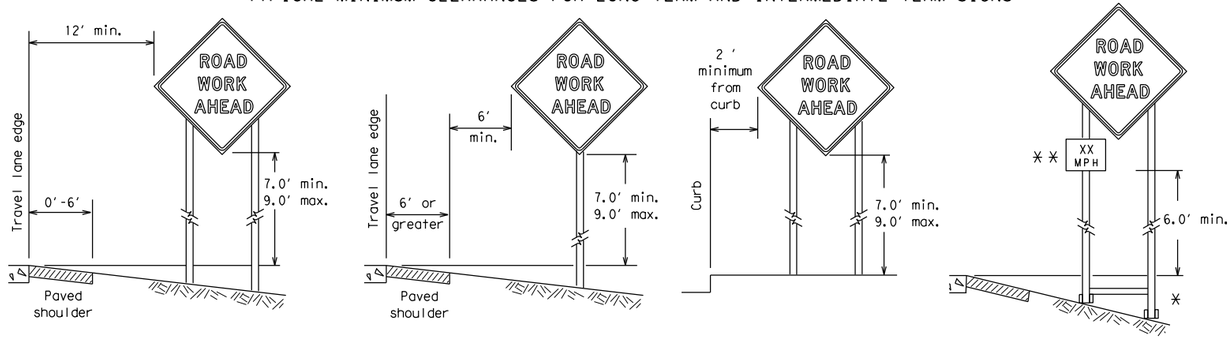
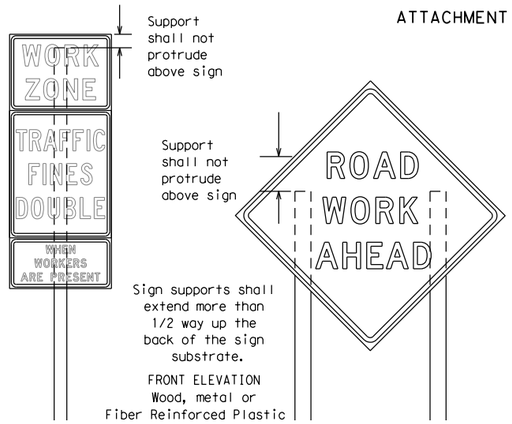
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

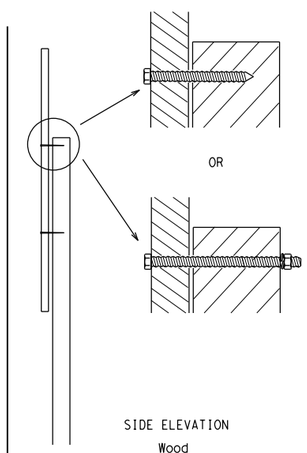


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ 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





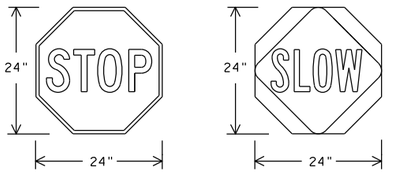
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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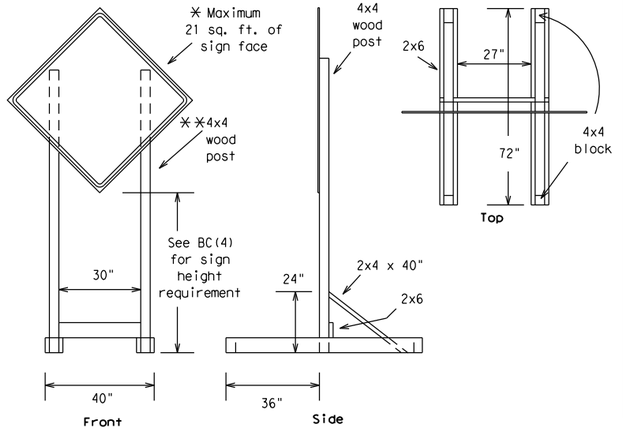
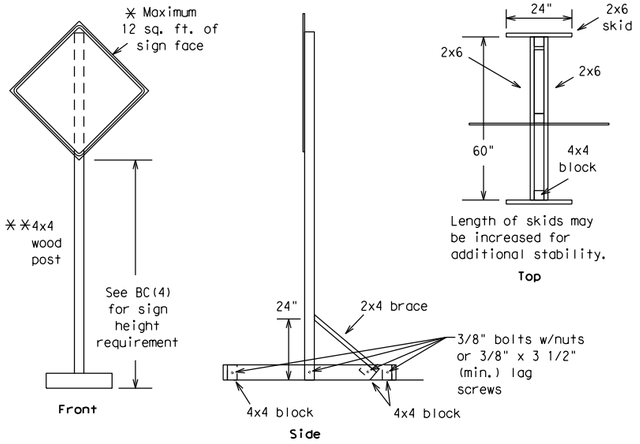
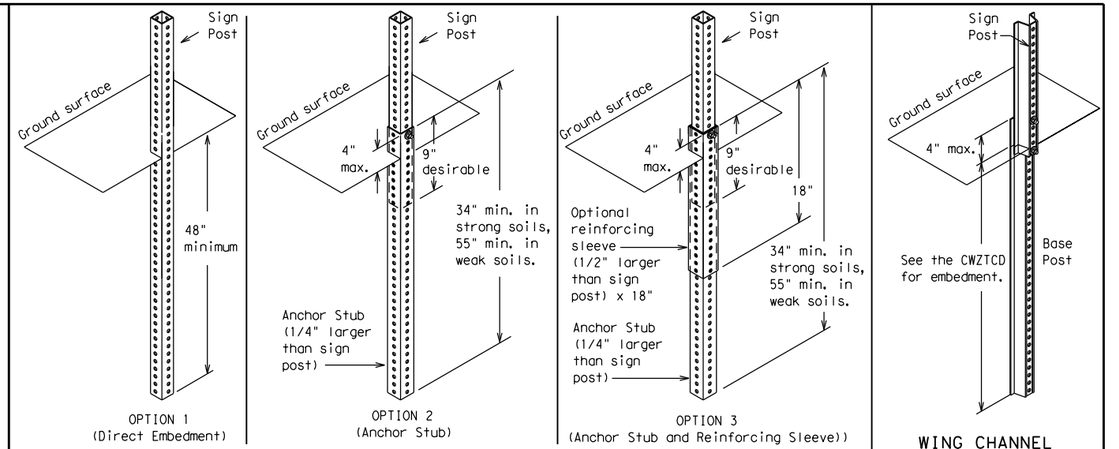




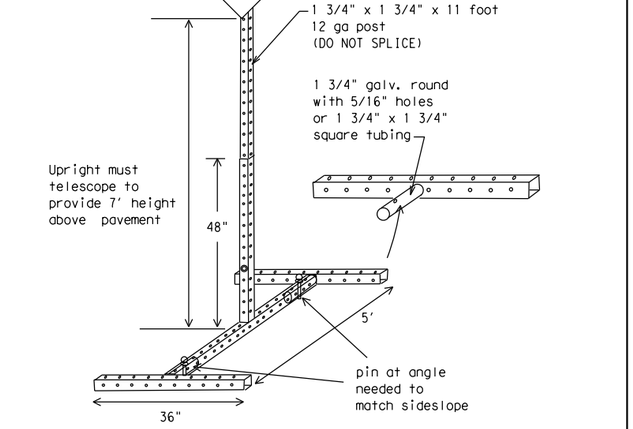
SKID MOUNTED WOOD SIGN SUPPORTS

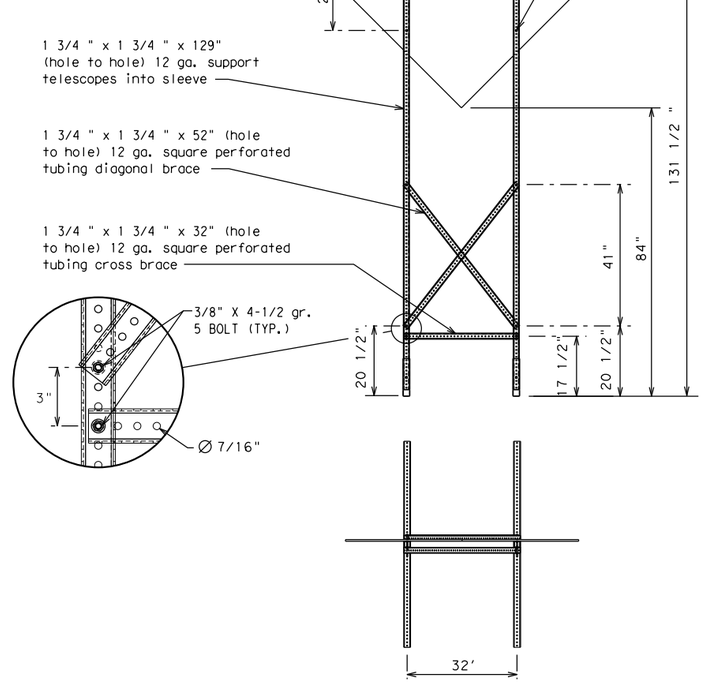
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

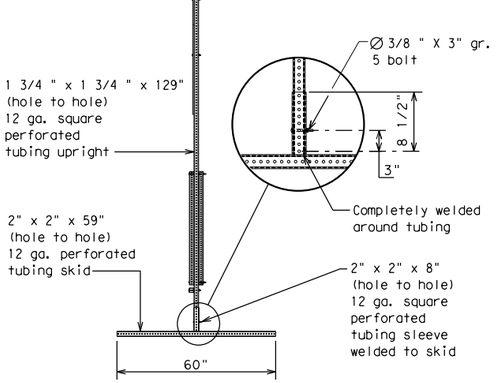


GROUND MOUNTED SIGN SUPPORTS

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

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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REVISIONS	0042	11	006	SL 395
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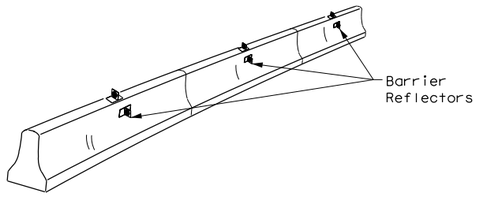
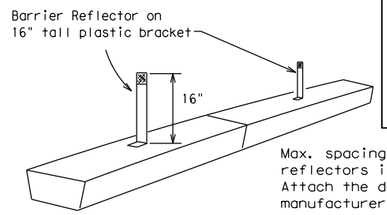
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

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

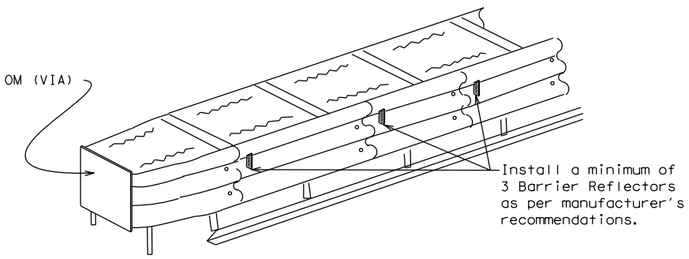


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

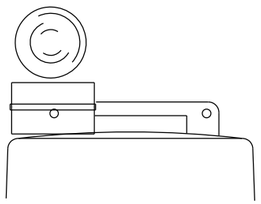


DELINEATION OF END TREATMENTS

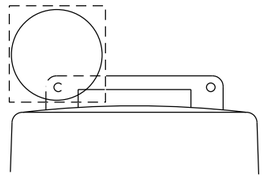
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

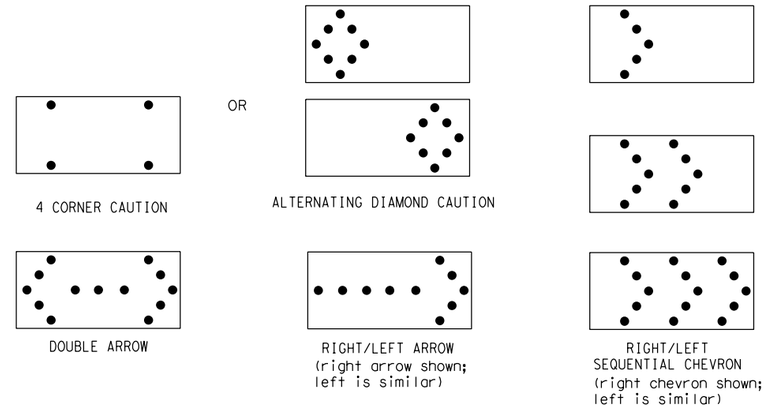
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

SHEET 7 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0042	11	006	SL 395
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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

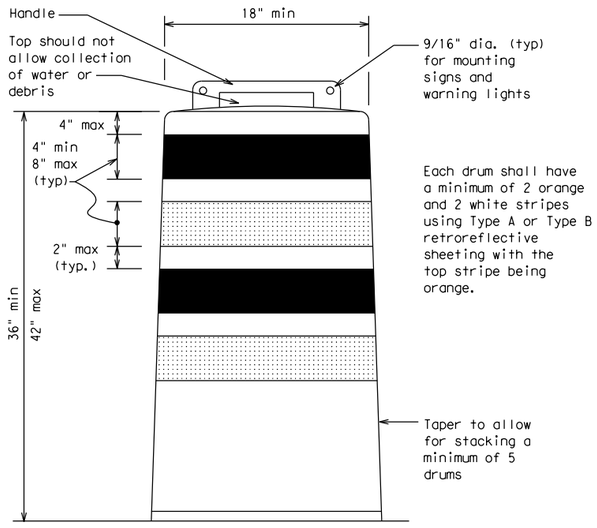
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

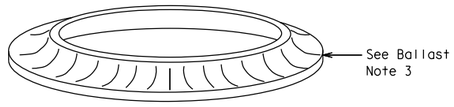
RETROREFLECTIVE SHEETING

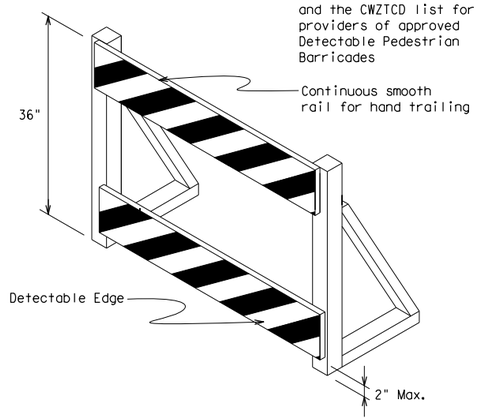
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

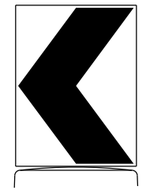




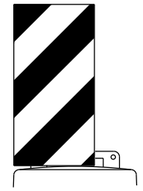


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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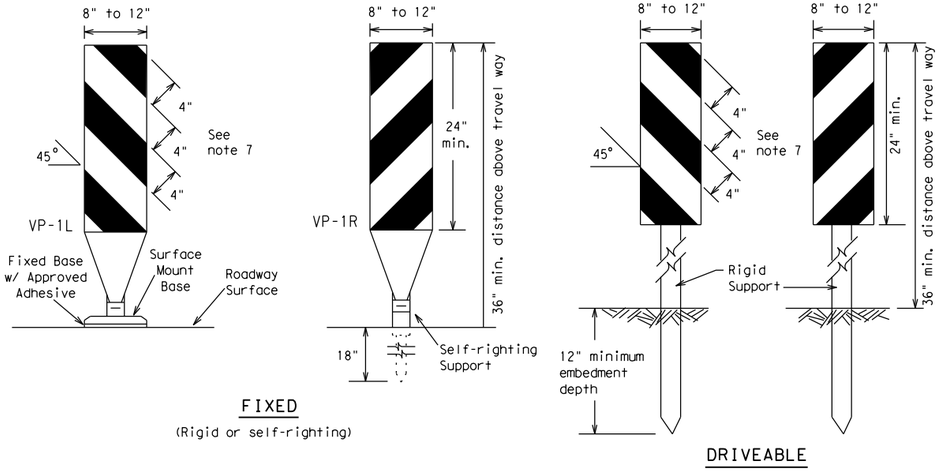
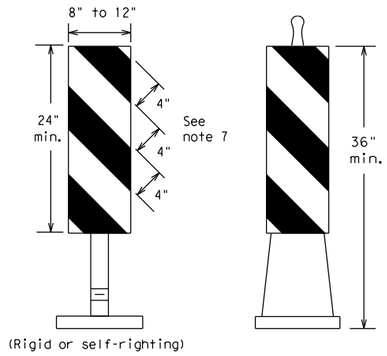


FIXED

(Rigid or self-righting)

DRIVEABLE

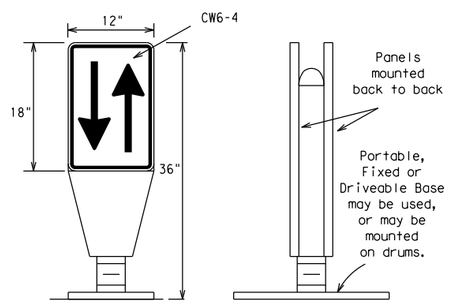


(Rigid or self-righting)

PORTABLE

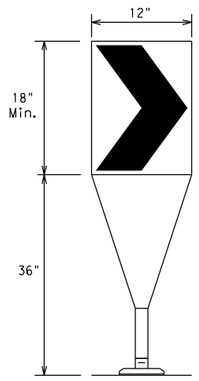
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



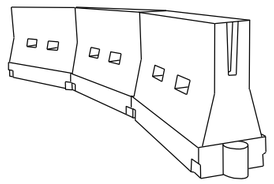
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0042	11	006	SL 395
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	AMA	POTTER		19

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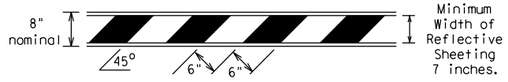
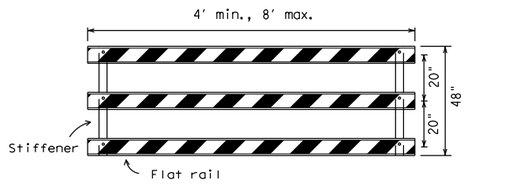
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



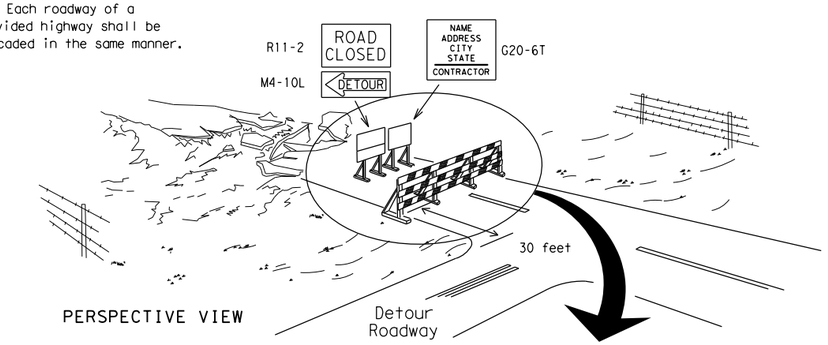
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

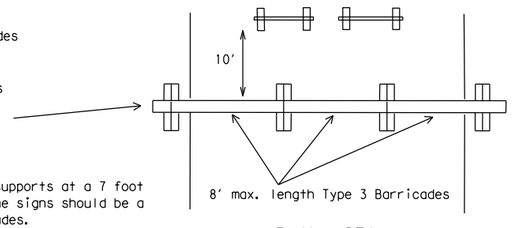
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

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

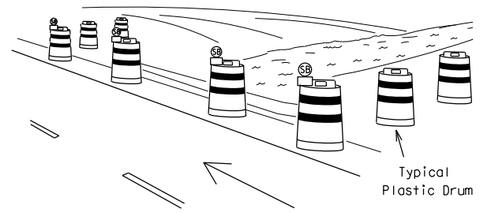
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

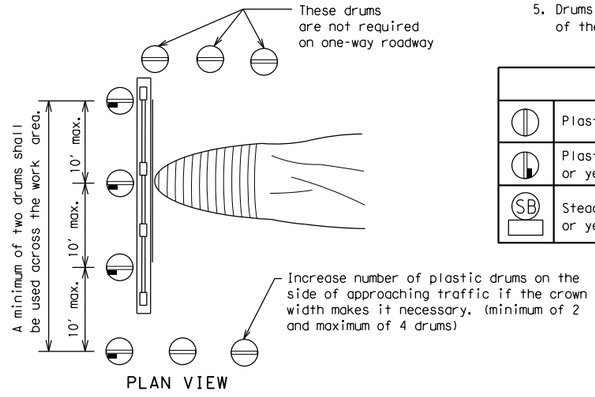
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

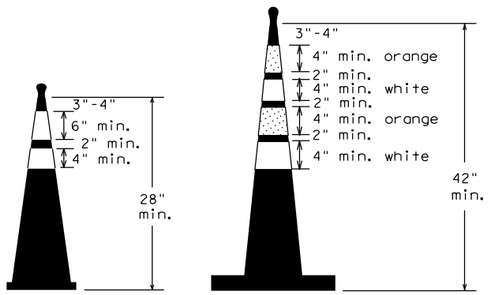
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



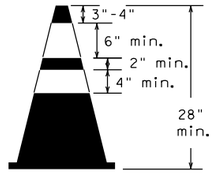
PLAN VIEW

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

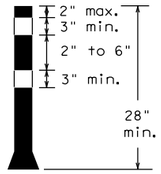
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

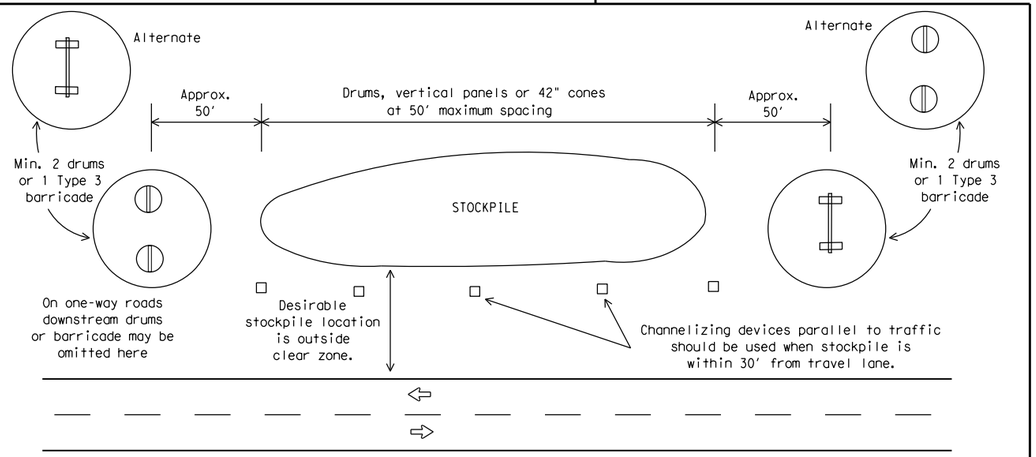


Tubular Marker

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 shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

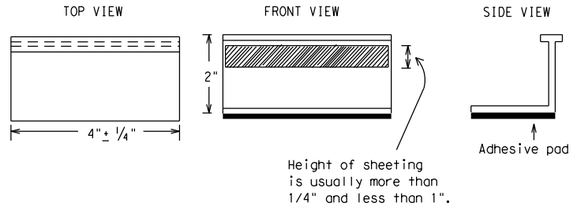
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

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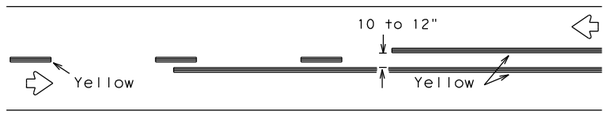
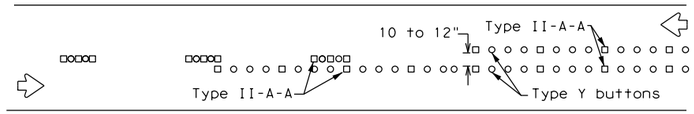
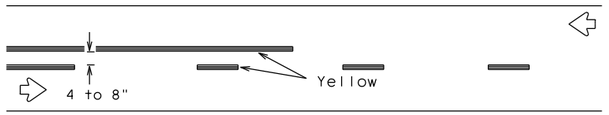
PAVEMENT MARKING PATTERNS



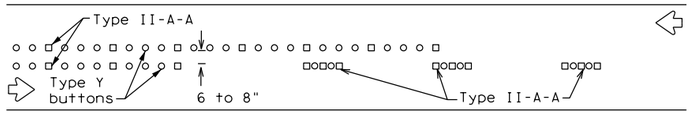
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



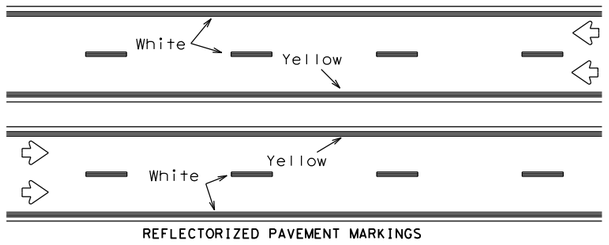
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



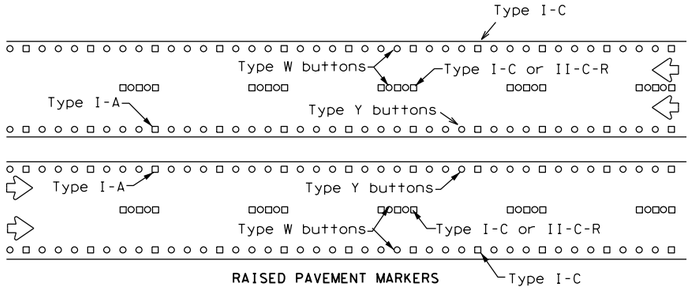
RAISED PAVEMENT MARKERS - PATTERN B

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

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



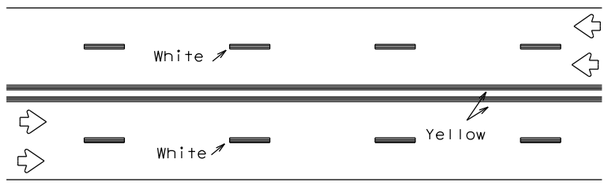
REFLECTORIZED PAVEMENT MARKINGS



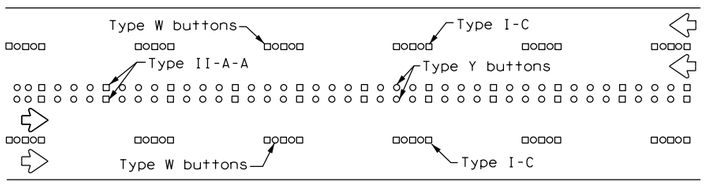
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



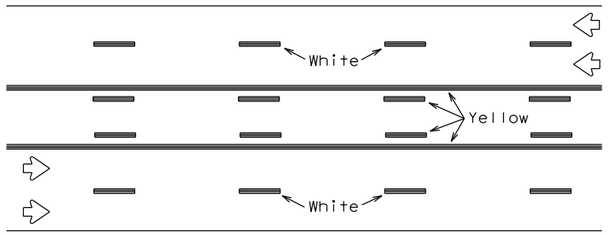
REFLECTORIZED PAVEMENT MARKINGS



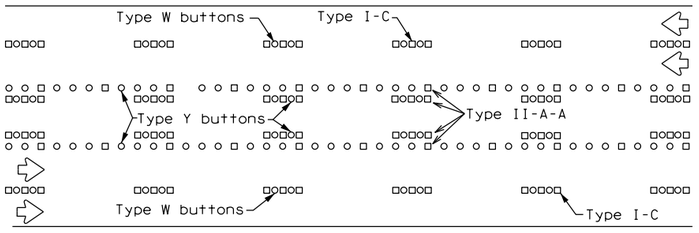
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

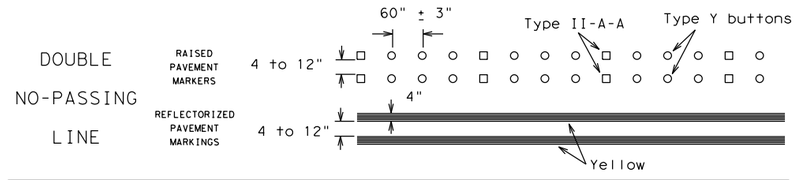
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

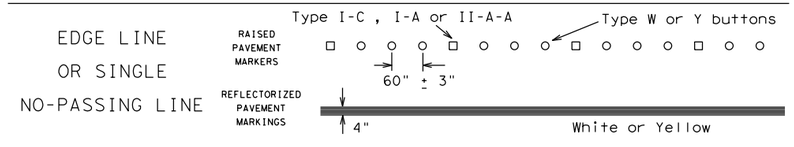
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

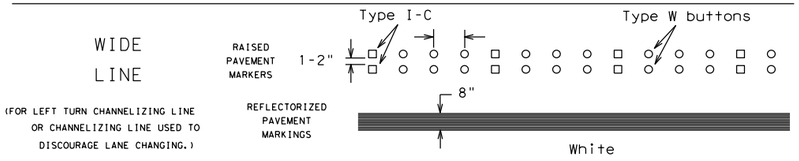


EDGE LINE OR SINGLE NO-PASSING LINE



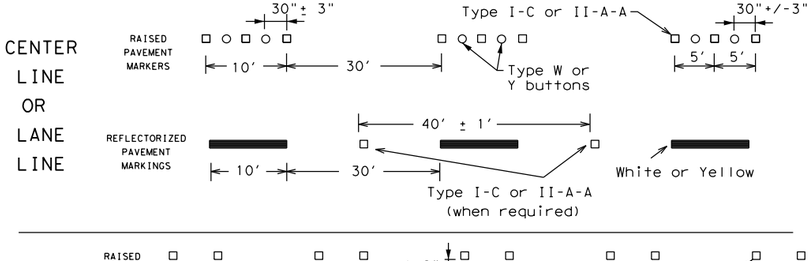
WIDE LINE

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

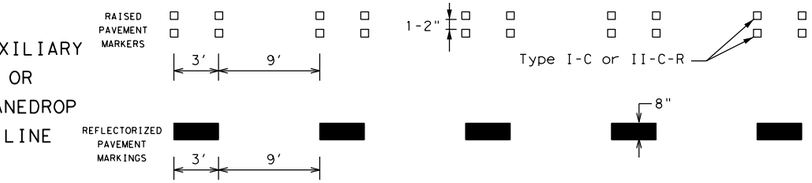


BROKEN LINES

CENTER LINE OR LANE LINE

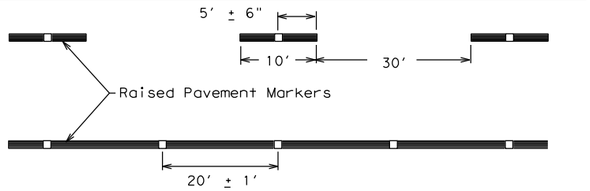


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0042	11	006	SL 395
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		22

106

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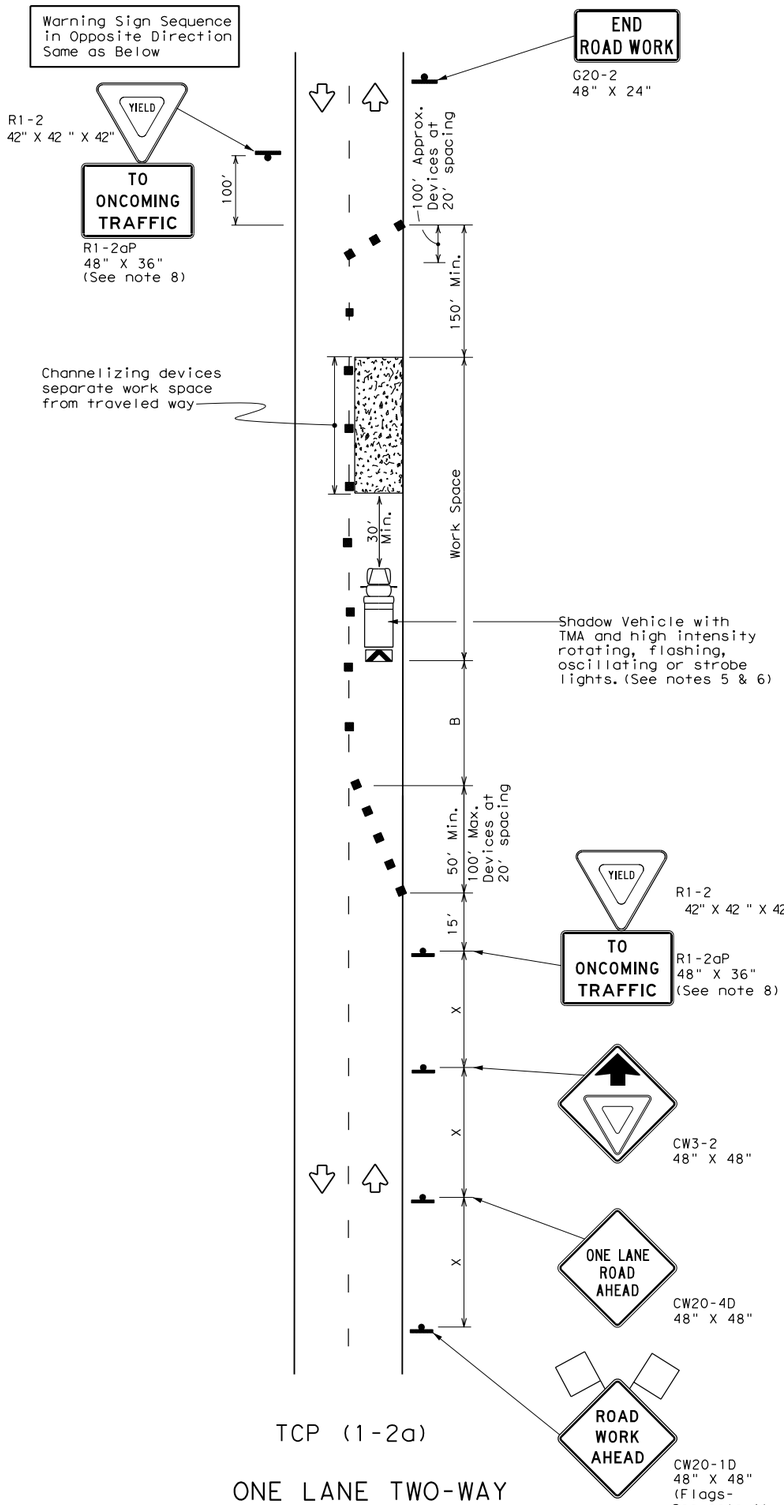
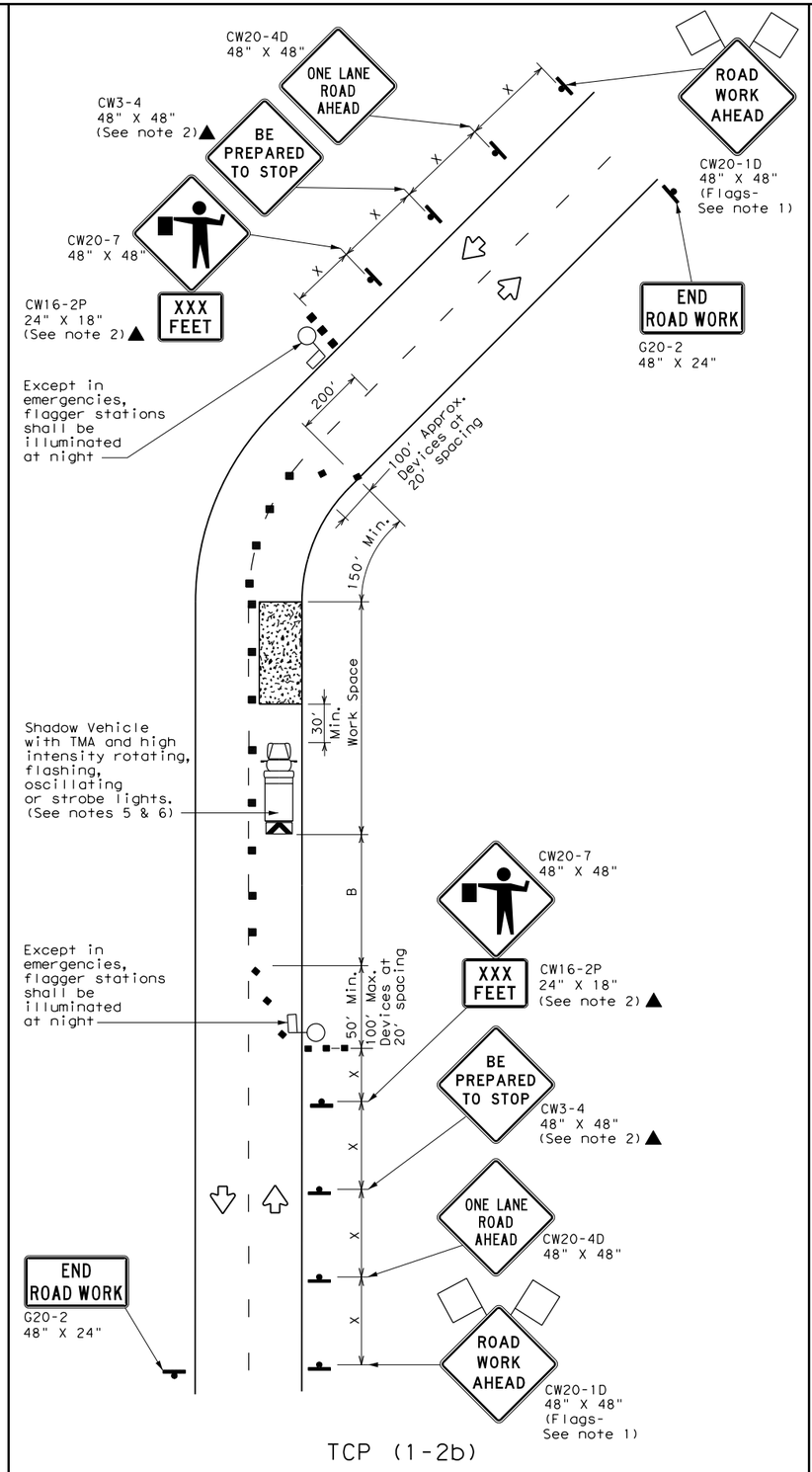


TCP (1-2a)

ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See note 7)



TCP (1-2b)

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 CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
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 off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

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

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98 2-94 2-12 1-97 2-18	0042	11	006	SL 395
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		23

152

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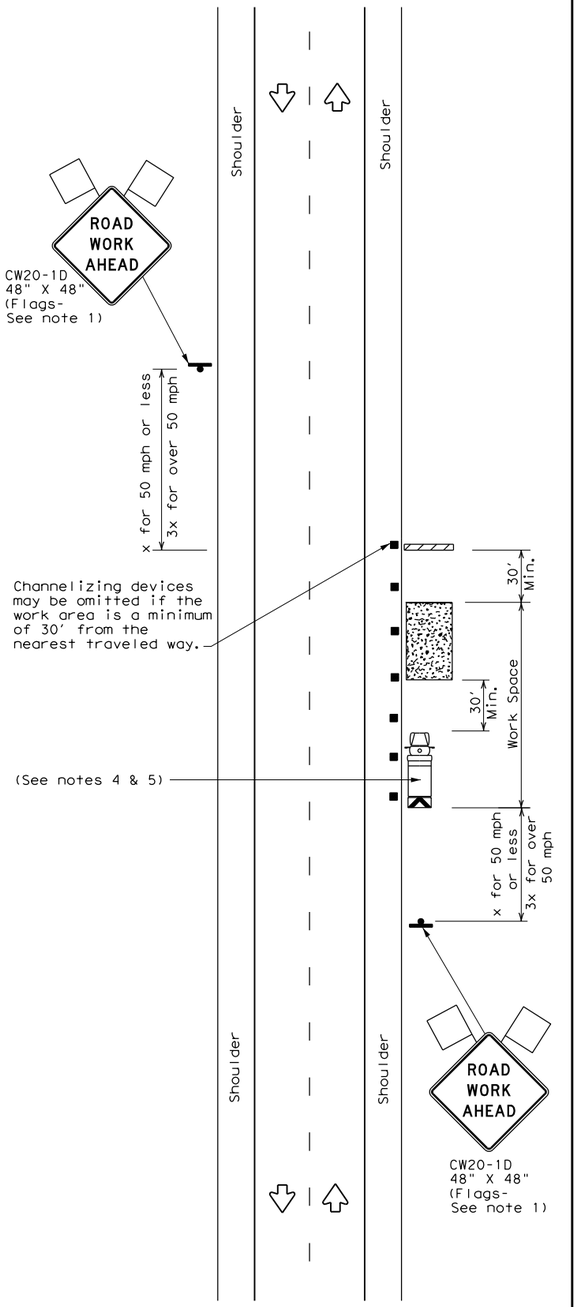
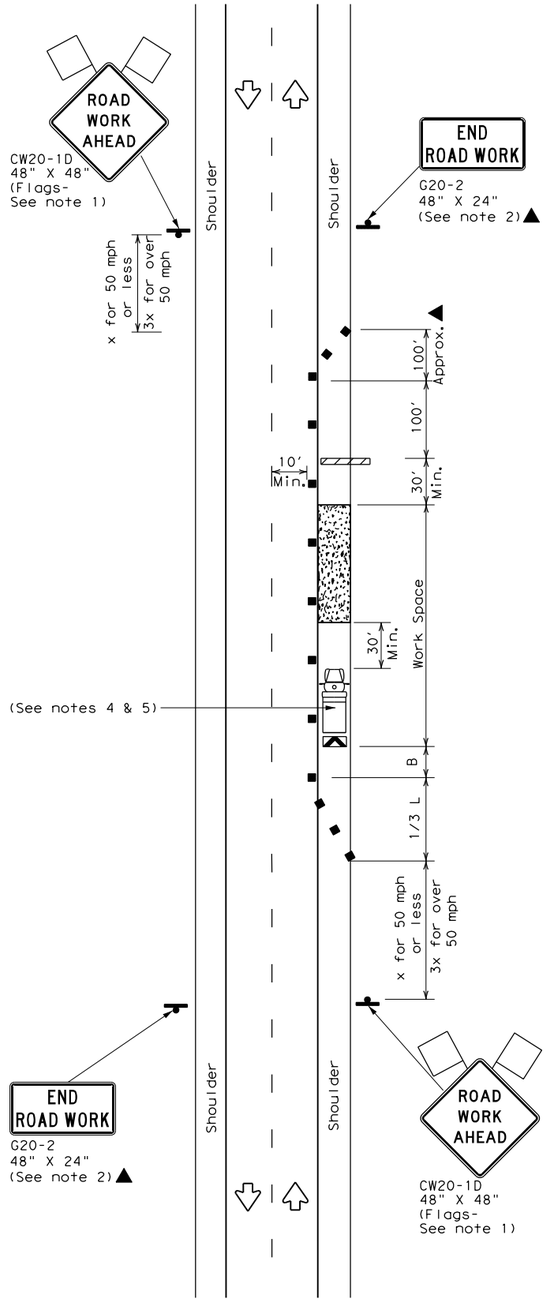


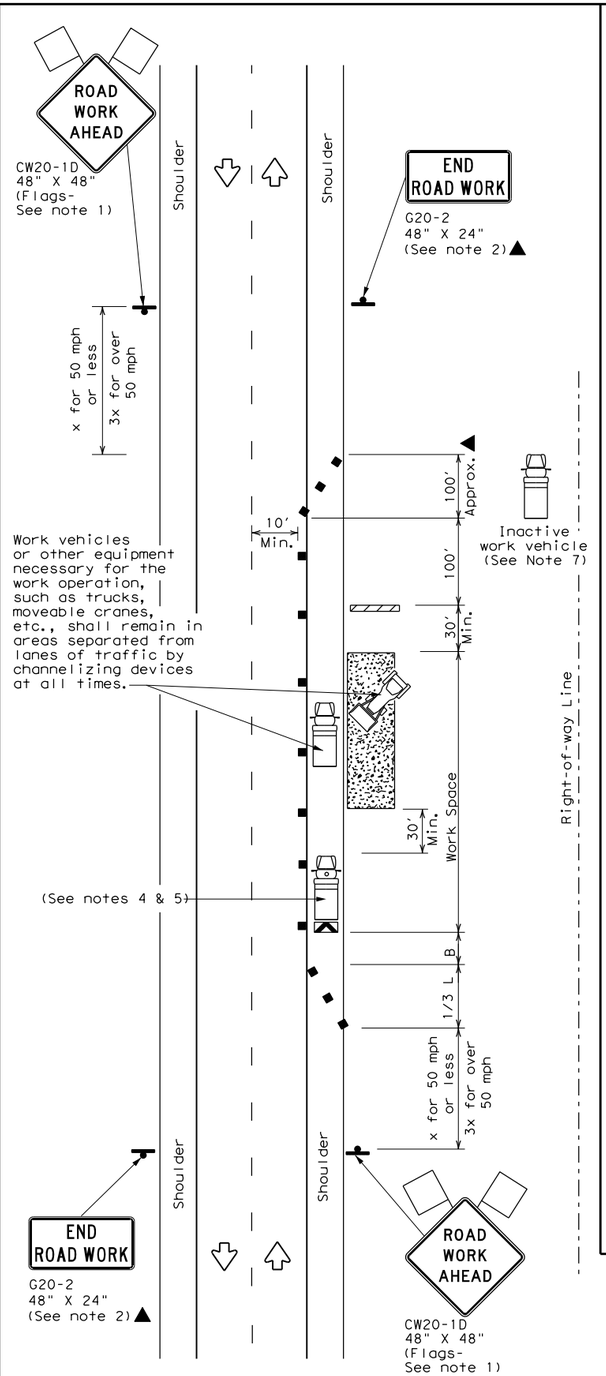
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

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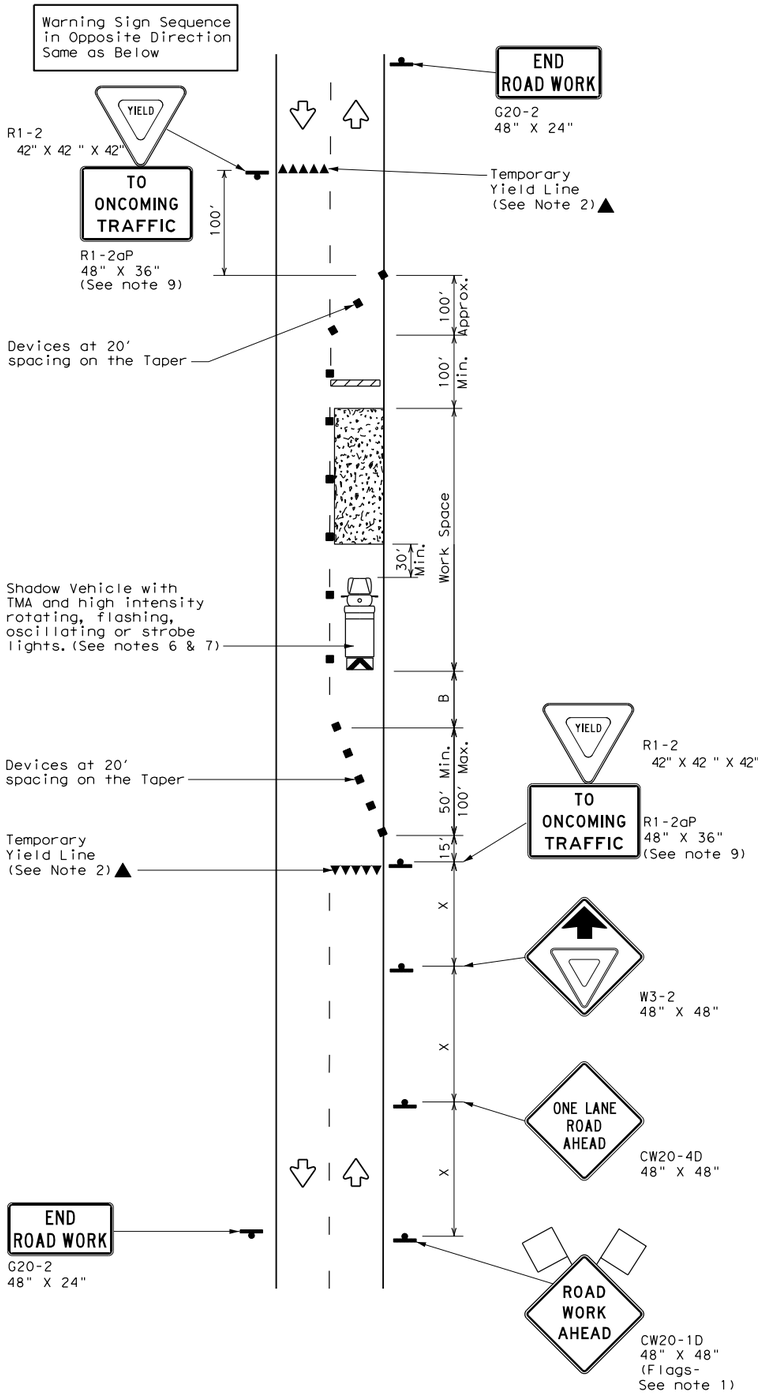
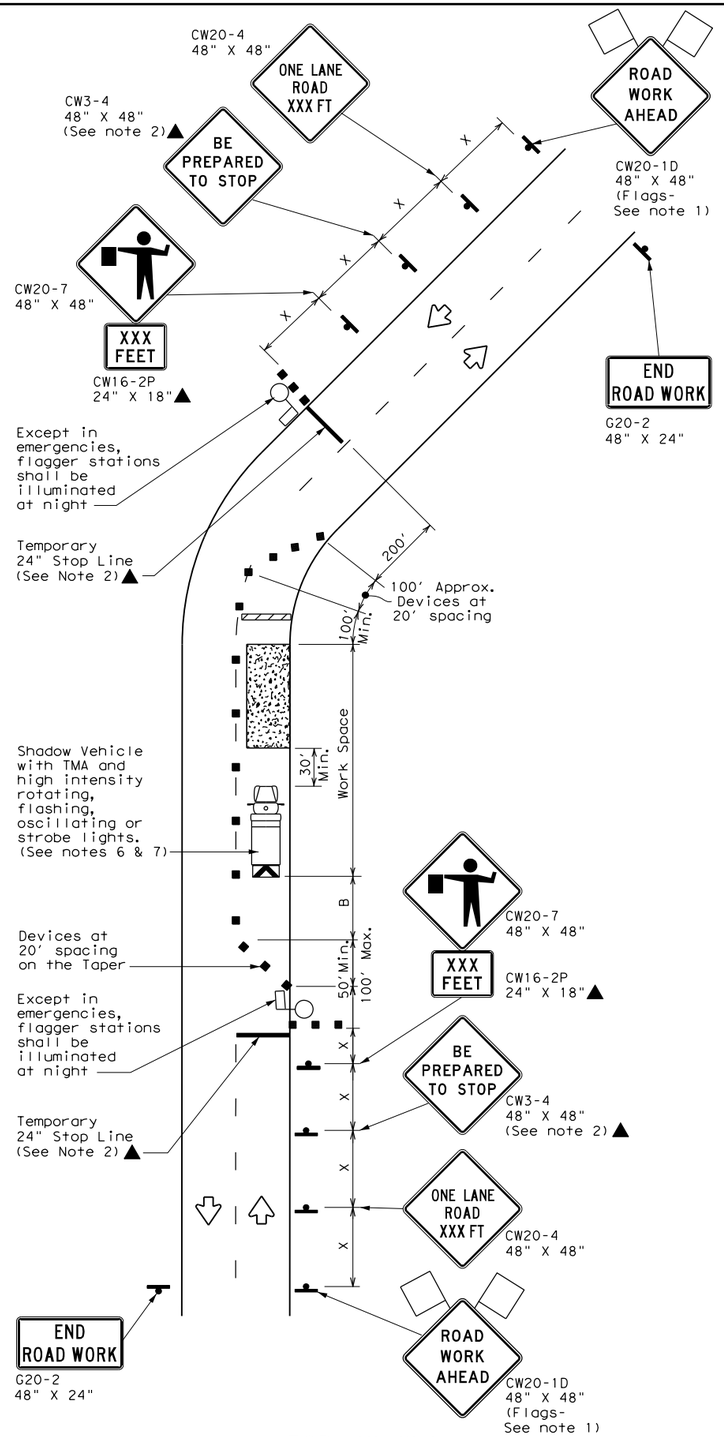
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	AMA	POTTER		24
1-97 2-18				

161



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	0042	11	006	SL 395
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	AMA	POTTER		25
4-98 2-18				

162

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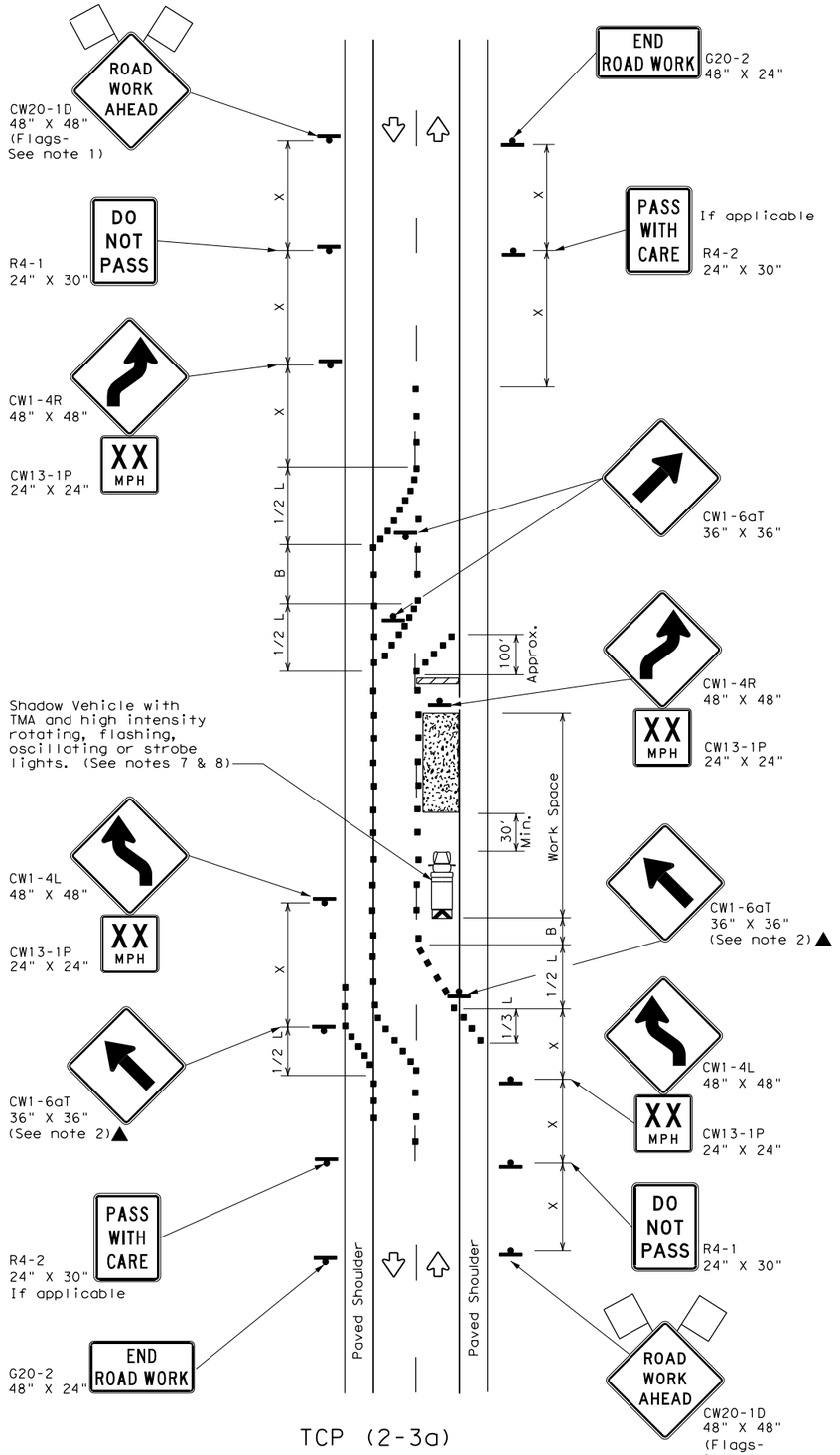
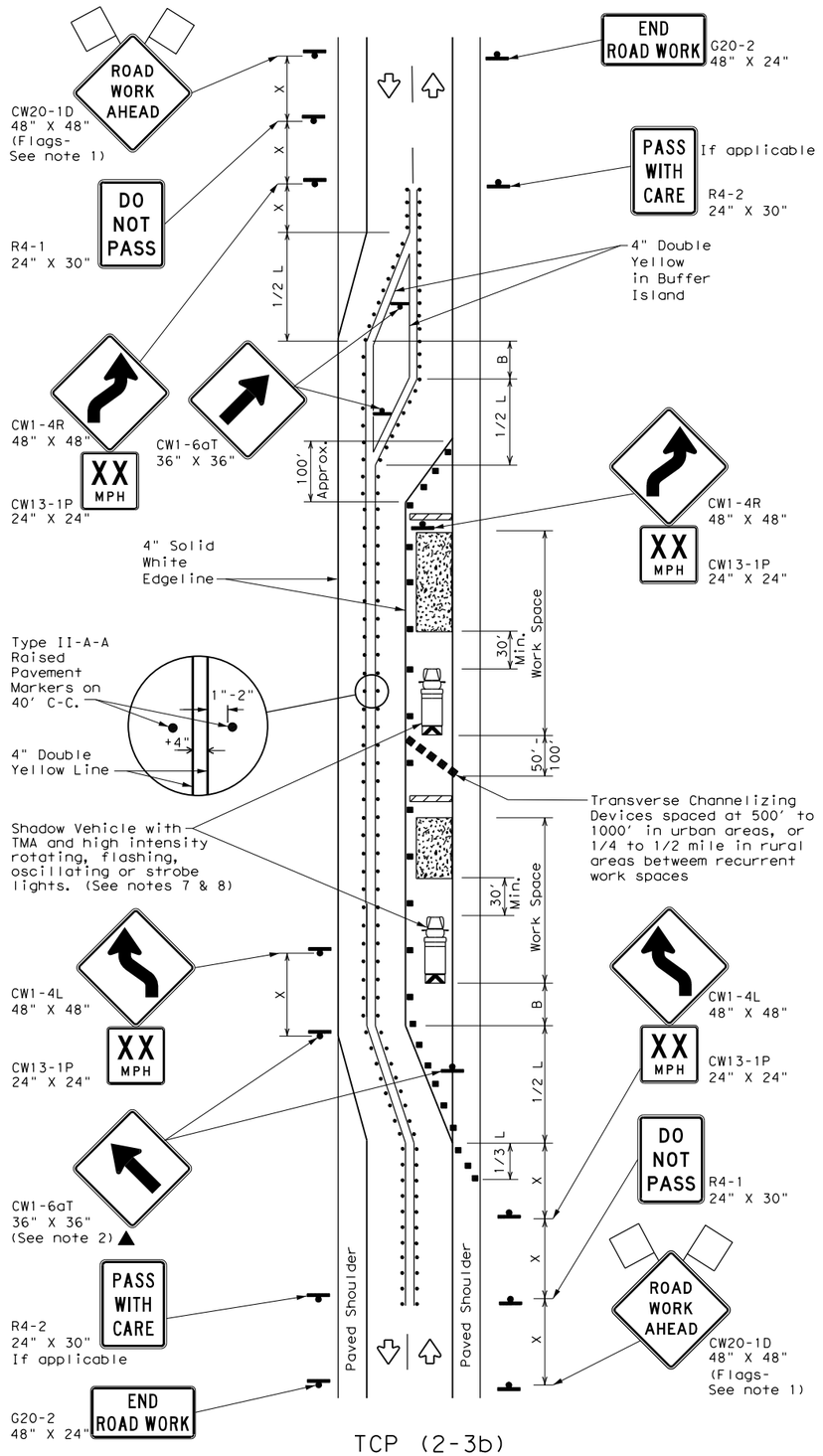


TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS
ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



TCP (2-3b)
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		Raised Pavement Markers Ty II-AA
	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
				TCP(2-3b)ONLY
			✓	✓

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. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. 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.
8. 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 (2-3a)

9. Conflicting pavement markings shall be removed for long-term projects. 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 device spacing is intended for the area of the 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(2-3)-18

FILE: tcp(2-3)-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	AMA	POTTER		26
4-98 2-18				

163

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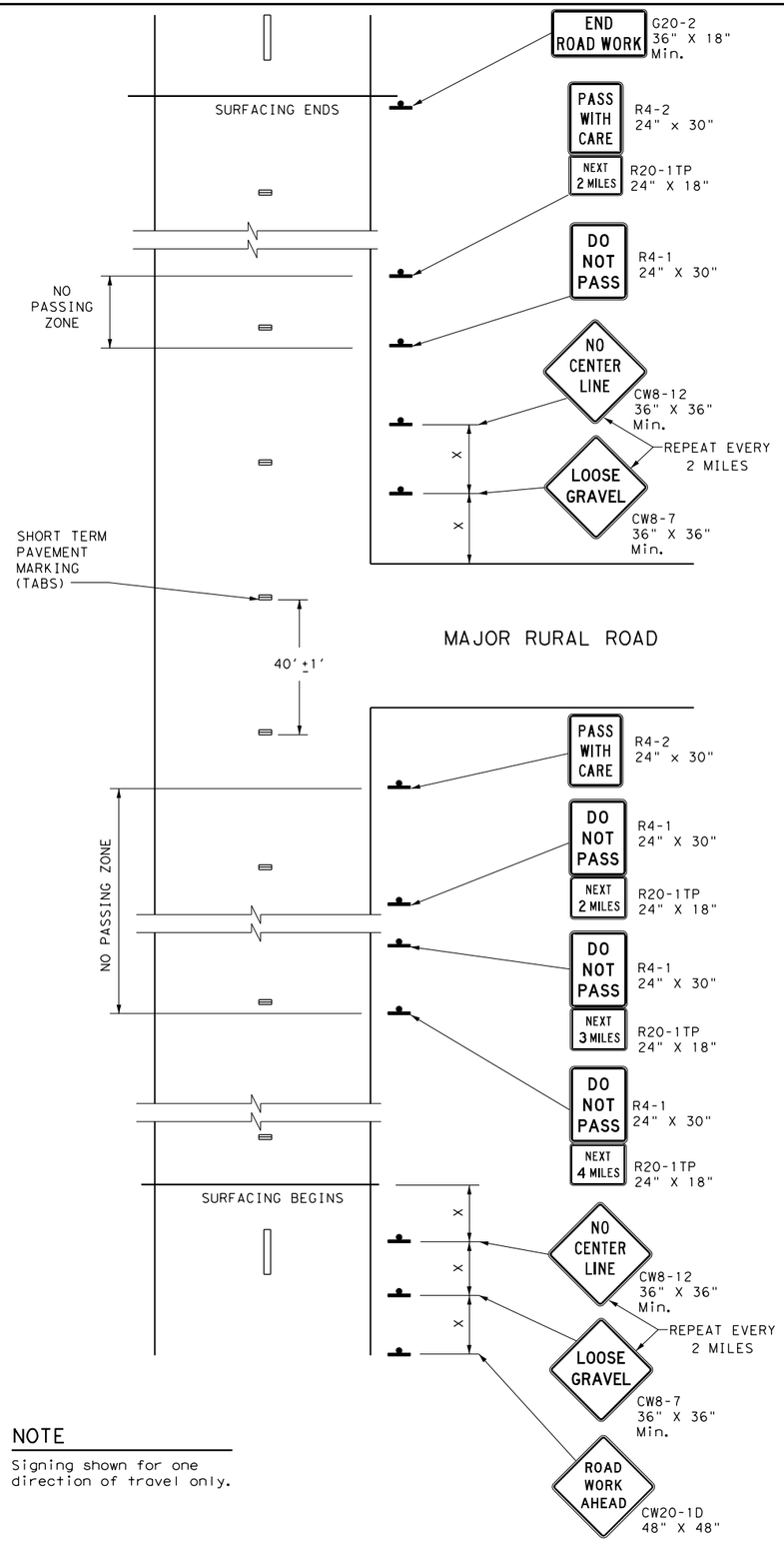
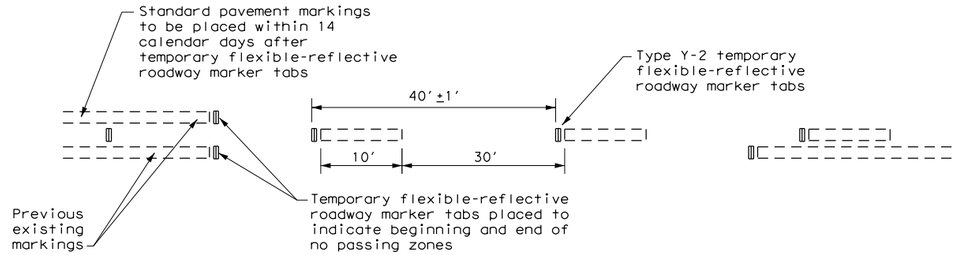


NOTE

Signing shown for one direction of travel only.

NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS



TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS

For seal coat, micro-surface or similar operations

"DO NOT PASS" SIGN (R4-1) and NO-PASSING ZONES

A. Prior to the beginning of construction, all currently striped no-passing zones shall be signed with the DO NOT PASS (R4-1) signs and PASS WITH CARE (R4-2) signs placed at the beginning and end of each zone for each direction of travel except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.

B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES (R20-1TP) plaque may be used at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where there is considerable distance between no-passing zones, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.

C. Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshield and lights. The DO NOT PASS sign and NEXT XX MILES plaque should be used and repeated as often as necessary for this purpose. Where several existing zones are to be combined into one individual no-passing zone, the sign at the beginning of the zone should be covered until the surfacing operation has passed this location so as not to have the DO NOT PASS sign conflict with the existing pavement markings. Also, unless one days operation completes the entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zones where the surfacing operation has stopped for the day.

D. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

"NO CENTER LINE" SIGN (CW8-12)

A. Center line markings are yellow pavement markings that delineate the separation of travel lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.

B. At the time construction activity obliterates the existing center line markings(low volume roads may not have an existing centerline), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately 2 mile intervals within the work area, beyond major intersections and other locations deemed necessary by the Engineer.

C. The NO CENTER LINE signs are to remain in place until standard pavement markings are installed.

"LOOSE GRAVEL" SIGN (CW8-7)

A. When construction begins, a LOOSE GRAVEL (CW8-7) sign should be erected at each end of the work area and repeated at intervals of approximately 2 miles in rural areas and closer in urban areas.

B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

PAVEMENT MARKINGS

A. Temporary markings for surfacing projects shall be Temporary Flexible-reflective Roadway Marker Tabs unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement
no more than two (2) days before the surfacing is applied. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.

B. Tabs shall not be used to simulate edge lines.

C. Tab placement for overlay/inlay operations shall be as shown on the WZ(STPM) standard sheet.

COORDINATION OF SIGN LOCATIONS

A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.

B. Where possible the ROAD WORK AHEAD (CW20-1D), LOOSE GRAVEL (CW8-7), and NO CENTER LINE (CW8-12) signs should be placed in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) and the TRAFFIC FINES DOUBLE (R20-5T) sign, and one "X" sign spacing prior to the CONTRACTOR (G20-6T)sign typically located at or near the limits of surfacing. LOOSE GRAVEL and NO CENTER LINE signs will then be repeated as described above.

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120′
35	160′
40	240′
45	320′
50	400′
55	500′
60	600′
65	700′
70	800′
75	900′

* Conventional Roads Only

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

GENERAL NOTES

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.
2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.
3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Long-Term / Intermediate-Term Work Zone Sign Supports.
4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".
5. Signs on divided highways, freeways and expressways will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS

TCP(7-1)-13

FILE: tcp7-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 1991	CONT	SECT	JOB	HIGHWAY
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4-92 4-98	DIST	COUNTY		SHEET NO.
1-97 7-13	AMA	POTTER		27

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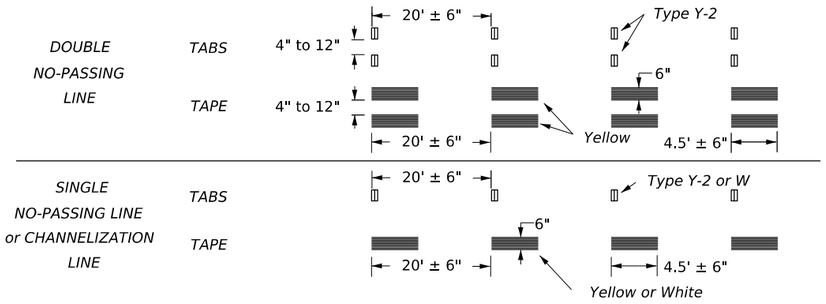
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



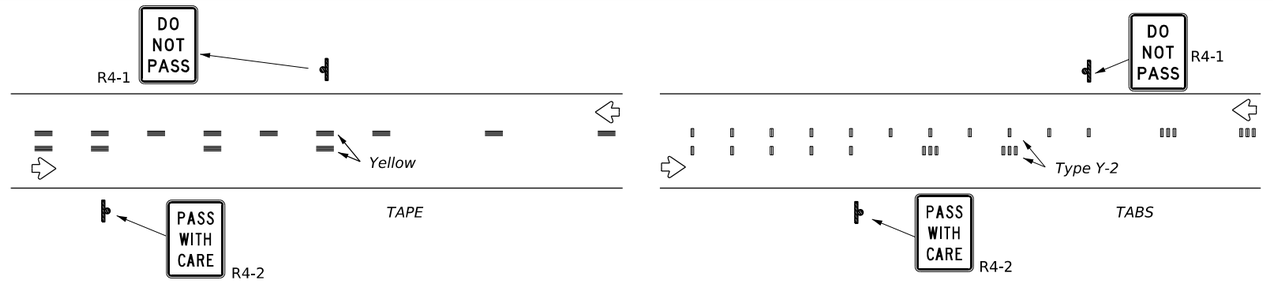
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

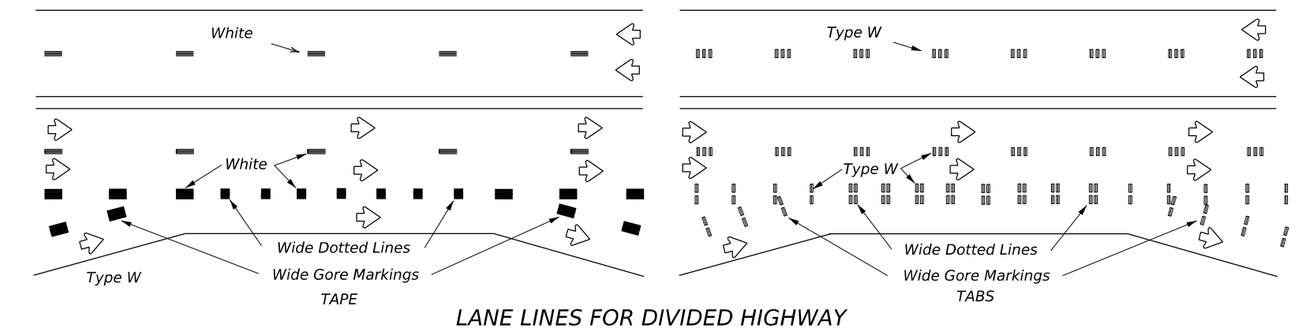
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

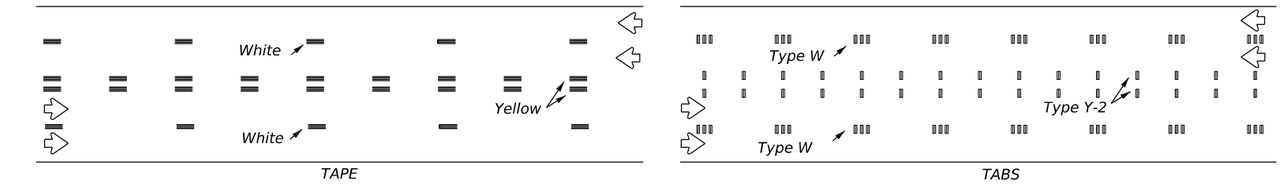
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



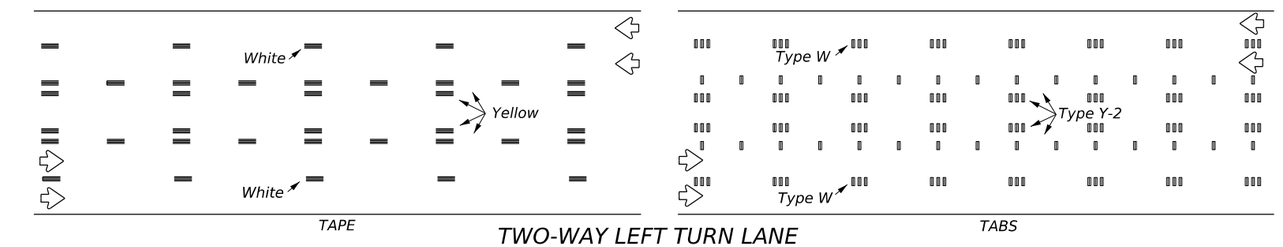
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



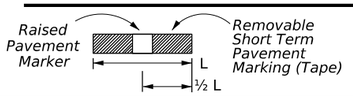
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Costruction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:

http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Safety Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-23

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1-97 2-23	AMA	POTTER		28
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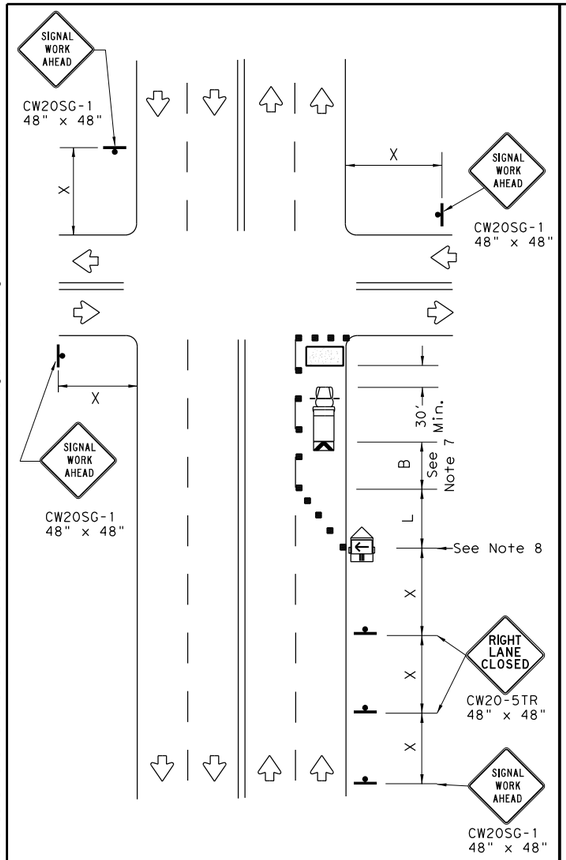
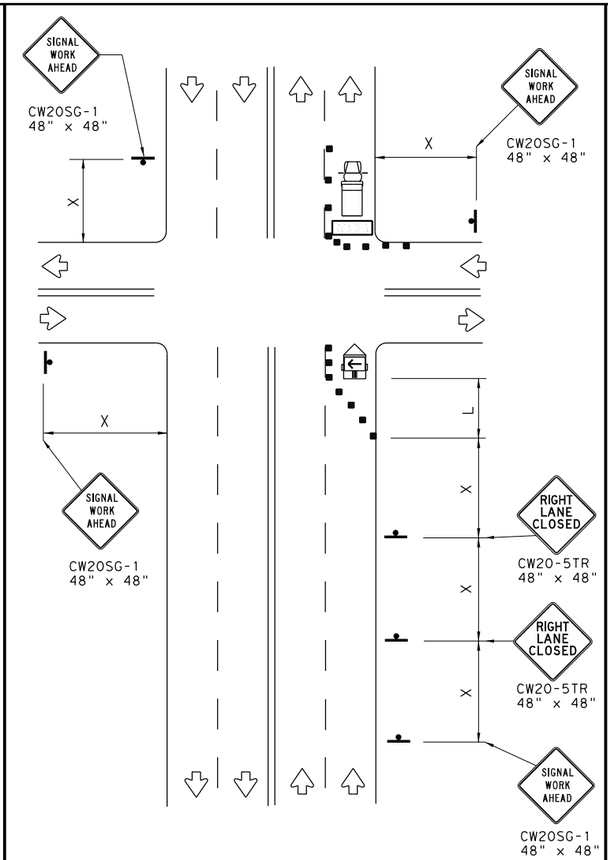


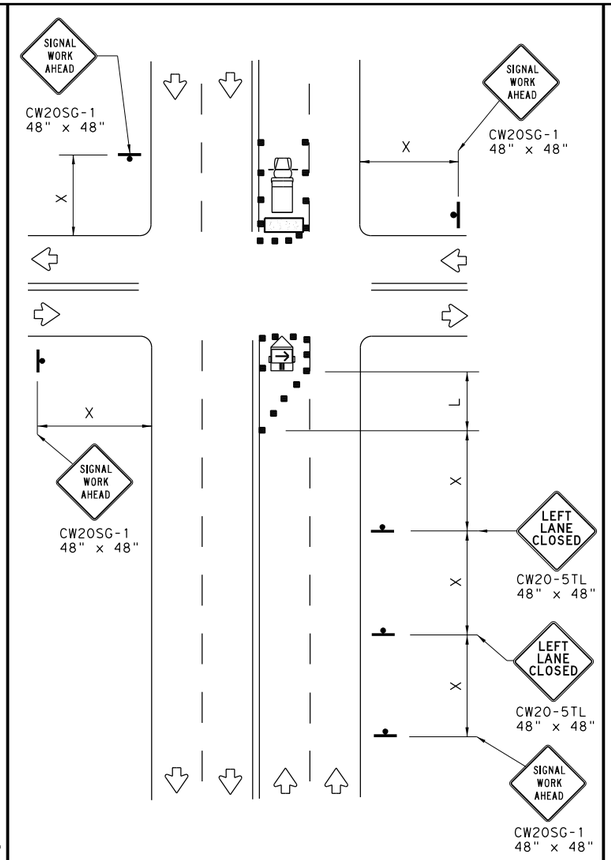
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE RIGHT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY

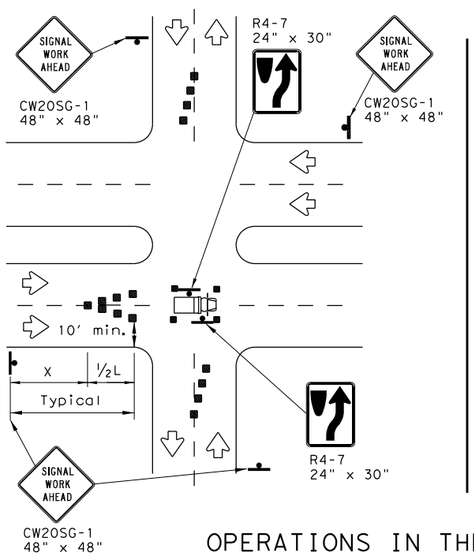
LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

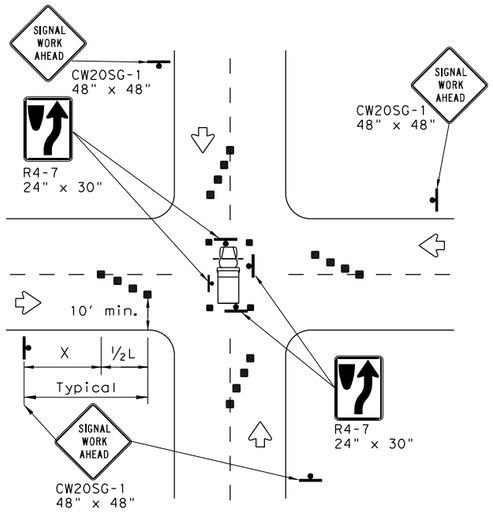
Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'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

* Conventional Roads Only

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

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





OPERATIONS IN THE INTERSECTION

SHORT DURATION

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

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© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
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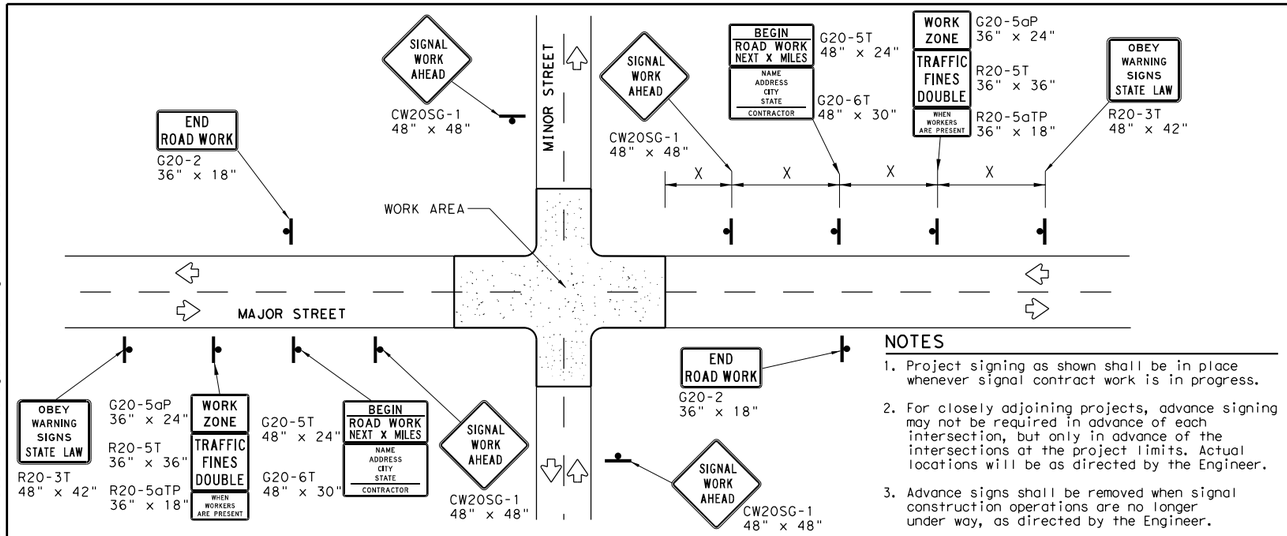


TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

DURATION OF WORK

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

SIGN MOUNTING HEIGHT

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

REMOVING OR COVERING

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

REFLECTIVE SHEETING

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

SIGN SUPPORT WEIGHTS

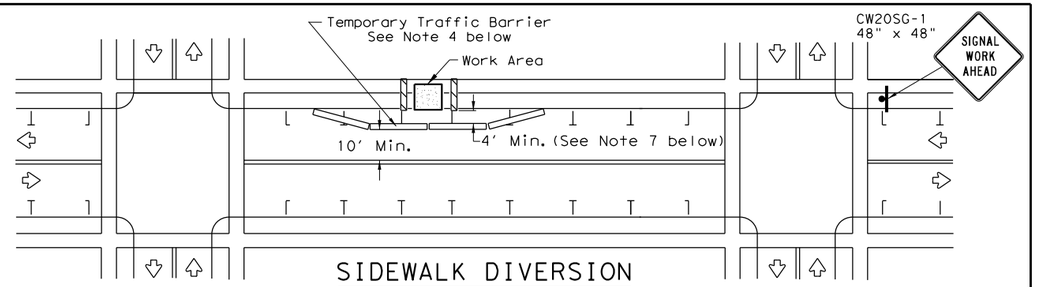
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

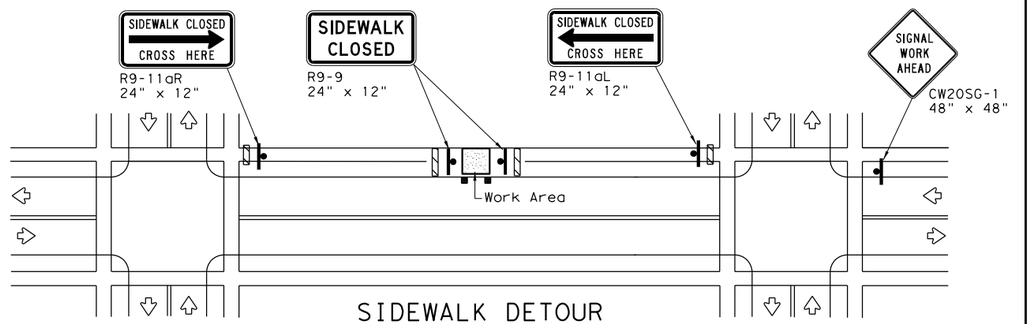
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

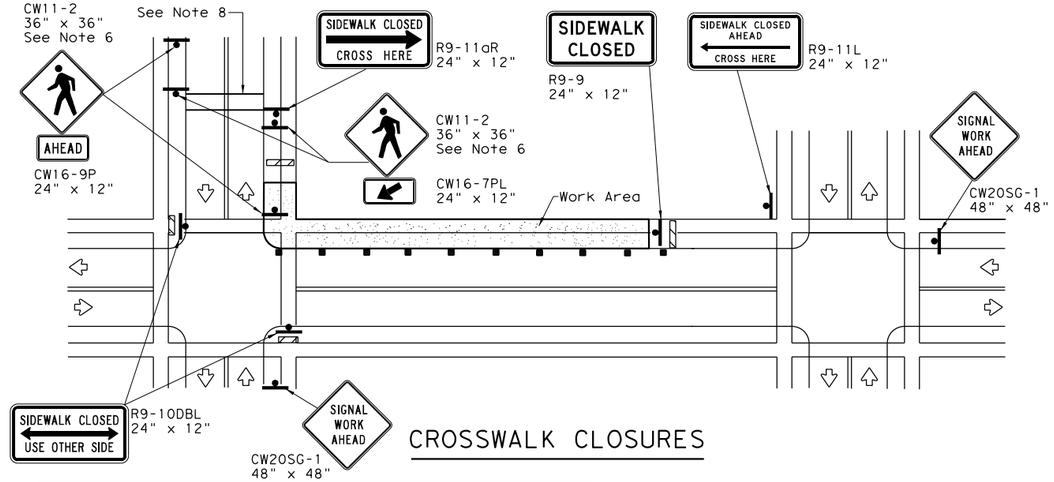
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

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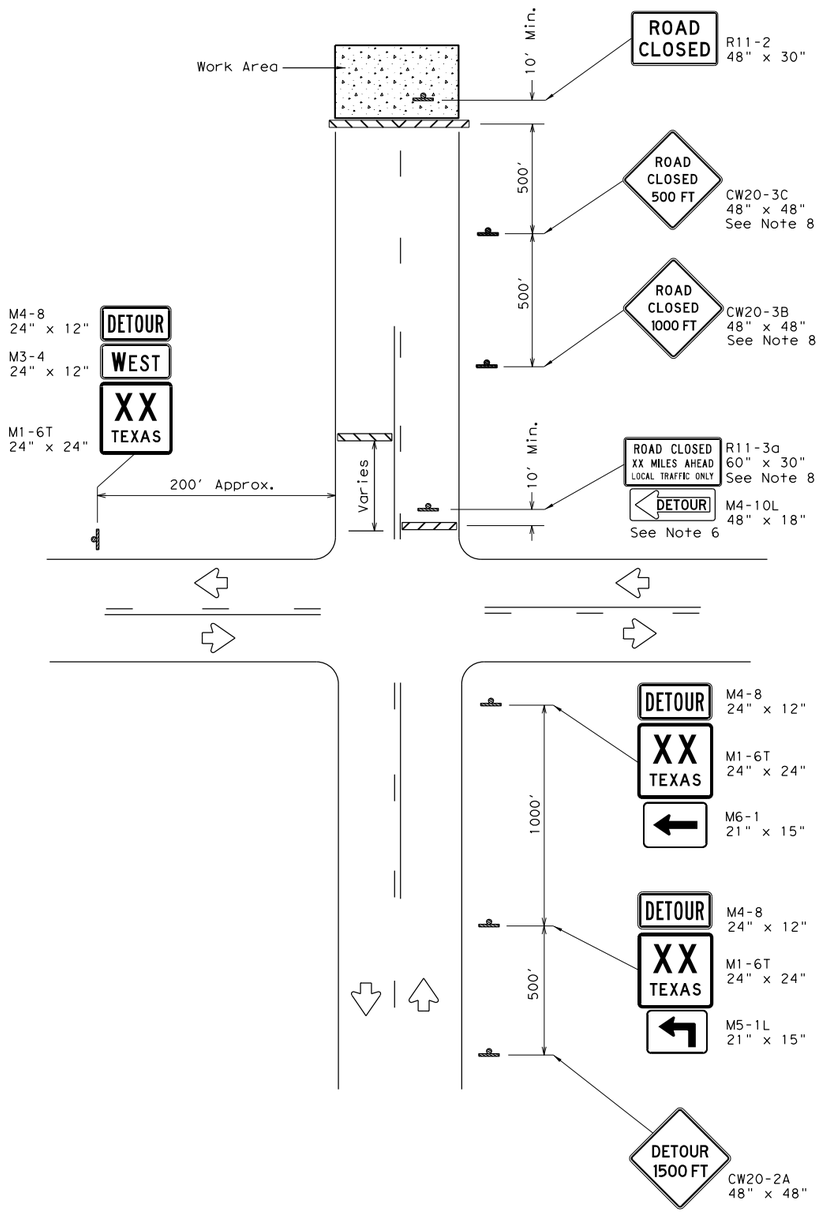
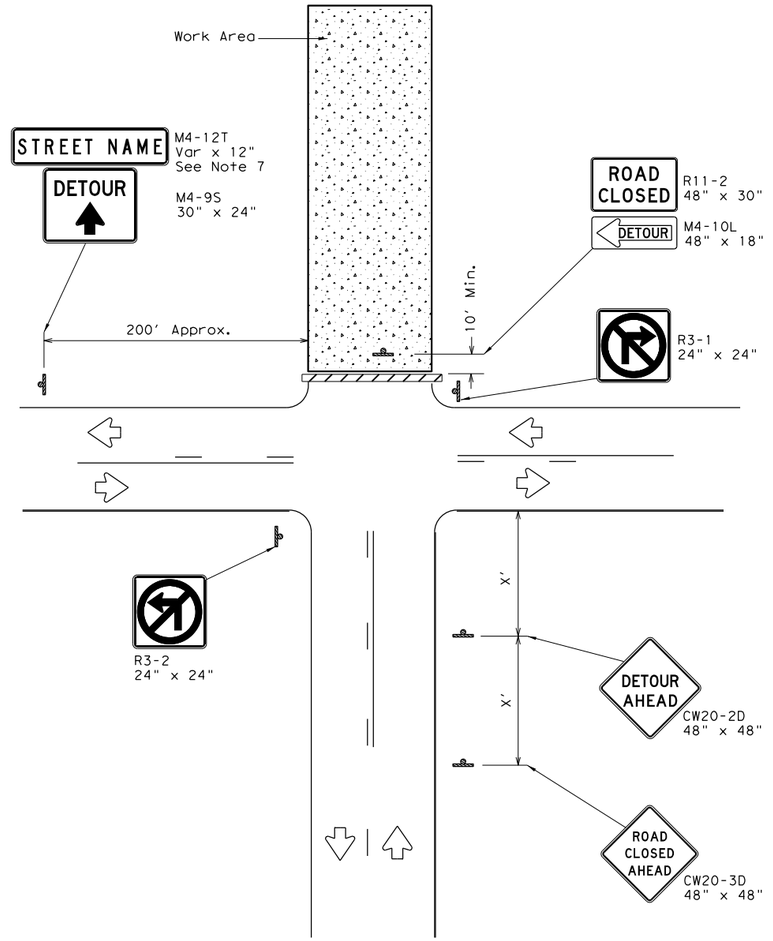


ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

GENERAL NOTES

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

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SUMMARY OF REMOVAL ITEMS

LOCATION	100 6013	104 6011	104 6017	104 6022	104 6028	104 6036	105 6019	105 6035	496 6002	496 6030
	PREP ROW (TREE) (2" TO 12" DIA)	REMOVING CONC (MEDIANS)	REMOVING CONC (DRIVEWAYS)	REMOVING CONC (CURB AND GUTTER)	REMOVING CONC (MISC)	REMOVING CONC (SIDEWALK OR RAMP)	REMOVING STAB BASE & ASPH PAV(14")	REMOVING STAB BASE & ASPH PAV (0-2")	REMOV STR (INLET)	REMOVE STR (BOLLARD)
	EA	SY	SY	LF	SY	SY	SY	SY	EA	EA
REMOVAL LAYOUT - SHEET 1 OF 2	0	0	1450	2301	25	1526	6437	8086	4	5
REMOVAL LAYOUT - SHEET 2 OF 2	5	35	1209	2031	7	1225	5555	6078	3	0
PROJECT TOTALS	5	35	2659	4332	32	2751	11992	14164	7	5

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Texas Department of Transportation

SE 10TH AVE

SUMMARY OF REMOVAL ITEMS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		32

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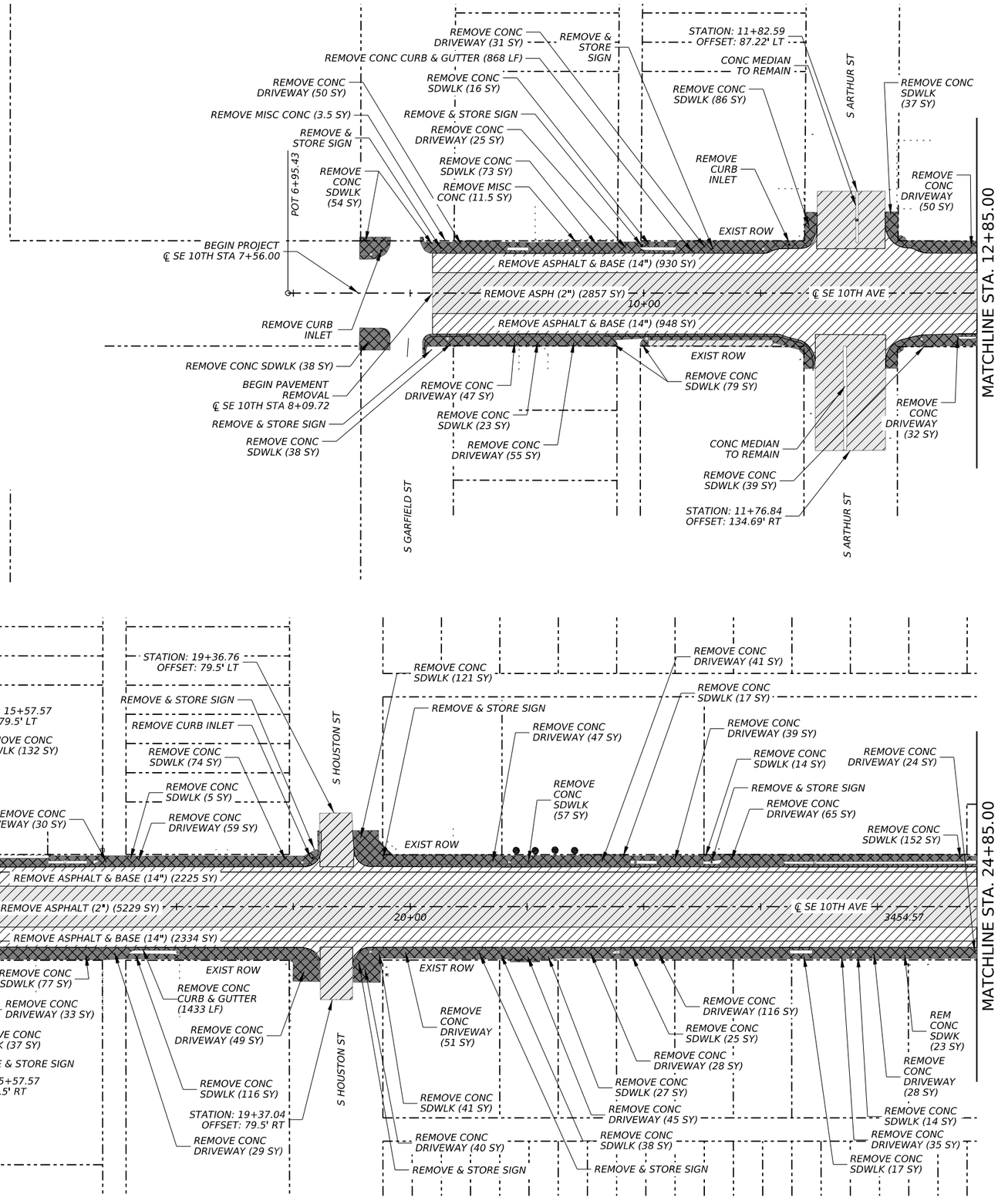

0 50 100
SCALE IN FEET

LEGEND

- ASPHALT REMOVAL(2")
- ASPHALT & STAB BASE REMOVAL(14")
- CONCRETE REMOVAL
- EXISTING RIGHT-OF-WAY

NOTES
1. CONTRACTOR SHALL TAKE CARE TO PROTECT EXISTING CURB, GUTTER, FENCE, AND SIDEWALK DESIGNATED TO REMAIN. ANY DAMAGE CAUSED BY CONTRACTOR OR CONTRACTOR'S EQUIPMENT WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
2. REMOVAL OF HEADWALLS/WINGWALLS SHALL BE SUBSIDIARY TO STRUCTURE REMOVAL.
3. REFER TO SIGNAL SHEETS FOR REMOVAL OF SIGNAL, ITS, GROUND BOX, AND CONDUIT RELATED ITEMS.
4. SIGNS IDENTIFIED FOR REMOVAL SHALL BE STORED AT AN APPROVED SECURE SITE UNTIL RE-INSTALLATION.

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REMOVAL LAYOUT

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		33

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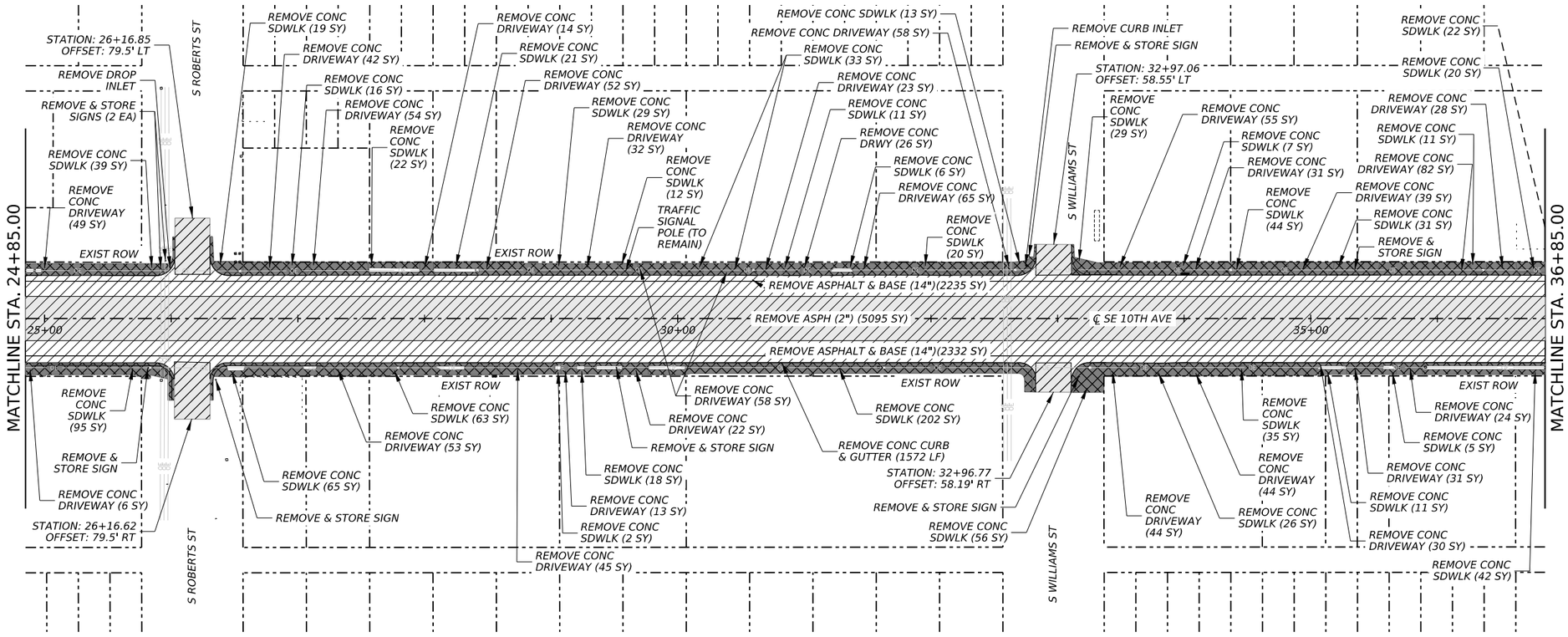

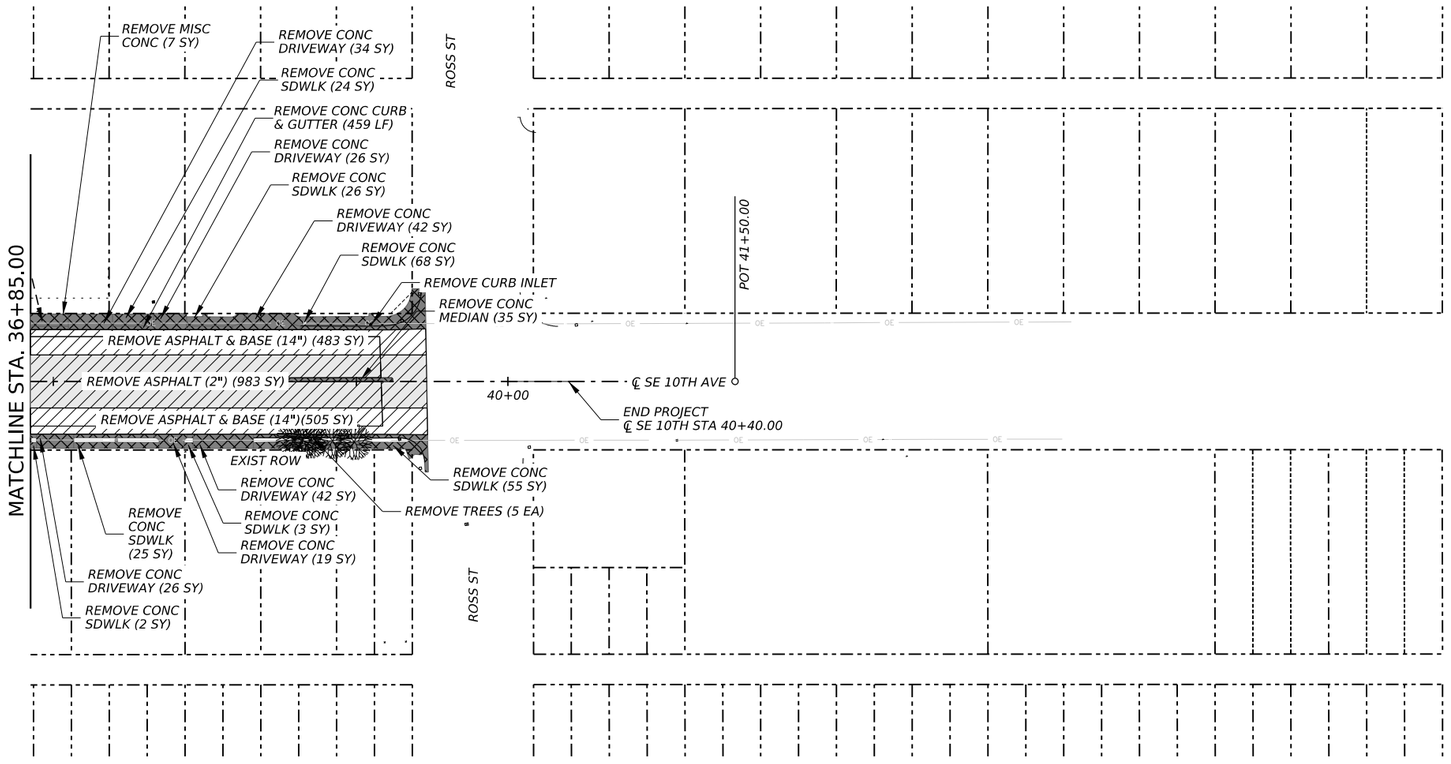

0 50 100

SCALE IN FEET

LEGEND

- ASPHALT REMOVAL(2")
- ASPHALT & STAB BASE REMOVAL(14")
- CONCRETE REMOVAL
- EXISTING RIGHT-OF-WAY

NOTES

1. CONTRACTOR SHALL TAKE CARE TO PROTECT EXISTING CURB, GUTTER, FENCE, AND SIDEWALK DESIGNATED TO REMAIN. ANY DAMAGE CAUSED BY CONTRACTOR OR CONTRACTOR'S EQUIPMENT WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
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REMOVAL LAYOUT

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		34

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DW: EIA
CK: SAW
DW: EIA

SE 10TH AVENUE ALIGNMENT DATA

```
* BENTLEY HORIZONTAL ALIGNMENT REVIEW
*
* Alignment name: BL CL-SE10
* Alignment description:
* Alignment style: Alignment\Baseline
*
                                STATION          NORTHING          EASTING
Element: Linear
                  POT(         )       6+95.43 R1       3719451.16        558653.07
                  POT(         )      46+16.69 R1       3718805.56        562520.82
          Tangential Direction:       S80.524°E
          Tangential Length:          3921.26
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SE 10TH AVE

HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		35

CK: SAW
DW: EIA
CK: SAW
DW: EIA

SUMMARY OF ROADWAY ITEMS

LOCATION	247 6238	260 6002	260 6027	310 6009	351 6002	529 6008	529 6012	529 6030	529 6036	530 6004	531 6001	531 6003	531 6008	531 6010	531 6013	3076 6001	3076 6044	3076 6066
	FL BS (CMP IN PLC)(TY A GR 4)(12")	LIME (HYDRATED LIME (SLURRY))	LIME TRT (EXST MATL)(8")(3% BY WEIGHT)	PRIME COAT (MC-30) (0.25 GAL/SY)	FLEXIBLE PAVEMENT STRUCTURE REPAIR(6") *	CONC CURB & GUTTER (TY II)	CONC CURB (SLOTTED)	CONC CURB & GUTTER (VALLEY GUTTER)	CONCRETE CURB (SPECIAL)	DRIVEWAYS (CONC)	CONC SIDEWALKS (4")	CONC SIDEWALKS (6")	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	D-GR HMA TY-B PG64-22 (330 LB/SY)	D-GR HMA TY-D PG70-28 (220 LB/SY)	TACK COAT (0.14 GAL/SY)
	SY	TON	SY	GAL	SY	LF	LF	LF	LF	SY	SY	SY	EA	EA	EA	TON	TON	GAL
PLAN & PROFILE - SHEET 1 OF 4	1461	16	1515	379		660	55	0	254	299	157	287	0	11	1	215	474	603
PLAN & PROFILE - SHEET 2 OF 4	3600	40	3734	934		1149	273	234	250	1042	560	824	0	8	0	528	947	1204
PLAN & PROFILE - SHEET 3 OF 4	3600	40	3734	934		991	352	0	27	1022	486	948	0	10	0	528	933	1186
PLAN & PROFILE - SHEET 4 OF 4	833	9	863	216		319	71	78	33	288	108	156	2	4	0	123	194	246
PROJECT TOTALS	9494	107	9846	2462	1417	3119	751	312	564	2651	1311	2215	2	33	1	1394	2548	3240

* FLEXIBLE PAVEMENT STRUCTURE REPAIR QUANTITY WAS CALCULATED AS 10% OF 2" MILLED AREA.
SEE "FULL DEPTH PAVEMENT REPAIR DETAIL" FOR MORE INFORMATION.

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SE 10TH AVE

SUMMARY OF ROADWAY ITEMS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		36

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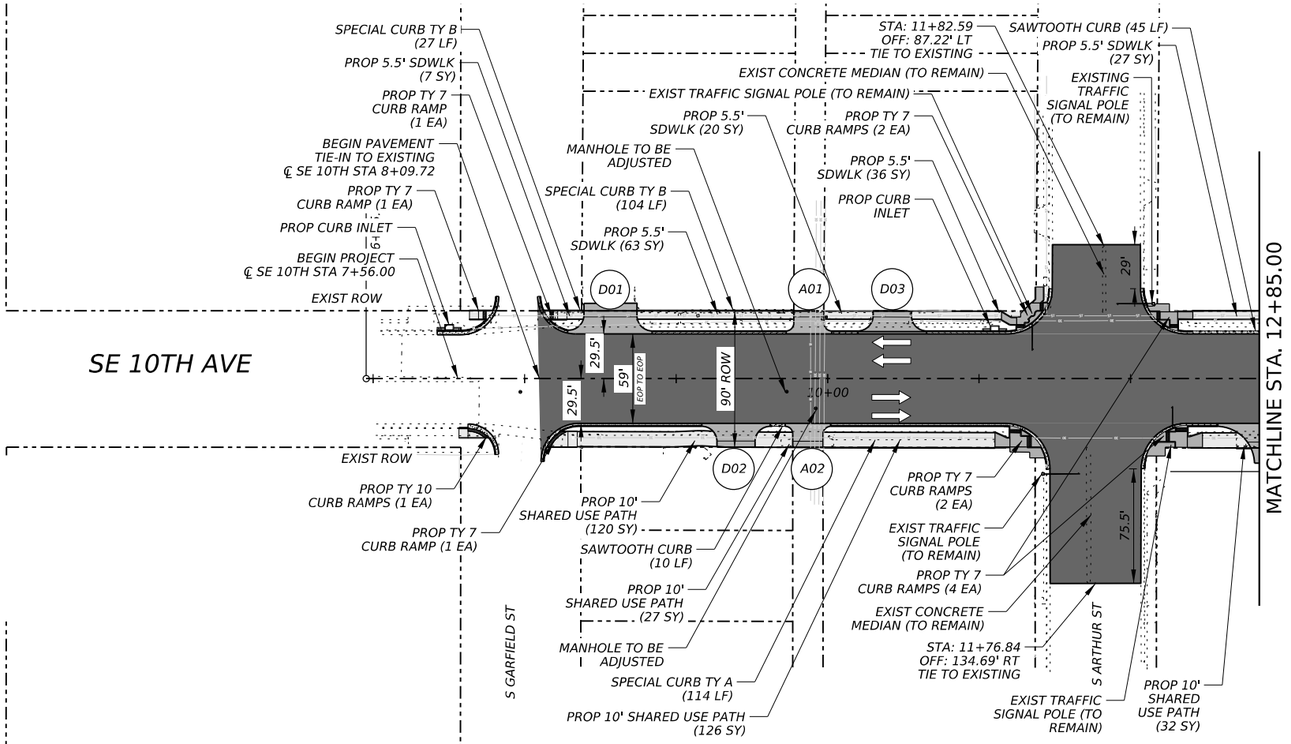

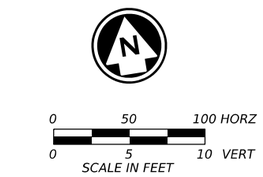

LEGEND

- ASPAHALT
- CONCRETE SIDEWALK
- CONCRETE CURB AND GUTTER
- CONCRETE DRIVEWAY
- D# DRIVEWAY
- A# ALLEY
- WEST BOUND TRAFFIC
- EAST BOUND TRAFFIC

NOTES:

1. PROPOSED 5.5' SIDEWALK USES 4" THICK CONCRETE.
2. PROPOSED 10' SHARED USE PATH USES 6" THICK CONCRETE.
3. SEE ROADWAY DETAILS SHEET FOR START/END STATION RANGES OF SAWTOOTH & SPECIAL CURB

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SE 10TH AVE

PLAN & PROFILE

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		37

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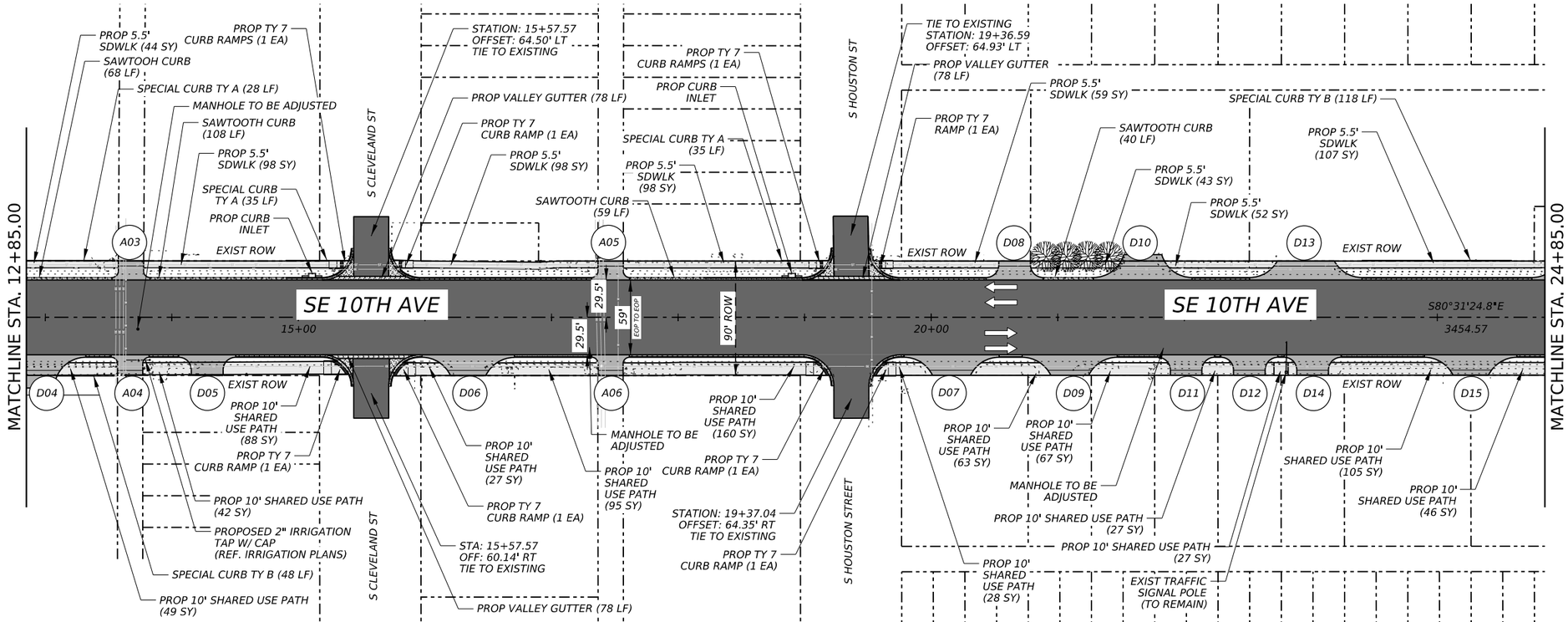

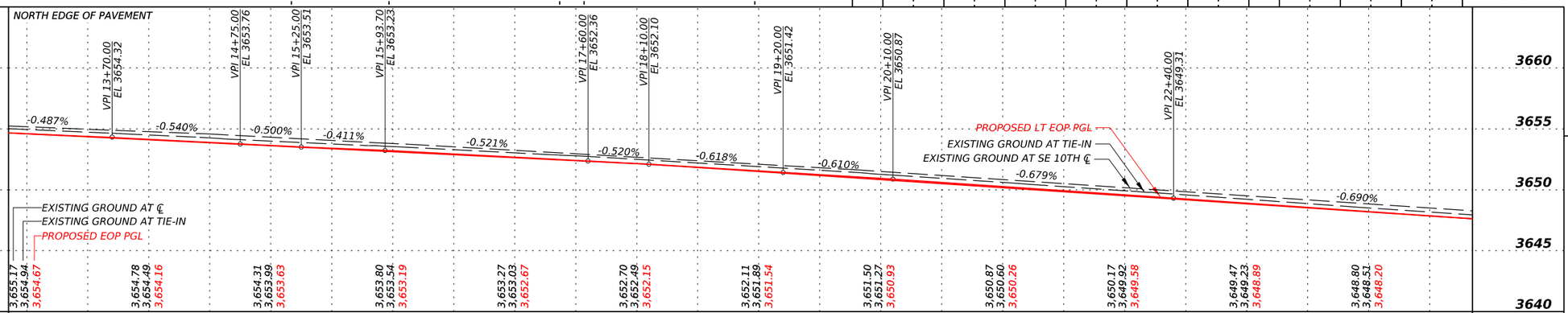

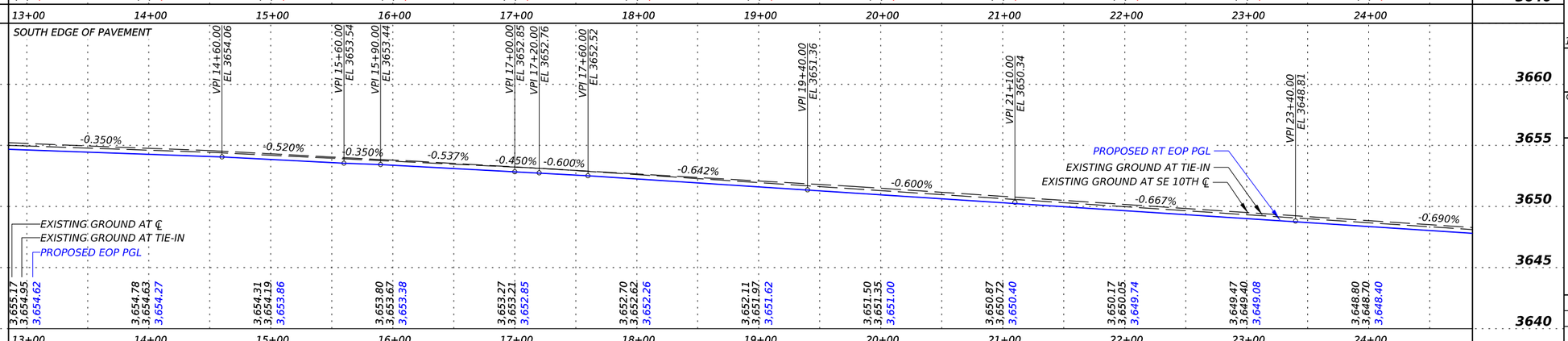

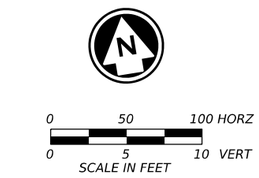

LEGEND

- ASPAHALT
- CONCRETE SIDEWALK
- CONCRETE CURB AND GUTTER
- CONCRETE DRIVEWAY
- D# — DRIVEWAY
- A# — ALLEY
- WEST BOUND TRAFFIC
- EAST BOUND TRAFFIC

NOTES:

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PLAN & PROFILE

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		38

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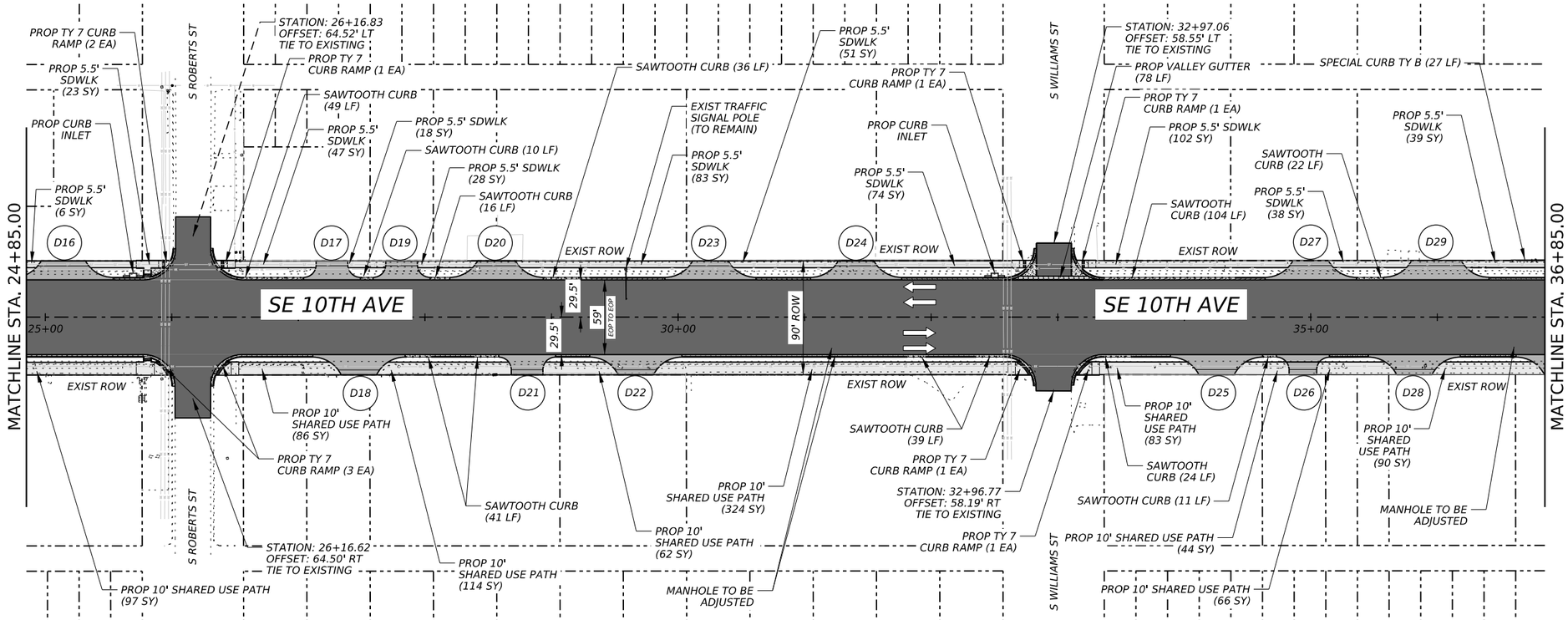

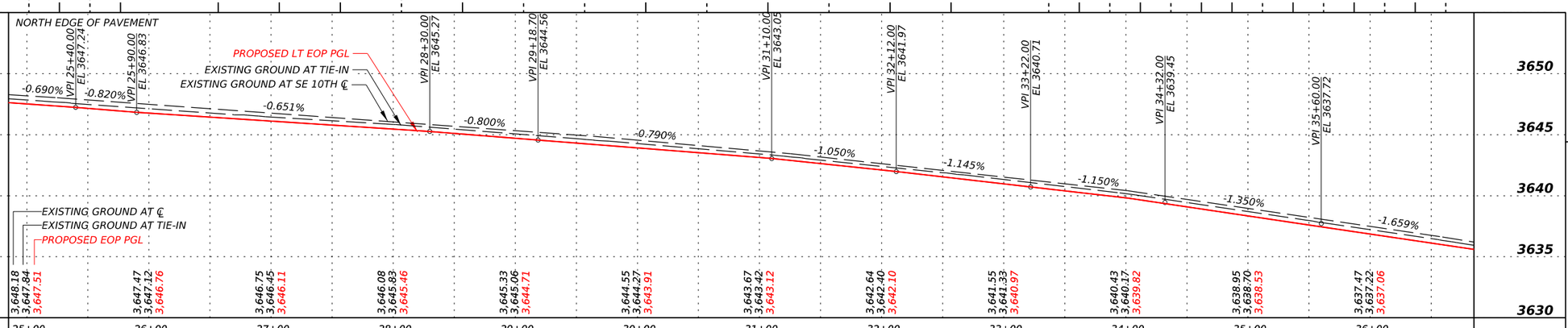

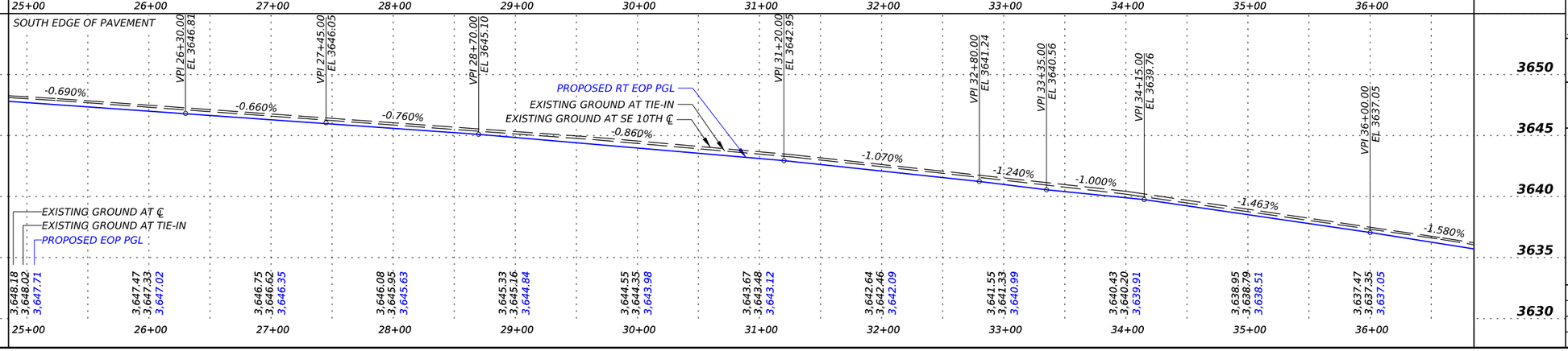

0 50 100 HORZ
0 5 10 VERT
SCALE IN FEET

LEGEND

- ASPAHALT
- CONCRETE SIDEWALK
- CONCRETE CURB AND GUTTER
- CONCRETE DRIVEWAY
- D# — DRIVEWAY
- A# — ALLEY
- WEST BOUND TRAFFIC
- EAST BOUND TRAFFIC

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PLAN & PROFILE

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		39

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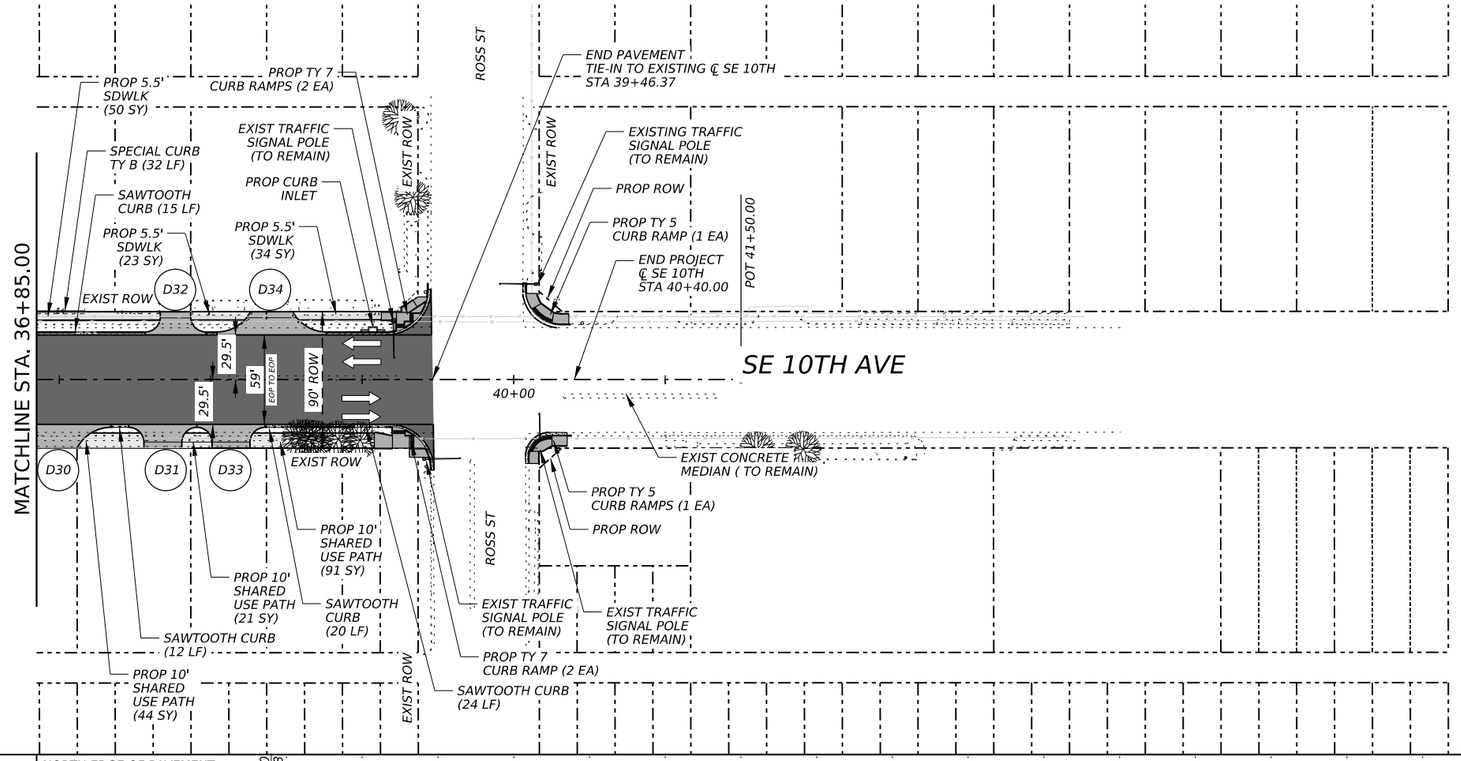

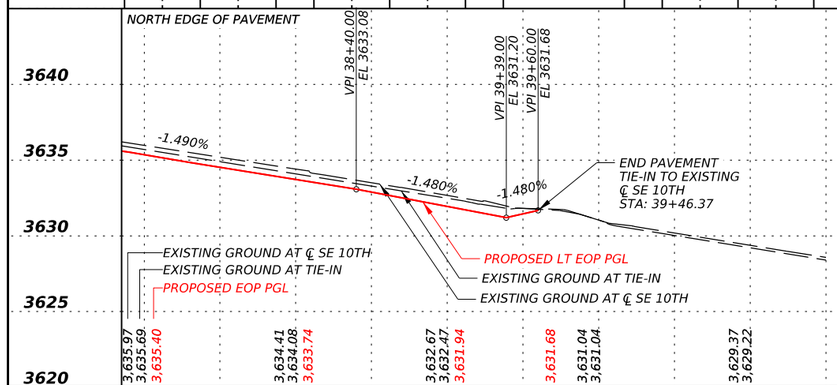

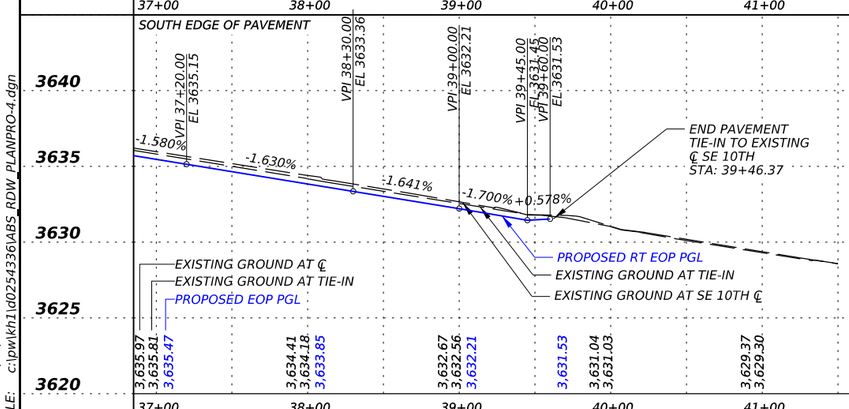

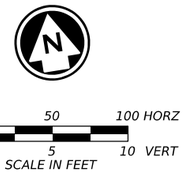

LEGEND

- ASPAHALT
- CONCRETE SIDEWALK
- CONCRETE CURB AND GUTTER
- CONCRETE DRIVEWAY
- D# — DRIVEWAY
- A# — ALLEY
- WEST BOUND TRAFFIC
- EAST BOUND TRAFFIC

NOTES:

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PLAN & PROFILE

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		40

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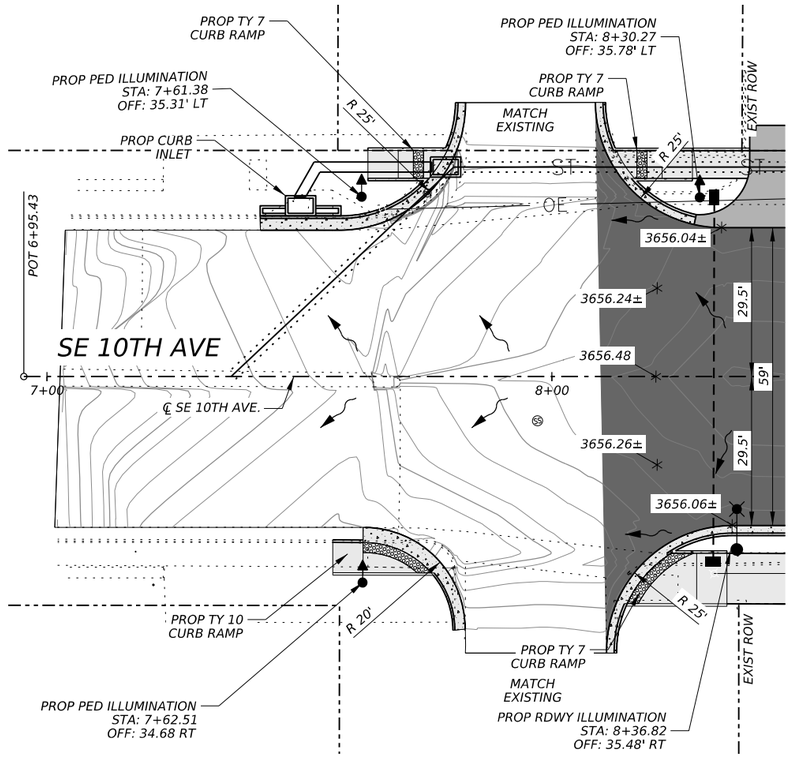

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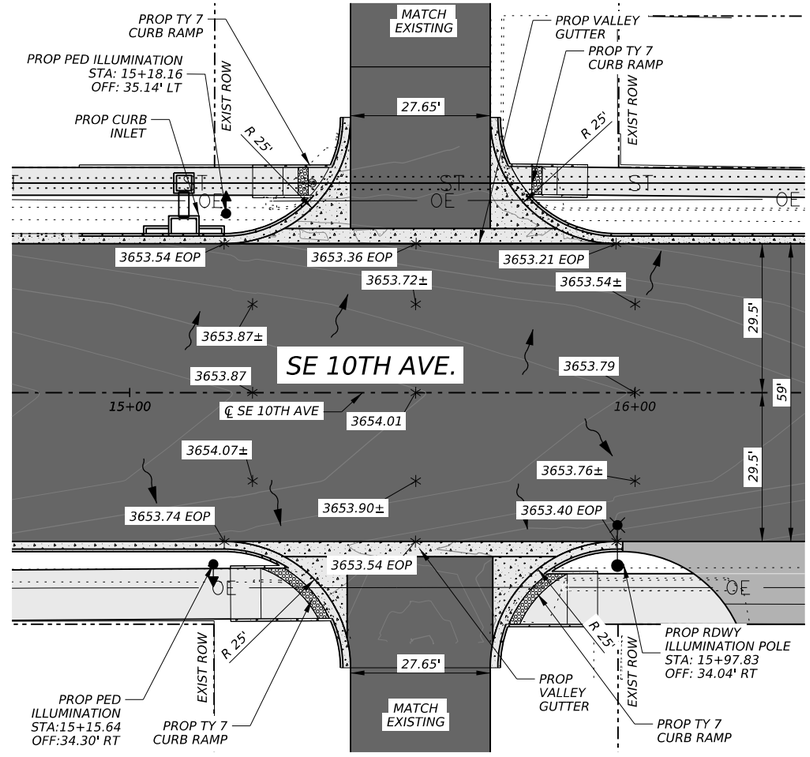

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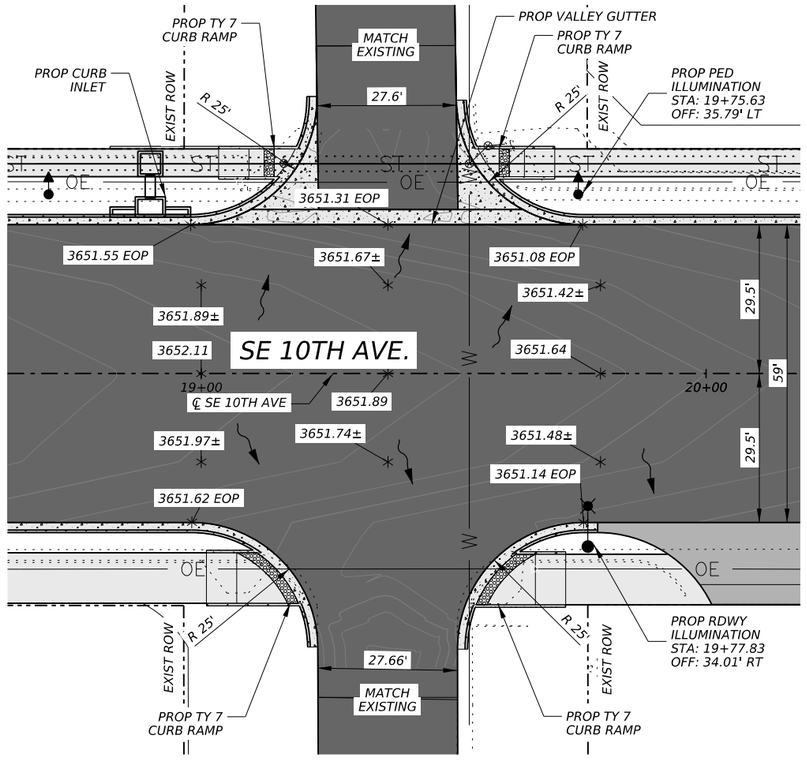

S HOUSTON ST

0 10 20 30
SCALE IN FEET

LEGEND

- ASPAHALT
- CONCRETE SIDEWALK
- CONCRETE CURB AND GUTTER
- CONCRETE DRIVEWAY
- FLOW ARROW
- SPOT ELEVATION

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INTERSECTION LAYOUT

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		41

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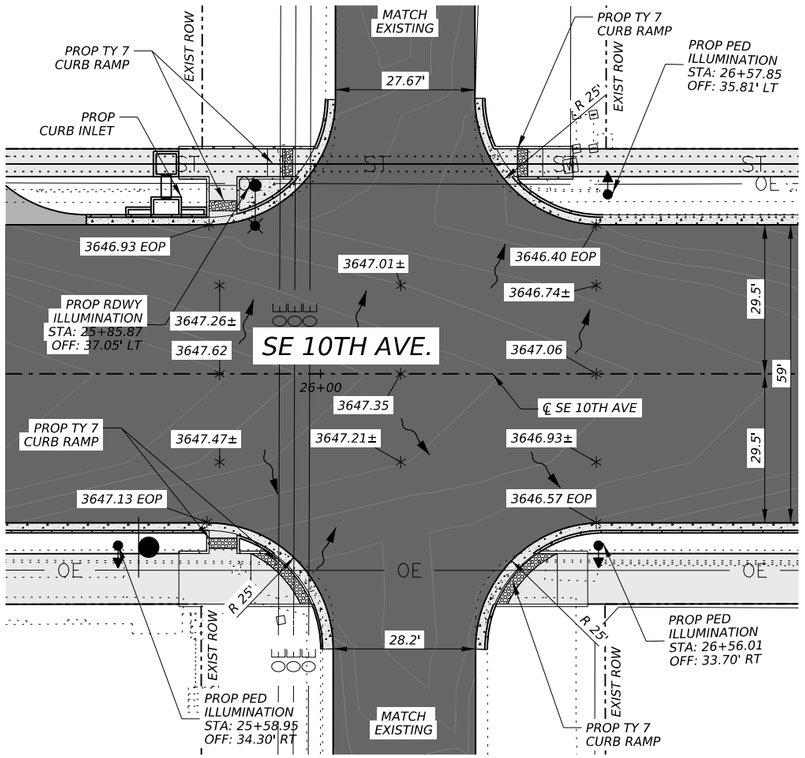

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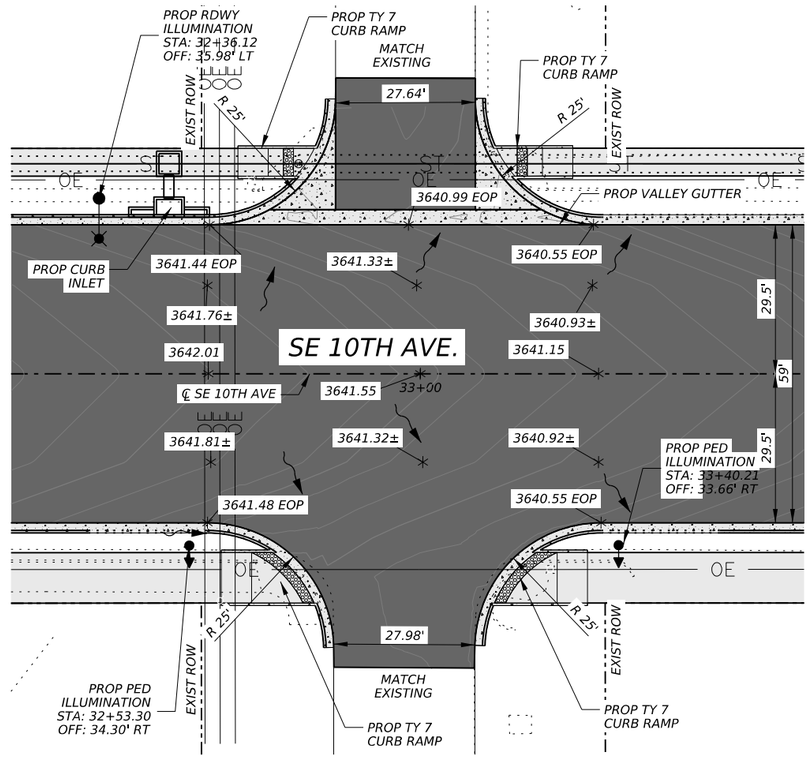

S WILLIAMS ST

LEGEND

- ASPAHALT
- CONCRETE SIDEWALK
- CONCRETE CURB AND GUTTER
- CONCRETE DRIVEWAY
- FLOW ARROW
- SPOT ELEVATION

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SE 10TH AVE

INTERSECTION LAYOUT

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		42

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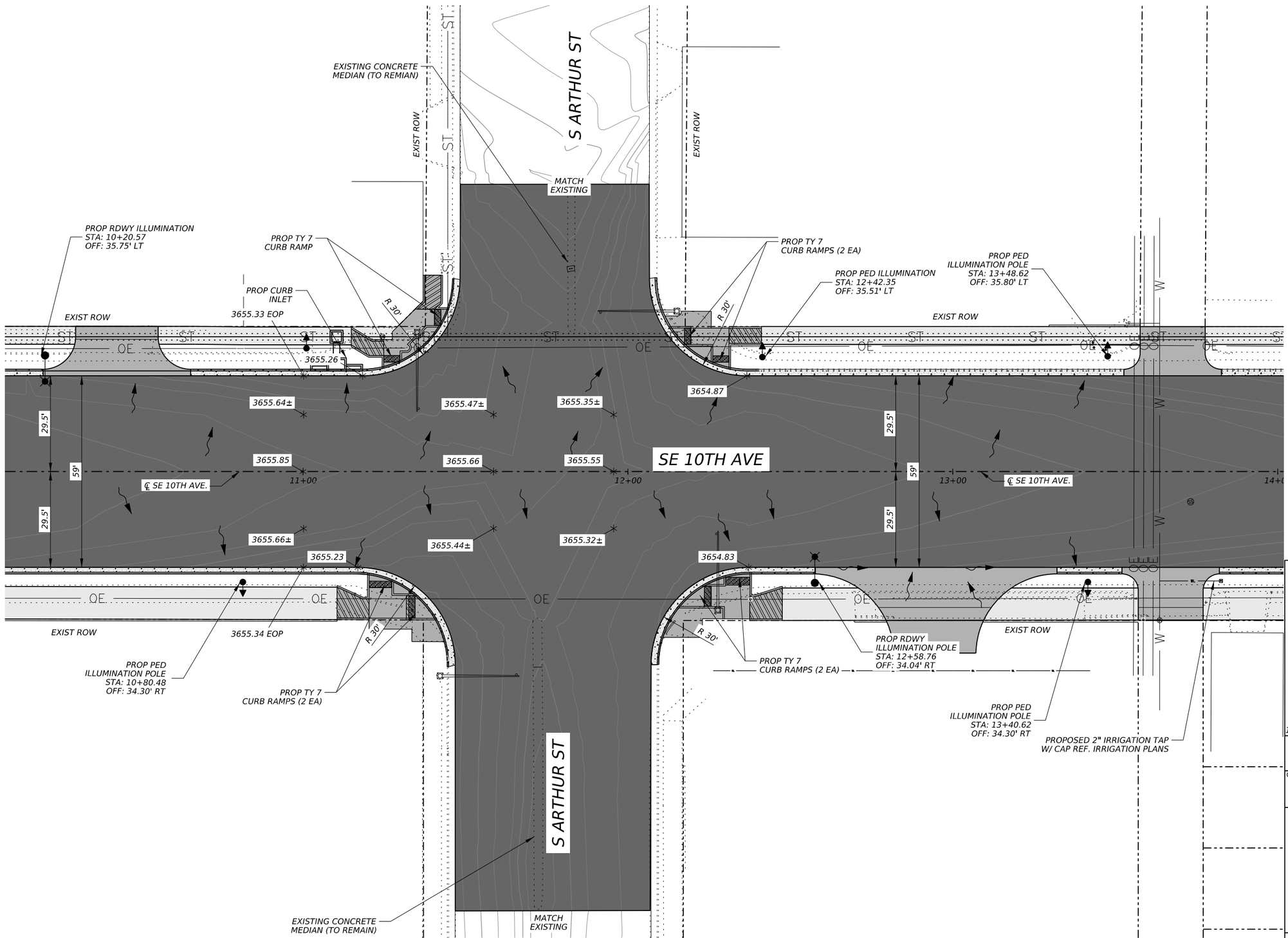

0 10 20 30
SCALE IN FEET

LEGEND

- ASPAHALT
- CONCRETE SIDEWALK
- CONCRETE CURB AND GUTTER
- CONCRETE DRIVEWAY
- FLOW ARROW
- SPOT ELEVATION

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INTERSECTION LAYOUT
S ARTHUR ST

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		43

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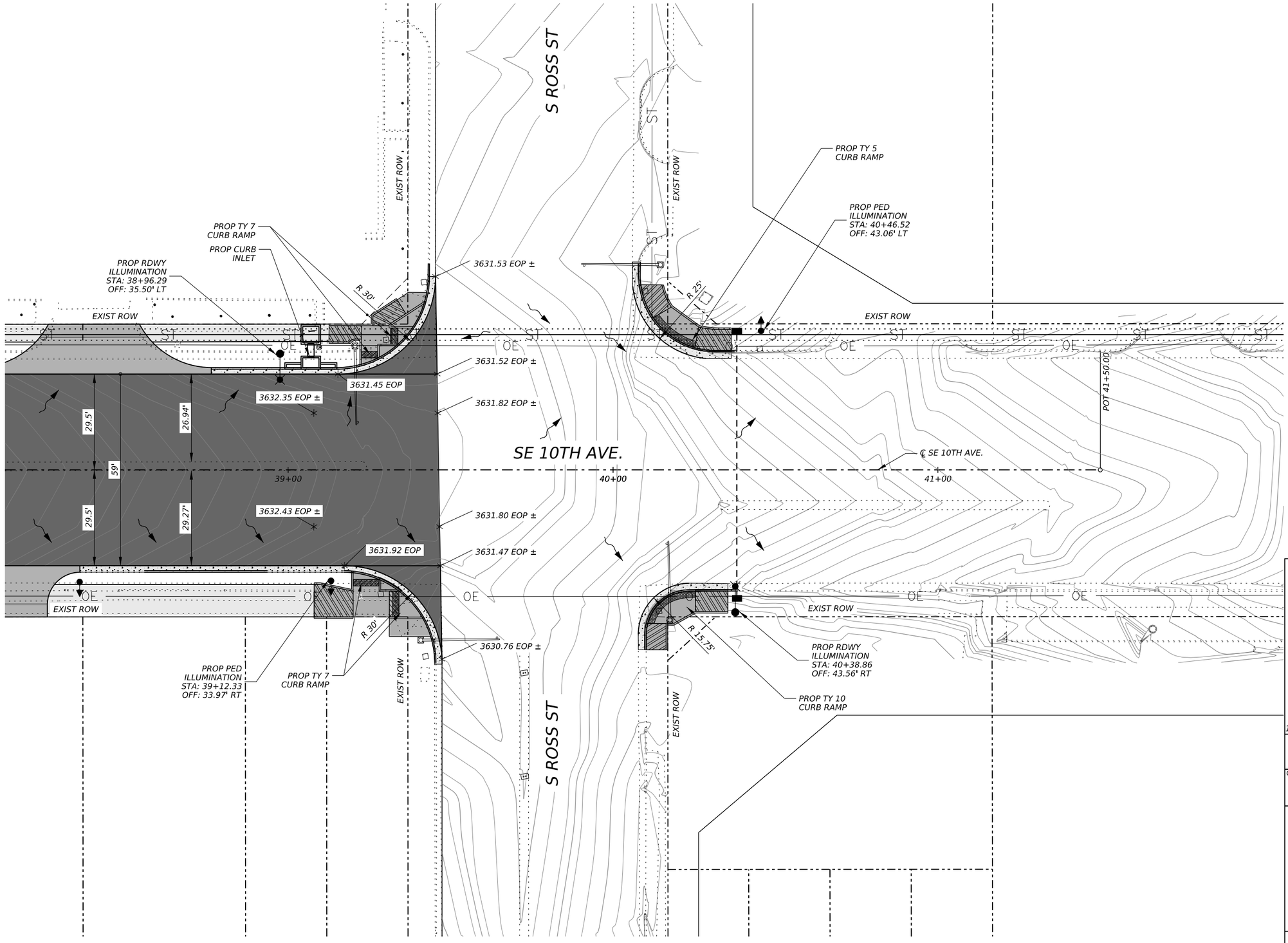

0 10 20 30

SCALE IN FEET

LEGEND

- ASPAHALT
- CONCRETE SIDEWALK
- CONCRETE CURB AND GUTTER
- CONCRETE DRIVEWAY
- FLOW ARROW
- SPOT ELEVATION

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2/29/2024

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SE 10TH AVE

INTERSECTION LAYOUT
ROSS STREET

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		44

DATE: 2/29/2024 4:54:26 PM
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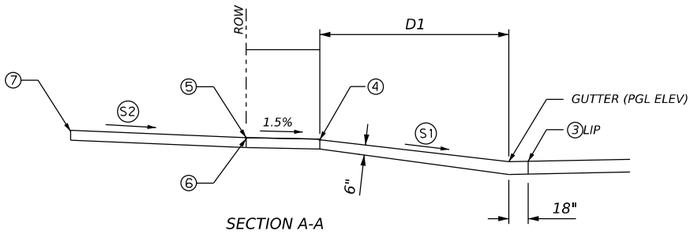
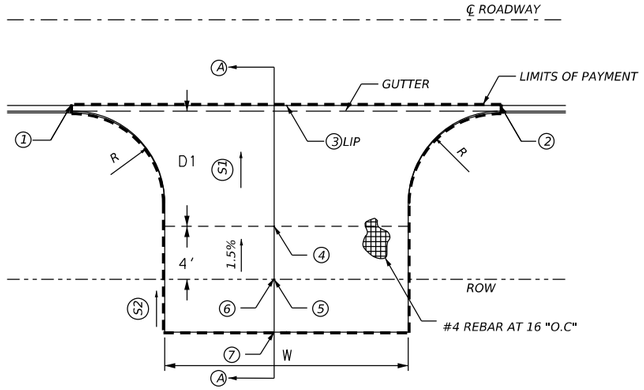
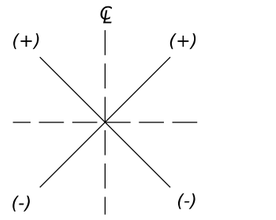


SECTION A-A
NTS



TYPICAL DRIVEWAY DETAIL #1



DRIVEWAY SLOPE SIGN CONVENTION

NOTES:

* SEE ROADWAY DETAILS SHEET FOR MORE INFORMATION
* TIE IN POINT IS AT POINT 5
* TIE IN ELEVATION IS EXISTING GROUND

			R	W		1		2		3		S1	4	D1	5	D2	6	S2	D3	7
						WEST		EAST		TIE			PROPERTY TIE AT DRIVEWAY							
DRIVEWAY NUMBER	DESCRIPTION	QUANTITY (SY)	RADIUS	DRIVEWAY WIDTH	RT/LT	STATION	LIP EL	STATION	LIP EL	STATION	LIP EL	BEGINNING SLOPE	ELEVATION	DISTANCE FROM GUTTER TO 4	ELEVATION AT BACK OF SIDEWALK	DISTANCE FROM 5 TO 6	TIE IN ELEVATION AT ROW	SLOPE BETWEEN 5 & TIE IN POINT	DISTANCE BEYOND ROW	BEYOND ROW TIE IN ELEVATION
D01	COMMERCIAL	88.8	10	35	LT	8+28.15	3655.99	8+84.17	3655.99	8+56.68	3656.06	5.00%	3656.56	11.24	EG	-	-	7.11%	5	3656.88
D02	COMMERCIAL	52.9	10	25	RT	9+17.03	3656.06	9+62.07	3655.94	9+39.55	3656.03	3.08%	3656.31	11.73	EG	-	EG	-	-	-
D03	COMMERCIAL	52.1	10	25	LT	10+20.00	3655.61	10+65.38	3655.45	10+42.69	3655.53	4.86%	3655.88	11.20	EG	-	EG	-	-	-
D04	COMMERCIAL	114.6	25	30	RT	12+57.67	3654.76	13+32.08	3654.49	12+94.88	3654.61	5.00%	3655.80	12.33	EG	-	-	9.30%	14.17	3656.11
D05	COMMERCIAL	53.7	10	25	RT	14+05.43	3654.25	14+50.47	3654.08	14+27.95	3654.18	0.76%	3654.21	12.36	EG	-	EG	-	-	-
D06	COMMERCIAL	81.4	25	28	RT	15+97.63	3653.32	16+70.72	3652.98	16+34.67	3653.15	4.34%	3653.59	12.39	EG	-	EG	-	-	-
D07	COMMERCIAL	84.5	25	30	RT	19+78.54	3651.12	20+53.69	3650.66	20+16.11	3650.89	1.56%	3651.02	12.27	EG	-	EG	-	-	-
D08	COMMERCIAL	50.8	10	25	LT	20+43.48	3650.62	20+88.48	3650.32	20+65.98	3650.46	5.53%	3650.97	10.98	EG	-	EG	-	-	-
D09	COMMERCIAL	84.5	25	30	RT	20+71.97	3650.54	21+47.12	3650.06	21+09.55	3650.30	4.30%	3650.73	12.29	EG	-	EG	-	-	-
D10	COMMERCIAL	102.6	25	34	LT	21+28.21	3650.06	22+06.21	3649.53	21+67.21	3649.78	5.10%	3650.25	11.00	EG	-	-	9.56%	5	3650.71
D11	COMMERCIAL	54.3	10	25	RT	21+79.01	3649.84	22+24.01	3649.53	22+01.51	3649.68	3.20%	3649.99	12.23	EG	-	EG	-	-	-
D12	COMMERCIAL	54.3	10	25	RT	22+28.99	3649.43	22+73.99	3649.14	22+51.49	3649.28	3.49%	3649.69	12.22	EG	-	EG	-	-	-
D13	COMMERCIAL	103.1	25	45	LT	22+51.65	3649.21	22+96.09	3648.58	23+40.53	3648.89	0.88%	3648.94	11.01	EG	-	EG	-	-	-
D14	COMMERCIAL	54.2	10	25	RT	22+78.97	3649.18	23+23.97	3648.88	23+01.47	3649.03	3.69%	3649.39	12.20	EG	-	EG	-	-	-
D15	COMMERCIAL	80.4	25	28	RT	23+89.89	3648.42	24+62.95	3647.90	24+26.42	3648.16	3.43%	3648.44	12.16	EG	-	EG	-	-	-
D16	COMMERCIAL	86.5	25	35	LT	24+74.75	3647.65	25+53.63	3647.08	25+14.19	3647.38	4.49%	3647.43	11.01	EG	-	EG	-	-	-
D17	COMMERCIAL	51.1	10	25	LT	27+04.08	3646.06	27+49.08	3645.79	27+26.58	3645.92	0.13%	3645.90	11.07	EG	-	EG	-	-	-
D18	COMMERCIAL	79.9	25	28	RT	27+11.32	3646.18	27+84.28	3645.70	27+47.80	3645.94	3.94%	3645.48	12.07	EG	-	EG	-	-	-
D19	COMMERCIAL	51.1	10	25	LT	27+59.08	3645.73	28+04.08	3645.44	27+81.58	3645.58	0.09%	3645.56	11.07	EG	-	EG	-	-	-
D20	COMMERCIAL	78.4	25	30	LT	28+19.62	3645.34	28+93.57	3644.76	28+56.60	3645.05	0.42%	3645.04	11.08	EG	-	EG	-	-	-
D21	COMMERCIAL	53.7	10	25	RT	28+58.24	3645.13	29+03.24	3644.78	28+80.74	3644.95	3.44%	3645.28	12.03	EG	-	EG	-	-	-
D22	COMMERCIAL	79.5	25	28	RT	29+30.19	3644.58	30+03.04	3643.96	29+66.62	3644.27	3.63%	3644.63	12.00	EG	-	EG	-	-	-
D23	COMMERCIAL	75.2	25	28	LT	29+89.64	3644.00	30+61.61	3643.38	30+25.62	3643.69	4.18%	3644.06	11.10	EG	-	EG	-	-	-
D24	COMMERCIAL	75.3	25	28	LT	31+04.65	3643.02	31+76.64	3642.28	31+40.65	3642.65	3.10%	3642.92	11.11	EG	-	EG	-	-	-
D25	COMMERCIAL	78.9	25	28	RT	33+89.13	3639.96	34+61.89	3638.98	34+25.51	3639.48	1.10%	3639.56	11.86	EG	-	EG	-	-	-
D26	COMMERCIAL	47.8	10	22	RT	34+72.79	3638.82	35+14.63	3638.22	34+93.71	3638.52	-0.83%	3638.39	11.84	EG	-	EG	-	-	-
D27	COMMERCIAL	75.8	25	28	LT	34+63.91	3638.87	35+36.01	3637.81	34+99.96	3638.34	2.73%	3638.57	11.22	EG	-	EG	-	-	-
D28	COMMERCIAL	78.7	25	28	RT	35+45.45	3637.77	36+18.17	3636.72	35+81.81	3637.32	2.12%	3637.43	11.81	EG	-	EG	-	-	-
D29	COMMERCIAL	94.7	25	40	LT	35+57.61	3637.48	36+40.88	3636.26	35+99.24	3636.87	2.00%	3636.98	11.26	EG	-	EG	-	-	-
D30	COMMERCIAL	76.9	25	27	RT	36+62.28	3636.07	37+34.07	3634.89	36+98.18	3635.48	1.99%	3635.65	11.78	EG	-	EG	-	-	-
D31	COMMERCIAL	53.0	10	25	RT	37+45.87	3634.70	37+90.87	3633.98	37+68.37	3634.34	2.18%	3634.53	11.76	EG	-	EG	-	-	-
D32	COMMERCIAL	43.3	10	20	LT	37+56.79	3634.43	37+96.79	3633.79	37+76.79	3634.09	1.75%	3634.23	11.32	EG	-	EG	-	-	-
D33	COMMERCIAL	53.1	10	25	RT	37+90.87	3633.98	38+35.87	3633.23	38+13.37	3633.59	2.47%	3633.81	11.74	EG	-	EG	-	-	-
D34	COMMERCIAL	76.4	25	28	LT	38+04.11	3633.67	38+76.34	3632.30	38+40.23	3633.07	2.34%	3633.26	11.35	EG	-	EG	-	-	-
A01	ALLEY	37.2	5	20	LT	9+72.62	3655.75	10+02.62	3655.76	9+87.62	3655.83	2.30%	3655.89	11.21	EG	-	EG	-	-	-
A02	ALLEY	38.6	5	20	RT	9+72.02	3655.90	10+02.02	3655.69	9+87.02	3655.84	2.85%	3655.49	11.82	EG	-	EG	-	-	-
A03	ALLEY	37.0	5	20	LT	13+52.66	3654.34	13+82.66	3654.21	13+67.66	3654.28	3.00%	3654.53	11.12	EG	-	EG	-	-	-
A04	ALLEY	39.7	5	20	RT	13+52.06	3654.44	13+82.06	3654.34	13+67.06	3654.39	1.09%	3654.45	12.34	EG	-	EG	-	-	-
A05	ALLEY	36.8	5	20	LT	17+31.74	3652.51	17+61.74	3652.35	17+46.74	3652.43	0.13%	3652.41	11.03	EG	-	EG	-	-	-
A06	ALLEY	39.4	5	20	RT	17+31.85	3652.70	17+61.63	3652.51	17+46.74	3652.60	1.58%	3652.39	12.37	EG	-	EG	-	-	-

STATE OF TEXAS
STEPHEN A. NAVA
135543
LICENSED
PROFESSIONAL ENGINEER
2/29/2024

100% PLANS

Kimley»Horn F-928

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SE 10TH AVE

DRIVEWAY TABLE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		45

DW: EIA
CK: SAN
DW: EIA
CK: SAN
DW: EIA
CK: SAN

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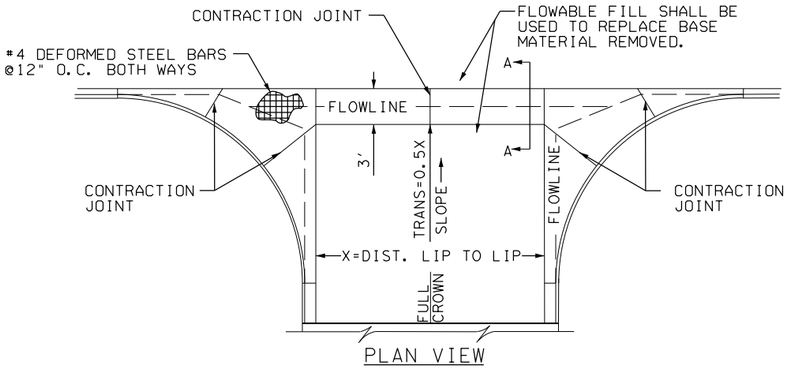
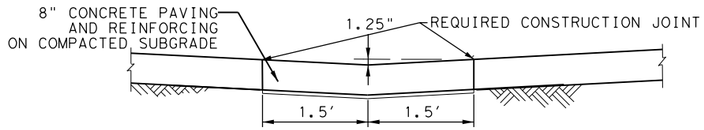


PLAN VIEW

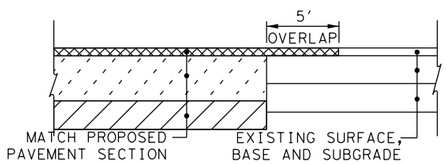


SECTION "A-A"

TYPICAL STREET DETAIL (VALLEY GUTTER)

NTS

(A) PAYMENT FOR CSB AND ASPHALT PAVEMENT WILL NOT BE MADE DIRECTLY, BUT IS CONSIDERED SUBSIDIARY TO CONCRETE PAVEMENT AND/OR INTERSECTIONS.



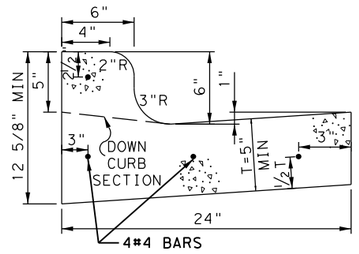
TYPICAL SECTION

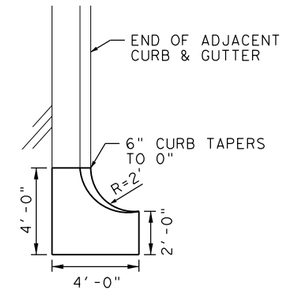
NEW ASPHALT TIE TO EXISTING ASPHALT

NTS

TYPE A

NTS



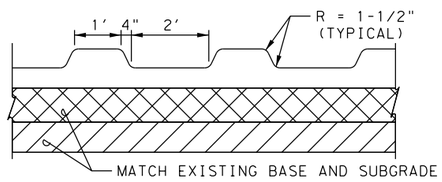


CURB TERMINI DETAIL

NTS

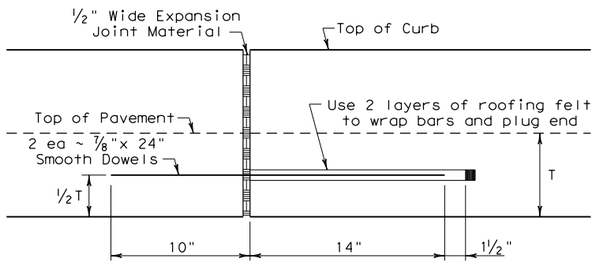
NOTES:

1. REINFORCED GUTTER SECTION WILL BE CONSTRUCTED WITH 4 - #4 BARS RUNNING THE ENTIRE LENGTH OF THE DRIVEWAY SECTION AND THE THREE HORIZONTAL BARS WILL BE SUPPORTED WITH CHAIRS, ON A SPACING TO GIVE ACCURATE PLACEMENT.
2. THE CURB AND GUTTER MUST BE CONSTRUCTED SEPARATELY. THE CURB MUST BE CONSTRUCTED AT A DEPTH TO MATCHTHE ADJACENT ROADWAY. PAYMENT FOR CURB WILL BE BASED ON LINEAR FEET ONLY.
3. ON ALL CURB, A LONGITUDINAL JOINT WILL BE LOCATED 2' FROM THE BACK OF CURB. THIS JOINT SHOULD CONFORM TO SECTION Y-Y OR SECTION Z-Z SHOWN ON THE CONCRETE PAVING DETAILS SHEET.
4. TY A AND TY B CURB AND GUTTER TO BE PAID UNDER TXDOT BID ITEM 0529 6008.TY C CURB AND GUTTER TO BE PAID UNDER TXDOT BID ITEM 0529 6007.
5. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH ITEM 529, "CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER."
6. CONCRETE SHALL BE CLASS A.
7. ROUND EXPOSED SHARP EDGES WITH A ROUNDING TOOL, TO A MINIMUM RADIUS OF 1/4 INCH.
8. 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.
9. USUAL PROFILE GRADE LINE. REFER TO TYPICAL SECTIONS AND PLAN-PROFILE SHEETS FOR EXACT LOCATIONS.
10. ONE-HALF INCH EXPANSION JOINT MATERIAL SHALL BE PROVIDED WHERE CURB OR CURB AND GUTTER IS ADJACENT TO SIDEWALK OR RIPRAP.



SAWTOOTH CURB AND GUTTER PROFILE

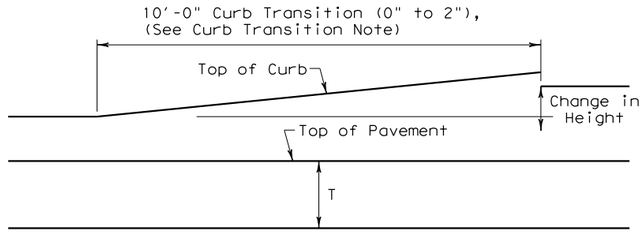
NTS



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.

Sidewalk and amenity zone shall follow curb transition between normal curb and sawtooth curb.



CURB TRANSITION

Note: To be paid for as Highest Curb

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2/29/2024

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SE 10TH AVE

ROADWAY DETAILS

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		46

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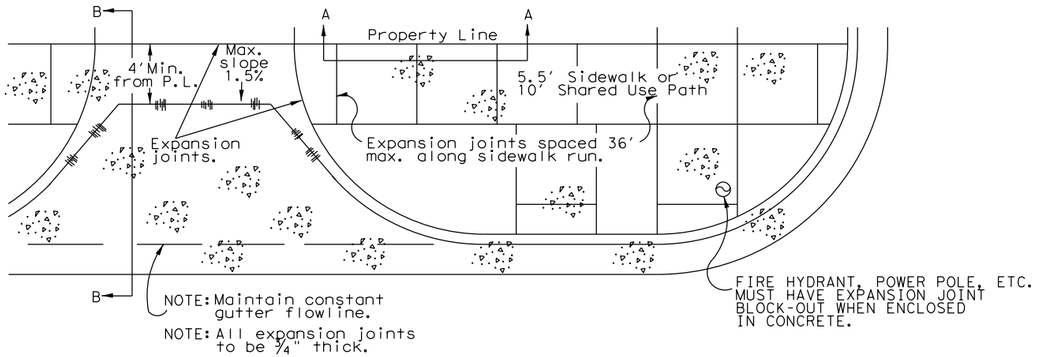
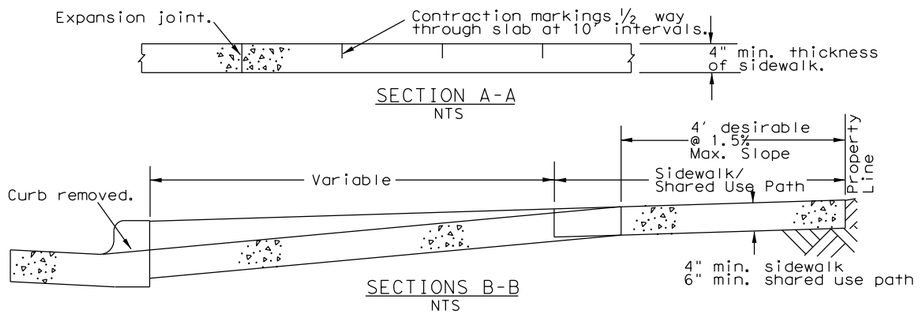
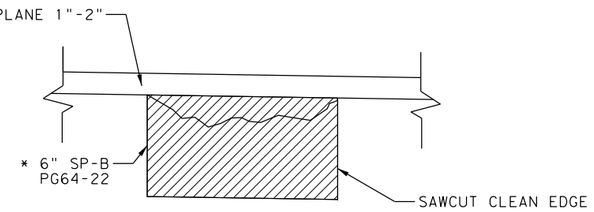


PROPERTY LINE SIDEWALK CONSTRUCTION DETAILS
NTS



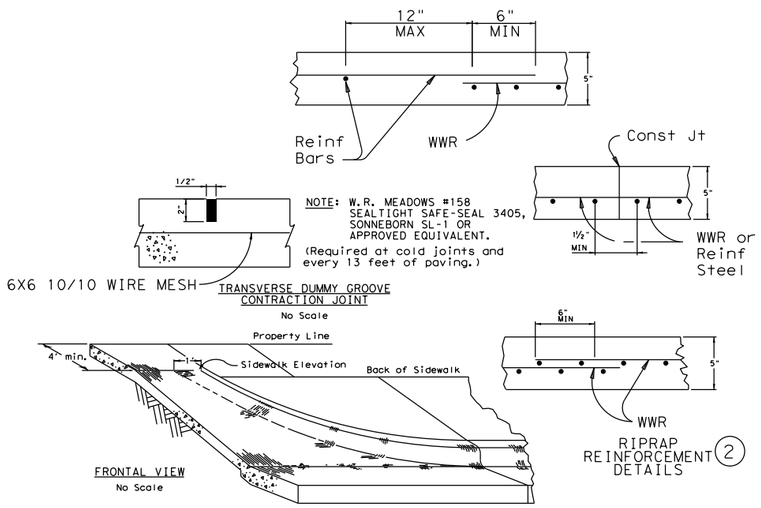


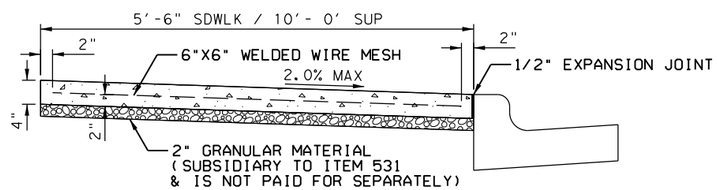
FULL DEPTH PAVEMENT REPAIR DETAIL
NOT TO SCALE

AREAS OF FULL DEPTH REPAIR SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER AND SHOULD BE COMPLETED AFTER THE MILLING PROCESS. THE LENGTH AND WIDTH SHALL BE AS DIRECTED BY THE ENGINEER.

PAVEMENT REPAIR WILL INCLUDE THE FOLLOWING:

1. REMOVAL OF 6"(MIN) OF EXISTING ACP AND FLEX BASE.
2. PLACE 6" OF PROPOSED ASPHALT BASE AND COMPACT TO REQUIRED DENSITY. MATCH THE EXISITING PAVEMENT SURFACE ELEVATION.
3. MINIMUM TWO LIFTS OF SP-B, WARM MIX MAY BE REQUIRED.





PLACE GROOVED JOINTS IN THE SIDEWALK AT A MAX SPACING OF 10 FT
PLACE 3/4" EXPANSION JOINTS AT A MAX SPACING OF 40 FT TO COINCIDE WITH THE CURB EXPANSION JOINTS.

SIDEWALK/SHARED USE PATH DETAILS
NTS

GENERAL NOTES:
SIDE WALKS WILL BE CONSTRUCTED USING: 1" COMPACTED SAND CUSHION, REINFORCING STEEL TO BE 6"X6" W1.4XW1.4 WELDED WIRE MESH (1 1/2" ABOVE SAND) OR NO.3 BAR 18" O.C. WITH GROOVED JOINT EVERY 10' AND 1/2" FIBER BOARD EXPANSION JOINT EVERY 40' BETWEEN BACK OF CURB AND SIDEWALK 1/2" FIBER BOARD EXPANSION JOINT WILL BE USED.

(1) #5 bars shown are required even when synthetic fiber reinforcing option is selected.

(2) Reinforcing bars shall be #4 at 16" Spa c-c. Welded Wire Reinforcement (WWR) shall be 6X6-W2.9XW2.9. Combinations of WWR and reinforcing bars may be used if both are permitted. Lap splices shall be a minimum of 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars.

STATE OF TEXAS
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PROFESSIONAL ENGINEER
2/29/2024

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SE 10TH AVE

ROADWAY DETAILS

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		47

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CK: SAW
DW: EIA
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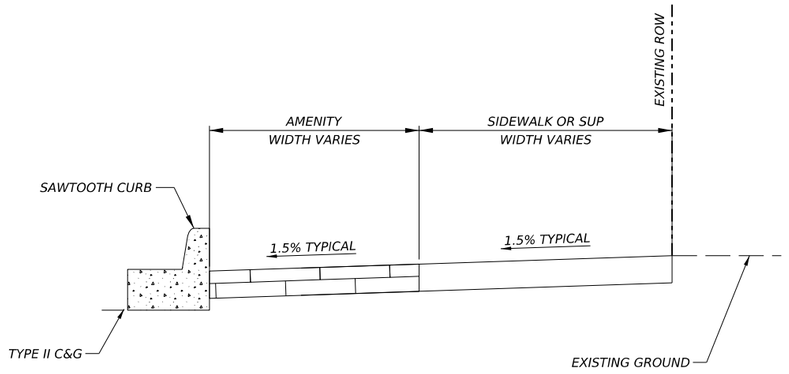
DW: EIA

*NOT TO SCALE



TYPE II CURB TIE-IN
SECTION VIEW

SAWTOOTH CURB

BEGIN	END	LOCATION
STA: 09+62.07 OFF: 31.5 R	STA: 09+72.02 OFF: 31.5 R	SUP SOUTH
STA: 12+40.00 OFF: 31.5 L	STA: 13+52.66 OFF: 31.5 L	SIDEWALK NORTH
STA: 13+82.66 OFF: 31.5 L	STA: 14+90.00 OFF: 31.5 L	SIDEWALK NORTH
STA: 17+61.73 OFF: 31.5 L	STA: 18+20.00 OFF: 31.5 L	SIDEWALK NORTH
STA: 20+88.48 OFF: 31.5 L	STA: 21+28.21 OFF: 31.5 L	SIDEWALK NORTH
STA: 26+55.61 OFF: 31.5 L	STA: 27+04.08 OFF: 31.5 L	SIDEWALK NORTH
STA: 27+49.08 OFF: 31.5 L	STA: 27+59.08 OFF: 31.5 L	SIDEWALK NORTH
STA: 27+84.28 OFF: 31.5 R	STA: 28+04.81 OFF: 31.5 R	SUP SOUTH
STA: 28+37.81 OFF: 31.5 R	STA: 28+58.24 OFF: 31.5 R	SUP SOUTH
STA: 28+04.08 OFF: 31.5 L	STA: 28+19.62 OFF: 31.5 L	SIDEWALK NORTH
STA: 28+93.57 OFF: 31.5 L	STA: 29+30.00 OFF: 31.5 L	SIDEWALK NORTH
STA: 31+80.00 OFF: 31.5 R	STA: 31+95.43 OFF: 31.5 R	SUP SOUTH
STA: 32+34.25 OFF: 31.5 R	STA: 32+57.82 OFF: 31.5 R	SUP SOUTH
STA: 33+35.86 OFF: 31.5 L	STA: 34+40.01 OFF: 31.5 L	SIDEWALK NORTH
STA: 33+35.80 OFF: 31.5 R	STA: 33+59.25 OFF: 31.5 R	SUP SOUTH
STA: 34+61.89 OFF: 31.5 R	STA: 34+72.79 OFF: 31.5 R	SUP SOUTH
STA: 35+36.01 OFF: 31.5 L	STA: 35+57.61 OFF: 31.5 L	SIDEWALK NORTH
STA: 37+10.01 OFF: 31.5 L	STA: 37+25.00 OFF: 31.5 L	SIDEWALK NORTH
STA: 37+34.07 OFF: 31.5 L	STA: 37+45.87 OFF: 31.5 L	SUP SOUTH
STA: 38+35.87 OFF: 31.5 R	STA: 38+55.85 OFF: 31.5 R	SUP SOUTH
STA: 38+93.28 OFF: 31.5 R	STA: 39+16.78 OFF: 31.5 R	SUP SOUTH

STATE OF TEXAS
STEPHEN A. NAVA
135543
LICENSED
PROFESSIONAL ENGINEER
2/29/2024

100% PLANS

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Texas Department of Transportation

SE 10TH AVE

ROADWAY DETAILS

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395

DIST	COUNTY	SHEET NO.
AMA	POTTER	48

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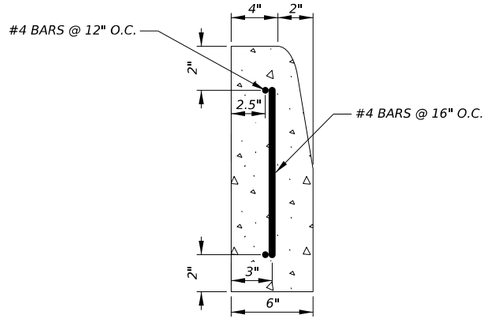
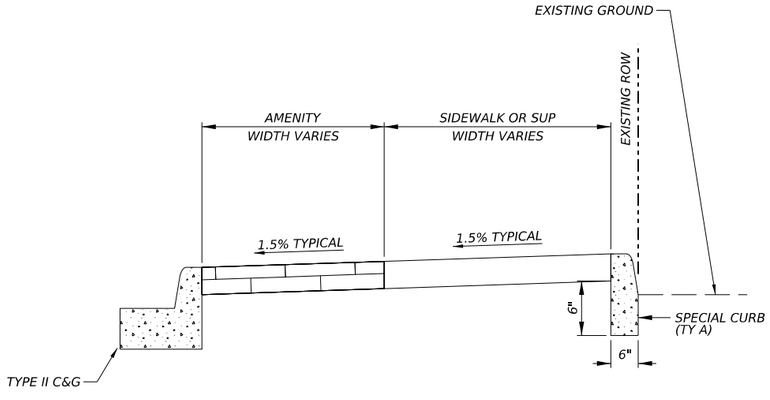
*NOT TO SCALE

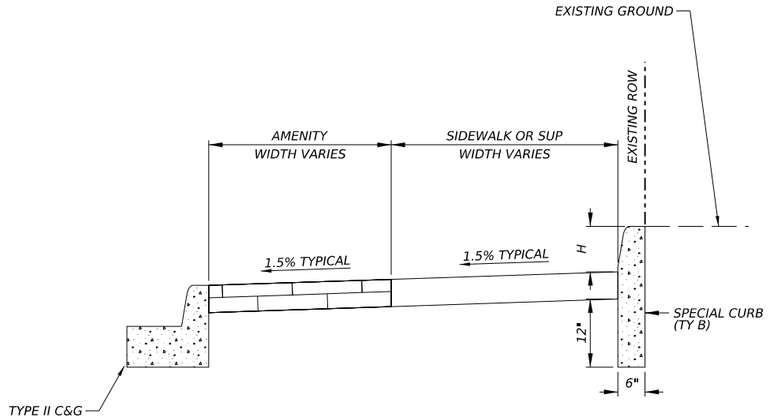


SPECIAL CURB REBAR



SPECIAL CURB (TY A)
SECTION VIEW

SPECIAL CURB (TY A)		
BEGIN	END	LOCATION
STA: 9+97.03 OFF: 45.48 R	STA: 11+10.48 OFF: 45.75 R	SUP SOUTH
STA: 14+90.00 OFF: 45.27 L	STA: 15+24.35 OFF: 45.08 L	SIDEWALK NORTH
STA: 18+81.95 OFF: 45.00 L	STA: 19+03.47 OFF: 45.00 L	SIDEWALK NORTH



SPECIAL CURB (TY B)
SECTION VIEW

SPECIAL CURB (TY B)			
BEGIN	END	LOCATION	HEIGHT (H)
STA: 08+12.55 OFF: 44.75 L	STA: 08+39.18 OFF: 44.75 L	SIDEWALK NORTH	1.58'
STA: 08+74.18 OFF: 44.75 L	STA: 09+77.62 OFF: 44.83 L	SIDEWALK NORTH	1.35' - 0.68'
STA: 12+69.43 OFF: 46.10 R	STA: 12+79.70 OFF: 46.10 R	SUP SOUTH	0.70'
STA: 13+09.24 OFF: 46.10 R	STA: 13+57.06 OFF: 46.10 R	SUP SOUTH	1.04' - 0.70'
STA: 13+29.61 OFF: 44.80 L	STA: 13+57.66 OFF: 44.80 L	SIDEWALK NORTH	0.5'
STA: 23+40.00 OFF: 44.80 L	STA: 24+58.75 OFF: 44.80 L	SIDEWALK NORTH	0.44' - 0.75'
STA: 36+58.10 OFF: 45.00 L	STA: 37+17.15 OFF: 45.00 L	SIDEWALK NORTH	1.00' - 1.73'

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3/1/2024

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SE 10TH AVE

ROADWAY DETAILS

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		49

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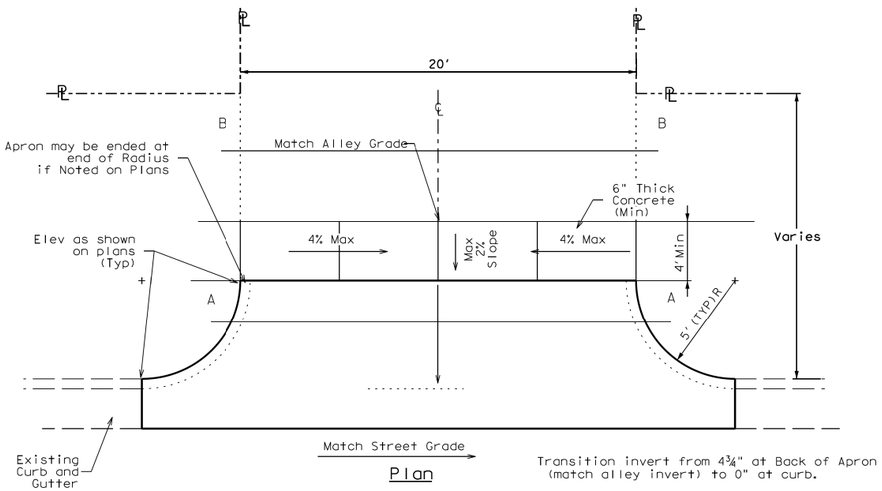
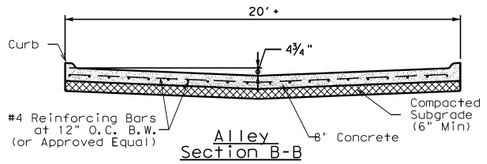
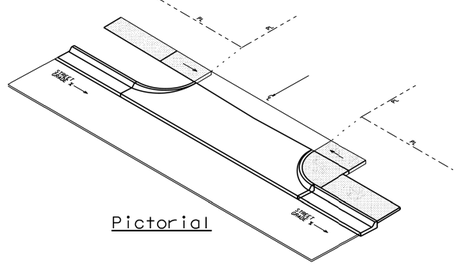


Plan

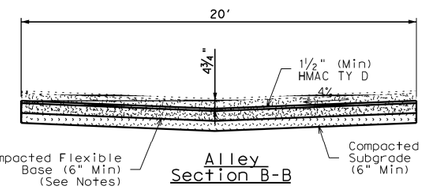
Transition invert from 4¾" at Back of Apron (match alley invert) to 0" at curb.



Alley
Section B-B



Pictorial



Alley
Section B-B

NOTES:

1. All flatwork shall use Class A (minimum 4000 psi at 28 days) concrete unless otherwise detailed or specified. Concrete requirements for flatwork of any other class shall be labeled on the plans and called out in the specifications.
2. All flatwork shall be reinforced with #4 reinforcing bars on twelve (12") inch centers both ways unless noted or detailed otherwise on plans.
3. No reinforcing bars will be closer than three (3") inches to edge of concrete.
4. ½" preformed expansion joint material shall be placed at intervals not to exceed thirty (30') feet in the curb and gutter or as directed by the engineer. Scoring joints (dummy joints) shall be placed in curb and gutter with jointing tools at intervals not to exceed five (5') feet.
5. 1" sand cushion shall be wetted and forms oiled prior to placing any concrete.
6. Alley Section shall match adjacent Street Section for Compacted Base Type and Thickness, Subgrade Thickness, and any required stabilization.
7. Location of sidewalk will vary. Sidewalk outside the limits of the alley is the responsibility of the property owner unless noted otherwise on the plans.
8. Accessible Ramps shall be installed where sidewalk approaches apron. Cross Slope where sidewalk crosses apron shall not exceed 2%. If sidewalk is not installed at the time alley apron is installed, the four (4') feet behind the apron shall be graded for future sidewalk. See City of Amarillo ADA Ramp Details, Sidewalk Details, and Driveway and Parking Manual (Latest Edition) for more information.

CITY OF AMARILLO ENGINEERING DEPARTMENT	Drawn by: rlh	Date: 10/12/2010		Description **Standard Alley Apron 8" Concrete**
	Designed by: rlh	Job No:		
	Path:			
	Scale: nts	Sheet 1		

Disclaimer : The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the City of Amarillo for any purpose whatsoever. The City of Amarillo assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

STATE OF TEXAS
STEPHEN A. NAVA
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LICENSED PROFESSIONAL ENGINEER
3/1/2024

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SE 10TH AVE

AMARILLO ALLEY APRON STANDARD

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		50

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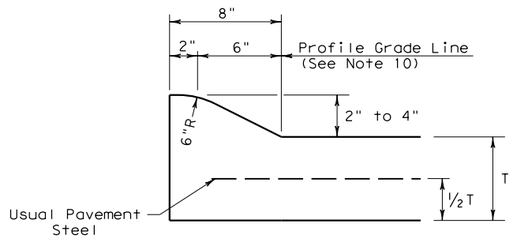
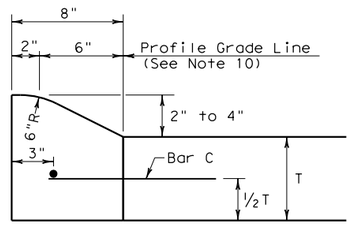


TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



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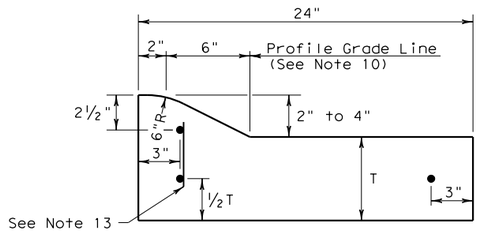
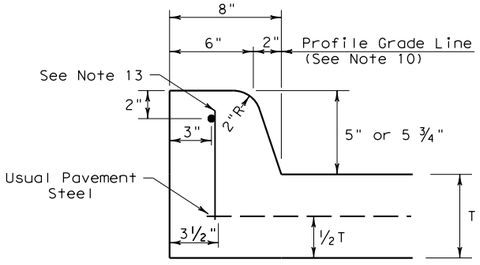
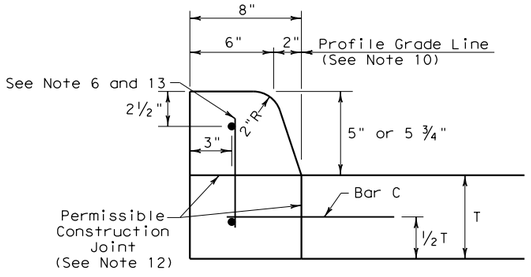


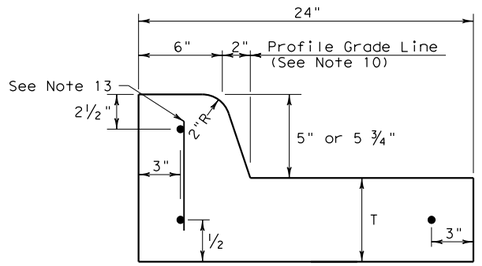
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



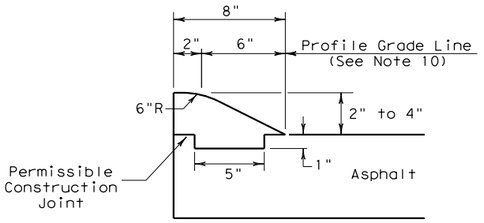
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



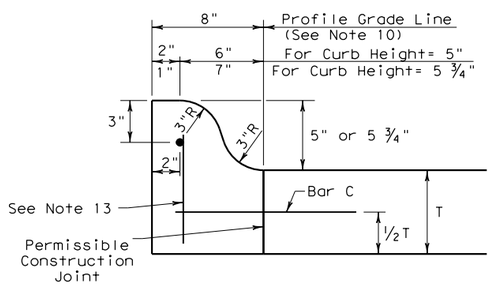
TYPE II CURB
5" - 5 ¾" HEIGHT



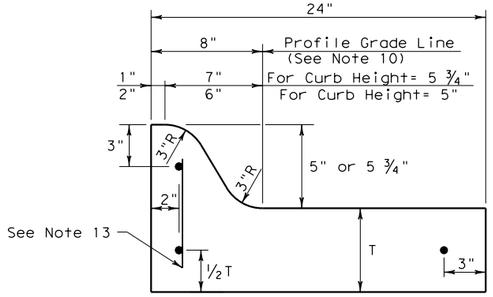
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



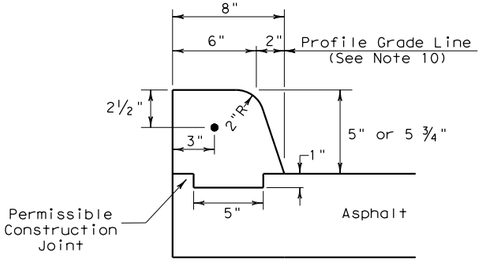
TYPE III CURB (KEYED)
2" - 4" HEIGHT



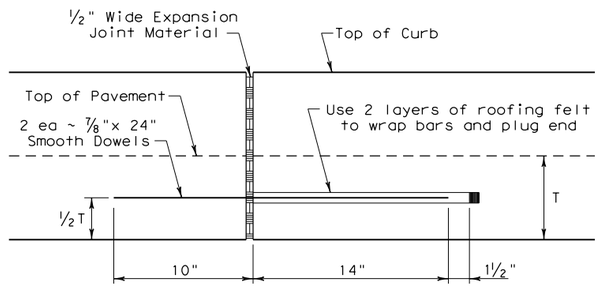
TYPE IIa CURB
5" - 5 ¾" HEIGHT



TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT

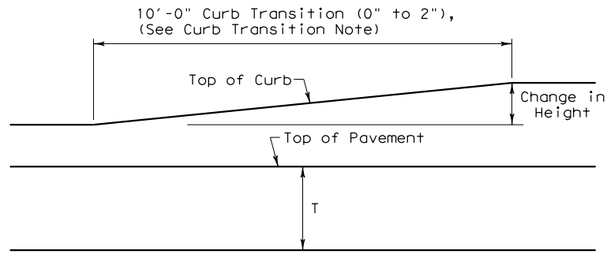


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

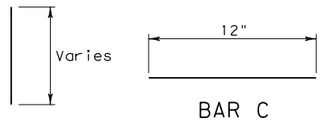
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C~C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B

BAR C

Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

CCCG-22

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		51

DATE: 2/29/2024
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DATE: 2/29/2024
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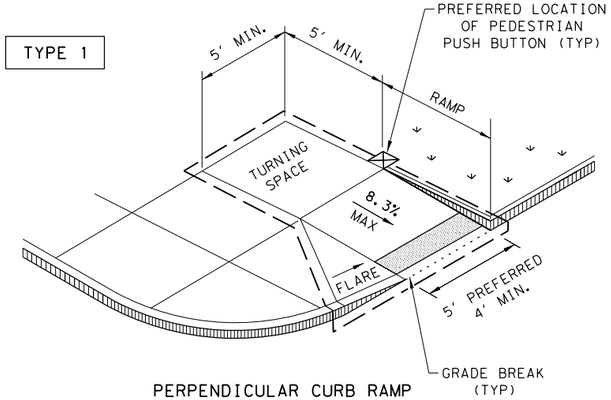
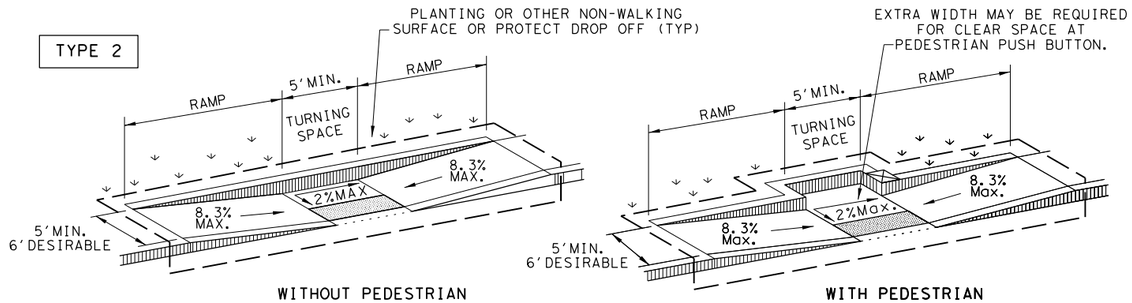


PERPENDICULAR CURB RAMP

TYPE 2

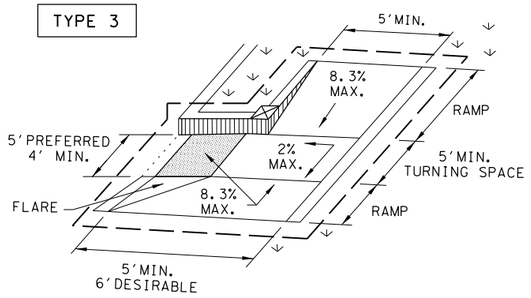


WITHOUT PEDESTRIAN PUSH BUTTON

WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3



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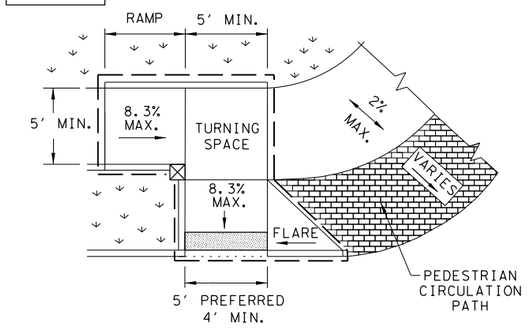
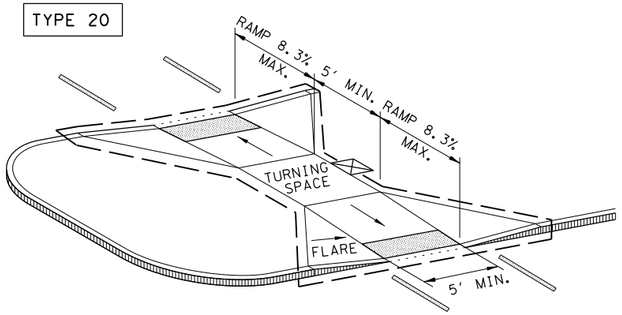


COMBINATION CURB RAMPS

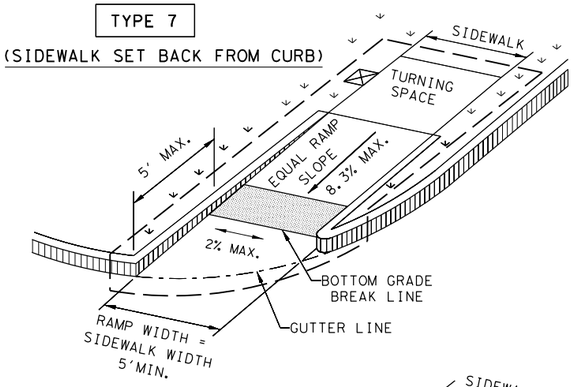
TYPE 20



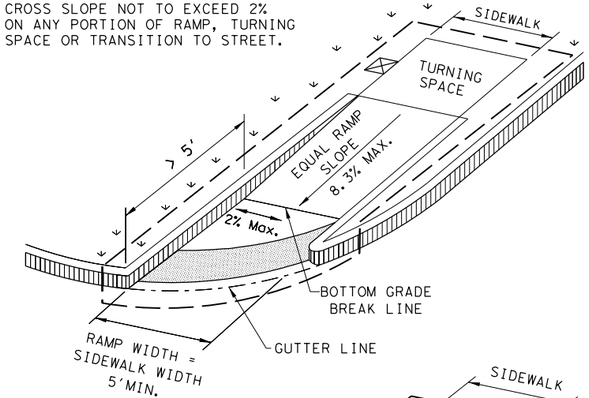
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

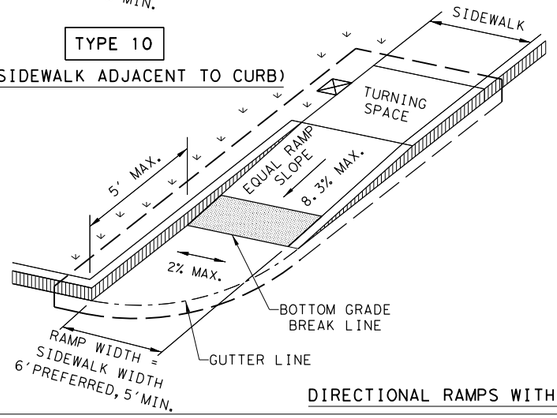


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

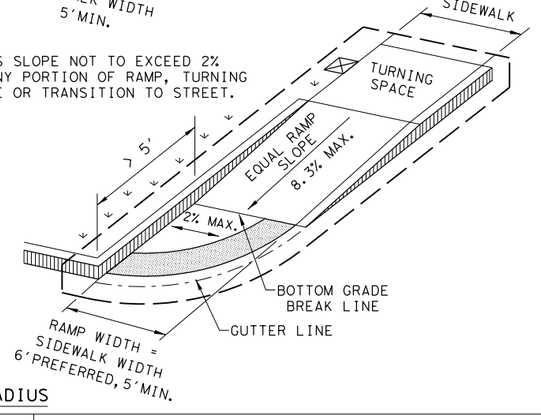


TYPE 10

(SIDEWALK ADJACENT TO CURB)

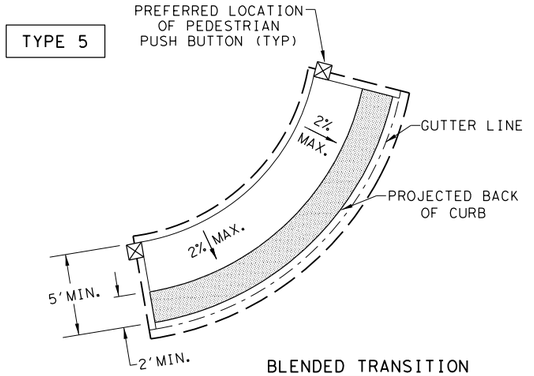


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

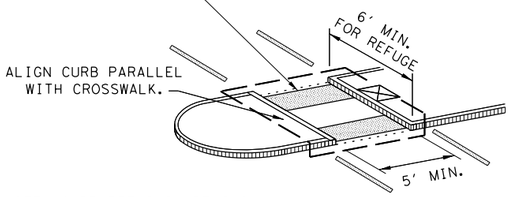
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

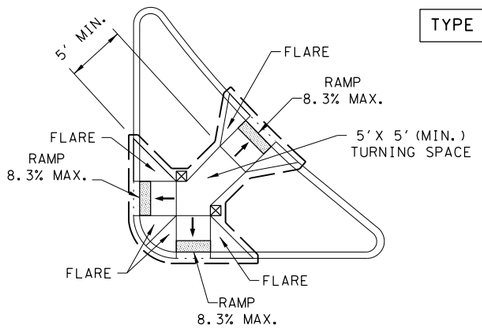
TYPE 21

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



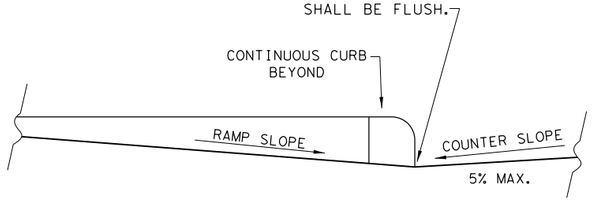
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

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



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012	AMA	POTTER		52
REVISED 01,2018				

DATE: 2/29/2024
FILE: c:\pw\khl\d0316912\ped18.dgn

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

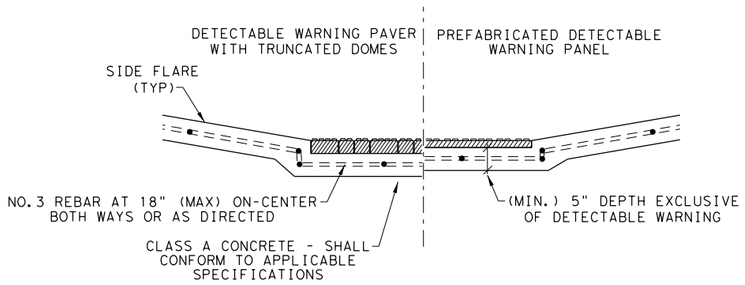
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

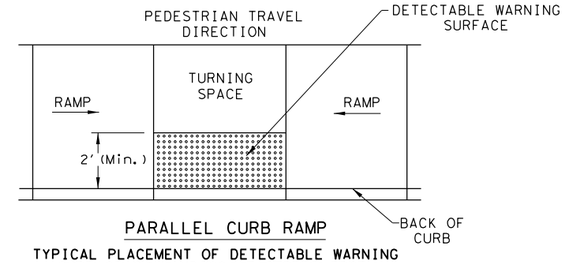
SIDEWALKS

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.

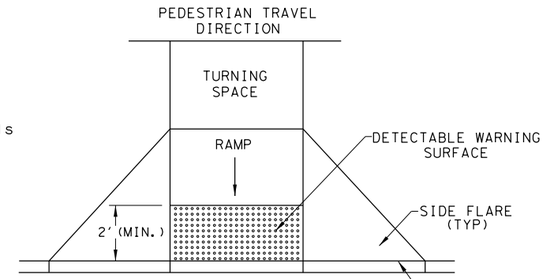


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

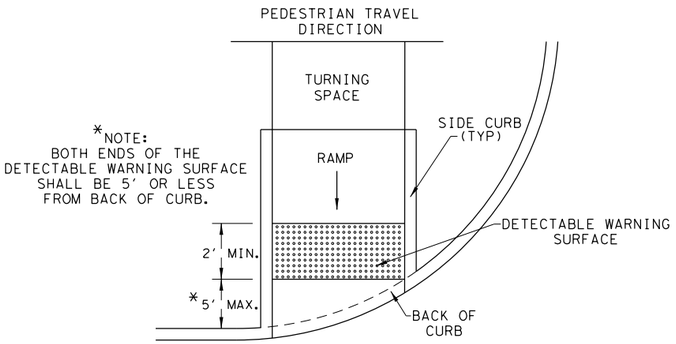
DETECTABLE WARNING SURFACE DETAILS



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

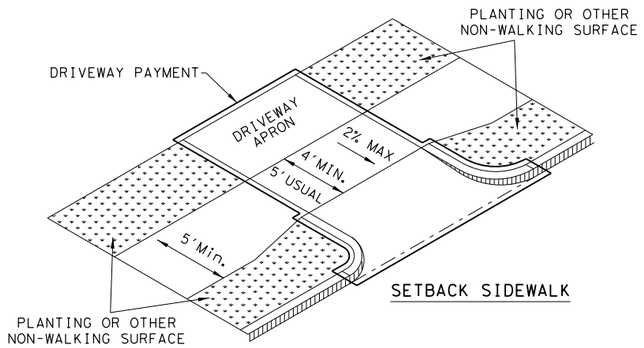
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

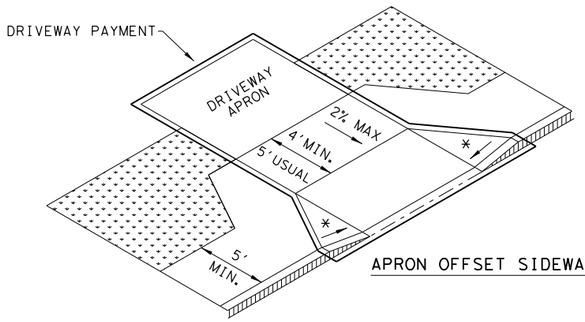
FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0042	11	006		SL 395
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	AMA	POTTER			53

DATE: 2/29/2024
FILE: c:\pw\khl\d0316912\ped18.dgn

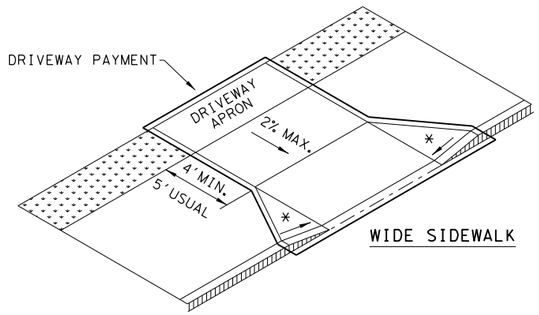
SIDEWALK TREATMENT AT DRIVEWAYS



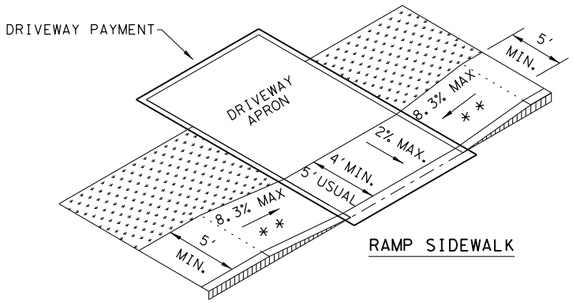
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

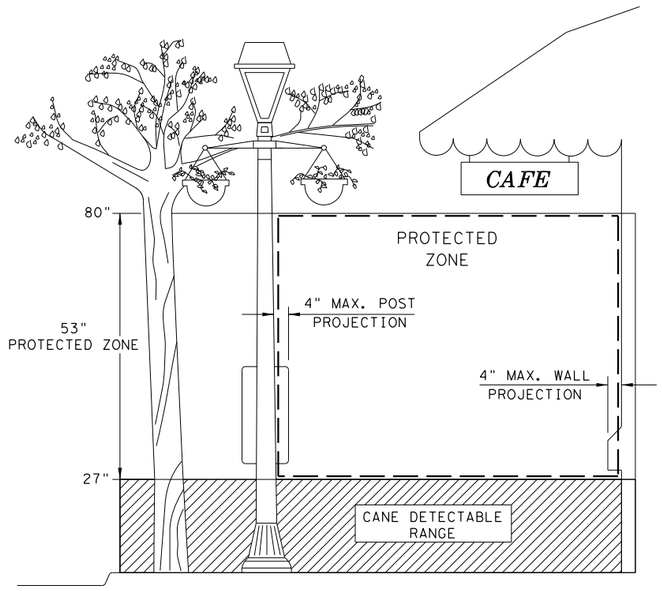


RAMP SIDEWALK

NOTES:

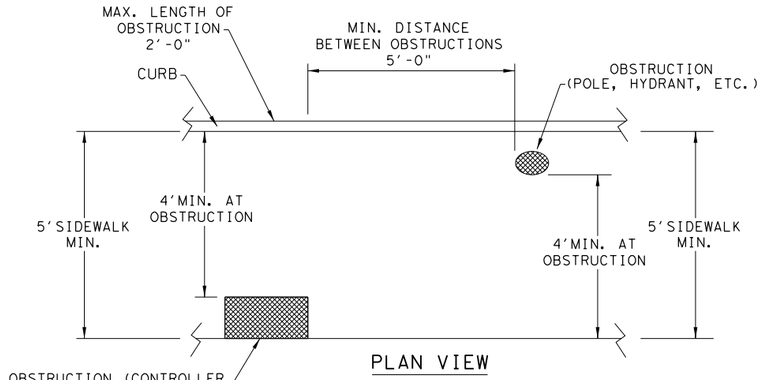
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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



PROTECTED ZONE

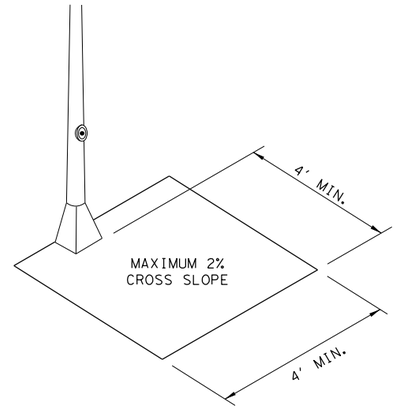
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



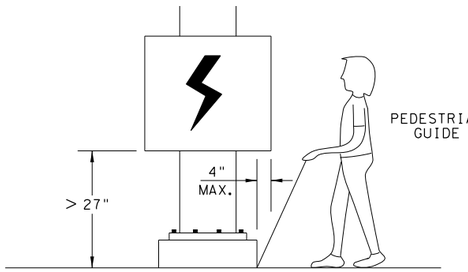
PLAN VIEW

PLACEMENT OF STREET FIXTURES

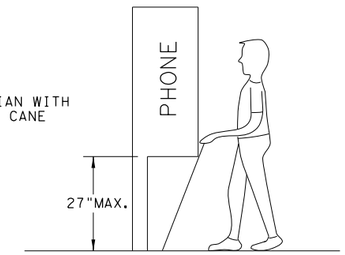
NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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



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

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

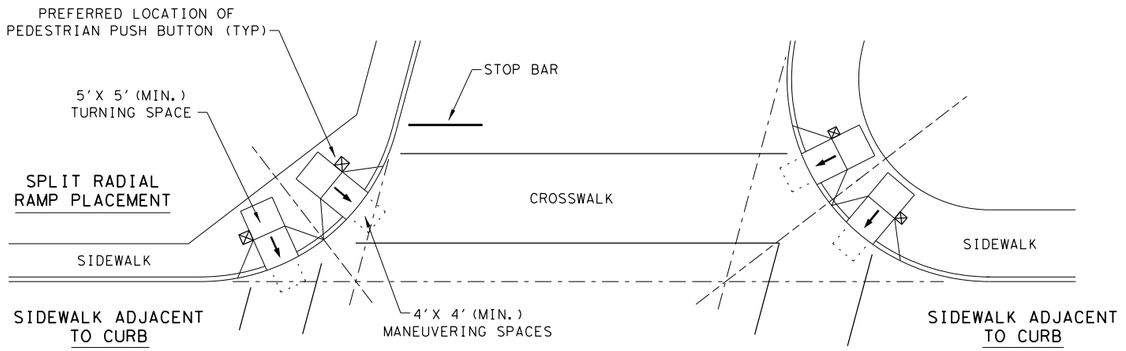
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0042	11	006		SL 395
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	AMA	POTTER			54

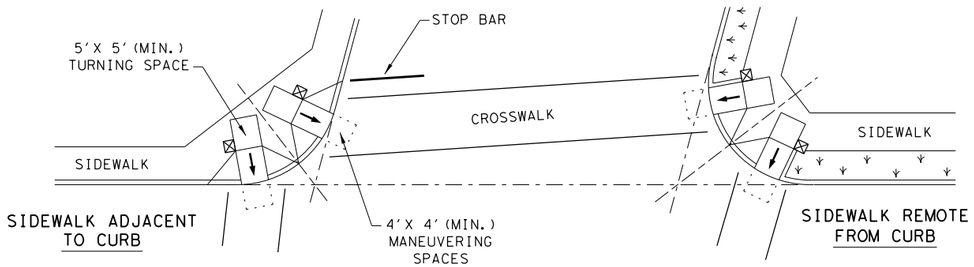
DATE: 2/29/2024
FILE: c:\pw\kh1\d0316912\ped18.dgn

TYPICAL CROSSING LAYOUTS

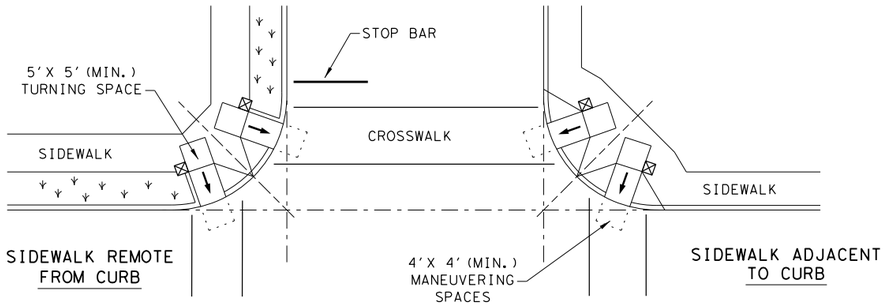
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



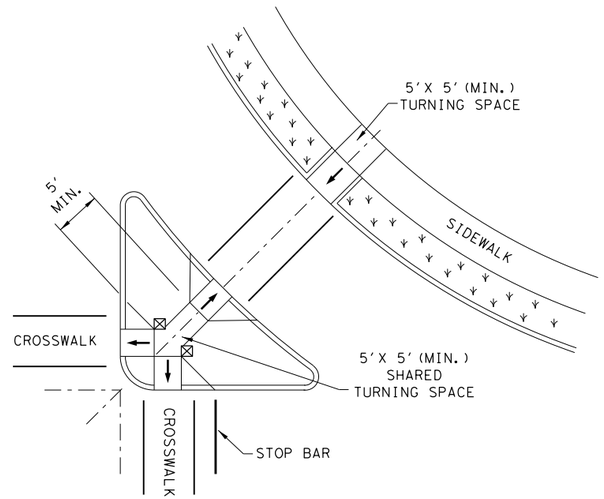
SKEWED INTERSECTION WITH "LARGE" RADIUS



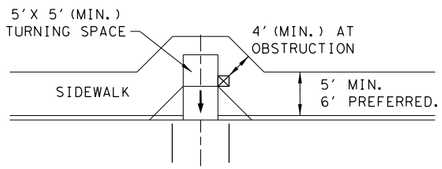
SKEWED INTERSECTION WITH "SMALL" RADIUS

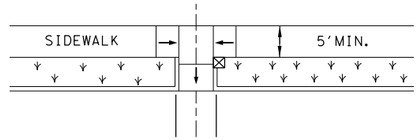


NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND





MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0042	11	006		SL 395
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
	AMA	POTTER			55

SUMMARY OF HARDSCAPE ITEMS (NON-REIMBURSABLE)					
LOCATION	668 6115	432 6047	1002 6002	1002 6003	1002 6004
	PREFAB PAV MRK TY C (MULTI) (SHIELD) (1)	RIPRAP (MOW STRIP)(6 IN)	LANDSCAPE AMENITY (TY 1) (2)	LANDSCAPE AMENITY (TY 2) (3)	LANDSCAPE AMENITY (TY 3) (4)
	EA	CY	EA	EA	EA
HARDSCAPE PLAN - SHEET 1 OF 4	0	7.5	4	3	2
HARDSCAPE PLAN - SHEET 2 OF 4	4	7	2	3	1
HARDSCAPE PLAN - SHEET 3 OF 4	2	8.5	4	2	1
HARDSCAPE PLAN - SHEET 4 OF 4	0	7.5	2	2	2
PROJECT TOTALS	6	30.5	12	10	6

SUMMARY OF HARDSCAPE ITEMS (REIMBURSABLE)		
LOCATION	528 6004	528 6011
	LANDSCAPE PAVERS	LANDSCAPE PAVERS (TYPE I)
	SY	SY
HARDSCAPE PLAN - SHEET 1 OF 4	434	0
HARDSCAPE PLAN - SHEET 2 OF 4	486	6
HARDSCAPE PLAN - SHEET 3 OF 4	483	0
HARDSCAPE PLAN - SHEET 4 OF 4	488	0
PROJECT TOTALS	1891	6

LEGEND

(1) SPECIAL CROSSWALK EMBLE

(2) BENCH INSTALLATION ONLY

(3) BIKE RACKS

(4) TRASH RECEPTACLE

100% PLANS

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Texas Department of Transportation

SE 10TH AVE

HARDSCAPE SUMMARY

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		56

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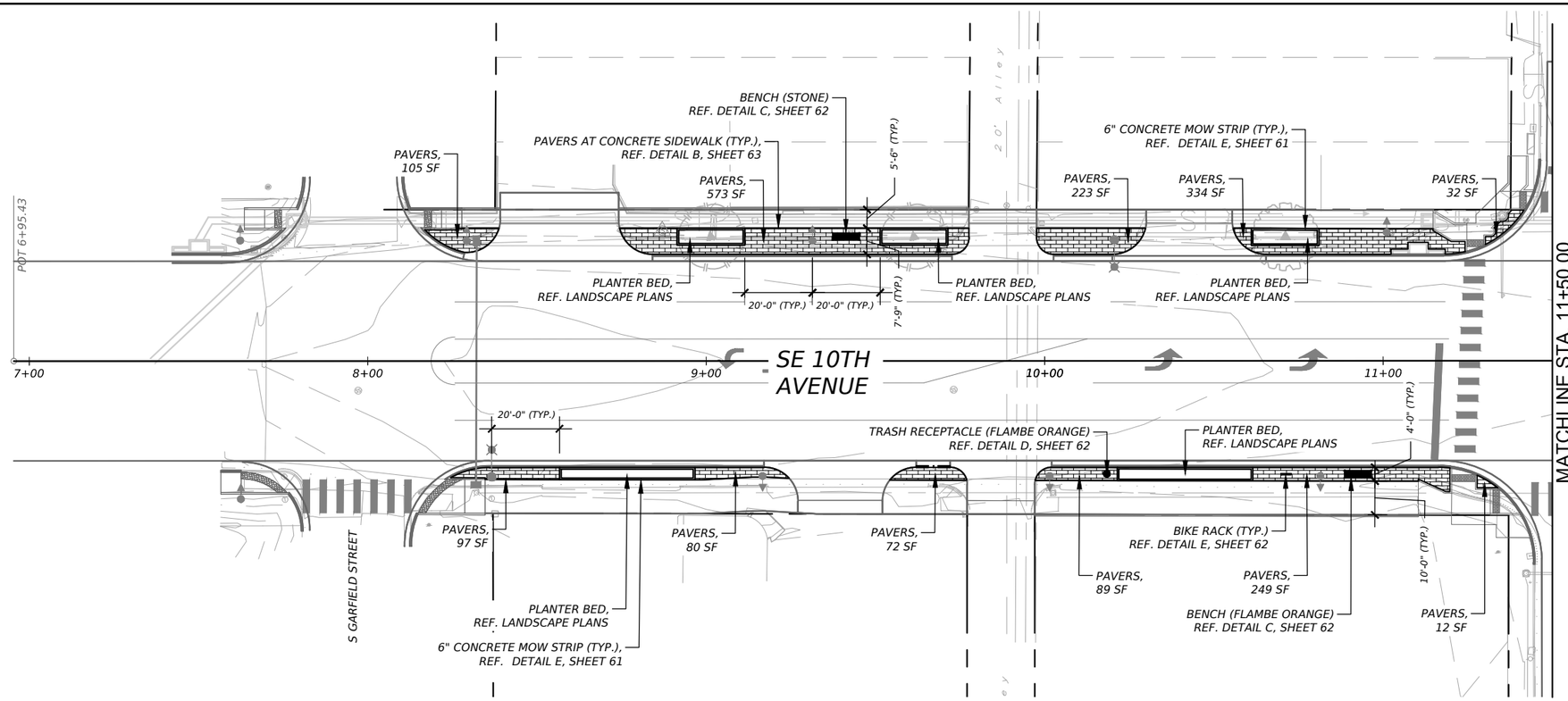

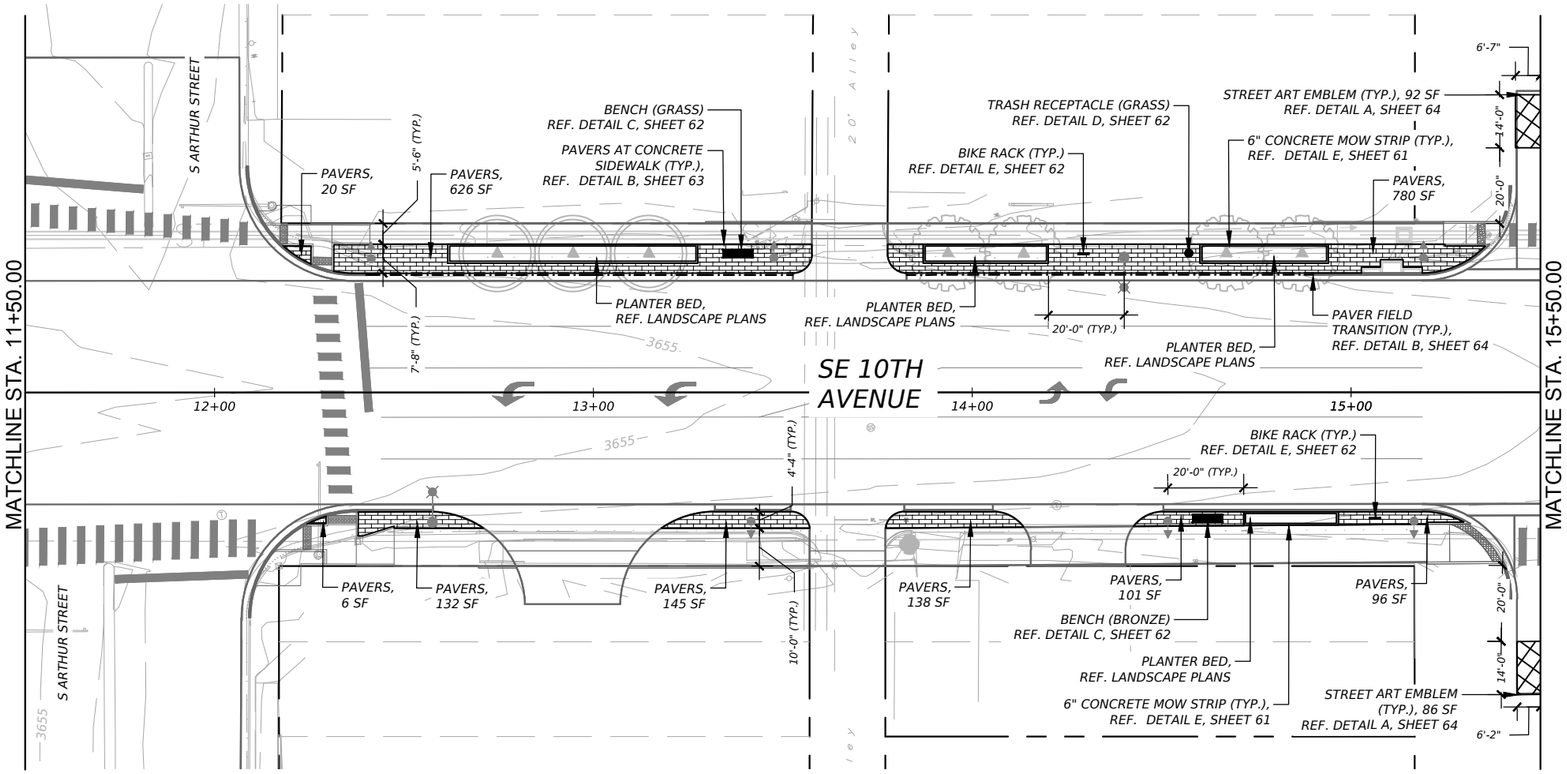

LEGEND

- EXISTING TREE TO REMAIN
- TRUNK PROTECTION REF. DETAIL B, SHEET 62
- TREE PROTECTION FENCING REF. DETAIL A, SHEET 62
- SAWTOOTH CURB REF. CIVIL PLANS
- PAVERS REF. DETAIL A, SHEET 63
- STREET ART EMBLEM REF. DETAIL A, SHEET 64

0 20 40
SCALE IN FEET

REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GRASS
3549
STATE OF TEXAS

100% PLANS 03/01/2024

Kimley»Horn F-928

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Texas Department of Transportation

SE 10TH AVE

HARDSCAPE PLAN

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		57

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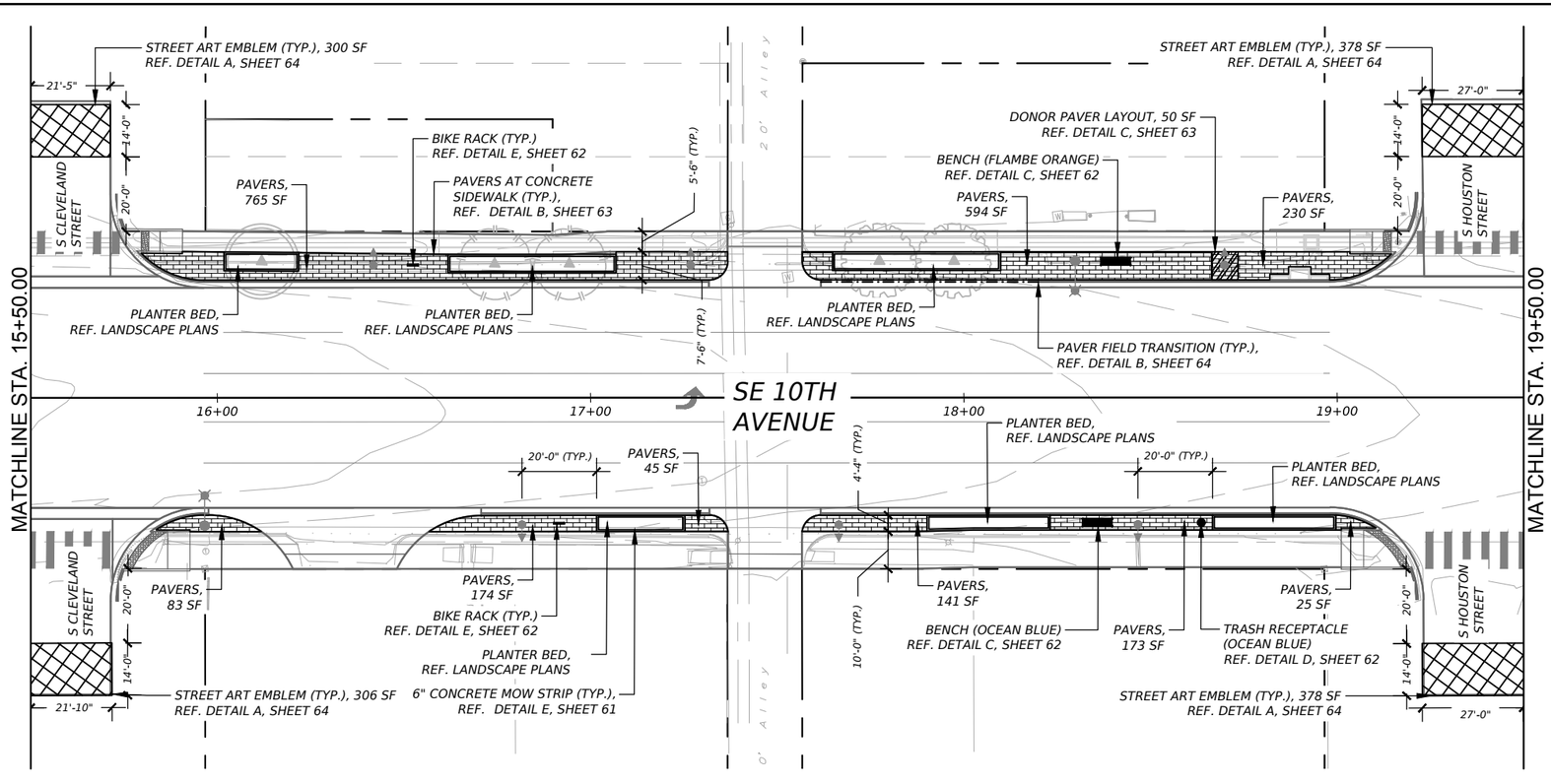

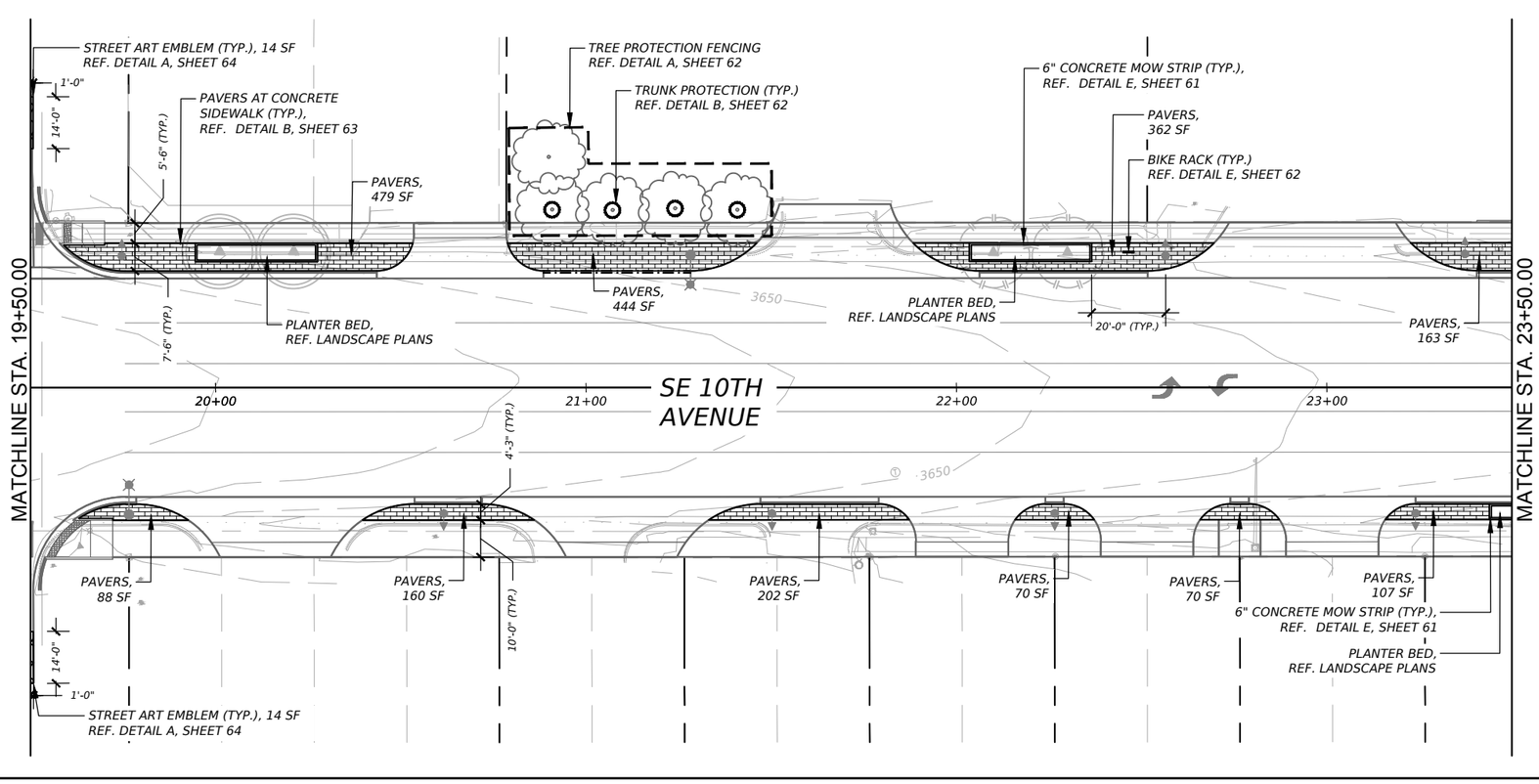

LEGEND

- EXISTING TREE TO REMAIN
- TRUNK PROTECTION — REF. DETAIL B, SHEET 62
- TREE PROTECTION FENCING — REF. DETAIL A, SHEET 62
- SAWTOOTH CURB — REF. CIVIL PLANS
- PAVERS — REF. DETAIL A, SHEET 63
- DONOR PAVERS — REF. DETAIL C, SHEET 63
- STREET ART EMBLEM — REF. DETAIL A, SHEET 64

0 20 40
SCALE IN FEET

REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GLASS
3549
STATE OF TEXAS

100% PLANS 03/01/2024

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Texas Department of Transportation

SE 10TH AVE

HARDSCAPE PLAN

SHEET OF 2 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		58

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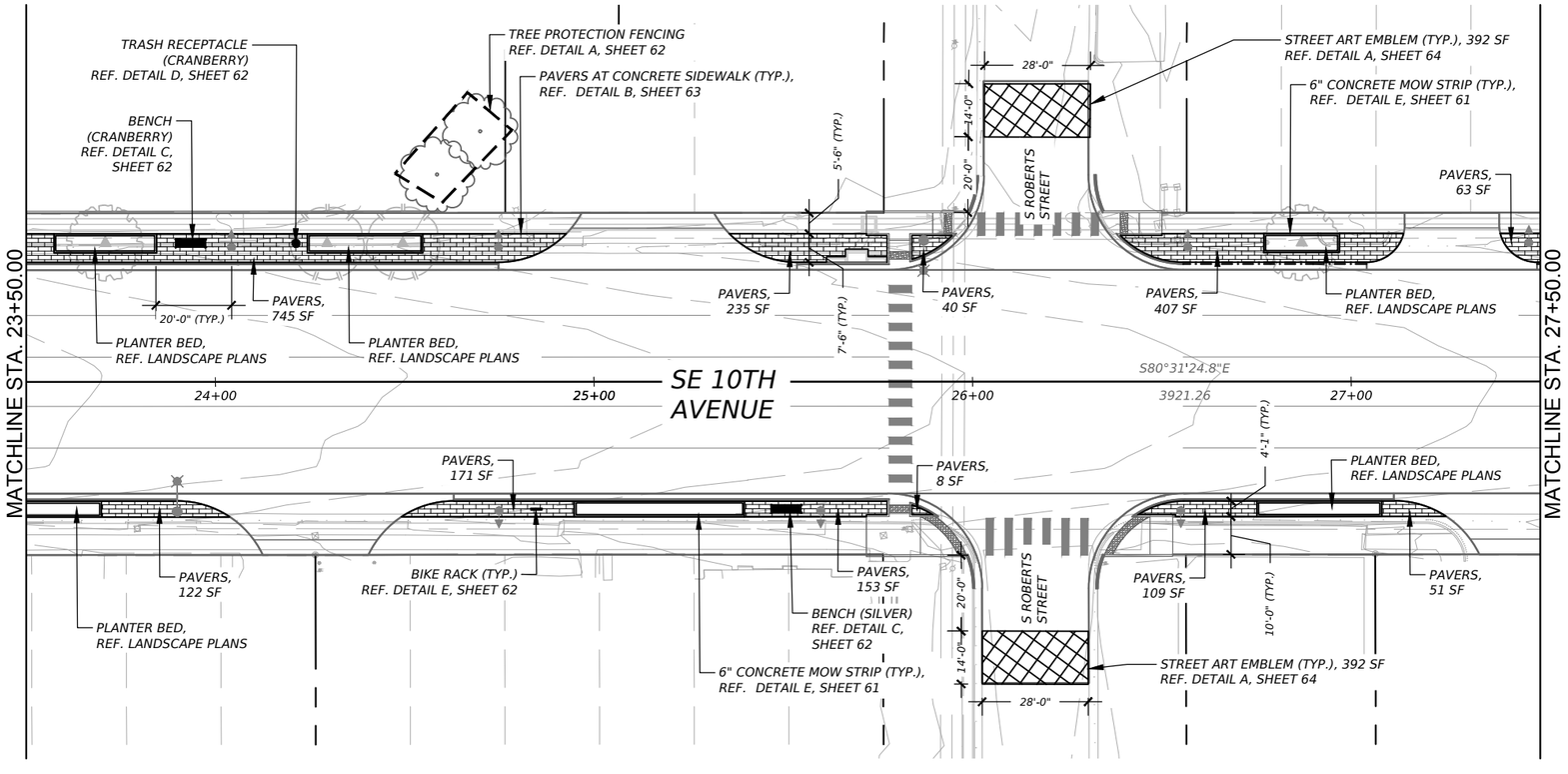

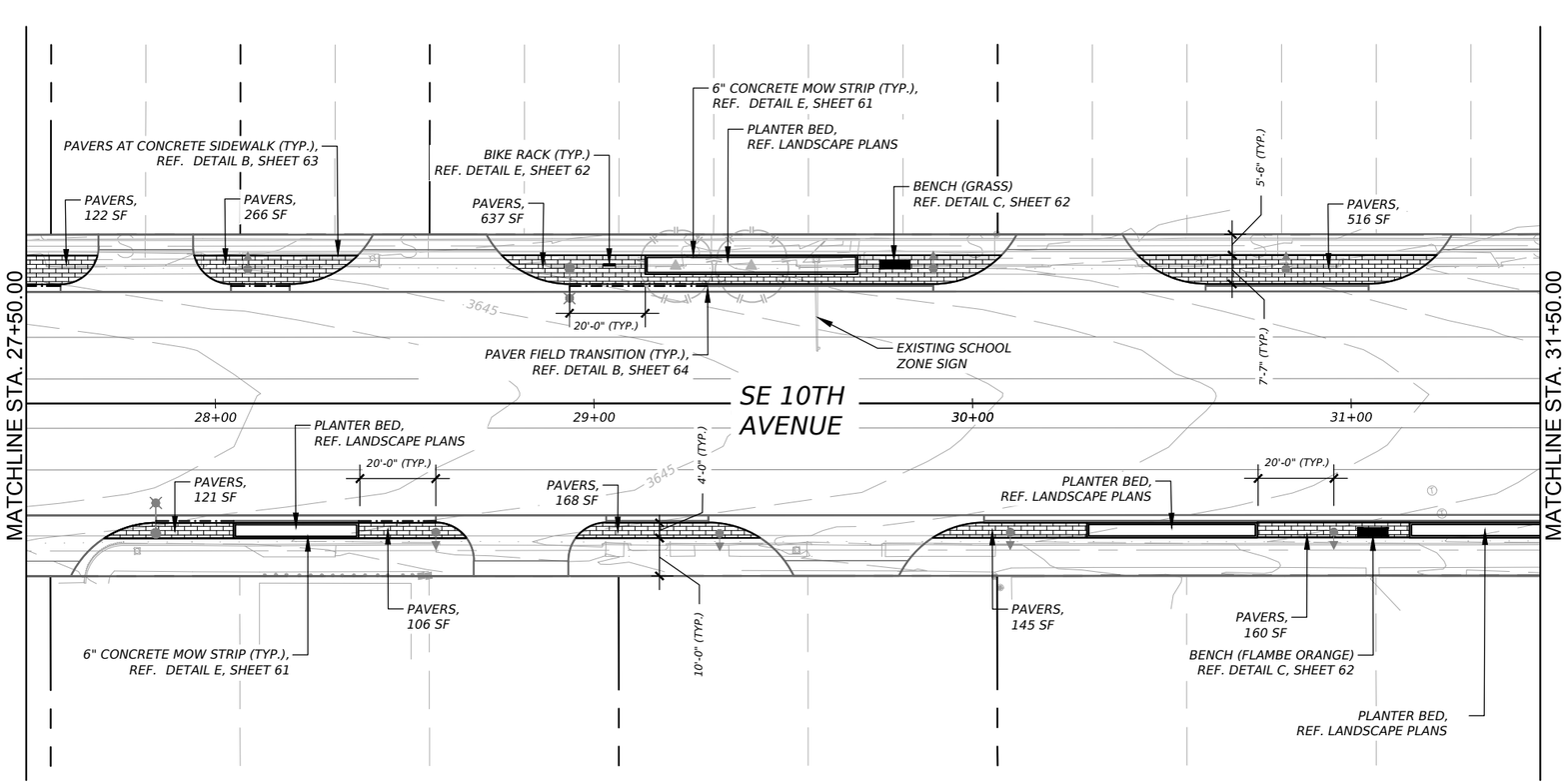

LEGEND

- EXISTING TREE TO REMAIN
- TRUNK PROTECTION REF. DETAIL B, SHEET 62
- TREE PROTECTION FENCING REF. DETAIL A, SHEET 62
- SAWTOOTH CURB REF. CIVIL PLANS
- PAVERS REF. DETAIL A, SHEET 63
- STREET ART EMBLEM REF. DETAIL A, SHEET 64

N

0 20 40

SCALE IN FEET

REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GRASS
3549
STATE OF TEXAS

100% PLANS 03/01/2024

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Texas Department of Transportation

SE 10TH AVE

HARDSCAPE PLAN

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		59

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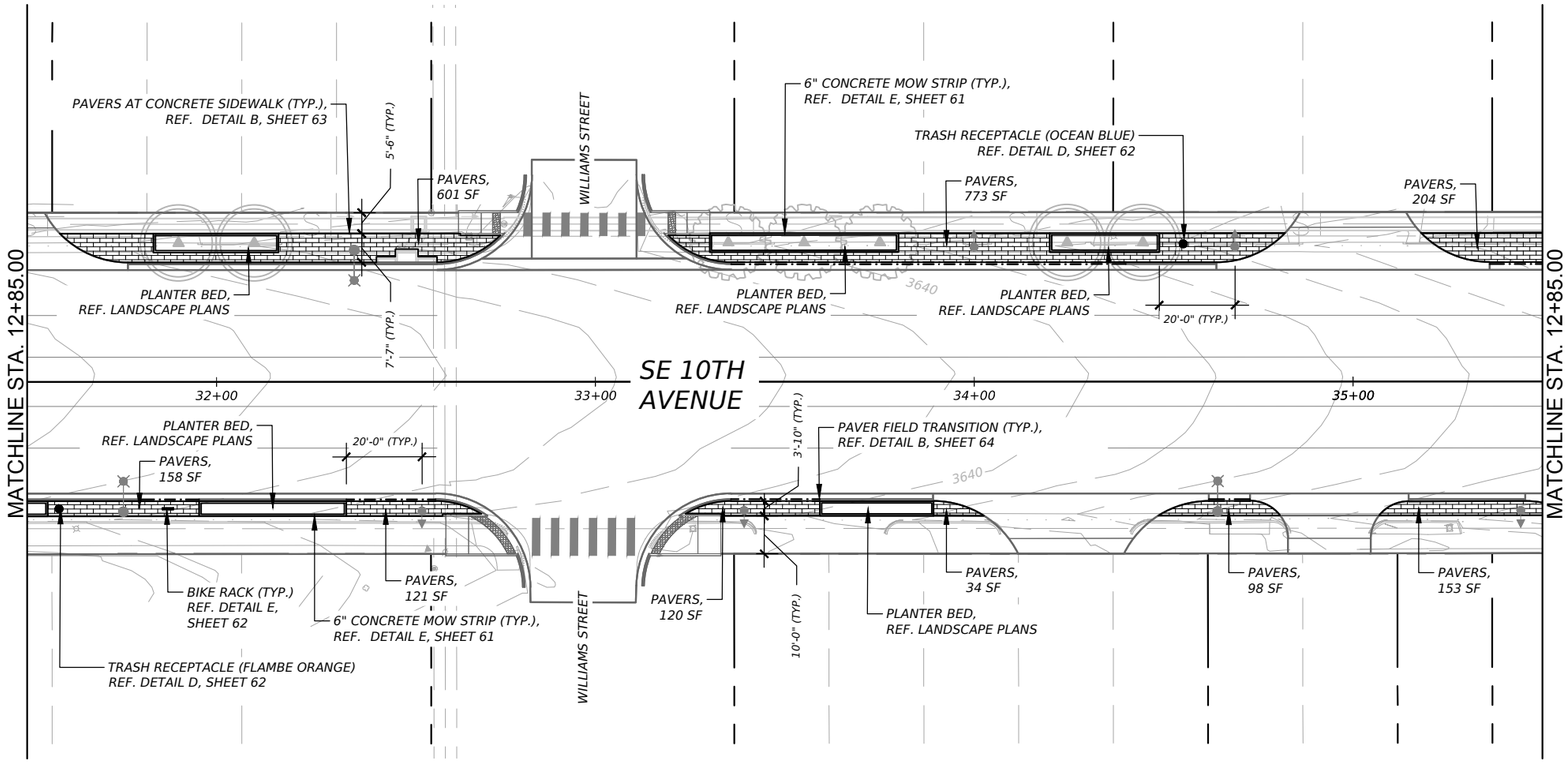

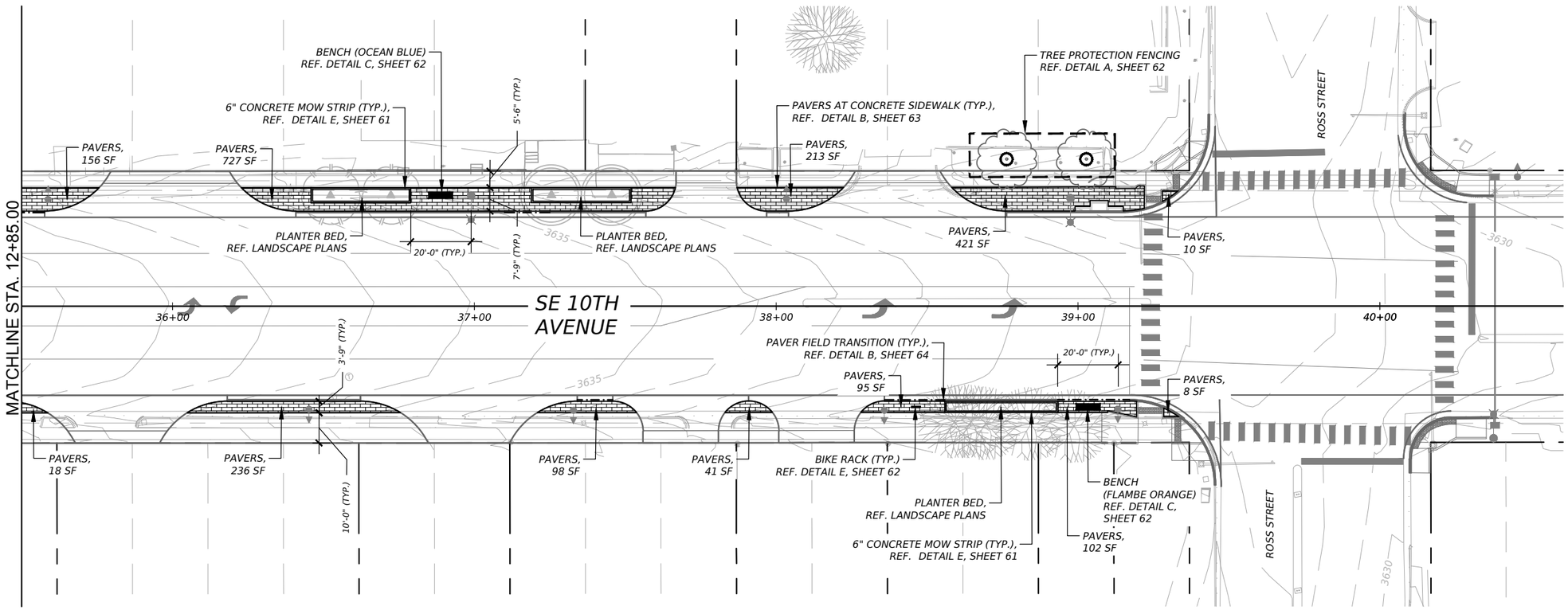

LEGEND

- EXISTING TREE TO REMAIN
- TRUNK PROTECTION REF. DETAIL B, SHEET 62
- TREE PROTECTION FENCING REF. DETAIL A, SHEET 62
- SAWTOOTH CURB REF. CIVIL PLANS
- PAVERS REF. DETAIL A, SHEET 63

0 20 40

SCALE IN FEET

REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GRASS
3549
STATE OF TEXAS

100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

HARDSCAPE PLAN

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		60

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DW: CHD

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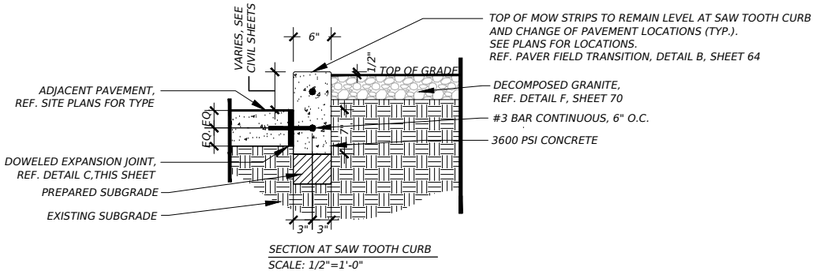
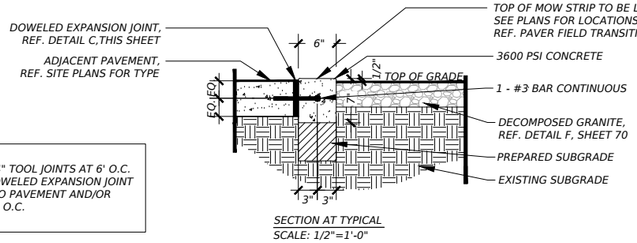


SECTION AT SAW TOOTH CURB
SCALE: 1/2"=1'-0"

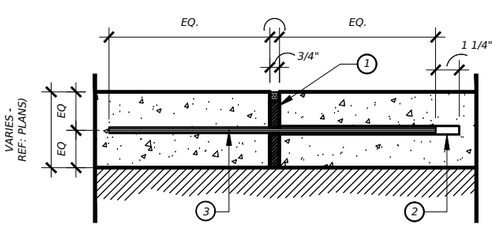


NOTES:
1. PROVIDE 1/4" TOOL JOINTS AT 6' O.C.
2. PROVIDE DOWELED EXPANSION JOINT ADJACENT TO PAVEMENT AND/OR CURB AT 36' O.C.

SECTION AT TYPICAL
SCALE: 1/2"=1'-0"

6" CONCRETE MOW STRIP — E

SCALE: AS SHOWN

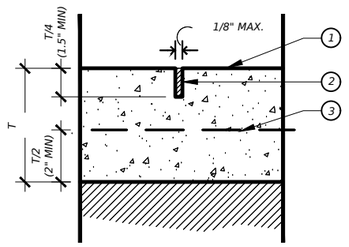


1. 3/4" REFLEX* RUBBER EXPANSION JOINT W/ JOINT SEALANT, SEAL WITH A SYNTHETIC JOINT SEAL COMPOUND. COLOR TO MATCH ADJACENT PAVEMENT
2. CLOSED END DOWEL SLEEVE W/ 1 1/4" MIN. CLEARANCE TO END. FIT & SECURE TO DOWEL.
3. 24" NO. 4 SMOOTH STEEL DOWEL. SPACING EQ. TO SLAB REBAR. WRAP ONE END FOR EXPANSION AS SHOWN.

*OR APPROVED EQUAL

DOWELED EXPANSION JOINT — C

SCALE: 1-1/2" = 1'-0"

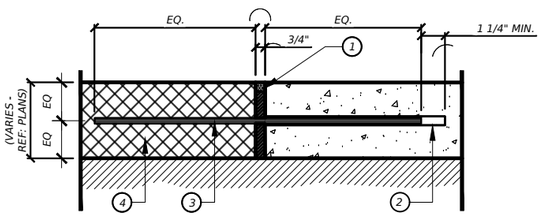


1. MEDIUM BROOM FINISH PER CITY STANDARDS.
2. SAWCUT JOINT FILLED W/ SYNTHETIC JOINT SEALER COMPOUND TO W/ IN 1/4" OF FINISH SURFACE. COLOR TO MATCH ADJACENT PAVING
3. PAVING REINFORCEMENT, REFER TO DETAIL A, THIS SHEET

CONTROL JOINT - SAW CUT — B

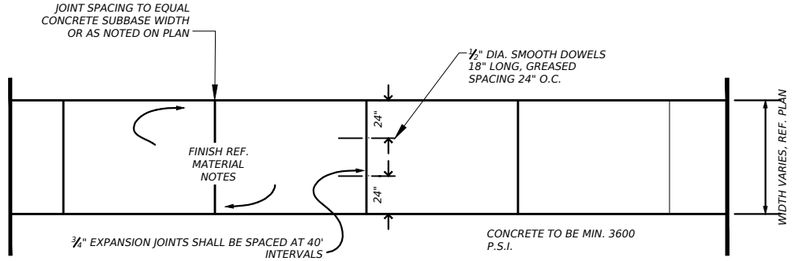
SCALE: 1-1/2" = 1'-0"

1. 3/4" REFLEX* RUBBER EXPANSION JOINT MATERIAL W/ JOINT SEALANT. SEAL WITH A SYNTHETIC JOINT SEAL COMPOUND. COLOR TO MATCH ADJACENT PAVEMENT
2. CLOSED END DOWEL SLEEVE W/ 1 1/4" MIN. CLEARANCE TO END.
3. 24", NO. 4 SMOOTH STEEL DOWEL. SPACING EQ. TO SLAB REBAR. WRAP ONE END FOR EXPANSION AS SHOWN. DRILL AND SET IN EPOXY CEMENT.
4. EXISTING CONCRETE *OR APPROVED EQUAL



CONNECTION TO EXISTING CONCRETE — D

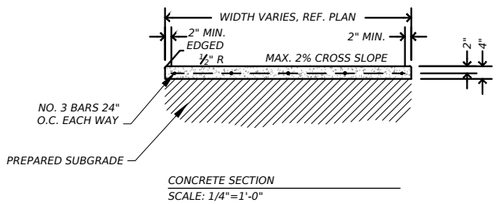
SCALE: 1-1/2" = 1'-0"



CONCRETE PLAN
SCALE: 1/8"=1'-0"

REFLEX* RUBBER EXPANSION JOINT, SEAL WITH 3/4" SYNTHETIC JOINT SEAL COMPOUND, SUBMIT COLOR AND MATERIAL TO LANDSCAPE ARCHITECT FOR APPROVAL.

*OR APPROVED EQUAL



CONCRETE SECTION
SCALE: 1/4"=1'-0"

NOTES:
1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3600 PSI AND 5 +/-1 PERCENT EXITRAINED AIR
2. REINFORCEMENT SHALL BE #3 BARS ON 24" CENTERS
3. 24" X 1/2" SMOOTH GREASED DOWELS WITH 5" X 9/16" DOWEL SLEEVES SHALL BE INSTALLED ON 24" CENTERS, ALONG WITH REFLEX* RUBBER EXPANSION JOINT, SEAL WITH 1" SYNTHETIC JOINT SEAL COMPOUND, SUBMIT COLOR AND MATERIAL TO LANDSCAPE ARCHITECT FOR APPROVAL.
4. PAVING TO HAVE A MAXIMUM 2% CROSS SLOPE AS SHOWN.
5. PAVING TO BE ON A MAXIMUM 5% LONGITUDINAL SLOPE.
6. CONCRETE TO HAVE MEDIUM BROOM FINISH

CONCRETE SUBBASE — A

SCALE: AS SHOWN

100% PLANS 03/01/2024

Kimley»Horn F-928

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SE 10TH AVE

HARDSCAPE DETAILS

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		61

DATE: 3/1/2024 11:36:10 AM
FILE: K:\FTW_LALP\06121\0022_Amarillo_SE 10th Streetscape\Dwg\04 CD\Sheet

DW: CHD CK: KBG DW: CHD CK: KBG

MATERIAL NOTES:

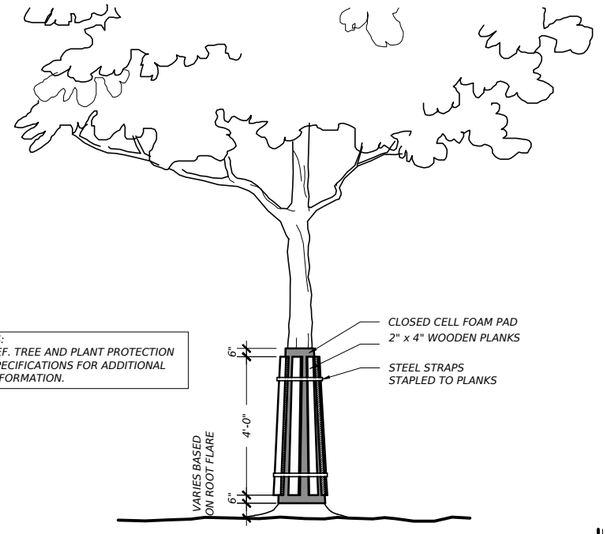
MANUFACTURER:	LANDSCAPE FORMS*
STYLE:	LOOP BIKE RACK
MATERIAL	POWDERCOATED METAL
COLOR:	SILVER METALLIC
SIZE:	36"L x 14"W x 31"H
INSTALL:	SURFACE MOUNT, PER MANUFACTURERS STANDARDS

MODEL: CONTRACTOR TO VERIFY FURNISHING SELECTION WITH CITY AND LANDSCAPE ARCHITECT. CONTRACTOR TO PROVIDE CUT SHEET FOR CITY AND LANDSCAPE ARCHITECT APPROVAL.

* OR APPROVED EQUAL

BIKE RACK (PROVIDE 10) — E

SCALE: N.T.S.



NOTES:
1. REF. TREE AND PLANT PROTECTION SPECIFICATIONS FOR ADDITIONAL INFORMATION.

TRUNK PROTECTION — B

SCALE: N.T.S.

MATERIAL NOTES:

MANUFACTURER:	LANDSCAPE FORMS*
STYLE:	PLAINWELL
MATERIAL:	POWDERCOATED METAL
COLOR:	VARIES, SEE HARDSCAPE PLANS
CAPACITY:	35 GALLON
LOCATION:	SEE HARDSCAPE PLANS FOR LOCATION
INSTALL :	SURFACE MOUNT, PER MANUFACTURERS STANDARDS

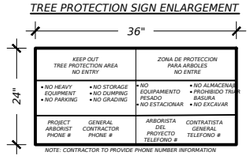
NOTES: CONTRACTOR TO VERIFY FURNISHING SELECTION WITH CITY AND LANDSCAPE ARCHITECT. CONTRACTOR TO PROVIDE CUT SHEET FOR CITY AND LANDSCAPE ARCHITECT APPROVAL.

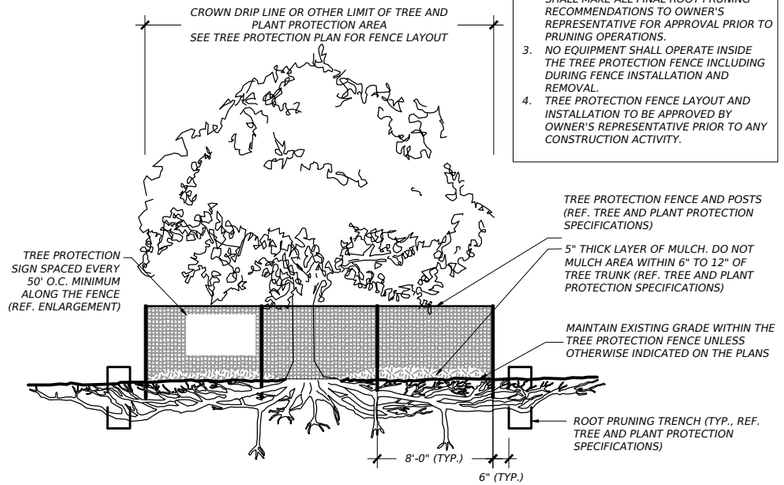
* OR APPROVED EQUAL

TRASH RECEPTACLE (PROVIDE 6) — D

SCALE: N.T.S.

TREE PROTECTION SIGN ENLARGEMENT





NOTES:
1. SEE TREE AND PLANT PROTECTION SPECIFICATIONS FOR WATERING AND OTHER ADDITIONAL REQUIREMENTS.
2. ALL TREE AND ROOT PRUNING SHALL BE PERFORMED UNDER THE SUPERVISION OF AN I.S.A. CERTIFIED ARBORIST. ARBORIST SHALL MAKE ALL FINAL ROOT PRUNING RECOMMENDATIONS TO OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO PRUNING OPERATIONS.
3. NO EQUIPMENT SHALL OPERATE INSIDE THE TREE PROTECTION FENCE INCLUDING DURING FENCE INSTALLATION AND REMOVAL.
4. TREE PROTECTION FENCE LAYOUT AND INSTALLATION TO BE APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO ANY CONSTRUCTION ACTIVITY.

TYPICAL TREE PROTECTION FENCING — A

SCALE: N.T.S.

MATERIAL NOTES (BENCHES PROVIDED BY CITY):

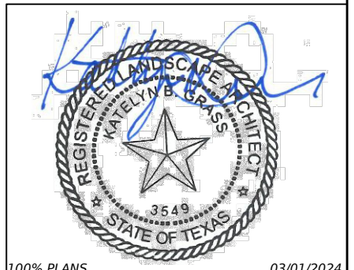
MANUFACTURER:	LANDSCAPE FORMS*
STYLE:	PLAINWELL BENCH
MATERIAL	POWDERCOATED METAL
COLOR:	VARIES, SEE HARDSCAPE PLANS
SIZE:	96"L x 25"W x 32" H
LOCATION:	SEE HARDSCAPE PLANS FOR LOCATION
INSTALL :	SURFACE MOUNT, PER MANUFACTURERS STANDARDS. REF. DETAIL D, SHEET 63

NOTES: TWELVE (12) BENCHES HAVE BEEN PURCHASED BY CITY. CONTRACTOR TO COORDINATE WITH CITY AND INSTALL PER MANUFACTURER STANDARDS. NORTH SIDE BENCHES TO FACE TOWARD SE 10TH AVE, SOUTH SIDE BENCHES TO FACE AWAY FROM SE 10TH AVE.

* OR APPROVED EQUAL

BENCH — C

SCALE: N.T.S.



100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

HARDSCAPE DETAILS

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		62

DATE: 3/1/2024 11:36:13 AM
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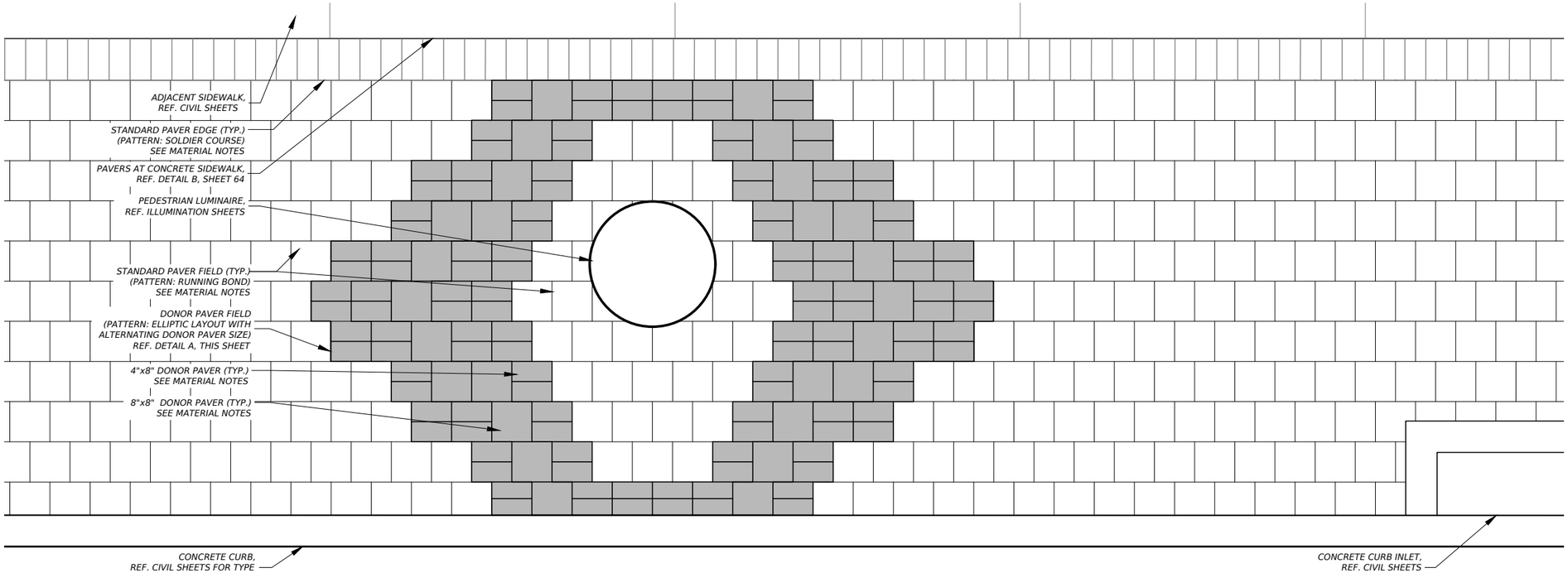
DW: CHD



DONOR PAVER LAYOUT C

SCALE: 1/2"=1'-0"

STANDARD PAVER MATERIAL NOTES:

PAVER EDGE:

MANUFACTURER:	ACME BRICK*
STYLE:	WHITACRE GREER STRAIGHT EDGE
COLOR:	#52 MAJESTIC
SIZE:	4"W x 8"L x 2-1/2"H
PATTERN:	SOLDIER COURSE

PAVER FIELD:

MANUFACTURER:	ACME BRICK*
STYLE:	WHITACRE GREER STRAIGHT EDGE
COLOR:	#52 MAJESTIC
SIZE:	8"W x 8"L x 2-1/2"H
PATTERN:	RUNNING BOND

NOTES: CONTRACTOR TO VERIFY PAVER SELECTION WITH CITY AND LANDSCAPE ARCHITECT. CONTRACTOR TO PROVIDE CUT SHEET & 8' x 8' MOCKUP FOR CITY AND LANDSCAPE ARCHITECT APPROVAL.

* OR APPROVED EQUAL

DONOR PAVER MATERIAL NOTES:

4"x8" DONOR PAVER:

MANUFACTURER:	ACME BRICK*
STYLE:	WHITACRE GREER STRAIGHT EDGE
COLOR:	#52 MAJESTIC
SIZE:	4"W x 8"L x 2-1/2"H
PATTERN:	90° RUNNING BOND, SEE DETAIL
QUANTITY:	116**

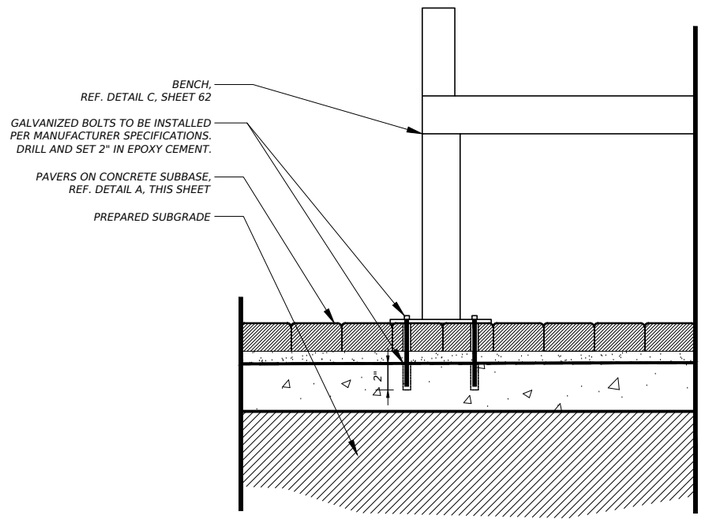
8"x8" DONOR PAVER:

MANUFACTURER:	ACME BRICK*
STYLE:	WHITACRE GREER STRAIGHT EDGE
COLOR:	#52 MAJESTIC
SIZE:	8"W x 8"L x 2-1/2"H
PATTERN:	RUNNING BOND, SEE DETAIL
QUANTITY:	26**

INSTALL: DONOR PAVERS PREPURCHASED AND PROVIDED BY CITY. CONTRACTOR TO COORDINATE WITH CITY ON ORGANIZATION AND PLACEMENT OF DONOR PAVERS PRIOR TO INSTALLATION. DONOR PAVER COUNT IS SUBJECT TO CHANGE/INCREASE.

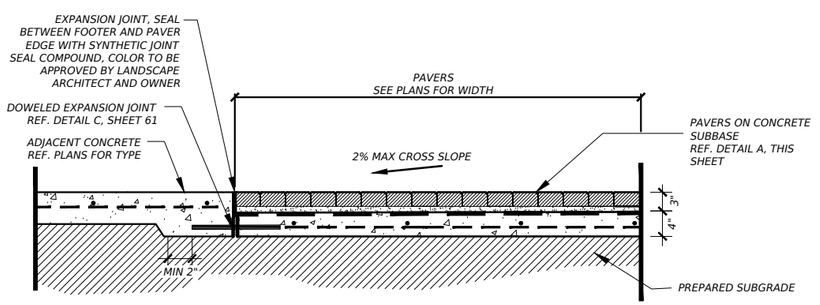
NOTES: CONTRACTOR TO VERIFY PAVER SELECTION WITH CITY AND LANDSCAPE ARCHITECT. CONTRACTOR TO PROVIDE CUT SHEET & SHOP DRAWING FOR CITY AND LANDSCAPE ARCHITECT APPROVAL.

* OR APPROVED EQUAL
**QUANTITY OF DONOR PAVERS SUBJECT TO CHANGE. CONTRACTOR TO VERIFY DONOR PAVER QUANTITY WITH CITY PRIOR TO INSTALLATION.



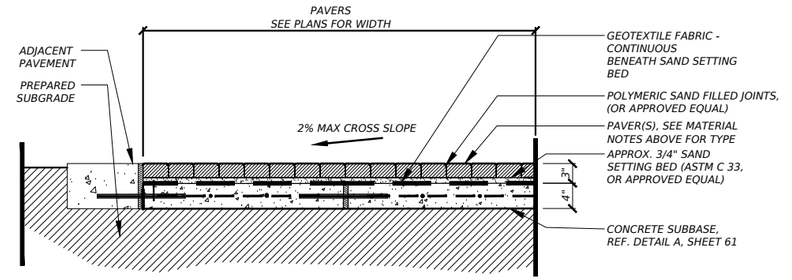
BENCH ON PAVERS SURFACE MOUNT D

SCALE: 1"=1'-0"



PAVERS AT CONCRETE SIDEWALK B

SCALE: 1/2"=1'-0"



PAVERS ON CONCRETE SUBBASE A

SCALE: 1/2"=1'-0"

REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GRASS
3549
STATE OF TEXAS

100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

HARDSCAPE DETAILS

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		63

DATE: 3/1/2024 11:36:14 AM
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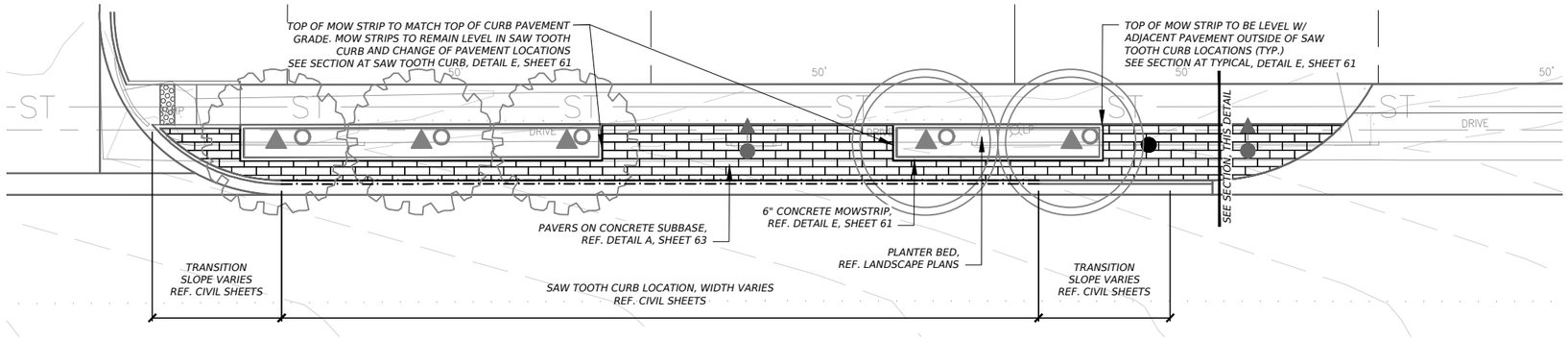
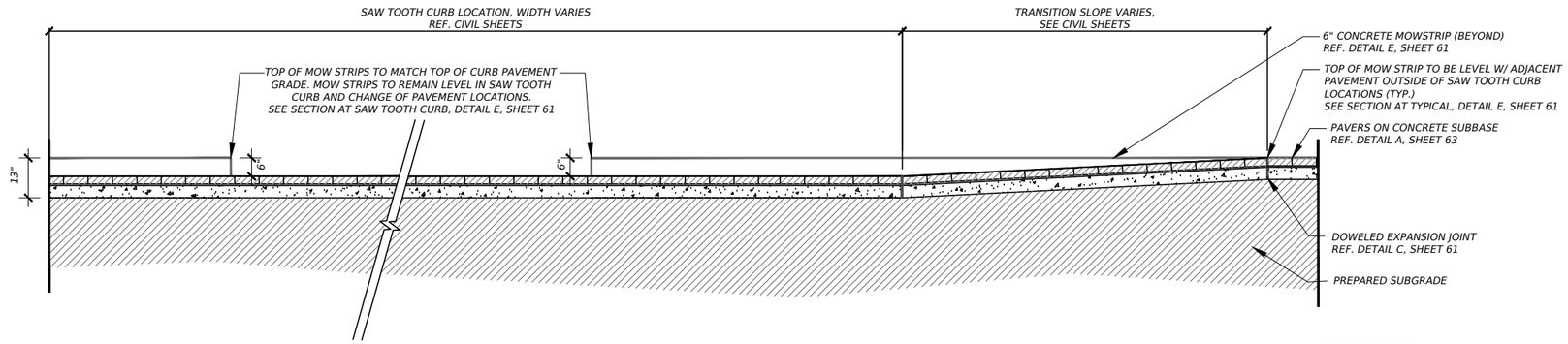


PLAN VIEW

SCALE: 1" = 20'-0"



SECTION

SCALE: 1/4" = 1'-0"

PAVER FIELD TRANSITION — B

SCALE: AS SHOWN

MATERIAL NOTES:

MANUFACTURER:	STREET BOND*
TYPE:	SB 150 PAVEMENT COATING
PRIMER:	STREET BOND ADHESION PROMOTER CONCENTRATE
SEALER:	STREET BOND SEALER CONCENTRATE.
DESIGN:	CONTRACTOR TO COORDINATE WITH CITY ON FINAL DESIGN OF STREET ART EMBLEMS.

INSTALL: PER MANUFACTURER STANDARDS

NOTES: DESIGN FOR STREET ART EMBLEM TO BE PROVIDED BY CITY. CONTRACTOR TO COORDINATE STREET ART EMBLEM DESIGN WITH CITY AND LANDSCAPE ARCHITECT. CONTRACTOR TO PROVIDE SHOP DRAWINGS AND CUT SHEETS FOR CITY AND LANDSCAPE ARCHITECT APPROVAL.

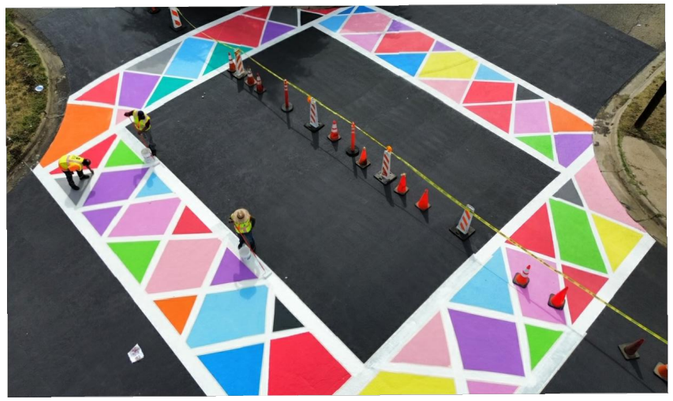
TOTAL QUANTITY TO BE PAID FOR IS 6 EA, SF SHOWN ON PLANS IS FOR CONTRACTORS INFORMATION ONLY

* OR APPROVED EQUAL

EMBLEM LOCATIONS:

1. NORTH AND SOUTH SIDE OF SE 10TH AVENUE AT SOUTH CLEVELAND STREET
2. NORTH AND SOUTH SIDE OF SE 10TH AVENUE AT SOUTH HOUSTON STREET
3. NORTH AND SOUTH SIDE OF SE 10TH AVENUE AT SOUTH ROBERTS STREET

REFERENCE IMAGES:



STREET ART EMBLEM (PROVIDE 6) — A

SCALE: N.T.S.

REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GRASS
3549
STATE OF TEXAS

100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

HARDSCAPE DETAILS

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		64

DATE: 3/1/2024 11:36:19 AM
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DW: CHD
CK: KBG
DW: CHD

CK: SAW
DW: EIA
CK: SAW
DW: EIA

SUMMARY OF LANDSCAPE ITEMS (NON-REIMBURSABLE)

LOCATION	1004 6001	192 6016	192 6063	192 6088	192 6026	192 6004	192 6017	1005 6001	170 6001
	TREE PROTECTION	PLANT BED PREPARATION	PLANT BED PREP (TYPE I)	PLANT SOIL MIX (TY 1)	PLANT MATERIAL (65 GAL) (TREE)	PLANT MATERIAL (5-GAL)	VEGETATION BARRIER	LOOSE AGGR FOR GROUNDCOVER (TYPE I)	IRRIGATION SYSTEM
	EA	EA	SY	CY	EA	EA	SY	CY	LS
LANDSCAPE PLAN - SHEET 1 OF 4	30	13	115	77	10	19	115	16	
LANDSCAPE PLAN - SHEET 2 OF 4	27	12	108	71	9	19	108	15	
LANDSCAPE PLAN - SHEET 3 OF 4	15	11	126	84	5	35	126	18	
LANDSCAPE PLAN - SHEET 4 OF 4	33	14	112	75	11	19	112	16	
PROJECT TOTALS	105	50	461	307	35	92	461	65	1

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100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

LANDSCAPE SUMMARY

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		65

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DW: CHD
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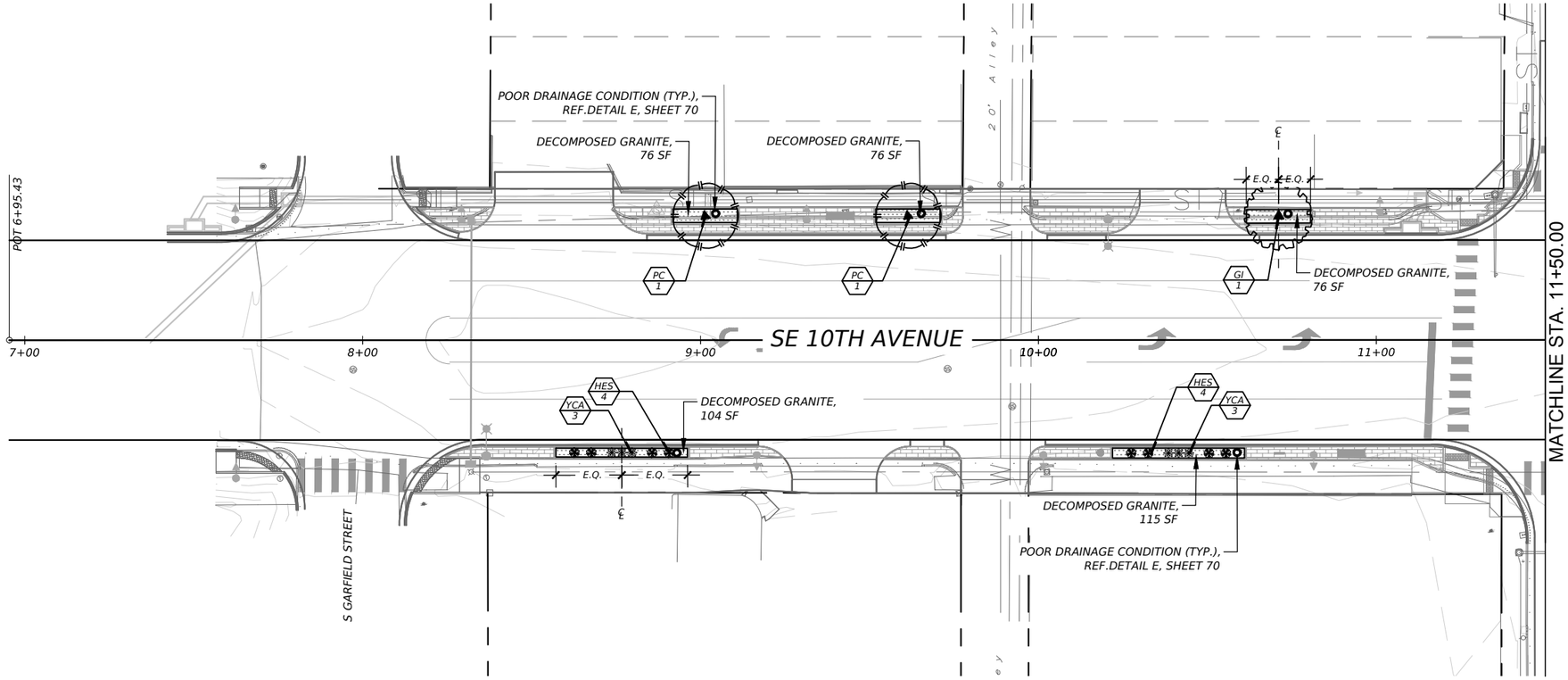

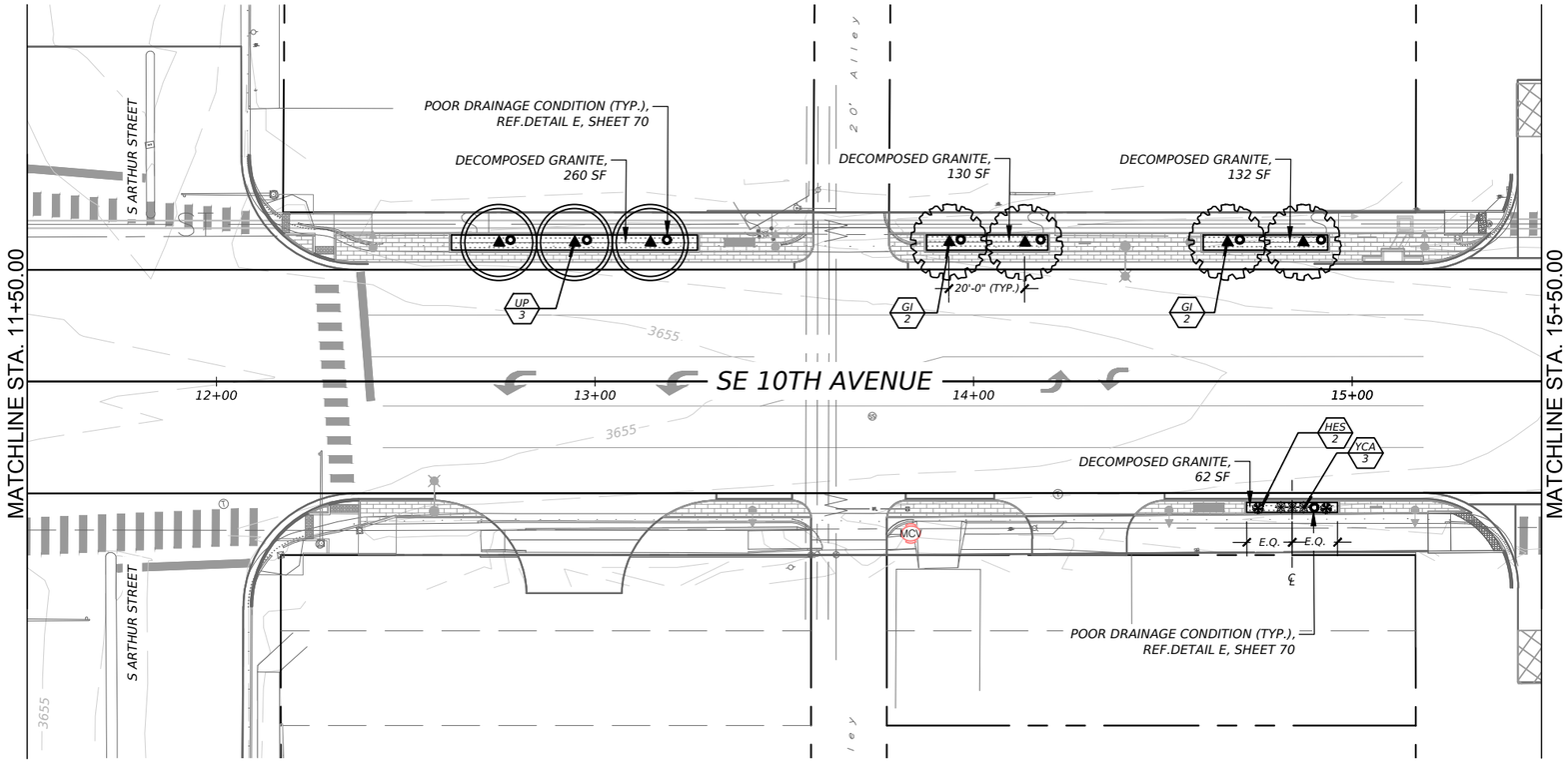

PLANTING NOTES

1. *ALL PLANT MATERIAL SHALL BE INSTALLED ACCORDING TO SOUND NURSERY PRACTICES AND SHALL MEET ALL STANDARDS AS STATED IN THE LATEST EDITION OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN.*
2. *NO SUBSTITUTIONS IN PLANT MATERIALS SHALL BE MADE WITHOUT WRITTEN AUTHORIZATION FROM OWNER OR LANDSCAPE ARCHITECT. IN THE EVENT OF DISCREPANCIES BETWEEN THE DRAWING AND THE PLANT LIST, THE DRAWING SHALL PREVAIL.*
3. *LOCATE ALL UTILITIES PRIOR TO ANY DIGGING OPERATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO EXISTING UTILITIES INCURRED BY HIS WORK.*
4. *REFERENCE IRRIGATION PLAN FOR BED IRRIGATION INFORMATION.*
5. *STAKING AND GUYING ALTERNATIVES: METHODS INDICATED IN DRAWING DETAILS ARE PREFERRED. CONTRACTOR MAY SUGGEST ALTERNATE METHODS, ASSUMING FULL RESPONSIBILITY FOR THEIR IMPLEMENTATION. CONTRACTOR SHALL REPLACE, PLANT, OR UPRIGHT ANY TREES BLOWN OVER OR DAMAGED DUE TO INADEQUATE STAKING AT NO ADDITIONAL COST TO THE OWNER.*
6. *PROVIDE CONCRETE MOW STRIP BETWEEN ALL PLANTING BEDS AND LAWN AREAS. REFERENCE SITE PLAN.*
7. *ALL PLANTING BEDS TO BE TOP DRESSED WITH A MINIMUM OF 2" DECOMPOSED GRANITE, UNLESS OTHERWISE SPECIFIED.*
8. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL LANDSCAPING UNTIL FINAL ACCEPTANCE. ALL REQUIRED LANDSCAPING SHALL BE MAINTAINED IN A NEAT AND ORDERLY MANNER AT ALL TIMES. THE WORK SHALL INCLUDE, BUT NOT TO BE LIMITED TO, MOWING, EDGING, PRUNING, FERTILIZING, WATERING, WEEDING, AND OTHER SUCH ACTIVITIES COMMON TO THE MAINTENANCE OF LANDSCAPING. ALL PLANT MATERIALS SHALL BE MAINTAINED IN A HEALTHY AND GROWING CONDITION AS IS APPROPRIATE FOR THE SEASON OF THE YEAR. PLANT MATERIAL THAT DIES SHALL BE REPLACED WITH THE PLANT MATERIAL OF SIMILAR SIZE AND VARIETY.*
9. *CONTRACTOR SHALL WARRANTY PLANT MATERIAL TO REMAIN ALIVE AND HEALTHY FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE. WARRANTY SHALL NOT INCLUDE DAMAGE FOR LOSS OF PLANT MATERIAL DUE TO NATURAL CAUSES, ACTS OF VANDALISM OR NEGLIGENCE ON THE PART OF THE OWNER.*
10. *ALL DISTURBED AREAS WITHIN LIMITS OF CONSTRUCTION NOT CALLED TO BE SODDED, SHALL BE REESTABLISHED WITH BERMUDA SOD AND IRRIGATED.*
11. *ALL LANDSCAPE BEDS TO HAVE TOPSOIL/BEDDING MIX THAT MEETS LANDSCAPE SPECIFICATIONS. INSTALL TO DEPTHS, PER PLANTING DETAILS (24" DEPTH MIN.) FINISHED GRADES OF PLANTING BEDS TO BE 1" BELOW FINISHED GRADE OF ADJACENT PAVING.*
12. *ALL SOD AREAS TO RECEIVE 4" DEPTH (MIN) TOPSOIL PRIOR TO INSTALLATION. TOPSOIL SHALL BE NATURAL, FRIABLE, FERTILE, pH RANGE OF 5.5-7.4, AND FREE OF TRASH, DEBRIS, STONES, WEEDS, AND TWIGS/BRANCHES.*
13. *ALL TREES TO BE PLACED A MINIMUM OF 4' FROM ANY UTILITY.*

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME
TREES		
	GI	GLEDITSIA TRIACANTHOS INERMIS / THORNLESS HONEYLOCUST
	PC	PISTACIA CHINENSIS / CHINESE PISTACHE
	UP	ULMUS PARVIFOLIA / LACEBARK ELM
SHRUBS		
	HES	HESPERALOE PARVIFLORA / RED YUCCA
	YCA	YUCCA FILAMENTOSA / ADAM`S NEEDLE
GROUND COVERS		
	--	DECOMPOSED GRANITE

NOTE: FOR FULL PLANT SCHEDULE, REF. SHEET 72.

LEGEND

- *POOR DRAINAGE CONDITION REF. DETAIL E, SHEET 70*
- *DECOMPOSED GRANITE REF. DETAIL F, SHEET 70*

0 20 40
SCALE IN FEET

REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GRASS
3549
STATE OF TEXAS

100% PLANS *03/01/2024*

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

LANDSCAPE PLAN

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		66

DATE: 3/1/2024 11:36:49 AM
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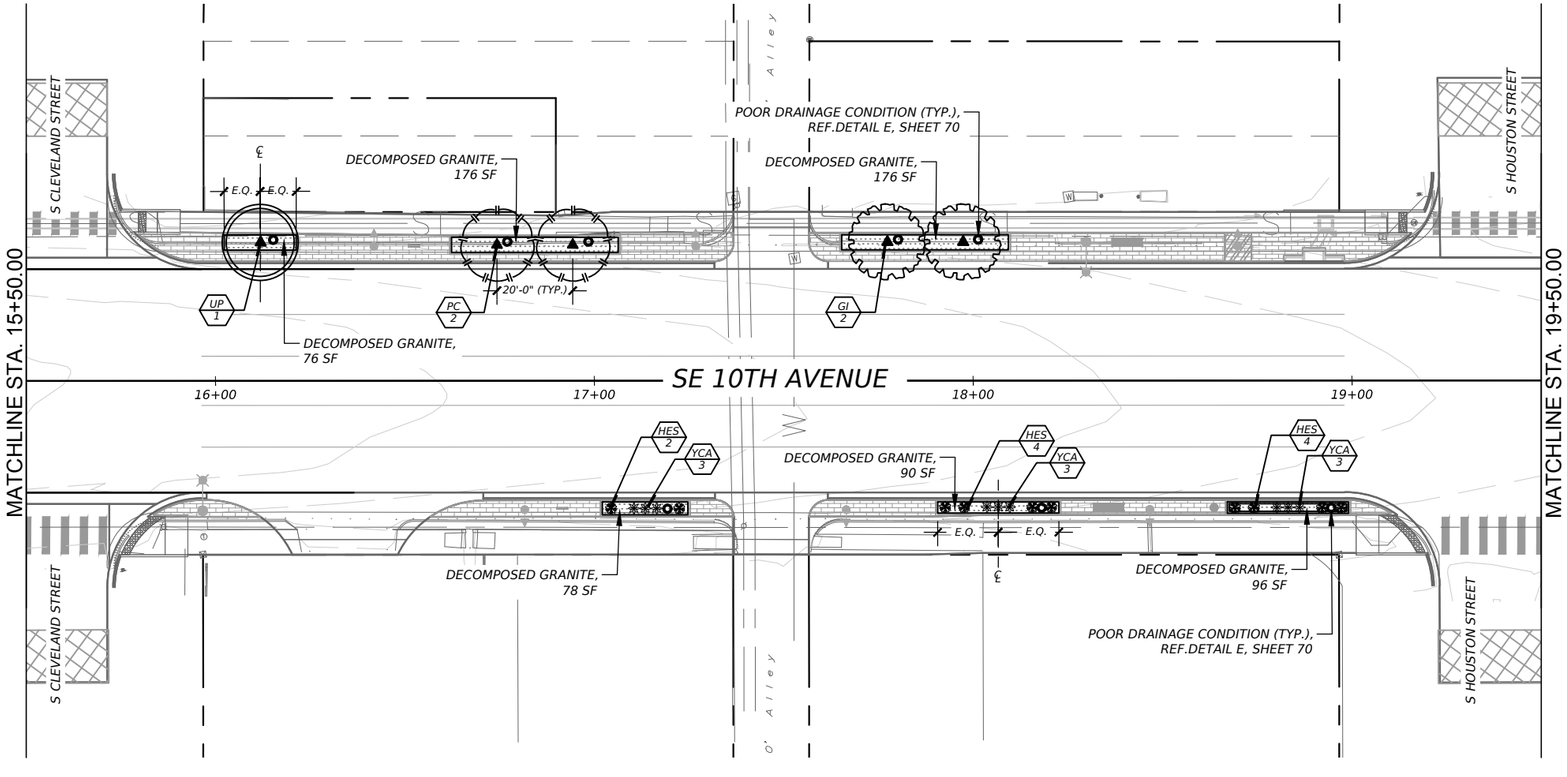

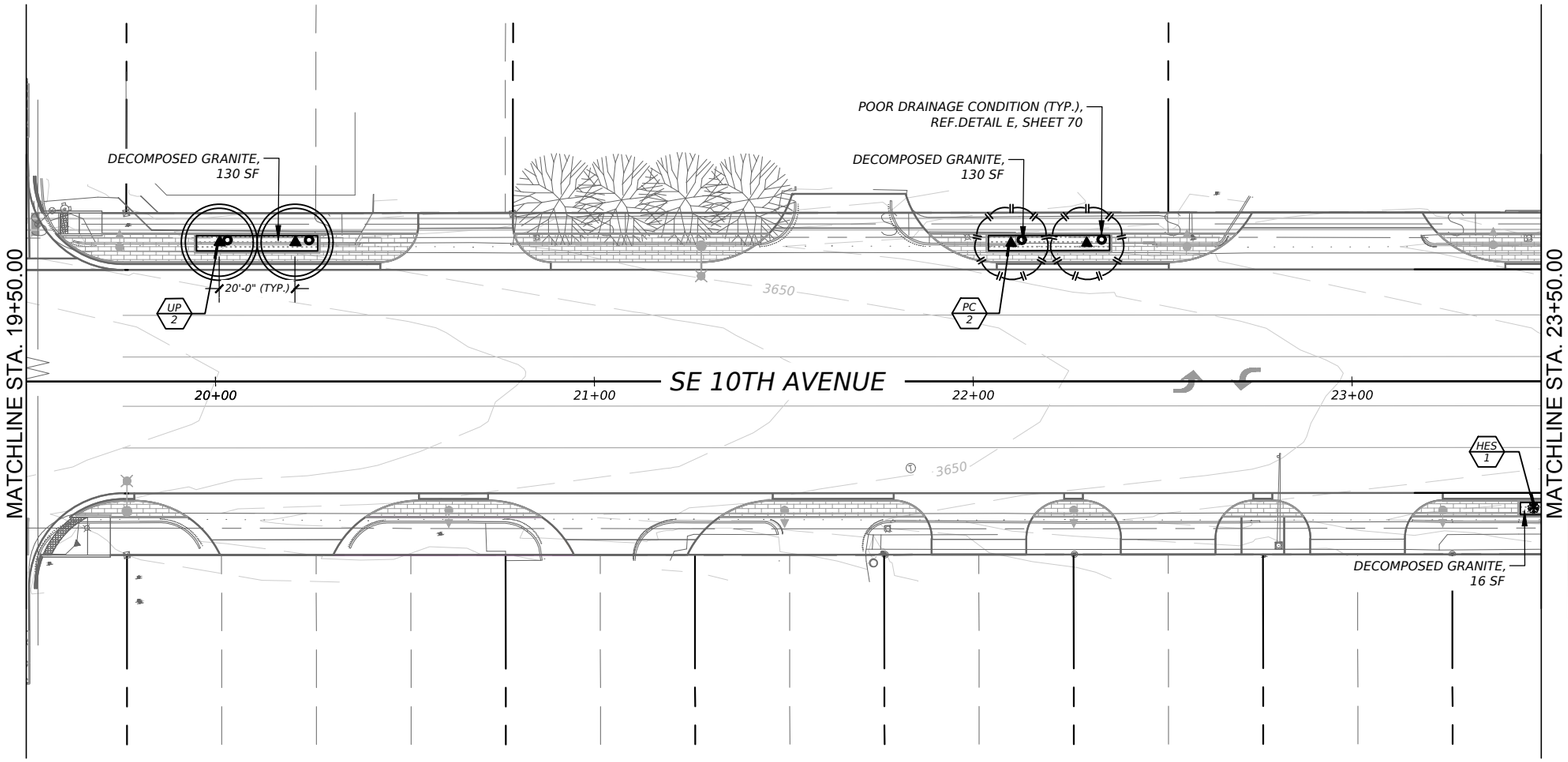

PLANTING NOTES

1. *ALL PLANT MATERIAL SHALL BE INSTALLED ACCORDING TO SOUND NURSERY PRACTICES AND SHALL MEET ALL STANDARDS AS STATED IN THE LATEST EDITION OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN.*
2. *NO SUBSTITUTIONS IN PLANT MATERIALS SHALL BE MADE WITHOUT WRITTEN AUTHORIZATION FROM OWNER OR LANDSCAPE ARCHITECT. IN THE EVENT OF DISCREPANCIES BETWEEN THE DRAWING AND THE PLANT LIST, THE DRAWING SHALL PREVAIL.*
3. *LOCATE ALL UTILITIES PRIOR TO ANY DIGGING OPERATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO EXISTING UTILITIES INCURRED BY HIS WORK.*
4. *REFERENCE IRRIGATION PLAN FOR BED IRRIGATION INFORMATION.*
5. *STAKING AND GUYING ALTERNATIVES: METHODS INDICATED IN DRAWING DETAILS ARE PREFERRED. CONTRACTOR MAY SUGGEST ALTERNATE METHODS, ASSUMING FULL RESPONSIBILITY FOR THEIR IMPLEMENTATION. CONTRACTOR SHALL REPLACE, PLANT, OR UPRIGHT ANY TREES BLOWN OVER OR DAMAGED DUE TO INADEQUATE STAKING AT NO ADDITIONAL COST TO THE OWNER.*
6. *PROVIDE CONCRETE MOW STRIP BETWEEN ALL PLANTING BEDS AND LAWN AREAS. REFERENCE SITE PLAN.*
7. *ALL PLANTING BEDS TO BE TOP DRESSED WITH A MINIMUM OF 2" DECOMPOSED GRANITE, UNLESS OTHERWISE SPECIFIED.*
8. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL LANDSCAPING UNTIL FINAL ACCEPTANCE. ALL REQUIRED LANDSCAPING SHALL BE MAINTAINED IN A NEAT AND ORDERLY MANNER AT ALL TIMES. THE WORK SHALL INCLUDE, BUT NOT TO BE LIMITED TO, MOWING, EDGING, PRUNING, FERTILIZING, WATERING, WEEDING, AND OTHER SUCH ACTIVITIES COMMON TO THE MAINTENANCE OF LANDSCAPING. ALL PLANT MATERIALS SHALL BE MAINTAINED IN A HEALTHY AND GROWING CONDITION AS IS APPROPRIATE FOR THE SEASON OF THE YEAR. PLANT MATERIAL THAT DIES SHALL BE REPLACED WITH THE PLANT MATERIAL OF SIMILAR SIZE AND VARIETY.*
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11. *ALL LANDSCAPE BEDS TO HAVE TOPSOIL/BEDDING MIX THAT MEETS LANDSCAPE SPECIFICATIONS. INSTALL TO DEPTHS, PER PLANTING DETAILS (24" DEPTH MIN.) FINISHED GRADES OF PLANTING BEDS TO BE 1" BELOW FINISHED GRADE OF ADJACENT PAVING.*
12. *ALL SOD AREAS TO RECEIVE 4" DEPTH (MIN) TOPSOIL PRIOR TO INSTALLATION. TOPSOIL SHALL BE NATURAL, FRIABLE, FERTILE, pH RANGE OF 5.5-7.4, AND FREE OF TRASH, DEBRIS, STONES, WEEDS, AND TWIGS/BRANCHES.*
13. *ALL TREES TO BE PLACED A MINIMUM OF 4' FROM ANY UTILITY.*

PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME
TREES		
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	PC	PISTACIA CHINENSIS / CHINESE PISTACHE
	UP	ULMUS PARVIFOLIA / LACEBARK ELM
SHRUBS		
	HES	HESPERALOE PARVIFLORA / RED YUCCA
	YCA	YUCCA FILAMENTOSA / ADAM`S NEEDLE
GROUND COVERS		
	--	DECOMPOSED GRANITE

NOTE: FOR FULL PLANT SCHEDULE, REF. SHEET 72.

LEGEND

- *POOR DRAINAGE CONDITION REF. DETAIL E, SHEET 70*
- *DECOMPOSED GRANITE REF. DETAIL F, SHEET 70*

0 20 40

SCALE IN FEET

REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GRASS
3549
STATE OF TEXAS

100% PLANS *03/01/2024*

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

LANDSCAPE PLAN

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		67

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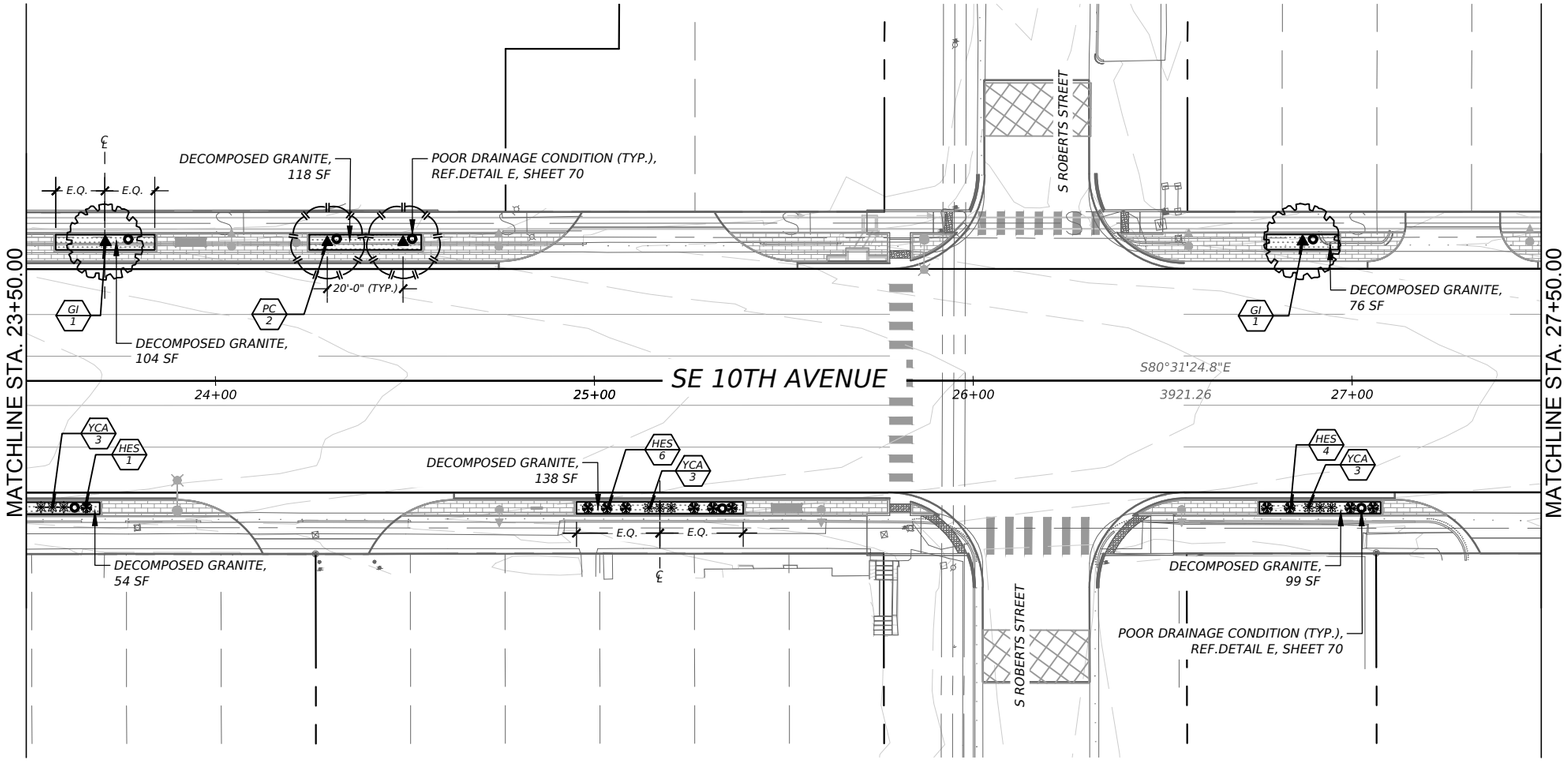

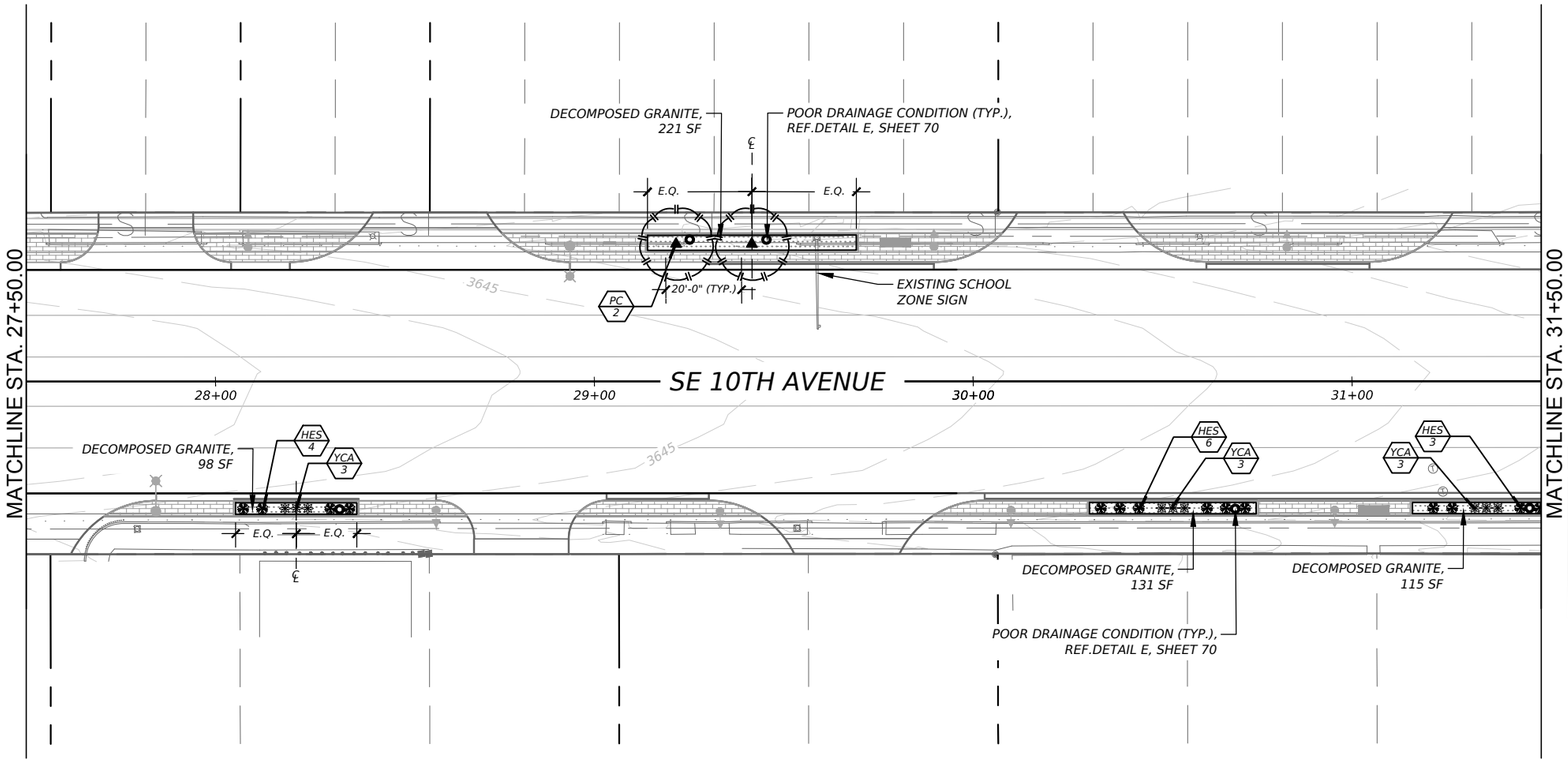

PLANTING NOTES

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	YCA	YUCCA FILAMENTOSA / ADAM`S NEEDLE
GROUND COVERS		
	--	DECOMPOSED GRANITE

NOTE: FOR FULL PLANT SCHEDULE, REF. SHEET 72.

LEGEND

- *POOR DRAINAGE CONDITION REF. DETAIL E, SHEET 70*
- *DECOMPOSED GRANITE REF. DETAIL F, SHEET 70*

0 20 40
SCALE IN FEET

REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GRASS
3549
STATE OF TEXAS

100% PLANS *03/01/2024*

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

LANDSCAPE PLAN

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		68

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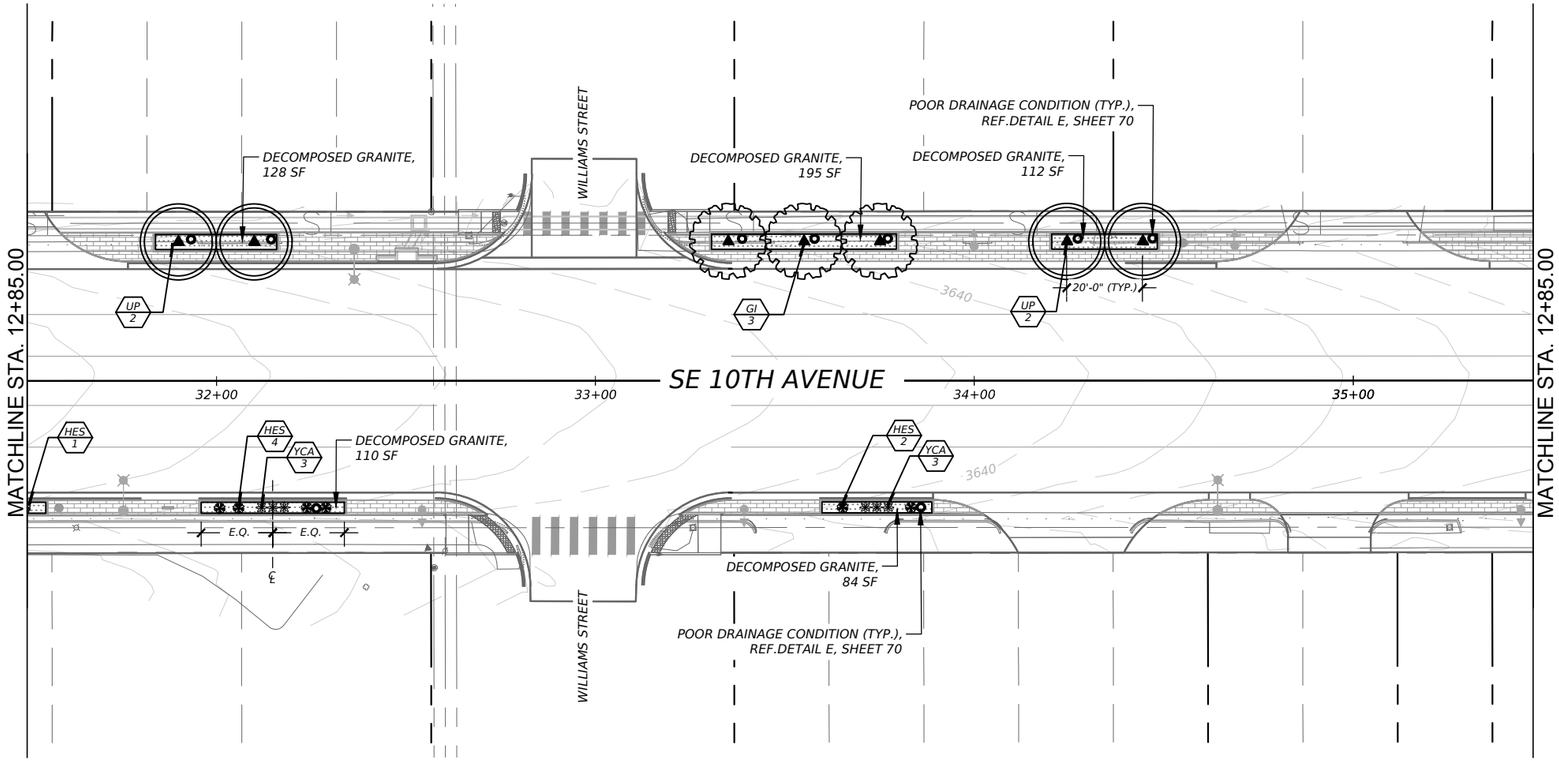

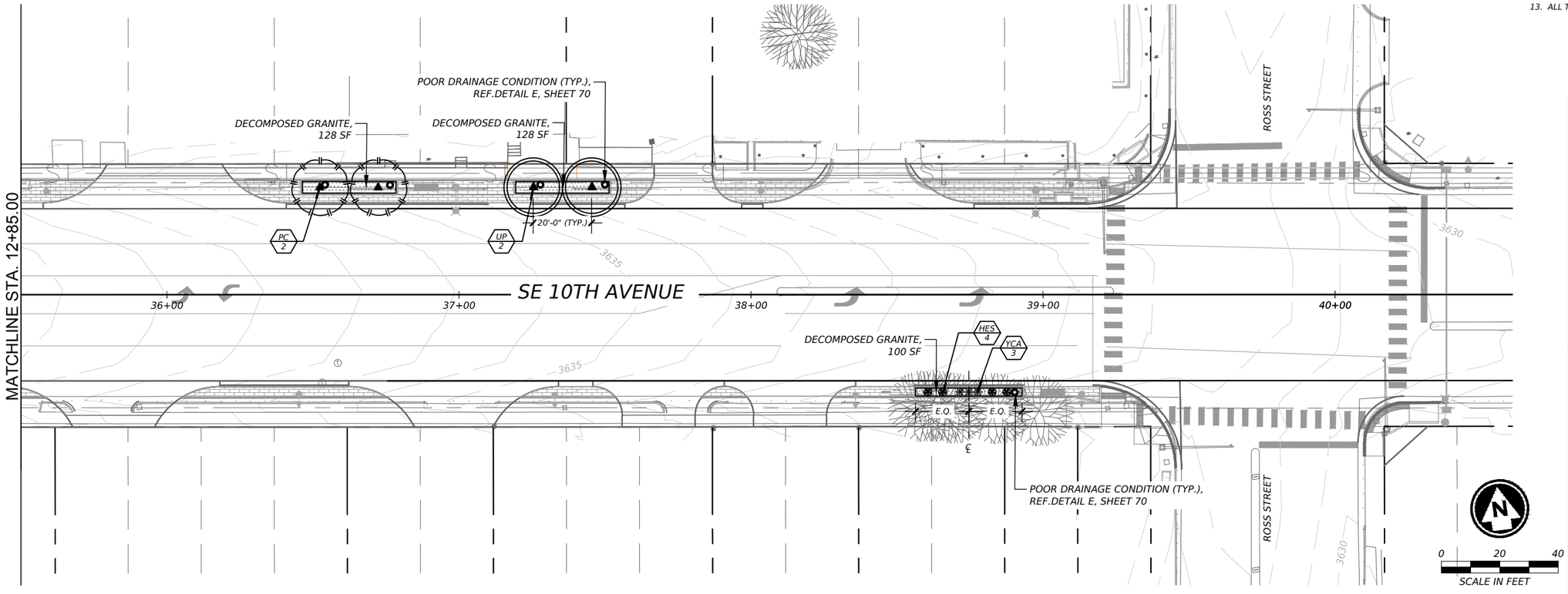

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NOTE: FOR FULL PLANT SCHEDULE, REF. SHEET 72.

LEGEND

POOR DRAINAGE CONDITION
REF. DETAIL E, SHEET 70

DECOMPOSED GRANITE
REF. DETAIL F, SHEET 70

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REGISTERED LANDSCAPE ARCHITECT
KATELYN B. GRASS
3549
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100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

LANDSCAPE PLAN

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		69

DATE: 3/1/2024 11:37:23 AM
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DN: CHD CK: KBG DW: CHD CK: KBG

IMAGE: STABILIZED DECOMPOSED GRANITE

DECOMPOSED GRANITE MATERIAL NOTES:

SUPPLIER:	WHIZ-Q STONE*
MATERIAL:	DECOMPOSED GRANITE
SIZE:	3/8" TO FINES

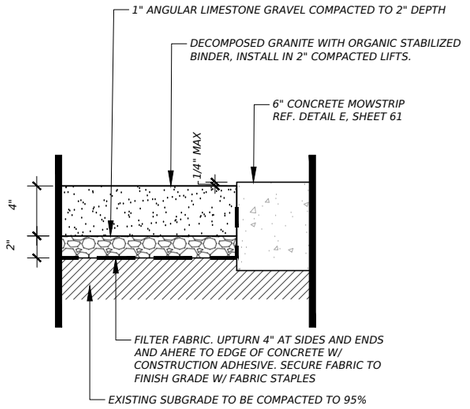
STABILIZED BINDER MATERIAL NOTES:

SUPPLIER:	STABILIZER SOLUTIONS*
PRODUCT:	ORGANIC STABILIZING BINDER
INSTALL:	PER MANUFACTURERS STANDARDS

INSTALL: STABILIZED DECOMPOSED GRANITE TO BE INSTALLED IN OPEN BED AREAS OUTSIDE OF PLANTING PIT. (SEE PLANTING DETAILS B & C THIS SHEET.

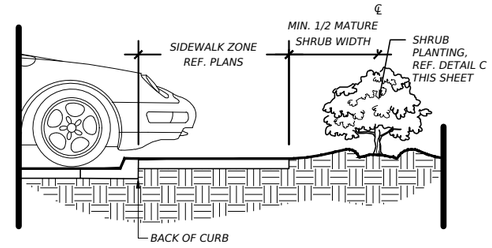
NOTE: CONTRACTOR SHALL PROVIDE 1 GALLON SAMPLE OF DECOMPOSED GRANITE AND CUT SHEET OF BINDER FOR REVIEW AND APPROVAL BY CITY AND/OR LANDSCAPE ARCHITECT

* OR APPROVED EQUAL



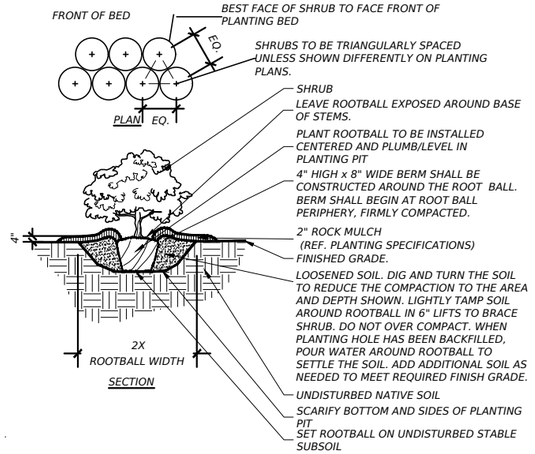
STABILIZED DECOMPOSED GRANITE — F

SCALE: 1"=1'-0"



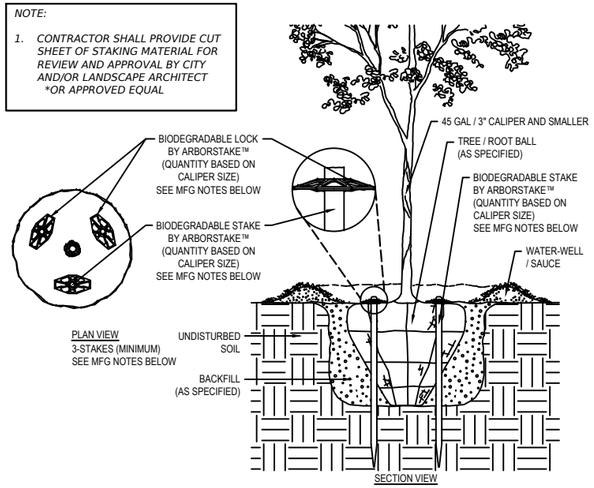
SHRUB PLANTING AT SIDEWALK — D

SCALE: N.T.S.



NOTE:

1. CONTRACTOR SHALL PROVIDE CUT SHEET OF STAKING MATERIAL FOR REVIEW AND APPROVAL BY CITY AND/OR LANDSCAPE ARCHITECT *OR APPROVED EQUAL



MANUFACTURER NOTES:
1. MINIMUM STAKE QUANTITY IS (3) - THEN - ADD (1) STAKE PER CALIPER INCH GREATER -THAN 3"
2. STAKES SHALL BE DRIVEN THROUGH THE ROOT BALL AS SHOWN.
3. ENSURE TRUNK BASE (ROOT FLARE) IS FREE FROM STAKING AND OTHER MATERIALS.
4. ABOVEGROUND GUYING AND/OR METALLIC STAKING SYSTEMS NOT ALLOWED AND SHALL BE REJECTED.
5. INSTALL STAKING SYSTEM AS PER MANUFACTURER'S INSTRUCTIONS.

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWING.
3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
5. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER L-LANDSC

ARBOR STAKES* TREE STAKING (PROVIDE 108) — A

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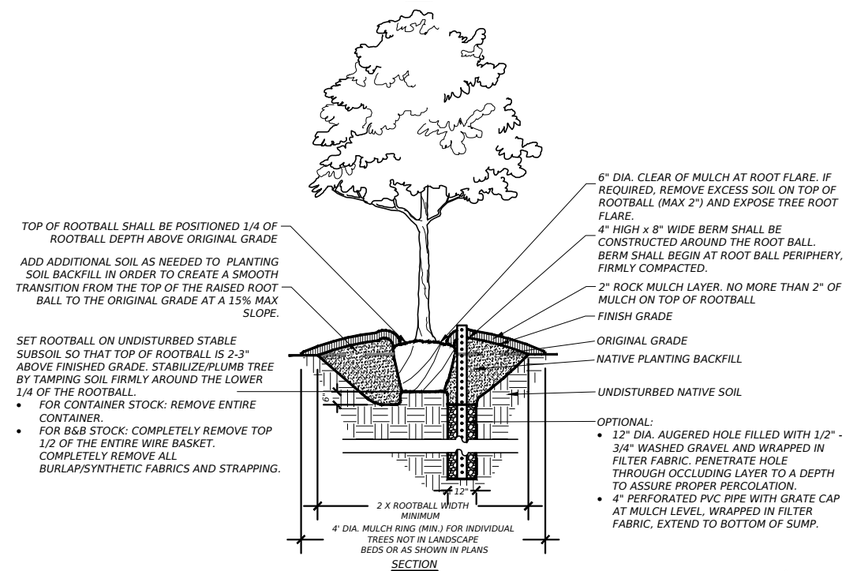
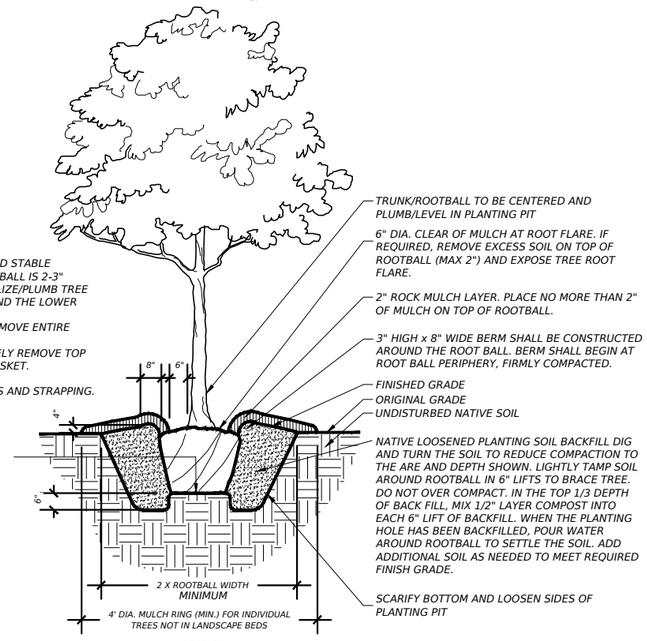


NOTES:
1. THIS DETAIL IS FOR TREE PLANTINGS IN TREE WELLS AND IN POOR DRAINAGE CONDITIONS ONLY. REF. DETAIL B THIS SHEET FOR TYPICAL TREE PLANTING.

POOR DRAINAGE CONDITION (PROVIDE 51) — E

SCALE: N.T.S.

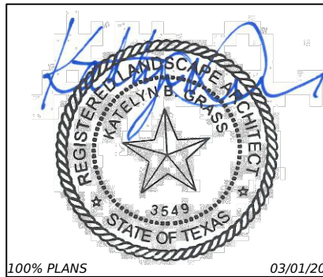


TYPICAL TREE PLANTING (UP TO 3" CALIPER) — B

SCALE: N.T.S.

TYPICAL SHRUB PLANTING — C

SCALE: N.T.S.



100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

LANDSCAPE DETAILS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		70

DATE: 3/1/2024 11:37:47 AM
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CK: KBG
DW: CHD
CK: KBG
DW: CHD

GENERAL LANDSCAPE SPECIFICATIONS AND NOTES

A. SCOPE OF WORK

1. THE WORK CONSISTS OF FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, TRANSPORTATION, AND ANY OTHER APPURTENANCES NECESSARY FOR THE COMPLETION OF THIS PROJECT AS SHOWN ON THE DRAWINGS, AS INCLUDED IN THE PLANT LIST, AND AS HEREIN SPECIFIED.

2. WORK SHALL INCLUDE MAINTENANCE AND WATERING OF ALL PLANTING AREAS OF THIS CONTRACT UNTIL CERTIFICATION OF ACCEPTABILITY BY THE OWNER.

B. PROTECTION OF EXISTING STRUCTURES

ALL EXISTING BUILDINGS, WALKS, WALLS, PAVING, PIPING, AND OTHER ITEMS OF CONSTRUCTION AND PLANTING ALREADY COMPLETED OR ESTABLISHED SHALL BE PROTECTED FROM DAMAGE BY THIS CONTRACTOR UNLESS OTHERWISE SPECIFIED. ALL DAMAGE RESULTING FROM NEGLIGENCE SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER.

C. PROTECTION OF EXISTING PLANT MATERIALS OUTSIDE LIMIT OF WORK

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UNAUTHORIZED CUTTING OR DAMAGE TO TREES AND SHRUBS EXISTING OR OTHERWISE, CAUSED BY CARELESS OPERATION OF EQUIPMENT, STOCKPILING OF MATERIALS, ETC. THIS SHALL INCLUDE COMPACTION BY DRIVING OR PARKING INSIDE THE DRIP-LINE OR THE SPILLING OF OIL, GASOLINE, OR OTHER DELETERIOUS MATERIALS WITHIN THE DRIP-LINE. NO MATERIALS SHALL BE BURNED WHERE THE HEAT WILL DAMAGE ANY PLANT. TREES KILLED OR DAMAGED SO THAT THEY ARE MISSHAPEN AND/ OR UNSIGHTLY SHALL BE REPLACED AT THE COST TO THE CONTRACTOR OF ONE HUNDRED DOLLARS ($100) PER CALIPER INCH ON AN ESCALATING SCALE WHICH ADDS AN ADDITIONAL TWENTY (20) PER CENT PER INCH OVER FOUR (4) INCHES CALIPER AS FIXED AND AGREED LIQUIDATED DAMAGES. CALIPER SHALL BE MEASURED SIX (6) INCHES ABOVE GROUND LEVEL FOR TREES UP TO AND INCLUDING FOUR (4) INCHES IN CALIPER AND TWELVE (12) INCHES ABOVE GROUND LEVEL FOR TREES OVER FOUR (4) INCHES IN CALIPER.

D. MATERIALS

1. GENERAL

SAMPLES OF MATERIALS AS LISTED BELOW SHALL BE SUBMITTED FOR APPROVAL, ON THE SITE OR AS OTHERWISE DETERMINED BY THE OWNER. UPON APPROVAL OF SAMPLES, DELIVERY OF MATERIALS MAY BEGIN.

MATERIALS	SAMPLES
MULCH	ONE (1) CUBIC FOOT
TOPSOIL	ONE (1) CUBIC YARD
PLANTS	ONE (1) OF EACH VARIETY

2. PLANT MATERIALS

A. PLANT SPECIES AND SIZE SHALL CONFORM TO THOSE INDICATED ON THE DRAWINGS. NOMENCLATURE SHALL CONFORM TO STANDARDIZED PLANT NAMES, 1942 EDITION. ALL NURSERY STOCK SHALL BE IN ACCORDANCE WITH GRADES AND STANDARDS AS STATED IN THE LATEST EDITION OF "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN. ALL PLANTS SHALL BE FRESHLY DUG, SOUND, HEALTHY, VIGOROUS, WELL-BRANCHED AND FREE OF DISEASE AND INSECTS, INSECT EGGS AND LARVAE AND SHALL HAVE ADEQUATE ROOT SYSTEMS. TREES FOR PLANTING IN ROWS SHALL BE UNIFORM IN SIZE AND SHAPE. ALL MATERIALS SHALL BE SUBJECT TO APPROVAL BY THE OWNER. WHERE ANY REQUIREMENTS ARE OMITTED FROM THE PLANT LIST, THE PLANTS FURNISHED SHALL BE NORMAL FOR THE VARIETY. PLANTS SHALL BE PRUNED PRIOR TO DELIVERY ONLY UPON THE APPROVAL OF THE OWNER.

B. MEASUREMENTS: THE HEIGHT AND/OR WIDTH OF TREES SHALL BE MEASURED FROM THE GROUND OR ACROSS THE NORMAL SPREAD OF BRANCHES WITH THE PLANTS IN THEIR NORMAL POSITION. THIS MEASUREMENT SHALL NOT INCLUDE THE IMMEDIATE TERMINAL GROWTH. PLANTS LARGER IN SIZE THAN THOSE SPECIFIED IN THE PLANT LIST MAY BE USED IF APPROVED BY THE OWNER. IF THE USE OF LARGER PLANTS IS APPROVED, THE BALL OF EARTH OR SPREAD OF ROOTS SHALL BE INCREASED IN PROPORTION TO THE SIZE OF THE PLANT.

C. INSPECTION: PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, OR UPON DELIVERY TO THE SITE, AS DETERMINED BY THE OWNER, FOR QUALITY, SIZE, AND VARIETY; SUCH APPROVAL SHALL NOT IMPAIR THE RIGHT OF INSPECTION AND REJECTION AT THE SITE DURING PROGRESS OF THE WORK OR AFTER COMPLETION FOR SIZE AND CONDITION OF BALLS OR ROOTS, LATENT DEFECTS OR INJURIES. REJECTED PLANTS SHALL BE REMOVED IMMEDIATELY FROM THE SITE. NOTICE REQUESTING INSPECTION SHALL BE SUBMITTED IN WRITING BY THE CONTRACTOR AT LEAST ONE (1) WEEK PRIOR TO ANTICIPATED DATE.

E. TOPSOIL

1. ASTM D5268, NATURAL, FRIABLE, FERTILE, FINE LOAMY SOIL POSSESSING CHARACTERISTICS OF REPRESENTATIVE TOPSOIL IN THE VICINITY THAT PRODUCES HEAVY GROWTH. TOPSOIL SHALL HAVE A PH RANGE OF 5.5 TO 7.4 PERCENT, FREE FROM SUBSOIL, OBJECTIONABLE WEEDS, LITTER, SODS, STIFF CLAY, STONES LARGER THAN 1-INCH IN DIAMETER, STUMPS, ROOTS, TRASH, HERBICIDES, TOXIC SUBSTANCES, OR ANY OTHER MATERIAL WHICH MAY BE HARMFUL TO PLANT GROWTH OR HINDER PLANTING OPERATIONS. TOP SOIL SHALL CONTAIN A MINIMUM OF THREE PERCENT ORGANIC MATERIAL.
2. SALVAGED OR EXISTING TOPSOIL: REUSE SUITABLE TOPSOIL STOCKPILED ON-SITE OR EXISTING TOPSOIL UNDISTURBED BY GRADING OR EXCAVATION OPERATIONS. CLEAN TOPSOIL OF ROOTS, PLANTS, SOD, STONES, CLAY LUMPS, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH.
3. VERIFY AMOUNT OF SUITABLE TOPSOIL STOCKPILED IF ANY, AND SUPPLY ADDITIONAL IMPORTED TOPSOIL AS NEEDED. FOUR (4) INCHES OF TOPSOIL TO BE PROVIDED FOR ALL TURF AREAS. TWENTY FOUR (24) INCHES OF TOPSOIL TO BE PROVIDED FOR ALL PLANTING AREAS WITHIN INTERIOR LANDSCAPE ISLANDS AND FOUNDATION PLANTINGS. FOR ALL OTHER PLANTING AREAS, TWELVE (12) INCHES OF TOPSOIL MINIMUM TO BE PROVIDED.
4. IMPORTED TOPSOIL: SUPPLEMENT SALVAGED TOPSOIL WITH IMPORTED TOPSOIL FROM OFF-SITE SOURCES WHEN EXISTING QUANTITIES ARE INSUFFICIENT.
5. OBTAIN TOPSOIL DISPLACED FROM NATURALLY WELL-DRAINED SITES WHERE TOPSOIL OCCURS AT LEAST 6 INCHES DEEP; DO NOT OBTAIN FROM AGRICULTURAL LAND, BOGS, OR MARSHES.
6. VERIFY BORROW AND DISPOSAL SITES ARE PERMITTED AS REQUIRED BY STATE AND LOCAL REGULATIONS. OBTAIN WRITTEN CONFIRMATION THAT PERMITS ARE CURRENT AND ACTIVE.
7. OBTAIN PERMITS REQUIRED BY STATE AND LOCAL REGULATIONS FOR TRANSPORTING TOPSOIL. PERMITS SHALL BE CURRENT AND ACTIVE.
8. AMEND EXISTING AND IMPORTED TOPSOIL AS INDICATED BELOW.

a. ORGANIC SOIL AMENDMENTS

1. MANURE: WELL-ROTTED, UNLEACHED, STABLE OR CATTLE MANURE CONTAINING NOT MORE THAN 25 PERCENT BY VOLUME OF STRAW, SAWDUST, OR OTHER BEDDING MATERIALS; FREE OF TOXIC SUBSTANCES, STONES, STICKS, SOIL, WEED SEED, AND MATERIAL HARMFUL TO PLANT GROWTH.
2. BACK TO NATURE COTTON BURR COMPOST OR APPROVED EQUIVALENT.
3. COMPOST: DECOMPOSED ORGANIC MATERIAL INCLUDING LEAF LITTER, MANURE, SAWDUST, PLANT TRIMMINGS AND/OR HAY, MIXED WITH SOIL.
4. PECAN HULLS: COMPOSTED PECAN HULLS FOR LOCAL SOURCE.
5. BIOSOLIDS: USE GRADE 1 CONTAINING LOWER PATHOGEN LEVELS.
6. WORM CASTINGS: EARTHWORMS.

b. INORGANIC SOIL AMENDMENTS

1. LIME: ASTM C602, CLASS O AGRICULTURAL LIMESTONE CONTAINING A MINIMUM OF 80 PERCENT CALCIUM CARBONATE EQUIVALENT WITH A MINIMUM OF 95 PERCENT PASSING NO. 8 SIEVE AND MINIMUM OF 55 PERCENT PASSING NO. 60 SIEVE.
2. SULFUR: GRANULAR, BIODEGRADABLE, CONTAINING A MINIMUM OF 90 PERCENT SULFUR, WITH A MINIMUM OF 99 PERCENT PASSING NO. 6 SIEVE AND A MAXIMUM OF 10 PERCENT PASSING NO. 40 SIEVE.
3. IRON SULFATE: GRANULATED FERROUS SULFATE CONTAINING A MINIMUM OF 20 PERCENT IRON AND 10 PERCENT SULFUR.
4. AGRICULTURAL GYPSUM: FINELY GROUND, CONTAINING A MINIMUM OF 90 PERCENT CALCIUM SULFATE.
5. SAND: CLEAN, WASHED, NATURAL OR MANUFACTURED, FREE OF TOXIC MATERIALS.

c. PLANTING SOIL MIX

1. PLANTING MIX MAY BE PROVIDED BY LIVING EARTH OR MINICK MATERIALS OR APPROVED EQUAL.
2. PLANTING MEDIUM CONTAINING 75 PERCENT SPECIFIED TOPSOIL MIXED WITH 15 PERCENT ORGANIC SOIL AMENDMENTS AND 10 PERCENT SHARP WASHED SAND. INSTALL TO DEPTHS, PER PLANTING DETAILS (24" MIN.) FINISHED GRADES OF PLANTING BEDS TO BE 2" BELOW FINISHED GRADE OF ADJACENT PAVING OR AS SHOWN ON GRADING PLAN.

2. SOD/SEED AREA TOPSOIL

ALL SOD AREAS TO RECEIVE 4" DEPTH (MIN) TOPSOIL PRIOR TO INSTALLATION. TOPSOIL SHALL BE NATURAL, FRIABLE, FERTILE, WITH 25% (MIN.) ORGANIC MATERIAL, AND FREE OF TRASH, DEBRIS, STONES, WEEDS, AND TWIGS/BRANCHES. THE PARTICLE SIZES SHALL BE SUCH THAT 98.5% OF THE TOPSOIL WILL PASS THROUGH A 1/2 INCH SCREEN, AND 99% MORE SHALL PASS THROUGH A 3/4 INCH SCREEN. TOPSOIL SHALL BE REVIEWED/APPROVED BY OWNER/LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. CONTRACTOR TO SUBMIT SAMPLES IN 1 GAL (MIN.) CONTAINER.

I. WATER

WATER NECESSARY FOR PLANTING AND MAINTENANCE SHALL BE OF SATISFACTORY QUALITY TO SUSTAIN AN ADEQUATE GROWTH OF PLANTS AND SHALL NOT CONTAIN HARMFUL, NATURAL OR MAN-MADE ELEMENTS DETRIMENTAL TO PLANTS. WATER MEETING THE ABOVE STANDARD SHALL BE OBTAINED ON THE SITE FROM THE OWNER, IF AVAILABLE, AND THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE ARRANGEMENTS FOR ITS USE BY HIS TANKS, HOSES, SPRINKLERS, ETC. IF SUCH WATER IS NOT AVAILABLE AT THE SITE, THE CONTRACTOR SHALL PROVIDE SUCH SATISFACTORY WATER FROM SOURCES OFF THE SITE AT NO ADDITIONAL COST TO THE OWNER.

J. COMMERCIAL FERTILIZER

COMMERCIAL FERTILIZER SHALL BE A COMPLETE FORMULA; IT SHALL BE UNIFORM IN COMPOSITION, DRY AND FREE FLOWING. THIS FERTILIZER SHALL BE DELIVERED TO THE SITE IN THE ORIGINAL UNOPENED CONTAINERS, EACH BEARING THE MANUFACTURER'S GUARANTEED STATEMENT OF ANALYSIS.

FIFTY PERCENT (50%) OF THE NITROGEN SHALL BE DERIVED FROM NATURAL ORGANIC SOURCES. THE FOLLOWING FERTILIZERS SHALL BE USED AND APPLIED AT RATES AS SUGGESTED BY MANUFACTURER'S SPECIFICATIONS:

1. SHRUBS AND TREES - MILORGANITE, OR APPROVED EQUAL
2. ANNUALS AND GROUNDCOVERS - OSMOCOTE/SIERRA BLEND 14-14-14
3. SOD - 8-8-8 FERTILIZER

IN ADDITION TO SURFACE APPLIED FERTILIZERS, ALL CONTAINER GROWN AND FIELD GROWN PLANT MATERIAL SHALL RECEIVE "AGRIFORM" PLANTING TABLETS 24-10-5 FORMULA, 21 GRAM OR EQUAL. THESE TABLETS SHALL BE PLACED AT A DEPTH OF ROOT BALL AT THE RATE AS SPECIFIED BY MANUFACTURER.

K. MULCH

MULCH MATERIAL SHALL BE MOISTENED AT THE TIME OF APPLICATION TO PREVENT WIND DISPLACEMENT, AND APPLIED AT A DEPTH OF 2-3 INCHES AS NOTED IN THE PLANS AND DETAIL. SEE PLANT LIST FOR TYPE OF MATERIAL AND GRADE.

L. DIGGING AND HANDLING

1. PROTECT ROOTS OR BALLS OF PLANTS AT ALL TIMES FROM SUN AND DRYING WINDS, WATER AND FREEZING, AS NECESSARY UNTIL PLANTING. PLANT MATERIALS SHALL BE ADEQUATELY PACKED TO PREVENT BREAKAGE AND DRYING OUT DURING TRANSIT. TREES TRANSPORTED MORE THAN TEN (10) MILES OR WHICH ARE NOT PLANTED WITHIN THREE (3) DAYS OF DELIVERY TO SITE SHALL BE SPRAYED WITH AN ANTI-TRANSPIRANT PRODUCT ("WILTPRUF" OR EQUAL) TO MINIMIZE TRANSPIRATIONAL WATER LOSS.

2. BALLED AND BURLAPPED PLANTS (B&B) SHALL BE DUG WITH FIRM, NATURAL BALLS OF SOIL OF SUFFICIENT SIZE TO ENCOMPASS THE FIBROUS AND FEEDING ROOTS OF THE PLANTS. NO PLANTS MOVED WITH A BALL SHALL BE PLANTED IF THE BALL IS CRACKED OR BROKEN. PLANTS BALLED AND BURLAPPED OR CONTAINER GROWN SHALL NOT BE HANDLED BY STEMS.

3. PLANTS MARKED "BR" IN THE PLANT LIST SHALL BE DUG WITH BARE ROOTS. THE ROOTS SHALL NOT BE CUT WITHIN THE MINIMUM SPREAD SPECIFIED IN THE PLANT LIST. CARE SHALL BE EXERCISED THAT THE ROOTS DO NOT DRY OUT IN MOVING AND PRIOR TO PLANTING.

4. PROTECTION OF PALMS (IF APPLICABLE): ONLY A MINIMUM OF FRONDS SHALL BE REMOVED FROM THE CROWN OF THE PALM TREES TO FACILITATE MOVING AND HANDLING. CLEAR TRUNK (CT) SHALL BE AS SPECIFIED AFTER THE MINIMUM OF FRONDS HAVE BEEN REMOVED. ALL PALMS SHALL BE BRACED PER DETAIL.

5. EXCAVATION OF TREE PITS SHALL BE DONE USING EXTREME CARE TO AVOID DAMAGE TO SURFACE AND SUBSURFACE ELEMENTS SUCH AS UTILITIES OR HARDSCAPE ELEMENTS, FOOTERS AND PREPARED SUB- BASES.

M. CONTAINER GROWN STOCK

1. ALL CONTAINER GROWN MATERIAL SHALL BE HEALTHY, VIGOROUS, WELL-ROOTED PLANTS AND ESTABLISHED IN THE CONTAINER IN WHICH THEY ARE SOLD. THE PLANTS SHALL HAVE TOPS WHICH ARE OF GOOD QUALITY AND ARE IN A HEALTHY GROWING CONDITION.
2. AN ESTABLISHED CONTAINER GROWN PLANT SHALL BE TRANSPLANTED INTO A CONTAINER AND GROWN IN THAT CONTAINER SUFFICIENTLY LONG FOR THE NEW FIBROUS ROOTS TO HAVE DEVELOPED SO THAT THE ROOT MASS WILL RETAIN ITS SHAPE AND HOLD TOGETHER WHEN REMOVED FROM THE CONTAINER. CONTAINER GROWN STOCK SHALL NOT BE HANDLED BY THEIR STEMS.
3. PLANT ROOTS BOUND IN CONTAINERS SHALL NOT BE ACCEPTABLE.
4. SUBSTITUTION OF NON-CONTAINER GROWN MATERIAL FOR MATERIAL EXPLICITLY SPECIFIED TO BE CONTAINER GROWN WILL NOT BE PERMITTED UNLESS WRITTEN APPROVAL IS OBTAINED FROM THE OWNER AND LANDSCAPE ARCHITECT.

N. COLLECTED STOCK

WHEN THE USE OF COLLECTED STOCK IS PERMITTED AS INDICATED ON THE PLANT LIST SCHEDULE, THE MINIMUM SIZES OF ROOTBALLS SHALL BE EQUAL TO THAT SPECIFIED FOR THE NEXT LARGER SIZE OF NURSERY GROWN STOCK OF THE SAME VARIETY.

O. NATIVE STOCK

PLANTS COLLECTED FROM WILD OR NATIVE STANDS SHALL BE CONSIDERED NURSERY GROWN WHEN THEY HAVE BEEN SUCCESSFULLY REESTABLISHED IN A NURSERY ROW AND GROWN UNDER REGULAR NURSERY CULTURAL PRACTICES FOR A MINIMUM OF TWO (2) GROWING SEASONS AND HAVE ATTAINED ADEQUATE ROOT AND TOP GROWTH TO INDICATE FULL RECOVERY FROM TRANSPLANTING INTO THE NURSERY ROW.

P. MATERIALS LIST

QUANTITIES NECESSARY TO COMPLETE THE WORK ON THE DRAWINGS SHALL BE FURNISHED BY THE CONTRACTOR. QUANTITY ESTIMATES HAVE BEEN MADE CAREFULLY, BUT THE LANDSCAPE ARCHITECT OR OWNER ASSUMES NO LIABILITY FOR OMISSIONS OR ERRORS. SHOULD A DISCREPANCY OCCUR BETWEEN THE BIDDERS TAKE OFF AND THE PLANT LIST QUANTITY, THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED FOR CLARIFICATION PRIOR TO THE SUBMISSIONS OF BIDS. ALL DIMENSIONS AND/OR SIZES SPECIFIED SHALL BE THE MINIMUM ACCEPTABLE SIZE

Q. FINE GRADING

1. FINE GRADING UNDER THIS CONTRACT SHALL CONSIST OF FINAL FINISHED GRADING OF LAWN AND PLANTING AREAS THAT HAVE BEEN ROUGH GRADED BY OTHERS. BERMING AS SHOWN ON THE DRAWINGS SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR, UNLESS OTHERWISE NOTED.

2. THE LANDSCAPE CONTRACTOR SHALL FINE GRADE THE LAWN AND PLANTING AREAS TO BRING THE ROUGH GRADE UP TO FINAL FINISHED GRADE ALLOWING FOR THICKNESS OF SOD AND/OR MULCH DEPTH. THIS CONTRACTOR SHALL FINE GRADE BY HAND AND/OR WITH ALL EQUIPMENT NECESSARY INCLUDING A GRADING TRACTOR WITH FRONT-END LOADER FOR TRANSPORTING SOIL WITHIN THE SITE.

3. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER. AREAS ADJACENT TO BUILDINGS SHALL SLOPE AWAY FROM THE BUILDINGS.

R. PLANTING PROCEDURES

1. CLEANING UP BEFORE COMMENCING WORK: THE CONTRACTOR SHALL CLEAN UP WORK AND SURROUNDING AREAS OF ALL RUBBISH OR OBJECTIONABLE MATTER. ALL MORTAR, CEMENT, AND TOXIC MATERIAL SHALL BE REMOVED FROM THE SURFACE OF ALL PLANT BEDS. THESE MATERIALS SHALL NOT BE MIXED WITH THE SOIL. SHOULD THE CONTRACTOR FIND SUCH SOIL CONDITIONS BENEATH THE SOIL WHICH WILL IN ANY WAY ADVERSELY AFFECT THE PLANT GROWTH, HE SHALL IMMEDIATELY CALL IT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT OR OWNER. FAILURE TO DO SO BEFORE PLANTING SHALL MAKE THE CORRECTIVE MEASURES THE RESPONSIBILITY OF THE CONTRACTOR.

2. VERIFY LOCATIONS OF ALL UTILITIES, CONDUITS, SUPPLY LINES AND CABLES, INCLUDING BUT NOT LIMITED TO: ELECTRIC, GAS (LINES AND TANKS), WATER, SANITARY SEWER, STORMWATER LINES, CABLE AND TELEPHONE. PROPERLY MAINTAIN AND PROTECT EXISTING UTILITIES.

3. SUBGRADE EXCAVATION: SITE CONTRACTOR IS RESPONSIBLE TO REMOVE ALL EXISTING AND IMPORTED LIMEROCK AND LIMEROCK SUB-BASE FROM ALL LANDSCAPE PLANTING AREAS TO A MINIMUM DEPTH OF 36". SITE CONTRACTOR IS RESPONSIBLE TO BACKFILL THESE PLANTING AREAS TO ROUGH FINISHED GRADE WITH CLEAN TOPSOIL FROM AN ON-SITE SOURCE OR AN IMPORTED SOURCE. IF LIMEROCK OR OTHER ADVERSE CONDITIONS OCCUR IN PLANTED AREAS AFTER 36" DEEP EXCAVATION BY SITE CONTRACTOR, AND POSITIVE DRAINAGE CAN NOT BE ACHIEVED, LANDSCAPE CONTRACTOR SHALL CONTACT LANDSCAPE ARCHITECT OR OWNER.

4. FURNISH NURSERY'S CERTIFICATE OF COMPLIANCE WITH ALL REQUIREMENTS AS HEREIN SPECIFIED AND REQUIRED. INSPECT AND SELECT PLANT MATERIALS BEFORE PLANTS ARE DUG AT NURSERY OR GROWING SITE.

5. GENERAL: COMPLY WITH APPLICABLE FEDERAL, STATE, COUNTY, AND LOCAL REGULATIONS GOVERNING LANDSCAPE MATERIALS AND WORK. CONFORM TO ACCEPTED HORTICULTURAL PRACTICES AS USED IN THE TRADE. PLANTS SHALL BE PROTECTED UPON ARRIVAL AT THE SITE BY BEING THOROUGHLY WATERED AND PROPERLY MAINTAINED UNTIL PLANTED. PLANTS SHALL NOT REMAIN UNPROTECTED FOR A PERIOD EXCEEDING TWENTY-FOUR (24) HOURS. AT ALL TIMES WORKMANLIKE METHODS CUSTOMARY IN GOOD HORTICULTURAL PRACTICES SHALL BE EXERCISED.

6. THE WORK SHALL BE COORDINATED WITH OTHER TRADES TO PREVENT CONFLICTS. COORDINATE THE PLANTING WITH THE IRRIGATION WORK TO ASSURE AVAILABILITY OF WATER AND PROPER LOCATION OF IRRIGATION ITEMS AND PLANTS.

7. ALL PLANTING PITS SHALL BE EXCAVATED TO SIZE AND DEPTH IN ACCORDANCE WITH THE USA STANDARD FOR NURSERY STOCK 260.1, UNLESS SHOWN OTHERWISE ON THE DRAWINGS, AND BACKFILLED WITH THE PREPARED PLANTING SOIL AS SPECIFIED HEREIN BEFORE (SECTION H). TEST ALL TREE PITS WITH WATER BEFORE PLANTING TO ASSURE PROPER DRAINAGE PERCOLATION IS AVAILABLE. NO ALLOWANCE WILL BE MADE FOR LOST PLANTS DUE TO IMPROPER DRAINAGE. IF POOR DRAINAGE EXISTS, UTILIZE PLANTING DETAIL THAT ADDRESSES THIS CONDITION. TREES SHALL BE SET PLUMB AND HELD IN POSITION UNTIL THE PLANTING MIXTURE HAS BEEN FLUSHED INTO PLACE WITH A SLOW, FULL HOSE STREAM. ALL PLANTING SHALL BE PERFORMED BY PERSONNEL FAMILIAR WITH PLANTING PROCEDURE AND UNDER THE SUPERVISION OF A QUALIFIED PLANTING FOREMAN. PROPER "JETTING IN" SHALL BE ASSURED TO ELIMINATE AIR POCKETS AROUND THE ROOTS. "JET STICK" OR EQUAL IS RECOMMENDED.

8. TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO BUILDINGS AND BUILDING STRUCTURES WHILE INSTALLING TREES.

9. SOIL MIXTURE SHALL BE AS SPECIFIED IN SECTION H OF THESE SPECIFICATIONS. IN ADDITION, EACH PLANTING PIT SHALL RECEIVE 21-GRAM "AGRIFORM" PLANTING TABLETS PER MANUFACTURER'S SPECIFICATIONS OR AS FOLLOWS:

- TWO (2) TABLETS PER 1 GAL. PLANT
- THREE (3) TABLETS PER 3 GAL. PLANT
- FOUR (4) TABLETS PER 10 GAL. PLANT
- LARGER MATERIAL - TWO (2) TABLETS PER 1/2" OF TRUNK CALIPER

10. TREES AND SHRUBS SHALL BE SET STRAIGHT AND AT SUCH A LEVEL THAT AFTER SETTLEMENT, THE PLANT CROWN WILL STAND ONE (1) TO TWO (2) INCHES ABOVE GRADE. EACH PLANT SHALL BE SET IN THE CENTER OF THE PIT. PLANTING SOIL MIXTURE SHALL BE BACKFILLED AND THOROUGHLY TAMPED AROUND THE BALL AND SHALL BE SETTLED BY WATER AFTER TAMPING.

11. FILL HOLE WITH SOIL MIXTURE, MAKING CERTAIN ALL SOIL IS SATURATED. TO DO THIS, FILL HOLE WITH WATER AND ALLOW TO SOAK MINIMUM TWENTY (20) MINUTES, STIRRING IF NECESSARY TO GET SOIL THOROUGHLY WET. PACK LIGHTLY WITH FEET. ADD MORE WET SOIL MIXTURE. DO NOT COVER TOP OF BALL WITH SOIL MIXTURE, ONLY WITH MULCH. ALL BURLAP, ROPE, WIRES, ETC., SHALL BE REMOVED FROM THE SIDES AND TOPS OF BALLS, BUT NO BURLAP SHALL BE PULLED FROM UNDERNEATH.

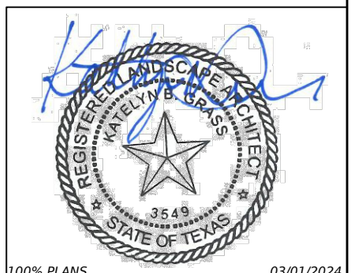
12. PRUNING: EACH TREE SHALL BE PRUNED TO PRESERVE THE NATURAL CHARACTER OF THE PLANT AS SHOWN ON THE DRAWINGS. ALL SOFT WOOD OR SUCKER GROWTH AND ALL BROKEN OR BADLY DAMAGED BRANCHES SHALL BE REMOVED WITH A CLEAN CUT.

13. SHRUBS AND GROUND COVER PLANTS SHALL BE EVENLY SPACED IN ACCORDANCE WITH THE DRAWINGS AND AS INDICATED ON THE PLANT LIST. CULTIVATE ALL PLANTING AREAS TO A MINIMUM DEPTH OF 6", REMOVE AND DISPOSE ALL DEBRIS. TILL INTO TOP 4" THE PLANTING SOIL MIX AS SPECIFIED IN SECTION E. THOROUGHLY WATER ALL PLANTS AFTER INSTALLATION.

14. TREE GUYING AND BRACING SHALL BE INSTALLED BY THE LANDSCAPE CONTRACTOR IN ACCORDANCE WITH THE PLANS TO INSURE STABILITY AND MAINTAIN TREES IN AN UPRIGHT POSITION. IF THE LANDSCAPE CONTRACTOR AND OWNER DECIDE TO WAIVE THE TREE GUYING AND BRACING, THE OWNER SHALL NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OF THEIR INTENTIONS AND AGREE TO HOLD HARMLESS THE LANDSCAPE ARCHITECT IN THE EVENT ANY TREES FALL DOWN AND DAMAGE PERSON OR PROPERTY.

15. MULCHING: PROVIDE A THREE (3) INCH MINIMUM LAYER OF SPECIFIED MULCH OVER THE ENTIRE AREA OF EACH SHRUB BED, GROUND COVER AND VINE BED AND TREE PIT.

16. HERBICIDE WEED CONTROL: ALL PLANT BEDS SHALL BE KEPT FREE OF NOXIOUS WEEDS UNTIL FINAL ACCEPTANCE OF WORK. IF DIRECTED BY THE OWNER, "ROUND-UP" SHALL BE APPLIED FOR WEED CONTROL BY QUALIFIED PERSONNEL TO ALL PLANTING AREAS IN SPOT APPLICATIONS PER MANUFACTURER'S PRECAUTIONS AND SPECIFICATIONS. PRIOR TO FINAL INSPECTION, TREAT ALL PLANTING BEDS WITH AN APPROVED PRE-EMERGENT HERBICIDE AT AN APPLICATION RATE RECOMMENDED BY THE MANUFACTURER.



100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

LANDSCAPE SPECIFICATIONS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
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GENERAL LANDSCAPE SPECIFICATIONS AND NOTES

S. LAWN SODDING

1. THE WORK CONSISTS OF LAWN BED PREPARATION, SOIL PREPARATION, AND SODDING COMPLETE, IN STRICT ACCORDANCE WITH THE SPECIFICATIONS AND THE APPLICABLE DRAWINGS TO PRODUCE A GRASS LAWN ACCEPTABLE TO THE OWNER.

2. LAWN BED PREPARATION: ALL AREAS THAT ARE TO BE SODDED SHALL BE CLEARED OF ANY ROUGH GRASS, WEEDS, AND DEBRIS, AND THE GROUND BROUGHT TO AN EVEN GRADE. THE WHOLE SURFACE SHALL BE ROLLED WITH A ROLLER WEIGHING NOT MORE THAN ONE-HUNDRED (100) POUNDS PER FOOT OF WIDTH. DURING THE ROLLING, ALL DEPRESSIONS CAUSED BY SETTLEMENT OF ROLLING SHALL BE FILLED WITH ADDITIONAL SOIL, AND THE SURFACE SHALL BE REGRADED AND ROLLED UNTIL PRESENTING A SMOOTH AND EVEN FINISH THAT IS UP TO THE REQUIRED GRADE.

3. SOIL PREPARATION: PREPARE LOOSE BED FOUR (4) INCHES DEEP. APPLY FERTILIZER AT RATE OF TWENTY (20) POUNDS PER ONE THOUSAND (1000) SQUARE FEET. APPLICATION SHALL BE UNIFORM, UTILIZING APPROVED MECHANICAL SPREADERS. MIX FERTILIZER THOROUGHLY WITH THE SOIL TO A DEPTH OF THREE (3) INCHES. HAND RAKE UNTIL ALL BUMPS AND DEPRESSIONS ARE REMOVED. WET PREPARED AREA THOROUGHLY.

4. SODDING

A. THE CONTRACTOR SHALL SOD ALL AREAS THAT ARE NOT PAVED OR PLANTED AS DESIGNATED ON THE DRAWINGS WITHIN THE CONTRACT LIMITS, UNLESS SPECIFICALLY NOTED OTHERWISE.

B. THE SOD SHALL BE CERTIFIED TO MEET THE STATE PLANT BOARD SPECIFICATIONS, ABSOLUTELY TRUE TO VARIETAL TYPE, AND FREE FROM WEEDS, FUNGUS, INSECTS AND DISEASE OF ANY KIND.

C. SOD PANELS SHALL BE LAID TIGHTLY TOGETHER SO AS TO MAKE A SOLID SODDED LAWN AREA. SOD SHALL BE LAID UNIFORMLY AGAINST THE EDGES OF ALL CURBS AND OTHER HARDSCAPE ELEMENTS, PAVED AND PLANTED AREAS. ADJACENT TO BUILDINGS, A FOUR INCH MULCH STRIP SHALL BE PROVIDED. IMMEDIATELY FOLLOWING SOD LAYING, THE LAWN AREAS SHALL BE ROLLED WITH A LAWN ROLLER CUSTOMARILY USED FOR SUCH PURPOSES, AND THEN THOROUGHLY IRRIGATED. IF, IN THE OPINION OF THE OWNER, TOP-DRESSING IS NECESSARY AFTER ROLLING TO FILL THE VOIDS BETWEEN THE SOD PANELS AND TO EVEN OUT INCONSISTENCIES IN THE SOD, CLEAN SAND AS APPROVED BY THE LANDSCAPE ARCHITECT OR OWNER SHALL BE UNIFORMLY SPREAD OVER THE ENTIRE SURFACE OF THE SOD AND THOROUGHLY WATERED IN.

D. DURING DELIVERY, PRIOR TO AND DURING THE PLANTING OF THE LAWN AREAS, THE SOD PANELS SHALL AT ALL TIMES BE PROTECTED FROM EXCESSIVE DRYING AND UNNECESSARY EXPOSURE OF THE ROOTS TO THE SUN. ALL SOD SHALL BE STACKED SO AS NOT TO BE DAMAGED BY SWEATING OR EXCESSIVE HEAT AND MOISTURE.

5. SEEDING

A. PROVIDE FRESH, CLEAN, NEW CROP LAWN SEED MIXTURE. FURNISH TO OWNER DEALERS GUARANTEED STATEMENT OF COMPOSITION OF MIXTURE AND PERCENTAGE OF PURITY AND GERMINATION OF EACH VARIETY.

B. SEED MIXTURE: PROVIDE SEED OF GRASS SPECIES AND VARIETIES, PROPORTIONS BY WEIGHT AND MINIMUM PERCENTAGES OF PURITY, GERMINATION, AND MAXIMUM PERCENTAGE OF WEED SEED. SEED MIXTURES VARY BY REGION AND SEASON AND SHALL COMPLY WITH STATE DO AND LOCAL SOIL CONSERVATION SERVICE STANDARDS FOR LAWN TURF.

C. DO NOT PERFORM SEEDING IN WINDY CONDITIONS.

D. SEEDING SHALL BE DISPERSED IN 2 DIRECTIONS AT RIGHT ANGLES TO EACH OTHER.

E. PERMANENTLY SEED AND MULCH CUT AND FILL SLOPES AS CONSTRUCTION PROCEEDS TO EXTENT CONSIDERED DESIRABLE AND PRACTICAL. IN THE EVENT IT IS NOT PRACTICAL TO SEED AREAS, SLOPES SHALL BE STABILIZED WITH STRAW MULCH AND TACKIFIER, BONDED FIBER MATRIX, NETTING, BLANKETS OR OTHER MEANS TO REDUCE THE EROSIVE POTENTIAL OF THE AREA.

F. SEED LAWN AREAS BY SOWING EVENLY WITH APPROVED MECHANICAL SEEDER AT RATE OF MINIMUM OF 6 POUNDS PER 1,000 SQUARE FEET. AMOUNT WILL VARY BASED ON VARIETY AND/OR SPECIES. CULTI-PACKER OR APPROVED SIMILAR EQUIPMENT MAY BE USED TO COVER SEED AND TO FORM SEEDBED IN ONE OPERATION. IN AREAS INACCESSIBLE TO CUTI-PACKER, LIGHTLY RAKE SEEDED GROUND WITH FLEXIBLE RAKES AD ROLL WITH WATER BALLAST ROLLER. AFTER ROLLING, MULCH WITH STRAW MULCH AT THE RATE OF 2 TONS PER ACRE.

G. SURFACE LAYER OF SOIL FOR SEEDED AREAS SHALL BE KEPT MOIST DURING GERMINATION PERIOD. WATER SEEDED AREAS TWICE FIRST WEEK TO MINIMUM DEPTH OF 6 INCHES WITH FINE SPRAY AND ONCE PER WEEK THEREAFTER AS NECESSARY TO SUPPLEMENT NATURAL RAIN TO EQUIVALENT OF 6 INCHES DEPTH.

H. CONTRACTOR TO REAPPLY SEED AS NECESSARY IN ORDER TO GET ALL SEEDED AREAS ESTABLISHED AS INTENDED.

6. LAWN MAINTENANCE:

A. WITHIN THE CONTRACT LIMITS, THE CONTRACTOR SHALL PRODUCE A DENSE, WELL ESTABLISHED LAWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND RE-SODDING OF ALL ERODED, SUNKEN OR BARE SPOTS UNTIL CERTIFICATION OF ACCEPTABILITY BY THE LANDSCAPE ARCHITECT OR OWNER. REPAIRED SODDING SHALL BE ACCOMPLISHED AS IN THE ORIGINAL WORK (INCLUDING REGRADING IF NECESSARY).

B. WATER EVERY DAY FOR TEN (10) SUCCESSIVE DAYS, THEN WATER THREE (3) TIMES PER WEEK (AT EVEN INTERVALS) FOR TWO (2) ADDITIONAL WEEKS. ALL WATERING SHALL BE OF SUFFICIENT QUANTITY TO WET OR RESTORE WATER TO DEPTH OF FOUR (4) INCHES. CONTRACTOR TO DETERMINE IF SITE IS IN A DROUGHT RESTRICTION AREA AND MUST FOLLOW CITY/ COUNTY PROTOCOL IF ANY ARE IN PLACE.

T. CLEAN-UP

UPON COMPLETION OF ALL PLANTING WORK AND BEFORE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL MATERIAL, EQUIPMENT, AND DEBRIS RESULTING FROM HIS WORK. ALL PAVED AREAS SHALL BE BROOM CLEANED AND THE SITE LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE.

U. PLANT MATERIAL MAINTENANCE

ALL PLANTS AND PLANTING INCLUDED UNDER THIS CONTRACT SHALL BE MAINTAINED BY WATERING, CULTIVATING, SPRAYING, AND ALL OTHER OPERATIONS (SUCH AS RE-STAKING OR REPAIRING GUY SUPPORTS) NECESSARY TO INSURE A HEALTHY CONDITION BY THE CONTRACTOR UNTIL CERTIFICATION OF ACCEPTABILITY BY THE LANDSCAPE ARCHITECT OR OWNER. MAINTENANCE AFTER THE CERTIFICATION OF ACCEPTABILITY SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS IN THIS SECTION. CONTRACTORS ARE REQUESTED TO PROVIDE A BID ESTIMATE TO COVER LANDSCAPE AND IRRIGATION MAINTENANCE FOR A PERIOD OF 90 CALENDAR DAYS COMMENCING AFTER ACCEPTANCE.

V. MAINTENANCE (ALTERNATE BID ITEM)

1. CONTRACTORS ARE REQUESTED TO PROVIDE A BID ESTIMATE FOR MAINTENANCE FOLLOWING THE INITIAL 90-DAY MAINTENANCE PERIOD ON A COST PER MONTH BASIS.

W. GUARANTEE

1. THE LIFE AND SATISFACTORY CONDITION OF ALL PLANT MATERIAL INSTALLED BY THE LANDSCAPE CONTRACTOR SHALL BE GUARANTEED BY THE CONTRACTOR FOR A MINIMUM OF ONE (1) CALENDAR YEAR COMMENCING AT THE TIME OF CERTIFICATION OF ACCEPTABILITY BY THE LANDSCAPE ARCHITECT OR OWNER.

2. THE LIFE AND SATISFACTORY CONDITION OF ALL OTHER PLANT MATERIAL (INCLUDING SOD) INSTALLED BY THE LANDSCAPE CONTRACTOR SHALL BE GUARANTEED BY THE CONTRACTOR FOR A MINIMUM OF 90 CALENDAR DAYS, COMMENCING AT THE TIME OF CERTIFICATION OF ACCEPTABILITY BY THE LANDSCAPE ARCHITECT OR OWNER.

3. REPLACEMENT: ANY PLANT NOT FOUND IN A HEALTHY GROWING CONDITION AT THE END OF THE GUARANTEE PERIOD SHALL BE REMOVED FROM THE SITE AND REPLACED AS SOON AS WEATHER CONDITIONS PERMIT. ALL REPLACEMENTS SHALL BE PLANTS OF THE SAME KIND AND SIZE AS SPECIFIED IN THE PLANT LIST. THEY SHALL BE FURNISHED PLANTED AND MULCHED AS SPECIFIED UNDER "PLANTING", AT NO ADDITIONAL COST TO THE OWNER.

4. IN THE EVENT THE OWNER DOES NOT CONTRACT WITH THE CONTRACTOR FOR LANDSCAPE (AND IRRIGATION) MAINTENANCE, THE CONTRACTOR IS ENCOURAGED TO VISIT THE PROJECT SITE PERIODICALLY DURING THE ONE YEAR WARRANTY PERIOD TO EVALUATE MAINTENANCE PROCEDURES BEING PERFORMED BY THE OWNER, AND SHALL NOTIFY THE OWNER IN WRITING OF MAINTENANCE PROCEDURES OR CONDITIONS WHICH THREATEN VIGOROUS AND HEALTH PLANT GROWTH. IT IS SUGGESTED SUCH SITE VISITS SHALL BE CONDUCTED A MINIMUM OF ONCE PER MONTH FOR A PERIOD OF TWELVE (12) MONTHS FROM THE DATE OF ACCEPTANCE.

X. FINAL INSPECTION AND ACCEPTANCE OF WORK

FINAL INSPECTION AT THE END OF THE GUARANTEE PERIOD SHALL BE ON PLANTING, CONSTRUCTION AND ALL OTHER INCIDENTAL WORK PERTAINING TO THIS CONTRACT. ANY REPLACEMENT AT THIS TIME SHALL BE SUBJECT TO THE SAME ONE (1) YEAR GUARANTEE (OR AS SPECIFIED BY THE LANDSCAPE ARCHITECT OR OWNER IN WRITING) BEGINNING WITH THE TIME OF REPLACEMENT AND ENDING WITH THE SAME INSPECTION AND ACCEPTANCE HEREIN DESCRIBED.

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	REMARKS
TREES					
	GI	12	GLEDITSIA TRIACANTHOS INERMIS / THORNLESS HONEYLOCUST	3" CAL, 12` HT, 4`-5` SPR	FULL, STRAIGHT, SINGLE LEADER
	PC	12	PISTACIA CHINENSIS / CHINESE PISTACHE	3" CAL, 12` HT, 4`-5` SPR	FULL, STRAIGHT, SINGLE LEADER
	UP	12	ULMUS PARVIFOLIA / LACEBARK ELM	3" CAL, 12` HT, 4`-5` SPR	FULL, STRAIGHT, SINGLE LEADER
SHRUBS					
	HES	56	HESPERALOE PARVIFLORA / RED YUCCA	18" HT, 18" SPR	FULL AND MATCHING, SPACING AS SHOWN, 7 GALLON
	YCA	45	YUCCA FILAMENTOSA / ADAM`S NEEDLE	18" HT, 18" SPR, 36" OC	FULL AND MATCHING, 36" O.C, SPACING, 7 GALLON
GROUND COVERS					
	--	4,139 SF	DECOMPOSED GRANITE	N/A	2" ROCK MULCH (LOOSE DECOMPOSED GRANITE) OR STABILIZED DECOMPOSED GRANITE. REF. DETAIL F, SHEET 70.

NOTE: PLANT QUANTITIES ARE PROVIDED FOR CONVENIENCE ONLY. IN THE CASE OF A DISCREPANCY, THE DRAWING SHALL TAKE PRECEDENCE.

100% PLANS 03/01/2024

Kimley»Horn F-928

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SE 10TH AVE

LANDSCAPE SPECIFICATIONS

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		72

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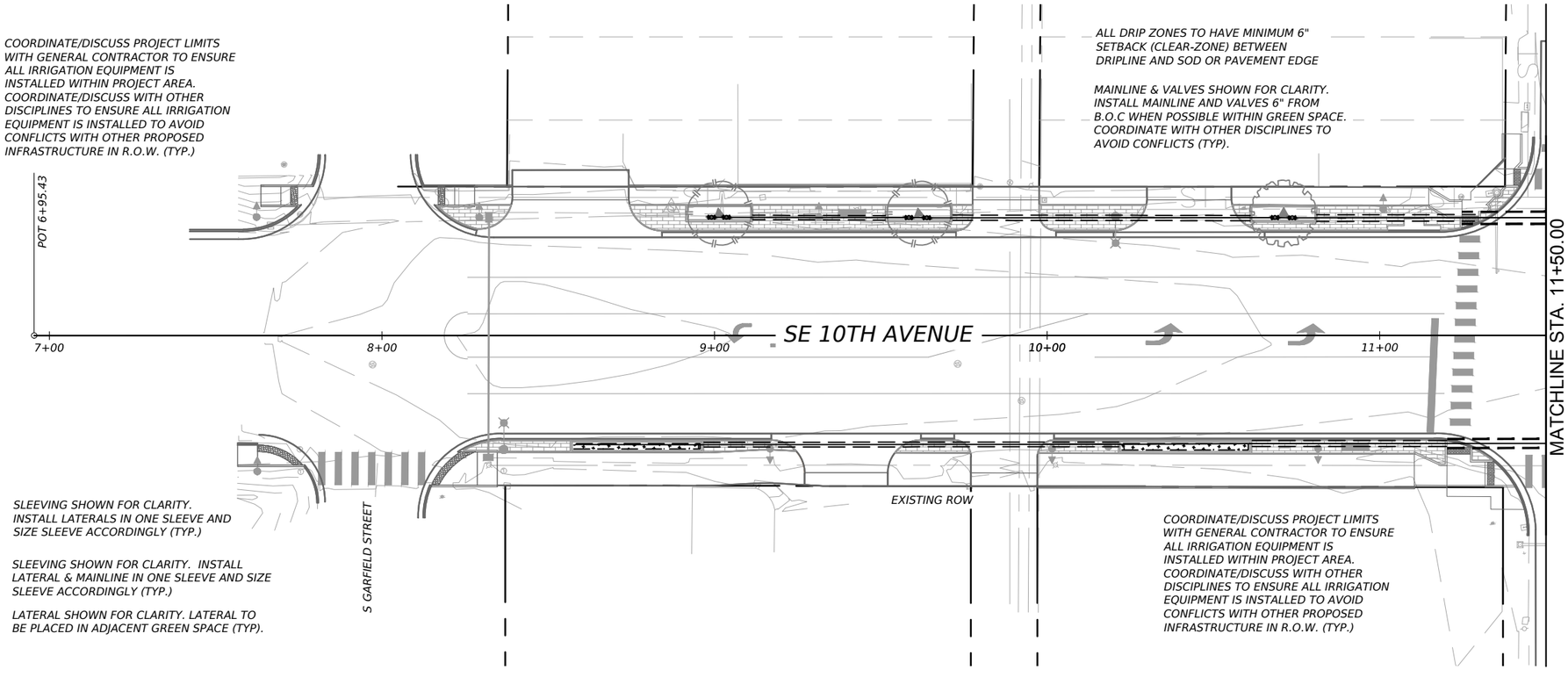

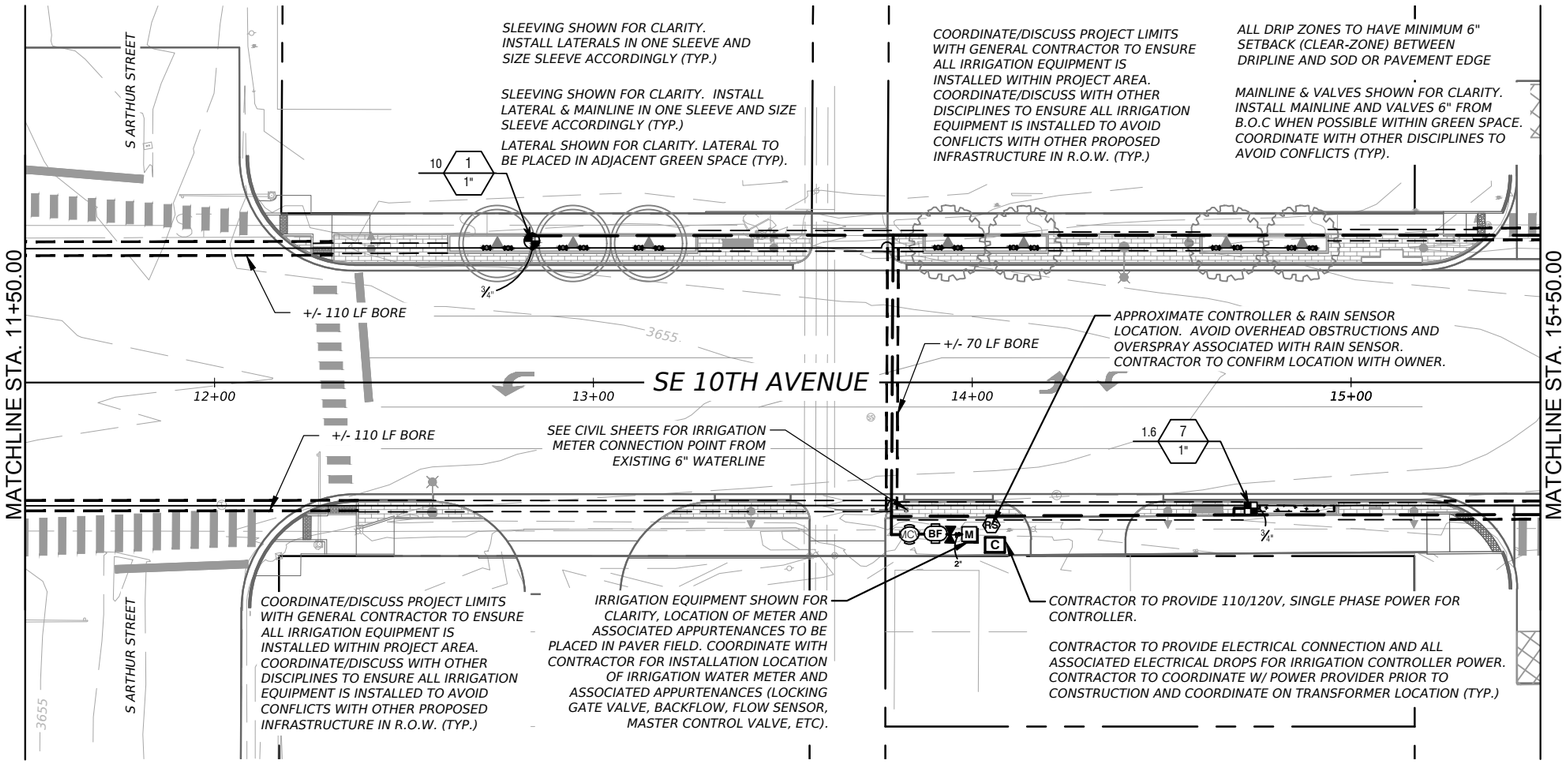

IRRIGATION SCHEDULE SHEET 1 OF 4

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
1401 1402 1404 1408	RAIN BIRD RWS-B-C 1400 SERIES ROOT WATERING SYSTEM WITH 4.0IN. DIAMETER X 36.0IN. LONG WITH LOCKING GRATE, SEMI-RIGID MESH TUBE, AND CHECK VALVE. RAIN BIRD BUBBLER OPTION AS INDICATED: 1401 0.25 GPM, 1402 0.5 GPM, 1404 1.0 GPM, 1408 2.0 GPM.	20

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD XCZLF-100-PRF LOW FLOW, 0.2-10 GPM, WITH 1IN. LOW FLOW VALVE VALVE AND 1IN. PRESSURE REGULATING RBY FILTER AND 40PSI PRESSURE REGULATOR.	1
	AREA TO RECEIVE DRIP EMITTERS RAIN BIRD XBT-6 SIX-OUTLET, PRESSURE COMPENSATING, DRIP EMITTER. FLOW RATES OF 0.5 GPH=BLUE, 1.0 GPH=BLACK, AND 2.0 GPH=RED, AT EACH EMITTER OUTLET. COMES WITH 1/2IN. FPT INLET X BARB OUTLET. EMITTER NOTES: 3-5 EMITTERS PER PLANTER (2 PER PLANT)	171.4 S.F.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD PEB 1IN., 1-1/2IN., 2IN. PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION.	1
	ISOLATION VALVE	1
AC	RAIN BIRD PESB 2" PLASTIC INDUSTRIAL MASTER VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION. WITH SCRUBBER TECHNOLOGY FOR RELIABLE PERFORMANCE IN DIRTY WATER IRRIGATION APPLICATIONS.	1
BF	FEBCO 860 2" REDUCED PRESSURE BACKFLOW PREVENTER. INSTALL IN HEATED PROTECTIVE ENCLOSURE WITH ADEQUATE DRAINAGE.	1
C	RAIN BIRD ESPLXME2-LXMM-LXMMPED 12 STATION, TRADITIONALLY-WIRED, COMMERCIAL CONTROLLER. INDOOR/OUTDOOR, PLASTIC WALL-MOUNT ENCLOSURE. INSTALL IN LXMM-LXMMPED POWDER COATED, METAL WALL-MOUNTED CABINET. W/ PEDESTAL.	1
RS	RAIN BIRD WR2-RFC WIRELESS RAIN AND FREEZE SENSOR COMBO, INCLUDES 1 RECEIVER AND 1 RAIN/FREEZE SENSOR TRANSMITTER.	1
M	WATER METER 2"	1
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	1,239 L.F.
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21	292.9 L.F.
	PIPE SLEEVE: PVC SCHEDULE 40 TYPICAL PIPE SLEEVE FOR IRRIGATION PIPE. PIPE SLEEVE SIZE SHALL ALLOW FOR IRRIGATION PIPING AND THEIR RELATED COUPLINGS TO EASILY SLIDE THROUGH SLEEVING MATERIAL. EXTEND SLEEVES 18 INCHES BEYOND EDGES OF PAVING OR CONSTRUCTION.	1,092 L.F.

Valve Callout
Valve Number
Valve Flow
Valve Size

THIS IRRIGATION PLAN IS DESIGNED TO THE FOLLOWING STATS: 65 PSI AND 75 GPM. IF WATER PRESSURE DOES NOT MEET DESIGN SPECIFICATIONS A BOOSTER PUMP WILL BE REQUIRED AT COST OF CONTRACTOR. CONTACT LANDSCAPE ARCHITECT PRIOR TO INSTALLATION IF SYSTEM HAS +/- 5 PSI THAN DESIGN PRESSURE.

ABOVE QUANTITIES PROVIDED FOR CONVENIENCE ONLY. CONTRACTOR TO CONFIRM ALL QUANTITIES PRIOR TO BIDDING.

REFERENCE MAXIMUM LATERAL DRIPLINE CHART TO DETERMINE MINIMUM NUMBER OF POINTS OF CONNECTION PER DRIP LINE ZONE.

WHERE LAYOUT FLEXIBILITY EXISTS CENTER FEED LAYOUTS MUST BE USED. THIS ALLOWS FOR EVEN FLOW OF WATER THROUGH THE ZONE.

HUNTER ECO-INDICATOR (OR APROVED EQUAL) TO BE PLACED IN ALL DRIP AREAS AT THE FURTHEST POINT OF EACH DRIP RUN.

0 20 40
SCALE IN FEET

STATE OF TEXAS
KATHERINE A. UTECHT
0021532
LICENSED IRRIGATOR

100% PLANS *03/01/2024*

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

IRRIGATION PLAN

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		73

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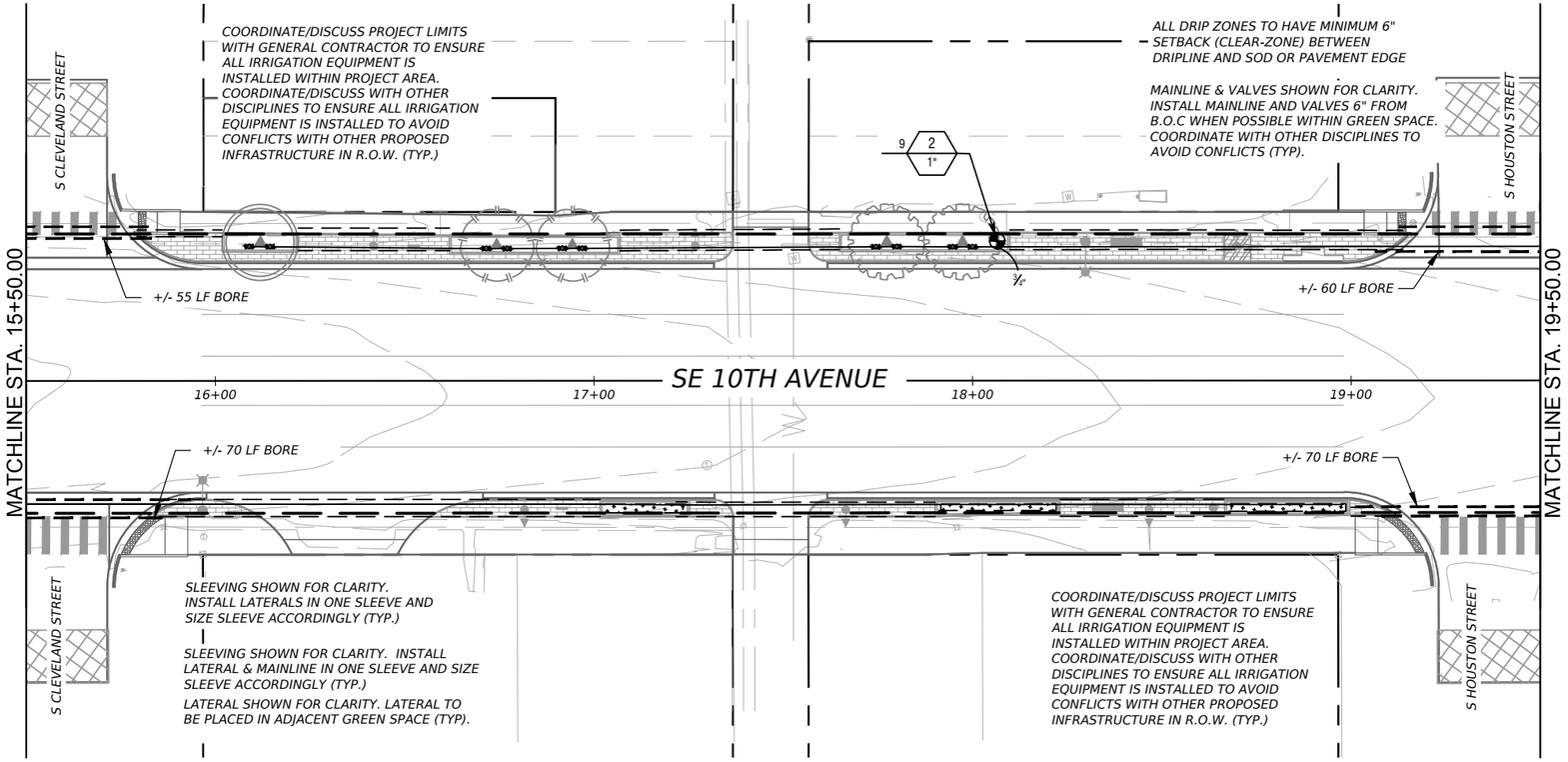

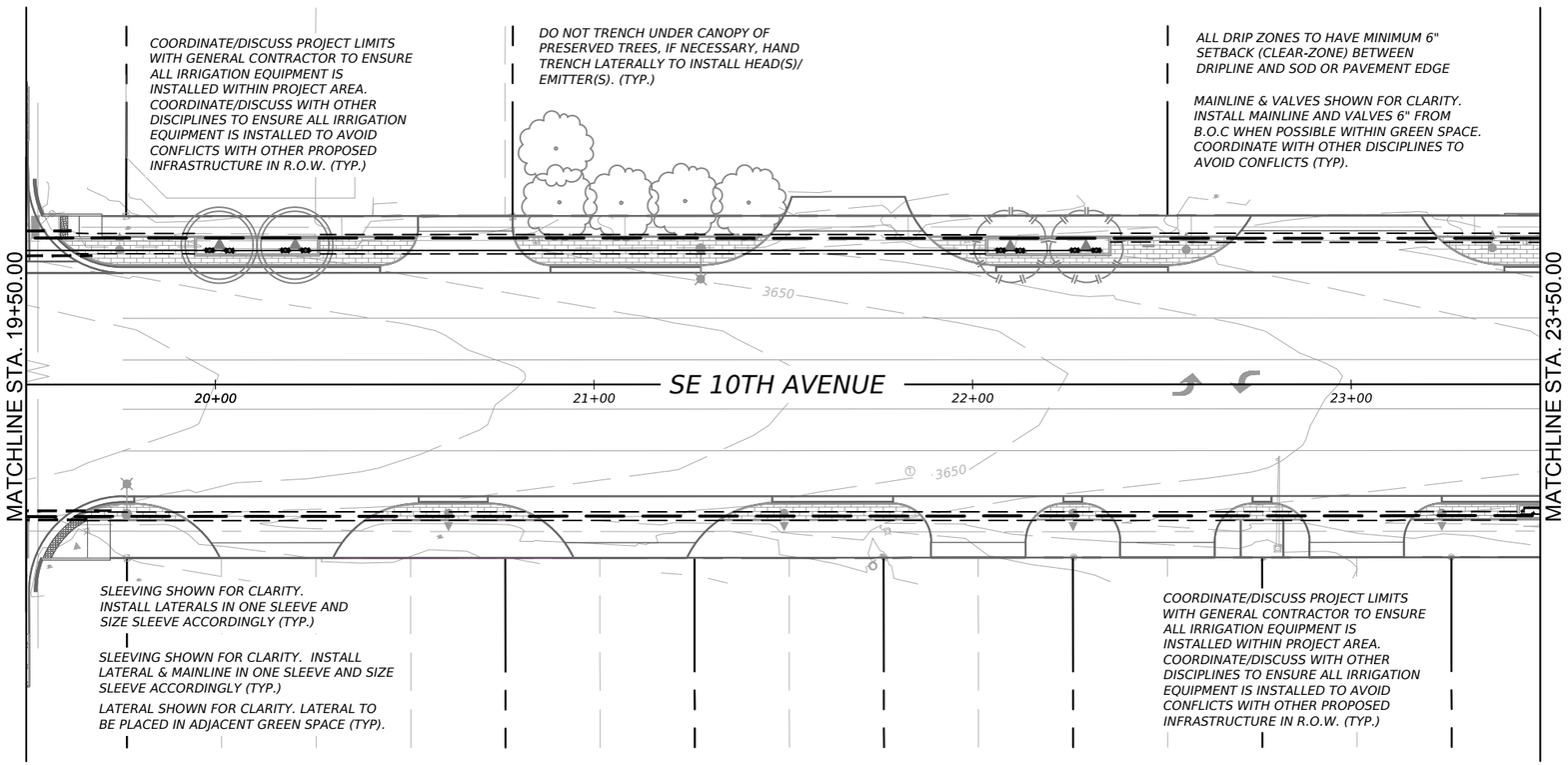

IRRIGATION SCHEDULE SHEET 2 OF 4

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
1401 1402 1404 1408	RAIN BIRD RWS-B-C 1400 SERIES ROOT WATERING SYSTEM WITH 4.0IN. DIAMETER X 36.0IN. LONG WITH LOCKING GRATE, SEMI-RIGID MESH TUBE, AND CHECK VALVE. RAIN BIRD BUBBLER OPTION AS INDICATED: 1401 0.25 GPM, 1402 0.5 GPM, 1404 1.0 GPM, 1408 2.0 GPM.	18

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	AREA TO RECEIVE DRIP EMITTERS RAIN BIRD XBT-6 SIX-OUTLET, PRESSURE COMPENSATING, DRIP EMITTER. FLOW RATES OF 0.5 GPH=BLUE, 1.0 GPH=BLACK, AND 2.0 GPH=RED, AT EACH EMITTER OUTLET. COMES WITH 1/2IN. FPT INLET X BARB OUTLET. EMITTER NOTES: 3-5 EMITTERS PER PLANTER (2 PER PLANT)	209.1 S.F.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD PEB 1IN., 1-1/2IN., 2IN. PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION.	1
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	1,033 L.F.
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21	2,359 L.F.
	PIPE SLEEVE: PVC SCHEDULE 40 TYPICAL PIPE SLEEVE FOR IRRIGATION PIPE. PIPE SLEEVE SIZE SHALL ALLOW FOR IRRIGATION PIPING AND THEIR RELATED COUPLINGS TO EASILY SLIDE THROUGH SLEEVING MATERIAL. EXTEND SLEEVES 18 INCHES BEYOND EDGES OF PAVING OR CONSTRUCTION.	1,399 L.F.

Valve Callout
Valve Number
Valve Flow
Valve Size

THIS IRRIGATION PLAN IS DESIGNED TO THE FOLLOWING STATS: 65 PSI AND 75 GPM. IF WATER PRESSURE DOES NOT MEET DESIGN SPECIFICATIONS A BOOSTER PUMP WILL BE REQUIRED AT COST OF CONTRACTOR. CONTACT LANDSCAPE ARCHITECT PRIOR TO INSTALLATION IF SYSTEM HAS +/- 5 PSI THAN DESIGN PRESSURE.

ABOVE QUANTITIES PROVIDED FOR CONVENIENCE ONLY. CONTRACTOR TO CONFIRM ALL QUANTITIES PRIOR TO BIDDING.

REFERENCE MAXIMUM LATERAL DRIPLINE CHART TO DETERMINE MINIMUM NUMBER OF POINTS OF CONNECTION PER DRIP LINE ZONE.

WHERE LAYOUT FLEXIBILITY EXISTS CENTER FEED LAYOUTS MUST BE USED. THIS ALLOWS FOR EVEN FLOW OF WATER THROUGH THE ZONE.

HUNTER ECO-INDICATOR (OR APPROVED EQUAL) TO BE PLACED IN ALL DRIP AREAS AT THE FURTHEST POINT OF EACH DRIP RUN.

0 20 40
SCALE IN FEET

STATE OF TEXAS
KATHERINE A. UTECHT
0021532
LICENSED IRRIGATOR

100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

IRRIGATION PLAN

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		74

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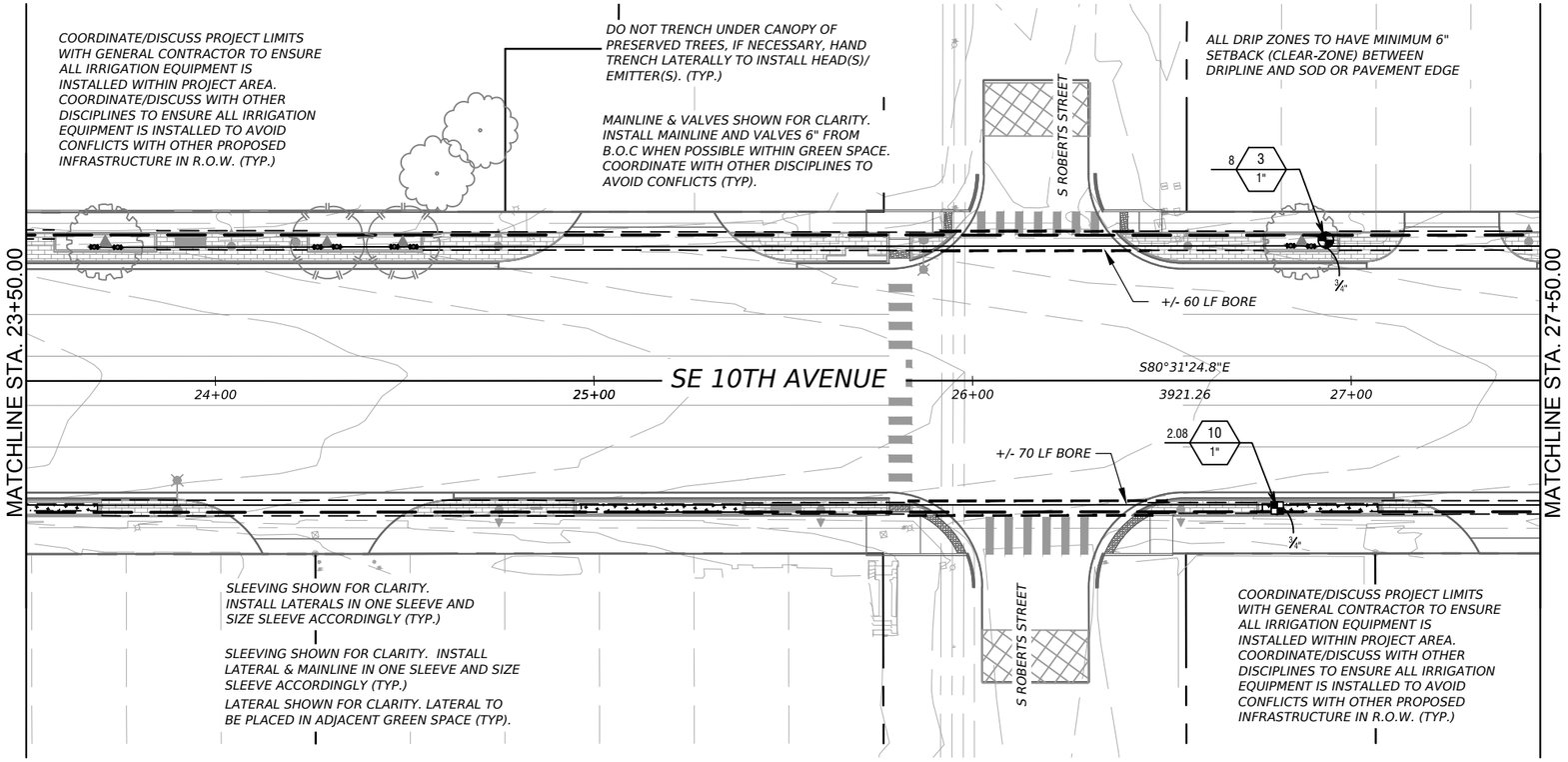

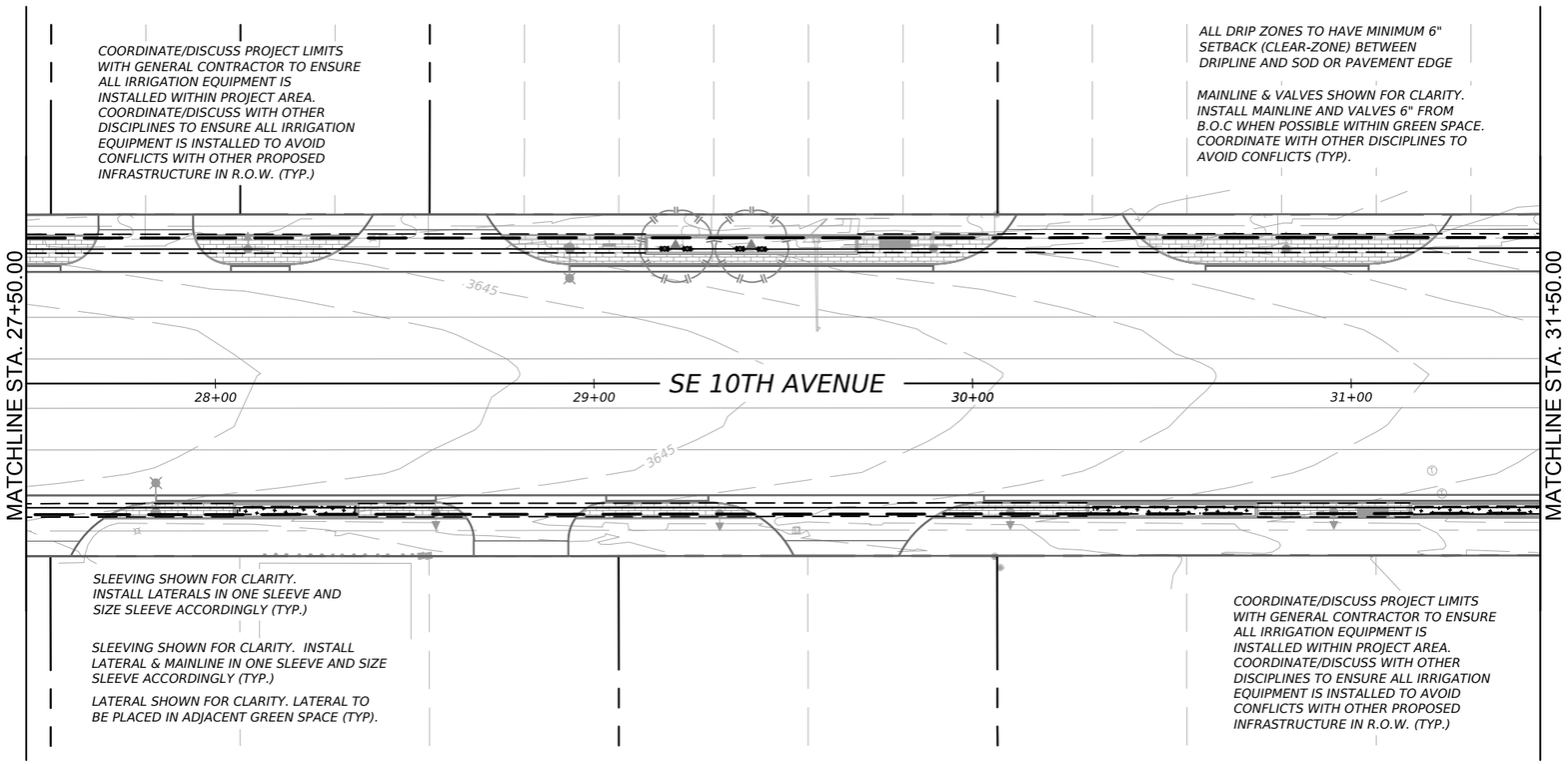

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IRRIGATION SCHEDULE SHEET 3 OF 4

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
1401 1402 1404 1408	RAIN BIRD RWS-B-C 1400 SERIES ROOT WATERING SYSTEM WITH 4.0IN. DIAMETER X 36.0IN. LONG WITH LOCKING GRATE, SEMI-RIGID MESH TUBE, AND CHECK VALVE. RAIN BIRD BUBBLER OPTION AS INDICATED: 1401 0.25 GPM, 1402 0.5 GPM, 1404 1.0 GPM, 1408 2.0 GPM.	12

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD XCZLF-100-PRF LOW FLOW, 0.2-10 GPM, WITH 1IN. LOW FLOW VALVE VALVE AND 1IN. PRESSURE REGULATING RBY FILTER AND 40PSI PRESSURE REGULATOR.	1
	AREA TO RECEIVE DRIP EMITTERS RAIN BIRD XBT-6 SIX-OUTLET, PRESSURE COMPENSATING, DRIP EMITTER. FLOW RATES OF 0.5 GPH=BLUE, 1.0 GPH=BLACK, AND 2.0 GPH=RED, AT EACH EMITTER OUTLET. COMES WITH 1/2IN. FPT INLET X BARB OUTLET. EMITTER NOTES: 3-5 EMITTERS PER PLANTER (2 PER PLANT)	423.1 S.F.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD PEB 1IN., 1-1/2IN., 2IN. PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION.	1
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	1,633 L.F.
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21	1,259 L.F.
	PIPE SLEEVE: PVC SCHEDULE 40 TYPICAL PIPE SLEEVE FOR IRRIGATION PIPE. PIPE SLEEVE SIZE SHALL ALLOW FOR IRRIGATION PIPING AND THEIR RELATED COUPLINGS TO EASILY SLIDE THROUGH SLEEVING MATERIAL. EXTEND SLEEVES 18 INCHES BEYOND EDGES OF PAVING OR CONSTRUCTION.	1,298 L.F.

Valve Callout
#" Valve Number
Valve Flow
#" Valve Size

THIS IRRIGATION PLAN IS DESIGNED TO THE FOLLOWING STATS: 65 PSI AND 75 GPM. IF WATER PRESSURE DOES NOT MEET DESIGN SPECIFICATIONS A BOOSTER PUMP WILL BE REQUIRED AT COST OF CONTRACTOR. CONTACT LANDSCAPE ARCHITECT PRIOR TO INSTALLATION IF SYSTEM HAS +/- 5 PSI THAN DESIGN PRESSURE.

ABOVE QUANTITIES PROVIDED FOR CONVENIENCE ONLY. CONTRACTOR TO CONFIRM ALL QUANTITIES PRIOR TO BIDDING.

REFERENCE MAXIMUM LATERAL DRIPLINE CHART TO DETERMINE MINIMUM NUMBER OF POINTS OF CONNECTION PER DRIP LINE ZONE.

WHERE LAYOUT FLEXIBILITY EXISTS CENTER FEED LAYOUTS MUST BE USED. THIS ALLOWS FOR EVEN FLOW OF WATER THROUGH THE ZONE.

HUNTER ECO-INDICATOR (OR APPROVED EQUAL) TO BE PLACED IN ALL DRIP AREAS AT THE FURTHEST POINT OF EACH DRIP RUN.

STATE OF TEXAS
KATHERINE A. UTECHT
0021532
LICENSED IRRIGATOR

100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

IRRIGATION PLAN

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		75

0 20 40
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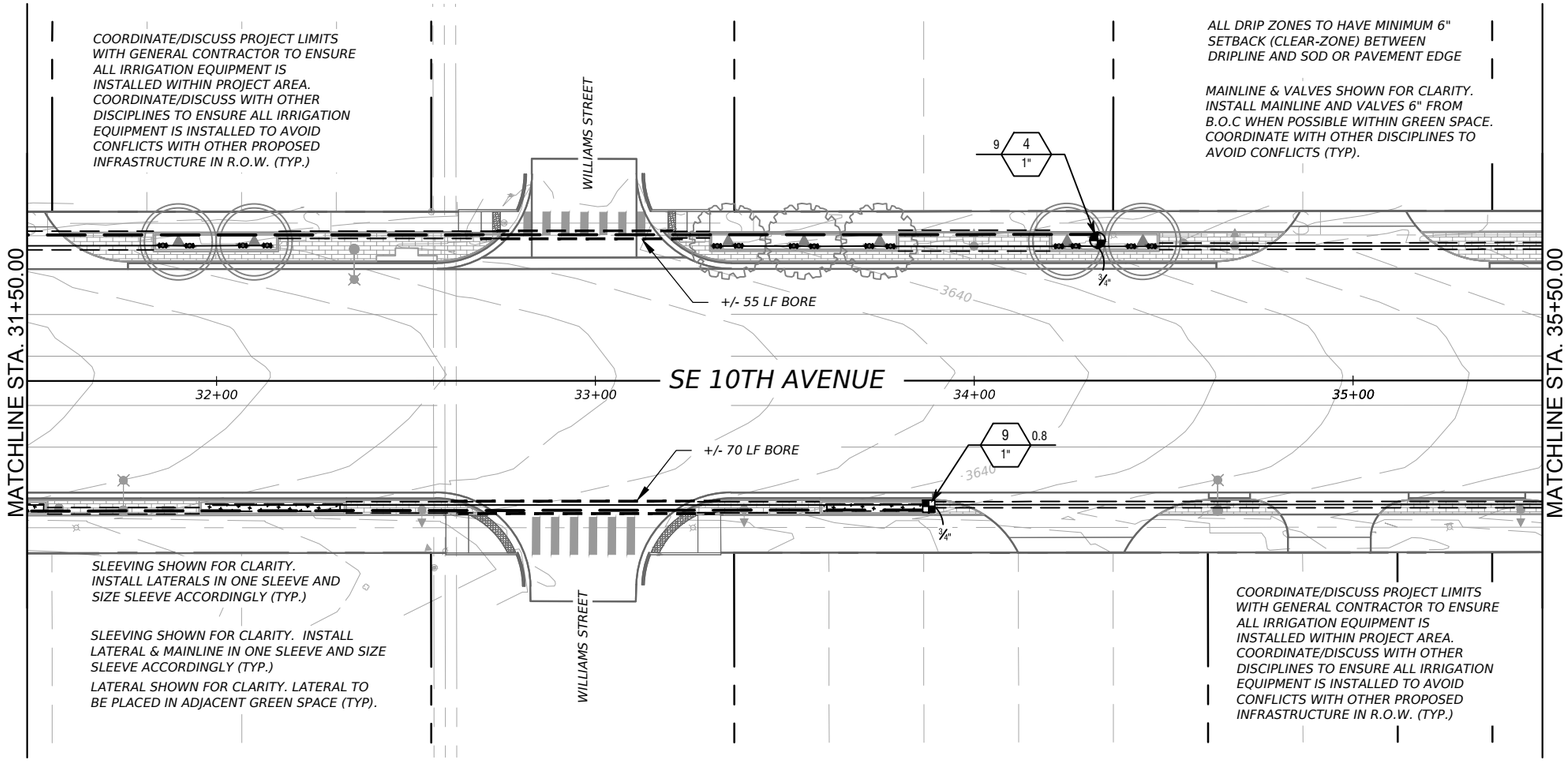

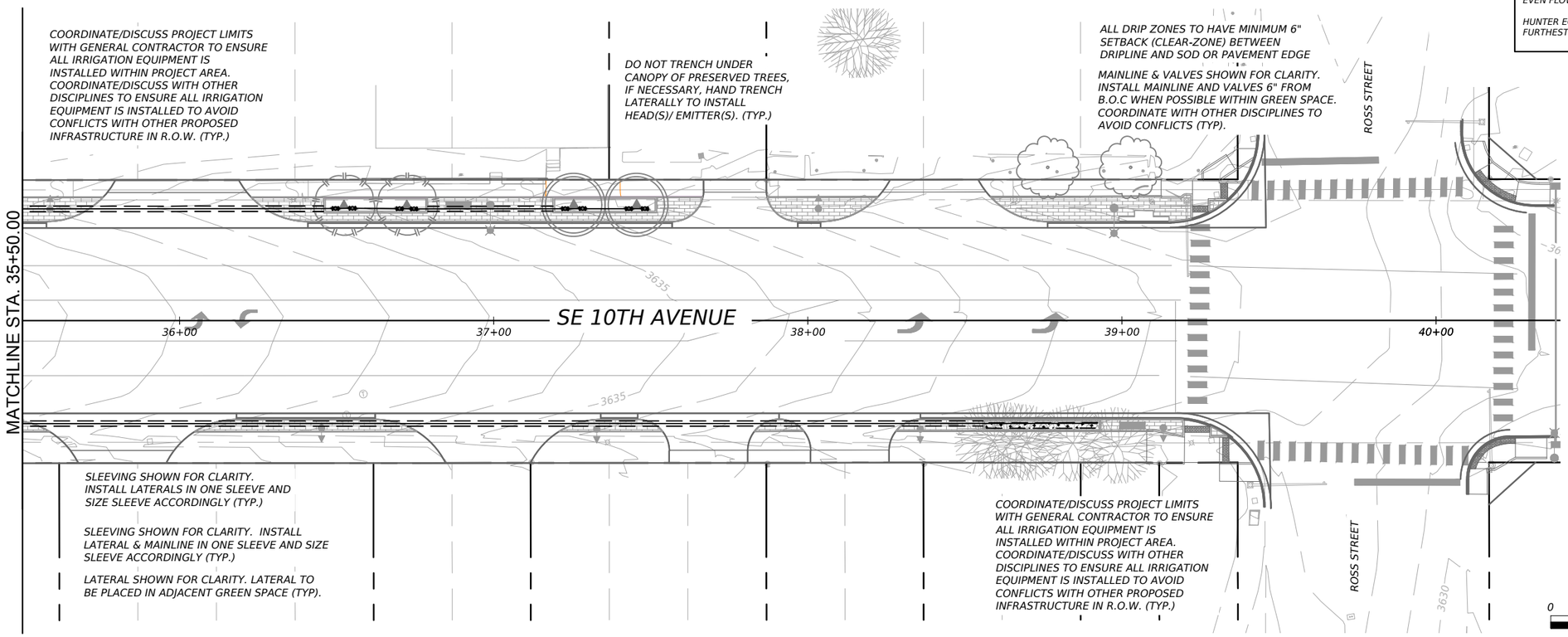

IRRIGATION SCHEDULE SHEET 4 OF 4

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
1401 1402 1404 1406	RAIN BIRD RWS-B-C 1400 SERIES ROOT WATERING SYSTEM WITH 4.0IN. DIAMETER X 36.0IN. LONG WITH LOCKING GRATE, SEMI-RIGID MESH TUBE, AND CHECK VALVE. RAIN BIRD BUBBLER OPTION AS INDICATED: 1401 0.25 GPM, 1402 0.5 GPM, 1404 1.0 GPM, 1408 2.0 GPM.	22

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD XCZLF-100-PRF LOW FLOW, 0.2-10 GPM, WITH 1IN. LOW FLOW VALVE VALVE AND 1IN. PRESSURE REGULATING RBY FILTER AND 40PSI PRESSURE REGULATOR.	1
	AREA TO RECEIVE DRIP EMITTERS RAIN BIRD XBT-6 SIX-OUTLET, PRESSURE COMPENSATING, DRIP EMITTER. FLOW RATES OF 0.5 GPH=BLUE, 1.0 GPH=BLACK, AND 2.0 GPH=RED, AT EACH EMITTER OUTLET. COMES WITH 1/2IN. FPT INLET X BARB OUTLET. EMITTER NOTES: 3-5 EMITTERS PER PLANTER (2 PER PLANT)	261.4 S.F.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD PEB 1IN., 1-1/2IN., 2IN. PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION.	1
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	1,141 L.F.
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21	361.2 L.F.
	PIPE SLEEVE: PVC SCHEDULE 40 TYPICAL PIPE SLEEVE FOR IRRIGATION PIPE. PIPE SLEEVE SIZE SHALL ALLOW FOR IRRIGATION PIPING AND THEIR RELATED COUPLINGS TO EASILY SLIDE THROUGH SLEEVING MATERIAL. EXTEND SLEEVES 18 INCHES BEYOND EDGES OF PAVING OR CONSTRUCTION.	1,038 L.F.

Valve Callout
Valve Number
Valve Flow
Valve Size

THIS IRRIGATION PLAN IS DESIGNED TO THE FOLLOWING STATS: 65 PSI AND 75 GPM. IF WATER PRESSURE DOES NOT MEET DESIGN SPECIFICATIONS A BOOSTER PUMP WILL BE REQUIRED AT COST OF CONTRACTOR. CONTACT LANDSCAPE ARCHITECT PRIOR TO INSTALLATION IF SYSTEM HAS +/- 5 PSI THAN DESIGN PRESSURE.

ABOVE QUANTITIES PROVIDED FOR CONVENIENCE ONLY. CONTRACTOR TO CONFIRM ALL QUANTITIES PRIOR TO BIDDING.

REFERENCE MAXIMUM LATERAL DRIPLINE CHART TO DETERMINE MINIMUM NUMBER OF POINTS OF CONNECTION PER DRIP LINE ZONE.

WHERE LAYOUT FLEXIBILITY EXISTS CENTER FEED LAYOUTS MUST BE USED. THIS ALLOWS FOR EVEN FLOW OF WATER THROUGH THE ZONE.

HUNTER ECO-INDICATOR (OR APPROVED EQUAL) TO BE PLACED IN ALL DRIP AREAS AT THE FURTHEST POINT OF EACH DRIP RUN.

STATE OF TEXAS
KATHERINE A. UTECHT
0021532
LICENSED IRRIGATOR

100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

IRRIGATION PLAN

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		76

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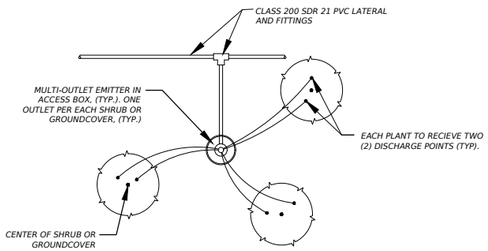
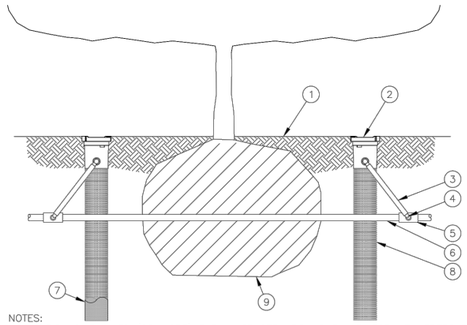
DW: CHD CK: KBG | DW: MD CHD CK: KBG

NOTES:
1. LENGTH OF DISTRIBUTION TUBING SHALL NOT EXCEED 5'-0". REFER TO LOCAL JURISDICTIONAL REQUIREMENTS: MAXIMUM ALLOWABLE LENGTH MAY BE LESS.
2. LAYOUT DISTRIBUTION TUBING AS SHOWN AND LOCATE DISCHARGE POINT 2" ABOVE FINISHED GRADE.



Emitter Distribution Tubing Layout — L

Scale: N.T.S.

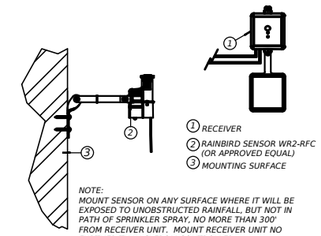


1. FINISH GRADE/TOP OF MULCH
2. ROOT WATERING SYSTEM: RAIN BIRD RWS
3. SWING ASSEMBLY (INCLUDED)
4. 1/2" (1,3 CM) MALE NPT INLET (INCLUDED)
5. PVC SCH 40 TEE OR EL
6. PVC OR POLYETHYLENE LATERAL PIPE
7. OPTIONAL SOCK (RWS-SOCK) FOR SANDY SOILS
8. 4" (10,2 CM) WIDE X 36" (91,4 CM) LONG RIGID BASKET WEAVE CANISTER (INCLUDED)
9. PLANT ROOT BALL

NOTES:
1. POSITION 2-3 UNITS (OR MORE) EVENLY SPACED AROUND PLANT. FOR NEW TREES PLACE NEAR ROOT BALL. FOR EXISTING TREES PLACE HALF THE DISTANCE BETWEEN CANOPY EDGE AND TREE TRUNK.
2. INSTALL PRODUCT WITH TOP EVEN WITH GROUND SURFACE.
3. RWS SERIES AVAILABLE IN THE FOLLOWING MODELS:
   RWS-B-C-1401: 0.25 GPM (0,95 L/M), CHECK VALVE
   RWS-B-1401: 0.25 GPM (0,95 L/M)
   RWS-B-X-1401: 0.25 GPM (0,95 L/M), 18" (45,7 CM) SWING ASSEMBLY
   RWS-B-C-1402: 0.5 GPM (1,9 L/M), CHECK VALVE
   RWS-B-1402: 0.5 GPM (1,9 L/M)
   RWS-B-C-1404: 1.0 GPM (3,8 L/M), CHECK VALVE
4. WHEN INSTALLING IN EXTREMELY HARD OR CLAY SOILS, ADD 3/4" (1,9 CM) GRAVEL UNDER AND AROUND THE UNIT TO ALLOW FASTER WATER INFILTRATION AND ROOT PENETRATION.
5. ONCE RWS HAS BEEN INSTALLED FILL THE BASKET WITH PEA GRAVEL BEFORE LOCKING LID.
6. OPTIONAL RWS-SOCK FOR USE IN SANDY SOILS.

Rain Bird RWS-B-C 1400 Series (Or Approved Equal) — G

Scale: N.T.S.

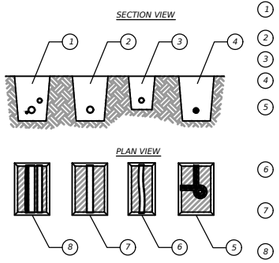


1. RECEIVER
2. RAINBIRD SENSOR WR2-RFC (OR APPROVED EQUAL)
3. MOUNTING SURFACE

NOTE:
MOUNT SENSOR ON ANY SURFACE WHERE IT WILL BE EXPOSED TO UNOBSTRUCTED RAINFALL, BUT NOT IN PATH OF SPRINKLER SPRAY, NO MORE THAN 300' FROM RECEIVER UNIT. MOUNT RECEIVER UNIT NO FURTHER THAN 6' FROM CONTROLLER.

Wireless Rain/Freeze Sensor — D

Scale: N.T.S.



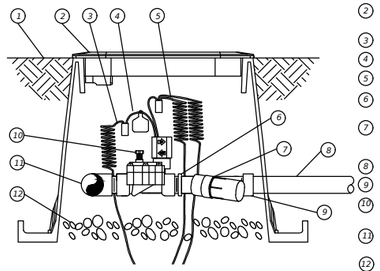
1. MAINLINE, LATERAL AND WIRING IN THE SAME TRENCH - 18" MIN. DEPTH
2. MAINLINE PIPE - 18" MIN. DEPTH
3. LATERAL PIPE - 12" MIN. DEPTH
4. WIRING IN CONDUIT - 12" MIN. DEPTH
5. TIE A 24-INCH LOOP IN ALL WIRING AT CHANGES OF DIRECTION OF 30° OR GREATER. UNTIE AFTER ALL CONNECTIONS HAVE BEEN MADE.
6. ALL SOLVENT WELD PLASTIC PIPING TO BE SNAKED IN TRENCH AS SHOWN.
7. ALL SOLVENT WELD PLASTIC PIPING TO BE RAN IN TRENCH AS SHOWN.
8. RUN WIRING BENEATH AND BESIDE MAINLINE. TAPE AND BUNDLE AT 10-FOOT INTERVALS.

NOTES:
1. SLEEVE BELOW ALL HARDSCAPE ELEMENTS WITH SCHD. 40 PVC TWICE THE DIAMETER OF THE PIPE OR WITH BUNDLE WITHIN.
2. FOR PIPE AND WIRE BURIAL DEPTHS SEE SPECIFICATIONS.

Pipe and Wire Trenching — C

Scale: N.T.S.

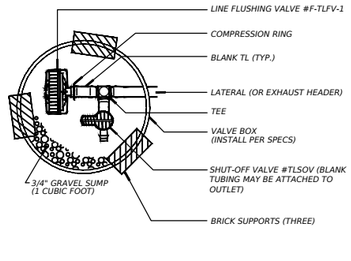
VALVE BOX TO BE INSTALLED 12-18" FROM BACK OF CURB



1. FINISH GRADE
2. STANDARD VALVE BOX WITH COVER
3. WATERPROOF CONNECTION
4. VALVE ID TAG
5. 30-INCH LINEAR LENGTH OF WIRE, COILED
6. 1" X ¾" REDUCING COUPLING
7. PRESSURE REGULATING FILTER
8. LATERAL PIPE
9. PVC SCH 40 FEMALE ADAPTOR OR REDUCER
10. REMOTE CONTROL VALVE
11. PVC SCH 40 TEE OR ELL TO MANIFOLD
12. 3-INCH MINIMUM DEPTH OF 3/4-INCH WASHED GRAVEL

Drip Control Zone Kit — K

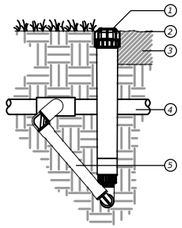
Scale: N.T.S.



Line Flushing Valve (W/ Shut-off Valve) — I

Scale: N.T.S.

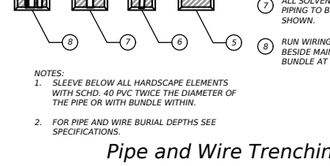
DRIP INDICATOR TO BE PLACED IN ALL DRIP AREAS AT THE FURTHEST POINT OF EACH DRIP RUN.



1. ECO INDICATOR
2. FINISHED GRADE
3. ADJACENT MULCH
4. PVC LATERAL PIPE
5. SWING JOINT

Eco Indicator - Swing Joint — F

Scale: N.T.S.

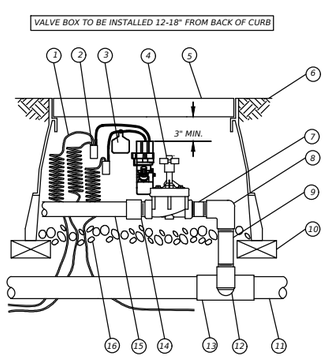


NOTES:
1. ALL IRRIGATION SLEEVES TO BE SCHEDULE 40 PVC.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
3. WHERE THERE IS MORE THAN ONE SLEEVE. EXTEND THE SMALLER SLEEVE TO 24-INCHES MINIMUM ABOVE FINISHED GRADE.
4. MECHANICALLY TAMP TO 95° PROCTOR.

Sleeve Detail — B

Scale: N.T.S.

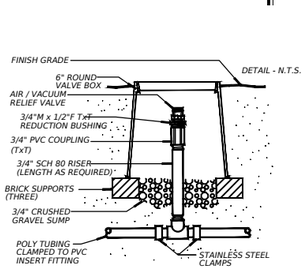
VALVE BOX TO BE INSTALLED 12-18" FROM BACK OF CURB



1. 30-INCH LINEAR LENGTH OF WIRE, COILED
2. WATERPROOF CONNECTION SPLICE-1 (1 OF 2)
3. ID TAG
4. REMOTE CONTROL VALVE: RAIN BIRD PEB (OR APPROVED EQUAL)
5. VALVE BOX WITH COVER
6. FINISH GRADE/TOP OF MULCH
7. PVC SCH 80 NIPPLE (CLOSE)
8. PVC SCH 40 ELL
9. PVC SCH 80 NIPPLE (LENGTH AS REQUIRED)
10. BRICK (1 OF 4)
11. PVC MAINLINE PIPE
12. SCH 80 NIPPLE (2-INCH LENGTH, HIDDEN) AND SCH 40 ELL
13. PVC SCH 40 TEE OR ELL
14. PVC SCH 40 MALE ADAPTER
15. PVC LATERAL PIPE
16. 3.0-INCH MINIMUM DEPTH OF 3/4-INCH WASHED GRAVEL

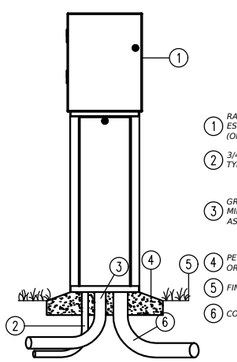
Electric Remote Control Valve — J

Scale: N.T.S.



Air/Vacuum Relief (Plumbed to Poly) — H

Scale: N.T.S.



1. RAIN BIRD CONTROLLER ESPLXME2-LXMM-LXMMPED (OR APPROVED EQUAL)
2. 3/4" POWER CONDUIT: SIZE, TYPE, DEPTH PER LOCAL CODE
3. GROUND WIRE CONDUIT, MIN. 1 1/2". GROUND PER ASIC GUIDELINES
4. PEDESTAL BASE: CONCRETE OR PREFABRICATED
5. FINISH GRADE
6. CONDUIT FOR CONTROL WIRES

Pedestal Controller — E

Scale: N.T.S.

PVC PIPE SIZE	SOLVENT WELD SCH. 40 FITTINGS	BELL AND GASKET FITTINGS	SOCKETED PIPE
1/2"	2"	--	2"
3/4"	2"	--	2"
1"	2 1/2"	--	2 1/2"
1 1/4"	3"	--	3"
1 1/2"	3"	3"	3"
2"	4"	4"	4"
2 1/2"	6"	6"	6"
3"	6"	6"	6"
4"	8"	8"	8"

Sleeve Schedule — A

Scale: N.T.S.

STATE OF TEXAS
KATHERINE A. UTECHT
0021532
LICENSED IRRIGATOR

100% PLANS 03/01/2024

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

IRRIGATION DETAILS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		77

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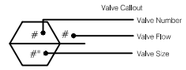
CK: KBG
DW: CHD
CK: KBG
DW: CHD

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
1401 1402 1404 140B	RAIN BIRD RWS-B-C 1400 SERIES ROOT WATERING SYSTEM WITH 4.0IN. DIAMETER X 36.0IN. LONG WITH LOCKING GRATE, SEMI-RIGID MESH TUBE, AND CHECK VALVE. RAIN BIRD BUBBLER OPTION AS INDICATED: 1401 0.25 GPM, 1402 0.5 GPM, 1404 1.0 GPM, 1408 2.0 GPM.	72

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD XCZLF-100-PRF LOW FLOW, 0.2-10 GPM, WITH 1IN. LOW FLOW VALVE VALVE AND 1IN. PRESSURE REGULATING RBY FILTER AND 40PSI PRESSURE REGULATOR.	3
	AREA TO RECEIVE DRIP EMITTERS RAIN BIRD XBT-6 SIX-OUTLET, PRESSURE COMPENSATING, DRIP EMITTER. FLOW RATES OF 0.5 GPH=BLUE, 1.0 GPH=BLACK, AND 2.0 GPH=RED, AT EACH EMITTER OUTLET. COMES WITH 1/2IN. FPT INLET X BARB OUTLET. EMITTER NOTES: 3-5 EMITTERS PER PLANTER (2 PER PLANT)	946.4 S.F.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	RAIN BIRD PEB 1IN., 1-1/2IN., 2IN. PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION.	4
	ISOLATION VALVE	1
MCI	RAIN BIRD PESB 2" PLASTIC INDUSTRIAL MASTER VALVES. LOW FLOW OPERATING CAPABILITY, GLOBE CONFIGURATION. WITH SCRUBBER TECHNOLOGY FOR RELIABLE PERFORMANCE IN DIRTY WATER IRRIGATION APPLICATIONS.	1
BF	FEBCO 860 2" REDUCED PRESSURE BACKFLOW PREVENTER. INSTALL IN HEATED PROTECTIVE ENCLOSURE WITH ADEQUATE DRAINAGE.	1
C	RAIN BIRD ESPLXME2-LXMM-LXMMPED 12 STATION, TRADITIONALLY-WIRED, COMMERCIAL CONTROLLER. INDOOR/OUTDOOR, PLASTIC WALL-MOUNT ENCLOSURE. INSTALL IN LXMM-LXMMPED POWDER COATED, METAL WALL-MOUNTED CABINET. W/ PEDESTAL.	1
RS	RAIN BIRD WR2-RFC WIRELESS RAIN AND FREEZE SENSOR COMBO, INCLUDES 1 RECEIVER AND 1 RAIN/FREEZE SENSOR TRANSMITTER.	1
M	WATER METER 2"	1
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21	5,046 L.F.
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21	4,272 L.F.
	PIPE SLEEVE: PVC SCHEDULE 40 TYPICAL PIPE SLEEVE FOR IRRIGATION PIPE. PIPE SLEEVE SIZE SHALL ALLOW FOR IRRIGATION PIPING AND THEIR RELATED COUPLINGS TO EASILY SLIDE THROUGH SLEEVING MATERIAL. EXTEND SLEEVES 18 INCHES BEYOND EDGES OF PAVING OR CONSTRUCTION.	4,827 L.F.



THIS IRRIGATION PLAN IS DESIGNED TO THE FOLLOWING STATS: 65 PSI AND 75 GPM. IF WATER PRESSURE DOES NOT MEET DESIGN SPECIFICATIONS A BOOSTER PUMP WILL BE REQUIRED AT COST OF CONTRACTOR. CONTACT LANDSCAPE ARCHITECT PRIOR TO INSTALLATION IF SYSTEM HAS +/- 5 PSI THAN DESIGN PRESSURE.

ABOVE QUANTITIES PROVIDED FOR CONVENIENCE ONLY. CONTRACTOR TO CONFIRM ALL QUANTITIES PRIOR TO BIDDING.

REFERENCE MAXIMUM LATERAL DRIPLINE CHART TO DETERMINE MINIMUM NUMBER OF POINTS OF CONNECTION PER DRIP LINE ZONE.

WHERE LAYOUT FLEXIBILITY EXISTS CENTER FEED LAYOUTS MUST BE USED. THIS ALLOWS FOR EVEN FLOW OF WATER THROUGH THE ZONE.

HUNTER ECO-INDICATOR (OR APPROVED EQUAL) TO BE PLACED IN ALL DRIP AREAS AT THE FURTHEST POINT OF EACH DRIP RUN.

GENERAL IRRIGATION SPECIFICATIONS AND NOTES

A. EXTENT:

INCLUDES FURNISHING ALL LABOR, MATERIALS AND EQUIPMENT FOR THE PROPER INSTALLATION OF THE IRRIGATION SYSTEM. THE WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING: (1) TRENCHING AND BACKFILL, (2) AUTOMATICALLY CONTROLLED LOW VOLUME IRRIGATION SYSTEM, (3) TEST ALL SYSTEMS AND MAKE OPERATIVE, (4) "AS-BUILT" DRAWINGS.

B. GENERAL:

1. PERMITS AND FEES: OBTAIN ALL PERMITS AND PAY REQUIRED FEES TO ANY GOVERNMENTAL AGENCY HAVING JURISDICTION OVER THE WORK. INSPECTIONS REQUIRED BY LOCAL ORDINANCES DURING THE COURSE OF CONSTRUCTION SHALL BE ARRANGED AS REQUIRED. ON COMPLETION OF THE WORK, SATISFACTORY EVIDENCE SHALL BE FURNISHED TO THE OWNER'S CONSTRUCTION REPRESENTATIVE TO SHOW THAT ALL WORK HAS BEEN INSTALLED IN ACCORDANCE WITH THE STATE AND LOCAL BUILDING/ PLUMBING CODE AND ALL OTHER CODE REQUIREMENTS.

2. APPROVAL: WHEREVER THE TERMS "APPROVE" OR "APPROVED" ARE USED IN THE SPECIFICATIONS, THEY SHALL MEAN THE APPROVAL OF THE OWNER'S CONSTRUCTION REPRESENTATIVE IN WRITING.

3. BEFORE ANY WORK IS STARTED, A CONFERENCE SHALL BE HELD BETWEEN THE CONTRACTOR AND THE OWNER'S CONSTRUCTION REPRESENTATIVE CONCERNING THE WORK UNDER THIS CONTRACT.

4. COORDINATION: COORDINATE AND COOPERATE WITH OTHER CONTRACTORS TO ENABLE THE WORK TO PROCEED AS RAPIDLY AND EFFICIENTLY AS POSSIBLE

5. INSPECTION OF SITE:

A. CONTRACTOR SHALL ACQUAINT THEMSELVES WITH ALL SITE CONDITIONS. SUBMISSION OF THEIR PROPOSAL SHALL BE CONSIDERED EVIDENCE THAT THE EXAMINATION HAS BEEN CONDUCTED. SHOULD UTILITIES NOT SHOWN ON THE PLANS BE FOUND DURING EXCAVATIONS, CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER'S CONSTRUCTION REPRESENTATIVE FOR INSTRUCTIONS AS TO FURTHER ACTION. FAILURE TO DO SO WILL MAKE CONTRACTOR LIABLE FOR ANY AND ALL DAMAGE THERETO ARISING FROM HIS OPERATIONS SUBSEQUENT TO DISCOVERY OF SUCH UTILITIES NOT SHOWN IN PLANS.

B. CONTRACTOR SHALL MAKE NECESSARY ADJUSTMENTS IN THE LAYOUT AS MAY BE REQUIRED TO CONNECT TO EXISTING STUBOUTS, SHOULD SUCH STUBS NOT BE LOCATED EXACTLY AS SHOWN, AND AS MAY BE REQUIRED TO WORK AROUND EXISTING WORK AT NO INCREASE IN COST TO THE OWNER'S CONSTRUCTION REPRESENTATIVE.

6. PROTECTION OF EXISTING PLANTS AND SITE CONDITIONS: THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT SITE CONDITIONS TO REMAIN. SHOULD DAMAGE BE INCURRED, THE CONTRACTOR SHALL REPAIR THE DAMAGE TO ITS ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

7. THE OWNER RESERVES THE RIGHT TO SUBSTITUTE, ADD, OR DELETE ANY MATERIAL OR WORK AS THE WORK PROGRESSES. ADJUSTMENTS TO THE CONTRACT PRICE SHALL BE NEGOTIATED IF DEEMED NECESSARY BY THE OWNER ON A PER DIEM BASIS.

8. THE OWNER RESERVES THE RIGHT TO REJECT MATERIAL OR WORK WHICH DOES NOT CONFORM TO THE CONTRACT DOCUMENTS. REJECTED WORK SHALL BE REMOVED OR CORRECTED AT THE EARLIEST TIME POSSIBLE.

9. WORK SCHEDULE: WITHIN 10 DAYS AFTER AWARD OF THE CONTRACT, THE CONTRACTOR SHALL SUBMIT TO THE OWNER A WORK SCHEDULE.

10. "AS-BUILT" IRRIGATION DRAWINGS: PREPARE AN "AS-BUILT" DRAWING ON A FULL-SIZE PLAN SET WHICH SHALL SHOW DEVIATIONS FROM THE BID DOCUMENTS MADE DURING CONSTRUCTION AFFECTING THE MAIN LINE PIPE, CONTROLLER LOCATIONS, REMOTE CONTROL VALVES AND QUICK COUPLING VALVES. THE DRAWINGS SHALL ALSO INDICATE AND SHOW APPROVED SUBSTITUTIONS OF SIZE, MATERIAL AND MANUFACTURERS NAME AND CATALOG NAME AND CATALOG NUMBER. THE DRAWINGS SHALL BE DELIVERED TO THE TENANT'S CONSTRUCTION REPRESENTATIVE BEFORE FINAL ACCEPTANCE OF WORK

11. FINAL ACCEPTANCE: FINAL ACCEPTANCE OF THE WORK MAY BE OBTAINED FROM THE OWNER'S CONSTRUCTION REPRESENTATIVE UPON THE SATISFACTORY COMPLETION OF ALL WORK.

12. GUARANTEE: ALL WORK SHALL BE GUARANTEED FOR ONE YEAR FROM DATE OF ACCEPTANCE AGAINST ALL DEFECTS IN MATERIAL, EQUIPMENT AND WORKMANSHIP. GUARANTEE SHALL ALSO COVER REPAIR OF DAMAGE TO ANY PART OF THE PREMISES RESULTING FROM LEAKS OR OTHER DEFECTS IN MATERIAL, EQUIPMENT AND WORKMANSHIP TO THE SATISFACTION OF THE TENANT'S CONSTRUCTION REPRESENTATIVE. REPAIRS, IF REQUIRED, SHALL BE DONE PROMPTLY AT NO COST TO THE OWNER.

13. A LAMINATED PLAN (8 1/2 X 11) SHOWING THE DIFFERENT IRRIGATION ZONES IN COLOR, PREPARED BY THE IRRIGATION CONTRACTOR, SHALL BE POSTED IN THE MECHANICAL ROOM OR WITHIN CONTROLLER CABINET.

C. MATERIALS:

1. GENERAL: ALL MATERIALS THROUGHOUT THE SYSTEM SHALL BE NEW AND IN PERFECT CONDITION.

2. PLASTIC PIPING: ALL MAIN LINES AND LATERAL LINES SHALL BE CLASS 200 POLYVINYL CHLORIDE (PVC) PIPE AND SHALL COMPLY WITH ONE OF THE FOLLOWING STANDARDS: ASTM D 1785, ASTM D-2241, AWWA C-900, OR AWWA C-905. SDR-PR PIPE SHALL HAVE A MINIMUM WALL THICKNESS AS REQUIRED BY SDR-26. PVC GASKETS FITTINGS SHALL CONFORMING TO ASTM D 3139. GASKETS SHALL CONFORM TO ASTM F 477. SOLVENT-WELD PVC FITTINGS SHALL MEET THE REQUIREMENTS OF SCHEDULE 40 AS SET FORTH IN ASTM D 2466. THREADED PVC PIPE FITTINGS SHALL MEET THE REQUIREMENTS OF SCHEDULE 40 AS SET FORTH IN ASTM D 2464. CONFORMING TO ASTM D-1784 AND D-2241

3. PLASTIC FITTINGS: ALL SOLVENT-WELD PVC FITTINGS SHALL MEET THE REQUIREMENTS OF SCHEDULE 40 AS SET FORTH IN ASTM D 2466. SCHEDULE 40 SOLVENT-WELD, POLYVINYL CHLORIDE (PVC) STANDARD WEIGHT AS MANUFACTURED BY SLOANE, LASCO, OR APPROVED EQUAL.

4. SOLVENT CEMENT: PVC CEMENT SHALL MEET ASTM D 2564 AND PVC CLEANER-TYPE SHALL MEET ASTM F 656.

5. SPRINKLER HEAD RISERS: SCHEDULE 40 PVC FOR RISERS. PIPE SHALL BE CUT WITH A STANDARD PIPE CUTTING TOOL WITH SHARP CUTTERS. REAM ONLY TO FULL DIAMETER OF PIPE AND CLEAN ALL ROUGH EDGES OR BURRS. CUT ALL THREADS ACCURATELY WITH SHARP DIES. NOT MORE THAN THREE(3) FULL THREADS SHALL SHOW BEYOND FITTINGS WHEN PIPE IS MADE UP. ASSEMBLIES SHALL BE AS DETAILED.

6. AUTOMATIC CONTROLLER: SEE LEGEND

7. REMOTE CONTROL VALVES: SEE LEGEND

8. CONTROL WIRING: CONVENTIONAL SYSTEMS TO USE 24 VOLT SOLID UL APPROVED FOR DIRECT BURIAL IN GROUND. MINIMUM WIRE SIZE: 14 GAUGE. ALL SPLICES SHALL BE MADE WITHIN VALVE BOX. TWO-WIRE SYSTEMS TO UTILIZE CONTROL WIRING PER MANUFACTURER STANDARDS.

9. SLEEVES FOR CONTROL WIRING: UNDER ALL WALKS AND PAVED AREAS AND WHERE INDICATED ON DRAWINGS. MINIMUM PVC SCHEDULE 40 PLASTIC PIPE.

10. SPRINKLER HEADS/ DRIP LINE: SEE LEGEND

11. QUICK COUPLING VALVES: SHALL BE NOTED ON DRAWINGS.

D. WORKMANSHIP:

1. LAY OUT WORK AS ACCURATELY AS POSSIBLE TO THE DRAWINGS. THE DRAWINGS, THOUGH CAREFULLY DRAWN, ARE GENERALLY DIAGRAMMATIC TO THE EXTENT THAT SWING JOINTS, OFFSETS, AND ALL FITTINGS ARE NOT SHOWN.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULL AND COMPLETE COVERAGE OF ALL IRRIGATED AREAS AND SHALL MAKE ANY NECESSARY MINOR ADJUSTMENTS AT NO ADDITIONAL COST TO THE OWNER'S CONSTRUCTION REPRESENTATIVE.

3. ANY MAJOR REVISIONS TO THE IRRIGATION SYSTEM MUST BE SUBMITTED AND ANSWERED IN WRITTEN FORM, ALONG WITH ANY CHANGE IN CONTRACT PRICE.

E. INSTALLATION:

1. EXCAVATION AND TRENCHING:

A. PERFORM ALL EXCAVATIONS AS REQUIRED FOR THE INSTALLATION OF THE WORK INCLUDING UNDER THIS SECTION, INCLUDING SHORING OF EARTH BANKS TO PREVENT CAVE-INS. RESTORE ALL SURFACES, EXISTING UNDERGROUND INSTALLATIONS, ETC., DAMAGED OR CUT AS A RESULT OF THE EXCAVATIONS TO AND IN A MANNER APPROVED BY THE OWNER.

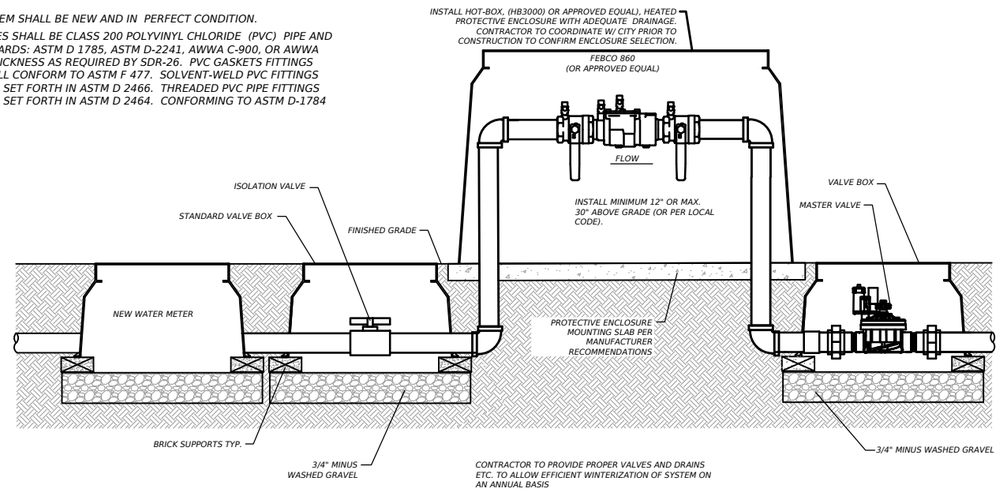
B. TRENCHES SHALL BE MADE WIDE ENOUGH TO ALLOW A MINIMUM OF 6 INCHES BETWEEN PARALLEL PIPE LINES. TRENCHES FOR PIPE LINES SHALL BE MADE OF SUFFICIENT DEPTHS TO PROVIDE THE MINIMUM COVER FROM FINISH GRADE AS FOLLOWS:

1) 24" MINIMUM BELOW BOTTOM PAVEMENT PER SLEEVING INSTALLATION DETAIL FOR MAIN LINE.18" MINIMUM FOR NON-PRESSURIZED LATERALS.

2) MINIMUM COVER OVER IRRIGATION LINES TO HEADS/ DRIPLINE EXCEPT VEHICLE TRAFFIC AREAS ARE AS FOLLOWS:

12" COVER OVER LATERALS
18" COVER OVER MAINLINE

C. MAINTAIN ALL WARNING SIGNS, SHORING, BARRICADES, FLARES AND RED LANTERNS AS REQUIRED BY THE SAFETY ORDERS OF THE DIVISION OF INDUSTRIAL SAFETY AND LOCAL ORDINANCES.



RPZ Assembly Backflow Preventer

Scale: N.T.S.

A

STATE OF TEXAS
KATHERINE A. UTECHT
0021532
LICENSED IRRIGATOR

100% PLANS *03/01/2024*

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

IRRIGATION SPECIFICATIONS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		78

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2. *PIPE LINE ASSEMBLY:*

A. INSTALL REMOTE CONTROL VALVES WHERE SHOWN AND GROUP TOGETHER WHERE PRACTICAL, PLACE NO CLOSER THAN 12-18 INCHES TO WALK EDGES, WALLS, AND OTHER PAVEMENTS. PLACE A MINIMUM OF 24" FROM BUILDINGS.

B. PLASTIC PIPE AND FITTINGS SHALL BE SOLVENT WELDED USING SOLVENTS AND METHODS RECOMMENDED BY MANUFACTURER OF THE PIPE, EXCEPT WHERE SCREWED CONNECTIONS ARE REQUIRED. PIPE AND FITTINGS SHALL BE THOROUGHLY CLEANED OF DIRT, DUST AND MOISTURE BEFORE APPLYING SOLVENT WITH A NON-SYNTHETIC BRISTLE BRUSH.

C. PIPE MAY BE ASSEMBLED AND WELDED ON THE SURFACE. SNAKE PIPE FROM SIDE TO SIDE OF TRENCH BOTTOM TO ALLOW FOR EXPANSION AND CONTRACTION.

D. MAKE ALL CONNECTIONS BETWEEN PLASTIC PIPE AND METAL VALVES OR STEEL PIPE WITH THREADED FITTINGS USING PLASTIC MALE ADAPTERS.

E. JOINTS:

1. *PIPE SIZES 2 1/2 INCH OR SMALLER SHALL HAVE BELL AND SOCKET JOINTS.*
2. *PIPE SIZES LARGER THAN 2 1/2 INCH SHALL HAVE SNAP CONNECTIONS WITH RUBBER GASKET JOINTS.*
3. *THRUST BLOCKING SHALL BE REQUIRED WHEN PIPE SIZE IS 4" OR GREATER.*

3. *SPRINKLER HEADS/ DRIPLINE:*

A. INSTALL ALL SPRINKLERS/ DRIPLINE AS DETAILED ON DRAWINGS.

B. DO NOT SCALE PLANS FOR EXACT HEAD LOCATION.

4. *CLOSING OF PIPE AND FLUSHING LINES:*

A. CAP OR PLUG ALL OPENINGS AS SOON AS LINES HAVE BEEN INSTALLED TO PREVENT THE ENTRANCE OF MATERIALS THAT WOULD OBSTRUCT THE PIPE. LEAVE IN PLACE UNTIL REMOVAL IS NECESSARY FOR COMPLETION OF INSTALLATION.

B. THOROUGHLY FLUSH OUT ALL WATER LINES BEFORE INSTALLING HEADS, DRIPLINE, VALVES AND OTHER HYDRANTS.

C. TEST IN ACCORDANCE WITH PARAGRAPH ON HYDROSTATIC TESTS.

D. UPON COMPLETION OF THE TESTING, THE CONTRACTOR SHALL COMPLETE ASSEMBLY AND ADJUST SPRINKLER HEADS FOR PROPER DISTRIBUTION.

5. INSPECTIONS:

A. SPRINKLER/ DRIPLINE LAYOUT AND SPACING INSPECTION: VERIFICATION THAT THE IRRIGATION DESIGN IS ACCURATELY INSTALLED IN THE FIELD. IT WILL ALSO PROVIDE FOR ALTERATION OR MODIFICATION OF THE SYSTEM TO MEET FIELD CONDITIONS. SPACING SHOULD BE WITHIN 5% OF THE DESIGN SPACING.

B. PIPE INSTALLATION DEPTH INSPECTION: ALL PIPES IN THE SYSTEM SHALL BE INSTALLED TO DEPTHS AS PREVIOUSLY DESCRIBED IN SECTION 'E' OF THESE SPECIFICATIONS.

C. OPEN TRENCH INSPECTION: THE TRENCH AND ALL JOINTS AND EVERY TRANSITION IN PIPE SIZE, WILL BE OPEN WHERE OPEN TRENCH INSPECTION IS REQUIRED.

D. INSPECTIONS WILL BE PERFORMED THROUGHOUT THE DURATION OF THE INSTALLATION. INSPECTION MAY BE MADE BY THE GOVERNING AGENCY/ OWNER TO ENSURE COMPLIANCE WITH DESIGN INTENT, SPECIFICATIONS, AND THE IRRIGATION CODES.

6. HYDROSTATIC TESTS:

A. REQUEST THE PRESENCE OF THE OWNER AND/OR OWNERS REPRESENTATIVE IN WRITING AT LEAST 48 HOURS IN ADVANCE OF TESTING.

B. TESTING TO BE ACCOMPLISHED AT THE EXPENSE OF THE CONTRACTOR AND IN THE PRESENCE OF THE OWNER.

C. CENTER LOAD PIPING WITH SMALL AMOUNT OF BACKFILL TO PREVENT ARCHING OR SLIPPING UNDER PRESSURE.

D. APPLYING A CONTINUOUS AND STATIC WATER PRESSURE OF 125 PSI WHEN WELDED PLASTIC JOINTS HAVE CURED AT LEAST 3 HOURS AND WITH THE RISERS CAPPED AS FOLLOWS:

1) MAIN LINES AND SUBMAINS TO BE TESTED FOR 2 HOURS.
2) NO PRESSURE LOSS IS ALLOWED FOR SOLVENT WELD MAINLINE/ PIPE.

E. FOR PVC AND O-RING GASKET PIPE THE ALLOWABLE LEAKAGE SHALL NOT EXCEED THE NUMBER OF GALLONS PER HOUR AS DETERMINED BY THE FOLLOWING FORMULA:

$$L=NPD^{1/2}/\ 1{,}850$$

IN WHICH: L=ALLOWABLE LEAKAGE, IN GALLONS PER HOUR
N=NUMBER OF JOINTS
D=PIPE DIAMETER IN INCHES
P=AVERAGE TEST PRESSURE IN PSI GAUGE

F. REPAIR LEAKS RESULTING FROM TESTS.

7. *AUTOMATIC CONTROLLERS:*

A. CONNECT REMOTE CONTROL VALVES TO CONTROLLER IN A CLOCKWISE SEQUENCE TO CORRESPOND WITH STATION SETTING BEGINNING WITH STATIONS 1, 2, 3, ETC.

8. *AUTOMATIC CONTROL WIRING:*

A. INSTALL CONTROL WIRING, SPRINKLER MAINS AND LATERALS IN COMMON TRENCHES WHEREVER POSSIBLE.

B. INSTALL CONTROL WIRES AT LEAST 18" BELOW FINISHED GRADE AND SNAKE WIRE SIDE TO SIDE IN TRENCH BELOW MAIN LINE. EXPANSION CURLS SHALL BE PROVIDED WITHIN THREE (3') FEET OF EACH WIRE CONNECTION TO SOLENOID AND AT LEAST EVERY THREE HUNDRED (300') FEET IN LENGTH. (EXPANSION CURLS ARE FORMED BY WRAPPING AT LEAST FIVE (5) TURNS OF WIRE AROUND A ROD OR PIPE 1" OR MORE IN DIAMETER, THEN WITHDRAWING THE ROD).

C. CONTROL WIRE SPLICES WILL BE ALLOWED ONLY RUNS OVER 1000 FT. CONNECTIONS SHALL BE IN VALVE BOX AND LOCATION TO BE SHOWN ON AS-BUILT PLANS.

D. ALL WIRING PASSING UNDER EXISTING OR FUTURE PAVING, CONSTRUCTION, ETC., SHALL BE ENCASED IN PLASTIC OR GALVANIZED STEEL CONDUIT EXTENDING AT LEAST 24" BEYOND EDGES OF PAVING OR CONSTRUCTION.

E. CONTRACTOR SHALL RUN TWO SPARE WIRES IN EACH DIRECTION FROM CONTROLLER TO FARTHEST VALVE TO SERVE AS BACKUP WIRES.

9. *BACKFILL AND COMPACTING:*

A. AFTER SYSTEM IS OPERATING AND REQUIRED TESTS AND INSPECTIONS HAVE BEEN MADE, BACKFILL EXCAVATIONS AND TRENCHES WITH CLEAN SOIL, FREE OF RUBBISH. INITIAL BACKFILL MATERIAL TO 6 INCHES ABOVE THE TOP OF PIPE SHALL BE FREE OF ROCKS OR STONES LARGER THAN ONE INCH IN DIAMETER FINAL BACKFILL MATERIAL SHALL BE FREE OF ROCKS OR STONES LARGER THAN 3 INCHES IN DIAMETER.

B. BACKFILL FOR ALL TRENCHES, REGARDLESS OF THE TYPE OF PIPE COVERED, SHALL BE COMPACTED TO MINIMUM 90% DENSITY.

C. COMPACT TRENCHES IN AREAS TO BE PLANTED BY THOROUGHLY FLOODING THE BACKFILL. JETTING PROCESS MAY BE USED IN THOSE AREAS.

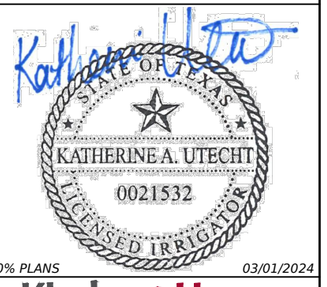
D. DRESS OFF ALL AREAS TO FINISH GRADES.

10. *PROTECTIVE RADIUS OF EXISTING TREES:*

A. AN AUGER IS TO BE USED TO TUNNEL UNDER EXISTING TREES IF IRRIGATION IS INSTALLED WITHIN THE PROTECTIVE RADIUS OF EXISTING TREES AND ONLY IF THERE IS NO OTHER OPTION OR TO DO SO CREATES AN UNREASONABLE HARDSHIP.

F. CLEAN-UP:

1. REMOVE FROM THE SITE ALL DEBRIS RESULTING FROM WORK OF THIS SECTION.



100% PLANS *03/01/2024*

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Texas Department of Transportation

SE 10TH AVE

IRRIGATION SPECIFICATIONS

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		79

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SUMMARY OF DRAINAGE ITEMS

LOCATION	402 6001	464 6018	465 6005	465 6006	465 6007	465 6009	465 6020
	TRENCH EXCAVATION PROTECTION	RC PIPE (CL IV)(24 IN)	JCTBOX(COMPL)(PJB)(3FTX3FT)	JCTBOX(COMPL)(PJB)(4FTX4FT)	JCTBOX(COMPL)(PJB)(3FTX5FT)	JCTBOX(COMPL)(PJB)(5FTX5FT)	INLET (COMPL)(PCO)(4FT)(BOTH)
	LF	LF	EA	EA	EA	EA	EA
PLAN & PROFILE - SHEET 1 OF 3	75	41.5	2	0	1	0	3
PLAN & PROFILE - SHEET 2 OF 3	30	10	0	2	0	0	2
PLAN & PROFILE - SHEET 3 OF 3	30	9.5	0	1	0	0	2
PROJECT TOTALS	**135**	**61**	**2**	**3**	**1**	**1**	**7**

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Texas Department of Transportation

SE 10TH AVE

DRAINAGE SUMMARY

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		80

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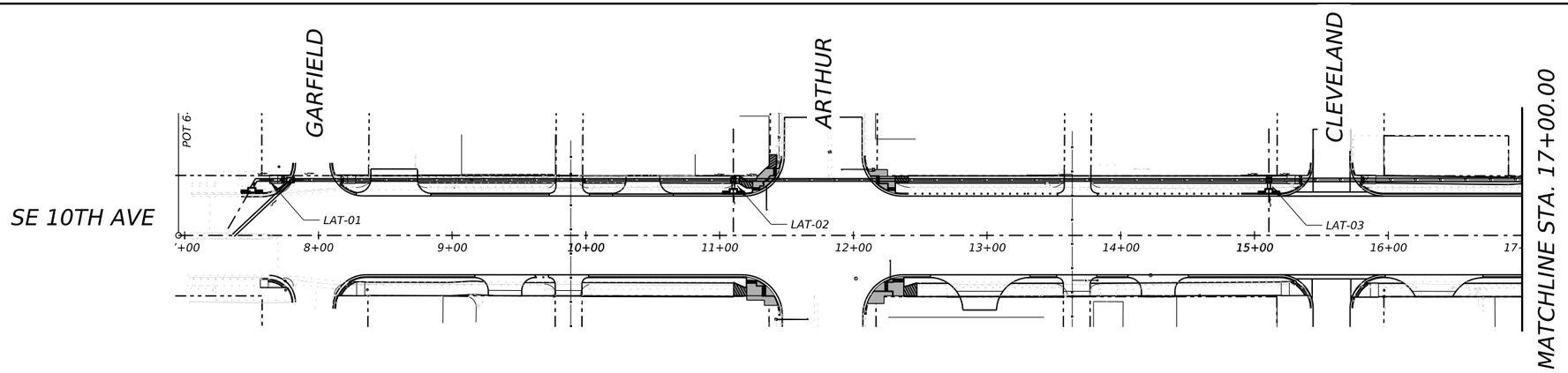
DW: EIA



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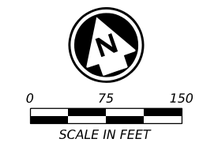

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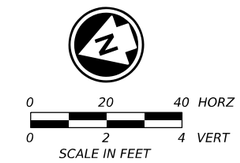

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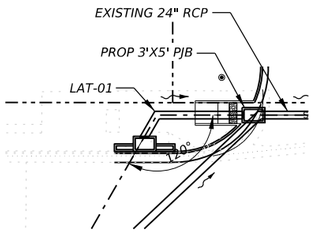

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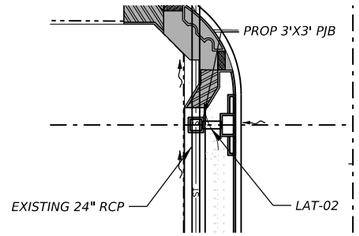

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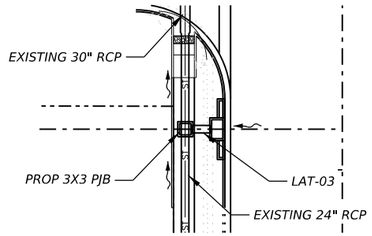
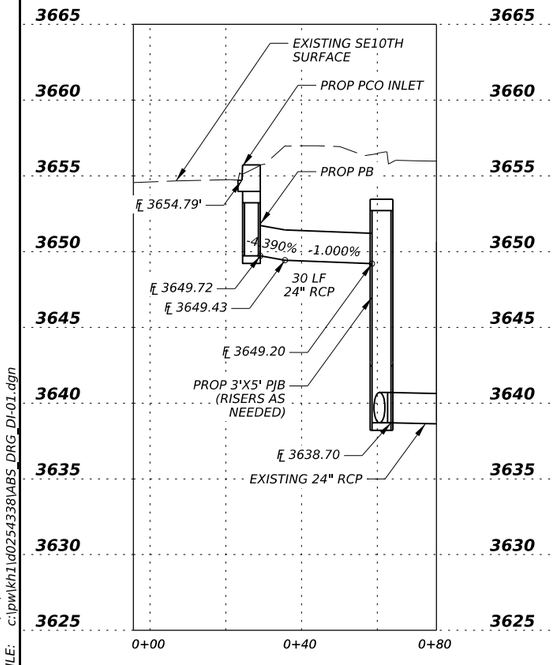
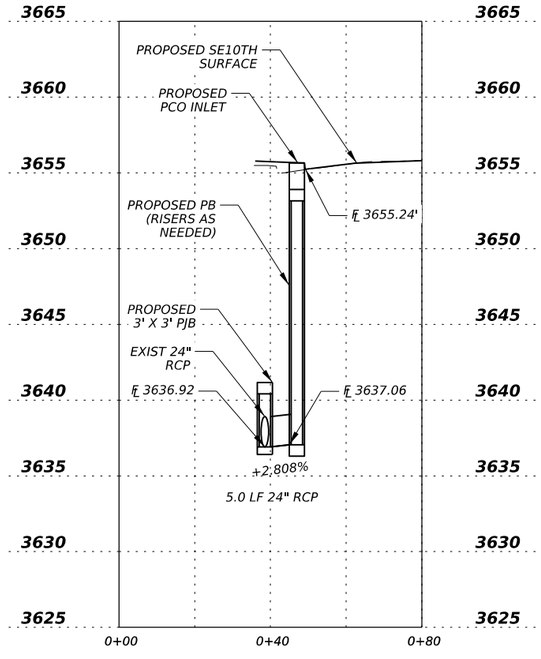
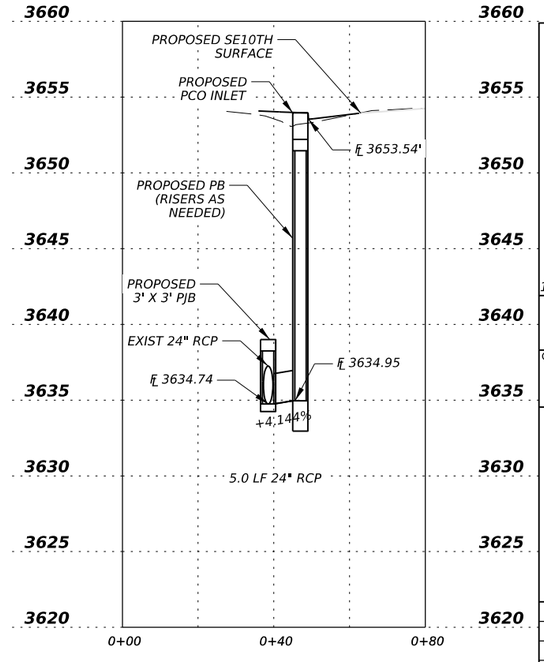


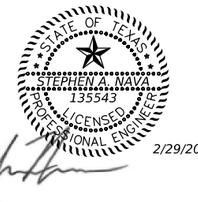
NOTES:

1. CONTRACTOR TO VERIFY TIE-IN ELEVATIONS PRIOR TO MATERIALS FABRICATIONS.









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Texas Department of Transportation

SE 10TH AVE

INLET EXTENSIONS

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		81

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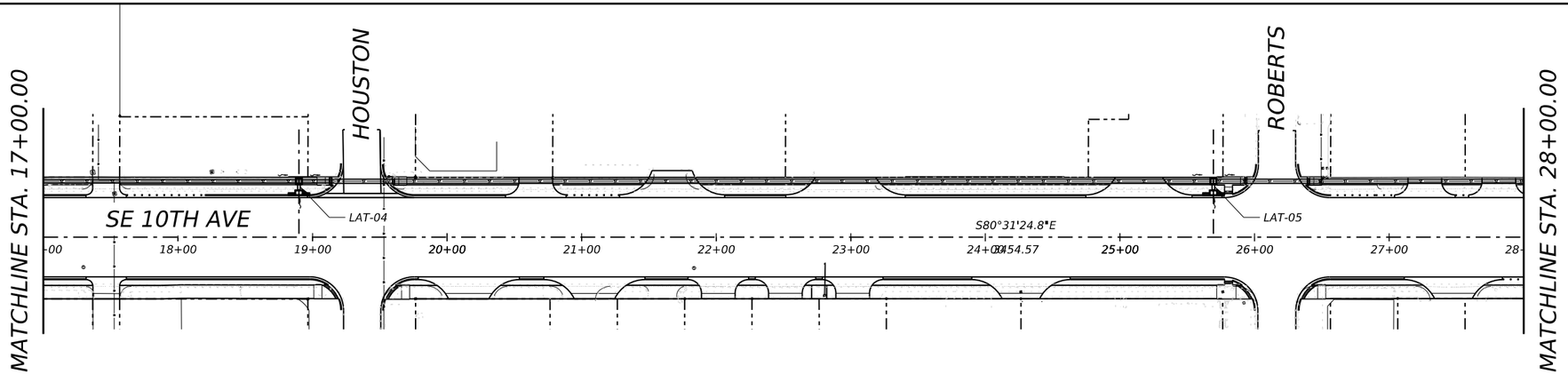

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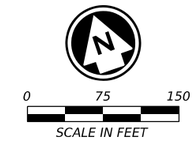

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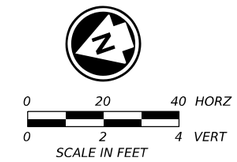

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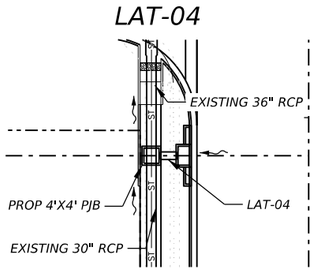

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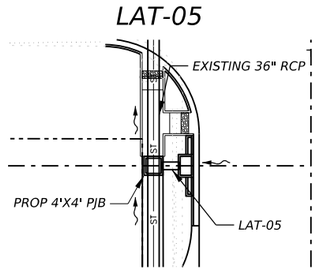

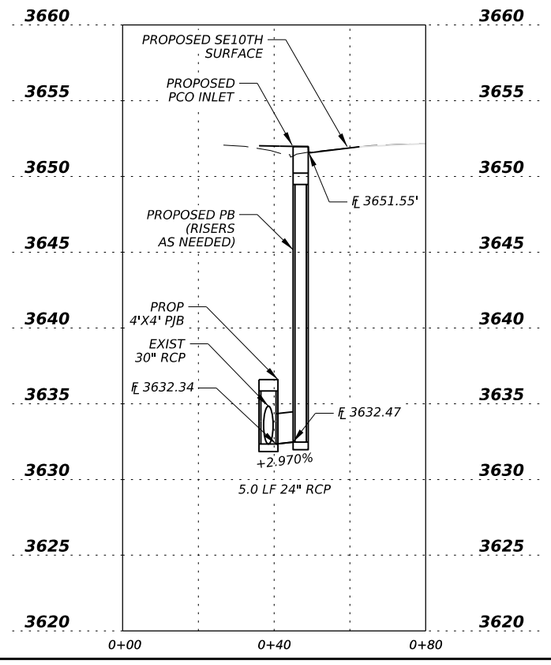

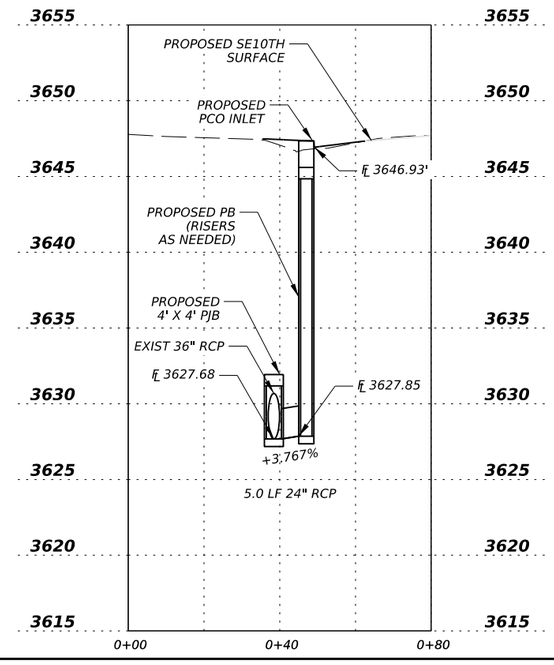

NOTES:

1. CONTRACTOR TO VERIFY TIE-IN ELEVATIONS PRIOR TO MATERIALS FABRICATIONS.

STATE OF TEXAS
STEPHEN A. NAVA
135543
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PROFESSIONAL ENGINEER
2/29/2024

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SE 10TH AVE

INLET EXTENSIONS

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		82

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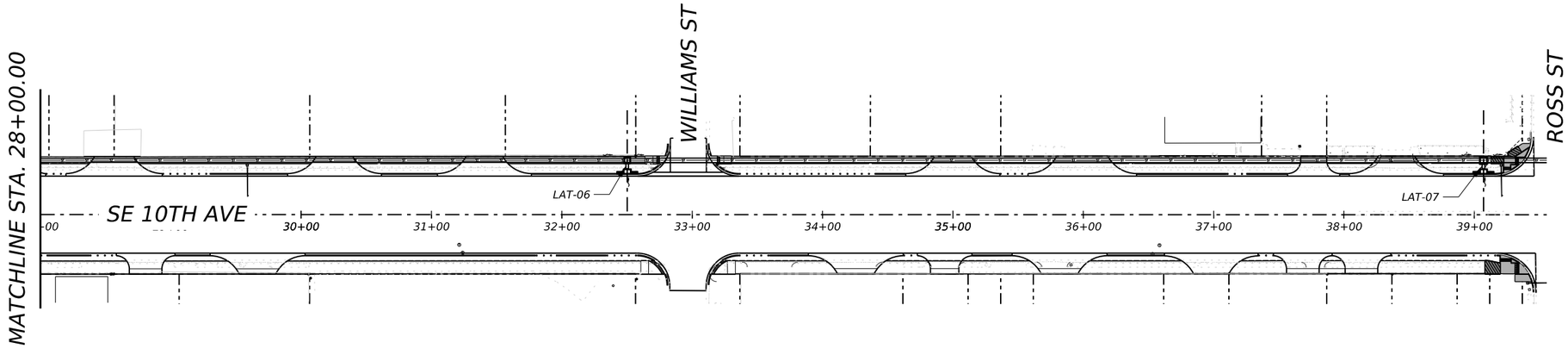

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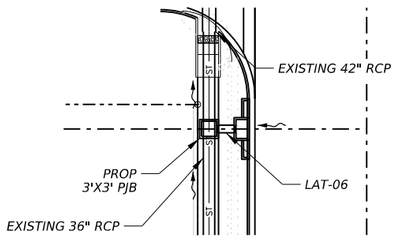
SCALE IN FEET

LAT-06



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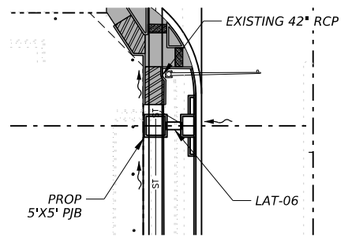

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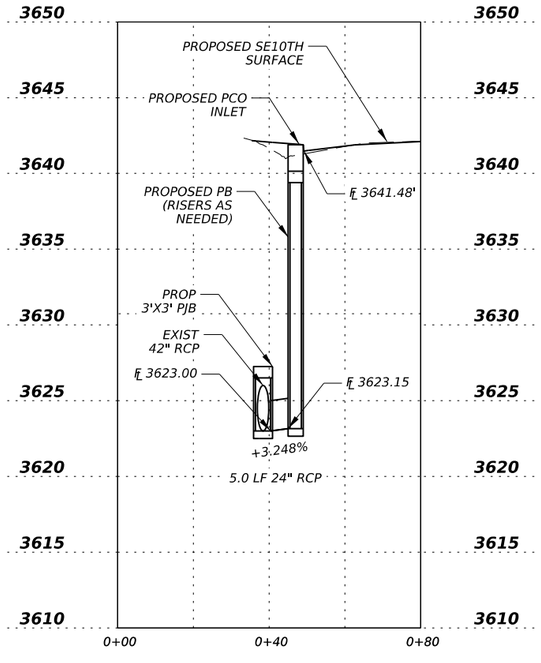
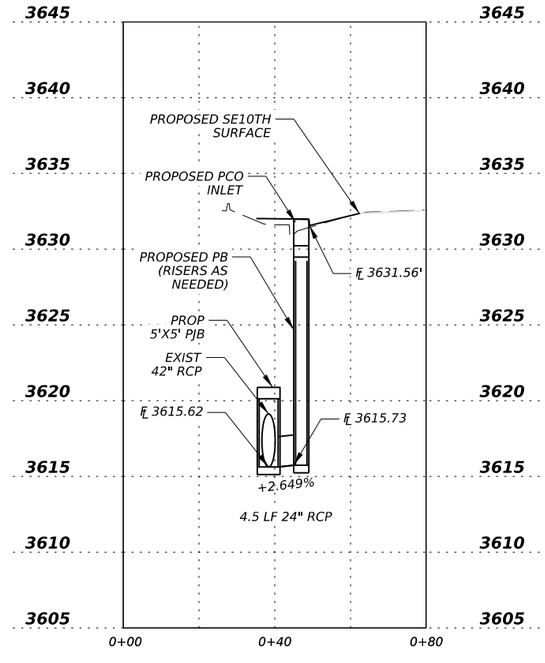
0 2 4 VERT
SCALE IN FEET





NOTES:

1. CONTRACTOR TO VERIFY TIE-IN ELEVATIONS PRIOR TO MATERIALS FABRICATIONS.

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SE 10TH AVE

INLET EXTENSIONS

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		83

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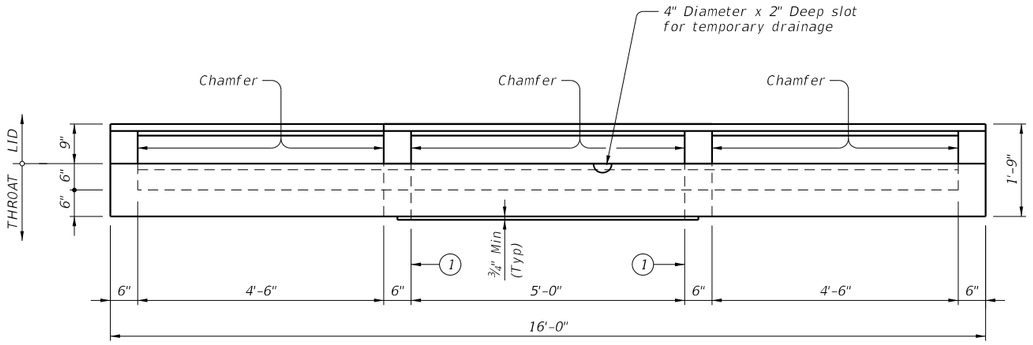
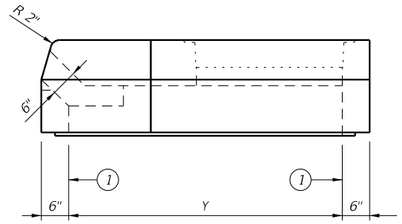


FRONT VIEW

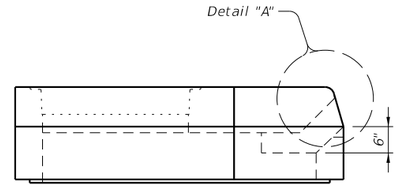
(Showning left and right extensions)



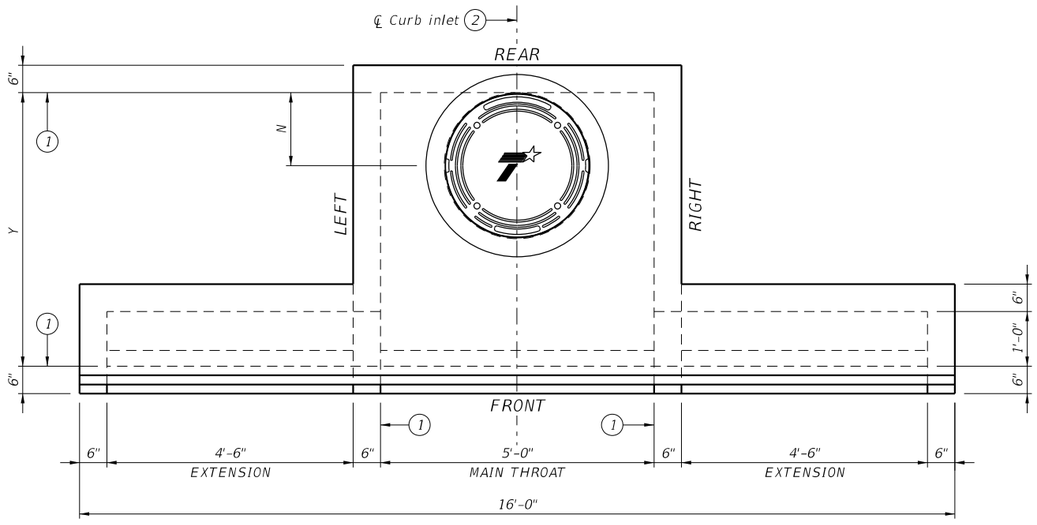
RIGHT VIEW

REAR VIEW

(Extensions not shown)



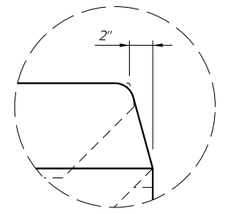
LEFT VIEW



PLAN VIEW

(Showning left and right extensions)

1. Matches inside face of wall of precast base or riser below inlet.
2. Reference point is located where the ℄ of the main throat intersects the normal gutter line. See Curb and Gutter Transition Details for PCO Inlet (CGT-PCO) standard for more information.



DETAIL "A"

HS20 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST CURB INLET OUTSIDE ROADWAY

PCO

FILE: CD-PCO-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT			
©TxDOT February 2020	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0042	11	006		SL 395		
06-2023; Added reference point.	DIST	COUNTY			SHEET NO.		
	AMA	POTTER			84		

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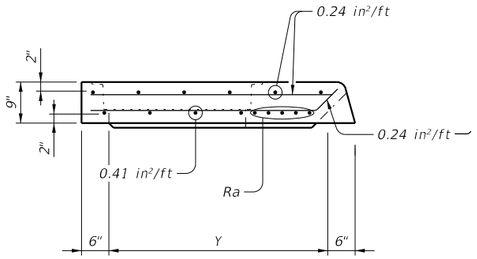

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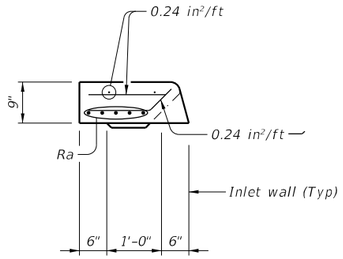

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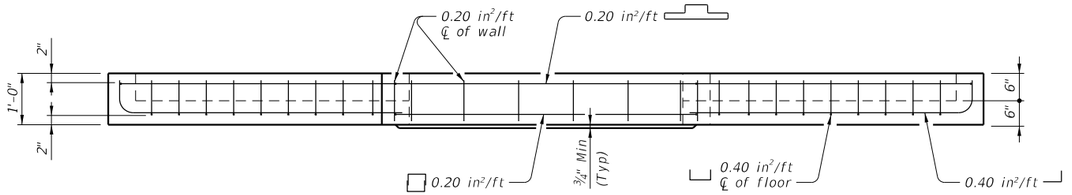
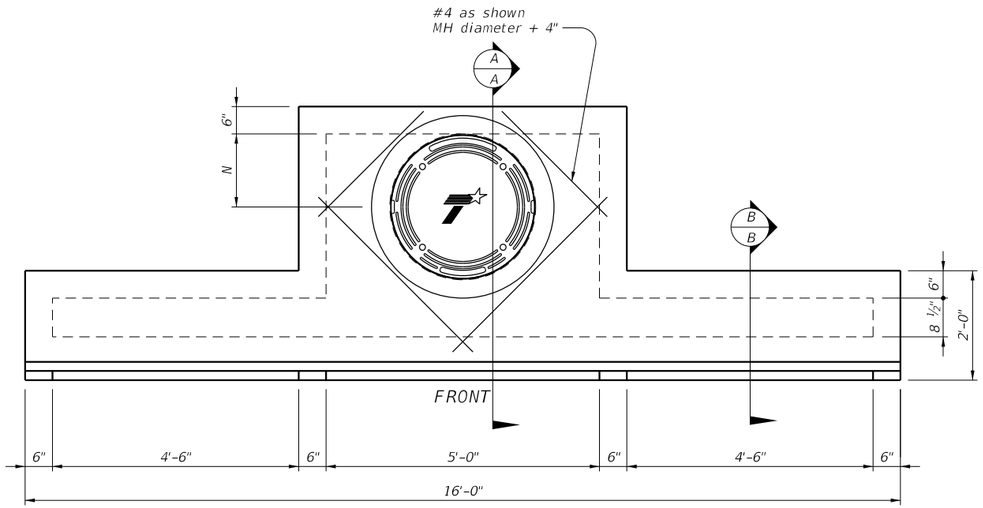


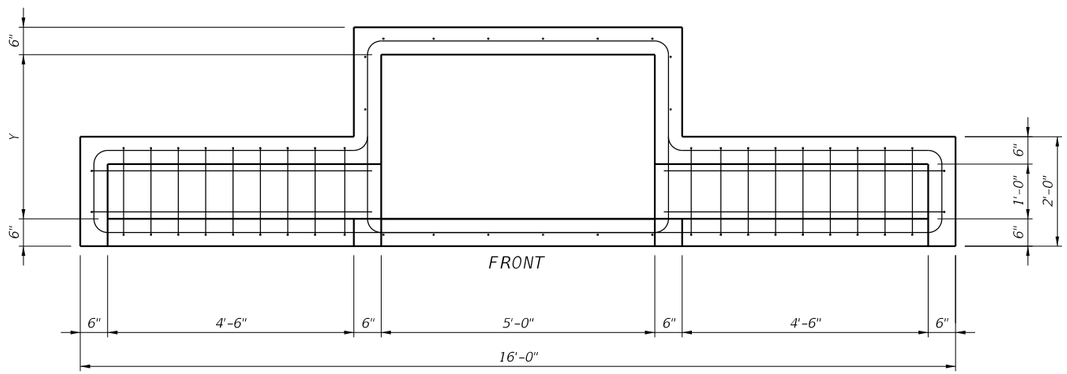
THROAT ELEVATION VIEW

(Showning left and right extensions)



LID PLAN VIEW

(Showning left and right extensions)



THROAT PLAN VIEW

(Showning left and right extensions)

Size (Y)	N	MH Dia*	Ra
3'	9"	18"	(4) #5 Additional
4'	16"	32"	(4) #5 Additional
5'	16"	32"	(4) #5 Additional
6'	16"	32"	(4) #5 Additional

*Nominal ring and cover size.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in the plans.
4. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾". Lid may employ a butt joint with dowels at the Contractor's option.
5. Provide lifting devices in conformance with Manufacturer's recommendations.
6. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.
7. Chamfer vertical edges of inlet lid ¾" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Open area of main throat = 360 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.

Cover dimensions are clear dimensions, unless noted otherwise.

HS20 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST CURB INLET OUTSIDE ROADWAY

PCO

FILE: CD-PCO-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
06-2023: Added reference point.	DIST	COUNTY		SHEET NO.
	AMA	POTTER		85

DATE: 2/29/2024 5:01:11 PM
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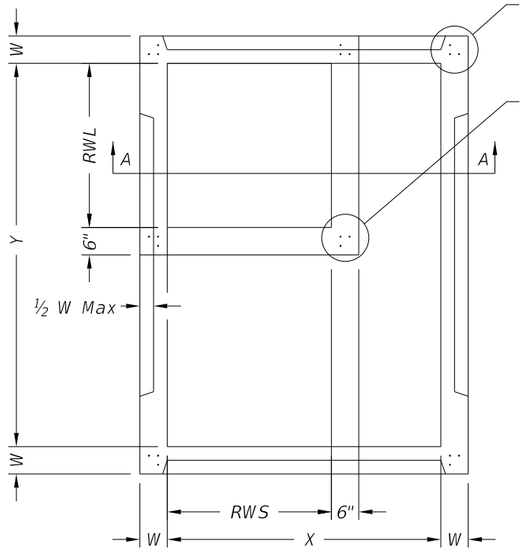
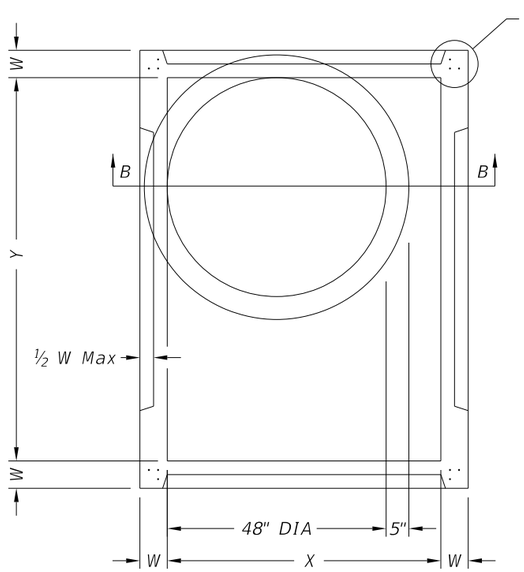


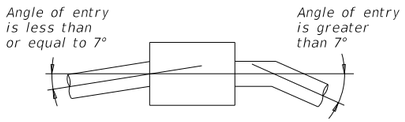
PLAN VIEW "A"

SQUARE REDUCED RISER OPTION



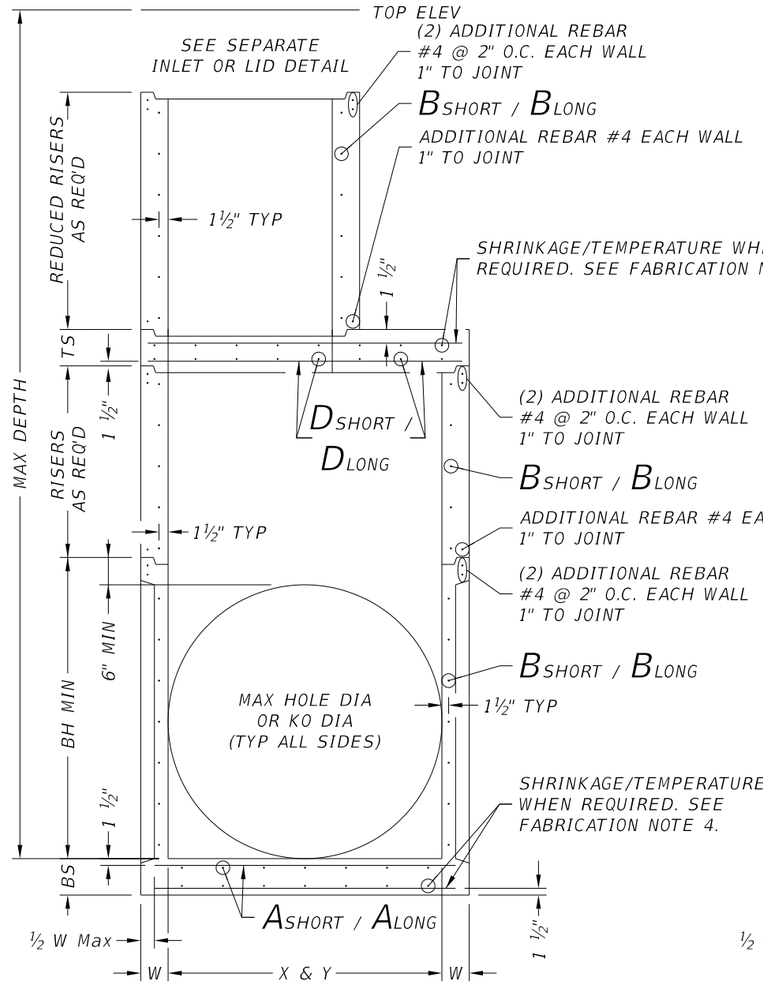
PLAN VIEW "B"

ROUND REDUCED RISER OPTION



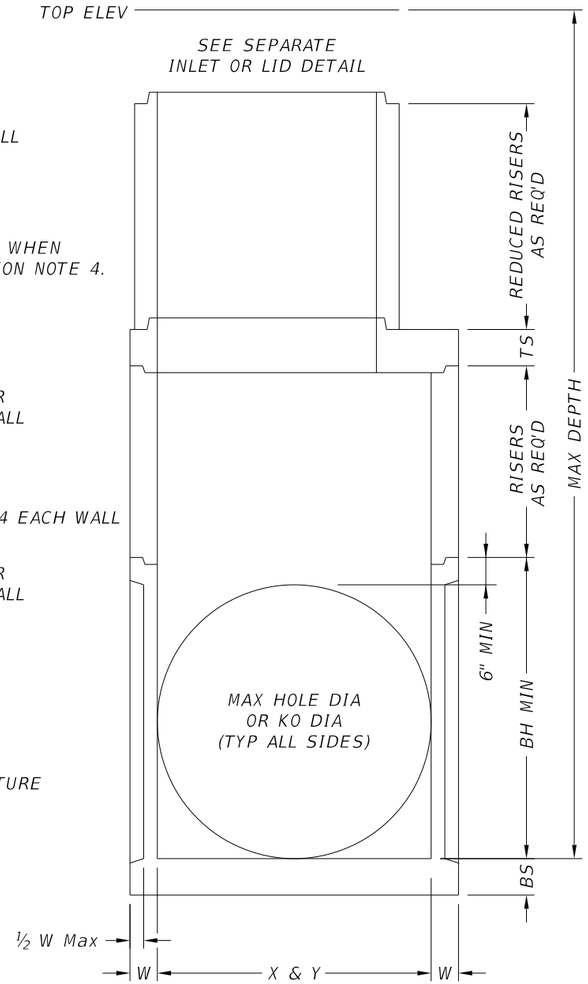
PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PB wall.
If necessary, use pipe elbow or curved
approach alignment to stay within this limit.



SECTION A-A

SQUARE REDUCED RISER OPTION



SECTION B-B

ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in^2/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

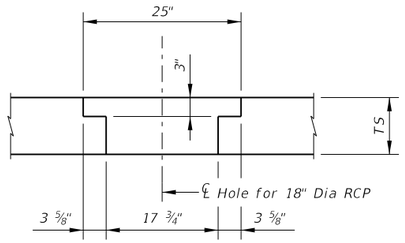
Bridge Division Standard

PRECAST BASE

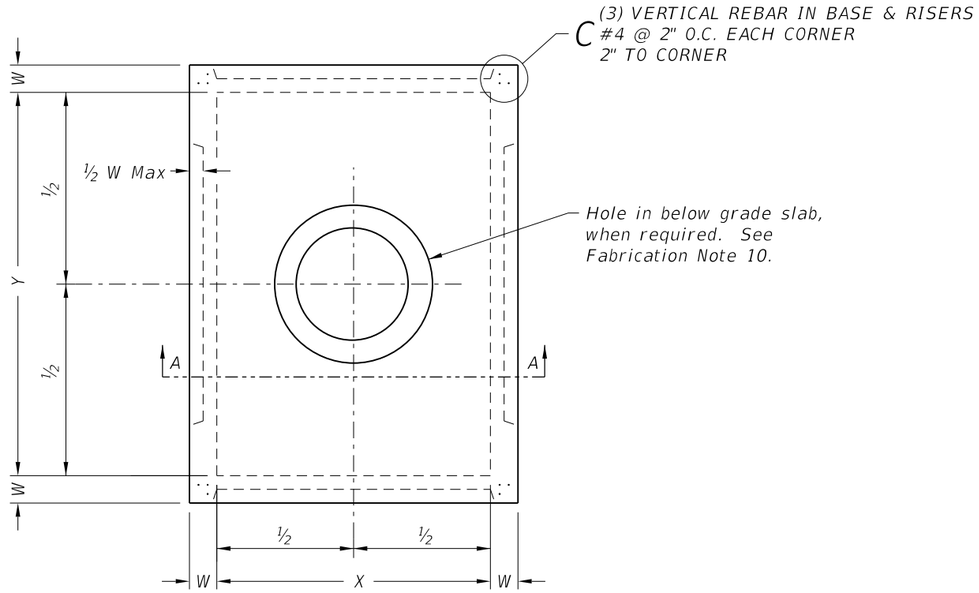
PB

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		86

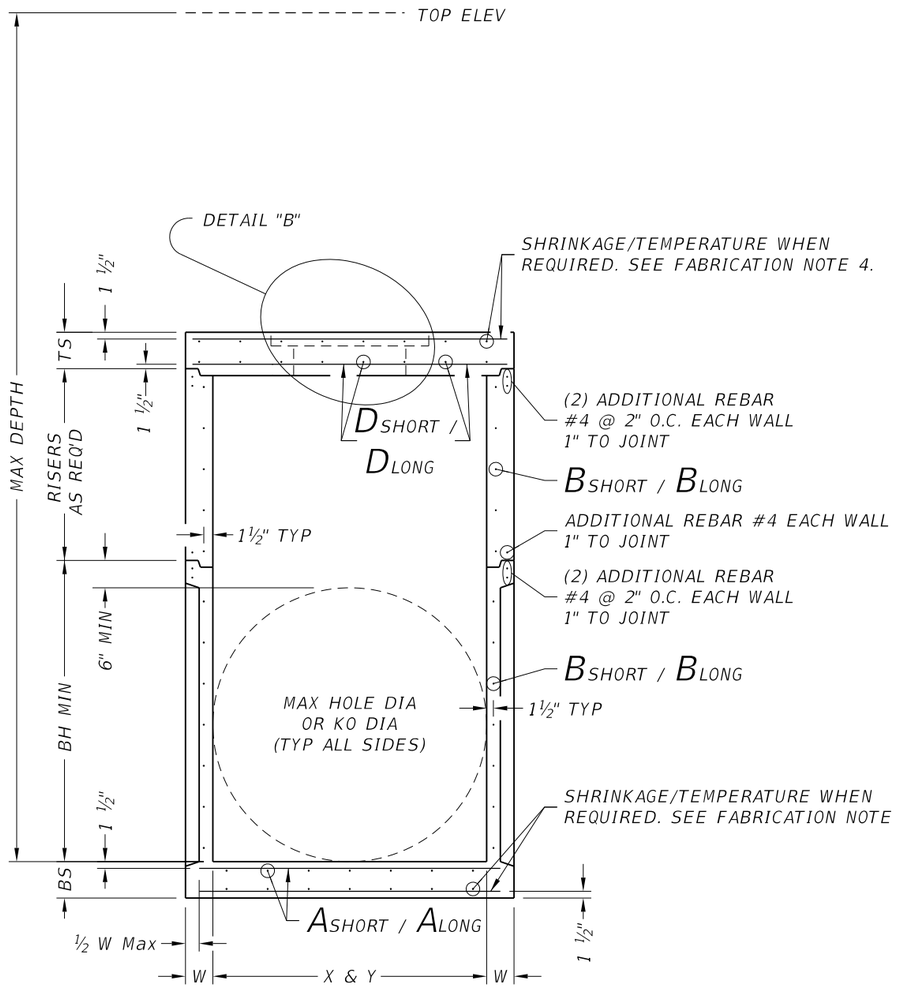
DATE: 06/30/2023 09:54 AM
FILE: DOCUMENT NAME



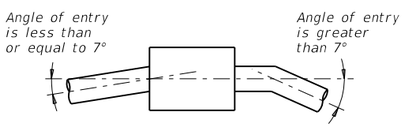
DETAIL "B"



PLAN VIEW



SECTION A-A



PIPE CONNECTION DETAIL

Connect pipes within 7° of normal to PJB wall. If necessary, use pipe elbow or curved approach alignment to stay within this limit.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.
10. Provide hole in below grade slab only when PJB is installed with inlet type POD.

INSTALLATION NOTES:

1. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to junction box.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for junction box is per Item 465 "Junction Boxes, Manholes, and Inlets" by type and size.

Cover dimensions are clear dimensions, unless noted otherwise.

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Texas Department of Transportation

Bridge Division Standard

PRECAST JUNCTION BOX

PJB

FILE: CD-PJB-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		87

DATE: 2/29/2020 2:02:51 PM
FILE: C:\Users\...\21883\CD-PJB-20.dgn

DATE:
FILE:

	Size	MAX DEPTH = 15 ft. to top of BASE SLAB										MAX DEPTH = 25 ft. to top of BASE SLAB										Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
		Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)				Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)						
		Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness	Reduced Riser Size	Short Span Reinf Steel Area	Long Span Reinf Steel Area	Thickness			
	X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA
	ft.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	in^2/ft	in^2/ft	in.	ft. **	in^2/ft	in^2/ft	in.	ft.	in.	in.
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72
	8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72

** Unless otherwise indicated.

FABRICATION NOTES:
1. Maximum spacing of reinforcement is 8".
2. At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.

GENERAL NOTES:
1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
2. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
3. Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

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Texas Department of Transportation

Bridge Division Standard

DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

PDD

FILE: CD-PDD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		88

LIGHTING FIXTURE SCHEDULE

SYMBOL	ID	QTY	MANUFACTURER (FIXTURE)	FIXTURE CATALOG NUMBER	MANUFACTURER (POLE)	POLE CATALOG NUMBER	FIXTURE WATTS	MOUNTING	DRILL SHAFT LENGTH (FT) 30" DIA TYPE A ITEM 416	MOUNTING HEIGHT (FT)	ARM LENGTH (FT)	ARRANGEMENT
●—✱	P	18*	SIGNIFY LUMEC	RFM-108W48LED 4K-G2-R2M-UNV-DALI 1-BK	TXDOT STANDARD	(TYPE SA 40S-10) (250W EQ) LED	108	POLE	8	40	10	SINGLE
●→	PD	53	HADCO	TX03-48-G3-E-H-1-A-3H-H-N-740-A-5-N-SP1	HADCO	Y7S 12 B6-4-SF12 BA	75.5	POLE	8	12	3	SINGLE

* CONTRACTOR TO POWDER COAT THE POLE BLACK TO MATCH COLOR OF FIXTURE. PAYMENT SHALL BE SUBSIDIARY TO ITEM 610.

ELECTRICAL SERVICE DATA

SHEET NO.	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
77	ELC SRV TY A 240/480 060(NS)SS(E)PS(U)	2"	3 / #6	N/A	2P / 60	30	100	LIGHTING CIRCUIT A	2P / 20	7.8	7.0
								LIGHTING CIRCUIT B	2P / 20	6.7	

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

GROUND BOX SUMMARY

ITEM NO.	DESCRIPTION	UNIT	QTY.
624	GROUND BOX TY A (122311)W/APRON	EA	4

CONDUIT AND CABLE CHART

WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	RUN LENGTH (FT)	ITEM 618 CONDUIT (SCH 40) 2" (RIGID METAL) Qty	2" (RIGID METAL) Len	2" PVC (BORED) Qty	2" PVC (BORED) Len	2" PVC (TRENCHED) Qty	2" PVC (TRENCHED) Len	ITEM 620 ELECTRICAL CONDUCTORS NO. 6 BARE WIRE Qty	NO. 6 BARE WIRE Len	NO. 6 INSULATED WIRE Qty	NO. 6 INSULATED WIRE Len
1	I	75			1	75			1	75	2	150
2	I	10					1	10	1	10	6	60
3	I	85					1	85	1	85	2	170
4	I	85			1	60	1	25	1	85	2	170
5	I	85					1	85	1	85	2	170
6	I	180			1	90	1	90	1	180	2	360
7	I	85			1	45	1	40	1	85	2	170
8	I	115			1	50	1	65	1	115	2	230
9	I	70					1	70	1	70	2	140
10	I	85			1	50	1	35	1	85	2	170
11	I	90			1	45	1	45	1	90	2	180
12	I	90			1	20	1	70	1	90	2	180
13	I	85					1	85	1	85	2	170
14	I	135			1	50	1	85	1	135	2	270
15	I	90			1	45	1	45	1	90	2	180
16	I	90			1	45	1	45	1	90	2	180
17	I	80			1	30	1	50	1	80	2	160
18	I	100			1	55	1	45	1	100	2	200
19	I	70					1	70	1	70	2	140
20	I	90			1	40	1	50	1	90	2	180
21	I	85					1	85	1	85	2	170
22	I	100			1	50	1	50	1	100	2	200
23	I	130			1	40	1	90	1	130	2	260
24	I	75					1	75	1	75	2	150
25	I	80			1	30	1	50	1	80	2	160
26	I	80			1	40	1	40	1	80	2	160
27	I	90					1	90	1	90	2	180
28	I	85					1	85	1	85	2	170
29	I	80					1	80	1	80	2	160
30	I	85			1	50	1	35	1	85	2	170
31	I	130			1	45	1	85	1	130	2	260
32	I	85			1	25	1	60	1	85	2	170
33	I	105			1	65	1	40	1	105	2	210
34	I	90			1	60	1	30	1	90	2	180
35	I	105			1	55	1	50	1	105	2	210
36	I	80					1	80	1	80	2	160
37	I	130			1	100	1	30	1	130	2	260
38	I	5					1	5	1	5	2	10
39	I	85			1	85			1	85	2	170
40	I	10					1	10	1	10	2	20

CONDUIT AND CABLE CHART

WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	RUN LENGTH (FT)	ITEM 618 CONDUIT (SCH 40) 2" (RIGID METAL) Qty	2" (RIGID METAL) Len	2" PVC (BORED) Qty	2" PVC (BORED) Len	2" PVC (TRENCHED) Qty	2" PVC (TRENCHED) Len	ITEM 620 ELECTRICAL CONDUCTORS NO. 6 BARE WIRE Qty	NO. 6 BARE WIRE Len	NO. 6 INSULATED WIRE Qty	NO. 6 INSULATED WIRE Len
41	I	140			1	140			1	140	2	280
42	I	100			1	40	1	60	1	100	2	200
43	I	105			1	25	1	80	1	105	2	210
44	I	150			1	50		100	1	150	2	300
45	I	95			1	40	1	55	1	95	2	190
46	I	70					1	70	1	70	2	140
47	I	155			1	45	1	110	1	155	2	310
48	I	170			1	40	1	130	1	170	2	340
49	I	95			1	40	1	55	1	95	2	190
50	I	100					1	100	1	100	2	200
51	I	90			1	40	1	50	1	90	2	180
52	I	65			1	30	1	35	1	65	2	130
53	I	95			1	25	1	70	1	95	2	190
54	I	90			1	45	1	45	1	90	2	180
55	I	95			1	45	1	50	1	95	2	190
56	I	75					1	75	1	75	2	150
57	I	70					1	70	1	70	2	140
58	I	85			1	85			1	85	2	170
59	I	130			1	45	1	85	1	130	2	260
60	I	155			1	30	1	125	1	155	2	310
61	I	110			1	50	1	60	1	110	2	220
62	I	45					1	45	1	45	2	90
63	I	105			1	20	1	85	1	105	2	210
64	I	90					1	90	1	90	2	180
65	I	125			1	40	1	85	1	125	2	250
66	I	80					1	80	1	80	2	160
67	I	95			1	20	1	75	1	95	2	190
68	I	105					1	105	1	105	2	210
69	I	145			1	145			1	145	2	290
70	I	80			1	35	1	45	1	80	2	160
71	I	95			1	35	1	60	1	95	2	190
72	I	110			1	55	1	55	1	110	2	220
73	I	85			1	85			1	85	2	170
74	I	115			1	25	1	90			8	920
	I	15	1	15							8	120
75	I	5					1	5	1	5	4	20
76	I	55			1	55			1	55	8	440
77	I	75			1	75			1	75	4	300
TOTAL		7175		15		2750		4410		7045		15660

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

03/01/2024

STATE OF TEXAS
HIRON M. FERNANDO
123288
LICENSED
PROFESSIONAL ENGINEER

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

ILLUMINATION IMPROVEMENTS

ILLUMINATION SUMMARY

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		89

PLOTTED: 3/1/2024
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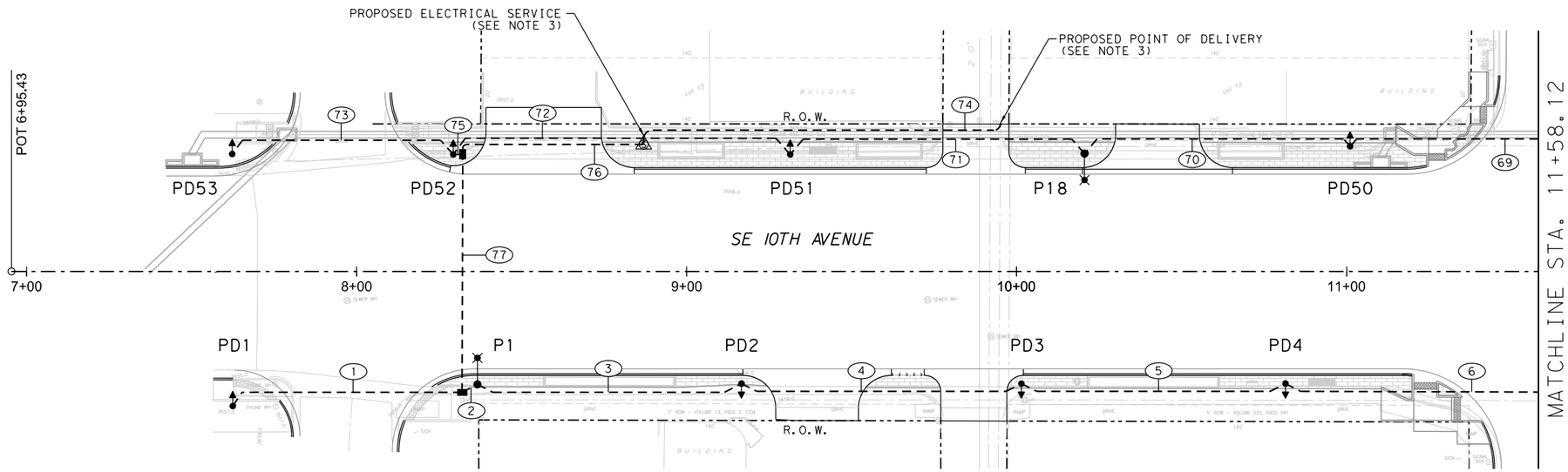
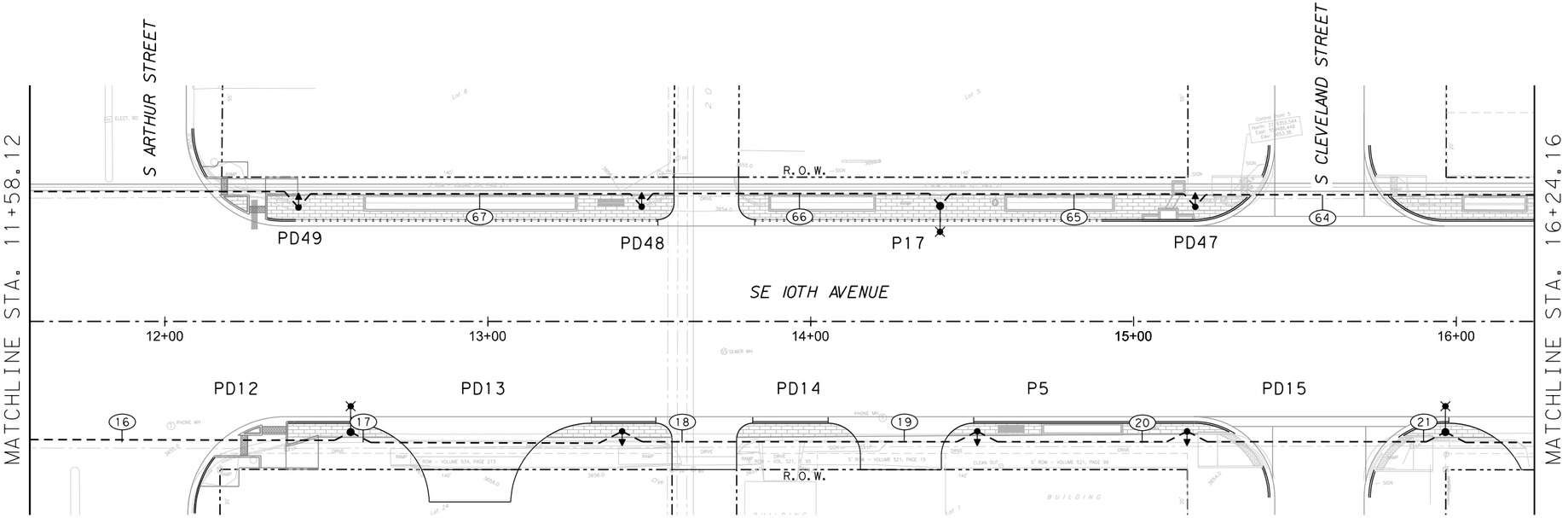
40.0000 ft / in.
BY: Marianna.Borrego





NOTES:

1. LIGHTING CONDUIT RUNS SHOWN ON PLANS ARE DIAGRAMMATICAL ONLY. THE BEST FINAL CONDUIT ROUTING SHALL BE DETERMINED BY THE CONTRACTOR AT THE TIME OF CONSTRUCTION.
2. LIGHT POLE FOUNDATIONS SHALL BE PLACED AT A MINIMUM OF 2.5 FEET FROM FACE OF CURB TO FACE OF FOUNDATION.
3. CONTRACTOR TO COORDINATE WITH POWER PROVIDER CONCERNING ILLUMINATION ELECTRICAL SERVICE AND POINT OF DELIVERY LOCATION.

0 40
SCALE IN FEET

LEGEND

●—→	PROP SINGLE ARM LUMINAIRE
●→	PROP PEDESTRIAN LUMINAIRE
P#	PROP ROAD POLE NUMBER
PD#	PROP PEDESTRIAN POLE NUMBER
■	PROP ILLUMINATION GROUND BOX
- - - - -	PROP ILLUMINATION PVC CONDUIT
(1)	ILLUMINATION CONDUIT LABEL

03/01/2024

STATE OF TEXAS
HIRON M. FERNANDO
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ILLUMINATION IMPROVEMENTS

ILLUMINATION PLAN
SE 10TH AVE

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		90

PLOTTED: 3/1/2024
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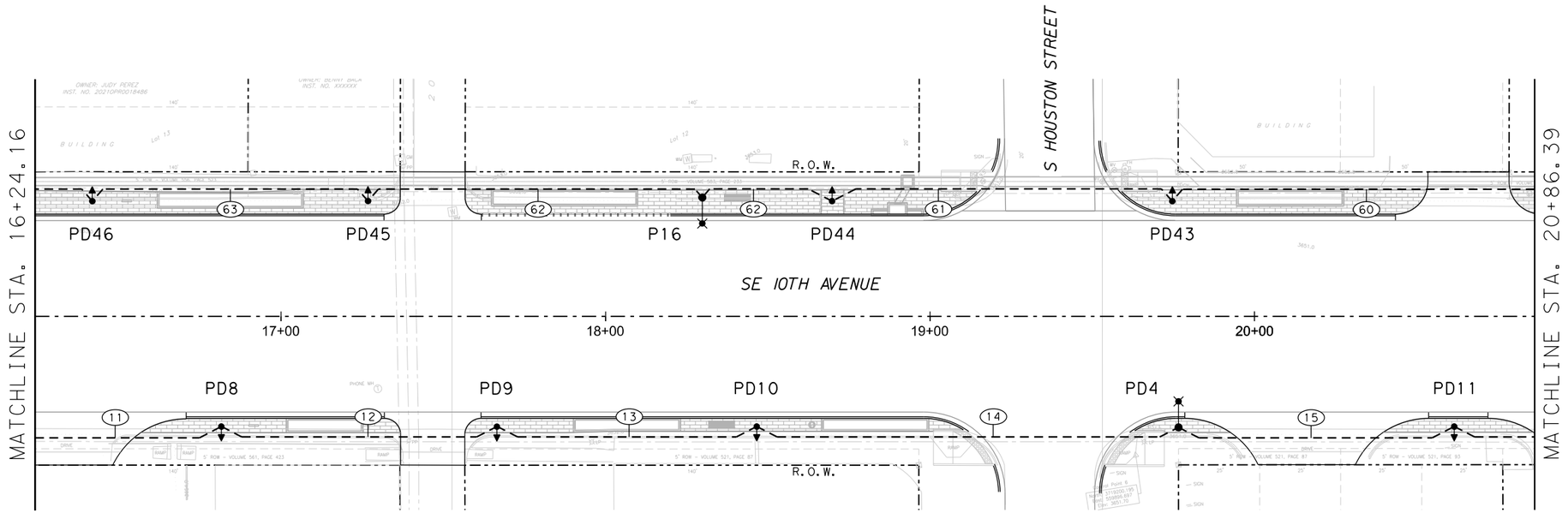
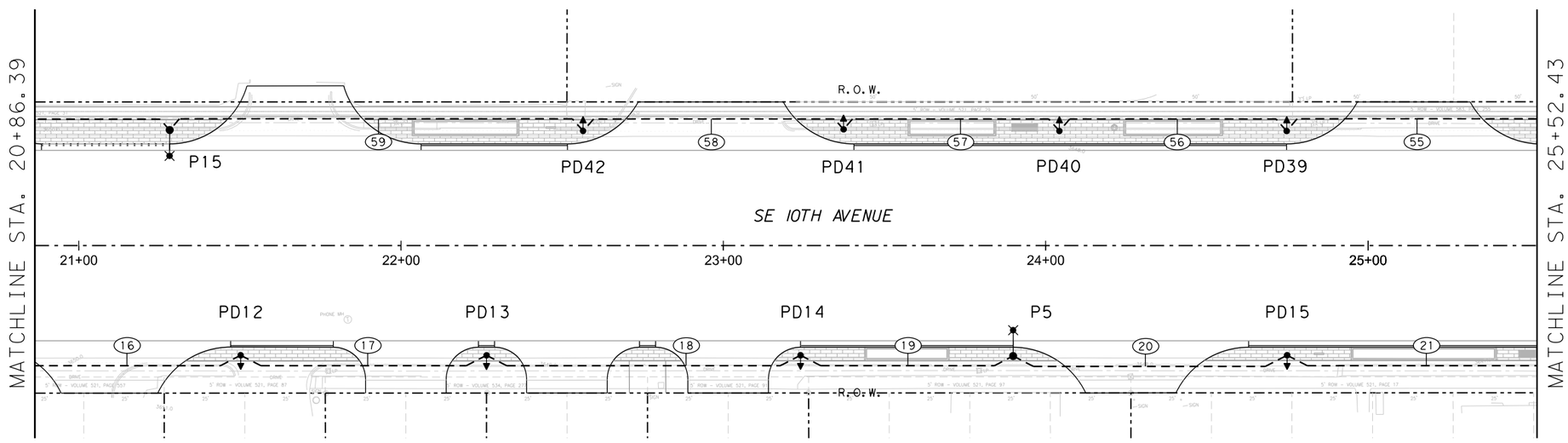
40.0038 ft / in.
BY: Marianna.Borrego





0 40
SCALE IN FEET

LEGEND

- PROP SINGLE ARM LUMINAIRE
- PROP PEDESTRIAN LUMINAIRE
- P# PROP ROAD POLE NUMBER
- PD# PROP PEDESTRIAN POLE NUMBER
- PROP ILLUMINATION GROUND BOX
- PROP ILLUMINATION PVC CONDUIT
- (1) ILLUMINATION CONDUIT LABEL

NOTES:

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ILLUMINATION IMPROVEMENTS

ILLUMINATION PLAN SE 10TH AVE

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		91

PLOTTED: 3/1/2024
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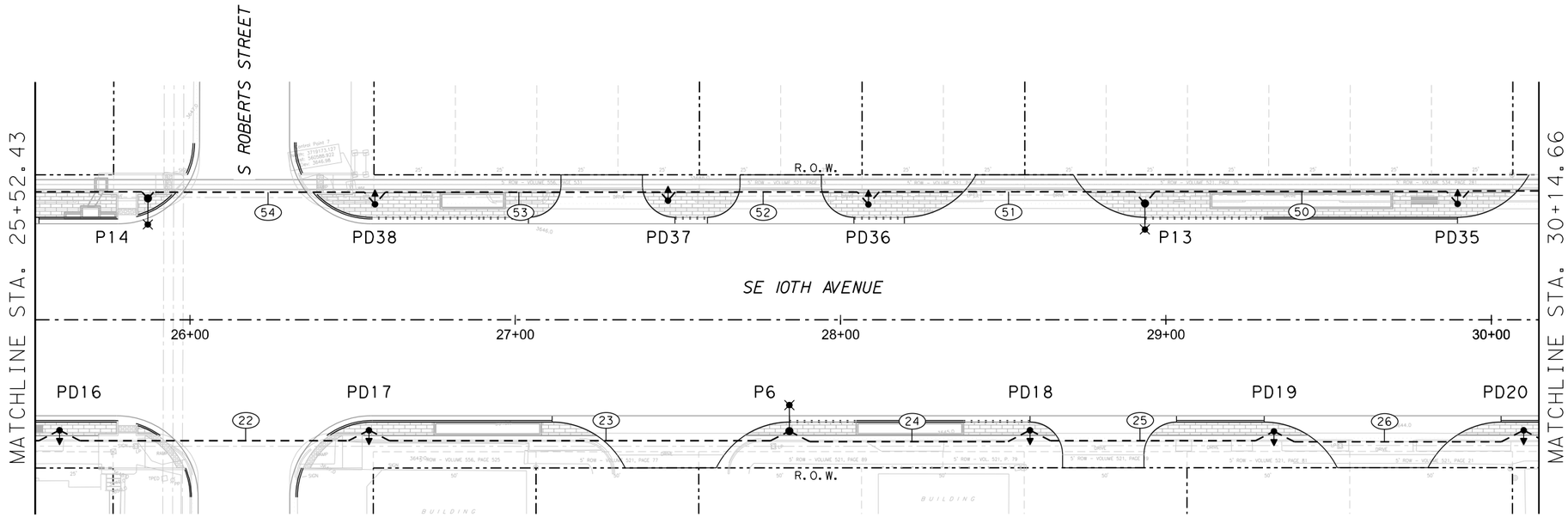
40.0038 ft / in.
BY: Marianna.Borrego



0 40
SCALE IN FEET

N

LEGEND

- PROP SINGLE ARM LUMINAIRE
- PROP PEDESTRIAN LUMINAIRE
- P# PROP ROAD POLE NUMBER
- PD# PROP PEDESTRIAN POLE NUMBER
- PROP ILLUMINATION GROUND BOX
- PROP ILLUMINATION PVC CONDUIT
- (1) ILLUMINATION CONDUIT LABEL

NOTES:

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ILLUMINATION IMPROVEMENTS

ILLUMINATION PLAN SE 10TH AVE

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		92

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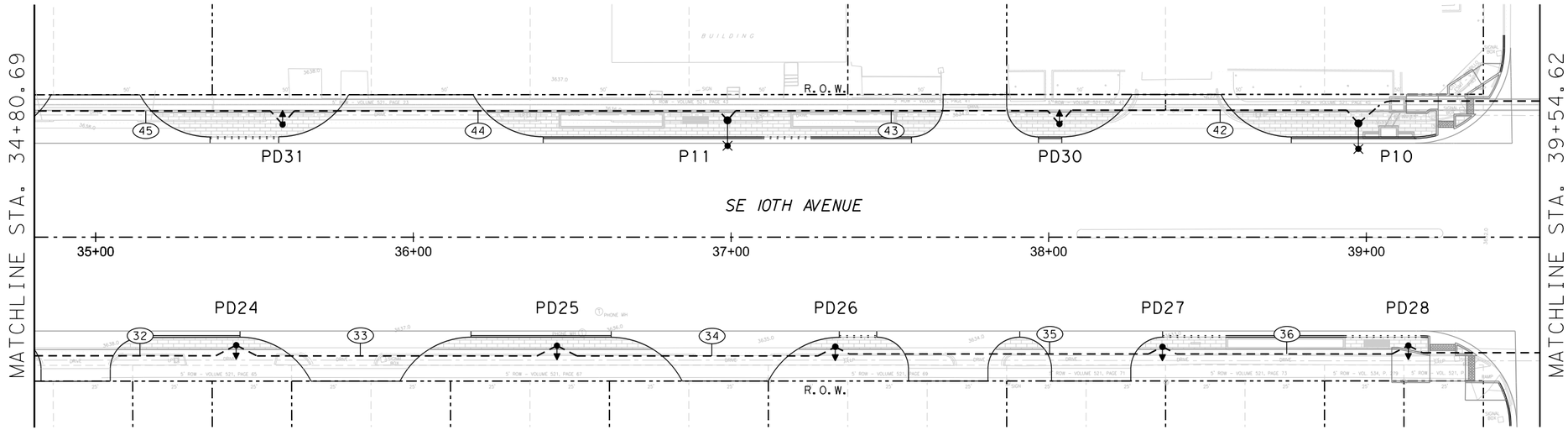
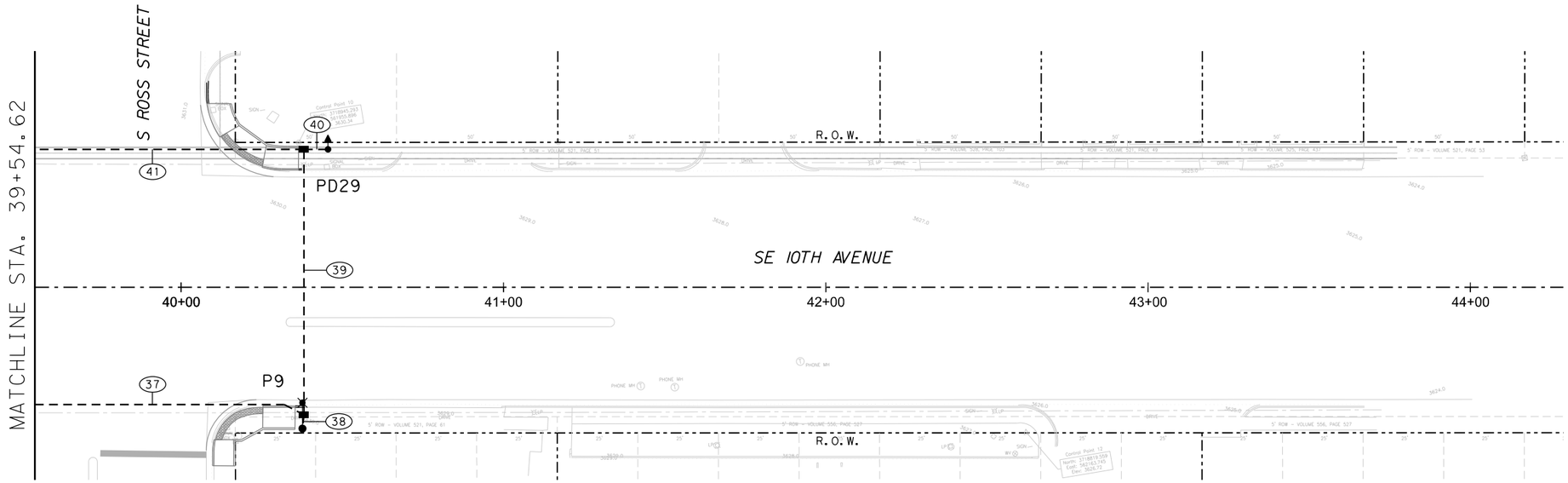
BY: Marianna.Borrego





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2. LIGHT POLE FOUNDATIONS SHALL BE PLACED AT A MINIMUM OF 2.5 FEET FROM FACE OF CURB TO FACE OF FOUNDATION.

0 40
SCALE IN FEET

LEGEND

- PROP SINGLE ARM LUMINAIRE
- PROP PEDESTRIAN LUMINAIRE
- P# PROP ROAD POLE NUMBER
- PD# PROP PEDESTRIAN POLE NUMBER
- PROP ILLUMINATION GROUND BOX
- PROP ILLUMINATION PVC CONDUIT
- (1) ILLUMINATION CONDUIT LABEL

03/01/2024

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ILLUMINATION IMPROVEMENTS

ILLUMINATION PLAN
SE 10TH AVE

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		93

PLOTTED: 3/1/2024
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40.0038 ft / in.
BY: Marianna.Borrego

HADCO by ⓢignify

Urban
Hagerstown
TX03 Post top

Hadco's Hagerstown LED post top gives you the ability to create a unique style through our modular post top concepts to blend into any residential and historic urban settings. With the latest LED technology you can seamlessly replace traditional HID technology to maximize energy savings and significantly reduce total cost of ownership. The Hagerstown luminaire provides excellent uniformity, traditional customizable look, with the benefits of modern technology.

Project:
Location:
Cat.No:
Type:
Lamps: Qty:
Notes:

Ordering guide

example: TX03-32-G3-B-A-2-A-5-E-N-740-A-9-SRD-SP1

Series	LEDs	Gen.	Pods	Finials	Fasteners	Finishes	Optical System	Photo controls
TX03			E	H	1	A	3H	H
TX03 Hagerstown LED post top	**32** 32 **48** 48[1] **64** 64[1]	**G3** Gen.3	**A** Octagonal fitter **B** Round fitter w/scalloped petals **C** Fluted tapered hourglass fitter[2] **D** Smooth tapered hourglass fitter[2] **E** Tapered fluted fitter w/scalloped flower petals[3] **G** Tall round fluted fitter[2] **H** Round contemporary fitter **J** Tapered fluted w/round stepped fitter **L** Round fluted long fitter **T** Decorative leaf fitter w/scalloped petals	**A** A finial **B** B finial **C** C finial **D** D finial **E** E finial **F** F finial **G** G finial **H** H finial **N** No finial	**1** Hex head bolts **2** Allen hex bolts	**A** Black **B** White **G** Verde **H** Bronze **J** Green	**2** Type 2 **2H** Type 2 w/HSS **3** Type 3 **3H** Type 3 w/HSS **3W** Type 3 Wide **3WH** Type 3 Wide w/ HSS **4** Type 4 **5** Type 5	Button eye photo controls **E** 120 VAC **H** 208/240/277 VAC **K** 347 VAC **R** Twist-lock receptacle[3] **N** None

Ordering guide (continued)

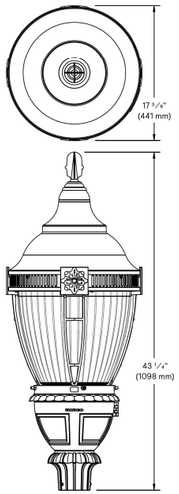
Future Proof controls	Color Temps	Voltages	Currents	Driver Options	Surge protection
N	740	A	5	N	SP1
R7 7-Pin Receptacle[4] **N** None	**730** 3000K **740** 4000K	**A** 120-277 VAC **B** 347-480 VAC[2]	**3** 350mA **5** 530 mA **7** 700mA **9** 900mA **1** 1050mA[1]	**DA** 4hrs 25% reduction[2] **DB** 4hrs 50% reduction[2] **DC** 4hrs 75% reduction[2] **DD** 6hrs 25% reduction[2] **DE** 6hrs 50% reduction[2] **DF** 6hrs 75% reduction[2] **DG** 8hrs 25% reduction[2] **DH** 8hrs 50% reduction[2] **DJ** 8hrs 75% reduction[2] **DL** Compatible with DALI **N** No dimming **S** FAWS Field adjustable wattage selector **SRD** Sensor ready driver (standard configuration)[1,2] **SRDI** Sensor ready driver (alternate configuration)[1,2]	**SP1** 10kV/10kA (standard) **SP2** 20kV/20kA (optional)

1. Configurations with 48 (48) and 64 (64) LED array boards are not compatible with the 1050mA (1) drive current. 64LED are limited to 35C ambient rating with 900ma driver current
2. Consult factory.
3. Configurations with C,D,E,G pods are not compatible with the Twist Lock receptacle (R) photo control.
4. R7 is located on the top of the roof, N No Finial is required.

TX03 Hagerstown

Post top

Dimensions



Max. EPA: 1.70 sq. ft.
Max. Weight: 37 lbs.

Finials

Shown with Finial A and Pod B.

Decorative Pods

TX03 Hagerstown

Post top

Lumen Charts

LED Module: 3000K	LED qty*	System current	Color Temp.	Average System Wattage**	Type 2 Lumen Output	Type 2 BUG Rating	Type 2 Efficacy	Type 3 Lumen Output	Type 3 BUG Rating	Type 3 Efficacy	Type 3W Lumen Output	Type 3W BUG Rating	Type 3W Efficacy
TX0332-G3-x-730-3	32	350	3000	35.4	4003	B1-U2-G1	113	4000	B1-U2-G1	113	4125	B1-U2-G1	117
TX0332-G3-x-730-5	32	530	3000	51.8	5586	B2-U3-G2	108	5581	B1-U3-G1	108	5755	B2-U2-G2	111
TX0332-G3-x-730-7	32	700	3000	71.9	7317	B2-U3-G2	102	7311	B2-U3-G2	102	7539	B2-U3-G2	105
TX0332-G3-x-730-9	32	900	3000	93.9	8913	B2-U3-G2	95	8905	B2-U3-G2	95	9182	B2-U3-G2	98
TX0332-G3-x-730-1	32	1050	3000	107.7	10107	B2-U3-G2	94	10098	B2-U3-G2	94	10412	B2-U3-G2	97
TX0348-G3-x-730-3	48	350	3000	51.4	5838	B2-U3-G2	114	5833	B2-U3-G2	113	6015	B2-U2-G2	117
TX0348-G3-x-730-5	48	530	3000	75.5	8357	B2-U3-G2	111	8350	B2-U3-G2	111	8610	B2-U3-G2	114
TX0348-G3-x-730-7	48	700	3000	104.7	10671	B2-U3-G2	102	10662	B2-U3-G2	102	10994	B3-U3-G3	105
TX0348-G3-x-730-9	48	900	3000	136.8	12997	B3-U3-G3	95	12986	B3-U3-G3	95	13390	B3-U3-G3	98
TX0364-G3-x-730-3	64	350	3000	68.7	7637	B2-U3-G2	111	7631	B2-U3-G2	111	7869	B2-U3-G2	115
TX0364-G3-x-730-5	64	530	3000	105.5	10932	B2-U3-G2	104	10923	B2-U3-G2	104	11263	B3-U3-G3	107
TX0364-G3-x-730-7	64	700	3000	138.4	13960	B3-U3-G3	101	13948	B3-U3-G3	101	14382	B3-U3-G3	104
TX0364-G3-x-730-9	64	900	3000	179.9	16825	B3-U3-G3	94	16811	B3-U3-G3	93	17334	B3-U3-G3	96

LED Module: 3000K	LED qty*	System current	Color Temp.	Average System Wattage**	Type 4 Lumen Output	Type 4 BUG Rating	Type 4 Efficacy	Type 5 Lumen Output	Type 5 BUG Rating	Type 5 Efficacy
TX0332-G3-x-730-3	32	350	3000	35.4	4062	B1-U2-G1	115	4228	B3-U2-G1	119
TX0332-G3-x-730-5	32	530	3000	51.8	5667	B1-U2-G2	109	5899	B3-U2-G1	114
TX0332-G3-x-730-7	32	700	3000	71.9	7423	B2-U3-G2	103	7727	B3-U3-G2	107
TX0332-G3-x-730-9	32	900	3000	93.9	9042	B2-U3-G2	96	9412	B4-U3-G2	100
TX0332-G3-x-730-1	32	1050	3000	107.7	10253	B2-U3-G2	95	10673	B4-U3-G2	99
TX0348-G3-x-730-3	48	350	3000	51.4	5923	B1-U3-G2	115	6165	B3-U2-G1	120
TX0348-G3-x-730-5	48	530	3000	75.5	8478	B2-U3-G2	112	8825	B3-U3-G2	117
TX0348-G3-x-730-7	48	700	3000	104.7	10826	B2-U3-G2	103	11269	B4-U3-G2	108
TX0348-G3-x-730-9	48	900	3000	136.8	13186	B3-U3-G3	96	13725	B4-U3-G2	100
TX0364-G3-x-730-3	64	350	3000	68.7	7748	B2-U3-G2	113	8065	B3-U3-G2	117
TX0364-G3-x-730-5	64	530	3000	105.5	11091	B2-U3-G2	105	11545	B4-U3-G2	109
TX0364-G3-x-730-7	64	700	3000	138.4	14163	B3-U3-G3	102	14742	B4-U3-G3	107
TX0364-G3-x-730-9	64	900	3000	179.9	17070	B3-U3-G3	95	17768	B5-U3-G3	99

* Configurations with 64 (64) LED array boards are limited to a 35C ambient rating with the 900mA (9) drive current.

** System wattage or total luminaire wattage includes the LED module and the LED driver. Note: Equivalence should always be confirmed by a photometric layout.

Note: Equivalence should always be confirmed by a photometric layout. Due to rapid and continuous advances in LED technology, LED luminaire data is subject to change without notice and at the discretion of Signify.

TX03 Hagerstown

Post top

Specifications

Roof
Roof is 0.090" thick spun aluminum (12-1/4"H x 16-1/4"W). Easy future replacement of either roof or bottom globe section if required.

Globe
Narrow body globe is constructed of clear injection-molded vertically ribbed U.V. stabilized acrylic. The bottom section of the globe has a neck opening of 7-1/4" and an ouriside neck diameter of 8". Globe (less roof) has a 13-1/4"H x 14-1/4"W.

Cage
Cage for narrow body globes (15" dia) is constructed of die-cast 360 aluminum alloy. Cage has 4 legs each with square decorative flower block. Solid rectangular band around top of cage. Height of cage is 17" and width of cage is 15". Finish is polyester thermoset powdercoat.

Pods
Wiring block to accept three #8 solid or stranded wires heavy cast aluminum post fitter utilizes three 5/16-18 black cadmium stainless steel set screws (Hex head or Allen head as specified) for mounting to 3" O.D. post tenon. Globe fitter has an internal water trap to prevent water from entering ballast compartment. Globe is held by utilizing four 5/16-18 black cadmium stainless steel fasteners (Hex head or Allen head as specified). All hardware to be stainless steel and captive.

Optional Decorative Pods
Octagonal fitter (A) is constructed of die-cast 360 aluminum alloy with bottom-hinged door providing 135° entry into the fitter assembly for easy access to the electrical components. Optional internal twist-lock photo eye receptacle or optional button eye photocell. Easy access to photo eye through the door on the pod (10-1/2"H x 10-1/2" W).

Round fitter with scalloped petals (B)
is constructed of die-cast 360 aluminum alloy with side-hinged door providing 180° entry into the fitter assembly for easy access to the electrical components. Optional internal twist-lock photo eye receptacle or optional button eye photocell. Easy access to photo eye through the door on the pod (12-1/2"H x 10-1/2" W).

Fluted tapered hourglass fitter (C)
is constructed of 356 HM High-Strength, Low-Copper cast aluminum. Optional internal button eye photocell (8"H x 8-1/2"W).

Smooth tapered hourglass fitter (D)
is constructed of 356 HM High-Strength, Low-Copper cast aluminum. Optional internal button eye photocell. (8"H x 9-1/4"W)

Tapered fluted fitter with scalloped flower petals (E) is constructed of 356 HM High-Strength, Low-Copper cast aluminum. Optional internal button eye photocell (10"H x 11-1/2"W).

Tall round fluted fitter (G) is constructed of die-cast 360 aluminum alloy with removable door providing entry into the fitter assembly for easy access to the electrical components. Optional internal button eye photocell. Easy access to photocell through door on the pod (9"H x 9"W).

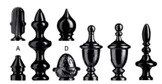
Round contemporary fitter (H) is constructed of 356 HM High-Strength, Low-Copper cast aluminum. Optional internal twist-lock photo eye receptacle or optional internal button eye photocell. Easy access to photocell through door on the pod (12"H x 10"W).

Tapered fluted with round stepped fitter (J) is constructed of 356 HM High-Strength, Low-Copper cast aluminum with a side-hinged door providing entry into the fitter assembly for easy access to the electrical components. Optional internal twist-lock photo eye receptacle or button eye photocell. Tool-less access to photo eye through the door on the pod (12-1/2"H x 10-1/4"W).

Round fluted long fitter (L) is constructed of 356 HM High-Strength, Low-Copper cast aluminum with a side-hinged door providing entry into the fitter assembly for easy access to the electrical components. Optional internal twist-lock photo eye receptacle or button eye photocell. Tool-less access to photo eye through the door on the pod (12-1/2"H x 10-1/4"W).

Decorative leaf fitter with scalloped petals (T)
is constructed of 356 HM High-Strength, Low-Copper cast aluminum with side-hinged door providing 180 degrees entry into the fitter assembly for easy access to the electrical components. Optional internal twist-lock photo eye receptacle or optional button eye photocell. Easy access to photo eye through the door on the pod (15-1/4"H x 11-1/2"W).

Finials
All finials are cast aluminum mounted with 1/4-20 stainless steel threaded studs. Standard finial finish will match fixture finish as specified. Finish is thwermoset powdercoat.



Fasteners
Used to secure post fitter to post tenon and globe to globe holder. Hex Head (1) and Allen Head (2) bolts feature Black cadmium stainless steel.

Light Engine
LEDgine is composed of five main components: Heat Sink, Lens, LED lamp, Optical System, and Driver. Electrical components are RoHS compliant.

LED Engine
Composed of high-performance white LEDs. Color temperature as per ANSI/NEMA bin - Neutral White, 4000 Kelvin nominal (3985K +/- 275K or 3710K to 4260K) or Warm White, 3000 Kelvin nominal (3045K +/- 175K or 2870K to 3220K). CRI 70 Min. 75 Typical.

Heat Sink
Made of cast aluminum optimizing the LEDs efficiency and life. Product does not use any cooling device with moving par ts (only passive cooling device).

Future Proof Contorl
R7 - Receptacle with 7 pin enabling dimming and additional functionality (to be determied). Can be used with twist lonk node pr a shorting cap. Will ship with a shorting cap installed for this product. Remove shorting cap when you ar ready to install your node.

Optical System
2: Type 2
2H: Type 2 with House side s ield
3: Type 3
3H: Type 3 with House side s ield
3W: Type 3 Wide
3WH: Type 3 Wide with House side shield
4: Type 4
5: Type 5

Above options are all composed of high performance optical grade PMMA acrylic refractor lenses to achieve desired distribution optimized to get maximum spaci'g, target lumens and a superior lighting uniformity. Optical system is rated IP66. Performance shallbe tested per LM 63, LM 79 and TM 15 (IESNA) certifying its photometric performance. Street side indicated.

TX03 Hagerstown

Post top

Lumen Charts

LED Module: 4000K	LED qty*	System current	Color Temp.	Average System Wattage**	Type 2 Lumen Output	Type 2 BUG Rating	Type 2 Efficacy	Type 3 Lumen Output	Type 3 BUG Rating	Type 3 Efficacy	Type 3W Lumen Output	Type 3W BUG Rating	Type 3W Efficacy
TX0332-G3-x-740-3	32	350	4000	35.4	4284	B1-U2-G1	121	4280	B1-U2-G1	121	4413	B1-U2-G1	125
TX0332-G3-x-740-5	32	530	4000	51.8	5977	B2-U3-G2	115	5972	B1-U3-G1	115	6158	B2-U2-G2	119
TX0332-G3-x-740-7	32	700	4000	71.9	7829	B2-U3-G2	109	7823	B2-U3-G2	109	8066	B2-U3-G2	112
TX0332-G3-x-740-9	32	900	4000	93.9	9536	B2-U3-G2	102	9528	B2-U3-G2	101	9825	B2-U3-G2	105
TX0332-G3-x-740-1	32	1050	4000	107.7	10814	B2-U3-G2	100	10805	B2-U3-G2	100	11141	B3-U3-G3	103
TX0348-G3-x-740-3	48	350	4000	51.4	6247	B2-U3-G2	122	6241	B2-U3-G2	121	6436	B2-U3-G2	125
TX0348-G3-x-740-5	48	530	4000	75.5	8942	B2-U3-G2	118	8935	B2-U3-G2	118	9213	B2-U3-G2	122
TX0348-G3-x-740-7	48	700	4000	104.7	11418	B3-U3-G3	109	11408	B2-U3-G2	109	11764	B3-U3-G3	112
TX0348-G3-x-740-9	48	900	4000	136.8	13907	B3-U3-G3	102	13895	B3-U3-G3	102	14328	B3-U3-G3	105
TX0364-G3-x-740-3	64	350	4000	68.7	8172	B2-U3-G2	119	8165	B2-U3-G2	119	8419	B2-U3-G2	123
TX0364-G3-x-740-5	64	530	4000	105.5	11697	B3-U3-G3	111	11688	B2-U3-G2	111	12052	B3-U3-G3	114
TX0364-G3-x-740-7	64	700	4000	138.4	14937	B3-U3-G3	108	14924	B3-U3-G3	108	15389	B3-U3-G3	111
TX0364-G3-x-740-9	64	900	4000	179.9	18003	B3-U3-G3	100	17988	B3-U3-G3	100	18548	B3-U3-G3	103

LED Module: 4000K	LED qty*	System current	Color Temp.	Average System Wattage**	Type 4 Lumen Output	Type 4 BUG Rating	Type 4 Efficacy	Type 5 Lumen Output	Type 5 BUG Rating	Type 5 Efficacy
TX0332-G3-x-740-3	32	350	4000	35.4	4346	B1-U2-G1	123	4524	B3-U2-G1	128
TX0332-G3-x-740-5	32	530	4000	51.8	6064	B1-U3-G2	117	6312	B3-U2-G1	122
TX0332-G3-x-740-7	32	700	4000	71.9	7843	B2-U3-G2	110	8268	B3-U3-G2	115
TX0332-G3-x-740-9	32	900	4000	93.9	9675	B2-U3-G2	103	10071	B4-U3-G2	107
TX0332-G3-x-740-1	32	1050	4000	107.7	10971	B2-U3-G2	102	11420	B4-U3-G2	106
TX0348-G3-x-740-3	48	350	4000	51.4	6337	B1-U3-G2	123	6597	B3-U2-G2	128
TX0348-G3-x-740-5	48	530	4000	75.5	9072	B2-U3-G2	120	9443	B4-U3-G2	125
TX0348-G3-x-740-7	48	700	4000	104.7	11584	B2-U3-G2	111	12058	B4-U3-G2	115
TX0348-G3-x-740-9	48	900	4000	136.8	14109	B3-U3-G3	103	14686	B4-U3-G3	107
TX0364-G3-x-740-3	64	350	4000	68.7	8291	B2-U3-G2	121	8630	B3-U3-G2	126
TX0364-G3-x-740-5	64	530	4000	105.5	11867	B2-U3-G2	112	12353	B4-U3-G2	117
TX0364-G3-x-740-7	64	700	4000	138.4	15154	B3-U3-G3	109	15774	B4-U3-G3	114
TX0364-G3-x-740-9	64	900	4000	179.9	18264	B3-U3-G3	102	19012	B5-U3-G3	106

Lumen charts continued on next page.

* Configurations with 64 (64) LED array boards are limited to a 35C ambient rating with the 900mA (9) drive current.

** System wattage or total luminaire wattage includes the LED module and the LED driver. Note: Equivalence should always be confirmed by a photometric layout.

Note: Equivalence should always be confirmed by a photometric layout. Due to rapid and continuous advances ir LED technology, LED luminaire data is subject to change without notice and at the discretion of Signify.

TX03 Hagerstown

Post top

Driver
Driver comes standard with 0-10V dimming capability. High power factor of 95%. Electronic driver, operating range 50/60 Hz. Auto adjusting universal voltage input from 120 to 277 VAC rated for both application line to line or line to neutral. Class I, THD of 20% max. Maximum ambient operating temperature from 40°F (4°C) to 130°F (55°C). Certified in compliance to UL1310 cULus requirement (dry and damp location). Assembled on a unitized removable tray with Tyco quick disconnect plug reslisting to 221°F (105°C). Tw current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built in driver surge protection of 2.5kV (min).

Driver Options
SRD: Sensor Ready Driver including SR communication (used for dimming and other functionalities). 24V auxiliary supply and a logical signal input (LSI) connected to the top NEMA twist lock receptacle.
SRDI: Sensor Ready Driver including SR communication (used for dimming and other functionalities) but with 24V auxiliary supply and a logical signal input (LSI) not connected to the top NEMA twist lock.
DA: 4 Hrs 25% Red.uction
DB: 4 Hrs 50% Reduction
DC: 4 Hrs 75% Reduction
DD: 6 Hrs 25% Reduction
DE: 6 Hrs 50% Reduction
DF: 6 Hrs 75% Reduction
DG: 8 Hrs 25% Reduction
DH: 8 Hrs 50% Reduction
DJ: 8 Hrs 75% Reduction
DL: Pre-set driver compatible with the DALI logarithm c control system

Surge Protection
Surge protector tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line Ground, Line Neutral and Neutral Ground, and in accordance with U.S. DOE (Department of Energy) MSSLC (Municipal Solid State Street Lighting Consortium) model specification for LED roadway luminaires electrical immunity requirements for High Test Level 10kV / 10kA. Option for SP2 20kV/20kA.

Finish
Color in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils / 24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard. The surface treatment achieves a minimum of 2000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

Luminaire Useful Life
Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in situ thermal testing.In accordance with UL1598 and UL8750, using LM-80 data from LED manufacturers and engineering prediction methods, the luminaire useful life is expected to reach 100,000+ hours with >L70 lumen maintenance @ 25°C. Luminaire useful life accounts for LED lumen maintenance and additional factors, including LED life, driver life, PCB substrate, solder joints on/off cycles and burning hours for nominal applications.

LED products manufacturing standard
The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340 5 1 and ANSI/ ESD S20 20 standards so as to eliminate ESD events that could decrease the useful life of the product.

Quality Control
The manufacturer must provide a written confirmation of its ISO 9001:2008 and ISO 14001:2004 International Quality Standards Certification.

Vibration Resistance
Meets the ANSI C136.31 2001, American National Standard for Roadway Luminaire Vibration specifications for normal Applications.

Certifications and Compliance
cETL listed to Canadian safety standards for wet locations. Manufactured to ISO 9001:2008 Standards. UL8750 and UL1598 compliant. ETL listed to U.S. safety standards for wet locations. cETL listed to Canadian safety standards for wet locations. LM80 & LM79 tested.

IP Rating: The LED optics chamber is IP66 rated. The LED driver is IP66 rated.

Warranty: 5 year extended warranty.

Predicted Lumen Performance Data

Predicted lumen depreciation data[1]				
Ambient Temperature (°C)	Driver mA	Calculated L_{70} hours[2]	L_{70} per TM-21[2,3]	Lumen Maintenance % @ 60,000 hours
25°C	up to 1050 mA	>100,000 hrs	>60,000 hrs	92.48%

1. Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions.
2. L_{70} is the predicted time when LED performance depreciates to 70% of initial lumen output.
3. Calculated per IESNA TM21-11. Published L_{70} hours limited to 6 times actual LED test hours.

Signify North America Corporation
400 Crossing Blvd. Suite 600
Bridgewater, NJ 08807
Telephone: 855-486-2216

Signify Canada Ltd.
281 Hillmount Road,
Markham, ON, Canada L6C 2S3
Telephone: 800-668-9008

www.hadco.com

NOTE TO CONTRACTOR:

1. CONTRACTOR TO VERIFY WITH THE POLE MANUFACTURER THE LIGHTING FIXTURE MOUNTING COMPATIBILITY TO PROPOSED POLE.

03/01/2024

100% PLANS

Kimley»Horn F-928

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Texas Department of Transportation

ILLUMINATION IMPROVEMENTS

ILLUMINATION DETAILS

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		94

Proven Performance
hapco pole products

YORK 17

Structural Base

Round Shaft

SR - Straight Round

SR

Butt Dia.	Mounting Hgt.
4"	Up To 30'
5"	Up To 30'
6"	Up To 30'

TR - Tapered Round

TR

Butt Dia.	Mounting Hgt.
4"	Up To 30'
5"	Up To 30'
6"	Up To 30'

Fluted Shaft

SF - Straight Fluted

SF-12
12 Flute

Butt Dia.	Mounting Hgt.
4"	Up To 25'
5"	Up To 30'
6"	Up To 30'

TF - Tapered Fluted

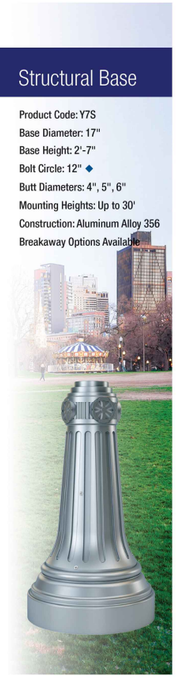
TF-12
12 Flute

TF-16
16 Flute

Butt Dia.	Mounting Hgt. TF-12	Mounting Hgt. TF-16
5"	Up To 16'	Up To 16'
6"	Up To 25'	Up To 25'

◆ *Diamond Bolt Pattern*

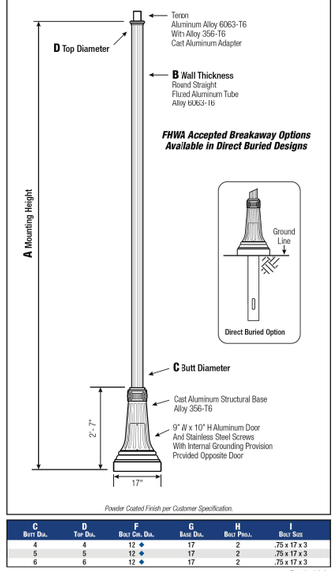
Product Code: Y7S
Base Diameter: 17"
Base Height: 2'-7"
Bolt Circle: 12" ◆
Butt Diameters: 4", 5", 6"
Mounting Heights: Up to 30'
Construction: Aluminum Alloy 356
Breakaway Options Available



26252 Hillman Highway • Abingdon, VA 24210 • 800-368-7171 • www.hapco.com • email: info@hapco.com

YORK 17

STRUCTURAL - Straight Fluted Aluminum Pole



Powder Coated Finish per Customer Specification.

C Butt Dia.	D Top Dia.	F Bolt Cir. Dia.	G Base Dia.	H Bolt Prod.	I Bolt Size
4	4	12 ◆	17	2	.75 x 17 x 3
5	5	12 ◆	17	2	.75 x 17 x 3
6	6	12 ◆	17	2	.75 x 17 x 3

◆ *Diamond Bolt Pattern* — *Dimensions in Inches*

Base

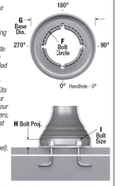
Cast Aluminum, 1-Piece Structural Federalist Base of Alloy 356 per ASTM B26 or B108. Tee base shall have an access door with cast aluminum cover and stainless steel attaching hardware. An interna grounding provision will be provided opposite the access door.

Pole

The pole shaft will be constructed of seamless extruded tube of 6063 Aluminum Alloy per the requirements of ASTM B221. The shaft shall be joined to the structural base by means of a complete circumferential weld in accordance with AWS Specification 81.2. The assembly shall be full-length heat-treated after weld to produce a T6 temper.

Anchorage

Anchorage Kit will include four (4) L-shaped Steel Anchor Bolts conforming to AASHTO M314-90 Grade 55. Ten inches (10") of threaded end will be galvanized per ASTM A153. Kits will contain four (4) Hex Nuts, four (4) Lock Washers, and four (4) Flat Washers (all components Galvanized Steel). A bolt circle template will be provided.



***NOTE:** All YORK 17 pole options may be specified in designs utilizing Direct Buried anchorage.*

Vibration Damper

When determined necessary by Hapco, a Vibration Damper will be factory installed inside the pole shaft. Customer specification of the damper is available.

WARNING: *Do not install light pole without luminaire.*

YORK 17

STRUCTURAL Straight Fluted Aluminum Pole

A Mtg. Hgt.	B Wall Thickness	C Butt Dia.	Total Lbs. Weight	Maximum EPA 90	100	110	120	130	140	Catalog Number*
8	0.125	4	100	16.6	13.2	10.3	8.9	7.5	6.4	Y7S084-4-SF12-**
	0.188	4	100	23.6	18.9	15.3	12.8	10.8	9.2	Y7S084-4-SF12-**
	0.125	5	100	25.5	20.5	16.7	13.9	11.7	10.0	Y7S085-4-SF12-**
	0.188	5	100	36.2	29.2	23.9	20.0	16.8	14.4	Y7S085-4-SF12-**
	0.125	6	100	36.1	29.1	23.8	19.8	16.8	14.4	Y7S086-4-SF12-**
10	0.125	4	100	12.7	10.1	8.1	6.6	5.5	4.6	Y7S104-4-SF12-**
	0.188	4	100	18.4	14.7	11.9	9.8	8.2	6.9	Y7S104-4-SF12-**
	0.125	5	100	19.9	15.9	12.8	10.5	8.8	7.5	Y7S105-4-SF12-**
	0.188	5	100	29.3	22.7	18.4	15.3	12.9	11.0	Y7S105-4-SF12-**
	0.125	6	100	28.2	22.6	18.3	15.2	12.8	10.8	Y7S106-4-SF12-**
12	0.125	4	100	9.7	7.6	6.0	4.9	3.9	3.1	Y7S124-4-SF12-**
	0.188	4	100	14.4	11.4	9.1	7.4	6.1	5.0	Y7S124-4-SF12-**
	0.125	5	100	15.8	12.5	9.9	8.1	6.7	5.6	Y7S125-4-SF12-**
	0.188	5	100	22.8	18.2	14.3	12.0	10.0	8.5	Y7S125-4-SF12-**
	0.125	6	100	22.6	18.1	14.4	11.9	9.9	8.4	Y7S126-4-SF12-**
14	0.125	4	85	7.6	5.8	4.4	3.4	2.6	2.1	Y7S144-4-SF12-**
	0.188	4	100	11.4	8.9	7.0	5.6	4.5	3.6	Y7S144-4-SF12-**
	0.125	5	100	12.4	9.7	7.5	6.0	4.8	4.0	Y7S145-4-SF12-**
	0.188	5	100	18.7	14.8	11.7	9.5	7.8	6.6	Y7S145-4-SF12-**
	0.125	6	100	18.4	14.6	11.4	9.4	7.7	6.4	Y7S146-4-SF12-**
16	0.125	4	60	5.8	4.3	3.2	2.3	1.6	1.2	Y7S164-4-SF12-**
	0.188	4	95	8.9	6.8	5.2	4.0	3.1	2.4	Y7S164-4-SF12-**
	0.125	5	100	9.6	7.4	5.5	4.2	3.3	2.6	Y7S165-4-SF12-**
	0.188	5	100	15.2	11.9	9.2	7.4	6.0	4.9	Y7S165-4-SF12-**
	0.125	6	100	15.0	11.7	9.0	7.2	5.8	4.7	Y7S166-4-SF12-**
18	0.125	4	65	4.2	2.9	2.0	1.3	0.8	-	Y7S184-4-SF12-**
	0.188	4	70	7.1	5.3	3.9	2.9	2.1	1.5	Y7S184-4-SF12-**
	0.125	5	70	7.6	5.7	4.0	2.9	2.2	1.7	Y7S185-4-SF12-**
	0.188	5	100	12.4	9.6	7.2	5.6	4.4	3.6	Y7S185-4-SF12-**
	0.125	6	100	12.2	9.4	6.9	5.4	4.2	3.4	Y7S186-4-SF12-**
20	0.125	4	75	2.8	1.8	1.0	-	-	-	Y7S204-4-SF12-**
	0.188	4	60	5.5	3.9	2.7	1.8	1.2	0.8	Y7S204-4-SF12-**
	0.125	5	50	5.9	4.2	2.8	1.8	1.2	0.8	Y7S205-4-SF12-**
	0.188	5	40	10.2	7.7	5.6	4.2	3.2	2.4	Y7S205-4-SF12-**
	0.125	6	85	9.8	7.4	5.2	3.9	3.0	2.2	Y7S206-4-SF12-**
25	0.188	4	90	1.9	0.8	-	-	-	-	Y7S254-4-SF12-**
	0.125	5	75	2.0	1.0	-	-	-	-	Y7S255-4-SF12-**
	0.188	5	50	5.8	4.0	2.4	1.3	-	-	Y7S255-4-SF12-**
	0.125	6	40	5.4	3.7	1.8	1.0	-	-	Y7S256-4-SF12-**
30	0.188	5	50	2.7	1.3	-	-	-	-	Y7S305-4-SF12-**
	0.125	6	80	1.5	-	-	-	-	-	Y7S306-4-SF12-**
	0.188	6	40	2.1	0.9	-	-	-	-	Y7S306-4-SF12-**

EPA Notes: *Effective Projected Area (EPA) in square feet. EPA's calculated using wind velocity (mph) indicated in accordance with 2015 AASHTO LRFD (7th Edition) using a 50-year design life. Maximum EPA is based on the luminaire weight shown. Increased luminaire weight may reduce maximum EPA. If weight is exceeded, or if other design life or code is required, please consult the factory.*

***4-Bolt Base.** Anchorage shown. For direct buried design replace -4 in catalog number with -E.*

Catalog Number:	Quantity:
Customer Name:	
Project:	Location:
Notes:	

Catalog Number System

The catalog number for Hapco poles utilizes the following identification system.

MOUNTING HEIGHT | BUTT DIA. | SHAFT STYLE
Y7S | 12 | B | 6 | 4 | SF12 | BA
BASE STYLE | WALL THICK. | ANCHORAGE | FINISH

Catalog Number Example -

Y7S 18 B 6 - 4 - SF12 - BA

YORK 17 Structural Base, 18' Mounting Height, .125" Wall Thickness, 6" Butt Diameter, 4-Bolt Base, Straight Fluted Shaft - 12 Flute, Black Powder Coat Finish

Wall Thickness

B = .125"
D = .188"

Butt Dia.

4 = 4"
5 = 5"
6 = 6"

Anchorage

4 = 4-Bolt Base
E = Direct Buried

Shaft Style

SF12 = Straight Fluted – 12 Flute

Powder Coat Finish

BA - Black Powder Coat
BV - Dark Green Powder Coat
BH - White Powder Coat
GC - Gray Powder Coat
BM - Dark Bronze Powder Coat
SC - Special Colors*

** Provide RAL # or Sample Color Chip*

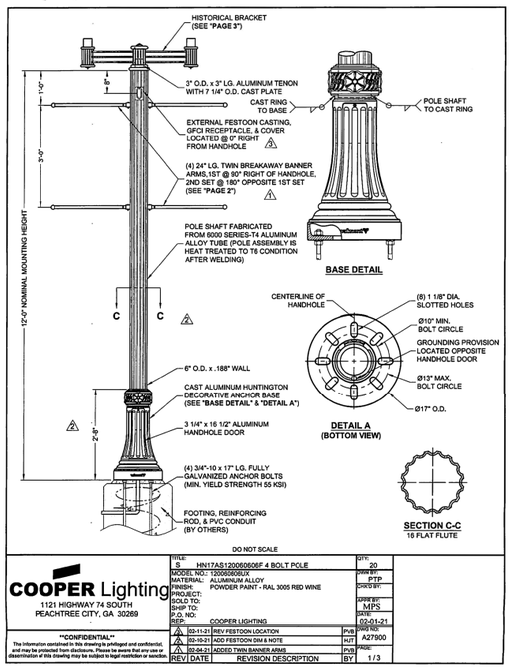
Mounting Options

Tenon Mount
For Tenon Mount applications specify both Tenon diameter and length.

Flute Options

NOTE TO CONTRACTOR:

1. CONTRACTOR TO MATCH POLE BOLT PATTERN TO DRILLED SHAFT BOLT PATTERN.
2. CONTRACTOR TO PROCURE THE BANNER ARMS AND REQUEST MANUFACTURER TO PREDRILL HOLES FOR BANNER ARMS (REFER TO COOPER LIGHTING SPEC FOR PLACEMENT DETAILS).



DO NOT SCALE

COOPER Lighting
1121 HIGHWAY 74 SOUTH
PEACHTREE CITY, GA 30269

TITLE: S HN17AS120060606F 4 BOLT POLE	QTY: 20
MODEL NO.: 120060606JX	DRW BY: PTP
MATERIAL: ALUMINUM ALLOY	CHKD BY:
FINISH: POWDER PAINT - RAL 3005 RED WINE	
PROJECT:	APPR BY: MPS
SOLD TO:	
SHIP TO:	
P.O. NO:	DATE: 02-01-21
REP: COOPER LIGHTING	DWG NO: A27900
REV | DATE | REVISION DESCRIPTION	BY | PAGE: 1 / 3
1 | 02-11-21 | REV FESTOON LOCATION	PVB
2 | 02-10-21 | ADD FESTOON DIM & NOTE	HJT
3 | 02-04-21 | ADDED TWIN BANNER ARMS	PVB

03/01/2024

100% PLANS

Kimley»Horn F-928

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Texas Department of Transportation

ILLUMINATION IMPROVEMENTS

ILLUMINATION DETAILS

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		95

PLOTTED: 3/1/2024 40.0500 ft / in. BY: Marianna.Borrego
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LUMEC by signify

Roadway

RoadFocus

RFM Cobra head (medium)

Lumec RoadFocus LED cobra head luminaires feature a sleek design that provides seamless replacement of existing HID luminaires. RoadFocus is available in three sizes, offers multiple lumen packages, and a complete array of optical distributions, making it an outstanding solution for all types of roadway applications. Includes Service Tag, innovative way to provide assistance throughout the life of the product.

Project:
Location:
Cat.No:
Type:
Lumens: Qty:
Notes:

Ordering guide

example: RFM-108W48LED3K-G2-R2M-UNV-DMG-HS-PH8-RCD7-GY3

Series	LED module	CCT	Generation	Distribution	Voltage	Controls [4] (Options)	Options (Options)	Finish
RFM	108W48LED	4K	G2	R2M	UNV	DALI 1		BK
RFM RoadFocus medium	130W32LED 135W40LED[14] 55W48LED[12] 80W48LED 108W48LED 160W48LED 50W60LED[14] 75W60LED[14] 100W60LED[14] 120W60LED[14] 150W60LED[14] 170W60LED[14]	4K 4000K 3K 3000K 2.7K[11] 2700K	G2 Generation 2	Type 2 R2S Type II short (ASYM) R2M Type II Medium (ASYM) Type 3 R3S Type III short (ASYM) R3M Type III Medium (ASYM) Type 4 4 Type IV (ASYM) Type 5 5 Type V (SYMM)	UNV 120-277V HVU 347-480V	D4I[16] Zhaga-D4i certified DALI[1] Digitally addressable lighting interface DMG[5] 0-10V SRD[1] Sensor ready driver, standard configuration SRD1[1] Sensor ready driver, alternate configuration	2C Two clamp with 4 bolts API Factory installed NEMA label, ANSI C136.15-2015 compliant FAWS[7] Field adjustable wattage selector CSS[2,15] Cul-de-Sac Shield FSS[2,15] Front Side Shield HS[2,15] House Side Shield LSS[2,15] Left Side Shield RSS[2,15] Right Side Shield NRC[8] No receptacle NYBC 4-position terminal block OMS[17] Outdoor Multisensor PH8[1,10] Twist-lock photoelectric cell, UNV (120-277VAC) PH8/347[10,13] Twist-lock photoelectric cell (347VAC) PH8/480[10,13] Twist-lock photoelectric cell (480VAC) PHXL[1,10] Twist-lock photoelectric cell, extended life, UNV (120-277VAC) PH9[10] Shorting cap RCD[3,9] Tool less receptacle for twist-lock photocell or shorting cap, 5-pin (optional) RCD7[3,5] Tool less receptacle for twist-lock photocell or shorting cap, 7-pin (standard) SP2 20kV / 10kA Surge protector TLRSR[6] SR receptacle BAC[18] Meets the requirements of the Buy American Act of 1933 (BAA)	BK Black BR Bronze GY3 Gray WH White

1. Not available with **HVU**.
2. Refer to Accessories section to confirm compatibility of shields with optical distribution
3. Use of photoelectric cell or shorting cap is required to ensure proper illumination.
4. Select either **DALI** or **DMG** or **SRD** or **SRD1** mandatory option.
5. Please note this integrated feature come standard with RoadFocus.
6. Only available with **SRD** or **SRD1** Driver Options.
7. Only available with **DMG** Driver Options
8. Not available with **PH8**, **PH8/347**, **PH8/480**, **PHXL**, **PH9**, **DALI**, **SRD** or **SRD1** Driver Options.
9. Not available with **SRD** Driver Options.
10. Either **RCD** or **RCD7** must be selected for this option.
11. Extended lead-time may apply. Consult factory.
12. **FAWS** table accuracy +/- 15% on these models.
13. Not available with **UNV**.
14. Only available with R2M or R3M distributions.
15. 1 shield provided per LED light engine.
16. TLRSR must be selected with D4I
17. TLRSR and D4I must be selected with OMS
18. Failure to properly select the "**BAC**" suffix could result in you receiving product that is not BAA compliant product with no recourse for an RMA or refund. This BAC designation hereunder does not address (i) the applicability of, or availability of a waiver under, the Trade Agreements Act, or (ii) the "Buy America" domestic content requirements imposed on states, localities, and other non-federal entities as a condition of receiving funds administered by the Department of Transportation or other federal agencies.
19. Consult Signify to confirm whether specific accessories are BAA-compliant.

Accessories[19] (must be ordered as separate line item – quickly and easily installed in the field)

Interact City connector node (Contact the factory for additional support when connected lighting or additional services are desired.)

Shielding accessories

Description	Luminaire Option Code	Accessory Ordering Code: 12/16 LED version*	Accessory Ordering Code: 20 LED version*	R2M	R2S	R3M	R3S	4	5
Cul-de-sac shield	CSS	ACC-LG66V16LED-CSS	ACC-LG66V20LED-CSS	Yes	Yes	Yes	Yes	Yes	Yes
Front side shield	FSS	ACC-LG66V16LED-FSS	ACC-LG66V20LED-FSS	Yes	Yes	Yes	Yes	No	Yes
House side shield	HS	ACC-LG66V16LED-HS	ACC-LG66V20LED-HS	Yes	Yes	Yes	Yes	Yes	No
Left side shield	LSS	ACC-LG66V16LED-LSS	ACC-LG66V20LED-LSS	Yes	Yes	Yes	Yes	Yes	Yes
Right side shield	RSS	ACC-LG66V16LED-RSS	ACC-LG66V20LED-RSS	Yes	Yes	Yes	Yes	Yes	Yes

(Columns R2M–5: Shield vs Distribution Compatibility)

*Refer to Wattage table to confirm light engine configuration. Example, if configuration is 2x16LED, 2 of the desired shields must be ordered per luminaire.

RFM RoadFocus

LED Cobra head (medium)

Predicted Lumen Depreciation Data

Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions. L_{70} is the predicted time when LED performance depreciates to 70% of initial lumen output. Calculated per IESNA TM21-11 Addendum B. Published L_{70} hours limited to 6 times actual LED test hours.

Ambient Temperature °C	L_{70} per TM-21	Lumen Maintenance % at 60,000 hrs
25°C	>60,000 hours	>97.6%

LED Wattage values

Ordering Code	Total LEDs	Light Engine Configuration	Average System Watts[16]	Wattage label[17]
RFM-130W32LED	32	2x16LED	129	130
RFM-135W40LED	40	2x12LED+1x16LED	135	140
RFM-55W48LED	48	3x16LED	55	60
RFM-80W48LED	48	3x16LED	81	80
RFM-108W48LED	48	3x16LED	106	110
RFM-160W48LED[18]	48	3x16LED	161	160
RFM-50W60LED	60	3x20LED	52	50
RFM-75W60LED	60	3x20LED	77	80
RFM-100W60LED	60	3x20LED	99	100
RFM-120W60LED	60	3x20LED	122	120
RFM-150W60LED	60	3x20LED	149	150
RFM-170W60LED[18]	60	3x20LED	170	170

16. Typical values, rounded.
17. As per ANSI C136.15-2015. Consult factory for other labeling needs.
18. Rated for +40°C / +104°F.

4000K LED Lumen values

Ordering Code	Color Temp.	R2M Lumen Output	R2M Efficacy (LPW)	R2M BUG Rating	R2S Lumen Output	R2S Efficacy (LPW)	R2S BUG Rating	R3M Lumen Output	R3M Efficacy (LPW)	R3M BUG Rating	R3S Lumen Output	R3S Efficacy (LPW)	R3S BUG Rating	Type 4 Lumen Output	Type 4 Efficacy (LPW)	Type 4 BUG Rating	Type 5 Lumen Output	Type 5 Efficacy (LPW)	Type 5 BUG Rating
RFM-130W32LED	4000	14,913	116	B3-U0-G2	15,633	121	B3-U0-G2	14,971	116	B3-U0-G2	15,172	118	B2-U0-G2	14,901	116	B2-U0-G3	15,500	120	B4-U0-G2
RFM-135W40LED	4000	15,066	112	B3-U0-G3	15,794	117	B3-U0-G2	15,125	112	B3-U0-G2	15,328	114	B2-U0-G3	15,054	112	B2-U0-G3	15,659	116	B4-U0-G2
RFM-55W48LED	4000	7,747	141	B2-U0-G1	8,123	147	B2-U0-G1	7,778	141	B2-U0-G1	7,883	143	B1-U0-G2	7,742	141	B1-U0-G2	8,053	146	B3-U0-G1
RFM-80W48LED	4000	11,109	138	B2-U0-G2	11,647	145	B2-U0-G2	11,153	138	B2-U0-G2	11,302	140	B2-U0-G2	11,101	138	B2-U0-G2	11,546	143	B4-U0-G2
RFM-108W48LED	4000	14,024	132	B3-U0-G2	14,702	139	B3-U0-G2	14,079	133	B3-U0-G2	14,268	135	B2-U0-G2	14,013	132	B2-U0-G2	14,576	138	B4-U0-G2
RFM-160W48LED	4000	19,412	121	B3-U0-G3	20,351	127	B3-U0-G2	19,489	121	B3-U0-G3	19,750	123	B2-U0-G3	19,397	121	B3-U0-G3	20,176	126	B4-U0-G2
RFM-50W60LED	4000	8,038	154	B2-U0-G2	N/A	N/A	N/A	8,081	155	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-75W60LED	4000	10,979	143	B2-U0-G2	N/A	N/A	N/A	11,038	143	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-100W60LED	4000	13,615	138	B3-U0-G3	N/A	N/A	N/A	13,688	138	B3-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-120W60LED	4000	16,094	132	B3-U0-G3	N/A	N/A	N/A	16,181	133	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-150W60LED	4000	19,078	128	B3-U0-G3	N/A	N/A	N/A	19,180	129	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-170W60LED	4000	21,037	124	B3-U0-G3	N/A	N/A	N/A	21,150	124	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout – contact Applications at signify.com/outdoorluminaires. Consult DLC QPL to confirm your specific fixture selection is DLC approved.

Note: Some data may be scaled based on tests of similar but not identical luminaries.

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LED Cobra head (medium)

3000K LED Lumen values

Ordering Code	Color Temp.	R2M Lumen Output	R2M Efficacy (LPW)	R2M BUG Rating	R2S Lumen Output	R2S Efficacy (LPW)	R2S BUG Rating	R3M Lumen Output	R3M Efficacy (LPW)	R3M BUG Rating	R3S Lumen Output	R3S Efficacy (LPW)	R3S BUG Rating	Type 4 Lumen Output	Type 4 Efficacy (LPW)	Type 4 BUG Rating	Type 5 Lumen Output	Type 5 Efficacy (LPW)	Type 5 BUG Rating
RFM-130W32LED	3000	13,990	109	B3-U0-G2	14,666	114	B3-U0-G2	14,045	109	B3-U0-G2	14,233	111	B2-U0-G2	13,979	109	B2-U0-G3	14,541	113	B4-U0-G2
RFM-135W40LED	3000	14,254	106	B3-U0-G3	14,944	111	B3-U0-G2	14,311	106	B3-U0-G2	14,503	107	B2-U0-G2	14,243	106	B2-U0-G3	14,815	110	B4-U0-G2
RFM-55W48LED	3000	7,268	132	B2-U0-G1	7,620	138	B2-U0-G1	7,297	132	B2-U0-G1	7,395	134	B1-U0-G2	7,263	132	B1-U0-G2	7,555	137	B3-U0-G1
RFM-80W48LED	3000	10,422	129	B2-U0-G2	10,926	136	B2-U0-G2	10,463	130	B2-U0-G2	10,603	132	B2-U0-G2	10,414	129	B2-U0-G2	10,832	134	B4-U0-G2
RFM-108W48LED	3000	13,156	124	B3-U0-G2	13,792	130	B3-U0-G2	13,208	125	B3-U0-G2	13,385	126	B2-U0-G2	13,146	124	B2-U0-G2	13,674	129	B4-U0-G2
RFM-160W48LED	3000	18,211	113	B3-U0-G3	19,092	119	B3-U0-G2	18,283	114	B3-U0-G3	18,528	115	B2-U0-G3	18,197	113	B3-U0-G3	18,928	118	B4-U0-G2
RFM-50W60LED	3000	7,643	146	B2-U0-G2	N/A	N/A	N/A	7,684	147	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-75W60LED	3000	10,439	136	B2-U0-G2	N/A	N/A	N/A	10,495	136	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-100W60LED	3000	12,945	131	B3-U0-G2	N/A	N/A	N/A	13,015	131	B3-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-120W60LED	3000	15,302	125	B3-U0-G3	N/A	N/A	N/A	15,384	126	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-150W60LED	3000	18,139	122	B3-U0-G3	N/A	N/A	N/A	18,237	122	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-170W60LED	3000	20,002	118	B3-U0-G3	N/A	N/A	N/A	20,110	118	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

2700K LED Lumen values

Ordering Code	Color Temp.	R2M Lumen Output	R2M Efficacy (LPW)	R2M BUG Rating	R2S Lumen Output	R2S Efficacy (LPW)	R2S BUG Rating	R3M Lumen Output	R3M Efficacy (LPW)	R3M BUG Rating	R3S Lumen Output	R3S Efficacy (LPW)	R3S BUG Rating	Type 4 Lumen Output	Type 4 Efficacy (LPW)	Type 4 BUG Rating	Type 5 Lumen Output	Type 5 Efficacy (LPW)	Type 5 BUG Rating
RFM-130W32LED	2700	12,829	100	B3-U0-G2	13,449	104	B3-U0-G2	14,045	109	B3-U0-G2	13,052	109	B2-U0-G2	12,819	100	B2-U0-G3	13,334	104	B4-U0-G2
RFM-135W40LED	2700	12,800	95	B3-U0-G2	13,419	99	B3-U0-G2	12,851	95	B3-U0-G2	13,023	96	B2-U0-G2	12,790	95	B2-U0-G3	13,304	99	B4-U0-G2
RFM-55W48LED	2700	6,665	121	B2-U0-G1	6,988	127	B2-U0-G1	7,297	132	B2-U0-G1	6,781	132	B1-U0-G2	6,660	121	B1-U0-G2	6,928	126	B3-U0-G1
RFM-80W48LED	2700	9,557	119	B2-U0-G2	10,019	124	B2-U0-G2	10,560	131	B2-U0-G2	9,723	131	B2-U0-G2	9,550	119	B2-U0-G2	9,933	123	B4-U0-G2
RFM-108W48LED	2700	12,064	114	B3-U0-G2	12,648	119	B3-U0-G2	13,208	125	B3-U0-G2	12,274	125	B2-U0-G2	12,055	114	B2-U0-G2	12,539	118	B4-U0-G2
RFM-160W48LED	2700	16,700	104	B3-U0-G3	17,508	109	B3-U0-G2	18,283	114	B3-U0-G3	16,991	114	B2-U0-G3	16,687	104	B3-U0-G3	17,357	108	B4-U0-G2
RFM-50W60LED	2700	6,983	134	B2-U0-G2	N/A	N/A	N/A	7,021	134	B2-U0-G1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-75W60LED	2700	9,538	124	B2-U0-G2	N/A	N/A	N/A	9,589	125	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-100W60LED	2700	11,828	119	B2-U0-G2	N/A	N/A	N/A	11,892	120	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-120W60LED	2700	13,982	115	B3-U0-G3	N/A	N/A	N/A	14,057	115	B3-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-150W60LED	2700	16,574	111	B3-U0-G3	N/A	N/A	N/A	16,663	112	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFM-170W60LED	2700	18,276	108	B3-U0-G3	N/A	N/A	N/A	18,374	108	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout – contact Applications at signify.com/outdoorluminaires. Consult DLC QPL to confirm your specific fixture selection is DLC approved.

Note: Some data may be scaled based on tests of similar but not identical luminaries.

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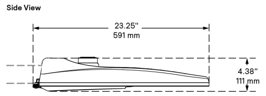
LED Cobra head (medium)

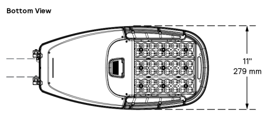
Dimensions

Side View



Weight: 12.2 Lbs
EPA: 0.53 sq. ft.

Bottom View



Field Adjustable Wattage (FAWS) Multiplier Chart

FAWS Position	Typical Delivered Lumens Multiplier	Typical System wattage
1	0.31	0.28
2	0.53	0.50
3	0.62	0.58
4	0.70	0.67
5	0.78	0.75
6	0.83	0.81
7	0.89	0.87
8	0.92	0.91
9	0.96	0.95
10	1.00	1.00

Note: Typical value accuracy +/- 5%

Specifications

Housing

Made of a low copper die cast Aluminum alloy (A360), 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 5 1/2" (140mm) minimum long tenon. Comes with a zinc plated clamp fixed by 2 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. Includes integral bubble level standard (always included). A quick release, tool less entry, single latch, hinged, removable door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 13" (330mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label as per C136.15-2015 to identify wattage and source (both included in box). Housing (including electrical compartment) rated IP54 per ANSI C136.37.

Light Engine

Composed of 4 main components: LED Module / Optical System / Heat Sink / Driver.

Electrical components are RoHS compliant, IP66 sealed light engine LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines in compliance with EPA ENERGY STAR, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

LED Module: Composed of high-performance white LEDs. Color temperature as per ANSI/NEMA bin 2700 Kelvin nominal (2725 ±145K), 3000 Kelvin nominal (3045K +/- 175K) or 4000 Kelvin nominal (3985K +/- 275K), CRI 70 Min. 75 Typical. Other CCT/CRI also available, consult factory.

Optical System: Composed of high performance UV stabilized optical grade polymer refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. System is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. 0% uplight and U0 per IESNA TM-15.

Heat Sink: Built in the housing, designed to ensure high efficacy and superior cooling by natural vertical convection air flow pattern always close to LEDs and driver optimizing their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling). Wide openings enable natural cleaning and removal of dirt and debris. Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +50°C / +122°F unless otherwise specified, refer to LED Wattages Values Table.

Driver: High power factor of 90% min. Electronic driver, operating range 50/60 Hz. Auto adjusting universal voltage input from 120 to 277 or 347 to 480 VAC rated for both application line to line or line to neutral, Class I, THD of 20% max.

DMG: Dimming compatible 0-10 volts.
The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built in driver surge protection of 2.5kV (min).

Integrated Features

DMG: Dimmable driver 0-10V.

RCD7*: Tool less orientable receptacle with 7 pins enabling dimming and additional functionality (to be determined), can be used with a twist lock Interact City node or photoelectric cell or a shorting cap.

SP1: Surge protection device tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with DOE MSSLC Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High test level 10kV/10kA.

Please note that these integrated features always come with RoadFocus luminaire.

* Use of photoelectric cell or shorting cap is required to ensure proper illumination.

Driver and Luminaire Options

D4I: Zhaga-D4i certified fixture

DALI: Pre-set driver compatible with the DALI control system.

SRD: Sensor Ready Driver including SR communication (used for dimming and other functionalities), 24V auxiliary supply and a logical signal input (LSI) connected to the top NEMA twist lock receptacle and bottom TLRSR receptacle, if this option included/chosen. This configuration is compatible with Interact City controllers.

SRD1: Sensor Ready Driver including SR communication (used for dimming and other functionalities) but with 24V auxiliary supply and a logical signal input (LSI) not connected to the top NEMA twist lock. If TLRSR receptacle option included, standard SR communication, 24V auxiliary supply and LSI are connected to the TLRSR receptacle.

OMS: Outdoor Multisensor

FAWS: Field Adjustable Wattage Selector, pre-set to the highest position, can be easily switched in the field to the required position. This reduces total luminaire wattage consumption and reduces the light level – see the FAWS multiplier chart for more details.

Note: It is not recommended to use FAWS with other dimming or controls; if you do, set the switch to position 10 (maximum output) to enable

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LED Cobra head (medium)

Specifications (continued)

the other dimming or controls. Switching FAWS to any position other than 10 will disable the other dimming or controls.

SP2: 20kV / 10kA surge protection device that provides extra protection beyond the SP1 10kV/10kA level.

NRC: No Receptacle. Fixture is shipped with a cap instead of a receptacle.

NYBC: 4-position terminal block

RCD*: Tool Less orientable receptacle with 5 pins enabling dimming, can be used with a twist lock Interact City or photoelectric cell or a shorting cap.

TLRSR: SR Sensor connector, installed in fixture door. Shipped with protective cover.

PH8: Twist-lock photoelectric cell, UNV (120-277VAC).

PH8/347: Twist-lock photoelectric cell, HVU (347VAC).

PH8/480: Twist-lock photoelectric cell, HVU (480VAC).

PHXL: Twist-lock photoelectric cell, extended life, UNV (120-277VAC).

PH9: Shorting cap.

API: Factory Installed NEMA label, ANSI C136.15-2015 compliant. Consult factory for other labeling needs.

* Use of photoelectric cell or shorting cap is required to ensure proper illumination.

Factory Installed Shield Options

(One per Light Engine)

CSS: Cul-de-Sac Shield. Shields light output on the left and right side of fixture.

FSS: Front Side Shield. Shields light output on the front side of fixture.

HS: House Side Shield. Shields light output to the back side of fixture.

LSS: Left Side Shield. Shields light output on the left side of fixture.

RSS: Right Side Shield. Shields light output on the right side of fixture.

Luminaire Useful Life

Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in situ thermal testing in accordance with UL1598 and UL8750, System Reliability Tool, Advance data and LED manufacturer LM-80/TM-21 data, expected to reach 100,000 + hours with >L70 lumen maintenance @ 25°C. Luminaire Useful Life accounts for LED lumen maintenance AND all of these additional factors including: LED life, driver life, PCB substrate, solder joints, on/off cycles, burning hours and corrosion.

Wiring

The connection of the luminaire is done using a terminal block connector 600V, 85A for use with #2 14 AWG. wires from the primary circuit, located inside the housing. Due to the inrush current that occurs with electronic drivers, recommend using a 10Amp time-delay fuse to avoid unwanted fuse blowing (false tripping) that can occur with normal or fast acting fuses.

Hardware

All exposed screws shall be complete with Ceramic primer seal to reduce seizing of the parts, also offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

Finish

Color in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 5000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

LED products manufacturing standard

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

Vibration Resistance

The RFM meets the ANSI C136.31-2018, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications. (Tested for 3G over 100,000 cycles by independent lab)

Certifications and Compliance

cULus Listed for Canada and USA. Luminaire meets DOE and MSSLC Model Specification for LED Roadway Luminaires. Most versions of RoadFocus LED Cobrahead luminaires are DesignLights Consortium qualified, consult DLC QPL to confirm your specific fixture selection is approved. CCTs 3000K and warmer are Dark Sky Approved. Luminaire complies with or exceeds the following ANSI C136 standards: .2, .3, .10, .14, .15, .22, .25, .31, .37, .41.

Service Tag

Each individual luminaire is uniquely identifiable, thanks to the Service tag application. With a simple scan of a QR code, placed on the inside of the mast door, you gain instant access to the luminaire configuration, making installation and maintenance operations faster and easier, no matter what stage of the luminaire's lifetime. Just download the APP and register your product right away.

For more details visit: philips.com/servicetag

Limited Warranty

10-year limited warranty.
See signify.com/warranties for details and restrictions.

Brackets/Arms

For brackets / arms available with this luminaire, see Lumec 3D for details.

03/01/2024

STATE OF TEXAS
HIRON M. FERNANDO
123288
LICENSED
PROFESSIONAL ENGINEER

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

ILLUMINATION IMPROVEMENTS

ILLUMINATION DETAILS

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		96

PLOTTED: 3/1/2024 BY: Marianna_Borrego 40.0500 ft / in.
FILENAME: K:\DAL_TPTO\project\061210021 - Amarillo SE 10th St. Barrio Signals - Lighting\CADD\ABS_ILL_SHT 307_SE 10TH_ILLUMINATION DETAILS.dgn

SUMMARY OF QUANTITIES						
ITEM NO.	CODE	DESCRIPTION	UNIT	SE 10TH AVE AT ARTHUR ST	SE 10TH AVE AT ROSS ST	PROJECT TOTAL
479	6010	ADJUSTING MANHOLES (ELECTRIC BOX)	EA	2	3	5
618	6029	CONDT (PVC) (SCH 40) (3")	LF	115	100	215
620	6009	ELEC CONDR (NO.6) BARE	LF	115	100	215
680	6004	REMOVING TRAFFIC SIGNALS	EA	1	1	2
680	6011	INSTALL HWY TRF SIG (UPGRADE)	EA	1	1	2
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	8	8	16
684	6031	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	LF	60	80	140
684	6036	TRF SIG CBL (TY A)(14 AWG)(10 CONDR)	LF	785	575	1360
684	6079	TRF SIG CBL (TY C)(12 AWG)(2 CONDR)	LF	1235	1105	2340
687	6001	PED POLE ASSEMBLY	EA	5	5	10
688	6001	PED DETECT PUSH BUTTON (APS)	EA	8	8	16
688	6003	PED DETECTOR CONTROLLER UNIT	EA	1	1	2
6027	6003	CONDUIT (PREPARE)	LF	425	400	825
6027	6008	GROUND BOX (PREPARE)	EA	5	5	10

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TRAFFIC SIGNAL IMPROVEMENTS

SIGNAL SUMMARY

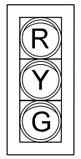
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		97

PLOTTED: 2/29/2024
FILENAME: K:\DAL_TPTO\1project\061210021 - Amarillo SE 10th St. Barrio Signals - Lighting\CADD\ABS_SIG_SHT 100_SUMMARY OF QUANTITIES.dgn
40.0000 ft / in.
BY: Marianna.Borrego

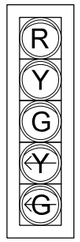
EXISTING SIGNALS TO REMAIN

V3



SH 2, 3, 4, 8, 9, 13, 14, 15, 19, 20

V5LT



SH 1, 7, 12, 18

EXISTING SIGNALS TO BE REMOVED

LED COUNTDOWN PEDESTRIAN SIGNAL

SH 5, 6, 10, 11, 16, 17, 21, 22

EXISTING SIGNS TO REMAIN

S4

S1

R10-5 (MOD)

S2 S3 S5 S7

S8

S6

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, SALVAGE, AND RETURN ALL PEDESTRIAN SIGNAL EQUIPMENT AS SHOWN AFTER PROPOSED PEDESTRIAN EQUIPMENT IS OPERATIONAL. RETURN SALVAGED MATERIAL TO CITY OF AMARILLO, CONTRACTOR TO TAKE DUE CARE OF EQUIPMENT AND RETURN IT AS REMOVED CONDITION.
5. CONTRACTOR TO CONTACT CITY OF AMARILLO TRAFFIC DEPARTMENT AT (806-378-6296) 48 HOURS IN ADVANCE TO COORDINATE WORK. CONTRACTOR TO COORDINATE WITH CITY OF AMARILLO TO PULL REQUIRED PERMITS PRIOR TO STARTING WORK.

0 40
SCALE IN FEET

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
- [1] SIGNAL HEAD NUMBER
- (S1) SIGN LABEL
- (S) EXISTING ELECTRICAL SERVICE
- E-# EXISTING TRAFFIC SIGNAL POLE NUMBER

03/01/2024

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TRAFFIC SIGNAL IMPROVEMENTS

EXISTING CONDITIONS

SE 10TH AVE AT ARTHUR ST

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		98

PLOTTED: 2/29/2024
FILENAME: K:\DAL_TPTO\project\06121002I - Amarillo SE 10th St. Barrio Signals - Lighting\CADD\ABS_SIG_SHT 201_SE 10TH AT ARTHUR_EXISTING.dgn
40.0000 ft / in.
BY: Marianna.Borrego

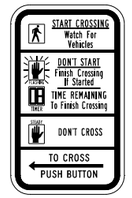
PROPOSED SIGNALS

COUNTDOWN PEDESTRIAN SIGNAL

SH 23,24,25,26
27,28,29,30

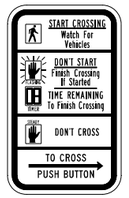
PROPOSED SIGNS

R10-3EL



S10 S12
S13 S15

R10-3ER



S9 S11
S14 S16

LEGEND

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

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 AMARILLO TRAFFIC FIELD SUPERINTENDENT MICHAEL PADILLA AT (806-378-629 OR michael.padilla@amarillo.gov) 48 HOURS IN ADVANCE TO COORDINATE WORK. CONTRACTOR TO COORDINATE WITH CITY OF AMARILLO TO PULL REQUIRED PERMITS, PRIOR TO STARTING WORK.
3. THE LOCATION OF THE PROPOSED PEDESTRIAN POLES, CONDUIT, AND CONDUCTORS ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMMODATE FIELD CONDITIONS.
4. PROPOSED CURB RAMPS LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.
5. CONTRACTOR TO CONFIRM ALL EQUIPMENT IS PLACED WITHIN PUBLIC R.O.W. PRIOR TO CONSTRUCTION.
6. REFER TO ROADWAY SHEETS FOR PROPOSED PAVEMENT MARKINGS DETAILS.
7. REFER TO ROADWAY SHEETS FOR PROPOSED CURB RAMPS DETAILS.
8. CONTRACTOR SHALL COORDINATE THE PEDESTRIAN 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 PEDESTRIAN 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.
9. ALL SIGNAL CABLES SHALL BE WIRED IN ACCORDANCE WITH THE CABINET PREPARATION NOTES SUPPLIED BY THE CITY OF AMARILLO.
10. 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.

NOTES CONTINUED:

11. IF PEDESTRIAN 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.
12. CONTRACTOR SHALL ENSURE THAT ALL PEDESTRIAN RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE RAMP OR GUTTER AREA.
13. CONTRACTOR TO MAINTAIN FULL ACCESS TO A MINIMUM OF TWO PEDESTRIAN CROSSINGS AT ALL TIMES DURING CONSTRUCTION.
14. CONTRACTOR IS RESPONSIBLE FOR REPAIRS AND SUBSTITUTION OF ANY DAMAGE IRRIGATION EQUIPMENT.
15. EXISTING INTERSECTION PHASING TO REMAIN UNCHANGED.

0 40
SCALE IN FEET

03/01/2024

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

TRAFFIC SIGNAL IMPROVEMENTS

PROPOSED CONDITIONS

SE 10TH AVE AT
ARTHUR ST

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		99

PLOTTED: 2/29/2024
FILENAME: K:\DAL_TPTO\project\061210021 - Amarillo SE 10th St. Barrio Signals - Lighting\CADD\ABS_SIG_SHT 202_SE 10TH AT ARTHUR_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 40) 2" PVC SCH 80 (RISER) Qty	2" PVC SCH 80 (RISER) Len	2" PVC (TRENCHED) Qty	2" PVC (TRENCHED) Len	3" PVC (TRENCHED) Qty	3" PVC (TRENCHED) Len	4" PVC (BORED) Qty	4" PVC (BORED) Len	CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS NO. 6 BARE WIRE Qty	NO. 6 BARE WIRE Len	ITEM 684 TRAFFIC SIGNAL CABLES TY C 2 CNDR NO. 12 Qty	TY C 2 CNDR NO. 12 Len	TY A 5 CNDR NO. 14 Qty	TY A 5 CNDR NO. 14 Len	TY A 10 CNDR NO. 14 Qty	TY A 10 CNDR NO. 14 Len	TOTAL LENGTH OF RUN	RUN NO
1	E	1		1						E									10	1
2	E			1						E									135	2
3	E			1						E									5	3
	E					1				E									5	
	E					1				I			8	40			5	25	5	
4	E					1				I			8	280			5	175	35	4
5	E					1				I			1	5					5	5
6	I					1	5			I	1	5	1	5			1	5	5	6
7	E							1		I			4	320			2	160	80	7
8	E					1				E									5	8
9	I					1	20			I	1	20	2	40			1	20	20	9
10	E							1		I			2	200			1	100	100	10
11	I					1	25			I	1	25	1	25			1	25	25	11
12	E					1				I			1	15					15	12
13	E							1		E									75	13
14	E					1				E									5	14
15	I					1	25			I	1	25	1	25			1	25	25	15
16	I					1	40			I	1	40	1	40			1	40	40	16
17	E					1				I			2	210			2	210	105	17
SUBTOTAL					0		115		0			115		1205		0		785		
E-1	E									E				5		10			VARIES	E-1
E-2	E									E									VARIES	E-2
E-3	E									E				5		10			VARIES	E-3
E-4	E									E									VARIES	E-4
P-1	P									I				5		10			VARIES	P-1
P-2	P									I				10		20			VARIES	P-2
P-3	P									I				5		10			VARIES	P-3
P-4	P									I				5		10			VARIES	P-4
P-5	P									I				5		10			VARIES	P-5
SUBTOTAL			0		0		0		0			0		30		60		0		
TOTAL			0		0		115		0			115		1235		60		785		

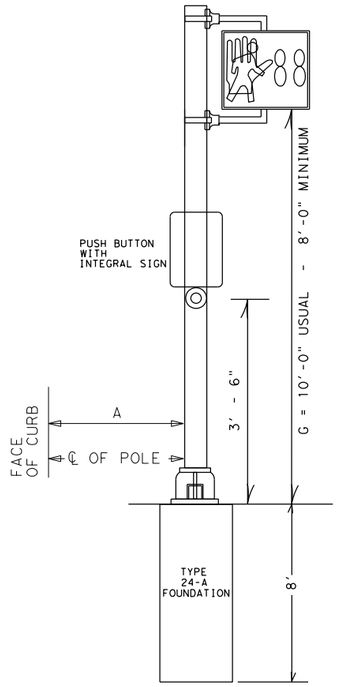
CONDUIT STATUS: I=INSTALL; E=EXISTING; P=WIRE TO BE INSTALLED INSIDE STEEL POLE; A=ABANDON; REM=REMOVE AND SALVAGE

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

SIGNAL HEAD AND POLE PLACEMENT (FT)

POLE NUMBER	STATUS	A (FT)	B (FT)	C (FT)	D (FT)	F (FT)	G (FT)	DRILLED SHAFT LENGTH (FT) 24" DIA SUB TO ITEM 687	FDN. TYPE
E-1	E	EXISTING TO REMAIN							
E-2	E	EXISTING TO REMAIN							
E-3	E	EXISTING TO REMAIN							
E-4	E	EXISTING TO REMAIN							
P-1	I	3	PEDESTRIAN SIGNAL POLE				10	6	24-A
P-2	I	4	PEDESTRIAN SIGNAL POLE				10	6	24-A
P-3	I	5	PEDESTRIAN SIGNAL POLE				10	6	24-A
P-4	I	10	PEDESTRIAN SIGNAL POLE				10	6	24-A
P-5	I	7	PEDESTRIAN SIGNAL POLE				10	6	24-A
							TOTAL:	30	

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



PEDESTRIAN POLE
POLE P1-P5

03/01/2024

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TRAFFIC SIGNAL IMPROVEMENTS

PROPOSED QUANTITIES

SE 10TH AVE AT
ARTHUR ST

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		100

PLOTTED: 2/29/2024
FILENAME: K:\DAL_TPTO\Project\061210021 - Amarillo SE 10th St. Barrio Signals - Lighting\CADD\ABS_SIG_SHT 203_SE 10TH AT ARTHUR_QUANTITIES (1 OF 3).dgn
40.0000 ft / in.
BY: Marianna.Borrego

CABLE TERMINATION CHART

CNDR. NO.	CONDUCTOR COLOR	CABLE 1 20 CNDR. FROM E-1 TO CNTRL.	CABLE 2 20 CNDR. FROM E-2 TO CNTRL.	CABLE 3 20 CNDR. FROM E-3 TO CNTRL.	CABLE 4 20 CNDR. FROM E-4 TO CNTRL.	CABLE 5 10 CNDR. FROM P-1 TO CNTRL.	CABLE 6 10 CNDR. FROM P-2 TO CNTRL.	CABLE 7 10 CNDR. FROM P-3 TO CNTRL.	CABLE 8 10 CNDR. FROM P-4 TO CNTRL.	CABLE 9 10 CNDR. FROM P-5 TO CNTRL.
1	BLACK	SPARE	EXISTING TO REMAIN	SPARE	EXISTING TO REMAIN	SPARE	SPARE	SPARE	SPARE	SPARE
2	WHITE	SH COM		SH COM		SH COM	SH COM	SH COM	SH COM	SH COM
3	RED	EXISTING R		EXISTING R		SPARE	SPARE	SPARE	SPARE	SPARE
4	GREEN	EXISTING G		EXISTING G		SPARE	SPARE	SPARE	SPARE	SPARE
5	ORANGE	EXISTING Y		EXISTING Y		SPARE	SPARE	SPARE	SPARE	SPARE
6	BLUE	SH 24 - Ø4 DW		SH 28 - Ø8 DW		SH 23 - Ø2 DW	SH 25 - Ø4 DW	SH 27 - Ø6 DW	SH 29 - Ø8 DW	SH 30 - Ø2 DW
7	WHITE/BLACK	SH 24 - Ø4 W		SH 28 - Ø8 W		SH 23 - Ø2 W	SH 25 - Ø4 W	SH 27 - Ø6 W	SH 29 - Ø8 W	SH 30 - Ø2 W
8	RED/BLACK	SPARE		SPARE		SPARE	SPARE	SPARE	SPARE	SPARE
9	GREEN/BLACK	SPARE		SPARE		SPARE	SH 26 - Ø6 DW	SPARE	SPARE	SPARE
10	ORANGE/BLACK	SPARE		SPARE		SPARE	SH 26 - Ø6 W	SPARE	SPARE	SPARE
11	BLUE/BLACK	SPARE		SPARE						
12	BLACK/WHITE	SPARE		SPARE						
13	RED/WHITE	SPARE		SPARE						
14	GREEN/WHITE	EXISTING G (LT ARW)		EXISTING G (LT ARW)						
15	BLUE/WHITE	EXISTING Y (LT ARW)		EXISTING Y (LT ARW)						
16	BLACK/RED	SPARE		SPARE						
17	WHITE/RED	SPARE		SPARE						
18	ORANGE/RED	SPARE		SPARE						
19	BLUE/RED	SPARE		SPARE						
20	RED/GREEN	SPARE		SPARE						

SIGNS SUMMARY

SIGN *	SIGN TYPE	SIGN LEGEND	STATUS	SUPPORT	SIGN DIMENSION (in x in)
S1	STREET NAME	ARTHUR	E	E-1	-
S2	R10-5(MOD)	PROTECTED LEFT ON GREEN ARROW	E	E-1	-
S3	R10-5(MOD)	PROTECTED LEFT ON GREEN ARROW	E	E-2	-
S4	STREET NAME	SE 10TH	E	E-2	-
S5	R10-5(MOD)	PROTECTED LEFT ON GREEN ARROW	E	E-3	-
S6	STREET NAME	ARTHUR	E	E-3	-
S7	R10-5(MOD)	PROTECTED LEFT ON GREEN ARROW	E	E-4	-
S8	STREET NAME	SE 10TH	E	E-4	-
S9	R10-3ER	PED PUSH BUTTON	I	P-1	9"x15"
S10	R10-3EL	PED PUSH BUTTON	I	E-1	9"x15"
S11	R10-3ER	PED PUSH BUTTON	I	P-2	9"x15"
S12	R10-3EL	PED PUSH BUTTON	I	P-2	9"x15"
S13	R10-3EL	PED PUSH BUTTON	I	P-3	9"x15"
S14	R10-3ER	PED PUSH BUTTON	I	E-3	9"x15"
S15	R10-3EL	PED PUSH BUTTON	I	P-4	9"x15"
S16	R10-3ER	PED PUSH BUTTON	I	P-5	9"x15"

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 (SUB TO ITEM 680).

GROUND BOX SUMMARY

ITEM NO.	DESCRIPTION	UNIT	QTY.
6027	GROUND BOX (PREPARE)	EA	5

03/01/2024

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TRAFFIC SIGNAL IMPROVEMENTS

PROPOSED QUANTITIES

SE 10TH AVE AT
ARTHUR ST

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		101

PLOTTED: 2/29/2024
FILENAME: K:\DAL_TPTO\Project\06210021 - Amarillo SE 10th St. Barrio Signals - Lighting\CADD\ABS_SIG_SHT 204_SE 10TH AT ARTHUR_QUANTITIES (2 OF 3).dgn
40.0000 ft / in.
BY: Marianna.Borrego

SIGNAL HEADS (ITEM 682)

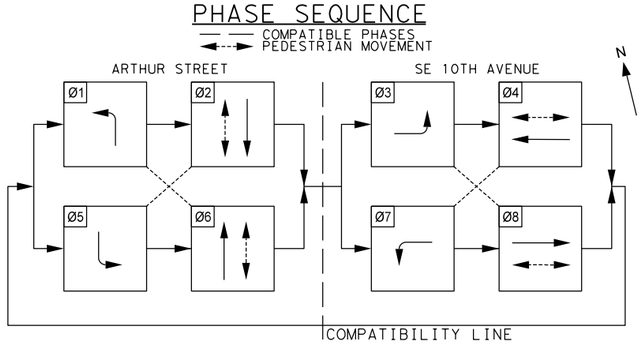
SIGNAL HEAD NUMBER	12" LED SIGNAL INDICATION										PED SIG SEC (LED) (COUNTDOWN)
	SIGNAL HEAD TYPE	STATUS	BACK PLATE		LED SIGNAL LAMPS						
			3 SEC	5 SEC	<-G-	G	<-Y-	Y	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA
1	V5LT	E									
2	V3	E									
3	V3	E									
4	V3	E									
5	PED	E									
6	PED	E									
7	V5LT	E									
8	V3	E									
9	V3	E									
10	PED	E									
11	PED	E									
12	V5LT	E									
13	V3	E									
14	V3	E									
15	V3	E									
16	PED	E									
17	PED	E									
18	V5LT	E									
19	V3	E									
20	V3	E									
21	PED	E									
22	PED	E									
23	PED	I									1
24	PED	I									1
25	PED	I									1
26	PED	I									1
27	PED	I									1
28	PED	I									1
29	PED	I									1
30	PED	I									1
TOTAL (NEW)			-	-	-	-	-	-	-	-	8

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

APS MESSAGE CHART

POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-1	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS 10TH AVENUE AT ARTHUR STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS 10TH AVENUE AT ARTHUR STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	10TH AVENUE, WALK SIGN IS ON TO CROSS 10TH AVENUE
E-1	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS ARTHUR STREET AT 10TH AVENUE
		EXTENDED BUTTON PUSH	WAIT TO CROSS ARTHUR STREET AT 10TH AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ARTHUR STREET, WALK SIGN IS ON TO CROSS ARTHUR STREET
P-2	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS ARTHUR STREET AT 10TH AVENUE
		EXTENDED BUTTON PUSH	WAIT TO CROSS ARTHUR STREET AT 10TH AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ARTHUR STREET, WALK SIGN IS ON TO CROSS ARTHUR STREET
P-2	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS 10TH AVENUE AT ARTHUR STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS 10TH AVENUE AT ARTHUR STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	10TH AVENUE, WALK SIGN IS ON TO CROSS 10TH AVENUE
P-3	Phase 6	BUTTON PUSH ON DW	WAIT.
		EXTENDED BUTTON PUSH	WAIT TO CROSS 10TH AVENUE AT ARTHUR STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	RAPID TICK.
E-3	Phase 8	BUTTON PUSH ON DW	WAIT.
		EXTENDED BUTTON PUSH	WAIT TO CROSS ARTHUR STREET AT 10TH AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	RAPID TICK.
P-4	Phase 8	BUTTON PUSH ON DW	WAIT.
		EXTENDED BUTTON PUSH	WAIT TO CROSS ARTHUR STREET AT 10TH AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	RAPID TICK.
P-5	Phase 2	BUTTON PUSH ON DW	WAIT.
		EXTENDED BUTTON PUSH	WAIT TO CROSS 10TH AVENUE AT ARTHUR STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	RAPID TICK.

PHASE SEQUENCE



03/01/2024

STATE OF TEXAS
HIRON M. FERNANDO
123288
LICENSED
PROFESSIONAL ENGINEER

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

TRAFFIC SIGNAL IMPROVEMENTS

PROPOSED QUANTITIES

SE 10TH AVE AT
ARTHUR ST

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		102

PLOTTED: 2/29/2024
FILENAME: K:\DAL_TPTO\Project\061210021 - Amarillo SE 10th St. Barrio Signals - Lighting\CADD\ABS_SIG_SHT 205_SE 10TH AT ARTHUR_QUANTITIES (3 OF 3).dgn
40.0000 ft / in.
BY: Marianna.Borrego

EXISTING SIGNALS TO REMAIN

V3LT — SH 1,12

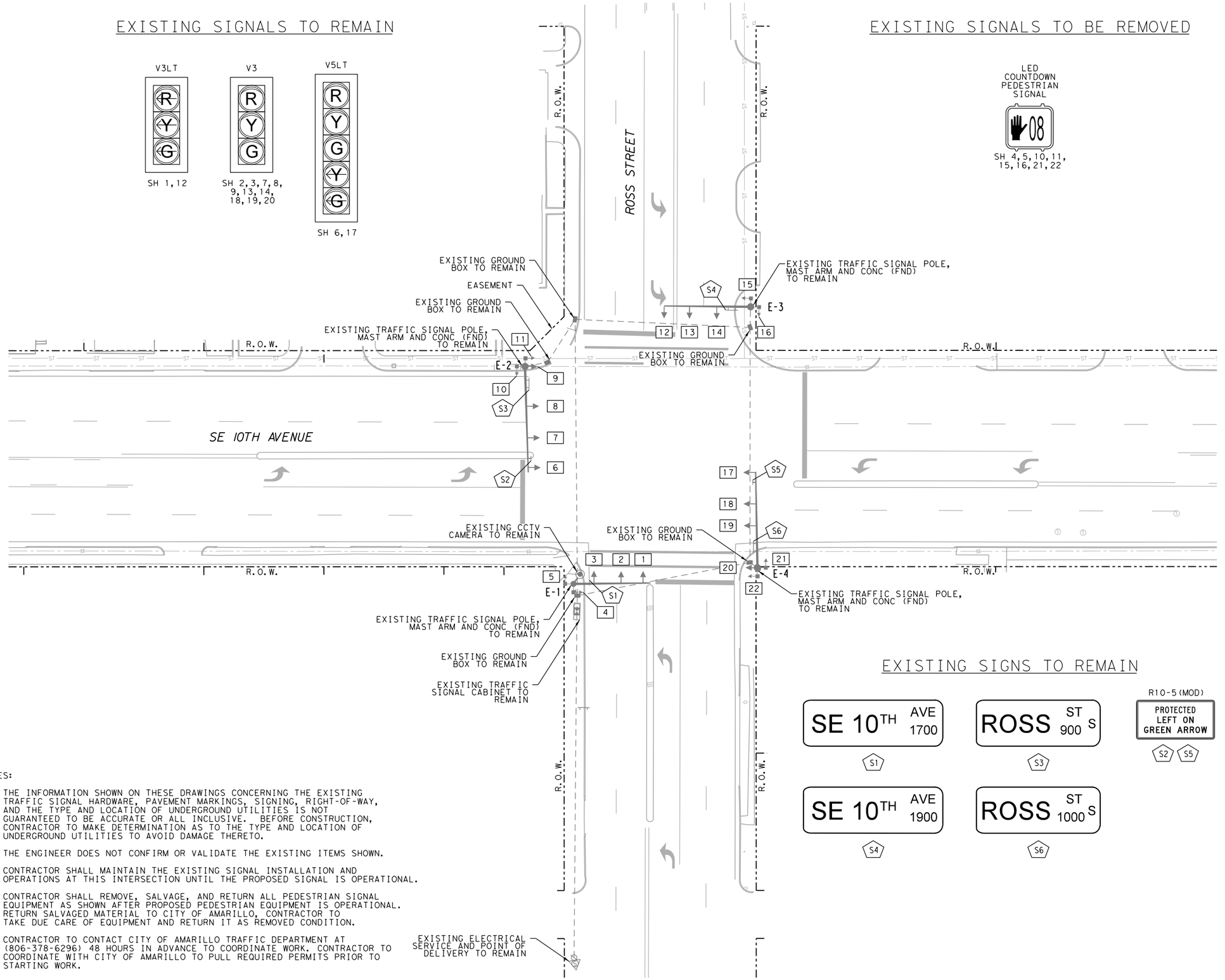
V3 — SH 2,3,7,8,9,13,14,18,19,20

V5LT — SH 6,17

EXISTING SIGNALS TO BE REMOVED

LED COUNTDOWN PEDESTRIAN SIGNAL — SH 4,5,10,11,15,16,21,22

0 40
SCALE IN FEET



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 CCTV CAMERA
- [1] SIGNAL HEAD NUMBER
- (S1) SIGN LABEL
- (S) EXISTING ELECTRICAL SERVICE
- E-# EXISTING TRAFFIC SIGNAL POLE NUMBER

EXISTING SIGNS TO REMAIN

SE 10TH AVE 1700 — S1

ROSS ST 900 S — S3

R10-5(MOD) PROTECTED LEFT ON GREEN ARROW — S2, S5

SE 10TH AVE 1900 — S4

ROSS ST 1000 S — S6

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, SALVAGE, AND RETURN ALL PEDESTRIAN SIGNAL EQUIPMENT AS SHOWN AFTER PROPOSED PEDESTRIAN EQUIPMENT IS OPERATIONAL. RETURN SALVAGED MATERIAL TO CITY OF AMARILLO, CONTRACTOR TO TAKE DUE CARE OF EQUIPMENT AND RETURN IT AS REMOVED CONDITION.
5. CONTRACTOR TO CONTACT CITY OF AMARILLO TRAFFIC DEPARTMENT AT (806-378-6296) 48 HOURS IN ADVANCE TO COORDINATE WORK. CONTRACTOR TO COORDINATE WITH CITY OF AMARILLO TO PULL REQUIRED PERMITS PRIOR TO STARTING WORK.

03/01/2024

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TRAFFIC SIGNAL IMPROVEMENTS

EXISTING CONDITIONS

SE 10TH AVE AT ROSS ST

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		103

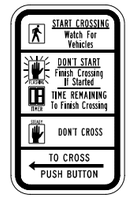
PROPOSED SIGNALS

COUNTDOWN PEDESTRIAN SIGNAL

SH 23,24,25,26
27,28,29,30

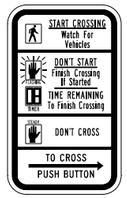
PROPOSED SIGNS

R10-3EL



S7 S10
S12 S14

R10-3ER



S8 S9
S11 S13

0 40
SCALE IN FEET

LEGEND

- EXISTING TYPICAL MAST ARM COMBINATION SIGNAL \ WITH PEDESTRIAN SIGNAL, AND SIGNAGE
- PROPOSED PEDESTRIAN POLE
- EXISTING TRAFFIC SIGNAL CONTROLLER CABINET
- EXISTING GROUND BOX
- EXISTING CONDUIT
- PROPOSED CONDUIT
- EXISTING ELECTRICAL SERVICE
- EXISTING CCTV CAMERA
- (1) CONDUIT RUN NUMBER
- [1] SIGNAL HEAD NUMBER
- S1 SIGN LABEL
- E-# EXISTING TRAFFIC SIGNAL POLE NUMBER
- P-# PROPOSED TRAFFIC SIGNAL POLE NUMBER

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 AMARILLO TRAFFIC FIELD SUPERINTENDENT MICHAEL PADILLA AT (806-378-629 OR michael.padilla@amarillo.gov) 48 HOURS IN ADVANCE TO COORDINATE WORK. CONTRACTOR TO COORDINATE WITH CITY OF AMARILLO TO PULL REQUIRED PERMITS, PRIOR TO STARTING WORK.
3. THE LOCATION OF THE PROPOSED PEDESTRIAN POLES, CONDUIT, AND CONDUCTORS ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMMODATE FIELD CONDITIONS.
4. PROPOSED CURB RAMPS LANDING SHALL BE POURED UP TO THE SIGNAL FOUNDATION, LEAVING NO GAPS.
5. CONTRACTOR TO CONFIRM ALL EQUIPMENT IS PLACED WITHIN PUBLIC R.O.W. PRIOR TO CONSTRUCTION.
6. REFER TO ROADWAY SHEETS FOR PROPOSED PAVEMENT MARKINGS DETAILS.
7. REFER TO ROADWAY SHEETS FOR PROPOSED CURB RAMPS DETAILS.
8. CONTRACTOR SHALL COORDINATE THE PEDESTRIAN 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 PEDESTRIAN 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.
9. ALL SIGNAL CABLES SHALL BE WIRED IN ACCORDANCE WITH THE CABINET PREPARATION NOTES SUPPLIED BY THE CITY OF AMARILLO.

NOTES CONTINUED:

10. 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.
11. IF PEDESTRIAN 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.
12. CONTRACTOR SHALL ENSURE THAT ALL PEDESTRIAN RAMPS DRAIN TOWARDS THE STREET WITHOUT PONDING IN THE RAMP OR GUTTER AREA.
13. CONTRACTOR TO MAINTAIN FULL ACCESS TO A MINIMUM OF TWO PEDESTRIAN CROSSINGS AT ALL TIMES DURING CONSTRUCTION.
14. CONTRACTOR IS RESPONSIBLE FOR REPAIRS AND SUBSTITUTION OF ANY DAMAGE IRRIGATION EQUIPMENT.
15. EXISTING INTERSECTION PHASING TO REMAIN UNCHANGED.

03/01/2024

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

TRAFFIC SIGNAL IMPROVEMENTS

PROPOSED CONDITIONS

SE 10TH AVE AT
ROSS ST

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		104

CONDUIT AND CABLE CHART

WIRE SIZE AND TYPE

RUN NO	CONDUIT STATUS	ITEM 618 CONDUIT (SCH 40)								CABLE STATUS	ITEM 620 ELECTRICAL CONDUCTORS		ITEM 684 TRAFFIC SIGNAL CABLES						TOTAL LENGTH OF RUN	RUN NO
		2" PVC SCH 80 (RISER)		2" PVC (TRENCHED)		3" PVC (TRENCHED)		4" PVC (BORED)			NO. 6 BARE WIRE		TY C 2 CNDR NO. 12		TY A 5 CNDR NO. 14		TY A 10 CNDR NO. 14			
		Qty	Len	Qty	Len	Qty	Len	Qty	Len		Qty	Len	Qty	Len	Qty	Len	Qty	Len		
1	E	1		1						E									10	1
2	E			1						E									145	2
3	E			1	10					E									10	3
	E					1				E									10	
	E					1				I			8	80			5	50	10	
4	E					1				E									5	4
5	I					1	25			I	1	25	1	25			1	25	25	5
6	I					1	40			I	1	40	1	40			1	40	40	6
7	E							1		I			4	480			2	240	120	7
8	E					1				E									10	8
9	I					1	5			I	1	5	2	10			1	5	5	9
10	E					1				I			2	50			1	25	25	10
11	E							1		I			2	150			1	75	75	11
12	E					1				E									10	12
13	I					1	20			I	1	20	2	40			1	20	20	13
14	E							1		E									100	14
15	I					1	10			I	1	10	2	20			1	10	10	15
16	E					1				E									5	16
17	E							1		I			2	170			1	85	75	17
SUBTOTAL					0		100		0			100		1065		0		575		
E-1	E									E									VARIES	E-2
E-2	E									E									VARIES	E-2
E-3	E									E									VARIES	E-3
E-4	E									E									VARIES	E-4
P-1	P									I				5		10			VARIES	P-1
P-2	P									I				5		10			VARIES	P-2
P-3	P									I				10		20			VARIES	P-3
P-4	P									I				10		20			VARIES	P-4
P-5	P									I				10		20			VARIES	P-5
SUBTOTAL		0			0		0		0			0		40		80		0		
TOTAL		0			0		100		0			100		1105		80		575		

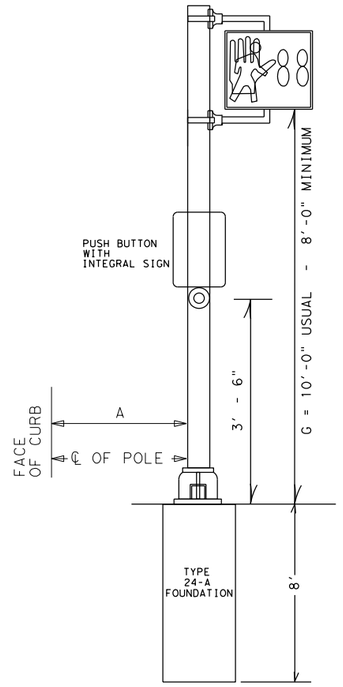
CONDUIT STATUS: I=INSTALL; E=EXISTING; P=WIRE TO BE INSTALLED INSIDE STEEL POLE; A=ABANDON; REM=REMOVE AND SALVAGE

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

SIGNAL HEAD AND POLE PLACEMENT (FT)

POLE NUMBER	STATUS	A (FT)	B (FT)	C (FT)	D (FT)	F (FT)	G (FT)	DRILLED SHAFT LENGTH (FT) 24" DIA SUB TO ITEM 687	FDN. TYPE
E-1	E	EXISTING TO REMAIN							
E-2	E	EXISTING TO REMAIN							
E-3	E	EXISTING TO REMAIN							
E-4	E	EXISTING TO REMAIN							
P-1	I	10	PEDESTRIAN SIGNAL POLE				10	6	24-A
P-2	I	6	PEDESTRIAN SIGNAL POLE				10	6	24-A
P-3	I	3	PEDESTRIAN SIGNAL POLE				10	6	24-A
P-4	I	6	PEDESTRIAN SIGNAL POLE				10	6	24-A
P-5	I	7	PEDESTRIAN SIGNAL POLE				10	6	24-A
							TOTAL:	30	

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



PEDESTRIAN POLE
POLE P1-P5

03/01/2024

STATE OF TEXAS
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123288
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PROFESSIONAL ENGINEER

100% PLANS

Kimley»Horn F-928

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TRAFFIC SIGNAL IMPROVEMENTS

PROPOSED QUANTITIES

SE 10TH AVE AT
ROSS ST

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		105

PLOTTED: 2/29/2024
FILENAME: K:\DAL_TPTO\Project\061210021 - Amarillo SE 10th St. Barrio Signals - Lighting\CADD\ABS_SIG_SHT 103_SE 10TH AT ROSS_QUANTITIES (1 OF 3).dgn
40.0000 ft / in.
BY: Marianna.Borrego

CABLE TERMINATION CHART

CNDR. NO.	CONDUCTOR COLOR	CABLE 1 20 CNDR. FROM E-1 TO CNTRL.	CABLE 2 20 CNDR. FROM E-2 TO CNTRL.	CABLE 3 20 CNDR. FROM E-3 TO CNTRL.	CABLE 4 20 CNDR. FROM E-4 TO CNTRL.	CABLE 5 10 CNDR. FROM P-1 TO CNTRL.	CABLE 6 10 CNDR. FROM P-2 TO CNTRL.	CABLE 7 10 CNDR. FROM P-3 TO CNTRL.	CABLE 8 10 CNDR. FROM P-4 TO CNTRL.	CABLE 9 10 CNDR. FROM P-5 TO CNTRL.
1	BLACK	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	SPARE	SPARE	SPARE	SPARE	SPARE
2	WHITE					SH COM	SH COM	SH COM	SH COM	SH COM
3	RED					SPARE	SPARE	SPARE	SPARE	SPARE
4	GREEN					SPARE	SPARE	SPARE	SPARE	SPARE
5	ORANGE					SPARE	SPARE	SPARE	SPARE	SPARE
6	BLUE					SH 23 - Ø8 DW	SH 24 - Ø2 DW	SH 25 - Ø2 DW	SH 27 - Ø6 DW	SH 29 - Ø8 DW
7	WHITE/BLACK					SH 23 - Ø8 W	SH 24 - Ø2 W	SH 25 - Ø2 W	SH 27 - Ø6 W	SH 29 - Ø8 W
8	RED/BLACK					SPARE	SPARE	SPARE	SPARE	SPARE
9	GREEN/BLACK					SPARE	SPARE	SH 26 - Ø4 DW	SH 28 - Ø4 DW	SH 30 - Ø6 DW
10	ORANGE/BLACK					SPARE	SPARE	SH 26 - Ø4 W	SH 28 - Ø4 W	SH 30 - Ø6 W
11	BLUE/BLACK									
12	BLACK/WHITE									
13	RED/WHITE									
14	GREEN/WHITE									
15	BLUE/WHITE									
16	BLACK/RED									
17	WHITE/RED									
18	ORANGE/RED									
19	BLUE/RED									
20	RED/GREEN									

SIGNS SUMMARY

SIGN *	SIGN TYPE	SIGN LEGEND	STATUS	SUPPORT	SIGN DIMENSION (in x in)
S1	STREET NAME	SE 10TH	E	E-1	-
S2	R10-5(MOD)	PROTECTED LEFT ON GREEN ARROW	E	E-2	-
S3	STREET NAME	SE 10TH	E	E-2	-
S4	STREET NAME	ROSS	E	E-3	-
S5	R10-5(MOD)	PROTECTED LEFT ON GREEN ARROW	E	E-4	-
S6	STREET NAME	ROSS	E	E-4	-
S7	R10-3EL	PED PUSH BUTTON	I	P-1	9"x15"
S8	R10-3ER	PED PUSH BUTTON	I	P-2	9"x15"
S9	R10-3ER	PED PUSH BUTTON	I	P-3	9"x15"
S10	R10-3EL	PED PUSH BUTTON	I	P-3	9"x15"
S11	R10-3ER	PED PUSH BUTTON	I	P-4	9"x15"
S12	R10-3EL	PED PUSH BUTTON	I	P-4	9"x15"
S13	R10-3ER	PED PUSH BUTTON	I	P-5	9"x15"
S14	R10-3EL	PED PUSH BUTTON	I	P-5	9"x15"

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 (SUB TO ITEM 680).

GROUND BOX SUMMARY

ITEM NO.	DESCRIPTION	UNIT	QTY.
6027	GROUND BOX (PREPARE)	EA	5

03/01/2024

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Texas Department of Transportation

TRAFFIC SIGNAL IMPROVEMENTS

PROPOSED QUANTITIES

SE 10TH AVE AT
ROSS ST

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		106

PLOTTED: 2/29/2024
FILENAME: K:\DAL_TPTO\Project\06210021 - Amarillo SE 10th St. Barrio Signals - Lighting\CADD\ABS_SIG_SHT 104_SE 10TH AT ROSS_QUANTITIES (2 OF 3).dgn
40.0000 ft / in.
BY: Marianna.Borrego

SIGNAL HEADS (ITEM 682)

SIGNAL HEAD NUMBER	12" LED SIGNAL INDICATION										PED SIG SEC (LED) (COUNTDOWN)
	SIGNAL HEAD TYPE	STATUS	BACK PLATE		LED SIGNAL LAMPS						
			3 SEC	5 SEC	<-G-	G	<-Y-	Y	<-R-	R	
			EA	EA	EA	EA	EA	EA	EA	EA	EA
1	V3LT	E									
2	V3	E									
3	V3	E									
4	PED	E									
5	PED	E									
6	V5LT	E									
7	V3	E									
8	V3	E									
9	V3	E									
10	PED	E									
11	PED	E									
12	V3LT	E									
13	V3	E									
14	V3	E									
15	PED	E									
16	PED	E									
17	V5LT	E									
18	V3	E									
19	V3	E									
20	V3	E									
21	PED	E									
22	PED	E									
23	PED	I									1
24	PED	I									1
25	PED	I									1
26	PED	I									1
27	PED	I									1
28	PED	I									1
29	PED	I									1
30	PED	I									1
TOTAL (NEW)			-	-	-	-	-	-	-	-	8

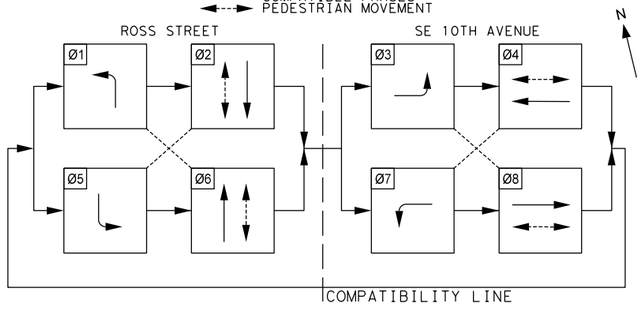
STATUS: I=INSTALL; E=EXISTING; REM=EXISTING TO BE REMOVED; REL=RELOCATE

APS MESSAGE CHART

POLE LOCATION	PEDESTRIAN MOVEMENT	FUNCTIONS	SPEECH MESSAGE/SOUND DETAILS
P-1	Phase 8	BUTTON PUSH ON DW	WAIT.
		EXTENDED BUTTON PUSH	WAIT TO CROSS ROSS STREET AT 10TH AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	RAPID TICK.
P-2	Phase 2	BUTTON PUSH ON DW	WAIT.
		EXTENDED BUTTON PUSH	WAIT TO CROSS 10TH AVENUE AT ROSS STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	RAPID TICK.
P-3	Phase 2	BUTTON PUSH ON DW	WAIT TO CROSS 10TH AVENUE AT ROSS STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS 10TH AVENUE AT ROSS STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	10TH AVENUE, WALK SIGN IS ON TO CROSS 10TH AVENUE
P-3	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS ROSS STREET AT 10TH AVENUE
		EXTENDED BUTTON PUSH	WAIT TO CROSS ROSS STREET AT 10TH AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ROSS STREET, WALK SIGN IS ON TO CROSS ROSS STREET
P-4	Phase 4	BUTTON PUSH ON DW	WAIT TO CROSS ROSS STREET AT 10TH AVENUE
		EXTENDED BUTTON PUSH	WAIT TO CROSS ROSS STREET AT 10TH AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ROSS STREET, WALK SIGN IS ON TO CROSS ROSS STREET
P-4	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS 10TH AVENUE AT ROSS STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS 10TH AVENUE AT ROSS STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	10TH AVENUE, WALK SIGN IS ON TO CROSS 10TH AVENUE
P-5	Phase 6	BUTTON PUSH ON DW	WAIT TO CROSS 10TH AVENUE AT ROSS STREET
		EXTENDED BUTTON PUSH	WAIT TO CROSS 10TH AVENUE AT ROSS STREET
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	10TH AVENUE, WALK SIGN IS ON TO CROSS 10TH AVENUE
P-5	Phase 8	BUTTON PUSH ON DW	WAIT TO CROSS ROSS STREET AT 10TH AVENUE
		EXTENDED BUTTON PUSH	WAIT TO CROSS ROSS STREET AT 10TH AVENUE
		LOCATOR TONE	SLOW TICK
		WALK INDICATION	ROSS STREET, WALK SIGN IS ON TO CROSS ROSS STREET

PHASE SEQUENCE

— — COMPATIBLE PHASES
◄---► PEDESTRIAN MOVEMENT



03/01/2024

STATE OF TEXAS
HIRON M. FERNANDO
123288
LICENSED
PROFESSIONAL ENGINEER

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

TRAFFIC SIGNAL IMPROVEMENTS

PROPOSED QUANTITIES

SE 10TH AVE AT
ROSS ST

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
			SE 10TH AVE
DIST	COUNTY		SHEET NO.
AMA	POTTER		107

PLOTTED: 2/29/2024
FILENAME: K:\DAL_TPTO\Project\06121002I - Amarillo SE 10th St. Barrio Signals - Lighting\CADD\ABS_SIG_SHT 105_SE 10TH AT ROSS_QUANTITIES (3 OF 3).dgn
40.0000 ft / in.
BY: Marianna.Borrego

CK: SAW
DW: EIA
CK: SAW
DW: EIA

SUMMARY OF SIGNING AND PAVEMENT MARKING ITEMS

LOCATION	644 6001	644 6068	666 6036	666 6225	666 6226	666 6230	666 6321	666 6306	666 6318	668 6018	668 6019
	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	RELOCATE SM RD SN SUP&AM TY 10BWG	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	PAVEMENT SEALER 6"	PAVEMENT SEALER 8"	PAVEMENT SEALER 24"	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	PREFAB PAV MRK TY B (W)(24")(SLD)	PREFAB PAV MRK TY B (W)(ARROW)
	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	EA
	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	EA
PLAN - SHEET 1 OF 2	0	12	206	4146	206	918	2886	692	568	918	12
PLAN - SHEET 2 OF 2	1	7	106	3813	106	863	2610	629	574	863	8
PROJECT TOTALS	1	20	312	7959	312	1781	5496	1321	1142	1781	20

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100% PLANS

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SE 10TH AVE

PAVEMENT MARKING SUMMARY

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		108

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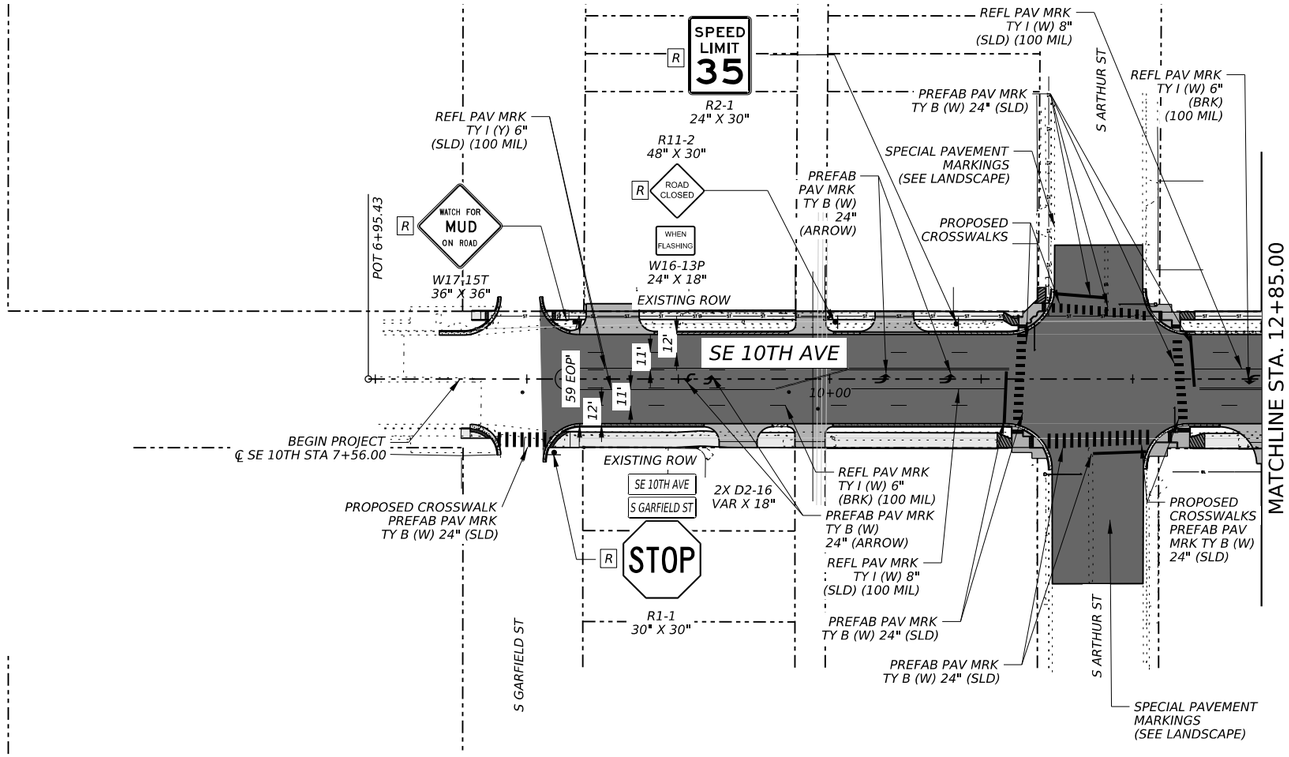
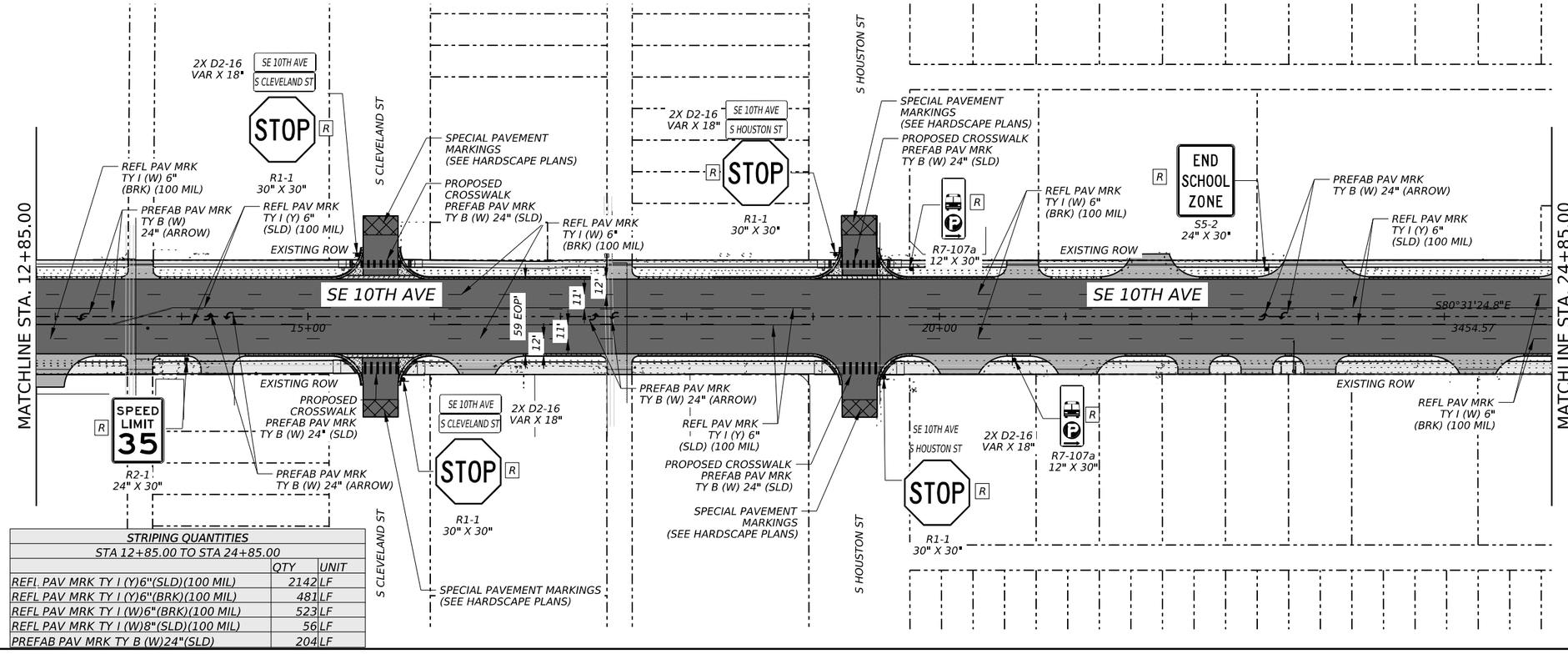
DW: EIA
CK: SAW
DW: EIA



STRIPING QUANTITIES		
BEGIN PROJECT TO STA 12+85.00		
	QTY	UNIT
REFL PAV MRK TY I (Y)6"(SLD)(100 MIL)	744	LF
REFL PAV MRK TY I (Y)6"(BRK)(100 MIL)	87	LF
REFL PAV MRK TY I (W)6"(BRK)(100 MIL)	169	LF
REFL PAV MRK TY I (W)8"(SLD)(100 MIL)	150	LF
PREFAB PAV MRK TY B (W)24"(SLD)	714	LF



STRIPING QUANTITIES		
STA 12+85.00 TO STA 24+85.00		
	QTY	UNIT
REFL PAV MRK TY I (Y)6"(SLD)(100 MIL)	2142	LF
REFL PAV MRK TY I (Y)6"(BRK)(100 MIL)	481	LF
REFL PAV MRK TY I (W)6"(BRK)(100 MIL)	523	LF
REFL PAV MRK TY I (W)8"(SLD)(100 MIL)	56	LF
PREFAB PAV MRK TY B (W)24"(SLD)	204	LF

0 50 100
SCALE IN FEET

LEGEND

- ASPAHALT
- CONCRETE SIDEWALK
- CONCRETE CURB AND GUTTER
- CONCRETE DRIVEWAY
- R — REMOVE SIGN
- # — PROPOSED SIGN

NOTES

1. SIGNS IDENTIFIED FOR REMOVAL SHALL BE STORED AT AN APPROVED AND SECURE SITE UNTIL RE-INSTALLATION

STATE OF TEXAS
STEPHEN A. NAVA
135543
LICENSED
PROFESSIONAL ENGINEER
2/29/2024

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SE 10TH AVE

PAVEMENT MARKING AND SIGNING PLAN

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		109

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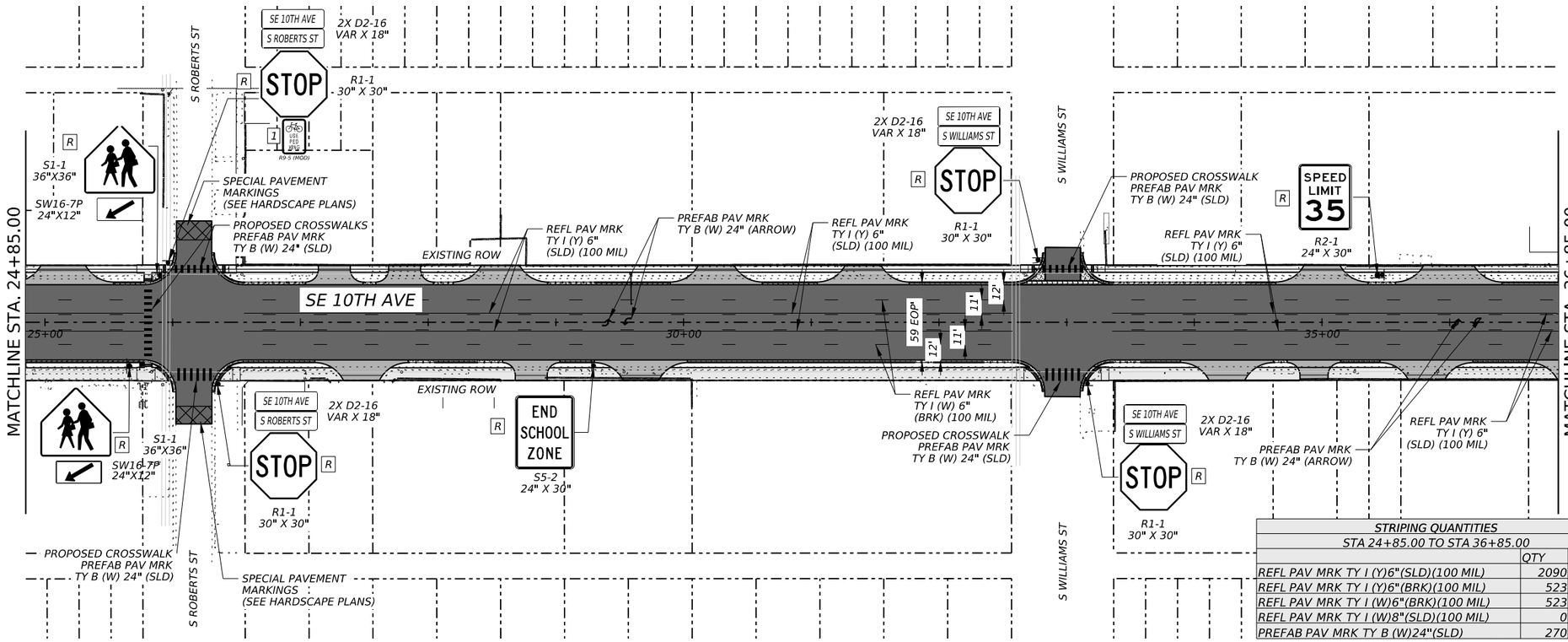

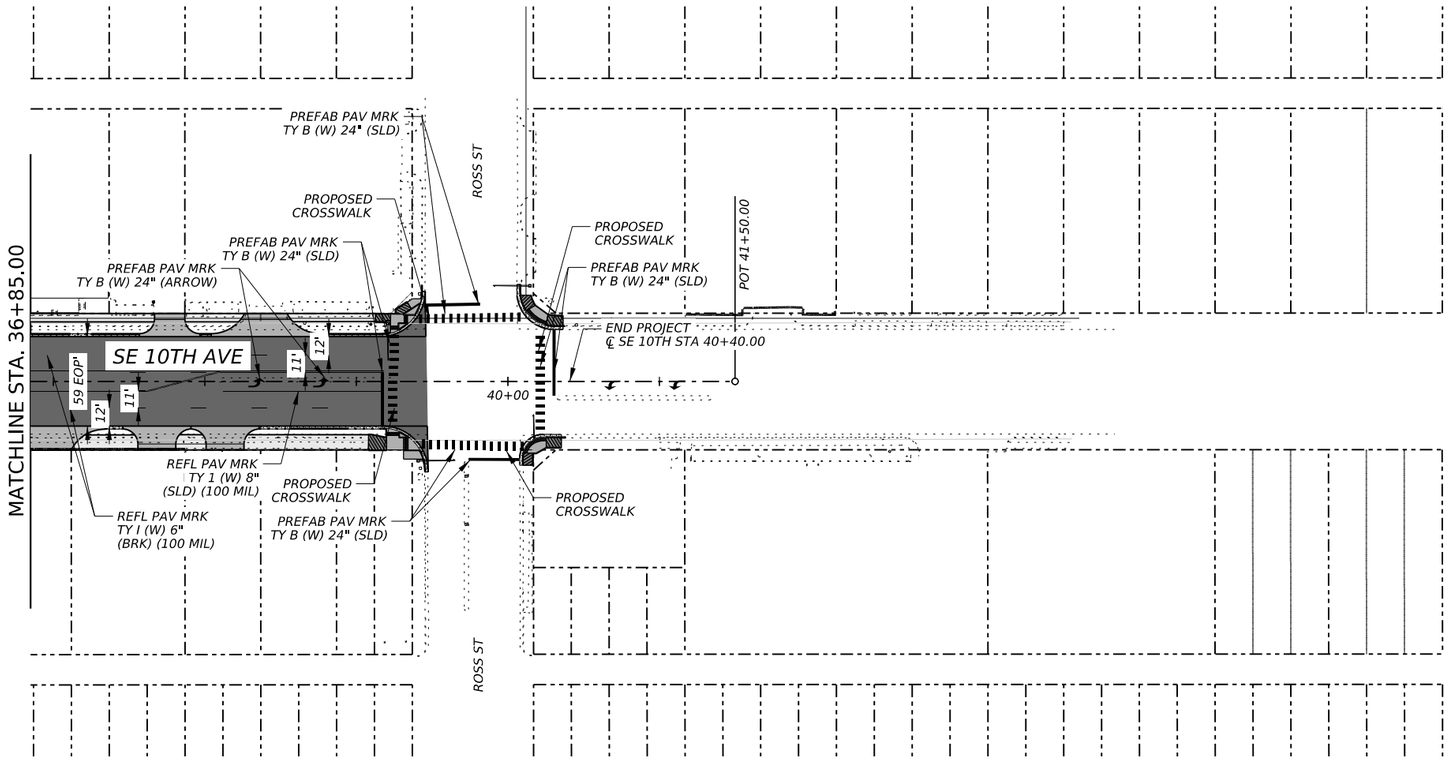

0 50 100
SCALE IN FEET

LEGEND

- ASPAHALT
- CONCRETE SIDEWALK
- CONCRETE CURB AND GUTTER
- CONCRETE DRIVEWAY
- R — REMOVE SIGN
- # — PROPOSED SIGN

NOTES

1. SIGNS IDENTIFIED FOR REMOVAL SHALL BE STORED AT AN APPROVED AND SECURE SITE UNTIL RE-INSTALLATION

STRIPING QUANTITIES
STA 24+85.00 TO STA 36+85.00

	QTY	UNIT
REFL PAV MRK TY I (Y)6"(SLD)(100 MIL)	2090	LF
REFL PAV MRK TY I (Y)6"(BRK)(100 MIL)	523	LF
REFL PAV MRK TY I (W)6"(BRK)(100 MIL)	523	LF
REFL PAV MRK TY I (W)8"(SLD)(100 MIL)	0	LF
PREFAB PAV MRK TY B (W)24"(SLD)	270	LF

PROPOSED SIGN #1
(R9-5 MODIFIED)

R9-5_12x18;
1.5" Radius, 0.4" Border, 0.4" Indent, Black on White;
Symbol RG025;
"USE", C specified length;
"PED", C specified length;
"XING", C specified length;

STRIPING QUANTITIES
STA 36+85.00 TO END PROJECT

	QTY	UNIT
REFL PAV MRK TY I (Y)6"(SLD)(100 MIL)	520	LF
REFL PAV MRK TY I (Y)6"(BRK)(100 MIL)	51	LF
REFL PAV MRK TY I (W)6"(BRK)(100 MIL)	106	LF
REFL PAV MRK TY I (W)8"(SLD)(100 MIL)	106	LF
PREFAB PAV MRK TY B (W)24"(SLD)	593	LF

STATE OF TEXAS
STEPHEN A. NAVA
135543
LICENSED
PROFESSIONAL ENGINEER
2/29/2024

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SE 10TH AVE

PAVEMENT MARKING AND SIGNING PLAN

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		110

DATE: 2/29/2024 5:04:18 PM
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DW: EIA CK: SAW
DW: EIA CK: SAW
DW: EIA

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	MOUNTING DESIGNATION 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
2	1	R9-5 (MOD)	BIKE USE PED CROSSING	12" x 18"	X		10BWG	1	SA	P	-	-

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.100"
7.5 OR GREATER	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

1. Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.
3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

DATE:
FILE:

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
4-16	DIST	COUNTY		SHEET NO.
8-16	AMA	POTTER		111

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

FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS					SE 10TH AVE
		DIST	COUNTY		SHEET NO.
		AMA	POTTER		112

DATE:
FILE:

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.

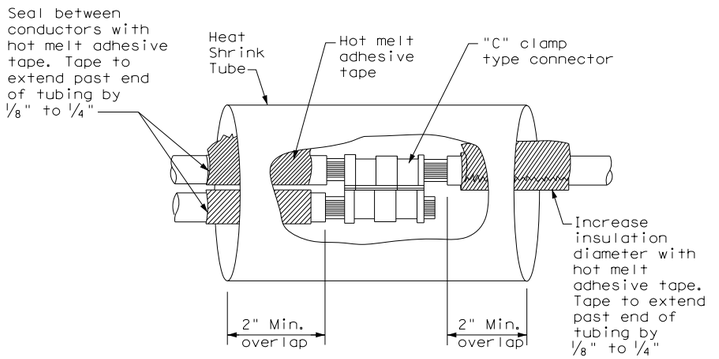
3. Install ground rods so the imprinted part number is at the upper end of the rod.

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

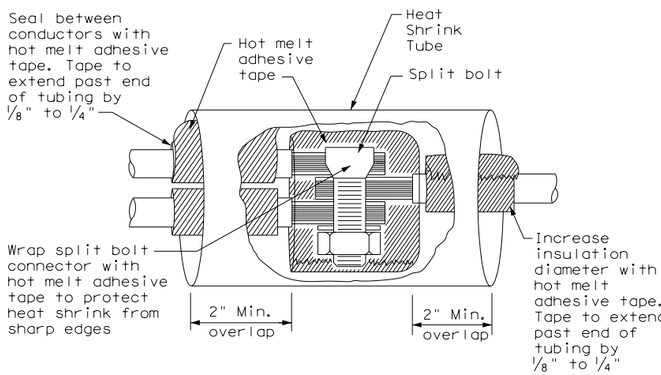
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

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.

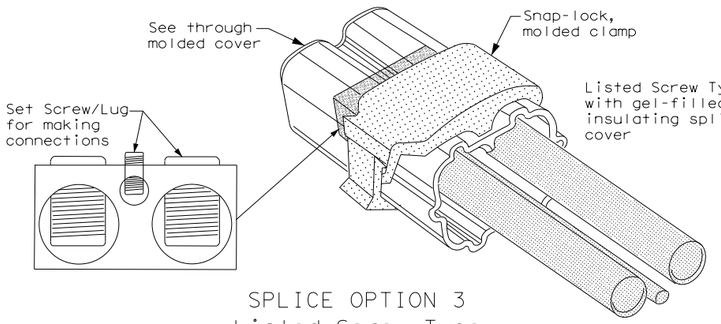
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

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Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

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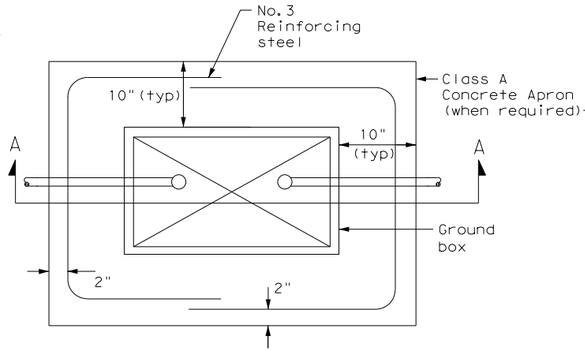
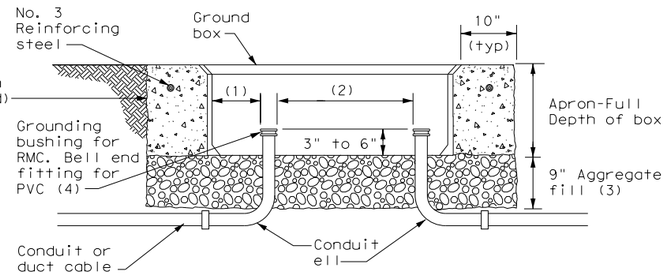


PLAN VIEW



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.

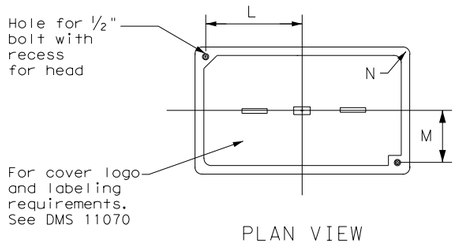
(2) Maintain sufficient space between conduits to allow for proper installation of bushings.

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

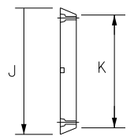
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

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



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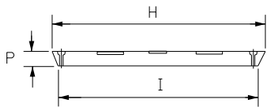

SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-14

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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	

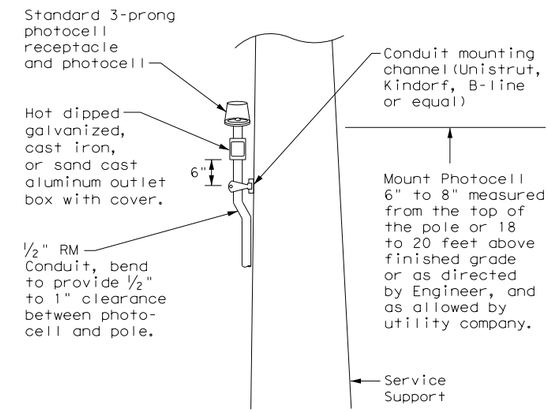
* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** 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.

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ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

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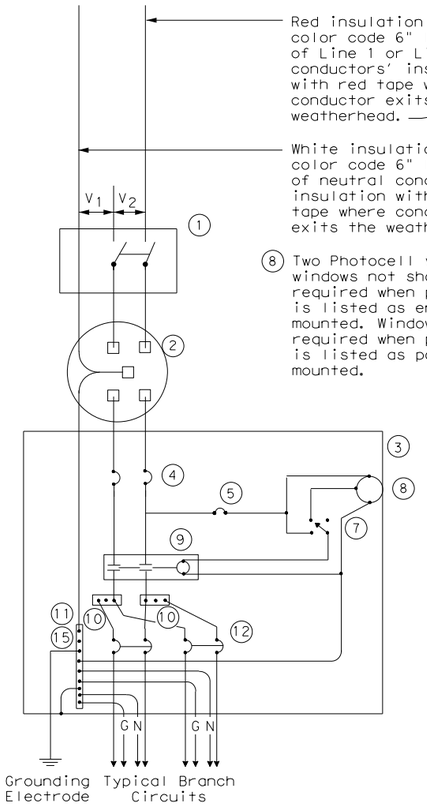
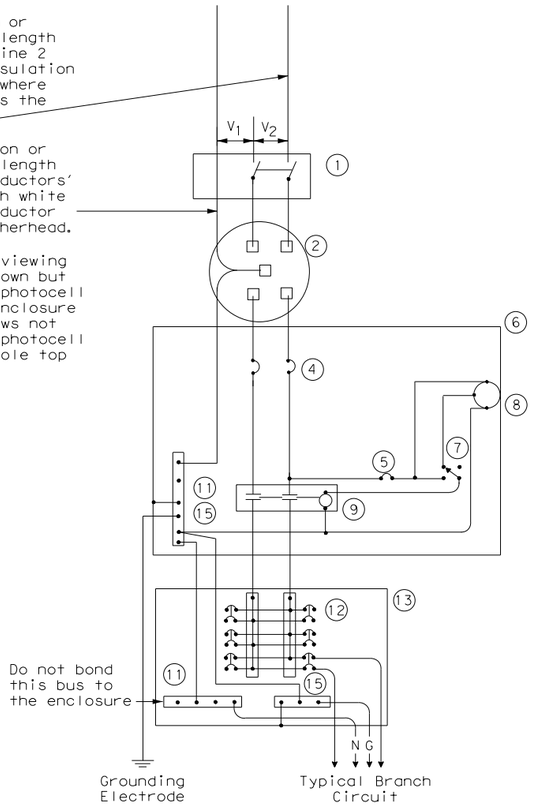
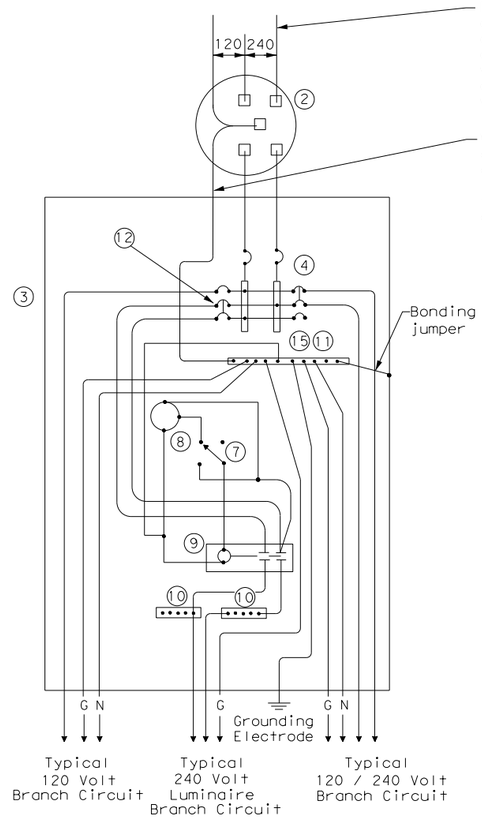


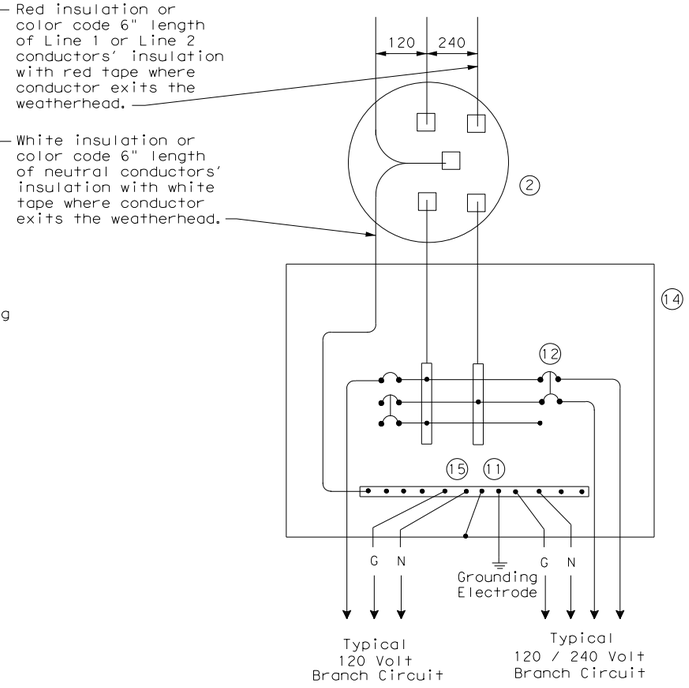
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
———	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

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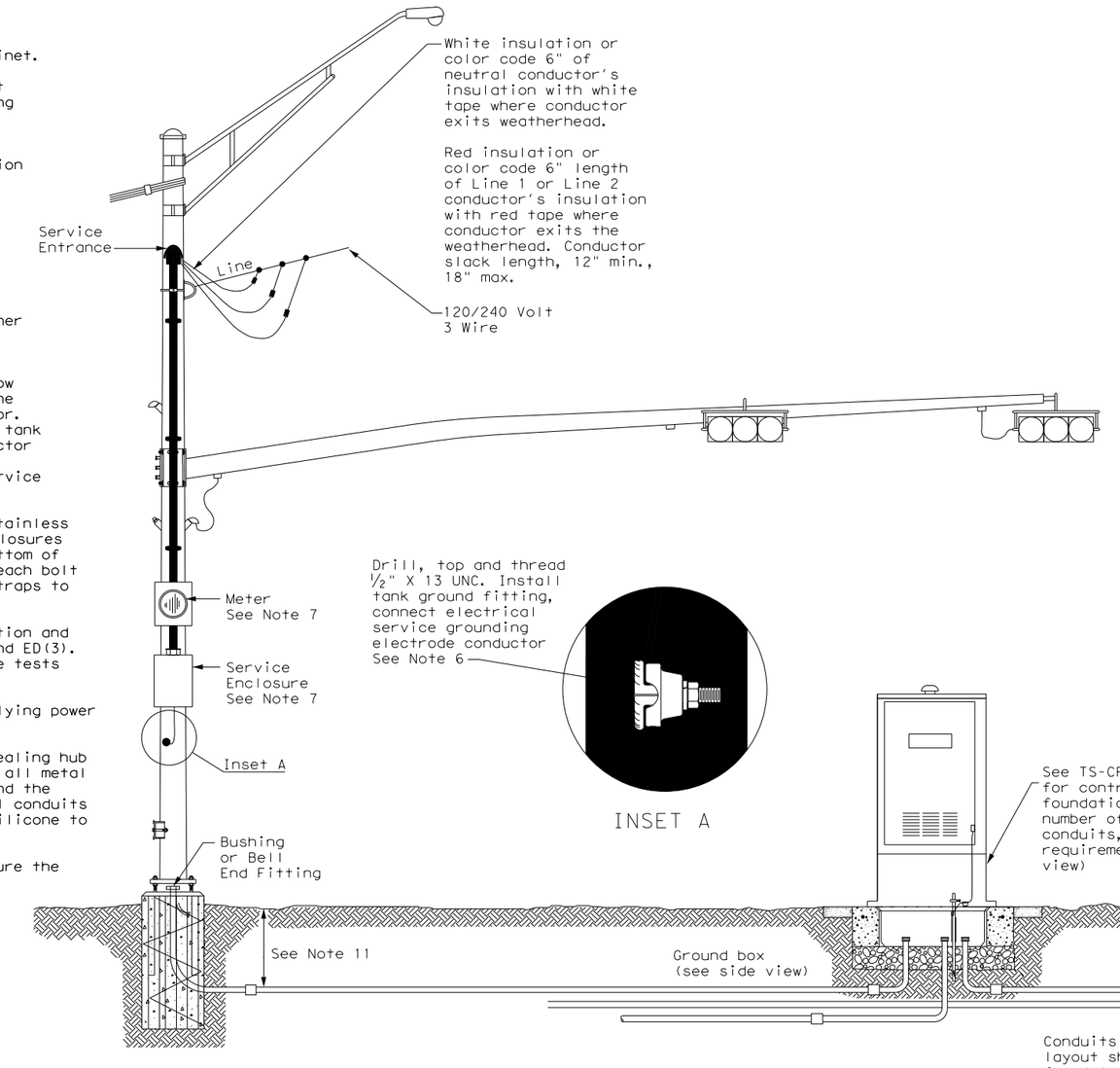
TRAFFIC SIGNAL NOTES

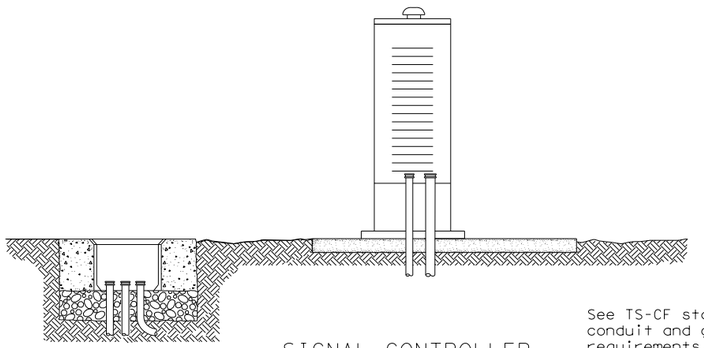
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".



SIGNAL POLE WITH SERVICE

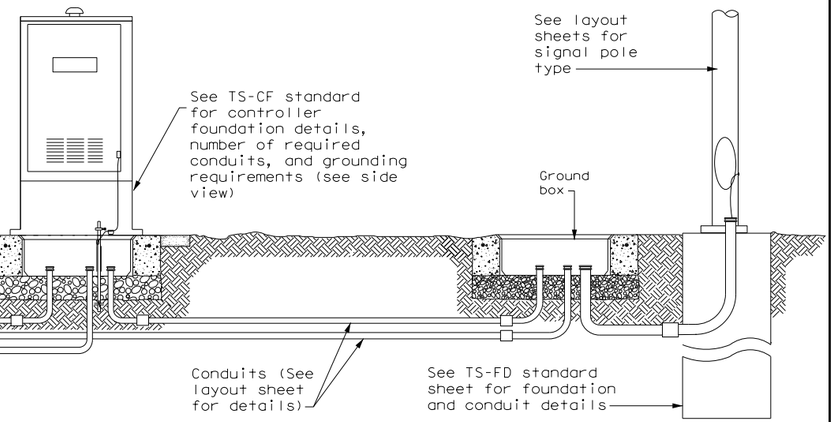
Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

INSET A



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.



SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE

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ELECTRICAL DETAILS
TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS
ED(8)-14

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PEDESTAL SERVICE NOTES

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

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

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

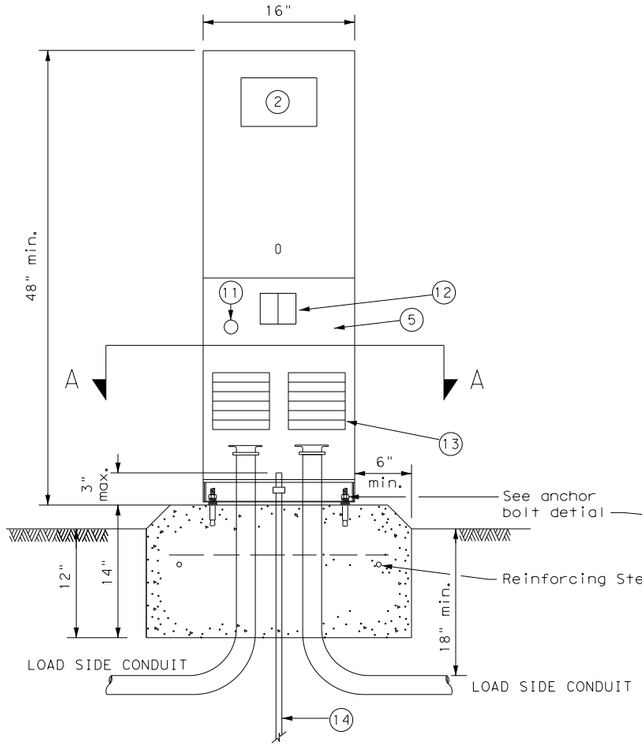
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

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

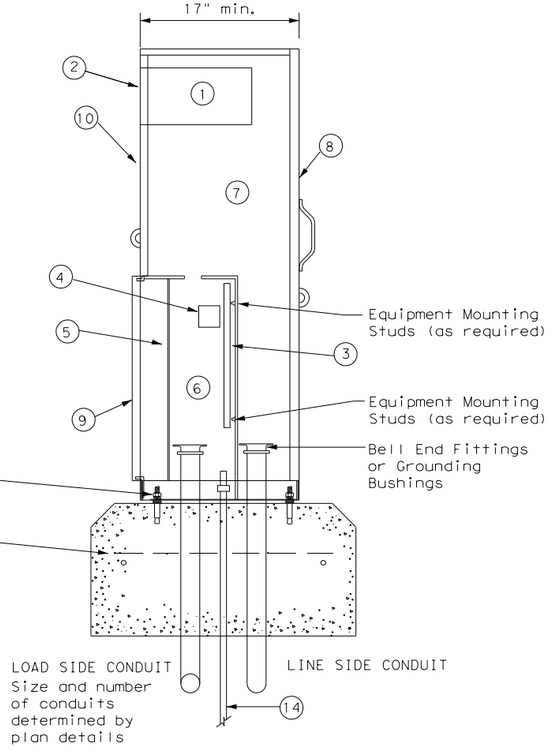
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than ⅛ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. When properly installed, ensure the top of the service enclosure is level front to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

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

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

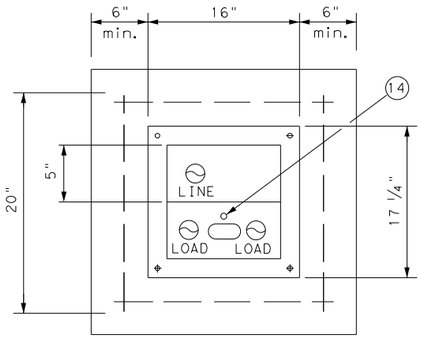


FRONT VIEW

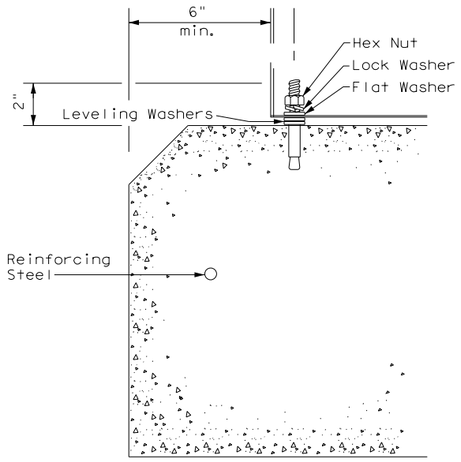


SIDE VIEW

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



SECTION A-A



ANCHOR BOLT DETAIL

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

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS

ED(9)-14

FILE: ed9-14.dgn		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT		
©TxDOT October 2014		CONT	SECT	JOB	HIGHWAY		
REVISIONS					SE 10TH AVE		
		DIST	COUNTY		SHEET NO.		
		AMA	POTTER		118		

71J

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.

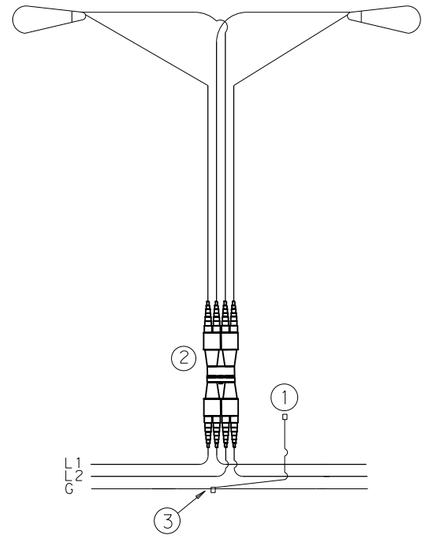
12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.

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.

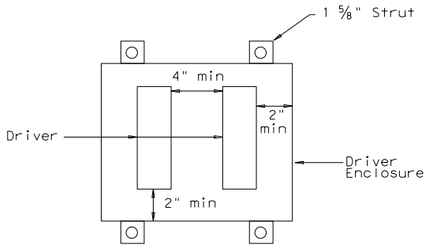
   c. Install drivers with at least 2 inches of space from enclosure walls.

   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

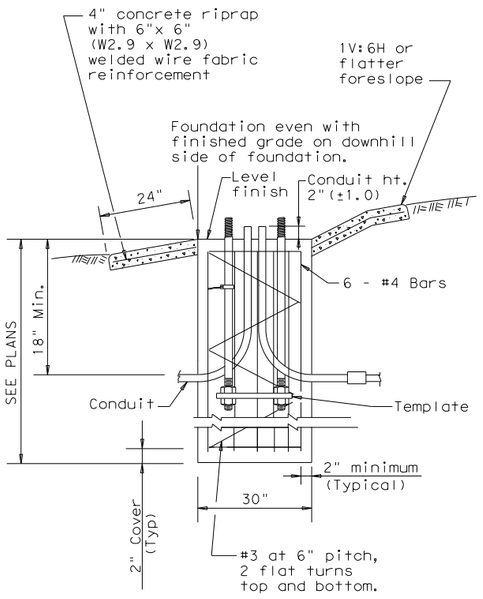
Texas Department of Transportation | Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS

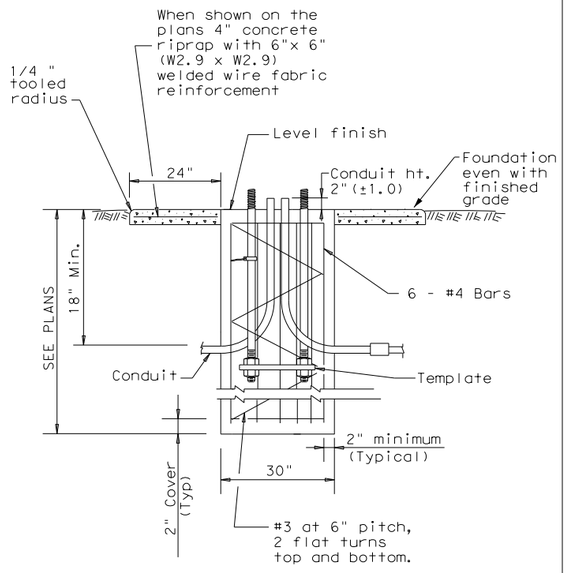
RID(1)-20

FILE: rid1-20.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS				SE 10TH AVE
7-17	DIST	COUNTY		SHEET NO.
12-20	AMA	POTTER		119

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.

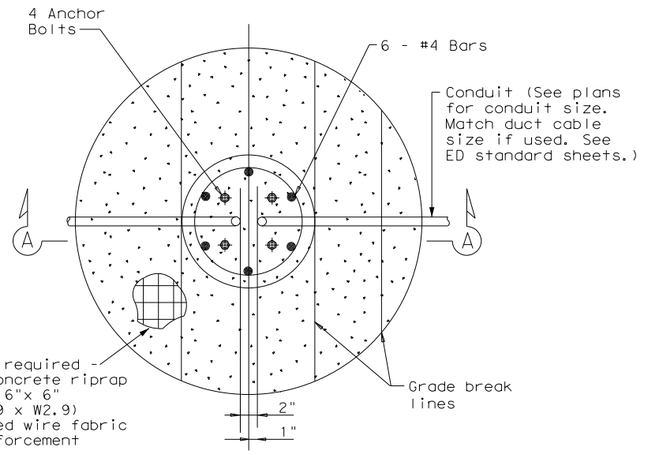
TABLE 4

BREAKAWAY POLE PLACEMENT (See note 6)

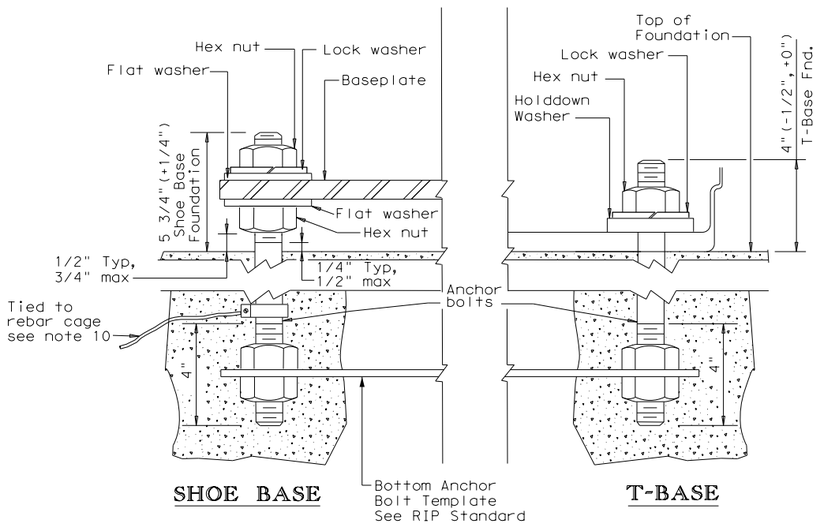
ROADWAY FUNCTIONAL CLASSIFICATION	** POLE OFFSET (DISTANCE TO FACE OF TRANSFORMER BASE)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum*(15 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:
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REVISIONS				SE 10TH AVE
1-11	DIST	COUNTY		SHEET NO.
7-17	AMA	POTTER		120
12-20				

72B

DATE: DATE TIME
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SHIPPING PARTS LIST - POLES AND LUMINAIRE ARMS

Nominal Mounting Ht. (ft)	Shoe Base Designation				Quantity	T-Base Designation				Quantity	CSB/SSCB Mounted Designation				Quantity
	Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire	
20	(Type SA 20 S - 4)			(150W EQ) LED		(Type SA 20 T - 4)			(150W EQ) LED						
	(Type SA 20 S - 4 - 4)			(150W EQ) LED		(Type SA 20 T - 4 - 4)			(150W EQ) LED						
30	(Type SA 30 S - 4)			(250W EQ) LED		(Type SA 30 T - 4)			(250W EQ) LED		(Type SP 28 S - 4)			(250W EQ) LED	
	(Type SA 30 S - 4 - 4)			(250W EQ) LED		(Type SA 30 T - 4 - 4)			(250W EQ) LED		(Type SP 28 S - 4 - 4)			(250W EQ) LED	
	(Type SA 30 S - 8)			(250W EQ) LED		(Type SA 30 T - 8)			(250W EQ) LED		(Type SP 28 S - 8)			(250W EQ) LED	
	(Type SA 30 S - 8 - 8)			(250W EQ) LED		(Type SA 30 T - 8 - 8)			(250W EQ) LED		(Type SP 28 S - 8 - 8)			(250W EQ) LED	
40	(Type SA 40 S - 4)			(250W EQ) LED		(Type SA 40 T - 4)			(250W EQ) LED		(Type SP 38 S - 4)			(250W EQ) LED	
	(Type SA 40 S - 4 - 4)			(250W EQ) LED		(Type SA 40 T - 4 - 4)			(250W EQ) LED		(Type SP 38 S - 4 - 4)			(250W EQ) LED	
	(Type SA 40 S - 8)			(250W EQ) LED		(Type SA 40 T - 8)			(250W EQ) LED		(Type SP 38 S - 8)			(250W EQ) LED	
	(Type SA 40 S - 8 - 8)			(250W EQ) LED		(Type SA 40 T - 8 - 8)			(250W EQ) LED		(Type SP 38 S - 8 - 8)			(250W EQ) LED	
	(Type SA 40 S - 10)			(250W EQ) LED	18	(Type SA 40 T - 10)			(250W EQ) LED		(Type SP 38 S - 10)			(250W EQ) LED	
	(Type SA 40 S - 10 - 10)			(250W EQ) LED		(Type SA 40 T - 10 - 10)			(250W EQ) LED		(Type SP 38 S - 10 - 10)			(250W EQ) LED	
	(Type SA 40 S - 12)			(250W EQ) LED		(Type SA 40 T - 12)			(250W EQ) LED		(Type SP 38 S - 12)			(250W EQ) LED	
	(Type SA 40 S - 12 - 12)			(250W EQ) LED		(Type SA 40 T - 12 - 12)			(250W EQ) LED		(Type SP 38 S - 12 - 12)			(250W EQ) LED	
50	(Type SA 50 S - 4)			(400W EQ) LED		(Type SA 50 T - 4)			(400W EQ) LED		(Type SP 48 S - 4)			(400W EQ) LED	
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	(Type SA 50 S - 8)			(400W EQ) LED		(Type SA 50 T - 8)			(400W EQ) LED		(Type SP 48 S - 8)			(400W EQ) LED	
	(Type SA 50 S - 8 - 8)			(400W EQ) LED		(Type SA 50 T - 8 - 8)			(400W EQ) LED		(Type SP 48 S - 8 - 8)			(400W EQ) LED	
	(Type SA 50 S - 10)			(400W EQ) LED		(Type SA 50 T - 10)			(400W EQ) LED		(Type SP 48 S - 10)			(400W EQ) LED	
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	(Type SA 50 S - 12 - 12)			(400W EQ) LED		(Type SA 50 T - 12 - 12)			(400W EQ) LED		(Type SP 48 S - 12 - 12)			(400W EQ) LED	

OTHER Designation				Quantity
Pole	A1	A2	Luminaire	

GENERAL NOTES:

1. All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the Department such warranties or guarantees.

2. The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.

3. Standard Steel Pole Designs. Steel poles fabricated in accordance with the details and dimensions shown herein, shall be considered standard designs. Submission of shop drawings and design calculations for standard designs is not required.

4. Optional Steel Pole Designs. Multi-sided steel poles may be allowed as optional designs, if steel poles are permitted or required, pending approval by the Department as outlined below.

   a. Shop Drawings. Optional designs require submission of shop drawings and design calculations bearing the seal of an engineer licensed in the State of Texas, in accordance with Item 441, "Steel Structures." The Department may elect to pre-approve some shop drawings for optionally designed poles. Submission of shop drawings and design calculations is not required for structures fabricated in accordance with the details of shop drawings on the pre-approved list maintained by the TxDOT Traffic Operations Division. Any deviation from the pre-approved shop drawings will require submission of shop drawings of the complete assembly and design calculations as described above.
   b. Structural Support Design for Luminaires. Lighting support structures shall be designed for a 25 year design life in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. All poles shall be designed for 110 mph 3-second gust wind speeds. The Gust Factor, G, and Wind Importance Factor, Ir, shall be applied as per the AASHTO Specifications assuming a 25-year design life. The design wind pressure for hurricane wind velocities greater than 100 mph shall not be less than the design wind pressure using 100 mph with the non-hurricane Wind Importance Factor, Ir, value. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. All transformer bases shall have been structurally tested to resist the theoretical plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.
   c. Mast Arm Attachments. All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 60-pound luminaire having an effective projected area of 1.6 square feet.
   d. Anchor Bolt Assembly. Anchor bolt assemblies for optionally designed poles shall be the same as those shown herein.

5. Aluminum Pole Designs. Aluminum pole designs may be allowed, if aluminum poles are permitted or required, pending approval by the Department as outlined below.

   a. Meet all of the requirements stated above for optional steel pole designs and the following:
      1. Aluminum poles shall be fabricated in accordance with "Structural Welding Code-Aluminum" AWS D1.2.
      2. Aluminum pole designs shall use the same anchor bolt assembly and be subject to the same geometric restraints and other requirements for steel poles specified herein.
      3. Aluminum poles shall be equipped with vibration mitigation devices, as approved by the engineer.
      4. Pole components shall be constructed using the following material:
         Shaft: ASTM B221 or B241 Alloy 6063-T6, ASTM B209 Alloy 5086-H34, ASTM B221 Alloy 6005-T5.
         Base Flange: ASTM B26 Alloy 356.0-T6 or ASTM B108 Alloy 356.0-T6 (Yield strength test required).
         Mast Arm Fitting: ASTM B209 Alloy 6061-T6 or ASTM B221 Alloy 6005-T5.
         Mast Arms: ASTM B241 Alloy 6061-T6 or Alloy 6063-T6.
         Pole Cap: ASTM B209 Alloy 5086-H32 or ASTM B108 or B26 Alloy 356.0-T6.
         Bolts: Stainless Steel AISI 300 series. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seez Compound, Permatex 133K or equal.

6. Special Designs. Poles with architectural treatments shall meet the requirements shown elsewhere in the plans.

7. Luminaire Mounting Height. Actual luminaire mounting height shall be the nominal mounting height given on RIP(2) for all pole-arm combinations except for poles with 4 ft. luminaire arms, which shall be 3'-0" lower than the nominal height, unless otherwise shown or directed.

EXPLANATION OF ROADWAY ILLUMINATION ASSEMBLY DESIGNATIONS

(TYPE SA 50 T - X - X) (400W EQ) LED

- SA: Pole and mast arm may be steel or aluminum.
- ST: Pole and mast arm must be steel.
- AL: Pole and mast arm must be aluminum.
- SP: Special (ovalized) steel or aluminum pole for installing on CSB or SSCB. See standard sheet CSB (4), or SSCB (4).

Two numerical digits denote nominal mounting height in feet.

Next letter denotes type of base, (S-Shoe Base, T-Transformer Base, or B-Bridge/Ret.Wall Mount)

First number denotes length of mast arm in feet.

Use of second mast arm is indicated by second dashed number which denotes length in feet.

Luminaire rating in watts (i.e. 400W). Equivalent wattage LED fixtures will include EQ (i.e. 400W EQ)

Last letters indicate light source (S - High Pressure Sodium; LED - LED luminaire)

DATE: DATE TIME
FILE: DOCUMENT NAME

SHEET 1 OF 4

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

RIP(1)-19

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
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REVISIONS				SE 10TH AVE
7-17	DIST	COUNTY		SHEET NO.
12-19	AMA	POTTER		121

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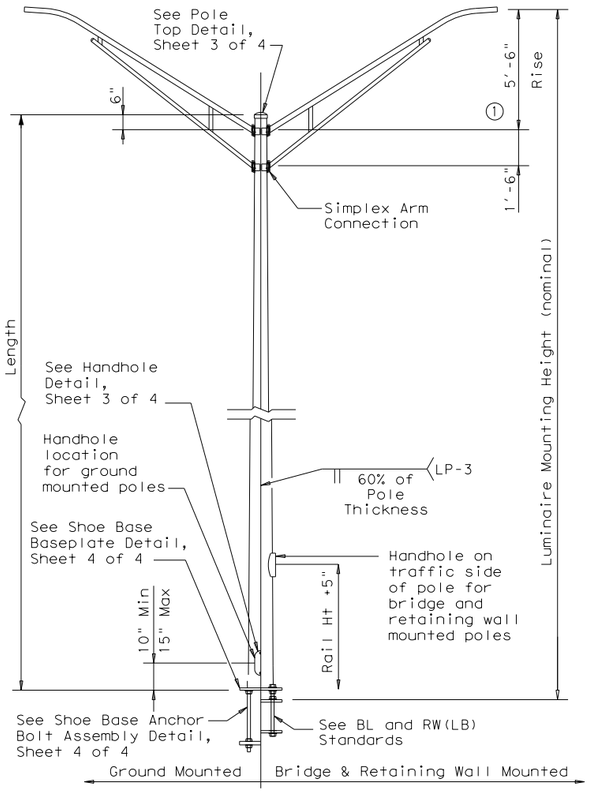
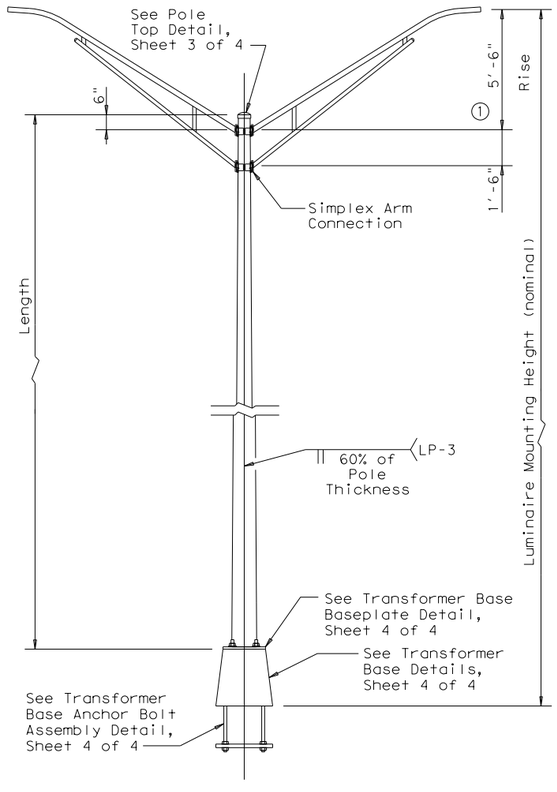


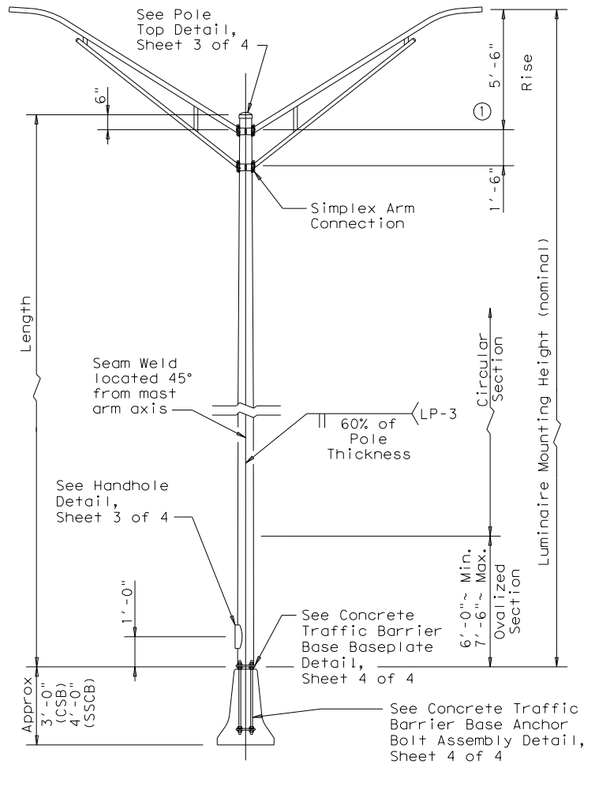
SHOE BASE POLE

SHOE BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	4.90	15.00	0.1196	7.1
30.00	7.50	4.00	25.00	0.1196	13.2
31.00-39.00	8.00	4.36-3.24	26.00-34.00	0.1196	20.7
40.00	8.50	3.60	35.00	0.1196	20.7
50.00	10.50	4.20	45.00	0.1196	30.3



TRANSFORMER BASE POLE

TRANSFORMER BASE POLE					
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	5.11	13.50	0.1196	7.1
30.00	7.50	4.21	23.50	0.1196	13.2
31.00-39.00	8.00	4.57-3.45	24.50-32.50	0.1196	20.7
40.00	8.50	3.81	33.50	0.1196	20.7
50.00	10.00	3.91	43.50	0.1196	30.3



CONCRETE TRAFFIC BARRIER BASE POLE

CONCRETE TRAFFIC BARRIER BASE POLE (CSB/SSCB)						
Luminaire Mounting Height (Nominal) (ft)	Base ② Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)	
					About ℄ of Rail	Perp. to Rail
28.00	9.00	5.78	23.00	0.1196	10.3	13.2
38.00	9.00	4.38	33.00	0.1196	16.6	20.8
48.00	10.50	4.48	43.00	0.1345	25.1	30.5

MATERIAL DATA		
COMPONENT	ASTM DESIGNATION	MIN. YIELD (ksi)
Pole Shaft (0.14"/ft. Taper)	A572 Gr 50, A595 Gr A, A1011 HSLAS Gr 50 Cl 2 ③, or A1008 HSLAS Gr 50 Cl 2	50
Base Plate and Handhole Frame	A572 Gr.50, or A36	36
T-Base Connecting Bolts	F3125 Gr A325	92
Anchor Bolts	F1554 Gr 55, A193-B7 or A321	55 105
Anchor Bolt Templates	A36	36
Heavy Hex (H.H.) Nuts	A194 Gr 2H, or A563 Gr DH	
Flat Washers	F436	

NOTES:

① 2'-6" rise for 4 ft. luminaire arms.

② Before ovalized as shown on Concrete Traffic Barrier Base Baseplate details, Sheet 4 of 4.

③ A1011 SS Gr 50 may be used instead of HSLAS, provided the material meets the elongation requirements for HSLAS.

POLE ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Shaft length	+1"
I.D. of outside piece of slip fitting pieces	+1/8", -1/16"
O.D. of inside piece of slip fitting pieces	+1/32", -1/8"
Shaft diameter: other	+3/16"
Out of "round"	1/4"
Straightness of shaft	±1/4" in 10 ft
Twist in multi-sided shaft	4° in 50 ft
Perpendicular to baseplate	1/8" in 24"
Pole centered on baseplate	±1/4"
Location of Attachments	±1/4"
Bolt hole spacing	±1/16"

GENERAL NOTES:

1. Designs conform to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals , 6th Edition (2013) and Interim Revisions thereto. Design 3-Second Gust Wind Speed equals 110 mph with a 1.14 gust factor. A wind importance factor of 0.80 is applied to adjust the wind speed to a 25 year recurrence interval. Design moments listed in tables assume base of pole is 25' above natural ground level.
2. Structures are designed to support two 12' luminaire mast arms and luminaires. Mast arms are designed to support a 60-pound luminaire having an effective projected area of 1.6 square feet.
3. Fabrication shall be in accordance with the Specifications and with the details, dimensions, and weld procedures shown herein. Do not submit shop drawings for roadway illumination pole assemblies fabricated in accordance with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of these sheets and the Specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
4. For mounting heights between values shown in the tables, use base diameter and thickness values for the larger height.
5. Unless otherwise noted, all steel parts shall be galvanized in accordance with Item 445, "Galvanizing."
6. Steel poles shall be fabricated in accordance with Item 441, "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with AWS D1.1, Structural Welding Code-Steel.
7. Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint.
8. Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
9. Lubricate and tighten anchor bolts, when erecting shoe base poles and concrete traffic barrier base poles, in accordance with Item 449, "Anchor Bolts."
10. All poles, except Transformer Base Poles, shall have hand holes with reinforcing frames and covers. For ground mounted shoe base poles, hand holes shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaire arms, all hand holes shall be on the same side of the barrier. For poles mounted on a bridge lighting bracket or a retaining wall lighting bracket, hand hole shall be on traffic side of the pole, at a height that will clear the barrier.
11. The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, and other damaged galvanized areas on poles and mast arms shall be repaired in accordance with Item 445, "Galvanizing."
12. Pole length is based on a 5'-6" luminaire arm rise. 4 ft. luminaire arms have a 2'-6" rise. A pole with 4 ft. luminaire arms will have an actual mounting height 3'-0" less than the nominal mounting height. Increasing the pole length to meet the nominal mounting height is allowed, but unnecessary unless otherwise directed by the engineer.
13. Erect transformer base poles in accordance with sheet RID(1).

Texas Department of Transportation — Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

RIP(2)-19

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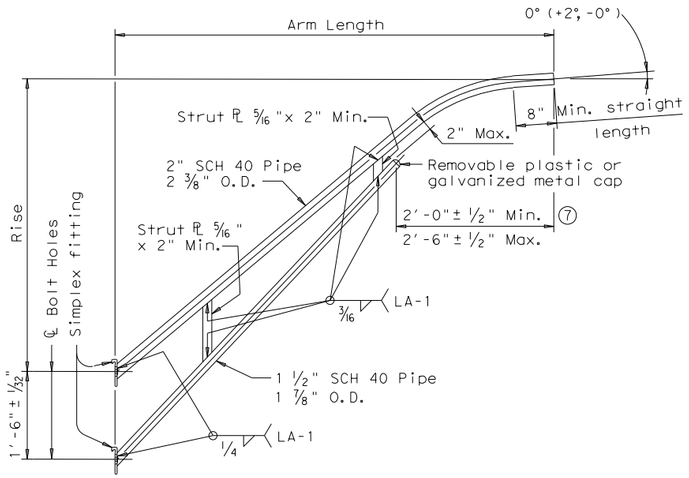
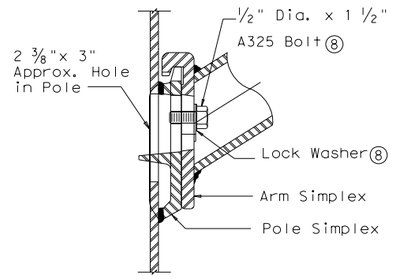


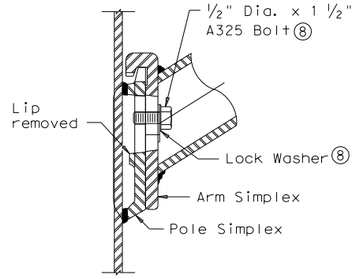
LUMINAIRE ARM

LUMINAIRE ARM DIMENSIONS		
Nominal Arm Length	Arm Length	Rise
4'-0"	3'-6"	2'-6"
6'-0"	5'-6"	5'-6"
8'-0"	7'-6"	5'-6"
10'-0"	9'-6"	5'-6"
12'-0"	11'-6"	5'-6"

ARM ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Arm Length	±1"
Arm Rise	±1"
Deviation from flat	1/8" in 12"
Spacing between holes	±1/32"

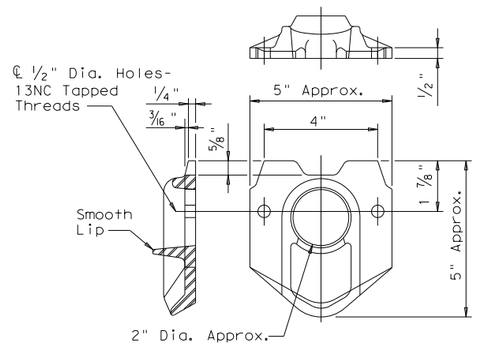


UPPER SIMPLEX FITTING
(Gusset not shown for clarity)

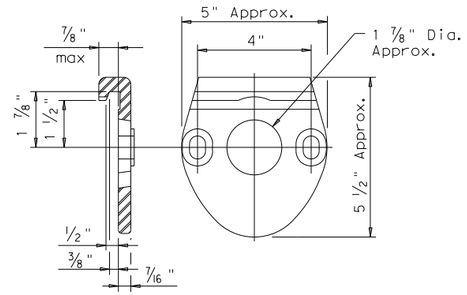


LOWER SIMPLEX FITTING
(Gusset not shown for clarity)

SECTION B-B



POLE SIMPLEX DETAIL ⑨



ARM SIMPLEX DETAIL ⑨

NOTES:

④ Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.

⑤ A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.

⑥ A572, A1008 HSLAS-F, and A1011 HSLAS-F materials may have higher yield strengths but shall not have less elongation than the grade indicated.

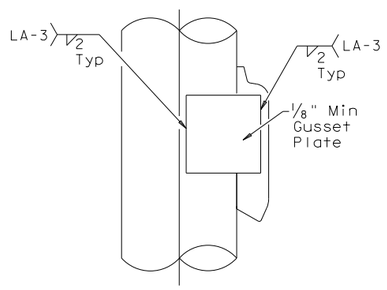
⑦ Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.

⑧ Each pole simplex fitting shall be supplied with 2 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans.

⑨ Proposed deviations in arm simplex dimensions or materials must be submitted to the Department for approval.

⑩ A welded handhole frame is permissible. Maximum of two (2) CJP weld splices is allowed.

MATERIALS	
Pole or Arm Simplex	ASTM A27 Gr 65-35 or Gr 70-36, A148 Gr 80-50, A576 Gr 1021 ⑤, or A36 (Arm only)
Arm Pipes	ASTM A53 Gr A or B, A500 Gr B, A501, A 1008 HSLAS-F Gr 50 ⑥, or A1011 HSLAS-F Gr 50 ⑥
Arm Struts and Gusset Plates ④	ASTM A36, A572 Gr 50 ⑥, or A588
Misc.	ASTM designations as noted



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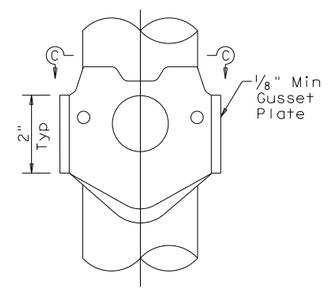

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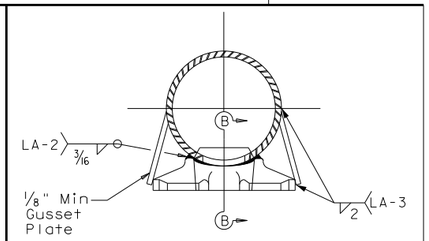
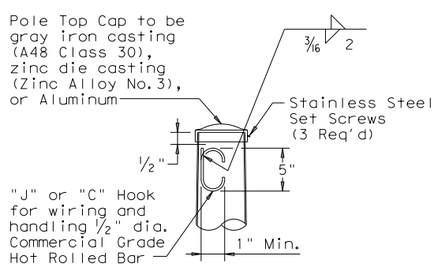
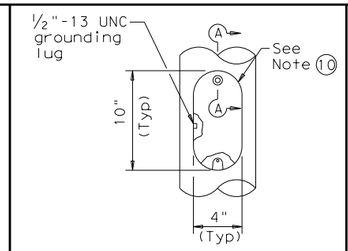


SECTION C-C

SIMPLEX ATTACHMENT DETAIL



POLE TOP



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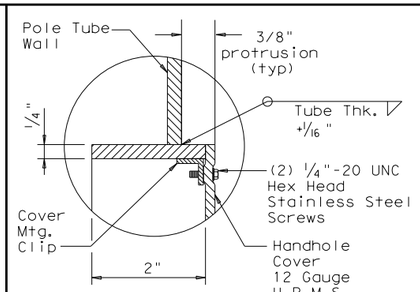

SECTION A-A

HANDHOLE

SHEET 3 OF 4

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Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

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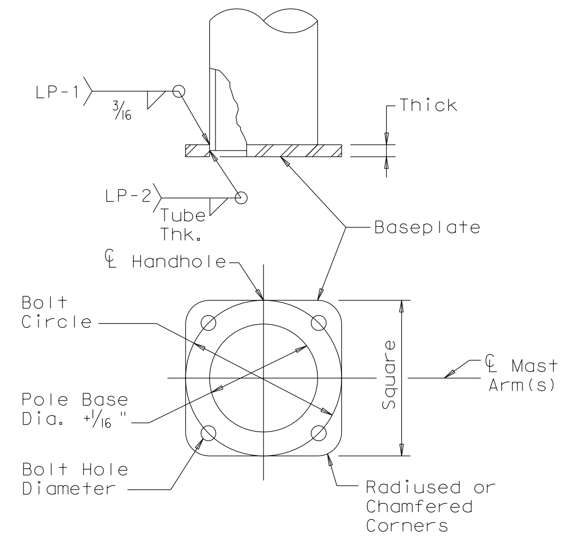
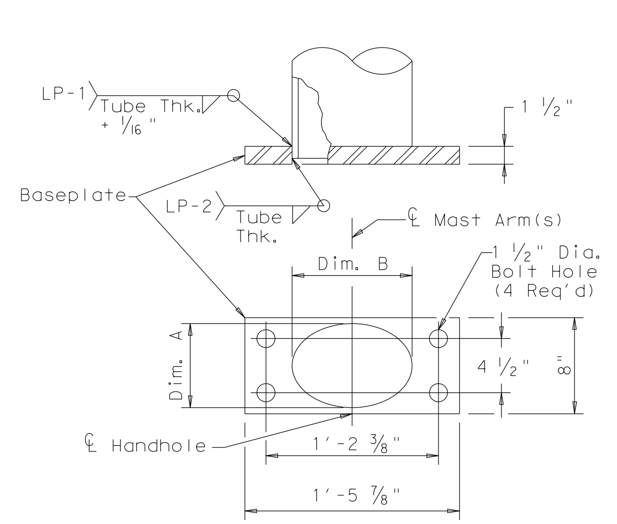
SHOE BASE BASEPLATE



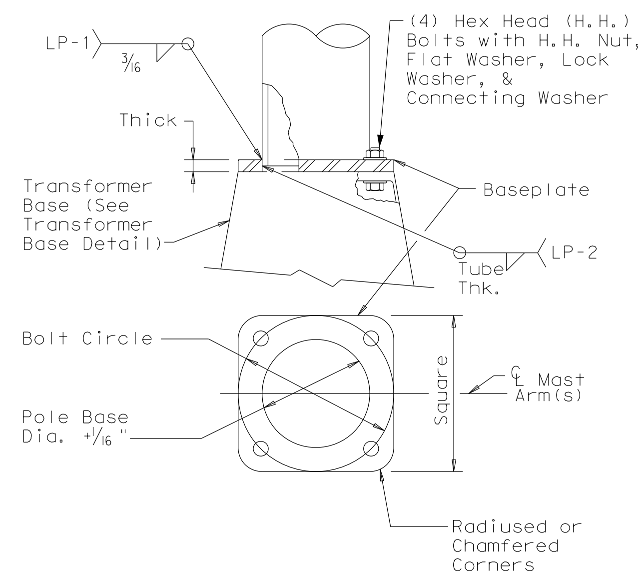
SHOE BASE BASEPLATE TABLE				
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	BOLT HOLE DIAMETER
20′ - 39′	13"	13"	1 1/4"	1 1/4"
40′	15"	15"	1 1/4"	1 1/2"
50′	15"	15"	1 1/2"	1 1/2"

CONCRETE TRAFFIC BARRIER BASE BASEPLATE



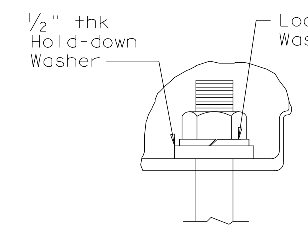
CONCRETE TRAFFIC BARRIER BASE BASEPLATE TABLE			
MOUNTING HEIGHTS (nominal)	POLE DIA. (12)	DIM. A	DIM. B
28′ - 38′	9"	7" ± 1/4"	10" ± 1/4"
48′	10 1/2"	7" ± 1/4"	13" ± 1/4"

TRANSFORMER BASE BASEPLATE

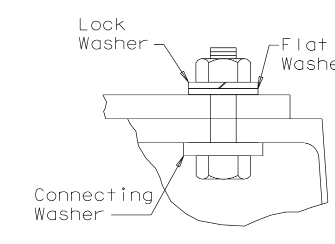


TRANSFORMER BASE BASEPLATE TABLE						
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	CONNECTING BOLT DIA.	BOLT HOLE DIAMETER	TRANSFOMER BASE TYPE
20′ - 39′	13"	13"	1 1/4"	1"	1 1/4"	A
40′	15"	15"	1 1/4"	1 1/4"	1 1/2"	B
50′	15"	15"	1 1/2"	1 1/4"	1 1/2"	B

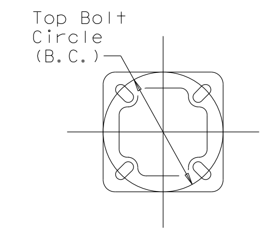
TRANSFORMER BASE TABLE		
TYPE	TOP B.C.	BTM. B.C.
A	13"	14"
B	15"	17 1/4"



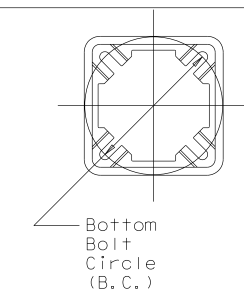
DETAIL A



DETAIL B



TOP PLAN



BOTTOM PLAN

GENERAL NOTES:

1. For mounting heights between those shown in the table, use the values in the table for the larger mounting height.
2. All breakaway bases shall meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
3. Transformer bases shall be cast from aluminum, ASTM B108 or B26 Alloy 356.0-T6, or other material approved by the Engineer. Four Hex Head (H.H.) bolts with four H.H. nuts, four lock washers, four flat washers, and connecting and hold-down washers as recommended by the manufacturer, galvanized to ASTM A153 Class C or D, or B695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A563 grade DH galvanized.
4. Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
5. Doors for transformer bases shall be made of plastic, fiberglass or other non-metallic material approved by the Engineer and shall be attached with stainless steel screws or bolts. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

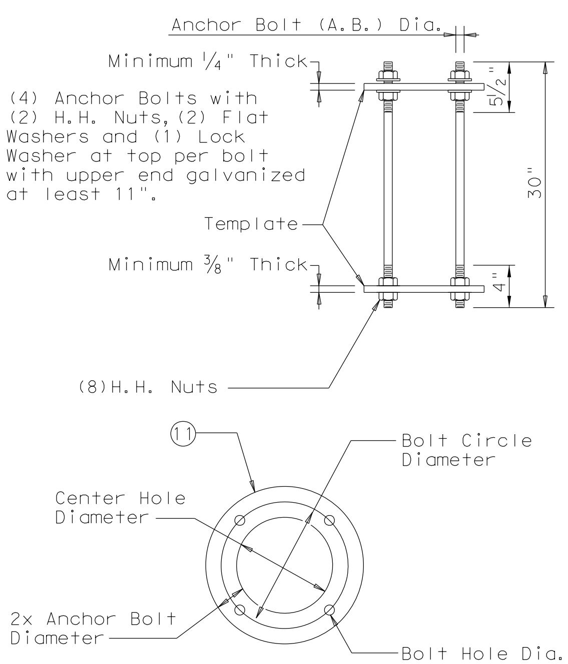
NOTES:

(11) Anchor Bolt Templates do not need to be galvanized.

(12) Pole diameter before ovalized.

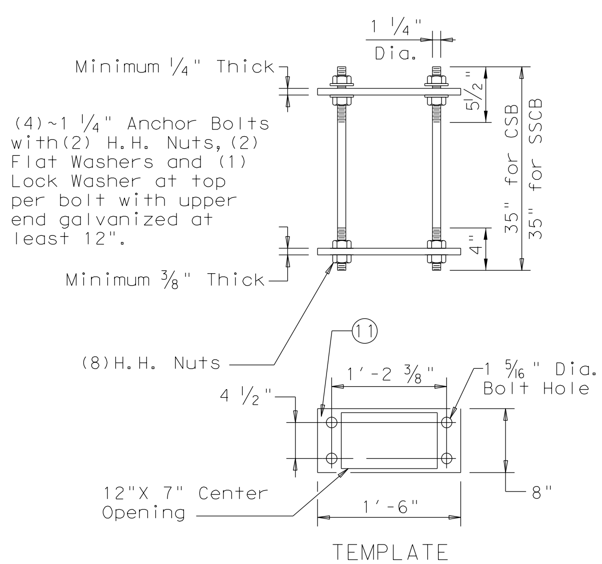
ANCHOR BOLT FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Length	± 1/2"
Threaded length	± 1/2"
Galvanized length (if required)	- 1/4"

SHOE BASE ANCHOR BOLT ASSEMBLY



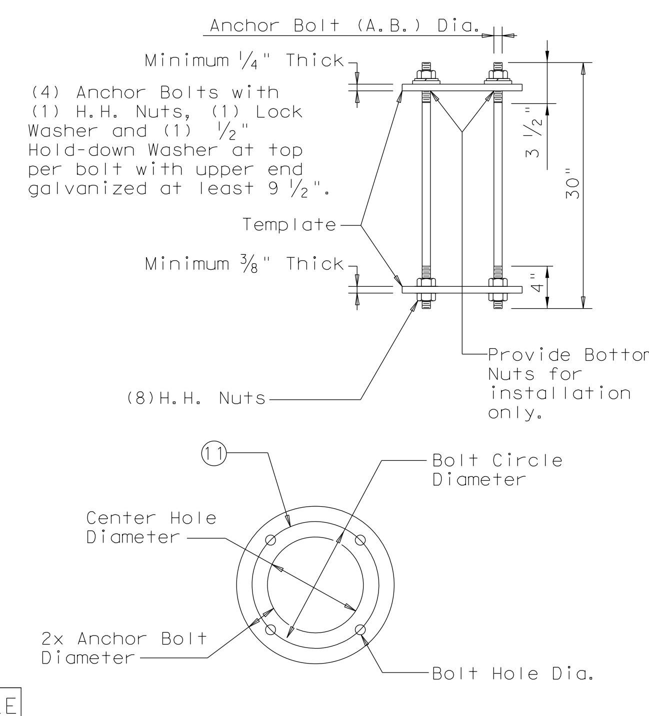
SHOE BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20′-39′	1"	13"	11"	1 1/16"
40′-50′	1 1/4"	15"	12 1/2"	1 5/16"

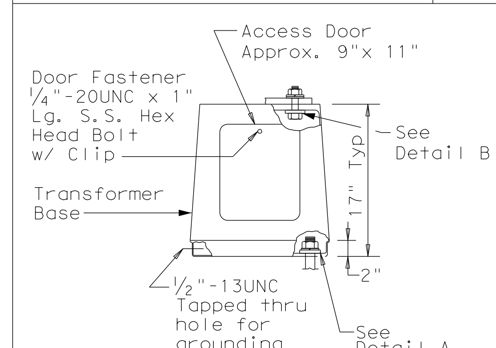
CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY



TRANSFORMER BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20′ - 39′	1"	14"	12"	1 1/16"
40′ - 50′	1 1/4"	17 1/4"	14 3/4"	1 5/16"

TRANSFORMER BASE ANCHOR BOLT ASSEMBLY





ELEVATION

TRANSFORMER BASE DETAILS

SHEET 4 OF 4

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Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

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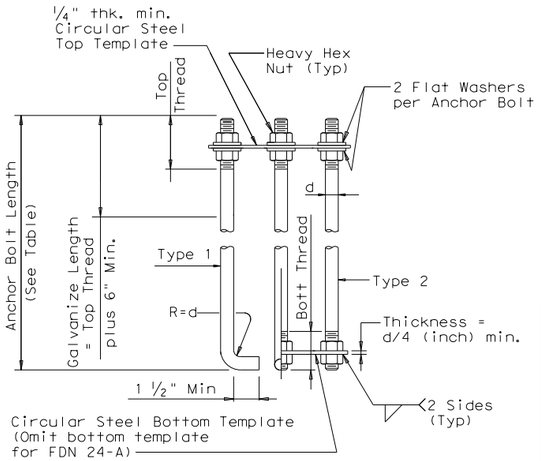
FOUNDATION DESIGN TABLE

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'

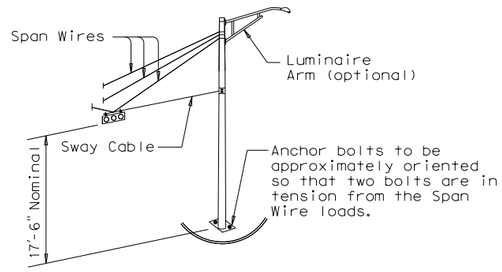
EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



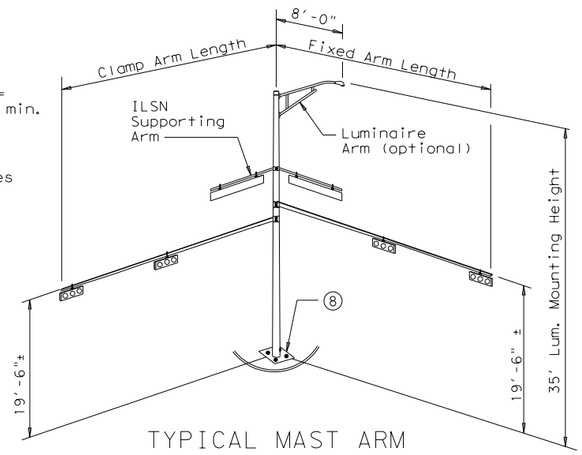
HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY

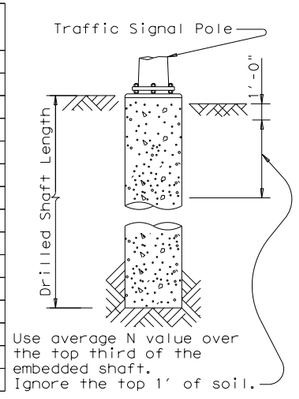
⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



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.

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
SE 10TH AVE AT ROSS ST	10	24-A	5	30				
SE 10TH AVE AT ARTHUR ST	10	24-A	5	30				
TOTAL DRILLED SHAFT LENGTHS				60				

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".

3/1/2024
STATE OF TEXAS
HIRON M. FERNANDO
123288
LICENSED
PROFESSIONAL ENGINEER

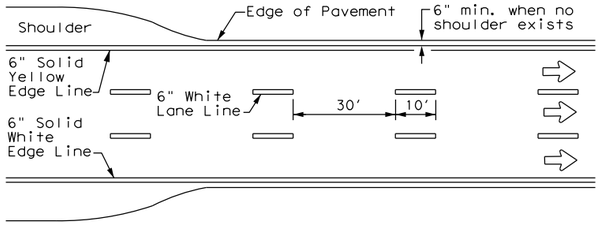
THE AFFIXED SEAL ABOVE APPLIES ONLY TO INFORMATION FILLED BY ABOVE STATED ENGINEER.

Texas Department of Transportation
Traffic Operations Division

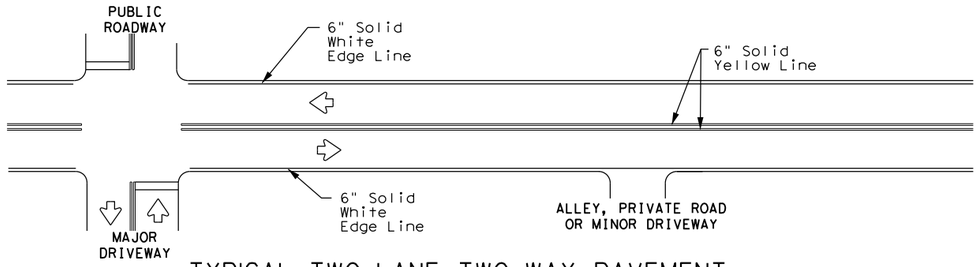
TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

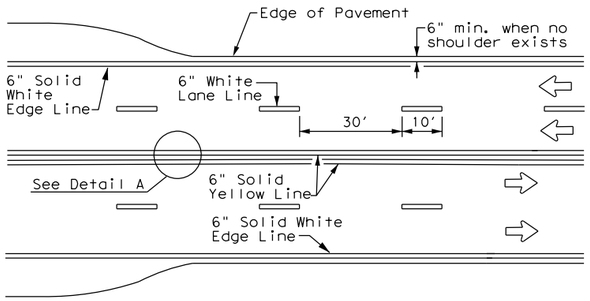
REVISIONS	DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB
5-96 11-98 1-12	CONT	SECT	JOB	HIGHWAY
	-	-	-	SE 10TH AVE
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		125

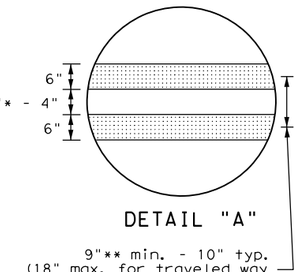


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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





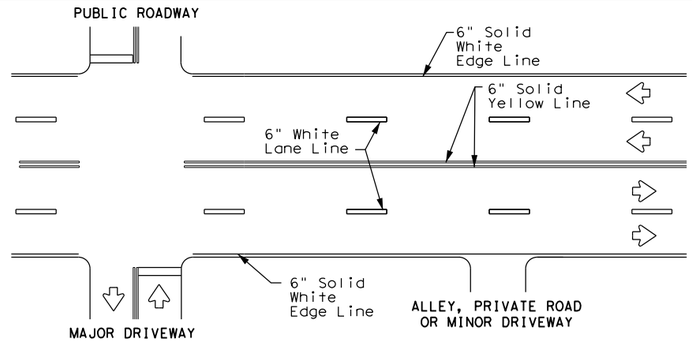
DETAIL "A"

9"** min. - 10" typ.
(18" max. for traveled way greater than 48' only)

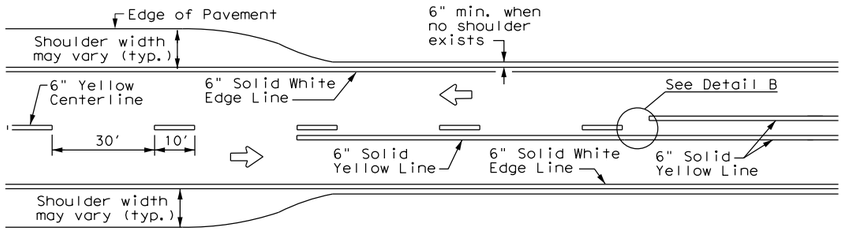
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

* 2" minimum for restripe projects when approved by the Engineer.

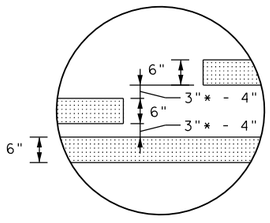
** 8" minimum for restripe projects when approved by the Engineer.



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



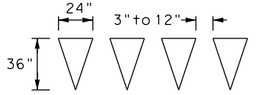
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



18" min. - 20" max.
(16" minimum for restripe projects when approved by the Engineer.)

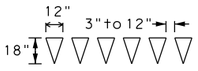
DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.

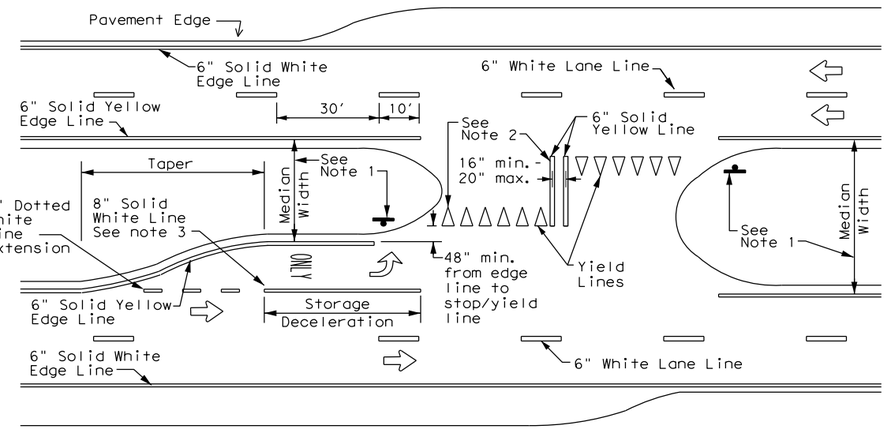


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



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



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

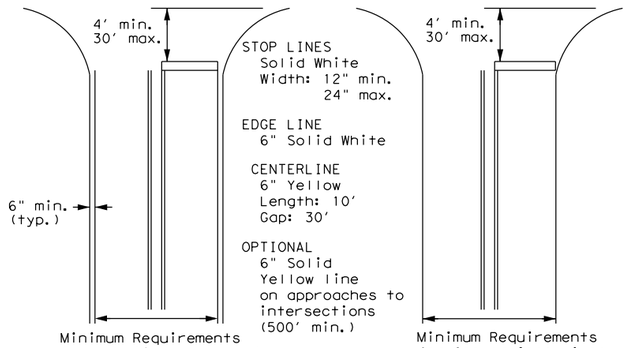
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20 8-95 3-03 12-22 5-00 2-12	0042	11	006	SL 395
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		126

22A

DATE: 2/29/2024 5:05:15 PM
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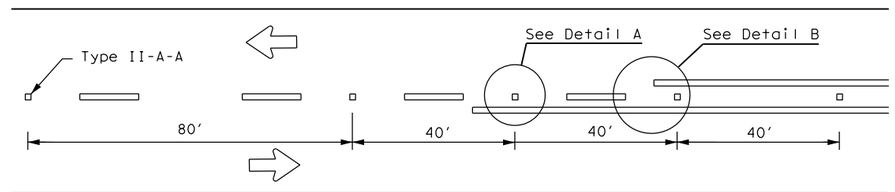
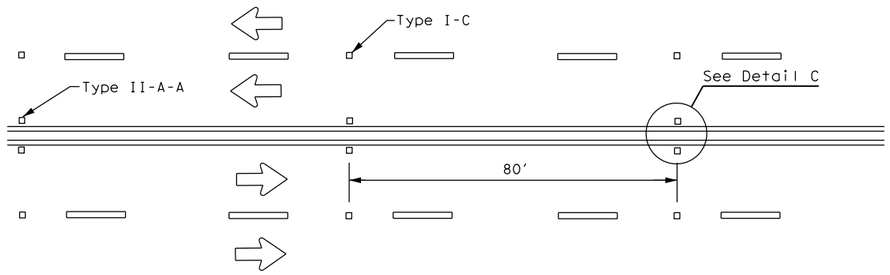
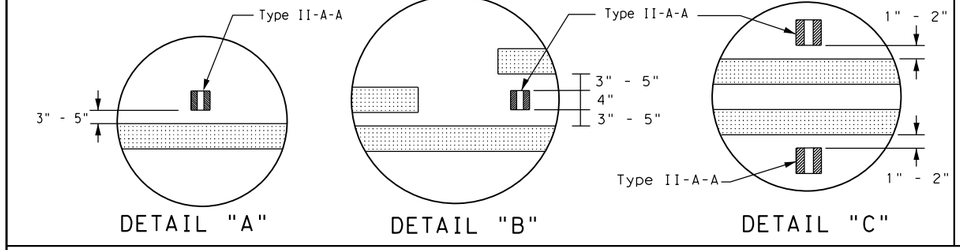
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

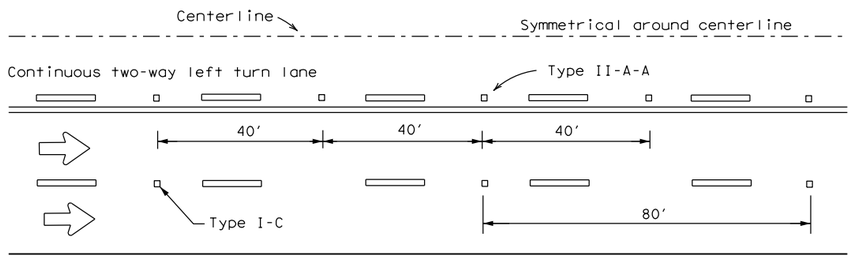


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

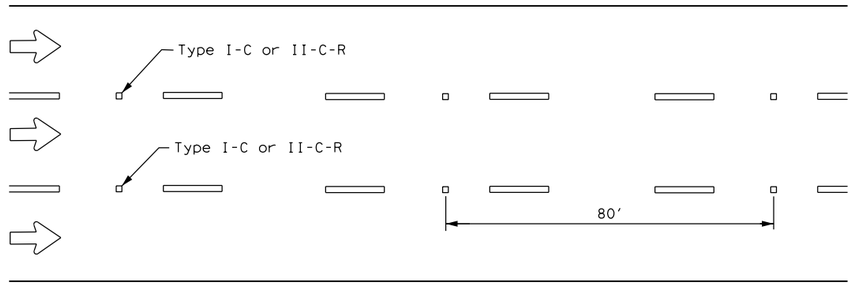


CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY ROADWAYS





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



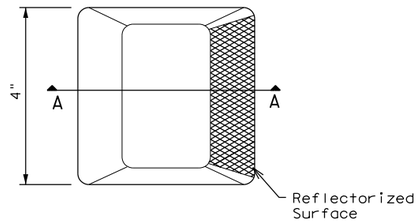
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

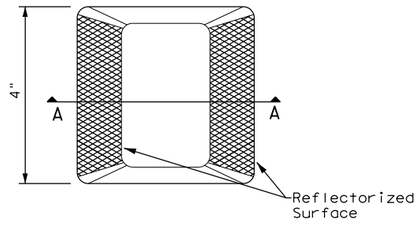
See Note 3.

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

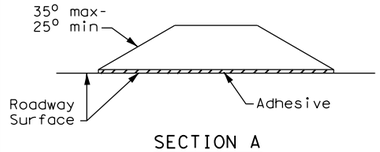
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

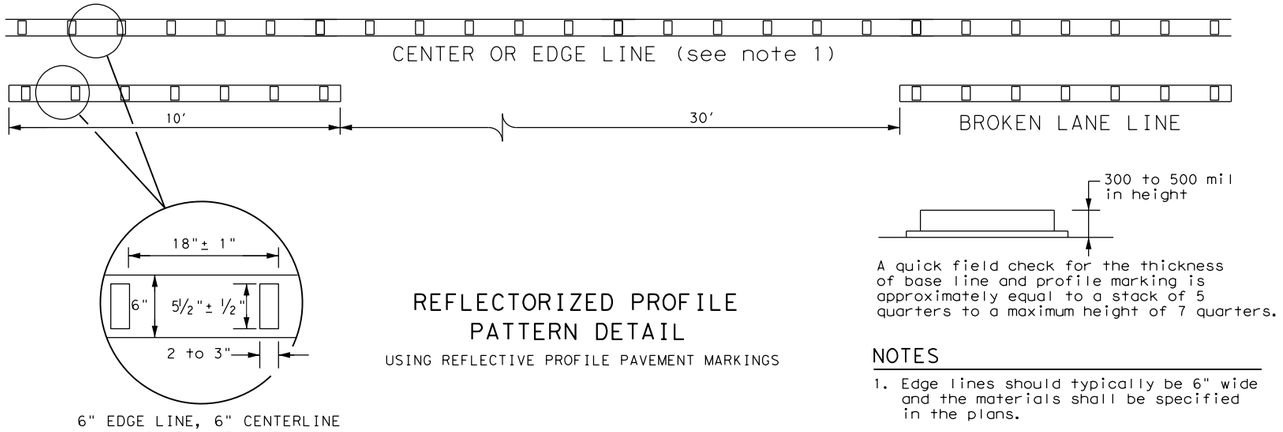


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



6" EDGE LINE, 6" CENTERLINE OR 6" LANE LINE

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

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

NOTES

1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements, the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians, and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

Texas Department of Transportation

Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS REFLECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
4-77 8-00 6-20	DIST	COUNTY		SHEET NO.
4-92 2-10 12-22	AMA	POTTER		127
5-00 2-12				

22B

DATE: 2/29/2024 5:05:42 PM
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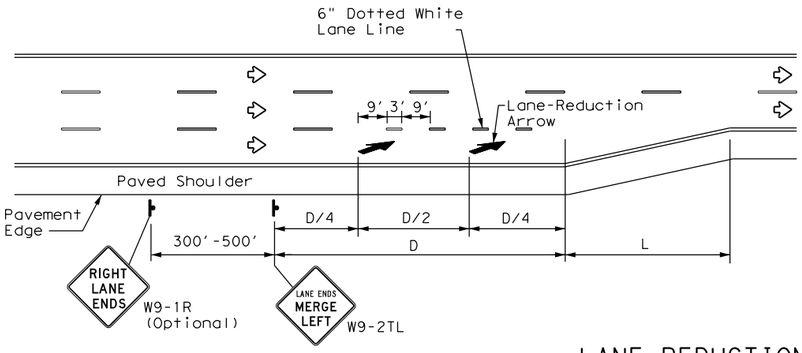


LANE REDUCTION

NOTES

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

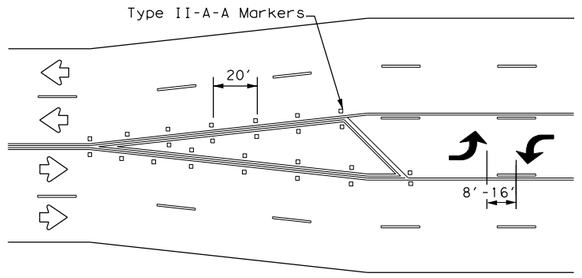
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

GENERAL NOTES

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

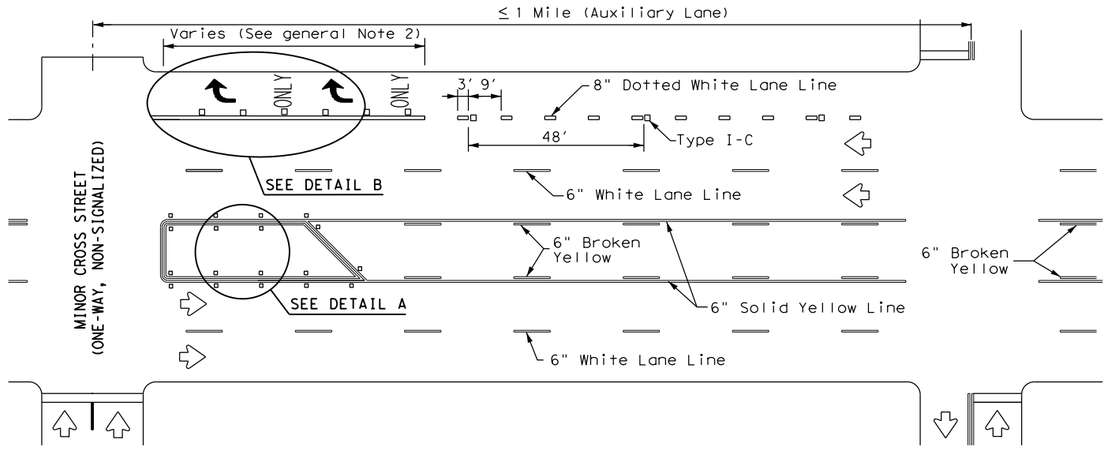
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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

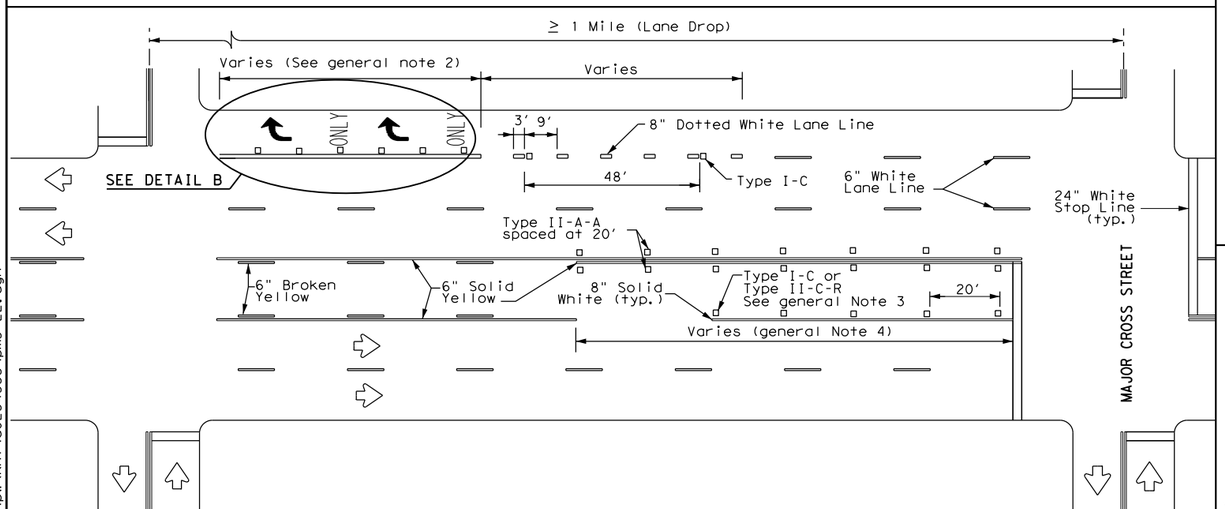


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

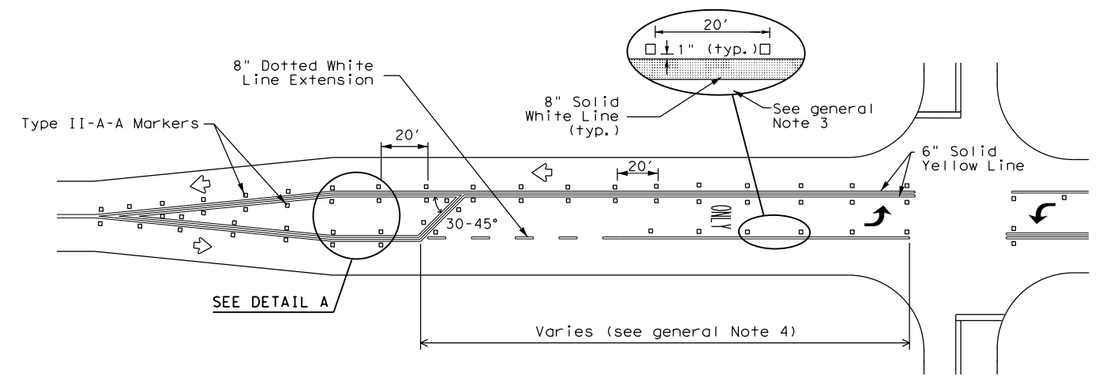
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



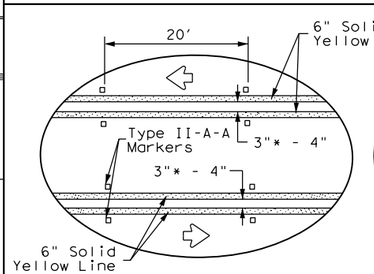
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



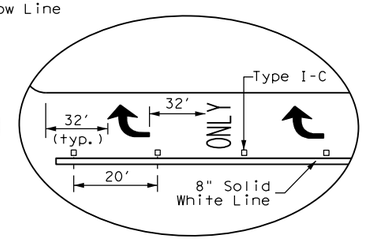
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A



DETAIL B

* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	0042	11	006	SL 395
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		128

22C

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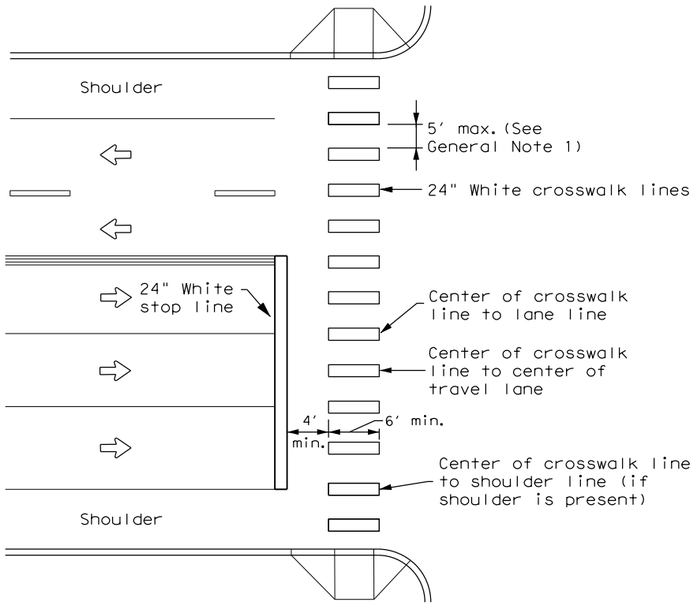


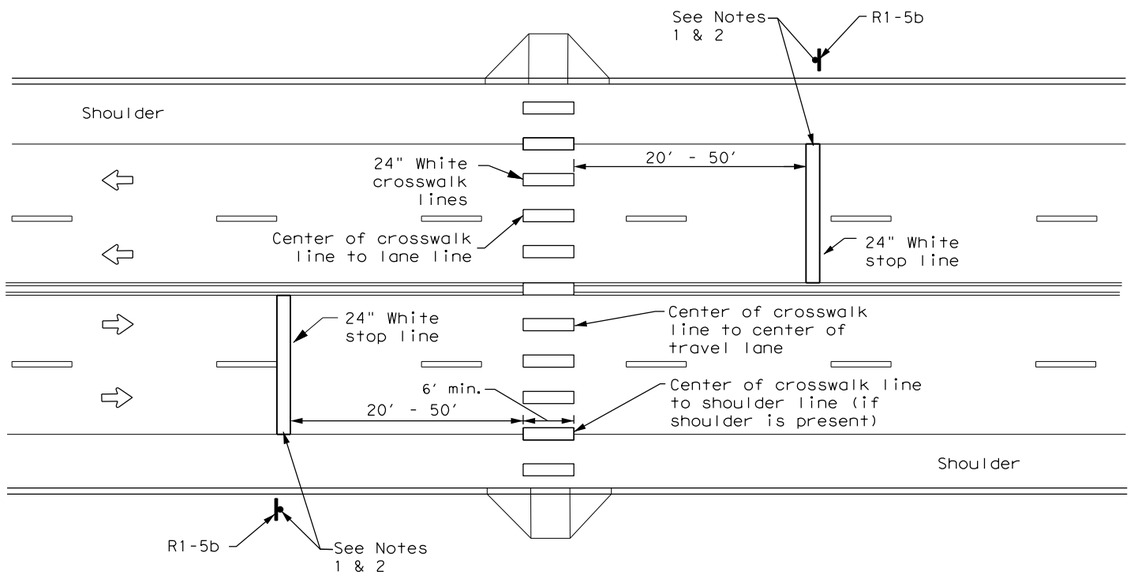
HIGH-VISIBILITY LONGITUDINAL CROSSWALK
AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6′ wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY
LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0042	11	006	SL 395
6-20	DIST	COUNTY		SHEET NO.
6-22	AMA	POTTER		129
12-22				
22D				

DATE: 2/29/2024 5:06:39 PM
FILE: c:\pw\khi\d0254333\pm4-22a.dgn

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)

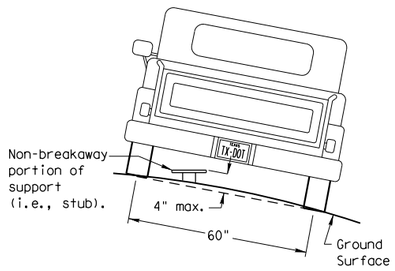
Anchor Type

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

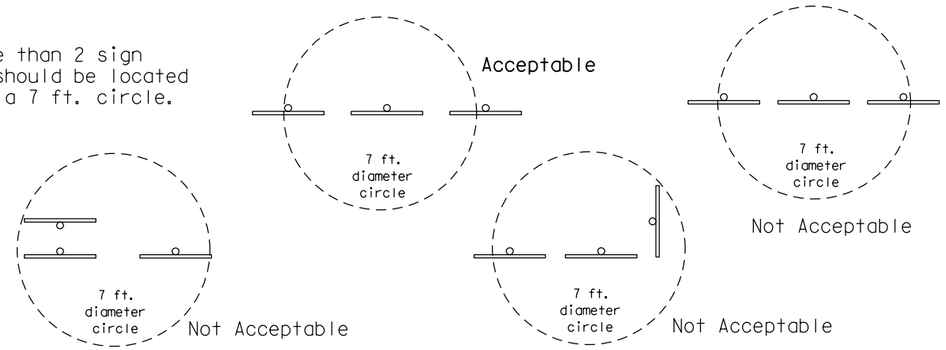
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))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



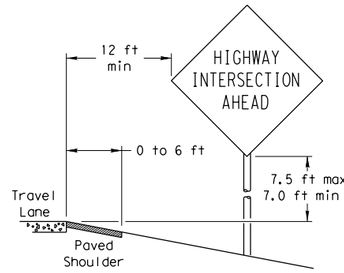
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

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



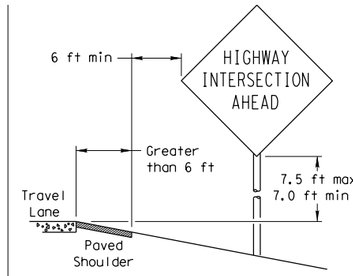
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

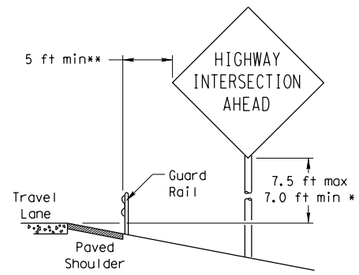
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



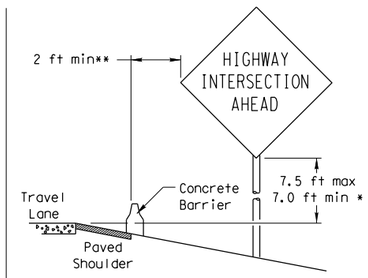
GREATER THAN 6 FT. WIDE

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.

BEHIND BARRIER



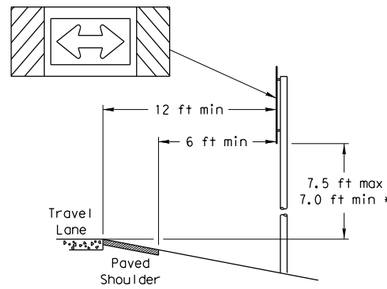
BEHIND GUARDRAIL



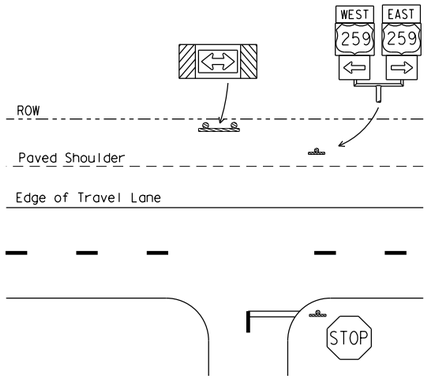
BEHIND CONCRETE BARRIER

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

T-INTERSECTION



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



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

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

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

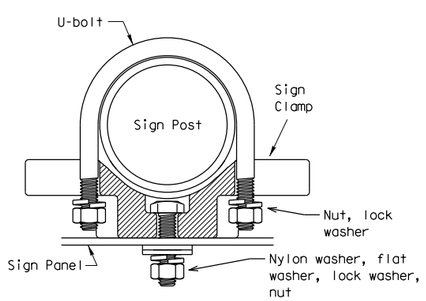
The maximum values may be increased when directed by the Engineer.

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

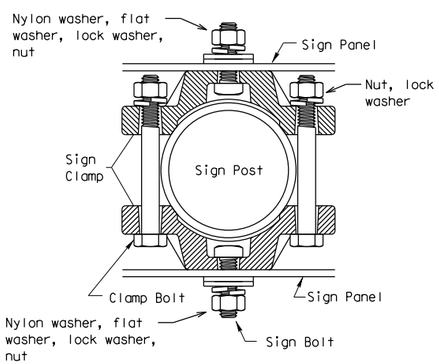
The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



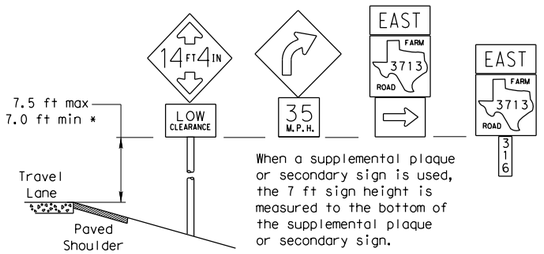
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

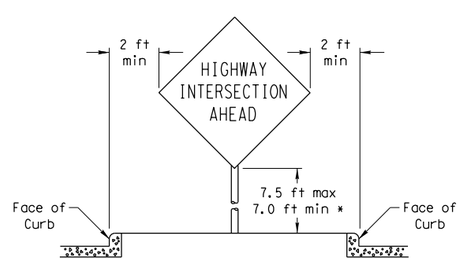
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



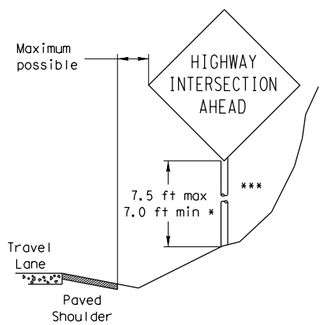
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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	0042	11	006	SL 395
	DIST	COUNTY		SHEET NO.
	AMA	POTTER		130

DATE:
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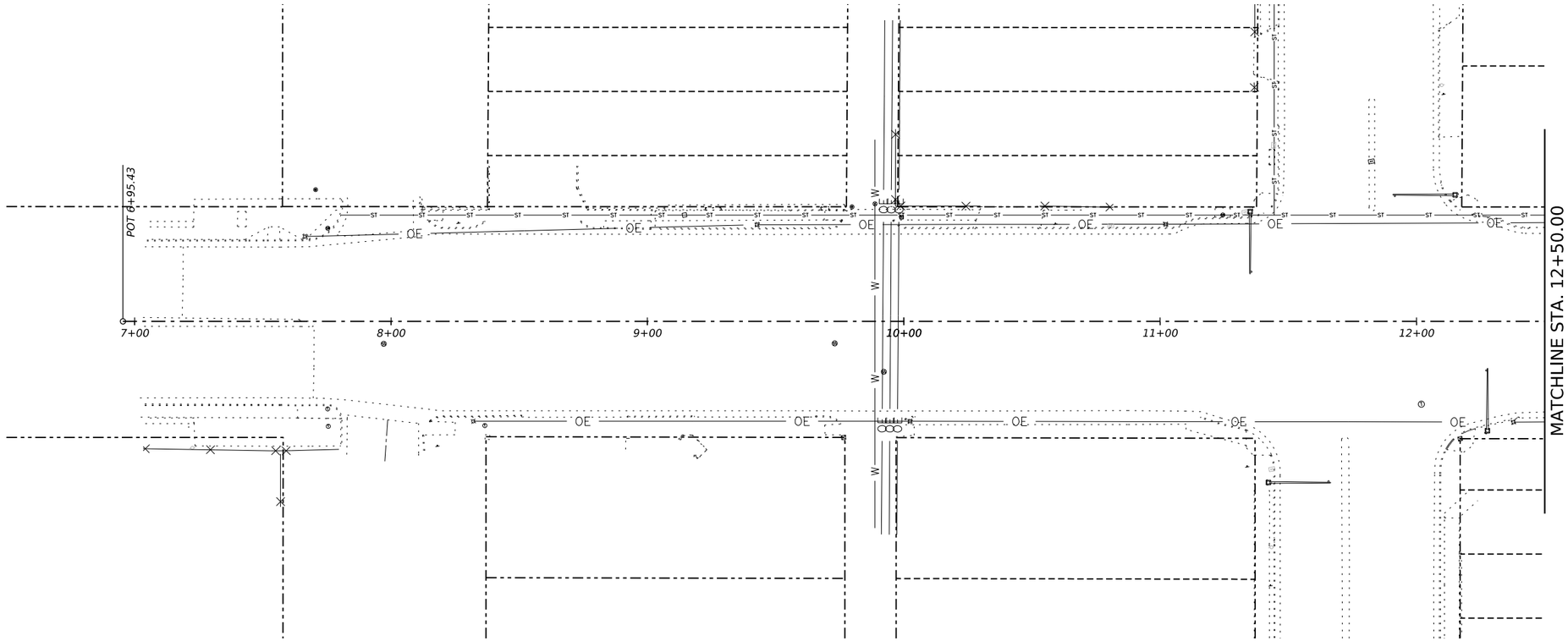

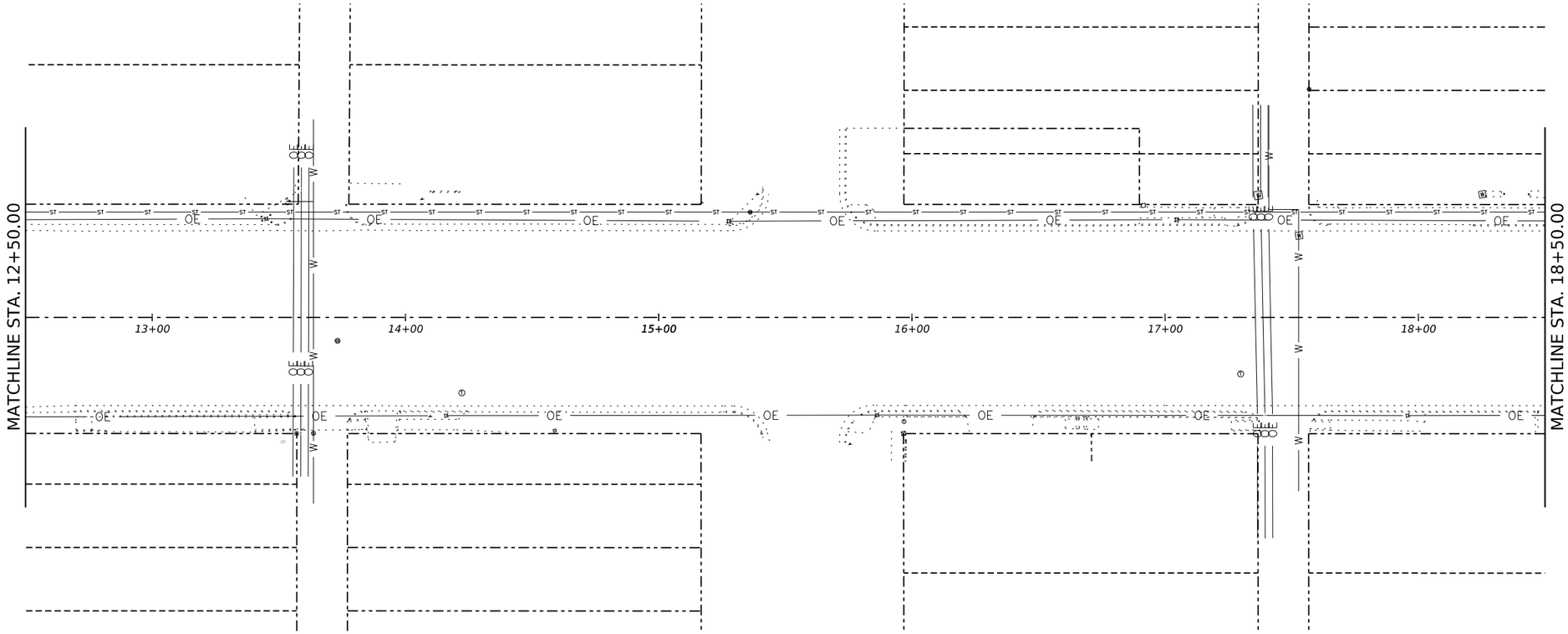

LEGEND

- W — CITY OF AMARILLO WATER
- ST — CITY OF AMARILLO STORM SEWER
- OE — OVERHEAD ELECTRIC
- LIGHTING POLE
- POWER POLE

100% PLANS

Kimley»Horn F-928

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SE 10TH AVE

EXISTING UTILITY LAYOUT

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		131

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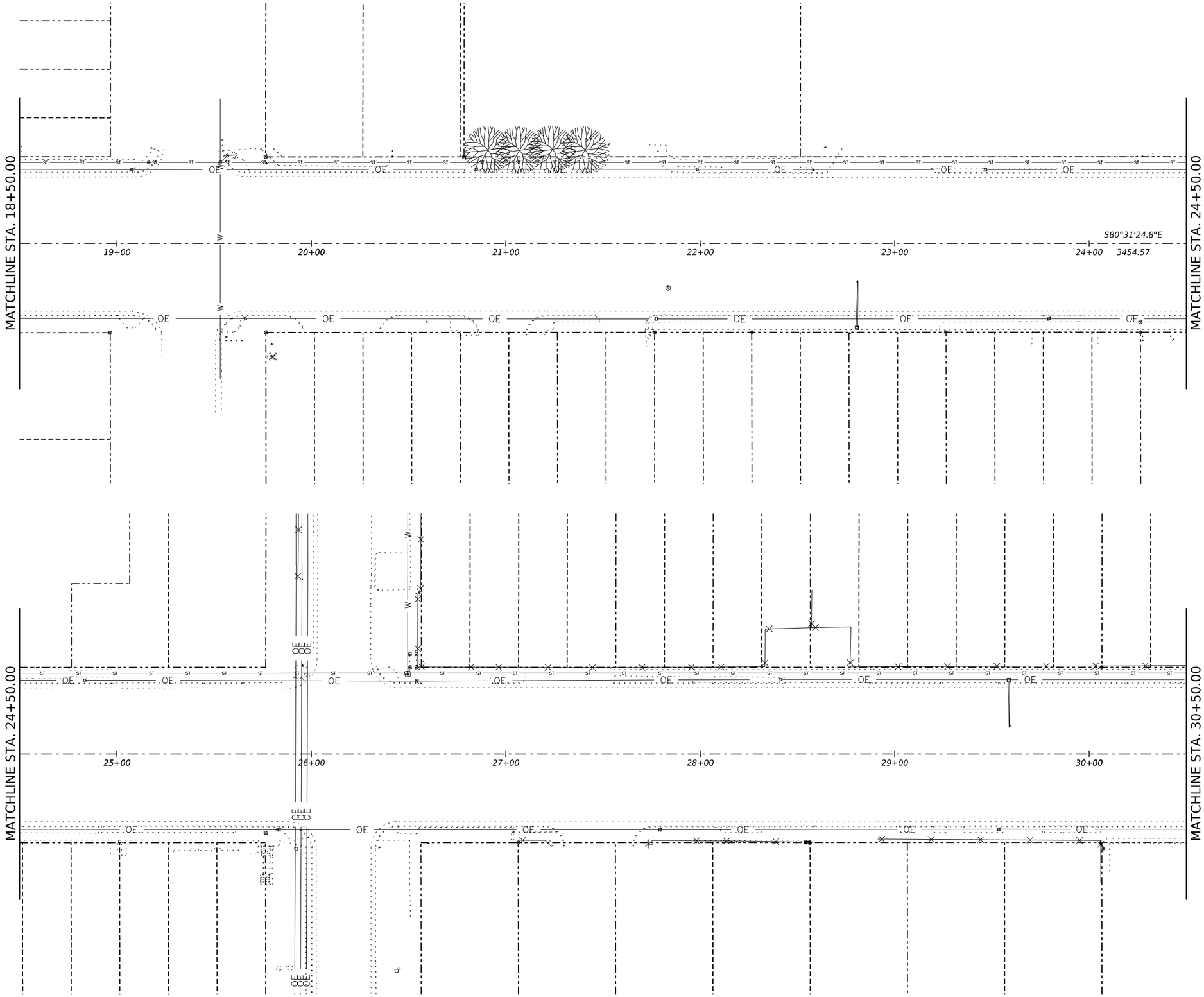

0 50
SCALE IN FEET

LEGEND

- W — CITY OF AMARILLO WATER
- ST — CITY OF AMARILLO STORM SEWER
- OE — OVERHEAD ELECTRIC
- LIGHTING POLE
- POWER POLE

100% PLANS

Kimley»Horn F-928

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Texas Department of Transportation

SE 10TH AVE

EXISTING UTILITY LAYOUT

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		132

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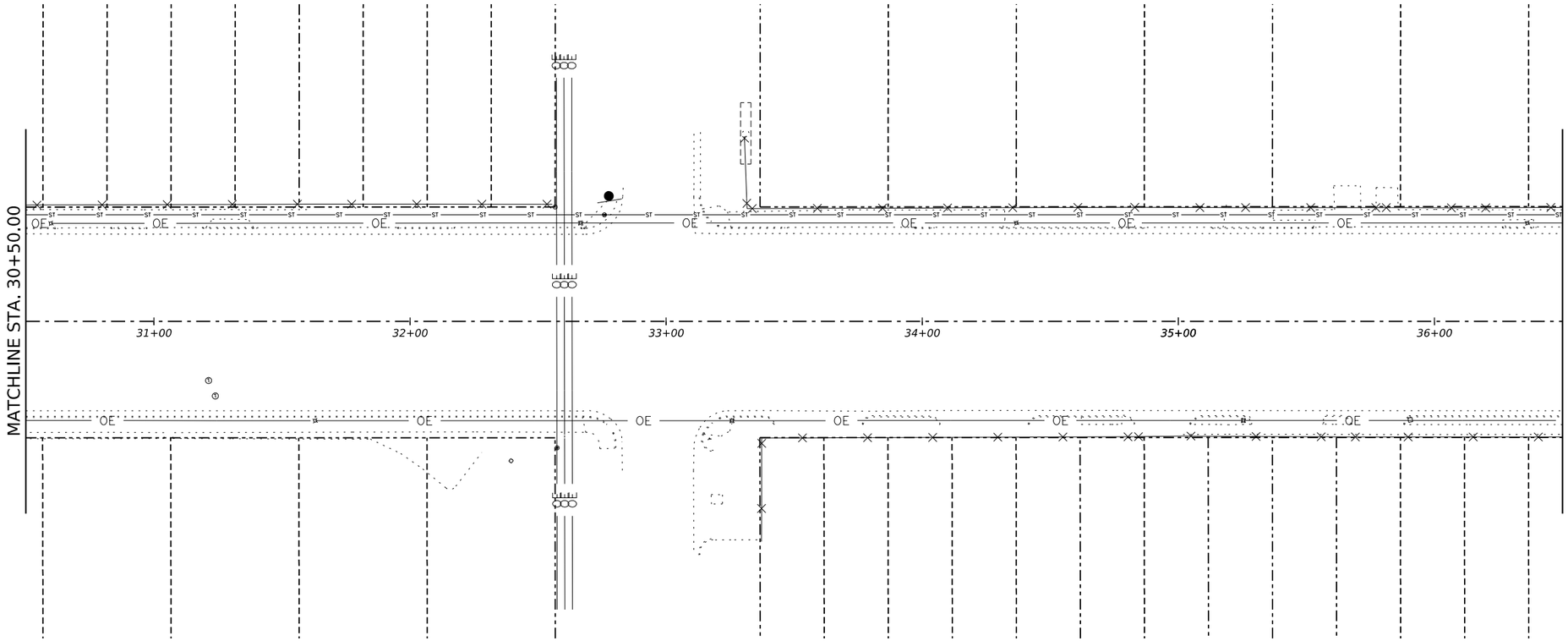

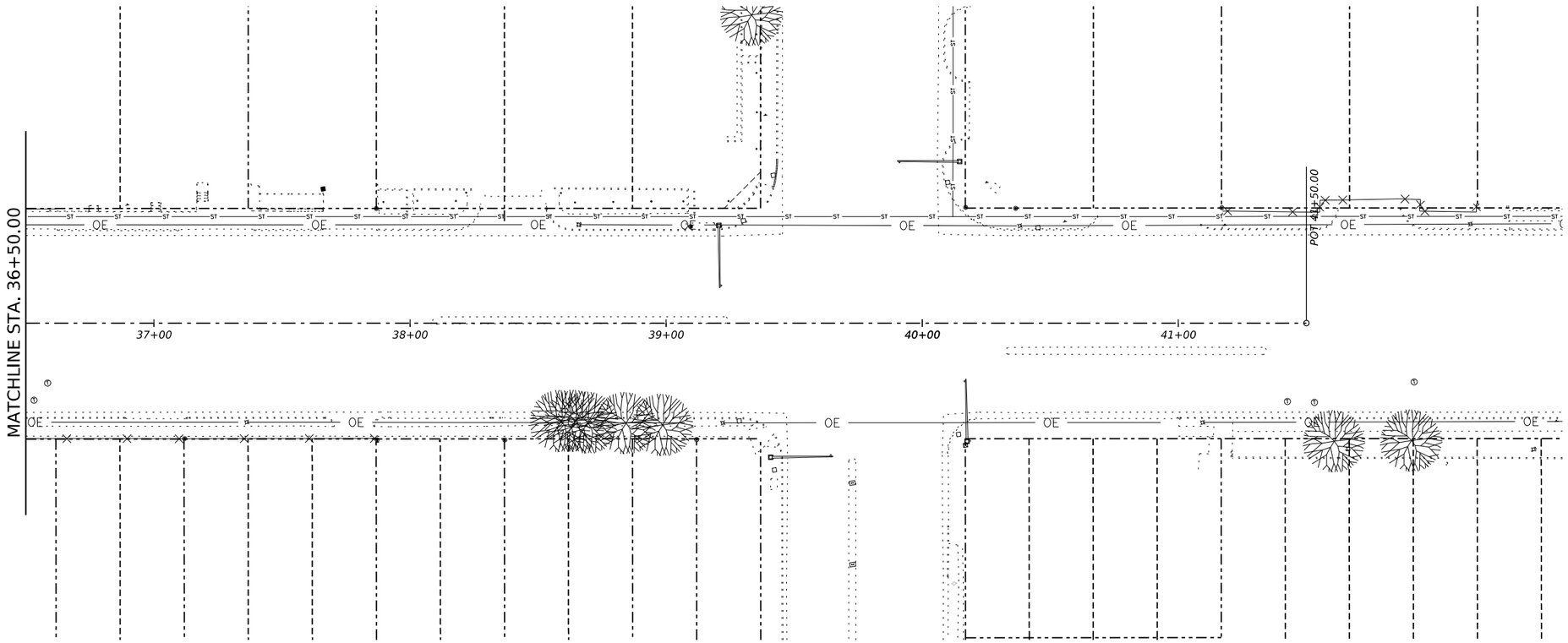

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SCALE IN FEET

LEGEND

- W — CITY OF AMARILLO WATER
- ST — CITY OF AMARILLO STORM SEWER
- OE — OVERHEAD ELECTRIC
- LIGHTING POLE
- POWER POLE

100% PLANS

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Texas Department of Transportation

SE 10TH AVE

EXISTING UTILITY LAYOUT

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		133

DATE: 2/29/2024 5:08:43 PM
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STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with soil disturbing activity and for projects that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0042-11-006

1.2 PROJECT LIMITS:
From: *GARFIELD STREET*

To: *ROSS STREET*

1.3 PROJECT COORDINATES:
BEGIN: (Lat) *35°12'7.19"N*, (Long) *101°49'35.69"W*

END: (Lat) *35°12'2.27"N*, (Long) *101°48'57.99"W*

1.4 TOTAL PROJECT AREA (Acres): *7.3 AC*

1.5 TOTAL AREA TO BE DISTURBED (Acres): *7.3 AC*

1.6 NATURE OF CONSTRUCTION ACTIVITY:
CONSTRUCTION OF DRIVING LANES, SIDEWALK, SHARED USE PATH, DRIVEWAYS, CURB & GUTTER, & STREETSCAPE ELEMENTS.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
URBAN LAND	BEGIN PROJECT - STA 11+00 WELL DRAINED, HIGH RUNOFF RATE
PULLMAN - URBAN LAND COMPLEX 0-3% SLOPES	SAT 11+00 TO END PROJECT WELL DRAINED, HIGH RUNOFF RATE

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):
PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- ☐ PSLs determined during preconstruction meeting
- ☑ PSLs determined during construction
- ☐ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:
(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

- ☑ Mobilization
- ☑ Install sediment and erosion controls
- ☑ Blade existing topsoil into windrows, prep ROW, clear and grub
- ☑ Remove existing pavement
- ☑ Grading operations, excavation, and embankment
- ☐ Excavate and prepare subgrade for proposed pavement widening
- ☐ Remove existing culverts, safety end treatments (SETs)
- ☐ Remove existing metal beam guard fence (MBGF), bridge rail
- ☑ Install proposed pavement per plans
- ☐ Install culverts, culvert extensions, SETs
- ☐ Install mow strip, MBGF, bridge rail
- ☑ Place flex base
- ☐ Rework slopes, grade ditches
- ☐ Blade windrowed material back across slopes
- ☐ Revegetation of unpaved areas
- ☐ Achieve site stabilization and remove sediment and erosion control measures
- ☐ Other: REMOVE EXISTING INLETS
- ☐ Other: PLACE NEW DRAINAGE STRUCTURES
- ☐ Other: PLACE STREETSCAPE ELEMENTS (TREES, SHRUBS, IRRIGATION)

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☑ Sediment laden stormwater from stormwater conveyance over disturbed area
- ☑ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ☑ Solvents, paints, adhesives, etc. from various construction activities
- ☑ Transported soils from offsite vehicle tracking
- ☑ Construction debris and waste from various construction activities
- ☐ Contaminated water from excavation or dewatering pump-out water
- ☑ Sanitary waste from onsite restroom facilities
- ☑ Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☐
- ☐ Other:
- ☐ Other:
- ☐ Other:

1.11 RECEIVING WATERS:
Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
NOT APPILCABLE	NOT APPILCABLE

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- ☒ Development of plans and specifications
- ☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- ☒ Post Construction Site Notice
- ☒ Submit NOI/CSN to local MS4
- ☒ Perform SWP3 inspections
- ☒ Maintain SWP3 records and update to reflect daily operations
- ☒ Complete and submit Notice of Termination to TCEQ
- ☒ Maintain SWP3 records for 3 years
- ☐ Other:
- ☐ Other:
- ☐ Other:

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- ☒ Day To Day Operational Control
- ☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- ☒ Post Construction Site Notice
- ☒ Submit NOI/CSN to local MS4
- ☒ Maintain schedule of major construction activities
- ☒ Install, maintain and modify BMPs
- ☒ Complete and submit Notice of Termination to TCEQ
- ☒ Maintain SWP3 records for 3 years
- ☐ Other:
- ☐ Other:
- ☐ Other:

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity
CITY OF AMARILLO

STATE OF TEXAS
STEPHEN A. NAVA
135543
LICENSED
PROFESSIONAL ENGINEER
2/29/2024

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	STP 2023(467) TAPS		134
STATE	STATE DIST.	COUNTY	
TEXAS	AMA	POTTER	
CONT.	SECT.	JOB	HIGHWAY NO.
0042	11	006	SL 395

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ ☐ Permanent Planting, Sodding or Seeding
- ☑ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- ☑ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☑ ☐ Inlet Protection
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- ☐ ☐ Sediment Control Fence
- ☐ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- ☐ ☐ Sedimentation Basin
  - ☑ Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☑ Excess dirt/mud on road removed daily
- ☑ Haul roads dampened for dust control
- ☑ Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☑ Chemical Management
- ☑ Concrete and Materials Waste Management
- ☑ Debris and Trash Management
- ☑ Dust Control
- ☑ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- ☒ Fire hydrant flushings
- ☒ Irrigation drainage
- ☒ Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- ☒ Potable water sources
- ☒ Springs
- ☒ Uncontaminated groundwater
- ☒ Water used to wash vehicles or control dust
- ☒ Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

When dewatering activities are present, a daily inspection will be conducted once per day during those activities and documented in accordance with CGP and TxDOT requirements.

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STATE OF TEXAS
STEPHEN A. NAVA
135543
LICENSED
PROFESSIONAL ENGINEER
2/29/2024

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	STP 2023(467)TAPS		135
STATE	STATE DIST.	COUNTY	
TEXAS	AMA	POTTER	
CONT.	SECT.	JOB	HIGHWAY NO.
0042	11	006	SL 395

DATE: 2/29/2024
FILE: c:\pw\kh1\d0316884\epic.dgn

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

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

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

1.CITY OF AMARILLO

☐ No Action Required ☒ Required Action

Action No.

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

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

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

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

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

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

1.

2.

3.

4.

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

Best Management Practices:

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

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

☒ No Action Required ☐ Required Action

Action No.

1.

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 immediate area, and contact the Engineer immediately.

LIST OF ABBREVIATIONS

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

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

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

☐ Yes ☒ No

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

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

☐ Yes ☐ No

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

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

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

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation

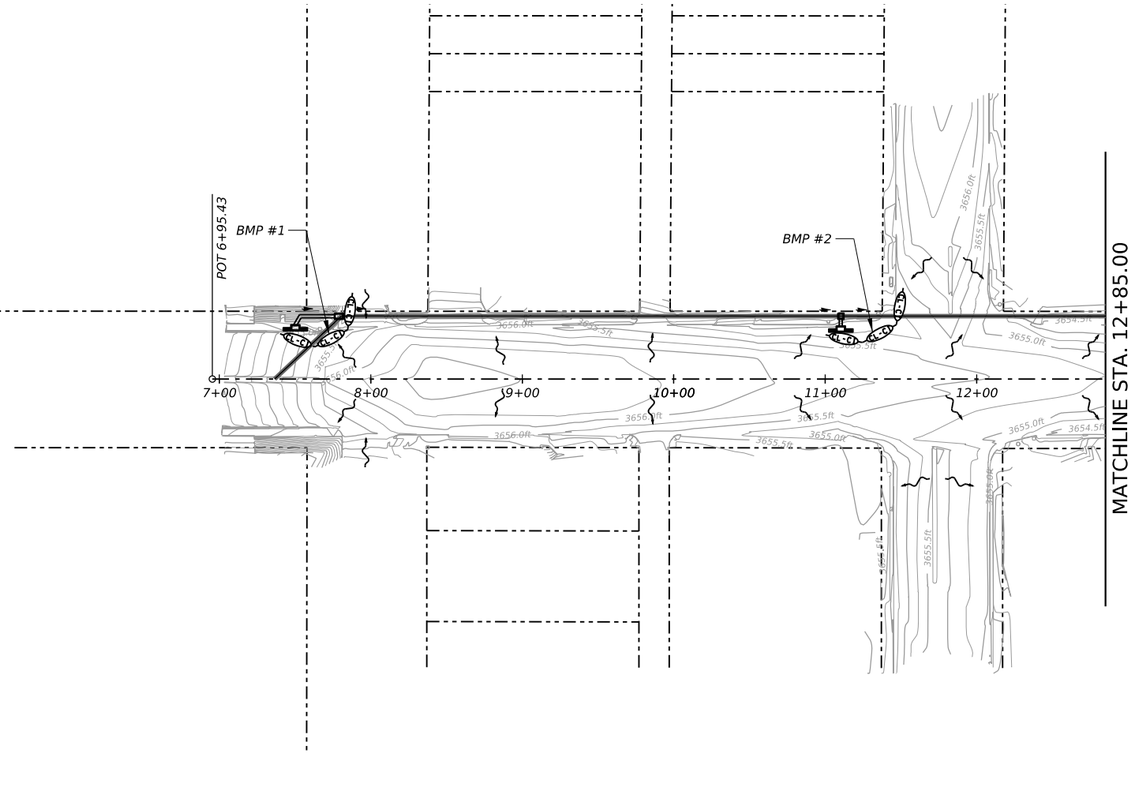
Design Division Standard

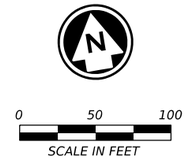
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
© TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-12-2011 (DS)	0042	11	006	SL 395
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY		SHEET NO.
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	AMA	POTTER		136

CK: SAW
DW: EIA
CK: SAW
DW: EIA





LEGEND

- FLOW ARROWS
- CL-C — 18" EROSION CONTROL LOG AT CURB INLET
- CL-G — 18" EROSION CONTROL LOG AT GRATE INLET

NOTES:

1. CONTROL LOG QUANITY SHOWN IS FOR ONE CYCLE. THREE CYCLES TOTAL FOR THE DURATION OF THE PROJECT

BMP #	01	02
TYPE	CONTROL LOG	CONTROL LOG
QUANTITY (LF)	60	60
INSTALL DATE		
REMOVAL DATE		
REPLACEMENT DATE #1		
REPLACEMENT DATE #2		

STATE OF TEXAS
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2/29/2024

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

EROSION CONTROL PLAN

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		137

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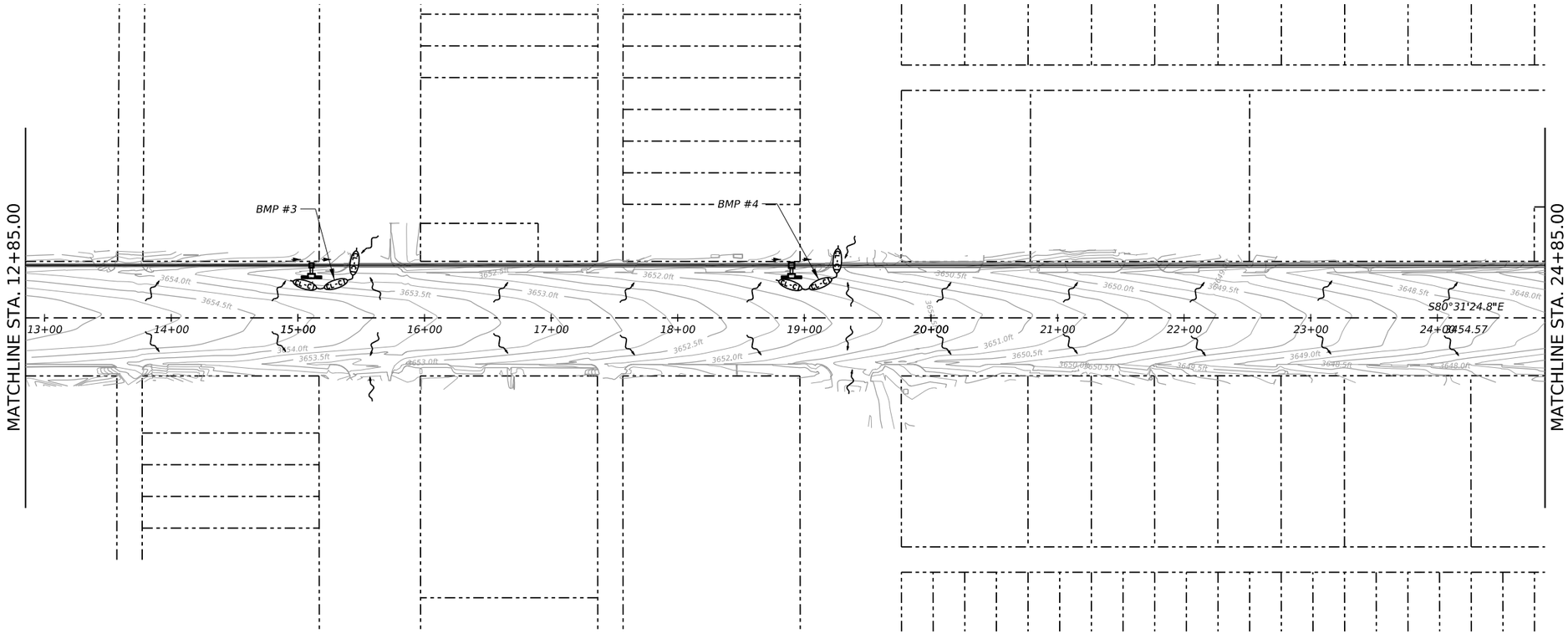

LEGEND

- FLOW ARROWS
- CL-C — 18" EROSION CONTROL LOG AT CURB INLET
- CL-G — 18" EROSION CONTROL LOG AT GRATE INLET

NOTES:

1. CONTROL LOG QUANITY SHOWN IS FOR ONE CYCLE. THREE CYCLES TOTAL FOR THE DURATION OF THE PROJECT

BMP #	03	04
TYPE	CONTROL LOG	CONTROL LOG
QUANTITY (LF)	60	60
INSTALL DATE		
REMOVAL DATE		
REPLACEMENT DATE #1		
REPLACEMENT DATE #2		

100% PLANS

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Texas Department of Transportation

SE 10TH AVE

EROSION CONTROL PLAN

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		138

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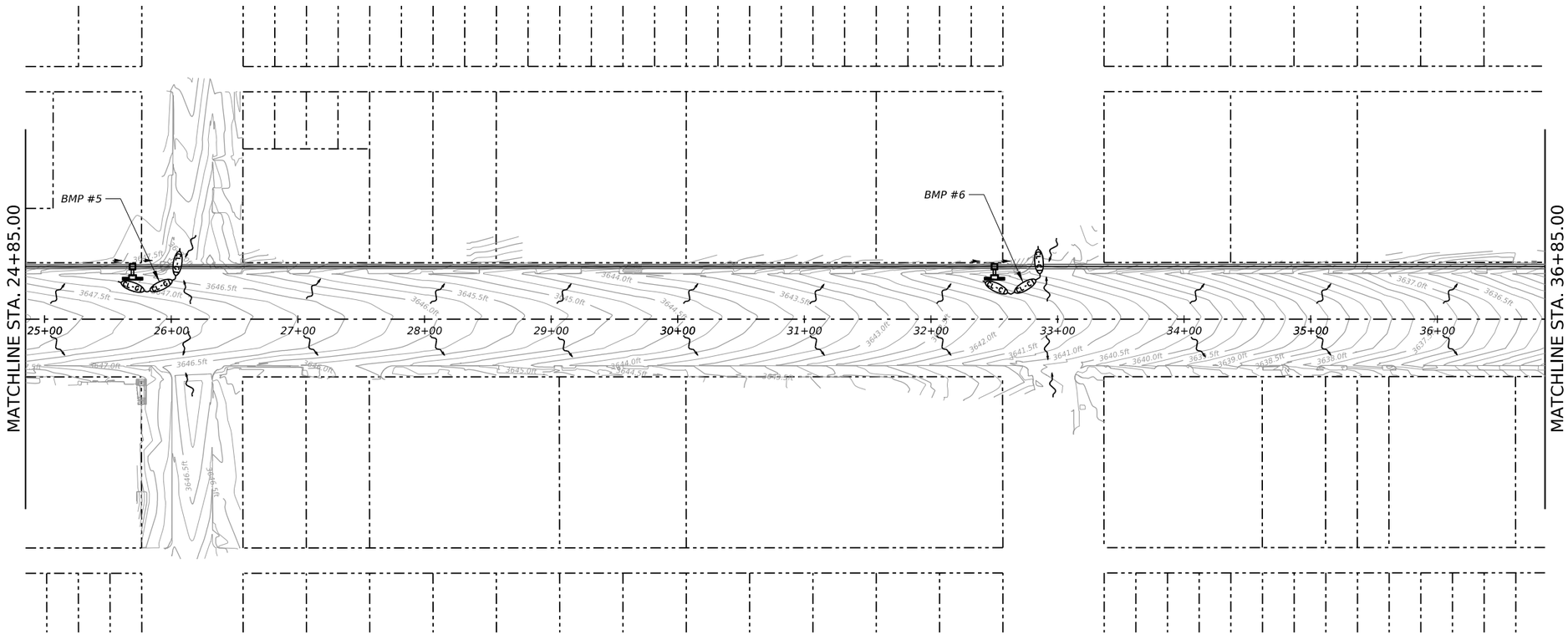

LEGEND

- FLOW ARROWS
- CL-C — 18" EROSION CONTROL LOG AT CURB INLET
- CL-G — 18" EROSION CONTROL LOG AT GRATE INLET

NOTES:

1. CONTROL LOG QUANITY SHOWN IS FOR ONE CYCLE. THREE CYCLES TOTAL FOR THE DURATION OF THE PROJECT

BMP #	05	06
TYPE	CONTROL LOG	CONTROL LOG
QUANTITY (LF)	60	60
INSTALL DATE		
REMOVAL DATE		
REPLACEMENT DATE #1		
REPLACEMENT DATE #2		

STATE OF TEXAS
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2/29/2024

100% PLANS

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SE 10TH AVE

EROSION CONTROL PLAN

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		139

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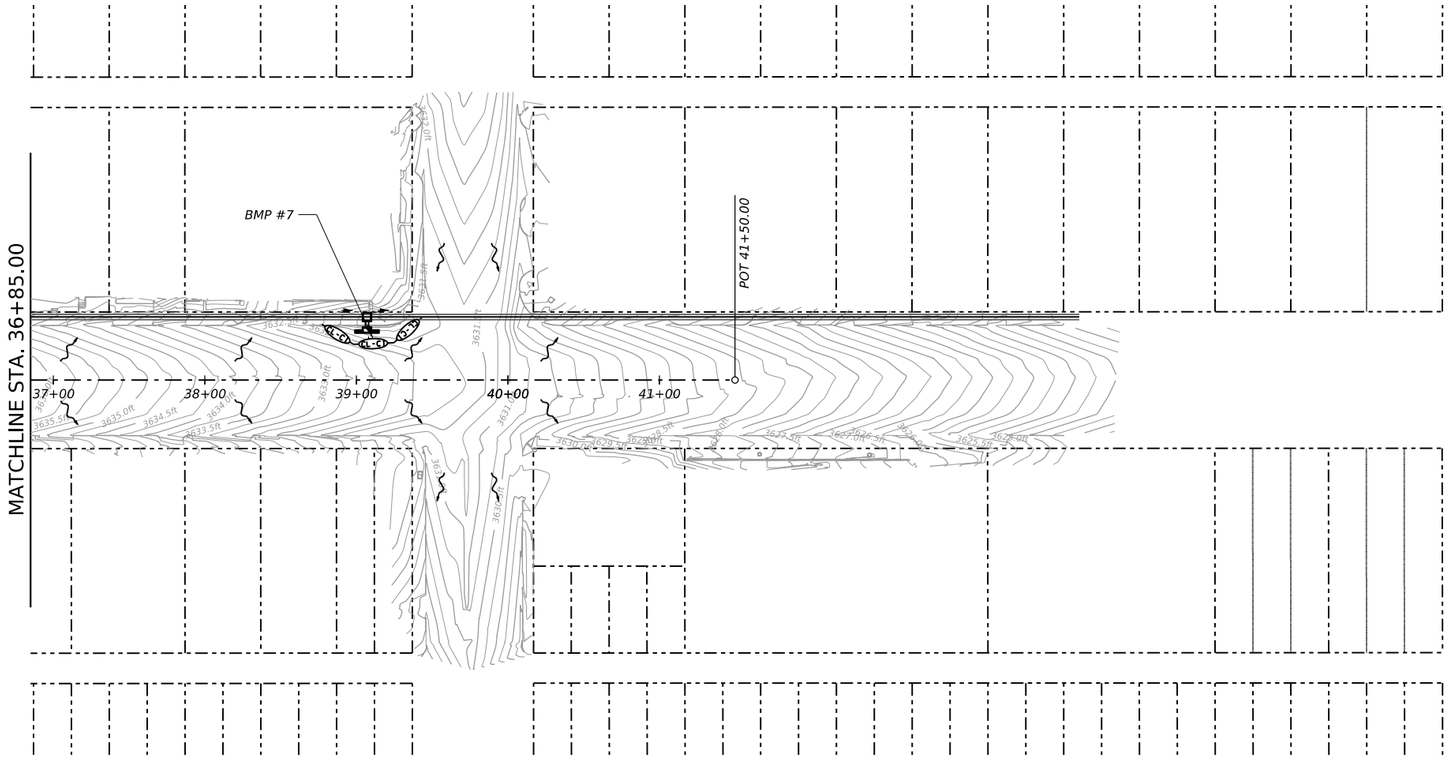

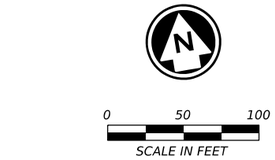

LEGEND

- FLOW ARROWS
- CL-C — 18" EROSION CONTROL LOG AT CURB INLET
- CL-G — 18" EROSION CONTROL LOG AT GRATE INLET

BMP #	07
TYPE	CONTROL LOG
QUANTITY (LF)	60
INSTALL DATE	
REMOVAL DATE	
REPLACEMENT DATE #1	
REPLACEMENT DATE #2	

NOTES:

1. CONTROL LOG QUANITY SHOWN IS FOR ONE CYCLE. THREE CYCLES TOTAL FOR THE DURATION OF THE PROJECT

2/29/2024

100% PLANS

Kimley»Horn F-928

Texas Department of Transportation

SE 10TH AVE

EROSION CONTROL PLAN

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0042	11	006	SL 395
DIST	COUNTY		SHEET NO.
AMA	POTTER		140

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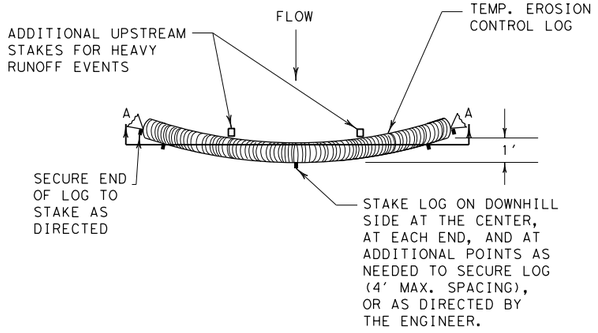
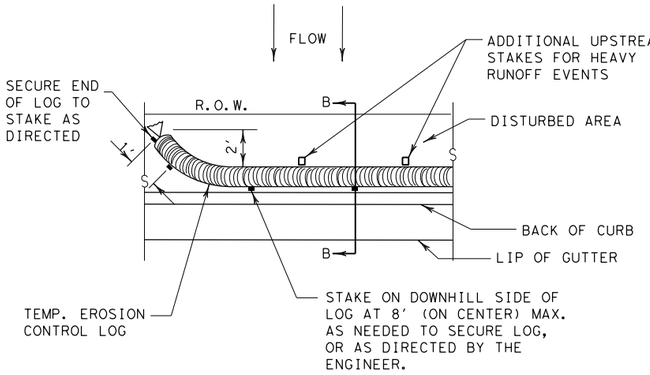
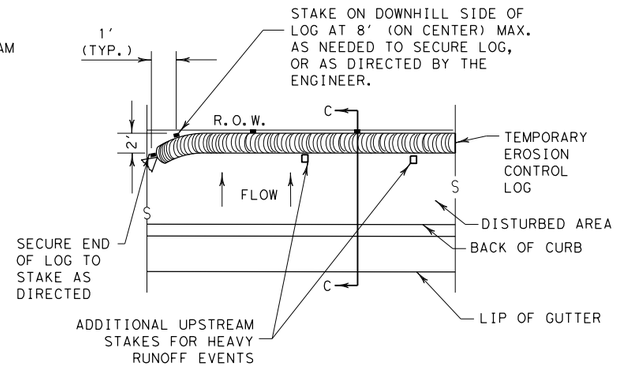


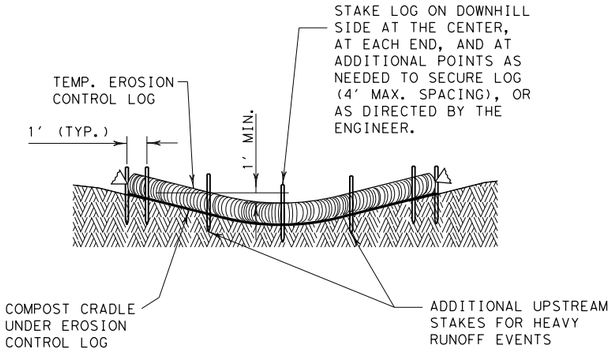
PLAN VIEW



PLAN VIEW



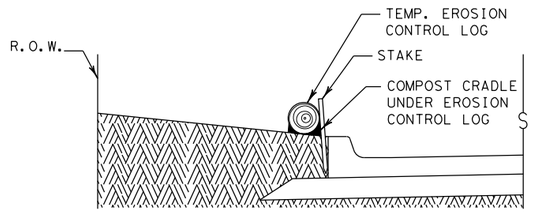
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

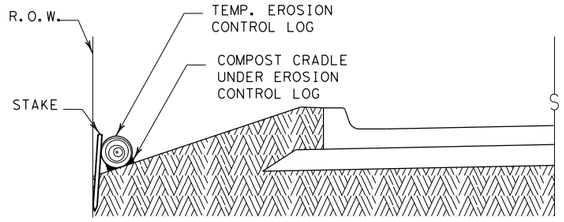
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

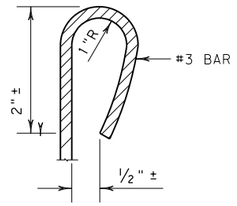
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



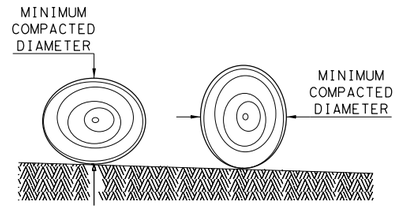
REBAR STAKE DETAIL

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

Texas Department of Transportation

Design Division Standard

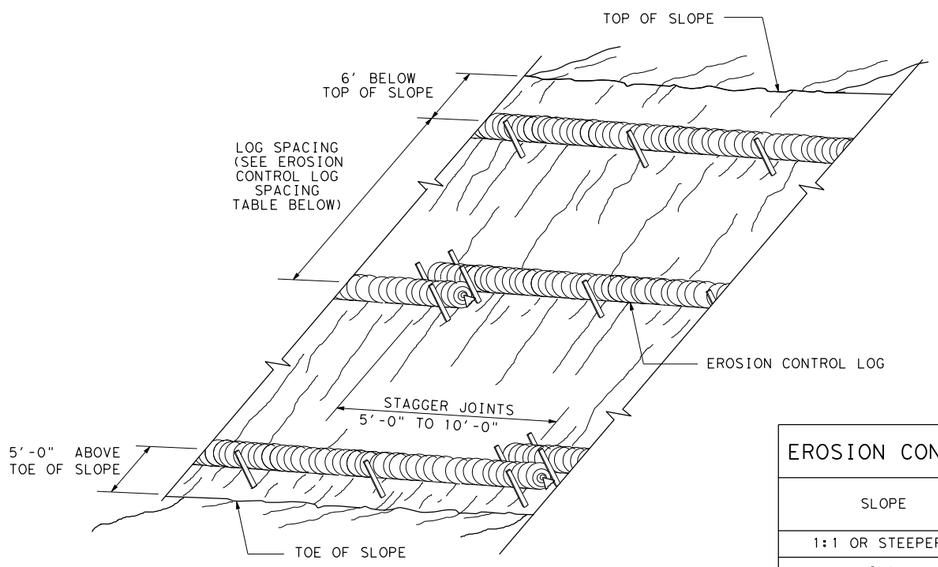
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

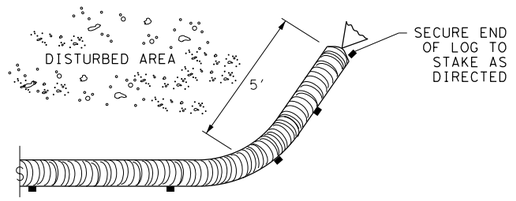
FILE: ec916	DN: TxDOT		CK: KM		DW: LS/PT		CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0042	11	006		SL 395		
	DIST	COUNTY			SHEET NO.		
	AMA	POTTER			141		

DATE: 2/29/2024
FILE: c:\pw\khl\d0316884\ec916.dgn



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

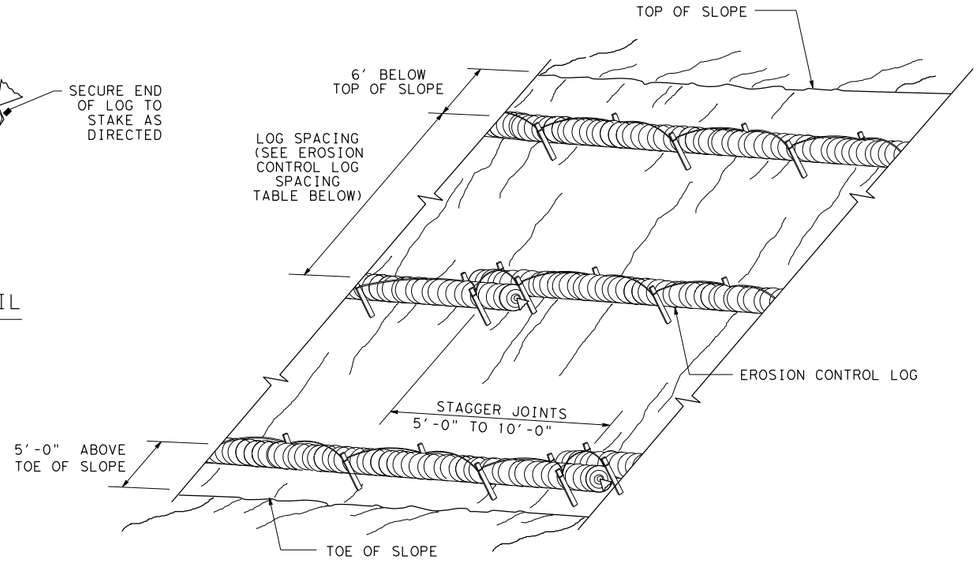
CL-SST



END SECTION RAP DETAIL

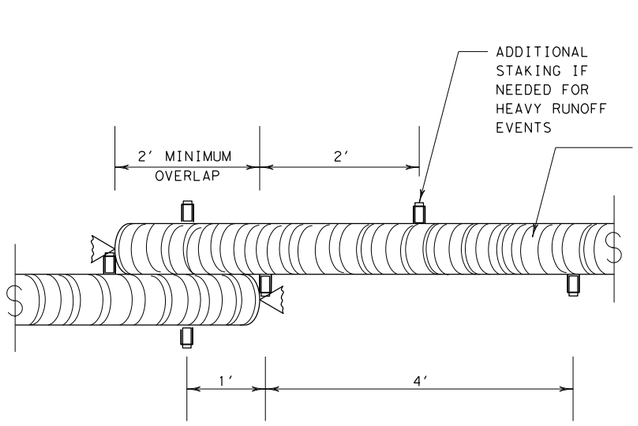
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

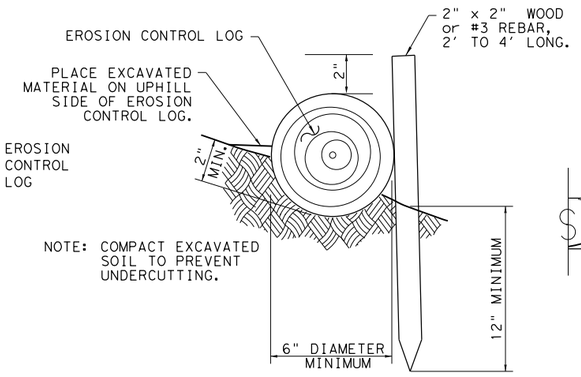
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

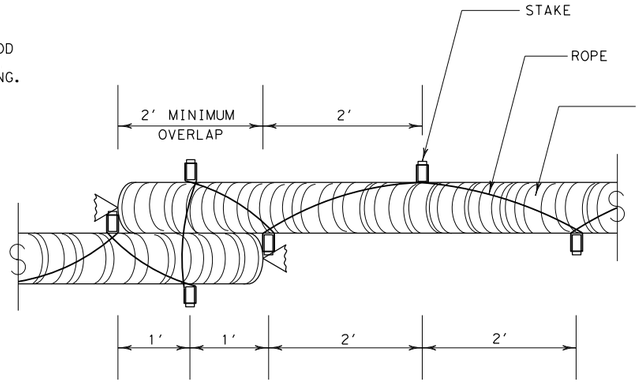




STAKE AND TRENCHING ANCHORING DETAIL

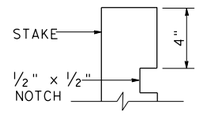
CL-SST

TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"

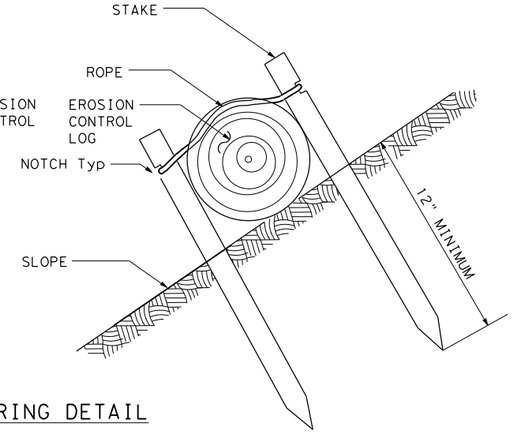


STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

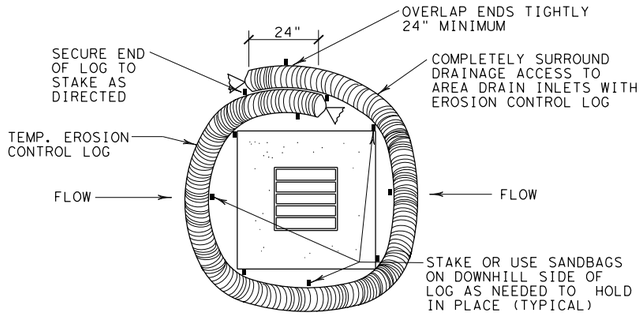


Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

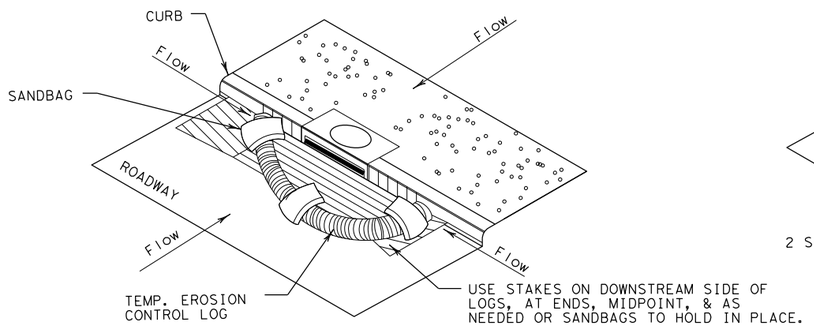
FILE: ec116	DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0042	11	006		SL 395	
	DIST	COUNTY			SHEET NO.	
	AMA	POTTER			142	

DATE: 2/29/2024
FILE: c:\pw\kh1\d0316884\ec916.dgn



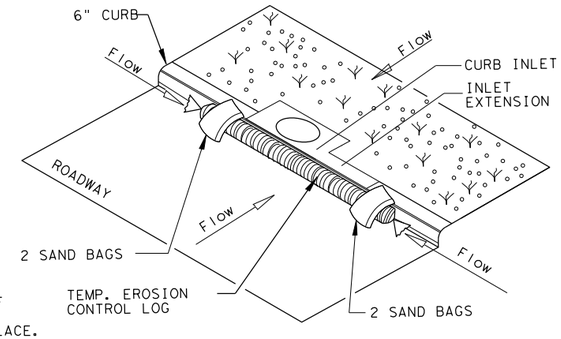
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

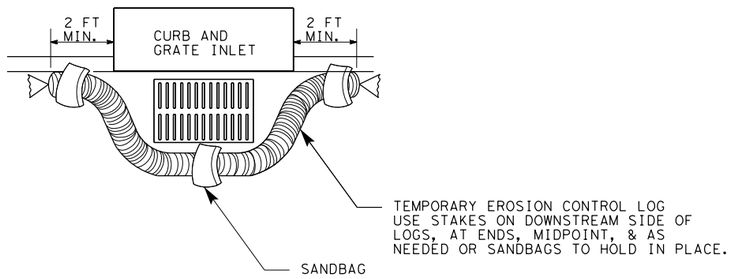
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

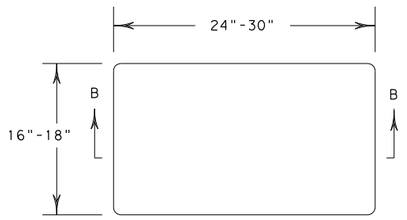
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRATE 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	0042	11	006	SL 395			
	DIST	COUNTY		SHEET NO.			
	AMA	POTTER		143			

DATE: 2/29/2024
FILE: c:\pw\kh1\d0316884\ec916.dgn