FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2B23 (202)TAPS		1
STATE	STATE DIST.	COUNTY	
TEXAS	PHR	CAMERON	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	06	348	VA

INDEX OF SHEETS
SEE SHEET NO. 2
FOR INDEX OF INDEX

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
PEDESTRIAN IMPROVEMENTS

FEDERAL AID PROJECT PROJECT NO.: STP 2B23 (202)TAPS
CSJ: 0921-06-348
PROJECT ID: A00179443

CAMERON COUNTY

CSJ: 0921-06-348

FM-1846: BEGINS AT POINT A STA 147+07
ENDS AT POINT B STA 177+18

EBONY AVE: BEGINS AT POINT C STA 201+19
ENDS AT POINT D STA 215+00

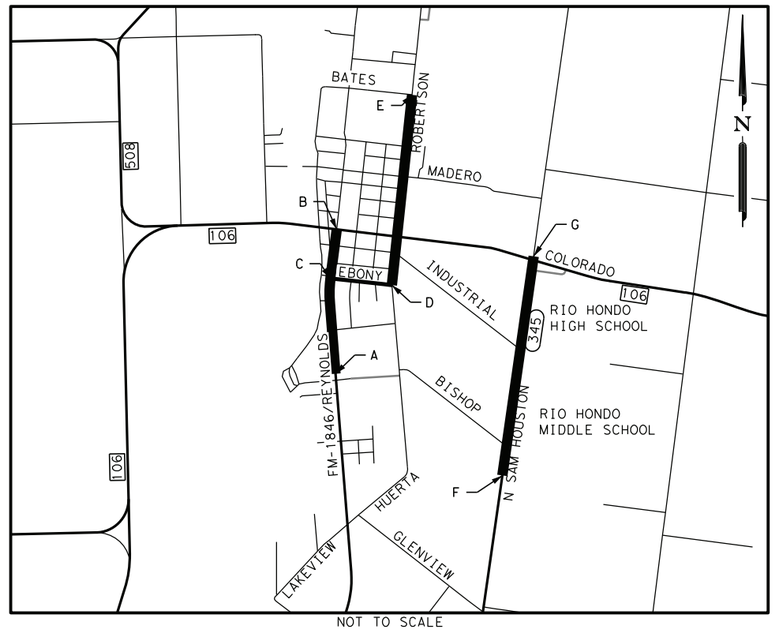
ROBERTSON RD: BEGINS AT POINT D STA 302+00
ENDS AT POINT E STA 346+00

SH-345: BEGINS AT POINT F STA 416+50
ENDS AT POINT G STA 444+69

NET LENGTH OF ROADWAY = 11476 FT = 2.17 MI
NET LENGTH OF BRIDGE = 0.00 FT = 0.00 MI
NET LENGTH OF PROJECT = 11476 FT = 2.17 MI

LIMITS FROM: ROBERTSON RD FROM ROBERTO GARZA (NOPALES)
TO: EBONY ST.

CONSTRUCT SIDEWALKS & BIKE LANES: SH 345-FM 106 TO 0.534 MI S OF FM 106; FM1846-FM106 TO .549 MI S OF FM 106;
CONSTRUCT SHARED USE PATH: ROBERSTON RD - EBONY RD TO ROBERTO GARZA ST;EBONY RD-S ROBERTSON RD TO FM 1846



NOT TO SCALE

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

FINAL PLANS

DATE OF LETTING: _____
DATE WORK BEGAN: _____
DATE WORK COMPLETED: _____
DATE WORK ACCEPTED: _____
FINAL CONTRACT COST: $ _____
CONTRACTOR: _____

LIST OF APPROVED FIELD CHANGES, CHANGE ORDERS & SUPPLEMENTAL AGREEMENTS

THIS IS TO CERTIFY THAT ALL CONSTRUCTION SUBSTANTIAL WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS SPECIFICATIONS AND CONTRACT. ALL PROPOSED CONSTRUCTION WAS COMPLETED UNLESS OTHERWISE NOTED.

_____ _____
ANDRES A ESPINOZA, P.E. DATE
SAN BENITO AREA ENGINEER

REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION REQUIRED.
TDLR NO. EABPRJ:TABS2024013969

JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

JOHN A. TYLER, P.E. 3/4/2024
DATE

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND THE 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).

PROJECT DATA

DESIGN SPEED: N/A
EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD: NONE

TEXAS DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR LETTING : 3/7/2024
DocuSigned by: Pedro R. Alvarez
EABA335C2DAA48C...

SUMITTED FOR LETTING : 3/7/2024
DocuSigned by: Agustin Ramirez
F0AA2C281FA841A...
UPPORT ENGINEER

APPROVED FOR LETTING : 3/7/2024
DocuSigned by:
2B9AFAE2F315409...
TP&D

COUNTY CAMERON PROJECT NO. STP 2B23 (202)TAPS
HWY. NO. VA LETTING DATE 5/2/2024
DATE ACCEPTED

CSJ: 0921-06-348

FILE LOCATION AND NAME
S:\projects\612540\02\Design\01_Rio_Hondo_ADA\Civil\General\612540201_Rio_Hondo_ADA_TITLE.dgn
DATE PLOTTED: 3/4/2024

LEVELS DISPLAYED
1

GENERAL

TRAFFIC CONTROL PLAN

ROADWAY

RETAINING WALL

DRAINAGE

TRAFFIC ITEMS

ENVIRONMENTAL ISSUES

(S) STATE STANDARD

(D) DISTRICT STANDARD

* THE STANDARDS SHEETS SPECIFICALLY IDENTIFIED ON THIS SHEET HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

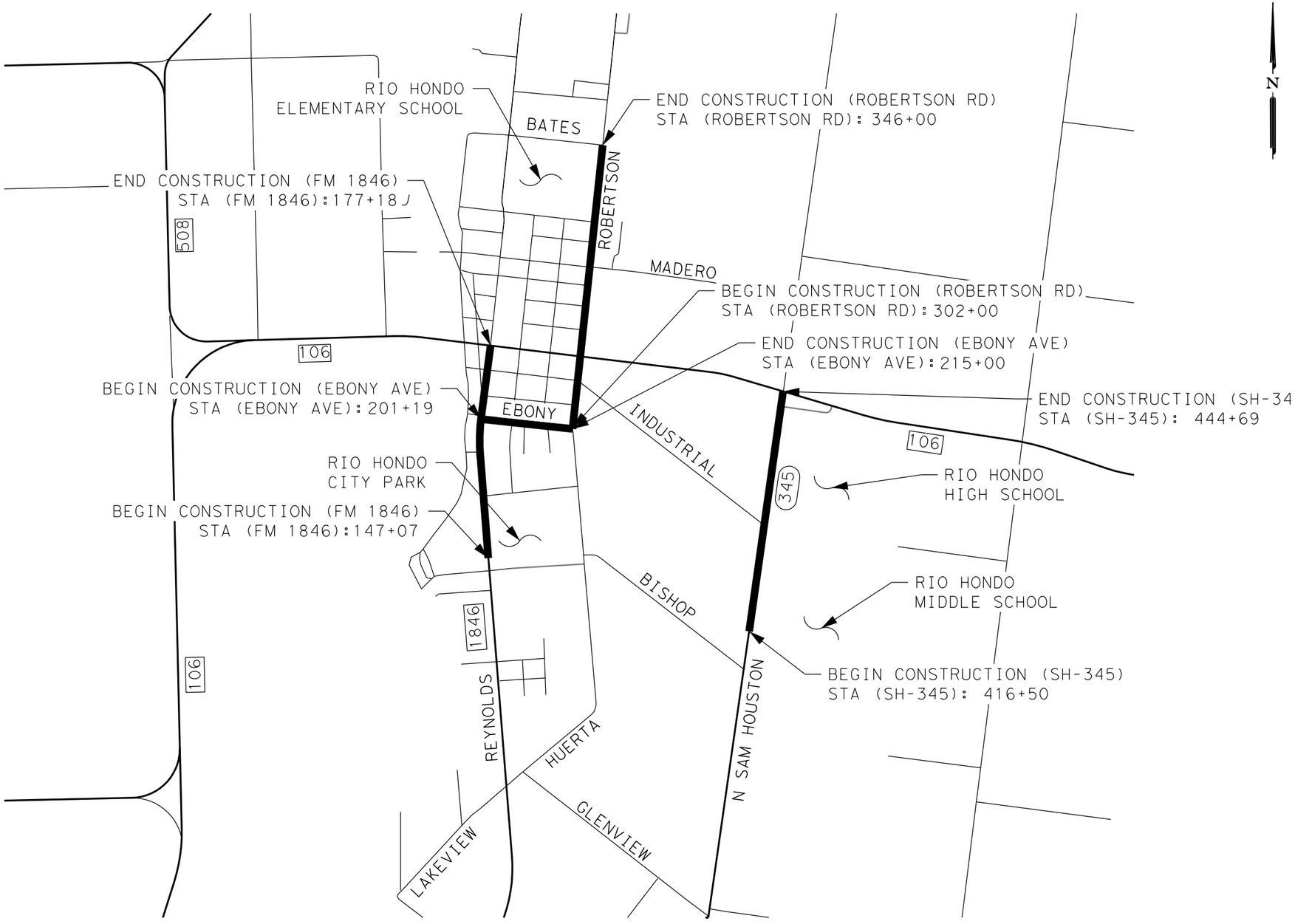
JOHN A. TYLER, P.E. — 3/4/2024 DATE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

INDEX OF SHEETS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	2



DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

PROJECT LOCATION MAP

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	3

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\General\612540201_Rio_Hondo_ADA_PRJLAYOUT.dgn

Project Number:

County: Cameron **Control:** 0921-06-348

Highway: Various

2014 SPECS GENERAL NOTES:

****

General Requirements and Covenants to ITEMS 1 thru 9:

For all pits or quarries, comply with the "Texas Aggregate Quarry and Pit Safety Act."

Provide on a weekly basis a list of equipment, including idle equipment, utilized on the project that week.

The 1-800 call services for utility locations do not include TxDOT facilities. Contact the Pharr District Signal Section (956-702-6225) for coordination regarding TxDOT underground lines.

ITEM 2: Instructions to Bidders

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

Andres Espinoza, P.E., San Benito Area Engineer; Andres.Espinoza@txdot.gov
Gabriel Villarreal, P.E., Assist. Area Engineer; Gabriel.Villarreal@txdot.gov

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

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

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

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

Information found on TxDOT's FTP server will be considered for informational purposes only.
Index of /pub/txdot-info/Pre-Letting Responses/Pharr District/21-Pharr District (Construction) (state.tx.us)

Project Number:

County: Cameron **Control:** 0921-06-348

Highway: Various

ITEM 5: Control of the Work

The responsibility for the construction surveying on this contract will be in accordance with Article 5.9.3., "Method C."

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

ITEM 6: 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 an original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

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

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

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

ITEM 7: Legal Relations and Responsibilities

No significant traffic generator events identified.

Roadway or Lane closures during the following key dates and/or special events are prohibited:

- National Holidays
- The day before a National Holiday
- During emergency events such as natural disasters or as directed by the Engineer

A certified person in accordance with Article 18.1.3 must be present when installing traffic signal items.

ITEM 8: Prosecution and Progress

Working days will be computed and charged in accordance with Article 8.3.1.4. Standard Workweek.

Prepare progress schedules using the Critical Path Method (CPM).

Working within the vicinity of known utility conflicts prior to the respective dates listed on Special Provision 000-1561 is solely the risk of the Contractor. The Department will not consider either monetary or time relief for inefficient work or any other impacts prior to the respective utility dates.

ITEM 100: Preparing Right of Way

Preparation of right of way will be done in accordance with the construction phasing shown on the Traffic Control Plans. Performance of this item will not be allowed outside of the project's current construction phase without prior approval by the Engineer.

Removal of all existing vegetation and trees in horizontal or vertical conflict with the proposed accessible route within the ROW will be subsidiary to prep ROW, unless otherwise noted.

ITEM 132: Embankment

Embankment (DENS CONT) shall be Type C with a max. PI of 40. Material used as embankment material in the top two feet below the bottom of Flexible Base shall meet the following requirements based on preliminary tests and such other tests found necessary by the Engineer.

1. The material shall be such as to produce a well-bonded embankment and shall have a minimum PI of 8 and a maximum PI of 30.

It is the Contractor's responsibility to advise the Engineer of the location of the source sufficiently in advance to avoid delay.

ITEM 160: Topsoil

Use topsoil as needed and directed by the Project Engineer for select problem areas. Unless otherwise approved by the Project Engineer, use topsoil from approved sources outside the right of way as per standard specifications. Existing topsoil is to be salvaged and retained for re-use on the project as topsoil.

Project Number:

County: Cameron **Control:** 0921-06-348

Highway: Various

ITEM 416: Drilled Shaft Foundations

Payment for furnishing and installing anchor bolts mounted in drill shafts will be included in the unit price bid for the pedestrian pole assemblies.

The Contractor shall coordinate with the utility companies to verify utility locations before drilling foundations.

The Contractor shall form, or provide a smooth finish, the portions of drilled shaft that project above the ground line. Place a ¾ inch chamfer on the top edge of each pole foundation. This work will not be paid for directly but will be considered subsidiary to this bid Item.

All drilled shaft foundations will be based on the lengths shown on the plans or those established in writing. Adequate calculations for measurements of foundations have been made in accordance with Article 9.1. of the Standard Specifications.

ITEM 421: Hydraulic Cement Concrete

Provide equipment at the batch plant for determining the free moisture and/or absorption of aggregates in accordance with applicable TXDOT Test.

Provide the following items for concrete batch inspection in accordance with specifications outlined in DMS-10101, "Computer Equipment":

(1) One Desktop Microcomputer or One Laptop Microcomputer
(2) One Integrated Printer/Scanner/Copier/Fax Unit
(3) Contractor-Furnished Software
(4) Hardware

Submit to the Engineer for approval the project locations for all Portland Cement concrete washout areas prior to starting any concrete work.

Fiber Reinforced Concrete is not permitted.

ITEM 432: Riprap

Provide Class "A" concrete minimum for riprap aprons placed around all box culvert and pipe safety end treatments. Provide ¼-inch thick dummy joints at least every 15-ft for riprap aprons placed around box and pipe culverts.

Do not use fiber reinforced concrete RIPRAP on side slopes equal to or steeper than 6:1 unless approved by the Engineer.

ITEM 464: Reinforced Concrete Pipe

Do not use mortar joints.

All reinforced concrete pipe shall include rubber gaskets unless shown otherwise on the plans or directed by the Engineer.

ITEM 467: Safety End Treatment

All Type II SET's shall have riprap, Class "A" minimum, aprons as shown on the plans. The Contractor may submit an alternate precast SET design for approval by the Engineer.

ITEM 471: Frames, Grates, Rings, and Covers

All grates will be tack welded to the frames in a manner satisfactory to the Engineer.

ITEM 496: Removing Structures

Store the following items to be salvaged at a location designated by the Engineer.

ITEM 502: Barricades, Signs, and Traffic Handling

Shadow vehicles equipped with Truck-Mounted Attenuators are required for traffic handling. See notes for Item 6185: Truck Mounted Attenuator/Trailer Attenuator, for additional references pertaining to the TMAs.

Replace/relocate all regulatory signs removed due to construction operations with the same sign on fixed support(s) immediately upon its removal. First obtain Project Engineer approval before removing any regulatory roadway sign. Required flaggers are to be available to direct traffic during sign intermediate down time.

Relocate any Directional Sign Assemblies removed during construction operations immediately upon their removal.

Project Number:

County: Cameron **Control:** 0921-06-348

Highway: Various

These signs shall be relocated to a location in accordance with the Latest Version of the "Texas Manual on Uniform Traffic Control Devices". In no case will a sign be removed without a replacement sign and support(s) being readily available and a location established. Removal and relocation of these signs required for traffic control will not be paid for directly but shall be considered subsidiary to Item 502.

From the beginning to the end of the project, all traffic control devices need to be in acceptable condition as per the Texas Quality Guidelines for Work Zone Traffic Control Devices.

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 "Safety Contingency" is not intended to be used in lieu of bid Items established by the contract.

Remove and dispose of all litter, debris, objectionable material, excess materials that accumulate at the base of all traffic control devices as directed by the Engineer.

ITEM 504: Field Office and Laboratory

For this project a field office will not be required at the project site.

The Contractor will furnish a Type D Structure (Asphalt Mix Laboratory) modified by the following.

Laboratory room:

The other room of this building will be used as a laboratory and will include access to a bathroom facility from the interior. The laboratory and bathroom facility will have the walls, ceiling and floor insulated such that the air temperature can always be maintained at 76 degrees Fahrenheit.

Furnish for the Department's use in the asphalt laboratory one (1) desktop computer.

ITEM 506: Temporary Erosion, Sedimentation, and Environmental Controls

Before starting each phase of construction, review with the Engineer the SW3P used for temporary erosion control as outlined on the plans. Before construction, place the temporary erosion and sedimentation control features as shown on the SW3P. Location of Construction Exits are to be approved by the Engineer. After completing earthwork operations, restore and reseed the disturbed areas in accordance with the Department's specifications for permanent or temporary erosion

control. Before starting grading operations and during the project duration, place the temporary or permanent erosion control measures to prevent sediment from leaving the right of way.

The Contractor Force Account "Erosion Control Maintenance" that has been established for this project is intended to be utilized for work zone Best Management Practice (BMP) maintenance, to improve the effectiveness of the Environmental Controls that may need maintenance attention and/or require replacement while the project is still under the construction stage. These procedures will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent BMP management reviews on the project. The "Erosion Control Maintenance" is not intended to be used in lieu of bid Items established by the contract.

ITEM 529: Concrete Curb, Gutter, and Combined Curb and Gutter

Before final acceptance of the project, remove discoloration caused by tire marks, mud, asphalt, paint, or other similar material by any method satisfactory to the Engineer to achieve a uniform color and texture of the finished surface exposed to view.

ITEM 530: Intersections, Driveways, and Turnouts

Public and private driveways need to have a smooth vertical transition tie-in between the proposed driveway and the existing driveway. The Contractor is to add a vertical taper if needed which will be subsidiary to Item 530.

ITEM 531: Sidewalks

Construct ¼-inch thick score joints at a maximum 6-foot spacing and expansion joints at a maximum 40 foot spacing. For steel reinforcement, use 12-inch spacing with #3 bars or 6x6 – D6 welded wire fabric.

Mixing of detectable warning materials is not permitted on curb ramps.

Retaining walls integrated with the sidewalk are not paid for separately and are considered subsidiary to Item 531 Conc Sidewalks (Special) (Type B). Wall heights, as measured from top of footing to top of wall are 15" typical in cut scenarios and 2' typical in fill scenarios. See plans for specific wall heights and lengths.

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

Project Number:

County: Cameron **Control:** 0921-06-348

Highway: Various

The furnishing and installation of the sand cushion in proposed sidewalks, curb ramps, and driveways will not be paid for directly but will be subsidiary to this bid item.

Truncated dome pavers are prohibited.

All detectable warning surfaces are to be prefabricated panels constructed of cast iron or composite materials of contrasting color to the surrounding material, as approved by the Engineer.

Proposed curb ramps, sidewalks, curbs, and riprap are to be doweled 8 in minimum, unless otherwise shown, into existing concrete using ½-in reinforcement placed on 12 in centers.

Curb wall along ramps and landings, unless otherwise shown on the plans, is not paid for separately but is subsidiary to the ramp or landing. If the wall extends above the plane of the ramp, Concrete sidewalks (Special) (Type B) should be utilized unless otherwise noted on the plans. See special details sheets for more information.

Areas labeled with a "T" on the construction drawings allow the Contractor to transition to existing conditions. Slope and grade of all transitions must be approved by the Engineer.

For driveways and turnouts, coarse aggregate Grade No. 3 through No. 8 conforming to the gradation requirements specified in the Item 421, "Hydraulic Cement Concrete" will be permitted.

Construct ADA-compliant curb ramps based upon referenced design criteria, PROWAG and TxDOT Roadway Design Manual. Consider the locations of existing traffic and pedestrian control devices including loop detectors and pedestrian push buttons during curb ramp construction at signalized intersections, and construct ramps to allow such existing facilities to remain undisturbed and reused to the fullest extent possible while providing for full ADA compliance. All intersection corners are unique and it may be necessary to use various combinations of ramp, landing, wall, and flare elements to achieve an ADA-compliant ramp configuration.

Review the curb ramp location and layout with the inspector prior to demolition so that both parties agree that the curb ramp can be installed properly. Should it become apparent at any time during the ramp layout and construction process that a curb ramp cannot be installed as indicated on the plans, promptly notify the Engineer.

Any approval, inspection, or checking of the Contractor's layout and the acceptance of all or any part of it shall not relieve the Contractor of his responsibility to secure the proper dimensions, grades and elevations of the various parts of the work.

Construction of each curb ramp is to be completed within seven (7) working days after start of construction process. Construction process of curb ramps shall include: demolition of existing conditions, placement of concrete or brick, removal of lips, street surface patching in front of the curb or ramp, adjustment of counter slope within 24-inches of the bottom of the ramp or curb and

gutter, street level landings, backfill, placement of topsoil, grading and sodding, and clean-up. All other related work such as adjustment of crosswalk, special heat-welds, asphalt overlays, and other work that does not affect accessibility shall be completed per a schedule pre-approved by the Engineer.

Contractor is to match existing concrete color and texturing at various locations determined by the Engineer.

The furnishing and installation of pipe underdrains, filter material, and other incidentals to ensure proper drainage of special concrete sidewalk with retaining wall per Concrete Sidewalk (Special)(Type B) will not be paid for directly but shall be considered subsidiary to this bid item and in accordance with Item 556.

Removal of existing concrete, surfaces, asphalt, base material, sign posts, miscellaneous materials, and all incidentals is included in this pay item within the footprint of the proposed work.

In areas where there is no curb fillet or concrete pavement, saw cut the existing curb and gutter and remove the curb.

When lack of right of way width or obstructions creates insufficient space, the ramp may be relocated within the right of way when authorized by the Engineer.

All deficient ramps will be removed and replaced at the Contractor's expense.

For curb ramps, form tooled joints on each side of the ramp section where it meets a flare or curb wall, at each break in ramp slope or geometry, and at intervals equivalent to the width of the sidewalk for the purpose of cracking control. Place expansion joint material between proposed ramps and existing concrete.

Place expansion joint material between proposed sidewalk and utility poles, guy wires, vent pipes, stand pipes and as directed.

Schedule work such that two-way traffic is provided through all intersections and intersecting streets at all times, unless otherwise authorized by the Engineer.

Limit operations such that no more than 12 separate curb ramp locations or 3 blocks of sidewalk are under construction and incomplete at any time, unless otherwise authorized by the Engineer.

ITEM 560: Mailbox Assemblies

Coordinate and verify final mailbox locations with TxDOT and the US Postmaster.

Project Number:

County: Cameron **Control:** 0921-06-348

Highway: Various

ITEM 618: Conduit

All conduit ends in pole bases, controllers and ground boxes shall be plugged with 4 to 6 inches of polyurethane sealant or its equivalent after cables are in place.

Conduit shall be placed in a straight line not to exceed 2.0 feet in any direction. The depth of the conduit shall be 2.0 feet.

All conduit elbows and rigid extensions required to be installed on PVC conduit systems will not be paid for separately but will be considered subsidiary to the various bid Items.

Use materials from prequalified Material Producer List as shown on the Texas Department of Transportation (TxDOT) - Construction Division's (CST) Material Producer List. Category is "Roadway Illumination and Electrical Supplies."

ITEM 620: Electrical Conductors

For Ped poles (Item 687) within the project, provide single-pole breakaway disconnects.

Use Bussman HEBW, Littelfuse LEB, Ferraz-Shawmut FEB, or equal on ungrounded conductors.

For all grounded conductors use Bussman HET, Littelfuse LET, Ferraz-Shawmut FEBN, or equal on ungrounded conductors. For all grounded conductors use Bussman HET, Littelfuse LET, Ferraz Shawmut FEBN, or equal. These breakaway connectors have a white colored marking and a permanently installed solid neutral.

ITEMS 636: Signs

Complete sign blanks and panels shall be handled and stored at the job site in such a manner that corners, edges and faces are not damaged. Finished sign blanks shall be stored in either a weatherproof warehouse or outside and off the ground in a vertical position. All paper, cardboard and chemically treated separators and packaging shall be removed prior to outside storage.

ITEM 644: Small Roadside Sign Assemblies

All signs shall be installed as shown in the plans and in accordance with the current edition of the "Texas Manual on Uniform Traffic Control Devices" and the "Sign Crew Field Book" (SCFB).

All signs shall be erected according to the locations shown on the signing layout sheets except that a sign may be shifted in order to secure a more desirable location. All sign locations will be staked

as shown in the plans and as approved. It is the intent of the plans to erect all roadside traffic signs with the sign edge a minimum of 6 feet from the edge of the shoulder, or if none, 12 feet from the edge of the travel lane. In curb and gutter sections, the sign edge shall be a minimum of 2 feet from the face of the curb.

For this project, aluminum type sign blanks as provided for under Item 636 will be required for all proposed signing installed under Item 644. Aluminum sign blanks less than 7.5 square feet shall be 0.08-inch-thick, sign blanks 7.5 to 15 square feet shall be 0.100-inch-thick and sign blanks greater than 15 square feet shall be 0.125 inch thick.

All excess excavation shall be spread uniformly inside the right of way as directed and shall be included in the price of these Items.

Sign types which design details are not shown on the plans shall conform with the latest edition of the Department's "Standard Highway Sign Design for Texas" Manual.

Signs shown to be removed shall include the complete sign installation and separate the sign post at the concrete foundation. The concrete foundation shall be disposed in accordance with this bid Item. Except for concrete foundations, all removed sign panels, sign posts, and hardware shall remain then property of the Department. All removed sign installations shall be completely disassembled. All salvageable sections of sign panels shall be recycled by TxDOT. The removed sign material will be required to be hauled to the maintenance yard closest to the project. No signs shall be removed without prior approval.

Existing signs shown to be removed and relocated within this project shall first be identified in the field before they are removed and relocated to their new installation position as determined in the plans. The complete sign assembly shall be removed and the sign with post shall be separated at the concrete foundation. The concrete foundation shall be disposed off in accordance with this bid Item. No sign shall be removed without prior approval.

All excess excavation shall be spread uniformly inside the right of way as directed and shall be included in the price of this Item.

ITEMS 662 and 666: Work Zone Pavement Markings and Retroreflectorized Pavement Markings

All permanent pavement markings and work zone pavement markings for this project under these Items shall be 0.100 inches (100 mil) thick thermoplastic.

Any permanent pavement markings or non-removal work zone pavement markings lacking reflectivity in accordance with the requirements of Tex 828-B, or that fail to meet minimum retro reflectivity requirements for longitudinal pavement markings when required, will be addressed per

Project Number:

County: Cameron **Control:** 0921-06-348

Highway: Various

the requirements of the specification. The roadway will be re-striped at no additional compensation.

Pavement surface preparation for markings and markers will not be paid for directly but shall be considered subsidiary to Item 666.

Prior to any striping operations, an on-site coordination meeting between all the parties involved will be required to review striping details and requirements to ensure quality work.

The beads used on this project shall meet the requirements of Departmental Materials Specification DMS-8290, Glass Traffic Beads Texas Type II & III. Use a 50% Type II/ 50% Type III mix utilizing a double drop system with Type III beads dropped first.

ITEM 677: Eliminating Existing Pavement Markings and Markers

Asphalt and aggregate types and grades shall be as approved in writing when a surface treatment is used to eliminate existing pavement markings.

ITEM 682: Vehicle and Pedestrian Signal Heads

All signal heads shall be covered with burlap from the time of installation until the signal is placed in operation. All signal heads shall be of polycarbonate material and yellow in color. Signal heads shall have standard detachable visors. LEDs shall be furnished for all traffic signal heads.

Pedestrian signal heads shall be positioned carefully to provide the best view to pedestrians.

ITEM 684: Traffic Signal Cables

All signal cable shall be #12 AWG; 2/c loop. Lead-In shall be #14 AWG shielded and loop wires in pavement.

ITEM 688: Pedestrian Detectors and Vehicle Loop Detectors

Loop detectors shall be installed to replace those damaged or destroyed due to construction operations.

Before milling operations begin, all existing loop detector locations shall be marked, and their configuration and orientation obtained for replacement with same size loop detectors.

Any deviation of location for proposed loop detector work shall be as approved.

Install loop vehicle detectors in accordance with plan Standard Sheet LD1-03 (Loop Detector Installation Details). All loop detectors shall be rectangular.

Use 2/c #14 AWG shielded for loop lead-ins and #14 AWG for loop wire in pavement.

Splices for loop wire will be permitted only at ground boxes or pole base with approved weatherproof splice kits.

A minimum length of 2 feet for each cable shall be left in each ground box.

All wiring not covered by the plans and specifications shall be in accordance with the latest edition of the National Electrical Code.

Handling of traffic

Roads and streets shall always be kept open to traffic. The setting of loop detectors shall be arranged so as to close only one lane of a roadway at a time and to permit the continuous movement of traffic in both directions at all times.

All construction operations shall be conducted to provide the least possible interference to traffic as shown on the plans, as provided for in the specifications and/or as directed. All signing, barricading, and handling of traffic lane closures shall conform to the current edition of the "Texas Manual on Uniform Traffic Control Devices".

Sequence of work

1. The existing traffic signal installation shall always remain in operation during construction of the proposed loop detector work.
2. Final inspection shall be performed in conjunction with the District Signal Shop.

ITEM 3076: Dense-Graded Hot-Mix Asphalt

The Contractor shall exercise diligence in the application of "Bonding Course" by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

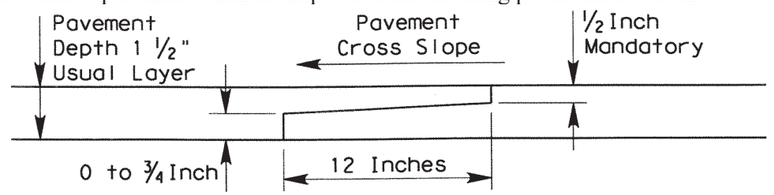
Level-up will be placed before the surface course. An asphaltic concrete spreading and finishing machine and/or motor graders; when approved by the Engineer may be used to place the ACP level-up.

Project Number:

County: Cameron **Control:** 0921-06-348

Highway: Various

All unconfined longitudinal joints shall be constructed with a joint maker providing a maximum ½-inch vertical edge and a minimum 6:1 edge taper or as approved by the Engineer. The Engineer may waive this requirement when no impacts to the traveling public are foreseen.



NOTCHED WEDGE JOINT

The engineer may allow for variances to the dimensions shown.

The Hamburg Wheel Test requirement for PG 64 binder will be 5,000 passes @ 0.5-inch rut depth.

Design mixture using a Superpave Gyratory Compactor.

Public and private driveways need to have a smooth vertical transition between the edge of pavement and the existing driveways. The Contractor is to add a vertical taper if needed which will be subsidiary to Item 3076.

The use of RAP and RAS (recycled asphalt shingles) will not be allowed as part of the mix design for the final riding surface.

Use a release agent from the Department's MPL to clean and to coat the inside of truck beds for hauling equipment. Hauling equipment shall be cleaned prior to hauling material to job site. Submit a copy of the bill of lading to the Engineer as part of the QCP. Ensure the pavement is free from any spillage of hydraulic oil or diesel from construction equipment. The Department may reject trucks that contain any foreign material and suspend production if the pavement is contaminated by any pollutants mentioned above.

ITEM 5145: Gate (Install)

The Contractor shall remove and dispose of existing gates and furnish and install new gates in accordance with the plans. New gates should match the style and material of existing gates to the extent practicable. Type 1 gates as noted in the plans are for pedestrian gates. Contractor shall provide shop drawings for review and coordinate with the Engineer and the Rio Hondo Independent School District for approval of gates prior to fabrication.

Project Number:

County: Cameron **Control:** 0921-06-348

Highway: Various

ITEM 6001: Portable Changeable Message Sign

Furnish the portable changeable message signs displaying the correct message at least seven (7) days prior to beginning work, or as directed. 2 PCMS will be required.

ITEM 6185: Truck Mounted Attenuator/Trailer Attenuator

1 total shadow vehicles with TMA will be required on this project for stationary operations as per TCP (2-1)-18, TCP (2-2)-18, and TCP (2-4)-18 and 2 TMAs for mobile operations as per TCP (3-1)-13 and TCP (3-4)-13. The Contractor will be responsible for determining if one or more of his construction operations will be ongoing at the same time and thus determine the total number of TMAs needed for the project.

Project Number:

County: Cameron **Control:** 0921-06-348

Highway: Various

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0921-06-348 **DISTRICT** Pharr **COUNTY** Cameron
HIGHWAY Various

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0921-06-348**			
		PROJECT ID		**A00179443**			
		COUNTY		**Cameron**			
		HIGHWAY		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6001	PREPARING ROW	AC	1.000		1.000	
	104-6009	REMOVING CONC (RIPRAP)	SY	5.000		5.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	962.000		962.000	
	104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	3,743.000		3,743.000	
	105-6037	REMOVING STAB BASE AND ASPH PAV(0"-16")	SY	837.000		837.000	
	110-6002	EXCAVATION (CHANNEL)	CY	23.400		23.400	
	132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	416.800		416.800	
	160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	8,560.000		8,560.000	
	162-6002	BLOCK SODDING	SY	8,560.000		8,560.000	
	168-6001	VEGETATIVE WATERING	MG	145.200		145.200	
	351-6006	FLEXIBLE PAVEMENT STRUCTURE REPAIR(10")	SY	197.000		197.000	
	420-6071	CL C CONC (COLLAR)	EA	3.000		3.000	
	420-6074	CL C CONC (MISC)	CY	5.500		5.500	
	432-6003	RIPRAP (CONC)(6 IN)	CY	1.800		1.800	
	464-6001	RC PIPE (CL III)(12 IN)	LF	449.000		449.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF	12.000		12.000	
	465-6074	INLET (COMPL)(PSL)(RC)(5FTX5FT)	EA	1.000		1.000	
	467-6323	SET (TY II) (12 IN) (RCP) (4: 1) (C)	EA	8.000		8.000	
	471-6003	GRATE & FRAME	EA	19.000		19.000	
	479-6001	ADJUSTING MANHOLES	EA	4.000		4.000	
	479-6005	ADJUSTING MANHOLES (WATER VALVE BOX)	EA	3.000		3.000	
	496-6002	REMOV STR (INLET)	EA	1.000		1.000	
	496-6004	REMOV STR (SET)	EA	10.000		10.000	
	496-6007	REMOV STR (PIPE)	LF	260.000		260.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	10.000		10.000	
	506-6035	SANDBAGS FOR EROSION CONTROL	EA	59.000		59.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	4,529.000		4,529.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	4,529.000		4,529.000	
	529-6002	CONC CURB (TY II)	LF	203.000		203.000	
	529-6007	CONC CURB & GUTTER (TY I)	LF	89.000		89.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF	4,549.000		4,549.000	
	529-6012	CONC CURB (SLOTTED)	LF	12.000		12.000	
	529-6020	CONC CURB & GUTTER (ARMOR CURB)	LF	14.000		14.000	
	530-6004	DRIVEWAYS (CONC)	SY	1,812.000		1,812.000	
	531-6001	CONC SIDEWALKS (4")	SY	8,995.000		8,995.000	
	531-6018	CURB RAMPS (TY 1)	SY	99.000		99.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0921-06-348 **DISTRICT** Pharr **COUNTY** Cameron
HIGHWAY Various

			CONTROL SECTION JOB		**0921-06-348**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00179443**		
			COUNTY		**Cameron**		
			HIGHWAY		**Various**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	531-6019	CURB RAMPS (TY 2)	SY	16.000		16.000	
	531-6020	CURB RAMPS (TY 3)	SY	138.000		138.000	
	531-6023	CURB RAMPS (TY 6)	SY	62.000		62.000	
	531-6024	CURB RAMPS (TY 7)	SY	312.000		312.000	
	531-6027	CURB RAMPS (TY 10)	SY	35.000		35.000	
	531-6033	CONC SIDEWALKS (SPECIAL) (TYPE B)	SY	81.000		81.000	
	550-6003	CHAIN LINK FENCE (REMOVE)	LF	10.000		10.000	
	560-6025	RELOCATE EXISTING MAILBOX	EA	3.000		3.000	
	618-6023	CONDT (PVC) (SCH 40) (2")	LF	180.000		180.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF	205.000		205.000	
	624-6009	GROUND BOX TY D (162922)	EA	4.000		4.000	
	624-6010	GROUND BOX TY D (162922)W/APRON	EA	4.000		4.000	
	624-6028	REMOVE GROUND BOX	EA	4.000		4.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2.000		2.000	
	644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	23.000		23.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	10.000		10.000	
	644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	15.000		15.000	
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF	286.000		286.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	1,732.000		1,732.000	
	666-6225	PAVEMENT SEALER 6"	LF	23,780.000		23,780.000	
	666-6230	PAVEMENT SEALER 24"	LF	1,732.000		1,732.000	
	666-6231	PAVEMENT SEALER (ARROW)	EA	21.000		21.000	
	666-6232	PAVEMENT SEALER (WORD)	EA	4.000		4.000	
	666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	16.000		16.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	23,494.000		23,494.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	21.000		21.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	4.000		4.000	
	668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	16.000		16.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	10,328.000		10,328.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	1,061.000		1,061.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	266.000		266.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	5.000		5.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	4.000		4.000	
	678-6002	PAV SURF PREP FOR MRK (6")	LF	23,393.000		23,393.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF	1,732.000		1,732.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	8.000		8.000	
	684-6009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	1,889.000		1,889.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0921-06-348 **DISTRICT** Pharr **COUNTY** Cameron
HIGHWAY Various

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0921-06-348**			
		PROJECT ID		**A00179443**			
		COUNTY		**Cameron**			
		HIGHWAY		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	684-6079	TRF SIG CBL (TY C)(12 AWG)(2 CONDR)	LF	1,769.000		1,769.000	
	687-6001	PED POLE ASSEMBLY	EA	8.000		8.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA	8.000		8.000	
	688-6003	PED DETECTOR CONTROLLER UNIT	EA	1.000		1.000	
	688-6004	VEH LP DETECT (SAWCUT)	LF	2,726.000		2,726.000	
	690-6024	REMOVAL OF SIGNAL HEAD ASSM	EA	8.000		8.000	
	690-6030	REMOVAL OF PEDESTRIAN PUSH BUTTONS	EA	8.000		8.000	
	752-6005	TREE REMOVAL (4" - 12" DIA)	EA	2.000		2.000	
	1002-6026	LANDSCAPE AMENITY (BENCH)	EA	2.000		2.000	
	3076-6072	D-GR HMA TY-D PG 76-22 (EXEMPT)	TON	16.000		16.000	
	5145-6001	GATE (INSTALL)(TYPE 1)(OTU)	EA	1.000		1.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	320.000		320.000	
	6185-6002	TMA (STATIONARY)	DAY	160.000		160.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	2.000		2.000	
	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	

ROADWAY QUANTITIES

ITEM	0104-6009	0104-6017	0104-6029	0105-6037	0110-6002	0132-6001	0160-6003
DESCRIPTION	REMOVING CONC (RIPRAP)	REMOVING CONC (DRIVEWAYS)	REMOVING CONC (CURB OR CURB & GUTTER)	REMOVING STAB BASE AND ASPH PAV(0"-16")	EXCAVATION (CHANNEL)	EMBANKMENT (FINAL)(ORD COMP)(TY A)	FURNISHING AND PLACING TOPSOIL (4")
	SY	SY	LF	SY	CY	CY	SY
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6		47					275
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6		93			7.3	107.2	996
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6		160			8.2	87.8	1129
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6		12	23	28	0.7	6.0	285
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 5 OF 6							
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 6 OF 6			38				
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3		34	496	218		65.3	408
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3			434	225		63.9	397
EBONY AVE SIDEWALK PLAN SHEET 3 OF 3			124	53		14.7	189
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 1 OF 8							400
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8	5		39	62			492
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8							418
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8							384
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8							386
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8							400
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8							400
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8					0.6	3.4	188
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7		187	21		6.6	9.6	316
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7		118	246			58.9	435
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7		158	489				197
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7		53	763	163			221
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7		46	844	88			298
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7		54	226				122
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 7 OF 7							224
TOTALS	5	962	3743	837	23.4	416.8	8560

ITEM	0162-6002	0168-6001	0351-6006	0416-6030*	0420-6071	0420-6074	0432-6003
DESCRIPTION	BLOCK SODDING	VEGETATIVE WATERING	FLEXIBLE PAVEMENT STRUCTURE REPAIR(10")	DRILL SHAFT (TRF SIG POLE) (24 IN)	CL C CONC (COLLAR)	CL C CONC (MISC)	RIPRAP (CONC)(6 IN)
	SY	MG	SY	LF	EA	CY	CY
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6	275	4.7					
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6	996	16.8	91				
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6	1129	19.1					
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6	285	4.8			2		
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 5 OF 6							
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 6 OF 6							0.1
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3	408	6.9	106		1		
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3	397	6.7					
EBONY AVE SIDEWALK PLAN SHEET 3 OF 3	189	3.2					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 1 OF 8	400	6.8					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8	492	8.3					0.9
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8	418	7.1					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8	384	6.5					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8	386	6.5					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8	400	6.8					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8	400	6.8					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8	188	3.2				3.4	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7	316	5.4				2.1	0.8
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7	435	7.4					
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7	197	3.4					
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7	221	3.8					
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7	298	5.1					
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7	122	2.1		48			
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 7 OF 7	224	3.8					
TOTALS	8560	145.2	197	48	3	5.5	1.8

ITEM	0464-6001	0464-6005	0465-6074	0467-6323	0471-6003	0479-6001	0479-6005
DESCRIPTION	RC PIPE (CL III)(12 IN)	RC PIPE (CL III)(24 IN)	INLET (COMPL)(PSL)(RC)(5 FTX5FT)	SET (TY II) (12 IN) (RCP) (4:1) (C)	GRATE & FRAME	ADJUSTING MANHOLES	ADJUSTING MANHOLES (WATER VALVE BOX)
	LF	LF	EA	EA	EA	EA	EA
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6							
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6	173			2			
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6	113			2			
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6	33						
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 5 OF 6							
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 6 OF 6							
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3		12	1			1	2
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3						2	
EBONY AVE SIDEWALK PLAN SHEET 3 OF 3							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 1 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8							1
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8					10		
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7	130			4	9		
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7							
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7							
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7							
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7							
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7						1	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 7 OF 7							
TOTALS	449	12	1	8	19	4	3

NOTES:
* ITEM IS SUBSIDIARY TO ITEM 0687. ITEM INCLUDED FOR CONTRACTOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SUMMARY OF QUANTITIES

SHEET 1 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	6

Plotted on: 3/4/2024
Design Filename: S:\projects\612x54\02\Design\01_Rio_Hondo_ADA\Civil\Summaries\612540201_Rio_Hondo_ADA_SUMM01.dgn

ROADWAY QUANTITIES

ITEM	0496-6002	0496-6004	0496-6007	0529-6002	0529-6007	0529-6008	0529-6012
DESCRIPTION	REMOV STR (INLET)	REMOV STR (SET)	REMOV STR (PIPE)	CONC CURB (TY II)	CONC CURB & GUTTER (TY I)	CONC CURB & GUTTER (TY II)	CONC CURB (SLOTTED)
	EA	EA	LF	LF	LF	LF	LF
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6						8	
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6		4	90				
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6		4	45				
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6						198	
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 5 OF 6							
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 6 OF 6					2	38	
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3	1					541	12
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3						580	
EBONY AVE SIDEWALK PLAN SHEET 3 OF 3						142	
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 1 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8				29		206	
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8						108	
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8							
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7		2	125	26	30	102	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7				56		503	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7					22	467	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7				72		580	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7				20		839	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7					35	237	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 7 OF 7							
TOTALS	1	10	260	203	89	4549	12

ITEM	0529-6020	0530-6004	0531-6001	0531-6018	0531-6019	0531-6020	0531-6023
DESCRIPTION	CONC CURB & GUTTER (ARMOR CURB)	DRIVEWAYS (CONC)	CONC SIDEWALKS (4")	CURB RAMPS (TY 1)	CURB RAMPS (TY 2)	CURB RAMPS (TY 3)	CURB RAMPS (TY 6)
	LF	SY	SY	SY	SY	SY	SY
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6		49	218	18			
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6		93	265				
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6		166	279				
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6		12	201	35		42	
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 5 OF 6							
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 6 OF 6			25		16	39	
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3		52	533				
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3		90	498				
EBONY AVE SIDEWALK PLAN SHEET 3 OF 3			232	9			
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 1 OF 8			666				
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8		47	528			57	
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8			692				
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8		291	571				
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8			614				
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8			666				
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8			666				
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8			213	25			
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7	14	183	96				
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7		124	358				
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7		201	318				
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7		273	361				
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7		177	577				23
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7		54	160	12			39
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 7 OF 7			258				
TOTALS	14	1812	8995	99	16	138	62

ITEM	0531-6024	0531-6027	0531-6033	0550-6003	0560-6025	0624-6010	0624-6028
DESCRIPTION	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	CONC SIDEWALKS (SPECIAL) (TYPE B)	CHAIN LINK FENCE (REMOVE)	RELOCATE EXISTING MAILBOX	GROUND BOX TY D (162922)W/APRON	REMOVE GROUND BOX
	SY	SY	SY	LF	EA	EA	EA
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6							
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6		18					
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6							
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6							
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 5 OF 6							
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 6 OF 6		17					
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3	68						
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3	60						
EBONY AVE SIDEWALK PLAN SHEET 3 OF 3	22						
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 1 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8	78						
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8	30						
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8							
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7				10			
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7							
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7							
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7			56				
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7					3	1	1
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7	54		25				
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 7 OF 7							
TOTALS	312	35	81	10	3	1	1

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SUMMARY OF QUANTITIES

SHEET 2 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	7

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Summaries\612540201_Rio_Hondo_ADA_SUMM01.dgn

ROADWAY QUANTITIES

ITEM	0644-6001	0644-6027	0644-6068	0644-6070	0666-6018	0666-6048	0666-6225
DESCRIPTION	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	IN SM RD SN SUP&AM TYS80(1)SA(P)	RELOCATE SM RD SN SUP&AM TY 10BWG	RELOCATE SM RD SN SUP&AM TY S80	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	PAVEMENT SEALER 6"
	EA	EA	EA	EA	LF	LF	LF
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6		2		1		62	1925
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6		2	1			48	2530
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6		1					2547
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6		7				60	1974
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 5 OF 6		4				22	2538
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 6 OF 6		1		1		285	92
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3			2			59	
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3			2			116	
EBONY AVE SIDEWALK PLAN SHEET 3 OF 3			1			61	
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 1 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8		2	3			266	
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8			1			57	
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8	2					50	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7		2		1			793
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7				3		10	2878
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7				2			3000
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7				5	150		2767
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7				1	60	40	2349
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7		2		1	76	596	387
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 7 OF 7							
TOTALS	2	23	10	15	286	1732	23780

ITEM	0666-6230	0666-6231	0666-6232	0666-6245	0666-6309	0668-6077	0668-6085
DESCRIPTION	PAVEMENT SEALER 24"	PAVEMENT SEALER (ARROW)	PAVEMENT SEALER (WORD)	PAVEMENT SEALER (BIKE SYMBOL)	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	PREFAB PAV MRK TY C (W) (ARROW)	PREFAB PAV MRK TY C (W) (WORD)
	LF	EA	EA	EA	LF	EA	EA
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6	62	1		1	1925	1	
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6	48	1		1	2530	1	
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6		1		1	2547	1	
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6	60	4		4	1974	4	
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 5 OF 6	22	3		3	2538	3	
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 6 OF 6	285	1		1	92	1	
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3	59						
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3	116						
EBONY AVE SIDEWALK PLAN SHEET 3 OF 3	61						
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 1 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8	266						
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8	57						
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8	50						
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7		1		1	793	1	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7	10	1		1	2878	1	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7		1		1	3000	1	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7					2617		
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7	40	2		1	2289	2	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7	596	5	4	1	311	5	4
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 7 OF 7							
TOTALS	1732	21	4	16	23494	21	4

ITEM	0668-6096	0677-6001	0677-6003	0677-6007	0677-6008	0677-6012	0678-6002
DESCRIPTION	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (8")	ELIM EXT PAV MRK & MRKS (24")	ELIM EXT PAV MRK & MRKS (ARROW)	ELIM EXT PAV MRK & MRKS (WORD)	PAV SURF PREP FOR MRK (6")
	EA	LF	LF	LF	EA	EA	LF
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6	1	870					1925
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6	1	1140					2530
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6	1	1148					2547
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6	4	1003		10			1974
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 5 OF 6	3	1104		22			2538
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 6 OF 6	1	40	295	42			92
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3							
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3		42					
EBONY AVE SIDEWALK PLAN SHEET 3 OF 3							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 1 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8			133	28			
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8							
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8							
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7	1	312					793
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7	1	1149					2878
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7	1	1200					3000
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7		1200					2767
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7	1	958			1		2349
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7	1	162	633	164	4	4	
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 7 OF 7							
TOTALS	16	10328	1061	266	5	4	23393

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SUMMARY OF QUANTITIES

SHEET 3 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	8

ROADWAY QUANTITIES

ITEM	0678-6008	0752-6005	1002-6026	3076-6072	5145-6001
DESCRIPTION	PAV SURF PREP FOR MRK (24")	TREE REMOVAL (4" - 12" DIA)	LANDSCAPE AMENITY (BENCH)	D-GR HMA TY-D PG 76-22 (EXEMPT)	GATE (INSTALL)(TYPE 1)(OTU)
	LF	EA	EA	TON	EA
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6	62				
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6	48			10	
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6		2			
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6	60				
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 5 OF 6	22				
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 6 OF 6	285				
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3	59			6	
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3	116				
EBONY AVE SIDEWALK PLAN SHEET 3 OF 3	61				
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 1 OF 8					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8	266				
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8			2		
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8	57				
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8					
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8	50				
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7					1
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7	10				
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7					
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7					
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7	40				
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7	596				
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 7 OF 7					
TOTALS	1732	2	2	16	1

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Summaries\612540201_Rio_Hondo_ADA_SUMM01.dgn Plotted on: 3/4/2024

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SUMMARY OF QUANTITIES

SHEET 4 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	9

INCIDENTAL ROADWAY QUANTITIES

ITEM	0100-6001	6001-6001	6185-6002	6185-6005
DESCRIPTION	PREPARING ROW	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	AC	DAY	DAY	DAY
INCIDENTALS	1.00	320	160	2
TOTALS	1.00	320	160	2

ENVIRONMENTAL QUANTITIES

ITEM	0506-6035	0506-6041	0506-6043
DESCRIPTION	SANDBAGS FOR EROSION CONTROL	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
	EA	LF	LF
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 1 OF 6		413	413
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 2 OF 6		265	265
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 3 OF 6		211	211
FM 1846 (REYNOLDS ST) SIDEWALK PLAN SHEET 4 OF 6		79	79
EBONY AVE SIDEWALK PLAN SHEET 1 OF 3		30	30
EBONY AVE SIDEWALK PLAN SHEET 2 OF 3	6	24	24
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 2 OF 8		270	270
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 3 OF 8		489	489
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 4 OF 8		468	468
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 5 OF 8		579	579
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 6 OF 8		600	600
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 7 OF 8		600	600
S ROBERTSON RD / N ROBERTSON RD SIDEWALK PLAN SHEET 8 OF 8		255	255
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 1 OF 7	4	60	60
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 2 OF 7	4	14	14
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 3 OF 7	11	42	42
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 4 OF 7	4	14	14
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 5 OF 7	18	70	70
SH-345 (N SAM HOUSTON BLVD) SIDEWALK PLAN SHEET 6 OF 7	12	46	46
TOTALS	59	4529	4529

SIGNAL QUANTITIES

ITEM	0618-6023	0620-6009	0624-6009	0624-6010	0624-6028	0682-6018	0684-6009
DESCRIPTION	CONDT (PVC) (SCH 40) (2")	ELEC CONDR (NO.6) BARE	GROUND BOX TY D (162922)	GROUND BOX TY D (162922)W/APRON	REMOVE GROUND BOX	PED SIG SEC (LED)(COUNTDOWN)	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)
	LF	LF	EA	EA	EA	EA	LF
SH-345 (N SAM HOUSTON BLVD) SIGNAL PLAN	180	205	4	3	3	8	1889
TOTALS	180	205	4	3	3	8	1889

ITEM	0684-6079	0687-6001	0688-6001	0688-6003	0688-6004	0690-6024	0690-6030
DESCRIPTION	TRF SIG CBL (TY C)(12 AWG)(2 CONDR)	PED POLE ASSEMBLY	PED DETECT PUSH BUTTON (APS)	PED DETECTOR CONTROLLER UNIT	VEH LP DETECT (SAWCUT)	REMOVAL OF SIGNAL HEAD ASSM	REMOVAL OF PEDESTRIAN PUSH BUTTONS
	LF	EA	EA	EA	LF	EA	EA
SH-345 (N SAM HOUSTON BLVD) SIGNAL PLAN	1769	8	8	1	2726	8	8
TOTALS	1769	8	8	1	2726	8	8

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SUMMARY OF QUANTITIES

SHEET 5 OF 5

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	10

LOC NO.	TCP PHASE	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET	FURNISH TMA/TA	RELOCATE/REUSE TMA/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	6185 6002 TMA (STATIONARY)	6185 6005 TMA (MOBILE OPERATION)
		SHEET NUMBER	EA	EA	EA	DAYS PER TMA/TA USE	DAY	DAY
1	ALL	TCP(2-1)-18, TCP(2-2)-18, TCP(2-4)-18	1		1	160	160	
2	PAVEMENT MARKINGS	TCP(3-1)-13, TCP(3-4)-13	1	1	2	2		2
		TOTALS					160	2

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

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

FILE: tma.dgn	DN: TxDOT	CK:		CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS 3/2018	0921	06	348	VA
	DIST	COUNTY		
	PHR	CAMERON		
	FEDERAL AID PROJECT			SHEET NO.
	STP 2B23 (202)TAPS			11

DATE: 3/4/2024 11:40:17 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

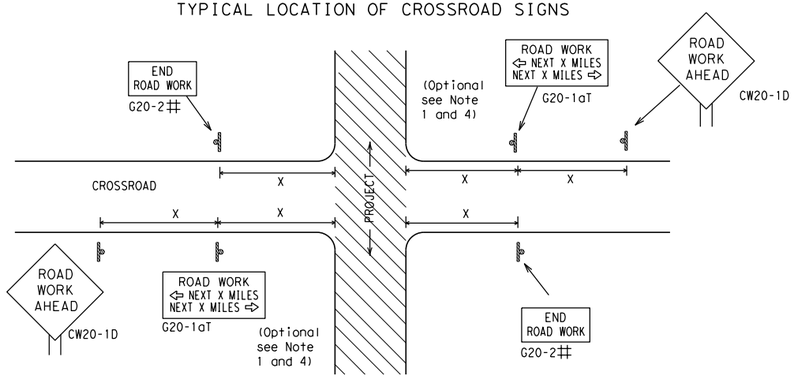
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13	0921	06	348	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	PHR	CAMERON		12

DATE: 3/4/2024 11:40:18 AM
FILE: S:\Projects\6i2\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn

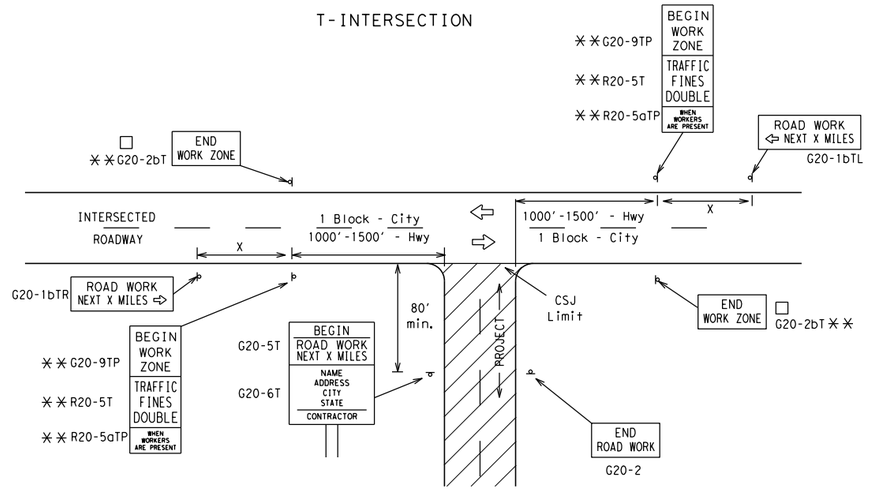
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

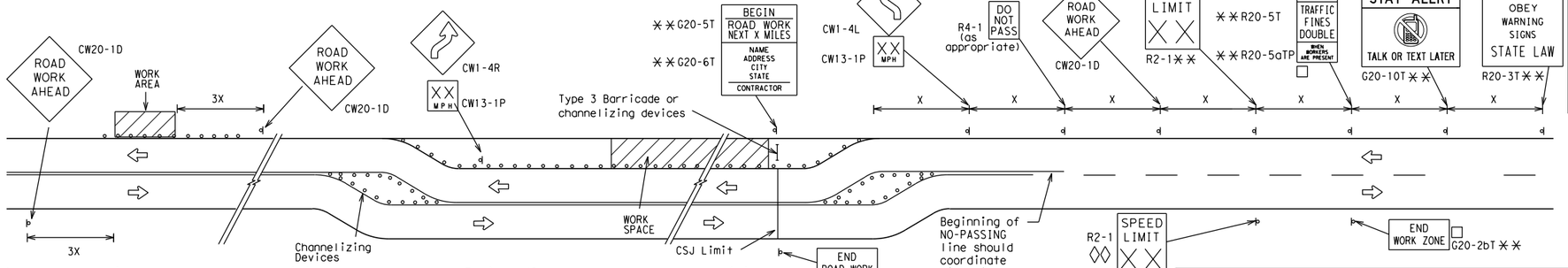
✳ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

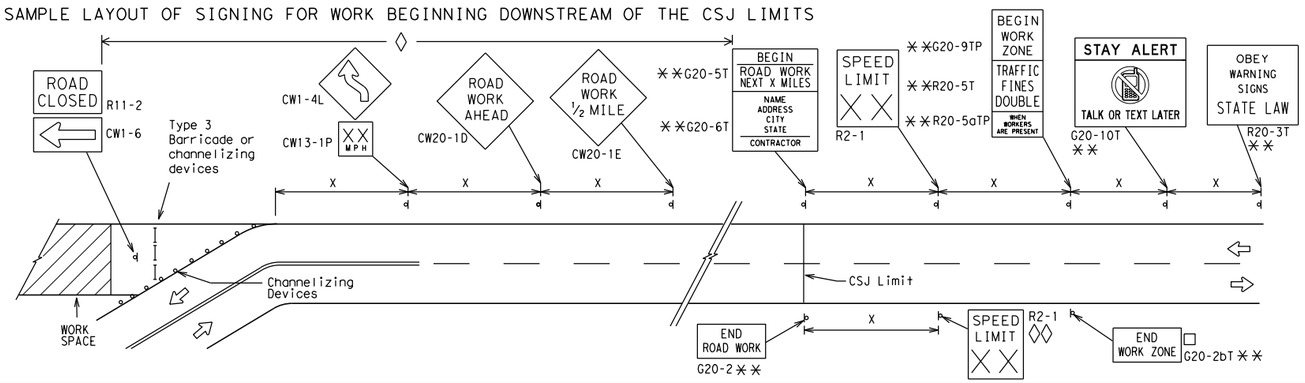
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

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

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

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

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

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

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	0921	06	348	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		13

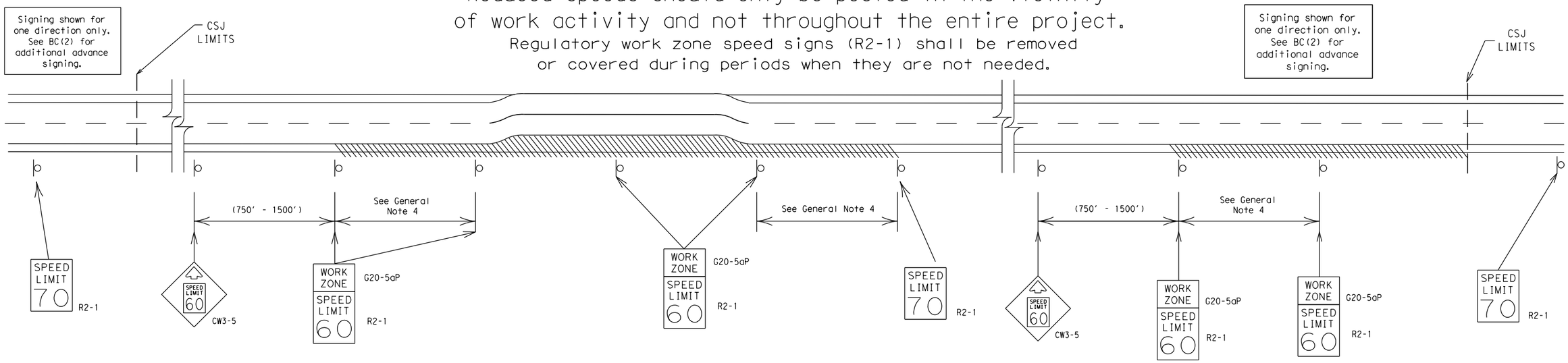
DATE: 3/4/2024 11:40:18 AM
FILE: S:\Projects\6i2\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

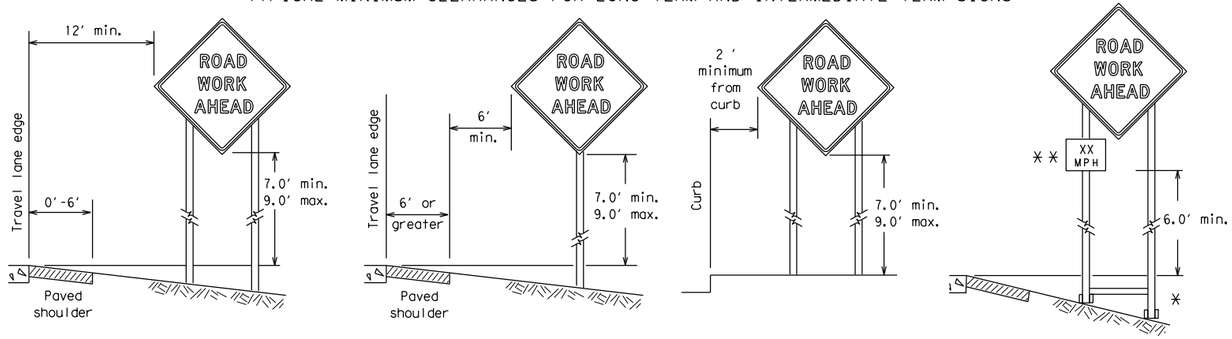
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		14

DATE: 3/4/2024 11:40:19 AM
FILE: S:\Projects\612154\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn

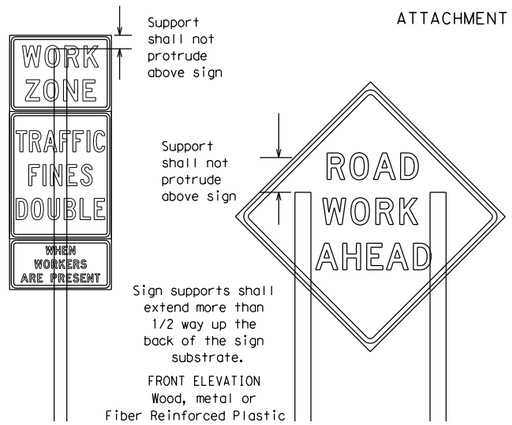
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

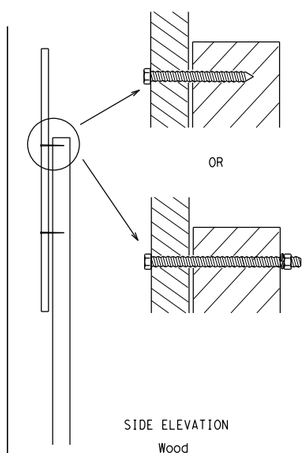


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





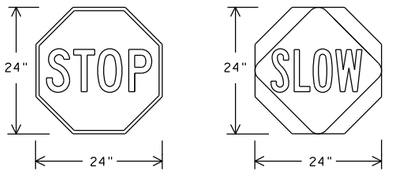
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

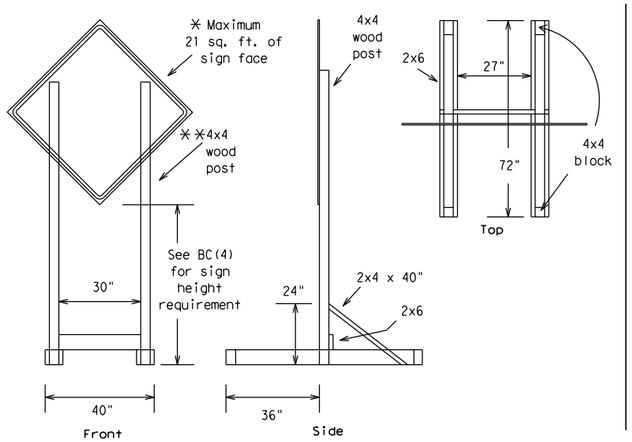
Traffic Safety Division Standard

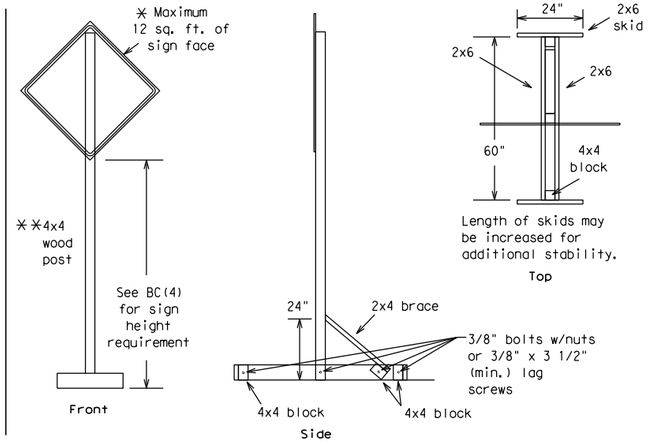
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		15

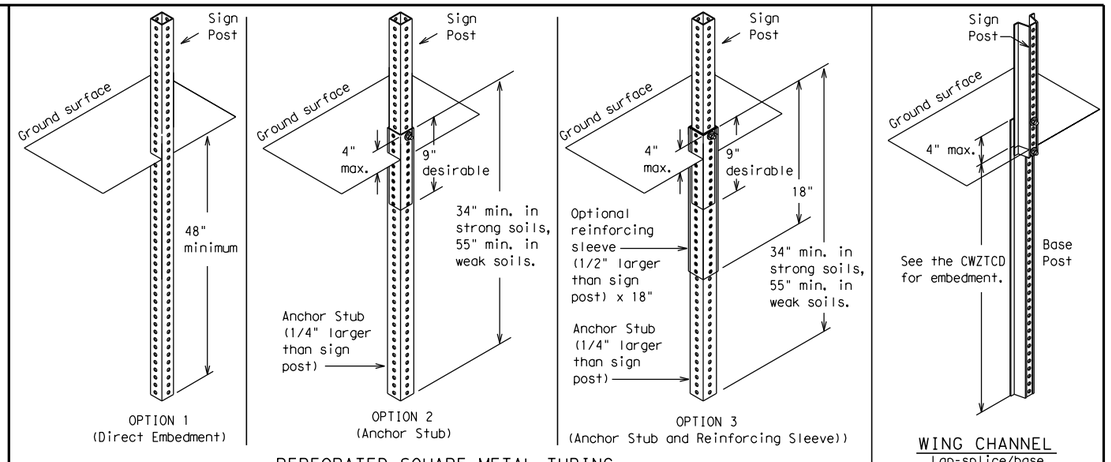
DATE: 3/4/2024 11:40:19 AM
FILE: S:\Projects\612154\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn





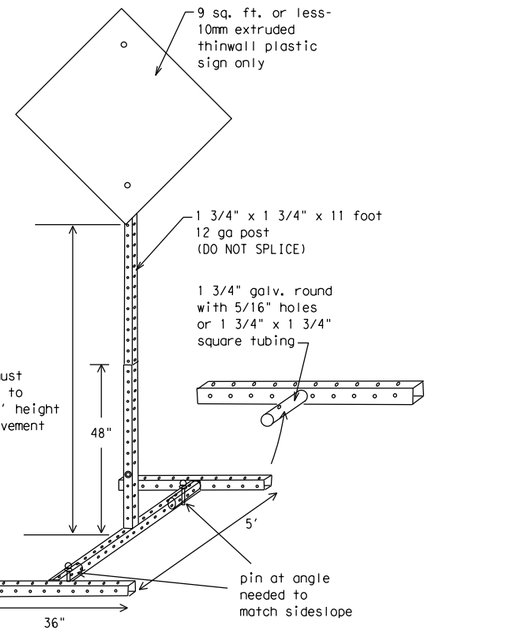
SKID MOUNTED WOOD SIGN SUPPORTS

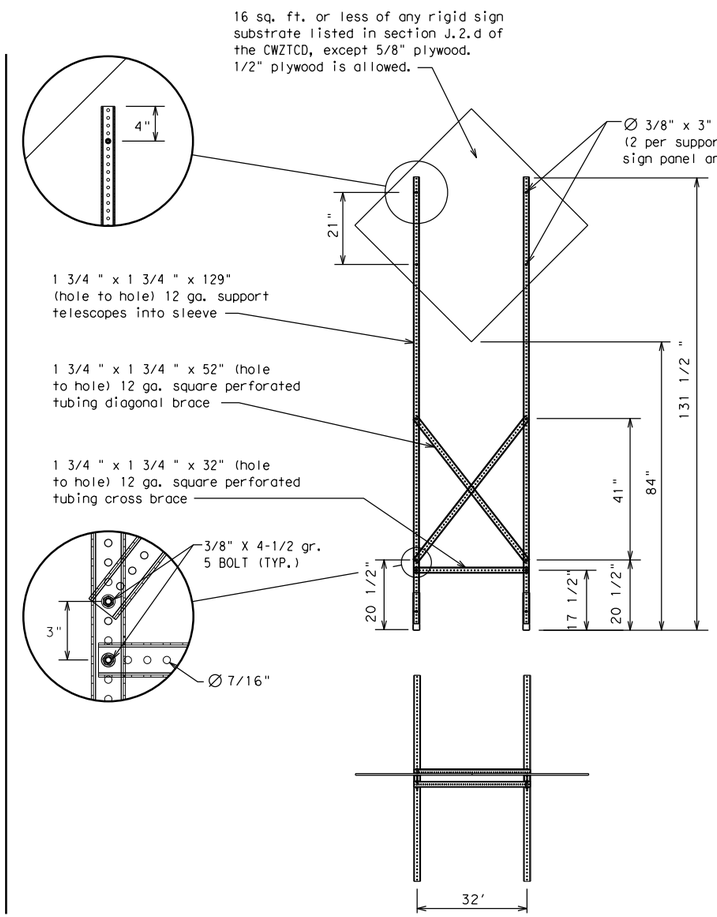
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

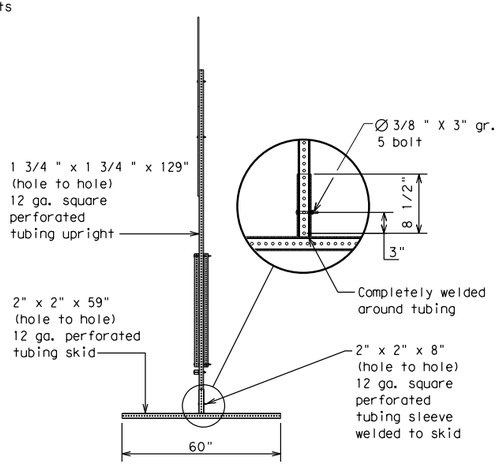


GROUND MOUNTED SIGN SUPPORTS

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

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		16

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 Vehicle	HOV
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)

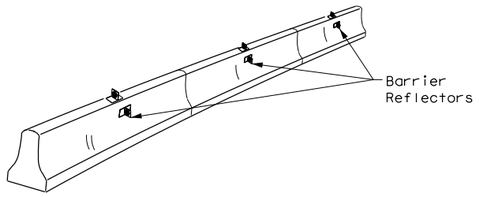
BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT 0921	SECT 06	JOB 348	HIGHWAY VA
REVISIONS 9-07 8-14 7-13 5-21	DIST PHR		COUNTY CAMERON	SHEET NO. 17

DATE: 3/4/2024 11:40:20 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn

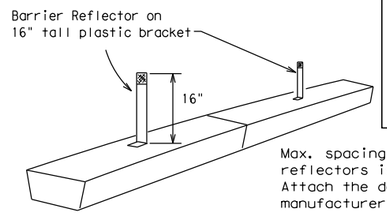
DATE: 3/4/2024 11:40:21 AM
FILE: S:\Projects\612154\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn

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



CONCRETE TRAFFIC BARRIER (CTB)

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

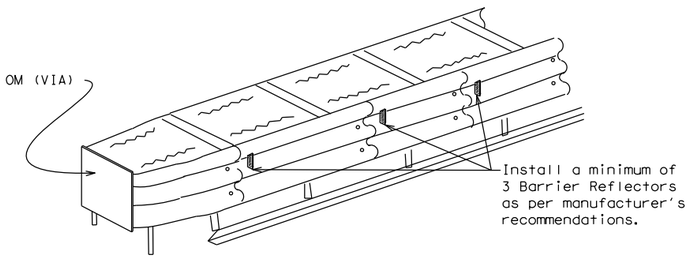


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

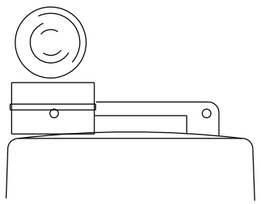


DELINEATION OF END TREATMENTS

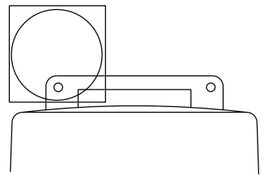
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

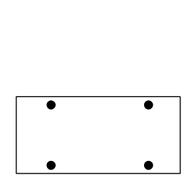
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

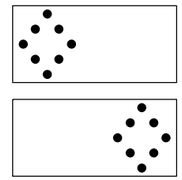
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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

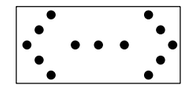


4 CORNER CAUTION

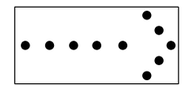
OR



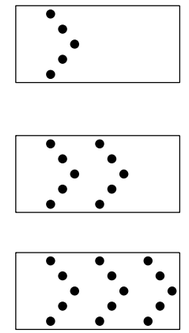
ALTERNATING DIAMOND CAUTION



DOUBLE ARROW



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



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

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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		18

DATE: 3/4/2024 11:40:21 AM
FILE: S:\Projects\6121541\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn

GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

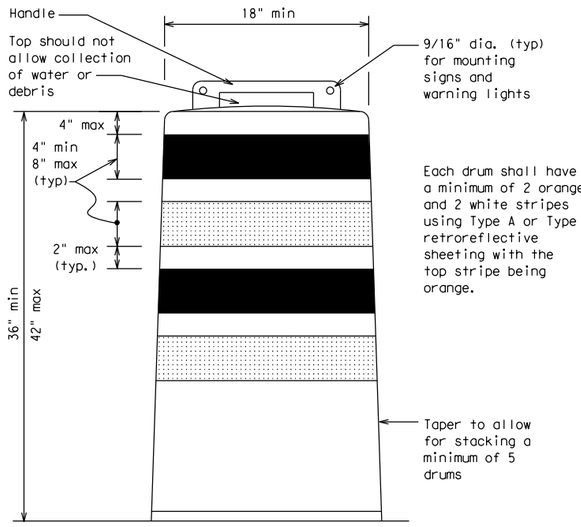
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

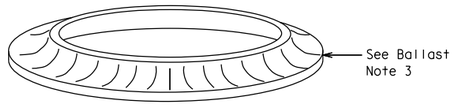
RETROREFLECTIVE SHEETING

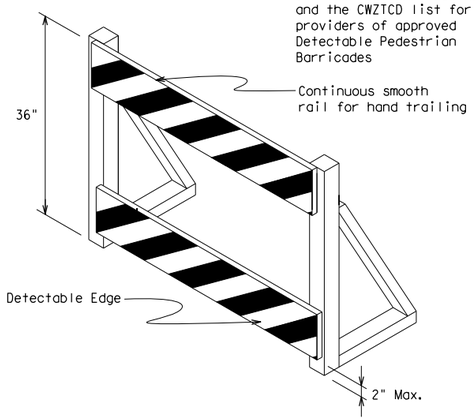
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

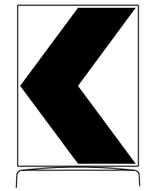




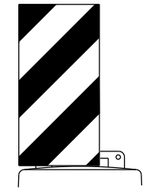


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation | Traffic Safety Division Standard

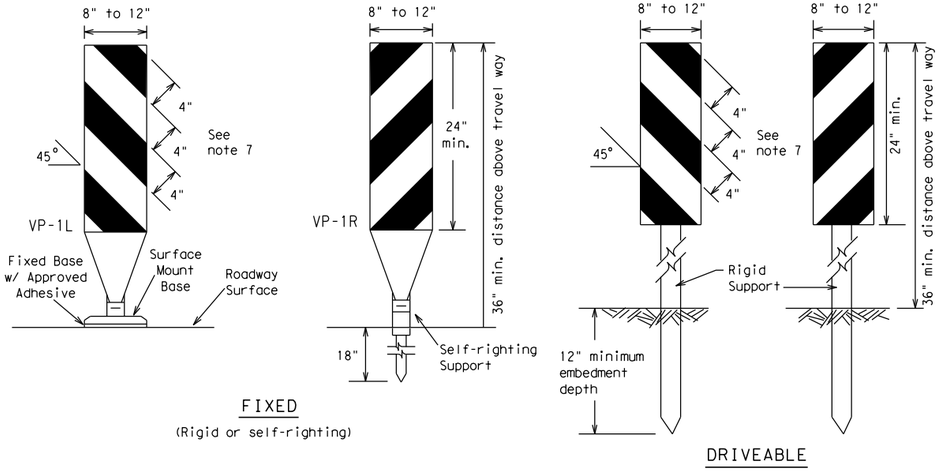
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	PHR	CAMERON		19
7-13				

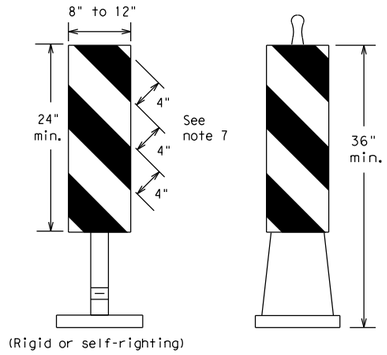
102

DATE: 3/4/2024 11:40:22 AM
FILE: S:\projects\612534\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn



FIXED
(Rigid or self-righting)

DRIVEABLE

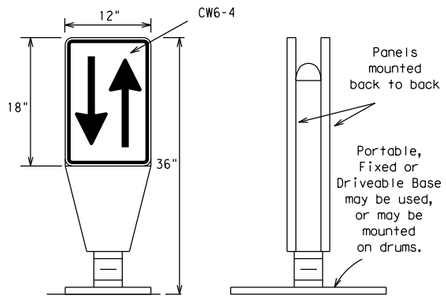


(Rigid or self-righting)

PORTABLE

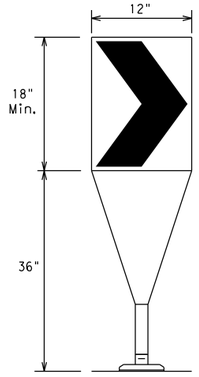
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is 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)



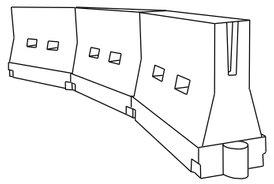
Fixed Base w/ Approved Adhesive
(Driveable Base, or Flexible Support can be used)

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

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

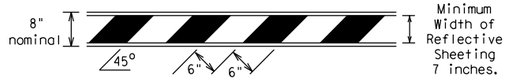
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		20

DATE: 3/4/2024 11:40:22 AM
FILE: S:\projects\6121541\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn

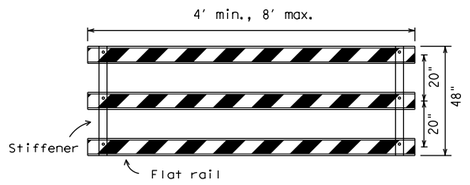
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



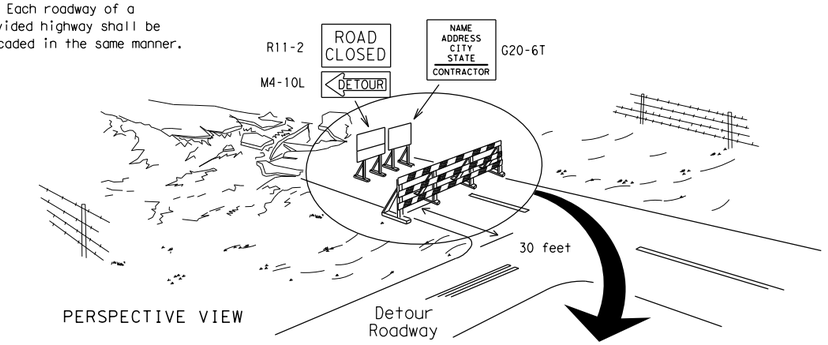
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

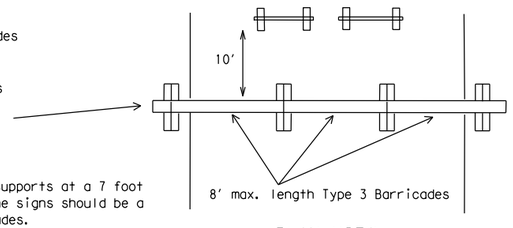
TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

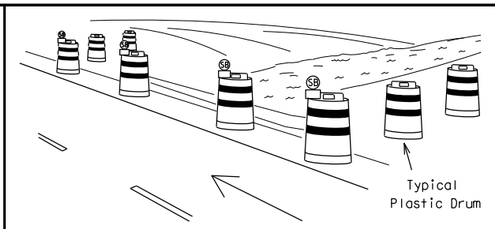
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

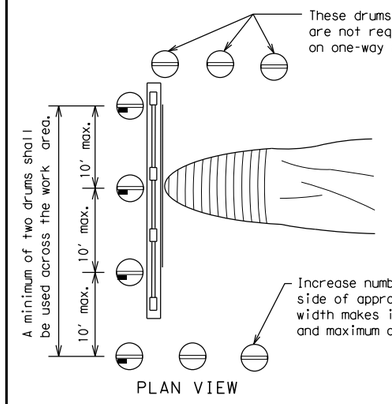
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

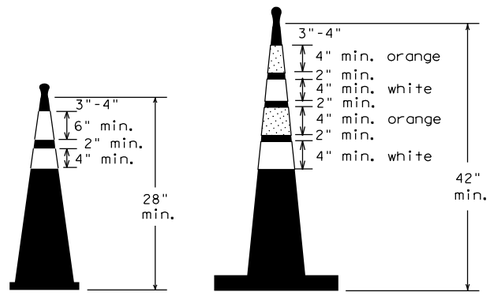
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

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

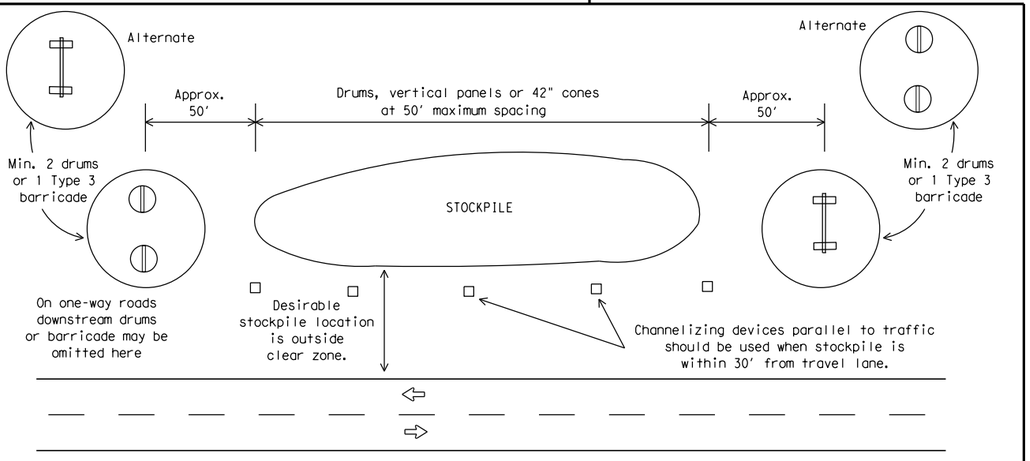
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	CAMERON		21

DATE: 3/4/2024 11:40:23 AM
FILE: S:\Projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

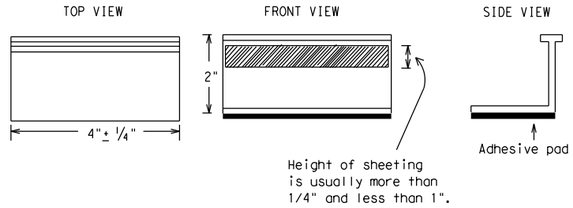
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation | Traffic Safety Division Standard

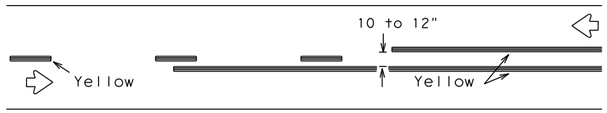
BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

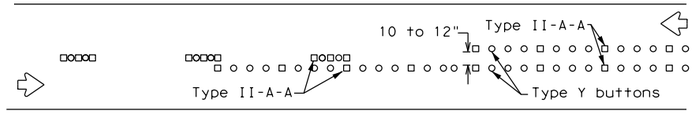
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-98 9-07 5-21	0921	06	348	VA
1-02 7-13	DIST	COUNTY		SHEET NO.
11-02 8-14	PHR	CAMERON		22

105

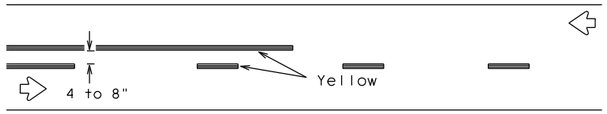
PAVEMENT MARKING PATTERNS



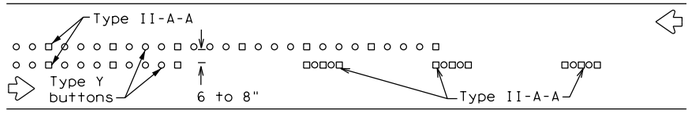
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



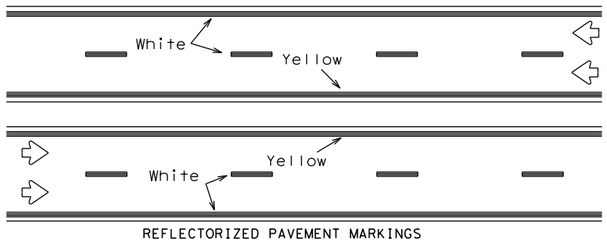
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



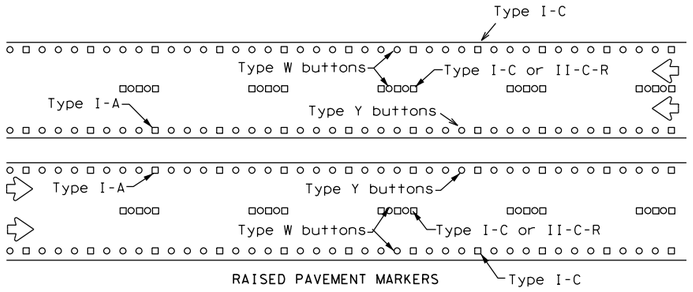
RAISED PAVEMENT MARKERS - PATTERN B

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



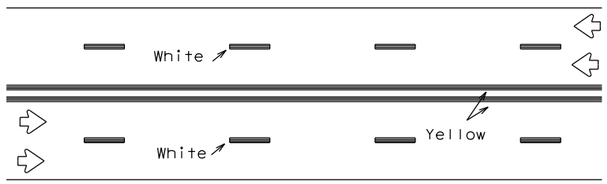
REFLECTORIZED PAVEMENT MARKINGS



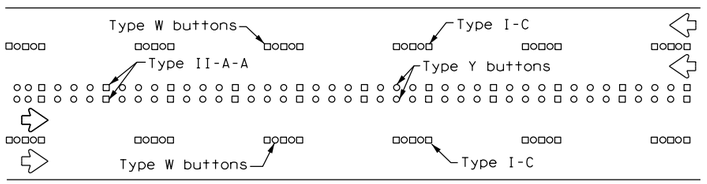
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



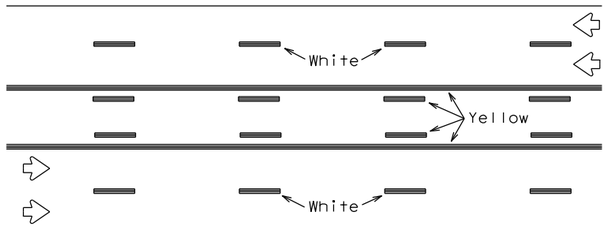
REFLECTORIZED PAVEMENT MARKINGS



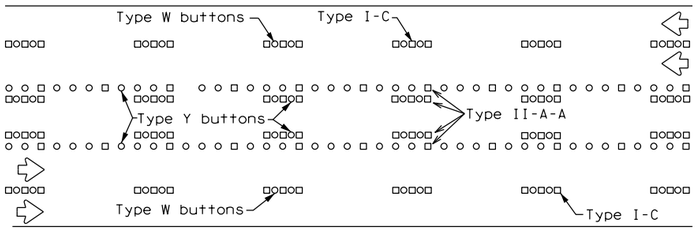
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

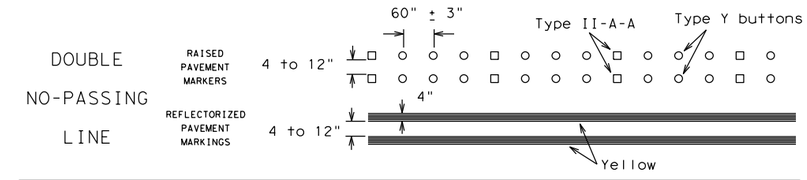
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

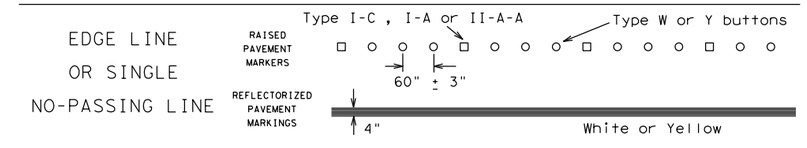
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

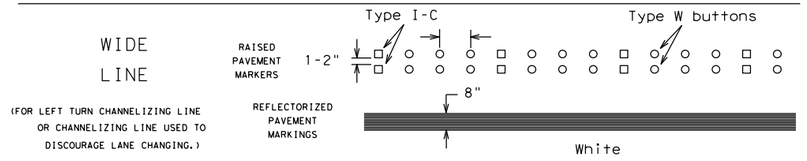


EDGE LINE OR SINGLE NO-PASSING LINE



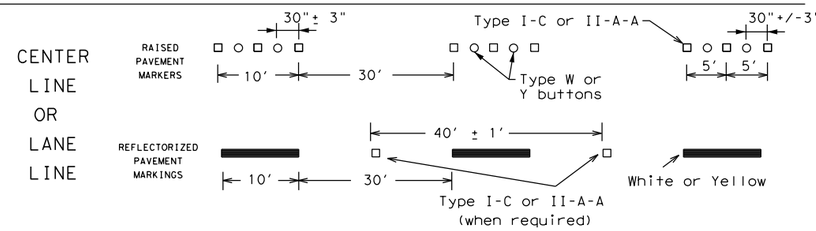
WIDE LINE

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

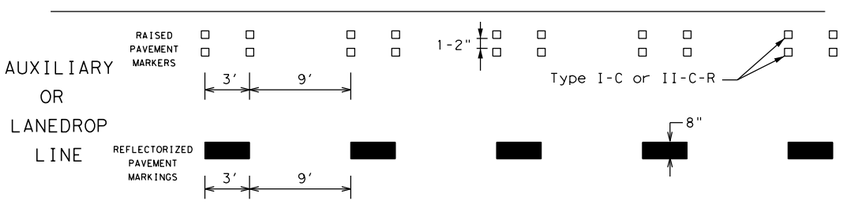


BROKEN LINES

CENTER LINE OR LANE LINE

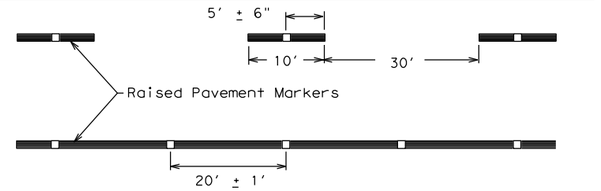


AUXILIARY OR LANEDROP LINE



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

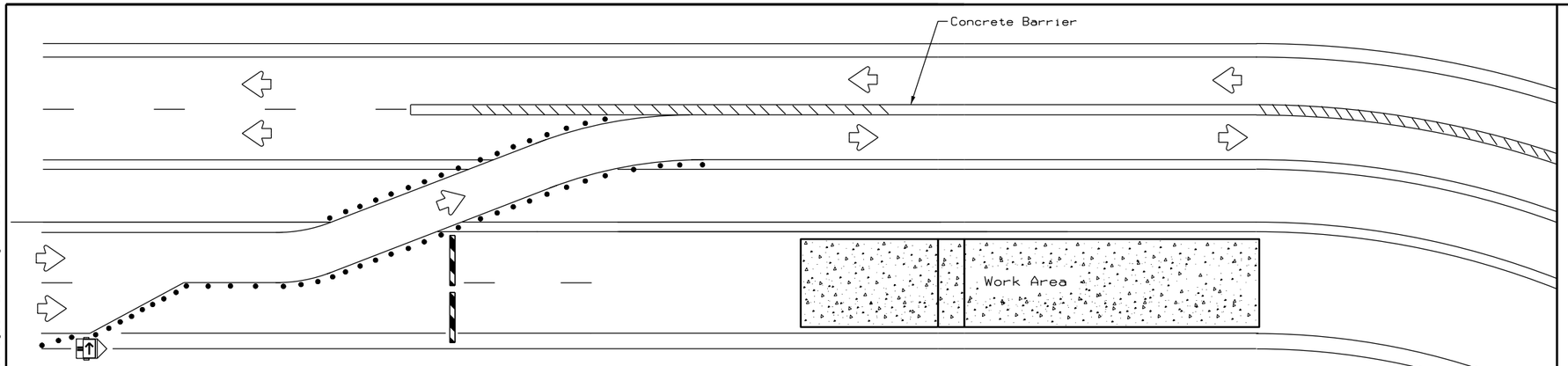
BC(12)-21

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	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		23

106

DATE: 3/4/2024 11:40:23 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\bc-21.dgn

DATE: 3/4/2024 11:40:25 AM
FILE: S:\projects\6i2x54x02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\wztd-17.dgn



NOTES:

1. Length of Safety Glare screen will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular safety glare screen units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one safety glare screen unit.
3. Screen Panel/blades will be designed such that reflective sheeting conforming with Departmental Material Specification DMS-8300, Sign Face Materials, Type B or C Yellow, minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one glare screen panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed with reflective sheeting as described.
4. Payment for these devices will be under statewide Special Specification "Modular Glare Screens for Headlight Barrier."
5. This detail is only intended to show types of locations where Glare Screens would be appropriate. Required signing and other devices shall be as shown elsewhere in the plans.

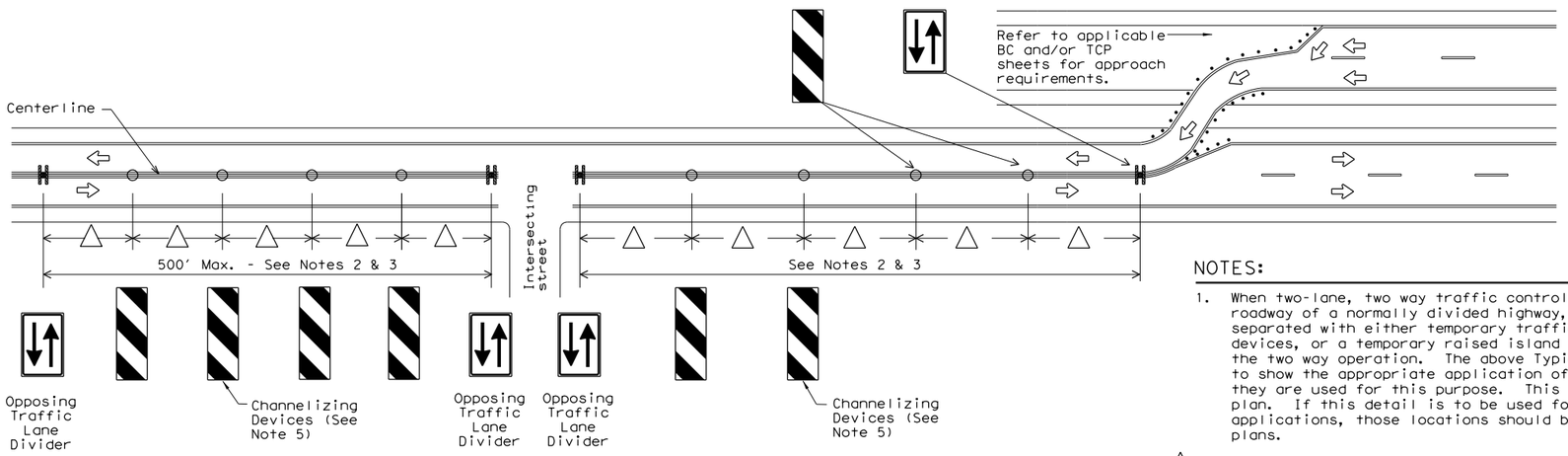
BARRIER DELINEATION WITH MODULAR GLARE SCREENS

LEGEND	
	Type 3 Barricade
• • •	Channelizing Devices
	Trailer Mounted Flashing Arrow Board
	Sign
\\\\	Safety glare screen

DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600
MODULAR GLARE SCREENS FOR HEADLIGHT BARRIER	DMS-8610

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/business/resources/producer-list.html



VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS (OTLD) SEPARATING TWO-WAY TRAFFIC ON NORMALLY DIVIDED HIGHWAYS

NOTES:

1. When two-lane, two way traffic control must be maintained on one roadway of a normally divided highway, opposing traffic shall be separated with either temporary traffic barriers, channelizing devices, or a temporary raised island throughout the length of the two way operation. The above Typical Application is intended to show the appropriate application of channelizing devices when they are used for this purpose. This is not a traffic control plan. If this detail is to be used for other types of roads or applications, those locations should be stated elsewhere in the plans.
2. △ Space devices according to the Tangent Spacing shown on the Device Spacing table on BC(9) but not exceeding 100′.
3. Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.
4. Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.
5. Channelizing devices are to be vertical panels, 42" cones or tubular markers that are at least 36" tall. Tubular markers used to separate traffic should have a rubber base weighing at least 30 pounds. Tubular markers that are 42" tall or more shall have four bands of reflective material as detailed for 42" cones on BC(10). Tubular markers less than 42" but at least 36" tall shall have three bands of 3" wide white reflective material spaced 2" apart. Reflective material shall meet DMS-8300, Type A.

Texas Department of Transportation

Traffic Operations Division Standard

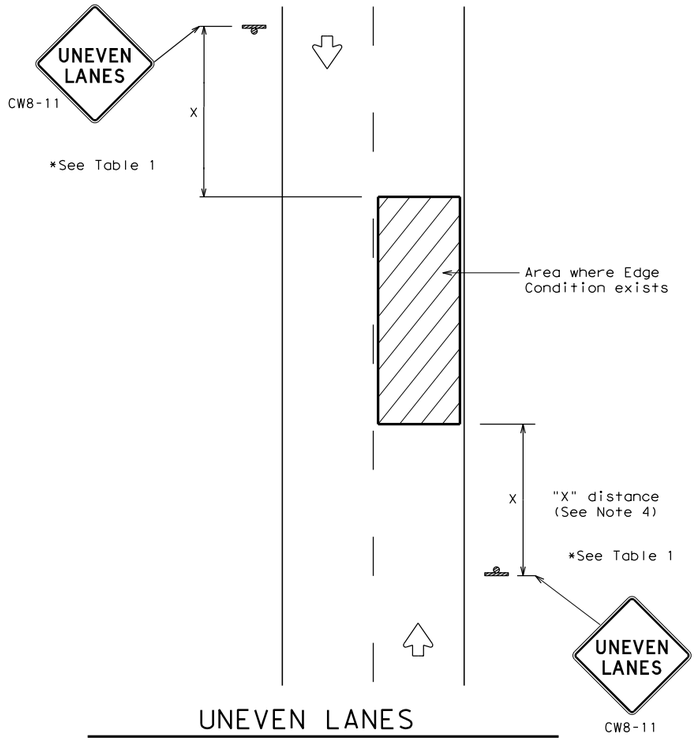
TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ(TD)-17

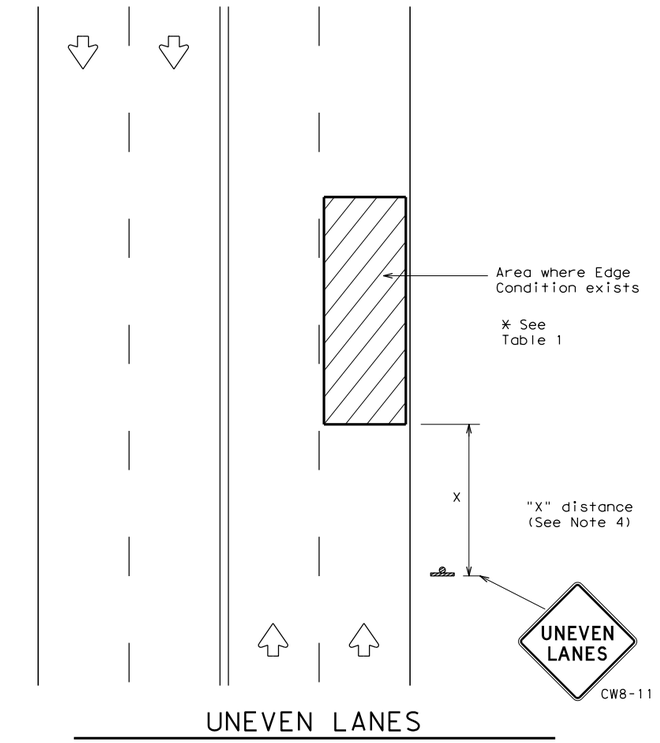
FILE: wztd-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 2-17 3-03 7-13	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		24

110

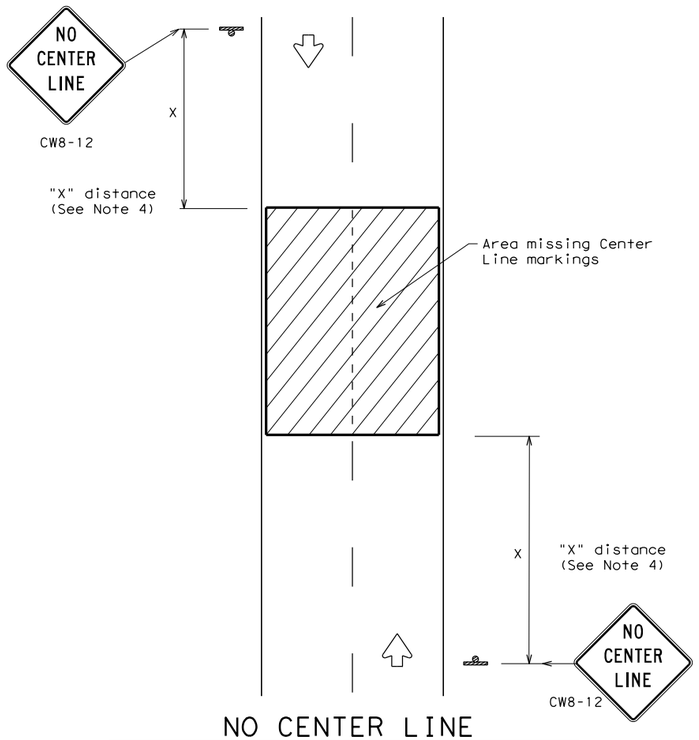
DATE: 3/4/2024 11:40:26 AM
FILE: S:\projects\612534\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\wzul-13.dgn



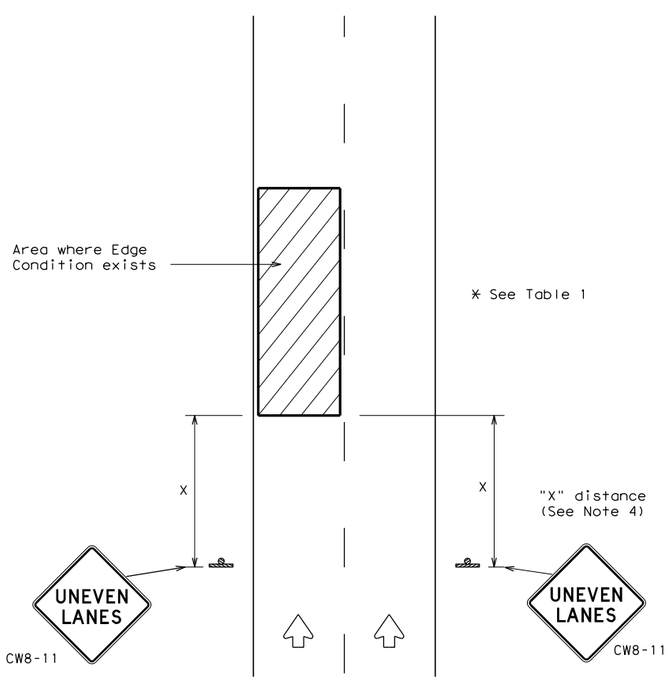
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

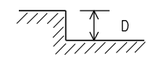
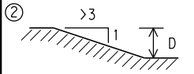
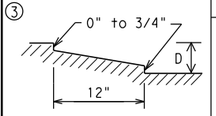
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

1. If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
2. UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
3. NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
6. Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① 	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② 	Less than or equal to 3"	Sign: CW8-11
③  Notched Wedge Joint	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

Texas Department of Transportation

Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

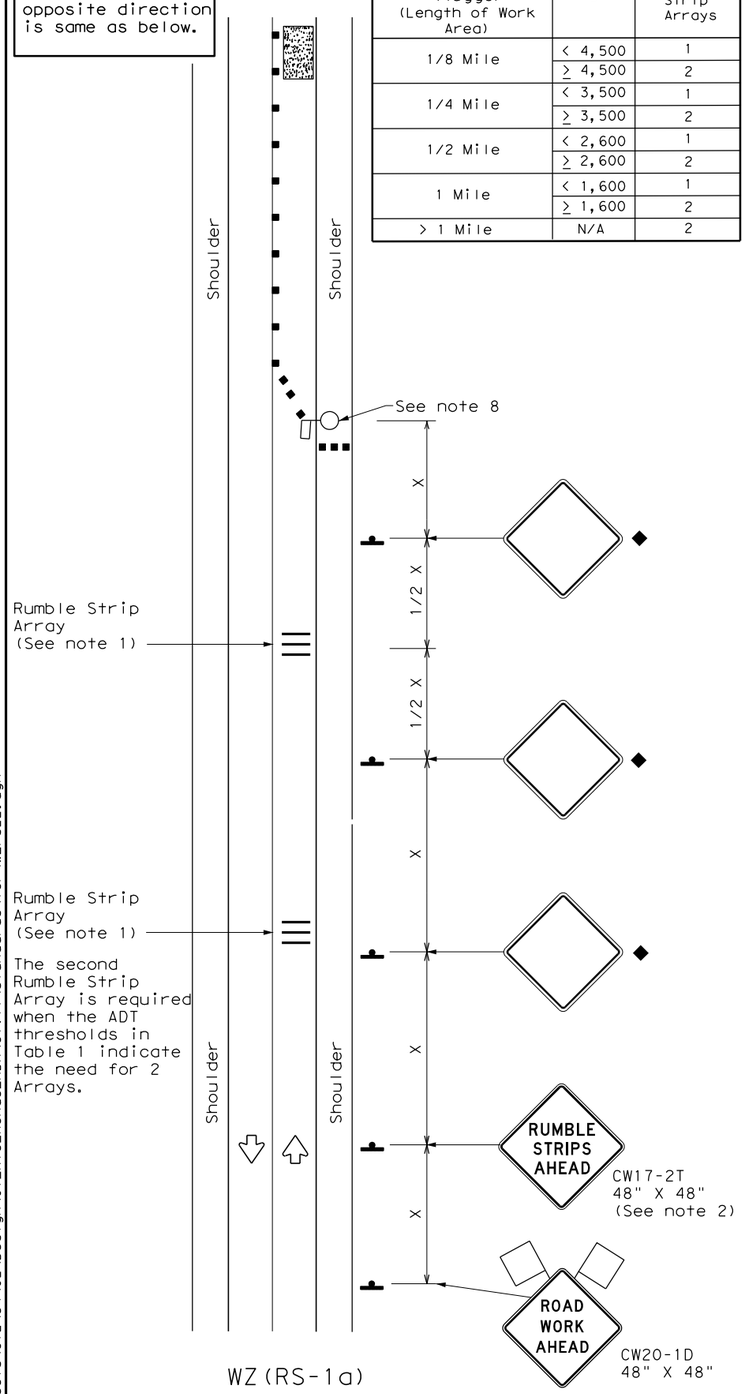
WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	PHR	CAMERON		25

DATE: 3/4/2024 11:40:27 AM
FILE: S:\projects\6i2154k02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\wzrs22.dgn

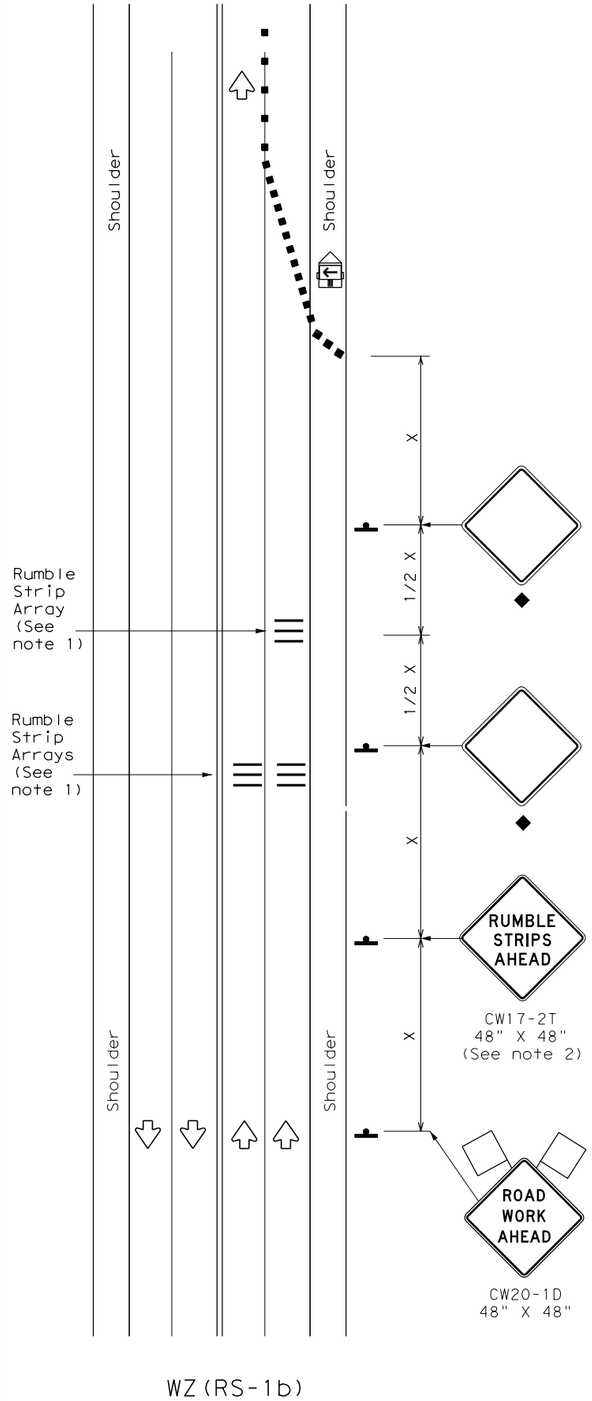
Warning sign and rumble strip sequence in opposite direction is same as below.

TABLE 1		
Flagger to Flagger (Length of Work Area)	ADT	# of Rumble Strip Arrays
1/8 Mile	< 4,500	1
	≥ 4,500	2
1/4 Mile	< 3,500	1
	≥ 3,500	2
1/2 Mile	< 2,600	1
	≥ 2,600	2
1 Mile	< 1,600	1
	≥ 1,600	2
> 1 Mile	N/A	2



WZ(RS-1a)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

1. Each Rumble Strip Array should consist of three rumble strips spaced center to center at the spacing shown in Table 2, placed transverse across the lane at locations shown.
2. The CW17-2T "RUMBLE STRIPS AHEAD" sign should be located after the CW20-1D "ROAD WORK AHEAD sign and spaced as shown. If traffic is observed to be queuing, or is expected to queue beyond the Rumble Strips, the CW17-2T sign and the first Rumble Strip Array may be located upstream of the CW20-1D sign as necessary to provide needed warning.
3. Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
4. Remove Temporary Rumble Strips before removing the advanced warning signs.
5. Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
6. Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
7. This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
8. The one-lane two-way application may utilize a flagger, an Automated Flagger Assistance Device (AFAD) or a Portable Traffic Signal (PTS).
9. Replace defective Temporary Rumble Strips as directed by the Engineer.
10. Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment and written direction from the Engineer.

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Panel	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
	✓	✓		

◆ Signs are for illustrative purposes only. Signs required may vary depending on the TCP, TMUTCD Typical Application, or project specific details for the project.

* For posted speeds in excess of 65 MPH, it is recommended that spacing is increased as speed limits increase. Increasing space between rumble strips will improve effectiveness.

TABLE 2	
Speed	Approximate distance between strips in an array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
= 60 MPH	20'
≥ 65 MPH	* 35' +

Texas Department of Transportation

Traffic Safety Division Standard

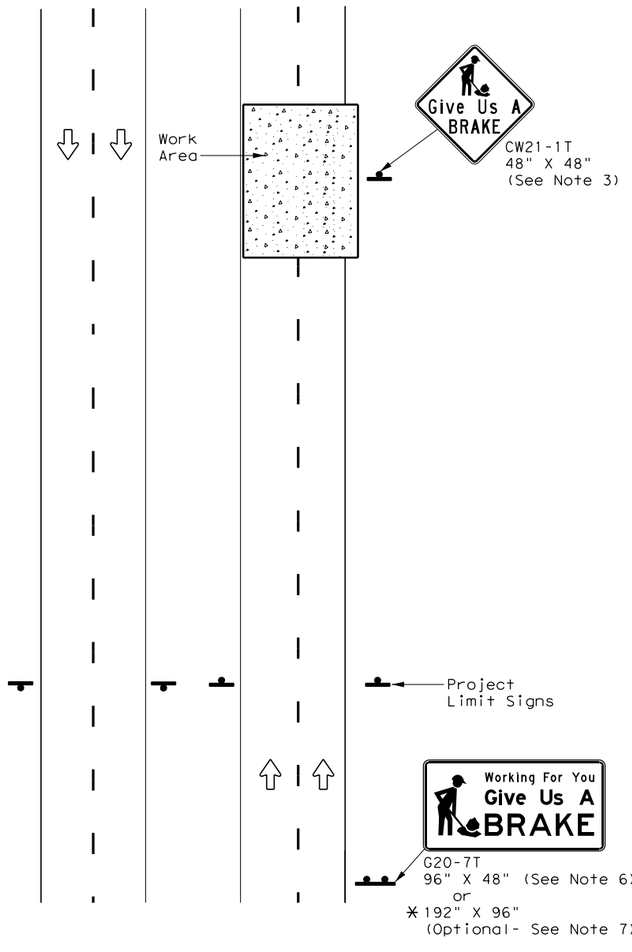
TEMPORARY RUMBLE STRIPS

WZ(RS)-22

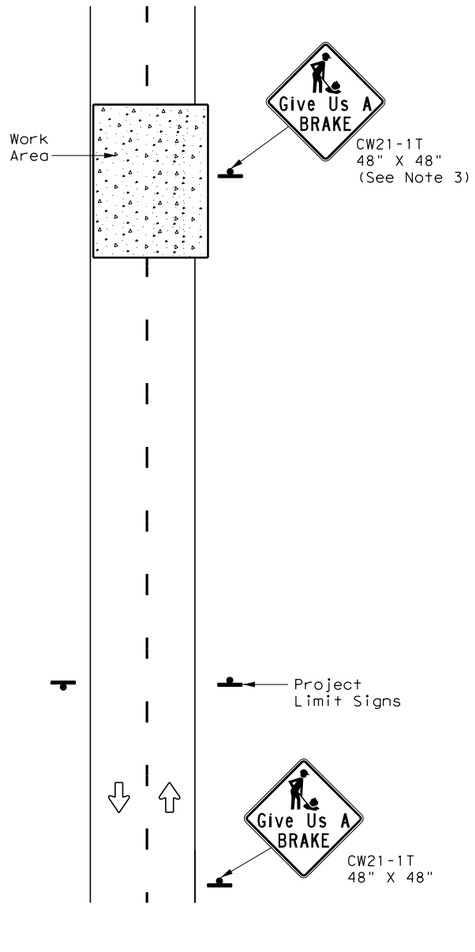
FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-14 1-22 4-16	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		26

117

DATE: 3/4/2024 11:40:28 AM
FILE: S:\projects\612534\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\wzbrk-13.dgn



DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

* When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT 24" DIA. (LF)
						Size	(LF) ①	(LF) ②	
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
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.

Texas Department of Transportation

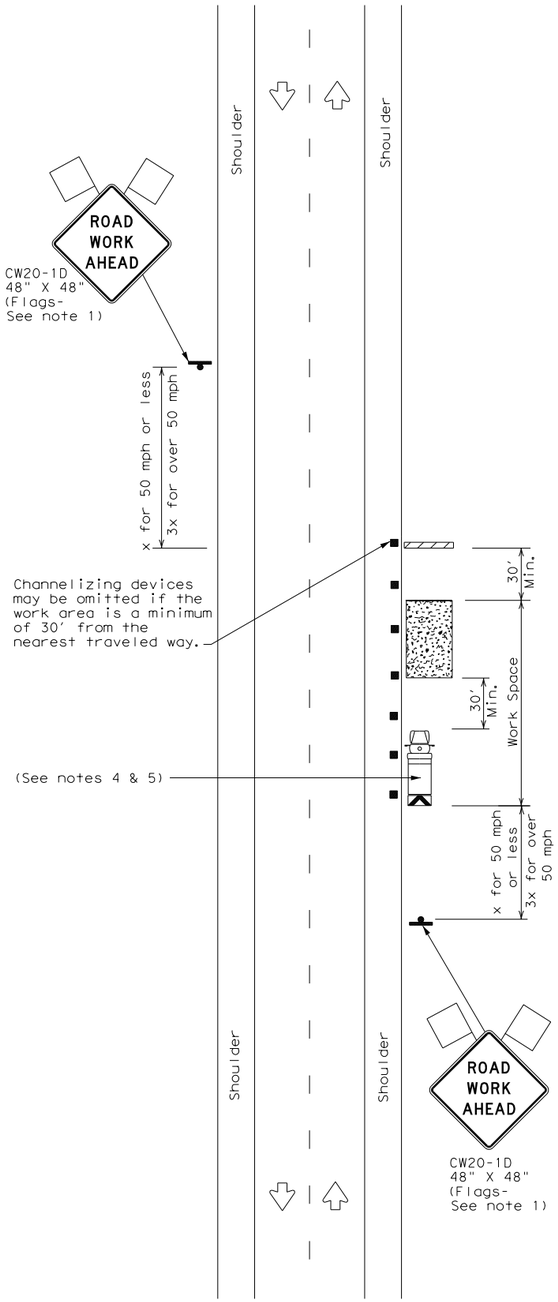
Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

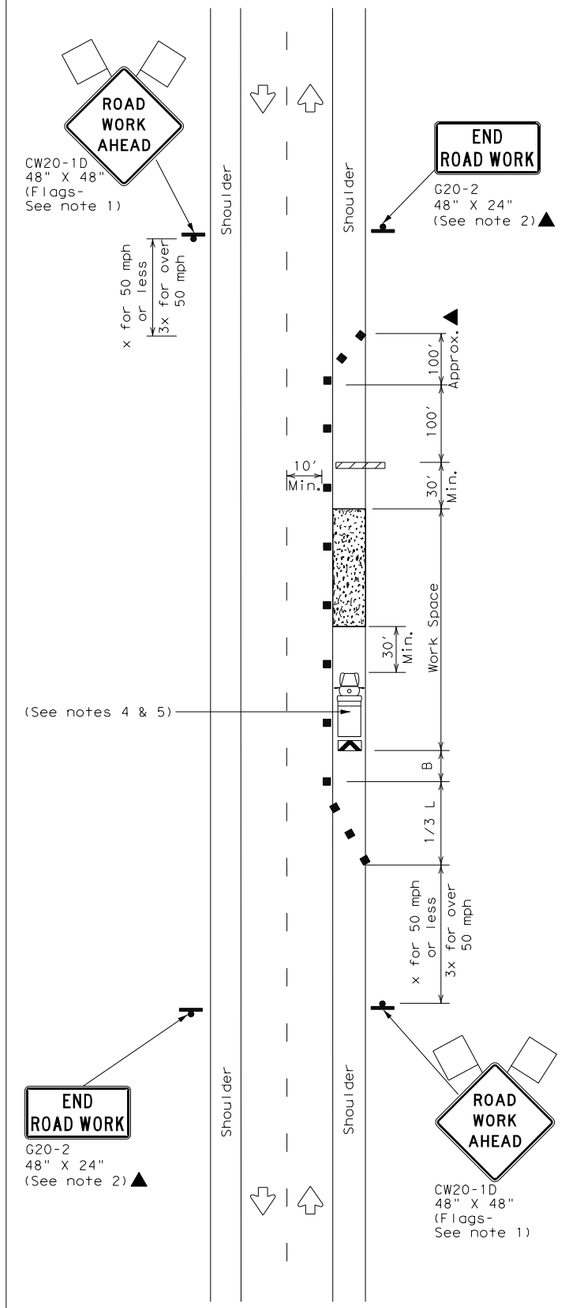
FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
6-96 5-98 7-13 8-96 3-03	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		27

DATE: 3/4/2024 11:40:30 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\tcp2-1-18.dgn



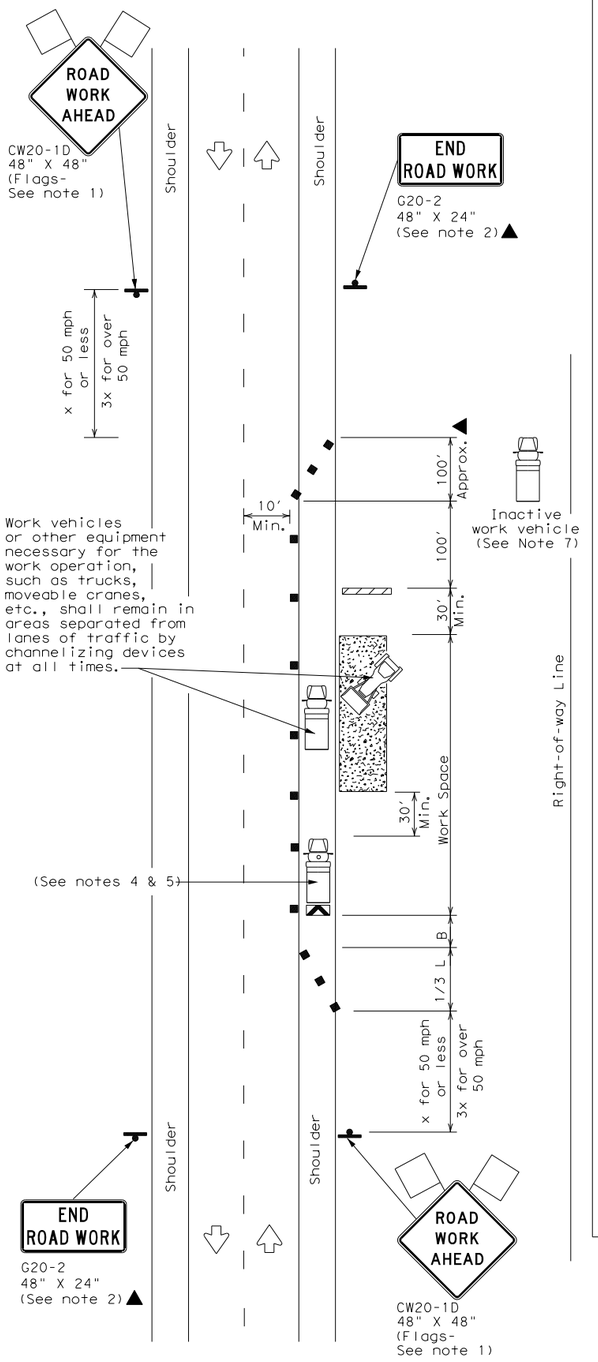
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

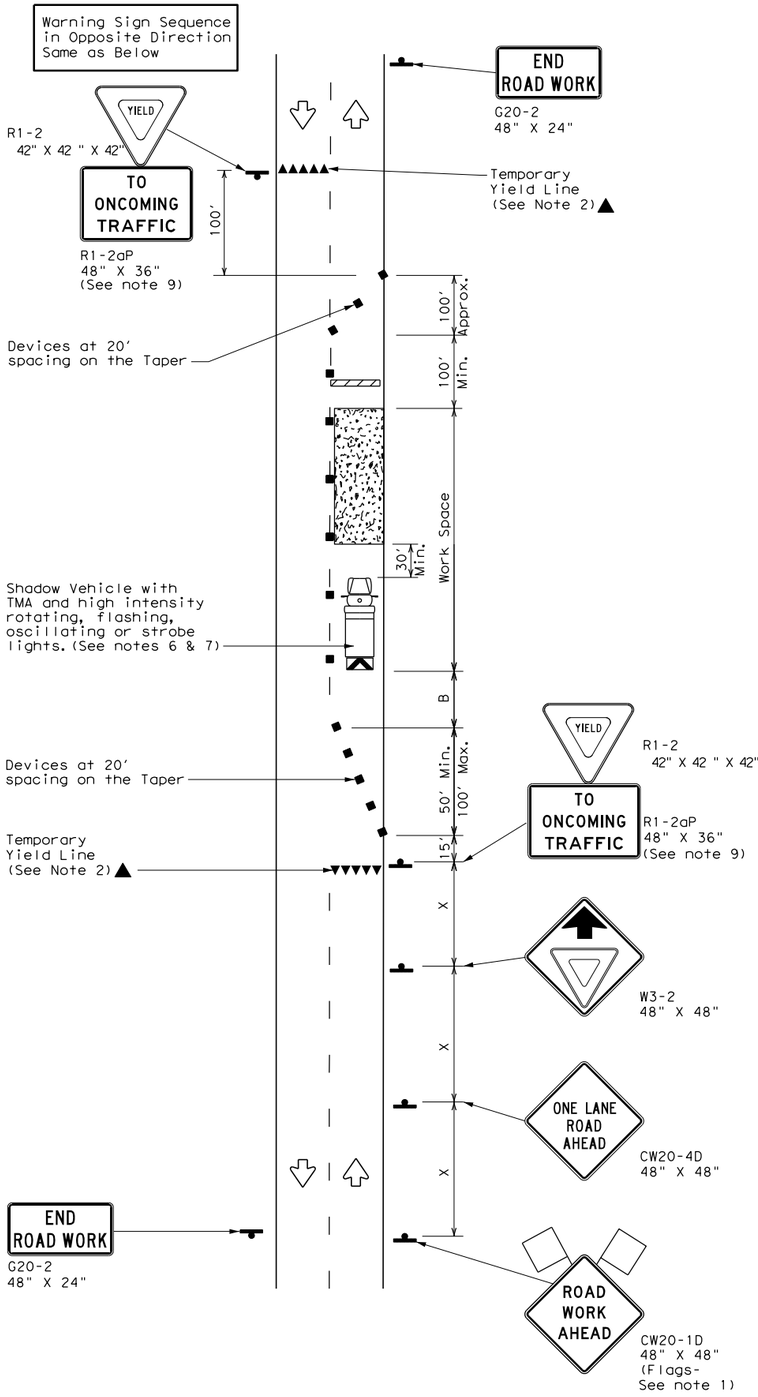
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

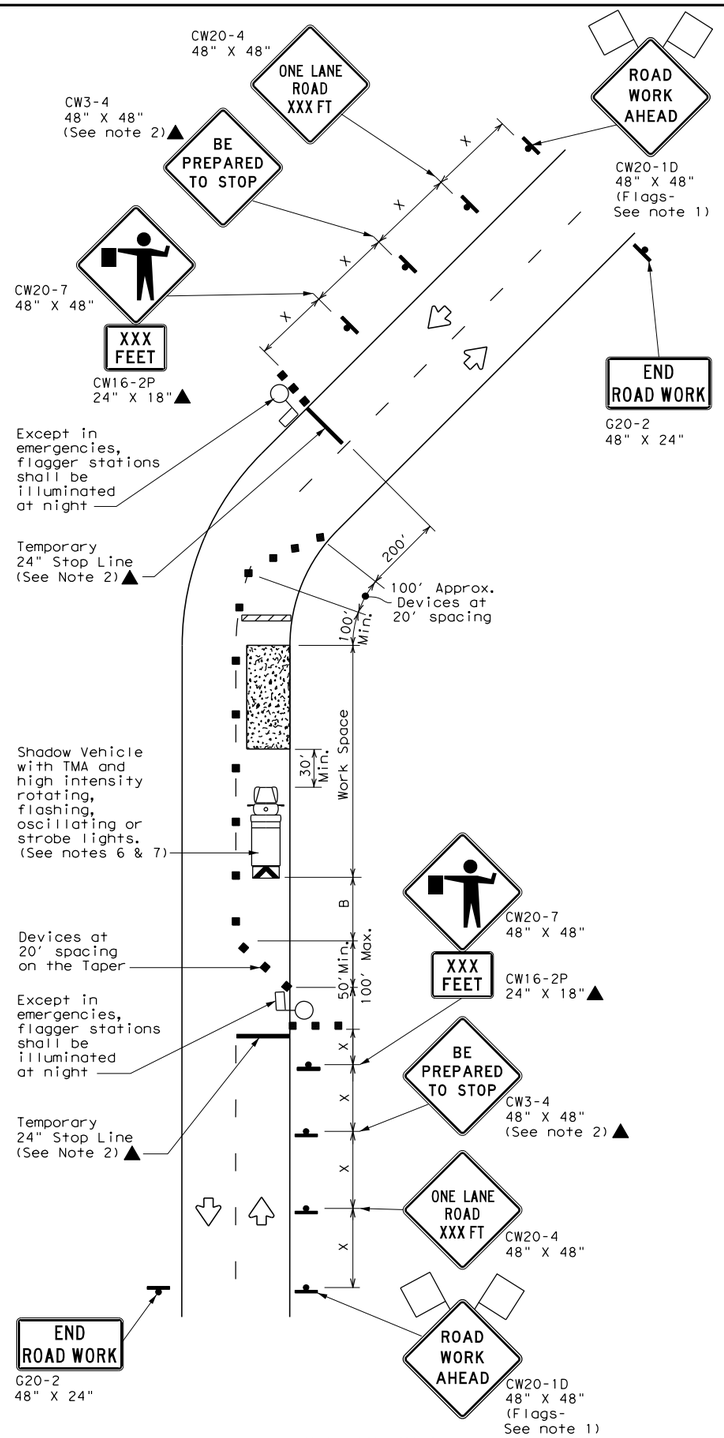
TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	PHR	CAMERON		28
1-97 2-18				

DATE: 3/4/2024 11:40:31 AM
FILE: S:\projects\6123454\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\tcp2-2b18.dgn



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.

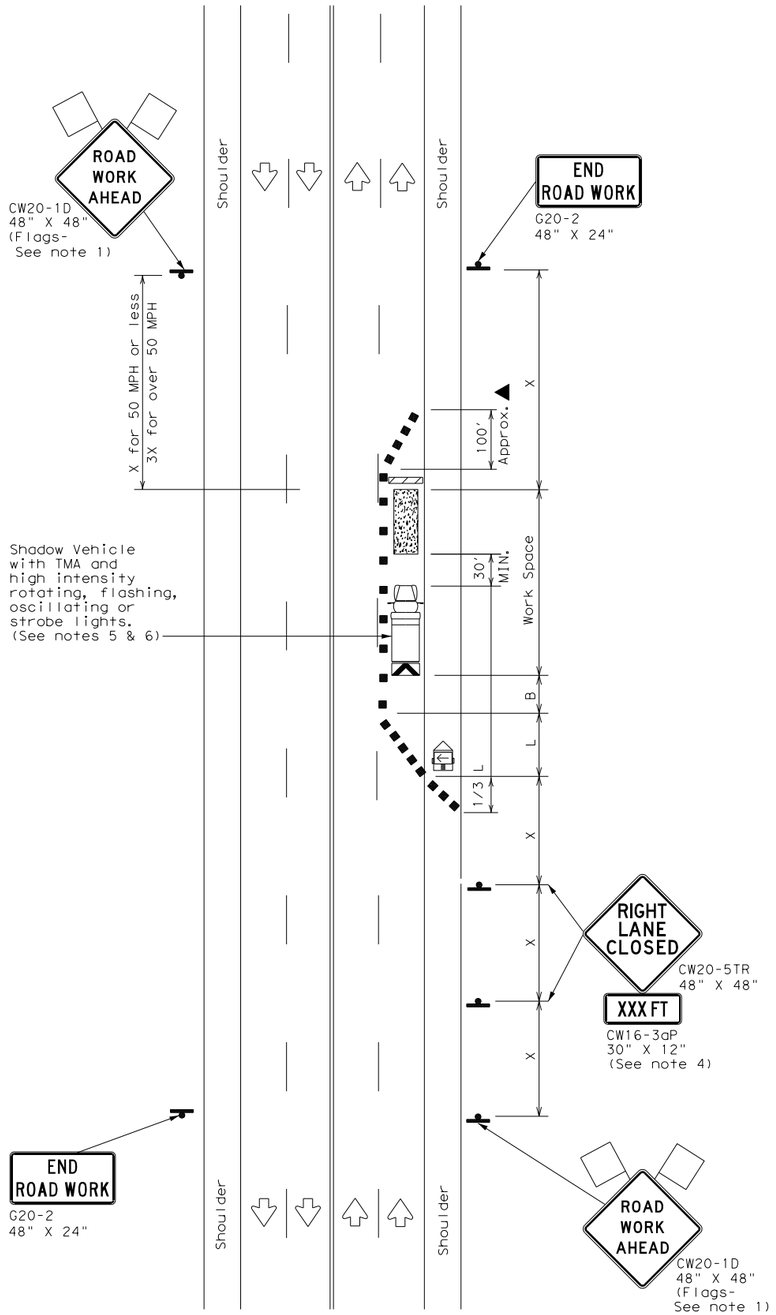
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(2-2)-18

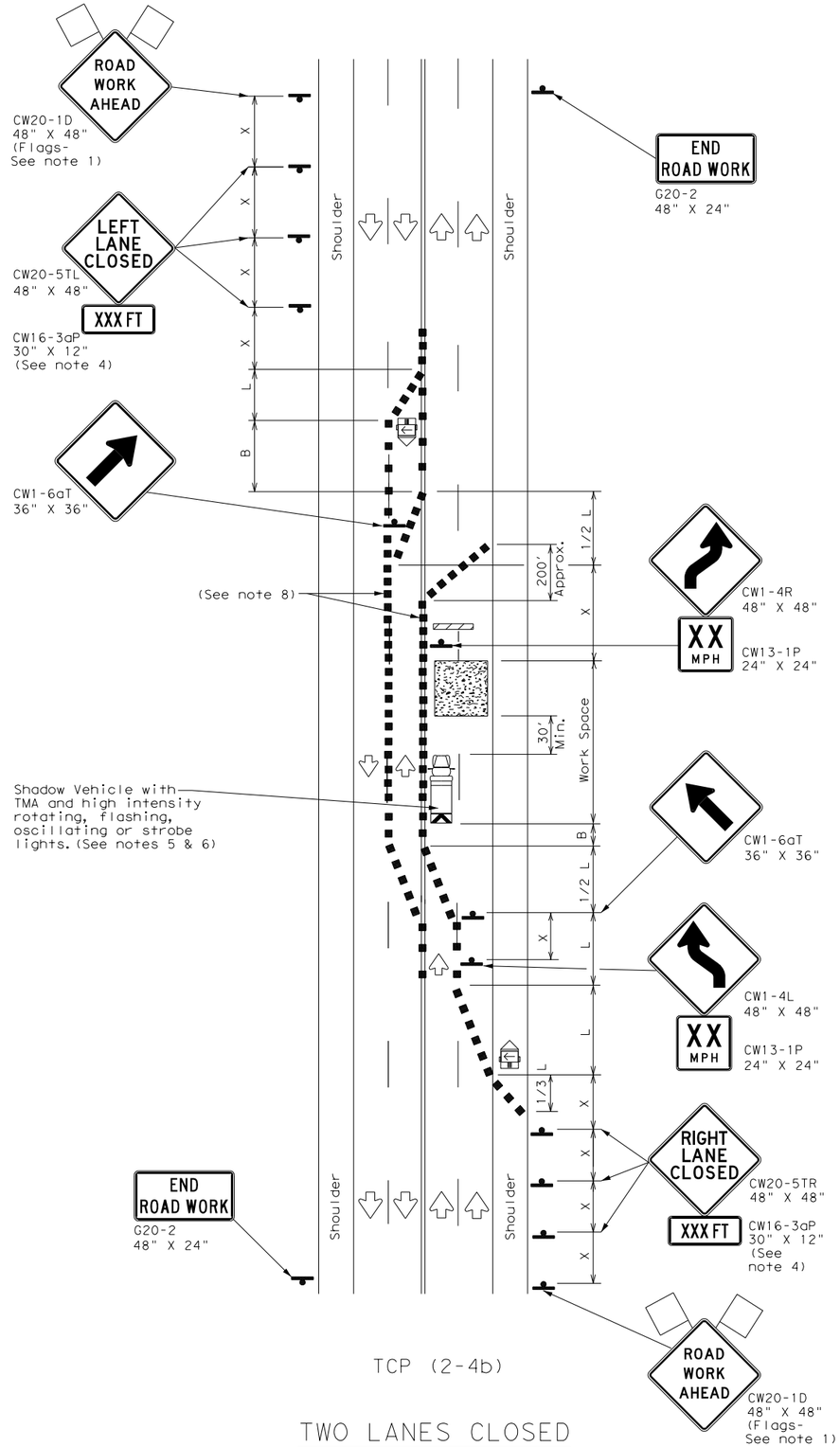
FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	PHR	CAMERON		29
4-98 2-18				

DATE: 3/4/2024 11:40:33 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\tcp2-4a18.dgn



TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
4. For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-4a)

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

TCP (2-4b)

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

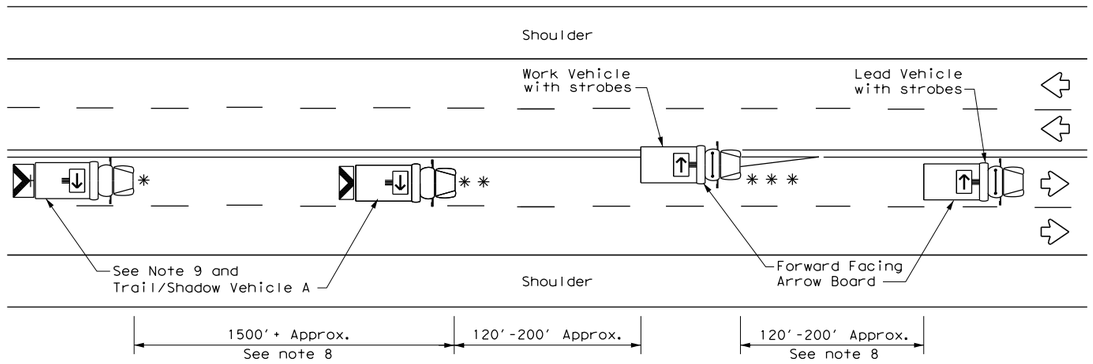
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

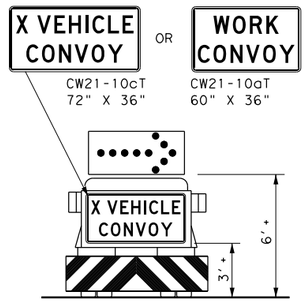
TCP(2-4)-18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	0921	06	348	VA
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	PHR	CAMERON		30



TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

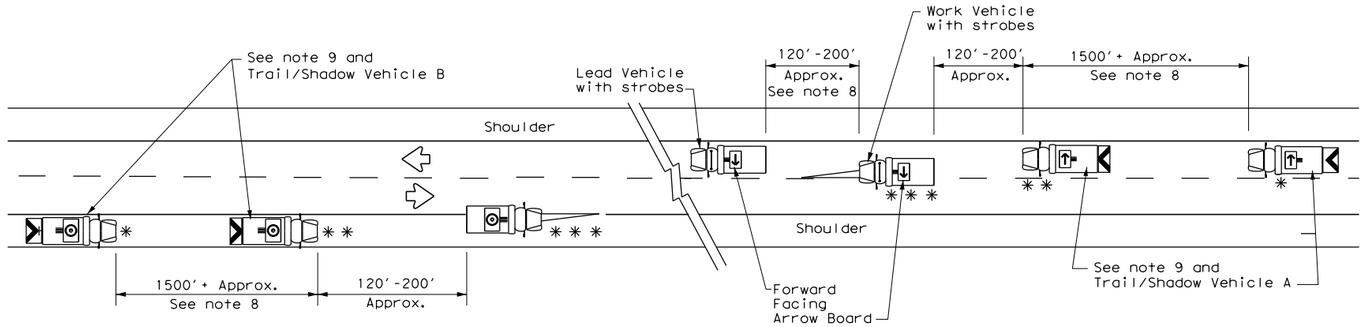
with RIGHT Directional display Flashing Arrow Board

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

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

GENERAL NOTES

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

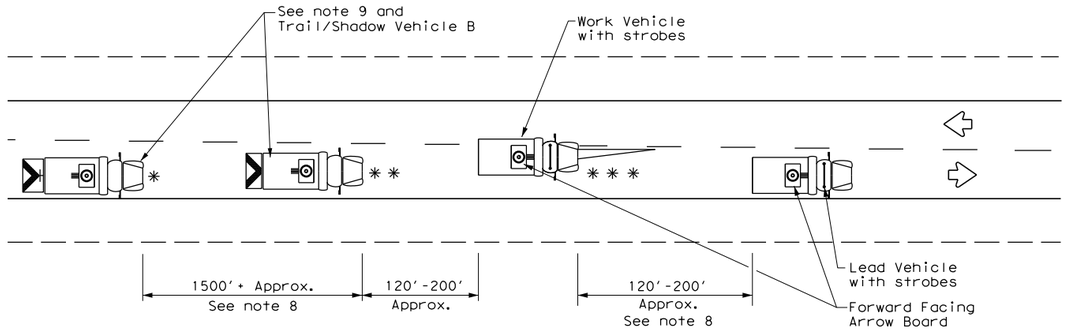


WORK ON SHOULDER

WORK ON TRAVEL LANE

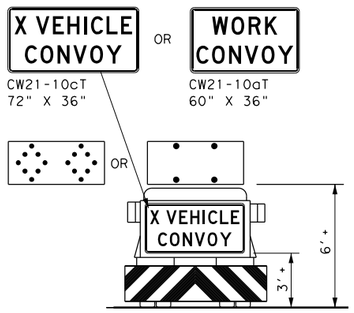
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



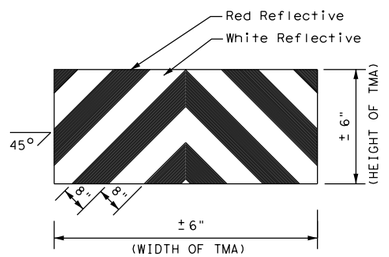
TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display



STRIPING FOR TMA

Texas Department of Transportation

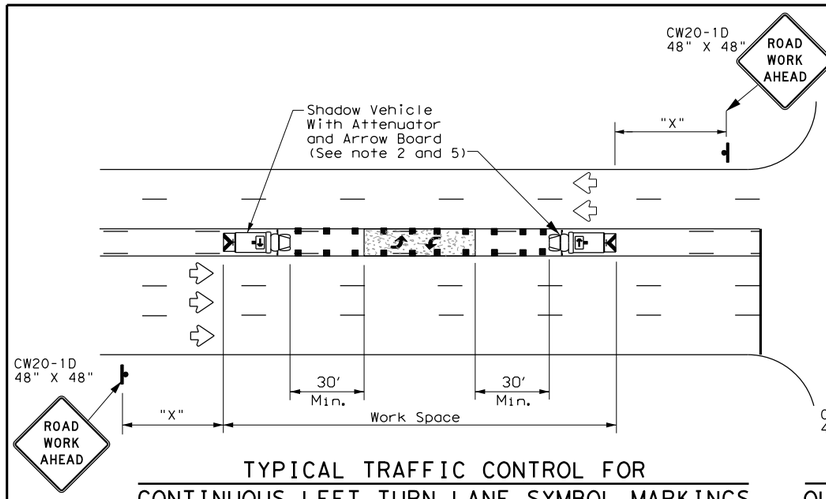
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

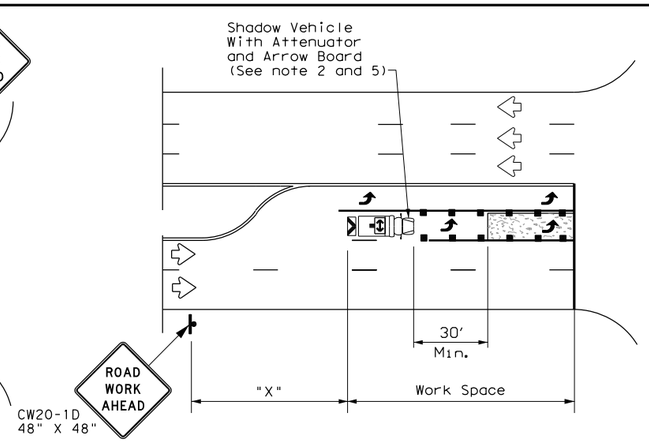
TCP(3-1)-13

FILE: tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		31

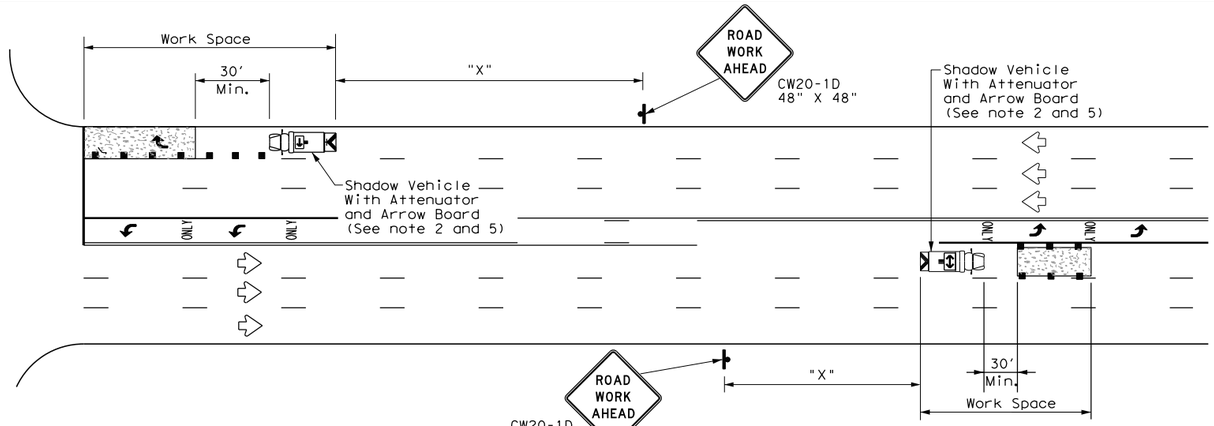
DATE: 3/4/2024 11:40:34 AM
FILE: S:\Projects\6125404\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\tcp3-1.dgn



TYPICAL TRAFFIC CONTROL FOR
CONTINUOUS LEFT TURN LANE SYMBOL MARKINGS

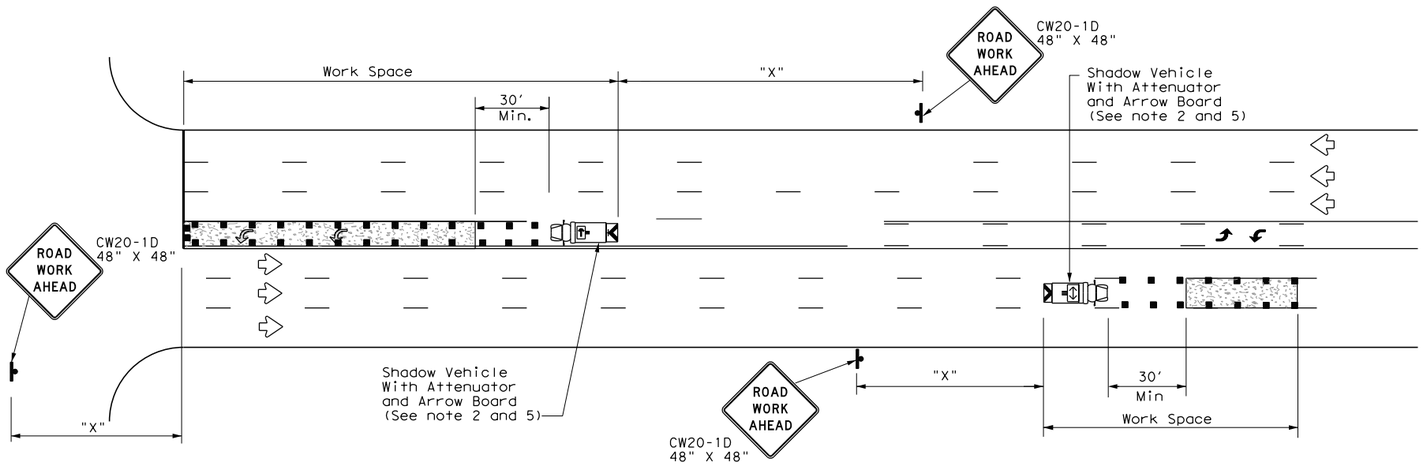


TYPICAL TRAFFIC CONTROL FOR
OUTSIDE DUAL LEFT TURN LANE SYMBOL MARKINGS



TYPICAL TRAFFIC CONTROL FOR
OUTSIDE LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
INSIDE LANE MARKINGS



TYPICAL TRAFFIC CONTROL FOR
LEFT TURN LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
CENTER LANE MARKINGS

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

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

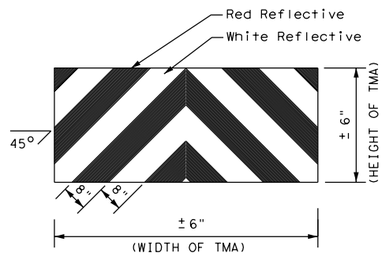
✳ Conventional Roads Only

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

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

GENERAL NOTES

1. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.
2. A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.
3. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.
4. The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
5. Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS FOR ISOLATED WORK AREAS UNDIVIDED HIGHWAYS

TCP(3-4)-13

FILE: tcp3-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT July, 2013	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		32

DATE: 3/4/2024 11:40:36 AM
FILE: S:\projects\612534\02\Design\01_Rio_Hondo_ADA\Civil\Standards\TCP\tcp3-4.dgn

ROBERTSON RD

Beginning chain ROBERTSON description
Feature: Road Centerline

Point ROBERTSON1 N 16,609,840.3499 E 1,286,355.6350 Sta 300+00.00

Course from ROBERTSON1 to PC ROBERTSON 3 N 4° 17′ 25" W Dist 69.3960

Curve Data					
Curve ROBERTSON 3					
P.I. Station	301+84.09	N	16,610,023.9282	E	1,286,341.8629
Delta =	10° 55′ 11" (RT)				
Degree =	4° 46′ 29"				
Tangent =	114.6983				
Length =	228.7017				
Radius =	1,200.0000				
External =	5.4691				
Long Chord =	228.3558				
Mid. Ord. =	5.4443				
P.C. Station	300+69.40	N	16,609,909.5514	E	1,286,350.4435
P.T. Station	302+98.10	N	16,610,137.8596	E	1,286,355.1044
C.C.		N	16,609,999.3237	E	1,287,547.0808
Back = N	4° 17′ 25" W				
Ahead = N	6° 37′ 46" E				
Chord Bear = N	1° 10′ 10" E				

Course from PT ROBERTSON 3 to PC ROBERTSON 6 N 6° 37′ 46" E Dist 674.3108

Curve Data					
Curve ROBERTSON 6					
P.I. Station	309+72.83	N	16,610,808.0783	E	1,286,432.9997
Delta =	0° 48′ 04" (LT)				
Degree =	95° 29′ 35"				
Tangent =	0.4195				
Length =	0.8389				
Radius =	60.0000				
External =	0.0015				
Long Chord =	0.8389				
Mid. Ord. =	0.0015				
P.C. Station	309+72.41	N	16,610,807.6617	E	1,286,432.9513
P.T. Station	309+73.25	N	16,610,808.4956	E	1,286,433.0423
C.C.		N	16,610,814.5885	E	1,286,373.3524
Back = N	6° 37′ 46" E				
Ahead = N	5° 49′ 42" E				
Chord Bear = N	6° 13′ 44" E				

Course from PT ROBERTSON 6 to PC ROBERTSON 9 N 5° 49′ 42" E Dist 245.9400

Curve Data					
Curve ROBERTSON 9					
P.I. Station	312+19.82	N	16,611,053.7979	E	1,286,458.0816
Delta =	1° 12′ 59" (RT)				
Degree =	95° 29′ 35"				
Tangent =	0.6369				
Length =	1.2737				
Radius =	60.0000				
External =	0.0034				
Long Chord =	1.2737				
Mid. Ord. =	0.0034				
P.C. Station	312+19.19	N	16,611,053.1643	E	1,286,458.0169
P.T. Station	312+20.46	N	16,611,054.4300	E	1,286,458.1597
C.C.		N	16,611,047.0714	E	1,286,517.7068
Back = N	5° 49′ 42" E				
Ahead = N	7° 02′ 41" E				
Chord Bear = N	6° 26′ 11" E				

Course from PT ROBERTSON 9 to ROBERTSON11 N 7° 02′ 41" E Dist 4,045.4676

Point ROBERTSON11 N 16,615,069.3581 E 1,286,954.3054 Sta 352+65.93

Ending chain ROBERTSON description

EBONY AVE

Beginning chain EBONY description
Feature: Road Centerline

Point EBONY1 N 16,610,144.1005 E 1,284,908.8786 Sta 200+00.00

Course from EBONY1 to EBONY2 S 83° 08′ 33" E Dist 1,508.1445

Point EBONY2 N 16,609,964.0286 E 1,286,406.2342 Sta 215+08.14

Ending chain EBONY description

FM-1846 (REYNOLDS ST)

Beginning chain FM1846 description
Feature: Road Centerline

Point FM18461 N 16,603,636.7599 E 1,285,308.7297 Sta 100+00.00

Course from FM18461 to PC FM1846 3 N 3° 52′ 21" W Dist 5,752.4949

Curve Data					
Curve FM1846 3					
P.I. Station	160+13.22	N	16,609,636.2499	E	1,284,902.6292
Delta =	10° 42′ 56" (RT)				
Degree =	2° 03′ 40"				
Tangent =	260.7237				
Length =	519.9266				
Radius =	2,780.0000				
External =	12.1993				
Long Chord =	519.1692				
Mid. Ord. =	12.1460				
P.C. Station	157+52.49	N	16,609,376.1215	E	1,284,920.2371
P.T. Station	162+72.42	N	16,609,895.1162	E	1,284,933.6956
C.C.		N	16,609,563.8677	E	1,287,693.8902
Back = N	3° 52′ 21" W				
Ahead = N	6° 50′ 36" E				
Chord Bear = N	1° 29′ 08" E				

Course from PT FM1846 3 to FM18465 N 6° 50′ 36" E Dist 2,927.5771

Point FM18465 N 16,612,801.8365 E 1,285,282.5285 Sta 192+00.00

Ending chain FM1846 description

SH-345 (N SAM HOUSTON BLVD))

Beginning chain SH345 description
Feature: Road Centerline

Point SH3451 N 16,606,196.4991 E 1,288,910.5480 Sta 400+00.00

Course from SH3451 to SH3452 N 8° 51′ 30" E Dist 4,999.9775

Point SH3452 N 16,611,136.8386 E 1,289,680.4960 Sta 449+99.98

Ending chain SH345 description

SH-345 (SCHOOL DRIVEWAY))

Beginning chain SH345_1 description
Feature: Road_Centerline

Point 1 N 16,607,892.01 E 1,289,164.67 Sta 500+00.00

Course from 1 to 2 S 81° 09′ 43" E Dist 210.00

Point 2 N 16,607,859.75 E 1,289,372.18 Sta 502+10.00

Course from 2 to 3 S 81° 09′ 43" E Dist 200.00

Point 3 N 16,607,829.02 E 1,289,569.80 Sta 504+10.00

Ending chain SH345_1 description

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

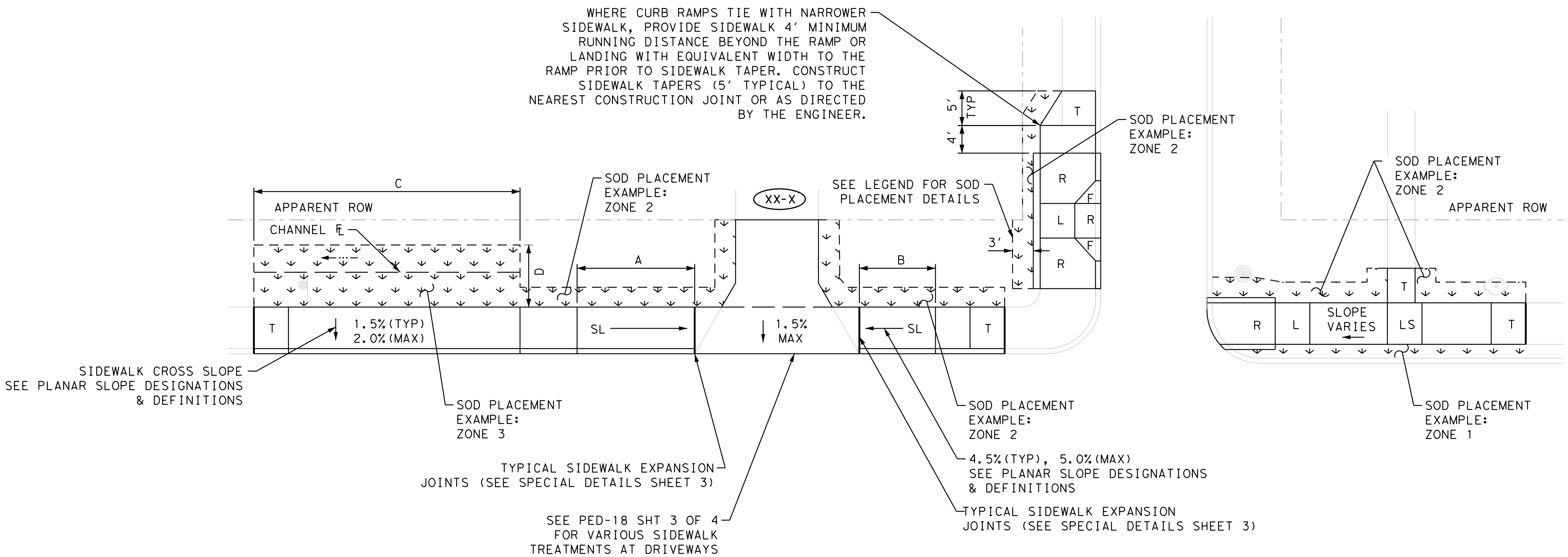
REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

HORIZONTAL ALIGNMENT DATA SHEET

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	33

SAMPLE PLAN LAYOUT



LEGEND OF SYMBOLS

Symbol	Description	Symbol	Description
	DRAINAGE FLOW DIRECTION		PI POINT
	FIRE HYDRANT		UTILITY POLE
	GAS METER		SEWER CLEANOUT
GV	GAS VALVE		SIGN
	GUY ANCHOR		TREE/BUSHES
	IRRIGATION	W	WATER METER
	MAIL BOX	WV	WATER VALVE
	MANHOLE		COMMUNICATION PEDESTAL
NSPI	NO SEPARATE PAY ITEM		EXISTING SIGNAL POLE
G	EX UNDERGROUND GAS	X.X%	EXISTING ROADWAY OR DRIVEWAY SLOPE
W	EX UNDERGROUND WATER	X.X%	PROPOSED ROADWAY, SIDEWALK OR DRIVEWAY SLOPE
SS	EX UNDERGROUND STORM SEWER	℄	BASE LINE
UE	EX UNDERGROUND ELECTRIC	PGL	PROFILE GRADE LINE
OE	EX OVERHEAD ELECTRIC		TRAFFIC FLOW ARROW
	EXISTING FENCE	APPARENT ROW	APPARENT RIGHT OF WAY LINE
CTV	CABLE PEDESTAL		DRAINAGE FLOW ARROW
T	TELEPHONE MANHOLE	X-X	DRIVEWAY ID
	EXISTING FEATURES	TOC	TOP OF CURB
	EXISTING SWALE	FOC	FACE OF CURB
OH C	PROPOSED OVERHEAD CABLE		BLOCK SOD
	PROPOSED CONDUIT		DETECTABLE WARNING SURFACE

F = FLARE (10:1 OR LESS) MEASURED AT FACE OF CURB

R = RAMP CROSS SLOPE: 1.5% TYP, 2.0% MAX; LONGITUDINAL NOT TO EXCEED 8.3%

L = LANDING: 1.5% TYP, 2.0% MAX SLOPE IN ANY DIRECTION)

L1 = SHARED LANDING: 1.5% TYP, 2.0% MAX SLOPE IN ANY DIRECTION)

LS = LEVEL SIDEWALK: 1.5% TYP, 2.0% MAX SLOPE IN ANY DIRECTION

SL = SLOPED SIDEWALK: IF INDICATED, CONSTRUCT SLOPED SIDEWALK AT LONGITUDINAL SLOPE SHOWN ON THE PLANS. SLOPED SIDEWALK LENGTHS A & B ARE 12' TYPICAL IN FLAT TERRAIN, BUT MAY BE LENGTHENED OR SHORTENED TO ACHIEVE FULL CURB HEIGHT. THE LONGITUDNAL SLOPE MAY NOT EXCEED 5.0%.

T = TAPER SIDEWALK WIDTH TO NEAREST EXISTING PANEL JOINT (5' TYP)

SDWK = SIDEWALK

DRWY = DRIVEWAY

TYPICAL LIMITS OF SOD PLACEMENT ARE AS FOLLOWS:

ZONE 1: PLACE SOD BETWEEN THE BACK OF CURB AND PROPOSED IMPROVEMENTS (SIDEWALK, DRIVEWAY, RIPRAP, ETC.)

ZONE 2: PLACE SOD 3' BEYOND PROPOSED IMPROVEMENTS

IF THE SPACE BETWEEN THE IMPROVEMENTS AND THE ROW IS LESS THAN 3', PLACE SOD BETWEEN PROPOSED IMPROVEMENTS AND THE ROW

ZONE 3: PLACE SOD WITHIN THE LIMITS OF SOIL DISTURBANCE DUE TO EXCAVATION OR EMBANKMENT AS DIMENSIONED ON THE PLANS

PLACE SOD AS DIRECTED BY THE ENGINEER

NOTES

1. FLARE (F), RAMP (R), AND LANDING (L), DIRECTLY IN CONTACT WITH THE CURB RAMP ARE PAID FOR UNDER ITEM 531 "CURB RAMPS"
2. LEVEL SIDEWALK (LS) AND RAMPS (R) NOT DIRECTLY IN CONTACT WITH THE CURB RAMP ARE PAID FOR UNDER ITEM 531 "SIDEWALK"

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED · PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED · PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

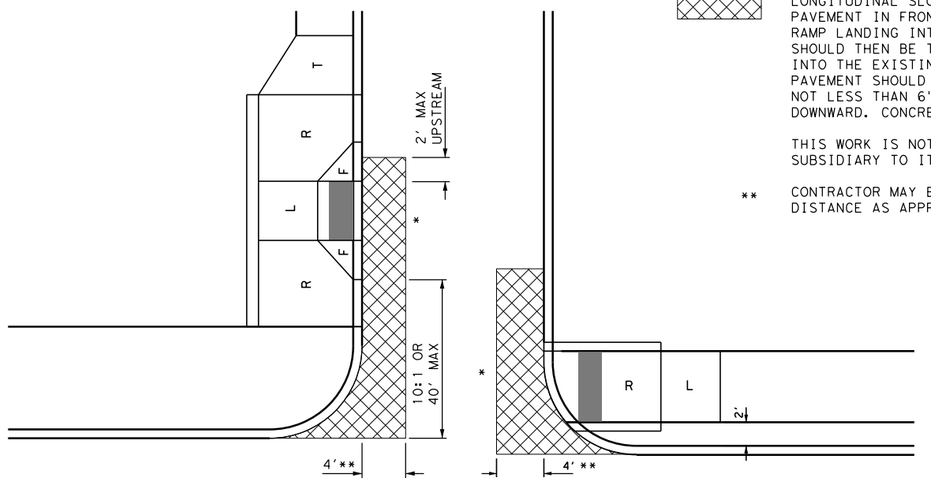
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	34

CURB RAMP PAVEMENT TRANSITION DETAIL

CONCRETE ROADWAY OR CURB AND GUTTER SECTION



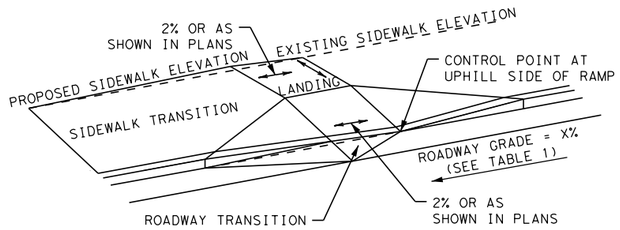
* SAW CUT (NSPI)

IN AREAS OF ROADWAY CROSS SLOPES EXCEEDING 2% LONGITUDINAL SLOPE, SAW CUT AND EXCAVATE 4' OF PAVEMENT IN FRONT OF RAMP AND TRANSITION THE RAMP LANDING INTO THE EXISTING PAVEMENT. THE PAVEMENT SHOULD THEN BE TRANSITIONED HORIZONTALLY INTO THE EXISTING PAVEMENT AT A SLOPE OF 10%. PAVEMENT SHOULD MATCH EXISTING PAVEMENT DEPTH BUT NOT LESS THAN 6". GUTTERLINES SHOULD NOT BE ADJUSTED DOWNWARD. CONCRETE PAVEMENT TO CONFORM TO ITEM 360.

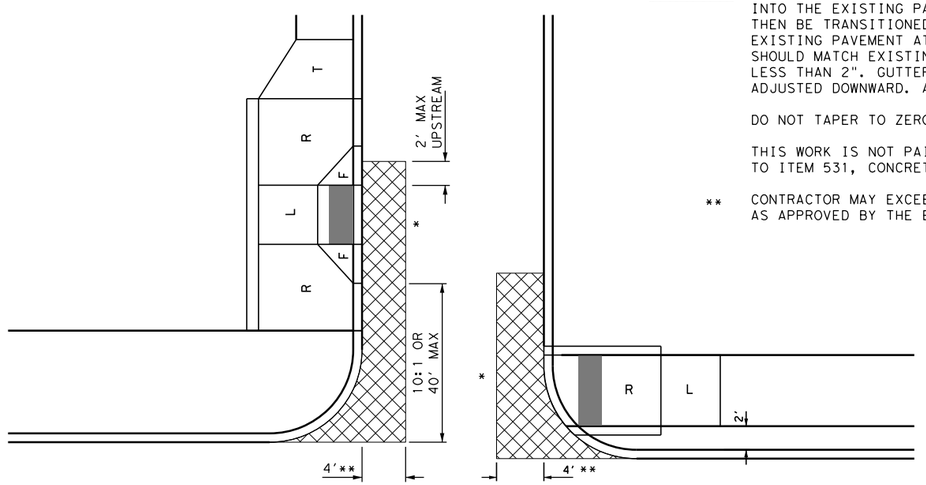
THIS WORK IS NOT PAID FOR DIRECTLY, BUT IS SUBSIDIARY TO ITEM 531.

** CONTRACTOR MAY EXCEED CROSS SLOPE TRANSITION DISTANCE AS APPROVED BY THE ENGINEER.

ROADWAY TRANSITION



ASPHALT/SEALCOAT ROADWAY



* SAW CUT (NSPI)

IN AREAS OF ROADWAY CROSS SLOPES EXCEEDING 2% LONGITUDINAL SLOPE, EXCAVATE 4' OF PAVEMENT IN FRONT OF RAMP AND TRANSITION THE RAMP LANDING INTO THE EXISTING PAVEMENT. THE PAVEMENT SHOULD THEN BE TRANSITIONED HORIZONTALLY INTO THE EXISTING PAVEMENT AT A SLOPE OF 10%. PAVEMENT SHOULD MATCH EXISTING PAVEMENT DEPTH BUT NOT LESS THAN 2". GUTTERLINES SHOULD NOT BE ADJUSTED DOWNWARD. ASPHALT TO CONFORM TO ITEM 3076.

DO NOT TAPER TO ZERO (MINIMUM 2" DEPTH @ TIE-IN).

THIS WORK IS NOT PAID FOR DIRECTLY, BUT IS SUBSIDIARY TO ITEM 531, CONCRETE SIDEWALKS.

** CONTRACTOR MAY EXCEED CROSS SLOPE TRANSITION DISTANCE AS APPROVED BY THE ENGINEER.

CURB ELEVATION

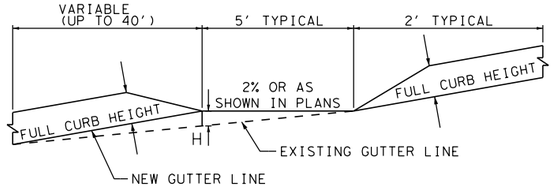


TABLE 1		
DIFFERENTIAL BETWEEN RAMP AND ROADWAY LONGITUDINAL SLOPE	H	
1%	0.04'	0.50"
2%	0.08'	1.00"
3%	0.12'	1.50"
4%	0.16'	2.00"
5%	0.20'	2.40"
6%	0.24	2.90"

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SPECIAL DETAILS

SHEET 1 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	35

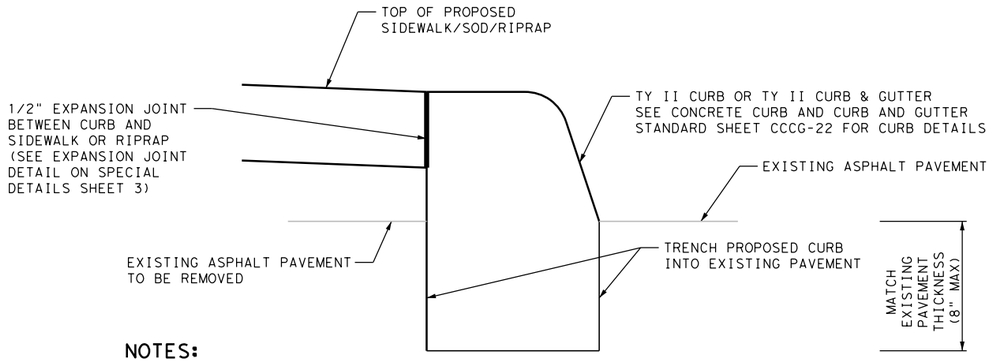
Plotted on: 3/4/2024
Design Filename: S:\projects\612540201_Rio_Hondo_ADA\Civil\General\612540201_Rio_Hondo_ADA_SAMPLE02.dgn

Plotted on: 3/4/2024

Design Filename: S:\projects\612540\02\Design\01_Rio_Hondo_ADA\Civil\General\612540201_Rio_Hondo_ADA_SAMPLE03.dgn

CURB TRENCH DETAIL

USE WHEN INSTALLING A CURB INTO EXISTING ASPHALT PAVEMENT



NOTES:

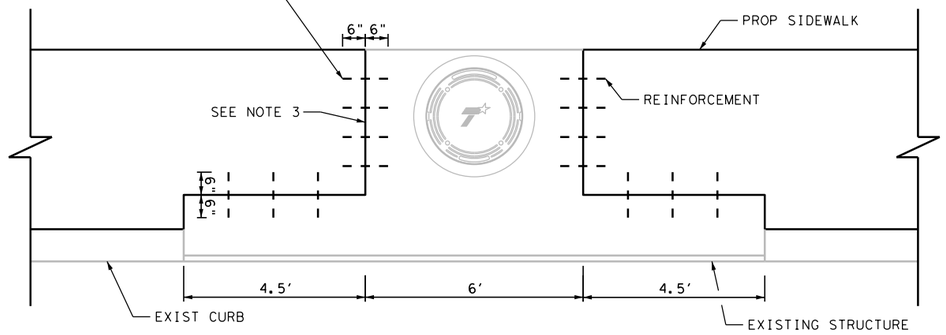
1. VERTICAL DOWELING PROPOSED CURB INTO EXISTING PAVEMENT IS NOT PERMITTED
2. NO ADDITIONAL PAYMENT SHALL BE MADE FOR ADDITIONAL CONCRETE REQUIRED TO MATCH EXISTING PAVEMENT THICKNESS
3. SEE CCCG-22 FOR MORE INFORMATION

STRUCTURE DOWELING DETAIL

NOT TO SCALE

#4 DOWEL BARS (SMOOTH) @ 12" C-C (TYP) INCIDENTAL TO PAY ITEM 530

STRUCTURE TYPES MAY VARY AND ADDITIONAL REINFORCEMENT MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

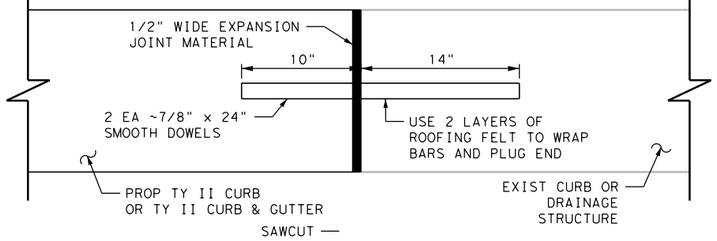


NOTES:

1. DOWEL BARS TO BE DRILLED INTO EXISTING CONCRETE.
2. GROUT OR EPOXY BARS INTO EXISTING CONCRETE AS APPROVED BY THE ENGINEER.
3. CONTRACTOR REQUIRED TO MAINTAIN SMOOTH TRANSITION FROM PROPOSED SIDEWALK TO EXISTING STUCTURES. TOP OF PROPOSED SIDEWALK SHALL MATCH FLUSH WITH TOP OF EXISTING STRUCTURE. CHANGES IN LEVEL ARE NOT PERMITTED.

CURB TIE-IN DETAIL

USE WHEN INSTALLING A CURB ABUTTING AN EXISTING CURB OR DRAINAGE STRUCTURE



NOTES:

1. DOWEL BARS TO BE DRILLED INTO EXISTING CONCRETE.
2. GROUT OR EPOXY BARS INTO EXISTING CONCRETE AS APPROVED BY THE ENGINEER.
3. SEE CCCG-22 FOR MORE DETAILS.

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

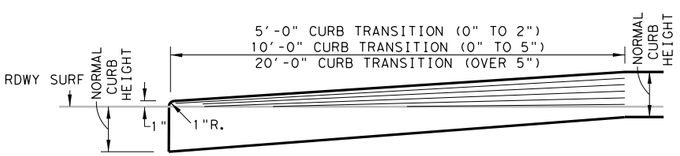
TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

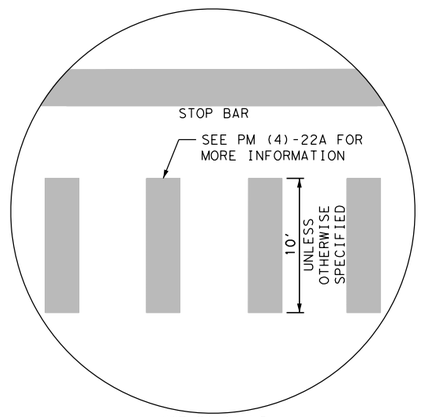
STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

TYPICAL TRANSITION FOR CONCRETE CURB ENDS



HIGH VISIBILITY LONGITUDINAL CROSSWALK DETAIL



NOT TO SCALE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

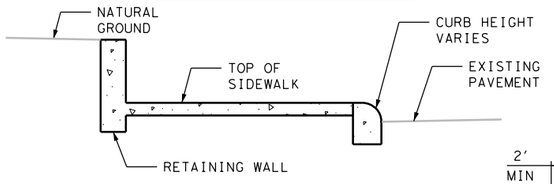
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SPECIAL DETAILS

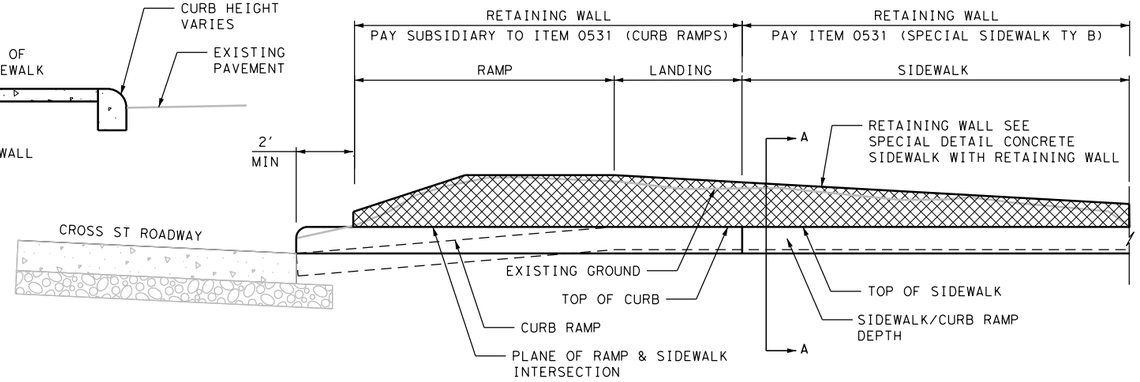
SHEET 2 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	36

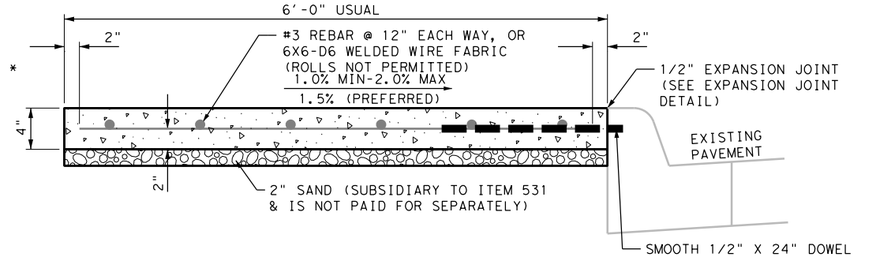
SECTION A-A



RETAINING WALL DETAIL



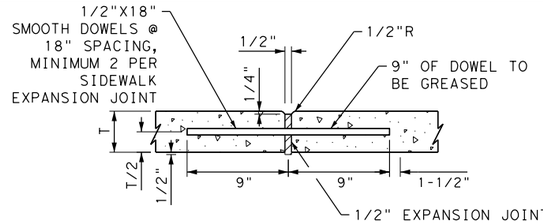
SIDEWALK DETAILS



PLACE GROOVED JOINTS IN THE SIDEWALK AT A MAX SPACING OF 6 FT
PLACE 1/2" EXPANSION JOINTS AT A MAX SPACING OF 40FT TO COINCIDE WITH THE CURB EXPANSION JOINTS.

* UNLESS OTHERWISE SHOWN

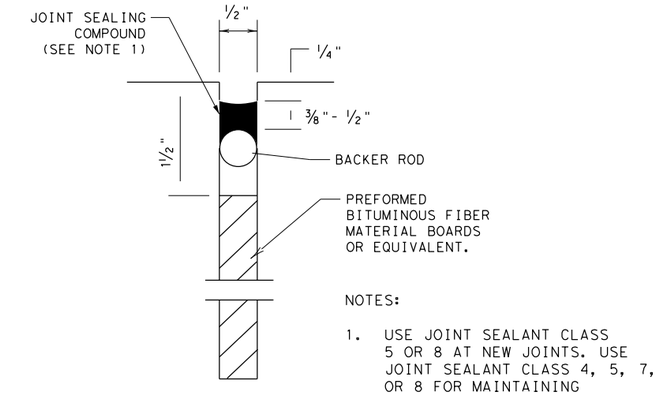
SIDEWALK EXPANSION JOINT DETAIL



NOTES:

1. SIDEWALK EXPANSION JOINT DOWELS ARE CONSIDERED SUBSIDIARY TO ITEM 531.
2. SIDEWALK EXPANSION JOINTS SHALL BE INSTALLED AT MAXIMUM 40 FT INTERVALS, COINCIDE WITH CURB EXPANSION JOINT, CONNECTIONS TO EXISTING CONCRETE, CONNECTIONS TO PROPOSED CONCRETE DRIVEWAYS, WHERE DAILY WORK TERMINATES, AND AS DIRECTED BY THE ENGINEER.

EXPANSION JOINT DETAIL



NOTES:

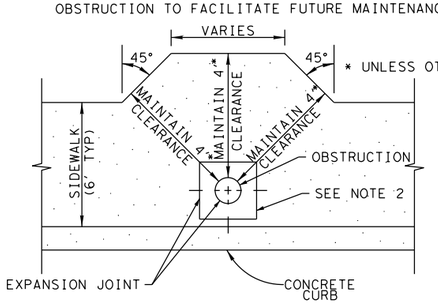
1. USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4, 5, 7, OR 8 FOR MAINTAINING EXISTING JOINTS.

OBSTRUCTION CONFLICT

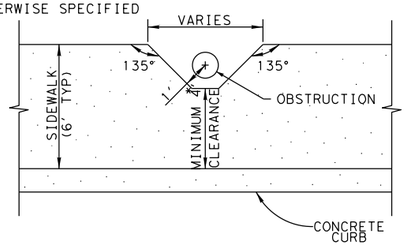
NOTES:

1. UTILIZE DETAIL AT OBSTRUCTION ENCROACHMENTS INTO THE PEDESTRIAN ACCESS ROUTE. A MINIMUM UNOBSTRUCTED CLEARANCE OF 4', UNLESS OTHERWISE SPECIFIED, SHOULD BE MAINTAINED AROUND THE OBSTRUCTION MEASURED FROM THE MOST RESTRICTIVE LOCATION OR AS APPROVED BY THE ENGINEER

2. IF OBSTRUCTION IS LOCATED WITHIN THE SIDEWALK, CONSTRUCT 2' SQUARE CONSTRUCTION JOINT CENTERED ON OBSTRUCTION TO FACILITATE FUTURE MAINTENANCE WITHOUT FULL SIDEWALK PANEL REMOVAL/REPLACEMENT

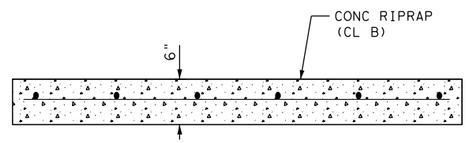


OBSTRUCTION IN SIDEWALK

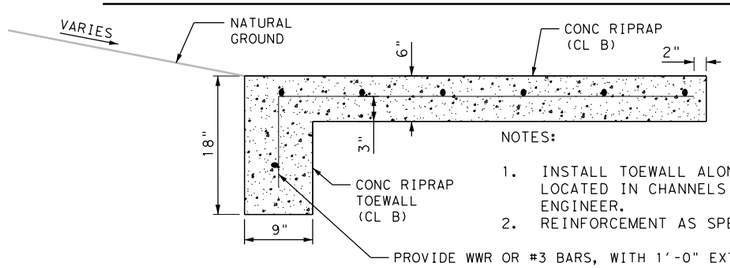


OBSTRUCTION OUTSIDE SIDEWALK

CONCRETE RIPRAP DETAIL



CONCRETE RIPRAP W/ TOEWALL DETAIL



NOTES:

1. INSTALL TOEWALL ALONG PERIMETER OF RIPRAP LOCATED IN CHANNELS OR AS DIRECTED BY THE ENGINEER.
2. REINFORCEMENT AS SPECIFIED IN ITEM 432.

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

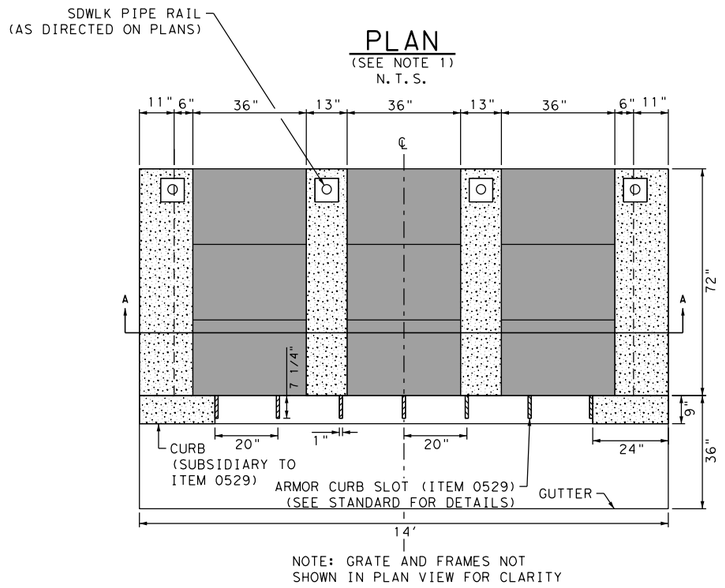
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SPECIAL DETAILS

SHEET 3 OF 11

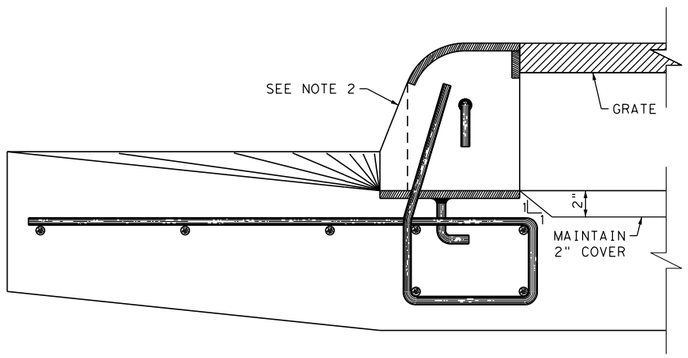
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	37

SIDEWALK (TYPE A) DETAIL



ARMOR CURB SLOT DETAIL

N.T.S.



NOTES:

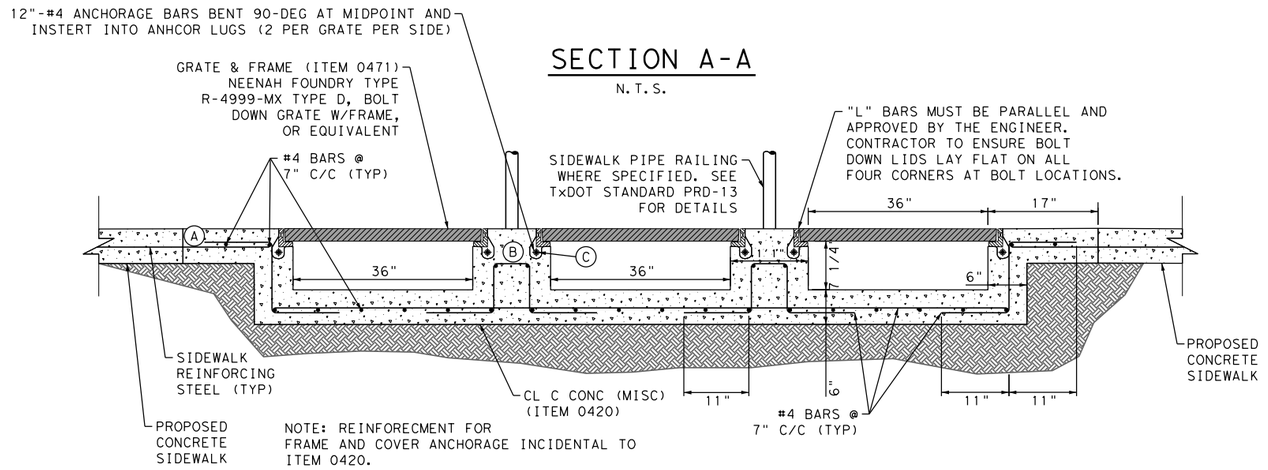
1) SIDEWALK (TY A) IS PAID
   SEPARATELY UNDER THE FOLLOWING PAY ITEMS
   UNLESS OTHERWISE SHOW:

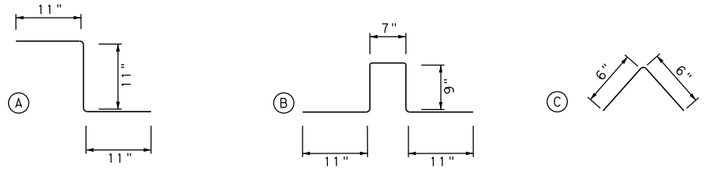
   ITEM 0104-6029 REMOVING CONC (CURB OR CURB & GUTTER)
   ITEM 0471-6003 GRATE & FRAME
   ITEM 0529-6020 CONC CURB & GUTTER (ARMOR CURB)
   ITEM 0420-6074 CL C CONC (MISC)

2) SEE ARMOR CURB SLOT DETAIL FOR
   ADDITIONAL INFORMATION

SECTION A-A

N.T.S.





REINFORCING STEEL DETAIL

TABLE OF REINFORCING STEEL			
BAR	SIZE	SPAN	NO.
A	#4	2'-9"	20
B	#4	3'-11"	20

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

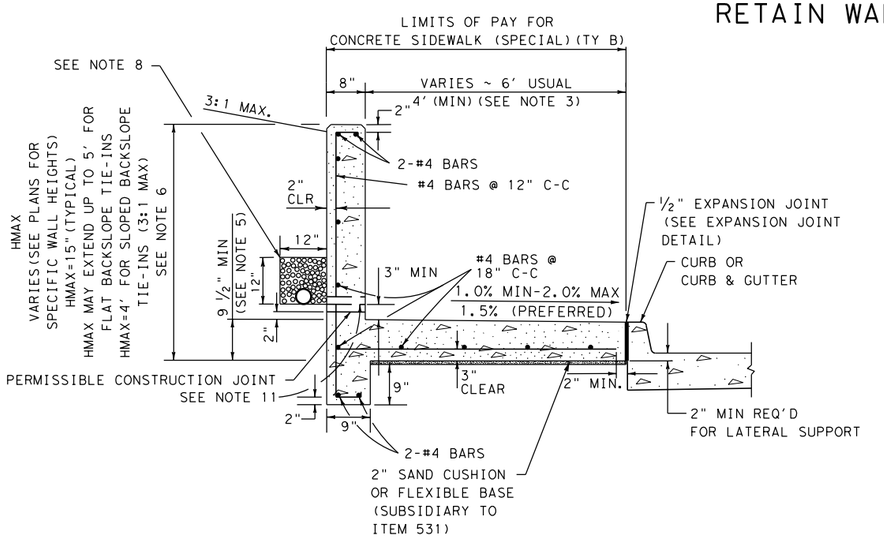
SPECIAL DETAILS

SHEET 4 OF 11

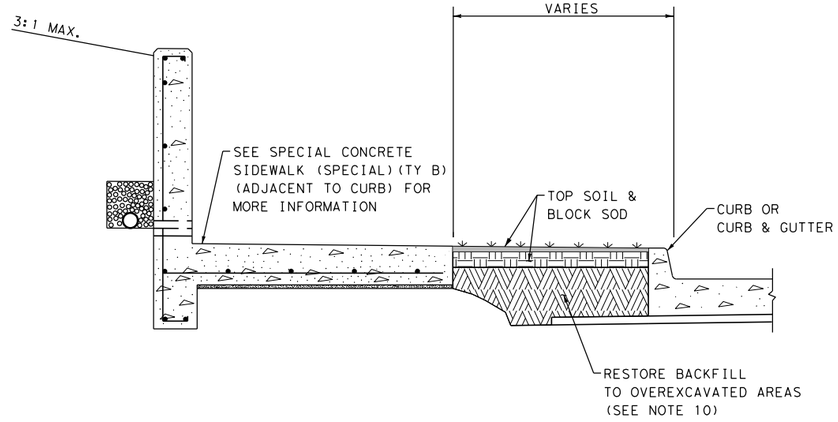
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	38

Plotted on: 3/4/2024
Design Filename: S:\projects\6122\54\02\Design\01_Rio_Hondo_ADA\Civil\General\6125402O1_Rio_Hondo_ADA_SAMPLE06.dgn

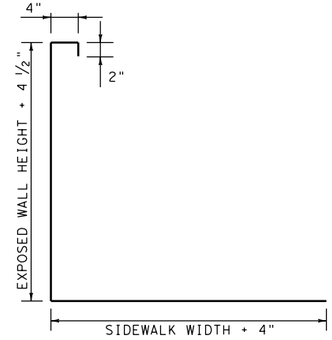
CONCRETE SIDEWALK (SPECIAL) (TY B)
RETAIN WALL (CUT)



ADJACENT TO CURB

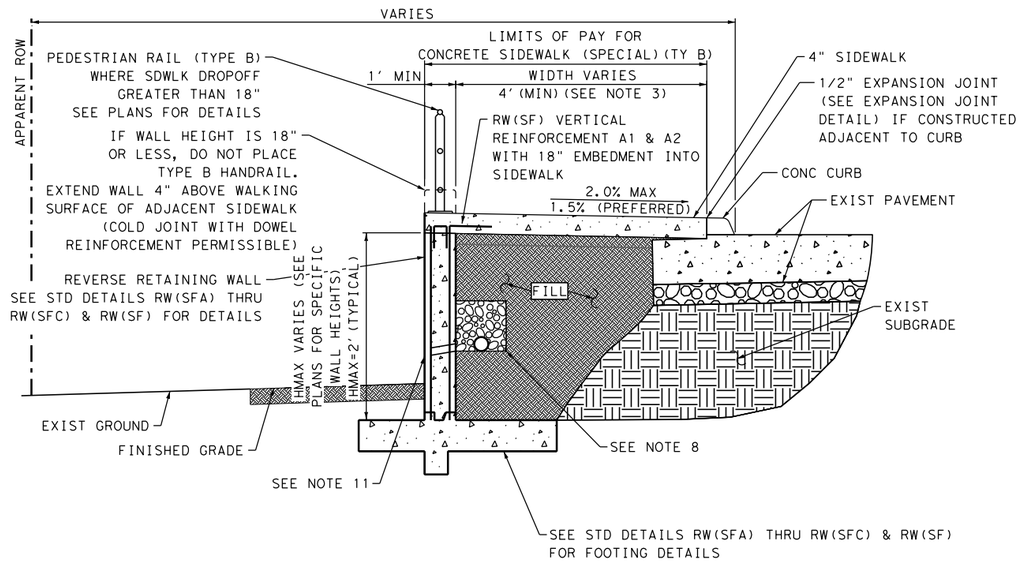


SEPARATED FROM CURB



REINFORCING STEEL DETAIL

CONCRETE SIDEWALK (SPECIAL) (TY B)
RETAIN WALL (FILL)



NOTES:

1. SEE PLAN SHEETS FOR LOCATIONS OF SIDEWALKS WITH INTEGRATED CUT OR FILL RETAINING WALLS.
2. LONGITUDINAL SLOPE OF SIDEWALKS SHALL NOT EXCEED 5% EXCEPT IN CASES WHERE THE ADJACENT ROADWAY SLOPE EXCEEDS 5%. IF ROADWAY SLOPE EXCEEDS 5%, LONGITUDINAL SLOPE OF SIDEWALK MAY MATCH THAT OF ROADWAY.
3. IF SIDEWALK WIDTH IS LESS THAN 5', PROVIDE 5' x 5' PASSING AREAS AT INTERVALS NOT TO EXCEED 200' SPACING.
4. RETAINING WALL IS CONSIDERED SUBSIDIARY TO ITEM 531, WALL LENGTH AND HMAX ARE SHOWN ON THE PLANS FOR CONTRACTOR INFORMATION ONLY.
5. FOR RETAINING WALL (CUT) FEATURES, CONCRETE SIDEWALK (SPECIAL) (TY B) THICKNESS IS PERMITTED TO BE 6" IN AREAS WHERE HMAX IS LESS THAN OR EQUAL TO 3'. THE SIDEWALK THICKNESS SHALL BE CONSTRUCTED AS INDICATED ON DETAIL FOR HMAX IN EXCESS OF 3' OR WHERE WALLS OF ANY HEIGHT ARE TO BE CONSTRUCTED ADJACENT TO PARKING.
6. EXCAVATION, HAULING, AND DISPOSAL OF EXCAVATED MATERIAL IS NOT PAID FOR SEPARATELY, CONSIDERED SUBSIDIARY TO ITEM 531.
7. EXCAVATED MATERIAL MAY BE USED AS EMBANKMENT IF APPROVED BY THE AREA ENGINEER.
8. CONSTRUCT FILTER MATERIAL AND 4" DRAIN PIPE PER ITEM 556 (TYPE 5, 6, 7, OR 8) (NOT PAID FOR SEPARATELY, SUBSIDIARY TO ITEM 531). SLOPE TO DRAIN AND TERMINATE AT WALL LIMITS OR AS DIRECTED BY THE ENGINEER. IF, IN THE OPINION OF THE ENGINEER, THE USE OF AN UNDERDRAIN IS IMPRACTICAL, WEEP HOLES MAY BE USED (NSPI).
9. CHAMFER ALL EXPOSED CORNERS 3/4".
10. WHERE OVER-EXCAVATION IS REQUIRED TO FORM CURB AND/OR SIDEWALK, RESTORE AND COMPACT BACKFILL UP TO LIMITS OF TOPSOIL BEFORE BACKFILLING BEHIND WALL.
11. 2" WEEP HOLES AT 15' MAX SPACING. SLOPE TO DRAIN. 1' SQUARE HARDWARE CLOTH (1/4" MESH) CENTERED BEHIND OPENING.

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

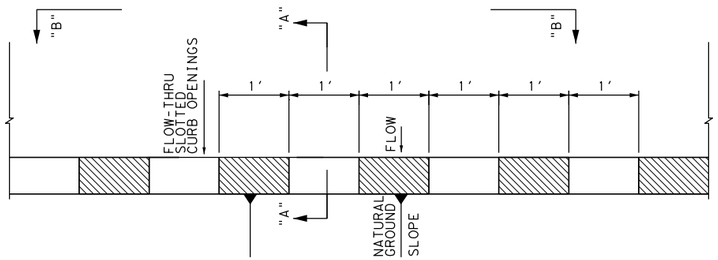
SPECIAL DETAILS

SHEET 5 OF 11

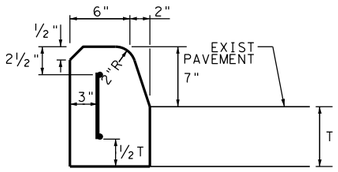
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	39

SLOTTED CURB DETAIL

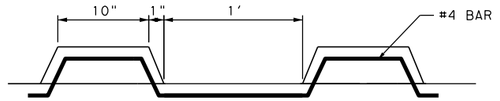
N.T.S.



PLAN VIEW
SCALE : NTS



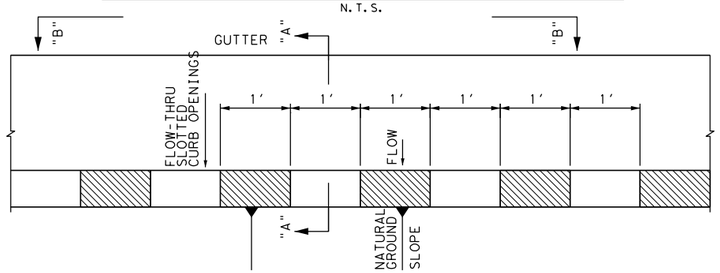
SECTION "A-A"
N.T.S.



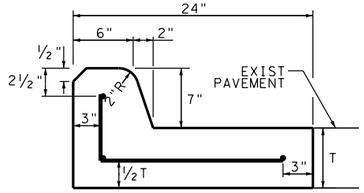
SECTION "B-B"
N.T.S.

SLOTTED CURB AND GUTTER DETAIL

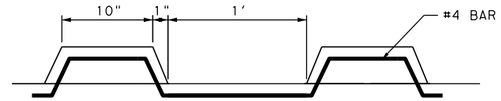
N.T.S.



PLAN VIEW
SCALE : NTS



SECTION "A-A"
N.T.S.

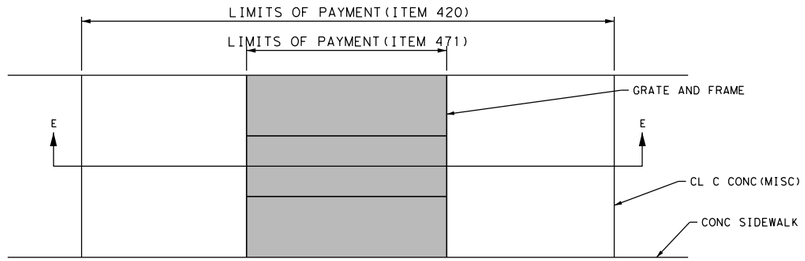


SECTION "B-B"
N.T.S.

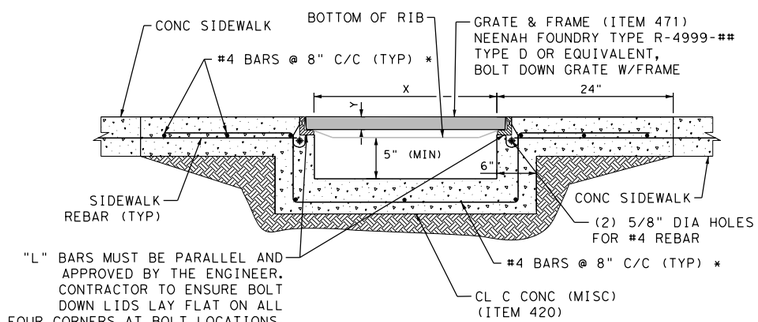
GRATE & FRAME DETAIL

N.T.S

* REINFORCEMENT IS SUBSIDIARY TO ITEM 420.



SINGLE CHANNEL PLAN VIEW
N.T.S



SECTION E-E
N.T.S.

GRATE LENGTH	X	Y	R-4999-##
20"	18"	1.5"	FX
26"	24"	1.5"	HX
39"	36"	2.0"	MX
51"	48"	2.0"	OX

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

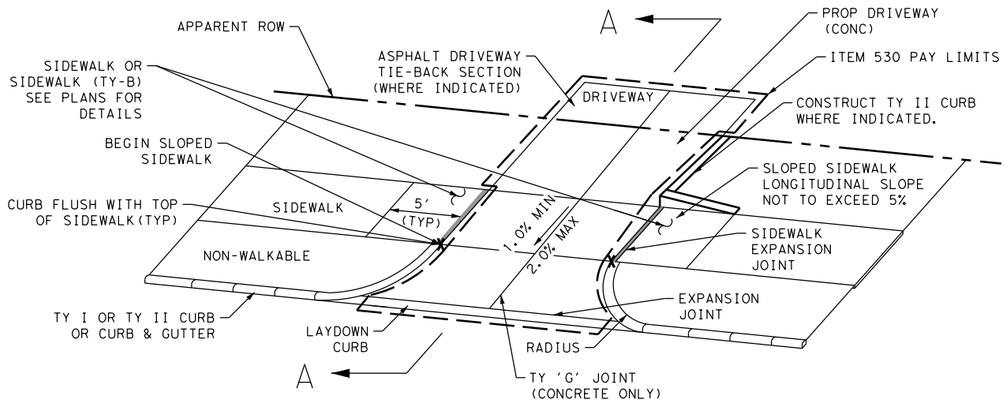
REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

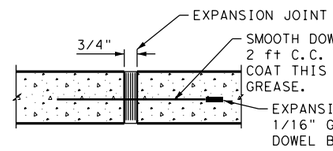
SPECIAL DETAILS

SHEET 6 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	40



DRIVEWAY W/ SIDEWALK OFFSET FROM CURB DETAILS



USE JOINT WHEN CONCRETE DRIVEWAYS MUST BE PLACED IN HALF WIDTHS.

TY 'G' JOINT

LEGEND

X CONTROL POINT

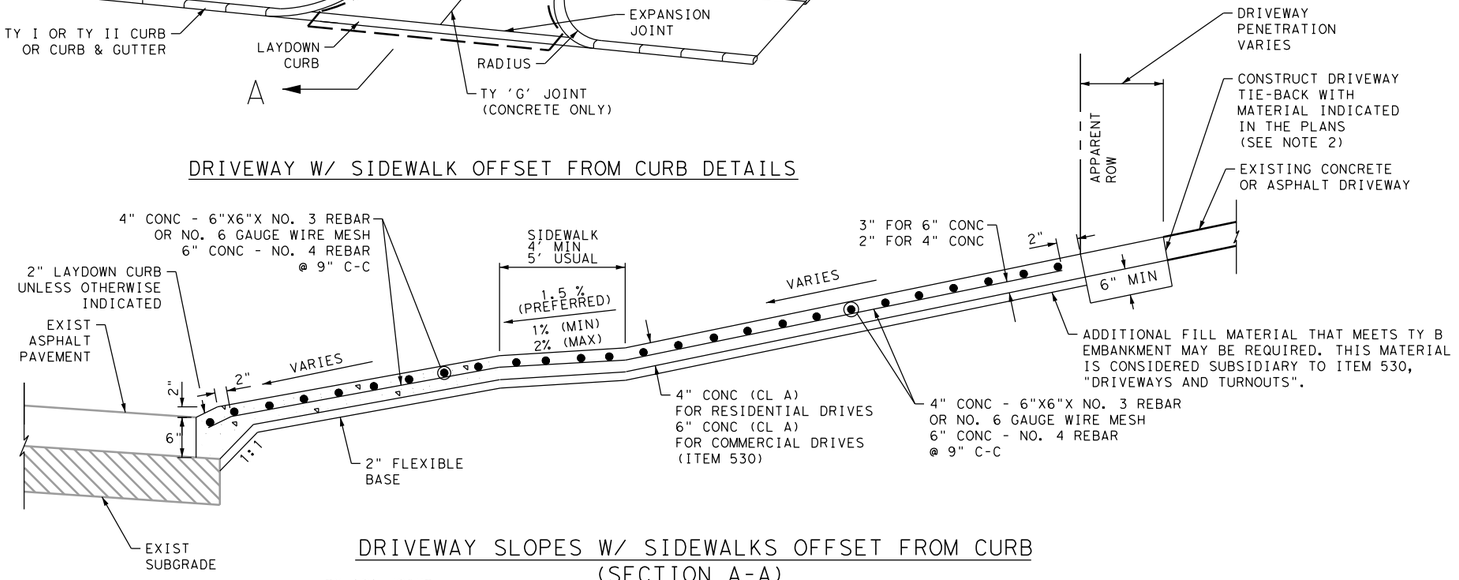
NOTES:

1) SLOPED SIDEWALK SEGMENT LENGTHS ARE SHOWN TO CONSERVATIVELY ACCOMMODATE STANDARD CURB HEIGHTS ON LEVEL STREETS. SOME SLOPED SIDEWALK SEGMENTS MAY REQUIRE ADDITIONAL LENGTH TO ENSURE LONGITUDINAL SLOPES DO NOT EXCEED 5%. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY EXTEND THE SLOPED SIDEWALK SEGMENT TO THE NEXT PLANAR ELEMENT (LS, L, SL, R, T, ETC.) OR UNTIL THE SLOPED SIDEWALK REACHES CURB HEIGHT, WHICHEVER IS SHORTER.

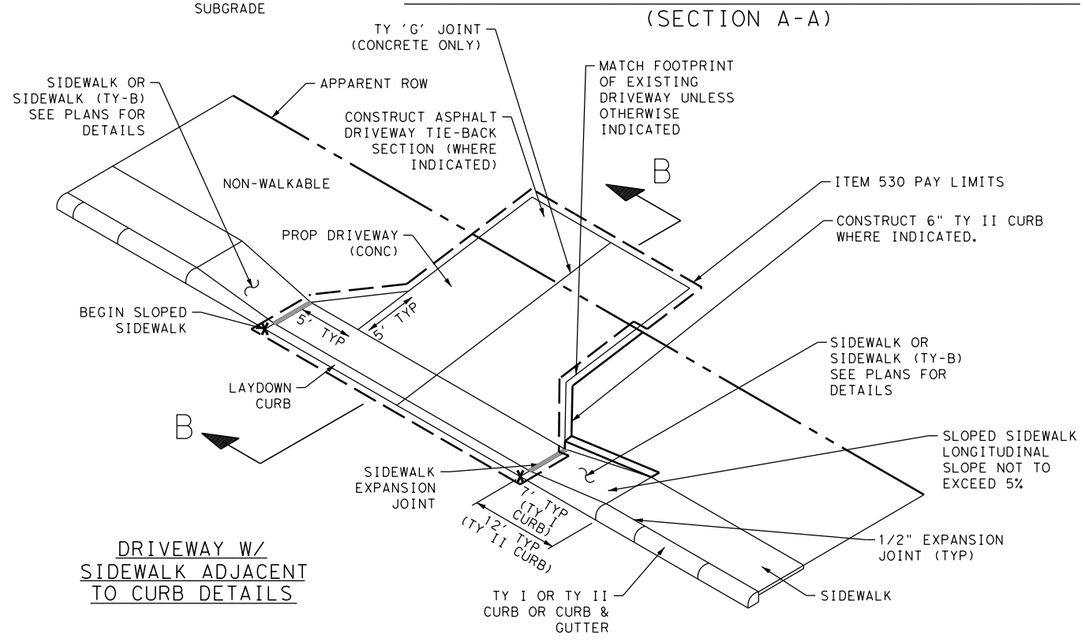
2) IF DRIVEWAY TIE-BACK IS SPECIFIED AS CONCRETE, SAWCUT EXISTING CONCRETE AT THE TIE-IN LOCATION MIN. 1/2", THEN BREAKBACK, CLEAN, AND EXPOSE 18" STEEL REINFORCING IN EXISTING CONCRETE. INSTALL FLEXIBLE BASE AS INDICATED. CONSTRUCT CONCRETE DRIVEWAY PER ITEM 530. USE 3/4" EXPANSION JOINT MATERIAL WITH DOWELS AT JOINT.

   IF DRIVEWAY TIE-BACK IS SPECIFIED AS ASPHALT, SAWCUT EXISTING ASPHALT AT THE TIE-IN LOCATION. INSTALL 6" FLEXIBLE BASE OR ASPHALTIC CONCRETE BASE (SUBSIDIARY TO ITEM 530). CONSTRUCT ASPHALT DRIVEWAY (PG 64-22 SAC B) PER ITEM 530. USE 3/4" EXPANSION JOINT MATERIAL WITH DOWELS AT JOINT.

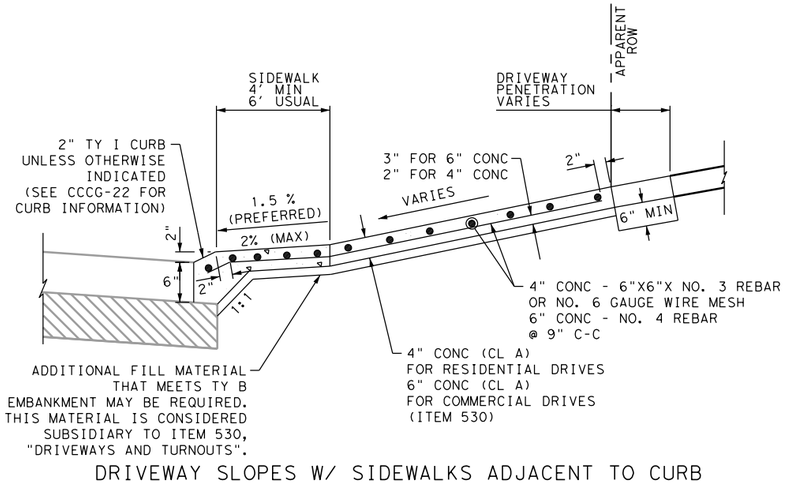
3) LETTER OF PERMISSION NEEDS TO BE OBTAINED FROM PROPERTY OWNERS FOR THE CONSTRUCTION OF DRIVEWAYS THAT EXTEND ONTO PRIVATE PROPERTY THE CONTRACTOR SHALL CONTACT EACH PROPERTY OWNER PRIOR TO CONSTRUCTION OF THESE DRIVEWAYS. REFERENCE TEMPORARY CONSTRUCTION EASEMENTS FOR DETAILS.



DRIVEWAY SLOPES W/ SIDEWALKS OFFSET FROM CURB (SECTION A-A)



DRIVEWAY W/ SIDEWALK ADJACENT TO CURB DETAILS



DRIVEWAY SLOPES W/ SIDEWALKS ADJACENT TO CURB (SECTION B-B)

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

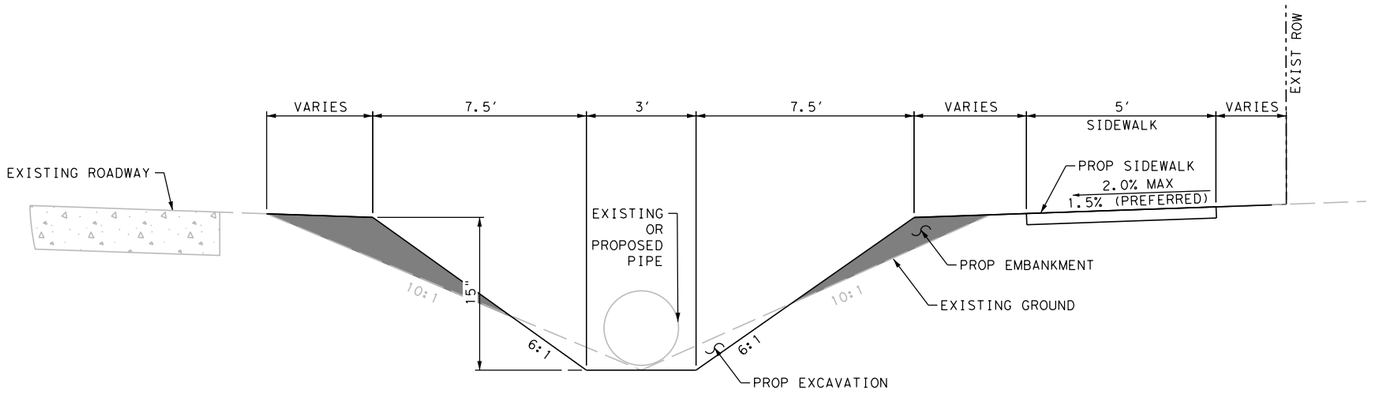
SPECIAL DETAILS

SHEET 7 OF 11

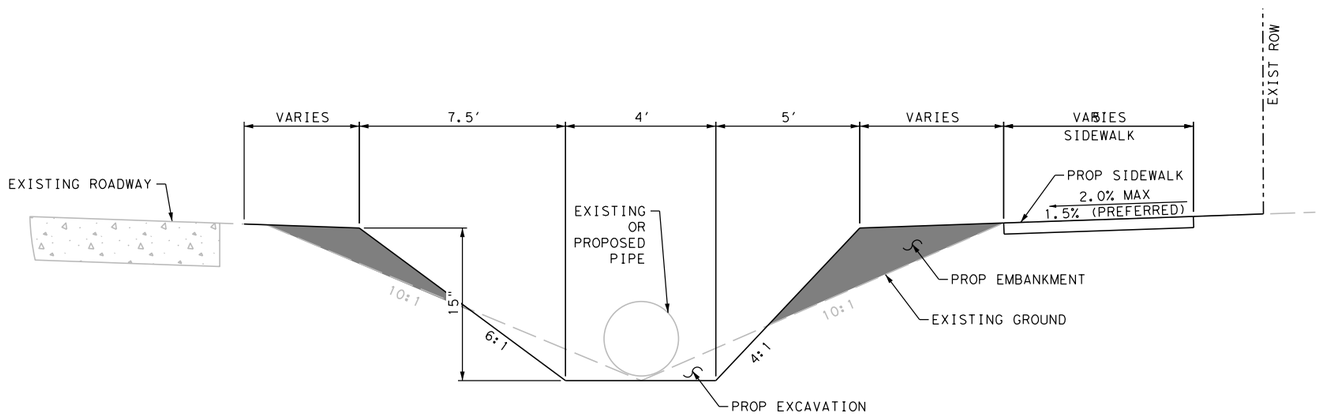
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	41

Plotted on: 3/4/2024

Design Filename: S:\projects\612540201\02\Design\01_Rio_Hondo_ADA\Civil\General\612540201_Rio_Hondo_ADA_SAMPLE10.dgn



SECTION A-A
NTS



SECTION B-B
NTS

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

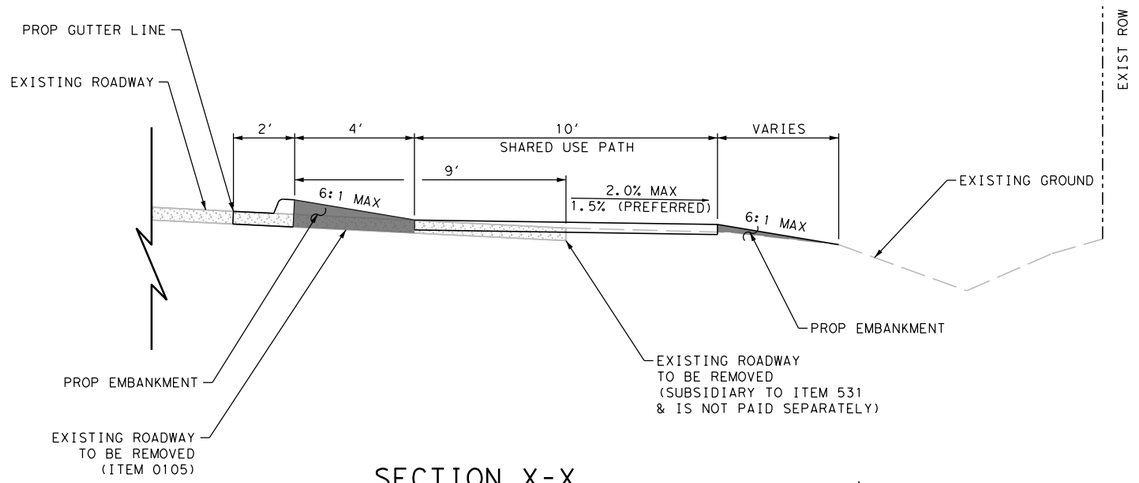
SPECIAL DETAILS

SHEET 8 OF 11

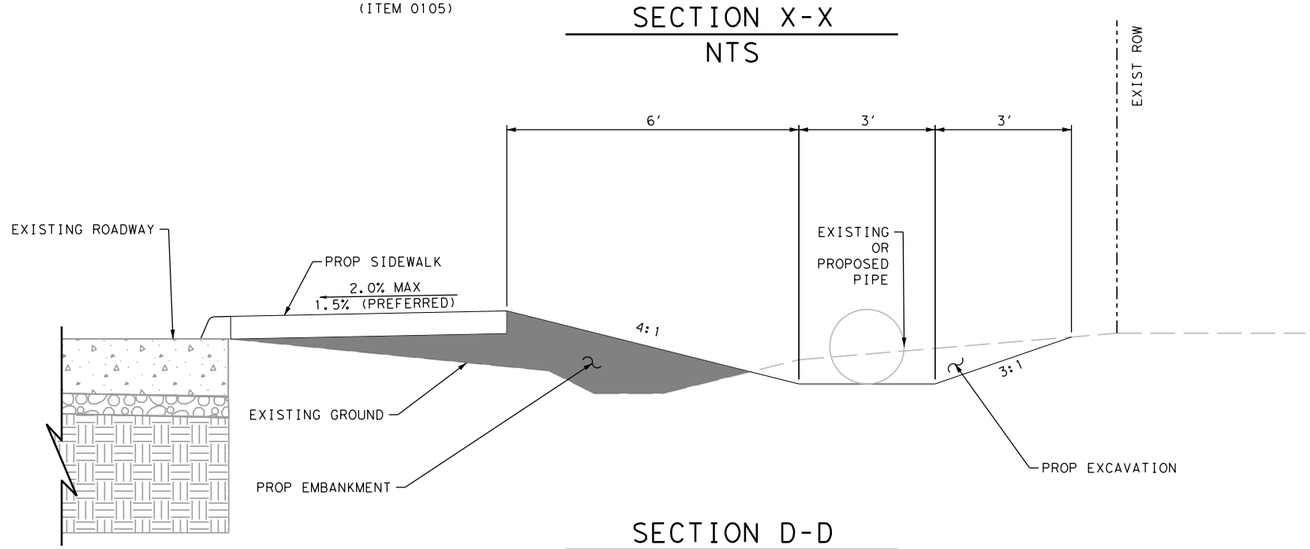
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	42

Plotted on: 3/4/2024

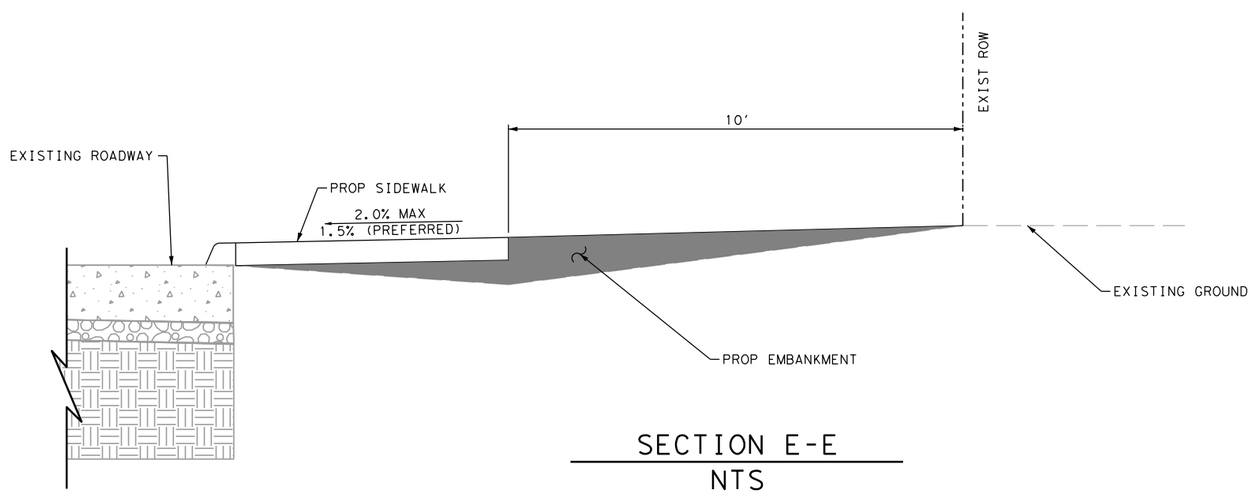
Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\General\612540201_Rio_Hondo_ADA_SAMPLE11.dgn



SECTION X-X
NTS



SECTION D-D
NTS



SECTION E-E
NTS

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

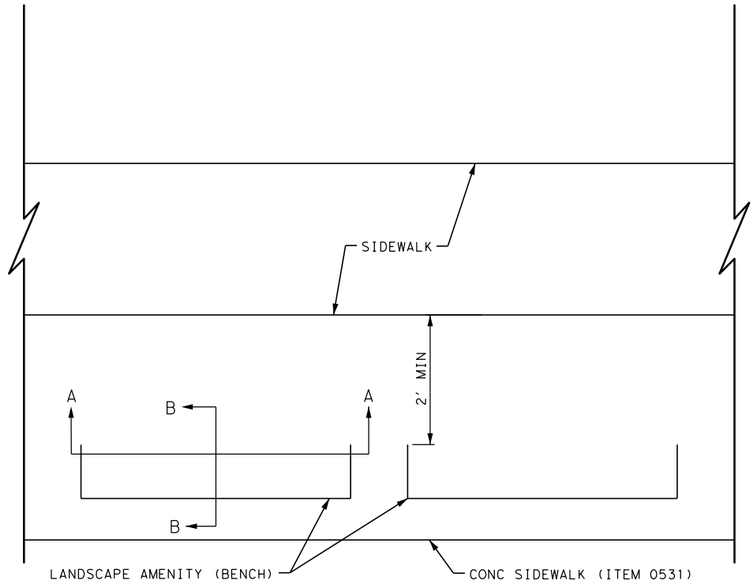
SPECIAL DETAILS

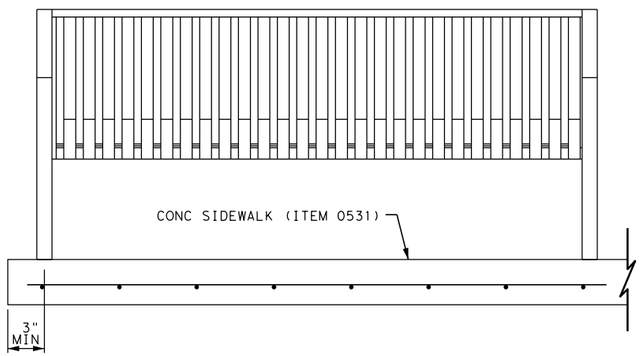
SHEET 9 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	43

METAL BENCH DETAIL (ITEM 1002)

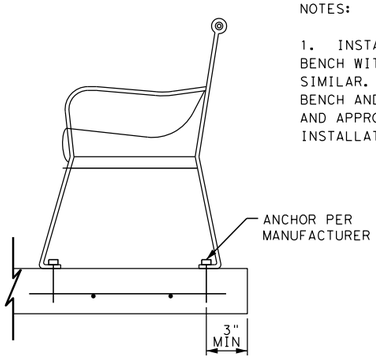
N.T.S





FRONT VIEW A-A

N.T.S



SIDE VIEW B-B

N.T.S

NOTES:

1. INSTALL A COMMERCIAL STEEL OUTDOOR BENCH WITH STRAIGHT BACK, BELSON OR SIMILAR. SUBMIT SHOP DRAWING INCLUDING BENCH AND MOUNTING HARDWARE FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO INSTALLATION.

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SPECIAL DETAILS

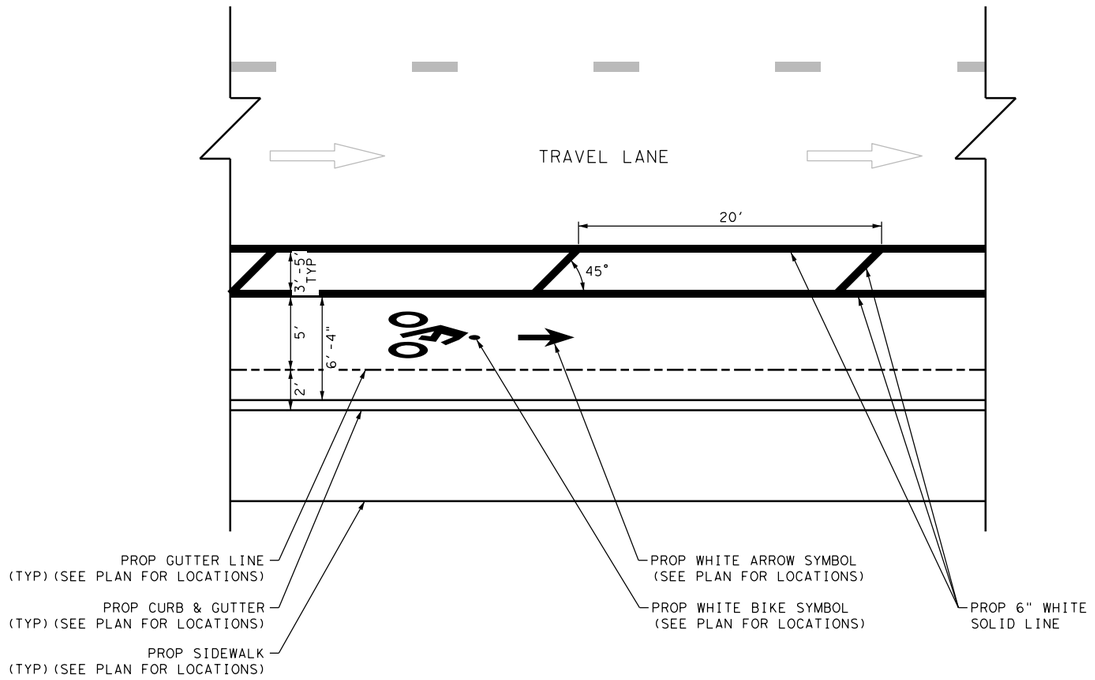
SHEET 10 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	44

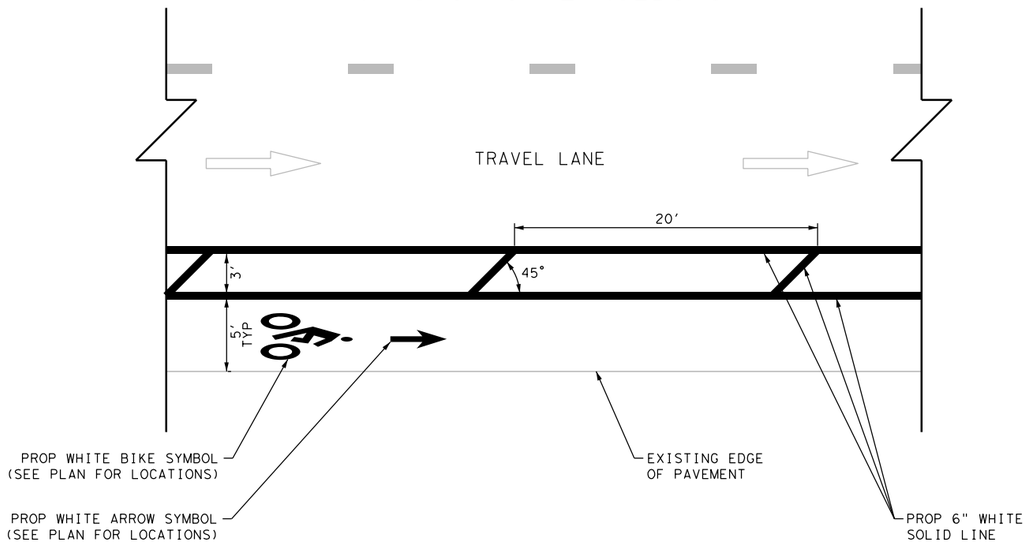
Plotted on: 3/4/2024

Design Filename: S:\projects\612541\02\Design\01_Rio_Hondo_ADA\Civil\General\612540201_Rio_Hondo_ADA_SAMPLE14.dgn

BUFFERED BIKE LANE DETAIL A
SH-345 (N SAM HOUSTON BLVD)



BUFFERED BIKE LANE DETAIL B
FM-1846 (S REYNOLDS ST)



DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

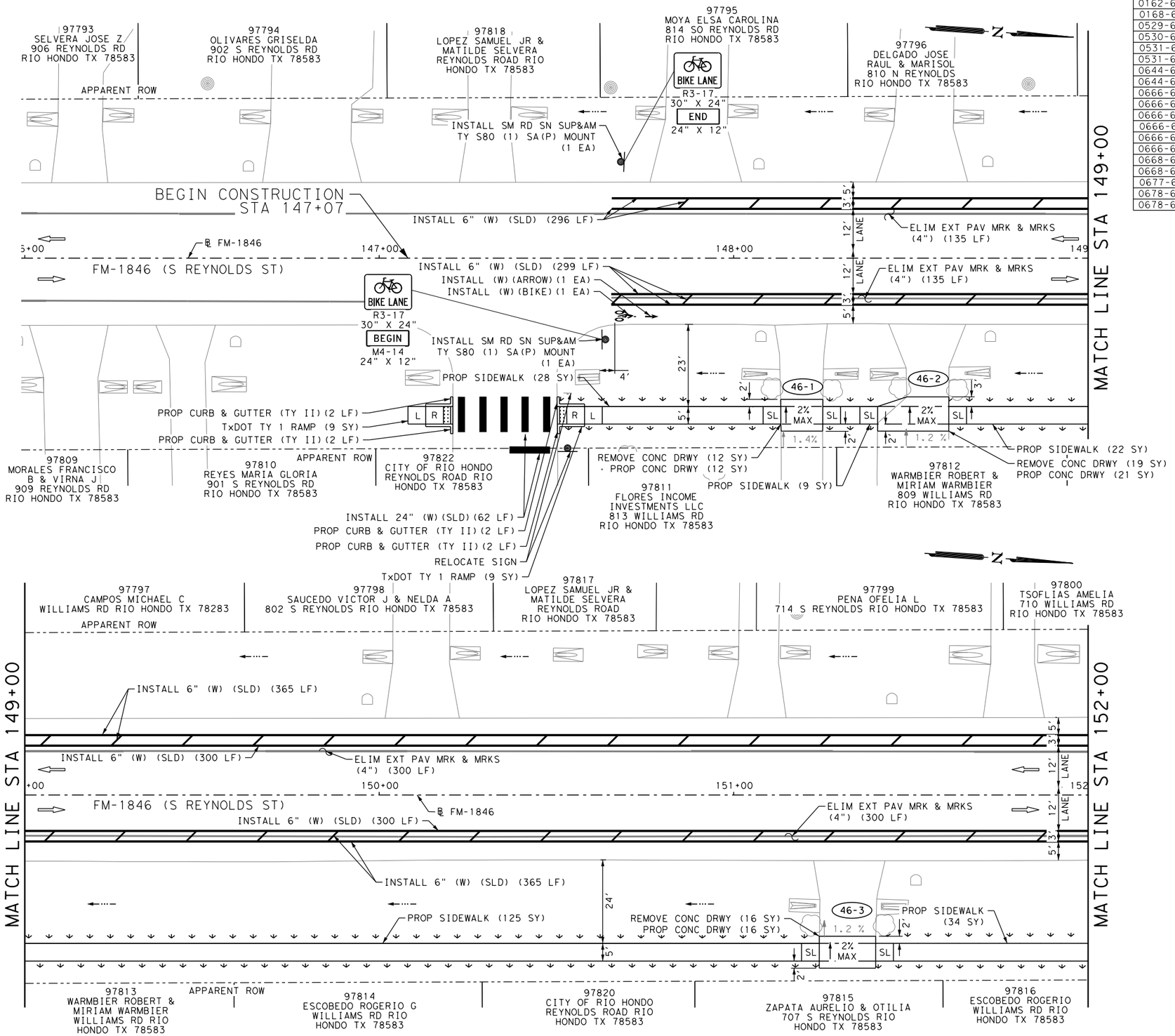
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SPECIAL DETAILS

SHEET 11 OF 11

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	45

ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	47
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	275
0162-6002	BLOCK SODDING	SY	275
0168-6001	VEGETATIVE WATERING	MG	4.7
0529-6008	CONC CURB & GUTTER (TY II)	LF	8
0530-6004	DRIVEWAYS (CONC)	SY	49
0531-6001	CONC SIDEWALKS (4")	SY	218
0531-6018	CURB RAMPS (TY 1)	SY	18
0644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	2
0644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	1
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	62
0666-6225	PAVEMENT SEALER 6"	LF	1925
0666-6230	PAVEMENT SEALER 24"	LF	62
0666-6231	PAVEMENT SEALER (ARROW)	EA	1
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	1
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	1925
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	1
0668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	1
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	870
0678-6002	PAV SURF PREP FOR MRK (6")	LF	1925
0678-6008	PAV SURF PREP FOR MRK (24")	LF	62



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

FM 1846 (REYNOLDS ST)

SIDEWALK PLAN

BEGIN CONSTRUCTION TO STA 152+00

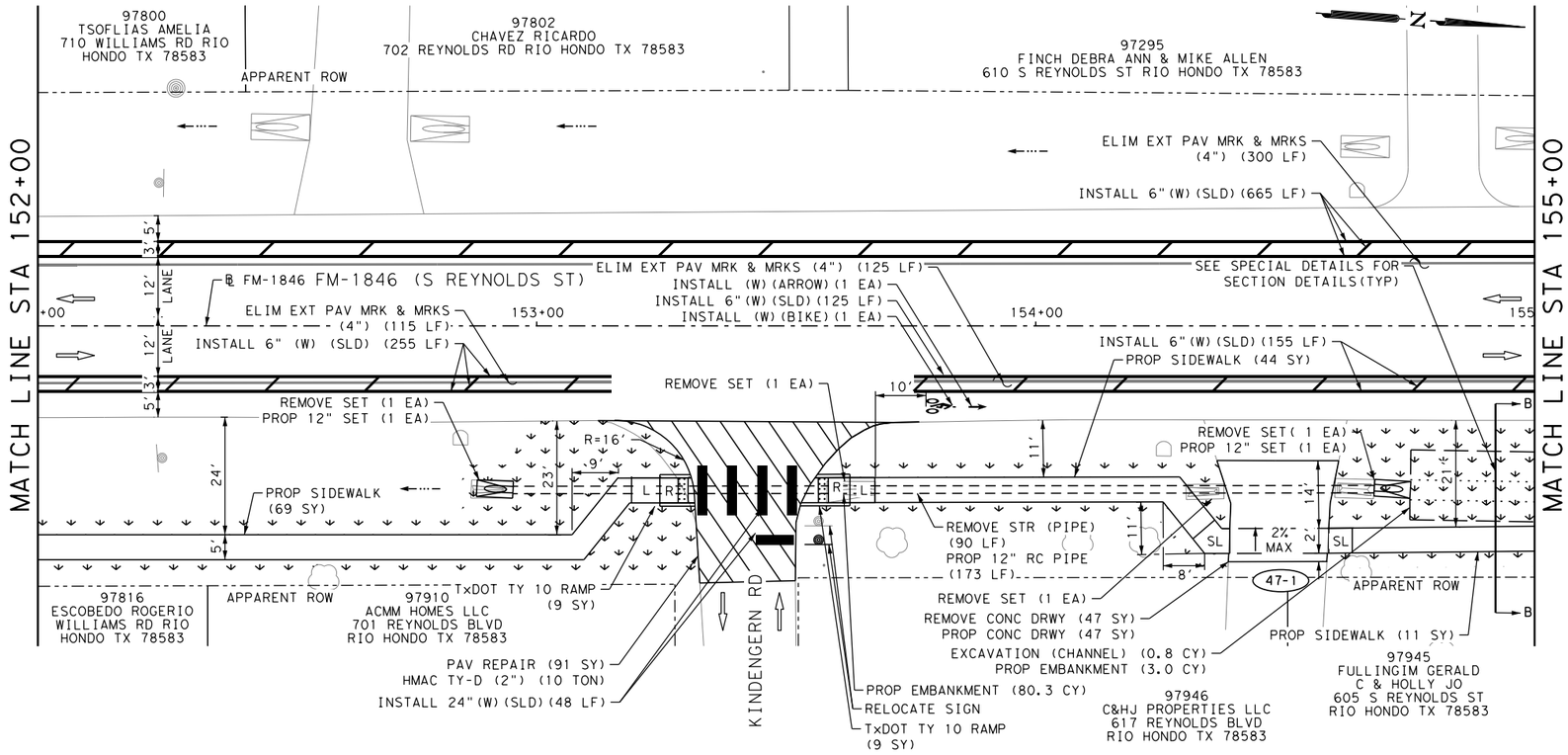
SHEET 1 OF 6

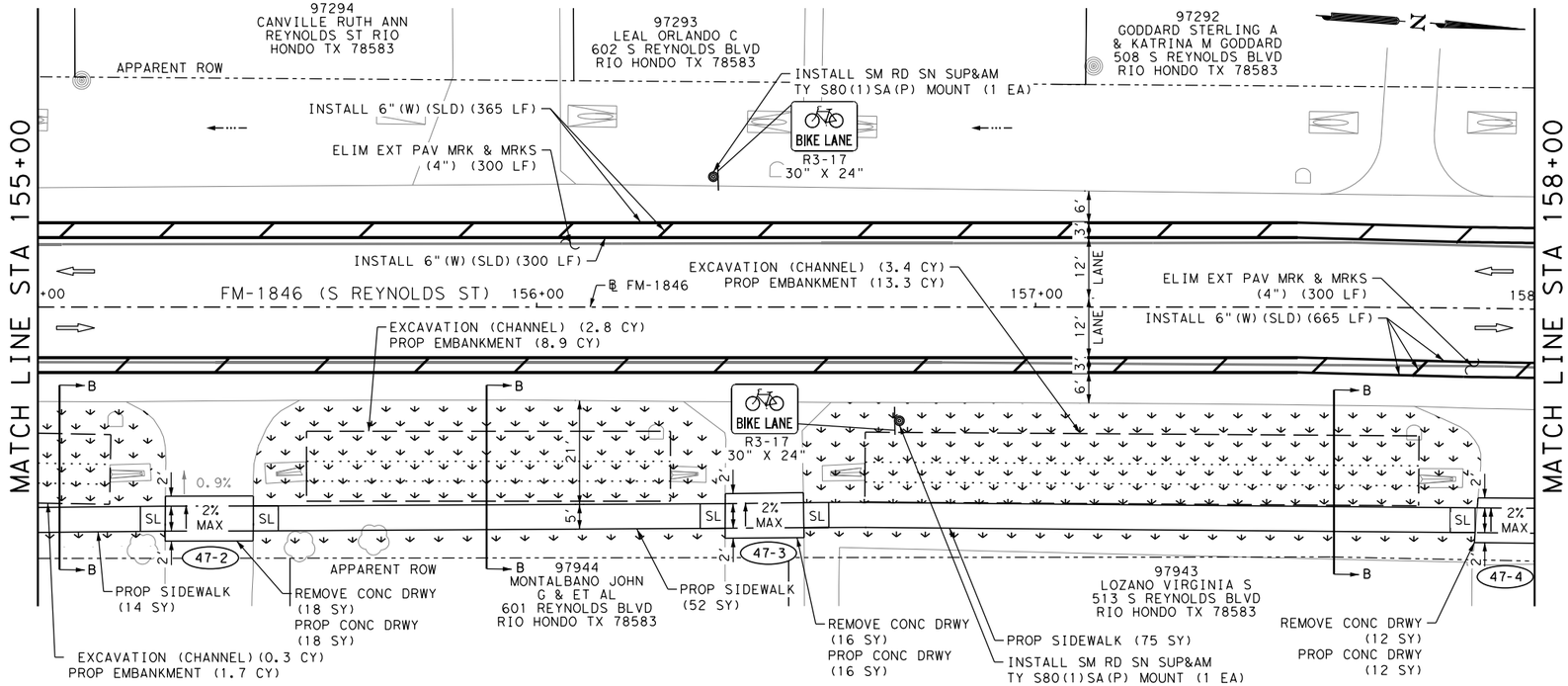
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	46

Plotted on: 3/4/2024

Design Filename: S:\projects\612540\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\1-612540201_FM1846_01.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	93
0110-6002	EXCAVATION (CHANNEL)	CY	7.3
0132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	107.2
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	996
0162-6002	BLOCK SODDING	SY	996
0168-6001	VEGETATIVE WATERING	MG	16.8
0351-6006	FLEXIBLE PAVEMENT STRUCTURE REPAIR(10")	SY	91
0464-6001	RC PIPE (CL III)(12 IN)	LF	173
0467-6323	SET (TY II) (12 IN) (RCP) (4: 1) (C)	EA	2
0496-6004	REMOV STR (SET)	EA	4
0496-6007	REMOV STR (PIPE)	LF	90
0530-6004	DRIVEWAYS (CONC)	SY	93
0531-6001	CONC SIDEWALKS (4")	SY	265
0531-6027	CURB RAMPS (TY 10)	SY	18
0644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	2
0644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	48
0666-6225	PAVEMENT SEALER 6"	LF	2530
0666-6230	PAVEMENT SEALER 24"	LF	48
0666-6231	PAVEMENT SEALER (ARROW)	EA	1
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	1
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	2530
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	1
0668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	1
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	1140
0678-6002	PAV SURF PREP FOR MRK (6")	LF	2530
0678-6008	PAV SURF PREP FOR MRK (24")	LF	48
3076-6072	D-GR HMA TY-D PG 76-22 (EXEMPT)	TON	10





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Texas Department of Transportation

FM 1846 (REYNOLDS ST)

SIDEWALK PLAN

STA 152+00 TO STA 158+00

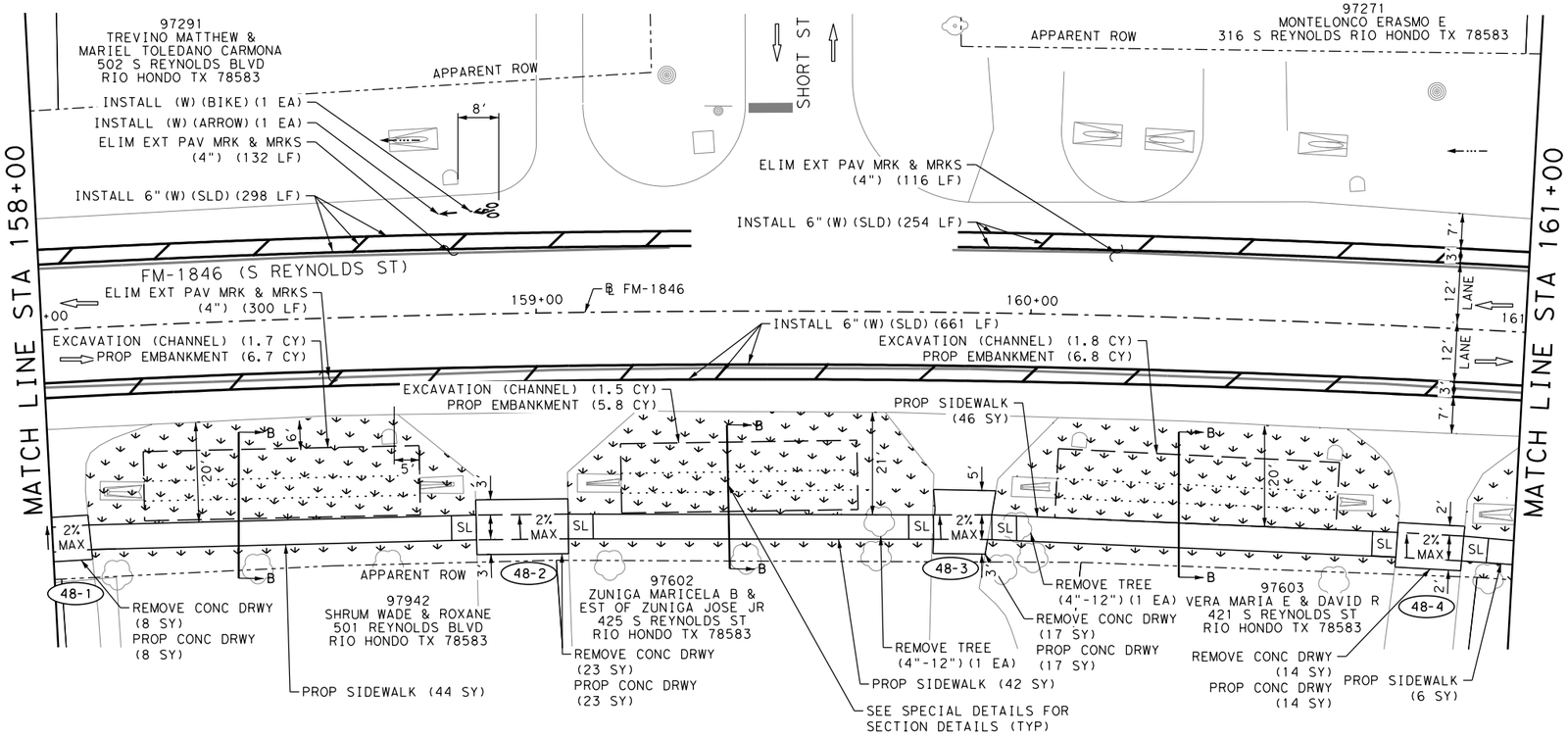
SHEET 2 OF 6

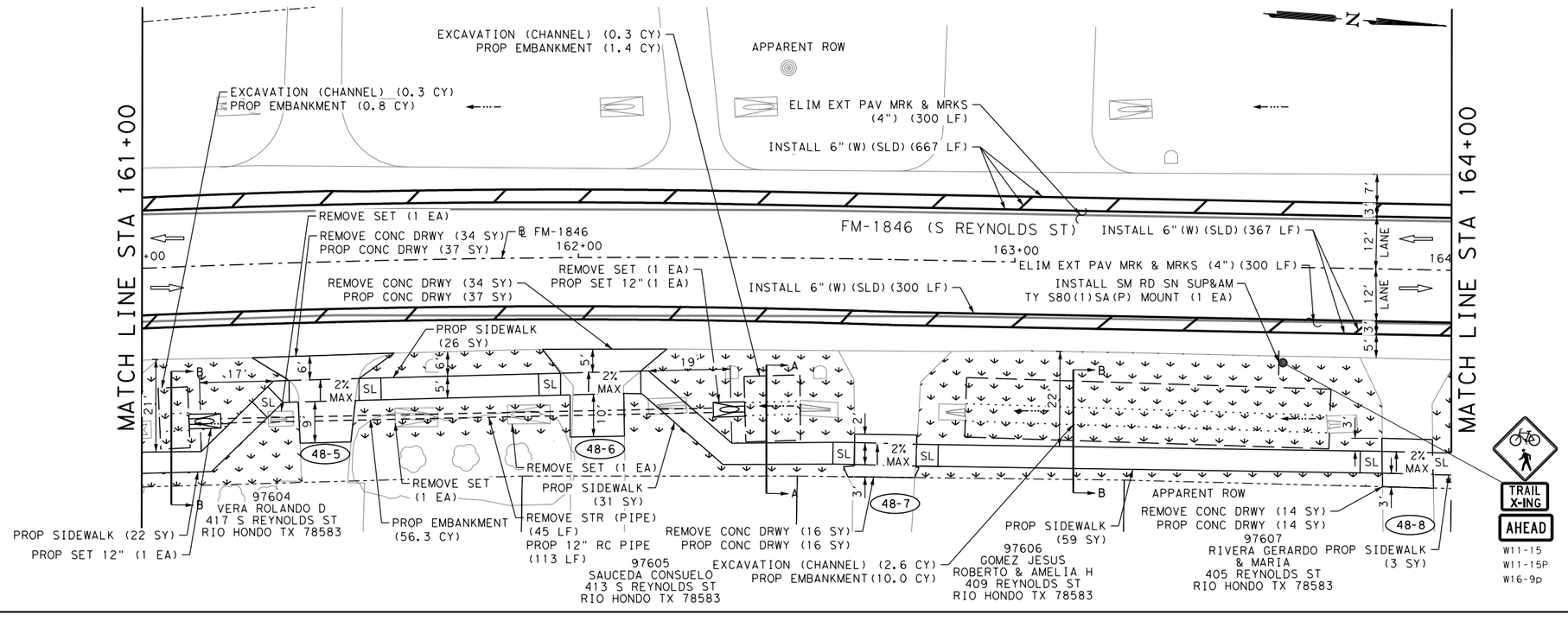
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	47

Plotted on: 3/4/2024

Design Filename: S:\projects\612540\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\1-612540201_FM1846_02.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	160
0110-6002	EXCAVATION (CHANNEL)	CY	8.2
0132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	87.8
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	1129
0162-6002	BLOCK SODDING	SY	1129
0168-6001	VEGETATIVE WATERING	MG	19.1
0464-6001	RC PIPE (CL III)(12 IN)	LF	113
0467-6323	SET (TY II) (12 IN) (RCP) (4:1) (C)	EA	2
0496-6004	REMOV STR (SET)	EA	4
0496-6007	REMOV STR (PIPE)	LF	45
0530-6004	DRIVEWAYS (CONC)	SY	166
0531-6001	CONC SIDEWALKS (4")	SY	279
0644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	1
0666-6225	PAVEMENT SEALER 6"	LF	2547
0666-6231	PAVEMENT SEALER (ARROW)	EA	1
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	1
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	2547
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	1
0668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	1
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	1148
0678-6002	PAV SURF PREP FOR MRK (6")	LF	2547
0752-6005	TREE REMOVAL (4" - 12" DIA)	EA	2





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Texas Department of Transportation ©2024

FM 1846 (REYNOLDS ST)

SIDEWALK PLAN

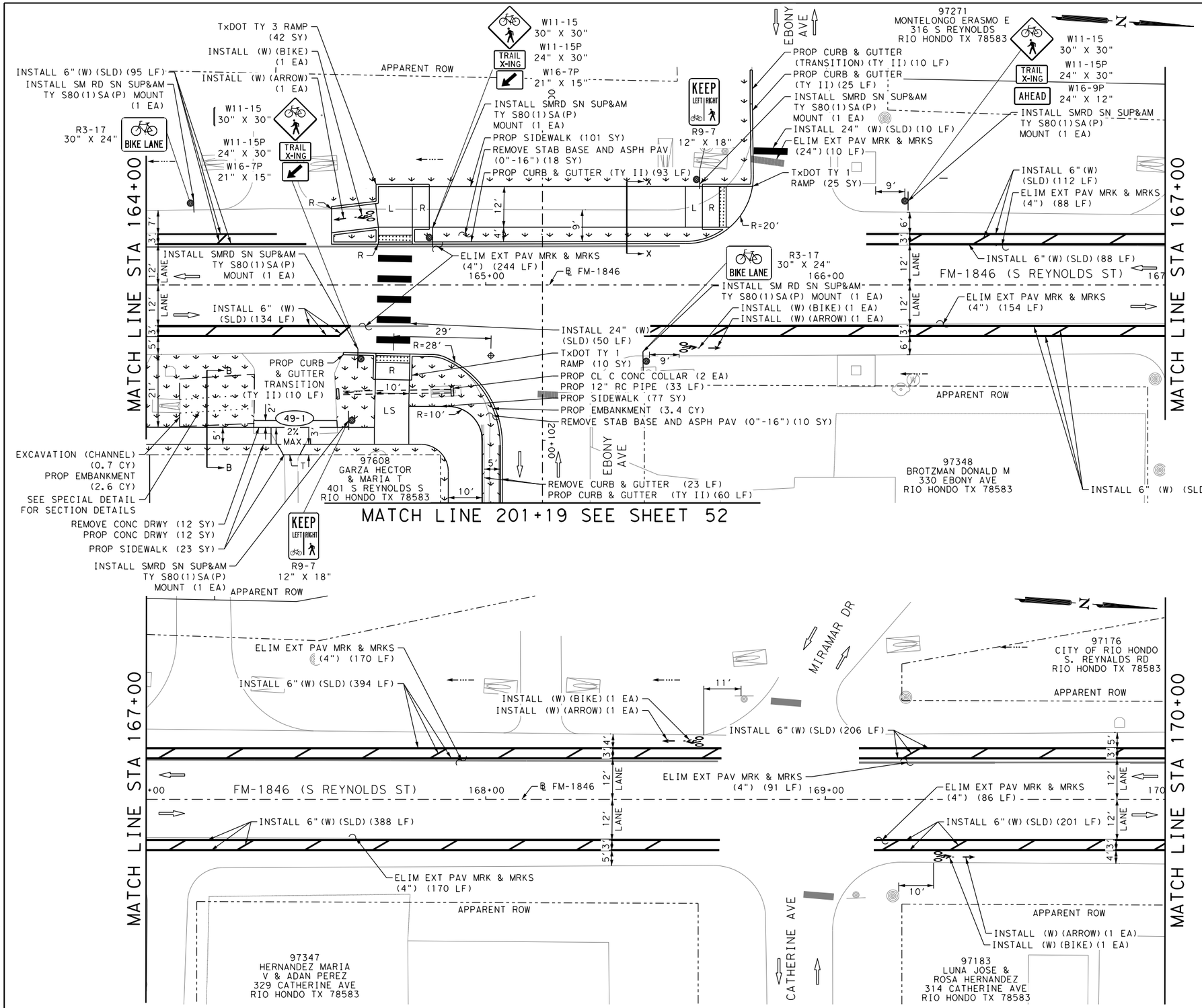
STA 158+00 TO STA 164+00

SHEET 3 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	48

Plotted on: 3/4/2024

Design Filename: S:\projects\612540\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\1-612540201_FM1846_03.dgn



ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	12
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	23
0105-6037	REMOVING STAB BASE AND ASPH PAV(0"-16")	SY	28
0110-6002	EXCAVATION (CHANNEL)	CY	0.7
0132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	6.0
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	285
0162-6002	BLOCK SODDING	SY	285
0168-6001	VEGETATIVE WATERING	MG	4.8
0420-6071	CL C CONC (COLLAR)	EA	2
0464-6001	RC PIPE (CL III)(12 IN)	LF	33
0529-6008	CONC CURB & GUTTER (TY II)	LF	198
0530-6004	DRIVEWAYS (CONC)	SY	12
0531-6001	CONC SIDEWALKS (4")	SY	201
0531-6018	CURB RAMPS (TY 1)	SY	35
0531-6020	CURB RAMPS (TY 3)	SY	42
0644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	7
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	60
0666-6225	PAVEMENT SEALER 6"	LF	1974
0666-6230	PAVEMENT SEALER 24"	LF	60
0666-6231	PAVEMENT SEALER (ARROW)	EA	4
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	4
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	1974
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	4
0668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	4
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	1003
0677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	10
0678-6002	PAV SURF PREP FOR MRK (6")	LF	1974
0678-6008	PAV SURF PREP FOR MRK (24")	LF	60

NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

FM 1846 (REYNOLDS ST)

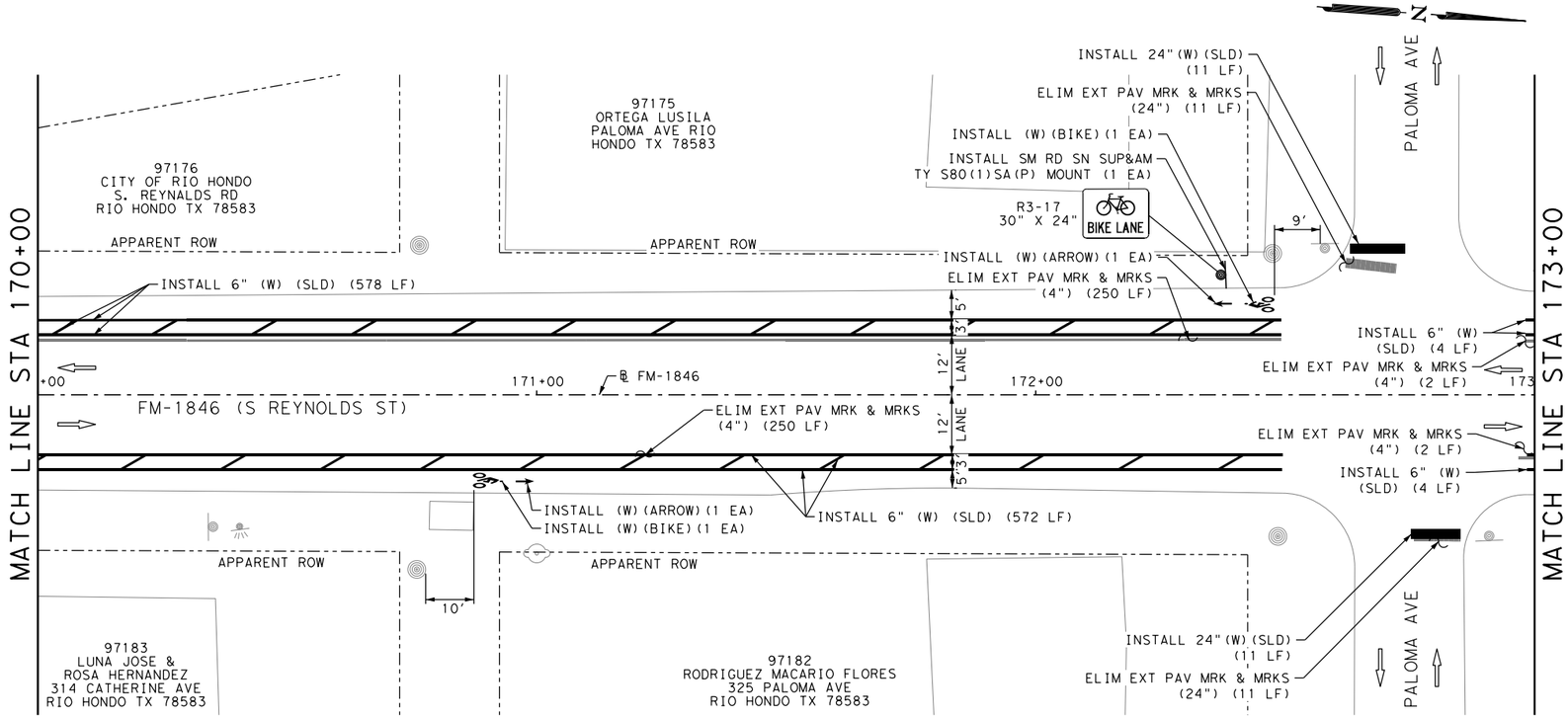
SIDEWALK PLAN

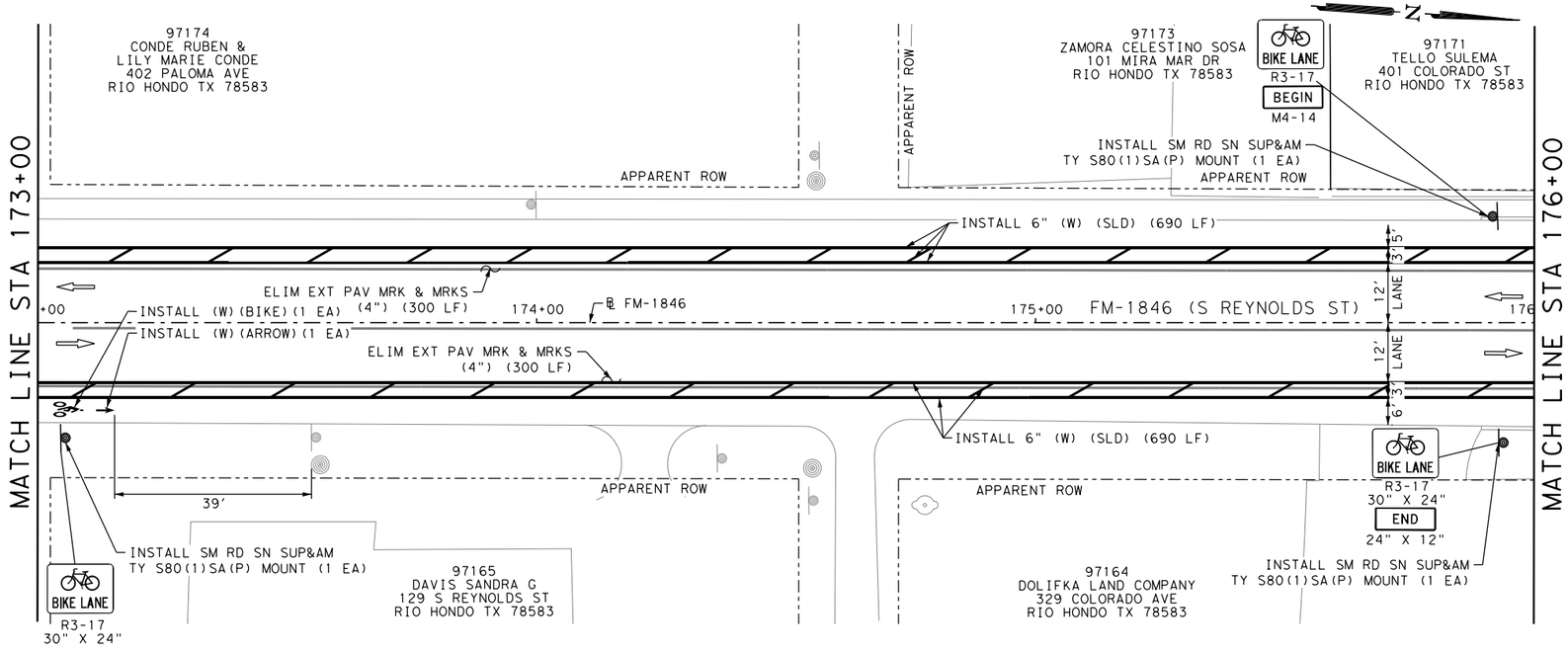
STA 164+00 TO STA 170+00

SHEET 4 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	49

Plotted on: 3/4/2024
Design Filename: S:\projects\612540201_FM1846_04.dgn





ITEM	DESCRIPTION	UNIT	QTY
0644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	4
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	22
0666-6225	PAVEMENT SEALER 6"	LF	2538
0666-6230	PAVEMENT SEALER 24"	LF	22
0666-6231	PAVEMENT SEALER (ARROW)	EA	3
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	3
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	2538
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	3
0668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	3
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	1104
0677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	22
0678-6002	PAV SURF PREP FOR MRK (6")	LF	2538
0678-6008	PAV SURF PREP FOR MRK (24")	LF	22

NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

FM 1846 (REYNOLDS ST)

SIDEWALK PLAN

STA 170+00 TO STA 176+00

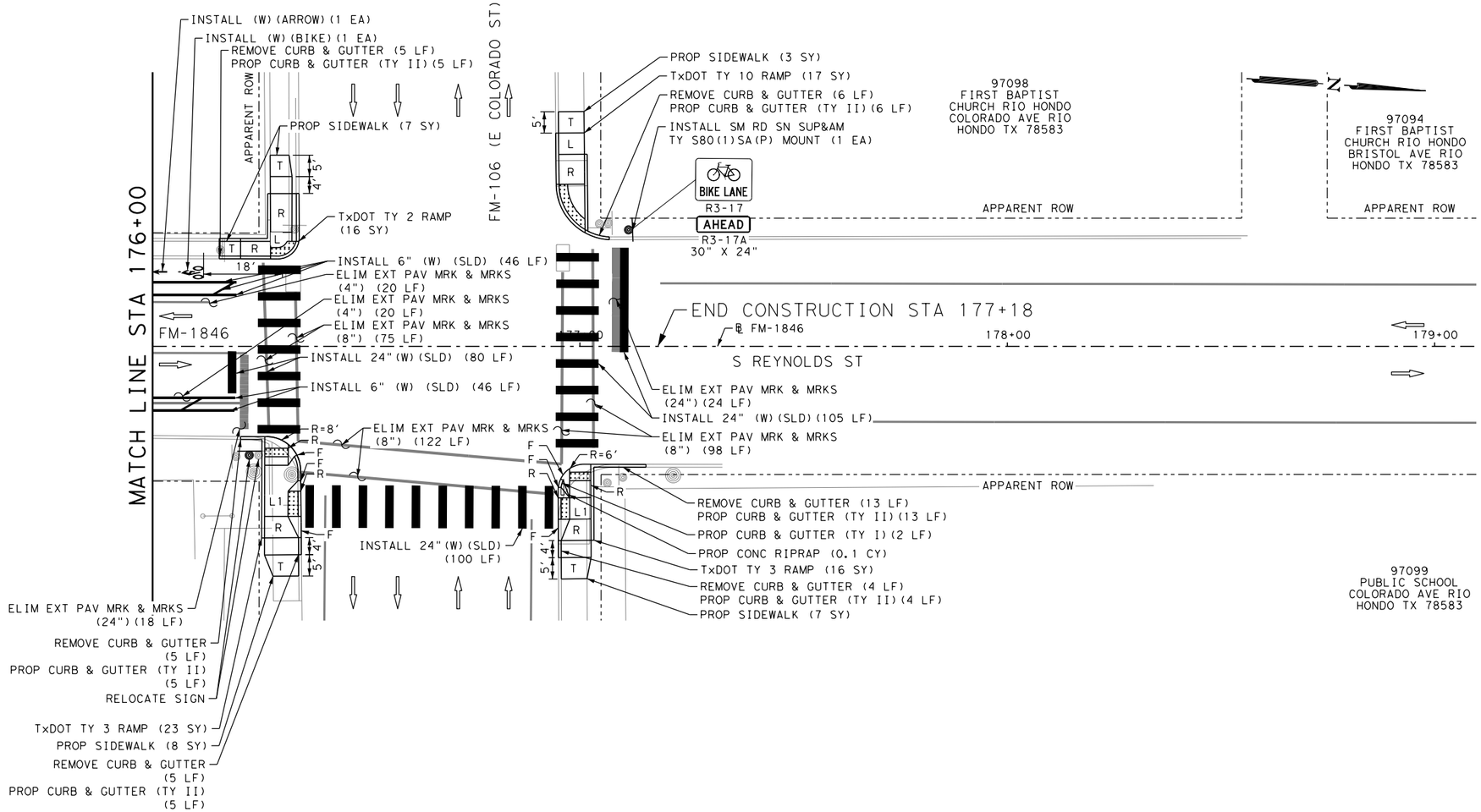
SHEET 5 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	50

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\1-612540201_FM1846_05.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	38
0432-6003	RIPRAP (CONC)(6 IN)	CY	0.1
0529-6007	CONC CURB & GUTTER (TY I)	LF	2
0529-6008	CONC CURB & GUTTER (TY II)	LF	38
0531-6001	CONC SIDEWALKS (4")	SY	25
0531-6019	CURB RAMPS (TY 2)	SY	16
0531-6020	CURB RAMPS (TY 3)	SY	39
0531-6027	CURB RAMPS (TY 10)	SY	17
0644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	1
0644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	1
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	285
0666-6225	PAVEMENT SEALER 6"	LF	92
0666-6230	PAVEMENT SEALER 24"	LF	285
0666-6231	PAVEMENT SEALER (ARROW)	EA	1
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	1
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	92
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	1
0668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	1
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	40
0677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	295
0677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	42
0678-6002	PAV SURF PREP FOR MRK (6")	LF	92
0678-6008	PAV SURF PREP FOR MRK (24")	LF	285



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Texas Department of Transportation ©2024

FM 1846 (REYNOLDS ST)

SIDEWALK PLAN

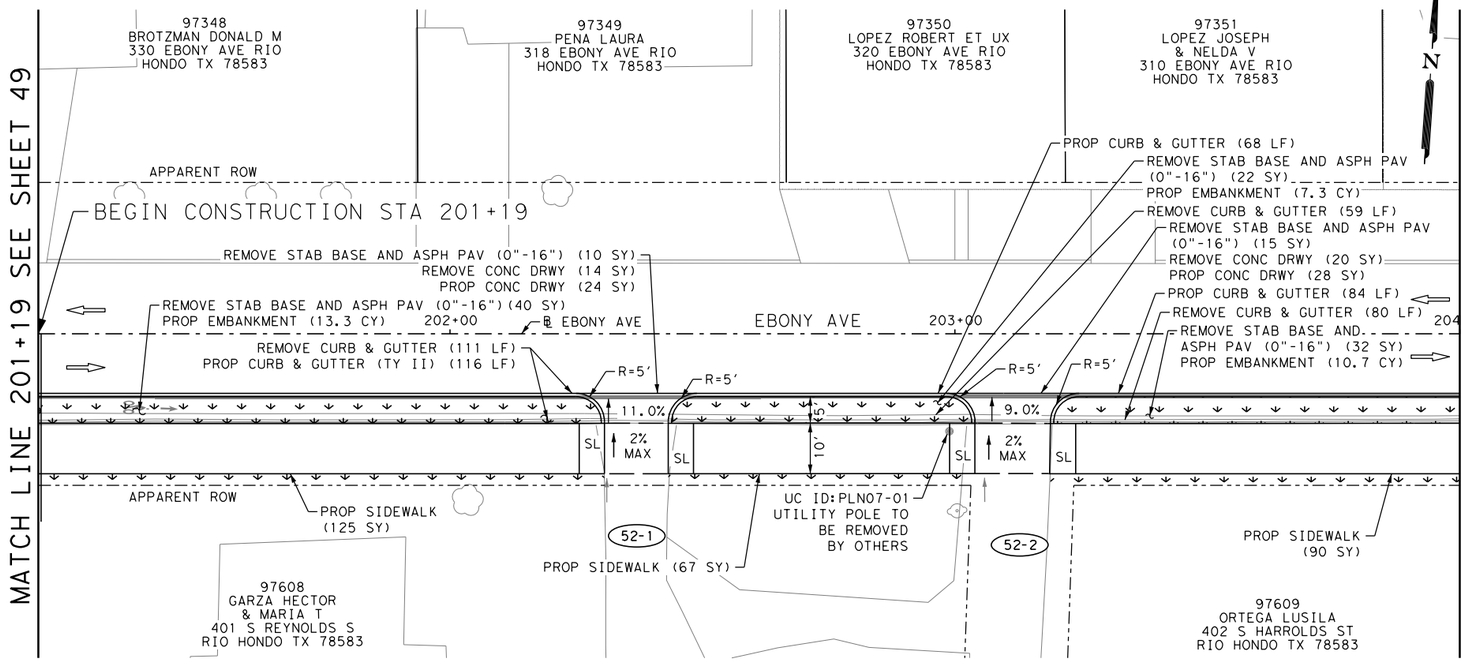
STA 176+00 TO END CONSTRUCTION

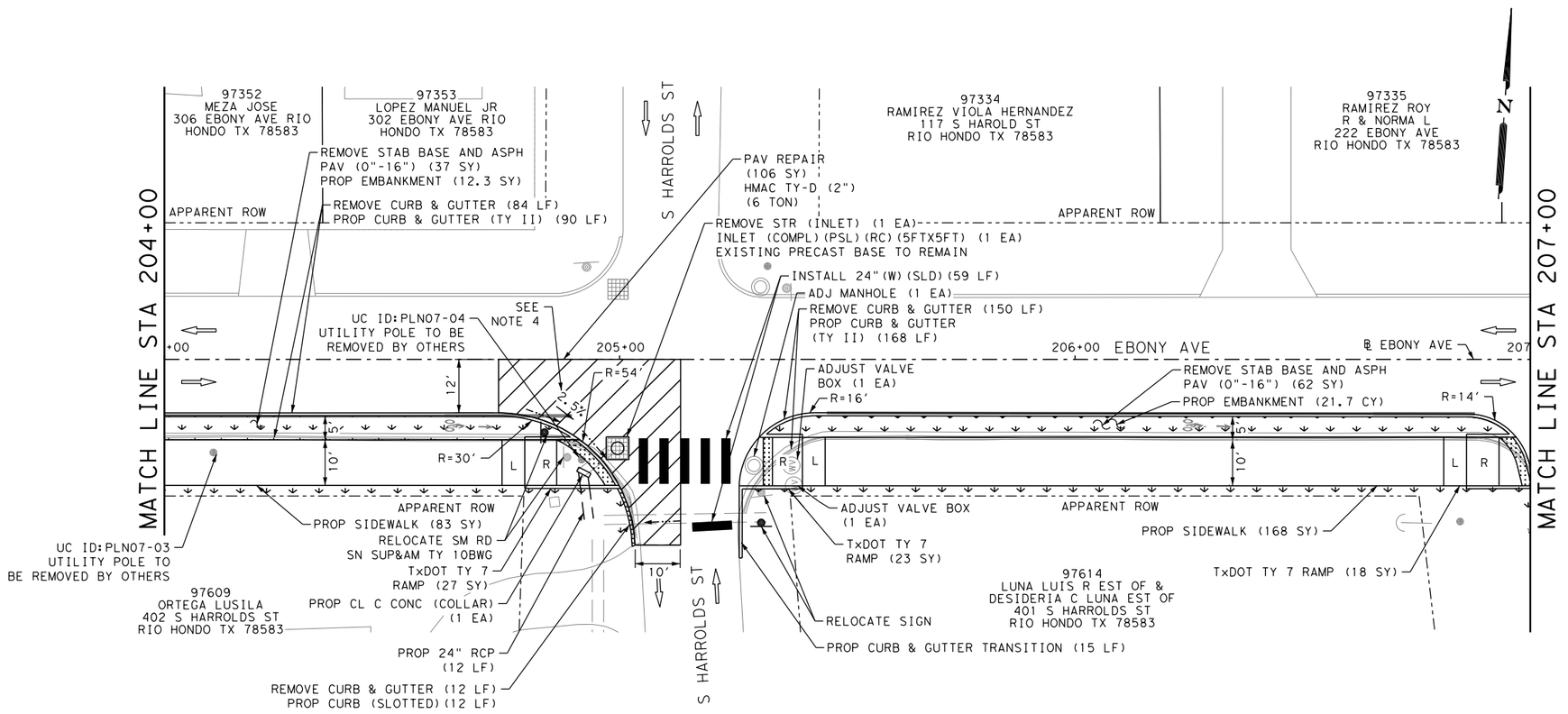
SHEET 6 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	51

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\1-612540201_FM1846_06.dgn





ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	34
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	496
0105-6037	REMOVING STAB BASE AND ASPH PAV(0"-16")	SY	218
0132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	65.3
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	408
0162-6002	BLOCK SODDING	SY	408
0168-6001	VEGETATIVE WATERING	MG	6.9
0351-6006	FLEXIBLE PAVEMENT STRUCTURE REPAIR(10")	SY	106
0420-6071	CL C CONC (COLLAR)	EA	1
0464-6005	RC PIPE (CL III)(24 IN)	LF	12
0465-6074	INLET (COMPL)(PSL)(RC)(5FTX5FT)	EA	1
0479-6001	ADJUSTING MANHOLES	EA	1
0479-6005	ADJUSTING MANHOLES (WATER VALVE BOX)	EA	2
0496-6002	REMOV STR (INLET)	EA	1
0529-6008	CONC CURB & GUTTER (TY II)	LF	541
0529-6012	CONC CURB (SLOTTED)	LF	12
0530-6004	DRIVEWAYS (CONC)	SY	52
0531-6001	CONC SIDEWALKS (4")	SY	533
0531-6024	CURB RAMPS (TY 7)	SY	68
0644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	2
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	59
0666-6230	PAVEMENT SEALER 24"	LF	59
0678-6008	PAV SURF PREP FOR MRK (24")	LF	59
3076-6072	D-GR HMA TY-D PG 76-22 (EXEMPT)	TON	6

NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION
4. CONTRACTOR TO MAINTAIN SLOPE ALONG ENTIRE CURB AND GUTTER WITHIN THE PAVEMENT REPAIR TOWARDS SLOTTED CURB

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

EBONY AVE

SIDEWALK PLAN

STA 201+19 TO STA 207+00

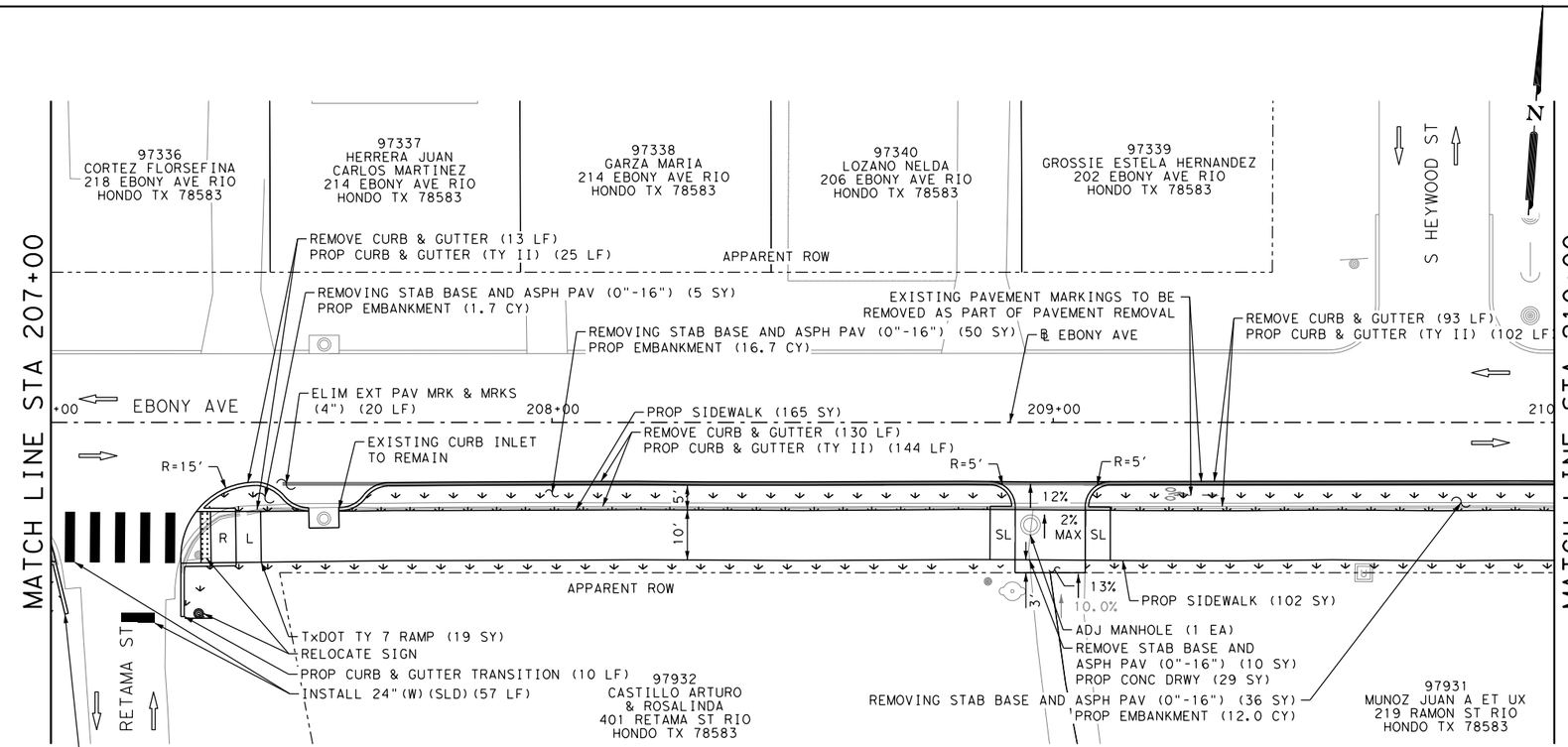
SHEET 1 OF 3

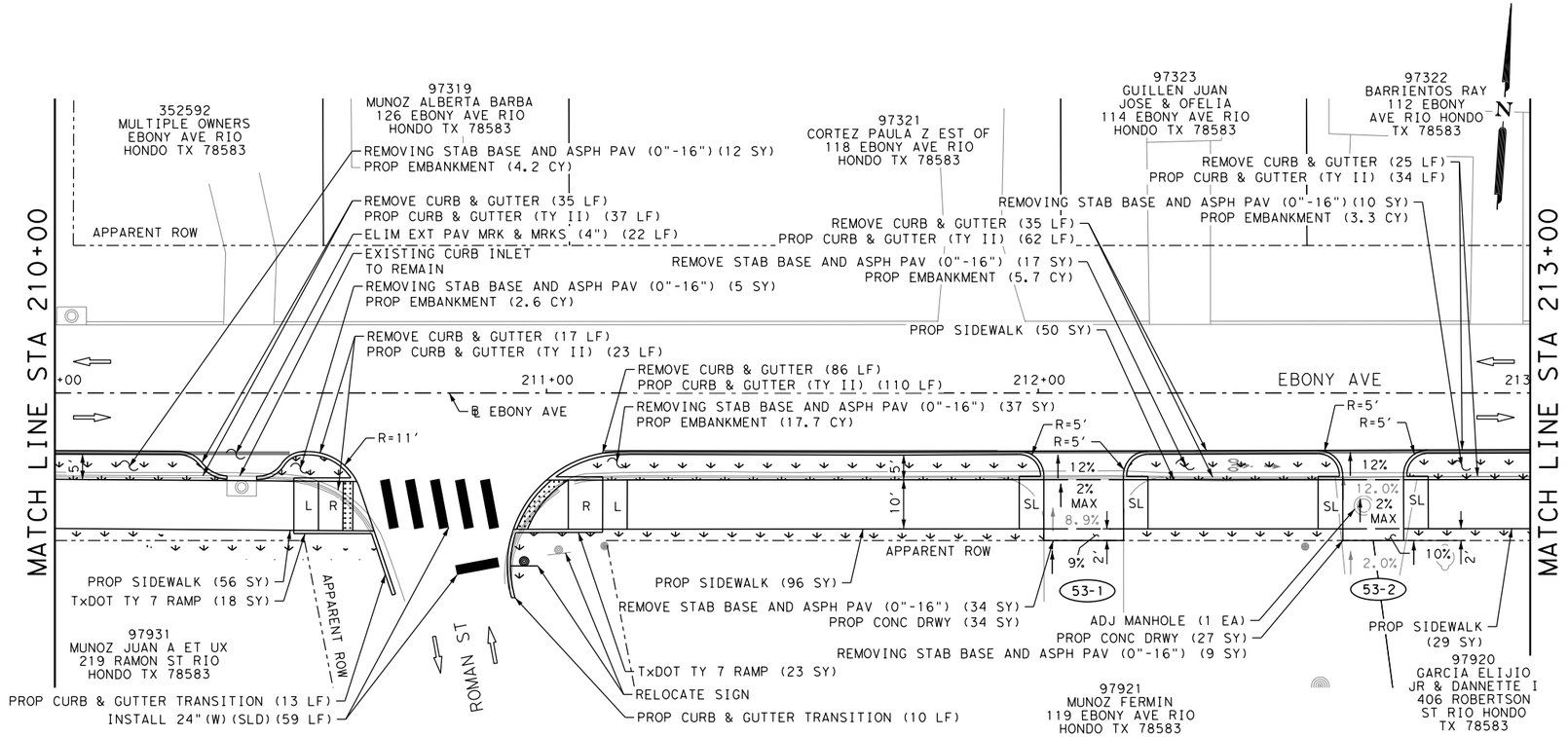
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	52

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\2-612540201_EBONY_01.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	434
0105-6037	REMOVING STAB BASE AND ASPH PAV(0"-16")	SY	225
0132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	63.9
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	397
0162-6002	BLOCK SODDING	SY	397
0168-6001	VEGETATIVE WATERING	MG	6.7
0479-6001	ADJUSTING MANHOLES	EA	2
0529-6008	CONC CURB & GUTTER (TY II)	LF	580
0530-6004	DRIVEWAYS (CONC)	SY	90
0531-6001	CONC SIDEWALKS (4")	SY	498
0531-6024	CURB RAMPS (TY 7)	SY	60
0644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	2
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	116
0666-6230	PAVEMENT SEALER 24"	LF	116
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	42
0678-6008	PAV SURF PREP FOR MRK (24")	LF	116





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

EBONY AVE

SIDEWALK PLAN

STA 207+00 TO STA 213+00

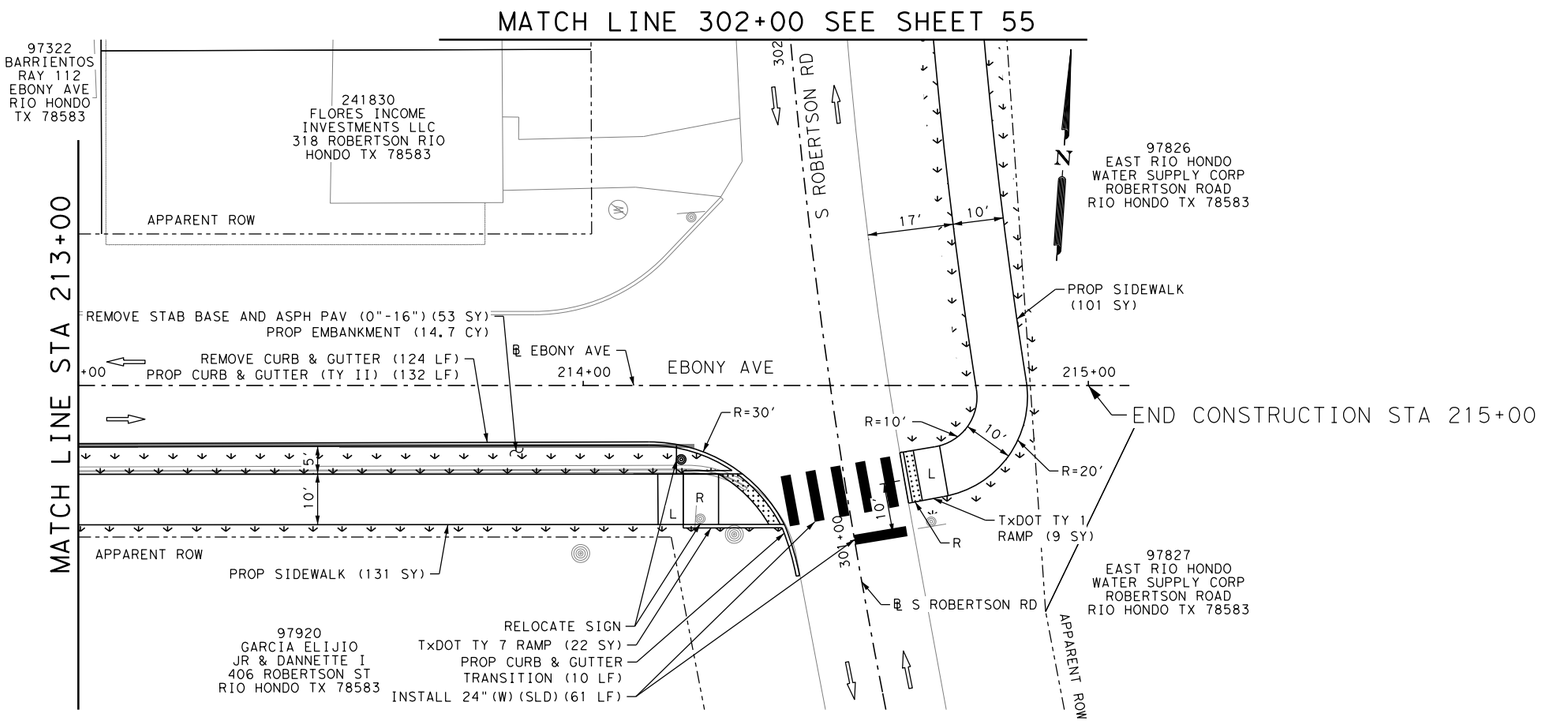
SHEET 2 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	53

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\2-612540201_EBONY_02.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	124
0105-6037	REMOVING STAB BASE AND ASPH PAV(0"-16")	SY	53
0132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	14.7
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	189
0162-6002	BLOCK SODDING	SY	189
0168-6001	VEGETATIVE WATERING	MG	3.2
0529-6008	CONC CURB & GUTTER (TY II)	LF	142
0531-6001	CONC SIDEWALKS (4")	SY	232
0531-6018	CURB RAMPS (TY 1)	SY	9
0531-6024	CURB RAMPS (TY 7)	SY	22
0644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	61
0666-6230	PAVEMENT SEALER 24"	LF	61
0678-6008	PAV SURF PREP FOR MRK (24")	LF	61



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40

SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

EBONY AVE

SIDEWALK PLAN

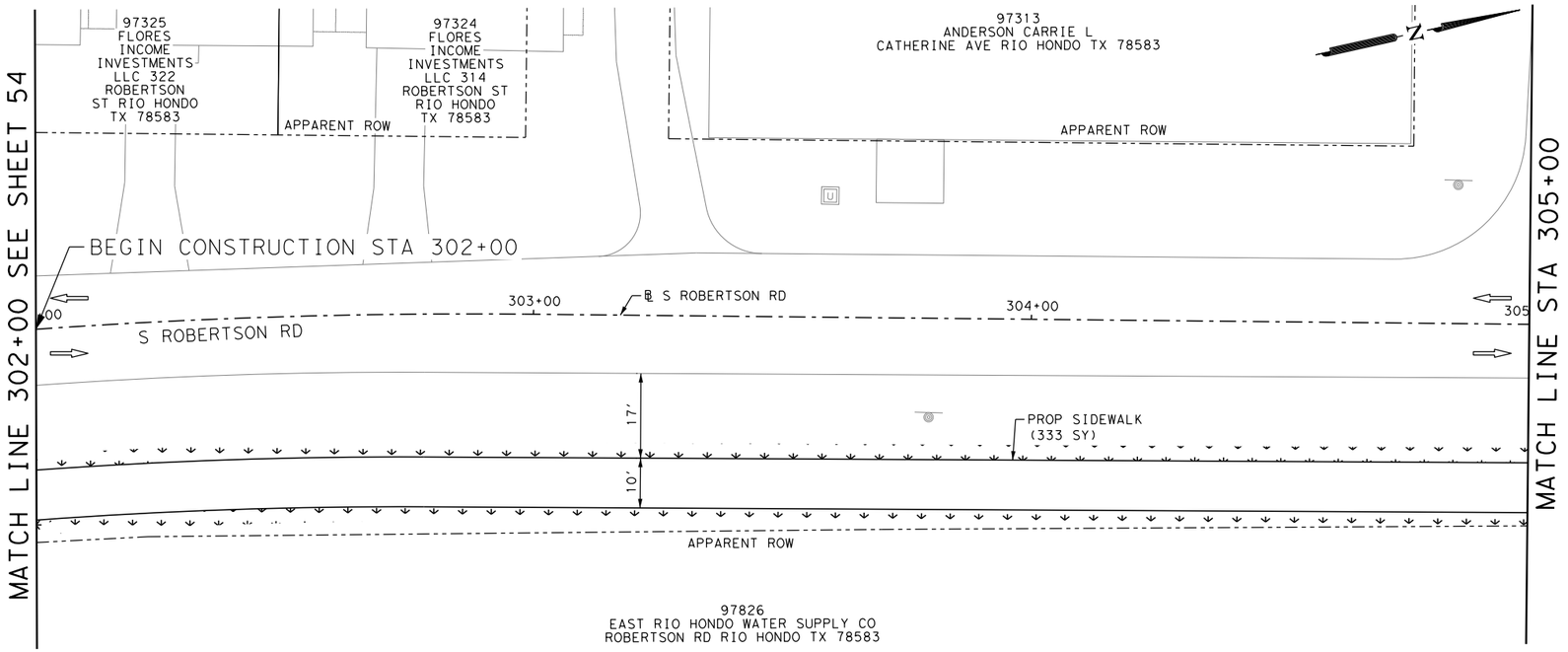
STA 213+00 TO STA 302+00

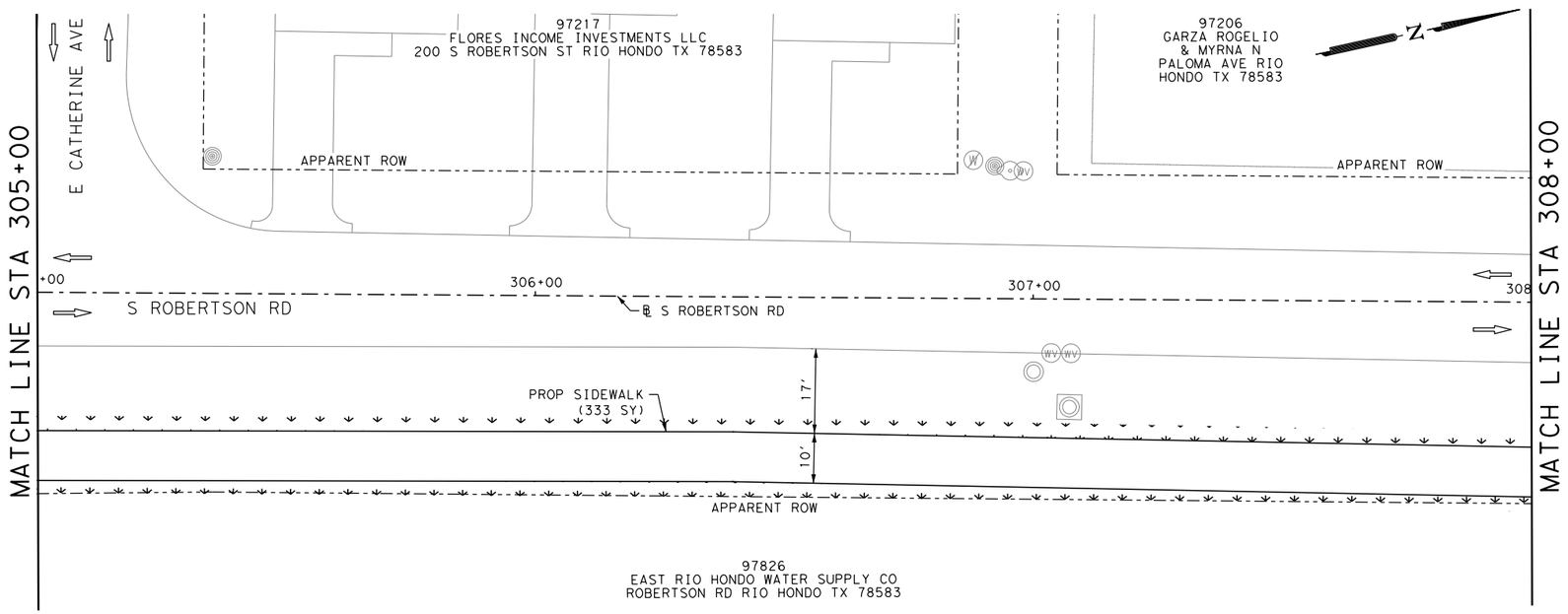
SHEET 3 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	54

Plotted on: 3/4/2024
Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\2-612540201_EBONY_03.dgn

ITEM	DESCRIPTION	UNIT	QTY
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	400
0162-6002	BLOCK SODDING	SY	400
0168-6001	VEGETATIVE WATERING	MG	6.8
0531-6001	CONC SIDEWALKS (4")	SY	666





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

S ROBERTSON RD

SIDEWALK PLAN

STA 302+00 TO STA 308+00

SHEET 1 OF 8

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	55

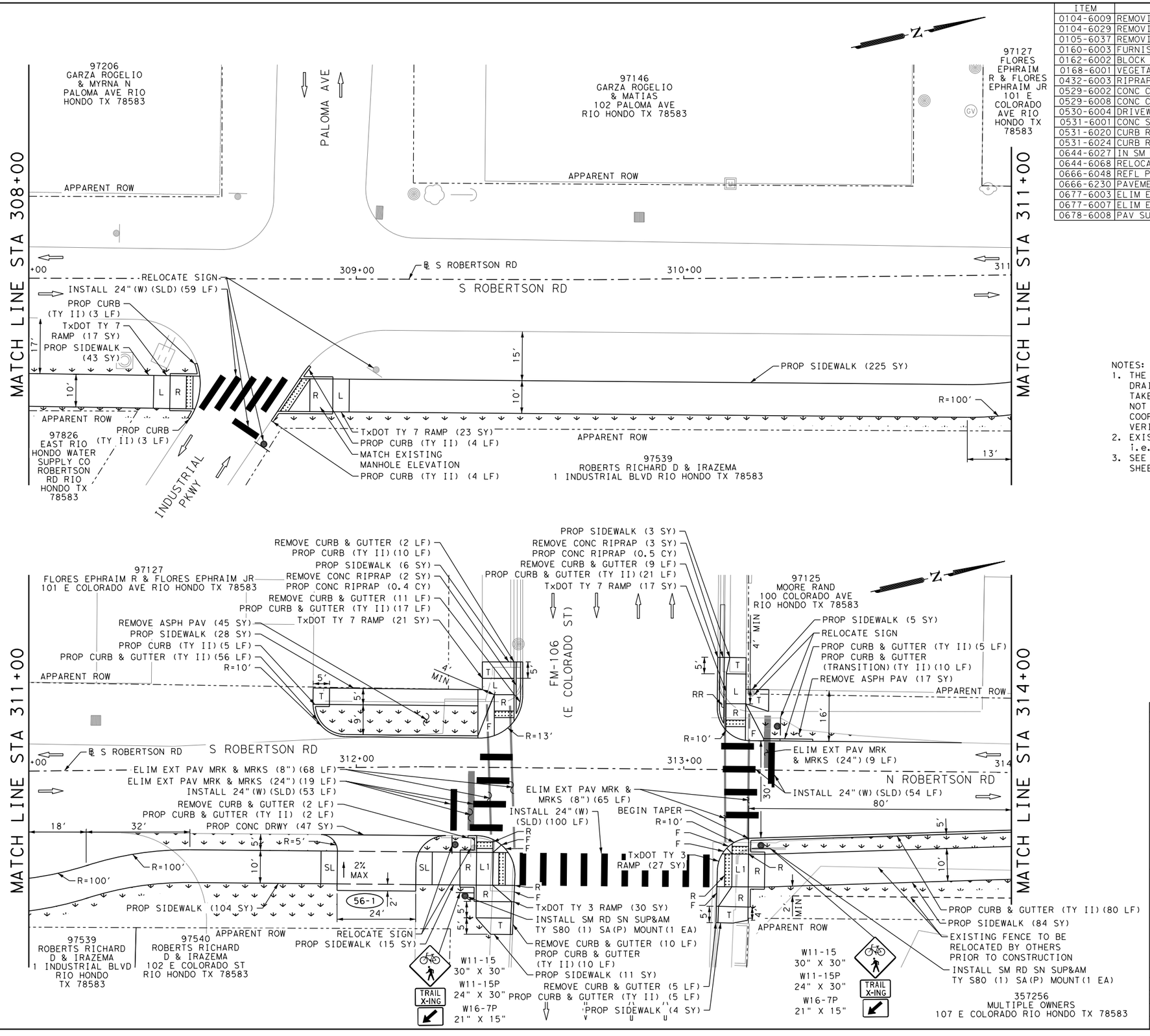
Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\3-612540201_ROBERTSON_01.dgn

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\3-612540201_ROBERTSON_02.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104-6009	REMOVING CONC (RIPRAP)	SY	5
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	39
0105-6037	REMOVING STAB BASE AND ASPH PAV(0"-16")	SY	62
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	492
0162-6002	BLOCK SODDING	SY	492
0168-6001	VEGETATIVE WATERING	MG	8.3
0432-6003	RIPRAP (CONC)(6 IN)	CY	0.9
0529-6002	CONC CURB (TY II)	LF	29
0529-6008	CONC CURB & GUTTER (TY II)	LF	206
0530-6004	DRIVEWAYS (CONC)	SY	47
0531-6001	CONC SIDEWALKS (4")	SY	528
0531-6020	CURB RAMPS (TY 3)	SY	57
0531-6024	CURB RAMPS (TY 7)	SY	78
0644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	2
0644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	3
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	266
0666-6230	PAVEMENT SEALER 24"	LF	266
0677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	133
0677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	28
0678-6008	PAV SURF PREP FOR MRK (24")	LF	266



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

S ROBERTSON RD

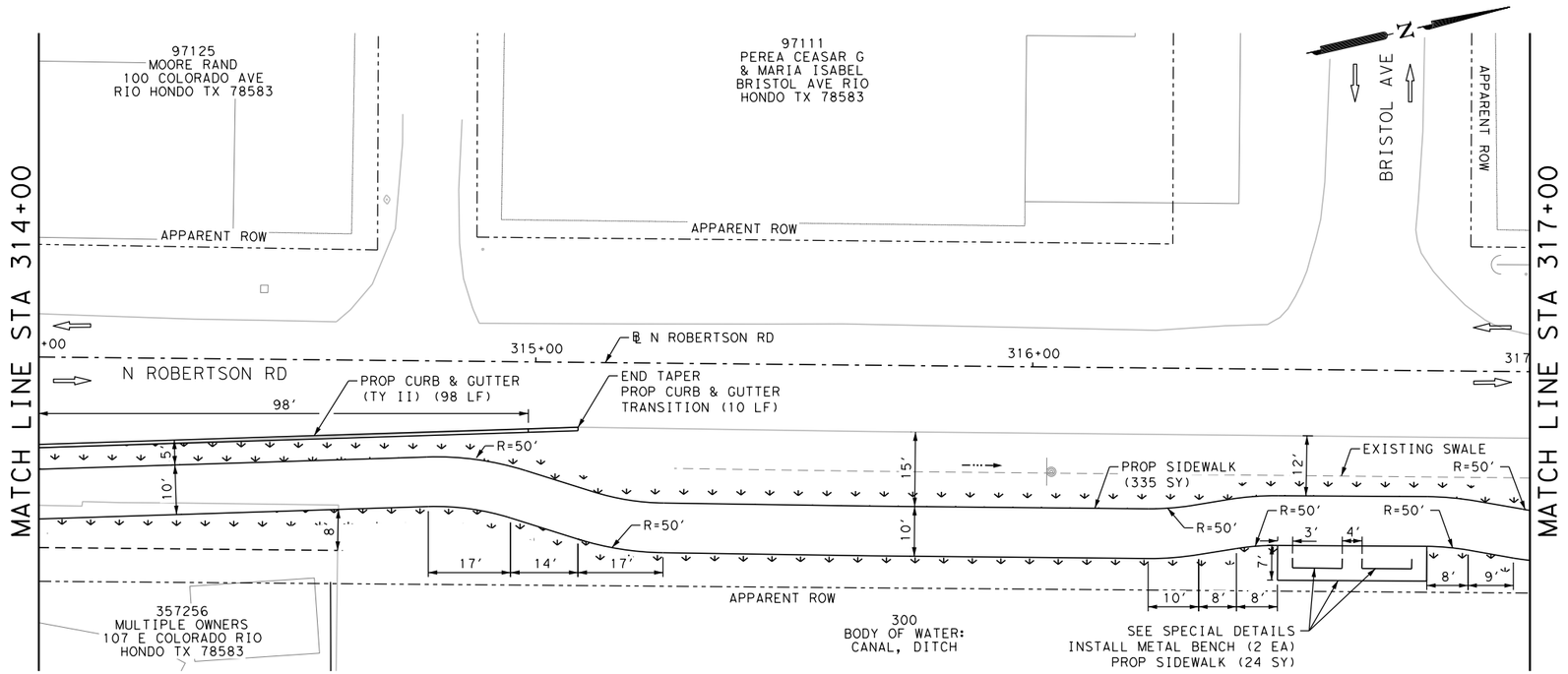
SIDEWALK PLAN

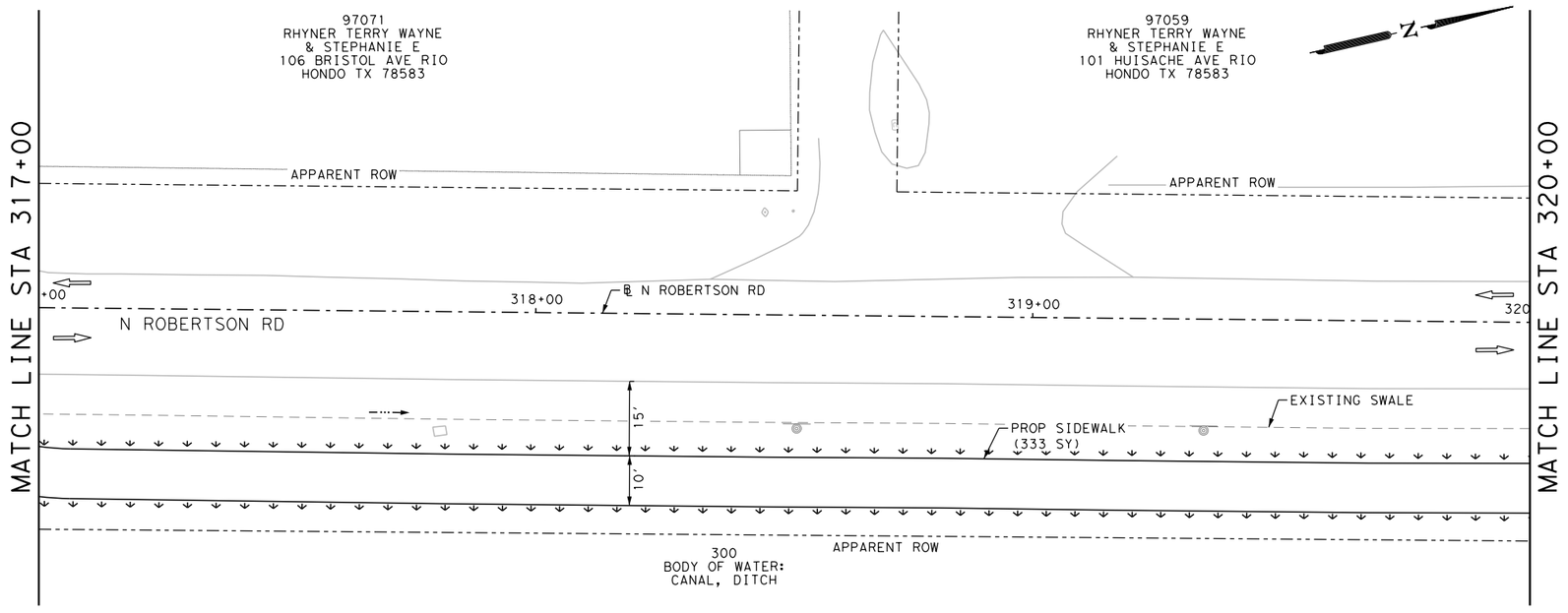
STA 308+00 TO STA 314+00

SHEET 2 OF 8

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	56

ITEM	DESCRIPTION	UNIT	QTY
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	418
0162-6002	BLOCK SODDING	SY	418
0168-6001	VEGETATIVE WATERING	MG	7.1
0529-6008	CONC CURB & GUTTER (TY II)	LF	108
0531-6001	CONC SIDEWALKS (4")	SY	692
1002-6026	LANDSCAPE AMENITY (BENCH)	EA	2





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40

SCALE: 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

SIDEWALK PLAN

STA 314+00 TO STA 320+00

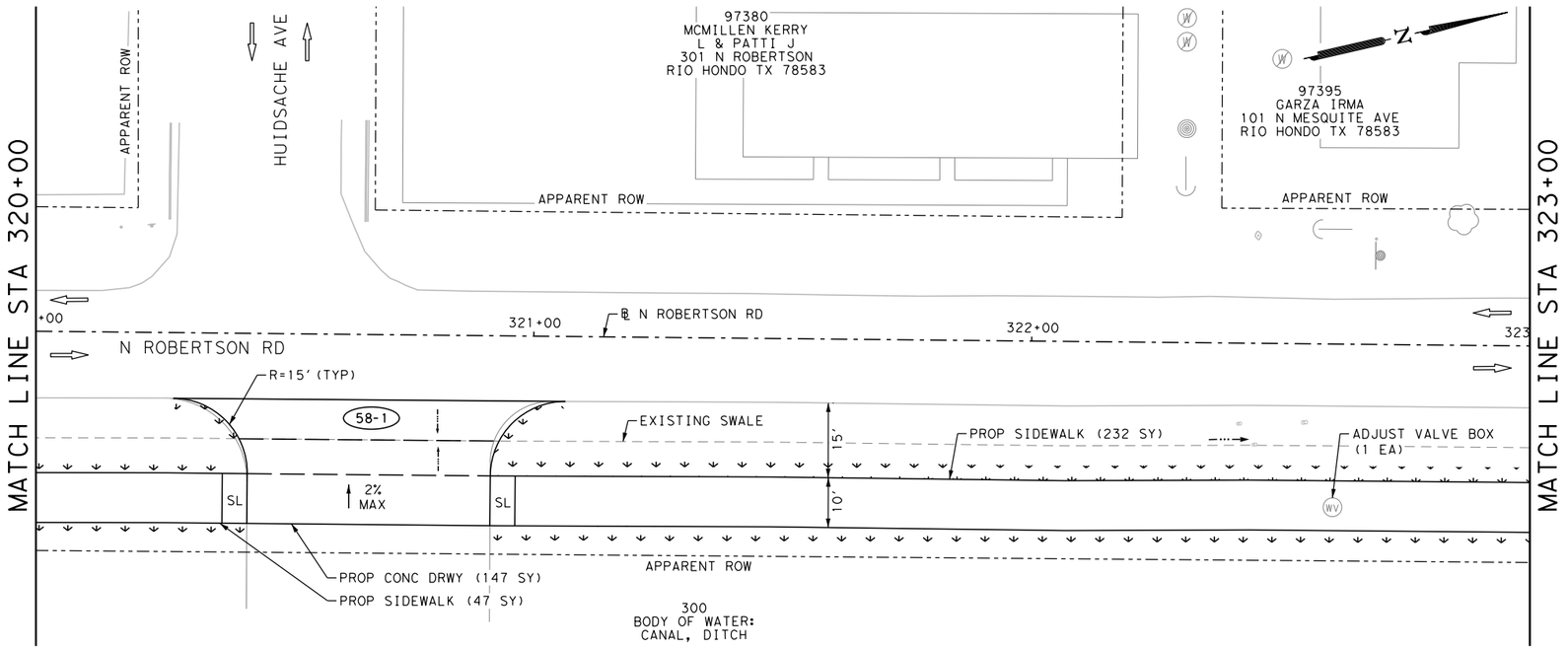
SHEET 3 OF 8

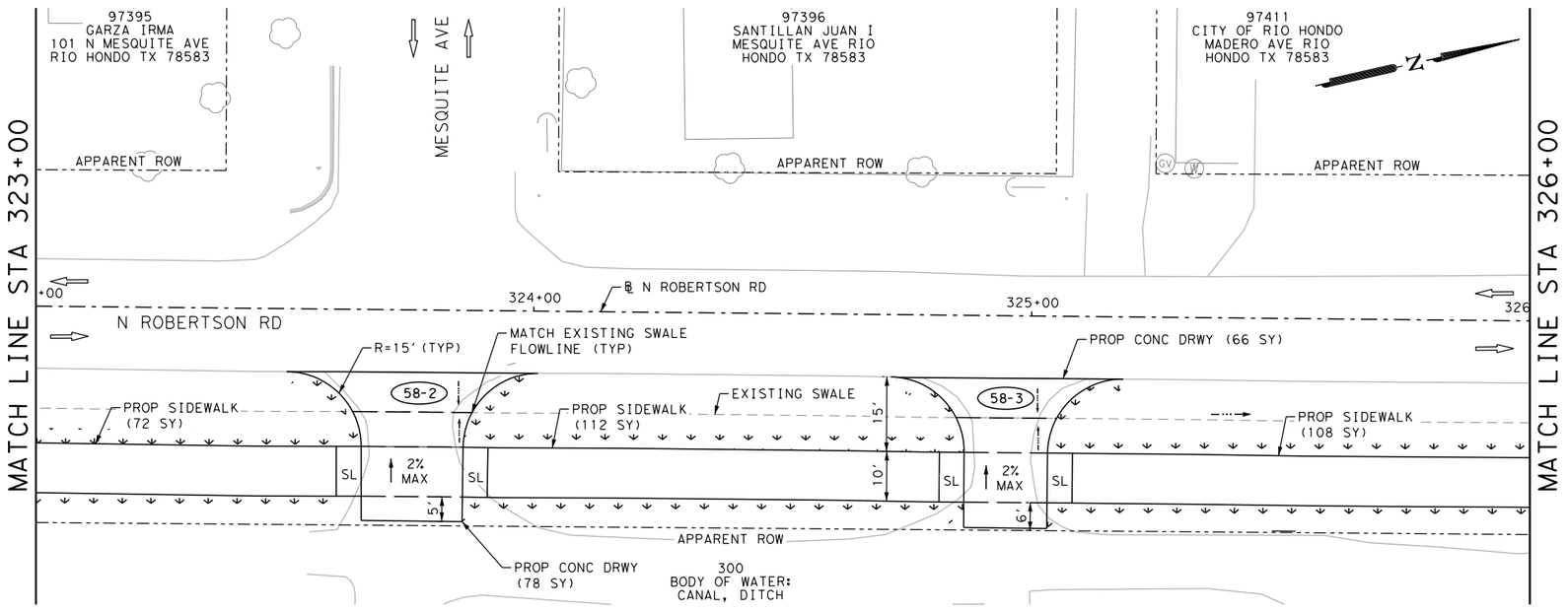
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	57

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\3-612540201_ROBERTSON_03.dgn

ITEM	DESCRIPTION	UNIT	QTY
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	384
0162-6002	BLOCK SODDING	SY	384
0168-6001	VEGETATIVE WATERING	MG	6.5
0479-6005	ADJUSTING MANHOLES (WATER VALVE BOX)	EA	1
0530-6004	DRIVEWAYS (CONC)	SY	291
0531-6001	CONC SIDEWALKS (4")	SY	571





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

SIDEWALK PLAN

STA 320+00 TO STA 326+00

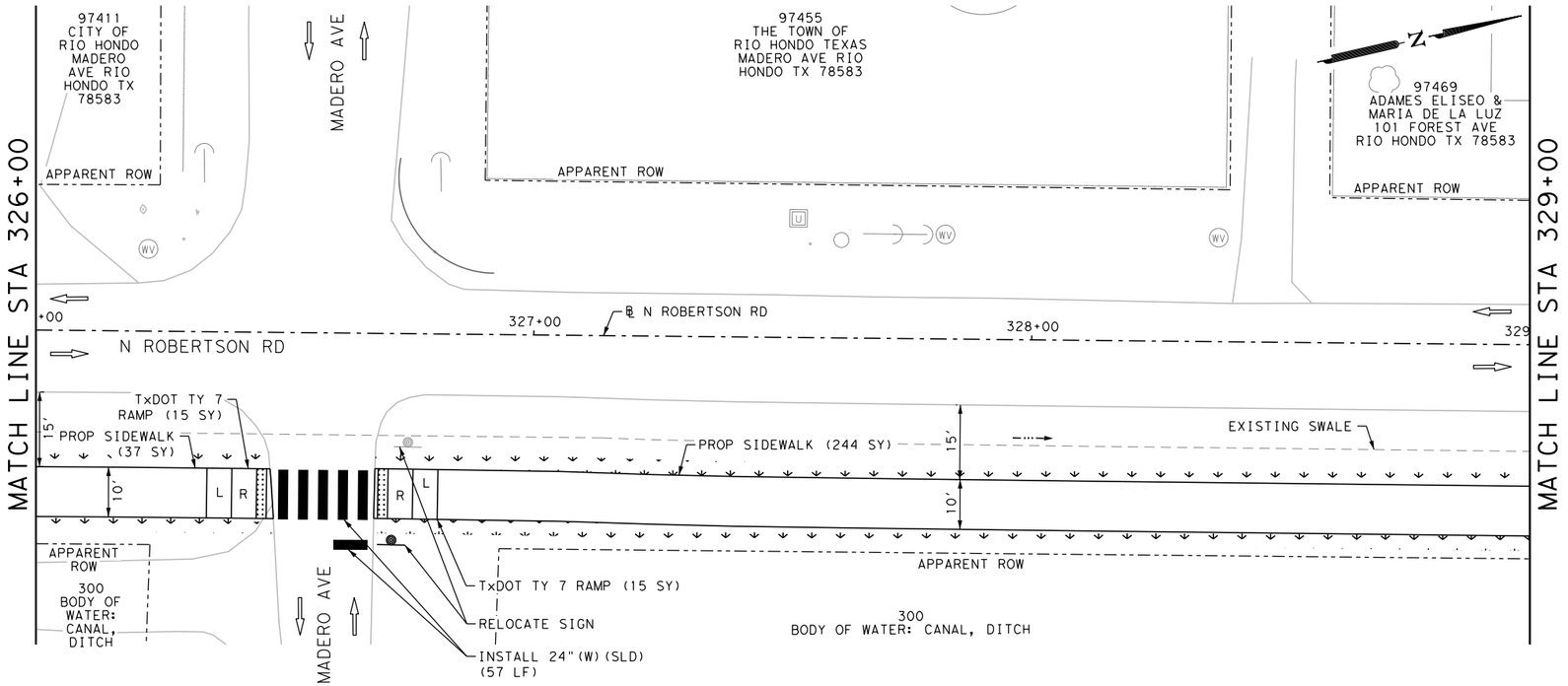
SHEET 4 OF 8

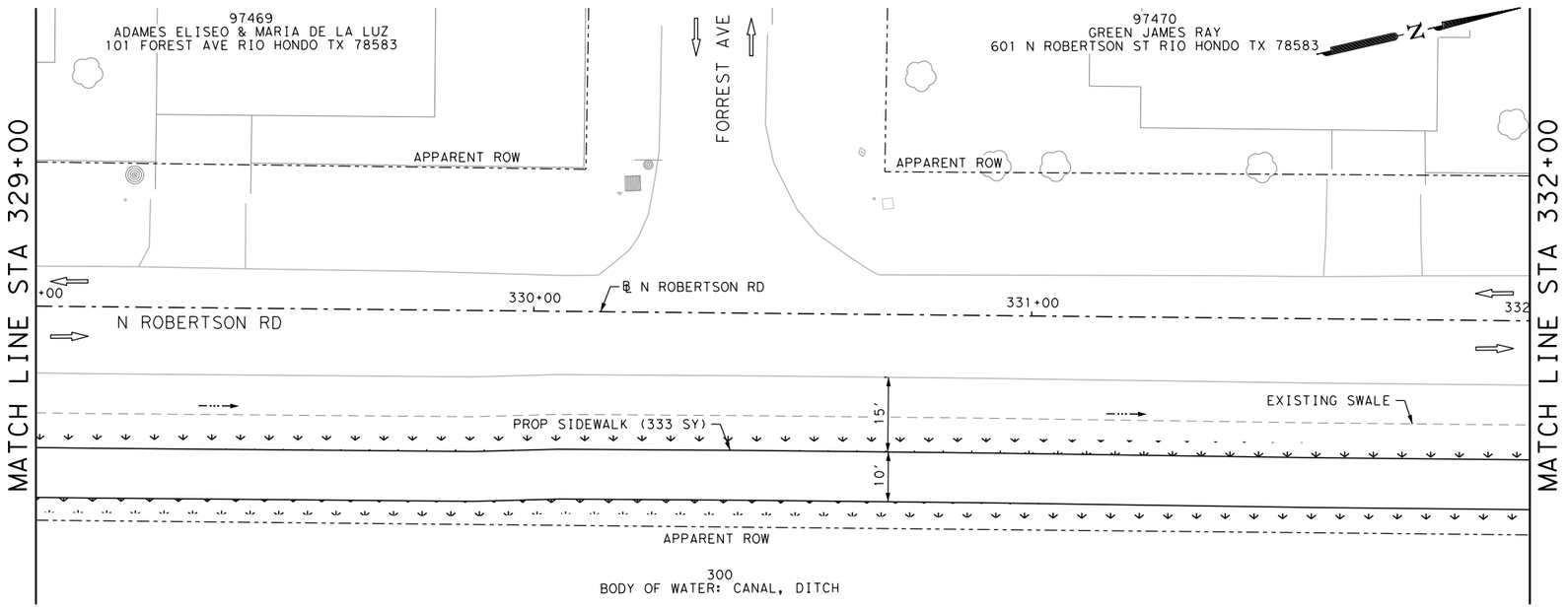
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	58

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\3-612540201_ROBERTSON_04.dgn

ITEM	DESCRIPTION	UNIT	QTY
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	386
0162-6002	BLOCK SODDING	SY	386
0168-6001	VEGETATIVE WATERING	MG	6.5
0531-6001	CONC SIDEWALKS (4")	SY	614
0531-6024	CURB RAMPS (TY 7)	SY	30
0644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	57
0666-6230	PAVEMENT SEALER 24"	LF	57
0678-6008	PAV SURF PREP FOR MRK (24")	LF	57





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

SIDEWALK PLAN

STA 326+00 TO STA 332+00

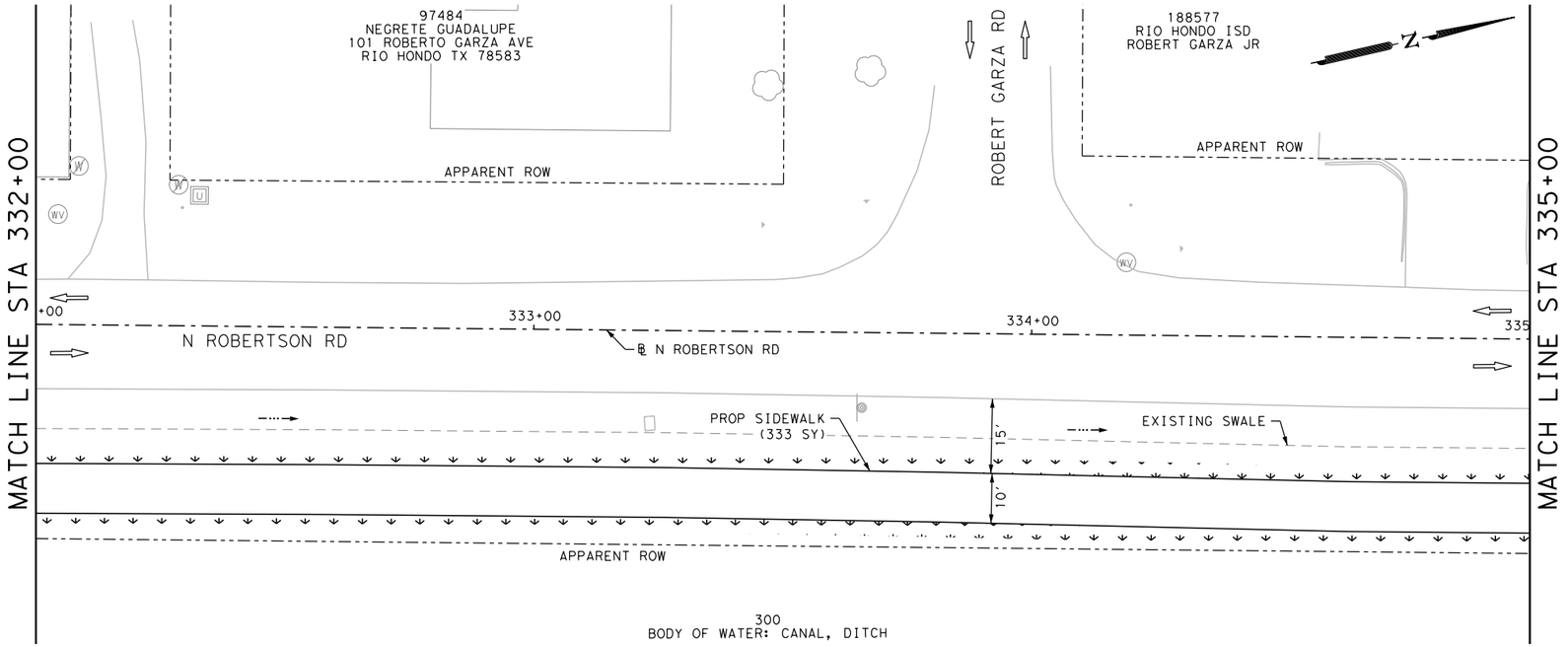
SHEET 5 OF 8

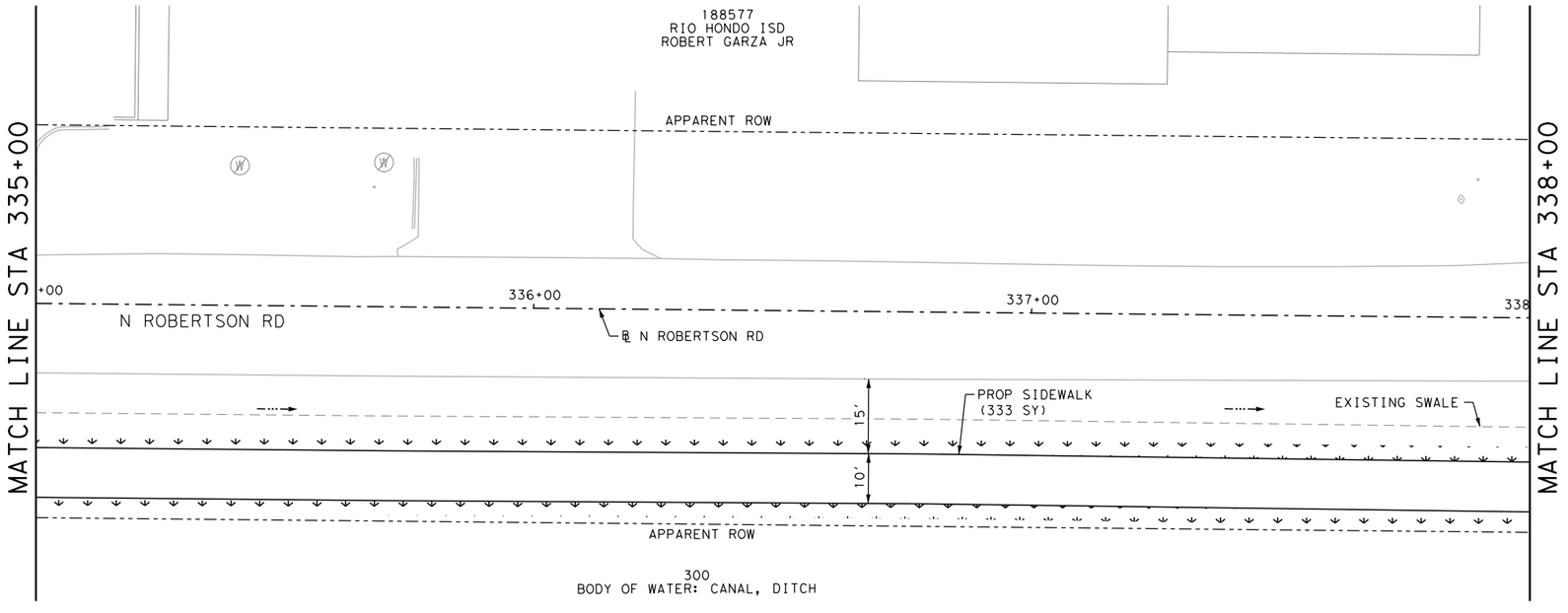
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	59

Plotted on: 3/4/2024

Design Filename: S:\projects\612540\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\3-612540201_ROBERTSON_05.dgn

ITEM	DESCRIPTION	UNIT	QTY
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	400
0162-6002	BLOCK SODDING	SY	400
0168-6001	VEGETATIVE WATERING	MG	6.8
0531-6001	CONC SIDEWALKS (4")	SY	666





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

SIDEWALK PLAN

STA 332+00 TO STA 338+00

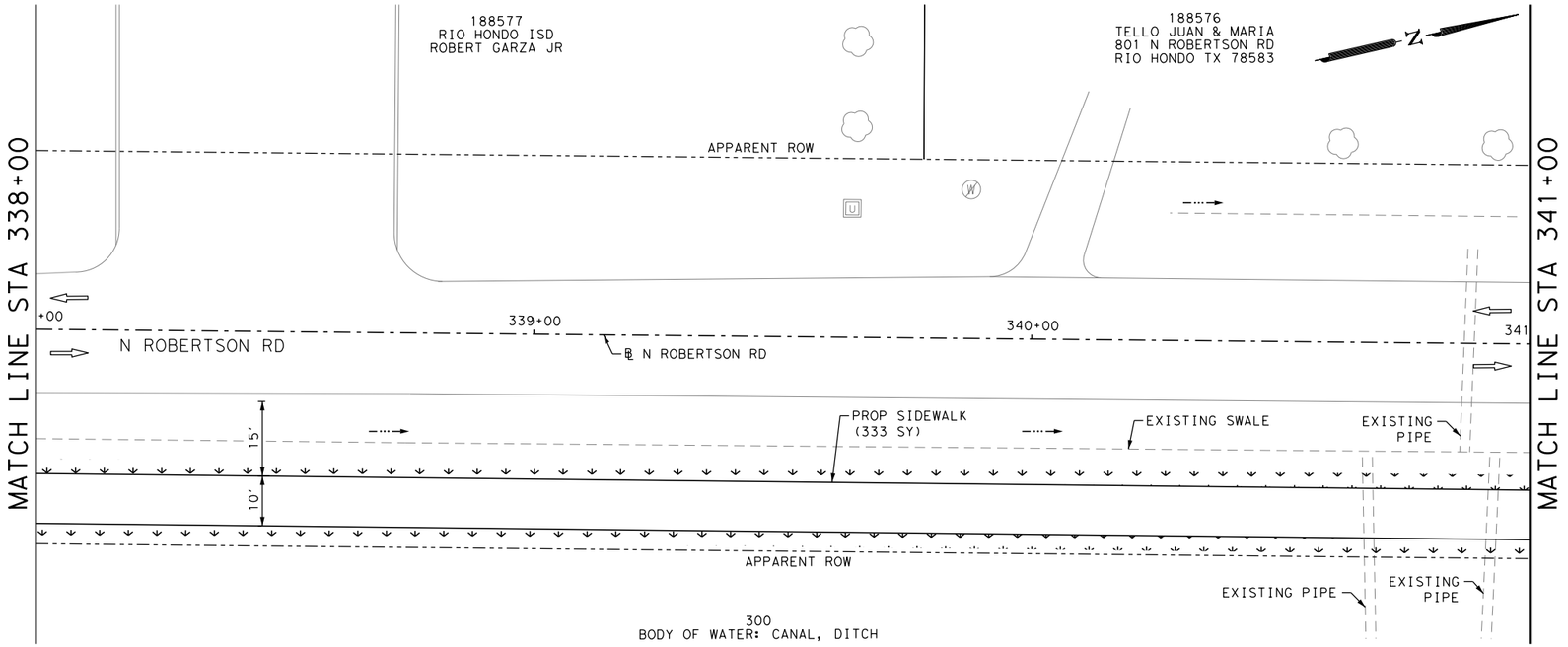
SHEET 6 OF 8

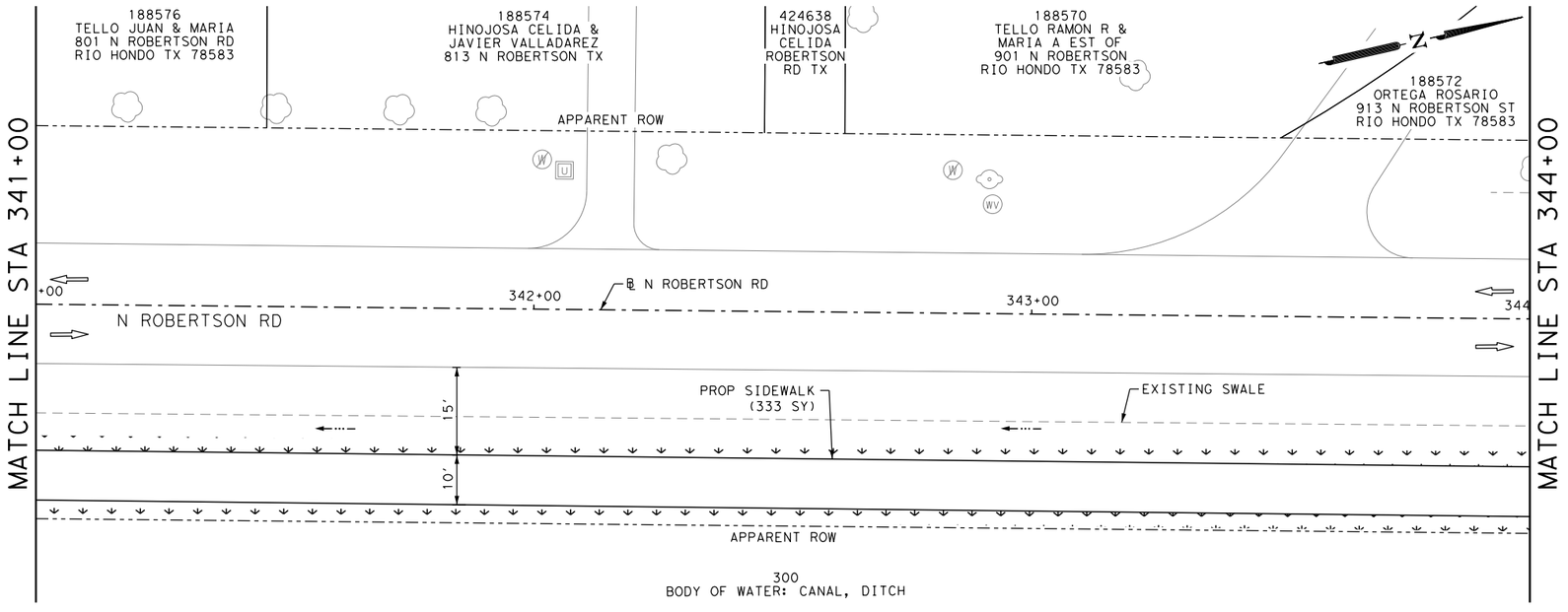
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	60

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\3-612540201_ROBERTSON_06.dgn

ITEM	DESCRIPTION	UNIT	QTY
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	400
0162-6002	BLOCK SODDING	SY	400
0168-6001	VEGETATIVE WATERING	MG	6.8
0531-6001	CONC SIDEWALKS (4")	SY	666





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

SIDEWALK PLAN

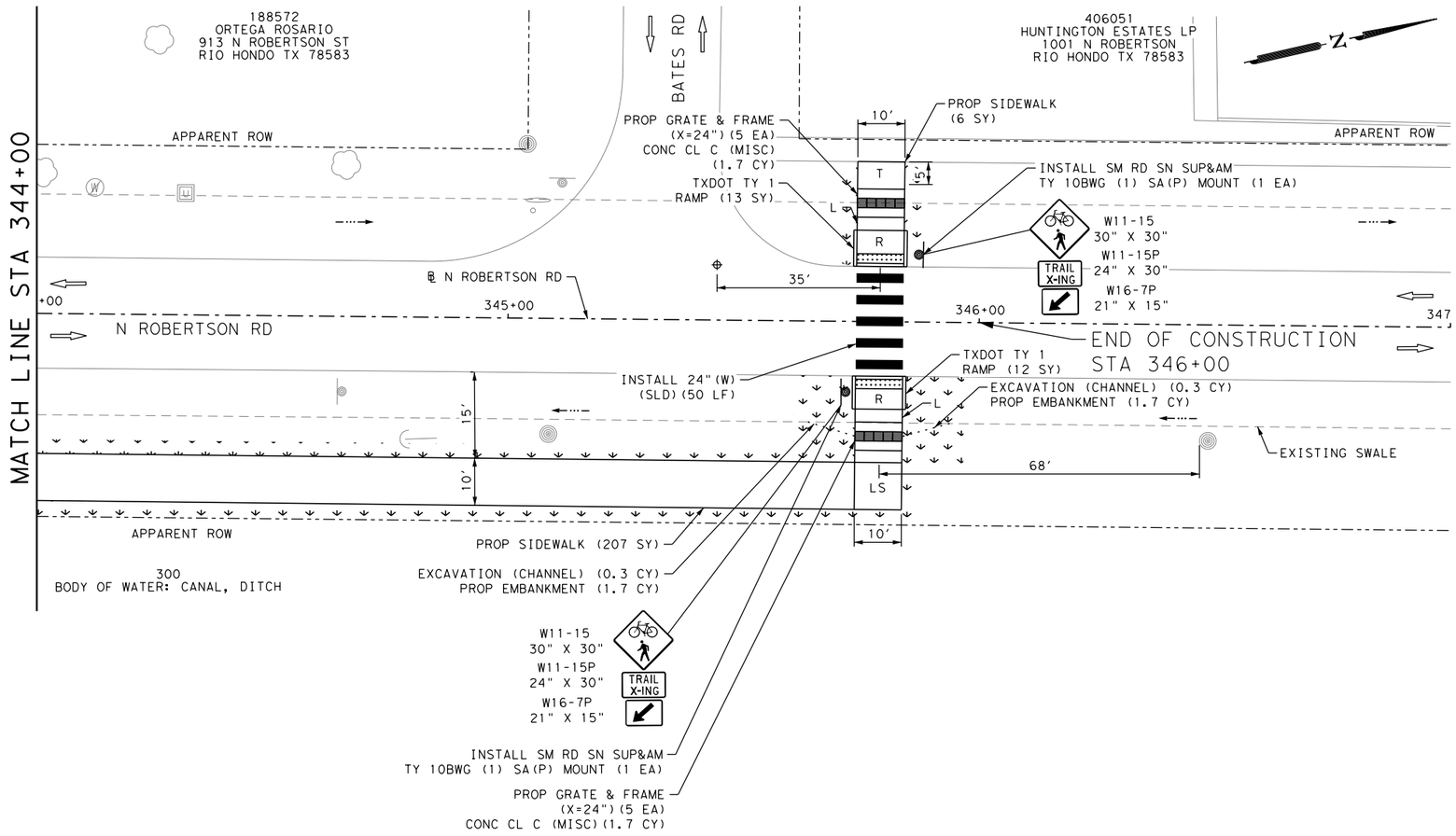
STA 338+00 TO STA 344+00

SHEET 7 OF 8

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	61

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\3-612540201_ROBERTSON_07.dgn



ITEM	DESCRIPTION	UNIT	QTY
0110-6002	EXCAVATION (CHANNEL)	CY	0.6
0132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	3.4
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	188
0162-6002	BLOCK SODDING	SY	188
0168-6001	VEGETATIVE WATERING	MG	3.2
0420-6074	CL C CONC (MISC)	CY	3.4
0471-6003	GRATE & FRAME	EA	10
0531-6001	CONC SIDEWALKS (4")	SY	213
0531-6018	CURB RAMPS (TY 1)	SY	25
0644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	50
0666-6230	PAVEMENT SEALER 24"	LF	50
0678-6008	PAV SURF PREP FOR MRK (24")	LF	50

NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

SIDEWALK PLAN

STA 344+00 TO END CONSTRUCTION

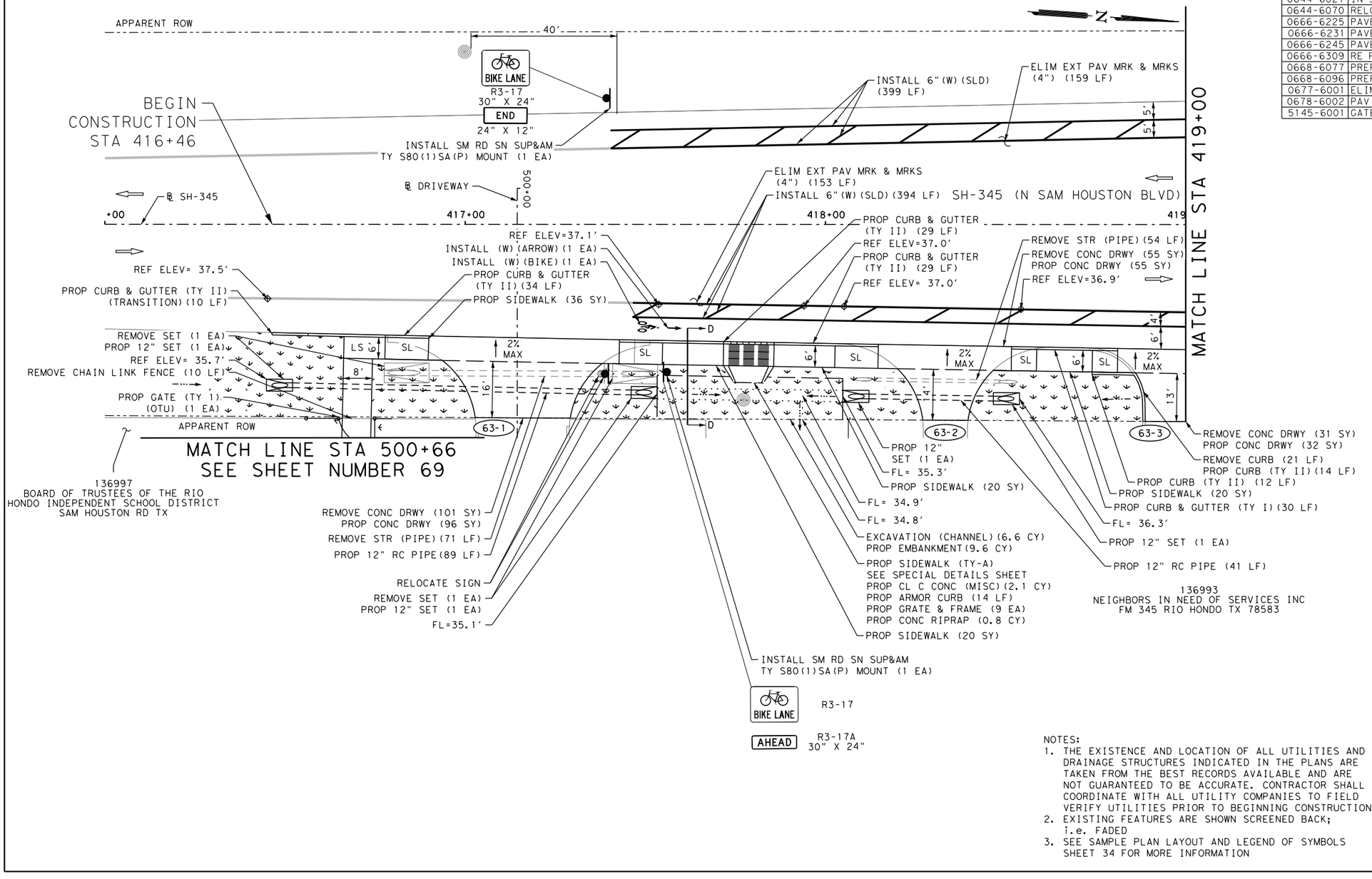
SHEET 8 OF 8

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	62

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\3-612540201_ROBERTSON_08.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	187
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	21
0110-6002	EXCAVATION (CHANNEL)	CY	6.6
0132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	9.6
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	316
0162-6002	BLOCK SODDING	SY	316
0168-6001	VEGETATIVE WATERING	MG	5.4
0420-6074	CL C CONC (MISC)	CY	2.1
0432-6003	RIPRAP (CONC)(6 IN)	CY	0.8
0464-6001	RC PIPE (CL III)(12 IN)	LF	130
0467-6323	SET (TY II) (12 IN) (RCP) (4: 1) (C)	EA	4
0471-6003	GRATE & FRAME	EA	9
0496-6004	REMOV STR (SET)	EA	2
0496-6007	REMOV STR (PIPE)	LF	125
0529-6002	CONC CURB (TY II)	LF	26
0529-6007	CONC CURB & GUTTER (TY I)	LF	30
0529-6008	CONC CURB & GUTTER (TY II)	LF	102
0529-6020	CONC CURB & GUTTER (ARMOR CURB)	LF	14
0530-6004	DRIVEWAYS (CONC)	SY	183
0531-6001	CONC SIDEWALKS (4")	SY	96
0550-6003	CHAIN LINK FENCE (REMOVE)	LF	10
0644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	2
0644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	1
0666-6225	PAVEMENT SEALER 6"	LF	793
0666-6231	PAVEMENT SEALER (ARROW)	EA	1
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	1
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	793
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	1
0668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	1
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	312
0678-6002	PAV SURF PREP FOR MRK (6")	LF	793
5145-6001	GATE (INSTALL)(TYPE 1)(OTU)	EA	1



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

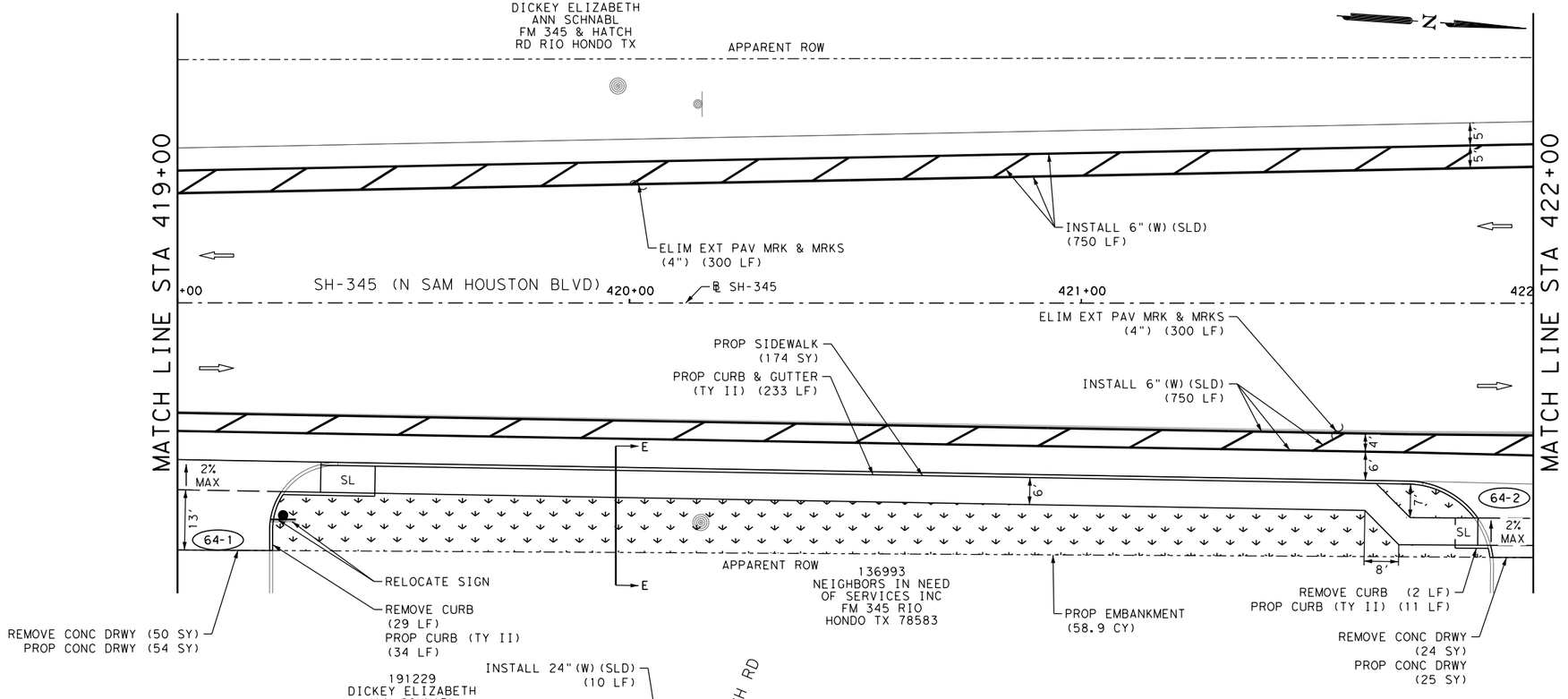
SIDEWALK PLAN

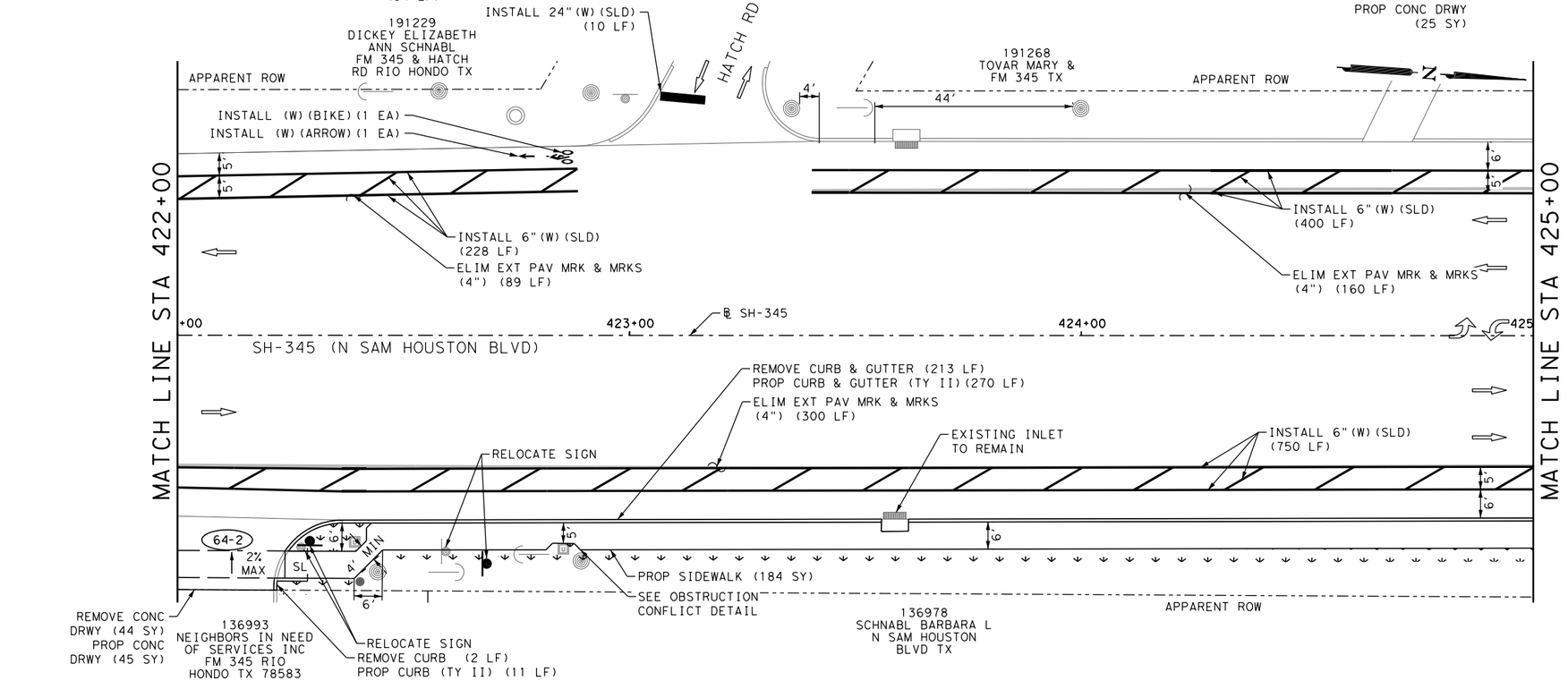
BEGIN CONSTRUCTION TO STA 419+00

SHEET 1 OF 7

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	63

ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	118
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	246
0132-6001	EMBANKMENT (FINAL)(ORD COMP)(TY A)	CY	58.9
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	435
0162-6002	BLOCK SODDING	SY	435
0168-6001	VEGETATIVE WATERING	MG	7.4
0529-6002	CONC CURB (TY II)	LF	56
0529-6008	CONC CURB & GUTTER (TY II)	LF	503
0530-6004	DRIVEWAYS (CONC)	SY	124
0531-6001	CONC SIDEWALKS (4")	SY	358
0644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	3
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	10
0666-6225	PAVEMENT SEALER 6"	LF	2878
0666-6230	PAVEMENT SEALER 24"	LF	10
0666-6231	PAVEMENT SEALER (ARROW)	EA	1
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	1
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	2878
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	1
0668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	1
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	1149
0678-6002	PAV SURF PREP FOR MRK (6")	LF	2878
0678-6008	PAV SURF PREP FOR MRK (24")	LF	10





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Texas Department of Transportation

SH-345 (N SAM HOUSTON BLVD)

SIDEWALK PLAN

STA 419+00 TO STA 425+00

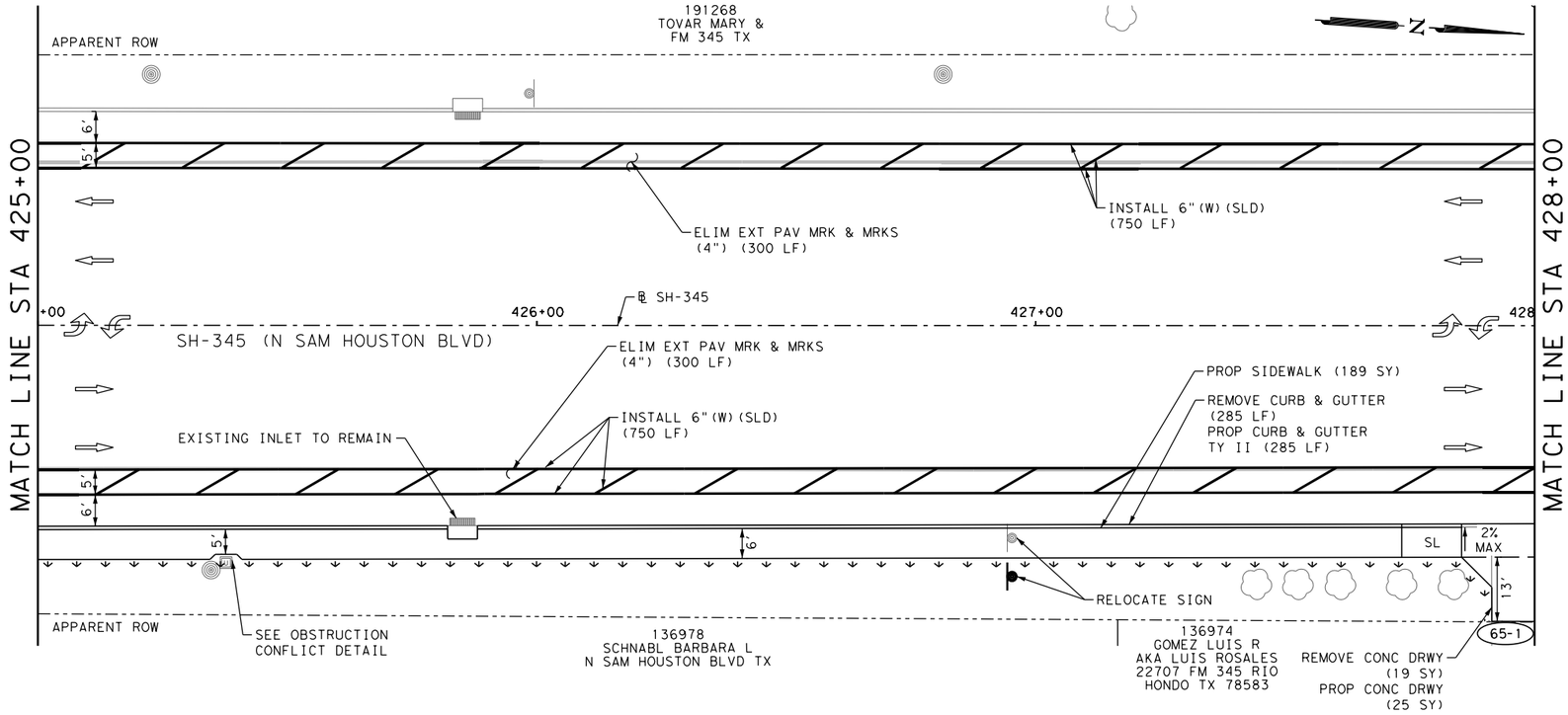
SHEET 2 OF 7

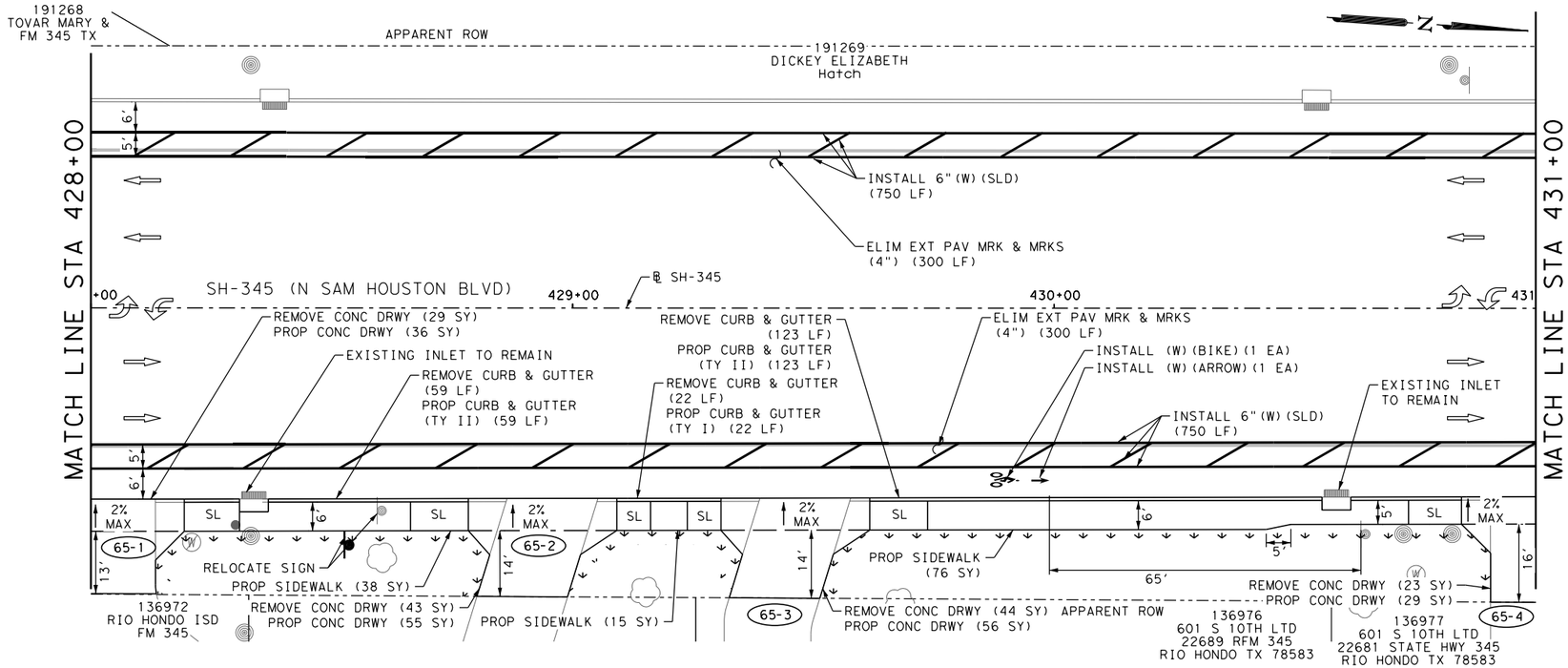
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	64

Plotted on: 3/4/2024

Design Filename: S:\projects\612540\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\4-612540201_SH345_04.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	158
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	489
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	197
0162-6002	BLOCK SODDING	SY	197
0168-6001	VEGETATIVE WATERING	MG	3.4
0529-6007	CONC CURB & GUTTER (TY I)	LF	22
0529-6008	CONC CURB & GUTTER (TY II)	LF	467
0530-6004	DRIVEWAYS (CONC)	SY	201
0531-6001	CONC SIDEWALKS (4")	SY	318
0644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	2
0666-6225	PAVEMENT SEALER 6"	LF	3000
0666-6231	PAVEMENT SEALER (ARROW)	EA	1
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	1
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	3000
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	1
0668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	1
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	1200
0678-6002	PAV SURF PREP FOR MRK (6")	LF	3000





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

SIDEWALK PLAN

STA 425+00 TO STA 431+00

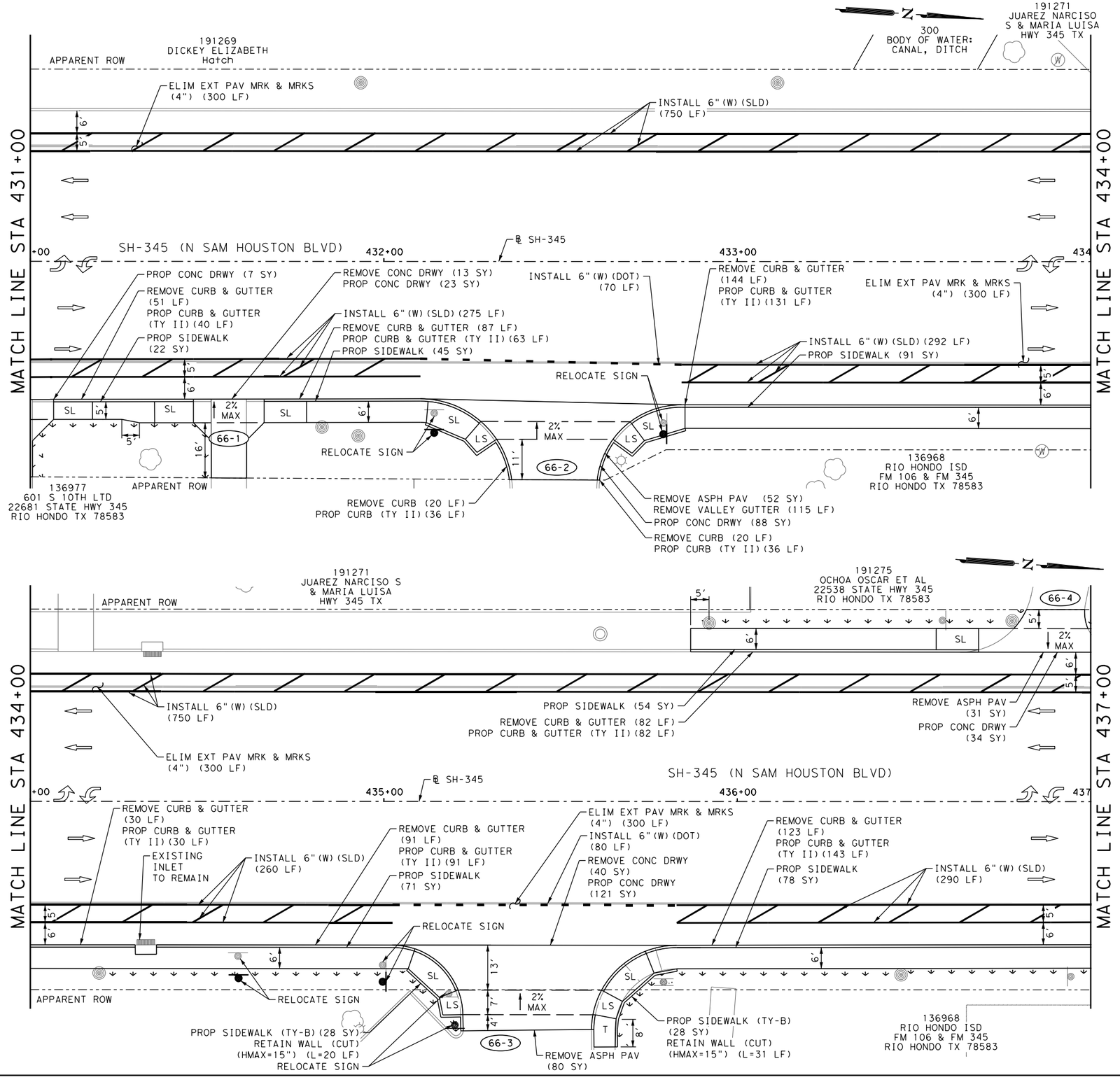
SHEET 3 OF 7

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	65

Plotted on: 3/4/2024

Design Filename: S:\projects\612540201_SH345_05.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	53
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	763
0105-6037	REMOVING STAB BASE AND ASPH PAV(0"-16")	SY	163
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	221
0162-6002	BLOCK SODDING	SY	221
0168-6001	VEGETATIVE WATERING	MG	3.8
0529-6002	CONC CURB (TY II)	LF	72
0529-6008	CONC CURB & GUTTER (TY II)	LF	580
0530-6004	DRIVEWAYS (CONC)	SY	273
0531-6001	CONC SIDEWALKS (4")	SY	361
0531-6033	CONC SIDEWALKS (SPECIAL) (TYPE B)	SY	56
0644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	5
0666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF	150
0666-6225	PAVEMENT SEALER 6"	LF	2767
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	2617
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	1200
0678-6002	PAV SURF PREP FOR MRK (6")	LF	2767



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

SIDEWALK PLAN

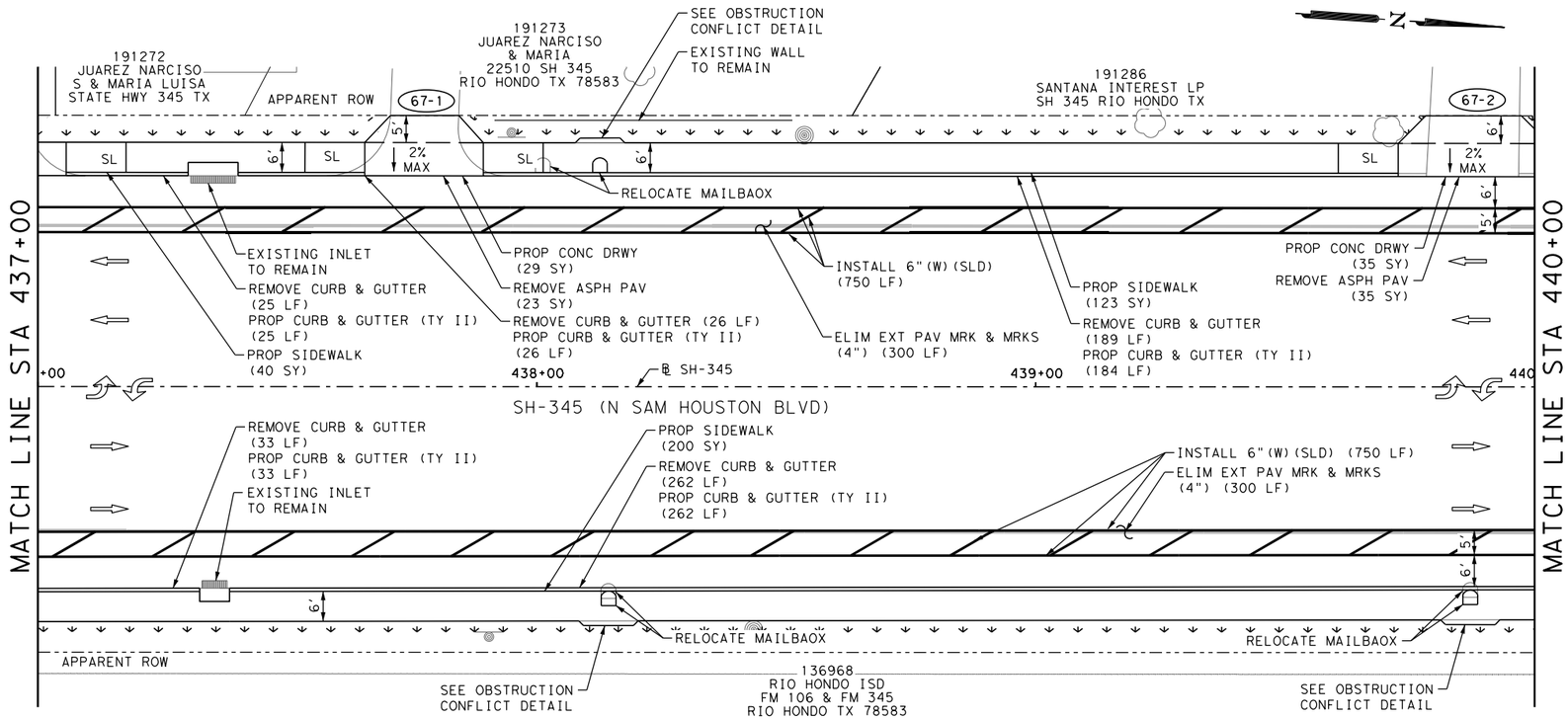
STA 431+00 TO STA 437+00

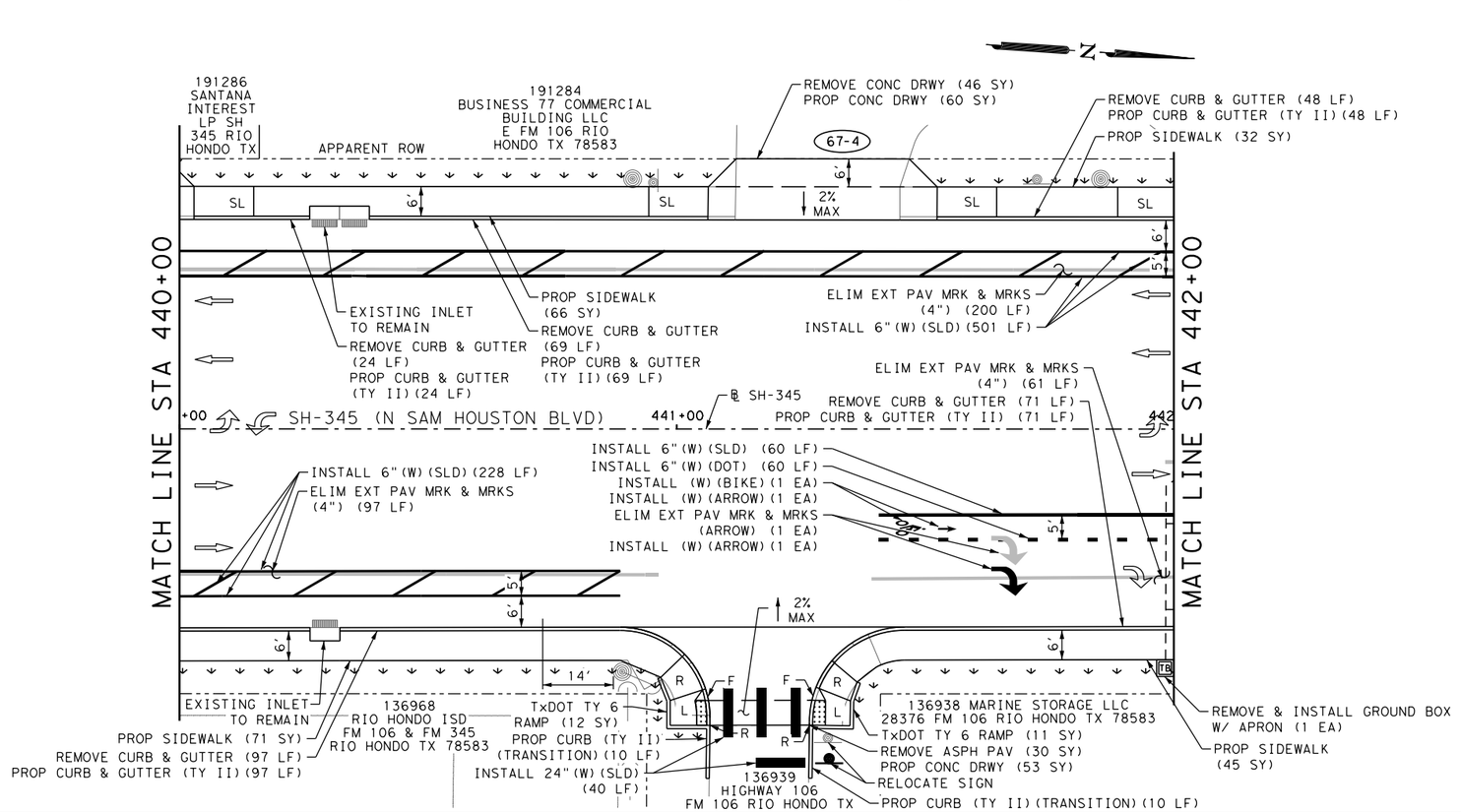
SHEET 4 OF 7

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	66

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\4-612540201_SH345_06.dgn





ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	46
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	844
0105-6037	REMOVING STAB BASE AND ASPH PAV(0"-16")	SY	88
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	298
0162-6002	BLOCK SODDING	SY	298
0168-6001	VEGETATIVE WATERING	MG	5.1
0529-6002	CONC CURB (TY II)	LF	20
0529-6008	CONC CURB & GUTTER (TY II)	LF	839
0530-6004	DRIVEWAYS (CONC)	SY	177
0531-6001	CONC SIDEWALKS (4")	SY	577
0531-6023	CURB RAMPS (TY 6)	SY	23
0560-6025	RELOCATE EXISTING MAILBOX	EA	3
0624-6010	GROUND BOX TY D (162922)W/APRON	EA	1
0624-6028	REMOVE GROUND BOX	EA	1
0644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	1
0666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF	60
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	40
0666-6225	PAVEMENT SEALER 6"	LF	2349
0666-6230	PAVEMENT SEALER 24"	LF	40
0666-6231	PAVEMENT SEALER (ARROW)	EA	2
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	1
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	2289
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	2
0668-6096	PREFAB PAV MRK TY C (W)(BIKE SYMBOL)	EA	1
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	958
0677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	1
0678-6002	PAV SURF PREP FOR MRK (6")	LF	2349
0678-6008	PAV SURF PREP FOR MRK (24")	LF	40

NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

SIDEWALK PLAN

STA 437+00 TO STA 442+00

SHEET 5 OF 7

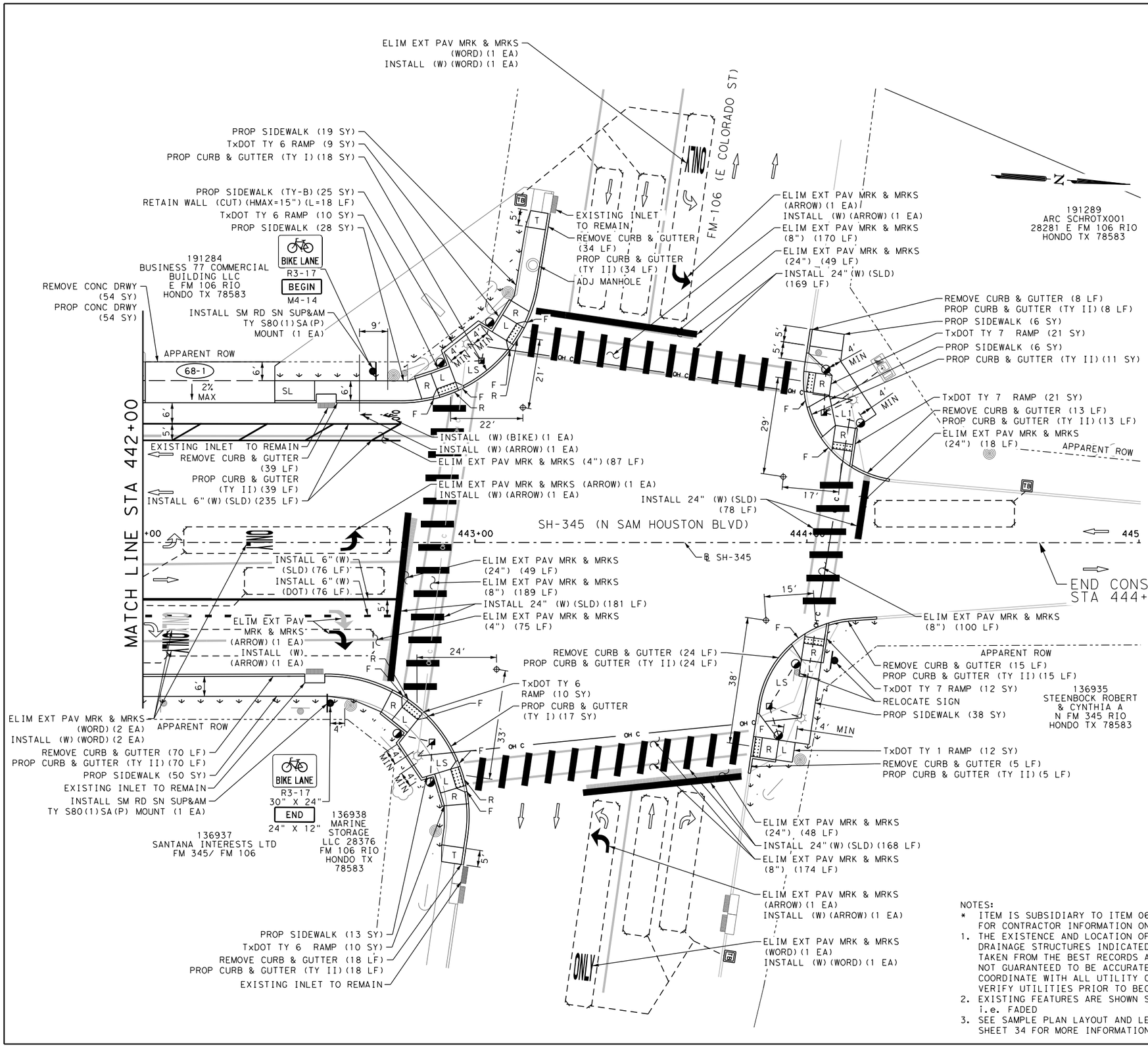
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	67

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\4-612540201_SH345_07.dgn

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\4-612540201_SH345_08.dgn



ITEM	DESCRIPTION	UNIT	QTY
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	54
0104-6029	REMOVING CONC (CURB OR CURB & GUTTER)	LF	226
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	122
0162-6002	BLOCK SODDING	SY	122
0168-6001	VEGETATIVE WATERING	MG	2.1
0416-6030*	DRILL SHAFT (TRF SIG POLE) (24 IN)	LF	48
0479-6001	ADJUSTING MANHOLES	EA	1
0529-6007	CONC CURB & GUTTER (TY I)	LF	35
0529-6008	CONC CURB & GUTTER (TY II)	LF	237
0530-6004	DRIVEWAYS (CONC)	SY	54
0531-6001	CONC SIDEWALKS (4")	SY	160
0531-6018	CURB RAMPS (TY 1)	SY	12
0531-6023	CURB RAMPS (TY 6)	SY	39
0531-6024	CURB RAMPS (TY 7)	SY	54
0531-6033	CONC SIDEWALKS (SPECIAL) (TYPE B)	SY	25
0644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	2
0644-6070	RELOCATE SM RD SN SUP&AM TY S80	EA	1
0666-6018	REFL PAV MRK TY I (W)6" (DOT) (100MIL)	LF	76
0666-6048	REFL PAV MRK TY I (W)24" (SLD) (100MIL)	LF	596
0666-6225	PAVEMENT SEALER 6"	LF	387
0666-6230	PAVEMENT SEALER 24"	LF	596
0666-6231	PAVEMENT SEALER (ARROW)	EA	5
0666-6232	PAVEMENT SEALER (WORD)	EA	4
0666-6245	PAVEMENT SEALER (BIKE SYMBOL)	EA	1
0666-6309	RE PM W/RET REQ TY I (W)6" (SLD) (100MIL)	LF	311
0668-6077	PREFAB PAV MRK TY C (W) (ARROW)	EA	5
0668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	4
0668-6096	PREFAB PAV MRK TY C (W) (BIKE SYMBOL)	EA	1
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	162
0677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	633
0677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	164
0677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	4
0677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	4
0678-6008	PAV SURF PREP FOR MRK (24")	LF	596

NOTES:
* ITEM IS SUBSIDIARY TO ITEM 0687. ITEM INCLUDED FOR CONTRACTOR INFORMATION ONLY
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

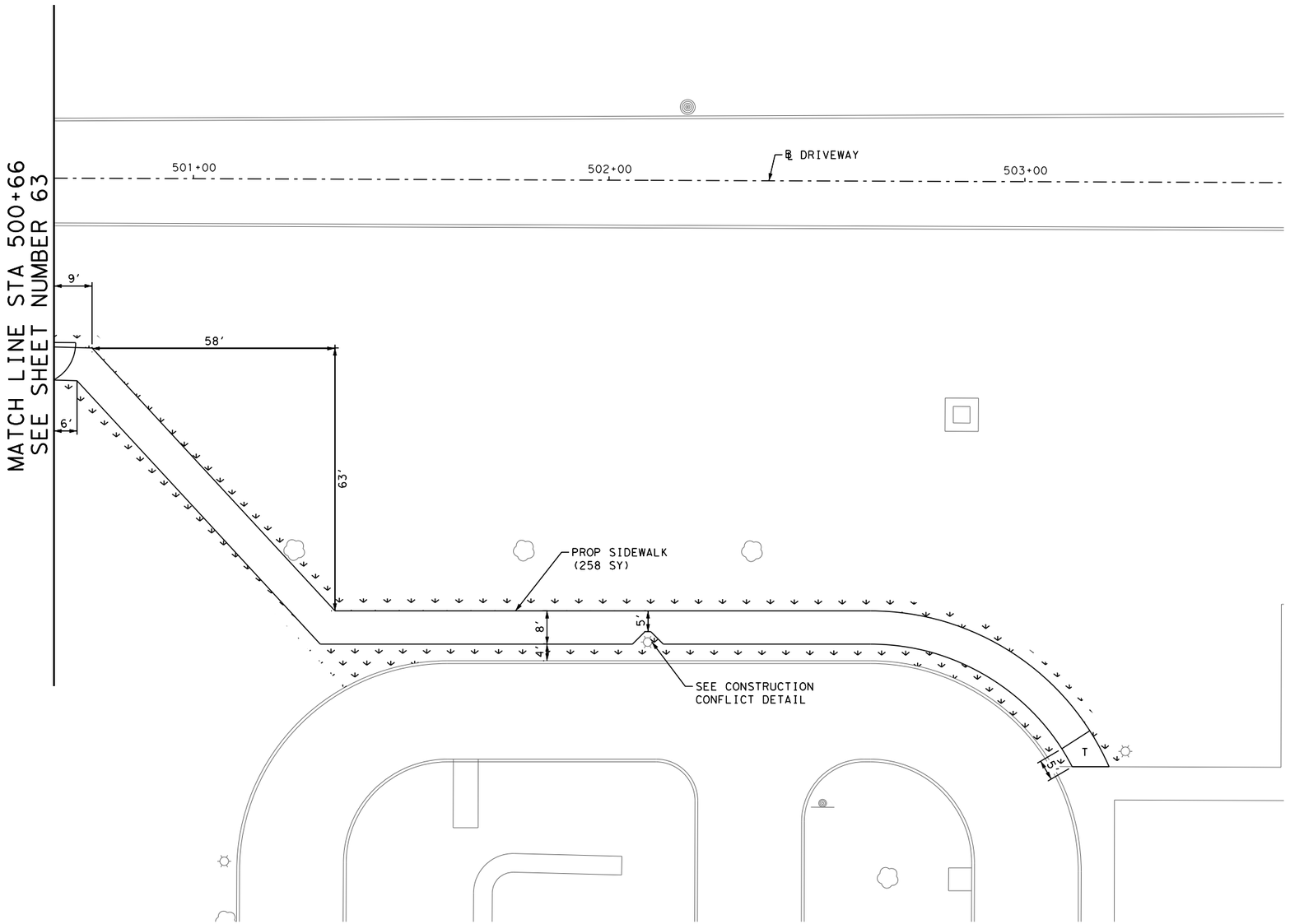
SIDEWALK PLAN

STA 442+00 TO END CONSTRUCTION

SHEET 6 OF 7

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	68

ITEM	DESCRIPTION	UNIT	QTY
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	224
0162-6002	BLOCK SODDING	SY	224
0168-6001	VEGETATIVE WATERING	MG	3.8
0531-6001	CONC SIDEWALKS (4")	SY	258



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

SIDEWALK PLAN

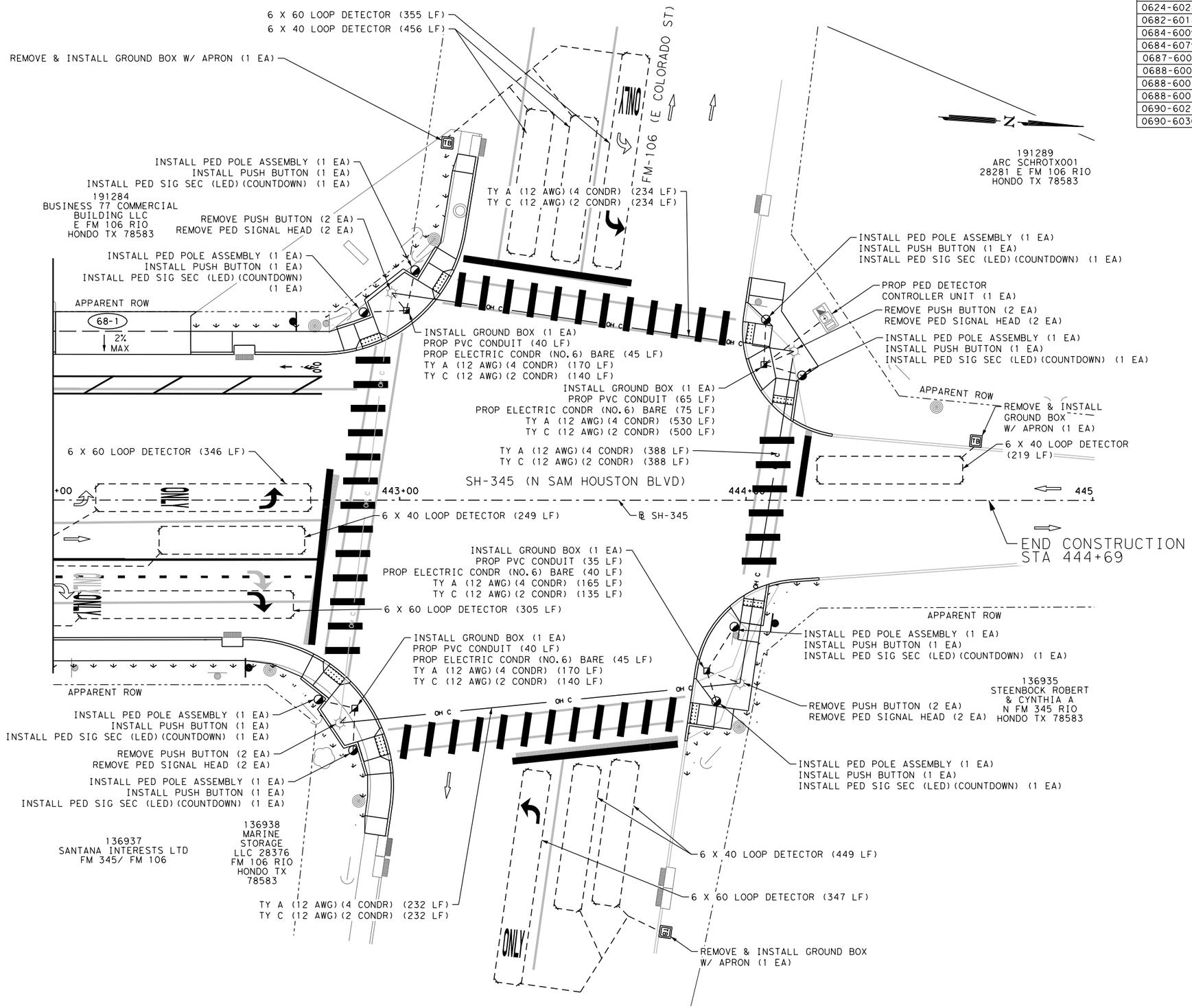
BEGIN CONSTRUCTION TO STA 419+00

SHEET 7 OF 7

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	69

Plotted on: 3/4/2024
Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\4-612540201_SH345_09.dgn

ITEM	DESCRIPTION	UNIT	QTY
0618-6023	CONDT (PVC) (SCH 40) (2")	LF	180
0620-6009	ELEC CONDR (NO.6) BARE	LF	205
0624-6009	GROUND BOX TY D (162922)	EA	4
0624-6010	GROUND BOX TY D (162922)W/APRON	EA	3
0624-6028	REMOVE GROUND BOX	EA	3
0682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	8
0684-6009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	1889
0684-6079	TRF SIG CBL (TY C)(12 AWG)(2 CONDR)	LF	1769
0687-6001	PED POLE ASSEMBLY	EA	8
0688-6001	PED DETECT PUSH BUTTON (APS)	EA	8
0688-6003	PED DETECTOR CONTROLLER UNIT	EA	1
0688-6004	VEH LP DETECT (SAWCUT)	LF	2726
0690-6024	REMOVAL OF SIGNAL HEAD ASSM	EA	8
0690-6030	REMOVAL OF PEDESTRIAN PUSH BUTTONS	EA	8



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

SIGNAL PLAN

STA 442+00 TO END CONSTRUCTION

SHEET 1 OF 1

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	70

Plotted on: 3/4/2024
Design Filename: S:\projects\612534\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\4-612540201_SH345_08 - EXHIBIT.dgn

GENERAL NOTES FOR TREE PROTECTION

1. PROTECT AND INSURE THE CONTINUED GOOD HEALTH OF EXISTING TREES IDENTIFIED ON THE PLANS OR DIRECTED BY THE ENGINEER. PRESERVE ALL EXISTING VEGETATION WITHIN THE PREFERRED ROOT PROTECTION ZONE.

2. SECURE THE SERVICES OF A TREE CARE SPECIALIST TO PERFORM OR OVERSEE ANY OPERATION INVOLVING LIMB PRUNING, ROOT PRUNING, CHEMICAL APPLICATION, OR ASSESSMENT OF THE CONDITION OF TREES OR EFFECTS OF CONSTRUCTION ON TREES DESIGNATED FOR PROTECTION.

3. WITHIN THE PREFERRED ROOT PROTECTION ZONE, NONE OF THE FOLLOWING ACTIVITIES ARE ALLOWED:

PARKING OF ANY VEHICLES; ERECTION OF ANY SHED OR STRUCTURE; STORAGE OF ANY EQUIPMENT OR MATERIALS; USE BY PEOPLE FOR ANY REASON; DUMPING OF ANY LITTER, WASTE MATERIALS, OR LIQUIDS; IMPOUNDMENT OF WATER; ADDITION OF FILL-SOIL; EXCAVATION, BORING, OR TRENCHING OF ANY TYPE

DEFINITIONS

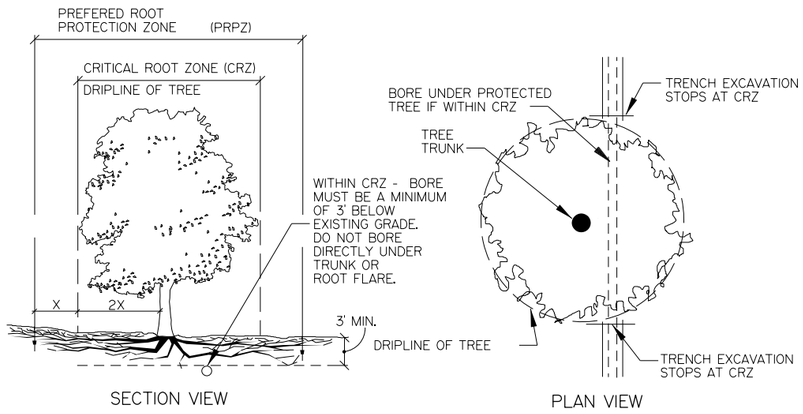
1. DRIPLINE - THE LINE ON THE GROUND DIRECTLY BELOW THE OUTER TIPS OR ENDS OF THE TREE LIMBS.

2. CRITICAL ROOT ZONE (CRZ) - THE GROUND AREA EXTENDING OUT FROM THE TREE TRUNK TO THE DRIPLINE.

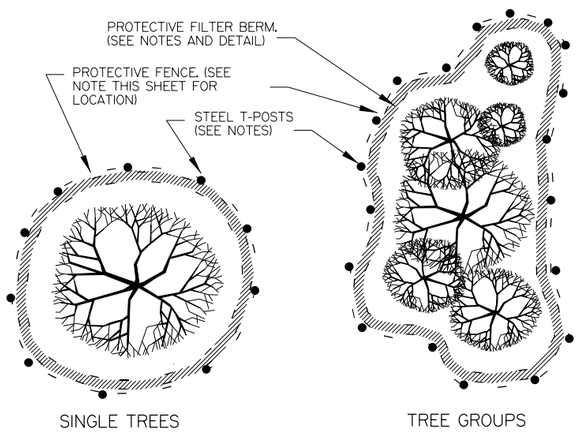
3. PREFERRED ROOT PROTECTION ZONE (PRPZ) - THE GROUND AREA EXTENDING OUT FROM THE TREE TRUNK A DISTANCE EQUAL TO ONE AND ONE HALF OF THE DISTANCE FROM THE TRUNK TO THE DRIPLINE.

4. TREE CARE SPECIALIST - CERTIFIED ARBORIST OR PROFESSIONAL URBAN FORESTER.

5. O.C. - ON CENTER



TRENCHING PAST TREES



PLAN VIEW OF FENCING LAYOUT

CONSTRUCTION METHODS

1. PRIOR TO THE START OF CONSTRUCTION, MARK ALL TREES OR OTHER FEATURES INDICATED ON THE PLANS TO BE PROTECTED WITH YELLOW FLAGGING FOR APPROVAL BY THE ENGINEER.

2. PRIOR TO CONSTRUCTION, PRUNE PROTECTED TREES AS FOLLOWS:
   A. REMOVE ANY DISEASED OR DEAD LIMBS AND CORRECT ANY PREVIOUS IMPROPER PRUNING
   B. REMOVE LIMBS FOR NECESSARY EQUIPMENT ACCESS (AS APPROVED BY THE ENGINEER).
   C. REMOVE LIMBS THAT WILL BE WITHIN TWENTY FEET (20) VERTICAL CLEARANCE OF VEHICLE TRAVEL LANES.
   D. REMOVE LIMBS THAT WILL BE WITHIN TEN FEET (10) VERTICAL CLEARANCE OF PEDESTRIAN AREAS.

3. PERFORM PRUNING USING ONLY TOOLS SPECIFICALLY DESIGNED FOR THE JOB AND IN ACCORDANCE WITH ANSI A300 PRUNING STANDARD. PRUNED MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR AND WILL BE DISPOSED OF OFF-SITE.

4. ERECT PROTECTIVE FENCING AT ALL TREES, GROUPS OF TREES, OR OTHER FEATURES AS SHOWN ON THE PLANS, OR DESIGNATED BY THE ENGINEER, OR OTHERWISE INDICATED FOR PROTECTION.

5. ERECT PROTECTIVE FENCING FOR TREES AT THE EDGE OF THE PRPZ. PLACE FENCING IN OTHER LOCATIONS ONLY WITH THE APPROVAL OF THE ENGINEER. THE FENCE MATERIAL SHALL BE CHAIN-LINK FENCE.
   A. CHAIN-LINK FENCING SHALL BE SIX-FOOT (6) IN HEIGHT AND SUPPORTED BY EIGHT-FOOT (8) STEEL T-POSTS SPACED SIX FEET (6) O.C., DRIVEN A MINIMUM OF 20" INTO EXISTING GRADE.
   B. THE FENCING SHALL BE CONTINUOUS BETWEEN POSTS AND SHALL BE FIRMLY ATTACHED TO THE POSTS WITH A MINIMUM OF 4 WIRE TIES.

6. PREPARE SIGNS WITH THE FOLLOWNG WORDING, AND INSTALL AT A MINIMUM OF 50' ON CENTER ALONG THE PROTECTIVE FENCING:
   PROTECTED AREA
   DO NOT ENTER
   THIS FENCE MAY NOT BE REMOVED OR MODIFIED WITHOUT THE PERMISSION OF THE ENGINEER
   CONTACT (PHONE NUMBER)

7. IF IT BECOMES NECESSARY TO LOCATE THE PROTECTIVE FENCING WITHIN SIX FEET (6) OF THE TRUNK OF A TREE, SECURE WOOD PLANKING TO THE TRUNK. THE PLANKING SHALL BE NOMINAL 2X4 DIMENSION LUMBER SECURED WITH A ROPE, BAND, OR STRAP OF SUFFICIENT DURABILITY TO REMAIIN IN PLACE FOR THE DURATION OF THE PROJECT. INSTALL PLANKS TO A HEIGHT OF TEN FEET (10') OR TO THE LOWEST MAJOR BRANCHES WHICHEVER IS LOWEST. DO NOT USE NAILS, SCREWS, OR ANY OTHER DAMAGING ATTACHMENTS UNDER ANY CIRCUMSTANCES.

8. ERECT A FILTER BERM COMPOSED OF WOOD CHIPS TO THE DIMENSIONS AND LOCATION SHOWN IN THE DETAILS. USE WOOD CHIPS LESS THAN OR EQUAL TO 5 IN. IN LENGTH WITH 95% PSSING A 2-IN. SCREEN AND LESS THAN 30% PASSING A 1-IN. SCREEN.

9. IMMEDIATELY REMOVE ANY CONCRETE, LIME OR OTHER CHEMICALS ACCIDENTALLY SPILLED WITHIN THE PROTECTED ROOT ZONE. IMMEDIATELY TREAT FOR ACCIDENTAL DAMAGE TO ANY TREE AS DIRECTED BY THE ENGINEER. SECURE THE SERVICES OF A TREE CARE SPECIALIST TO ASSESS AND/OR TREAT FOR THE DAMAGE.

10. MAINTAIN ALL TREE PROTECTION MATERIALS THROUGHOUT ENTIRE LENGTH OF PROJECT. REPAIR ANY DAMAGED TREE PROTECTION MATERIALS IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. ADDITIONAL COMPOST OR MULCH MATERIALS MAY BE REQUIRED.

11. NO TRENCHING, EXCAVATING, FILLING, OR COMPACTION IS ALLOWED WITHIN THE CRITICAL ROOT ZONE EXCEPT AS SPECIFICALLY IDENTIFIED IN THE PLANS OR APPROVED BY THE ENGINEER.

12. IF ROOT REMOVAL OR EXCAVATION IS UNAVOIDABLE WITHIN THE PREFERRED ROOT PROTECTION ZONE, HAND-DIG TO EXPOSE MAJOR TREE ROOTS OF ONE-INCH (1") DIAMETER OR GREATER. ONCE EXPOSED, PRUNE ROOTS WITH SHARP, CLEAN TOOLS DESIGNED FOR THAT PURPOSE. BACKFILL EXPOSED ROOT ENDS AS SOON AS POSSIBLE OR COVERED WITH SIX INCHES (6") SHREDDED HARDWOOD MULCH WITHIN THE SAME DAY OF EXCAVATION.

13. PRUNE ANY ROOTS EXPOSED BY CONSTRUCTION FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOPSOIL AS SOON AS POSSIBLE. IF EXPOSED ROOTS ARE NOT TO BE BACKFILLED WITHIN TWO DAYS, COVER THEM WITH A MINIMUM OF SIX INCHES (6") OF SHREDDED HARDWOOD MULCH.

14. SHOULD ACCESS ACROSS THE CRITICAL ROOT ZONE BE NECESSARY, OPEN ONLY THAT PORTION NEEDED FOR ACCESS AND THE COMPLETION OF THE TASK. INSTALL SIX INCHES (6") OF SHREDDED HARDWOOD BARK IN ACCESS AREAS BEFORE ANY WHEELED OR TRACKED VEHICES ENTER THE CRITICAL ROOT ZONE. REPLACE PROTECTIVE FENCING TO ITS ORIGINAL POSITIONS AS SOON AS POSSIBLE AFTER THE CONSTRUCTION TASK IS COMPLETED AND REMOVE THE BARK MULCH LAYER AND STOCKPILE OUTSIDE THE CRITICAL ROOT ZONE.

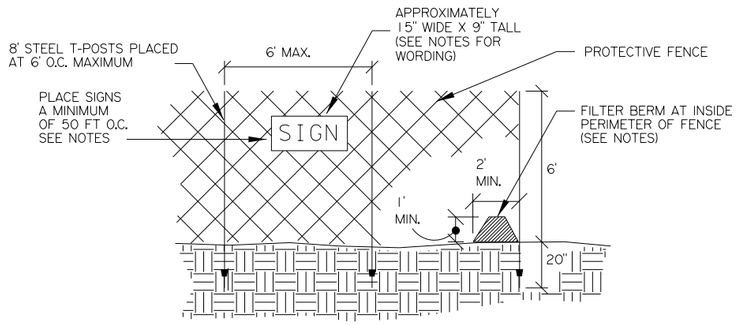
15. FOR PROPOSED UNDERGROUND UTILITIES SHOWN ELSEWHERE IN THE PLANS THAT CROSS THE CRITICAL ROOT ZONE, BORE AT A MINIMUM OF THREE FEET (3) BELOW EXISTING GRADE. TRENCH FOR BORE SHALL NOT INTRUDE INTO CRITICAL ROOT ZONE.

POST CONSTRUCTION

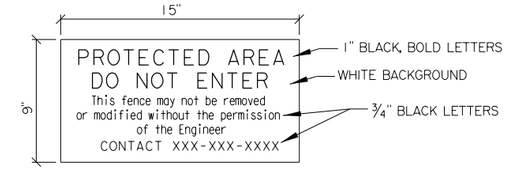
1. UPON THE COMPLETION OF CONSTRUCTION ACTIVITIES, CONDUCT A FINAL ASSESSMENT BY A TREE CARE SPECIALIST TO DETERMINE THE HEALTH AND CONDITION OF THE TREES. THE SPECIALIST SHOULD PROVIDE RECOMMENDATIONS FOR THE FOLLOWING INSPECTION ITEMS FOR NEEDED POST-CONSTRUCTION MEASURES:
   A. DAMAGE TO ANY PART OF THE TREE
   B. CHANGES IN SOILS STRUCTURE SUCH AS COMPACTION, FILLS, EROSION, OR LOSS OF ORGANIC MATTER

IMPLEMENT THE RECOMMENDATIONS MADE BY THE TREE CARE SPECIALIST AS DIRECTED. AT A MINIMUM, PERFORM THE FOLLOWING:
   A. REMOVE TREES THAT MAY HAVE DIED DURING CONSTRUCTION
   B. REMOVE ANY FILL SOIL FROM ROOT ZONES
   C. REPAIR AREAS DAMAGED DURING CONSTRUCTION

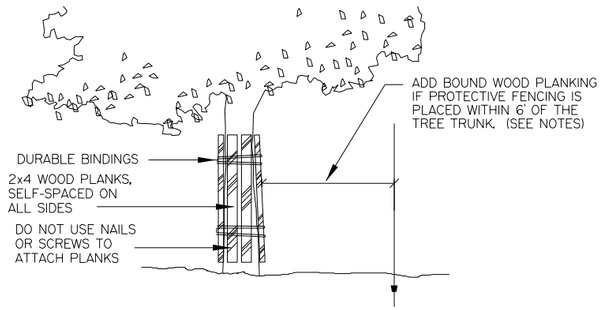
2. AFTER ALL CONSTRUCTION ACTIVITIES HAVE CEASED, REMOVE ALL TREE PROTECTION MATERIALS FROM THE PROJECT SITE. MULCH MAY BE SPREAD OVER THE SITE IN A TWO-INCH THICK MAXIMUM LAYER.



PROTECTIVE FENCE AND SIGN PLACEMENT



SIGNAGE FOR PROTECTED AREAS



WOOD PLANKING INSTALLATION

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

THIS WORK AND ALL ASSOCIATED MATERIALS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO ITEM 100 - PREPARING RIGHT OF WAY.

NOT TO SCALE

Texas Department of Transportation

TREE PROTECTION

T:Engdata/Standards/SATreeProtection.dgn

ORIGINAL DRAWING DATE: 12-18-18

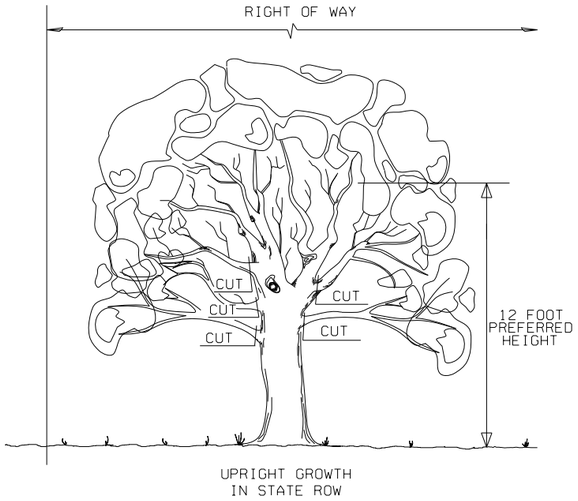
REVISIONS

PREPARED BY AND FOR USE OF TxDoT.

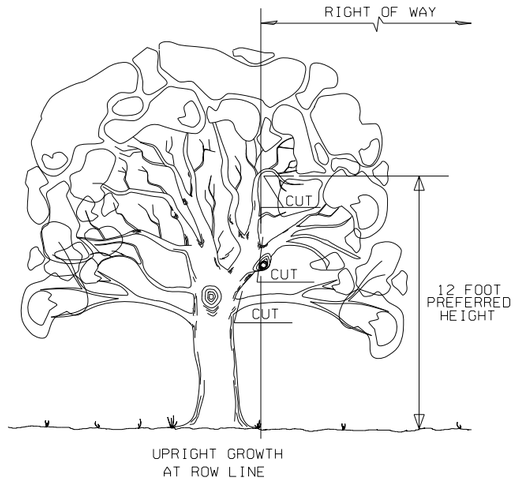
STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
PHR	6	STP 2B23 (202) TAPS	71

COUNTY	CONTROL	SECTION	JOB	HIGHWAY
CAMERON	0921	06	348	VA

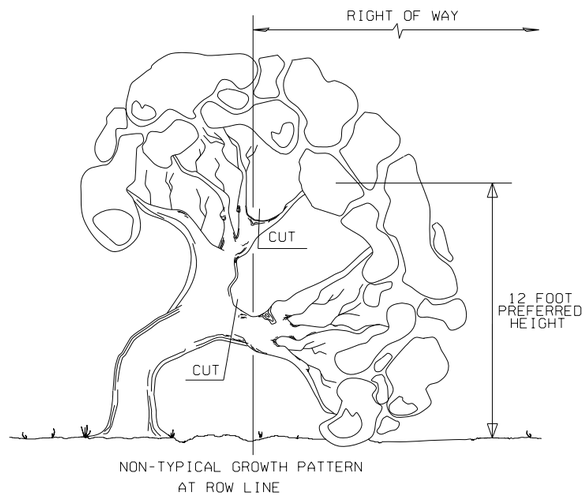
GUIDELINES FOR PRUNING TREES



UPRIGHT GROWTH
IN STATE ROW



UPRIGHT GROWTH
AT ROW LINE



NON-TYPICAL GROWTH PATTERN
AT ROW LINE

THOSE EXISTING TREES, SHRUBS OR OTHER LANDSCAPE FEATURES DESIGNATED BY THE ENGINEER FOR PRESERVATION AND PRUNING INDICATED IN THE PLANS AND/OR AS DIRECTED BY THE ENGINEER SHALL BE PROTECTED AND PRUNED. THIS PROTECTION WORK SHALL BE CONSIDERED SUBSIDIARY TO THIS ITEM. ACCEPTABLE FENCING MATERIAL FOR TREE PROTECTION SHALL BE "FENCE IT PLUS", 46" H X 150' L, NEW ORANGE COLOR, AS MANUFACTURED BY WEATHERSHADE, 3000 W. ORANGE AVE., APOPKA, FLORIDA, 32703, (407) 889-3692, OR APPROVED EQUAL. ALL TREES TO BE PRESERVED ARE NOT NECESSARILY SHOWN ON THE PLANS. AS DETAILED ON THIS SHEET AND TO THE SATISFACTION OF THE ENGINEER, IN THE EVENT OF OVERHANGING LIMBS ONTO TRAVEL LANES AND/OR IN CONFLICT WITH CONSTRUCTION, THE FOLLOWING PRUNING GUIDELINES SHALL BE UTILIZED.

(ATTENTION CONTRACTORS AND TXDOT ENGINEERS)

NOTE: TREE LIMBS SHALL NOT BE BROKEN FROM THE TREES BY EARTHWORK EQUIPMENT UNDER ANY CIRCUMSTANCES.

THE FOLLOWING GENERAL SPECIFICATIONS APPLY TO CLASS 111. HAZARD PRUNING:

1. ALL CUTS SHALL BE MADE AS CLOSE AS POSSIBLE TO THE TRUNK OR PARENT LIMB WITHOUT CUTTING INTO THE BRANCH COLLAR AND LEAVING A PROTRUDING STUB (SEE DIAGRAM A). BARK AT THE EDGE OF ALL PRUNING CUTS SHOULD REMAIN FIRMLY ATTACHED.

2. ALL BRANCHES TOO LARGE TO SUPPORT WITH ONE HAND SHALL BE PRECUT (SEE DIAGRAM B) TO AVOID SPLITTING OR TEARING OF THE BARK. WHERE NECESSARY, ROPES OR OTHER EQUIPMENT SHOULD BE USED TO LOWER LARGE BRANCHES OR STUBS TO THE GROUND. CUT "A" SHOULD BE DONE TO HALF OF BRANCH DIAMETER TO AVOID THE UNDESIRED TEARING OF BARK TO MAIN TRUNK WHEN CUTTING LARGE BRANCHES.

3. TREATMENT OF CUTS AND WOUNDS WITH WOUND DRESSING OR PAINTS HAS NOT SHOWN TO BE EFFECTIVE IN PREVENTING OR REDUCING DECAY AND IS NOT GENERALLY RECOMMENDED FOR THAT REASON. WOUND DRESSING OVER INFECTED WOUND MAY STIMULATE THE DECAY PROCESS. IF WOUNDS ARE PAINTED FOR COSMETIC OR OTHER REASONS, THEN MATERIALS NON-TOXIC TO THE CAMBIUM LAYER MERISTIMATIC TISSUE MUST BE USED. CARE MUST BE TAKEN TO APPLY A THIN COATING OF THE MATERIAL ONLY TO THE EXPOSED WOOD.

4. EQUIPMENT THAT WOULD DAMAGE THE BARK AND CADMIUM LAYER SHALL NOT BE USED ON OR IN THE TREE. FOR EXAMPLE, THE USE OF CLIMBING SPURS (HOOKS, IRONS) IS NOT AN ACCEPTABLE WORK PRACTICE FOR PRUNING OPERATIONS ON LIVE TREES. SHARP TOOLS SHALL BE USED SO THAT CLEAN CUTS SHALL BE MADE AT ALL TIMES.

5. ALL CUT LIMBS SHALL BE REMOVED FROM THE CROWN UPON COMPLETION OF THE PRUNING.

6. TREES SUSCEPTIBLE TO SERIOUS INFECTIOUS DISEASES SHOULD NOT BE PRUNED AT THE TIME OF YEAR DURING WHICH THE PATHOGENS CAUSING THE DISEASE OR THE INSECT INFESTATION IS MOST ACTIVE. SIMILARLY, IF PRUNING WOUNDS MAY ATTRACT HARMFUL INSECTS, PRUNING SHOULD BE TIMED SO AS TO AVOID INSECT INFESTATION.

7. THE PRESENCE OF ANY DISEASE CONDITION, FUNGUS FRUIT BODIES, DECAYED TRUNK OR BRANCHES, SPLIT CROTCHES OR BRANCHES, CRACKS, OR OTHER STRUCTURAL WEAKNESS SHOULD BE REPORTED IN WRITING TO THE ENGINEER FOR CORRECTIVE MEASURES.

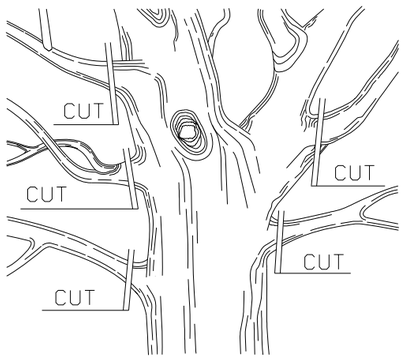


DIAGRAM A

NOTE: IF PRUNING OF MAJOR LIMBS WILL CAUSE THE TREE TO LOOSE PROPER OR FUNCTIONAL FORM, THE CONTRACTOR SHALL CONTACT THE ENGINEER FOR APPROVAL BEFORE FURTHER PRUNING CAN BE ACCOMPLISHED.

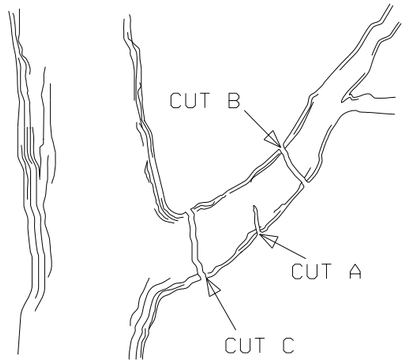


DIAGRAM B

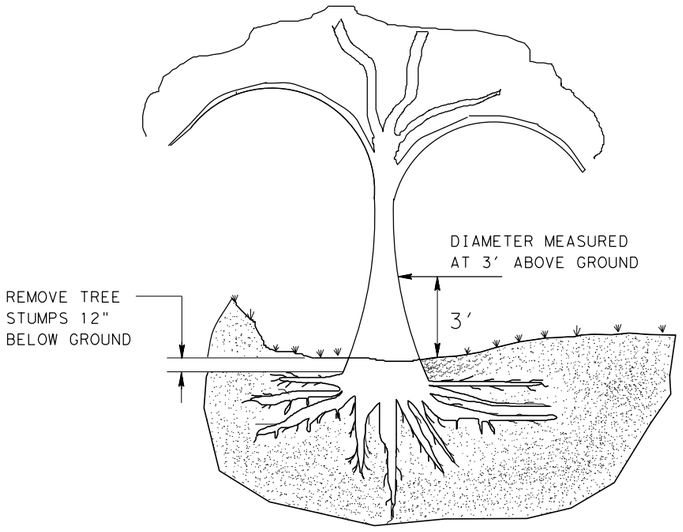
 PHARR DISTRICT STANDARD

Texas Department of Transportation

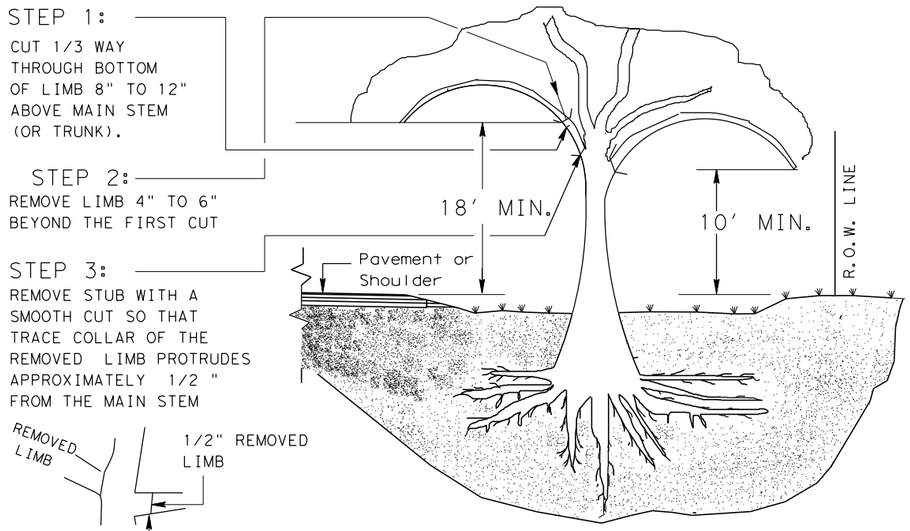
TREE PRUNING DETAILS

04/17

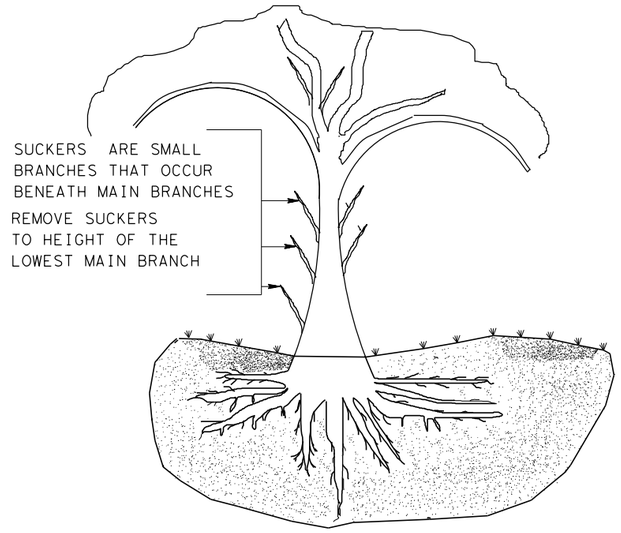
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		FILE NO.			SHEET NO.
6						72
STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	PHR	CAMERON	0921	06	348	VA



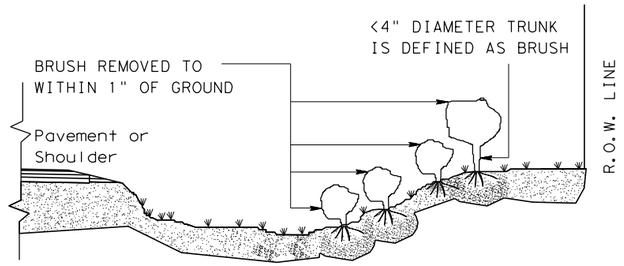
TREE REMOVAL



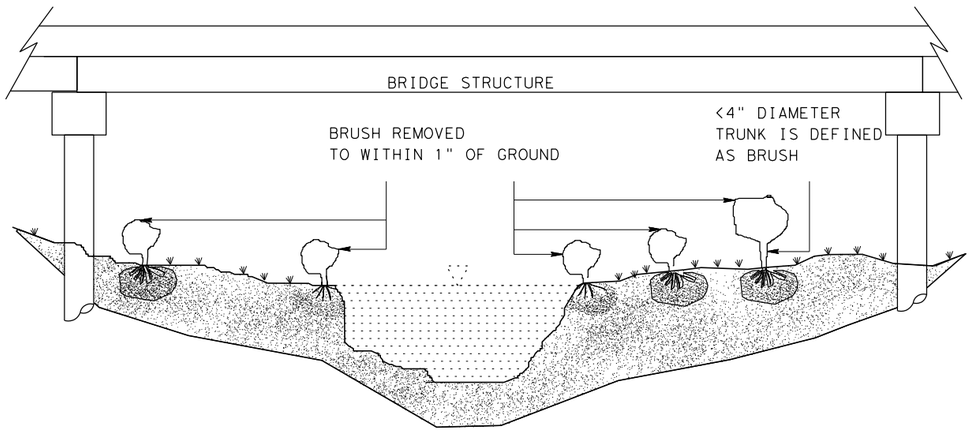
TREE TRIMMING



STEPS 1, 2 AND 3 APPLY WHEN REMOVING LIMBS 2" IN DIAMETER OR LARGER.



BRUSH REMOVAL



BRUSH REMOVAL UNDER BRIDGE AND IN CHANNEL

GENERAL NOTES:

TREE TRIMMING

1. TRIM AND REMOVE ALL TREE LIMBS ON THE PAVEMENT SIDE OF THE TRUNK 18' ABOVE THE PAVEMENT OR BRIDGE DECK ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.

2. TRIM AND REMOVE ALL TREE LIMBS BETWEEN THE TRUNK AND R.O.W. LINE 10' ABOVE NATURAL GROUND, TERRAIN OR OTHER STRUCTURE ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.

TREE REMOVAL

3. FOR TREES MARKED FOR REMOVAL, THE DIAMETER OF TREES ARE DETERMINED BY MEASUREMENT OF THE TRUNK CIRCUMFERENCE 3' ABOVE THE GROUND. TREES WITH TRUNKS OF LESS THAN 4" DIAMETER ARE CONSIDERED TO BE BRUSH. TREES WITH MULTIPLE TRUNKS AT THE POINT OF MEASUREMENT ARE MEASURED AND PAID FOR SEPARATELY.

4. MEASUREMENTS FOR PAYMENT OF TREE DIAMETERS ARE DIVIDED INTO THE RANGES SHOWN IN TABLE 1.

TABLE 1
TREE TRUNK SIZE FOR TREE REMOVAL PAYMENT

PAY ITEM	RANGE FOR PAY ITEMS			
	TRUNK DIAMETER *		TRUNK CIRCUMFERENCE	
	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO
752 6005	4	12	12 1/2	37 1/2
752 6006	12	18	37 1/2	56 1/2
752 6007	18	24	56 1/2	75 1/2
752 6008	24	30	75 1/2	94
752 6009	30	36	94	113
752 6010	36	42	113	132
752 6011	42	48	132	151
752 6012	48	60	151	188 1/2
752 6013	60	72	188 1/2	226
752 6019	72	84	226	264
	84	GREATER THAN 84	264	NOT APPLICABLE

*SEE GENERAL NOTE #3.

Texas Department of Transportation

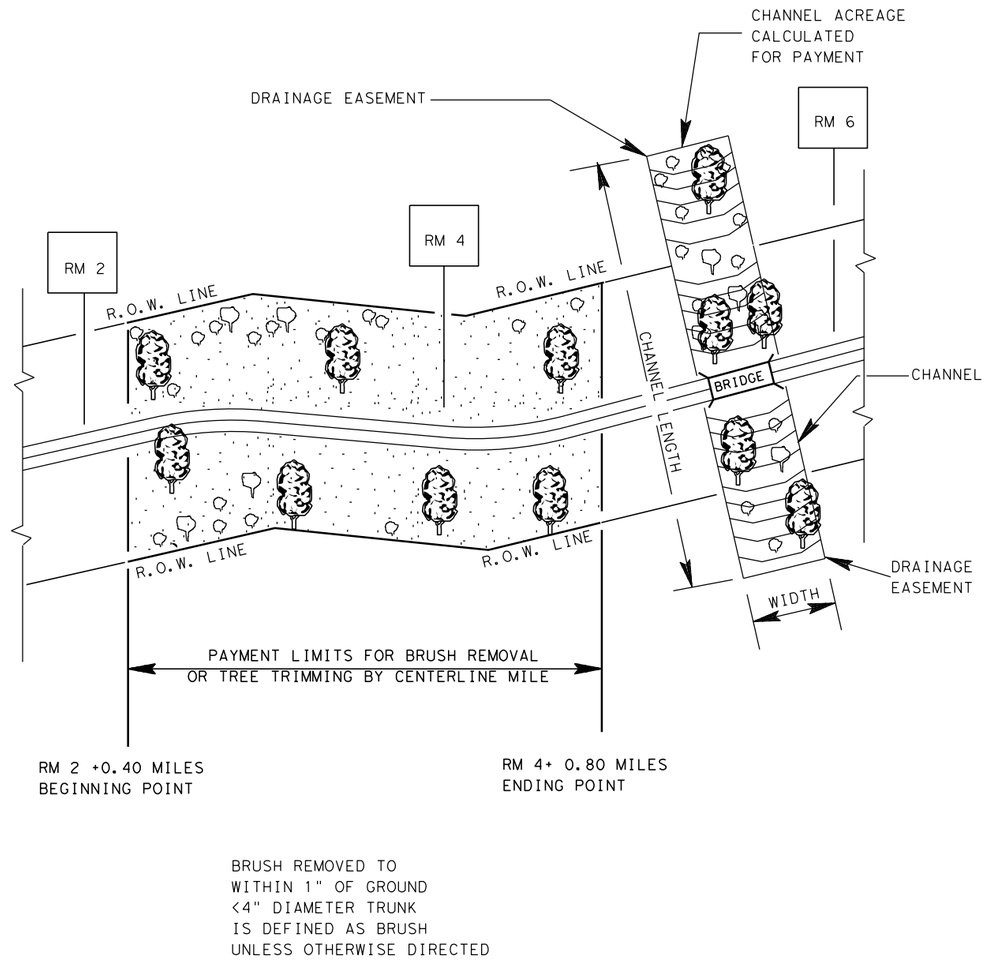
Maintenance Division Standard

TREE AND BRUSH REMOVAL

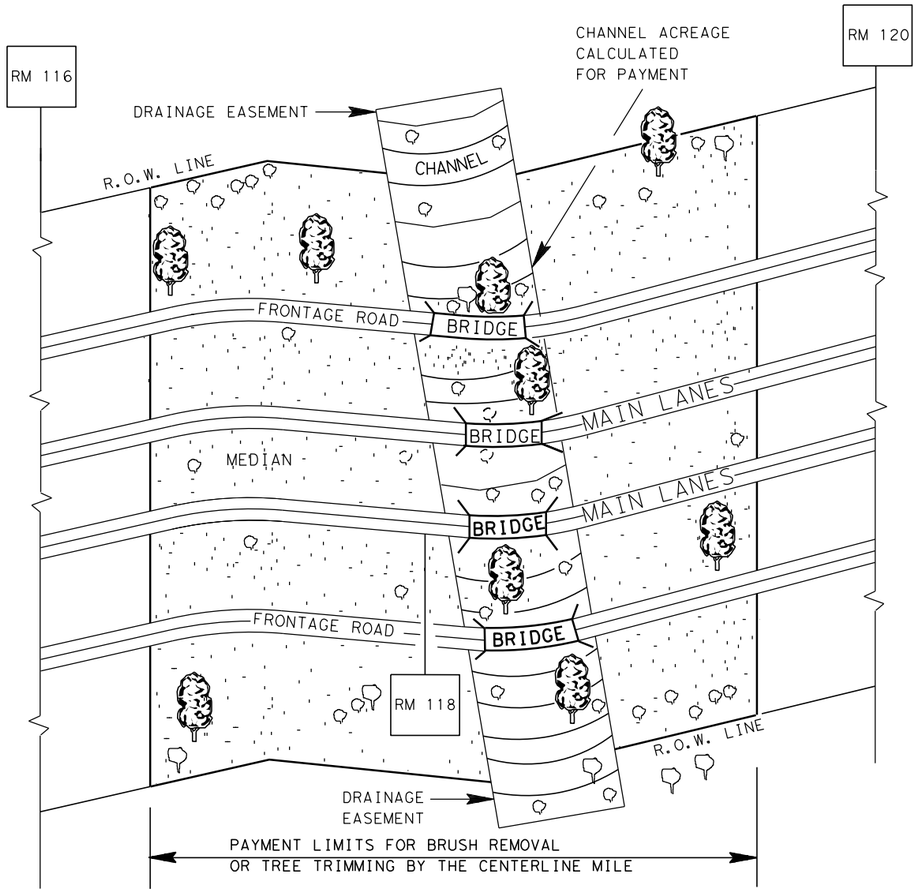
TRB-15(1)

SHEET 1 OF 2

FILE:	DN: JEO	CK: LJB	DW: JEO	CK:
©TxDOT MARCH 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
Revised table 1 to 2014 Specification	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		73



EXAMPLE: UNDIVIDED HIGHWAY



EXAMPLE: DIVIDED HIGHWAY WITH FRONTAGE ROADS

GENERAL NOTES:

TREE TRIMMING AND BRUSH REMOVAL

1. PAYMENT BY THE CENTERLINE MILE IS MADE TO THE NEAREST 1/100 (0.01) MILE.
2. LIMITS OF WORK ARE SHOWN AS DISTANCES FROM REFERENCE MARKERS (RM).
3. PAY ITEMS BY THE CENTERLINE MILE INCLUDE ALL TREE TRIMMING OR BRUSH REMOVAL IN THE RIGHT OF WAY ON BOTH SIDES OF THE HIGHWAY. FOR DIVIDED HIGHWAYS, THE MEDIAN IS INCLUDED. FOR HIGHWAYS WITH FRONTAGE ROADS, THE AREAS BETWEEN THE FRONTAGE ROADS AND MAIN LANES, AND THE AREAS OUTSIDE OF THE FRONTAGE ROADS ARE INCLUDED.
4. BRUSH REMOVAL AND TREE TRIMMING UNDER BRIDGES, IN AND ALONG CHANNELS AND EASEMENTS ARE PAID FOR BY THE ACRE FOR AREAS DESIGNATED ON THE PLANS.

LEVELS DISPLAYED
1

Texas Department of Transportation
Maintenance Division
Standard Plans

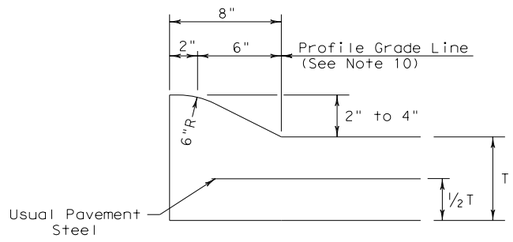
TREE AND BRUSH REMOVAL

TRB-15(2)

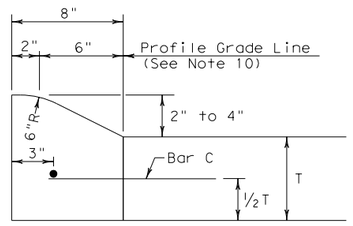
NOT TO SCALE — SHEET 2 OF 2

FILE: TRB-15(2).DGN	DRAWN: JEO MODIFIED:	CHECKED: DW: LJB	DW: -	CK: -	NEG NO.:	
© TxDOT APRIL 2015		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT #		SHEET
REVISED: 5/13/2004	LJB	PHR		STP 2B23 (202)TAPS		74
REVISED: 9/24/2004	LJB	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
REVISED: APRIL 2015	JEO	CAMERON		0921	06	348	VA

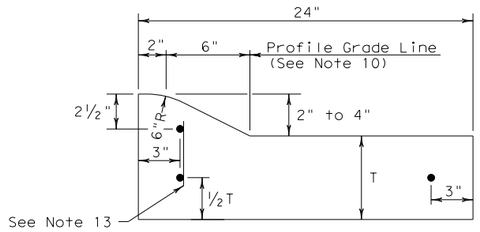
DATE: 3/4/2024
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Roadway\cccg22.dgn



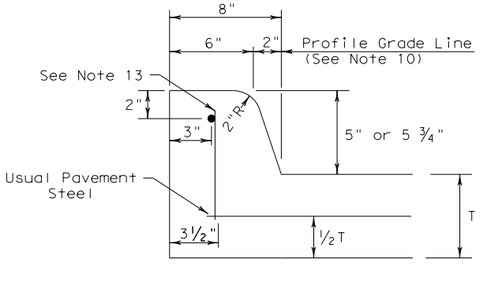
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



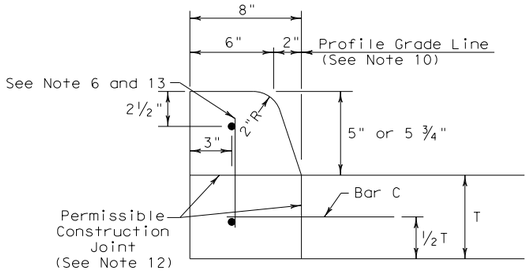
TYPE I CURB
2" - 4" HEIGHT



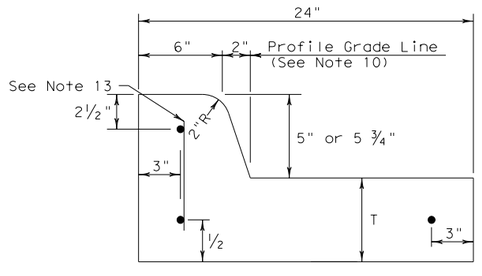
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



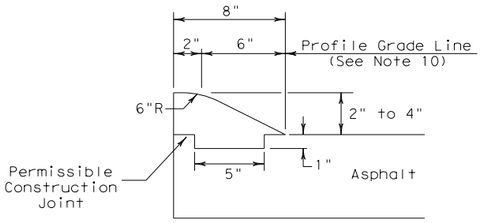
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



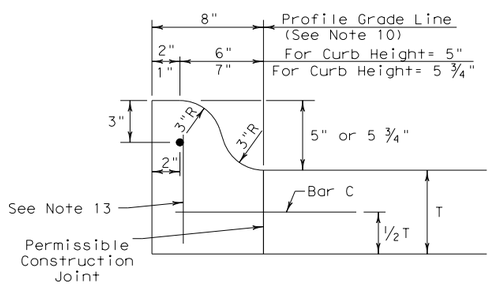
TYPE II CURB
5" - 5 ¾" HEIGHT



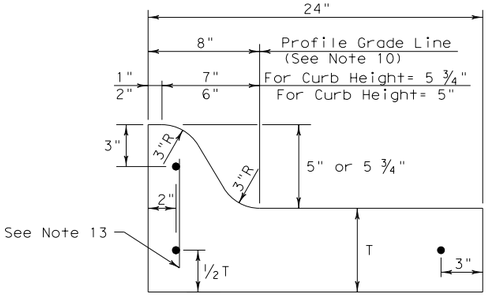
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



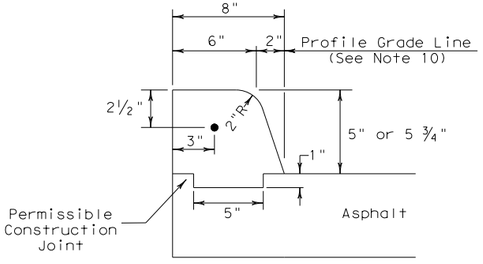
TYPE III CURB (KEYED)
2" - 4" HEIGHT



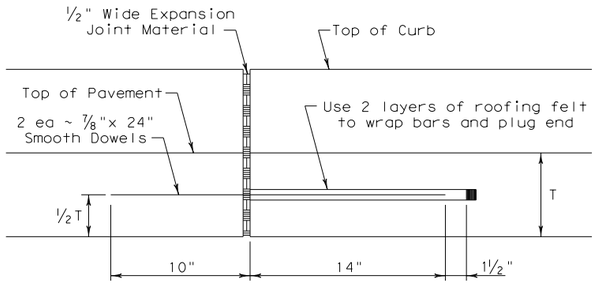
TYPE IIa CURB
5" - 5 ¾" HEIGHT



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

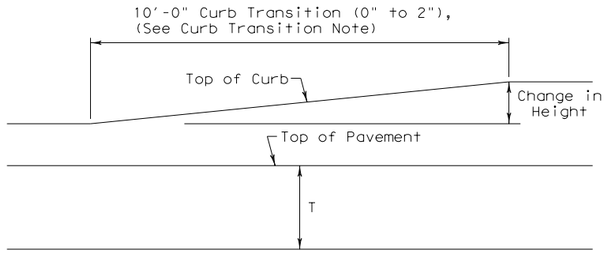


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

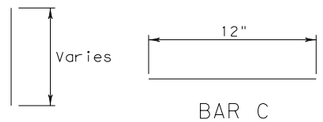
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



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

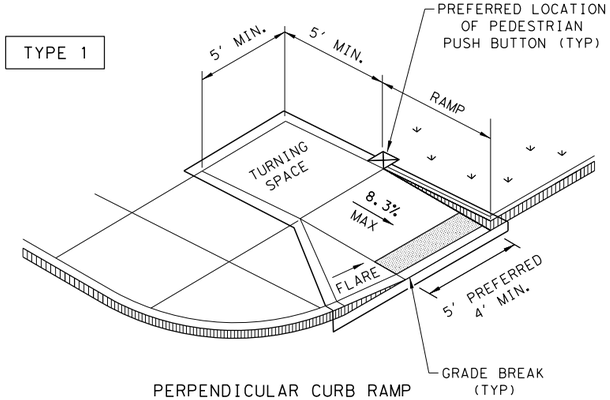
CONCRETE CURB AND CURB AND GUTTER

CCCG-22

FILE: cccg22.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		75

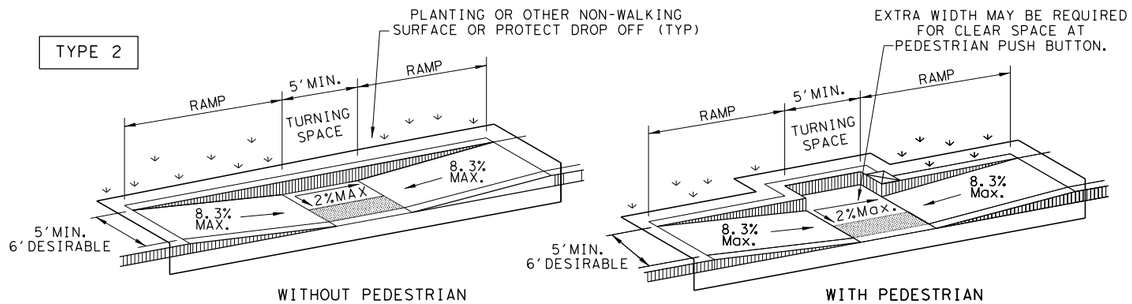
DATE: 3/4/2024
FILE: S:\projects\612534\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Roadway\ped18.dgn

TYPE 1



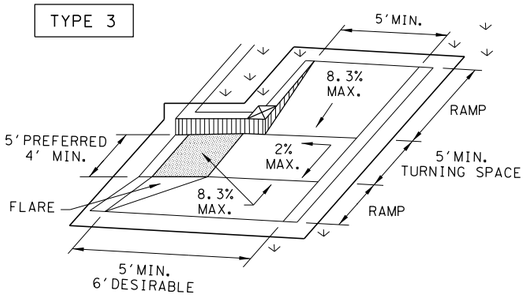
PERPENDICULAR CURB RAMP

TYPE 2

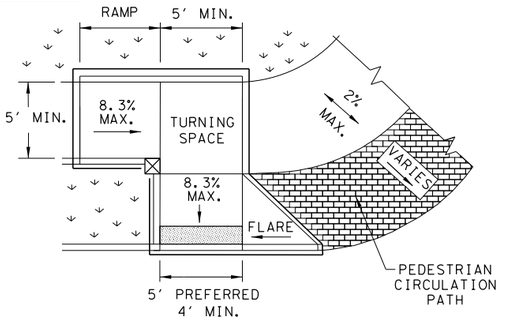


PARALLEL CURB RAMP

TYPE 3

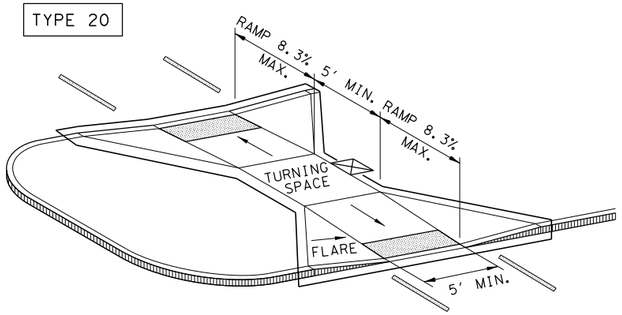


TYPE 6



COMBINATION CURB RAMPS

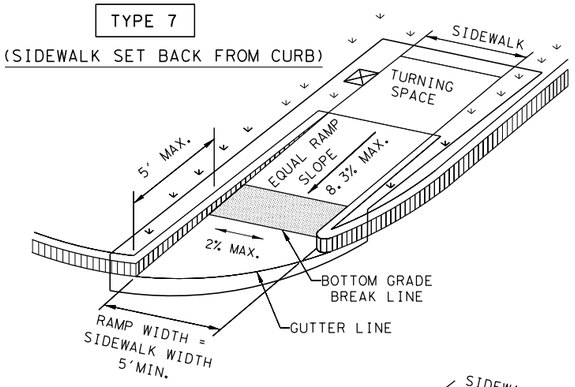
TYPE 20



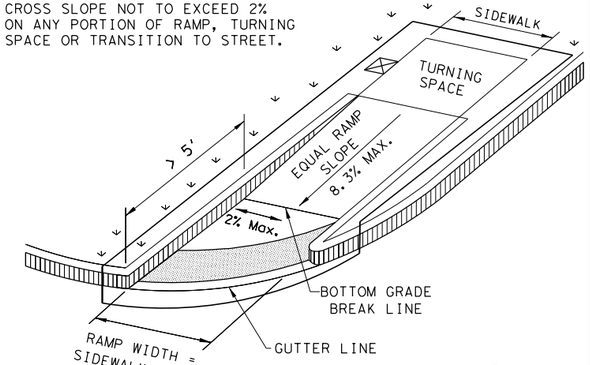
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

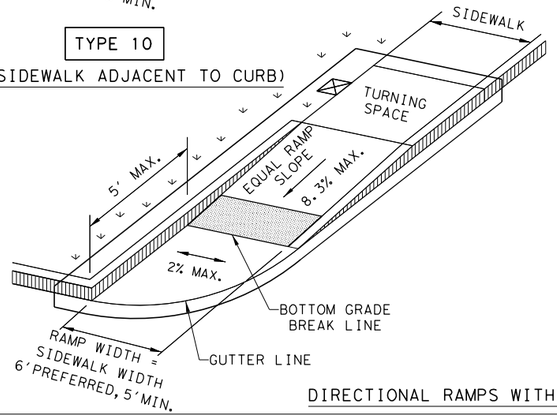


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

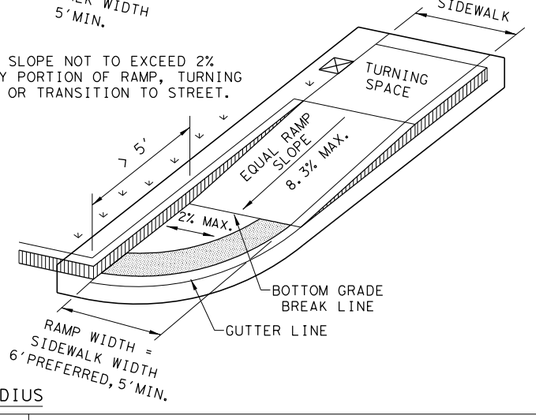


TYPE 10

(SIDEWALK ADJACENT TO CURB)

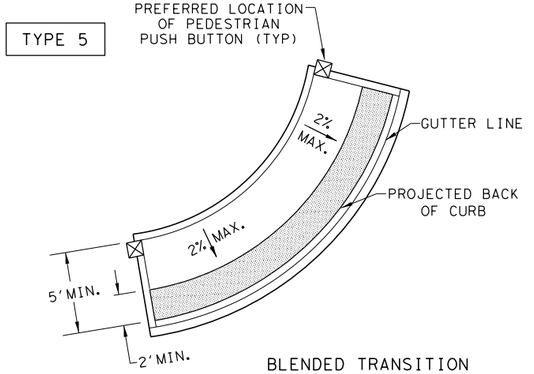


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

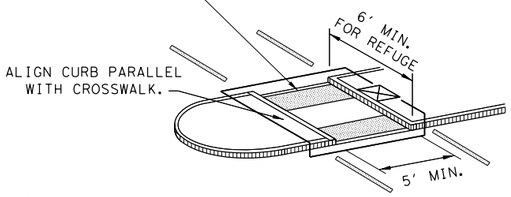
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

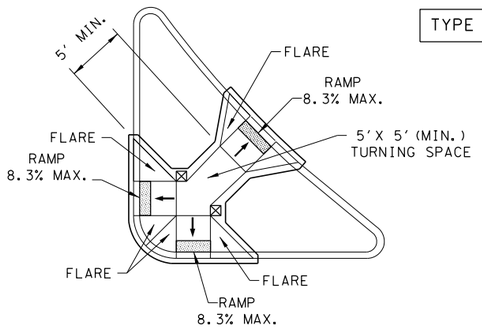
TYPE 21

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



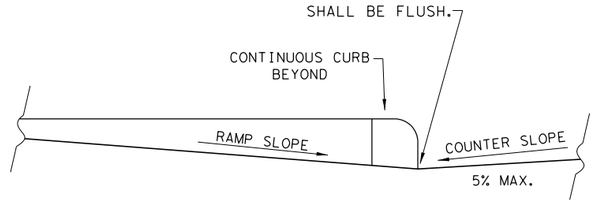
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

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



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

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	0921	06	348	VA
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		76

DATE: 3/4/2024
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Roadway\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

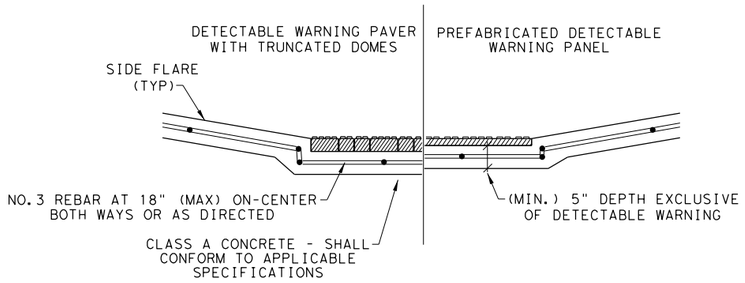
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

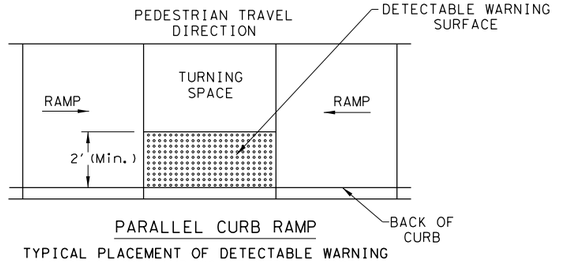
SIDEWALKS

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.



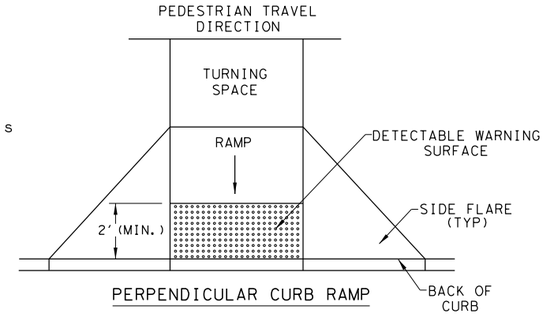
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



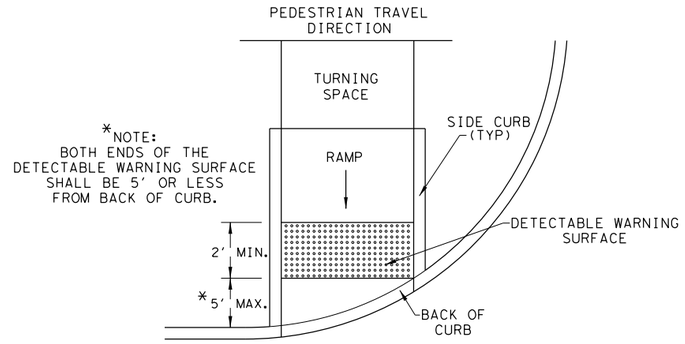
PARALLEL CURB RAMP

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

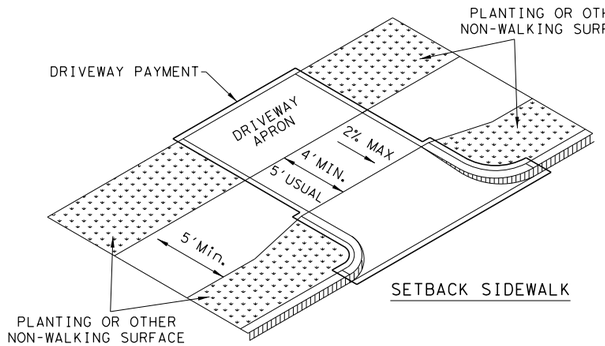
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

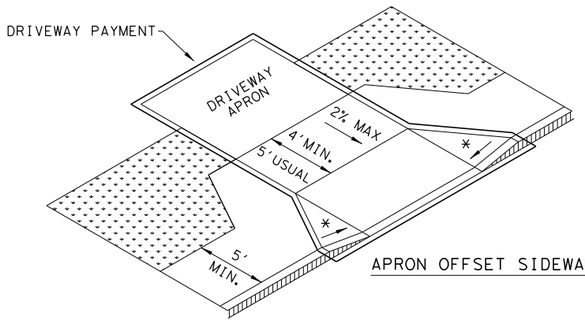
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0921	06	348	VA	
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.	
	PHR	CAMERON		77	

DATE: 3/4/2024
FILE: S:\projects\612554\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Roadway\ped18.dgn

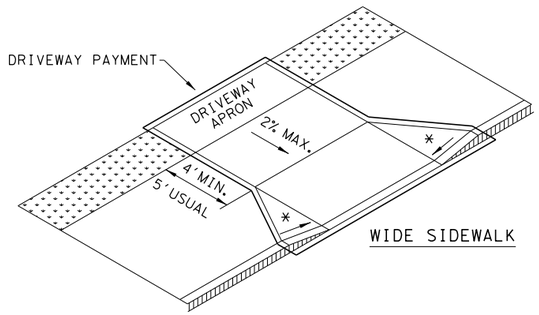
SIDEWALK TREATMENT AT DRIVEWAYS



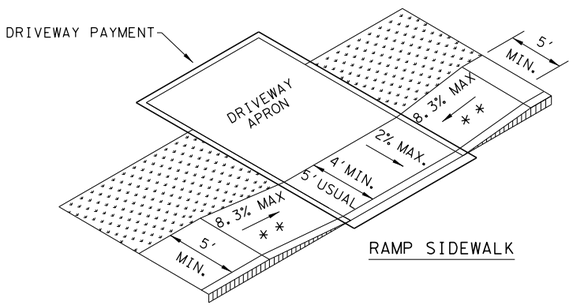
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

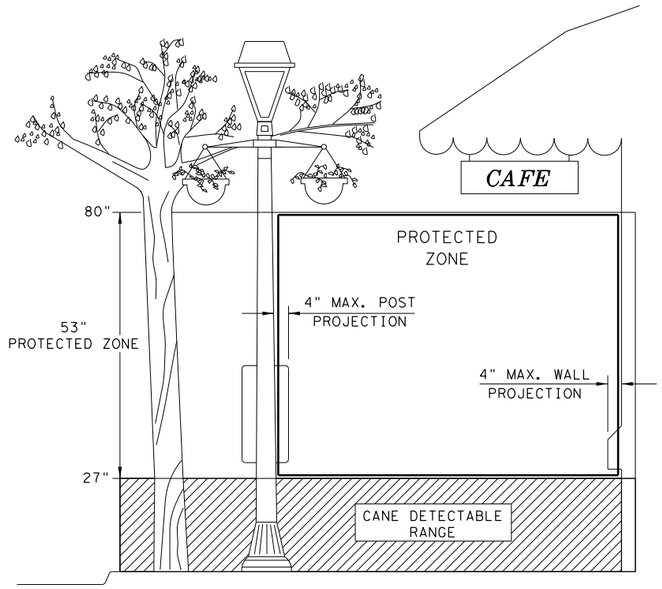


RAMP SIDEWALK

NOTES:

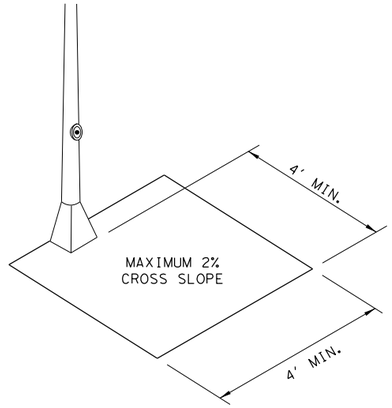
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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

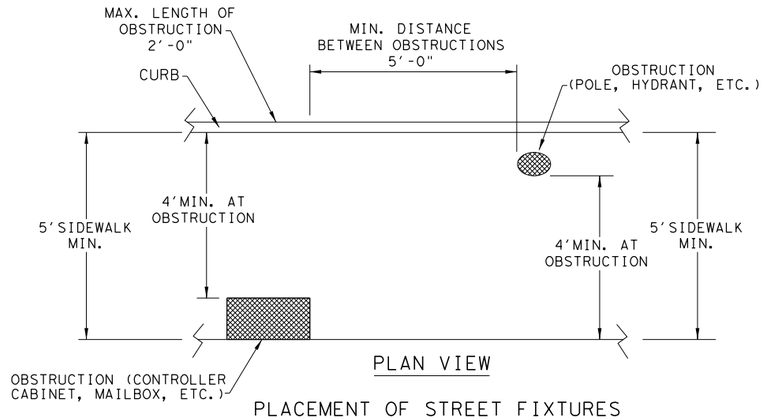


PROTECTED ZONE

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



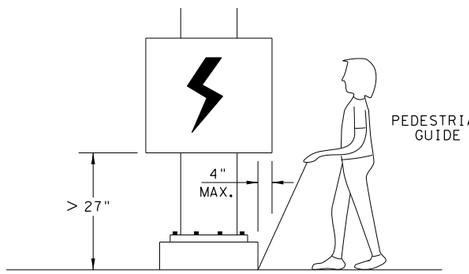
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



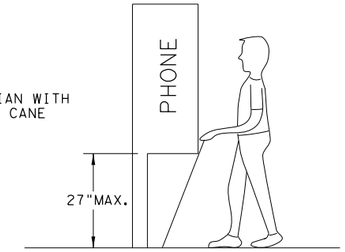
PLAN VIEW

PLACEMENT OF STREET FIXTURES

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



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



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

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

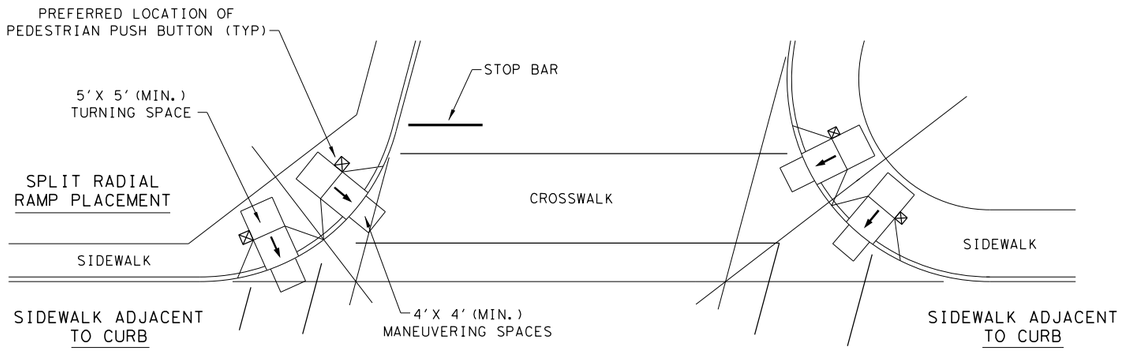
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		78

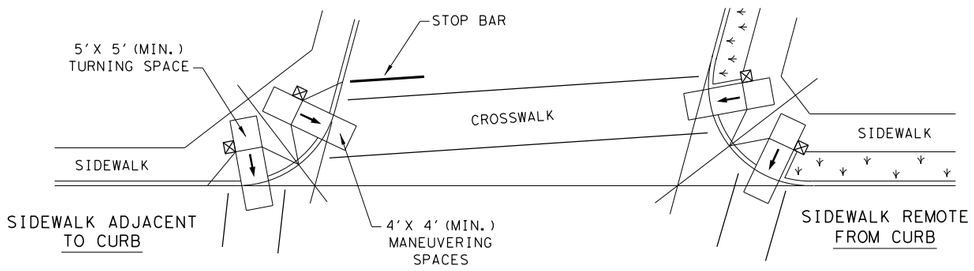
DATE: 3/4/2024
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Roadway\ped18.dgn

TYPICAL CROSSING LAYOUTS

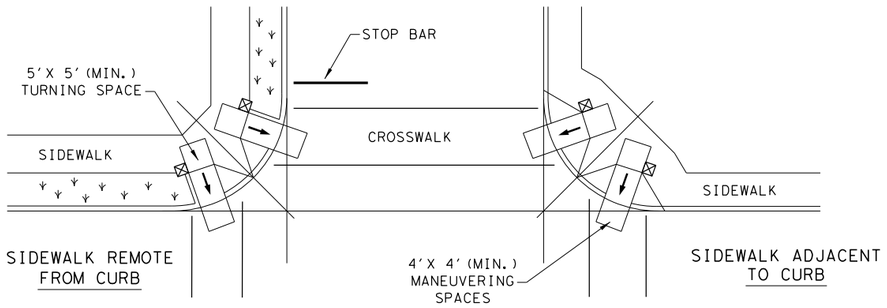
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



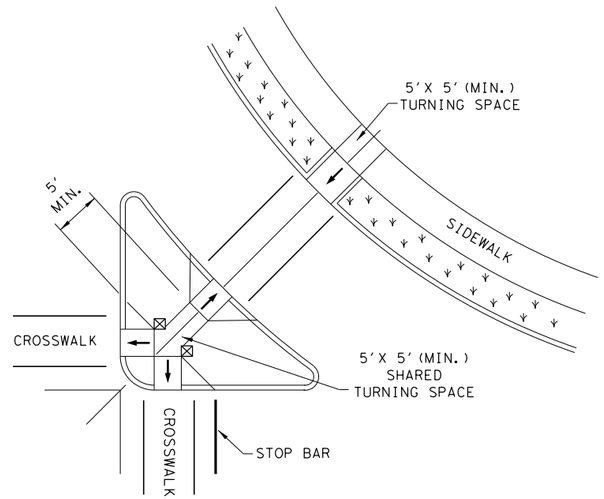
SKEWED INTERSECTION WITH "LARGE" RADIUS



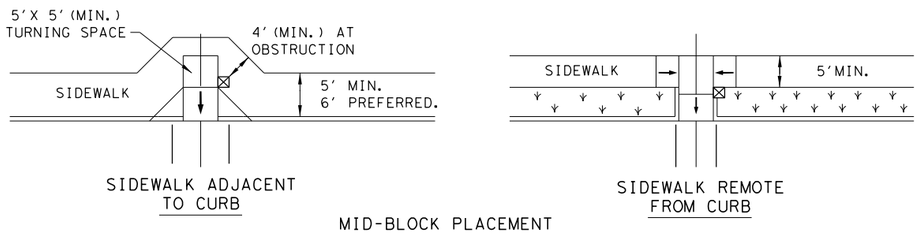
SKEWED INTERSECTION WITH "SMALL" RADIUS



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

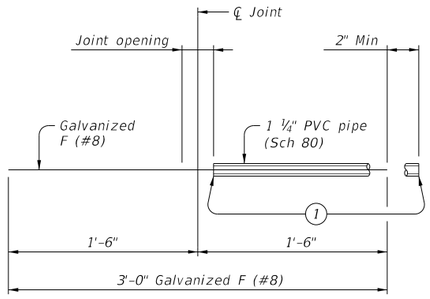
Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

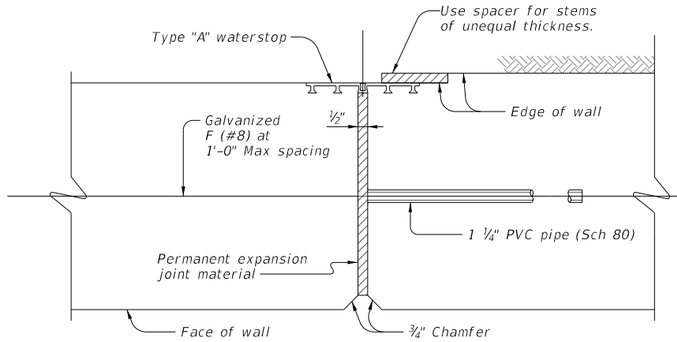
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0921	06	348		VA
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
	PHR	CAMERON			79

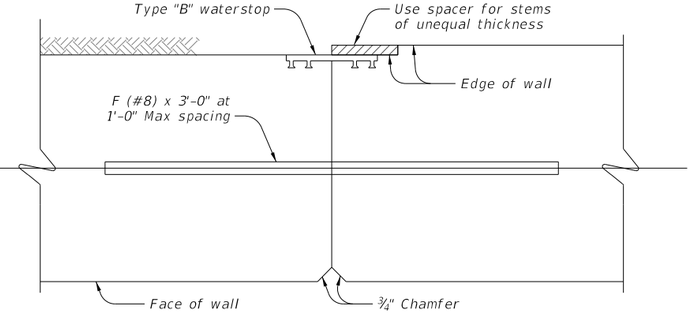
DATE: 3/4/2024 11:38:36 AM
FILE: S:\Projects\6121\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Retaining Walls\RW-SF-22.dgn



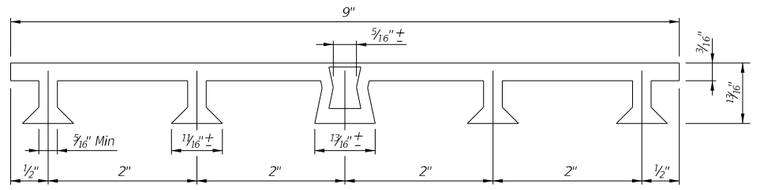
BAR F (#8) ASSEMBLY DETAIL



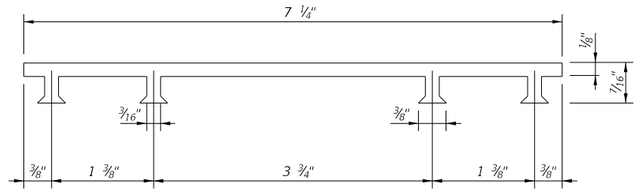
EXPANSION JOINT



CONSTRUCTION JOINT



PVC WATERSTOP TYPE "A"



PVC WATERSTOP TYPE "B"

Note: Dimensions and shapes may vary slightly depending on manufacturer.

(1) Tape ends of 1 ¼" PVC Schedule 80 to prevent concrete or mortar from seeping in.

(2) Class C unreinforced concrete when difference in top of footing elevations is less than 2 feet. Omit when Dowel Bars F can be placed between adjacent footings with 4-inch cover top and bottom. Footing elevation difference not to exceed 4 feet.

(3) Underdrain pipe to be in accordance with Item 556, "Pipe Underdrains."

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi.)
Provide Grade 60 reinforcing steel.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

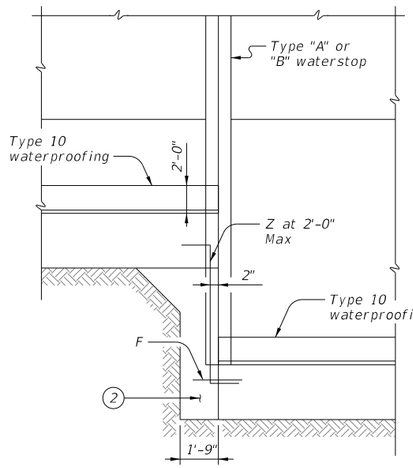
Walls are designed assuming unit weight of soil = 120 pcf and a friction angle = 30 degrees for foundation and retained soil.

The undisturbed or compacted soil depth in front of walls must not measure less than Kd + Ft + 1 foot as measured upwards from bottom of key.

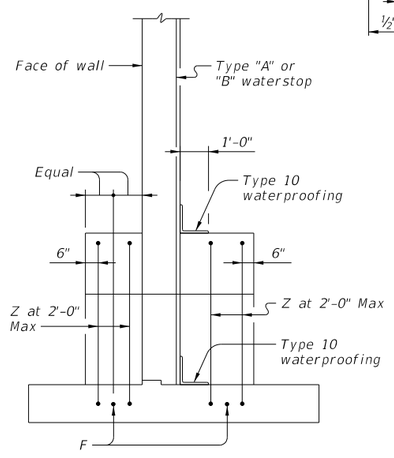
Retaining walls are detailed to be placed on grades up to 10% with level footing, with no changes in reinforcing steel. Steeper grades can be accommodated by shortening Bars A and Bars B and increasing the length of legs of Bars U by the same amount. No change in quantities will be required.

Retaining walls may be placed on horizontal curves by adjusting lengths of Bars T and Bars H in the footing. Minor revisions to concrete quantities may be required as a result.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

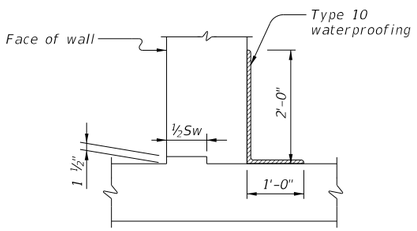


PARTIAL ELEVATION

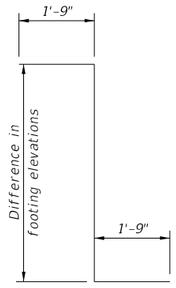


PARTIAL SECTION

SHOWING WATERSTOP AT FOOTING ELEVATION TRANSITION

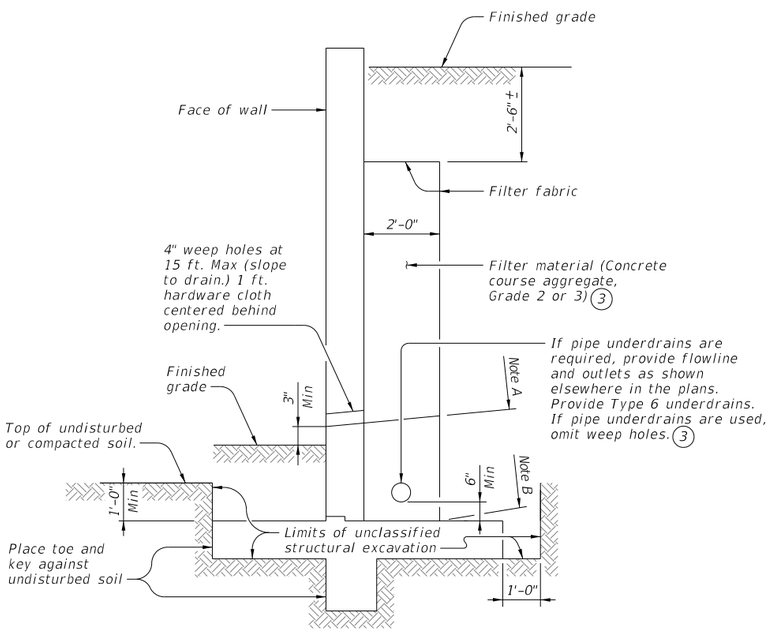


JOINT AND WATERSTOP DETAILS



BARS Z (#5)

(Omit Bars Z when difference in top of footing elevations is less than 2 ft).



DRAINAGE DETAILS AND EXCAVATION DIAGRAM

Note A: Stop coarse aggregate at this level when weep holes are used.

Note B: Use coarse aggregate to here when underdrains are used.

Texas Department of Transportation

Bridge Division Standard

SPREAD FOOTING RETAINING WALL MISCELLANEOUS DETAILS

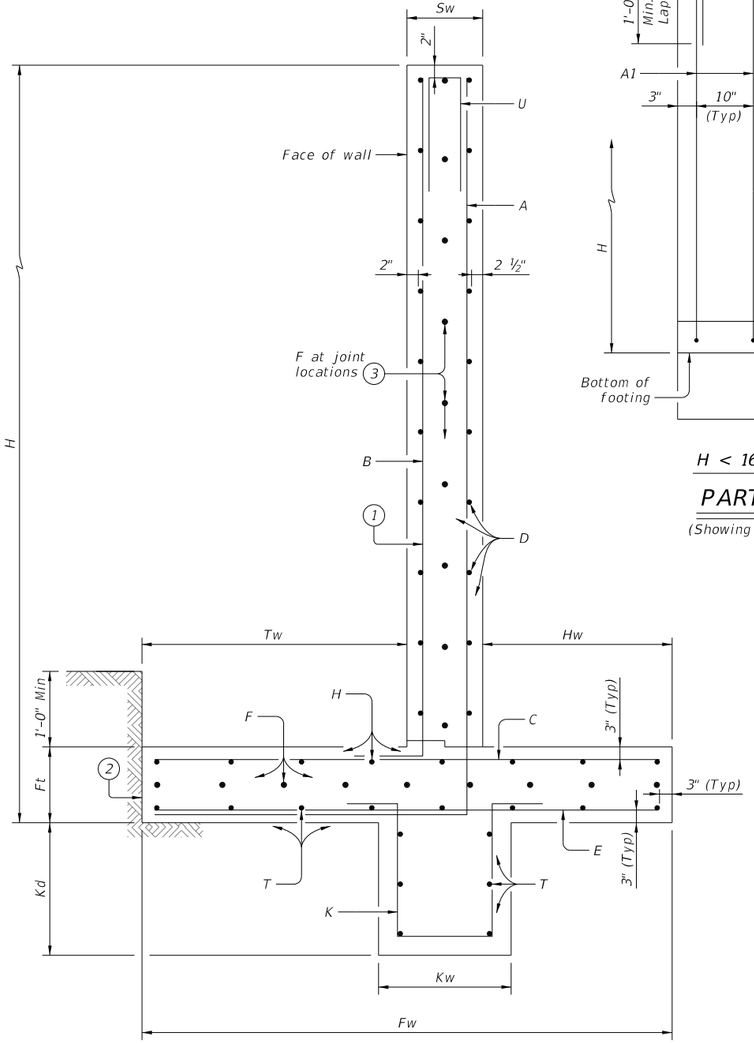
RW(SF)

FILE: RW-SF-22.dgn	DN: TAR	CK: RLE	DW: JER	CK: TAR
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
8-22: Updated underdrain requirements.	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		80

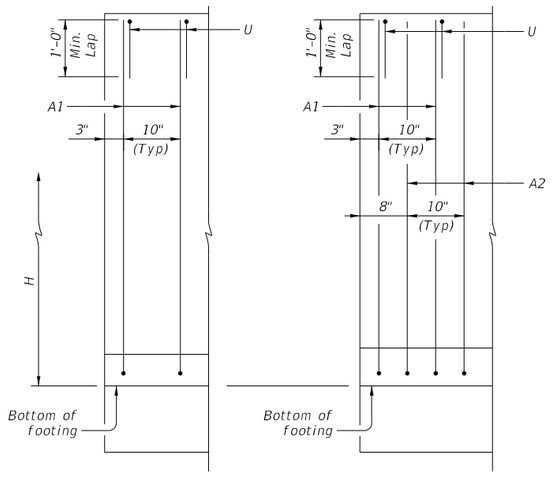
DATE: 3/4/2024 11:38:38 AM
FILE: S:\Projects\6123454\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Retaining Walls\RW-SFA-22.dgn

PROPERTIES / REINFORCING STEEL FOR ONE 32' PANEL (DESIGN A)

Wall Height "H"	WALL DIMENSIONS							MAX SOIL PRESS	Bars A1					Bars A2					Bars B					Bars C					Bars E					Bars K					D (#5) at 12" Max.		Dowel F at 12" Max.		H (#5) at 12" Max.		T (#5) at 12" Max.		U ~ 39 #5 at 10" Max.		QUANTITY FOR ONE 32' PANEL		Wall Height "H"
(Ft)	Fw	Tw	Sw	Hw	Ft	Kw	Kd	T/SF	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Weight	No.	Weight	No.	Weight	No.	Weight	Length	Weight	Conc (CY)	REINF (LB)	(Ft)
2	1'-4"	0'-4"	1'-0"	0'-0"	0'-9"	0'-9"	0'-9"	0.164	39	#4	10"	2'-6"	66						39	#4	10"	2'-2"	57												39	#4	10"	3'-1"	81	6	198	5	41	2	66	2	66	2'-5"	99	3.4	674	2
4	2'-5"	0'-8"	1'-0"	0'-9"	1'-0"	0'-9"	0'-9"	0.287	39	#4	10"	4'-10"	126						39	#4	10"	3'-11"	103	39	#4	10"	1'-11"	50	39	#4	10"	1'-11"	50	39	#4	10"	3'-1"	81	8	263	7	57	3	99	3	99	6'-0"	245	7.1	1173	4
6	3'-6"	1'-2"	1'-0"	1'-4"	1'-0"	0'-9"	0'-9"	0.373	39	#4	10"	7'-4"	192						39	#4	10"	5'-11"	155	39	#4	10"	3'-0"	79	39	#4	10"	3'-0"	79	39	#4	10"	3'-1"	81	12	395	10	81	4	132	4	132	8'-5"	343	10.8	1669	6
8	5'-1"	1'-9"	1'-0"	2'-4"	1'-0"	0'-9"	0'-9"	0.425	39	#4	10"	9'-11"	259						39	#4	10"	7'-11"	207	39	#4	10"	4'-7"	120	39	#4	10"	4'-7"	120	39	#4	10"	3'-1"	81	16	526	14	113	6	198	6	198	8'-5"	343	15.0	2165	8
10	6'-7"	2'-3"	1'-0"	3'-4"	1'-2"	1'-0"	1'-0"	0.513	39	#4	10"	12'-5"	324						39	#4	10"	9'-9"	255	39	#4	10"	6'-1"	159	39	#4	10"	6'-1"	159	39	#4	10"	3'-10"	100	20	658	18	145	8	263	8	263	8'-5"	343	20.8	2669	10
12	8'-4"	2'-10"	1'-1"	4'-5"	1'-4"	1'-3"	1'-3"	0.589	39	#5	10"	15'-1"	614						39	#4	10"	11'-7"	302	39	#5	10"	7'-10"	319	39	#4	10"	7'-10"	205	39	#4	10"	4'-7"	120	24	789	21	169	9	296	9	296	8'-6"	346	28.8	3456	12
14	9'-11"	3'-5"	1'-2"	5'-4"	1'-7"	1'-6"	1'-6"	0.674	39	#6	10"	17'-9"	1040						39	#4	10"	13'-4"	348	39	#6	10"	9'-5"	553	39	#4	10"	9'-5"	246	39	#4	10"	5'-4"	139	28	920	25	201	11	362	11	362	8'-7"	350	38.5	4521	14
16	11'-5"	4'-0"	1'-3"	6'-2"	1'-9"	1'-9"	1'-9"	0.756	39	#6	10"	20'-5"	1196	39	#4	10"	20'-5"	532	39	#4	10"	15'-2"	396	39	#6	10"	10'-11"	640	39	#4	10"	10'-11"	285	39	#4	10"	6'-1"	159	32	1052	28	225	12	395	12	395	8'-8"	353	48.5	5628	16
18	12'-8"	4'-7"	1'-4"	6'-9"	1'-9"	2'-0"	2'-0"	0.830	39	#6	10"	23'-1"	1353	39	#5	10"	23'-1"	939	39	#4	10"	17'-2"	448	39	#7	10"	12'-2"	971	39	#4	10"	12'-2"	318	39	#4	10"	6'-10"	179	36	1183	32	257	14	460	14	460	8'-9"	356	56.7	6924	18
20	14'-4"	5'-2"	1'-6"	7'-8"	2'-0"	2'-0"	2'-0"	0.910	39	#6	10"	25'-10"	1514	39	#6	10"	25'-10"	1514	39	#4	10"	18'-11"	493	39	#7	10"	13'-10"	1103	39	#4	10"	13'-10"	361	39	#4	10"	6'-10"	179	38	1249	34	273	15	493	15	493	8'-11"	363	70.8	8035	20



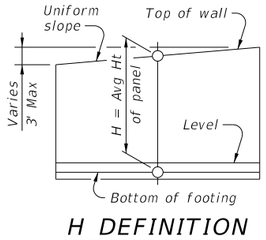
SECTION



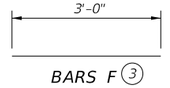
H < 16' H ≥ 16'

PARTIAL WALL ELEVATIONS

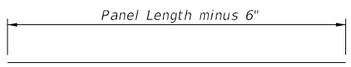
(Showing vertical reinforcing pattern in back face.)



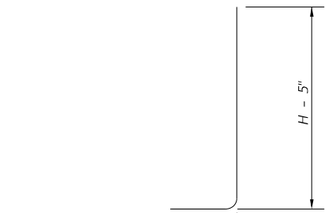
H DEFINITION



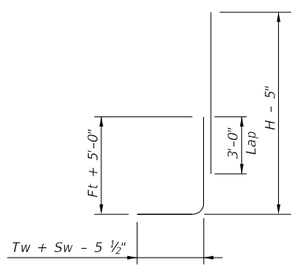
BARS F (3)



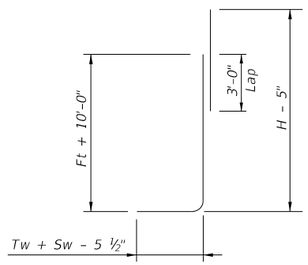
BARS D, H, and T



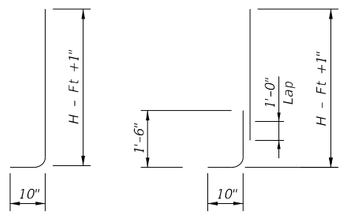
BARS A1 & A2



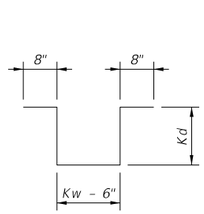
OPTIONAL BARS A1 (4)



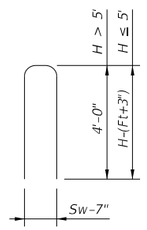
OPTIONAL BARS A2 (4)



BARS B OPTIONAL BARS B (4)



BARS K



BARS U

(1) Place vertical bars inside of horizontal bars (Typical both faces).
(2) Place footing toe against undisturbed soil.
(3) See Retaining Wall Miscellaneous Details (RW(SF)) standard for size.
(4) Optional bars splices not included in above table.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi.)
Provide Grade 60 reinforcing steel.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Walls are designed assuming unit weight of soil = 120 pcf and a friction angle = 30 degrees for foundation and retained soil.
See Retaining Wall Miscellaneous Details (RW(SF)) standard for details and notes not shown.
These details provide designs for wall heights of 2 to 20 feet. For heights not shown, round up "H" to determine wall dimensions and reinforcing. (For example, a 9-foot high wall would use the 10-foot high dimensions and reinforcing.)
Quantities are based on "H" being average height of panel.
Retaining walls are designed to be coded as follows on Retaining Wall Layout Sheets:

A - 15 - 32
- Panel length ~ 32 ft. is standard; 28 ft. requires special quantities.
- Average height (H) of panel.
- Design A = No surcharge or slope above wall.
- Design B = No surcharge; slopes to 3:1.
- Design C = Traffic surcharge; no slope above wall.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

Bridge Division Standard

SPREAD FOOTING RETAINING WALL

RW(SFA)

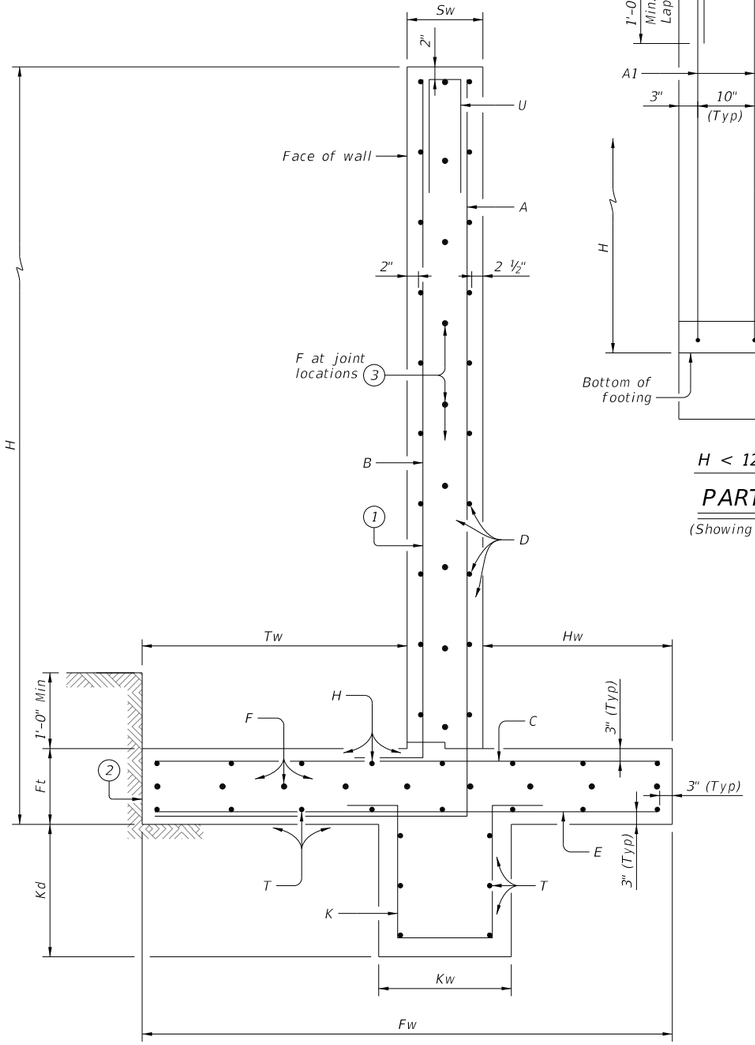
FILE: RW-SFA-22.dgn	DN: TAR	CK: RLE	DW: JER	CK: TAR
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
8-22: Constructability update.	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		81

DATE: 3/4/2024 11:38:40 AM
FILE: S:\Projects\6123454\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Retaining Walls\RW-SFB-22.dgn

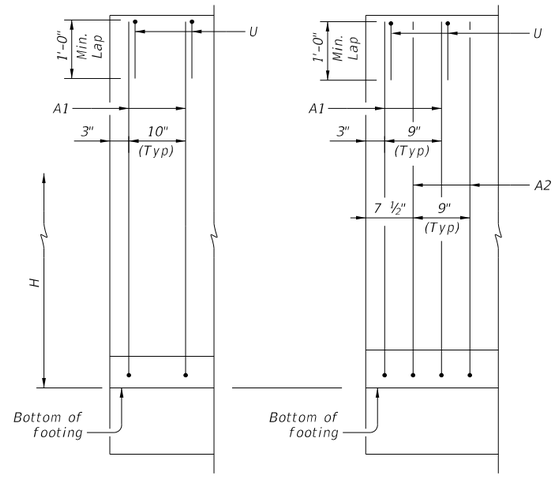
PROPERTIES

REINFORCING STEEL FOR ONE 32' PANEL (DESIGN B)

Wall Height "H"	WALL DIMENSIONS							MAX SOIL PRESS	Bars A1					Bars A2					Bars B					Bars C					Bars E					Bars K					D (#5) at 12" Max.		Dowel F at 12" Max.		H (#5) at 12" Max.		T (#5) at 12" Max.		U ~ #5 (5)		QUANTITY FOR ONE 32' PANEL		Wall Height "H"
									No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Weight	No.	Weight	No.	Weight	No.	Weight	Length	Weight	Conc (CY)	REINF (LB)	
(Ft)	Fw	Tw	Sw	Hw	Ft	Kw	Kd	T/SF																																										(Ft)
2	1'-4"	0'-4"	1'-0"	0'-0"	0'-9"	0'-9"	0'-9"	0.175	39	#4	10"	2'-6"	66						39	#4	10"	2'-2"	57														39	#4	10"	3'-1"	81	6	198	5	41	2	66	2	66	2'-5"	99	3.4	674	2
4	2'-5"	0'-8"	1'-0"	0'-9"	1'-0"	0'-9"	0'-9"	0.317	39	#4	10"	4'-10"	126						39	#4	10"	3'-11"	103	39	#4	10"	1'-11"	50	39	#4	10"	1'-11"	50	39	#4	10"	3'-1"	81	8	263	7	57	3	99	3	99	6'-0"	245	7.1	1173	4
6	4'-2"	1'-3"	1'-0"	1'-11"	1'-0"	0'-9"	0'-9"	0.390	39	#4	10"	7'-5"	194						39	#4	10"	5'-11"	155	39	#4	10"	3'-8"	96	39	#4	10"	3'-8"	96	39	#4	10"	3'-1"	81	12	395	11	89	5	165	5	165	8'-5"	343	11.6	1779	6
8	6'-3"	1'-8"	1'-0"	3'-7"	1'-0"	0'-9"	0'-9"	0.492	39	#4	10"	9'-10"	257						39	#4	10"	7'-11"	207	39	#4	10"	5'-9"	150	39	#4	10"	5'-9"	150	39	#4	10"	3'-1"	81	16	526	15	121	7	230	7	230	8'-5"	343	16.4	2295	8
10	8'-4"	2'-4"	1'-1"	4'-11"	1'-2"	1'-0"	1'-0"	0.593	39	#5	10"	12'-7"	512						39	#4	10"	9'-9"	255	39	#5	10"	7'-10"	319	39	#4	10"	7'-10"	205	39	#4	10"	3'-10"	100	20	658	19	153	9	296	9	296	8'-6"	346	24.1	3140	10
12	10'-6"	3'-0"	1'-2"	6'-4"	1'-4"	1'-3"	1'-3"	0.720	43	#4	9"	15'-4"	441	43	#4	9"	15'-4"	441	43	#4	9"	11'-7"	333	43	#6	9"	10'-0"	646	43	#4	9"	10'-0"	288	43	#4	9"	4'-7"	132	24	789	23	185	11	362	11	362	8'-7"	385	33.2	4364	12
14	12'-1"	3'-7"	1'-3"	7'-3"	1'-7"	1'-6"	1'-6"	0.833	43	#5	9"	18'-0"	808	43	#5	9"	18'-0"	808	43	#4	9"	13'-4"	383	43	#7	9"	11'-7"	1019	43	#4	9"	11'-7"	333	43	#4	9"	5'-4"	154	28	920	27	217	13	428	13	428	8'-8"	389	43.8	5887	14
16	13'-11"	4'-2"	1'-5"	8'-4"	1'-9"	1'-9"	1'-9"	0.951	43	#6	9"	20'-9"	1341	43	#5	9"	20'-9"	931	43	#4	9"	15'-2"	436	43	#8	9"	13'-5"	1542	43	#4	9"	13'-5"	386	43	#4	9"	6'-1"	175	32	1052	31	249	15	493	15	493	8'-10"	397	56.5	7495	16
18	15'-9"	4'-11"	1'-8"	9'-2"	2'-0"	2'-0"	2'-0"	1.065	43	#6	9"	23'-9"	1534	43	#6	9"	23'-9"	1534	43	#4	9"	16'-11"	486	43	#8	9"	15'-3"	1751	43	#4	9"	15'-3"	439	43	#4	9"	6'-10"	197	34	1118	34	273	17	559	17	559	9'-1"	408	73.7	8858	18
20	17'-6"	5'-5"	1'-9"	10'-4"	2'-3"	2'-0"	2'-0"	1.182	43	#7	9"	26'-4"	2315	43	#7	9"	26'-4"	2315	43	#4	9"	18'-8"	537	43	#9	9"	17'-0"	2486	43	#4	9"	17'-0"	489	43	#4	9"	6'-10"	197	38	1249	37	297	18	592	18	592	9'-2"	412	88.3	11481	20



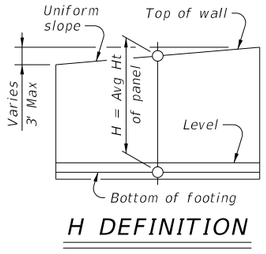
SECTION



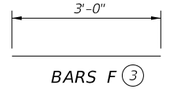
H < 12' H ≥ 12'

PARTIAL WALL ELEVATIONS

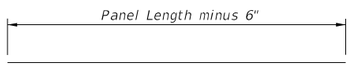
(Showing vertical reinforcing pattern in back face.)



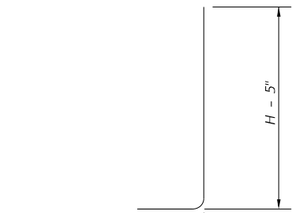
H DEFINITION



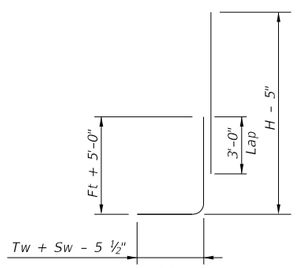
BARS F (3)



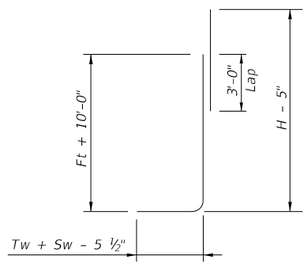
BARS D, H, and T



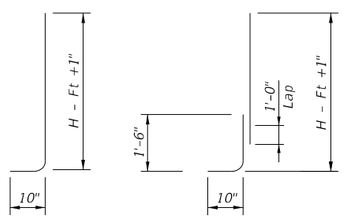
BARS A1 & A2



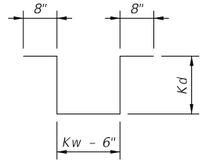
OPTIONAL BARS A1 (4)



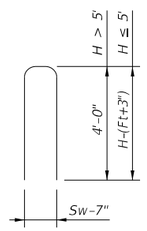
OPTIONAL BARS A2 (4)



BARS B OPTIONAL BARS B (4)



BARS K



BARS U

(1) Place vertical bars inside of horizontal bars (Typical both faces).

(2) Place footing toe against undisturbed soil.

(3) See Retaining Wall Miscellaneous Details (RW(SF)) standard for size.

(4) Optional bars splices not included in above table.

(5) Bars U lapped with Bars A1:
H ≤ 10'-0", 10" Max Spa, 39 bars.
H > 10'-0", 9" Max Spa, 43 bars.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi.)
Provide Grade 60 reinforcing steel.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Walls are designed assuming unit weight of soil = 120 pcf and a friction angle = 30 degrees for foundation and retained soil.
See Retaining Wall Miscellaneous Details (RW(SF)) standard for details and notes not shown.
These details provide designs for wall heights of 2 to 20 feet. For heights not shown, round up "H" to determine wall dimensions and reinforcing. (For example, a 9-foot high wall would use the 10-foot high dimensions and reinforcing.)
Quantities are based on "H" being average height of panel.
Retaining walls are designed to be coded as follows on Retaining Wall Layout Sheets:

B - 15 - 32
- Panel length ~ 32 ft. is standard; 28 ft. requires special quantities.
- Average height (H) of panel.
- Design A = No surcharge or slope above wall.
- Design B = No surcharge; slopes to 3:1.
- Design C = Traffic surcharge; no slope above wall.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

Bridge Division Standard

SPREAD FOOTING RETAINING WALL

RW(SFB)

FILE: RW-SFB-22.dgn	DN: TAR	CK: RLE	DW: JER	CK: TAR
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
8-22: Constructability update.	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		82

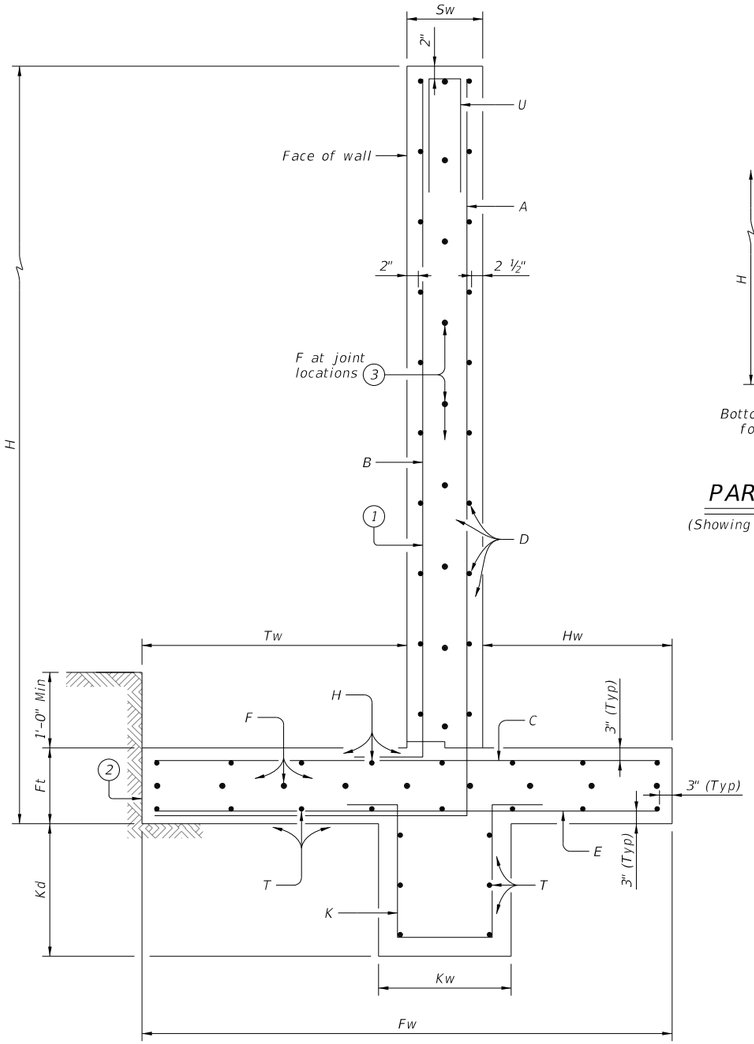
DATE: 3/4/2024 11:38:41 AM
FILE: S:\Projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Retaining Walls\RW-SFC-22.dgn

PROPERTIES

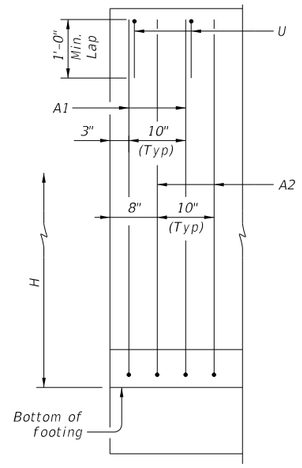
Wall Height "H"	WALL DIMENSIONS							MAX SOIL PRESS
(Ft)	Fw	Tw	Sw	Hw	Ft	Kw	Kd	T/SF
2	5'-0"	1'-0"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.218
4	5'-0"	1'-0"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.321
6	5'-6"	1'-6"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.395
8	7'-4"	1'-9"	1'-1"	4'-6"	1'-0"	1'-0"	1'-0"	0.500
10	8'-8"	2'-4"	1'-1"	5'-3"	1'-2"	1'-6"	1'-6"	0.590
12	10'-4"	2'-11"	1'-2"	6'-3"	1'-4"	1'-9"	1'-9"	0.684
14	11'-8"	3'-6"	1'-4"	6'-10"	1'-7"	2'-0"	2'-0"	0.769
16	13'-1"	4'-0"	1'-6"	7'-7"	1'-9"	2'-0"	2'-0"	0.853
18	14'-7"	4'-6"	1'-8"	8'-5"	1'-9"	2'-0"	2'-0"	0.937
20	16'-5"	5'-0"	1'-10"	9'-7"	2'-0"	2'-0"	2'-0"	1.039

REINFORCING STEEL FOR ONE 32' PANEL (DESIGN C)

Wall Height "H"	Bars A1					Bars A2					Bars B					Bars C					Bars E					Bars K					D (#5) at 12" Max.		Dowel F at 12" Max.		H (#5) at 12" Max.		T (#5) at 12" Max.		U ~ 39 #5 at 10" Max		QUANTITY FOR ONE 32' PANEL		Wall Height "H"
	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Weight	No.	Weight	No.	Weight	No.	Weight	Length	Weight	Conc (CY)	REINF (LB)	
(Ft)																																									(Ft)
2	39	#4	10"	3'-2"	83	39	#4	10"	3'-2"	83	39	#4	10"	1'-11"	50	39	#4	10"	4'-6"	118	39	#4	10"	4'-6"	118	39	#4	10"	3'-10"	100	4	132	8	65	6	198	6	198	2'-0"	82	8.3	1227	2
4	39	#4	10"	5'-2"	135	39	#4	10"	5'-2"	135	39	#4	10"	3'-11"	103	39	#4	10"	4'-6"	118	39	#4	10"	4'-6"	118	39	#4	10"	3'-10"	100	8	263	10	81	6	198	6	198	6'-0"	245	10.7	1694	4
6	39	#4	10"	7'-8"	200	39	#4	10"	7'-8"	200	39	#4	10"	5'-11"	155	39	#4	10"	5'-0"	131	39	#4	10"	5'-0"	131	39	#4	10"	3'-10"	100	12	395	12	97	6	198	6	198	8'-5"	343	13.7	2148	6
8	39	#4	10"	10'-0"	261	39	#4	10"	10'-0"	261	39	#4	10"	7'-11"	207	39	#4	10"	6'-10"	179	39	#4	10"	6'-10"	179	39	#4	10"	3'-10"	100	16	526	16	129	8	263	8	263	8'-6"	346	18.9	2714	8
10	39	#4	10"	12'-7"	328	39	#4	10"	12'-7"	328	39	#4	10"	9'-9"	255	39	#5	10"	8'-2"	333	39	#4	10"	8'-2"	213	39	#4	10"	5'-4"	139	20	658	20	161	10	329	10	329	8'-6"	346	26.0	3603	10
12	39	#5	10"	15'-3"	621	39	#4	10"	15'-3"	398	39	#4	10"	11'-7"	302	39	#5	10"	9'-10"	400	39	#4	10"	9'-10"	257	39	#4	10"	6'-1"	159	24	789	23	185	11	362	11	362	8'-7"	350	34.8	4185	12
14	39	#5	10"	18'-0"	733	39	#4	10"	18'-0"	469	39	#4	10"	13'-4"	348	39	#5	10"	11'-2"	455	39	#4	10"	11'-2"	291	39	#4	10"	6'-10"	179	28	920	27	217	13	428	13	428	8'-9"	356	46.3	4824	14
16	39	#5	10"	20'-8"	841	39	#5	10"	20'-8"	841	39	#4	10"	15'-2"	396	39	#6	10"	12'-7"	738	39	#4	10"	12'-7"	329	39	#4	10"	6'-10"	179	32	1052	30	241	14	460	14	460	8'-11"	363	57.3	5900	16
18	39	#6	10"	23'-4"	1367	39	#5	10"	23'-4"	950	39	#4	10"	17'-2"	448	39	#7	10"	14'-1"	1124	39	#4	10"	14'-1"	368	39	#4	10"	6'-10"	179	36	1183	34	273	16	526	16	526	9'-1"	370	67.1	7314	18
20	39	#6	10"	26'-0"	1524	39	#6	10"	26'-0"	1524	39	#4	10"	18'-11"	493	39	#7	10"	17'-11"	1429	39	#4	10"	17'-11"	467	39	#4	10"	6'-10"	179	38	1249	36	289	17	559	17	559	9'-3"	377	82.8	8649	20

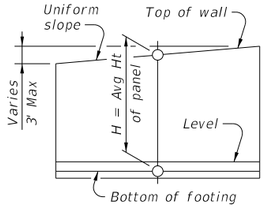


SECTION

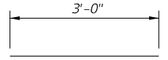


PARTIAL WALL ELEVATION

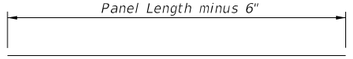
(Showing vertical reinforcing pattern in back face.)



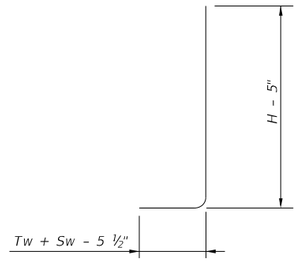
H DEFINITION



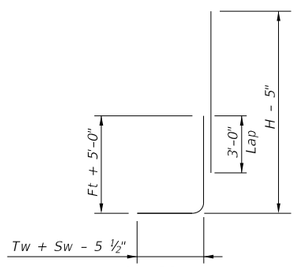
BARS F (3)



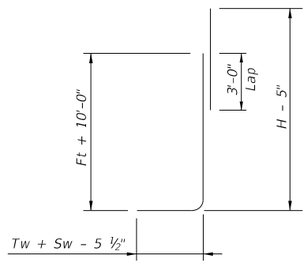
BARS D, H, and T



BARS A1 & A2

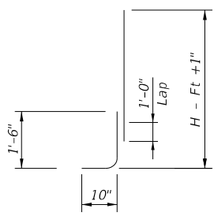


OPTIONAL BARS A1 (4)

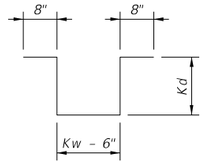


OPTIONAL BARS A2 (4)

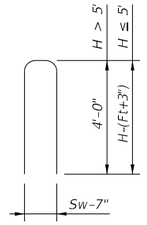
BARS B



OPTIONAL BARS B (4)



BARS K



BARS U

(1) Place vertical bars inside of horizontal bars (Typical both faces).

(2) Place footing toe against undisturbed soil.

(3) See Retaining Wall Miscellaneous Details (RW(SF)) standard for size.

(4) Optional bars splices not included in above table.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi.)
Provide Grade 60 reinforcing steel.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Walls are designed assuming unit weight of soil = 120 pcf and a friction angle = 30 degrees for foundation and retained soil.
See Retaining Wall Miscellaneous Details (RW(SF)) standard for details and notes not shown.
These details provide designs for wall heights of 2 to 20 feet. For heights not shown, round up "H" to determine wall dimensions and reinforcing. (For example, a 9-foot high wall would use the 10-foot high dimensions and reinforcing.)
Quantities are based on "H" being average height of panel.
Retaining walls are designed to be coded as follows on Retaining Wall Layout Sheets:

C - 15 - 32
- Panel length ~ 32 ft. is standard; 28 ft. requires special quantities.
- Average height (H) of panel.
- Design A = No surcharge or slope above wall.
- Design B = No surcharge; slopes to 3:1.
- Design C = Traffic surcharge; no slope above wall.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

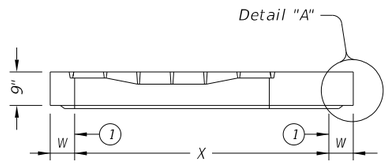
Bridge Division Standard

SPREAD FOOTING RETAINING WALL

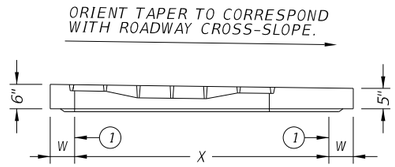
RW(SFC)

FILE: RW-SFC-22.dgn	DN: TAR	CK: RLE	DW: JER	CK: TAR
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
8-22: Constructability update.	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		83

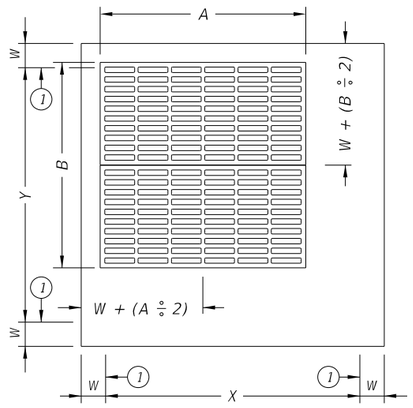
DATE: 3/4/2024 11:38:43 AM
FILE: S:\Projects\612554\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Drainage\prestd05-20.dgn



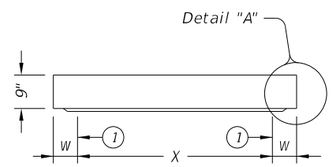
STYLE 'FG'



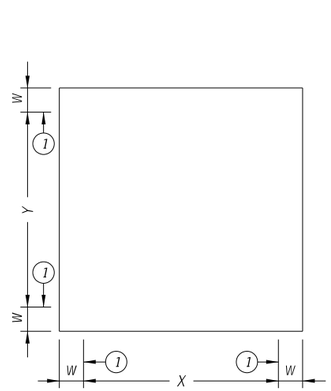
STYLE 'SFG'
ELEVATION VIEW



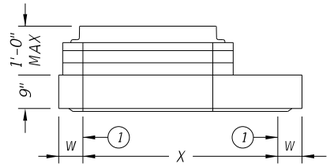
PLAN VIEW
CAST-IN FRAME & GRATE
STYLES 'FG' & 'SFG'



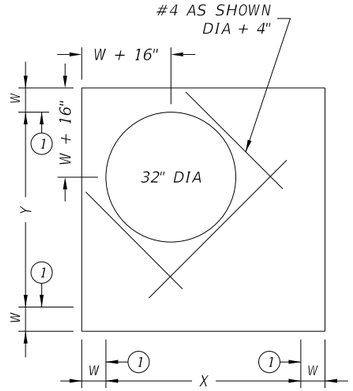
ELEVATION VIEW



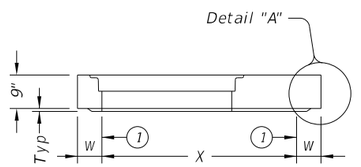
PLAN VIEW
NO OPENINGS
STYLE 'SL'



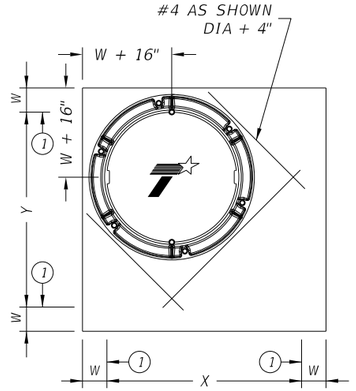
ELEVATION VIEW



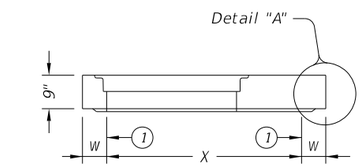
PLAN VIEW
SHIP LOOSE RING & COVER
STYLE 'RH'



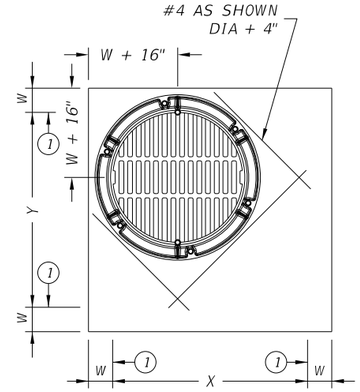
ELEVATION VIEW



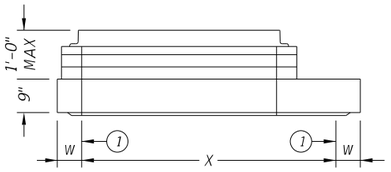
PLAN VIEW
32" DIA CAST-IN RING & COVER
STYLE 'RC'



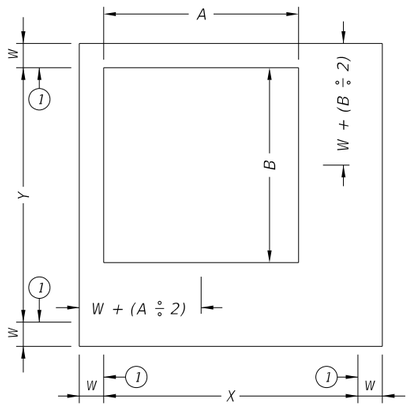
ELEVATION VIEW



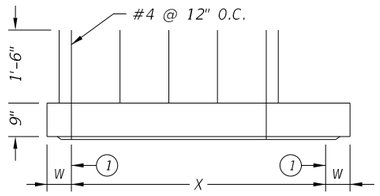
PLAN VIEW
32" DIA CAST-IN RING & GRATE
STYLE 'RG'



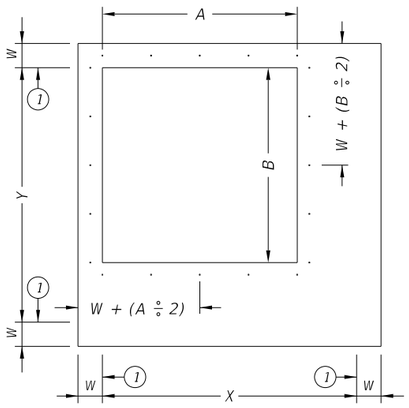
ELEVATION VIEW



PLAN VIEW
SHIP LOOSE FRAME & GRATE
STYLE 'SH'



ELEVATION VIEW



PLAN VIEW
EXPOSED REBAR
STYLE 'S1'

(1) Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

PSL

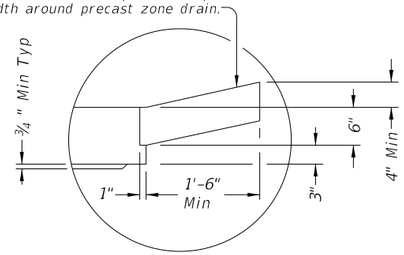
FILE: prestd05-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		84

DATE: 3/4/2024 11:38:43 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Drainage\prestd05-20.dgn

Style	Size (X x Y)	W (2)	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in²/ft	0.37 in²/ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in²/ft	0.37 in²/ft
SFG	3'x3'	6"	3'x3'	0.32 in²/ft	0.32 in²/ft
SL	4'x4'	6"	n/a	0.34 in²/ft	0.34 in²/ft
RH,RC,RG,SH,S1,FG	4'x4'	6"	3'x3' or 32" Dia	0.41 in²/ft	0.41 in²/ft
SH,S1,FG	4'x4'	6"	4'x4'	0.41 in²/ft	0.41 in²/ft
SFG	4'x4'	6"	4'x4'	0.32 in²/ft	0.32 in²/ft
SL	3'x5'	6"	n/a	0.39 in²/ft	0.39 in²/ft
RH,RC,RG,SH,S1,FG	3'x5'	6"	3'x3' or 32" Dia	0.48 in²/ft	0.48 in²/ft
SH,S1,FG	3'x5'	6"	3'x5'	0.48 in²/ft	0.48 in²/ft
SFG	3'x5'	6"	3'x5'	0.32 in²/ft	0.32 in²/ft
SL	4'x5'	6"	n/a	0.42 in²/ft	0.42 in²/ft
RH,RC,RG,SH,S1,FG	4'x5'	6"	3'x3' or 32" Dia	0.42 in²/ft	0.42 in²/ft
SH,S1,FG	4'x5'	6"	4'x4'	0.63 in²/ft	0.63 in²/ft
SH,S1,FG	4'x5'	6"	3'x5'	0.66 in²/ft	0.66 in²/ft
SL	5'x5'	6"	n/a	0.36 in²/ft	0.36 in²/ft
RH,RC,RG,SH,S1,FG	5'x5'	6"	3'x3' or 32" Dia	0.43 in²/ft	0.43 in²/ft
SH,S1,FG	5'x5'	6"	4'x4'	0.63 in²/ft	0.63 in²/ft
SH,S1,FG	5'x5'	6"	3'x5'	0.63 in²/ft	0.63 in²/ft
SL	5'x6'	6"/8"	n/a	0.48 in²/ft	0.48 in²/ft
RH,RC,RG,SH,S1,FG	5'x6'	6"/8"	3'x3' or 32" Dia	0.48 in²/ft	0.48 in²/ft
SH,S1,FG	5'x6'	6"/8"	4'x4'	0.60 in²/ft	0.60 in²/ft
SH,S1,FG	5'x6'	6"/8"	3'x5'	0.60 in²/ft	0.60 in²/ft
SL	6'x6'	6"/8"	n/a	0.43 in²/ft	0.43 in²/ft
RH,RC,RG,SH,S1,FG	6'x6'	6"/8"	3'x3' or 32" Dia	0.56 in²/ft	0.56 in²/ft
SH,S1,FG	6'x6'	6"/8"	4'x4'	0.56 in²/ft	0.56 in²/ft
SH,S1,FG	6'x6'	6"/8"	3'x5'	0.59 in²/ft	0.59 in²/ft
SL	8'x8'	8"/10"	n/a	0.45 in²/ft	0.45 in²/ft
RH,RC,RG,SH,S1,FG	8'x8'	8"/10"	3'x3' or 32" Dia	0.45 in²/ft	0.45 in²/ft
SH,S1,FG	8'x8'	8"/10"	4'x4'	0.45 in²/ft	0.45 in²/ft
SH,S1,FG	8'x8'	8"/10"	3'x5'	0.45 in²/ft	0.45 in²/ft

(2) See sheet PDD for corresponding wall thickness (W) of base unit or riser.

Construct cast-in-place reinforced concrete apron, when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PSL. Apron is 1'-6" Min width around precast zone drain.



DETAIL "A"

(Reinforcing not shown for clarity)

When an apron is to be cast around PSL, use detail above to create an apron ledge on all 4 sides.

FABRICATION NOTES:

1. Locate penetration (Style 'RH'), ring and cover (Style 'RC'), ring and grate (Style 'RG'), and frame and grate (Style 'FG') in a corner. Only one penetration is allowed per slab lid.
2. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
3. Provide Grade 60 reinforcing steel or equivalent area of WWR.
4. Provide clear cover of ¾" to reinforcing from lower outside shoulder of slab for structural reinforcement, and 2" from top of slab for shrinkage and temperature reinforcement. Place short span reinforcing closest to surface.
5. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing. Provide steel area = 0.11 in²/ft each way.
6. No substitution is allowed for diagonal #4 bars around openings.
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.

INSTALLATION NOTES:

1. Precast slab lids are intended for direct traffic and may be placed in roadway.
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. Initial installation of grade adjustment rings for Styles 'RH' and 'SH' is limited to 1'-0" Max as shown.
5. Grade adjustment rings for Styles 'RH' and 'SH' may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments can be made up to Max depth shown on sheet PDD. Structure must be evaluated if Max depth will be exceeded.
6. Orient long dimension of grate slots perpendicular to traffic, unless noted otherwise on plans

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for lid is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise.

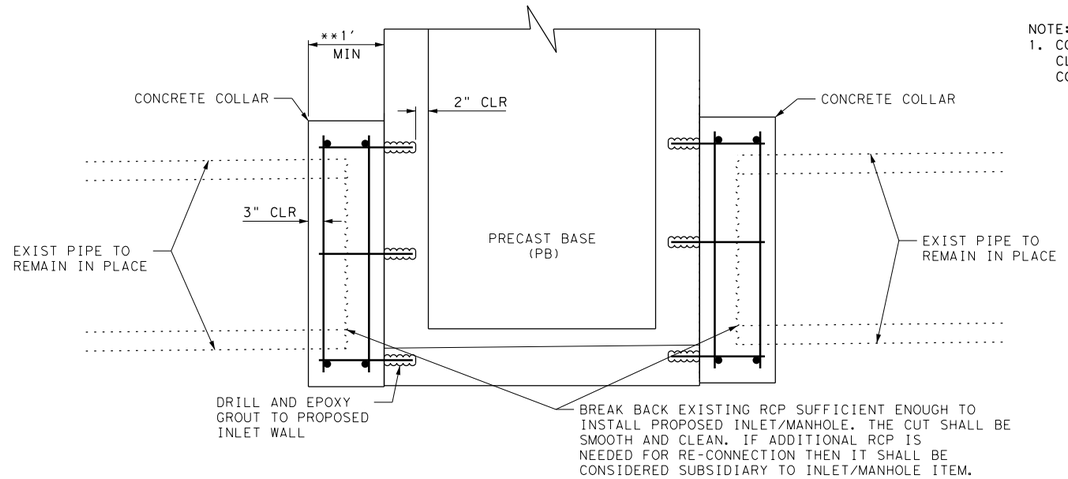
Texas Department of Transportation

Bridge Division Standard

PRECAST SLAB LID

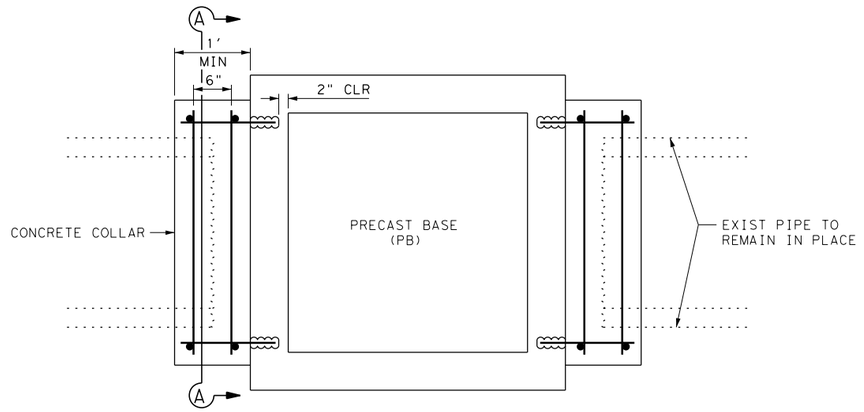
PSL

FILE: prestd05-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		85

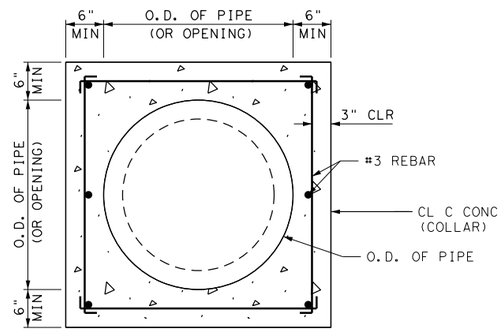


NOTE:
1. CONCRETE REPAIR SHALL UTILITZE CLASS C CONCRETE COLLAR AND MINIMUM COMPRESSIVE STRENGTH OF 3600 PSI.

TIE-IN-DETAIL FOR PROP INLET/MANHOLE TO EXISTING RCP - SECTION VIEW



PRECAST BASE - PLAN VIEW



CONCRETE COLLAR DETAIL
SECTION A-A

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

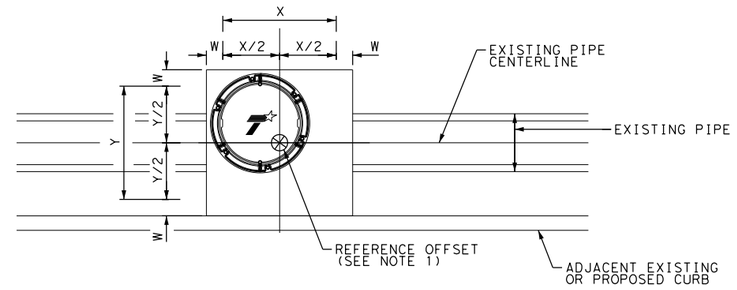
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

DRAINAGE SPECIAL DETAILS

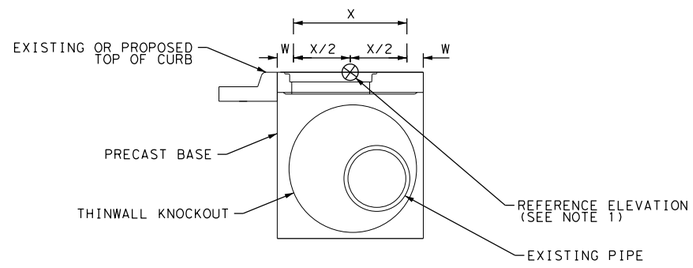
SHEET 1 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	86

CONTROL POINTS FOR DRAINAGE STRUCTURES

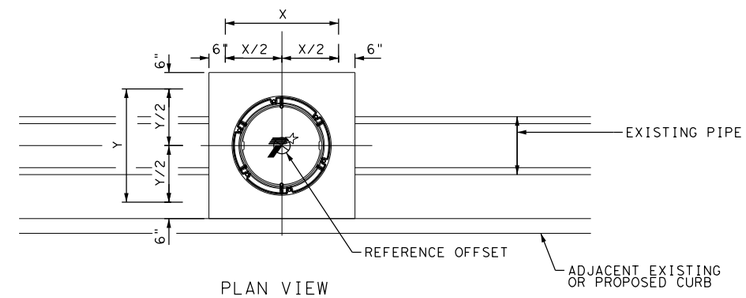


PLAN VIEW

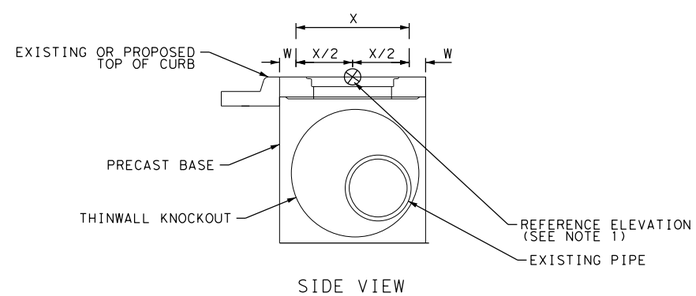


SIDE VIEW

PRECAST SLAB LIDS



PLAN VIEW



SIDE VIEW

PRECAST AREA ZONE DRAIN

NOTES:

1. PROPOSED PRECAST BASE (PB) PLACEMENT IS INTENTED TO ALIGN FLUSH WITH THE BACK OF ADJACENT EXISTING OR PROPOSED CURB, UNLESS OTHERWISE SHOWN. THIS MAY RESULT IN EXISTING PIPES INTERCEPTING THE STRUCTURE UNCENTERED WITHIN THE PRECAST BASE (PB) OPENING. MINOR ADJUSTMENT TO STRUCTURE PLACEMENT TO ALIGN THE CENTER OF THE STRUCTURE WITH THE CENTER OF THE EXISTING PIPE IS PERMITTED AT THE DISCRETION OF THE ENGINEER. IN THESE INSTANCES, CL C CONC SHOULD BE PLACED BETWEEN THE BACK OF CURB AND THE STRUCTURE AND IS CONSIDERED SUBSIDIARY TO THE PAYMENT FOR THE STRUCTURE.
2. REFER TO DRAINAGE STANDARDS FOR VARIABLE DIMENSIONS.

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

DRAINAGE SPECIAL DETAILS

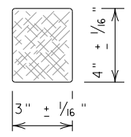
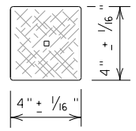
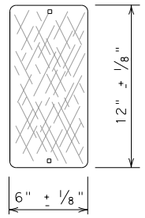
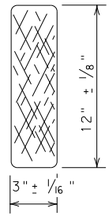
SHEET 2 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	87

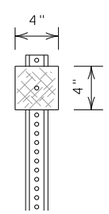
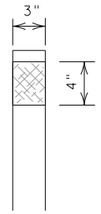
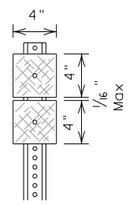
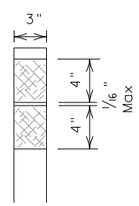
Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Drainage\612540201_RIO_HONDO_DRN_SAMPLE01.dgn Plotted on: 3/4/2024

DATE: 3/4/2024 11:38:46 AM
FILE: S:\Projects\612154\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic\dom1-20.dgn

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
- S = Single
- D = Double

COLOR OF REFLECTORS
- W = White
- Y = Yellow
- R = Red

REFLECTOR UNIT SIZE
- 1 or 2

TYPE OF POST OR DELINEATOR
- WC = Wing Channel Post
- YFLX = Yellow Flexible Post
- WFLX = White Flexible Post
- BRF = Barrier Reflector

TYPE OF MOUNT
- GND = Embedded (drivable or set in concrete)
- CTB = Concrete Barrier Mount
- GF1 or GF2 = Guard Fence Attachment
- SRF = Surface Mount

DIRECTION
If Required
- BI = Bi-Directional
- BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
- 1, 2, 3, or 4

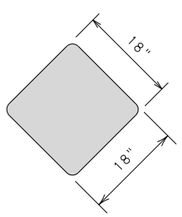
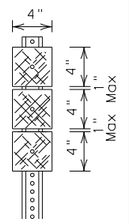
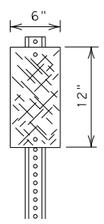
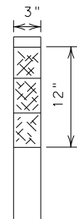
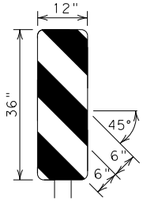
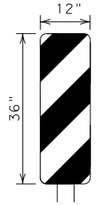
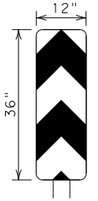
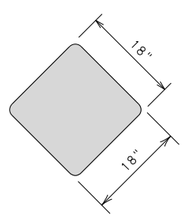
NUMBER OF REFLECTORS OR DIRECTION
- X = 3-Size 2 reflector units (Type 2 only)
- Y = 1-Size 3 reflector unit (Type 2 only)
- Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
- L = Left Side (Type 3 Object Marker only)
- R = Right Side (Type 3 Object Marker only)
- C = Center (Type 3 Object Marker only)

TYPE OF POST
- WC = Wing Channel Post
- WFLX = White Flexible Post
- TWT = Thin Walled Tubing

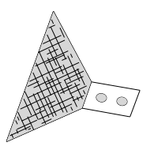
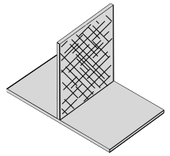
TYPE OF MOUNT
- GND = Embedded (drivable)
- SRF = Surface Mount
- WAS = Wedge Anchor Steel
- WAP = Wedge Anchor Plastic

DIRECTION
If Required
- BI = Bi-Directional

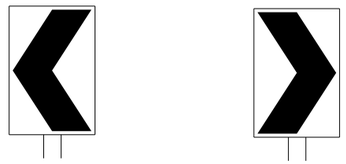
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

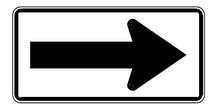
BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE	 W1-8			
SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	
NOTE	1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).			

ONE DIRECTION LARGE ARROW

DEVICE	 W1-6	
SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	PHR	CAMERON		88

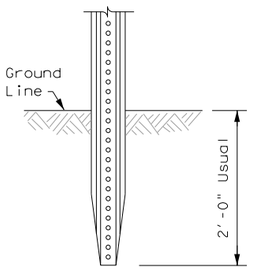
20A

DATE: 3/4/2024 11:38:47 AM
FILE: S:\Projects\612154\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic\dom2-20.dgn

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

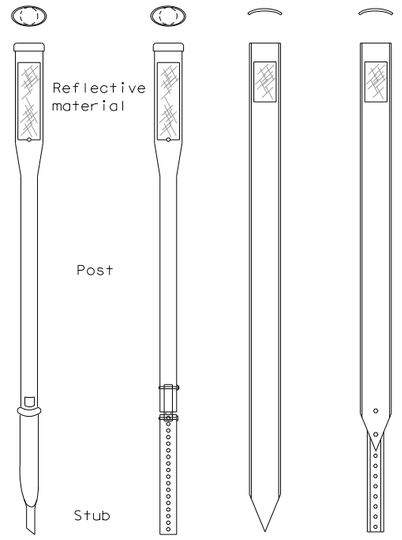


NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

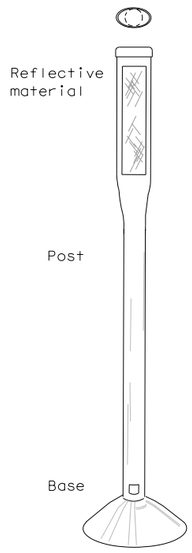
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



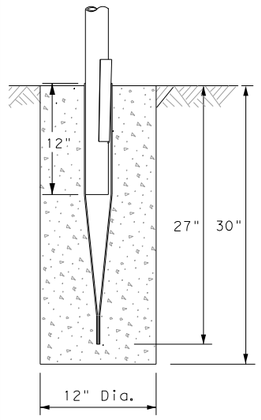
SURFACE MOUNT

NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

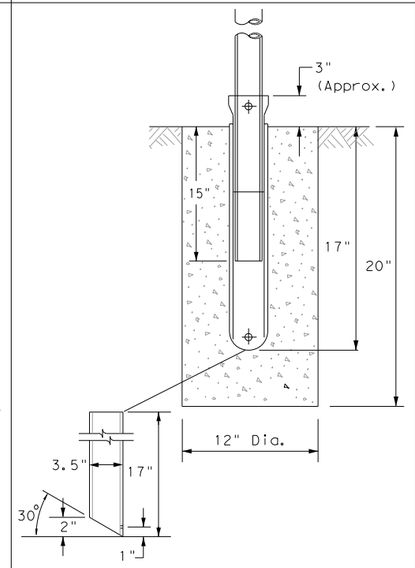
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

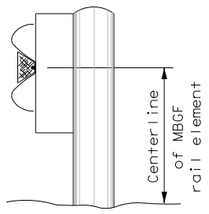
NOTE

1. Install per manufacturer's recommendations.

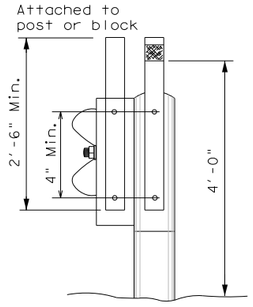
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

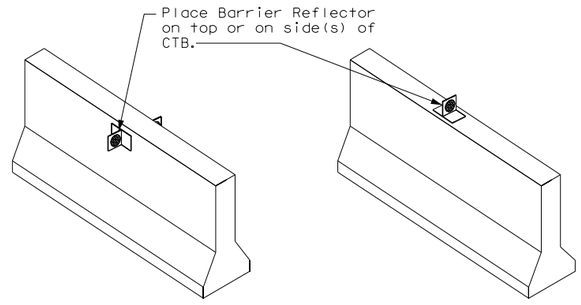
GF1



GF2



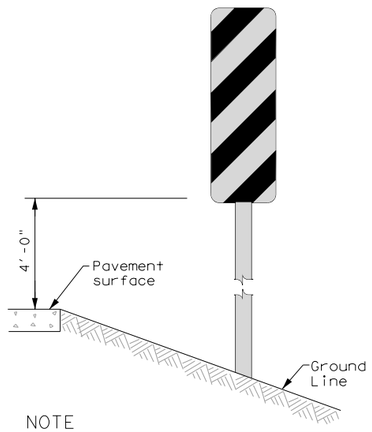
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

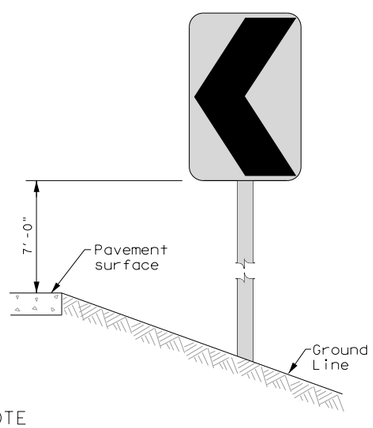
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

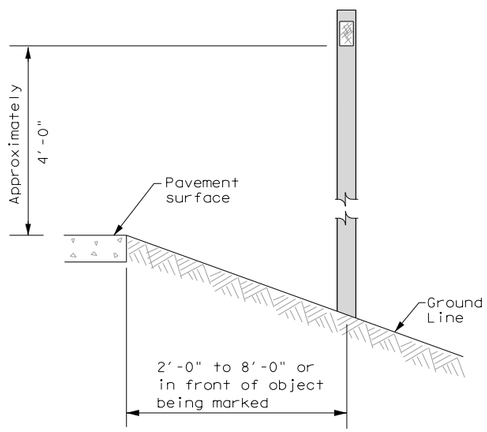
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	PHR	CAMERON		89

20B

DATE: 3/4/2024 11:38:48 AM
FILE: S:\Projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic Items\smdgen.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)

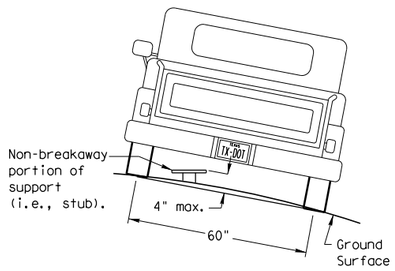
Anchor Type

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

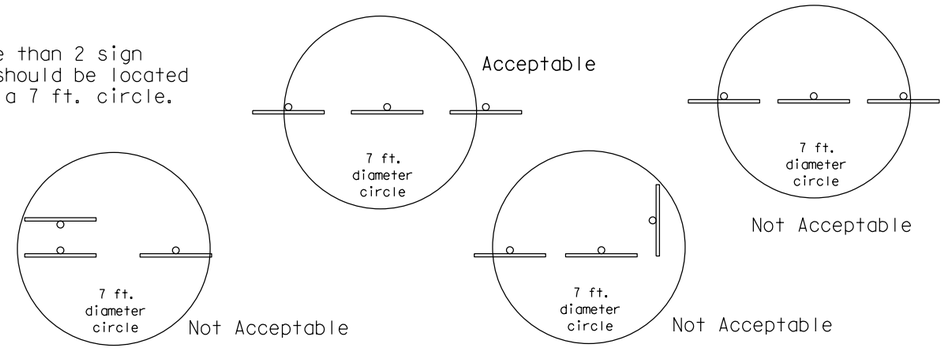
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))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



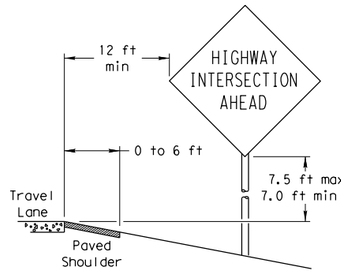
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

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



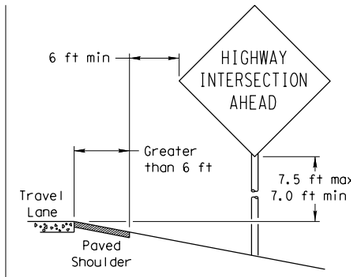
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

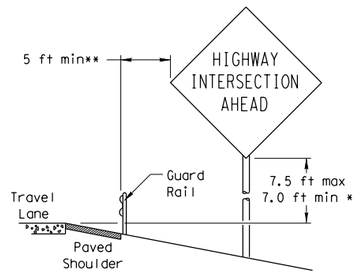
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



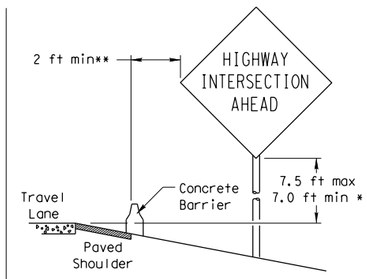
GREATER THAN 6 FT. WIDE

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



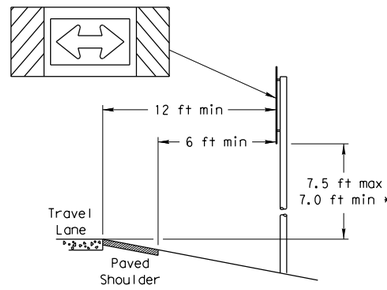
BEHIND GUARDRAIL



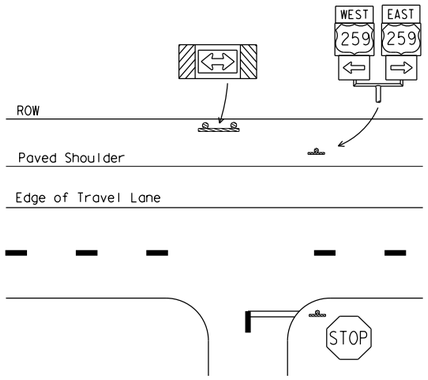
BEHIND CONCRETE BARRIER

**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.

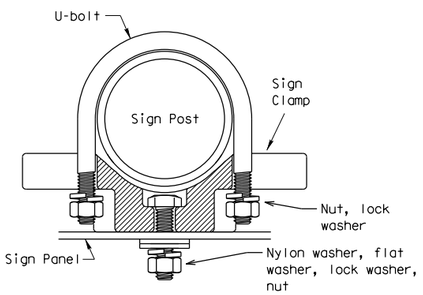
The maximum values may be increased when directed by the Engineer.

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

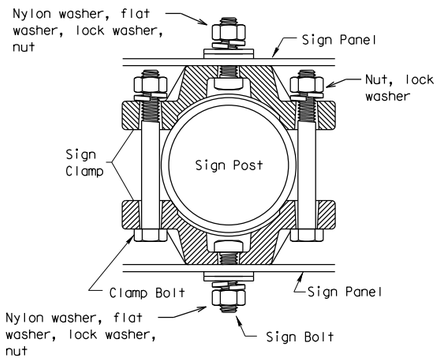
The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



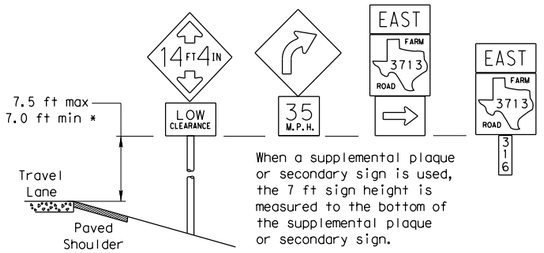
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

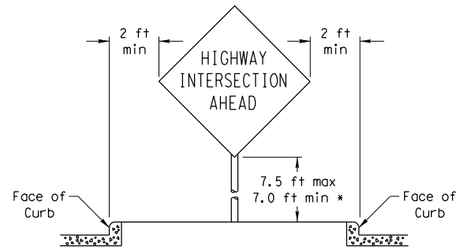
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



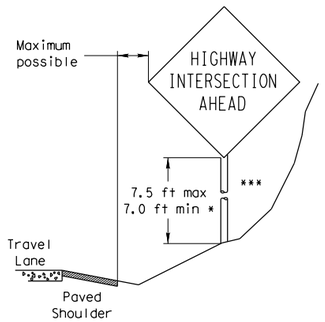
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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

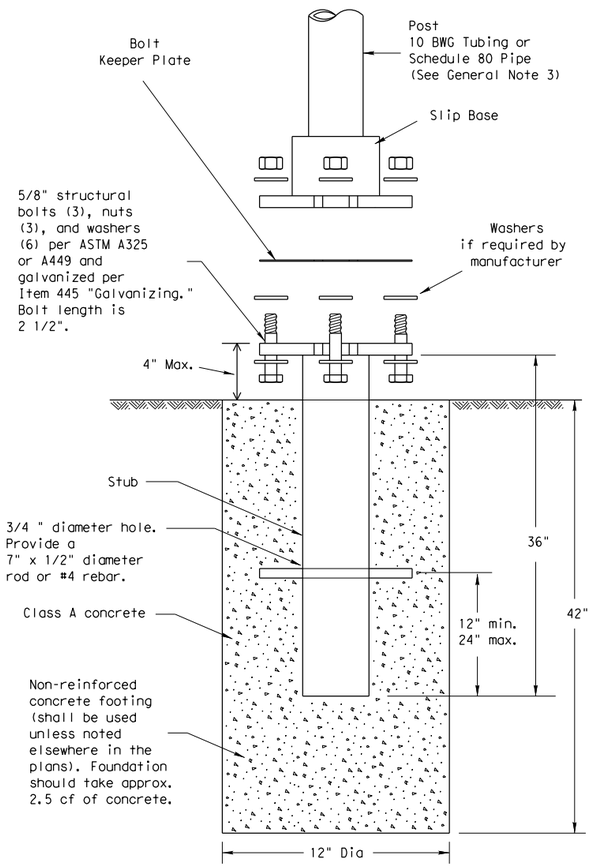
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		90

DATE: 3/4/2024 11:38:49 AM
FILE: S:\projects\6121541\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic Items\smdsl.dgn

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

NOTE

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

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

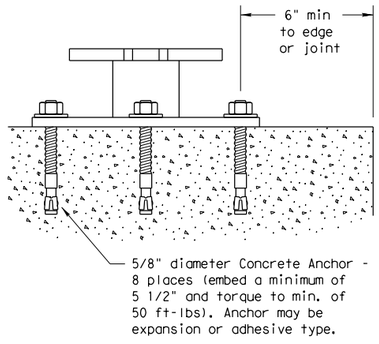
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

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

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

CONCRETE ANCHOR



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

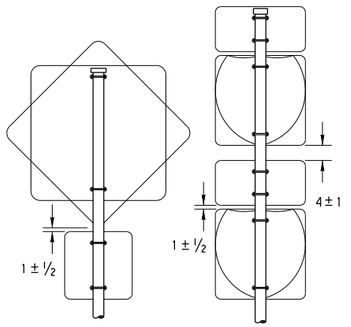
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized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

Texas Department of Transportation
Traffic Operations Division

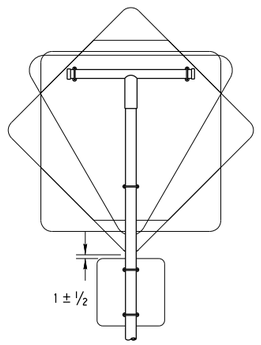
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

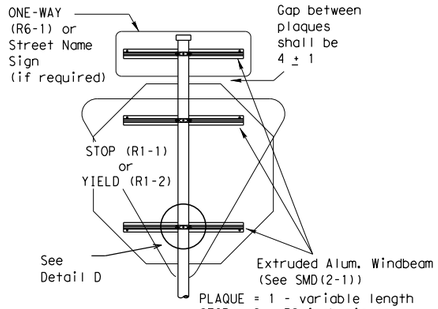
©TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		91



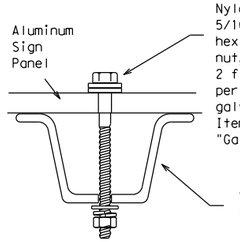
SM RD SGN ASSM TY XXXXX(1)XX(P)



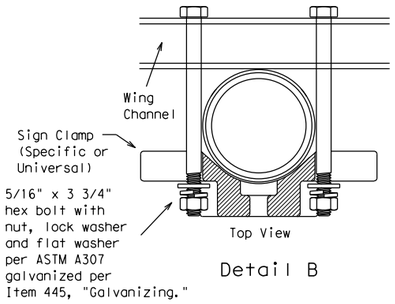
SM RD SGN ASSM TY XXXXX(1)XX(T)



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



Detail A



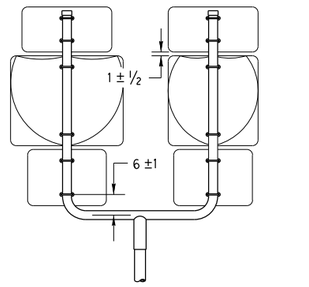
Detail B

GENERAL NOTES:

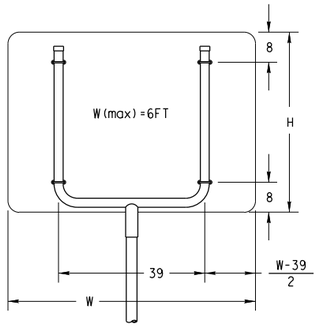
1.

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

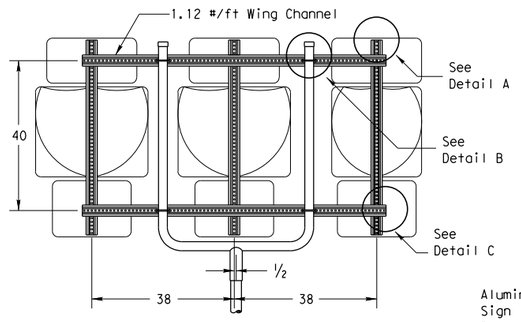
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material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



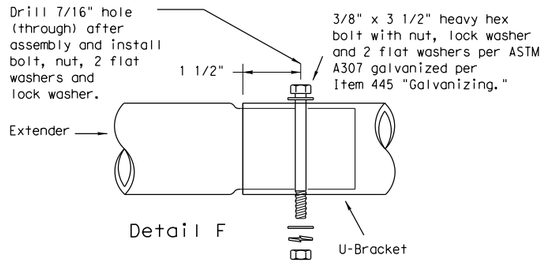
SM RD SGN ASSM TY XXXXX(1)XX(U)



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

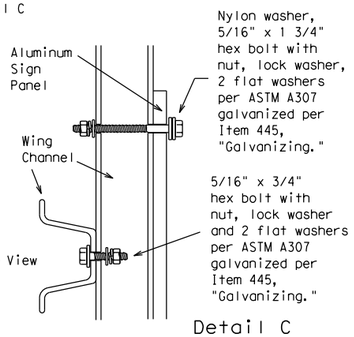


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

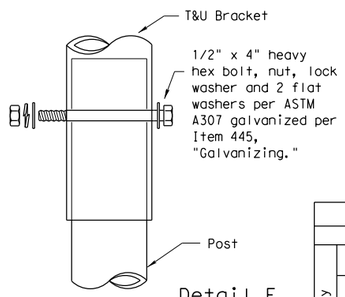


Detail F

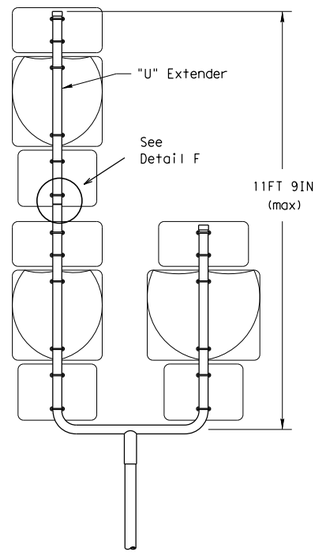
Splices shall only be allowed behind the sign substrate.



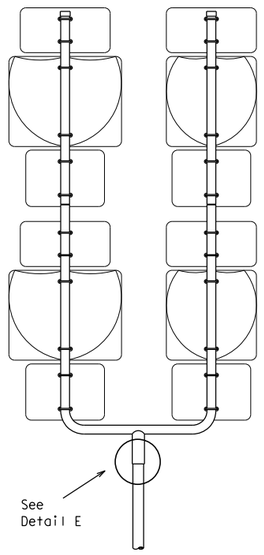
Detail C



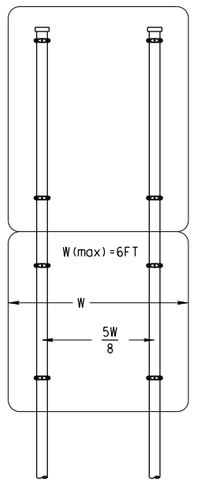
Detail E



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

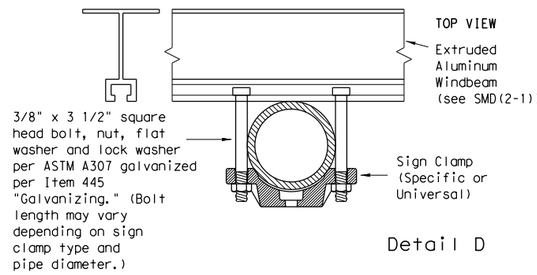


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

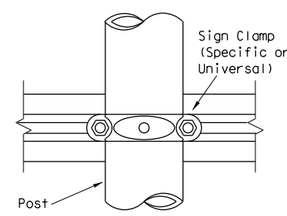


SM RD SGN ASSYM TY XXXXX(2)XX(P)

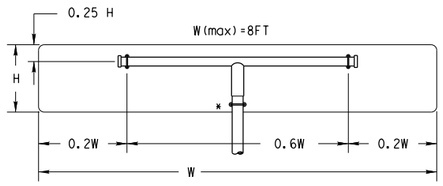
SIDE VIEW



Detail D



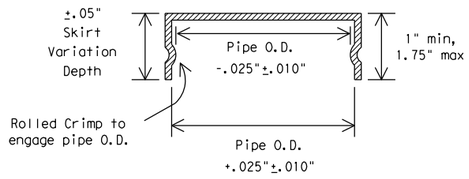
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)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



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

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

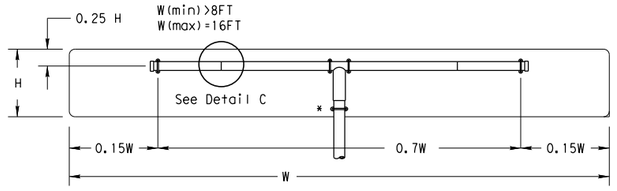
SMD(SLIP-2)-08

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

REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		92

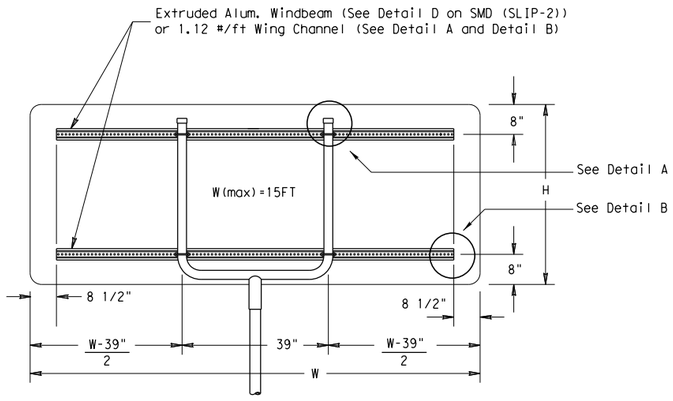
26C

DATE: 3/4/2024 11:38:50 AM
FILE: S:\projects\6i2\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic Items\smds2.dgn

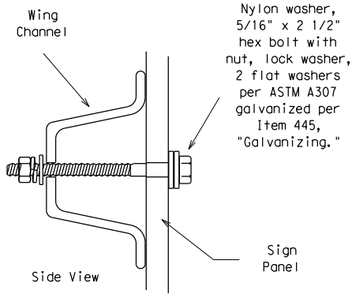


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)

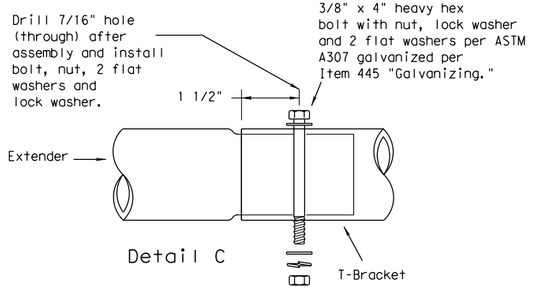
(* - See Note 12)



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



Detail B



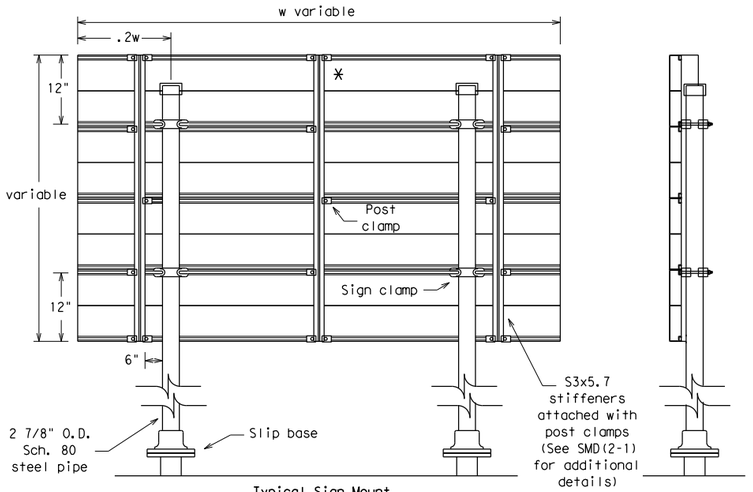
Detail C

Splices shall only be allowed behind the sign substrate.

GENERAL NOTES:

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

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

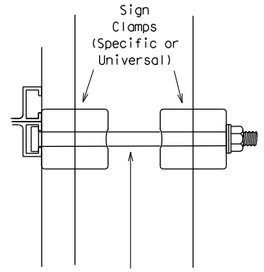


Typical Sign Mount

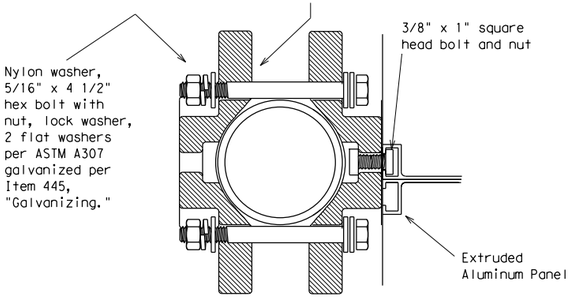
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

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

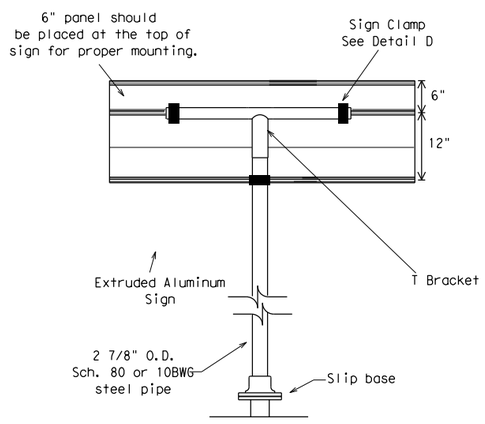
See Detail E
for clamp installation



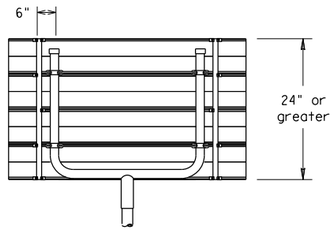
Detail E



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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

REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0921	06	348	VA
DIST	COUNTY		SHEET NO.
PHR	CAMERON		93

DATE: 3/4/2024 11:38:51 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic Items\smds3.dgn

DATE: 3/4/2024 1:18:10 PM
FILE: S:\Projects\6121\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic\tsr3-13.dgn

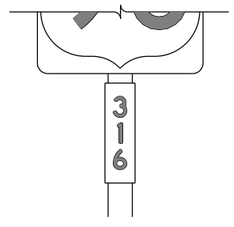
REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

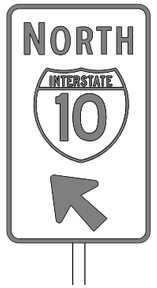
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING

TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING





TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).

2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).

4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.

5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.

6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(3)-13

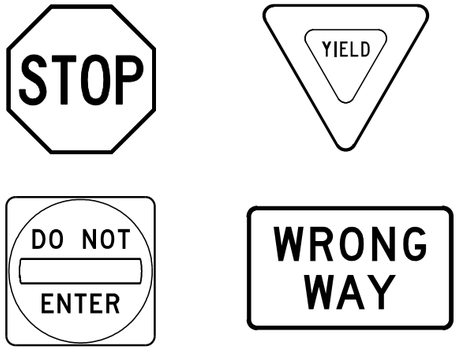
FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	PHR	CAMERON		94

3

DATE: 3/4/2024 1:18:12 PM
FILE: S:\projects\6125401\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic\tsr4-13.dgn

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

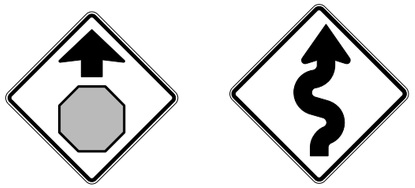
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

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

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

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

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

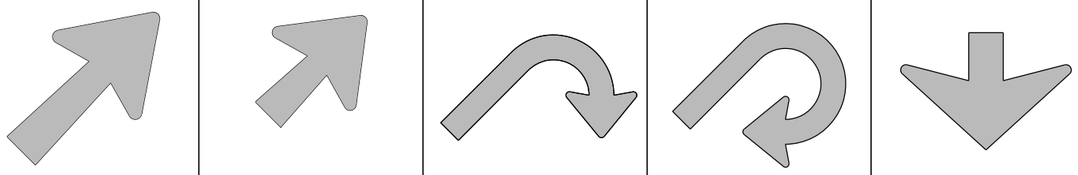
TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
12-03 7-13 9-08	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		95

DATE: 3/4/2024 11:39:11 AM
FILE: S:\Projects\6123\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic\tsr5-13.dgn

ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

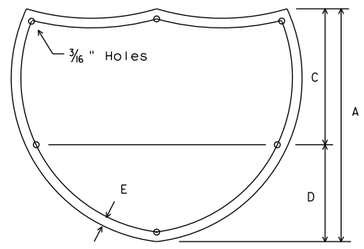
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

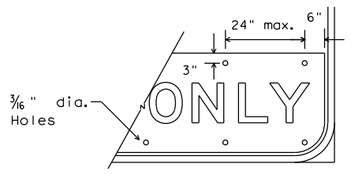
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

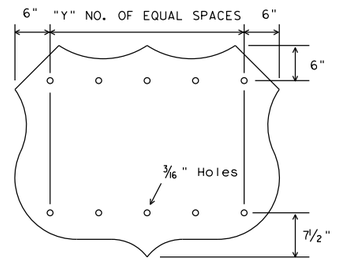


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4

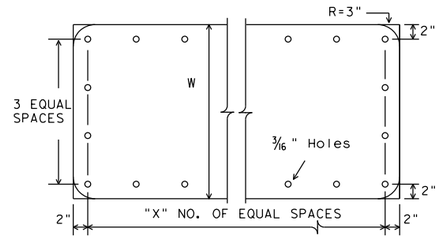


EXIT ONLY PANEL



U.S. ROUTE MARKERS

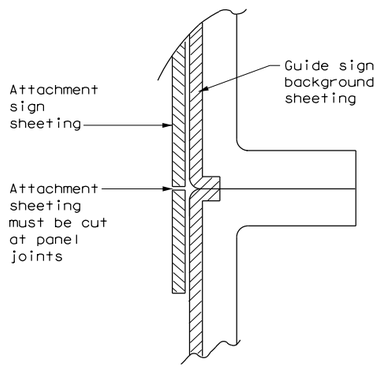
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

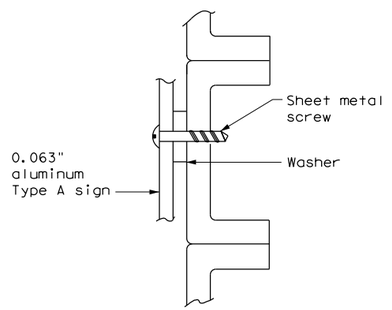
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



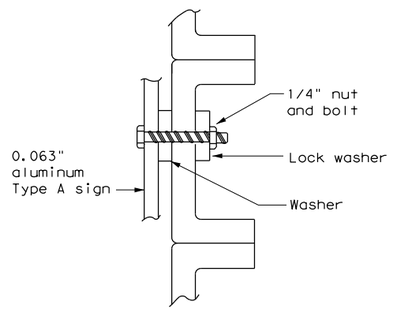
DIRECT APPLIED ATTACHMENT

NOTE:

1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



SCREW ATTACHMENT



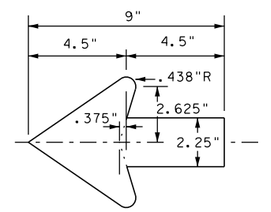
NUT/BOLT ATTACHMENT

NOTE:

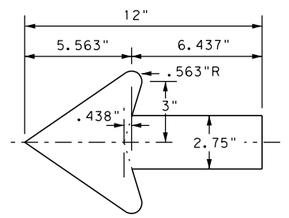
Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS

for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.

Texas Department of Transportation

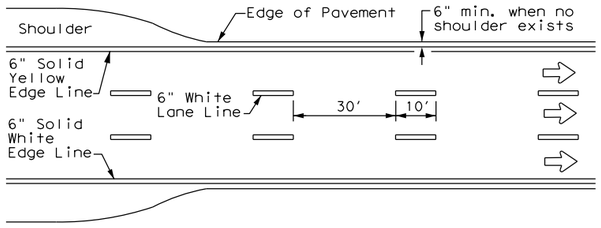
Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

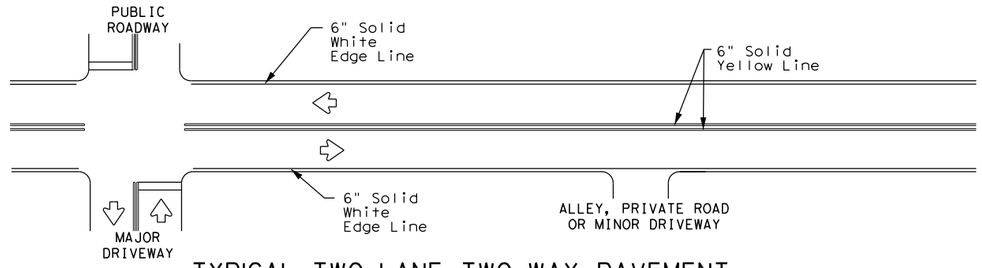
TSR(5)-13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	PHR	CAMERON		96

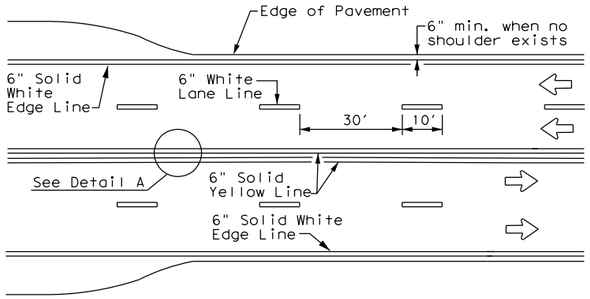
DATE: 3/4/2024 11:39:25 AM
FILE: S:\projects\612534\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic\pm1-22.dgn

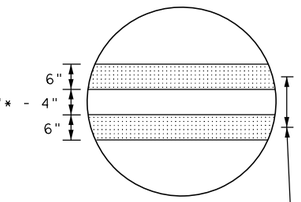


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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





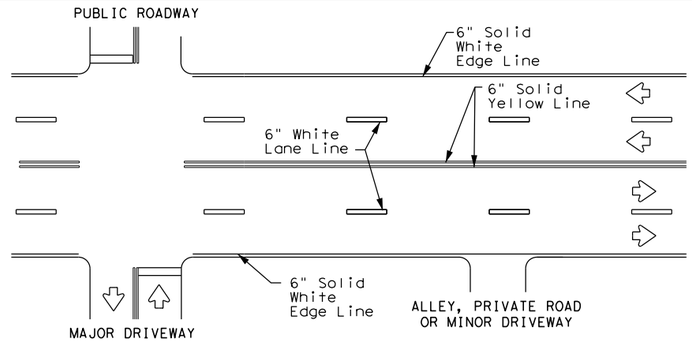
DETAIL "A"

9"** min. - 10" typ.
(18" max. for traveled way greater than 48' only)

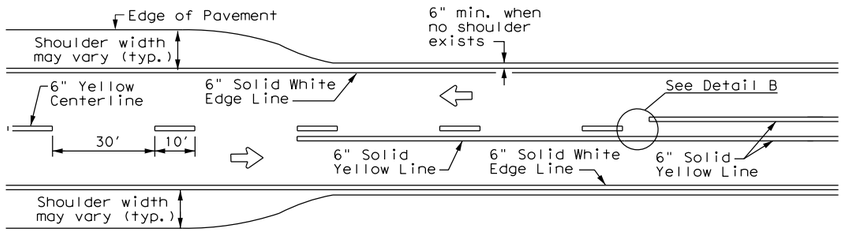
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

* 2" minimum for restripe projects when approved by the Engineer.

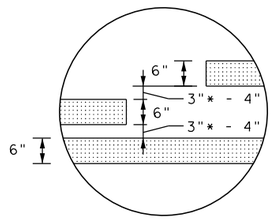
** 8" minimum for restripe projects when approved by the Engineer.



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



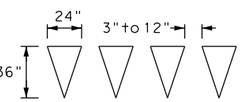
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



18" min. - 20" max.
(16" minimum for restripe projects when approved by the Engineer.)

DETAIL "B"

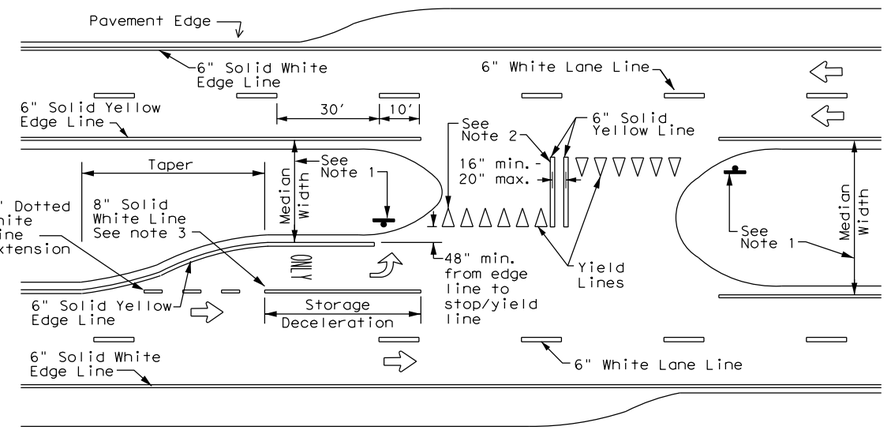
* 2" minimum for restripe projects when approved by the Engineer.



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

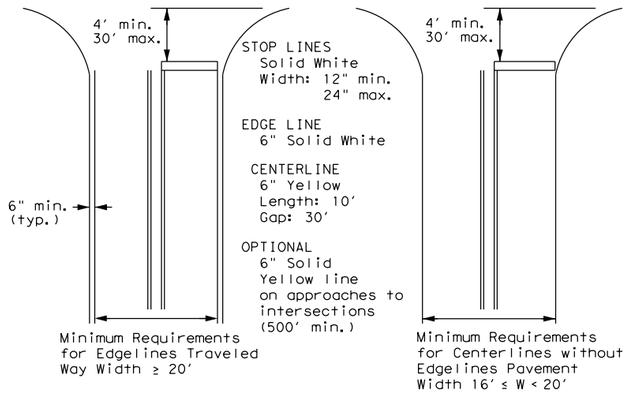
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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

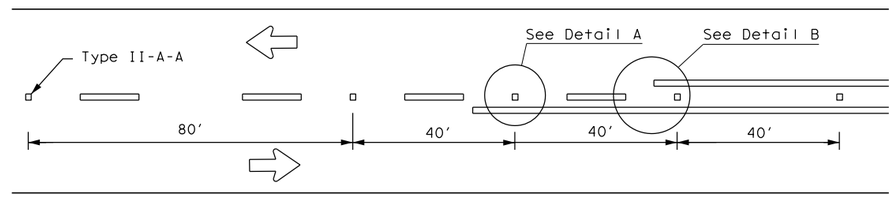
TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

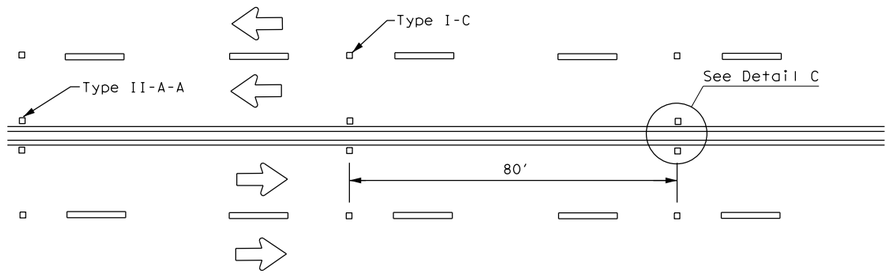
FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
11-78 8-00 6-20	DIST	COUNTY		SHEET NO.
8-95 3-03 12-22	PHR	CAMERON		97
5-00 2-12				

22A

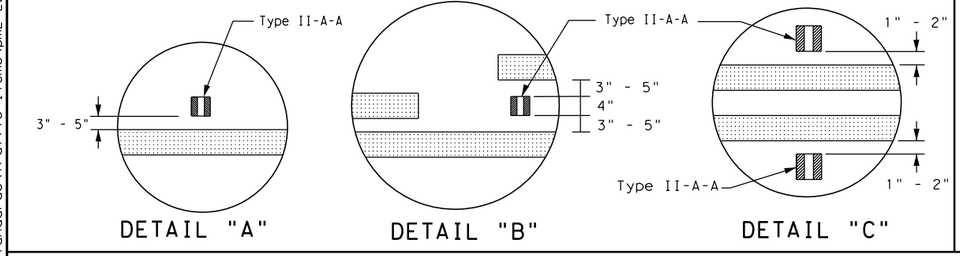
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



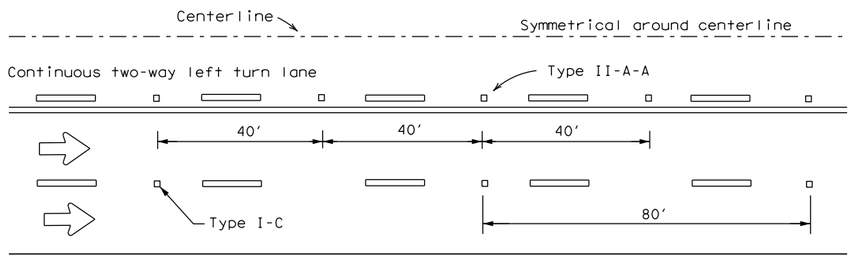
CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



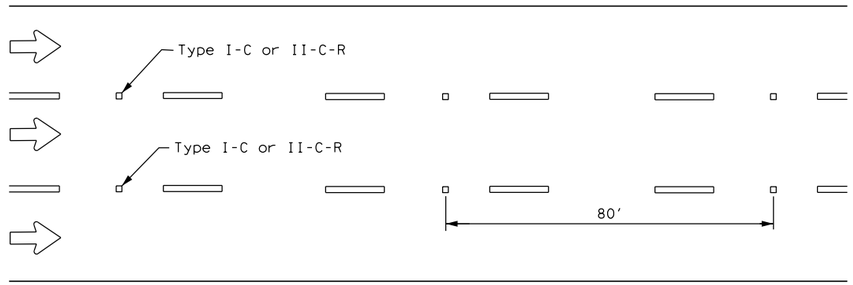
CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY ROADWAYS



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



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



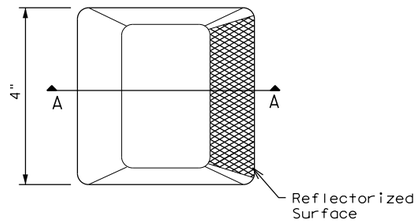
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

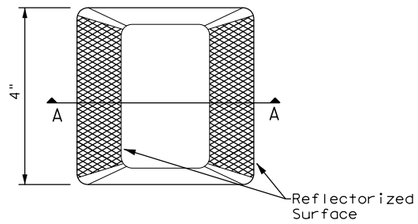
See Note 3.

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

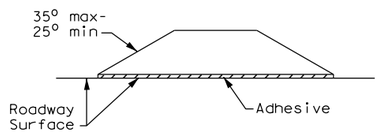
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

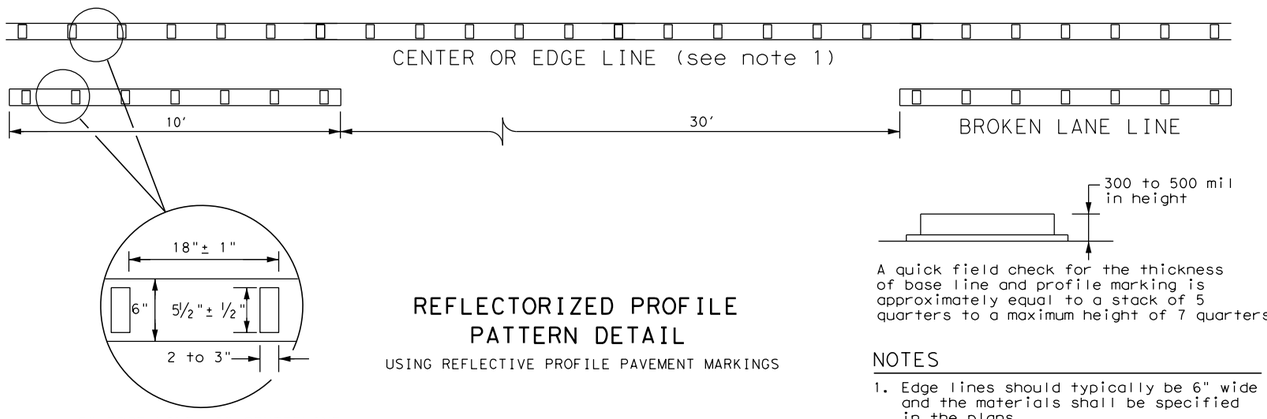


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



6" EDGE LINE, 6" CENTERLINE
OR 6" LANE LINE

REFLECTORIZED PROFILE
PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

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

NOTES

1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

Texas Department of Transportation

Traffic Safety Division Standard

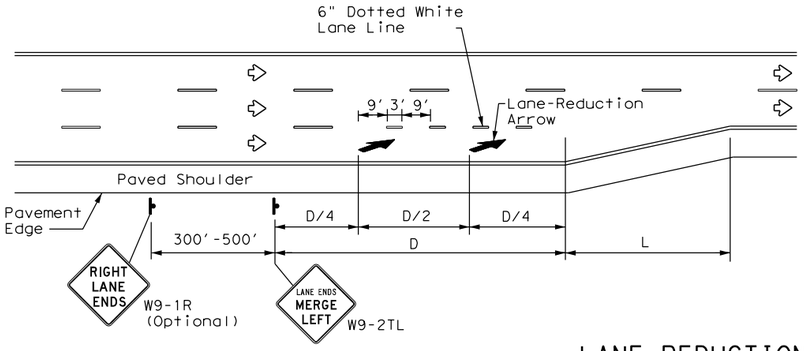
POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
4-77 8-00 6-20	DIST	COUNTY		SHEET NO.
4-92 2-10 12-22	PHR	CAMERON		98
5-00 2-12				

22B

DATE: 3/4/2024 11:39:26 AM
FILE: S:\projects\6i2\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic\pm2-22.dgn

DATE: 3/4/2024 11:39:27 AM
FILE: S:\projects\6i2\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic\pm3-22.dgn

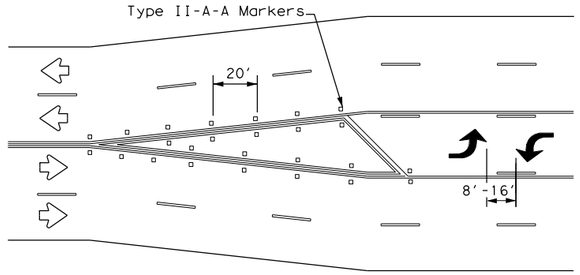


LANE REDUCTION

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	



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

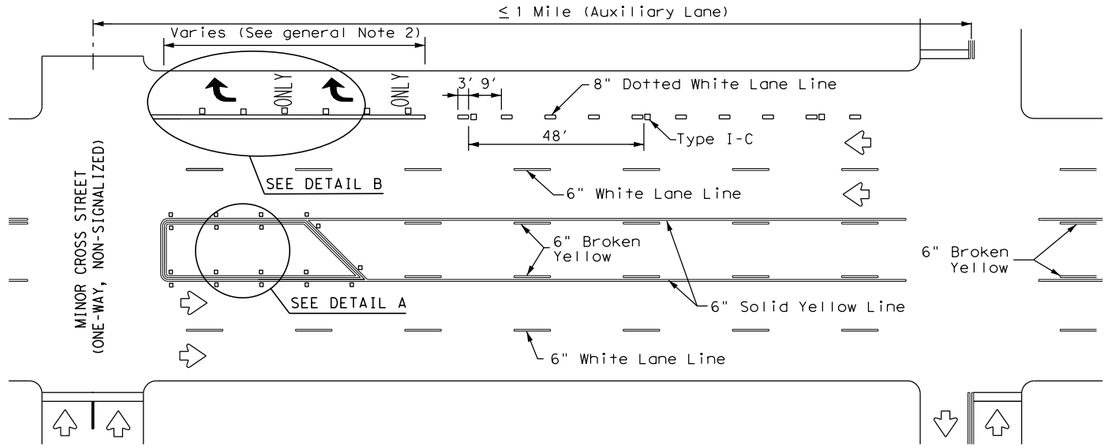
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

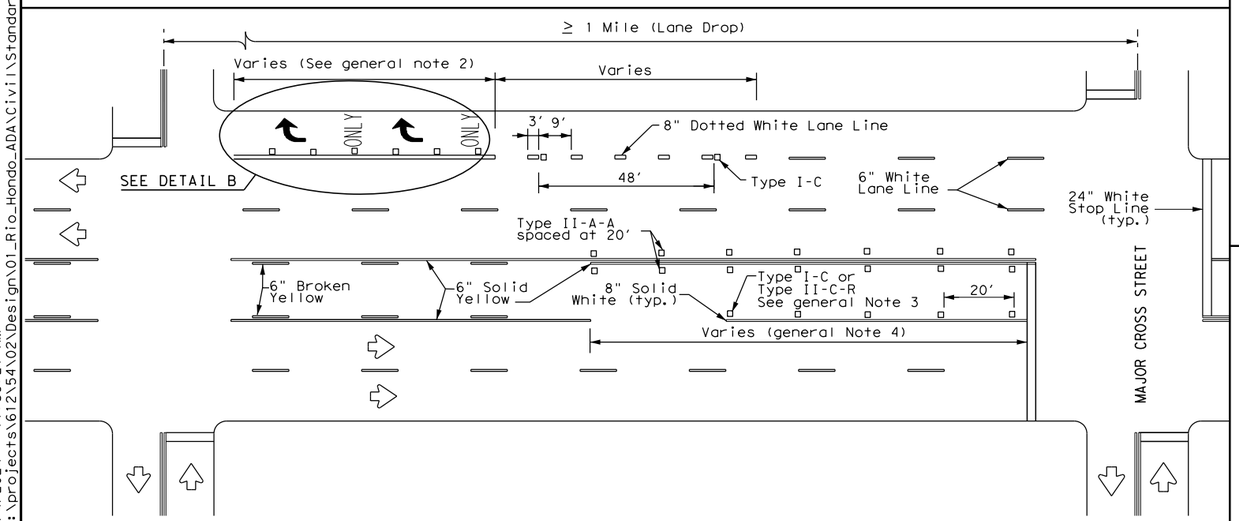
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn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

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

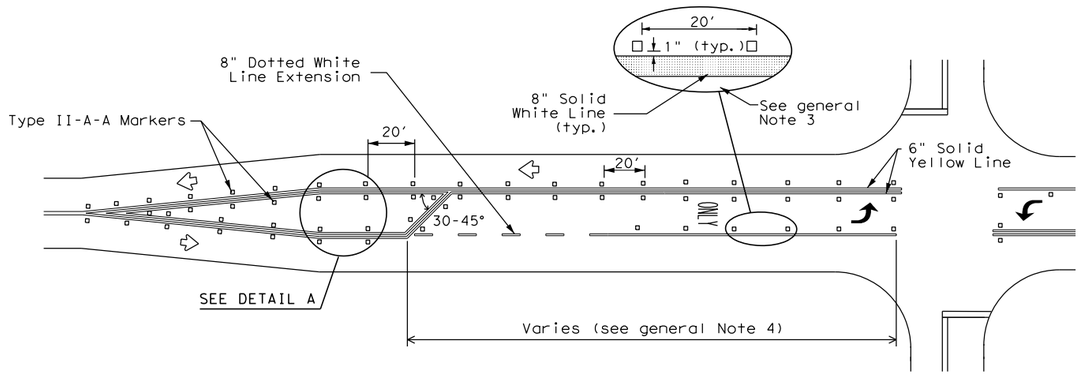
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



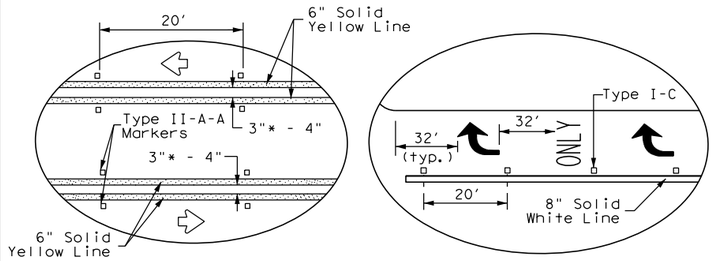
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



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



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation

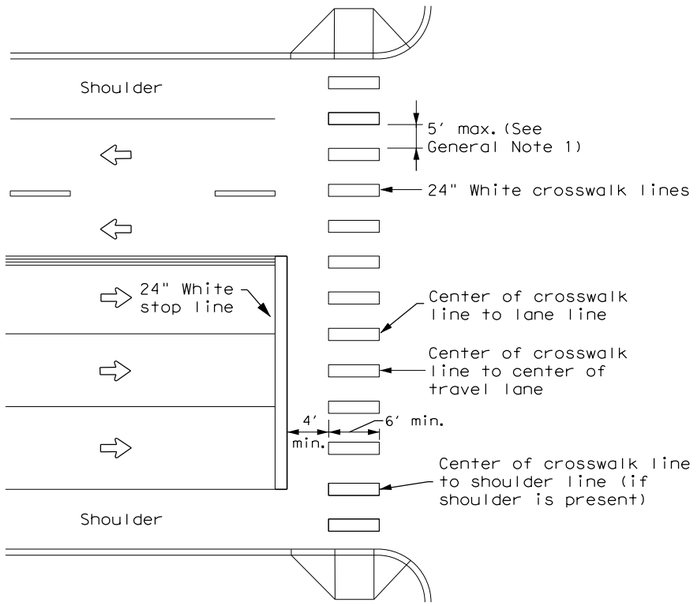
Traffic Safety Division Standard

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	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		99

22C

DATE: 3/4/2024 11:39:28 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic\pm4-22a.dgn



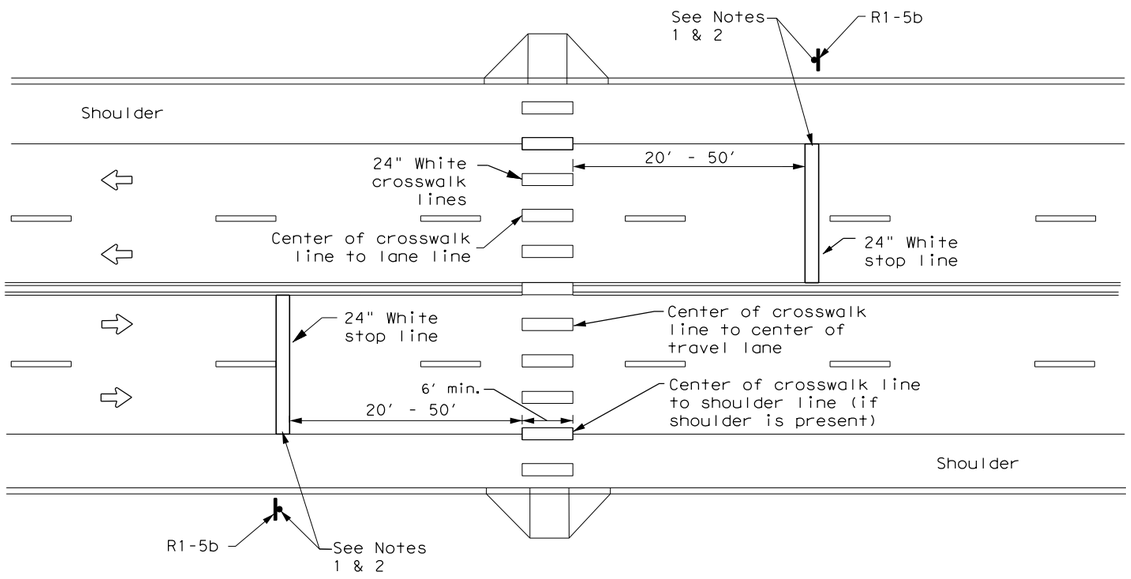
HIGH-VISIBILITY LONGITUDINAL CROSSWALK
AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED 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

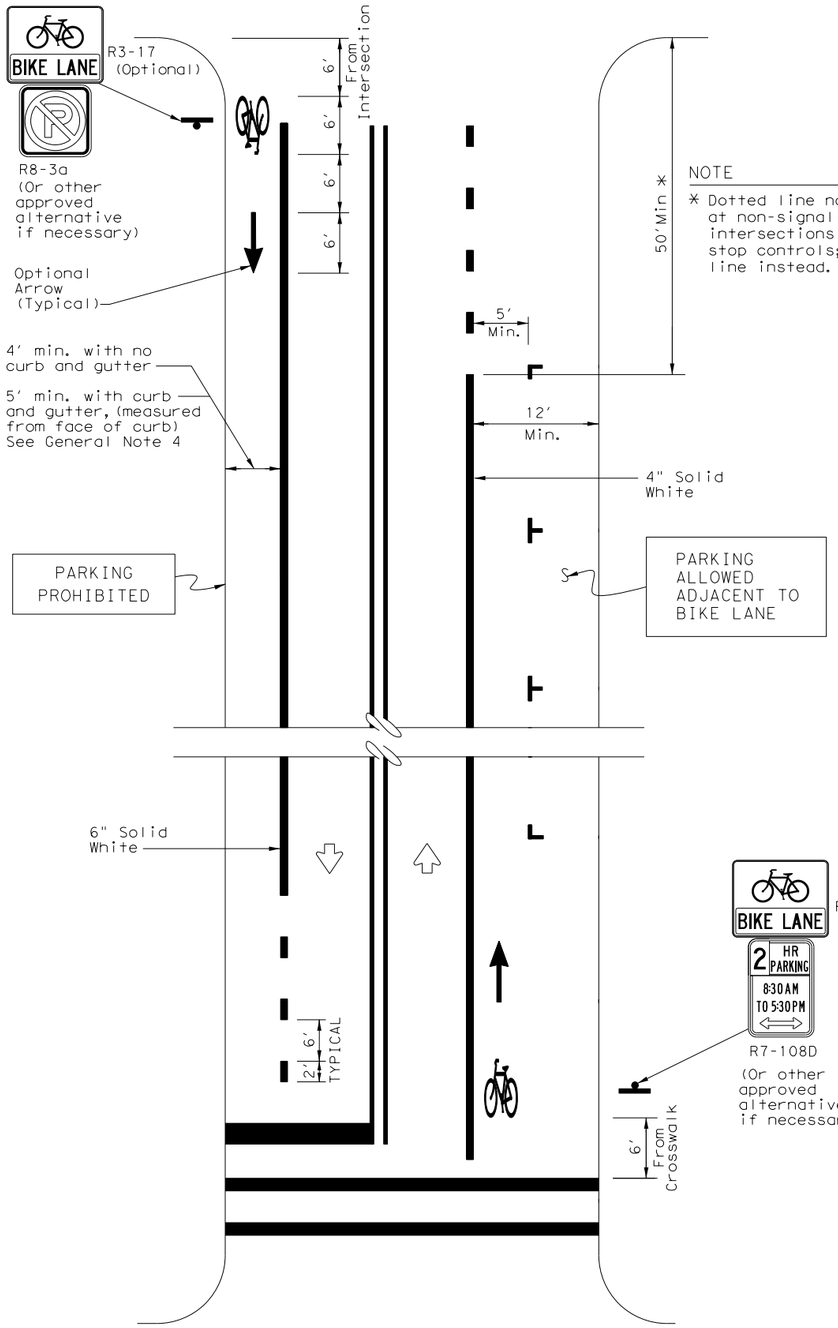
CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
6-20	DIST	COUNTY		SHEET NO.
6-22	PHR	CAMERON		100
12-22				

22D

DATE: 3/4/2024 11:39:30 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic Items\blpm-10.dgn



NOTE

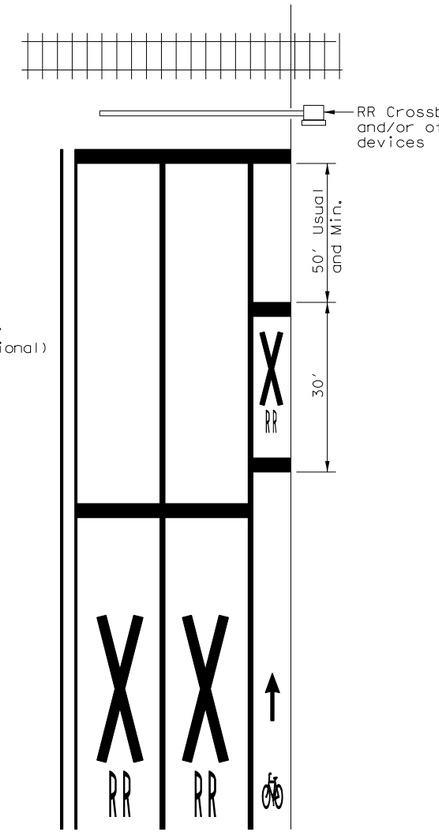
* Dotted line not necessary at non-signalized minor intersections with no stop controls; Use solid line instead.

NOTES

1. Bicycle lane pavement markings typically repeated after each intersection or signalized driveway.
2. On uninterrupted sections of roadway, bicycle lane pavement markings typically repeated as follows:

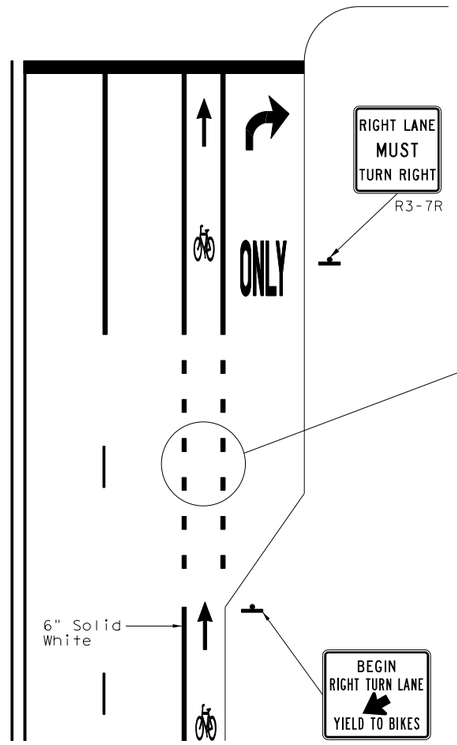
   -1200' for 45 MPH or less roads
   -2500' for 50 MPH and greater roads.

TWO-WAY STREET

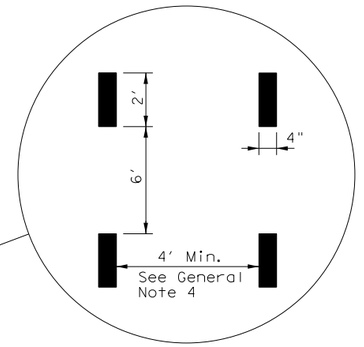


(See RCPM Standard for travel lane details)

RAILROAD CROSSING APPROACH



RIGHT TURN ONLY LANE



DETAIL "A"

LEGEND	
	Sign
	Traffic Flow

SPECIFICATION REFERENCE TABLE	
Traffic Paint	DMS-8200
Hot Applied Thermoplastic	DMS-8220
Permanent Prefabricated Pavement Markings	DMS-8240
Glass Traffic Beads	DMS-8290

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

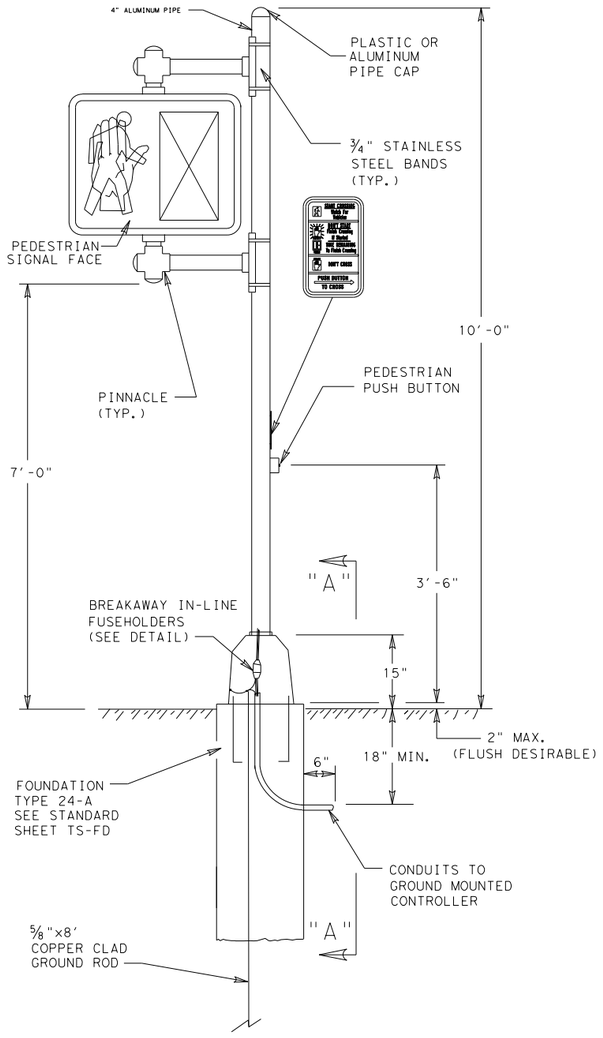
JOHN A. TYLER, P.E. — 3/4/2024 DATE

Texas Department of Transportation
Traffic Operations Division

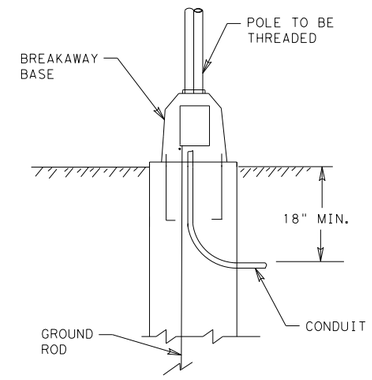
BICYCLE LANE PAVEMENT MARKINGS

BLPM-10 (MOD)

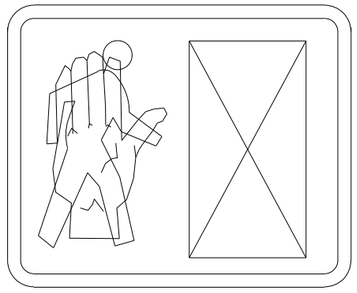
© TxDOT May 2010	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		101



PEDESTAL POLE DETAIL



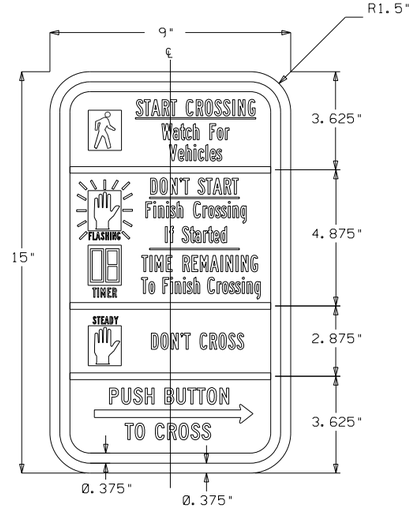
SECTION "A A"

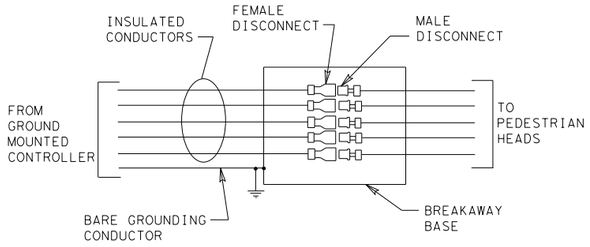


18"x16" LED PEDESTRIAN SIGNAL HEAD w/COUNTDOWN

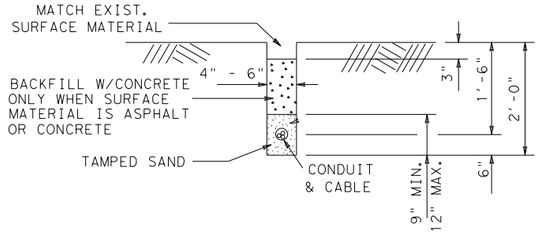
- LEGEND:
  BLACK
- BACKGROUND:
  WHITE (RETROREFLECTIVE)
- 08, HAND SYMBOL:
  ORANGE (RETROREFLECTIVE)
  ON BLACK
- PEDESTRIAN SYMBOL:
  WHITE (RETROREFLECTIVE)
  ON BLACK

NOTE:
REFER TO THE STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD) FOR MORE DETAILS AND DIMENSIONS REGARDING SIGN R10-3e



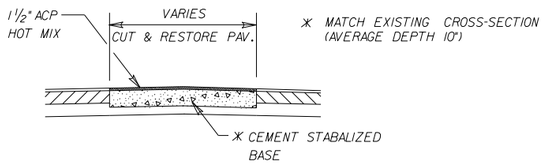


BREAKAWAY IN-LINE FUSEHOLDERS



NOTE:
ALL TRENCHES ARE TO BE MADE ONLY PARALLEL TO THE STREET. ALL CONDUIT RUNS CROSSING THE STREET SHALL BE PUSHED AND NO CUTS MADE IN THE SURFACE.

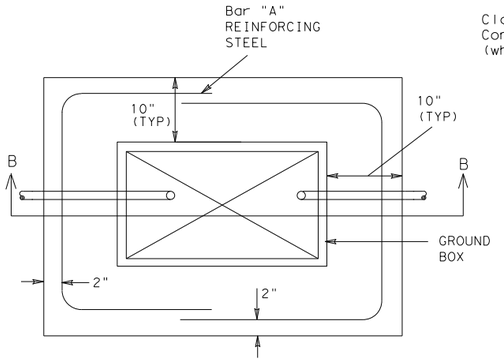
DETAIL - TRENCH LAY CONDUIT

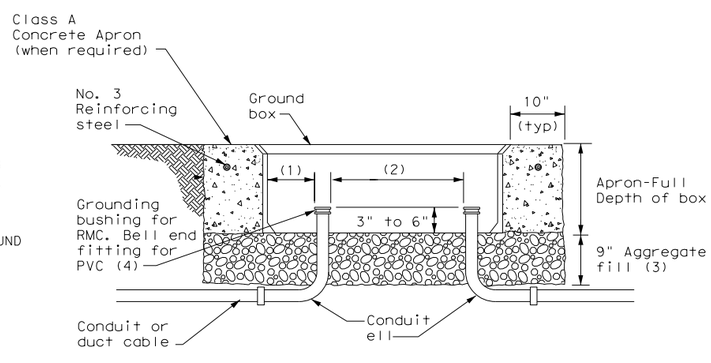


DETAIL - CUT AND RESTORE PAVEMENT

NOTES:

1. BREAKAWAY ELECTRICAL QUICK-DISCONNECTS SHALL BE WATERTIGHT BUSSMANN HEB SERIES OR EQUAL.
2. DRILL POLE FOR WIRE ENTRY. USE BUSHING OR RUBBER GROMMET TO PROTECT CONDUCTORS.
3. POLE SHAFT SHALL BE ONE PIECE SCHEDULE 40 ALUMINUM PIPE, ASTM B429 OR B221 (ALLOY 6601-T6), DO NOT USE ALUMINUM CONDUIT.





APRON FOR GROUND BOXES

(Where required)

DISTRICT STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
PHARR DISTRICT STANDARD

TRAFFIC SIGNAL CONSTRUCTION DETAILS

MISCELLANEOUS DETAILS

SHEET 1 OF 1

DN: OG	DRAWING	DATE	FED.RD. DIV.NO.	STATE	PROJECT NO.				SHEET NO.
CK DN: JSL	ORIGINAL	APR. 2010	6	TEXAS	STP 2B23 (202)TAPS				102
DW: OG	REV. JUL. 2015 MAY 2016 AUG 2016 APR 2017		STATE DIST.NO.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	HIGHWAY NO.
CK DW: JSL			PHARR	CAMERON		0921	06	348	VA

DATE: 3/4/2024 11:39:32 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic Items\ts-fd_12_Rio_Hondo.dgn

FOUNDATION DESIGN TABLE

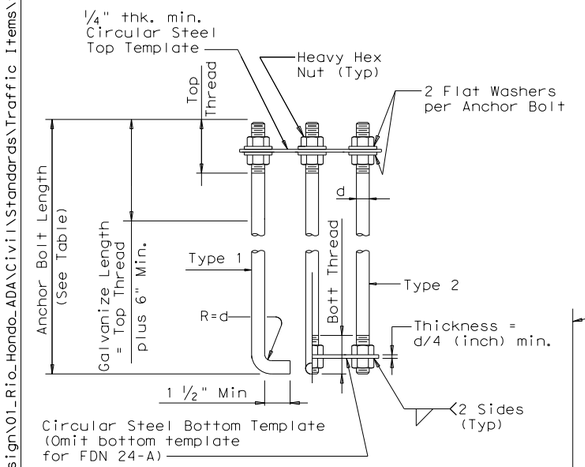
FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft (4), (5), (6)			ANCHOR BOLT DESIGN (1)				FOUNDATION DESIGN LOAD (2)		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
				10	15	40							
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

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'

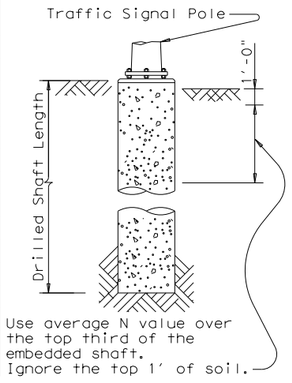
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.

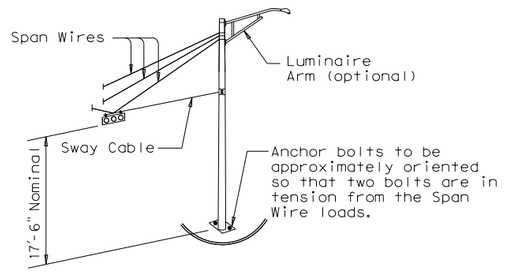


HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

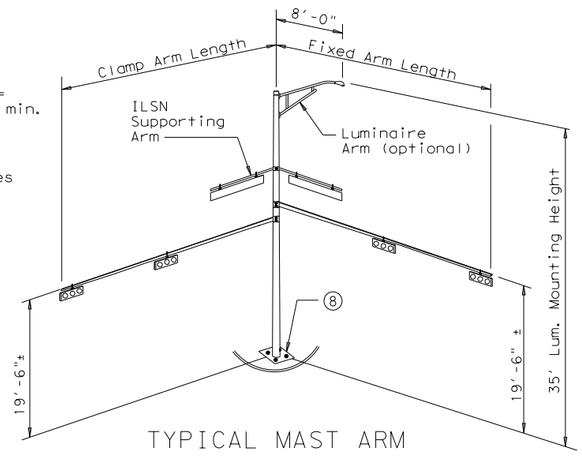
ANCHOR BOLT ASSEMBLY

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

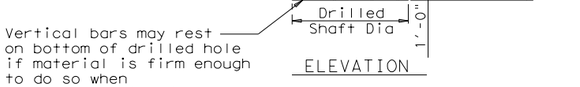


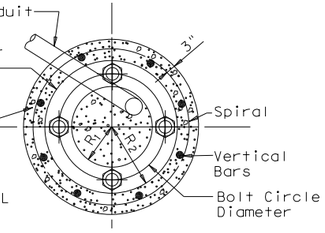


TYPICAL STRAIN POLE ASSEMBLY



TYPICAL MAST ARM ASSEMBLY





TOP VIEW

ELEVATION

FOUNDATION DETAILS

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.

NOTES:

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

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

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

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

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

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

FOUNDATION SUMMARY TABLE ③

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET)				
				24-A	30-A	36-A	36-B	42-A
SH-345 @ N SAM HOUSTON BLVD (SHEET 70)	10	24-A	8	6				
TOTAL DRILLED SHAFT LENGTHS				48				

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

Texas Department of Transportation
Traffic Operations Division

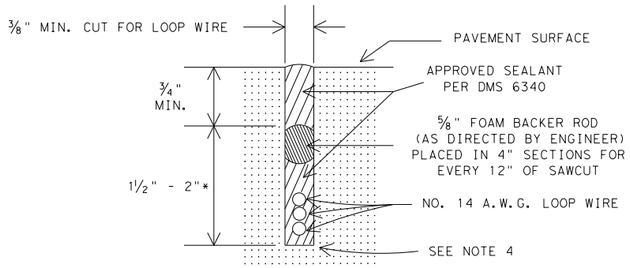
TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB

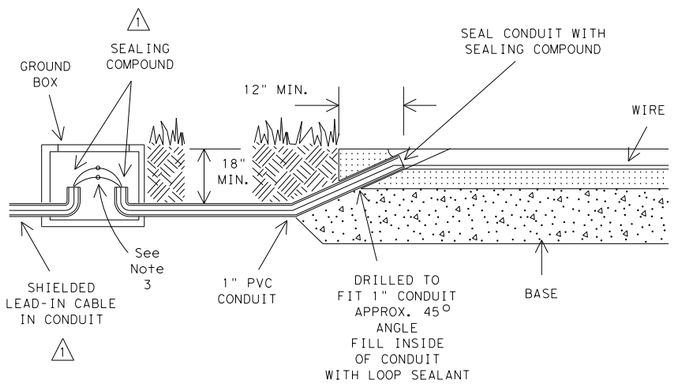
REVISIONS: 5-96, 11-99, 1-12

CONT	SECT	JOB	HIGHWAY
0921	06	348	VA
DIST	COUNTY		SHEET NO.
PHR	CAMERON		103

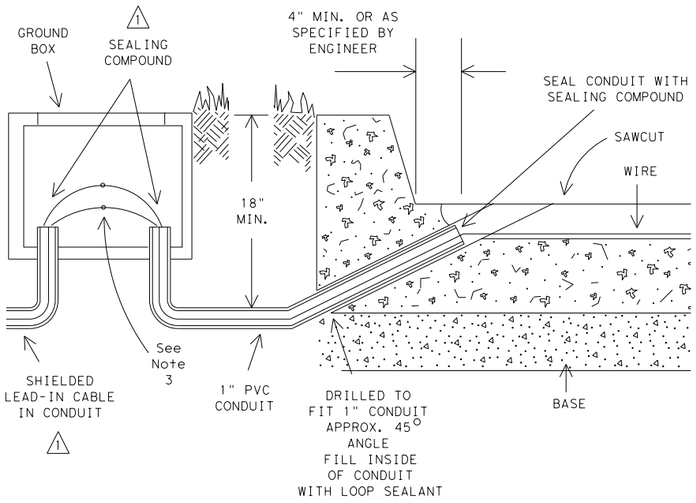


LOOP SAW CUT CROSS-SECTION

* SAWCUTS IN BRIDGE DECKS ARE TYPICALLY 1" DEPTH MAXIMUM
SAWCUTS IN BRIDGE DECKS AND ACROSS EXPANSION JOINTS
SHALL BE AS APPROVED BY ENGINEER



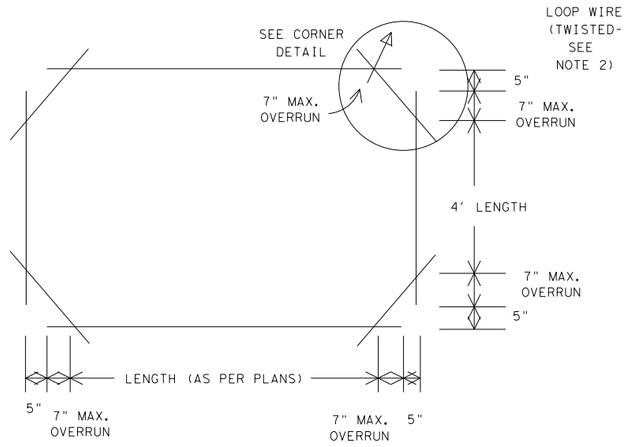
TYPICAL LEAD IN CONFIGURATION (WITHOUT CURBING)



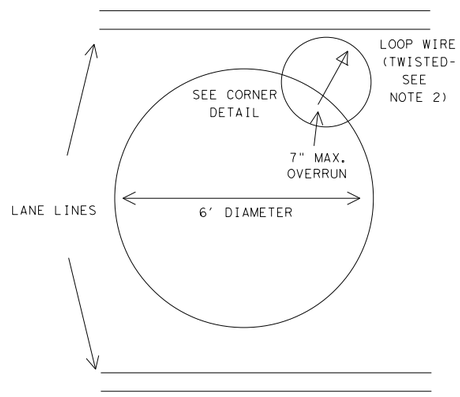
TYPICAL LEAD IN CONFIGURATION (WITH CURBING)

TYPICAL LOOP DETECTOR LAYOUTS

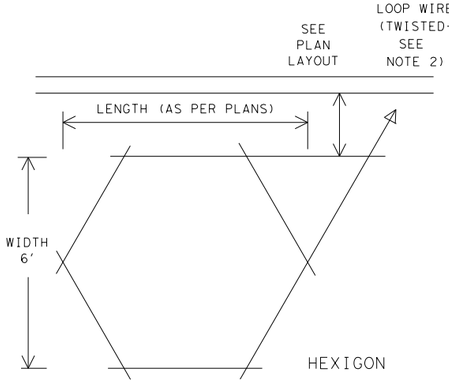
(AS SPECIFIED IN PLANS)



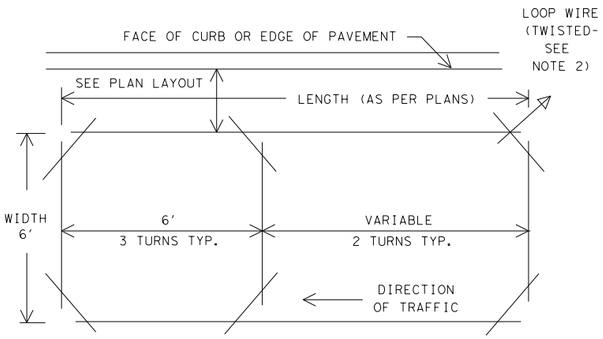
RECTANGULAR



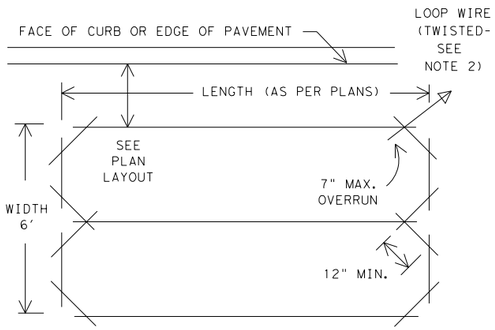
CIRCULAR



HEXIGON



POWER HEADER



QUADRAPOLE

GENERAL NOTES:

1. The pavement cut is to be made with a concrete saw to neat lines and loose material removed. The cut shall be clean and dry when the wire and sealing compound is placed.
2. Loop wire shall be 14 AWG Stranded Type XHHW. Wire from the loop to the ground box shall be twisted a minimum of 5 turns per foot. No splices shall be permitted in the loop or in the run to the ground box.
3. The home run cable from the pull box to the controller shall be IMSA 50-2 shielded cable and shall be soldered to the loop wire. The solder joints shall be sealed with Scotchcast or other method acceptable to the Engineer. The shield shall be grounded only at the controller end. Loop home run cable shall be two conductor 14 AWG shielded, Type XHHW.
4. All wire placed in the saw cut shall be sealed by fully encapsulating it in a sealant acceptable to the Engineer. Sealing compound shall be in accordance with DMS 6340.
5. The loop location, confirguration and number of turns shall be as indicated on the plans or as directed by the Engineer.

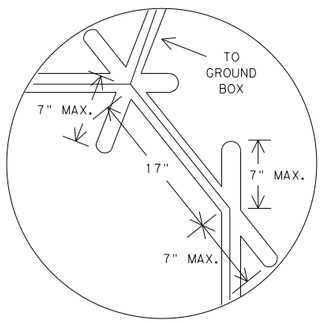
Recommended Number of Turns for Loop Detectors

LOOP PERIMETER SIZE (FT.)	NUMBER OF TURNS	APPROXIMATE LOOP SIZES INCLUDED
24' or Less	3 or 4	5' x 5', 6' x 6'
25' - 110'	2 or 3	6' x 10', 6' x 45'
110' or More	1 or 2	6' x 50' or Longer

6. A separate saw cut shall be made from each loop to the edge of pavement or as specified by the Engineer.
7. Splices between the loop lead-in cable and loop detector shall be made only in the ground box near the loop it is serving.
8. Circular loops may use prewound loops encased in continuous pvc tubing. Sawcut width may be adjusted to accommodate tubing.
9. The lead-in wire in the circular loop shall be coiled at the 3 inch drilled corner to reduce bending stress.
10. Loop duct may be used as specified by Engineer.

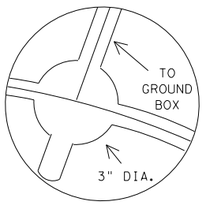
For additionnal information refer to "Texas Traffic Signal Detector" manual, TTI Report 1163-1.

TYPICAL CORNER DETAILS

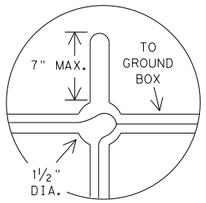


RECTANGULAR & HEXIGON LOOP
SAWCUT CORNER DETAIL

7" OVERRUN BASED ON
24" DIAMETER SAW BLADE



CIRCULAR LOOP
DRILLED CORNER DETAIL



RECTANGULAR & HEXIGON LOOP (ALT.)
DRILLED CORNER DETAIL

Texas Department of Transportation
Traffic Operations Division

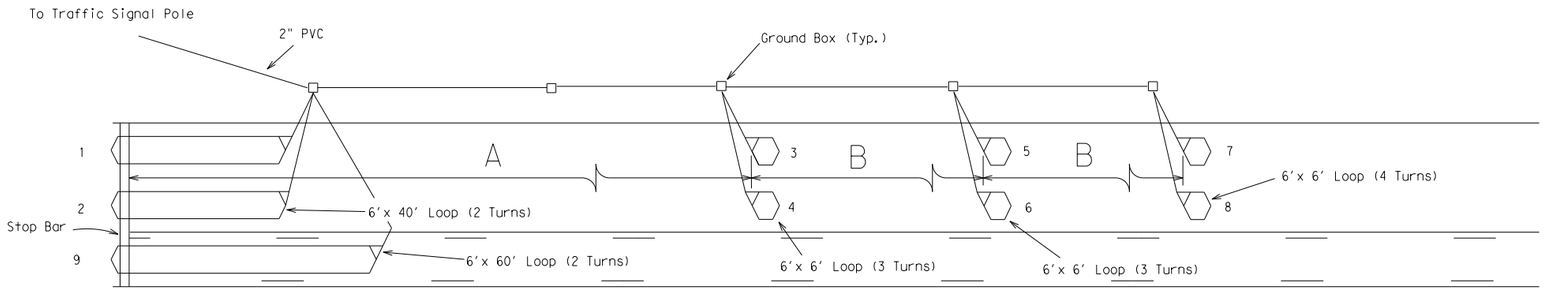
LOOP DETECTOR INSTALLATION DETAILS

LD(1)-03

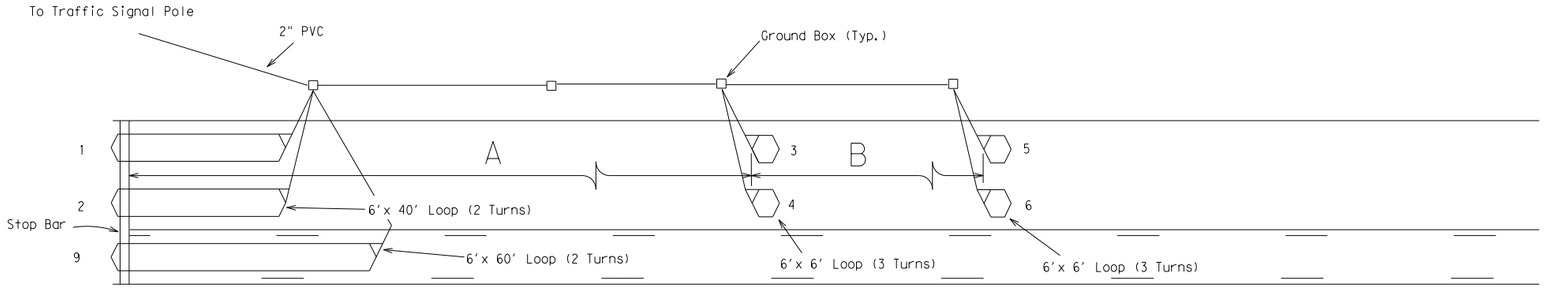
©TxDOT December 1998	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
2-99	0921	06	348	VA
1-03	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		104

79A

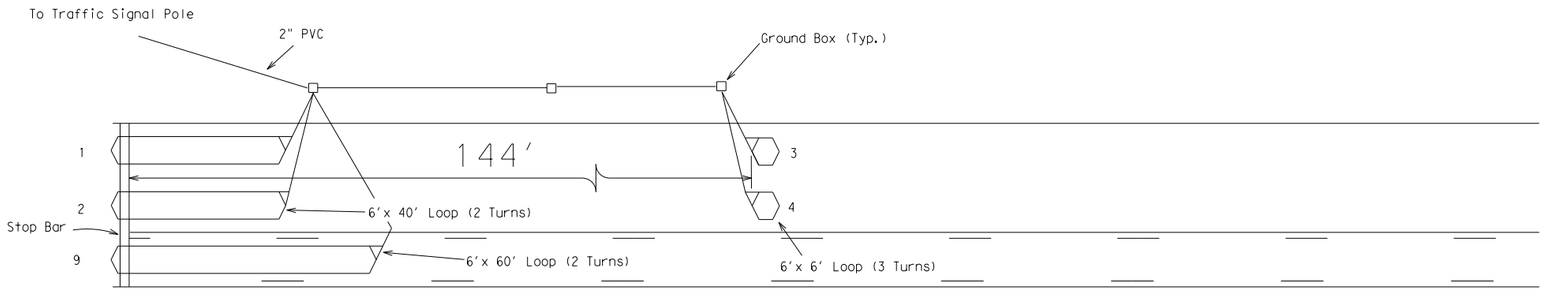
DATE: 3/4/2024 11:39:33 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic Items\ld-03.dgn



55 MPH (A=225', B=95') 60 MPH (A=275', B=100')
65 MPH (A=320', B=110') 70 MPH (A=350', B=125')



35 MPH (A=90', B=100') 40 MPH (A=110', B=130')
45 MPH (A=175', B=115') 50 MPH (A=220', B=130')



30 MPH

GENERAL NOTES:

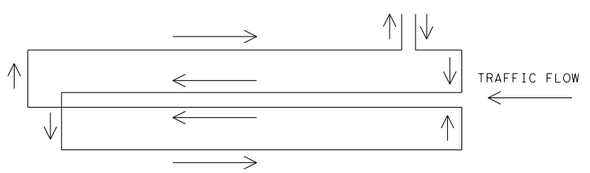
Loops 1 and 2 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

Loops 3 thru 6 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

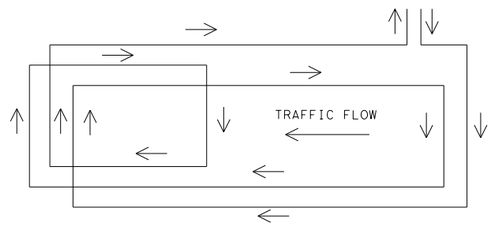
Loops 7 and 8 shall be connected to the controller cabinet by means of the same loop lead-in (2/C #14 AWG).

Loop 9 shall be connected to the controller cabinet by means of a loop lead-in (2/C #14 AWG). Loop 9 shall be placed only when a left turn lane exists.

LOOP WINDING DETAILS



QUADRAPOLE LOOP



POWER HEADER LOOP

Texas Department of Transportation
Traffic Operations Division

LOOP DETECTOR PLACEMENT DETAILS

LD(2)-03

REVISIONS

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

CONT	SECT	JOB	HIGHWAY
0921	06	348	VA

DIST	COUNTY	SHEET NO.
PHR	CAMERON	105

79B

DATE: 3/4/2024 11:39:33 AM
FILE: S:\projects\6i2\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\Traffic Items\ld-03.dgn

DATE: 3/4/2024 11:39:34 AM
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Traffic\ed1-14.dgn

GENERAL NOTES FOR ALL ELECTRICAL WORK

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

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

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

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

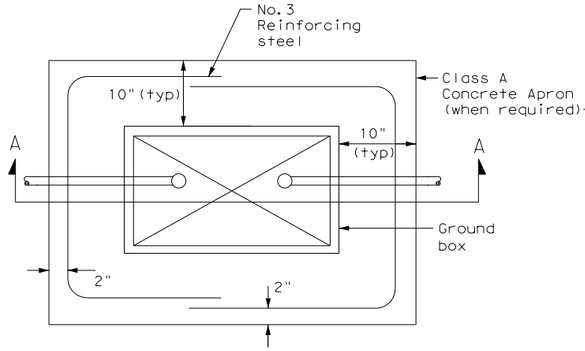
ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

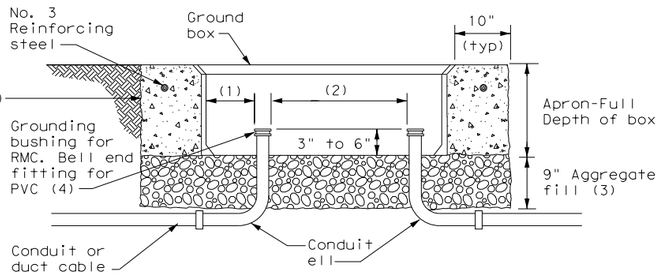
FILE:	ed1-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
	REVISIONS	0921	06	348	VA
		DIST	COUNTY		SHEET NO.
		PHR	CAMERON		106

71A

DATE: 3/4/2024 11:39:36 AM
FILE: S:\projects\6121\54\02\Design\01_Rio_Hondo_ADA\Civil\Traffic\ed4-14.dgn



PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

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

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

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

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

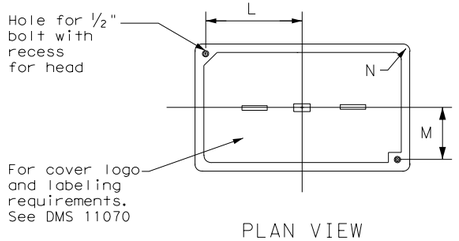
8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

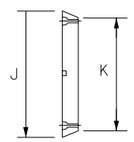
10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

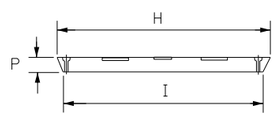
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

Texas Department of Transportation

Traffic Operations Division Standard

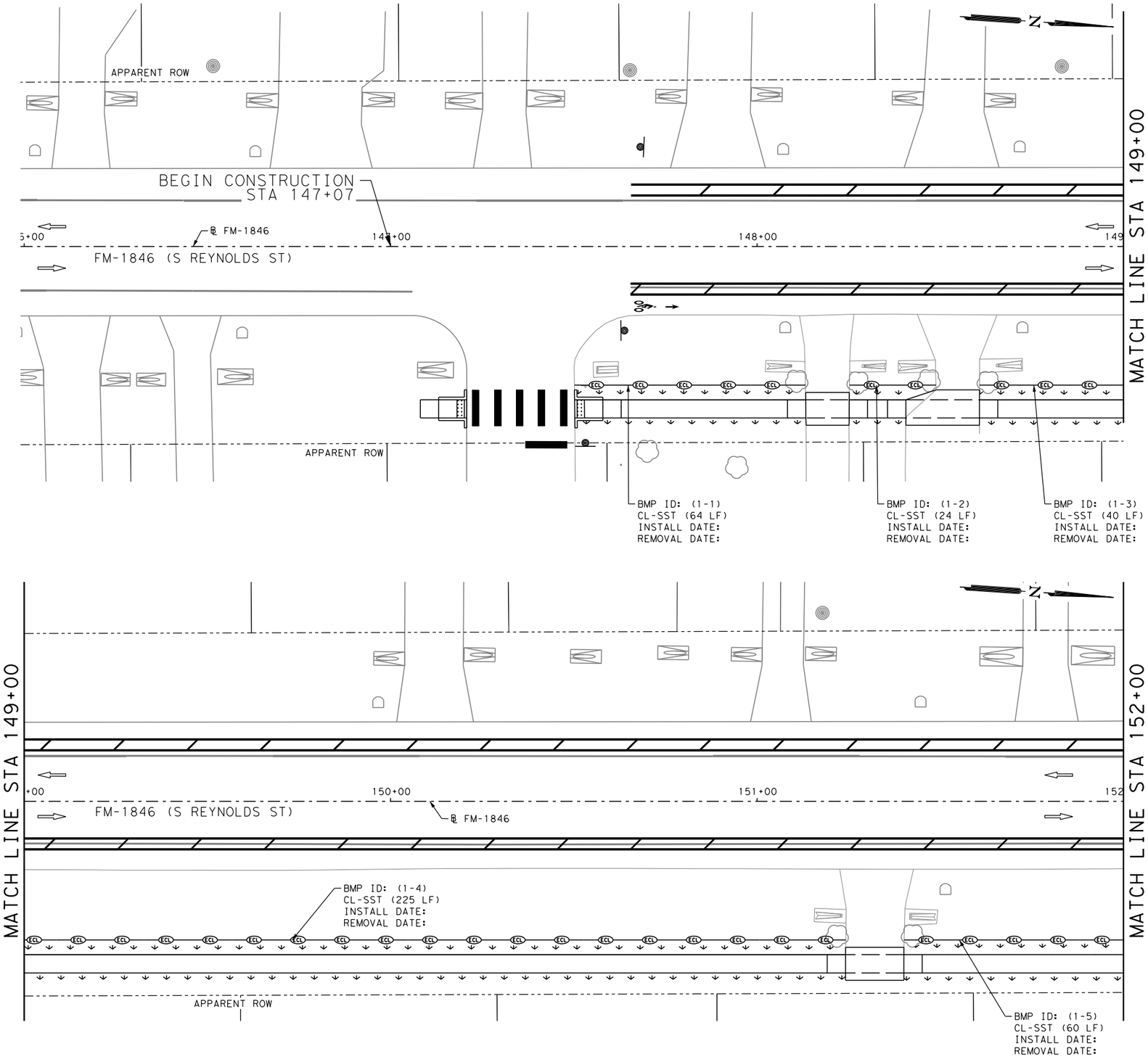
ELECTRICAL DETAILS GROUND BOXES

ED(4)-14

FILE: ed4-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		107

71D

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	413
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	413



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40

SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

FM 1846 (REYNOLDS ST)

ENVIRONMENTAL LAYOUT PLAN

BEGIN CONSTRUCTION TO STA 152+00

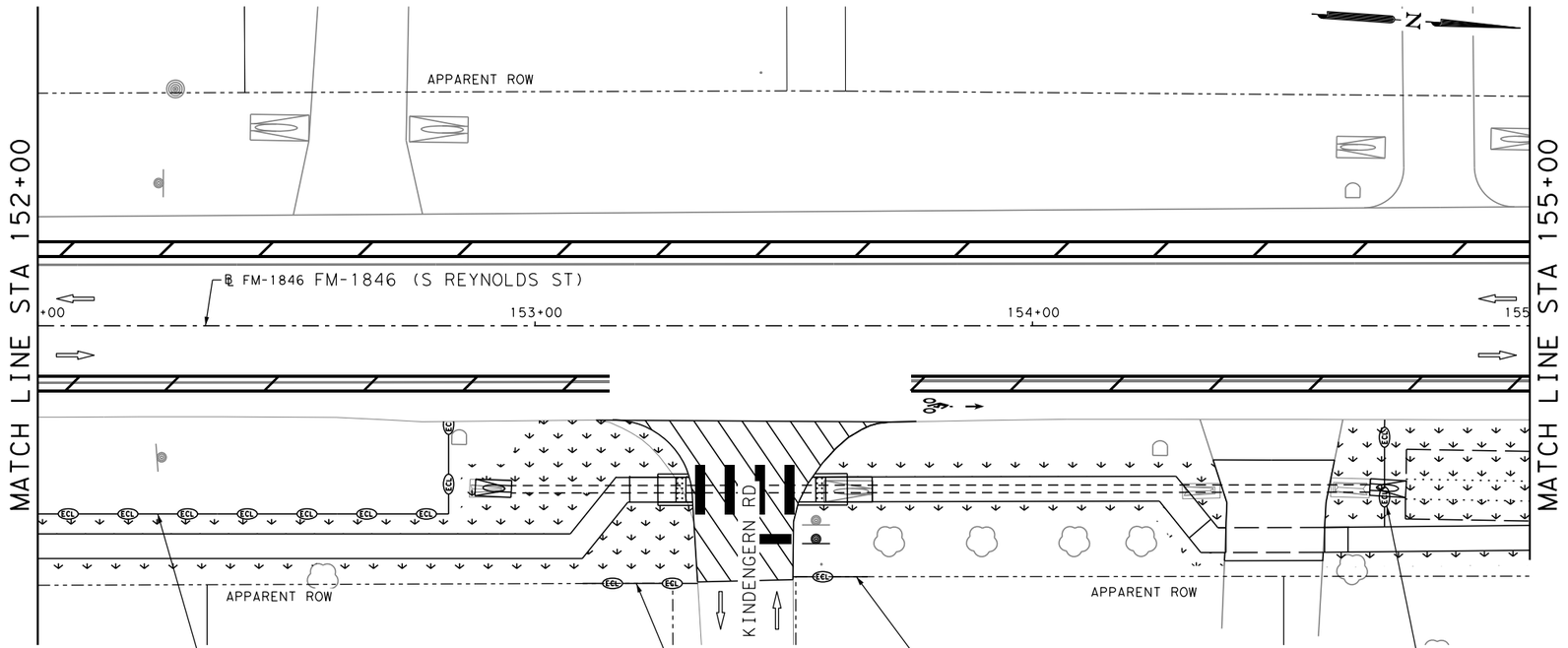
SHEET 1 OF 6

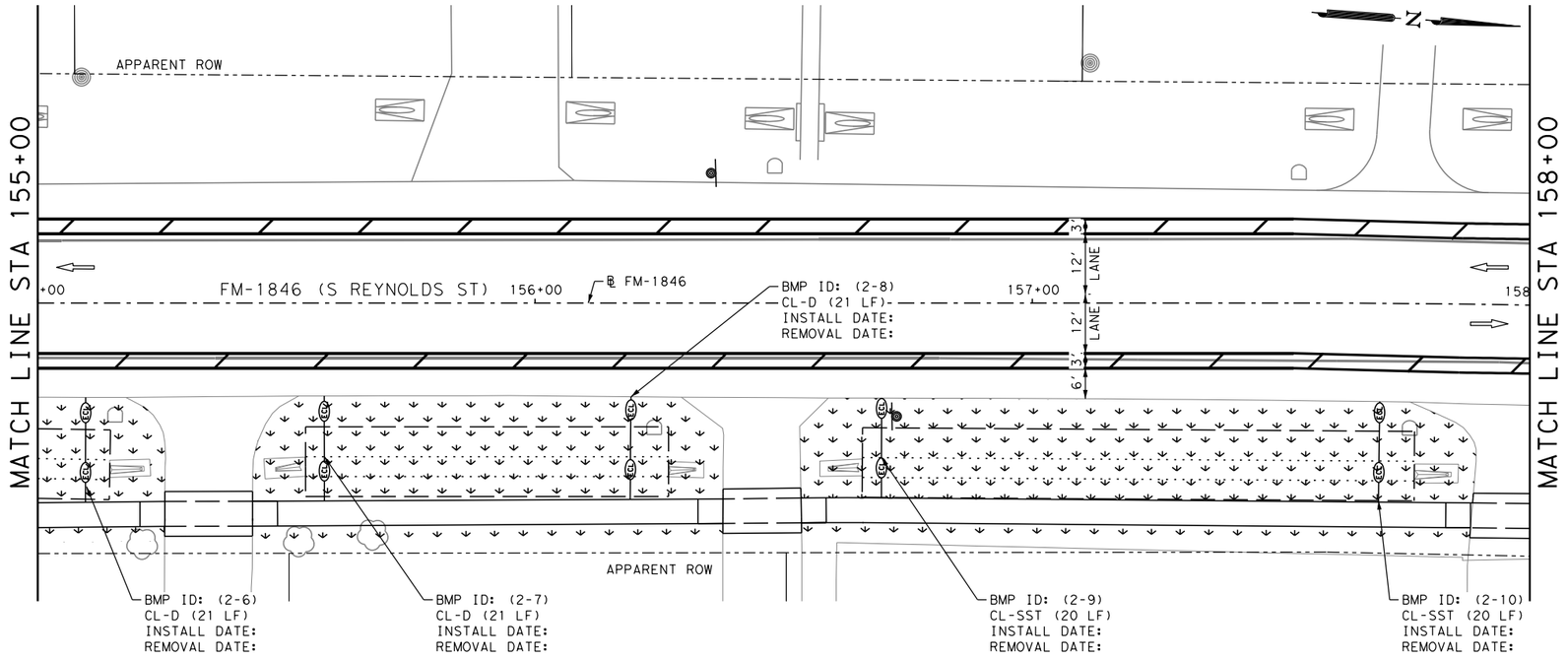
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	108

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\1-612540201_FM1846_01.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	265
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	265





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

FM 1846 (REYNOLDS ST)

ENVIRONMENTAL LAYOUT PLAN

STA 152+00 TO STA 158+00

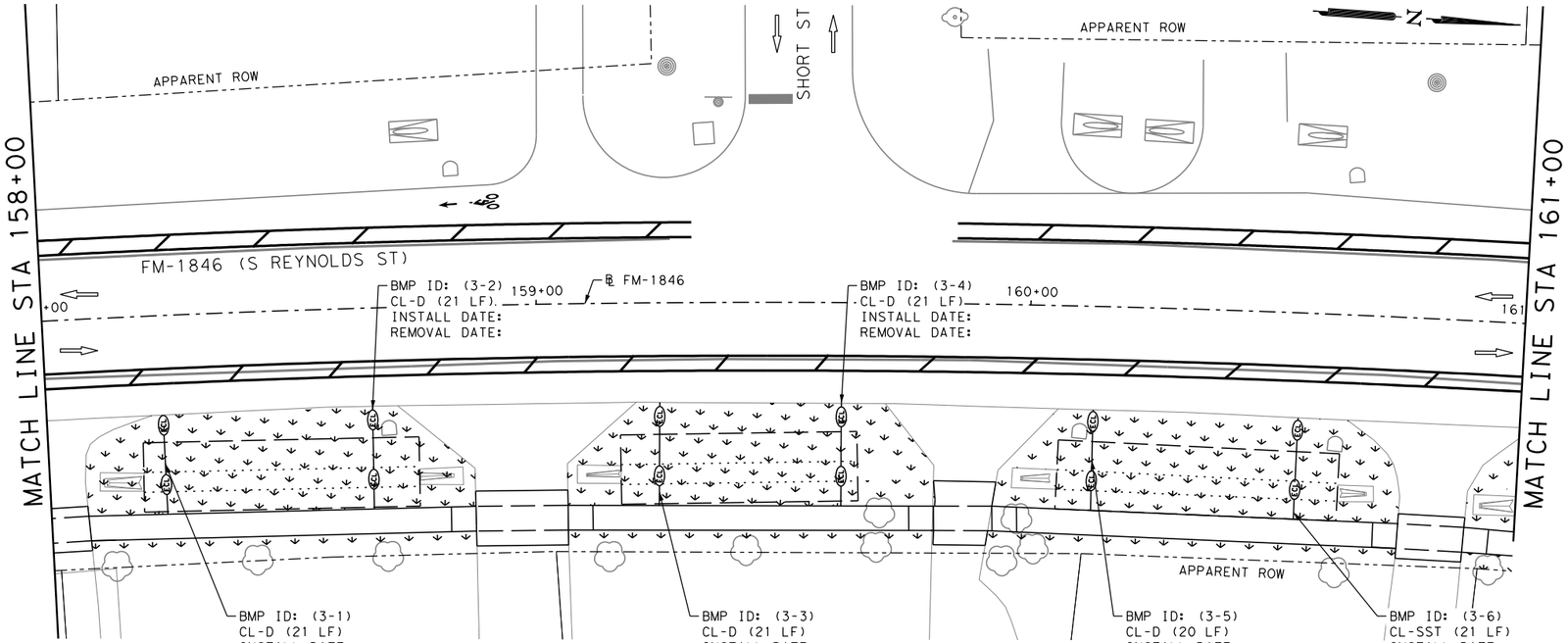
SHEET 2 OF 6

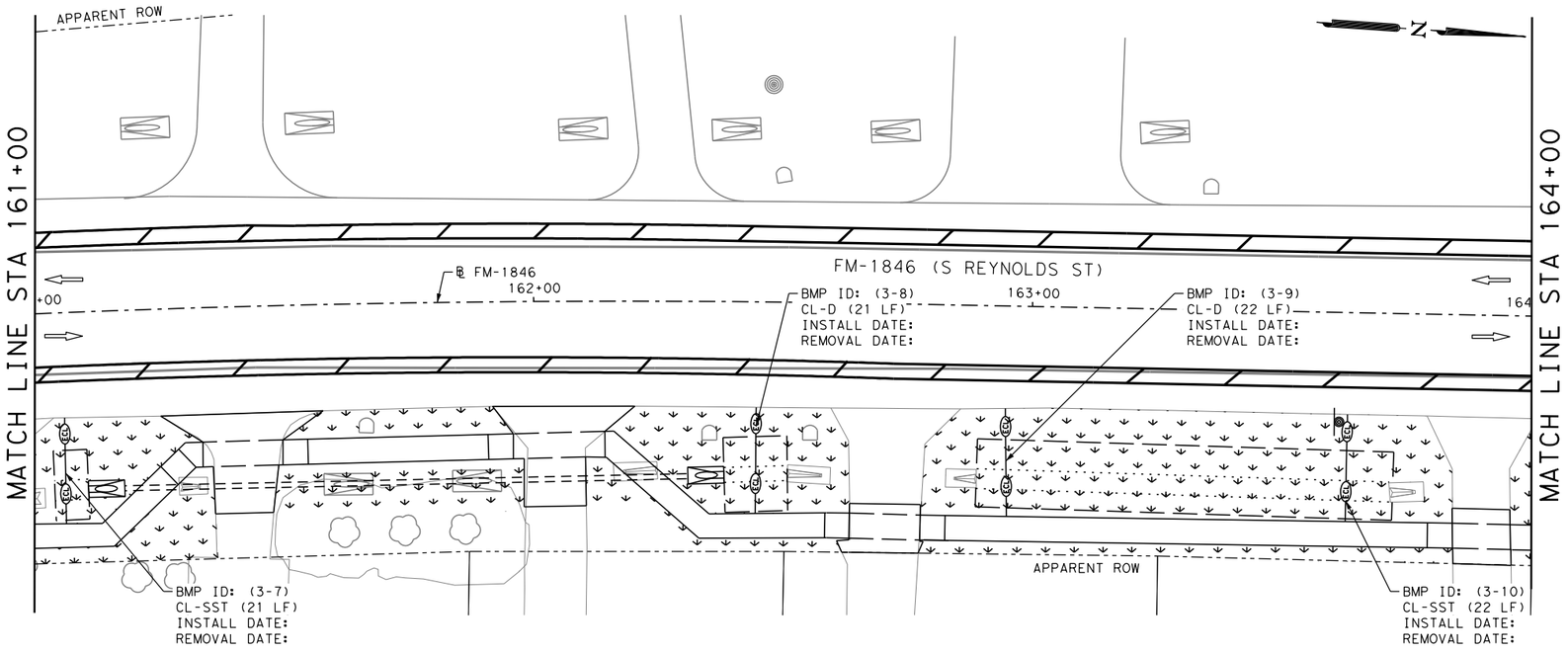
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	109

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\1-612540201_FM1846_02.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	211
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	211





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

FM 1846 (REYNOLDS ST)

ENVIRONMENTAL LAYOUT PLAN

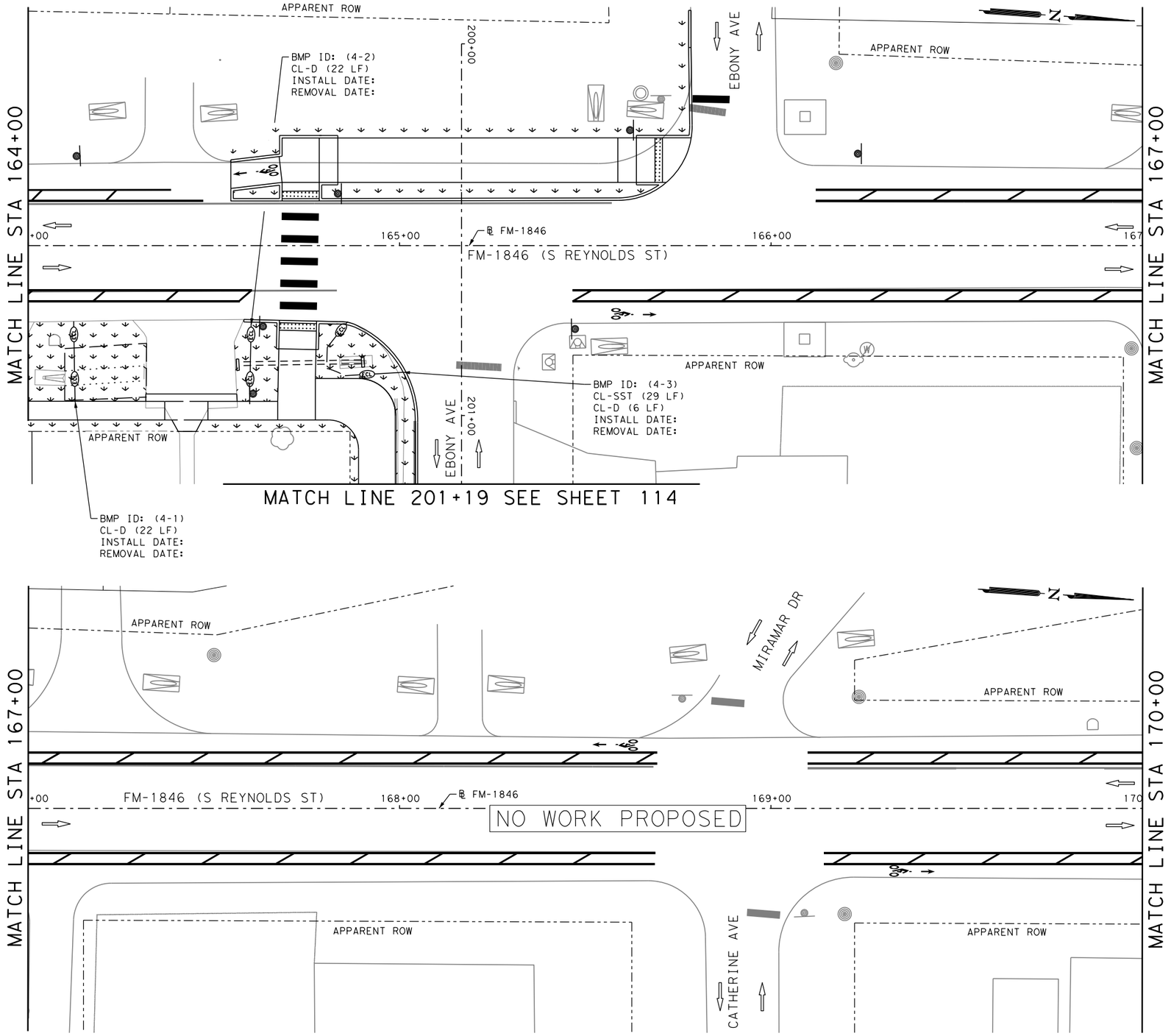
STA 158+00 TO STA 164+00

SHEET 3 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	110

Plotted on: 3/4/2024
Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\1-612540201_FM1846_03.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	79
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	79



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS
TYLER PAYNE DUBE
118612
LICENSED
PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS
JOHN A. TYLER
105193
LICENSED
PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

FM 1846 (REYNOLDS ST)

ENVIRONMENTAL LAYOUT PLAN

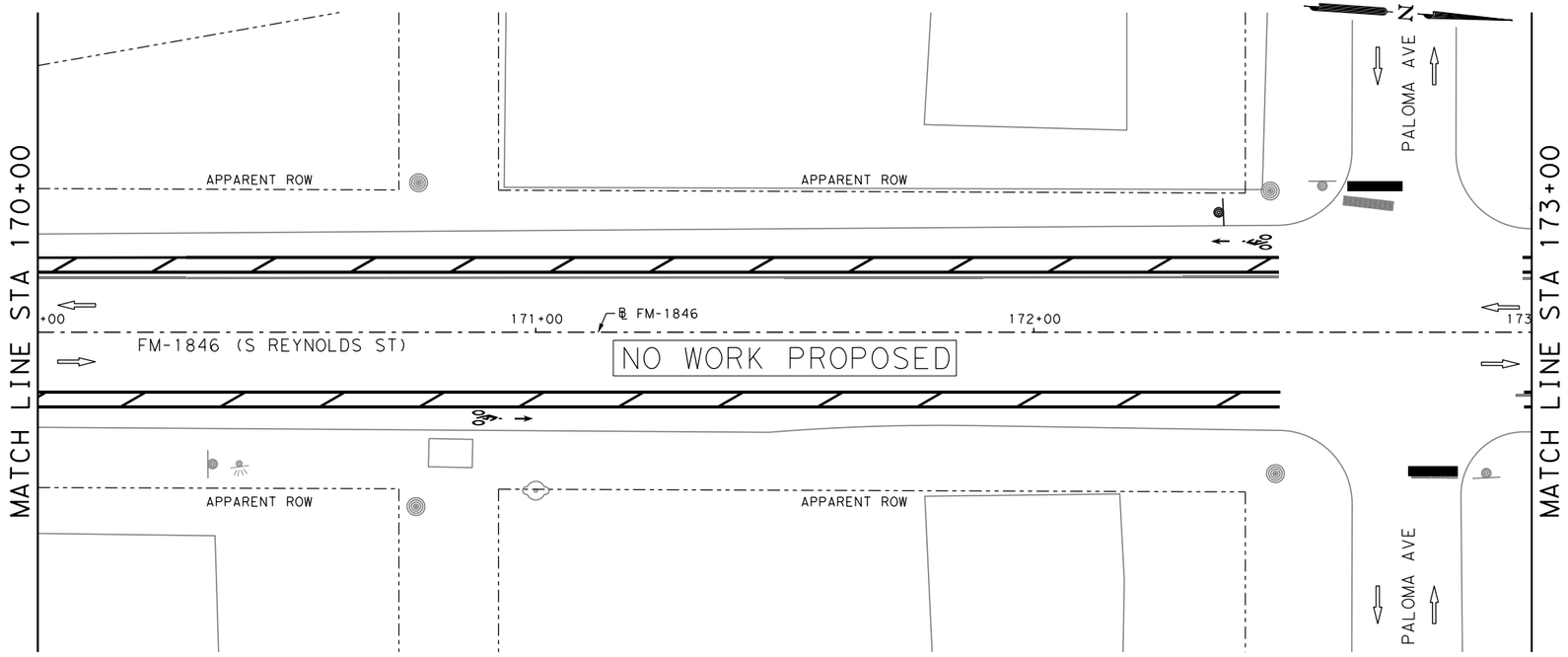
STA 164+00 TO STA 170+00

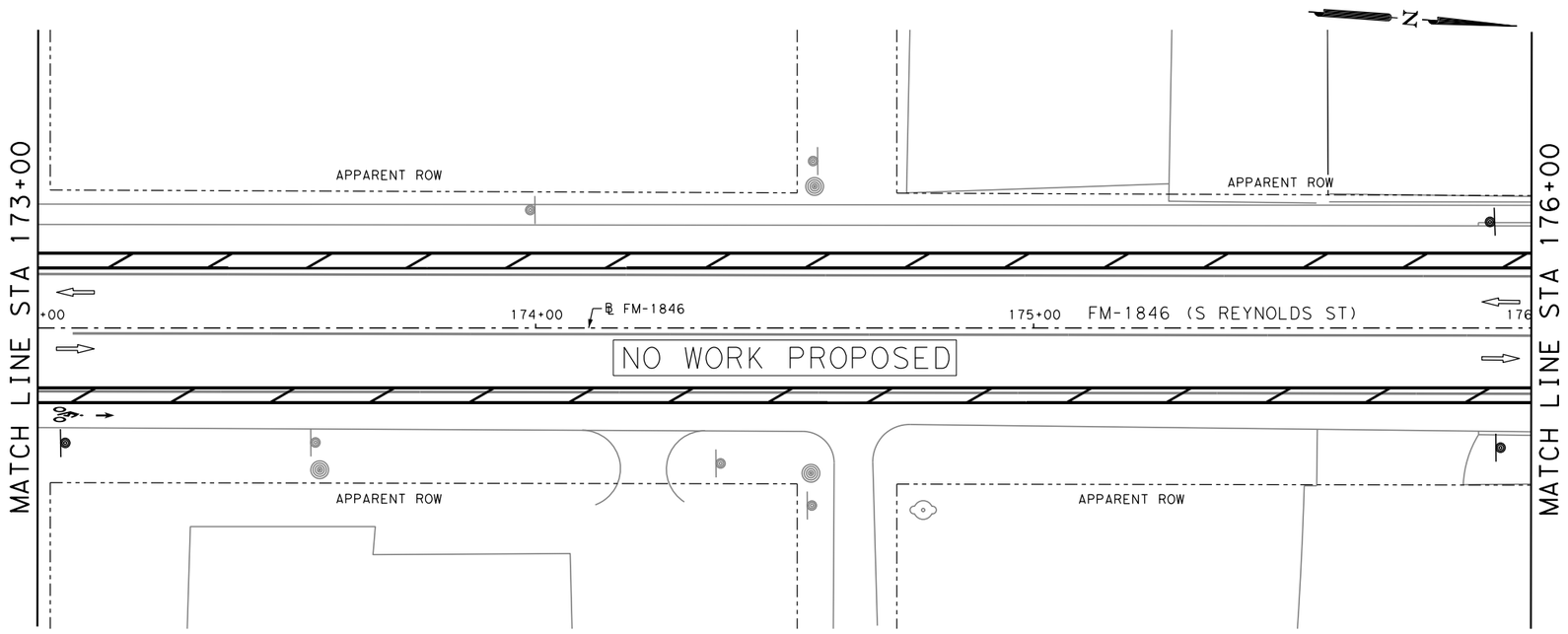
SHEET 4 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	111

Plotted on: 3/4/2024
Design Filename: S:\projects\612540201_FM1846_04.dgn

ITEM	DESCRIPTION	UNI	QTY





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

FM 1846 (REYNOLDS ST)

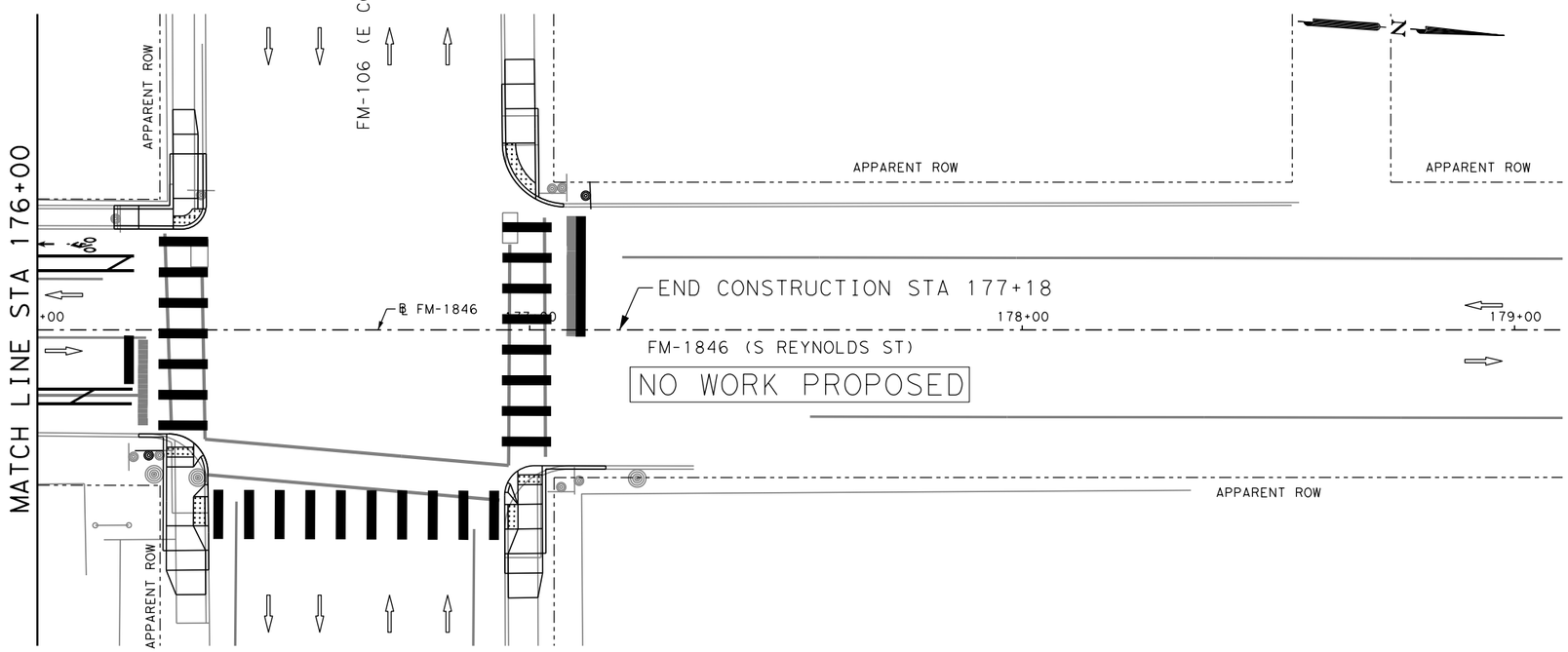
ENVIRONMENTAL LAYOUT PLAN

STA 170+00 TO STA 176+00

SHEET 5 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	112

ITEM	DESCRIPTION	UNI	QTY



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

FM 1846 (REYNOLDS ST)

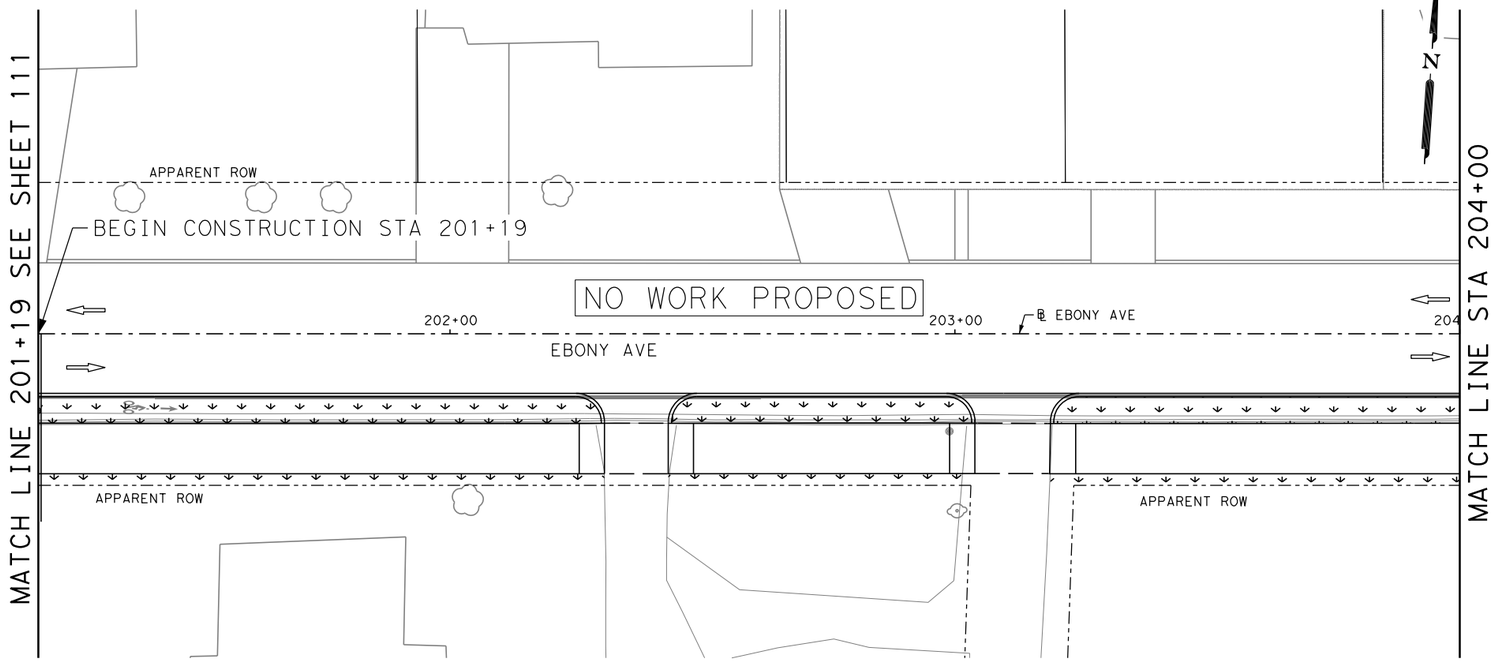
ENVIRONMENTAL LAYOUT PLAN

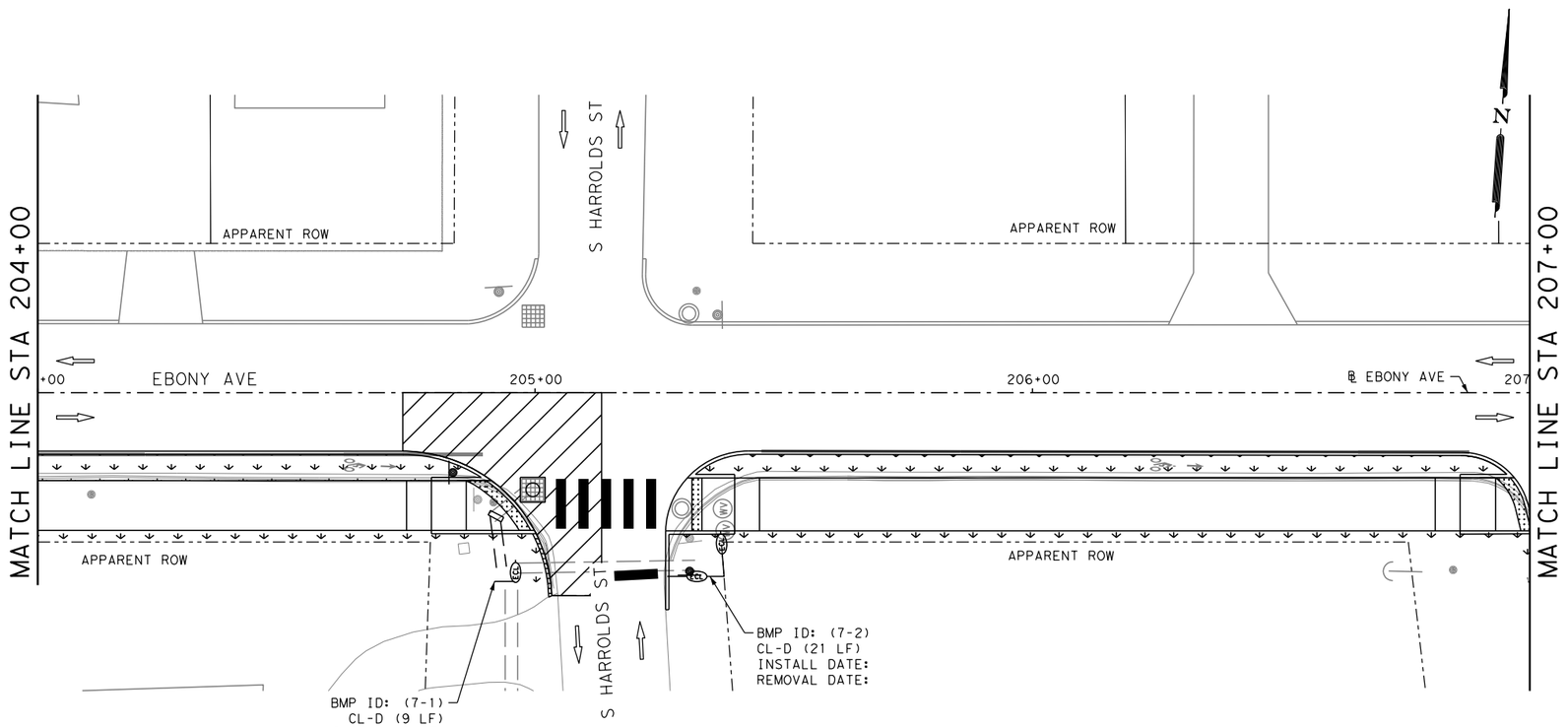
STA 176+00 TO END CONSTRUCTION

SHEET 6 OF 6

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	113

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	30
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	30





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40

SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

EBONY AVE

ENVIRONMENTAL LAYOUT PLAN

STA 201+19 TO STA 207+00

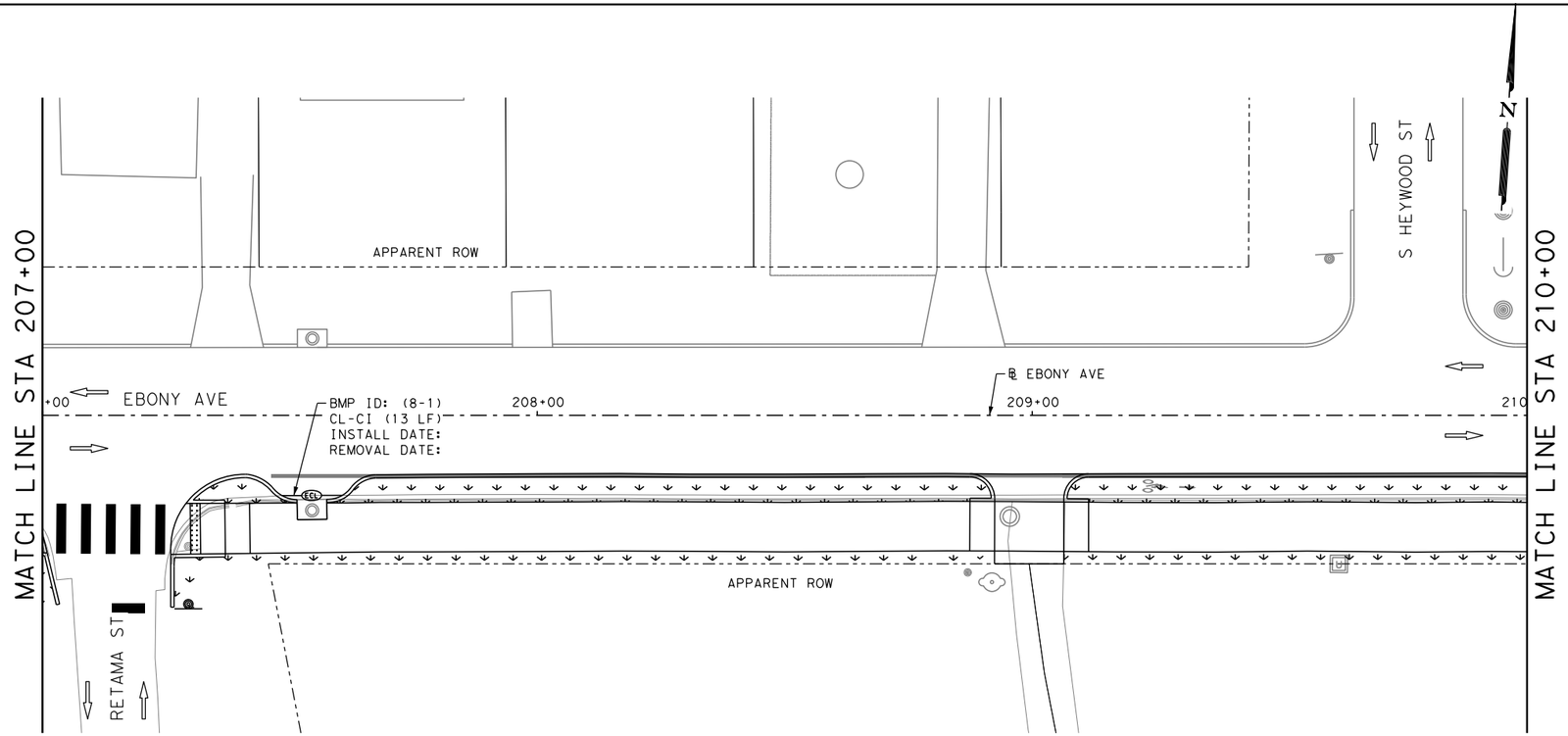
SHEET 1 OF 3

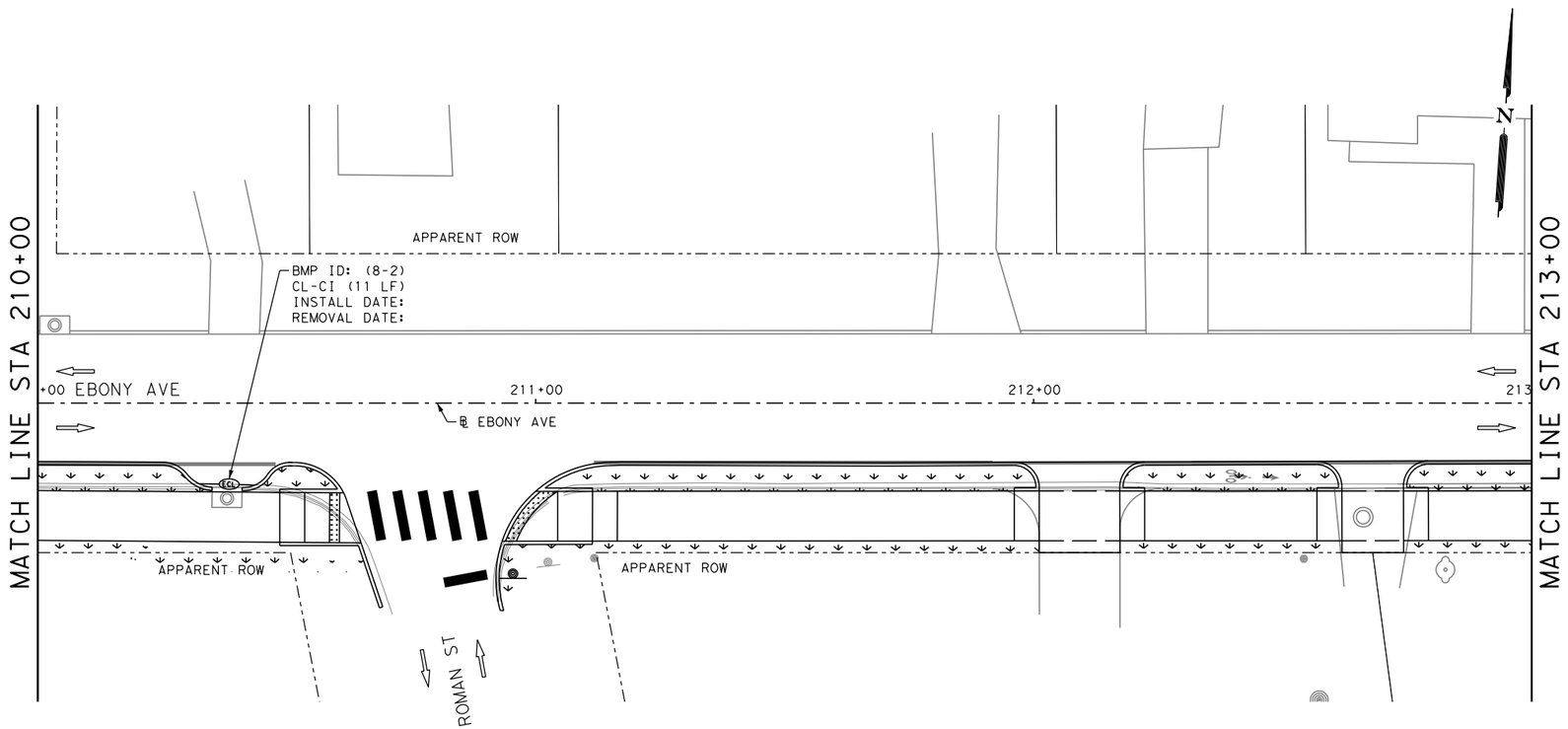
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	114

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\2-612540201_EBONY_01.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6035	SANDBAGS FOR EROSION CONTROL	EA	6
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	24
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	24





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

EBONY AVE

ENVIRONMENTAL LAYOUT PLAN

STA 207+00 TO STA 213+00

SHEET 2 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	115

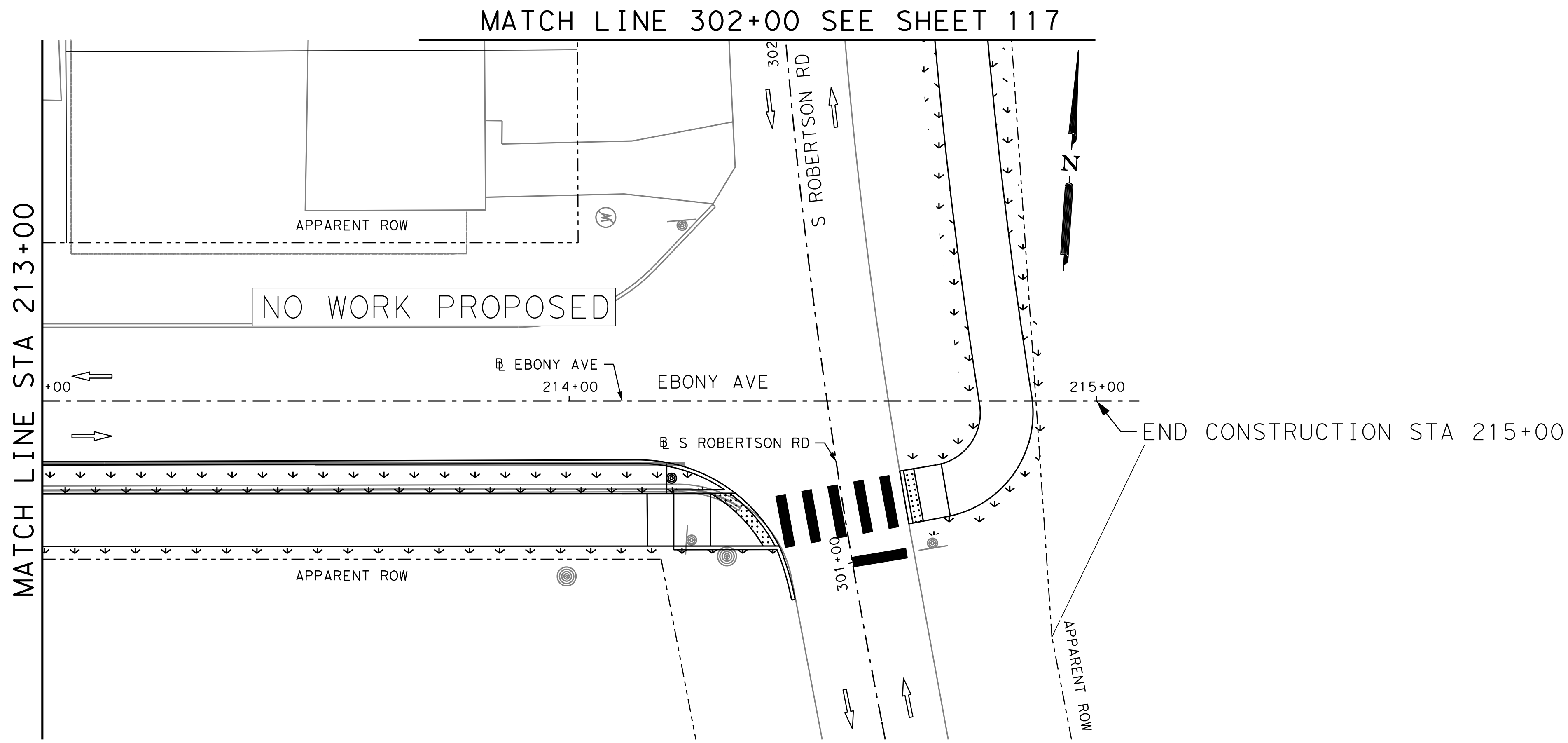
Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\2-612540201_EBONY_02.dgn

ITEM	DESCRIPTION	UNI	QTY

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\2-612540201_EBONY_03.dgn



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40

SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Texas Department of Transportation

EBONY AVE

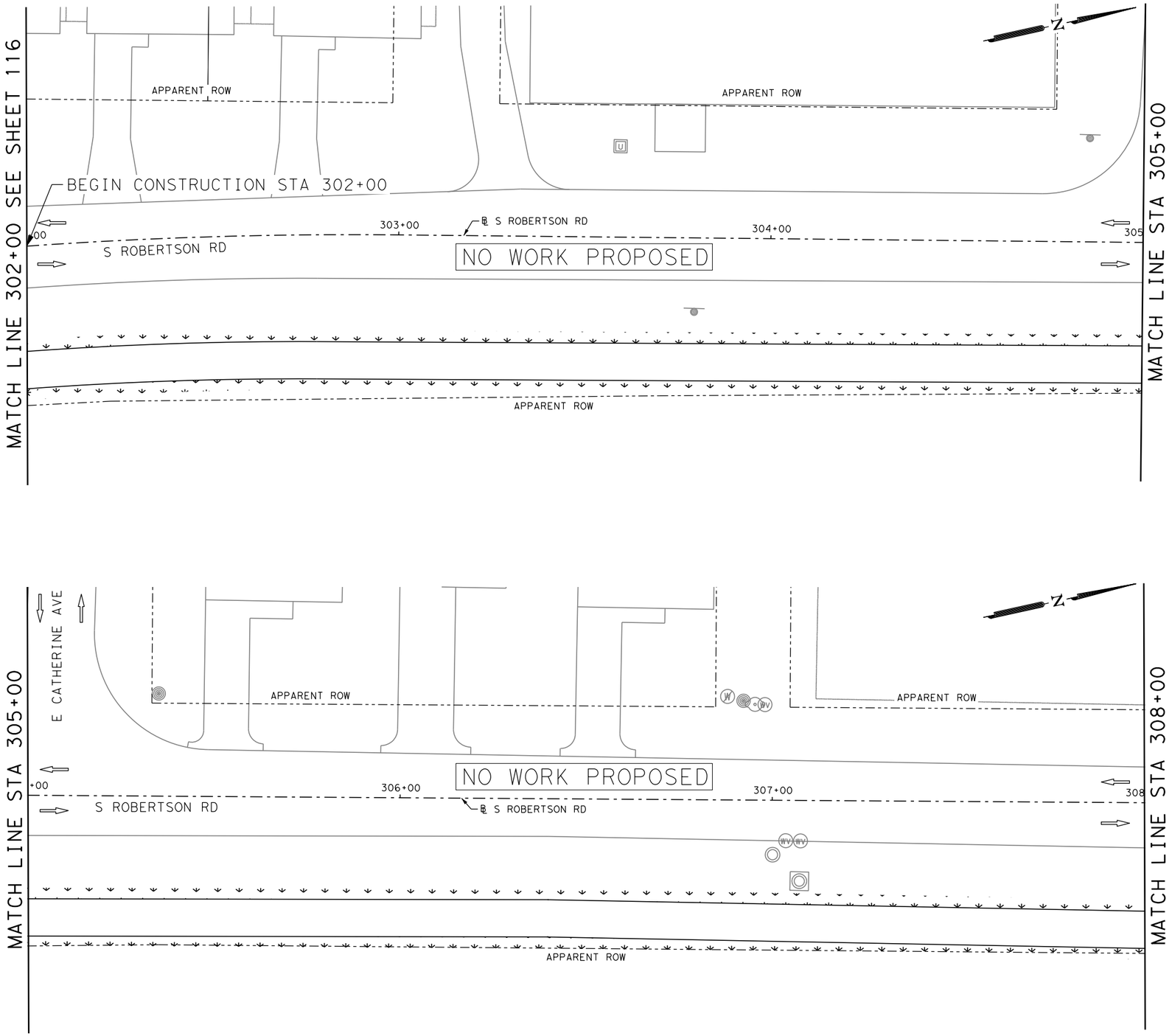
ENVIRONMENTAL LAYOUT PLAN

STA 213+00 TO STA 302+00

SHEET 3 OF 3

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	116

ITEM	DESCRIPTION	UNI	QTY



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

S ROBERTSON RD

ENVIRONMENTAL LAYOUT PLAN

STA 302+00 TO STA 308+00

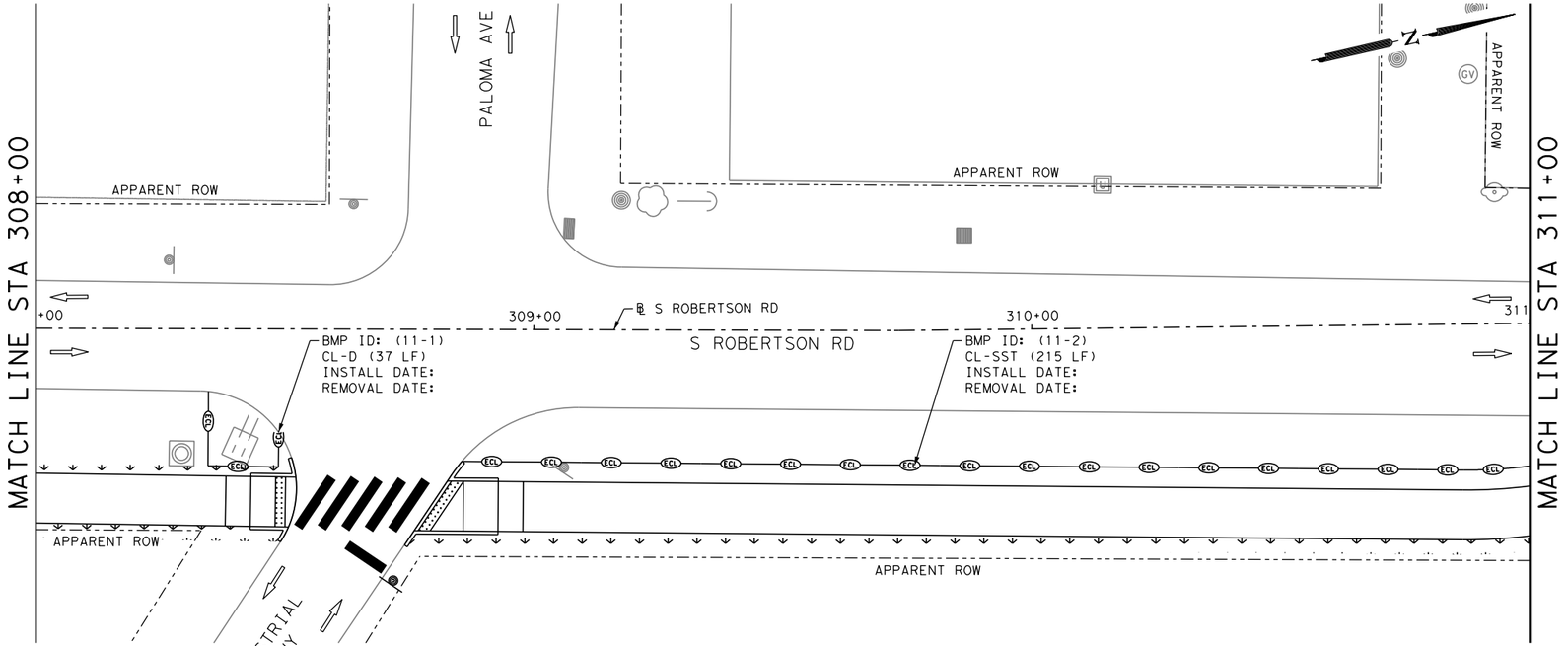
SHEET 1 OF 8

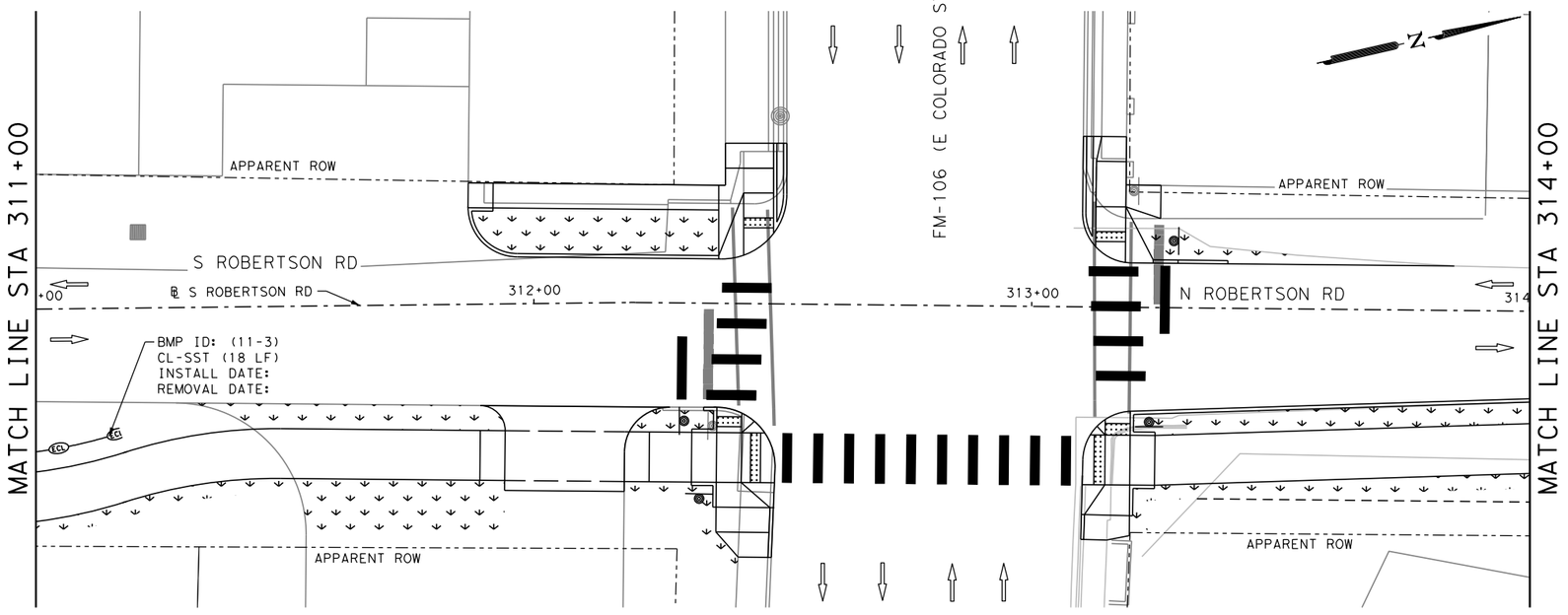
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	117

Plotted on: 3/4/2024

Design Filename: S:\projects\612540201\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\3-612540201_ROBERTSON_01.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	270
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	270





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

S ROBERTSON RD

ENVIRONMENTAL LAYOUT PLAN

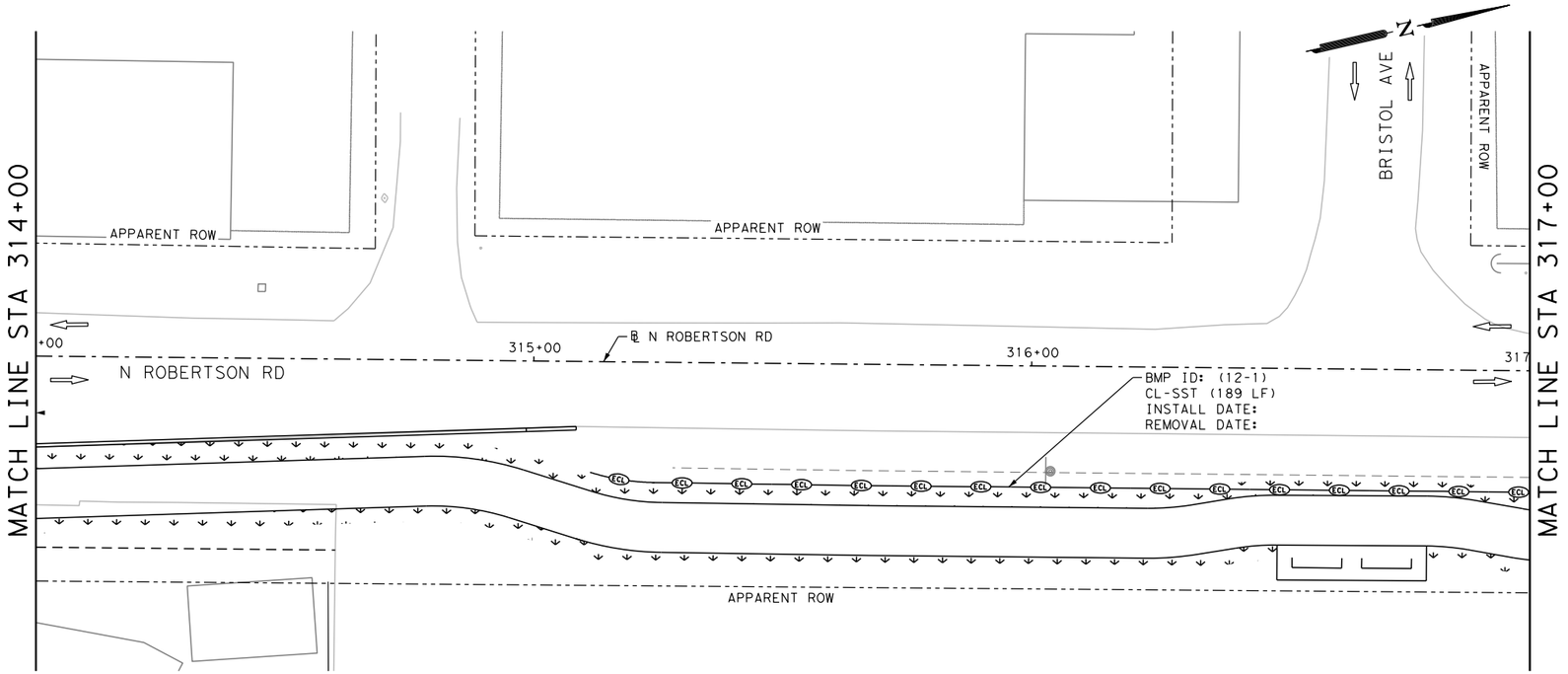
STA 308+00 TO STA 314+00

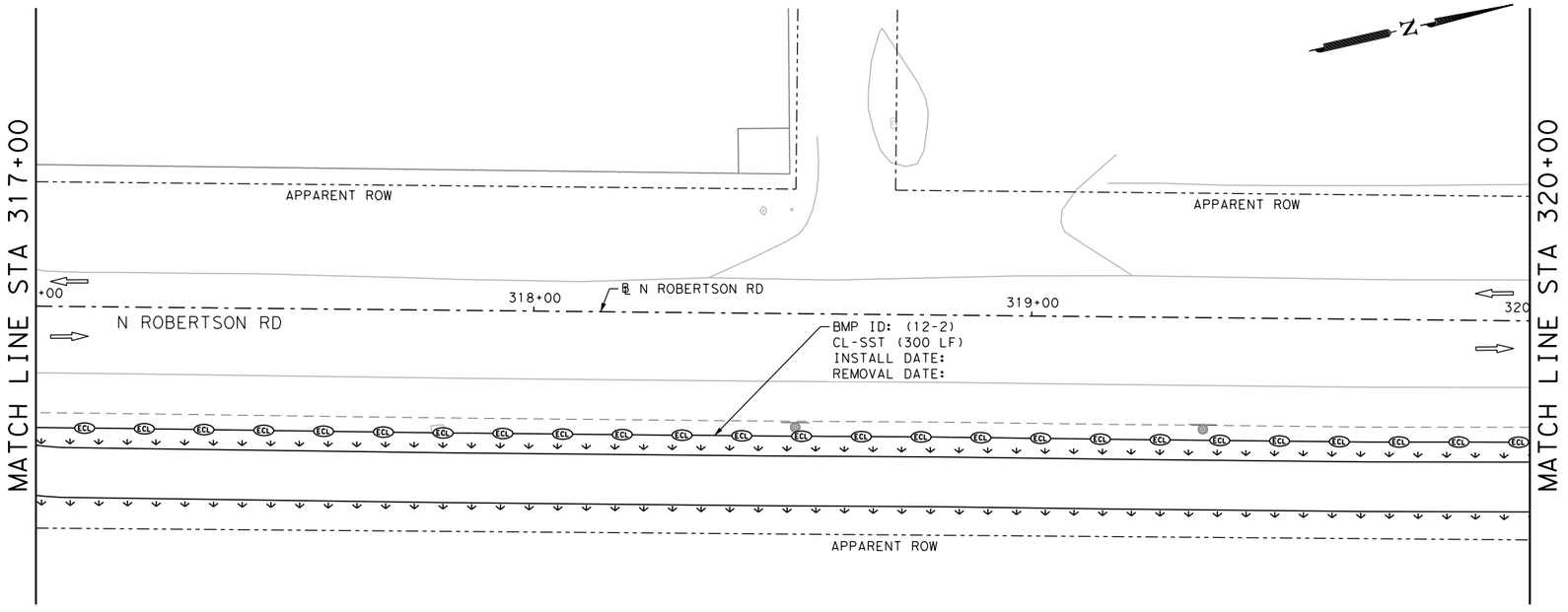
SHEET 2 OF 8

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	118

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\3-612540201_ROBERTSON_02.dgn Plotted on: 3/4/2024

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	489
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	489





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

ENVIRONMENTAL LAYOUT PLAN

STA 314+00 TO STA 320+00

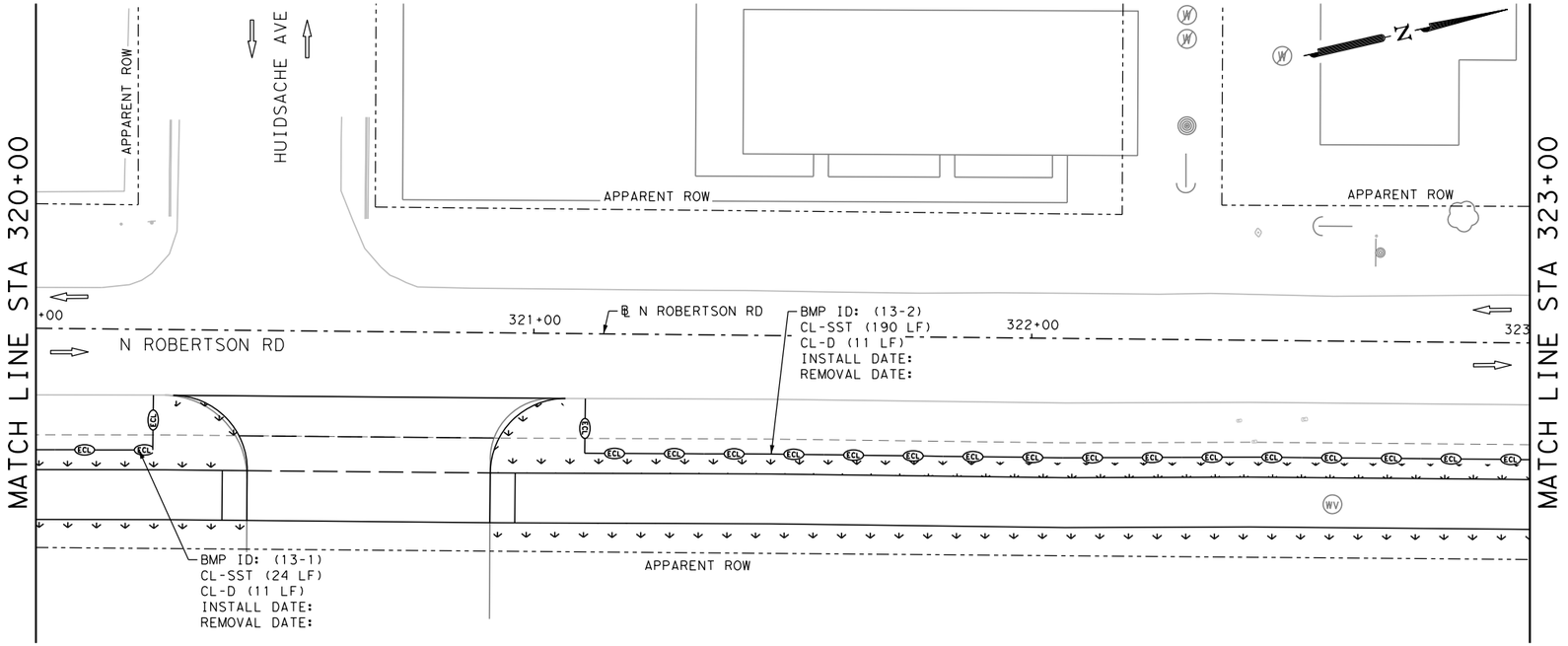
SHEET 3 OF 8

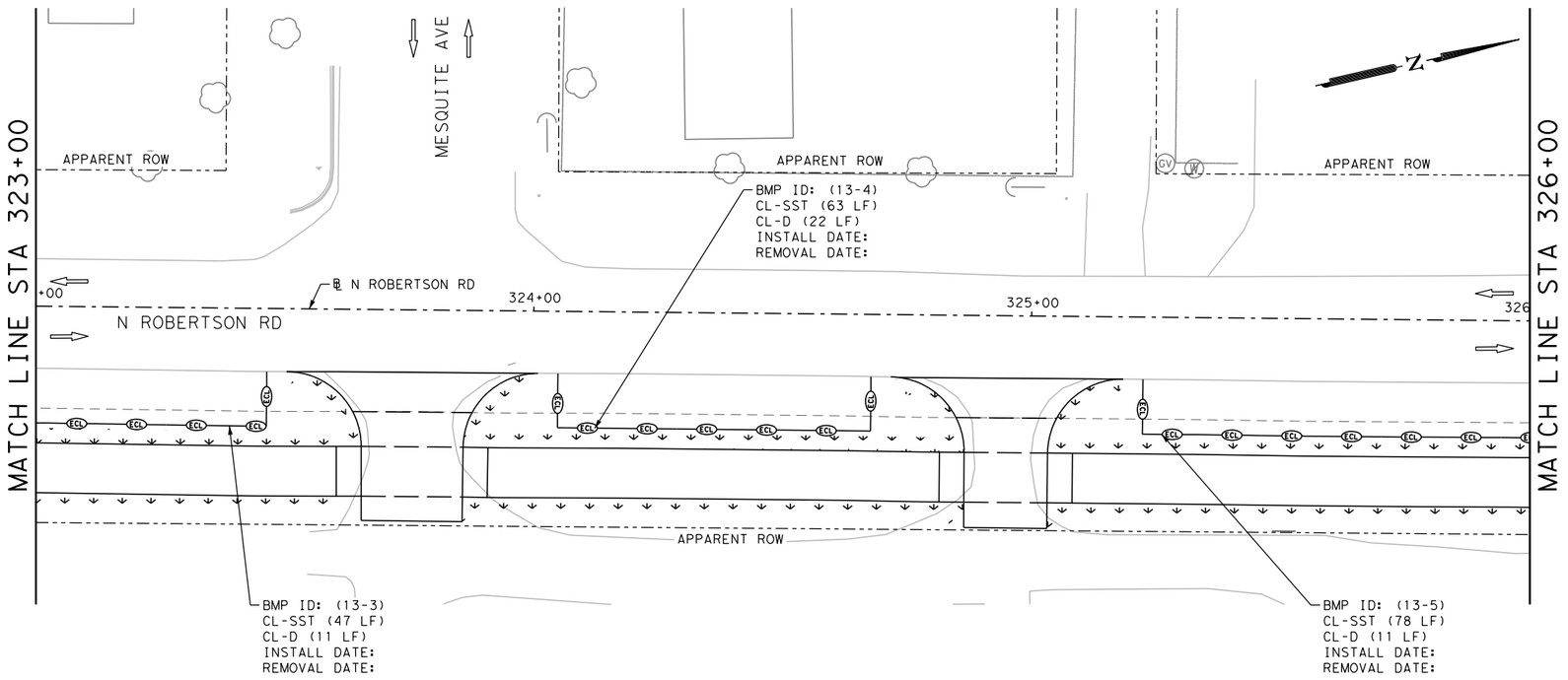
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	119

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\3-612540201_ROBERTSON_03.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	468
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	468





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

ENVIRONMENTAL LAYOUT PLAN

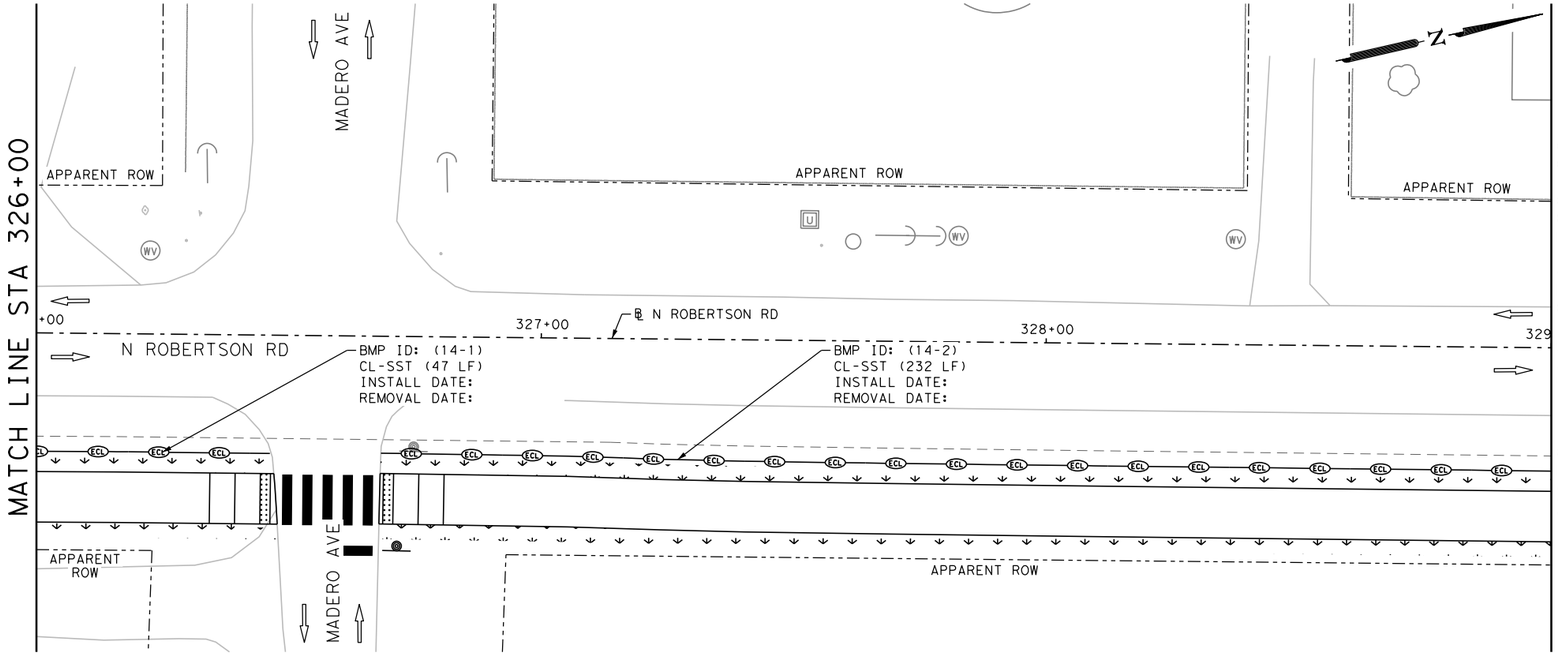
STA 320+00 TO STA 326+00

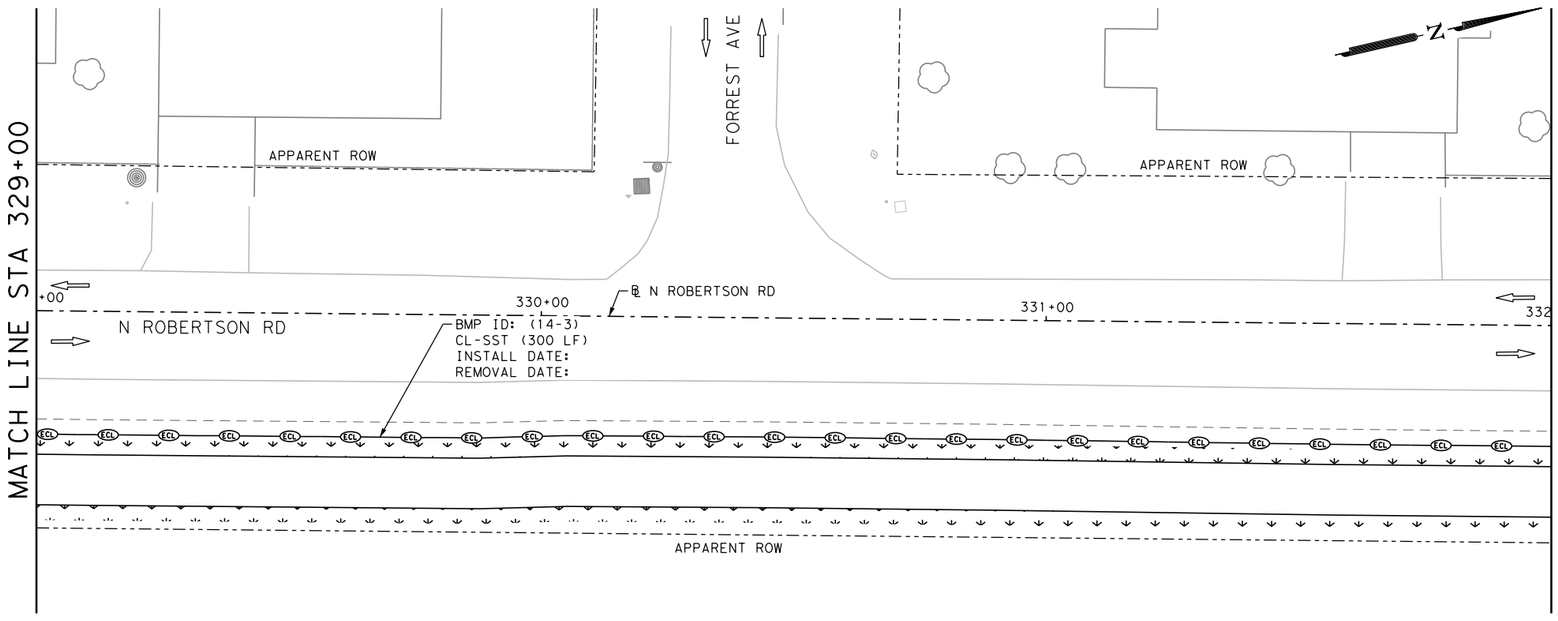
SHEET 4 OF 8

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	120

Plotted on: 3/4/2024
Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\3-612540201_ROBERTSON_04.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	579
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	579





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

ENVIRONMENTAL LAYOUT PLAN

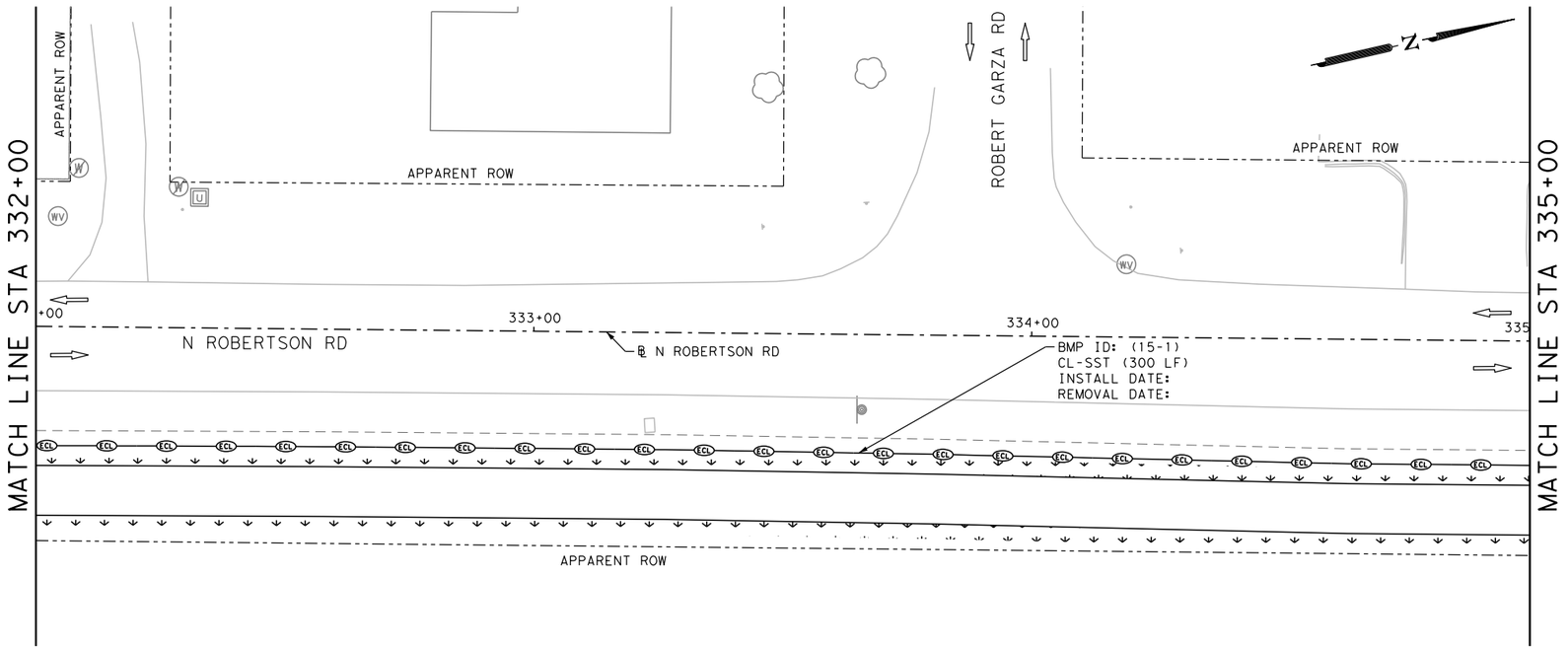
STA 326+00 TO STA 332+00

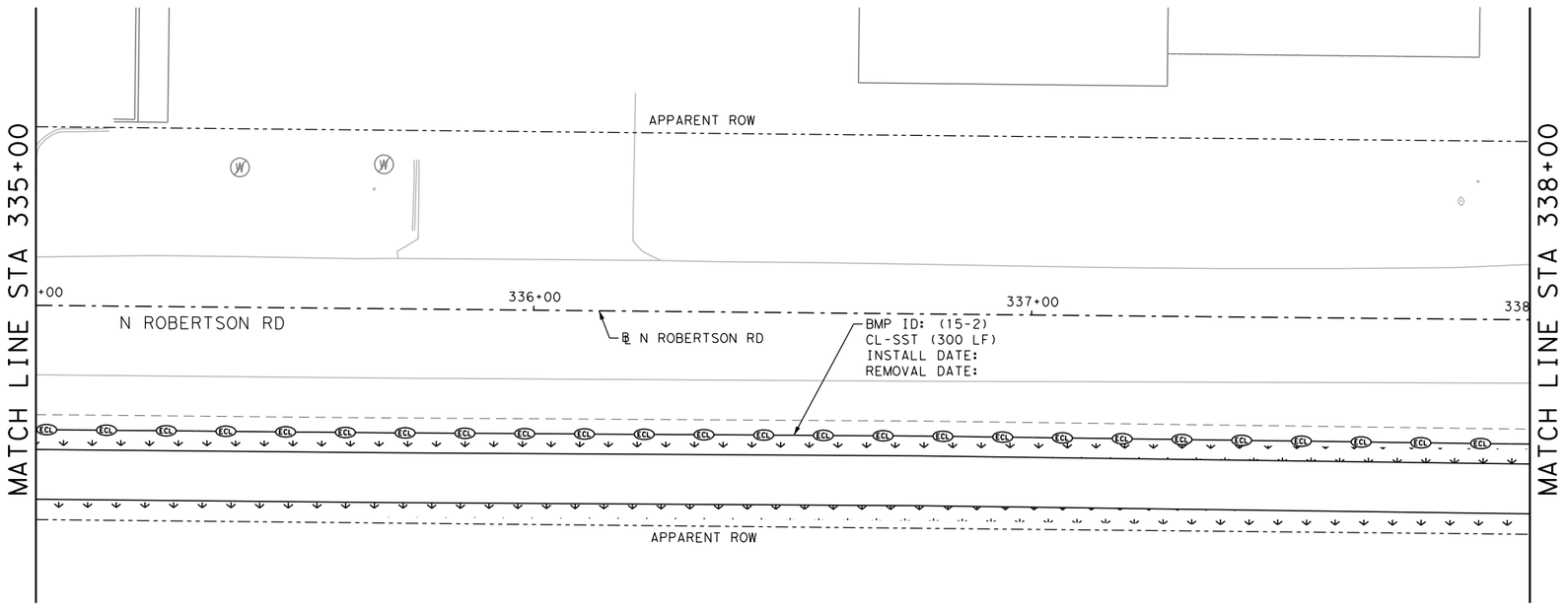
SHEET 5 OF 8

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	121

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\3-612540201_ROBERTSON_05.dgn Plotted on: 3/4/2024

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	600
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	600





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

ENVIRONMENTAL LAYOUT PLAN

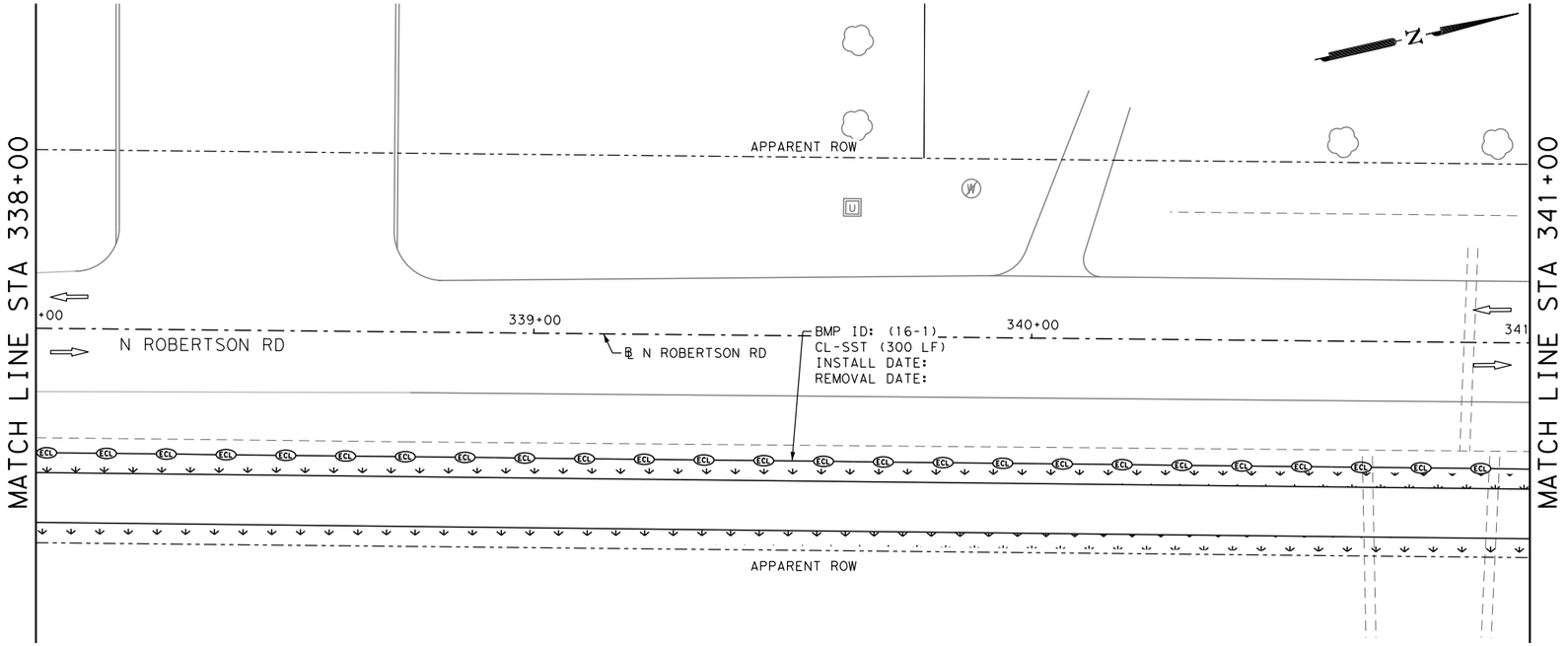
STA 332+00 TO STA 338+00

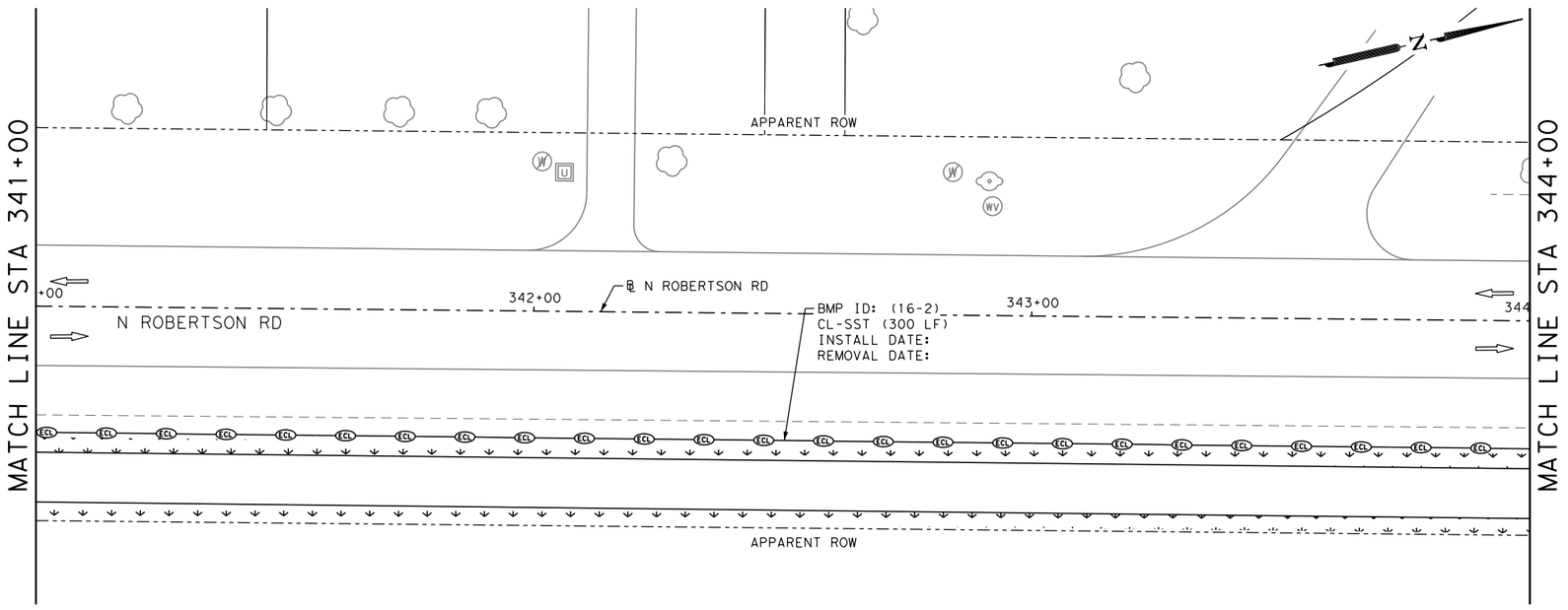
SHEET 6 OF 8

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	122

Plotted on: 3/4/2024
Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\3-612540201_ROBERTSON_06.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	600
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	600





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

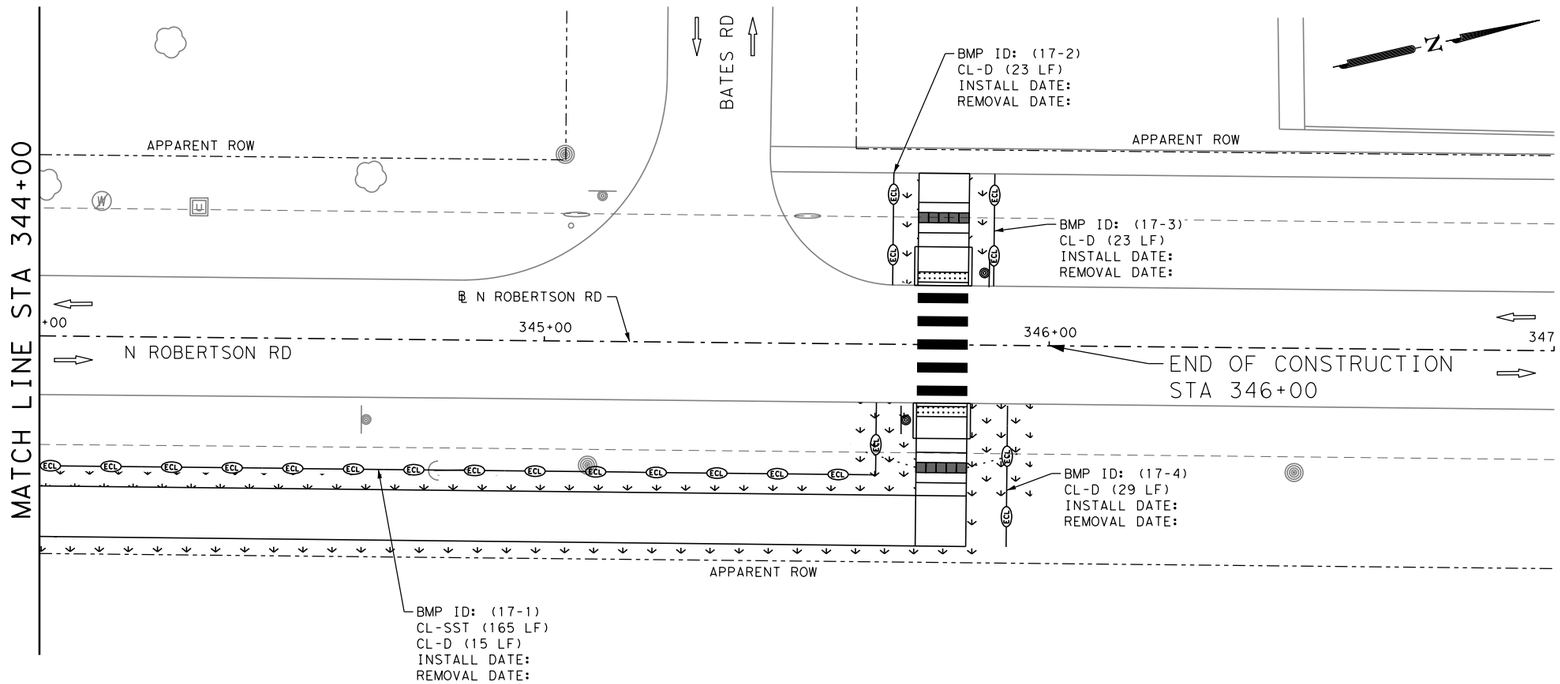
ENVIRONMENTAL LAYOUT PLAN

STA 338+00 TO STA 344+00

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	123

Plotted on: 3/4/2024
Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\3-612540201_ROBERTSON_07.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	255
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	255



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED · PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED · PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40

SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N ROBERTSON RD

ENVIRONMENTAL LAYOUT PLAN

STA 344+00 TO END CONSTRUCTION

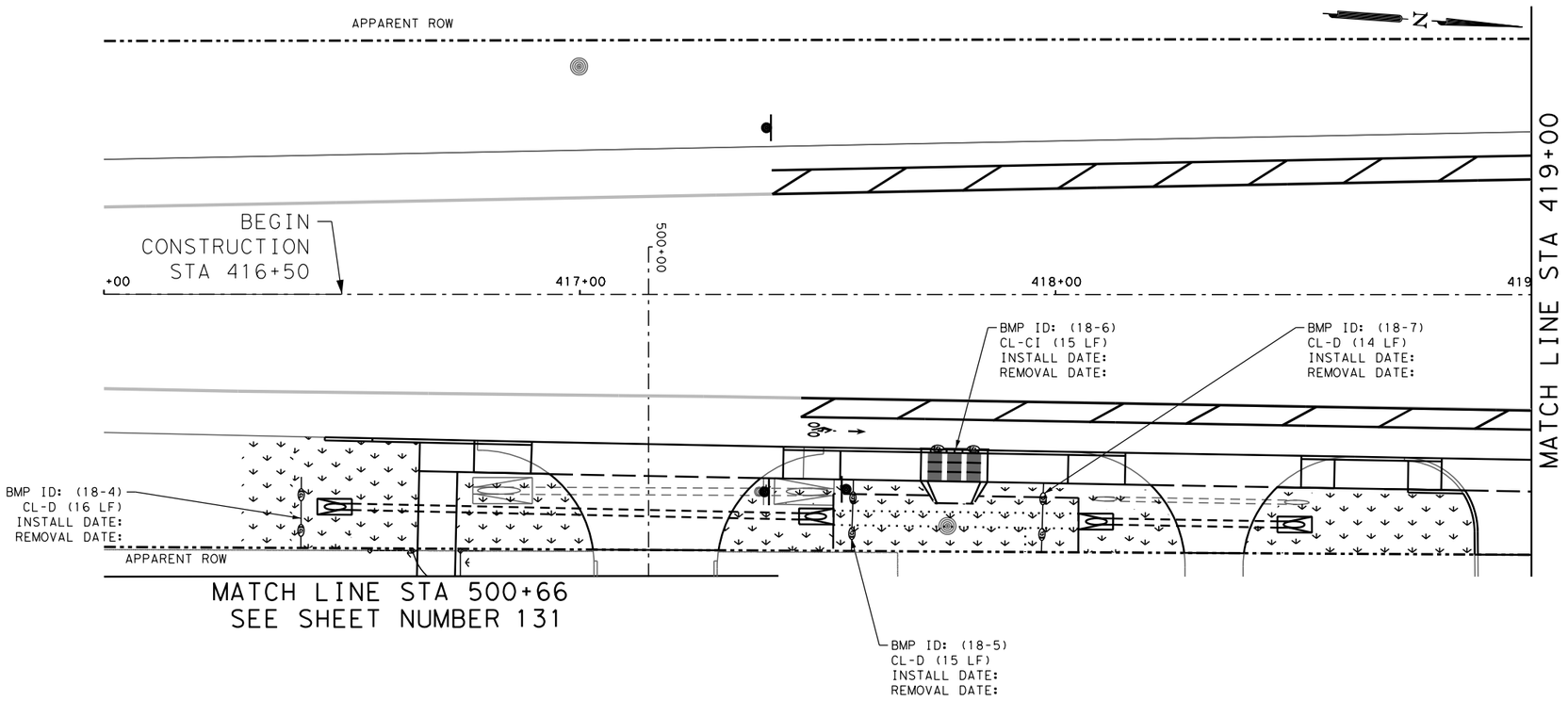
SHEET 8 OF 8

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	124

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\3-612540201_ROBERTSON_08.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6035	SANDBAGS FOR EROSION CONTROL	EA	4
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	60
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	60



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40

SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Texas Department of Transportation

SH-345 (N SAM HOUSTON BLVD)

ENVIRONMENTAL LAYOUT PLAN

BEGIN CONSTRUCTION TO STA 419+00

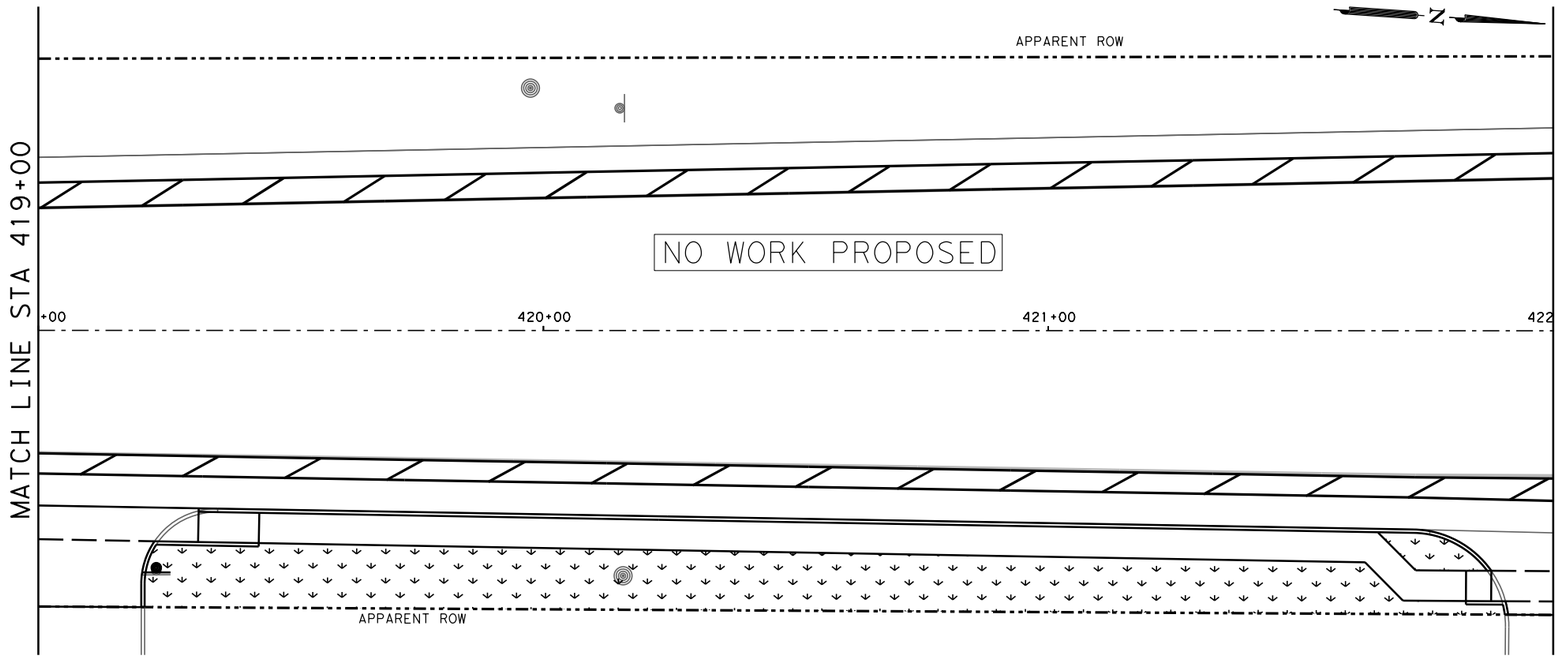
SHEET 1 OF 7

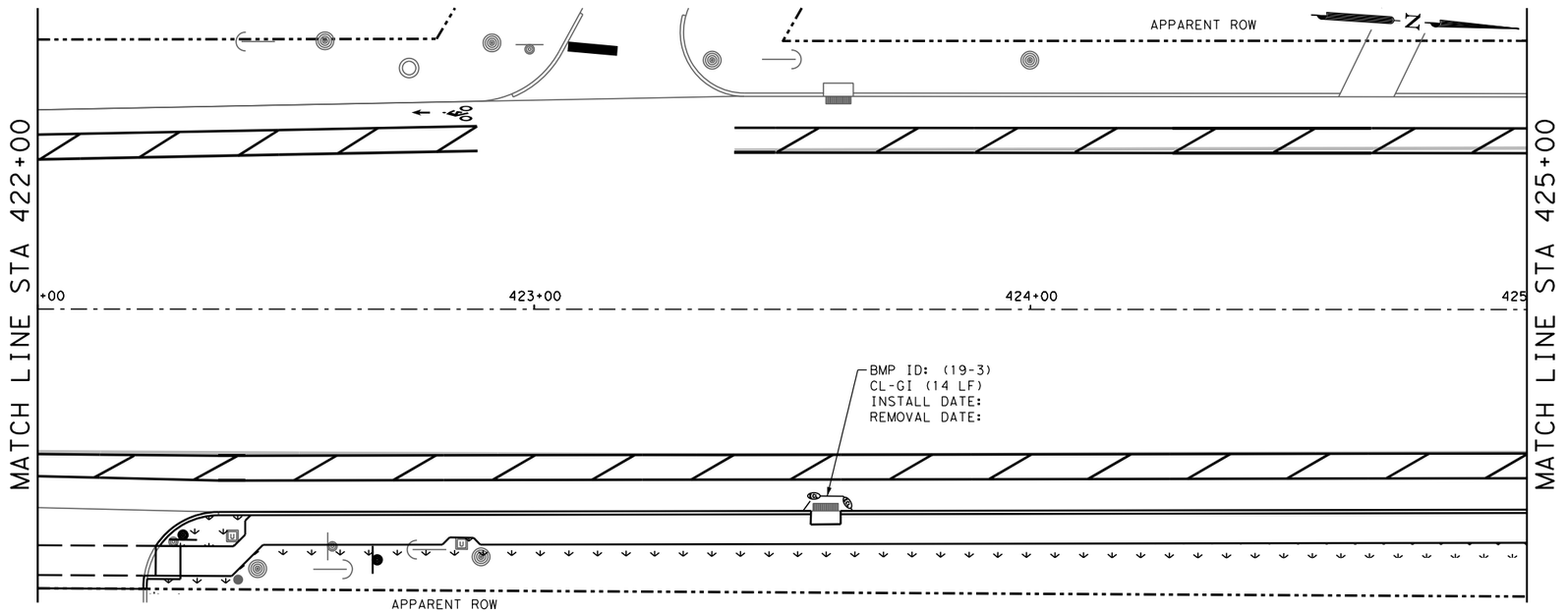
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	125

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\4-612540201_SH345_03.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6035	SANDBAGS FOR EROSION CONTROL	EA	4
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	14
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	14





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

ENVIRONMENTAL LAYOUT PLAN

STA 419+00 TO STA 425+00

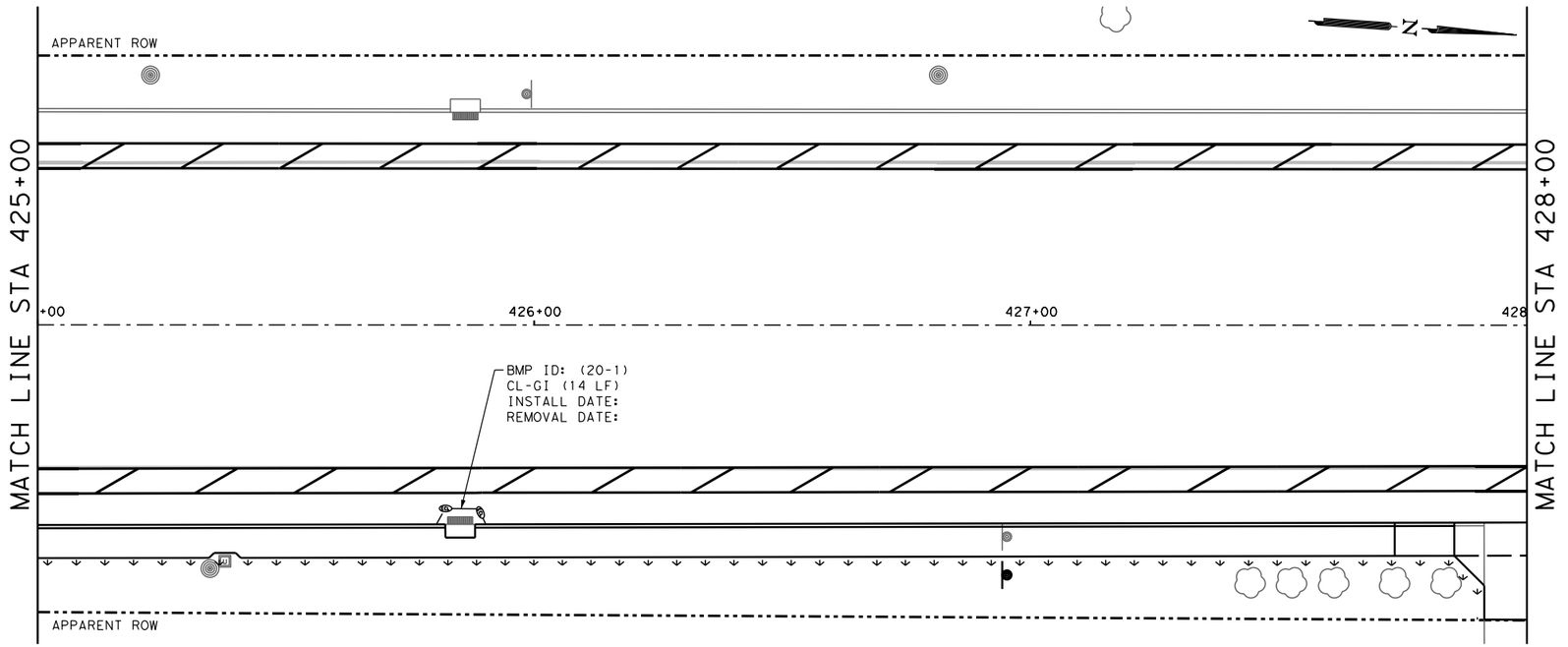
SHEET 2 OF 7

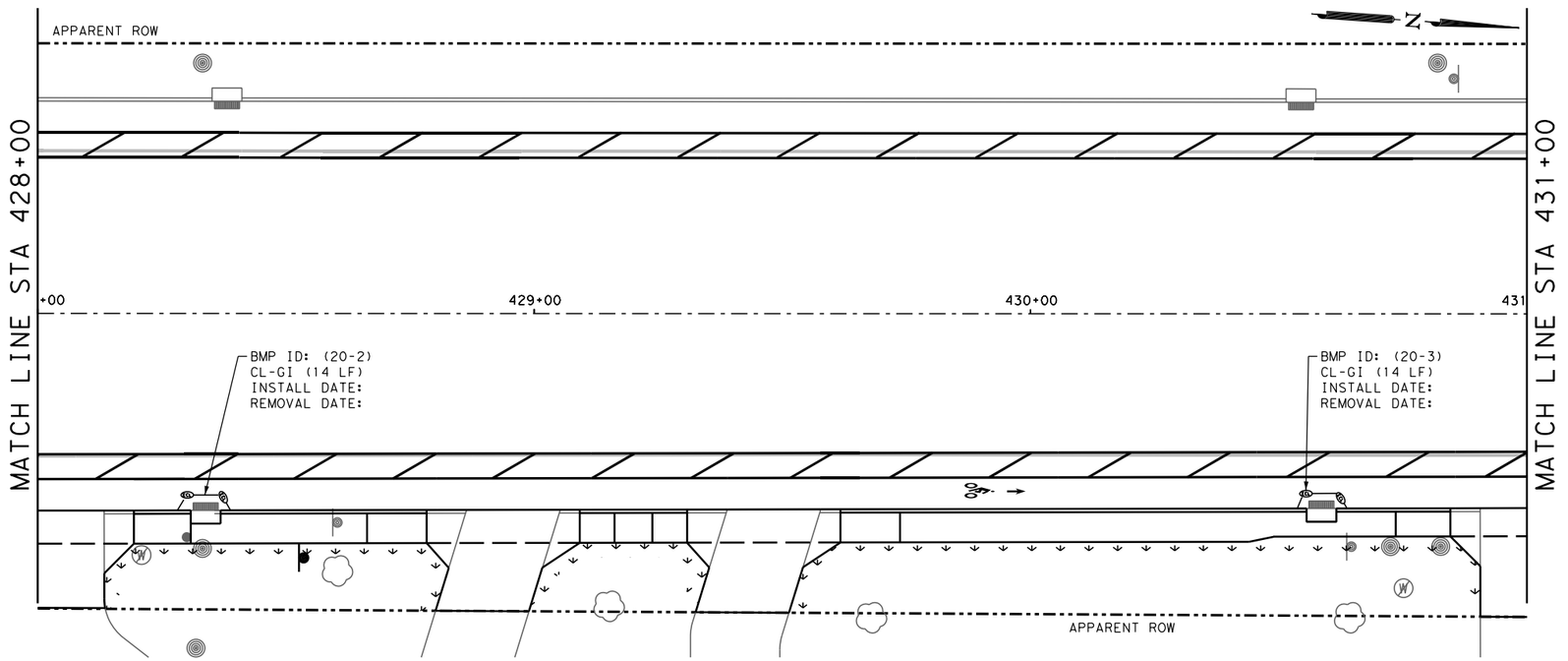
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	126

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\4-612540201_SH345_04.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6035	SANDBAGS FOR EROSION CONTROL	EA	11
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	42
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	42





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

ENVIRONMENTAL LAYOUT PLAN

STA 425+00 TO STA 431+00

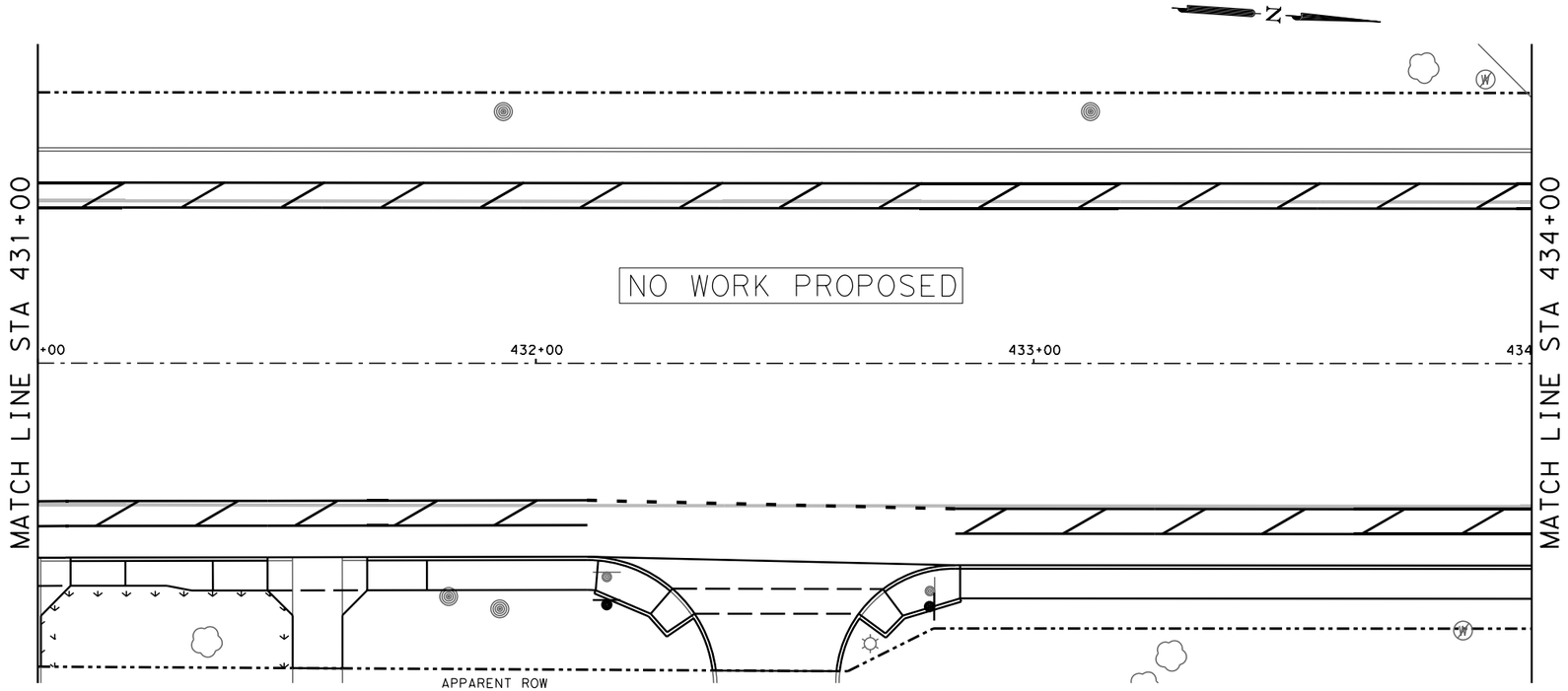
SHEET 3 OF 7

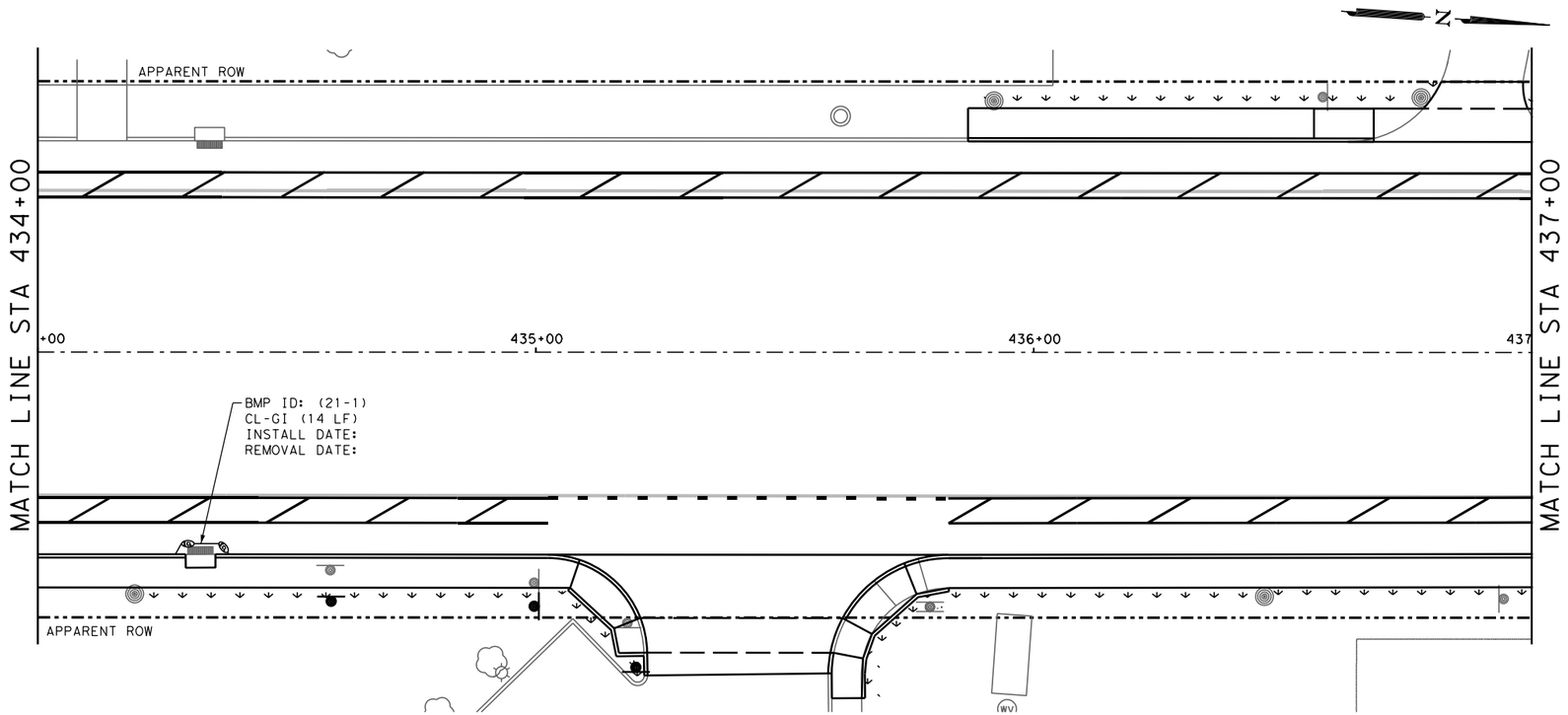
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	127

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\4-612540201_SH345_05.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6035	SANDBAGS FOR EROSION CONTROL	EA	4
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	14
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	14





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40

SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

ENVIRONMENTAL LAYOUT PLAN

STA 431+00 TO STA 437+00

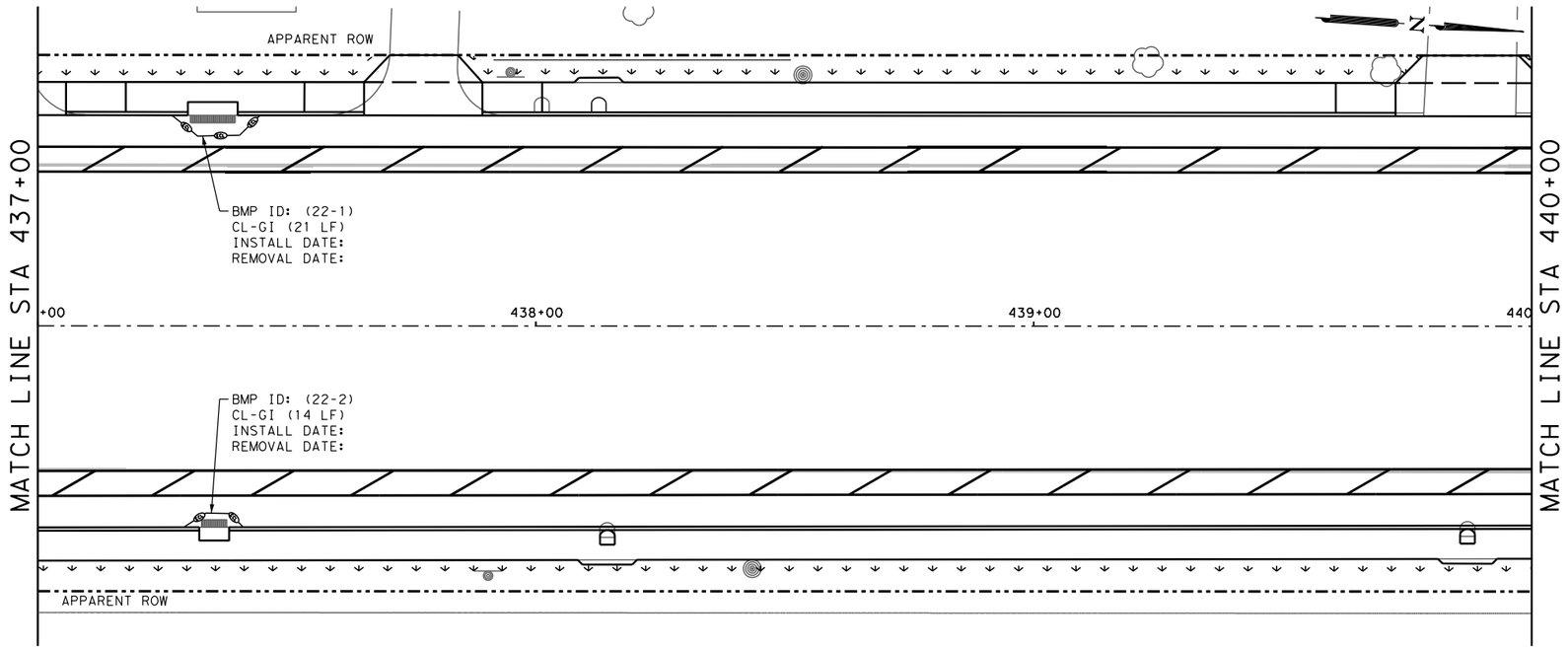
SHEET 4 OF 7

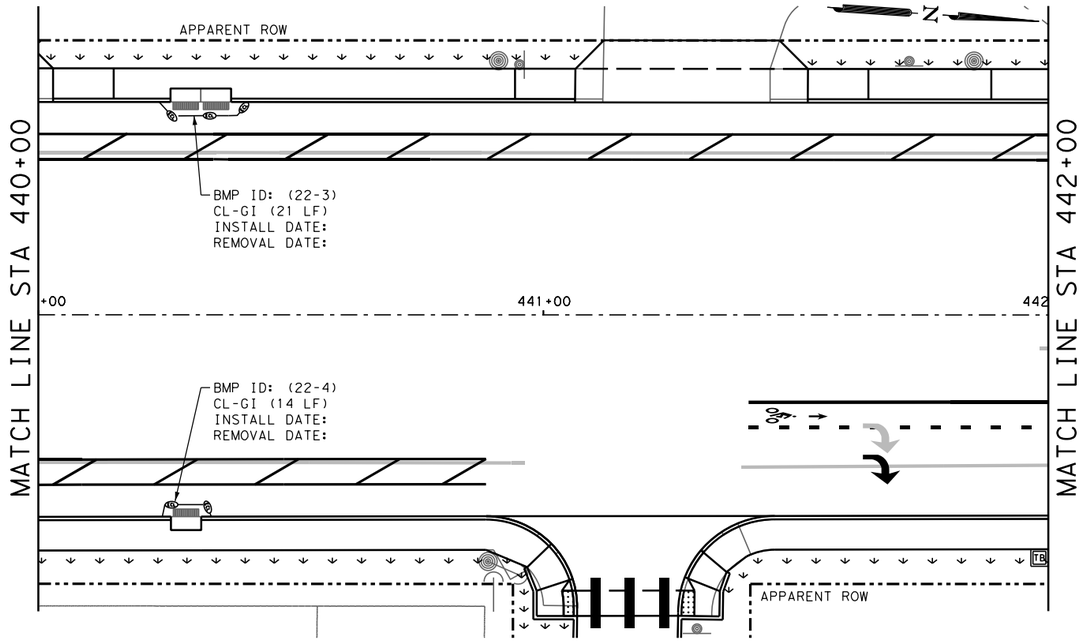
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	128

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\4-612540201_SH345_06.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6035	SANDBAGS FOR EROSION CONTROL	EA	18
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	70
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	70





NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1" = 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

ENVIRONMENTAL LAYOUT PLAN

STA 437+00 TO STA 442+00

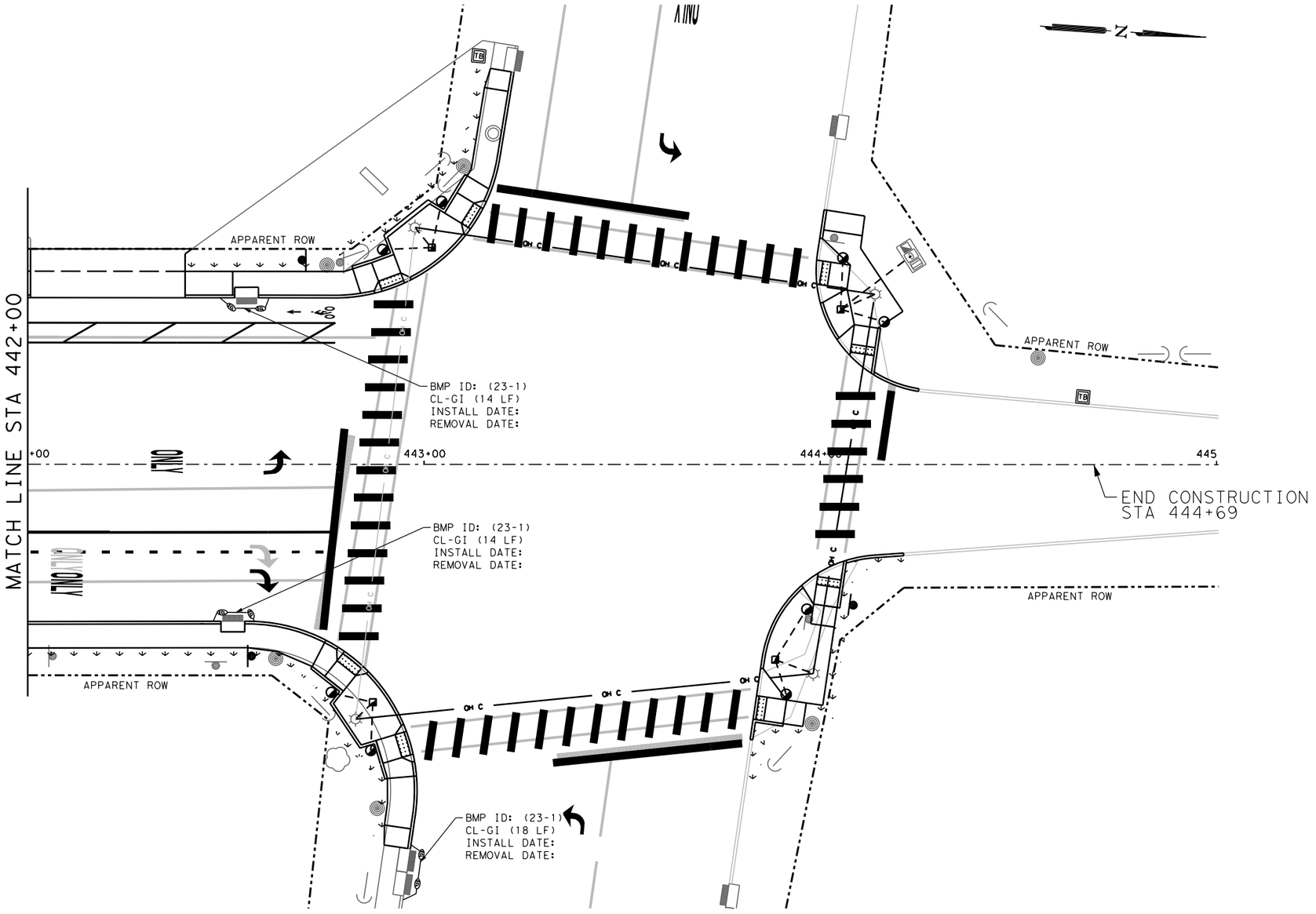
SHEET 5 OF 7

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	129

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\4-612540201_SH345_07.dgn

ITEM	DESCRIPTION	UNI	QTY
0506-6035	SANDBAGS FOR EROSION CONTROL	EA	12
0506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	46
0506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	46



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40
SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

ENVIRONMENTAL LAYOUT PLAN

STA 442+00 TO END CONSTRUCTION

SHEET 6 OF 7

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	130

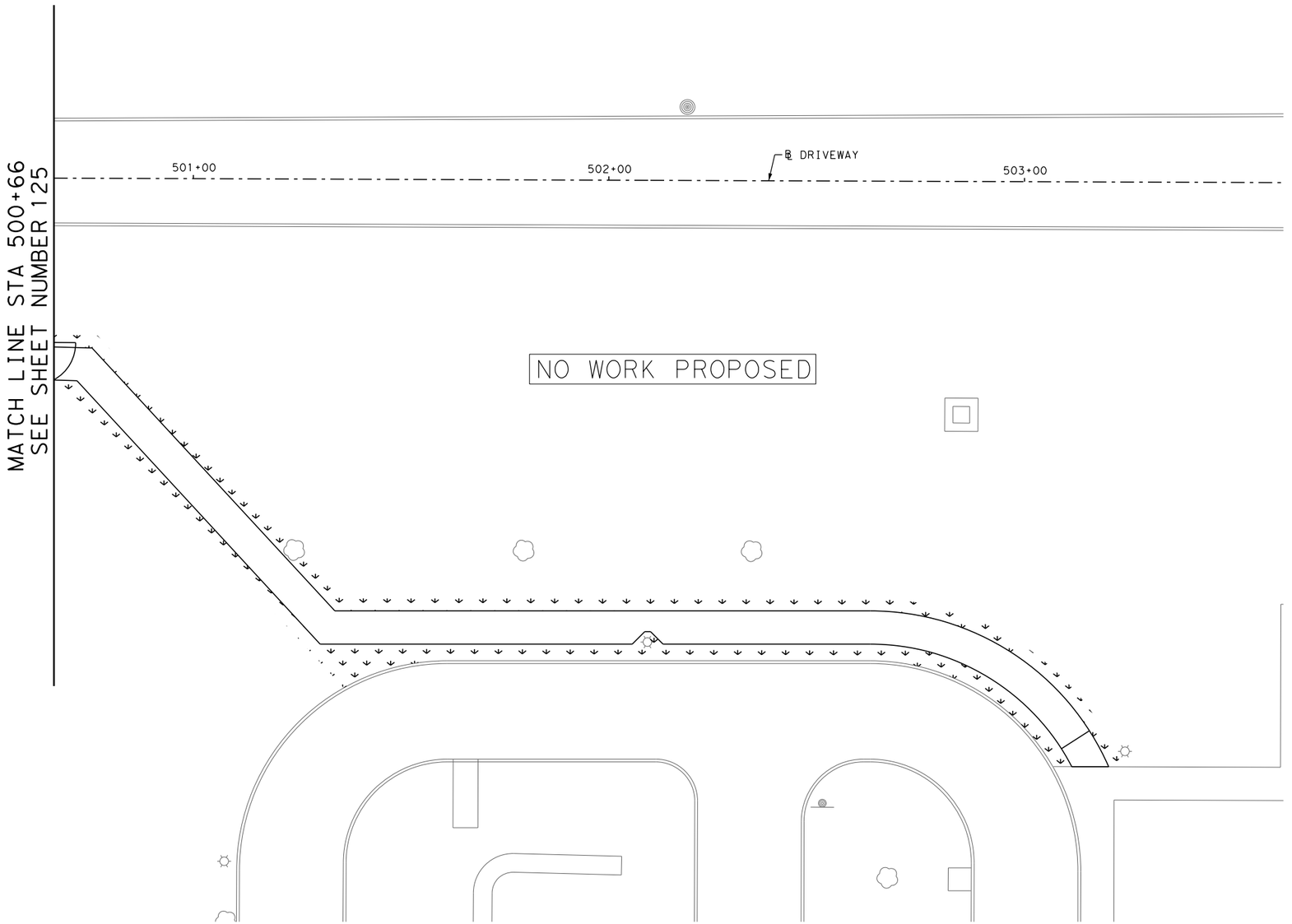
Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\4-612540201_SH345_08.dgn

Plotted on: 3/4/2024

Design Filename: S:\projects\612540201\Design\01_Rio_Hondo_ADA\Civil\Roadway\TEC\4-612540201_SH345_09.dgn

ITEM	DESCRIPTION	UNI	QTY



NOTES:
1. THE EXISTENCE AND LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES INDICATED IN THE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO FIELD VERIFY UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
3. SEE SAMPLE PLAN LAYOUT AND LEGEND OF SYMBOLS SHEET 34 FOR MORE INFORMATION

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED · PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED · PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

0 10 20 30 40

SCALE: 1"= 30'

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

SH-345 (N SAM HOUSTON BLVD)

SIDEWALK PLAN

BEGIN CONSTRUCTION TO STA 419+00

SHEET 7 OF 7

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	131

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

For projects with less than one acre of soil disturbing activity and that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

This SWP3 is consistent with requirements specified in applicable stormwater plans, and the project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

_____

1.2 PROJECT LIMITS:

From: _____

To: _____

1.3 PROJECT COORDINATES:

BEGIN: (Lat) VARIES ,(Long) VARIES

END: (Lat) VARIES ,(Long) VARIES

1.4 TOTAL PROJECT AREA (Acres): 4.97

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0.56

1.6 NATURE OF CONSTRUCTION ACTIVITY:

_____

_____

_____

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Hidalgo Sandy Clay Loam, 0 to 1% slopes	Sta 337+00 to Sta 346+00; 100% sandy clay, well drained, negligible runnoff, and very low erosion potential
Racombes Soils and Urban Land, 0 to 1% slopes	Sta 147+00 to Sta 177+00, Sta 200+00 to Sta 215+00, and Sta 301+00 to Sta 331+00; 100% sandy clay, well drained, negligible runnoff, and not rated for erosion potential
Raymondville Clay Loam, 0 to 1% slopes	Sta 335+00 to Sta 337+00, sta 420+00 to sta 425+00; 100% clay, moderately well drained, medium runnoff, and very low erosion potential
Raymondville-Urban Land Complex, 0 to 1% slopes	Sta 331+00 to Sta 335+00; 100% clay, moderately well drained, medium runnoff, and very low erosion potential
Lyford sandy clay loam, 0 to 1% slopes	Sta 414+00 to Sta 420+00, sta 425+00 to sta 444+25; 100% sandy clay,moderately well drained, negligible runoff, and not rated for erosion potential

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- ☐ PSLs determined during preconstruction meeting
- ☐ PSLs determined during construction
- ☐ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.3.)

- ☐ Mobilization
- ☐ Install sediment and erosion controls
- ☐ Blade existing topsoil into windrows, prep ROW, clear and grub
- ☐ Remove existing pavement
- ☐ Grading operations, excavation, and embankment
- ☐ Excavate and prepare subgrade for proposed pavement widening
- ☐ Remove existing culverts, safety end treatments (SETs)
- ☐ Remove existing metal beam guard fence (MBGF), bridge rail
- ☐ Install proposed pavement per plans
- ☐ Install culverts, culvert extensions, SETs
- ☐ Install mow strip, MBGF, bridge rail
- ☐ Place flex base
- ☐ Rework slopes, grade ditches
- ☐ Blade windrowed material back across slopes
- ☐ Revegetation of unpaved areas
- ☐ Achieve site stabilization and remove sediment and erosion control measures
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☐ Sediment laden stormwater from stormwater conveyance over disturbed area
- ☐ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ☐ Solvents, paints, adhesives, etc. from various construction activities
- ☐ Transported soils from offsite vehicle tracking
- ☐ Construction debris and waste from various construction activities
- ☐ Contaminated water from excavation or dewatering pump-out water
- ☐ Sanitary waste from onsite restroom facilities
- ☐ Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☐

- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- X Development of plans and specifications
- X Perform SWP3 inspections
- X Maintain SWP3 records and update to reflect daily operations
- ☐ Other: _____
- ☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- X Day To Day Operational Control
- X Maintain schedule of major construction activities
- X Install, maintain and modify BMPs
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2B23 (202)TAPS		132
STATE	STATE DIST.	COUNTY	
TEXAS	PHR	CAMERON	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	06	348	VA

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- X ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- X ☐ Temporary Seeding
- ☐ X Permanent Planting, Sodding or Seeding
- X ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- X ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- X ☐ Inlet Protection
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- X ☐ Sandbag Berms
- ☐ ☐ Sediment Control Fence
- ☐ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- X Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- X Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- X Chemical Management
- X Concrete and Materials Waste Management
- X Debris and Trash Management
- X Dust Control
- X Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- X Fire hydrant flushings
- X Irrigation drainage
- X Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- X Potable water sources
- X Springs
- X Uncontaminated groundwater
- X Water used to wash vehicles or control dust
- X Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3 .

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.3 of this SWP3.

DESIGN

STATE OF TEXAS — TYLER PAYNE DUBE — 118612 — LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS — JOHN A. TYLER — 105193 — LICENSED PROFESSIONAL ENGINEER

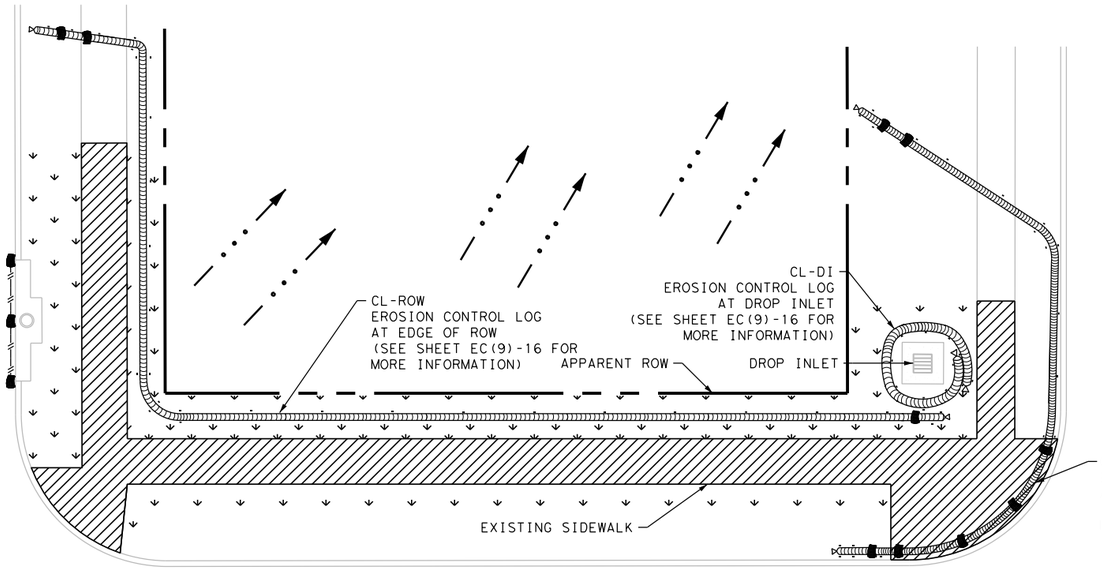
JOHN A. TYLER, P.E. — 3/4/2024 DATE

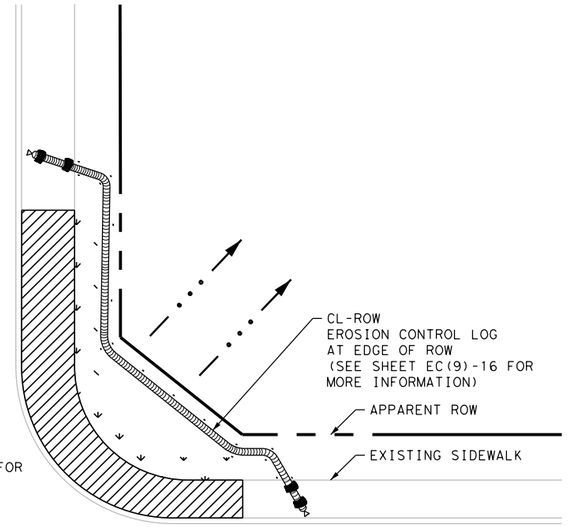
STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

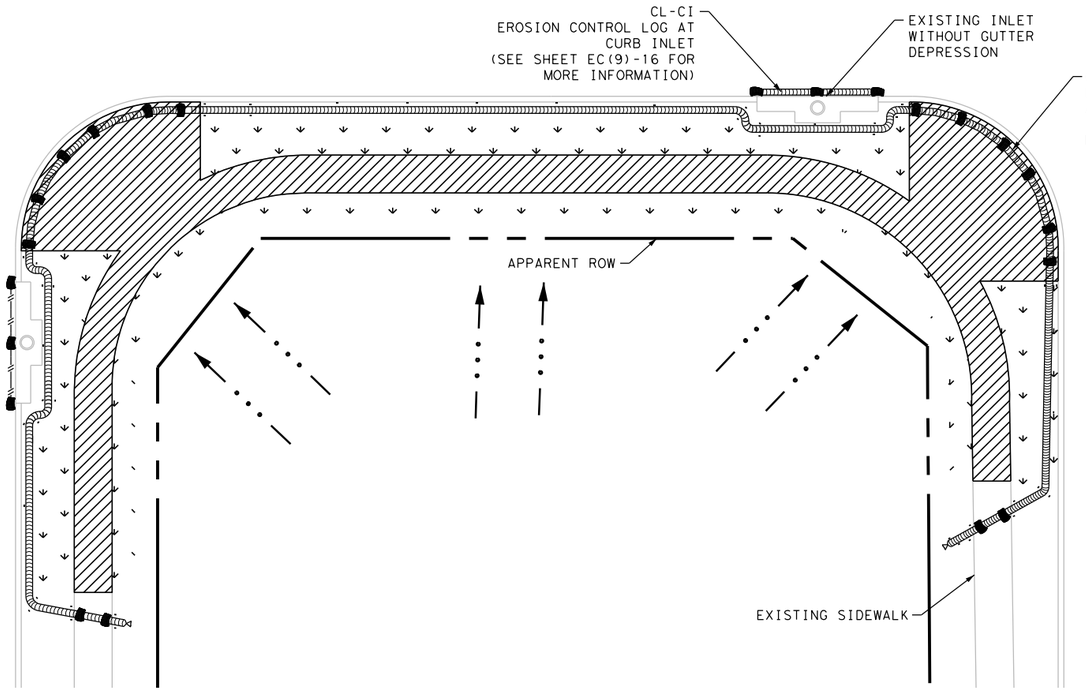
July 2023 Sheet 2 of 2

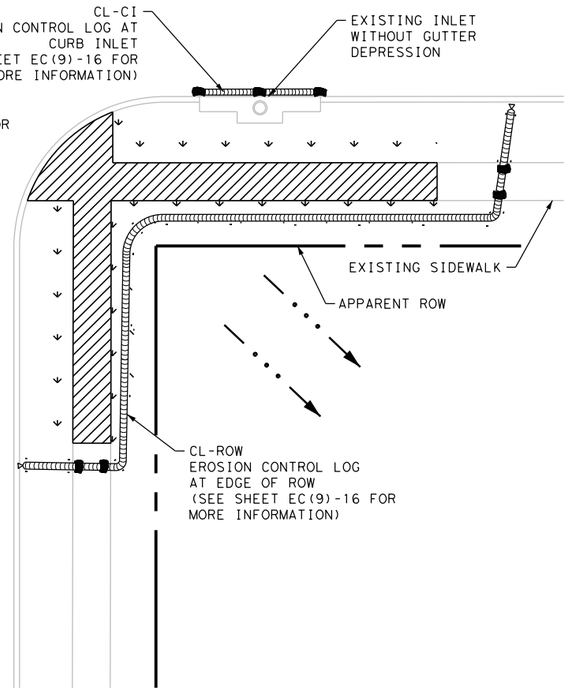
Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2B23 (202)TAPS		133
STATE	STATE DIST.	COUNTY	
TEXAS	PHR	CAMERON	
CONT.	SECT.	JOB	HIGHWAY NO.
0921	06	348	VA









LEGEND

- BLOCK SODDING
- FLOW DIRECTION
- EROSION CONTROL LOG
- WOOD OR METAL STAKES (AS APPROVED BY THE ENGINEER)
- SANDBAGS
- EXISTING FEATURES
- PROPOSED WORK AREA

NOTES:

REFERENCE ENVIRONMENTAL PERMITS, ISSUES, AND COMMITMENTS (EPIC)AND STORM WATER POLLUTION PREVENTION PLAN (SW3P) SHEETS FOR SPECIFIC CONSTRUCTION CONSIDERATIONS OR REQUIREMENTS.

EXAMPLES SHOWN ON THE SHEET ARE FOR GENERAL GUIDANCE AND MAY BE MODIFIED AS DIRECTED BY THE ENGINEER.

SITE CONDITIONS MAY DICTATE ADDITIONAL COUNTERMEASURES AS DIRECTED BY THE ENGINEER.

USE ADDITIONAL STAKES OR SAND BAGS AS NEEDED TO HOLD IN PLACE (NSPI)

INSTALLATION OF COUNTERMEASURES MUST BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT.

DESIGN

STATE OF TEXAS · TYLER PAYNE DUBE · 118612 · LICENSED PROFESSIONAL ENGINEER

TYLER PAYNE DUBE, P.E. — 3/4/2024 DATE

APPROVAL

STATE OF TEXAS · JOHN A. TYLER · 105193 · LICENSED PROFESSIONAL ENGINEER

JOHN A. TYLER, P.E. — 3/4/2024 DATE

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Texas Department of Transportation

SWP3 EXAMPLE LAYOUTS

SHEET 1 OF 1

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS	STP 2B23 (202)TAPS			VA
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	PHR	CAMERON	0921	06	348	134

Plotted on: 3/4/2024

Design Filename: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\SW3P\sw3pex01.dgn

DATE: 3/4/2024
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\SW3P\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.

2.

☐ 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.

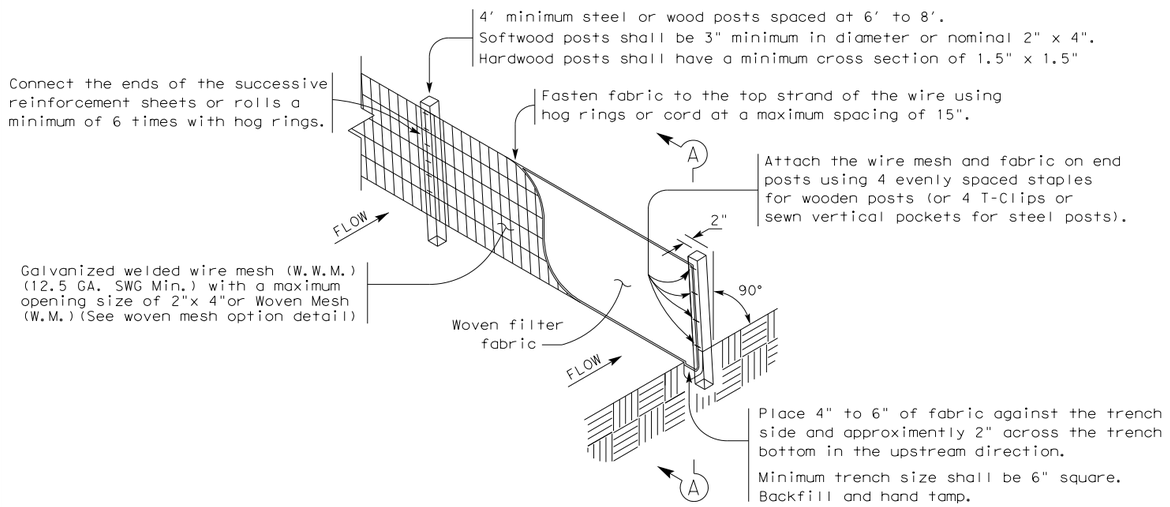
Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

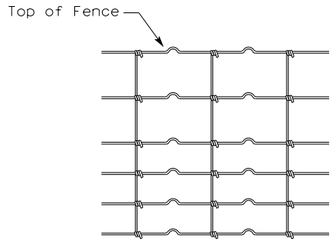
FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR	
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS 12-12-2011 (DS)	0921	06	348	VA	
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY		SHEET NO.	
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	PHR	CAMERON		135	

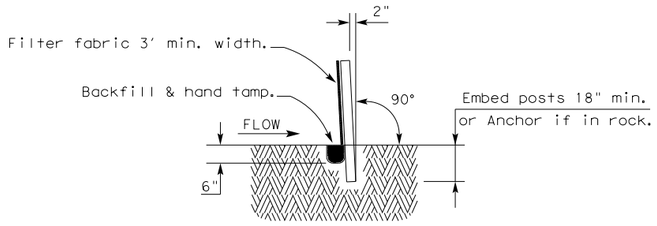
DATE: 3/4/2024
FILE: S:\Projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\SW3P\ec116.dgn



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

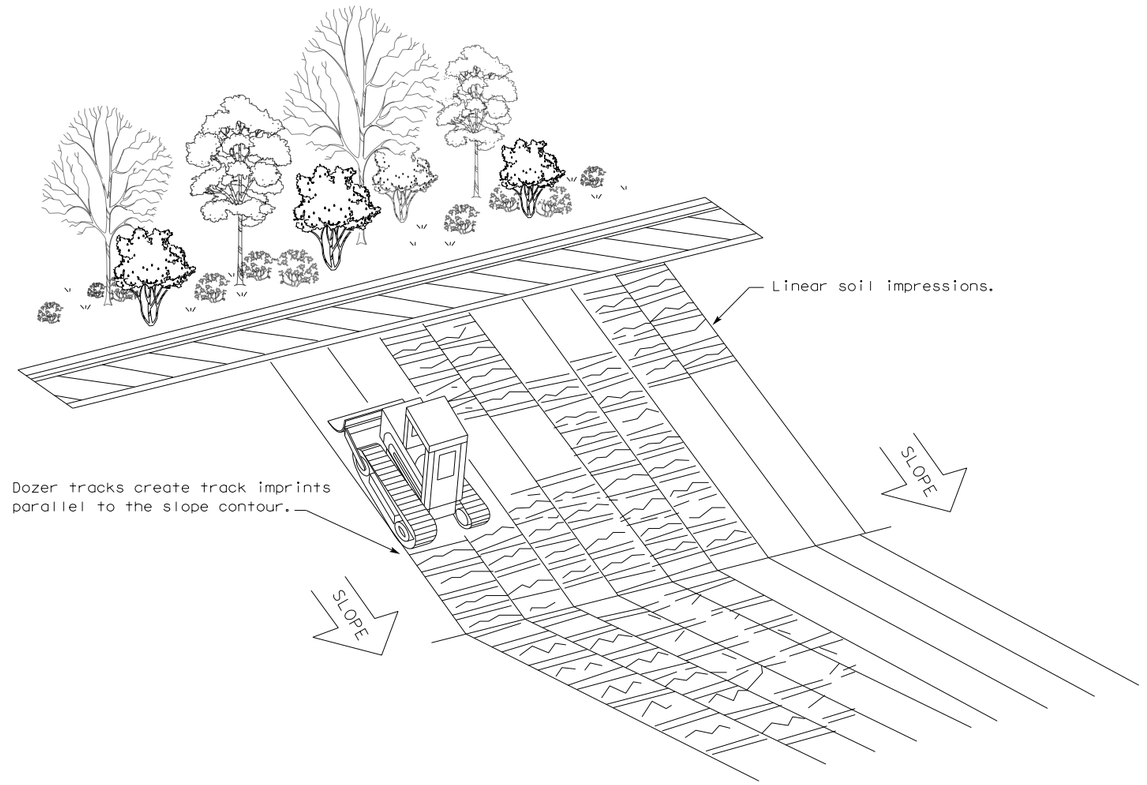
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

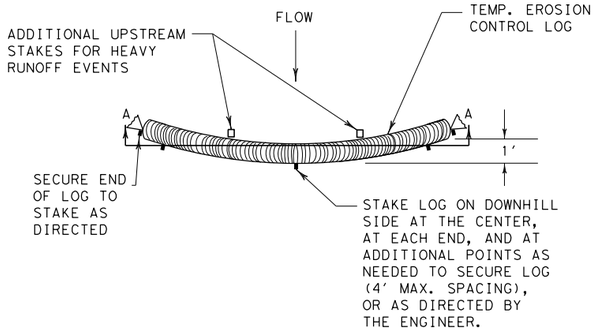
Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

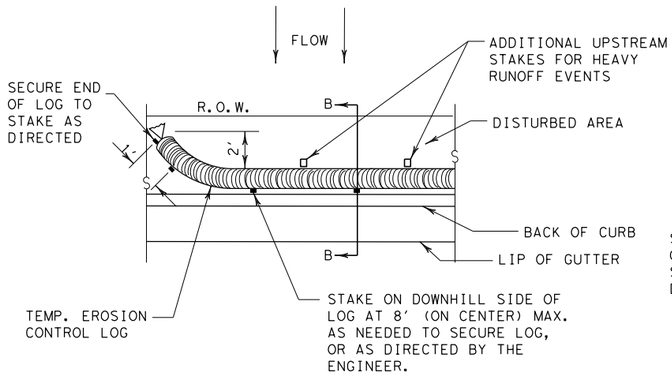
FENCE & VERTICAL TRACKING

EC(1)- 16

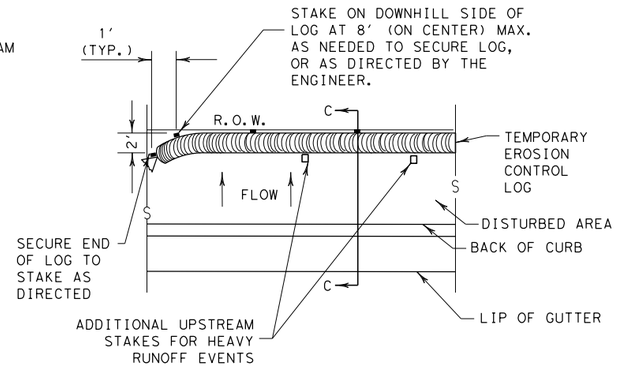
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0921	06	348	VA
	DIST	COUNTY		SHEET NO.
	PHR	CAMERON		136



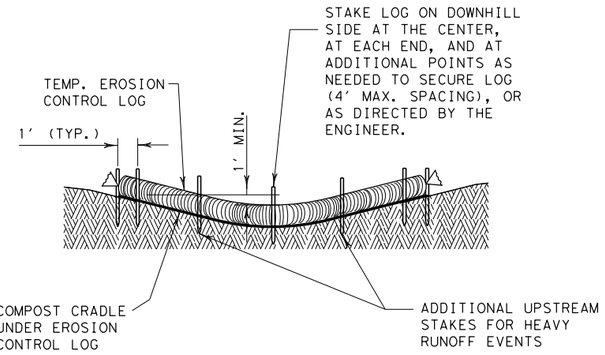
PLAN VIEW



PLAN VIEW



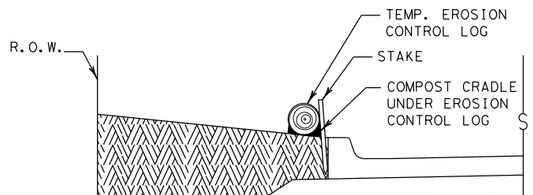
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

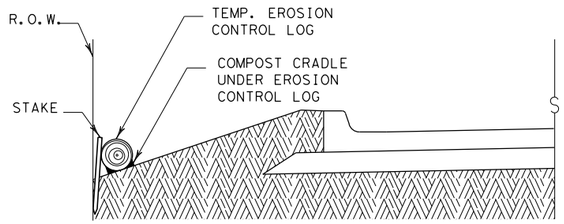
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

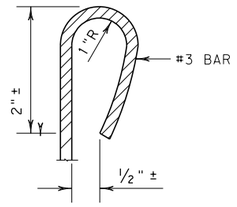
CL-BOC



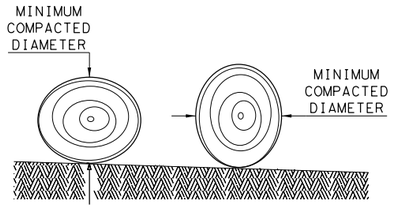
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

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.

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.

DATE: 3/4/2024
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\SW3P\ec916.dgn

SHEET 1 OF 3

Texas Department of Transportation

Design Division Standard

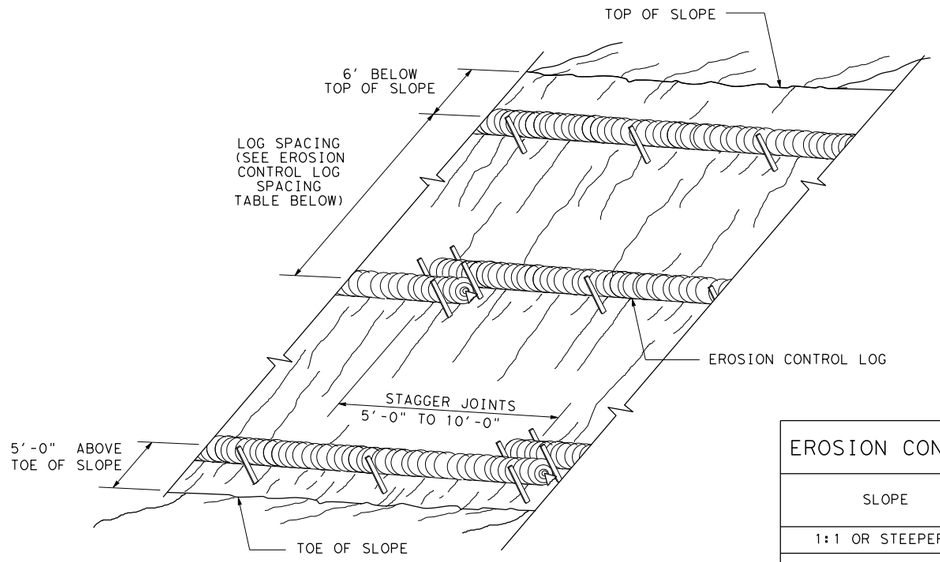
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

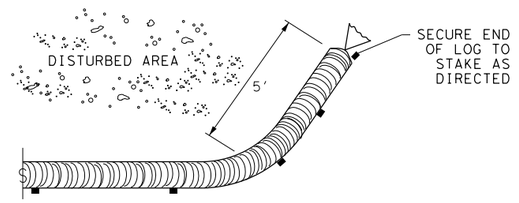
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0921	06	348	VA	
	DIST	COUNTY		SHEET NO.	
	PHR	CAMERON		137	

DATE: 3/4/2024
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\SW3P\ec916.dgn



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

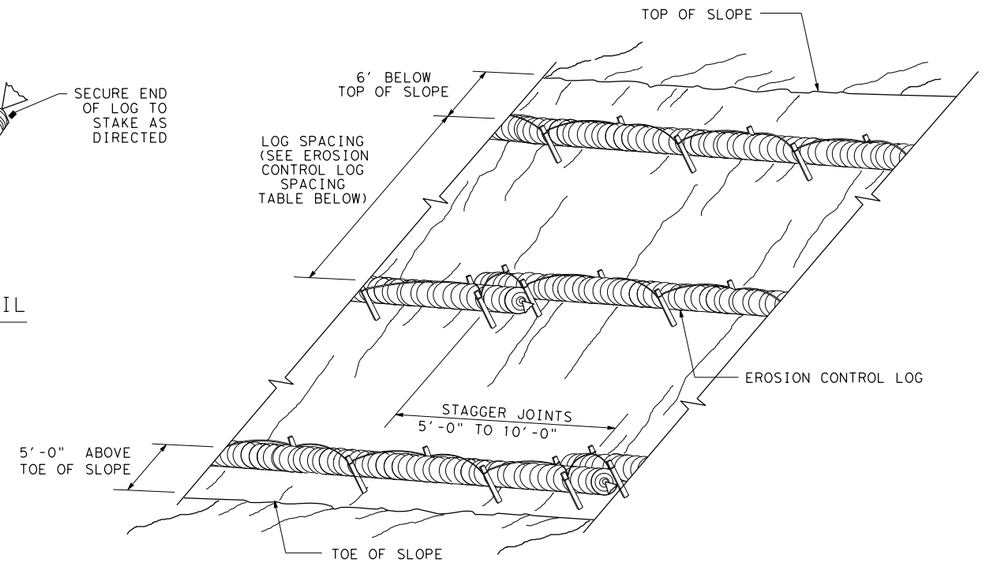
CL-SST



END SECTION RAP DETAIL

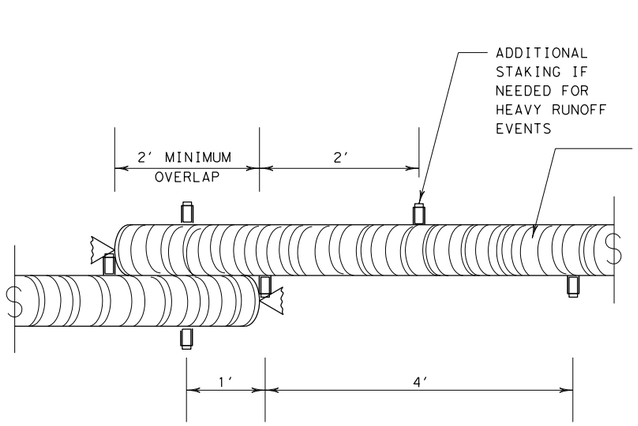
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5′	10′	15′	20′
2:1	10′	20′	30′	40′
3:1	15′	30′	45′	60′
4:1 OR FLATTER	20′	40′	60′	80′

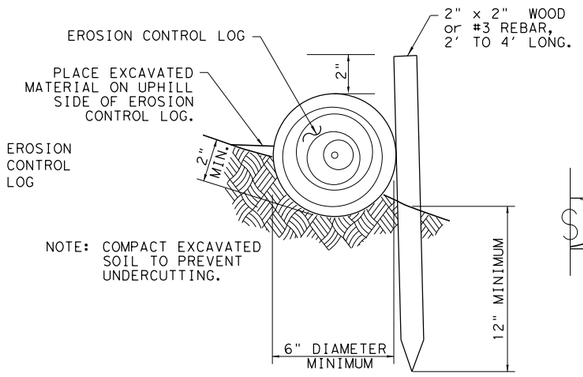
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

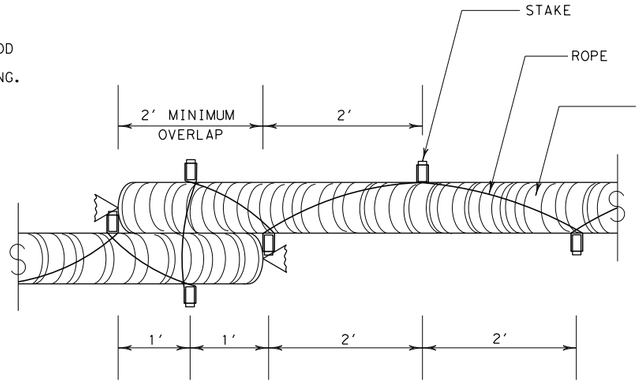


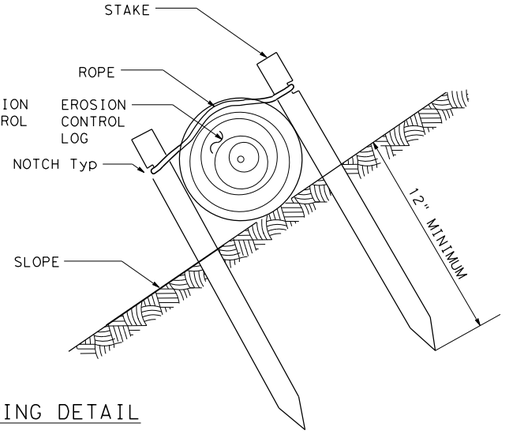


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

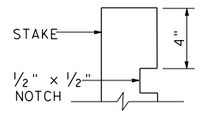
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 3

Texas Department of Transportation | Design Division Standard

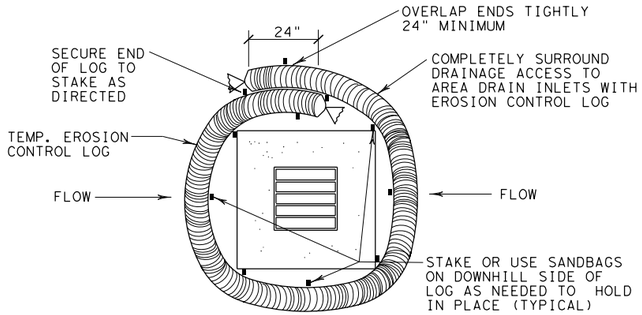
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

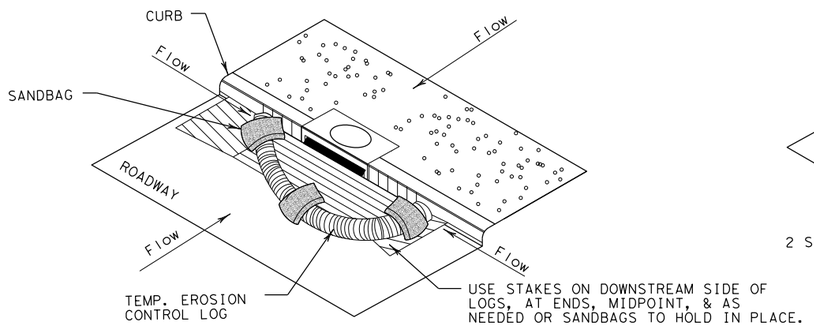
FILE: ec116	DN: TxDOT		CK: KM		DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0921	06	348		VA	
	DIST	COUNTY			SHEET NO.	
	PHR	CAMERON			138	

DATE: 3/4/2024
FILE: S:\projects\612\54\02\Design\01_Rio_Hondo_ADA\Civil\Standards\SW3P\ec916.dgn



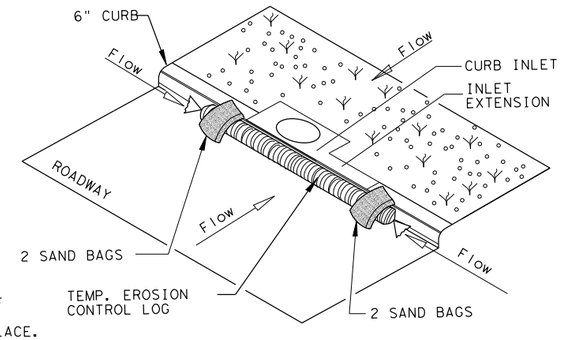
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

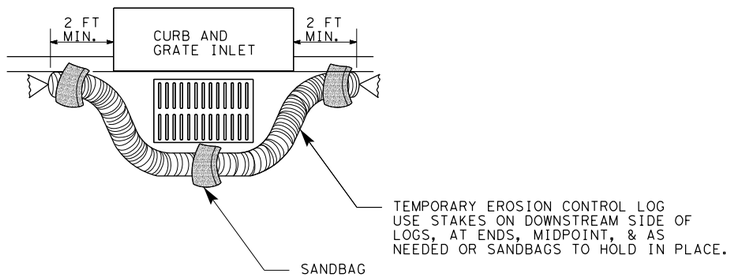
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

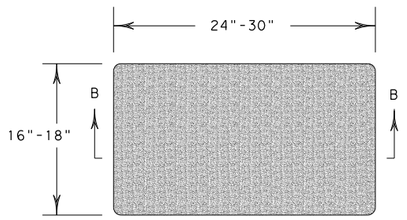
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

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	0921	06	348		VA		
	DIST	COUNTY					SHEET NO.
	PHR	CAMERON					139