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STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PROJECT NO.			
CONT	SECT	JOB	HIGHWAY
0022	10	073,ETC	US 90,ETC
DIST	COUNTY		SHEET NO.
LRD	VAL VERDE		1

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

STATE AID PROJECT NO. C22-10-73

HIGHWAY: VARIOUS
VAL VERDE AND KINNEY COUNTY

REGISTERED ACCESSIBILITY SPECIALIST (RAS)
INSPECTION REQUIRED
EAB NO. TABS2021009013

CSJ: 0022-10-073 (CCSJ)
US 90
FROM: EAST GIBB ST - SOUTH LIMIT
TO: BRADDIE DR - NORTH

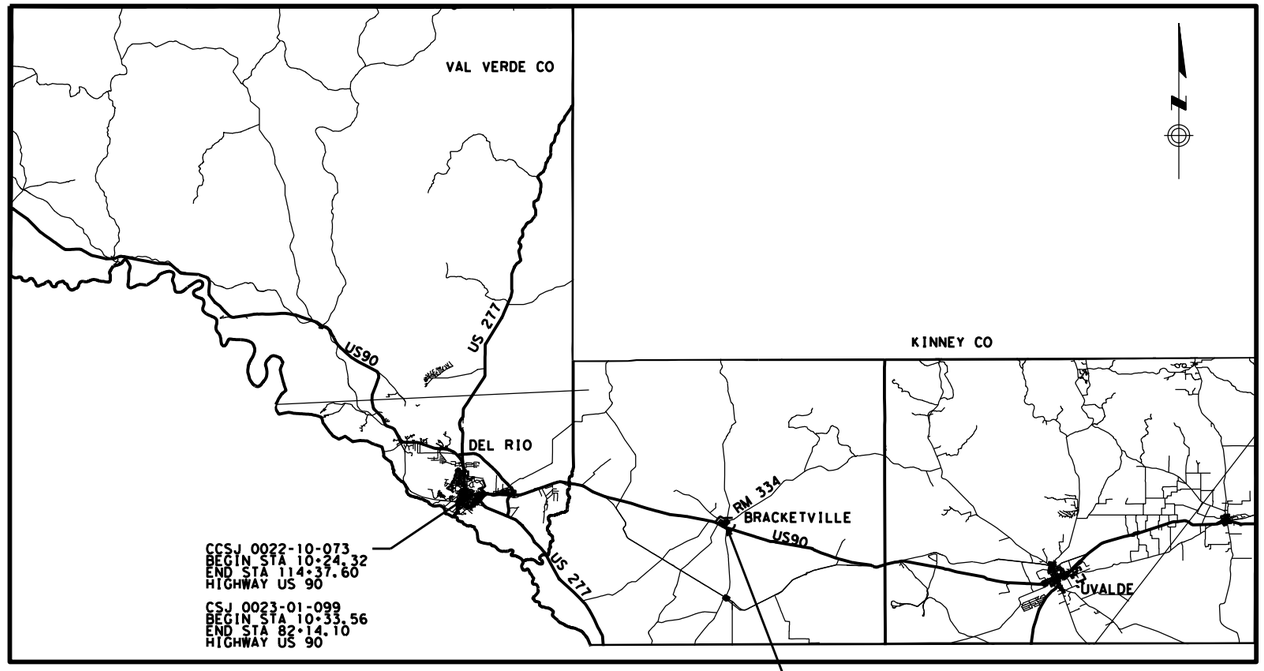
CSJ: 0023-01-099
US 90
FROM: VETERANS BLVD - WEST LIMIT
TO: DE LA ROSA ST - EAST LIMIT

CSJ: 0023-07-016
SL 166
FROM: RM 2804 WEST CITY LIMIT
TO: US 90 EAST CITY LIMIT

CSJ: 0876-02-036
RM 334
FROM: EAST CITY LIMIT OF BRACKETVILLE
TO: US 90(SOUTH/WEST LIMIT) INTERSECTION

FOR THE CONSTRUCTION OF MISCELANEOUS WORK CONSISTING OF SIDEWALKS, CURBS, DRIVEWAYS AND ACCESSIBILITY RAMPS.

LOCATION MAP



SCALE: NOT TO SCALE

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: SPECIAL LABOR PROVISIONS FOR STATE PROJECTS (000-008)

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS COMPLETED & ACCEPTED: _____

FINAL CONTRACT COST: $ _____

CONTRACTOR : _____

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH BC (1)- 14 THRU BC (12)- 14 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

FINALS AS BUILTS

THE CONSTRUCTION WORK WAS PERFORMED UNDER MY SUPERVISION IN ACCORDANCE WITH THE PLANS AND CONTRACT.

_____ P.E. _____
AREA ENGINEER DATE

RECOMMENDED FOR LETTING: 3/25/2021

DocuSigned by: Jose Franco III
AREA ENGINEER

RECOMMENDED FOR LETTING: 3/25/2021

DocuSigned by: Humberto Gonzalez Jr, P.E
DISTRICT DIRECTOR OF TRANSPORTATION
PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: 3/26/2021

DocuSigned by: David Salazar
DISTRICT ENGINEER

GENERAL

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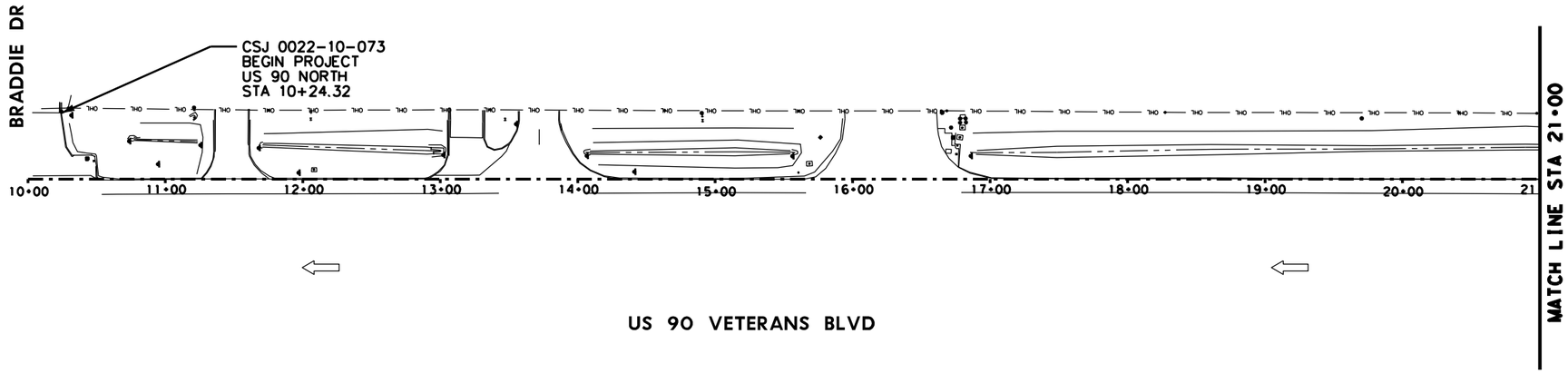
STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/30/2021

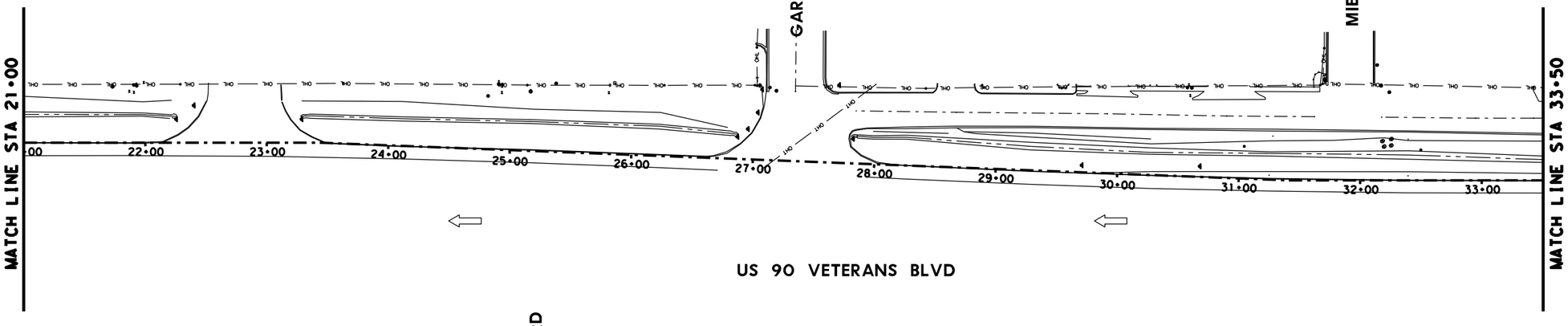
INDEX OF SHEETS

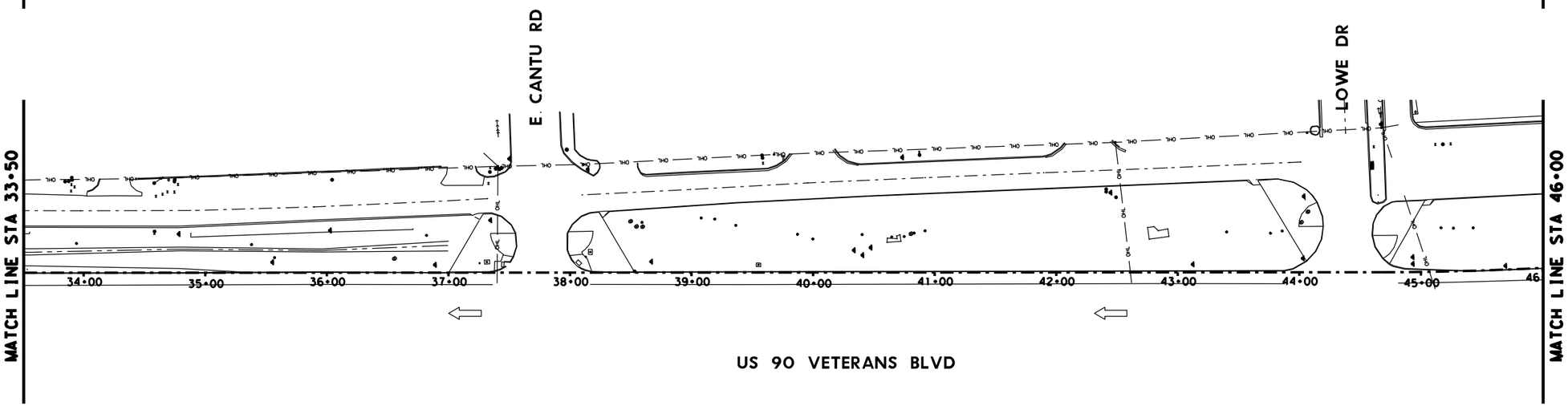
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			2
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC







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STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

PROJECT LAYOUT

SHEET 1 OF 3

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 235-2002

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FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			3
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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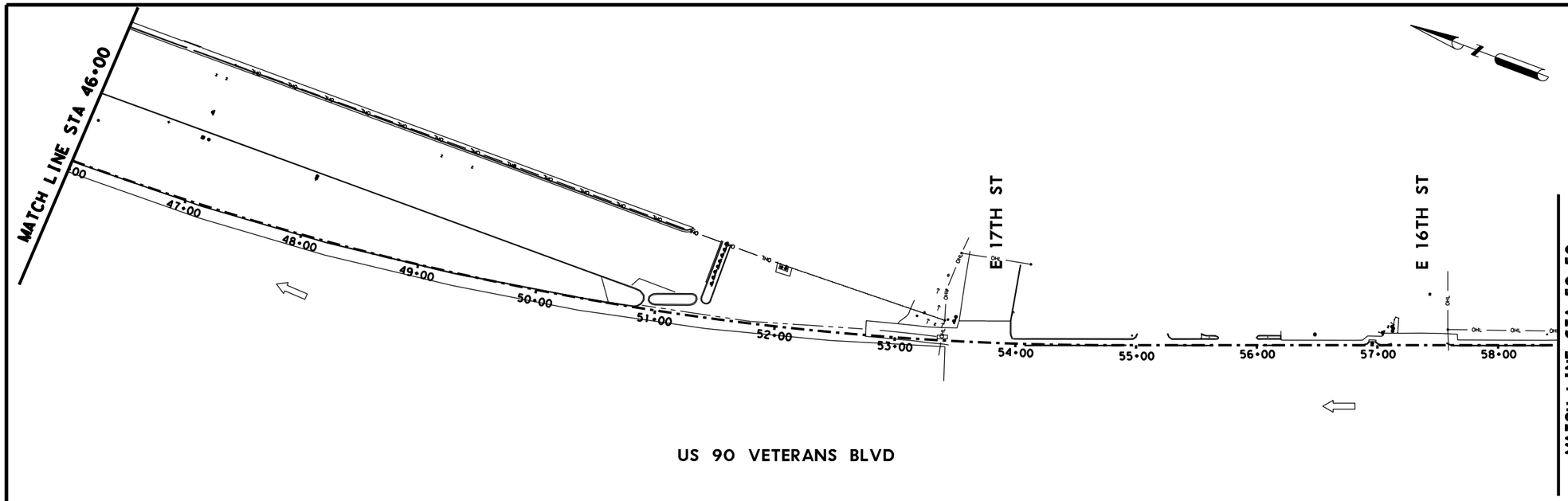

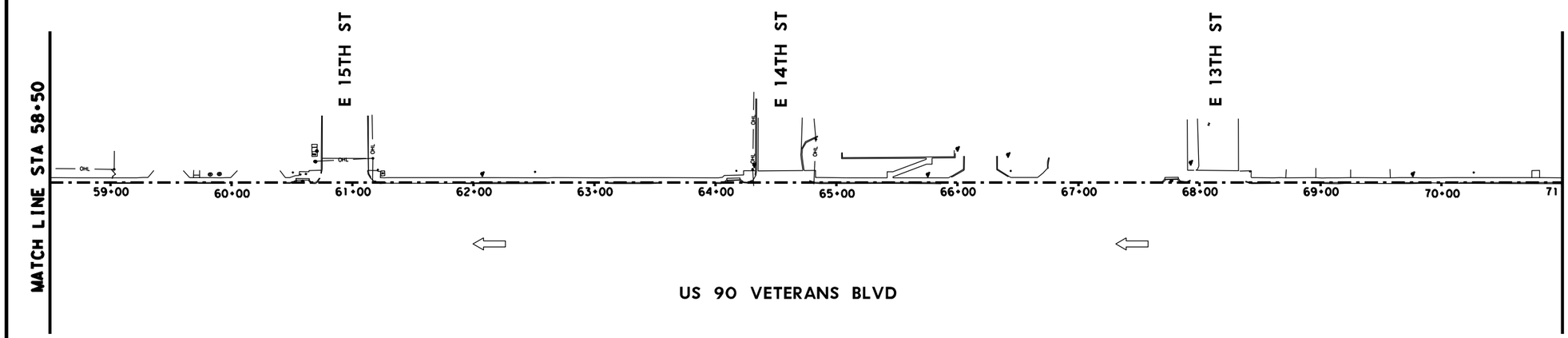

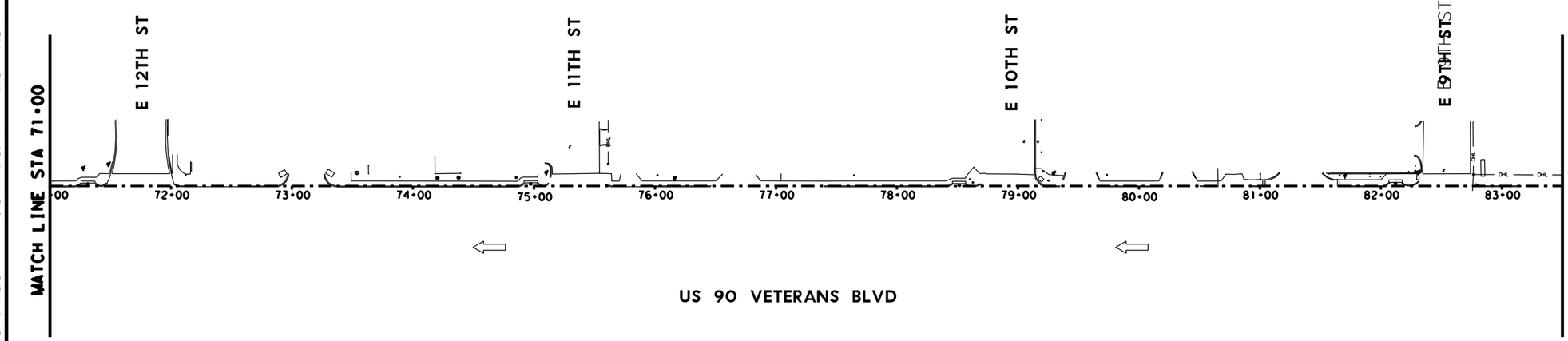

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STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER

3/5/2021

US 90

PROJECT LAYOUT

SHEET 2 OF 3

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 235-2002

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FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			4
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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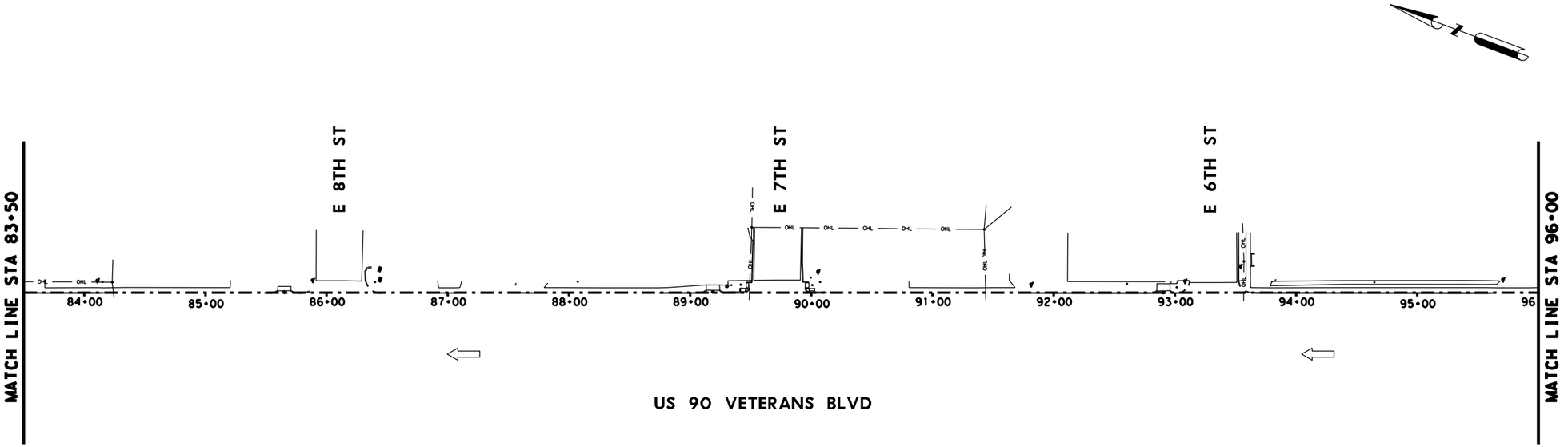

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STATE OF TEXAS
ALEX I. GARCIA
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PROFESSIONAL ENGINEER

3/5/2021

US 90

PROJECT LAYOUT

SHEET 3 OF 3

DANNENBAUM
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T.B.P.E. FIRM REGISTRATION #392
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TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
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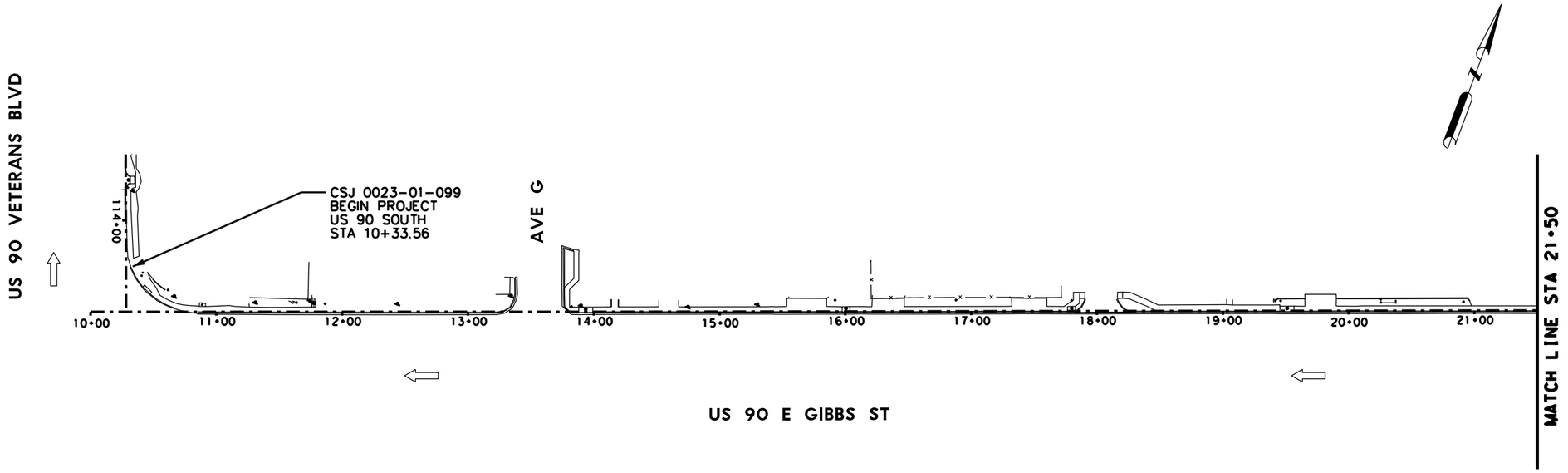

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STATE OF TEXAS
ALEX L. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

PROJECT LAYOUT

SHEET 1 OF 2

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

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STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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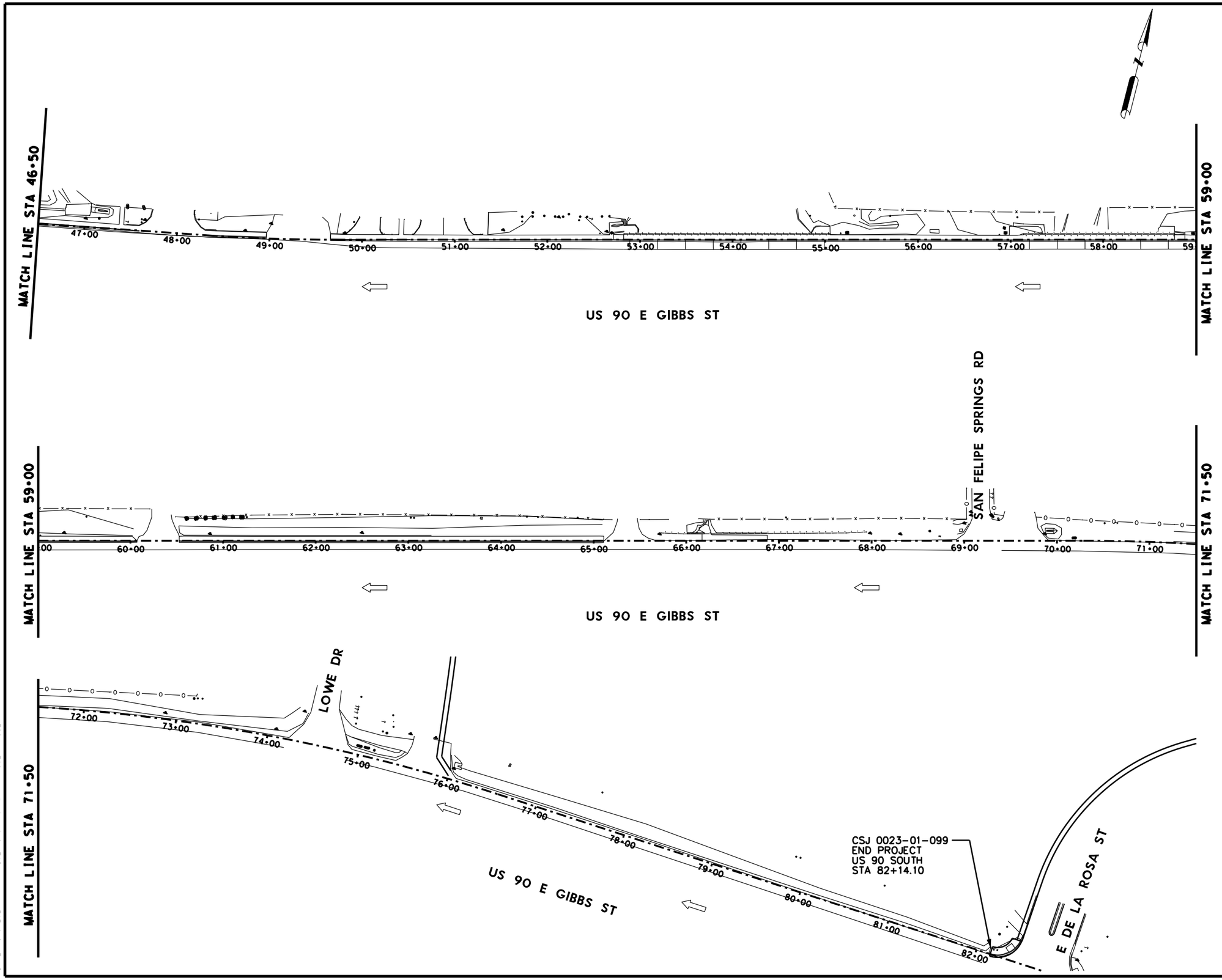

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SCALE: 1"=100' H

STATE OF TEXAS
ALEX I. GARCIA
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3/5/2021

US 90

PROJECT LAYOUT

SHEET 2 OF 2

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 235-2002

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FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			7
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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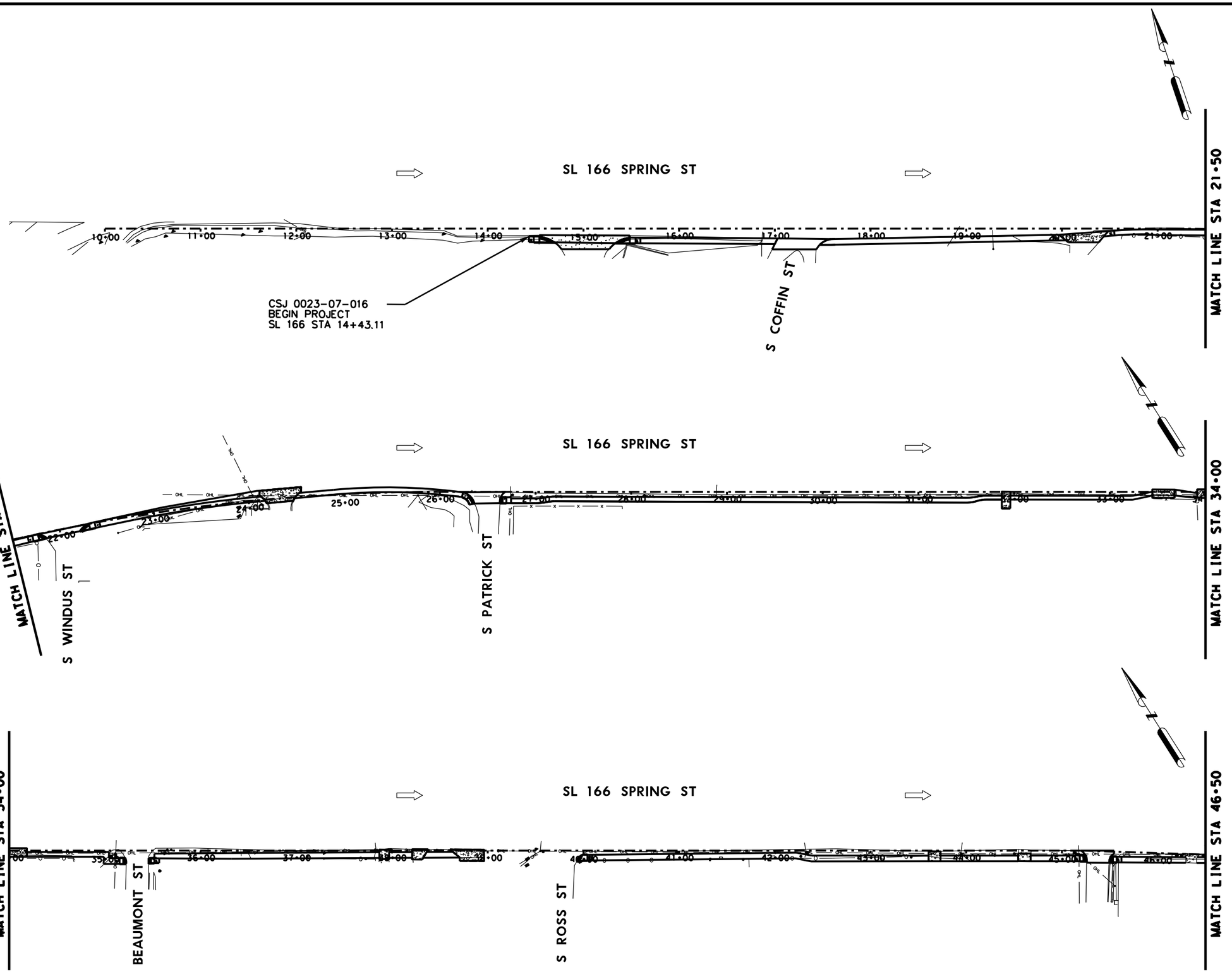

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SCALE: 1"=100' H

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ALEX I. GARCIA
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SL 166

PROJECT LAYOUT

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3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 235-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			8
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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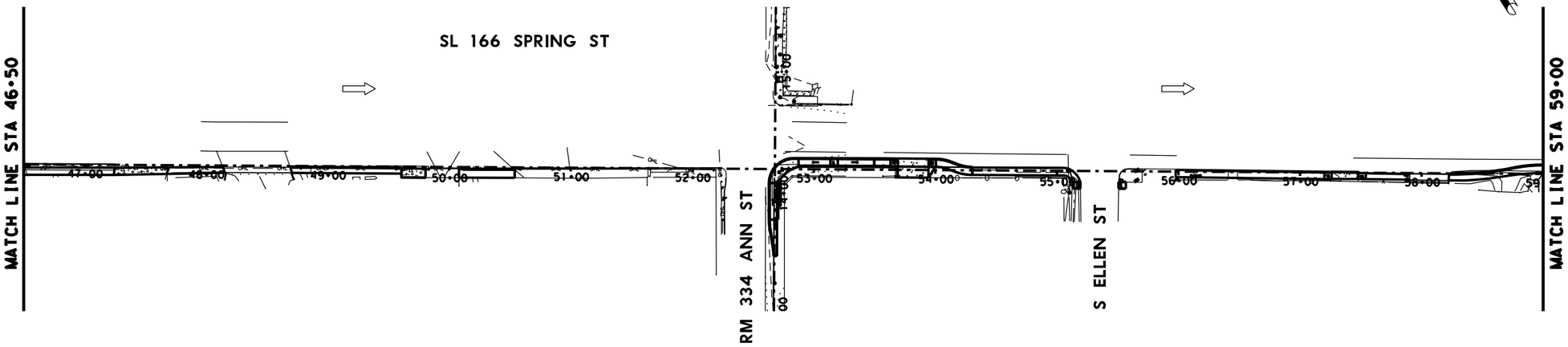

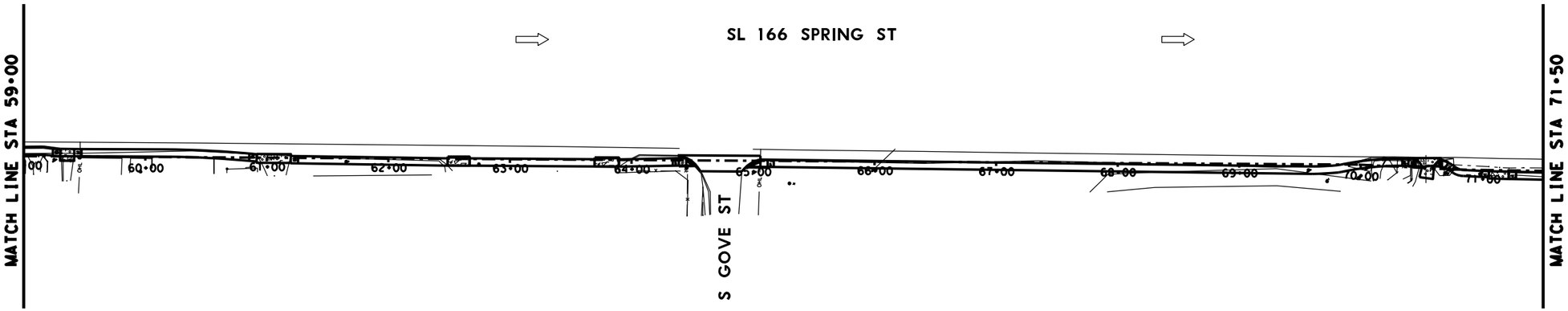

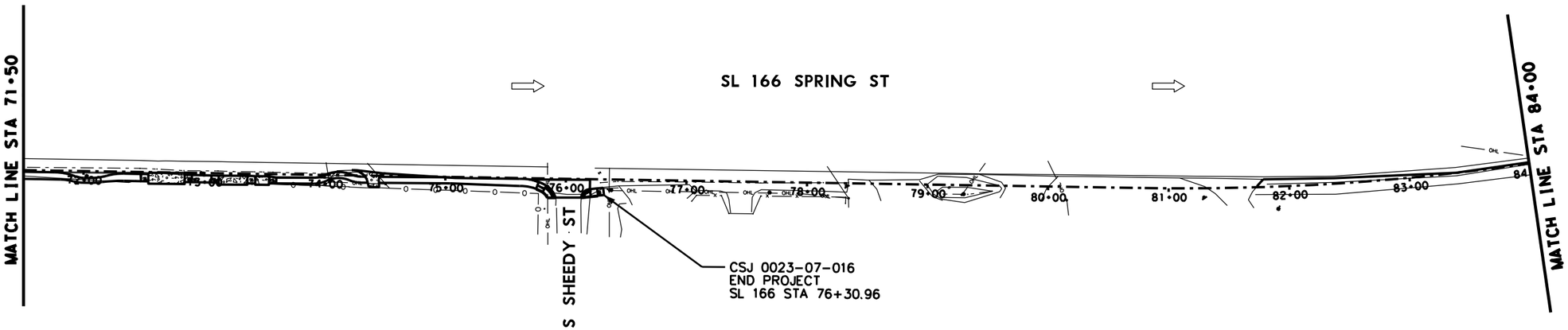

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STATE OF TEXAS
ALEX I. GARCIA
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3/5/2021

SL 166

PROJECT LAYOUT

SHEET 2 OF 2

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
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STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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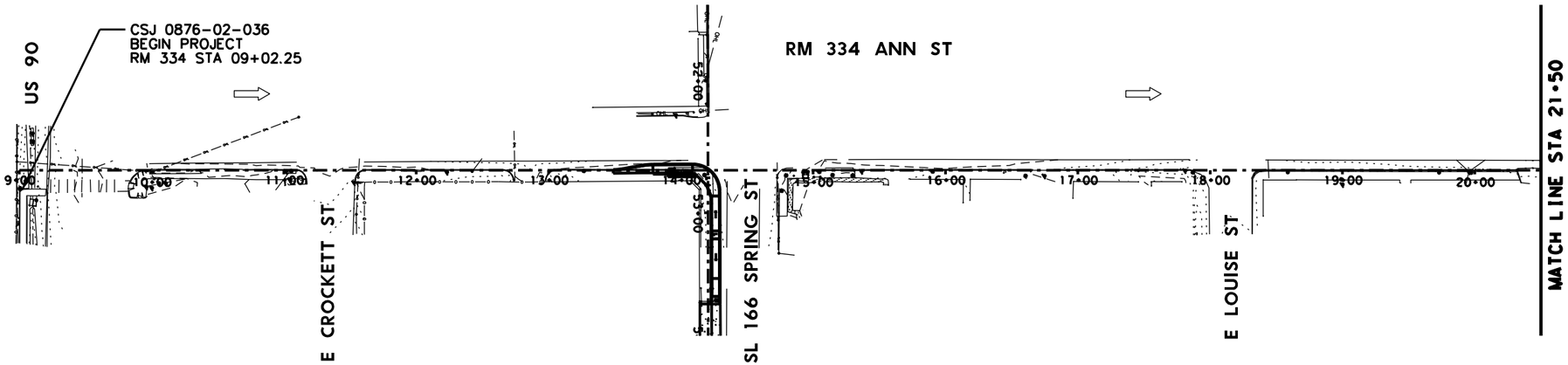

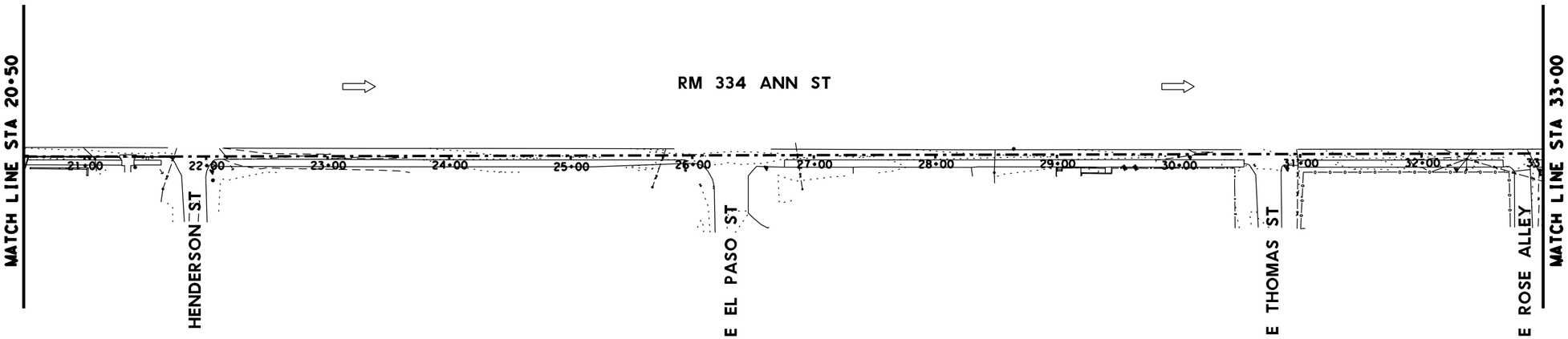

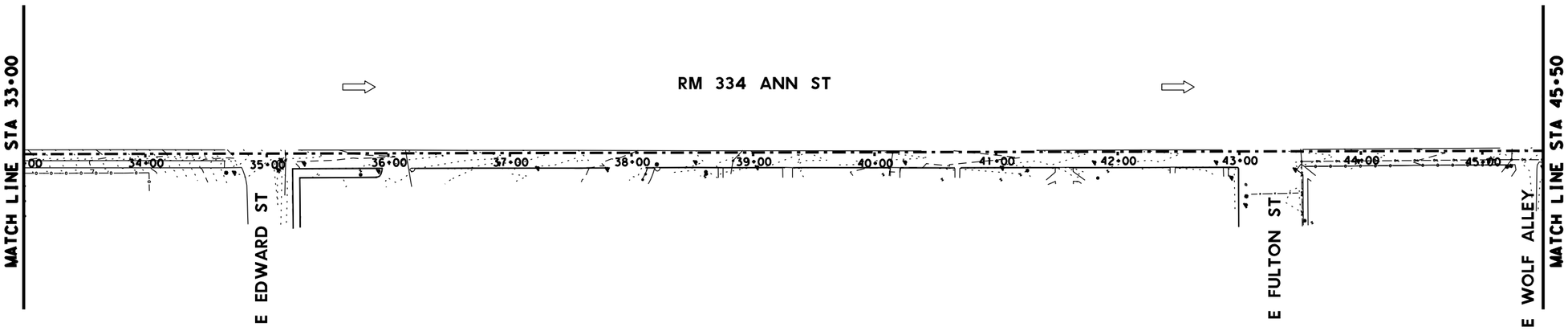

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SCALE: 1"=100' H

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

PROJECT LAYOUT

SHEET 1 OF 3

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

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STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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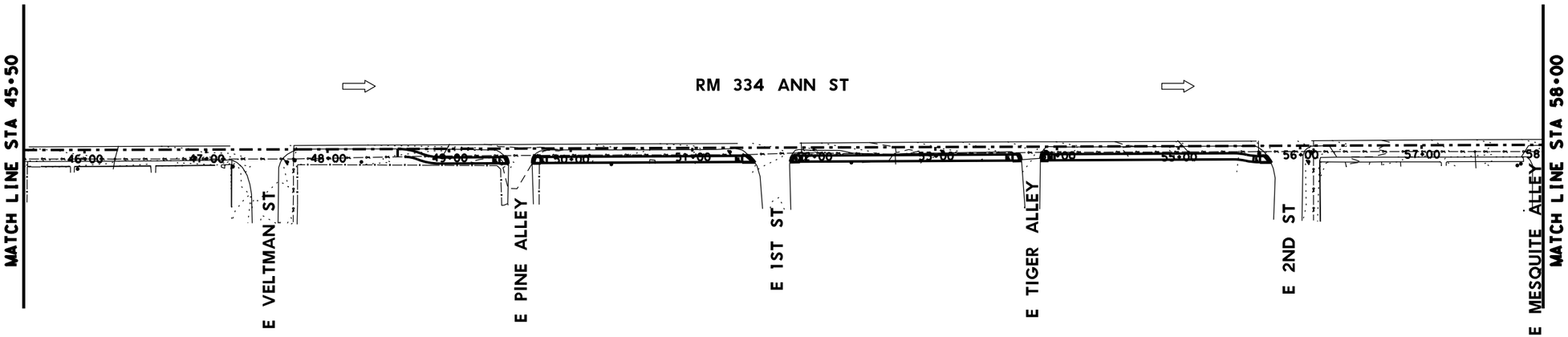

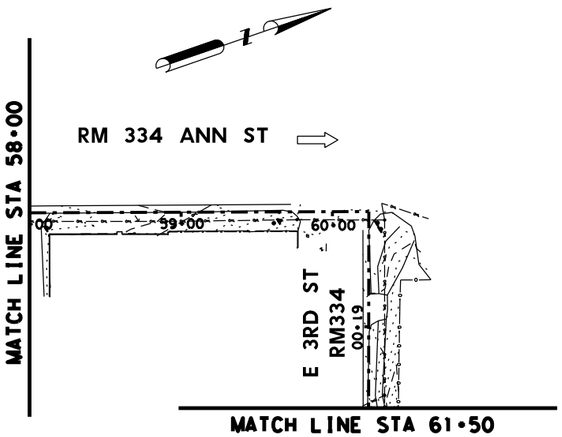

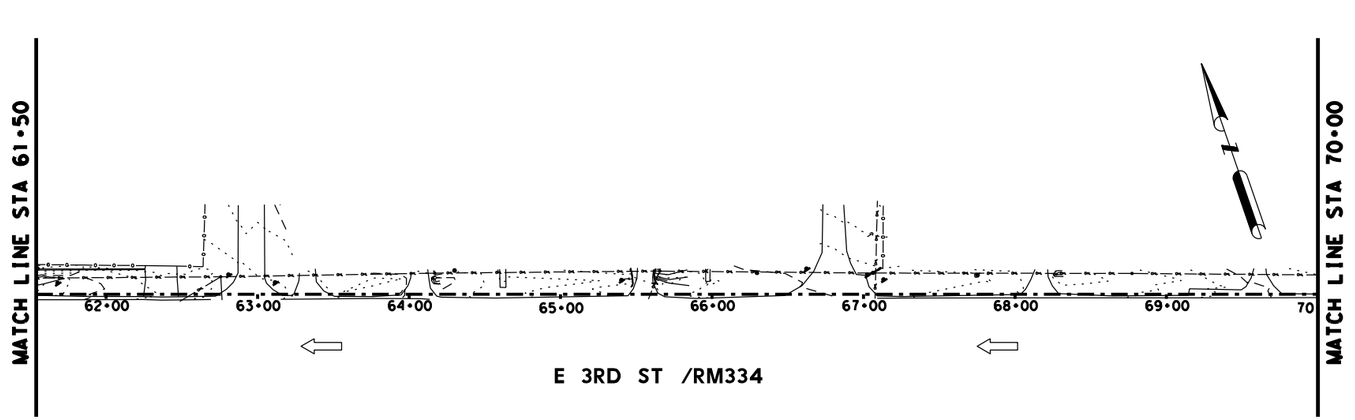

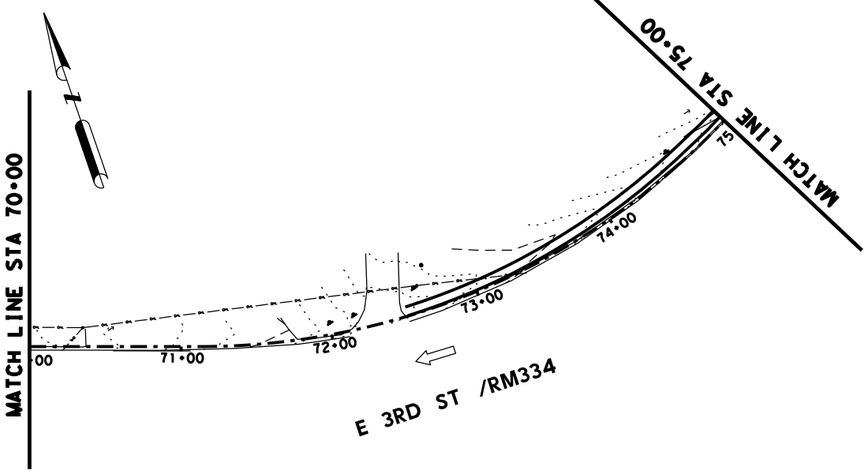

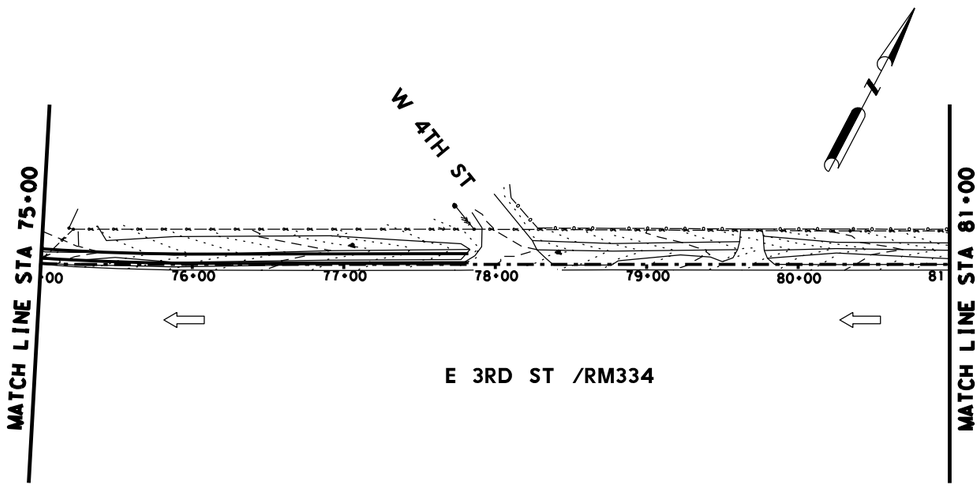

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SCALE: 1"=100' H

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

PROJECT LAYOUT

SHEET 2 OF 3

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			11
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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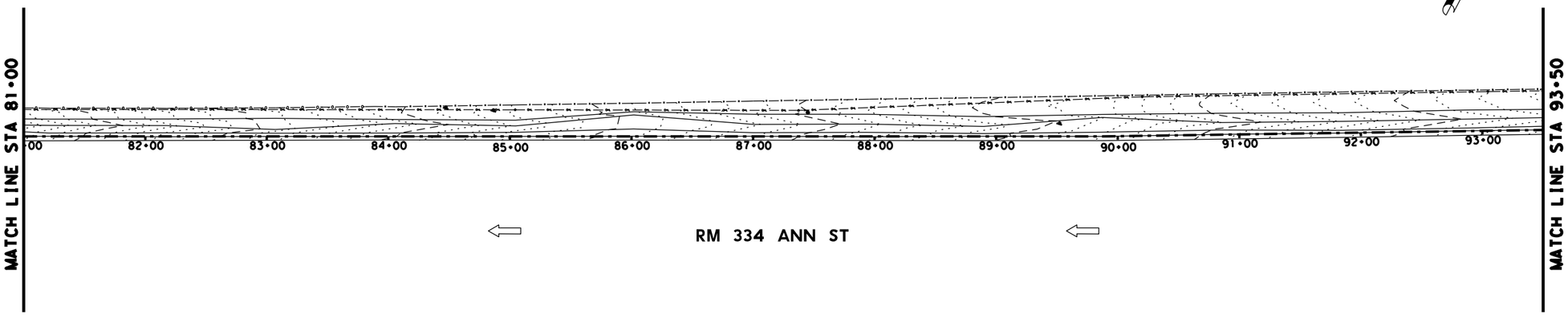
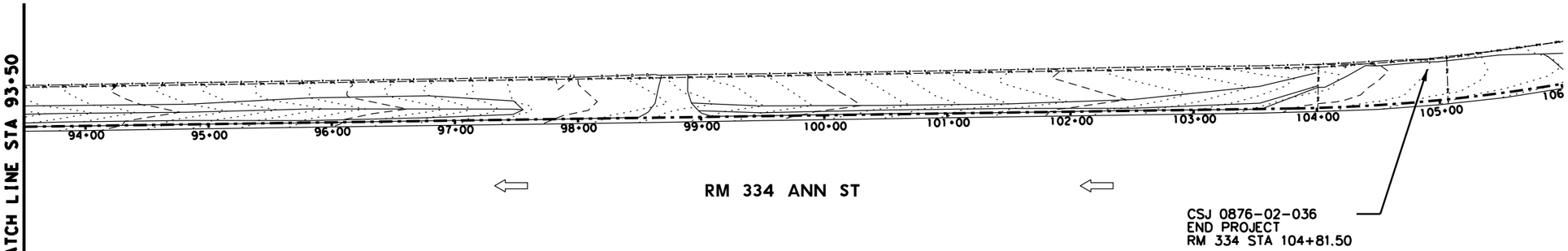




MATCH LINE STA 93+50

0 50 100

SCALE: 1"=100' H

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

PROJECT LAYOUT

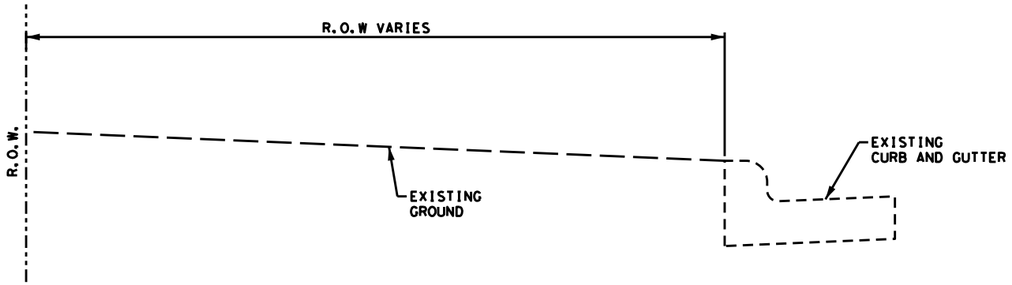
SHEET 3 OF 3

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		12

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



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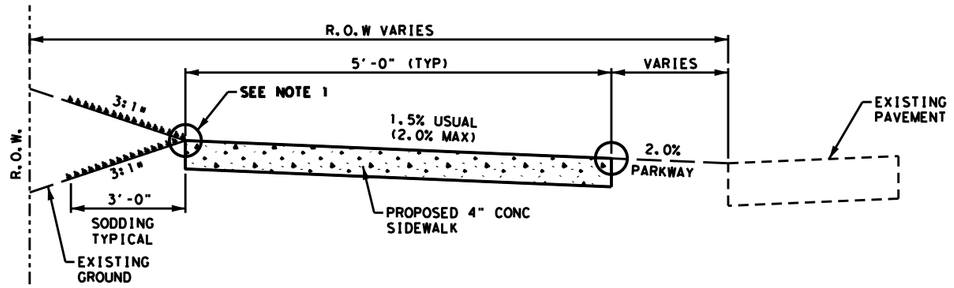
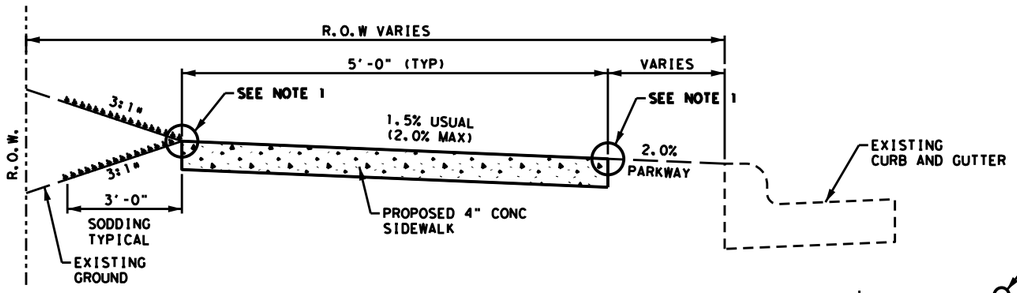
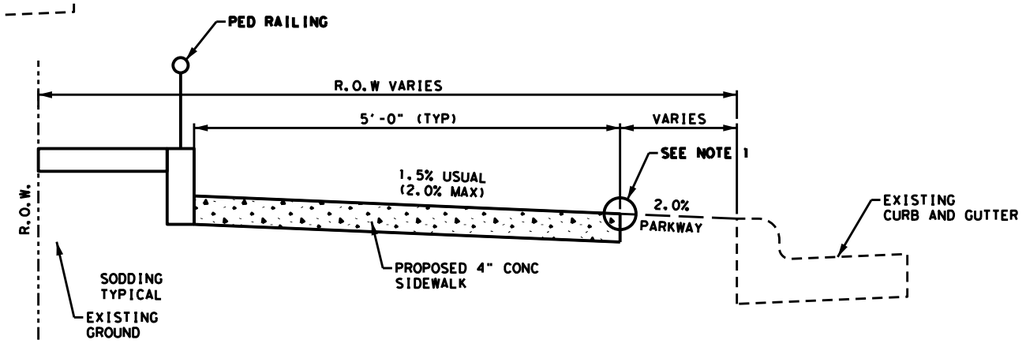


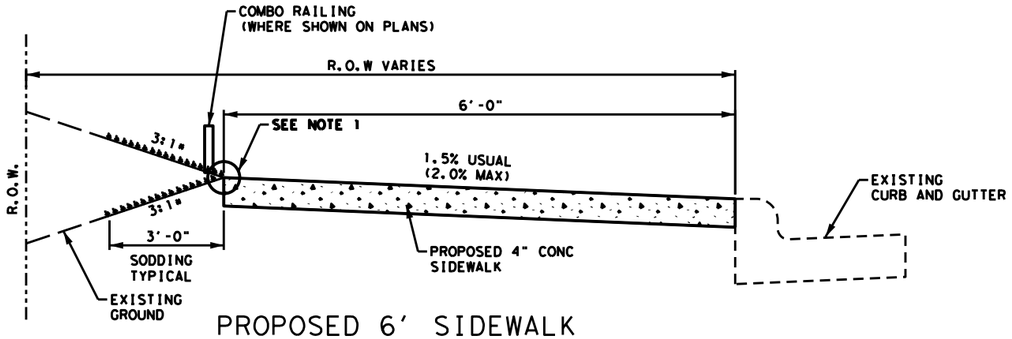
PROPOSED 5' SIDEWALK
NO CURB
NOT TO SCALE



PROPOSED 5' SIDEWALK
OFFSET FROM CURB
NOT TO SCALE



RM334/SL166
INTERSECTION
NOT TO SCALE



PROPOSED 6' SIDEWALK
ADJACENT TO CURB
NOT TO SCALE

NOTE:
1. ADD TOE DITCH AT EACH EXPOSED END OF SIDEWALK. 6" TOP WIDTH AND 3" RISE.

AT LOCATIONS SHOWN IN THE DRAWINGS, ADD 6" MONO CURB.

LEGEND
SLOPE DIRECTION
EXISTING TREES

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
4/26/2021

TYPICAL SECTIONS

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			13
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5il3-03\Design\General\5il303_GEN_TYP_01.dgn
DATE: 4/26/2021 TIME: 2:21:51 PM USER: $USER$

GENERAL NOTES:

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

Antonio Reyna – Antonio.Reyna1@txdot.gov

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

All contractor questions will be reviewed by the Engineer. Once a response is developed, it will be posted to TxDOT's Public FTP at the following address: https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/

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

Item 5 - Control of the Work

The Contractor shall maintain and preserve the integrity of all "existing survey markers" by avoiding the disturbance of such markers; which include all control points (horizontal and/or vertical), stakes, marks, and right-of-way markers. The Department will repair all Contractor disturbed control points, stakes, marks, and right-of-way markers. The cost for any and all repairs to the "existing survey markers" will be deducted from money due or to become due to the Contractor.

Contact the Laredo District Signal Section (956-712-7770) for coordination with TxDOT underground lines and/or facilities.

Place temporary asphalt around the manholes and/or valves to provide a minimum of 50:1 taper when manholes and/or valves are exposed to traffic. The cost of the elevation adjustment and asphalt tapers will not be paid for directly, but will be subsidiary to the price bid for other manhole and/or valve work.

Prior to construction must call 811 to verify any utilities located within project limits. Contractor will also coordinate with utility owners listed below for any adjustments needed to sanitary sewer manholes, water valves, gas valve, telecommunication, television manhole located within project limits. The utility company is responsible for any adjustment when necessary. The work should be performed in a manner as to not delay construction contractor work activity.

Contractor will make necessary arrangements with the utility owner(s) when utility adjustments are required, as a result of construction activities.

Utility Owner	Phone Number
AEP Distribution	361-881-5707
AEP Transmission	918-202-3935
AT&T	210-804-2961
Century Link	918-547-0817
Rio Grande Electric Coop	830-563-2444
City of Bracketville	830-563-2412
City of Del Rio Tx Utilities	830-774-8622
Charter Communications	830-290-6001
Frontier	903-464-2621

Item 7 - Legal Relations and Responsibilities

No significant traffic generator events identified.

Jurisdictional Waters of the United States and Project Specific Locations (PSL) Coordination - This project requires permit(s) with environmental resource agencies. There is a high probability that environmentally sensitive areas will be encountered on contractor designated project specific locations (PSLS) for the project (including but not limited to haul roads, equipment staging areas, parking areas, etc.).
Requirements for Work within Jurisdictional Waters of the United States:
The department has been authorized to perform work within designated areas of the project under U.S. Army Corps of Engineers (USACE) nationwide permit (NWP) #14 and/or #3a and/or #3b.

The contractor will not initiate activities in a project specific location (PSL) associated with a U.S. Army Corps of Engineers (USACE) permit area (i.e. an area where the USACE has jurisdiction) that has not been previously evaluated by the USACE as part of the permitting for this project. Such activities include, but are not limited to, haul roads, equipment staging areas, borrow and disposal sites. Associated defined here includes materials delivered to or from the PSL. The permit area includes all waters of the U.S. and their associated wetlands affected by activities associated with this project. Special restrictions may be required for such work in these USACE jurisdictional areas. The contractor will be responsible for any and all consultations with the USACE regarding activities, including PSLs, which have not been previously evaluated by the USACE. The

Contractor will provide the department with a copy of all consultation(s) or approval(s) from the USACE prior to initiating activities.

The contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self determination has been made that the PSL is non-jurisdictional or proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The contractor is solely responsible for documenting any determination(s) that their activities do not affect a USACE permit area. The contractor will maintain copies of their determination(s) for review by the department and/or any regulatory agency.

The disturbed area for all project locations in the Contract, and the Contractor project specific locations (PSLs) within 1 mile of the project limits for the Contract, will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, the Contractor shall provide a copy of the Contractor Notice of Intent (NOI) for the PSLs to the Engineer and to the local government operating a municipal separate storm sewer system (MS4) if applicable. If the total area of project disturbed areas and PSLs total between 1-acre but less than 5-acres, the Contractor shall post the appropriate Contractor Construction Site Notice for all Contractor PSLs to be in compliance with TCEQ storm water regulations.

In order to expedite the approval process for PSLs or to eliminate or minimize potential impacts to project progress, initiate coordination efforts with the U.S.A.C.E. within 30 days from the date of “authorization to begin work” for all PSLs that are in areas where the USACE has jurisdiction (i.e. USACE permit areas). If this is not done, the contractor waives the right to request any contract time considerations if project progress is impacted and PSL’S approval is still pending.

Requests submitted to the area engineer will be evaluated on this basis, and will require documentation showing substantial early coordination efforts to expedite the approval process as herein stated. The request will include a detailed chronological summary status with dates of coordination activities with the resource agencies, including those occurring after the initial coordination, to be reviewed and confirmed by the district’s environmental section.

For PSLs that fall within USACE permit areas, the Contractor must document and coordinate with the USACE, if required, before any excavation hauled from or embankment hauled into a USACE permit area by either (1) or (2) below.

1. Restricted Use of Materials for Previously Evaluated Permit Areas. The Contractor will document both the project specific location (PSL) and their authorization and the Contractor will maintain copies for review by the Department and/or any regulatory agency. When an area within the project limits has been evaluated by the USACE as part of the permit process for this project, then:
   a. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in Item 110 is used for permanent or temporary fill (Item 132, Embankment) within a USACE permit area may be restricted;
   b. Suitable embankment (Item 132) from within the USACE permit area is used as fill within a USACE evaluated area may be restricted; and,
   c. Unsuitable excavation or excess excavation [“Waste”] (Item 110) that is disposed of at an approved location within a USACE evaluated area may be restricted.

2. Contractor Materials from Areas Other than Previously Evaluated Areas. The Contractor will provide the Department with a copy of all USACE coordination or approvals before initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right-of-way locations used for the following, but not limited to, haul roads, equipment staging areas, borrow and disposal sites, including:
   a. Item 132, Embankment, used for temporary or permanent fill within a USACE permit area; and,
   b. Unsuitable excavation or excess excavation [“Waste”] (Item 110, Excavation) that is disposed of outside a USACE evaluated area.

Storm Water Regulations Requirements:
The Contractor shall be responsible for (off ROW) PSLs applicable to the TCEQ Construction General Permit (CGP) requirements and will notify the Engineer of the disturbed acreage within one (1) mile of the project limits. The Contractor shall obtain any required authorization form the TCEQ for any Contractor PSLs for construction support activities on or off ROW.

The total area disturbed for this project is 7.61 acres. The disturbed area in this project, all project locations in the Contract, and the Contractor project specific locations (PSLs), within 1 mile of the project limits, for the Contract will further

establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, the Contractor shall provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer and to the local government that operates a municipal separate storm sewer system (MS4), if applicable.

Item 8 - Prosecution and Progress

No closures will be allowed on the weekends which include the following holidays: January 1, the last Monday in May, July 4, the first Monday in September, the fourth Thursday in November, December 25 and Easter weekend.

Nighttime work will be allowed to be performed, as approved and directed by the Engineer. Refer to the Sequence of Work, Traffic Control Plan, etc. shown in the plans, for other details.

Item 100 - Preparing Right of Way

It is the intent on the plans to prepare only that portion of the right-of-way necessary for construction. Do not disturb natural vegetation and trees wherever possible.

Burning of brush will not be permitted.

Do not begin any clearing operations until the trees and areas of vegetation that should not be removed or disturbed by construction activities have been identified. To ensure that these areas are not disturbed, place protection fencing as shown in the plans or as directed/approved by the Engineer.

All right of way clearing operations will be coordinated with the project's SW3P and as directed/approved by the Engineer.

The following items will also be subsidiary to this item:
- Metal railing removal shown on US-90 S (Sheet 2 of 15)
- Concrete driveway and sidewalk not specifically quantified in drawings
- HMA where not specifically quantified in drawings

Item 104 – Removing Concrete

In those areas where the pavement is not to be overlaid, provide a smooth surface after the curb removal. Planing or grinding is considered an acceptable method at these locations.

Measurement and payment is in accordance with this item where quantified and subsidiary when not specifically denoted on plans

Item 160 - Topsoil

Place 5 inches of Topsoil to designated areas.

Item 162 - Sodding for Erosion Control

Furnish and place Bermuda grass sod.

Item 164 - Seeding for Erosion Control

Drill seeding will be used for this project. Refer to the Laredo District Standard Revegetation notes and specifications for additional information.

Item 168 - Vegetative Watering

Maintain the seed bed in a condition favorable for the growth of grass. Watering can be postponed immediately after a rainfall on the site of ½ in. or greater, but will be resumed before the soil dries out. Watering will continue until final acceptance.

Obtain water at a source that is metered or furnish the manufacturer's specifications showing the tank capacity for each truck used. Notify the Engineer before watering so meter readings or truck counts may be verified.

Establish 70% uniform vegetative coverage during this period in order to comply with stabilization requirements. Operate and meter water equipment under pumping pressure in order to deliver the required quantities of water necessary. During periods of adequate moisture, as determined by the Engineer, mechanical watering may not be required. In addition to metering the water equipment, provide a log book showing daily water usage and receipts of water applied upon request of the Engineer.

Upon establishment of 70% vegetative coverage as determined by the Engineer, the Engineer has the option to require the Contractor to continue watering as specified for a period not to exceed 30 days.

Item 340 – Dense Graded Hot Mix Asphalt (Small Quantity)

The tack coat material shall be placed at a rate of approximately 0.07 gal/sy.

Underseals will be tacked at a rate of 0.04 gal/sy when left open to traffic for more than 14 days.

Waterproof thermal tarps are required on all loads unless otherwise approved by the Engineer

Contractor is allowed to use RAP below the riding surface.

HMACP TY	Application Rate	PG Binder	Lab Density
A*	115 #/SY/IN	70 -22	96.5%
B*	115 #/SY/IN	70 -22	96.5%
C*	115 #/SY/IN	70 -22	96.5%
D*	115 #/SY/IN	70 -22	96.5%

* If mix has RAP, the required lab density will be 97%.

In addition to the tack coat materials specified in these standard specifications, MS-2 or MS-1 may be used.

Use the point of sampling for tests, test method TEX-217-F (part I and part II), for the coarse aggregate stockpile when the dryer-drum mixing plant is used. The point of sampling when the batch plant is used will be at the hot bins.

The use of RAP or RAS will not be allowed on the final riding surface.

Item 496 - Removing Structures

Store items as indicated by engineer to be salvaged at a location designated by the Engineer:

Item 500 - Mobilization

"Materials-on-Hand" payments will not be considered in determining percentages used to compute mobilization payments.

Item 502 - Barricades, Signs, and Traffic Handling

Designate, as the Contractor Responsible Person (CRP), an English speaking employee on-call nights and weekends (or any other time that work is not in progress) with a local address and telephone number for maintenance of signs and barricades. This employee will be located within one (1) hour of traveling time to the project site. Notify the Engineer in writing of the name, address and telephone number of this employee. Furnish this information to local law enforcement officials.

The time frame for the Contractor to provide properly maintained traffic control devices before they are considered to be in non-compliance with this Item, is 48 hours regardless of the days of the week involved after notification is done in writing by the Engineer.

Provide two-way radios in areas where flagmen do not have visual contact with one another or cannot communicate with one another.

Limit lane closures to the extent possible based on active work zones. Single lane closures only where necessary. Provide a separate sign set up for each location.

Ensure equipment not in use, stockpile aggregate, and other working materials are:
At a proper clear zone distance from the roadway or,
Barricaded safely.
Do not obstruct traffic or sight distance;
Do not interfere with the access from abutting property; or
Do not interfere with roadway drainage.

Erect signs in locations not obstructing the traveling public's view of the normal roadway signing or necessary sight distance at intersections and curves.

During the holiday time frame of December 21st through January 1st, every effort should be taken to ensure that all travel lanes remain open where possible.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more

frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Item 531 – Sidewalks

All compliant ramps are to remain in place.

Install an approved cast in place detectable warning surface on all new curb ramps.

Construct compliant curb ramps based upon referenced design criteria, Texas Accessibility Standards and TxDOT Pedestrian Facilities Standards. 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 corners are unique and it may be necessary to use various combinations of ramp elements to achieve a compliant ramp configuration.

Review the curb ramp location and layout with TxDOT's 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 Project Drawings, promptly notify the TxDOT inspector.

Any approval, inspection, or checking of the contractor's layout by TxDOT 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 TxDOT.

Furnish and install #3 dia. reinforcing steel bars @ 18" O.C./B.W. for sidewalk, curb ramps and curb ramp components.

Proposed curb ramps, sidewalks, curbs, and riprap is to be doweled 8in minimum into existing, using 1/2in reinforcement placed on 12in centers.

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.

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

Contractor is to match existing concrete color and texturing at various locations which, as directed by the engineer, require matching.

Contractor shall adjust any water meter boxes, valves, fire hydrants and other water appurtenances as required for construction of the sidewalk. Approximate locations are shown in the plans, but contractor is responsible for all locations subsidiary to this bid item. Estimated quantities are:

ADJUST AND/OR RELOCN OF WATER METER BOX – 8 EA TOTAL (7 EA ON CSJ 0023-07-016 AND 1 EA ON 0876-02-036)

ADJUST FIRE HYDRANT – 1 EA (ON CSJ 0023-07-016)

Item 618 - Conduit

If using the trenching method outside of existing pavement, place conduit on a 2-inch sand cushion and then backfill with a minimum of 6 inches of sand fill. Backfill the remainder of the trench with flexible base, soil, or two-sack concrete as directed.

Place conduit in an area not exceeding 2 feet in any direction from a straight line and the depth of the conduit will be 2 feet, except when crossing a roadway, where the depth will not be more than 3 feet or less than 1 foot below the bottom of the base material in the roadway when placed by the jacking or boring method. Any evidence of damage to the roadway during the jacking or boring operation will be sufficient grounds to stop the method being used. Repair any roadway

damage, due to daily operations in jacking or boring, at no additional cost to the State.

Item 620 - Electrical Conductors

Provide a sized, self-insulated, solderless terminal to ends of wires to be attached to terminal posts. Attach these terminals to wires with a ratchet type compression crimping tool properly sized to the wire. Place pre-numbered identification tags of plastic or tape around each wire adjacent to wire ends in the controller, signal heads, and signal pole terminal blocks.

Item 628 - Electrical Services

All traffic signal electrical service pole(s) for this project will be as shown on the plans.

Consider any and all costs associated with the installation and connection of electrical services to the electrical utility company subsidiary to bid item 628 "Electrical Services." This includes conduit, conduit fittings, and electrical conductors.

Ground all electrical service poles in accordance with the latest edition of the National Electrical Code (NEC) and TXDOT Standards. Include the cost of such grounding in the unit price for this bid item.

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

Item 644 - Small Roadside Sign Assemblies

Salvage and deliver all aluminum sign faces to the local TxDOT maintenance office.

Item 666 – Reflectorized Pavement Markings

Reflectivity requirements for Type I will be as per Item 666.

Item 682 - Vehicle and Pedestrian Signal Heads

All new signal heads will be covered with burlap from the time of installation until the signal is placed in operation. Provide signal heads made of polycarbonate material and yellow in color. All signal heads will have detachable visors. Position all pedestrian signal heads to provide the best view for motorists and pedestrians.

Item 684 - Traffic Signal Cables

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

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

Item 6001 – Portable Changeable Message Sign

Provide four (4) electronic portable changeable message signs as required by the Engineer. Provide backups and keep operational and available on the jobsite at all times during traffic control operations. The electronic portable changeable message signs will be made available for utilization for the entire duration of the project, including all alternative locations.

Item 6185 – Truck Mounted Attenuator (TMA) and Trailer

Provide 2 Truck Mounted Attenuators as required by the Engineer. Provide backup and keep operational and available on the jobsite at all times during traffic control operations. The Truck Mounted Attenuator will be made available for utilization for the entire duration of the project, including all alternative locations.

SUMMARY OF ROADWAY ITEMS

LOCATION	100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013	531 6016	471 6003	531 6017	531 6057	536 6002	531 6004	531 6006
	PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(T Y E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	CURB RAMPS (TY 21)	GRATE & FRAME	CURB RAMPS (TY 22)	CONC SIDEWALK (SPECIAL)(RETAINING WALL)	CONC MEDIAN	CURB RAMPS (TY 1)	CURB RAMPS (TY 3)
	STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA	EA	EA	EA	SF	SY	EA	EA
US 90 N CSJ: 0022-10-073																								
BEGIN TO STA 14+00	0.09												143			4		1						
STA 14+00 TO STA 19+00	0.12												259	1										
STA 19+00 TO STA 24+00	0.12												225			2								
STA 24+00 TO STA 29+00	0.12						115						235			2								
STA 29+00 TO STA 34+00	0.12						500						334											
STA 34+00 TO STA 39+00	0.12						318						284			2								
STA 39+00 TO STA 44+00	0.12												537											
STA 44+00 TO STA 49+00	0.12												455											
STA 49+00 TO STA 54+05	0.12												318	1			1		2					
STA 54+05 TO STA 59+00	0.12	22						38		50			159		1	1							1	
STA 59+00 TO STA 64+00	0.12	65				253		185			112		199			4								
STA 64+00 TO STA 69+00	0.12	28				27		112	45		28		184			4								
STA 69+00 TO STA 74+00	0.12	48				215		112			62		205			2								
STA 74+00 TO STA 79+00	0.12	34						191			81		199			2								
STA 79+00 TO STA 84+00	0.12	3											63			2								
STA 84+00 TO STA 89+00	0.12	1											7			2								
STA 89+00 TO STA 94+00	0.12					38							36			6								
STA 94+00 TO STA 99+00	0.12					166		15					120											
STA 99+00 TO STA 104+00	0.12	13				87		96			130		189			3								
STA 104+00 TO STA 109+00	0.12	2											27			3								
STA 109+00 TO STA 114+00	0.12	4					4						129			2								
STA 114+00 TO END	0.01						37						25											
US 90 S CSJ: 0023-01-099																								
BEGIN TO STA 14+00	0.08		21				72						190	1			2							
STA 14+00 TO STA 19+00	0.12										88		232											
STA 19+00 TO STA 24+00	0.12										25		253				2							
STA 24+00 TO STA 29+00	0.12										107		183				4							
STA 29+00 TO STA 34+00	0.12										259		125				2							
STA 34+00 TO STA 39+00	0.12					73					151		157				3							
STA 39+00 TO STA 44+00	0.12										98	34	108				2							
STA 44+00 TO STA 49+00	0.12											104	81											
STA 49+00 TO STA 54+00																								
STA 54+00 TO STA 59+00																								
STA 59+00 TO STA 64+00							183																	
STA 64+00 TO STA 69+00	0.10			222			325					77	228				1							
STA 69+00 TO STA 74+00	0.12						409						265				1							
STA 74+00 TO STA 79+00	0.12						346						213				4							
STA 79+00 TO END	0.08						312						210											
SL 166 CSJ: 0023-07-016																								
BEGIN TO STA 19+00	0.11										110	61	188				2							
STA 19+00 TO STA 24+00	0.12									28		45	246				2							
STA 24+00 TO STA 29+00	0.12									42		56	214	1		1								
STA 29+00 TO STA 34+00	0.12											49	208											
STA 34+00 TO STA 39+00	0.12											83	253			2								
STA 39+00 TO STA 44+00	0.12											14	255			1								
STA 44+00 TO STA 49+00	0.12						31			39		53	215			2								
STA 49+00 TO STA 54+00	0.12				40		185				44	17	158			2								
STA 54+00 TO STA 59+00	0.12				34		109				14		233	1		1								
STA 59+00 TO STA 64+00	0.12				26		31					62	283											
STA 64+00 TO STA 69+00	0.12									70			283			1	1							
STA 69+00 TO STA 74+00	0.12				59							85	231			1	1							
STA 74+00 TO END	0.06									53		17	104	1			1							
RM 334 CSJ: 0876-02-036																								
BEGIN TO STA 14+00	0.09						51			70	59		83			4	2				20		2	
STA 14+00 TO STA 19+00	0.12						320						252	2			6	1		1	80	12		2
STA 19+00 TO STA 24+00	0.12												16			1	1							
STA 24+00 TO STA 29+00	0.12									100			48				2							
STA 29+00 TO STA 34+00	0.12									51			12				4							
STA 34+00 TO STA 39+00	0.12						60			53		26	210	1		2	2							
STA 39+00 TO STA 44+00	0.12									35			10			3								
STA 44+00 TO STA 49+00	0.12									81			91	1		1	1							
STA 49+00 TO STA 54+00	0.12									129			222			6								
STA 54+00 TO STA 59+00	0.12									125			242			4								
STA 59+00 TO STA 63+00	0.10									26		42	161			3	1							
STA 63+00 TO STA 68+00	0.12									84		63	232			5								
STA 68+00 TO STA 73+00	0.12									57		45	280			2								
STA 73+00 TO STA 78+00	0.12									20			312			1								
STA 78+00 TO STA 83+00	0.12									73			276			3								
STA 83+00 TO STA 88+00	0.12												334											
STA 88+00 TO STA 93+00	0.12												334											
STA 93+00 TO STA 98+00	0.12												333											
STA 98+00 TO STA 103+00	0.12											63	306											
STA 103+00 TO END	0.05												131											
PROJECT TOTALS	**7.61**	**220**	**21**	**222**	**159**	**859**	**3408**	**749**	**45**	**1186**	**1368**	**996**	**13333**	**10**	**1**	**87**	**48**	**2**	**2**	**1**	**100**	**12**	**3**	**2**

QUANTITY SUMMARY

SHEET 1 OF 2

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		15

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

SUMMARY OF DRAINAGE ITEMS

LOCATION	479 6002	460 6019	462 6010	466 6232	465 6011
	ADJUSTING INLETS	CMP (GAL STL 21 IN)	CONC BOX CULV (6 FT X 3 FT)	WINGWALL (SPL)	JCTBOX(COMPL)(PJB)(6FTX6FT)
	EA	LF	LF	EA	EA
US 90 N CSJ: 0022-10-073					
STA 59+00 TO STA 64+00	1				
STA 104+00 TO STA 109+00	1				
US 90 S CSJ: 0023-01-099					
STA 29+00 TO STA 34+00	2				
STA 34+00 TO STA 39+00	1				
STA 39+00 TO STA 44+00	1				
STA 44+00 TO STA 49+00		76			1
SL 166 CSJ: 0023-07-016					
STA 69+00 TO STA 74+00			18	1	
RM 334 CSJ: 0876-02-036					
STA 34+00 TO STA 39+00	1				
PROJECT TOTALS	**7**	**76**	**18**	**1**	**1**

SUMMARY OF UTILITY ITEMS

LOCATION	**	**	6027 6009
	ADJUST AND/OR RELOCN OF WATER METER BOX	ADJUST FIRE HYDRANT	GROUND BOX (ADJUST)
	EA	EA	EA
US 90 N CSJ: 0022-10-073			
STA 59+00 TO STA 64+00			2
STA 109+00 TO STA 114+00			1
STA 114+00 TO END			
US 90 S CSJ: 0023-01-099			
SL 166 CSJ: 0023-07-016			
STA 34+00 TO STA 39+00	2		
STA 54+00 TO STA 59+00	1		
STA 59+00 TO STA 64+00	1		
STA 64+00 TO STA 69+00		1	
STA 69+00 TO STA 74+00	3		
RM 334 CSJ: 0876-02-036			
STA 14+00 TO STA 19+00			1
STA 29+00 TO STA 34+00	1		
PROJECT TOTALS	**8**	**1**	**4**

SUMMARY OF EROSION CONTROL ITEMS

LOCATION	160 6010	162 6002	164 6001	168 6001	500 6001	506 6038
	FURNISH AND PLACE TOPSOIL (5")	BLOCK SODDING	BROADCAST SEED (PERM) (RURAL) (SANDY)	VEGETATIVE WATERING	MOBILIZATION	TEMP SEDMT CONT FENCE (INSTALL)
	SY	SY	SY	MG	LS	LF
US 90 N CSJ: 0022-10-073	2100	1100	1100	1710	0.25	12600
US 90 S CSJ: 0023-01-099	1500	800	800	772	0.25	8800
SL 166 CSJ: 0023-07-016	3000	1500	1500	823	0.25	17500
RM 334 CSJ: 0876-02-036	3300	1700	1700	1341	0.25	19800
PROJECT TOTALS	**9900**	**5100**	**5100**	**4646**	**1**	**58700**

**** NOTE:**
QUANTITIES ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING WATER APURTENANCE BOXES AND FIRE HYDRANTS TO GRADE SUBSIDIARY TO ITEM 531 CONC SIDEWALKS.

SUMMARY OF SIGNING ITEMS

LOCATION	644 6068
	RELOCATE SM RD SN SUP&AM TY 10BWG
	EA
US 90 N CSJ: 0022-10-073	
STA 54+05 TO STA 59+00	1
STA 64+00 TO STA 69+00	1
STA 69+00 TO STA 74+00	1
STA 74+00 TO STA 79+00	1
US 90 S CSJ: 0023-01-099	
STA 29+00 TO STA 34+00	1
SL 166 CSJ: 0023-07-016	
STA 24+00 TO STA 29+00	2
STA 54+00 TO STA 59+00	2
STA 59+00 TO STA 64+00	1
STA 69+00 TO STA 74+00	2
STA 74+00 TO END	1
RM 334 CSJ: 0876-02-036	
BEGIN TO STA 14+00	1
STA 14+00 TO STA 19+00	3
STA 34+00 TO STA 39+00	2
STA 44+00 TO STA 49+00	2
STA 49+00 TO STA 54+00	3
STA 54+00 TO STA 59+00	2
STA 59+00 TO STA 63+00	2
STA 63+00 TO STA 68+00	1
STA 68+00 TO STA 73+00	1
PROJECT TOTALS	**30**

SUMMARY OF TRAFFIC SIGNAL ITEMS

LOCATION	618 6046	618 6047	620 6009	682 6018	684 6007	684 6009	687 6001	688 6001
	CONDT (PVC) (SCH 80) (2")	CONDT (PVC) (SCH 80) (2") (BORE)	ELEC CONDR (NO.6) BARE	PED SIG SEC (LED)(COUNTDOWN)	TRF SIG CBL (TY A)(12 AWG)(2 CONDR)	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	PED POLE ASSEMBLY	PED DETECT PUSH BUTTON (APS)
	LF	LF	LF	EA	LF	LF	EA	EA
US 90 N CSJ: 0022-10-073								
US 90 at Chevrolet Dr	50	120	170	2	180	180	1	2
RM 334 CSJ: 0876-02-036								
RM 334 at SL 166	30	170	200	5	370	490	2	4
RM 334 at US 90								
PROJECT TOTALS	**80**	**290**	**370**	**7**	**550**	**670**	**3**	**6**

SUMMARY OF PAVEMENT MARKING ITEMS

LOCATION	666 6048	677 6001	677 6003	677 6005	677 6007
	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (8")	ELIM EXT PAV MRK & MRKS (12")	ELIM EXT PAV MRK & MRKS (24")
	LF	LF	LF	LF	LF
US 90 N CSJ: 0022-10-073					
US 90 at Chevrolet Dr	120	20	20		40
RM 334 CSJ: 0876-02-036					
RM 334 at SL 166	296			260	80
RM 334 at US 90	172			80	132
PROJECT TOTALS	**588**	**20**	**20**	**340**	**252**

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS

LOCATION	502 6001	6001 6002	6185 6002
	BARRICADES, SIGNS AND TRAFFIC HANDLING	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)
	MO	EA	DAY
US 90 N CSJ: 0022-10-073	4	1	20
US 90 S CSJ: 0023-01-099	3	1	
SL 166 CSJ: 0023-07-016	3	1	
RM 334 CSJ: 0876-02-036	3	1	
PROJECT TOTALS	**13**	**4**	**20**

SUMMARY OF REMOVAL ITEMS

LOCATION	104 6001	104 6017	496 6002	496 6006	105 6096
	REMOVING CONC (PAV)	REMOVING CONC (DRIVEWAYS)	REMOV STR (INLET)	REMOV STR (HEADWALL)	REMOV STAB BASE AND ASPH PAV (0"-12")
	SY	SY	EA	EA	SY
US 90 N CSJ: 0022-10-073					
STA 59+00 TO STA 64+00		112			
STA 64+00 TO STA 69+00	45	17			
STA 69+00 TO STA 74+00		61			
STA 74+00 TO STA 79+00		88			
STA 99+00 TO STA 104+00		51			
US 90 S CSJ: 0023-01-099					
STA 14+00 TO STA 19+00		87			
STA 19+00 TO STA 24+00		25			
STA 24+00 TO STA 29+00		107			
STA 29+00 TO STA 34+00		255	1		
STA 34+00 TO STA 39+00		193			
STA 39+00 TO STA 44+00		97			34
STA 44+00 TO STA 49+00					104
STA 64+00 TO STA 69+00					77
SL 166 CSJ: 0023-07-016					
BEGIN TO STA 19+00		111			61
STA 19+00 TO STA 24+00					74
STA 24+00 TO STA 29+00		56			42
STA 29+00 TO STA 34+00					50
STA 34+00 TO STA 39+00					46
STA 39+00 TO STA 44+00					15
STA 44+00 TO STA 49+00					92
STA 49+00 TO STA 54+00		44			17
STA 54+00 TO STA 59+00					15
STA 59+00 TO STA 64+00					160
STA 64+00 TO STA 69+00					70
STA 69+00 TO STA 74+00				1	94
STA 74+00 TO END					70
RM 334 CSJ: 0876-02-036					
BEGIN TO STA 14+00		59			70
STA 24+00 TO STA 29+00					101
STA 29+00 TO STA 34+00					51
STA 34+00 TO STA 39+00					103
STA 39+00 TO STA 44+00					35
STA 44+00 TO STA 49+00					82
STA 49+00 TO STA 54+00					130
STA 54+00 TO STA 59+00					126
STA 59+00 TO STA 63+00					68
STA 63+00 TO STA 68+00					147
STA 68+00 TO STA 73+00					79
STA 73+00 TO STA 78+00					20
STA 78+00 TO STA 83+00					72
STA 98+00 TO STA 103+00					63
PROJECT TOTALS	**45**	**1363**	**1**	**1**	**2168**

QUANTITY SUMMARY

SHEET 2 OF 2

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		16

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

QUANTITY SHEET

CONTROLLING PROJECT ID 0022-10-073 **DISTRICT** Laredo **COUNTY** Kinney, Val Verde
HIGHWAY RM 334, SL 166, US 90

													TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0022-10-073**		**0023-01-099**		**0023-07-016**		**0876-02-036**				
		PROJECT ID		**A00132977**		**A00132976**		**A00132974**		**A00132972**				
		COUNTY		**Val Verde**		**Val Verde**		**Kinney**		**Kinney**				
		HIGHWAY		**US 90**		**US 90**		**SL 166**		**RM 334**				
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL			
	100-6002	PREPARING ROW	STA	2.500		1.340		1.490		2.280			7.610	
	104-6001	REMOVING CONC (PAV)	SY	45.000									45.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	329.000		764.000		211.000		59.000			1,363.000	
	105-6096	REMOV STAB BASE AND ASPH PAV (0"-12")	SY			218.000		806.000		1,147.000			2,171.000	
	160-6010	FURNISH AND PLACE TOPSOIL (5")	SY	2,100.000		1,500.000		3,000.000		3,300.000			9,900.000	
	162-6002	BLOCK SODDING	SY	1,100.000		800.000		1,500.000		1,700.000			5,100.000	
	164-6001	BROADCAST SEED (PERM) (RURAL) (SANDY)	SY	1,100.000		800.000		1,500.000		1,700.000			5,100.000	
	168-6001	VEGETATIVE WATERING	MG	1,710.000		772.000		823.000		1,341.000			4,646.000	
	340-6050	D-GR HMA(SQ) TY-C PG70-22	TON	220.000									220.000	
	432-6001	RIPRAP (CONC)(4 IN)	CY			21.000							21.000	
	450-6004	RAIL (TY T221)	LF			222.000							222.000	
	450-6051	RAIL (HANDRAIL)(TY E)	LF					159.000					159.000	
	460-6019	CMP (GAL STL 21 IN)	LF			76.000							76.000	
	462-6010	CONC BOX CULV (6 FT X 3 FT)	LF					18.000					18.000	
	465-6011	JCTBOX(COMPL)(PJB)(6FTX6FT)	EA			1.000							1.000	
	466-6232	WINGWALL (SPL)	EA					1.000					1.000	
	471-6003	GRATE & FRAME	EA	2.000									2.000	
	479-6002	ADJUSTING INLETS	EA	2.000		4.000				1.000			7.000	
	496-6002	REMOV STR (INLET)	EA			1.000							1.000	
	496-6006	REMOV STR (HEADWALL)	EA					1.000					1.000	
	500-6001	MOBILIZATION	LS	25.00%		25.00%		25.00%		25.00%			100.00%	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	4.000		3.000		3.000		3.000			13.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	12,600.000		8,800.000		17,500.000		19,800.000			58,700.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	12,600.000		8,800.000		17,500.000		19,800.000			58,700.000	
	529-6005	CONC CURB (MONO) (TY II)	LF	786.000		73.000							859.000	
	529-6008	CONC CURB & GUTTER (TY II)	LF	974.000		1,647.000		356.000		431.000			3,408.000	
	529-6022	CONC CURB (DOWEL) (TY II)	LF	749.000									749.000	
	530-6001	INTERSECTIONS (CONC)	SY	45.000									45.000	
	530-6002	INTERSECTIONS (ACP)	SY	50.000				232.000		904.000			1,186.000	
	530-6004	DRIVEWAYS (CONC)	SY	413.000		728.000		168.000		59.000			1,368.000	
	530-6005	DRIVEWAYS (ACP)	SY			215.000		542.000		239.000			996.000	
	531-6001	CONC SIDEWALKS (4")	SY	4,332.000		2,245.000		2,871.000		3,885.000			13,333.000	
	531-6004	CURB RAMPS (TY 1)	EA	1.000						2.000			3.000	
	531-6005	CURB RAMPS (TY 2)	EA	2.000		1.000		3.000		4.000			10.000	
	531-6006	CURB RAMPS (TY 3)	EA							2.000			2.000	
	531-6008	CURB RAMPS (TY 5)	EA	1.000									1.000	
	531-6010	CURB RAMPS (TY 7)	EA	41.000				11.000		35.000			87.000	

QUANTITY SHEET

CONTROLLING PROJECT ID 0022-10-073 **DISTRICT** Laredo **COUNTY** Kinney, Val Verde
HIGHWAY RM 334, SL 166, US 90

			CONTROL SECTION JOB	**0022-10-073**		**0023-01-099**		**0023-07-016**		**0876-02-036**		TOTAL EST.	TOTAL FINAL
			PROJECT ID	**A00132977**		**A00132976**		**A00132974**		**A00132972**			
			COUNTY	**Val Verde**		**Val Verde**		**Kinney**		**Kinney**			
			HIGHWAY	**US 90**		**US 90**		**SL 166**		**RM 334**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL		
	531-6013	CURB RAMPS (TY 10)	EA	1.000		21.000		7.000		19.000		48.000	
	531-6016	CURB RAMPS (TY 21)	EA	1.000						1.000		2.000	
	531-6017	CURB RAMPS (TY 22)	EA							1.000		1.000	
	531-6057	CONC SIDEWALK (SPECIAL)(RETAINING WALL)	SF							100.000		100.000	
	536-6002	CONC MEDIAN	SY							12.000		12.000	
	618-6046	CONDT (PVC) (SCH 80) (2")	LF	50.000						30.000		80.000	
	618-6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	120.000						170.000		290.000	
	620-6009	ELEC CONDR (NO.6) BARE	LF	170.000						200.000		370.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	4.000		1.000		8.000		17.000		30.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	120.000						468.000		588.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	20.000								20.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	20.000								20.000	
	677-6005	ELIM EXT PAV MRK & MRKS (12")	LF							340.000		340.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	40.000						212.000		252.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	2.000						5.000		7.000	
	684-6007	TRF SIG CBL (TY A)(12 AWG)(2 CONDR)	LF	180.000						370.000		550.000	
	684-6009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	180.000						490.000		670.000	
	687-6001	PED POLE ASSEMBLY	EA	1.000						2.000		3.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA	2.000						4.000		6.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	1.000		1.000		1.000		1.000		4.000	
	6027-6009	GROUND BOX (ADJUST)	EA	3.000						1.000		4.000	
	6185-6002	TMA (STATIONARY)	DAY	20.000								20.000	
	08	EROSION CONTROL MAINTENANCE (NON-PART)	LS	1.000								1.000	
		SAFETY CONTINGENCY (NON-PART)	LS	1.000								1.000	

CONSTRUCTION PHASE NARRATIVE

1. AS SL-166 HAS AN OUTSTANDING UTILITY RELOCATION AT TIME OF FINAL PLANS, CONTRACTOR SHALL PHASE THAT WORK LAST. OTHER STREETS MAY BE PHASED AT CONTRACTOR'S DISCRETION IN COORDINATION WITH ENGINEER.

2. INSTALL ADVANCE WARNING SIGNS AND TRAFFIC CONTROL MEASURES.

3. INSTALL APPROPRIATE SEDIMENT CONTROL DEVICES AS DIRECTED.

4. UP TO 2 PORTABLE CHANGEABLE MESSAGE SIGNS MAY BE USED AT THE DISCRETION OF THE ENGINEER AT EACH LOCATION (DEL RIO AND BRACKETVILLE).

5. UTILIZE APPROPRIATE TXDOT STANDARDS AS INCLUDED IN THIS PLAN OR OTHERWISE AVAILABLE AS NECESSARY TO PERFORM CONSTRUCTION WORK.

6. NOTIFY TXDOT OF LANE CLOSURE AT LEAST 10 DAYS IN ADVANCE AND PROVIDE THE EXPECTED LOCATION, DURATION AND JUSTIFICATION FOR REQUESTED CLOSURE.

7. WHEN REMOVING EXISTING SIDEWALK, PROVIDE ALTERNATIVE WALKWAY DURING CONSTRUCTION WHERE POSSIBLE.

8. WHEN CONSTRUCTING DRIVEWAYS, PERFORM CONSTRUCTION TO MINIMIZE DISRUPTION TO BUSINESSES. IF A BUSINESS HAS MULTIPLE ACCESS POINTS, DO NOT CONSTRUCT CONCURRENTLY.

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

TRAFFIC CONTROL NARRATIVE

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			19
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

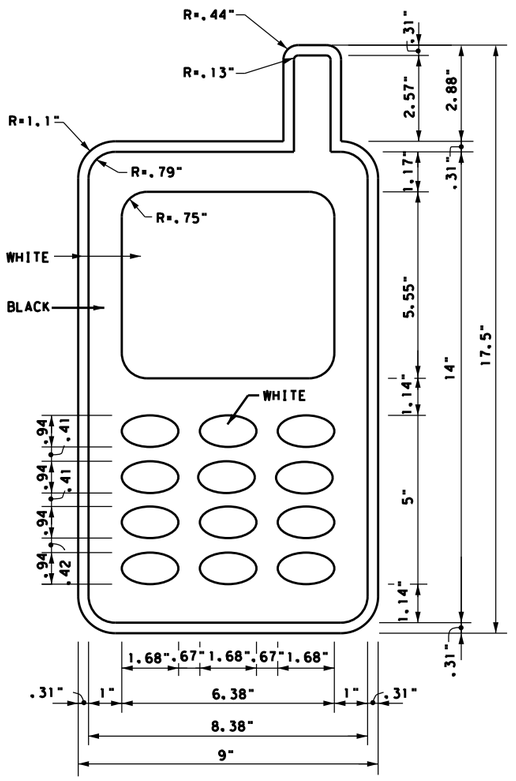
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

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

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

WORKER SAFETY APPAREL NOTES:

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



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

SIGN DETAIL (G20-10T)

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

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

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

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-14

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REVISIONS	0022	10	073,ETC	US 90,ETC
4-03 5-10 8-14	DIST	COUNTY		SHEET NO.
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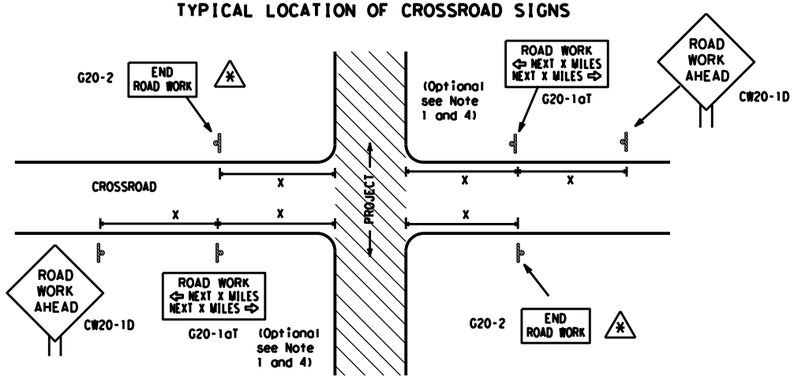
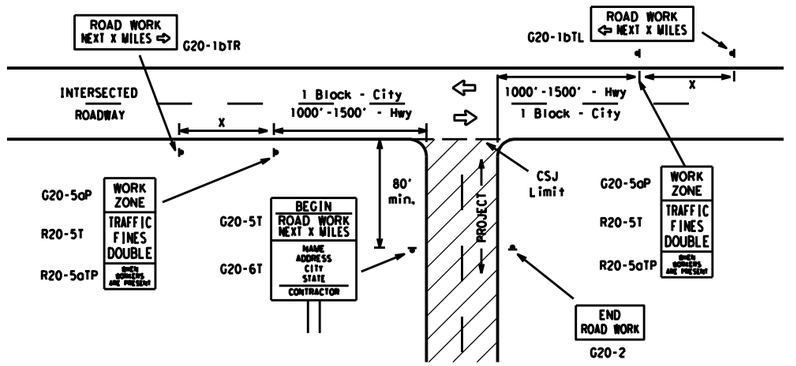
TYPICAL LOCATION OF CROSSROAD SIGNS



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

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. 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]

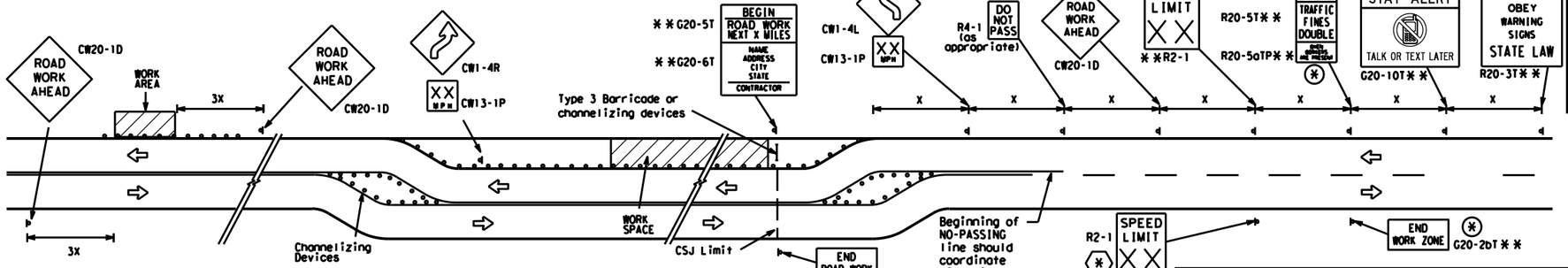
✱ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

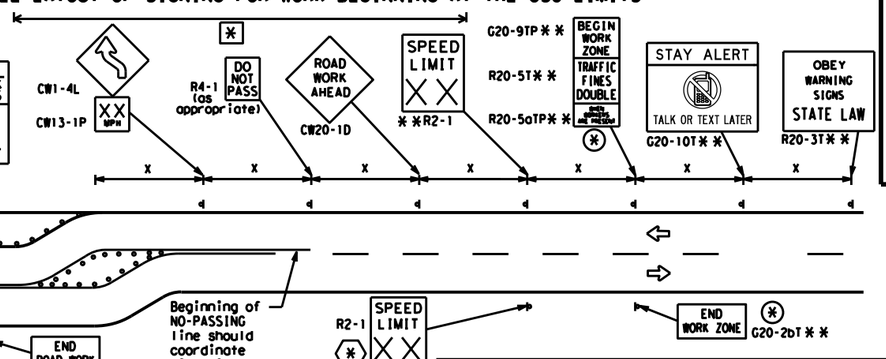
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

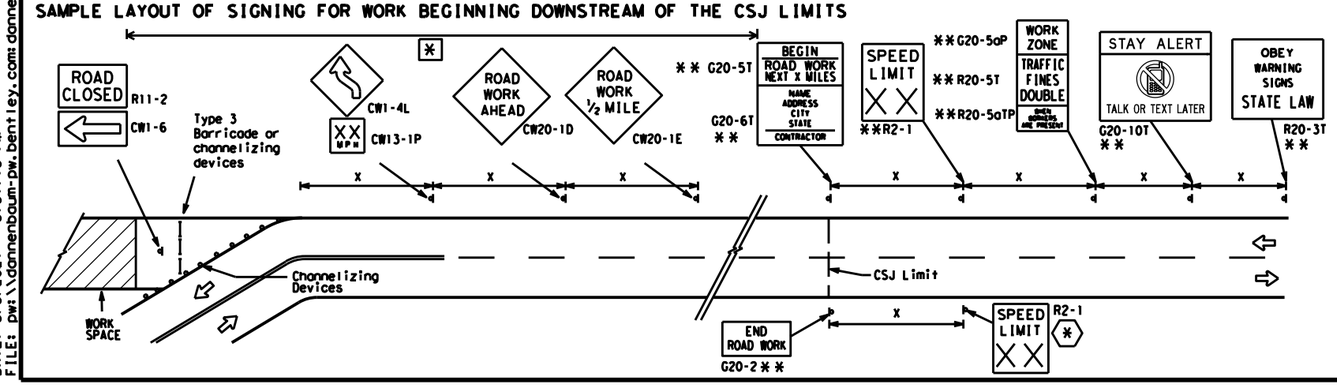


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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



NOTES

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

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

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

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

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

LEGEND

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

SHEET 2 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

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9-07 8-14	DIST	COUNTY		SHEET NO.
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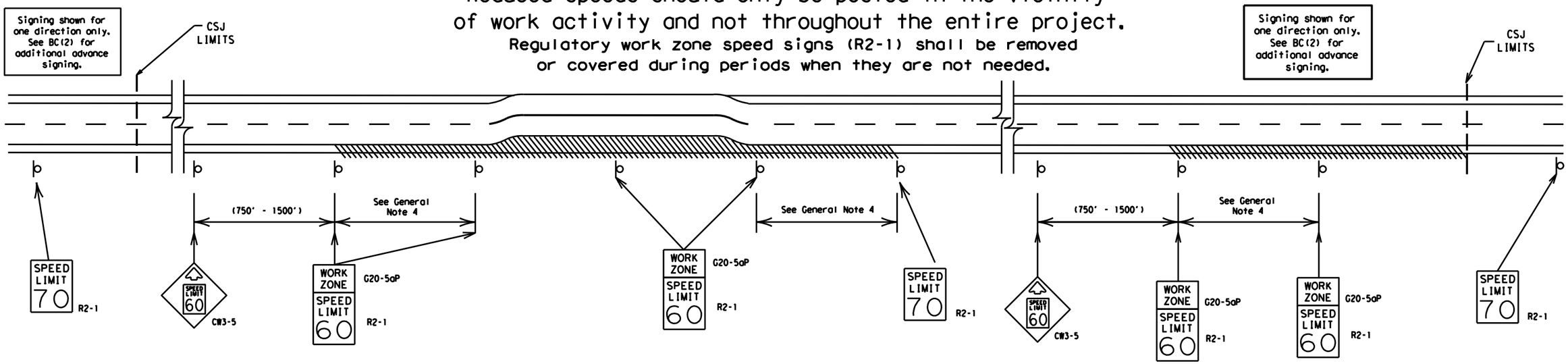
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-14

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	DIST	COUNTY		SHEET NO.
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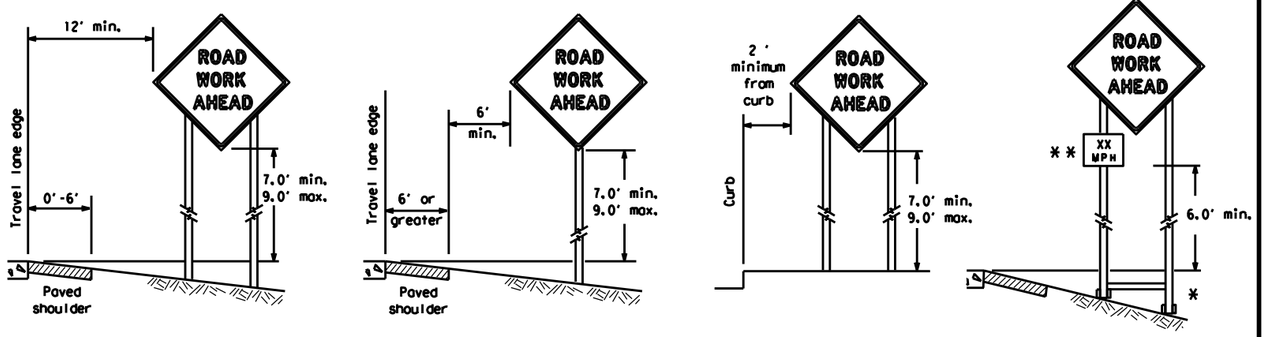
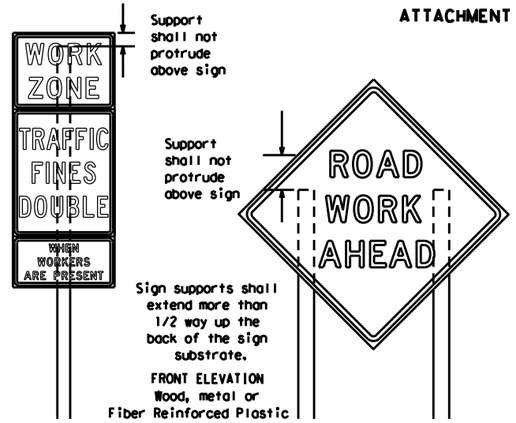
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



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

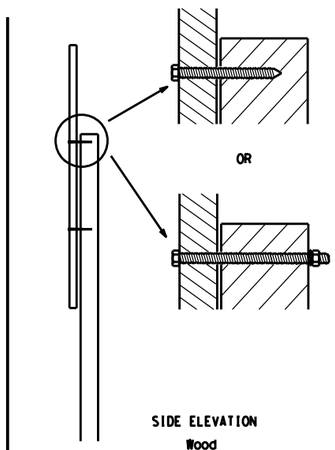
** When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or Fiber Reinforced Plastic

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.



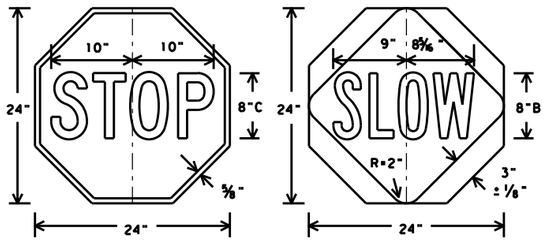
SIDE ELEVATION
Wood

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

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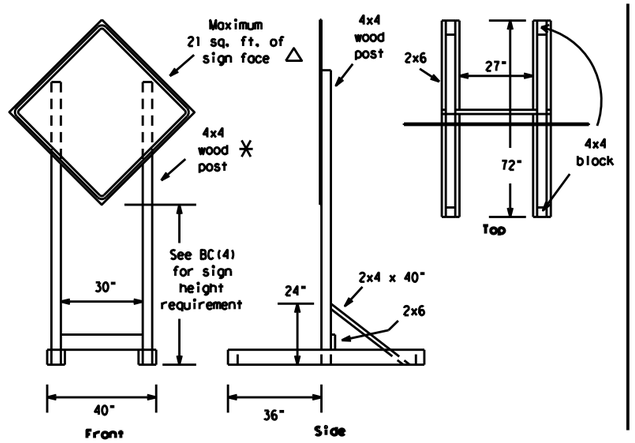
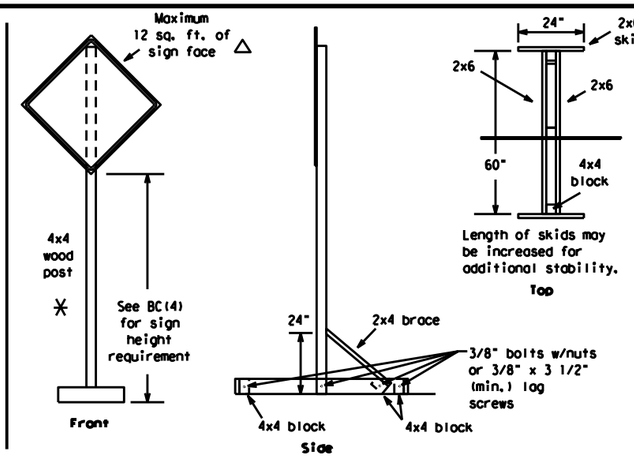
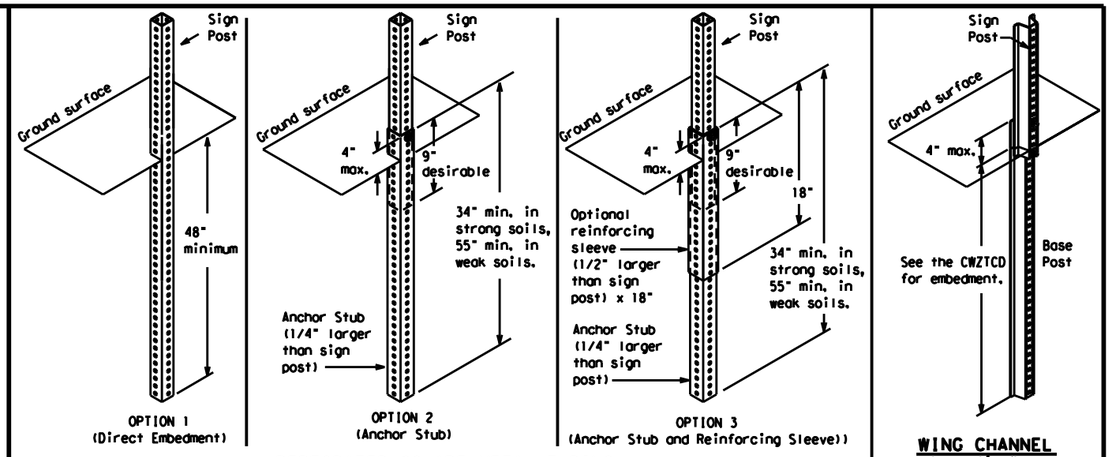




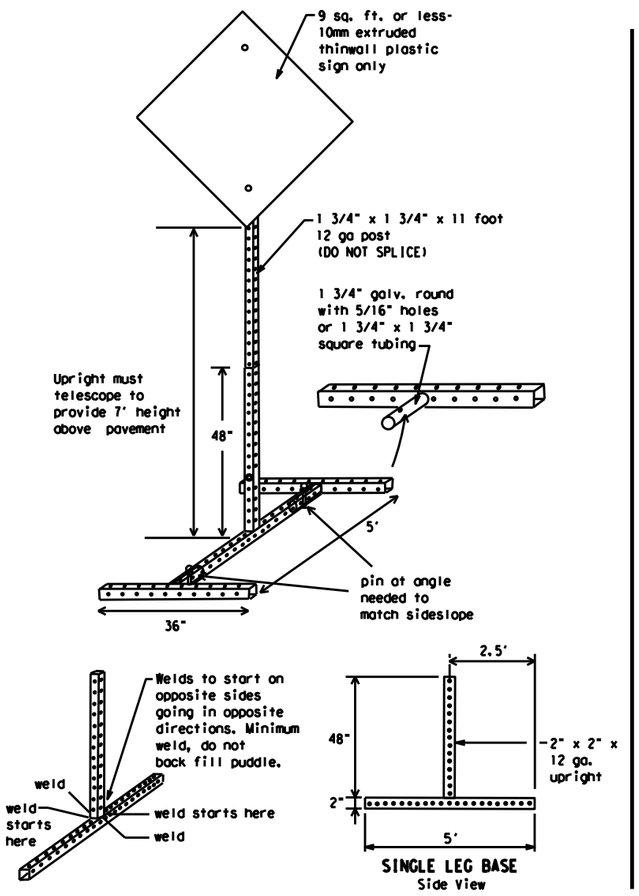
SKID MOUNTED WOOD SIGN SUPPORTS

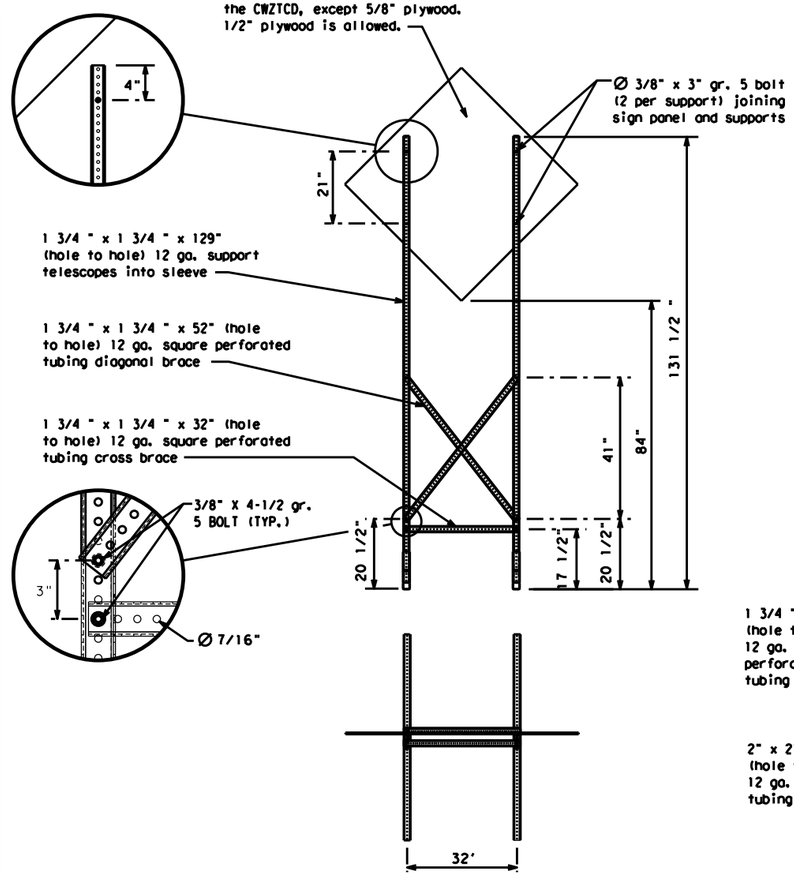
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

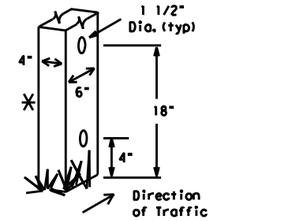


GROUND MOUNTED SIGN SUPPORTS

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

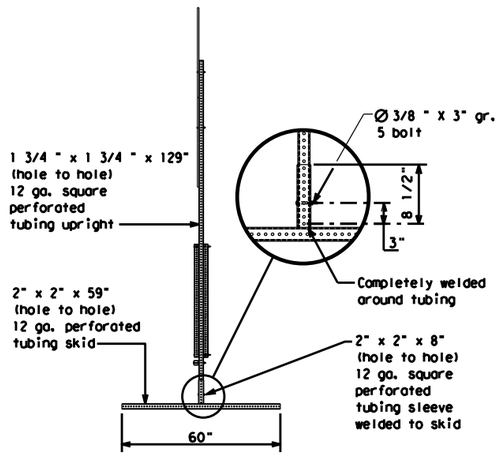






Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0022	10	073,ETC	US 90,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	LRD	VAL VERDE		24

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List		Other Condition List	
FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT *
XXXXXXXX BLVD CLOSED			

* 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		Location List	Warning List	** Advance Notice List
MERGE RIGHT	FORM X LINES RIGHT	AT FM XXXX	SPEED LIMIT XX MPH	TUE-FRI XX AM- X PM
DETOUR NEXT X EXITS	USE XXXXX RD EXIT	BEFORE RAILROAD CROSSING	MAXIMUM SPEED XX MPH	APR XX-XX X PM-X AM
USE EXIT XXX	USE EXIT I-XX NORTH	NEXT X MILES	MINIMUM SPEED XX MPH	BEGINS MONDAY
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N	PAST US XXX EXIT	ADVISORY SPEED XX MPH	BEGINS MAY XX
TRUCKS USE US XXX N	WATCH FOR TRUCKS	XXXXXXX TO XXXXXXX	RIGHT LANE EXIT	MAY X-X XX PM - XX AM
WATCH FOR TRUCKS	EXPECT DELAYS	US XXX TO FM XXXX	USE CAUTION	NEXT FRI-SUN
EXPECT DELAYS	PREPARE TO STOP		DRIVE SAFELY	XX AM TO XX PM
REDUCE SPEED XXX FT	END SHOULDER USE		DRIVE WITH CARE	NEXT TUE AUG XX
USE OTHER ROUTES	WATCH FOR WORKERS			TONIGHT XX PM- XX AM
STAY IN LANE *				

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0022	10	073,ETC	US 90,ETC
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	LRD	VAL VERDE		25

100

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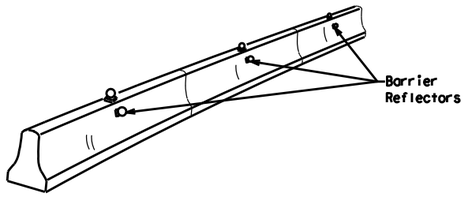
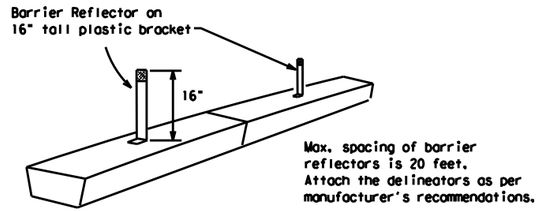
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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

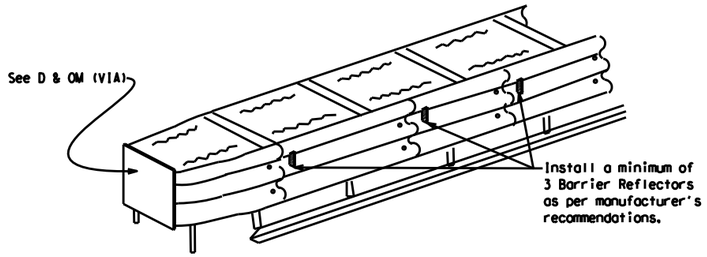


CONCRETE TRAFFIC BARRIER (CTB)

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



LOW PROFILE CONCRETE BARRIER (LPCB)



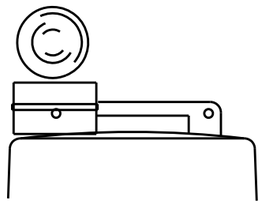
DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES

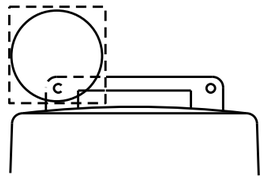
End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS



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

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

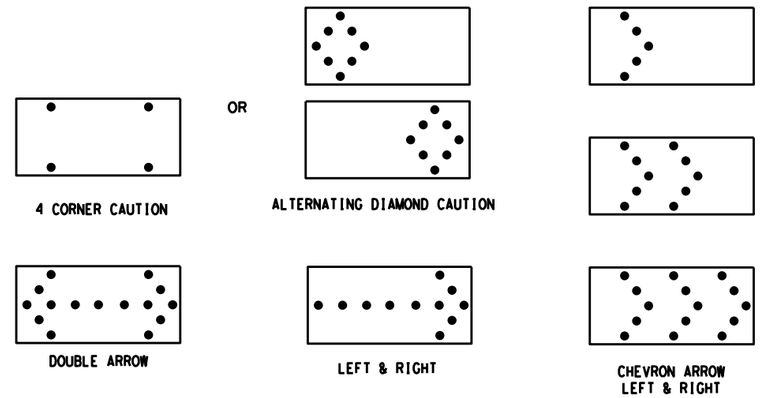
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION
Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation

Traffic Operations Division Standard

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

BC(7)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13	LRD	VAL VERDE		26

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

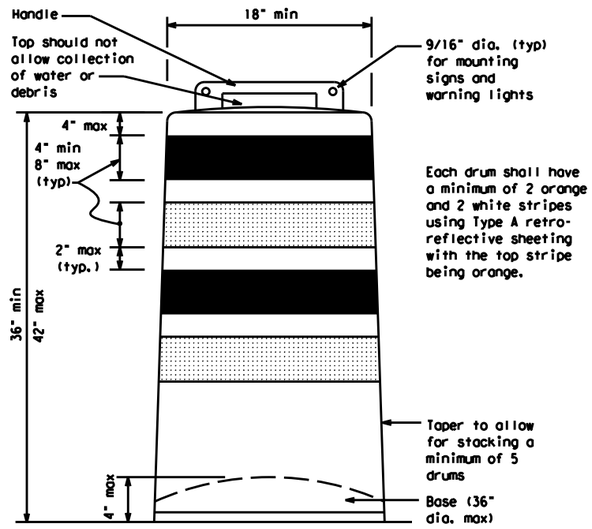
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

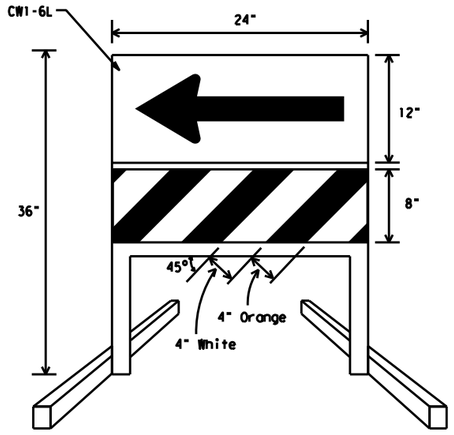
RETROREFLECTIVE SHEETING

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

BALLAST

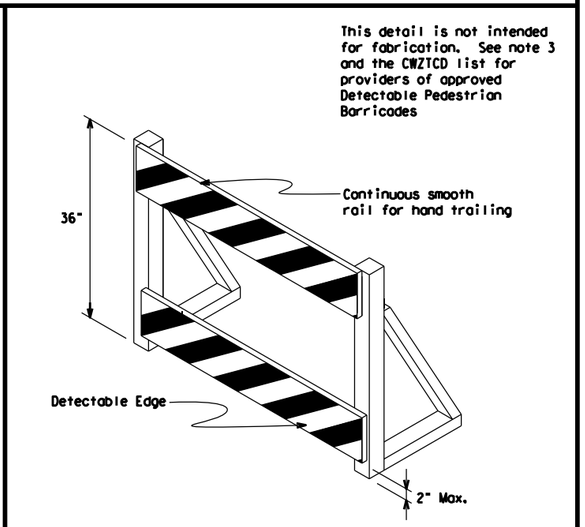
1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other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





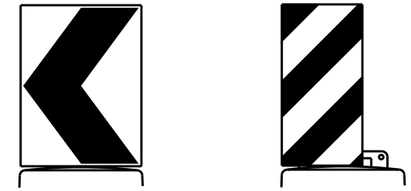
DIRECTION INDICATOR BARRICADE

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



DETECTABLE PEDESTRIAN BARRICADES

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



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

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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

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4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	LRD	VAL VERDE		27

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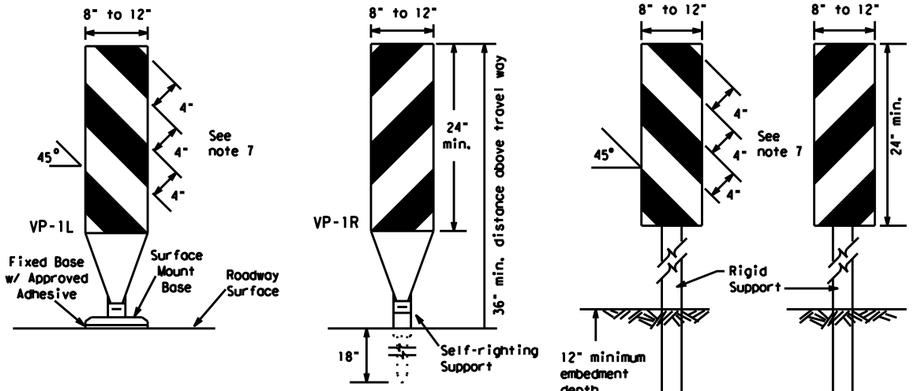
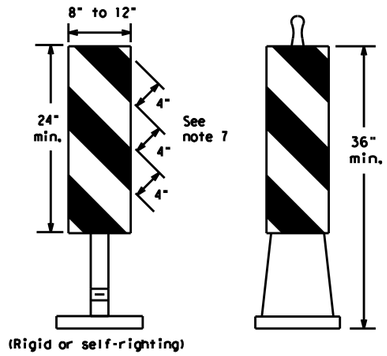


FIXED
(Rigid or self-righting)

DRIVEABLE

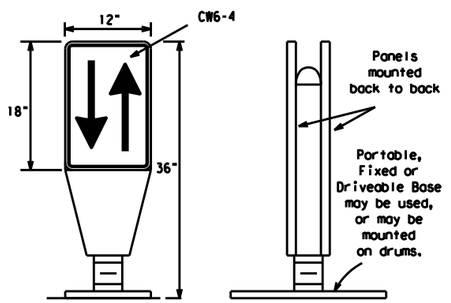


(Rigid or self-righting)

PORTABLE

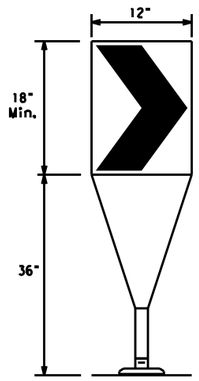
VERTICAL PANELS (VPs)

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



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

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



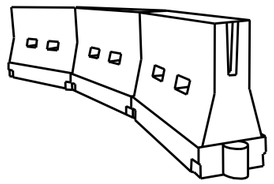
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

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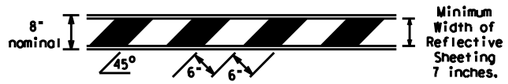
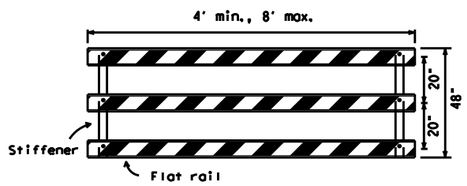
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



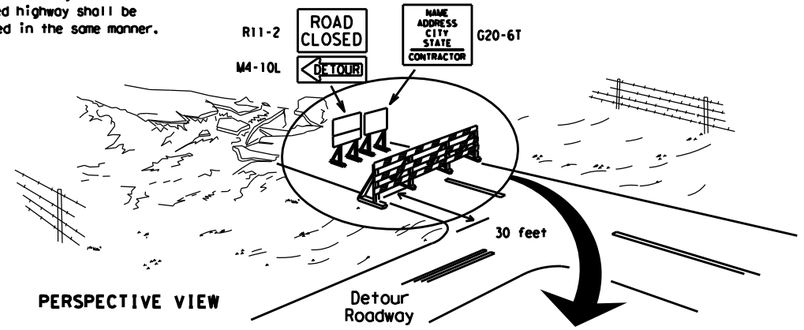
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

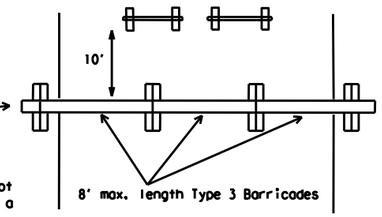
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

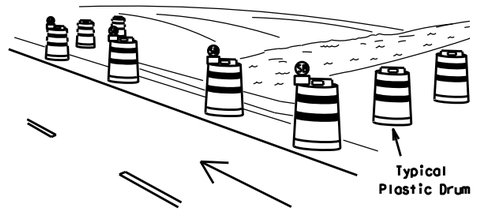
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

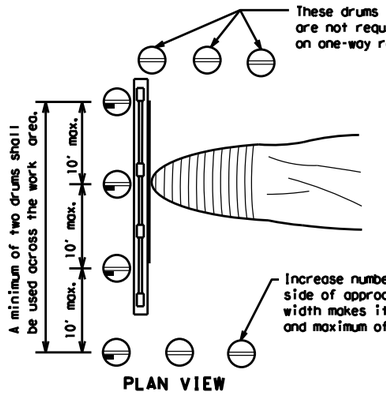
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

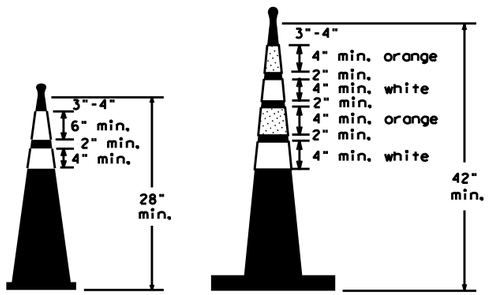
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

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

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

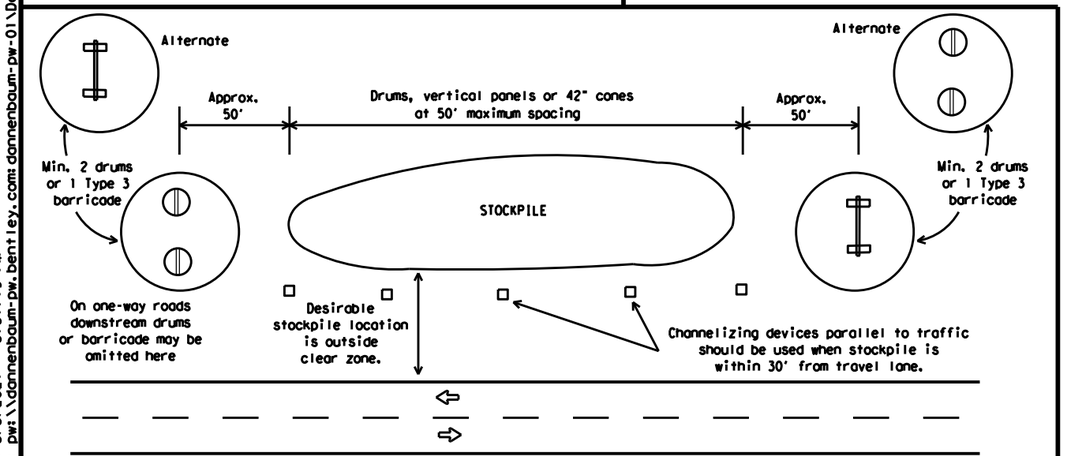


Two-Piece cones | One-Piece cones | Tubular Marker

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

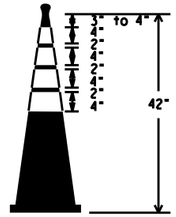
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

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



EDGELINE CHANNELIZER

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

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

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	LRD	VAL VERDE		29

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

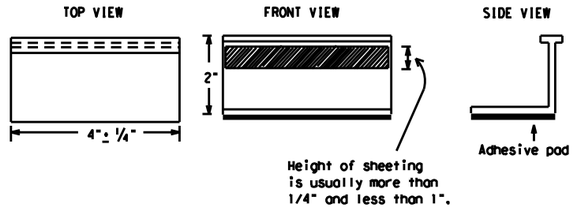
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
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2-98 9-07	DIST	COUNTY		SHEET NO.
1-02 7-13	LRD	VAL VERDE		30
11-02 8-14				

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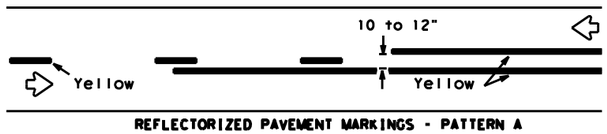
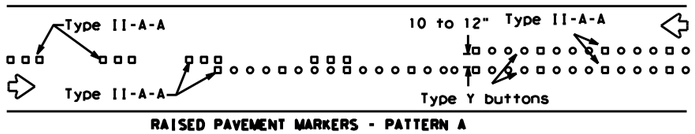
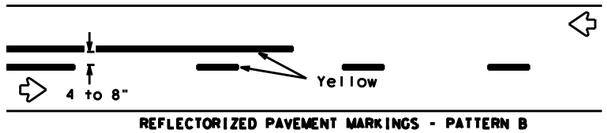
PAVEMENT MARKING PATTERNS



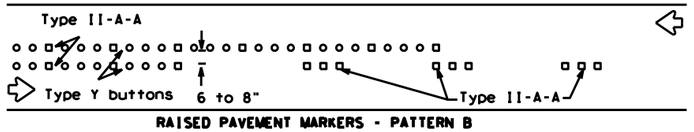
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



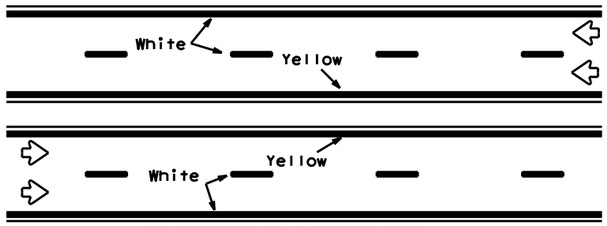
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



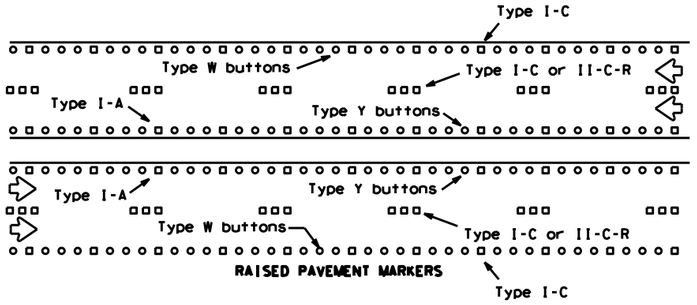
RAISED PAVEMENT MARKERS - PATTERN B

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

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



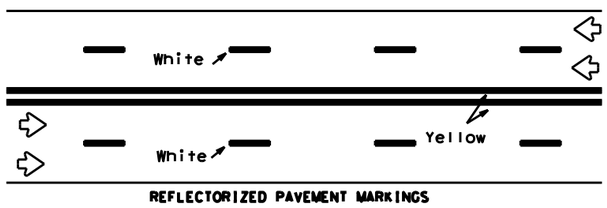
REFLECTORIZED PAVEMENT MARKINGS



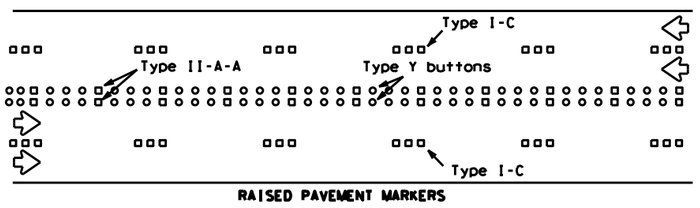
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



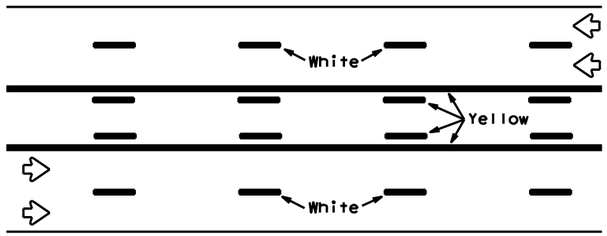
REFLECTORIZED PAVEMENT MARKINGS



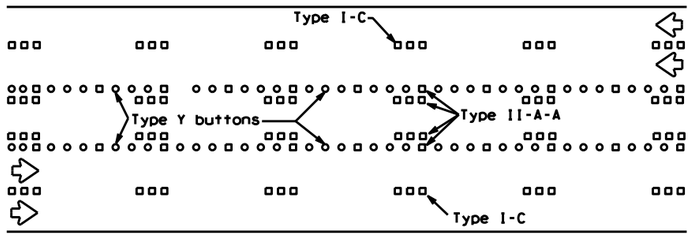
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

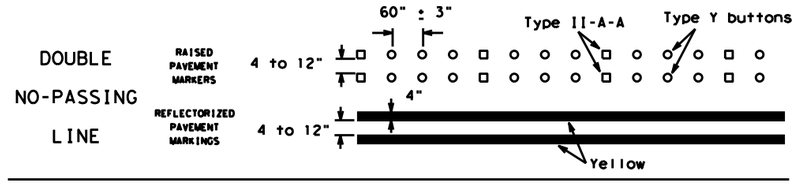
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

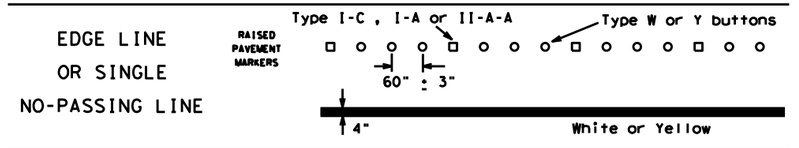
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

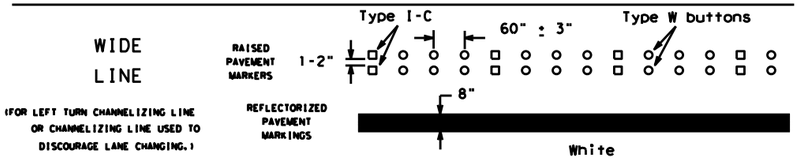


EDGE LINE OR SINGLE NO-PASSING LINE



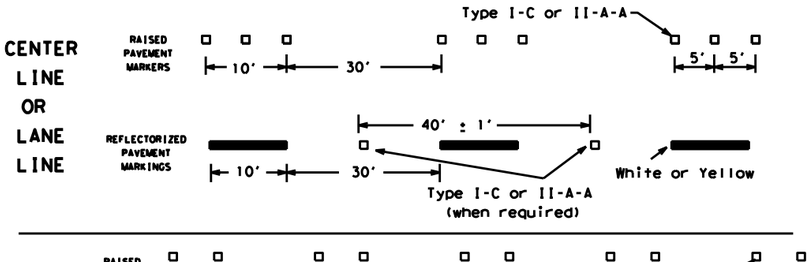
WIDE LINE

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

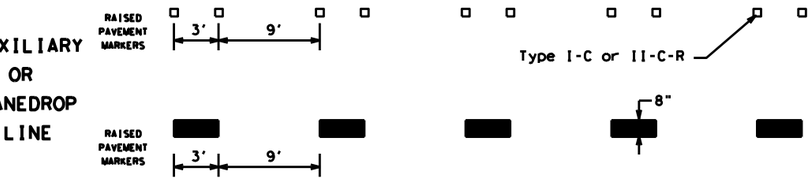


BROKEN LINES

CENTER LINE OR LANE LINE

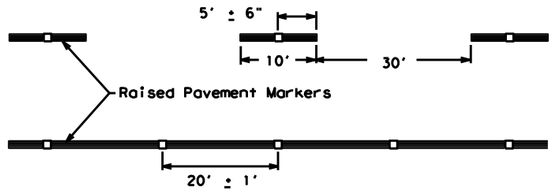


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-14

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©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
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1-97 9-07	DIST	COUNTY		SHEET NO.
2-98 7-13	LRD	VAL VERDE		31
11-02 8-14				

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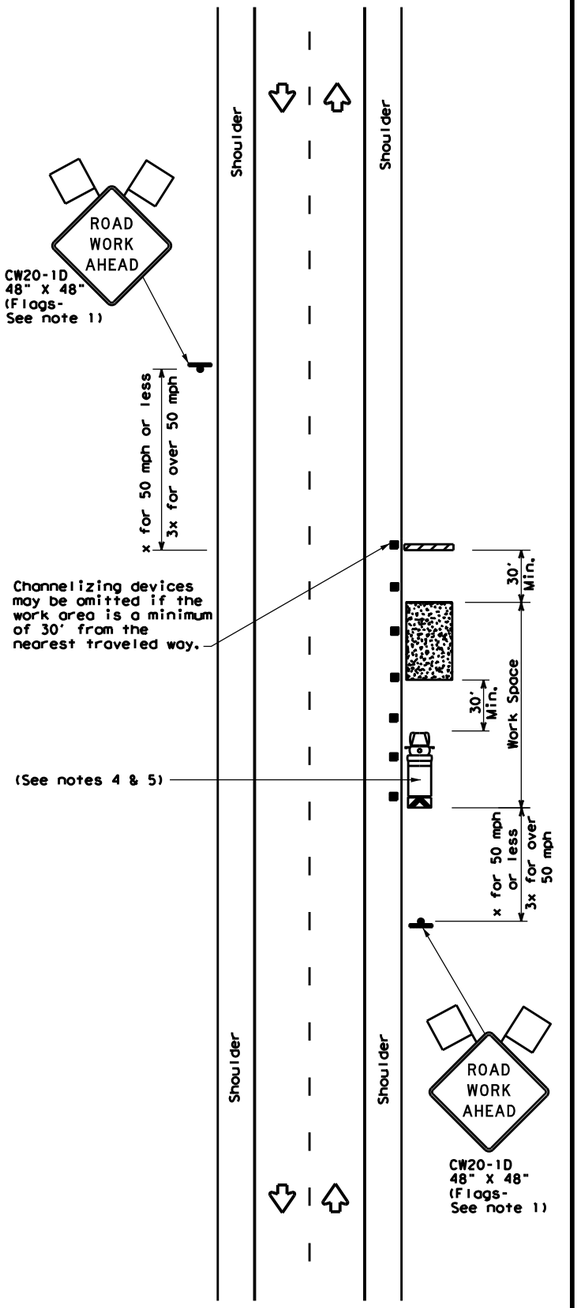
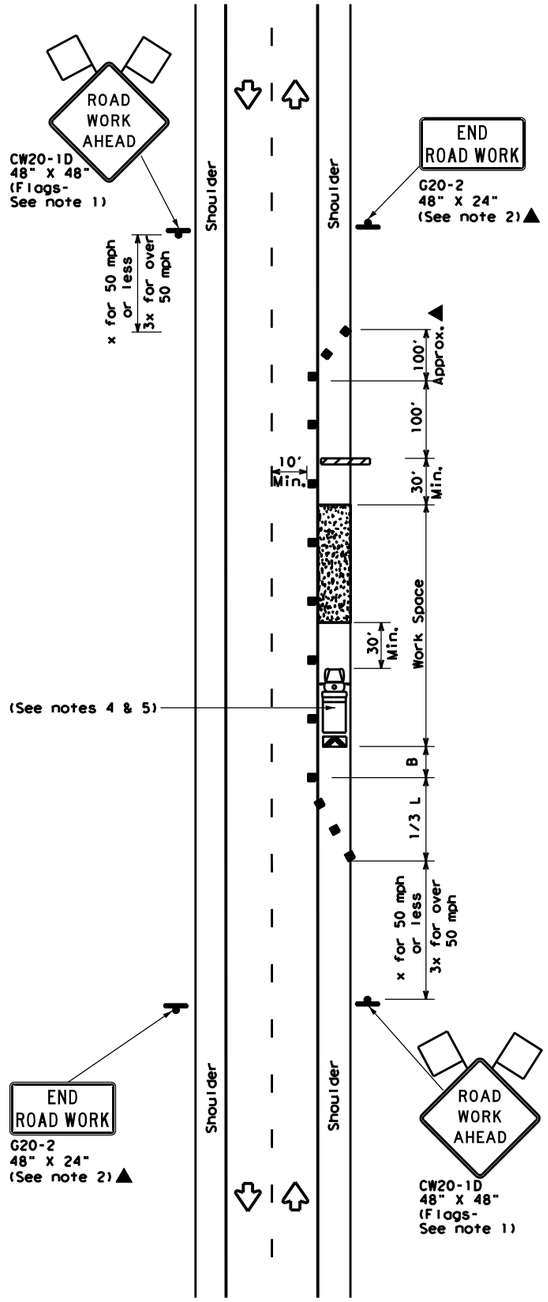


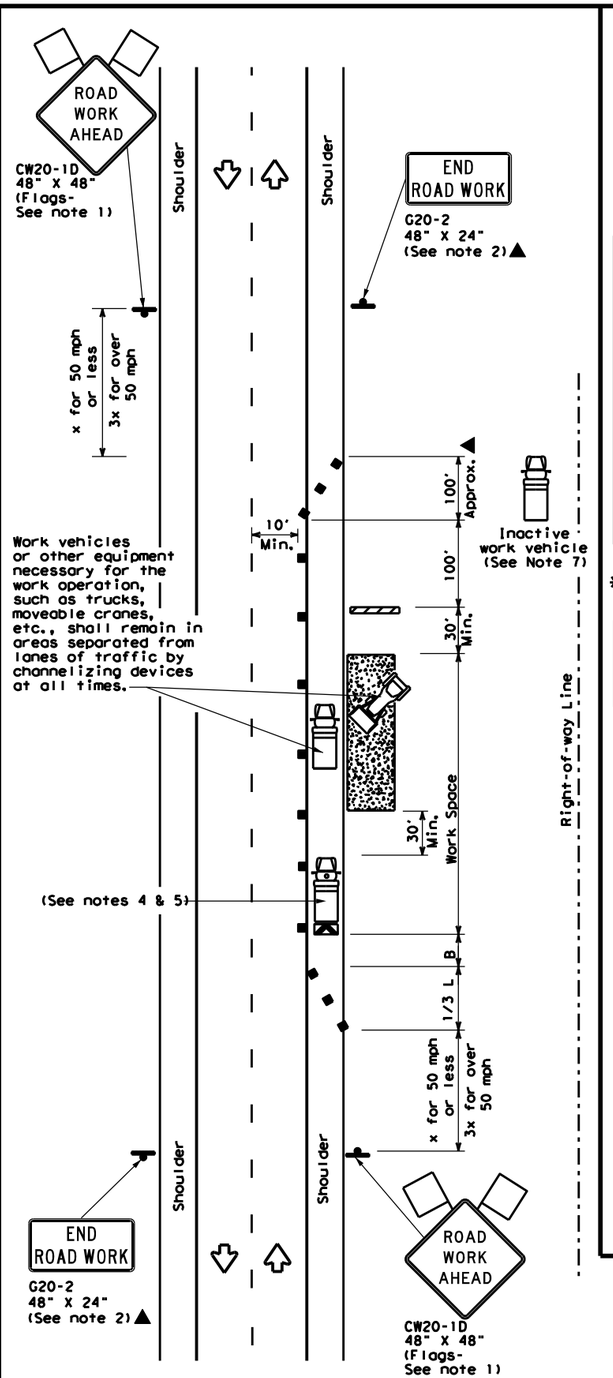
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

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©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	LRD	VAL VERDE		32
1-97 2-18				

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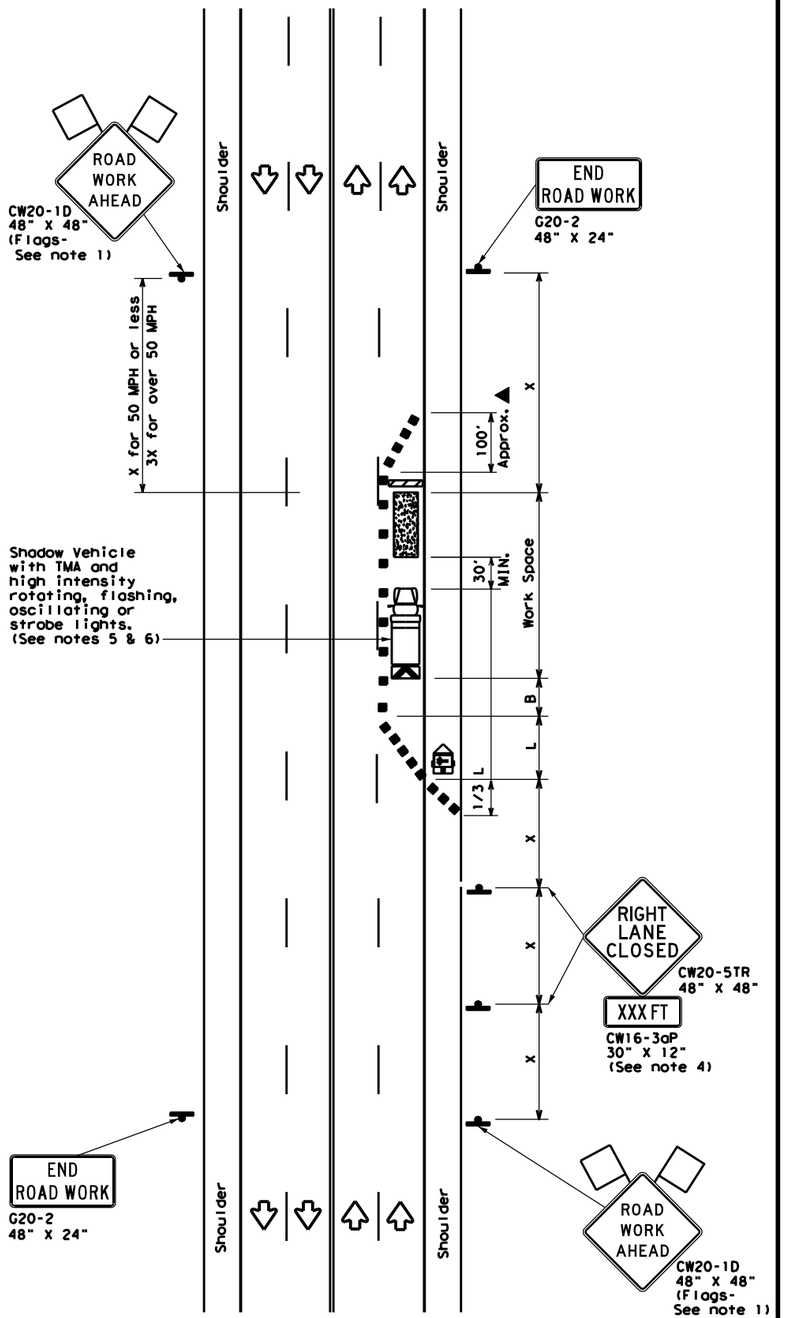
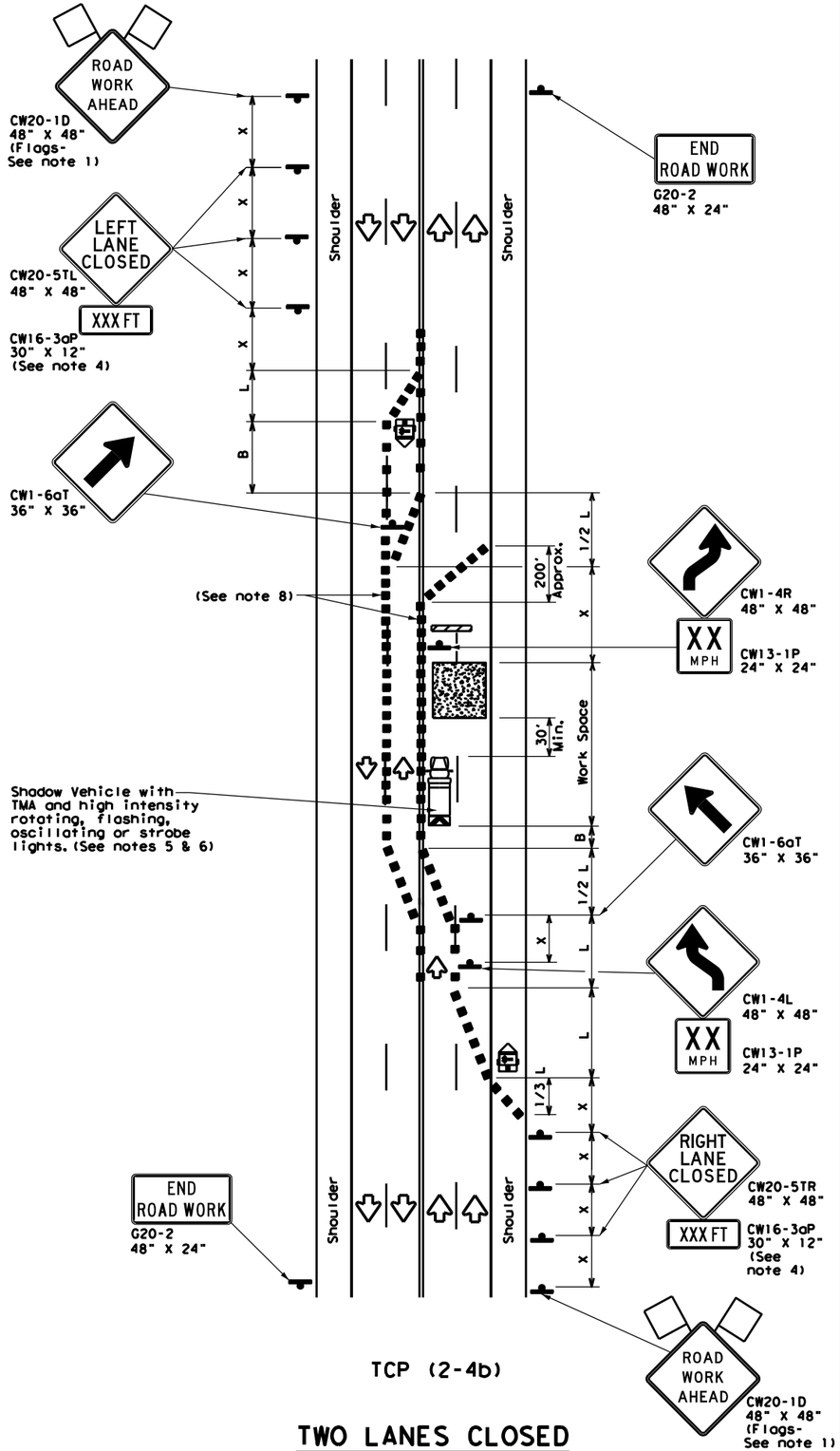


TCP (2-4a)

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

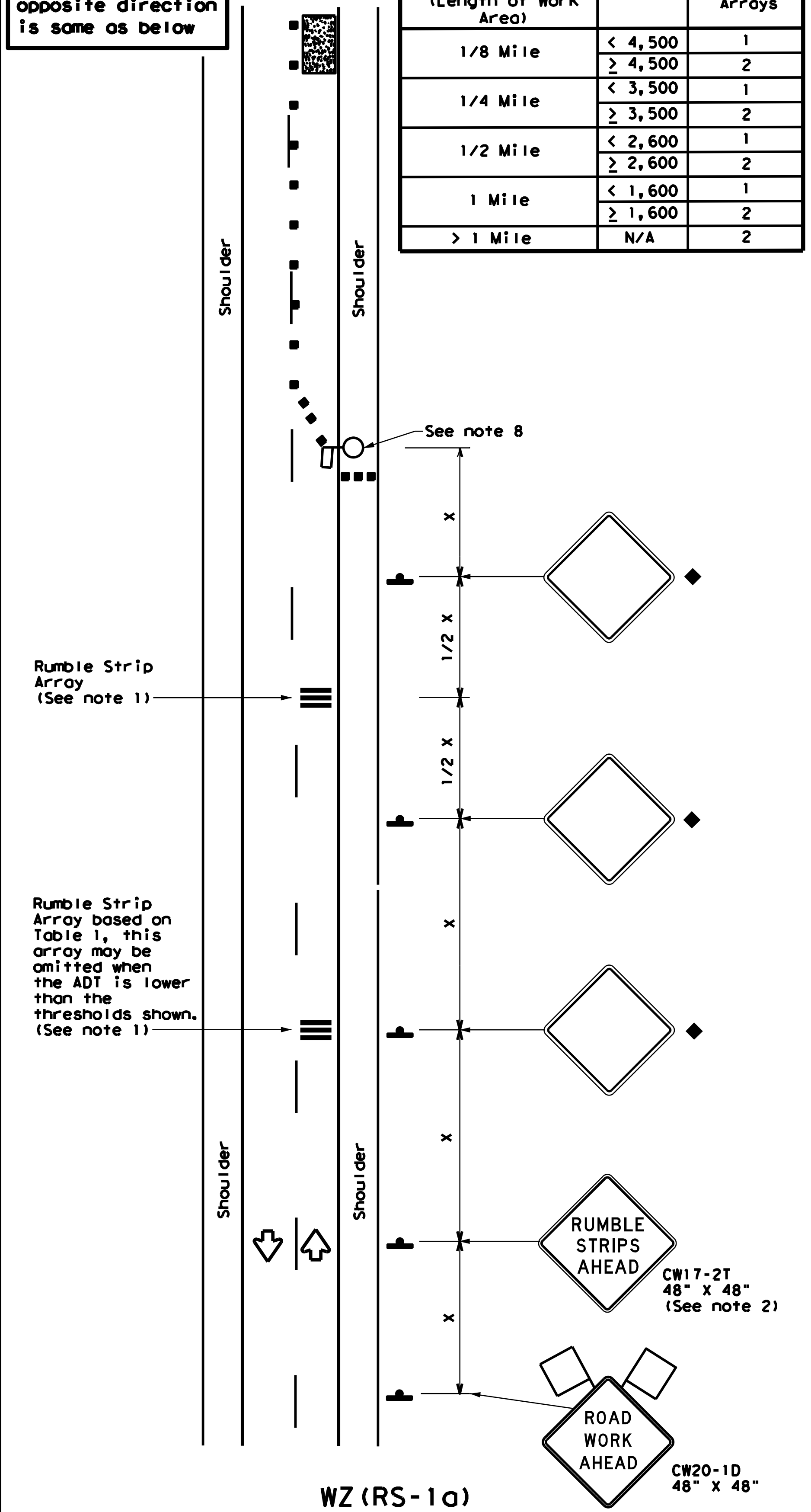
TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

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	0022	10	073,ETC	US 90,ETC
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18	LRD	VAL VERDE		33

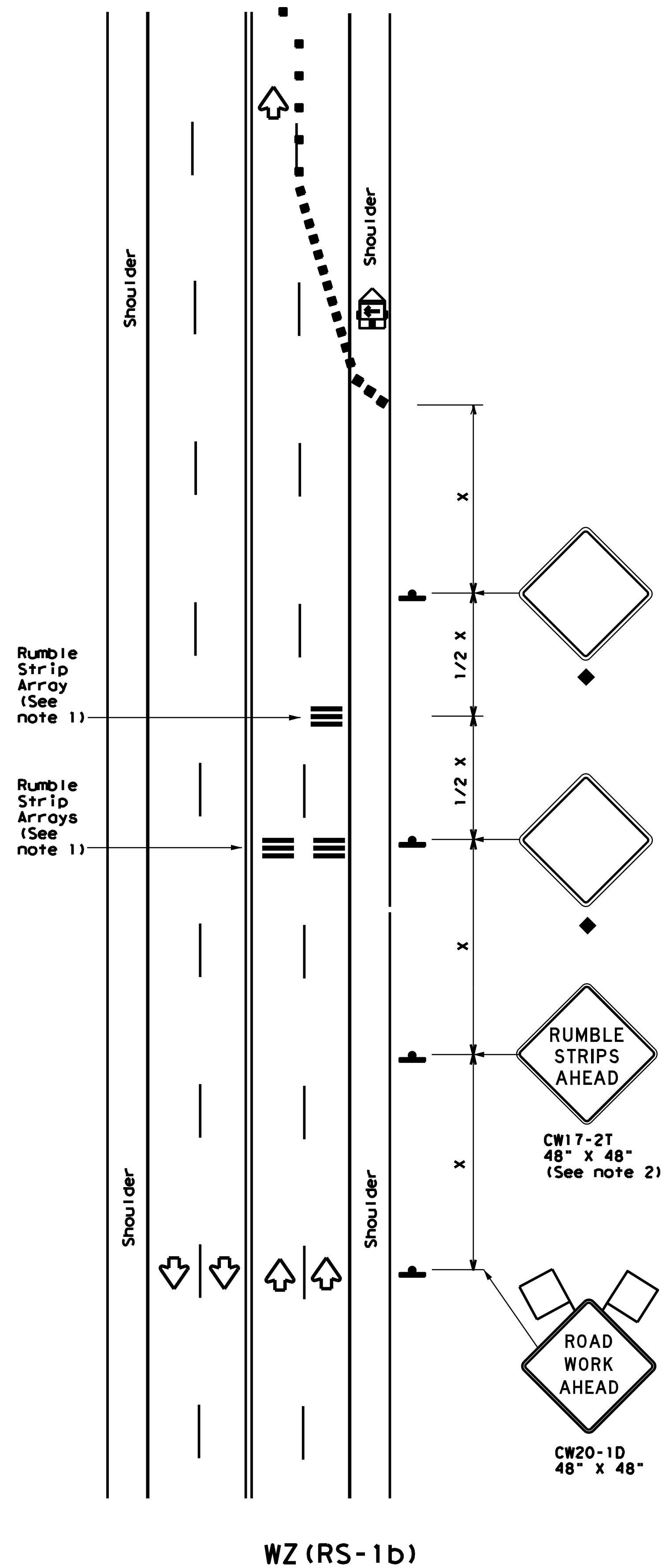
Warning sign and rumble strip sequence in opposite direction is same as below

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)
75 mph or Less

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)
75 mph or Less

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. Removal of the Temporary Rumble Strips should be accomplished before removing the advance 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 AFAD or a portable traffic signal.
9. Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment.

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
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.**

TABLE 2	
Speed	Approximate distance between strips in an Array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
> 55 MPH	20'

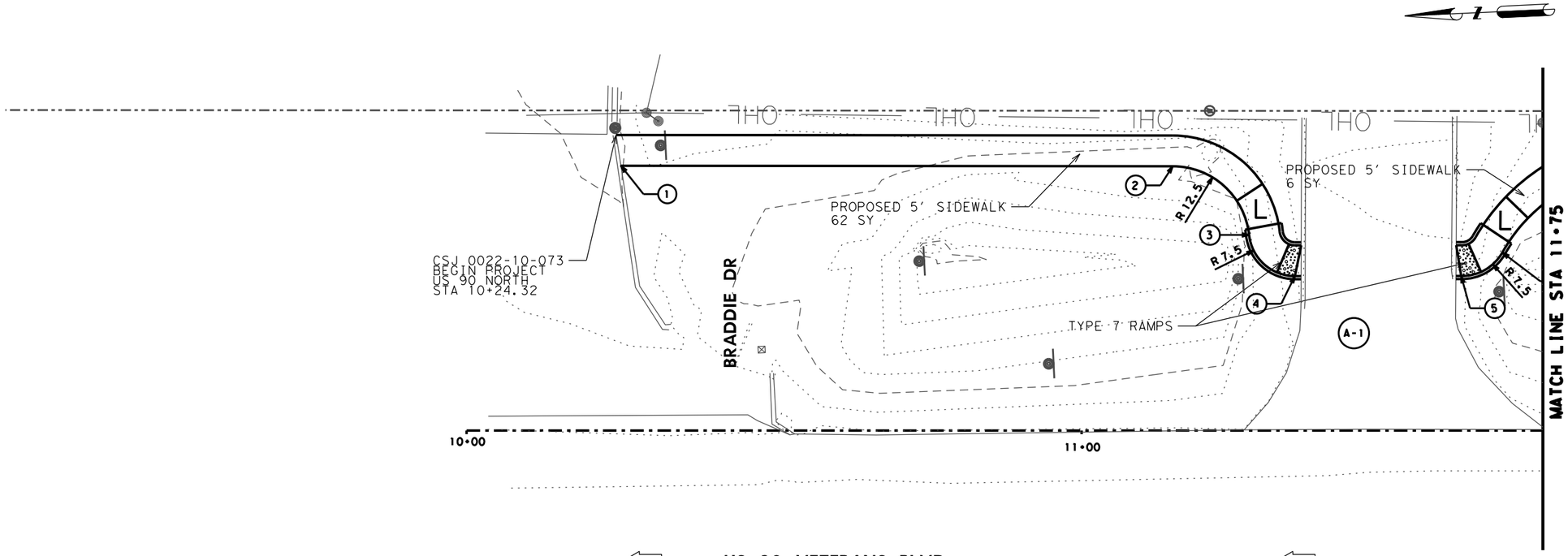
Texas Department of Transportation

Traffic Operations Division Standard

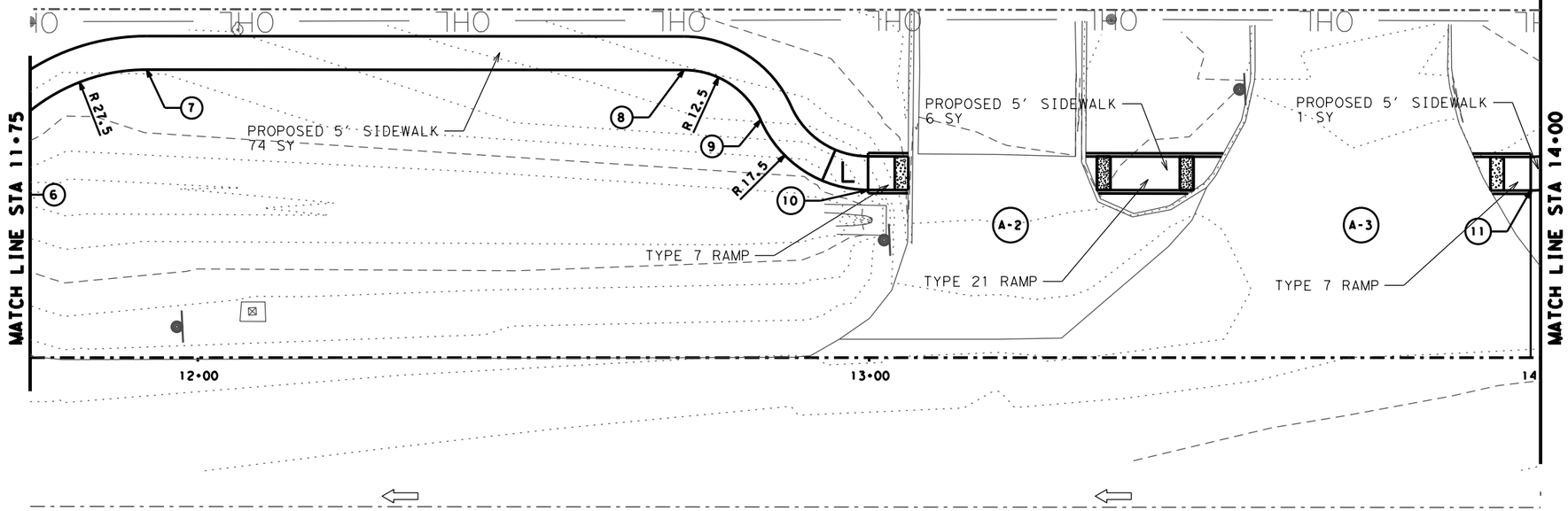
TEMPORARY RUMBLE STRIPS

WZ(RS)-16

FILE: wzrs16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-14 4-16	0022	10	073, ETC	US 90, ETC
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		34



100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013	531 6016
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	CURB RAMPS (TY 21)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA	EA
0.09												143			4		1



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	10+25.10	43.05	LT
2	11+14.81	42.99	LT
3	11+27.23	31.82	LT
4	11+34.68	25.11	LT
5	11+61.71	25.14	LT
6	11+68.40	28.95	LT
7	11+92.37	42.93	LT
8	12+72.39	42.87	LT
9	12+83.82	35.42	LT
10	12+99.81	24.99	LT
11	13+98.51	24.91	LT

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

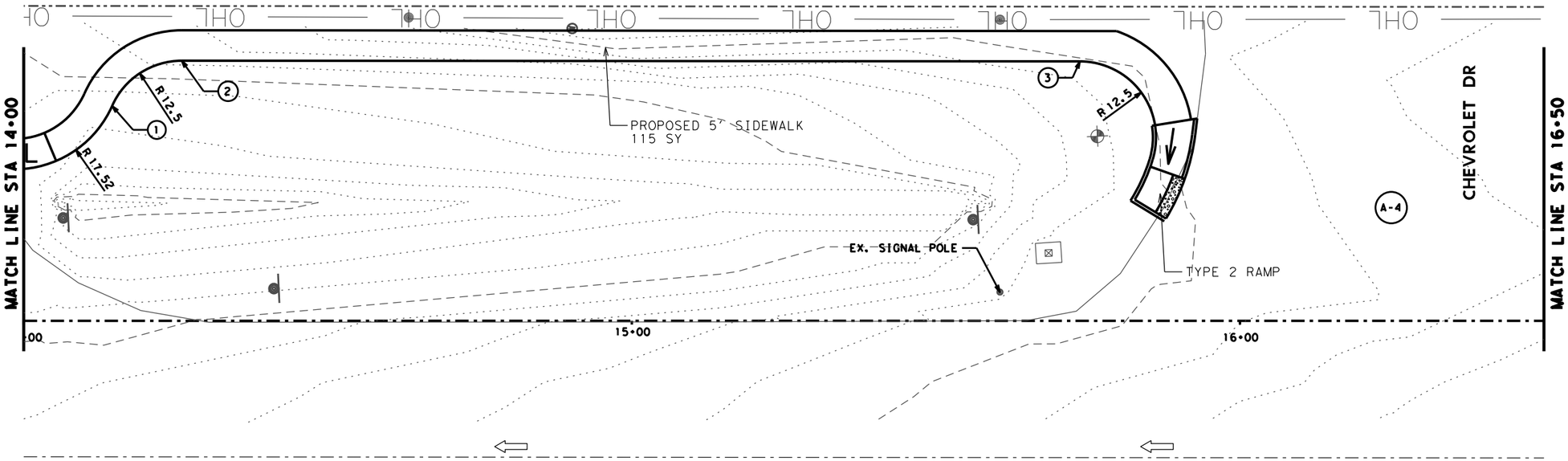
SIDEWALK PLAN

SHEET 1 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

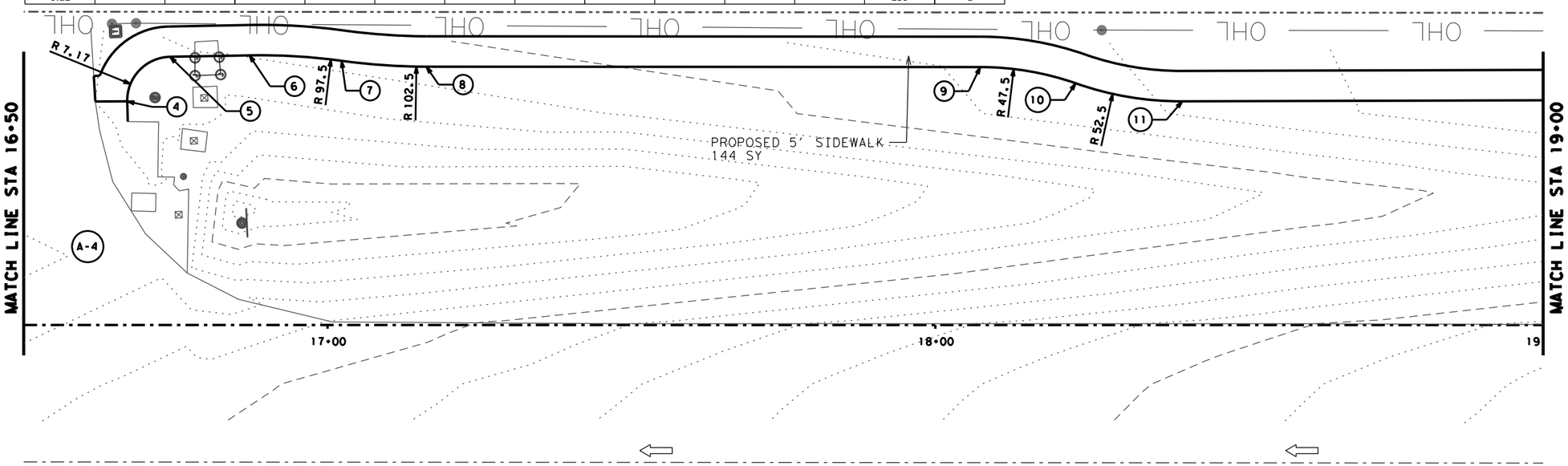
Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			35
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073, ETC	US 90, ETC



US 90 VETERANS BLVD

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA
0.12												259	1



US 90 VETERANS BLVD

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L LANDING
- SS SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	14+14.54	35.33	LT
2	14+25.97	42.75	LT
3	15+73.71	42.65	LT
4	16+67.03	36.82	LT
5	16+74.06	44.15	LT
6	16+87.12	44.40	LT
7	17+02.31	43.50	LT
8	17+16.25	42.54	LT
9	18+07.40	42.47	LT
10	18+23.10	39.79	LT
11	18+40.63	36.83	LT

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

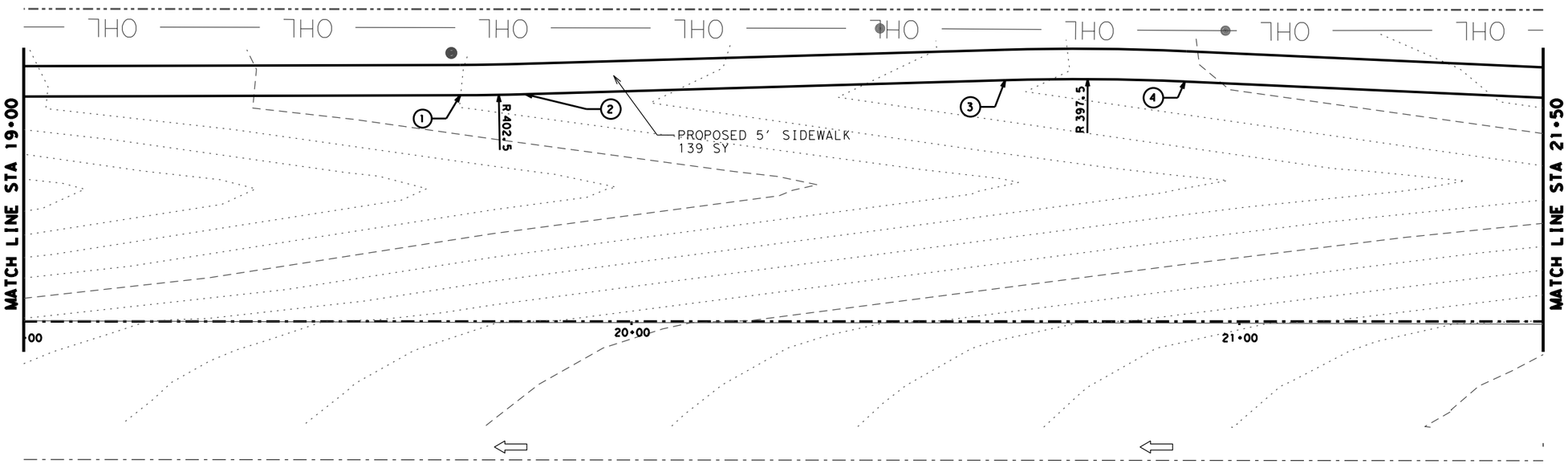
SIDEWALK PLAN

SHEET 2 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

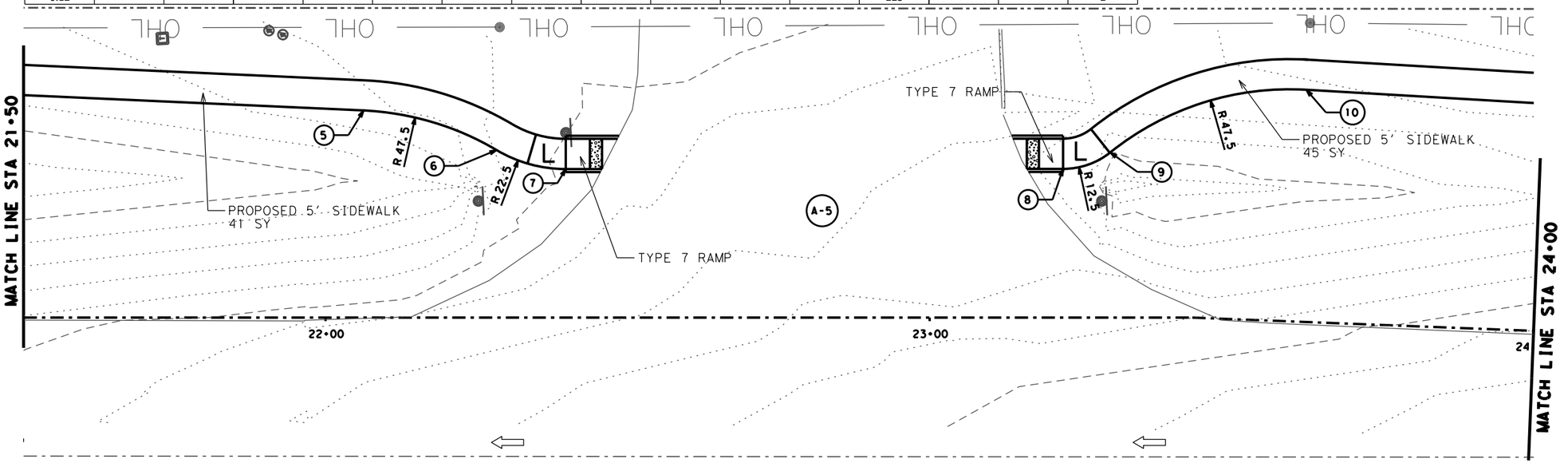
Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			36
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



US 90 VETERANS BLVD

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12												225			2



US 90 VETERANS BLVD

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	19+71.82	37.19	LT
2	19+82.51	37.36	LT
3	20+61.49	39.67	LT
4	20+91.06	39.44	LT
5	22+06.30	34.24	LT
6	22+28.31	27.69	LT
7	22+39.75	24.56	LT
8	23+22.07	24.57	LT
9	23+29.89	27.31	LT
10	23+60.86	38.37	LT

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

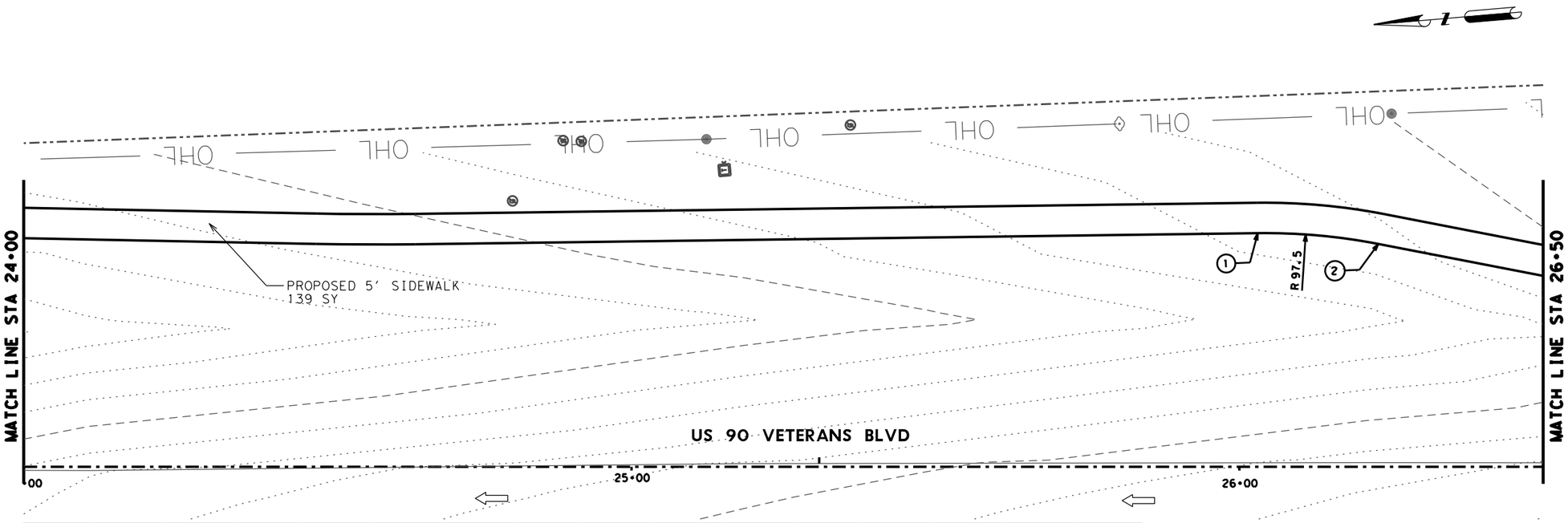
SHEET 3 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

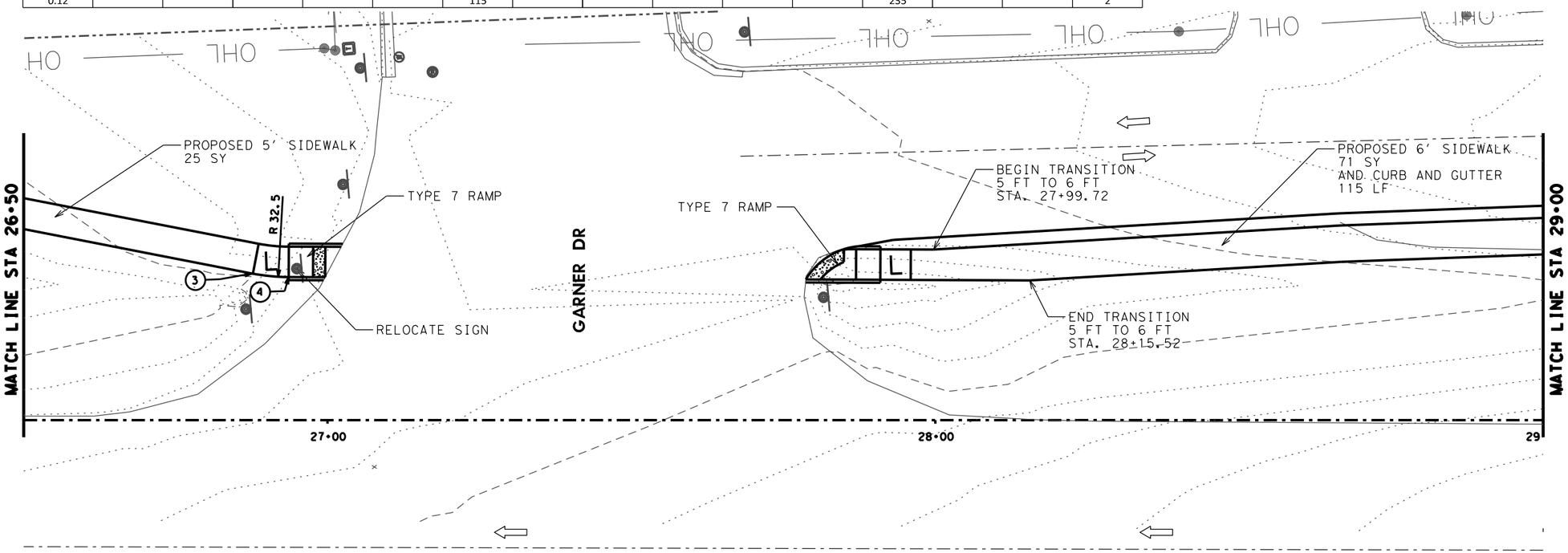
Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		37

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073, ETC	US 90, ETC



100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12						115						235			2



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	26+03.03	38.45	LT
2	26+22.88	36.67	LT
3	26+87.55	24.13	LT
4	26+93.60	23.53	LT

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

SHEET 4 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		38

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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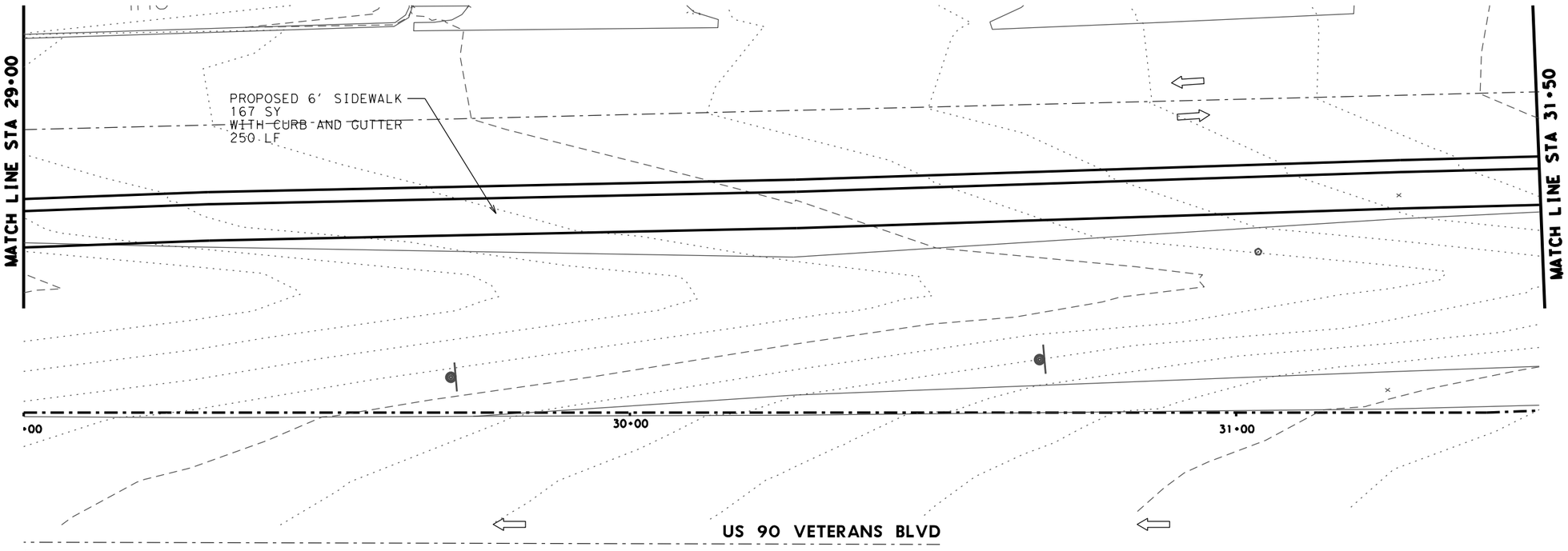

US 90 VETERANS BLVD

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12						500						334

US 90 VETERANS BLVD

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
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3/22/2021

US 90

SIDEWALK PLAN

SHEET 5 OF 22

DANNENBAUM
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Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			39
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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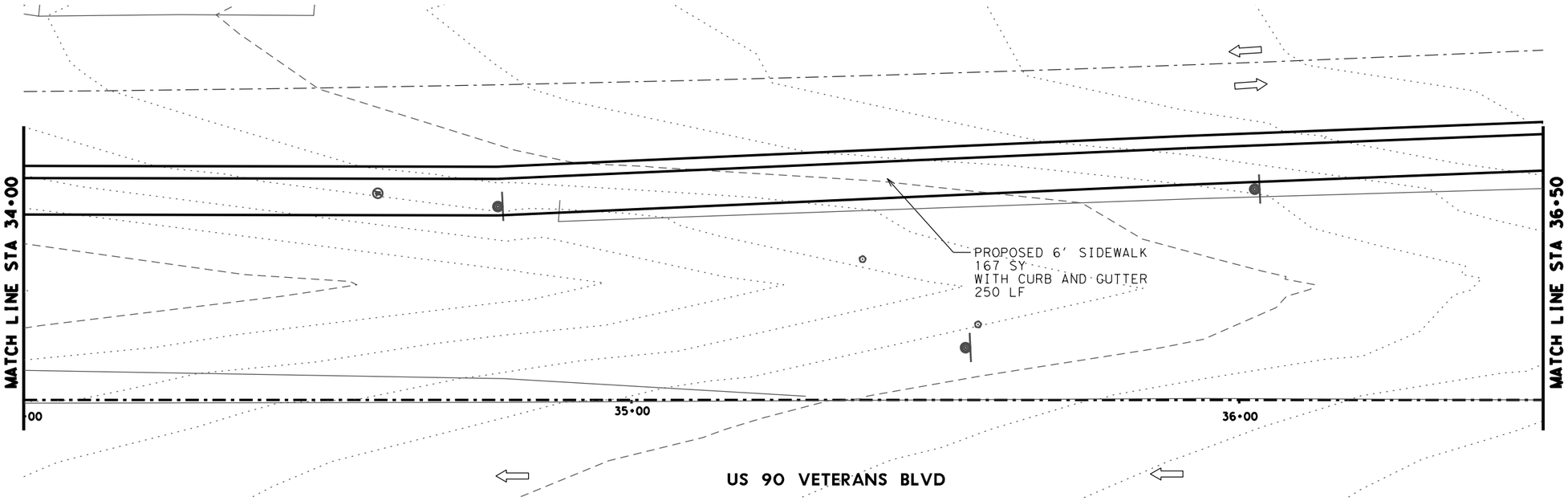

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	36+85.58	39.10	LT
2	36+97.84	36.02	LT

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12						318						284			2

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

SHEET 6 OF 22

DANNENBAUM
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T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			40
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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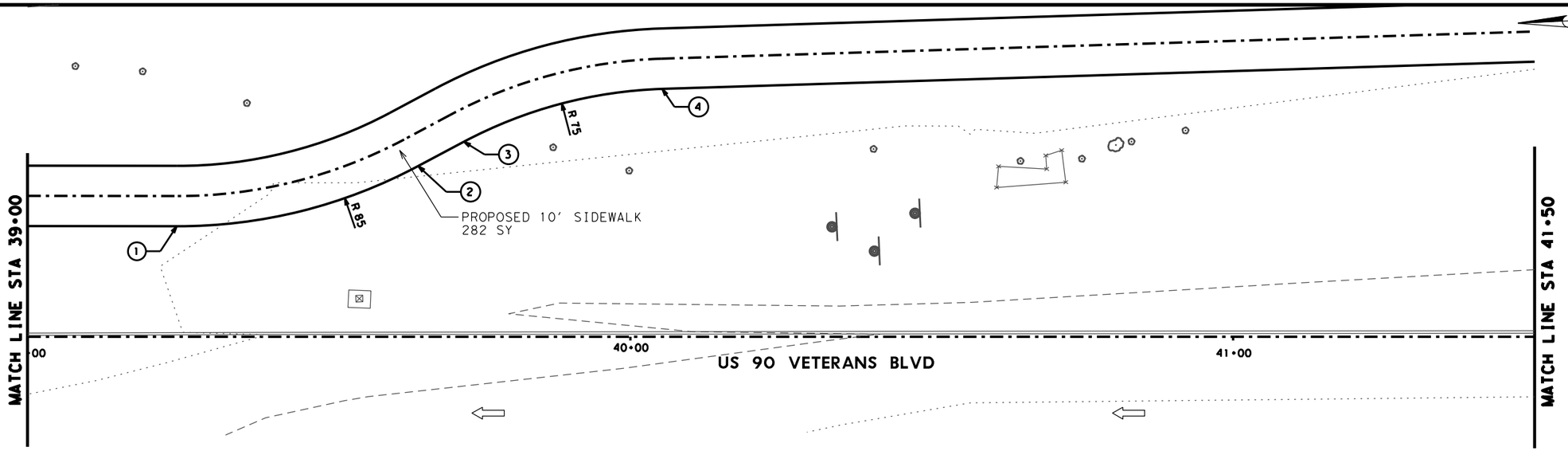
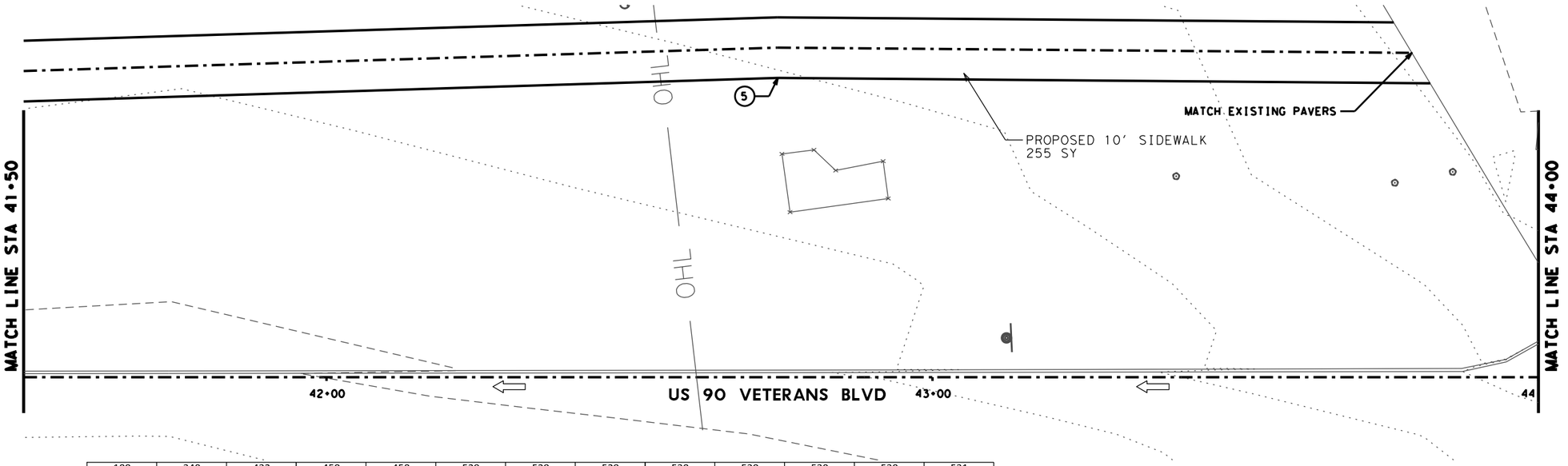




LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	39+24.75	18.30	LT
2	39+64.82	28.28	LT
3	39+72.38	32.30	LT
4	40+05.30	41.06	LT
5	42+74.50	49.43	LT

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12												537

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

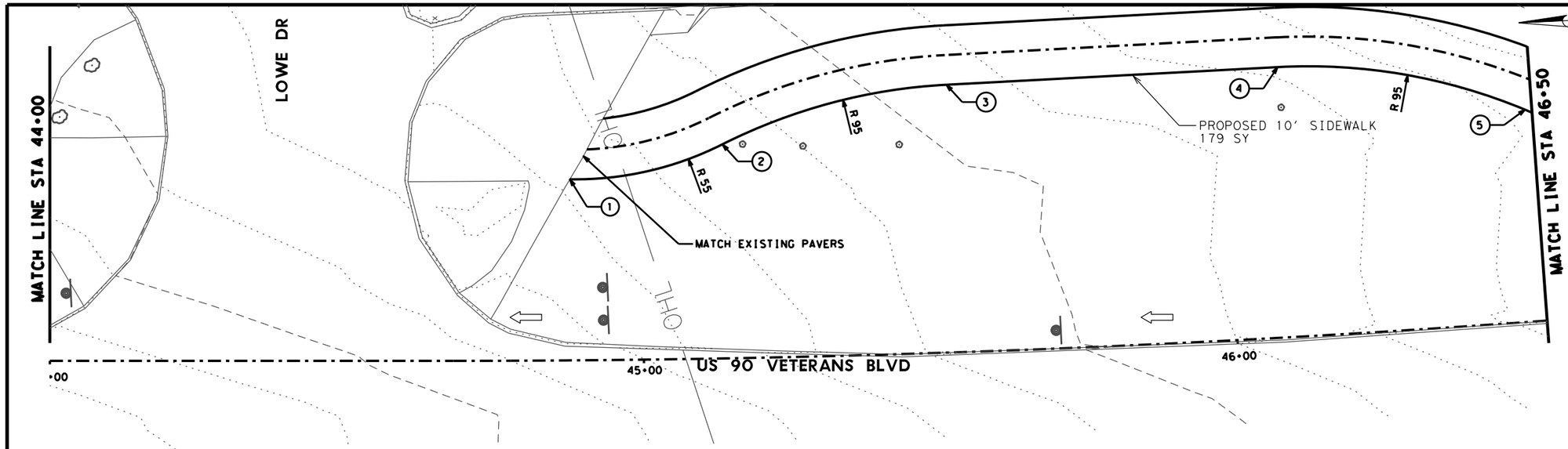
SHEET 7 OF 22

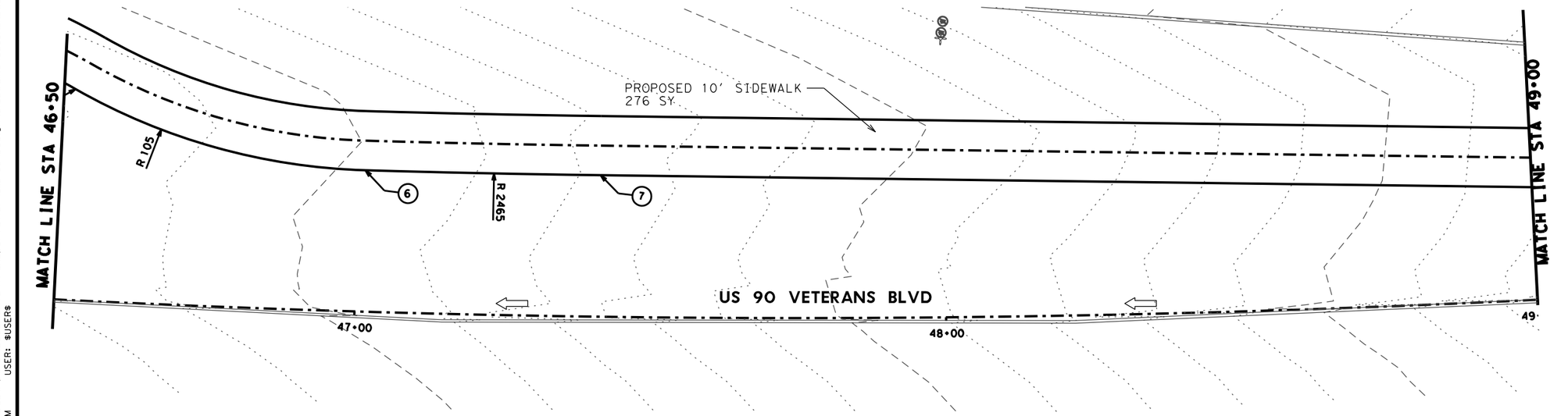
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		41

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC





LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	44+87.77	30.51	LT
2	45+13.88	36.06	LT
3	45+52.46	45.11	LT
4	46+09.31	45.57	LT
5	46+51.08	35.70	LT
6	47+01.14	23.92	LT
7	47+41.28	23.94	LT

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12												455

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

SHEET 8 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			42
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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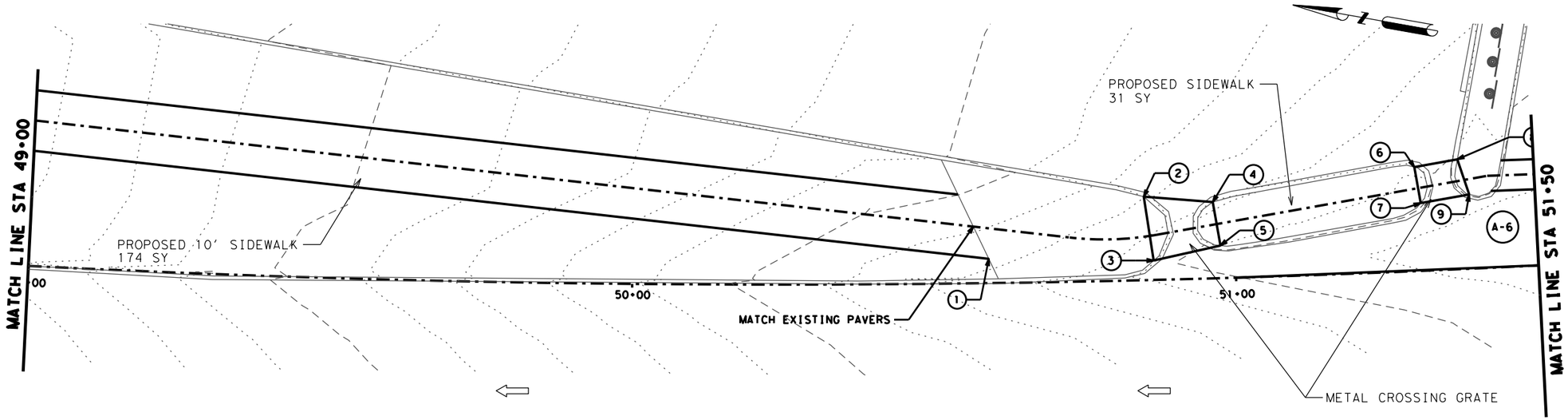


US 90 VETERANS BLVD

LEGEND

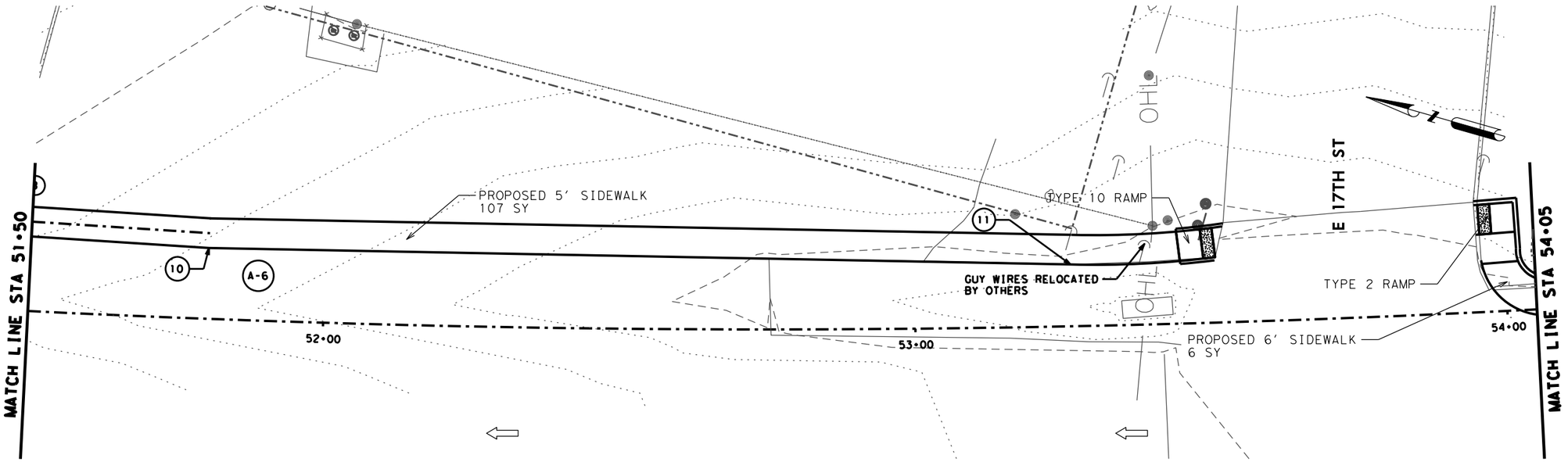
- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	50+59.10	4.02	LT
2	50+85.05	13.79	LT
3	50+86.43	3.21	LT
4	50+96.48	12.61	LT
5	50+97.56	5.38	LT
6	51+30.24	17.20	LT
7	51+31.05	11.20	LT
8	51+37.47	18.15	LT
9	51+39.16	12.27	LT
10	51+80.28	11.97	LT
11	53+26.40	10.46	LT

0 10' 20'

SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013	531 6016	471 6003
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	CURB RAMPS (TY 21)	GRATE & FRAME
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA	EA	EA
0.12												318	1			1		2



US 90 VETERANS BLVD

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/25/2021

US 90

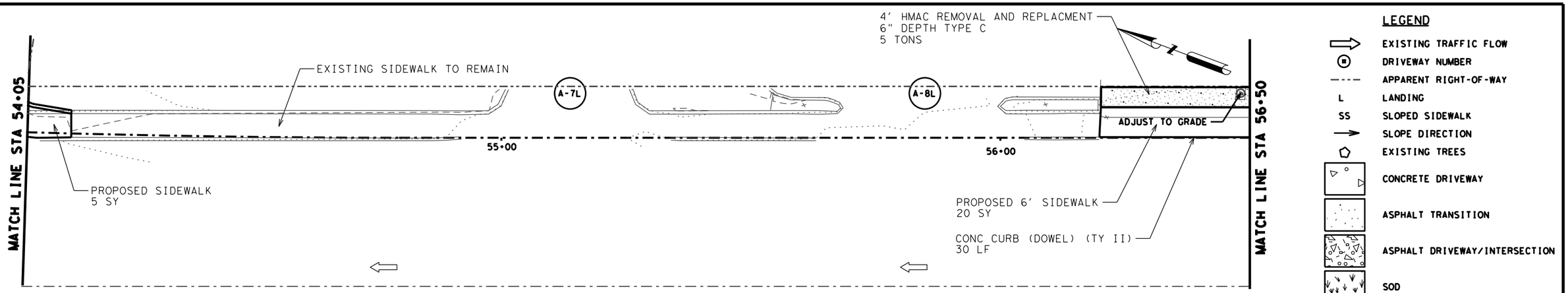
SIDEWALK PLAN

SHEET 9 OF 22

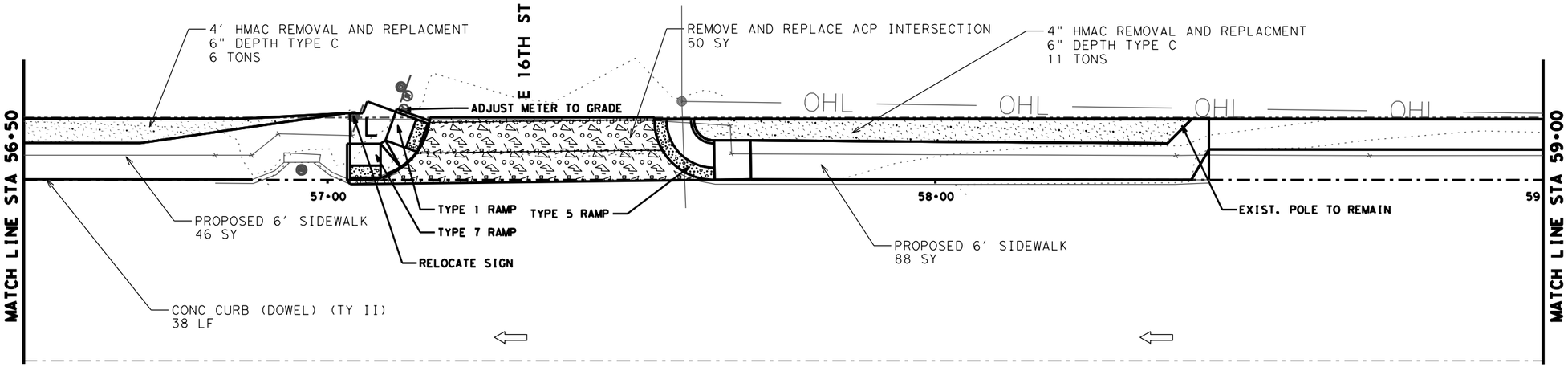
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			43
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013	531 6016	471 6003	531 6017	531 6057	536 6002	531 6004
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	CURB RAMPS (TY 21)	GRATE & FRAME	CURB RAMPS (TY 22)	CONC SIDEWALK (SPECIAL)(RETAINING WALL)	CONC MEDIAN	CURB RAMPS (TY 1)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA	EA	EA	EA	SF	SY	EA
0.12	22						38		50			159		1	1							1



0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/26/2021

US 90

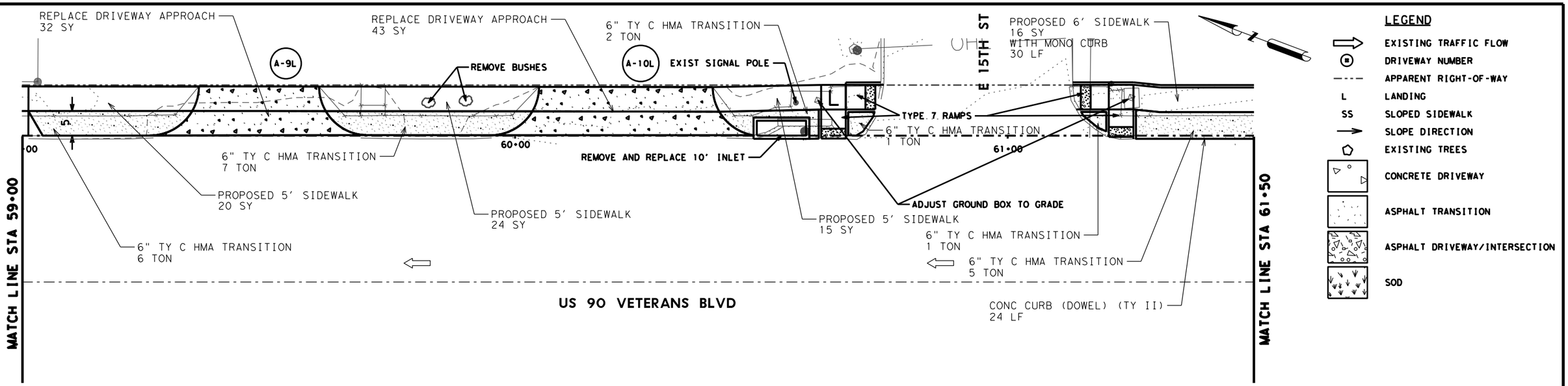
SIDEWALK PLAN

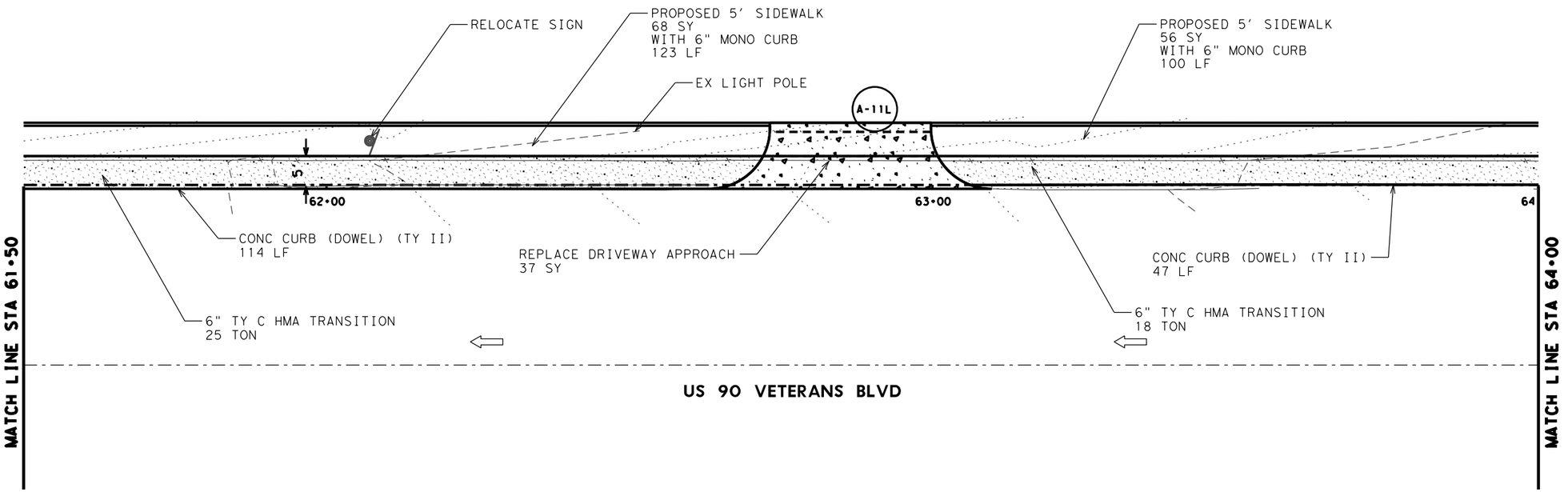
SHEET 10 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			44
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC





100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	479 6002
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	ADJUSTING INLETS
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12	65				253		185			112		199			4	1

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
3/22/2021

US 90

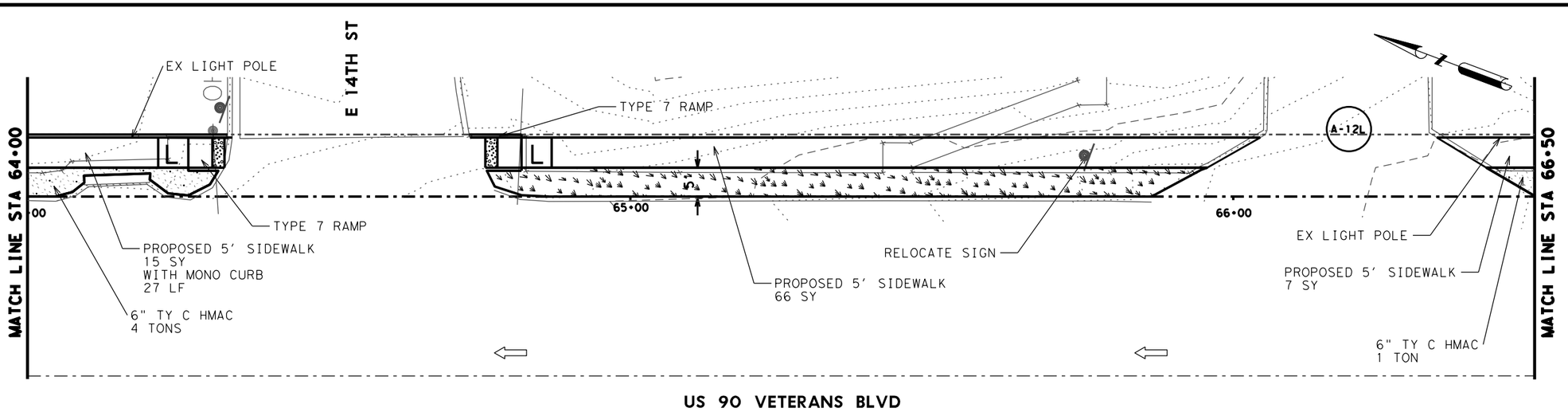
SIDEWALK PLAN

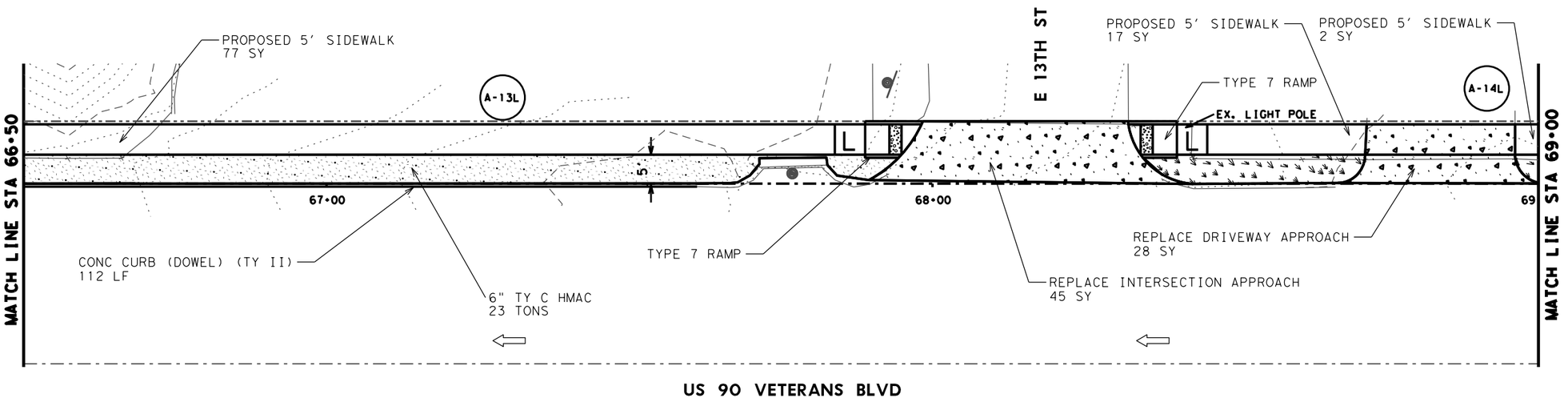
SHEET 11 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			45
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC





100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12	28				27		112	45		28		184			4

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/25/2021

US 90

SIDEWALK PLAN

SHEET 12 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			46
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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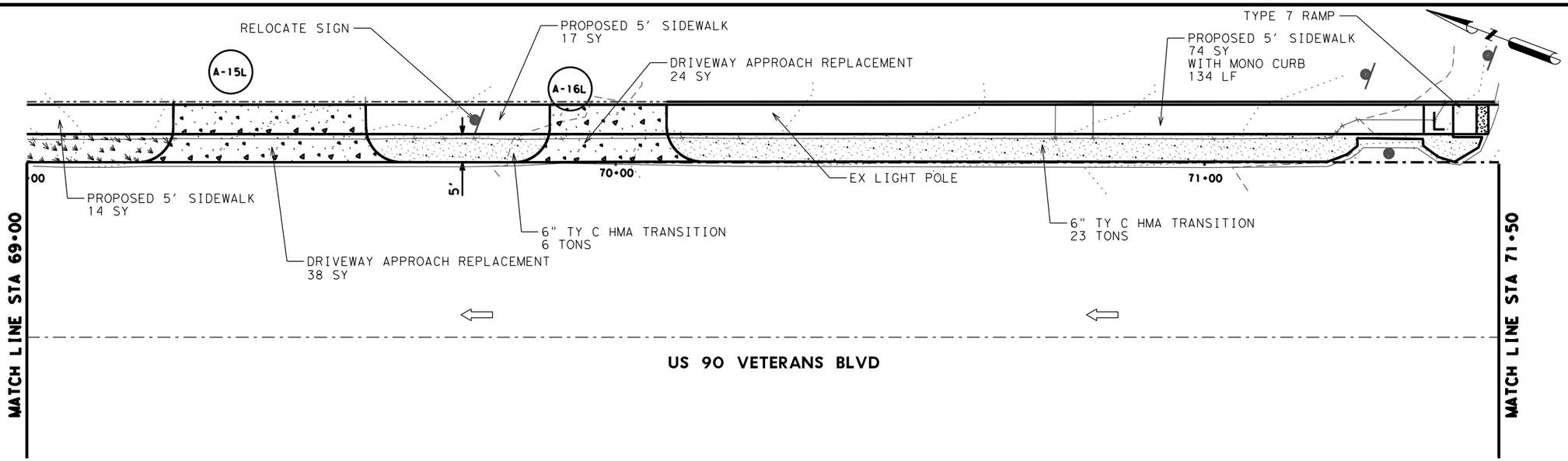
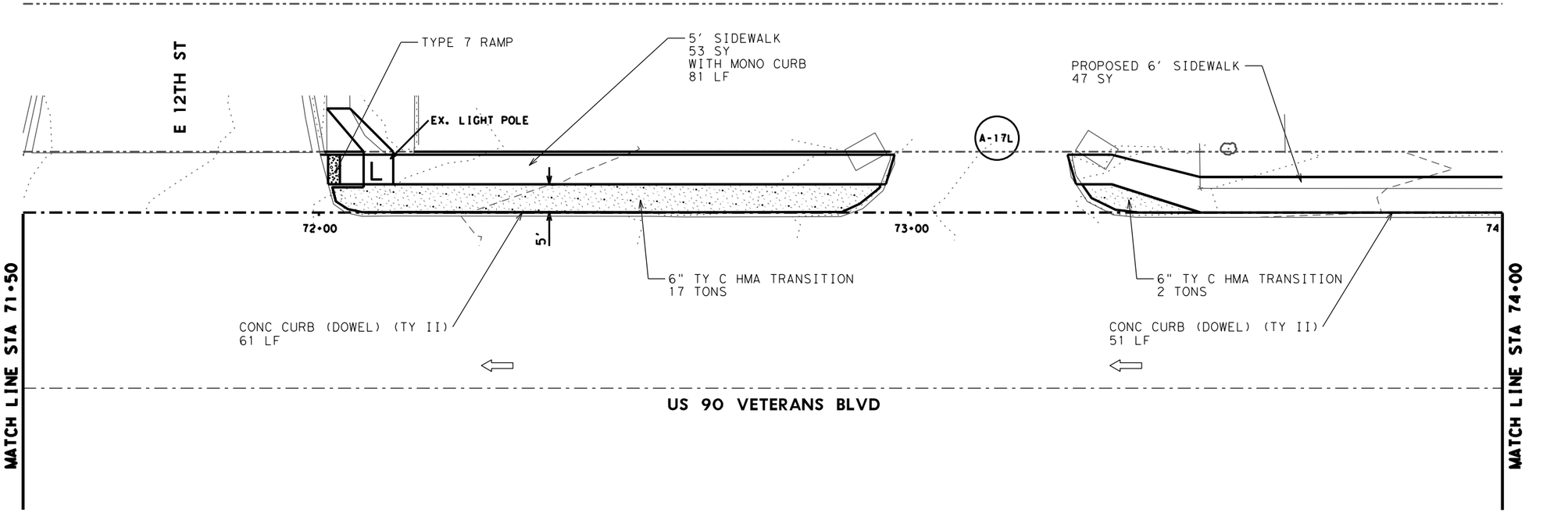




100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12	48				215		112			62		205			2

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L LANDING
- SS SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/25/2021

US 90

SIDEWALK PLAN

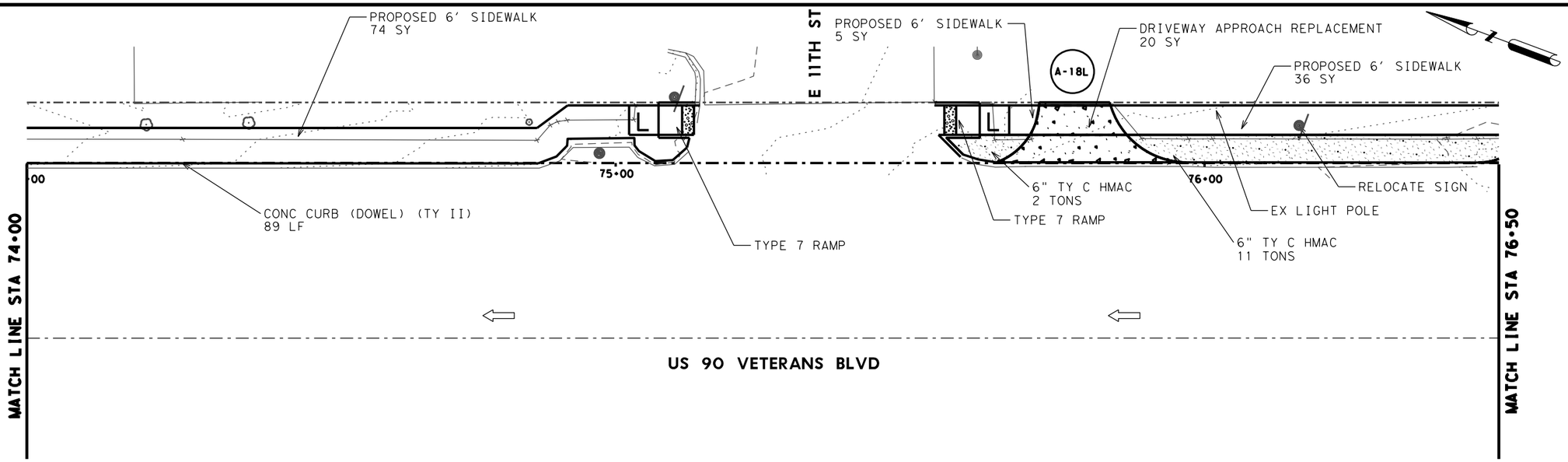
SHEET 13 OF 22

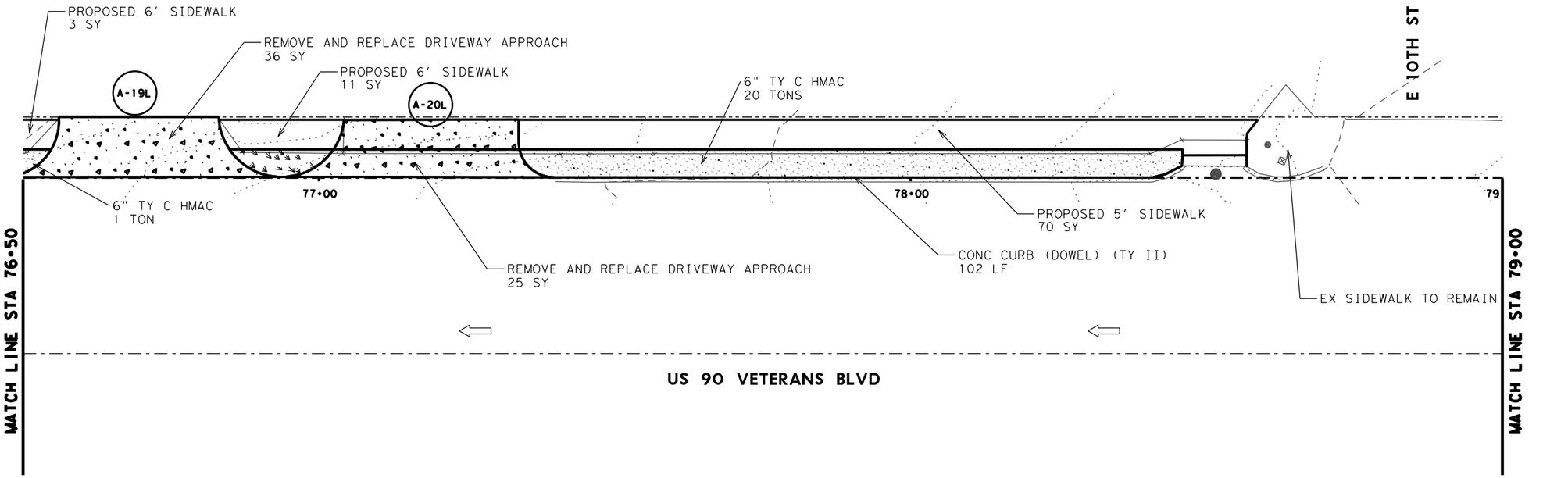
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		47

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC





LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12	34						191			81		199			2

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

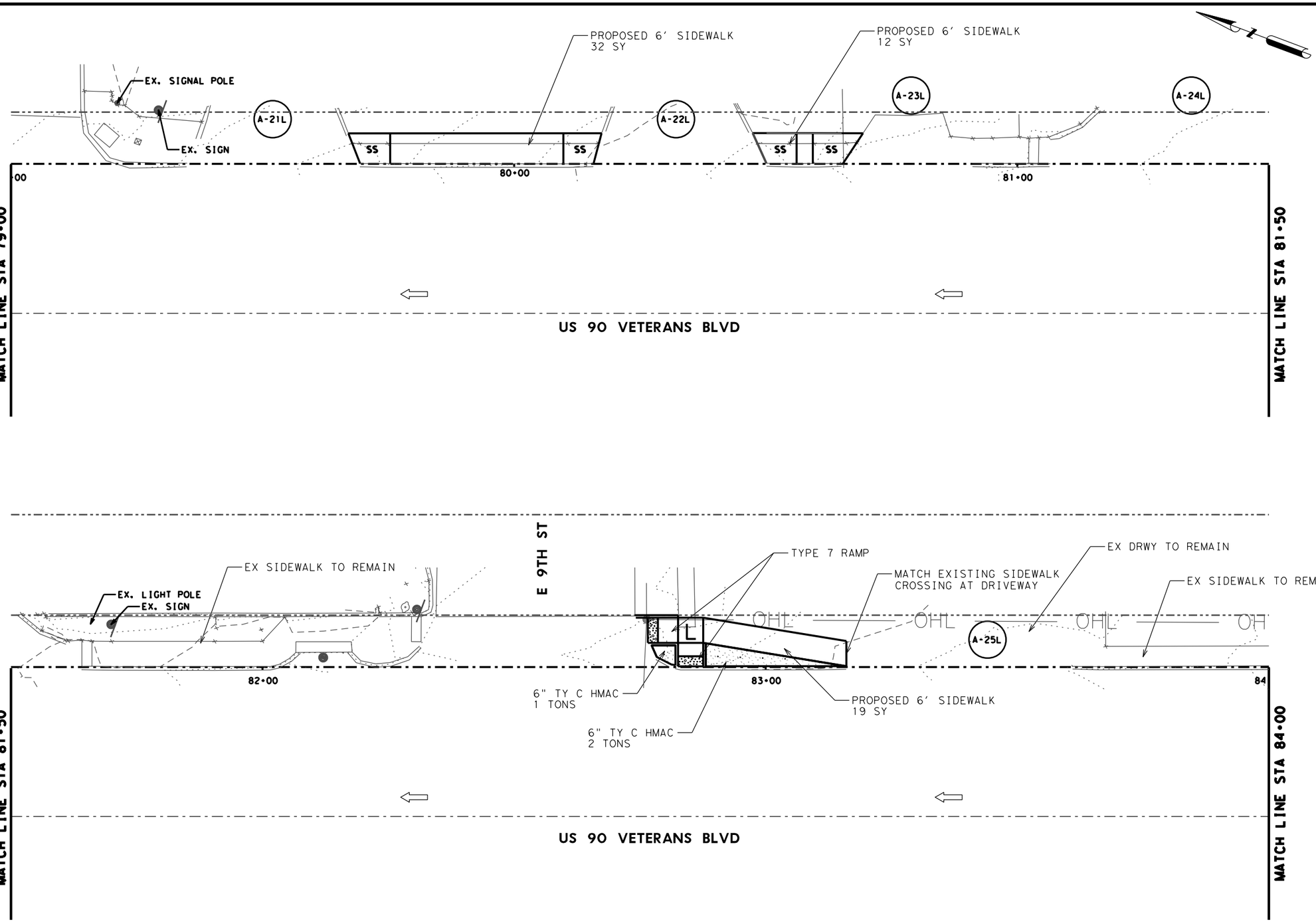
SHEET 14 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		48

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12	3											63			2

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

SHEET 15 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			49
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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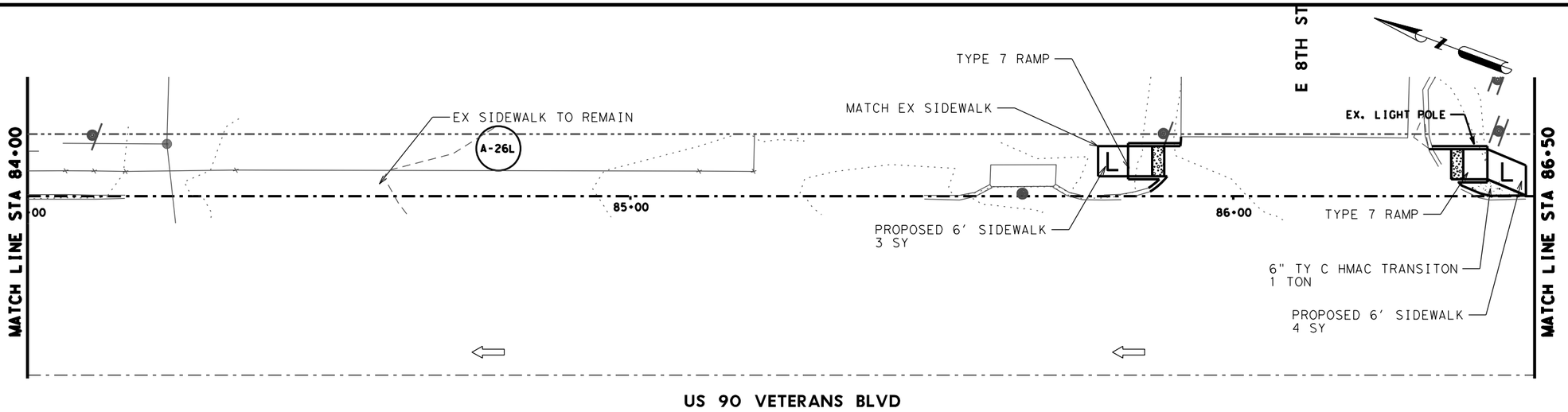
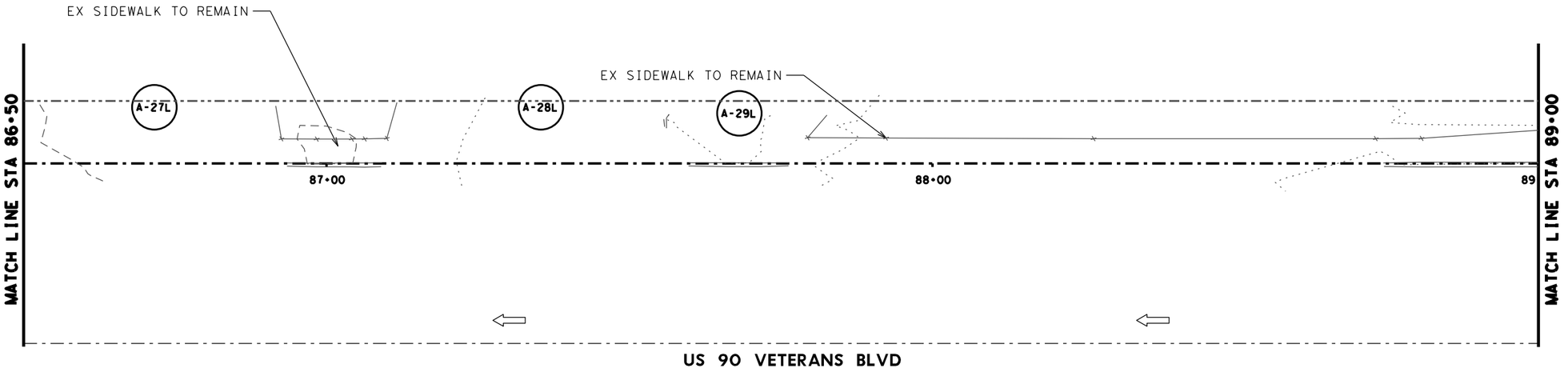




LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12	1											7			2

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

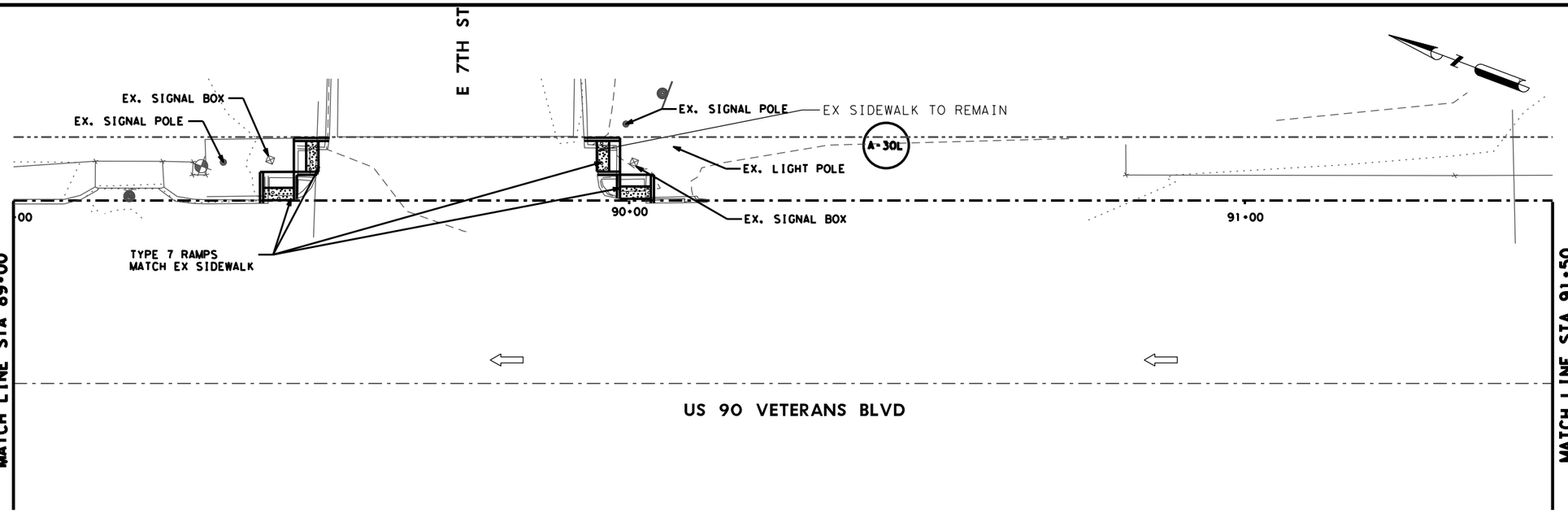
SIDEWALK PLAN

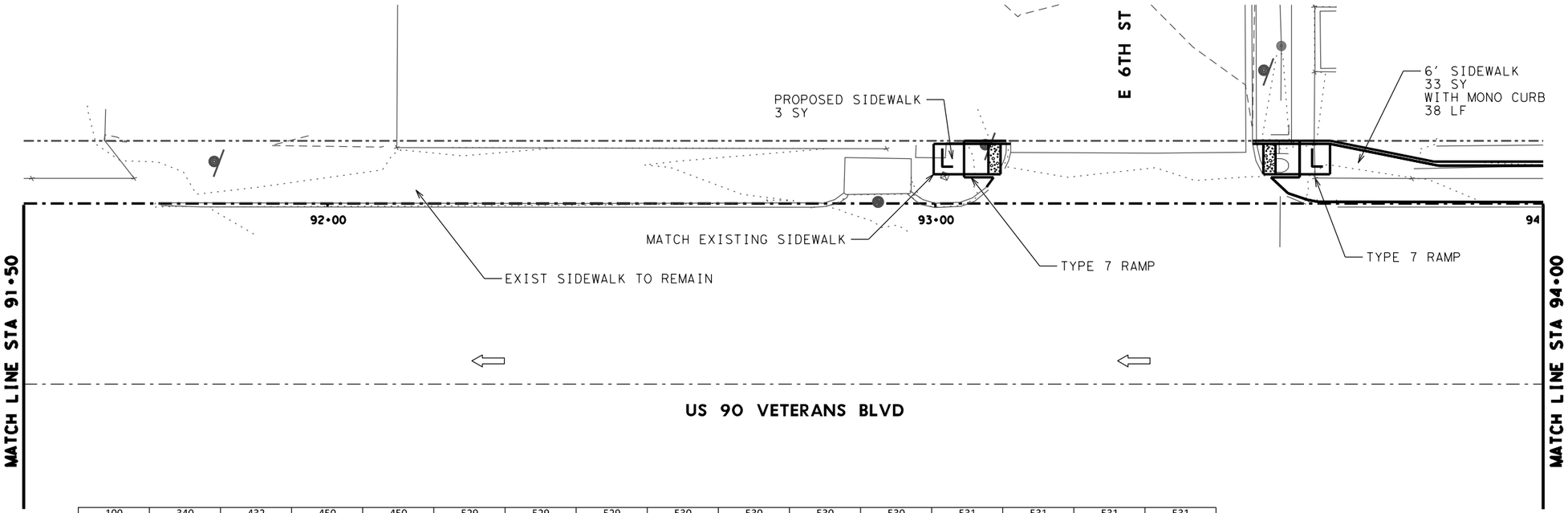
SHEET 16 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		50

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC





LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L LANDING
- SS SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(T Y E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTION S (CONC)	INTERSECTION S (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12					38							36			6

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/26/2021

US 90

SIDEWALK PLAN

SHEET 17 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			51
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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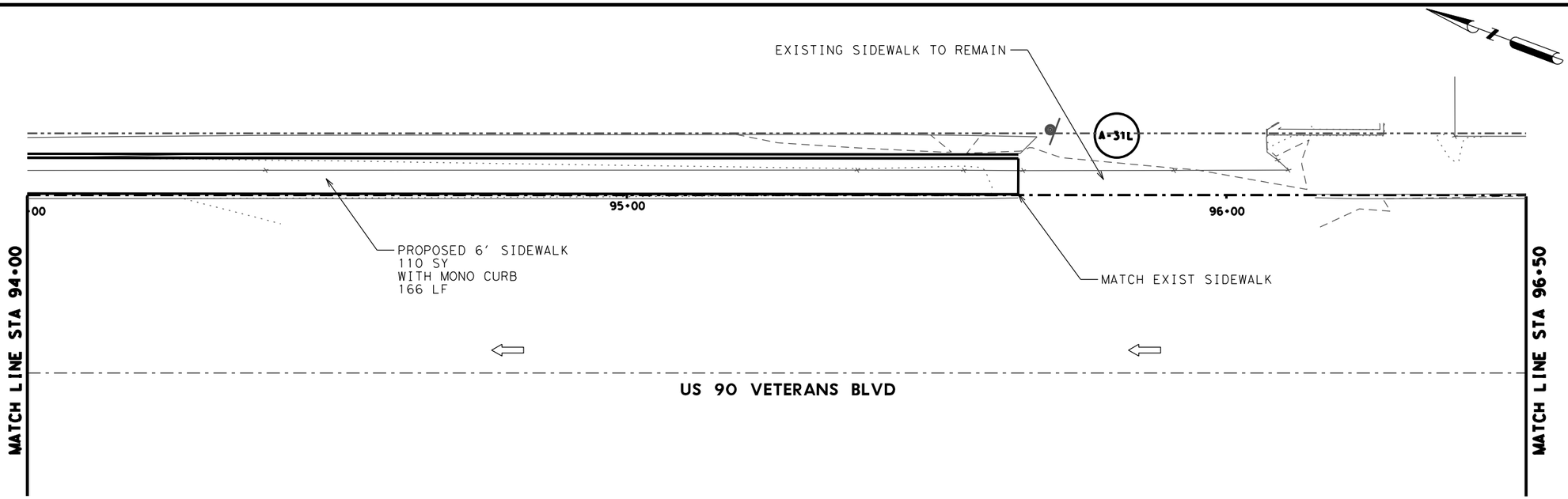

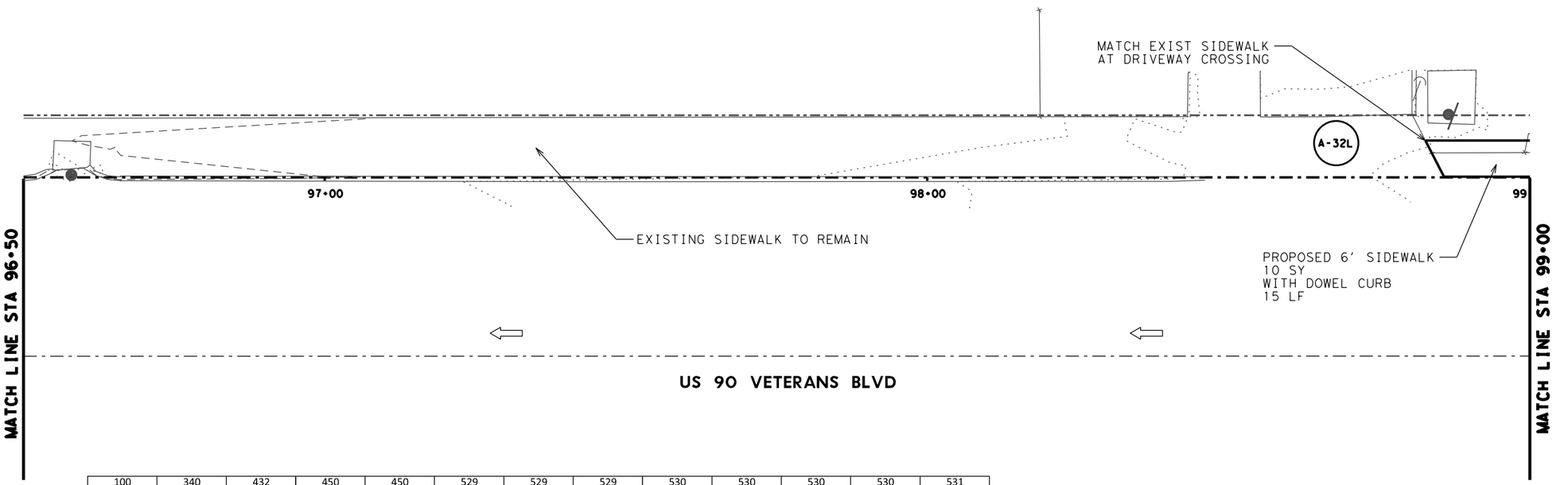

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12					166		15					120

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/25/2021

US 90

SIDEWALK PLAN

SHEET 18 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		52

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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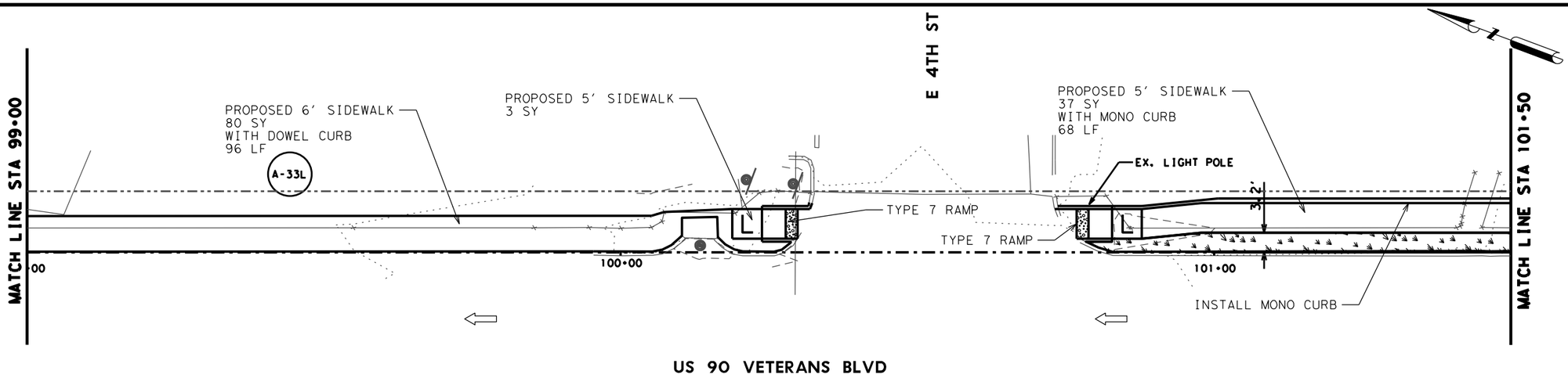

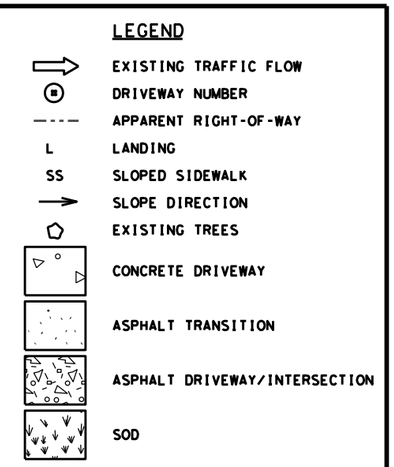

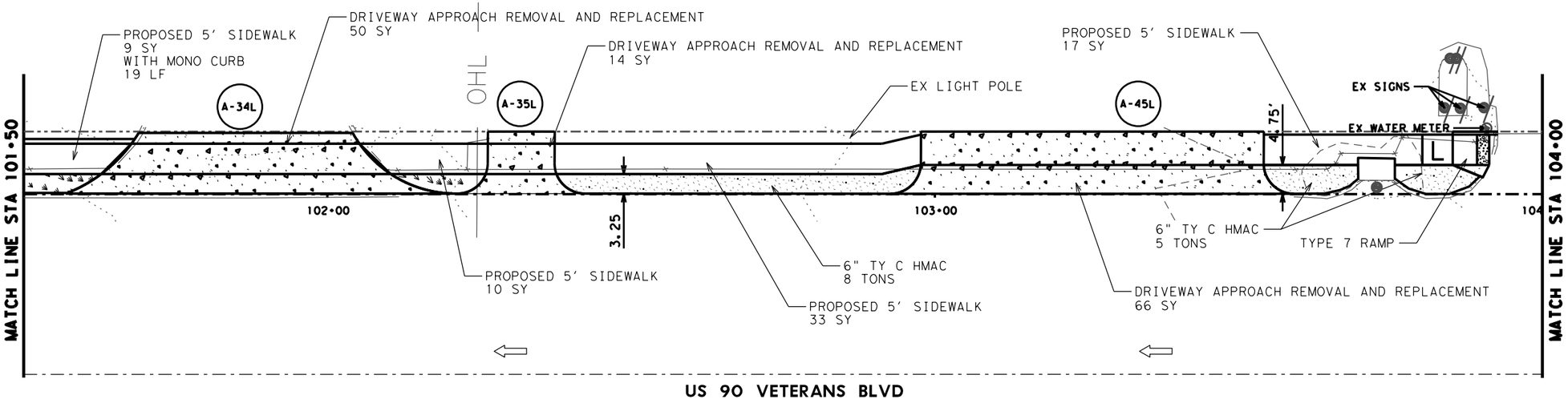

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12	13				87		96			130		189			3

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

SHEET 19 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			53
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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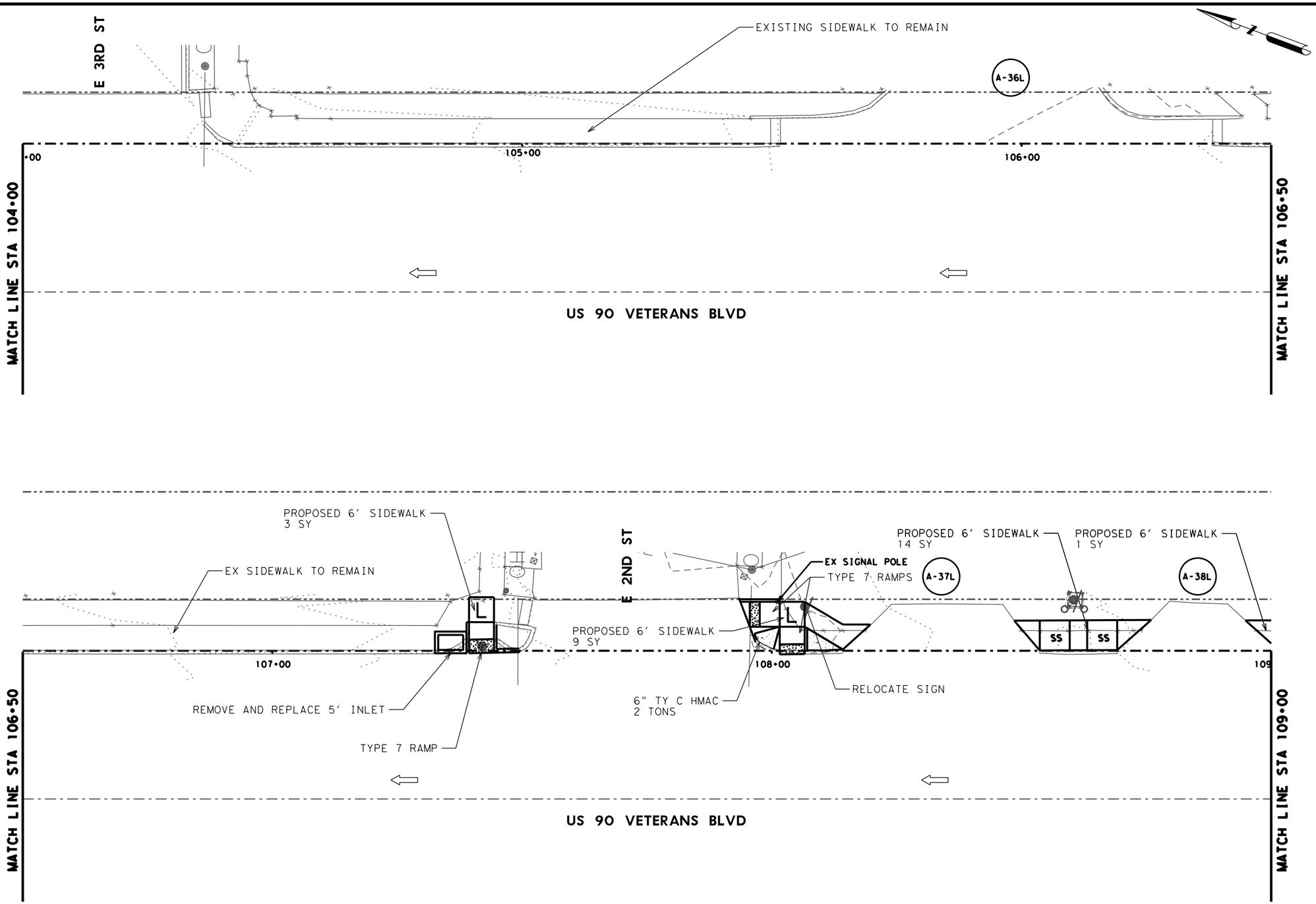


LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'

SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12	2											27			3

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

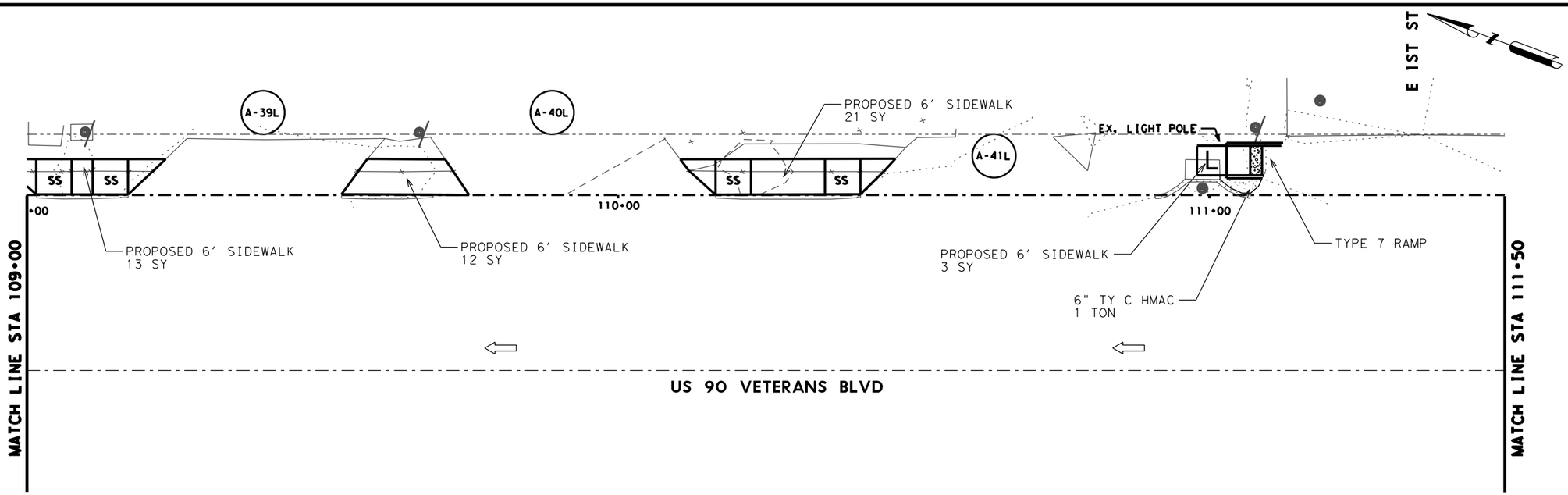
US 90

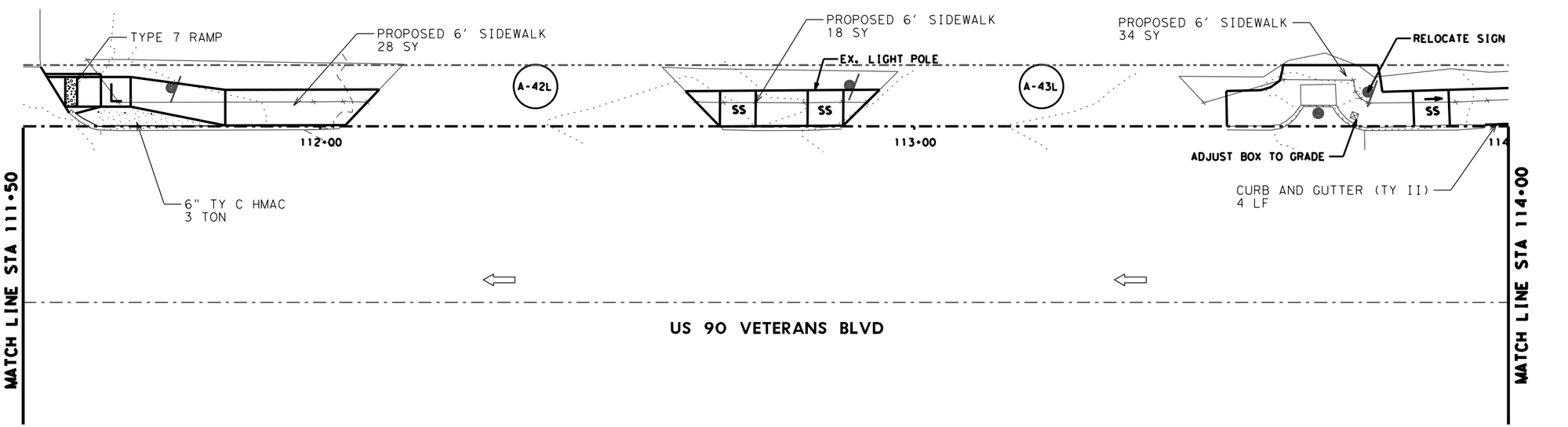
SIDEWALK PLAN

SHEET 20 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			54
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC





LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L LANDING
- SS SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12	4					4						129			2

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

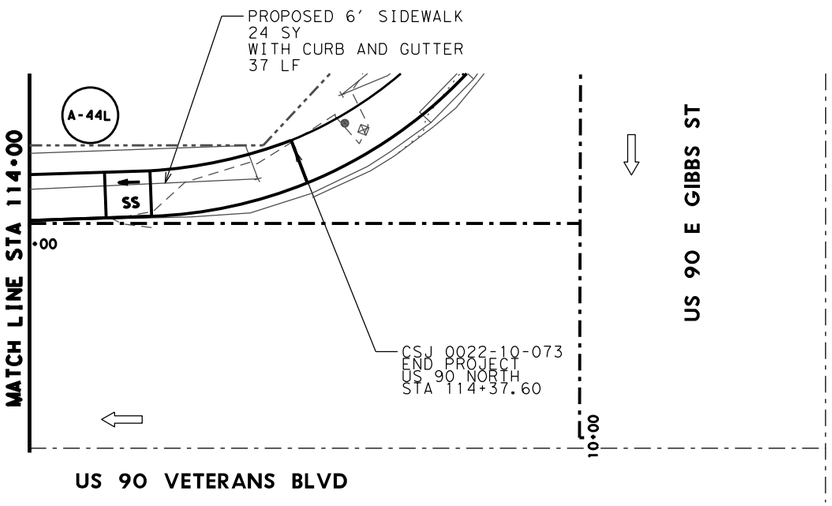
SIDEWALK PLAN

SHEET 21 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			55
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.01						37						25

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

SHEET 22 OF 22

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			56
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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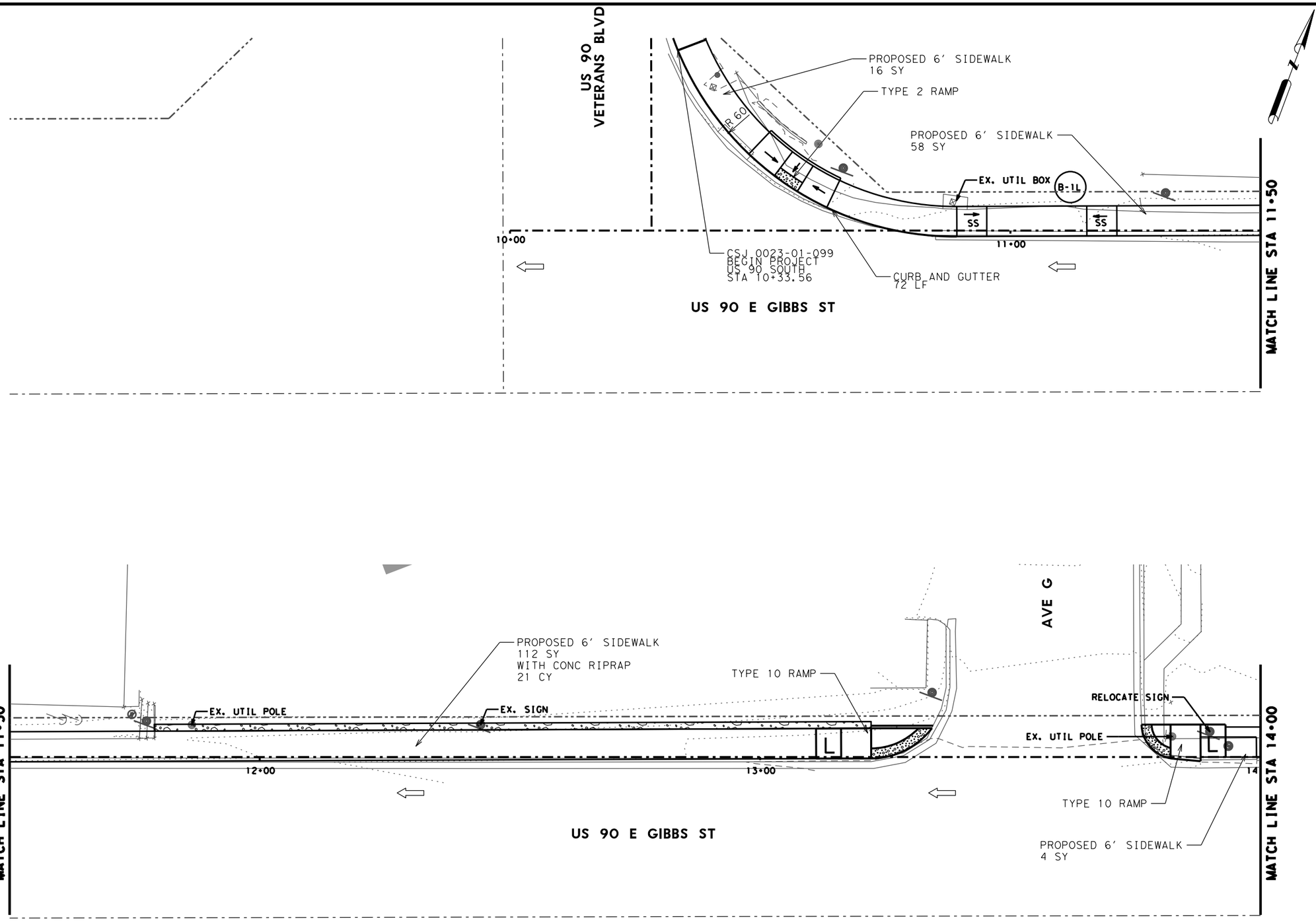

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.08		21				72						190	1			2

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

SHEET 1 OF 15

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			57
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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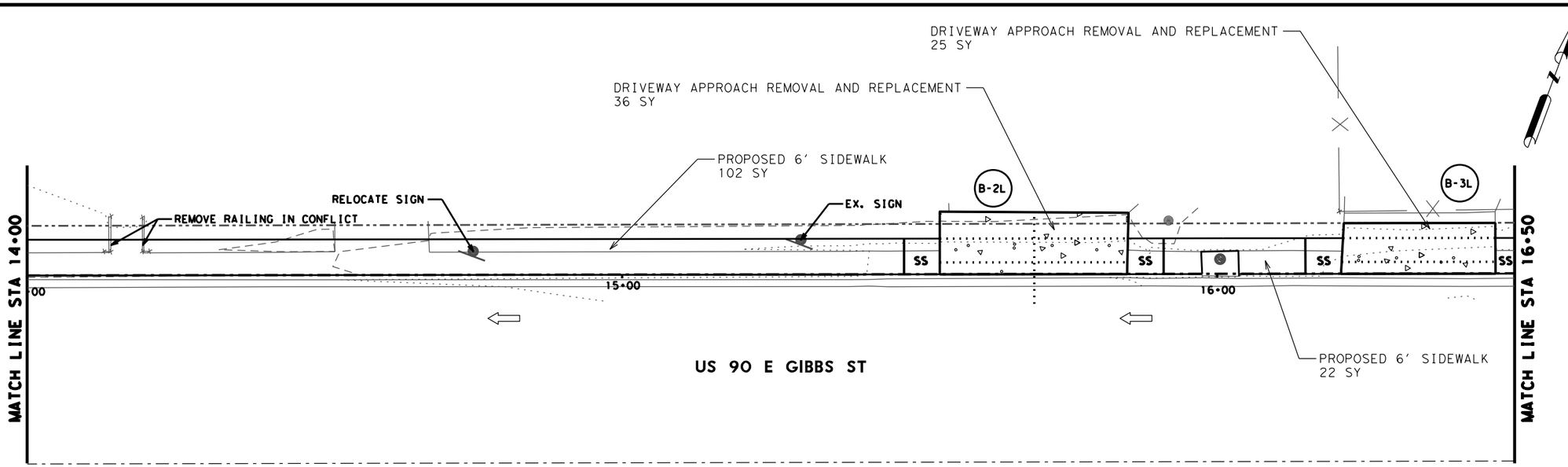
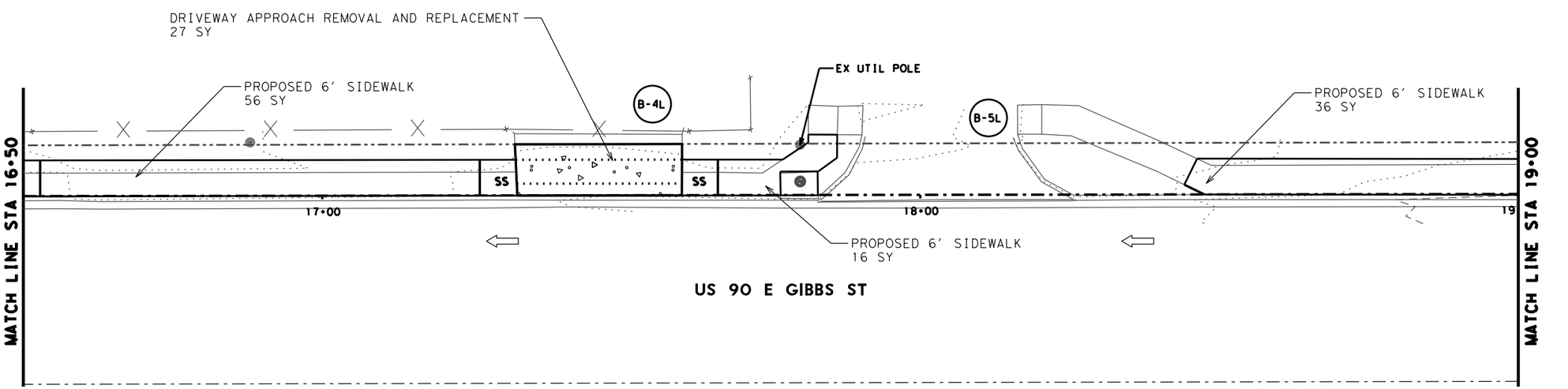




LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12										88		232

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

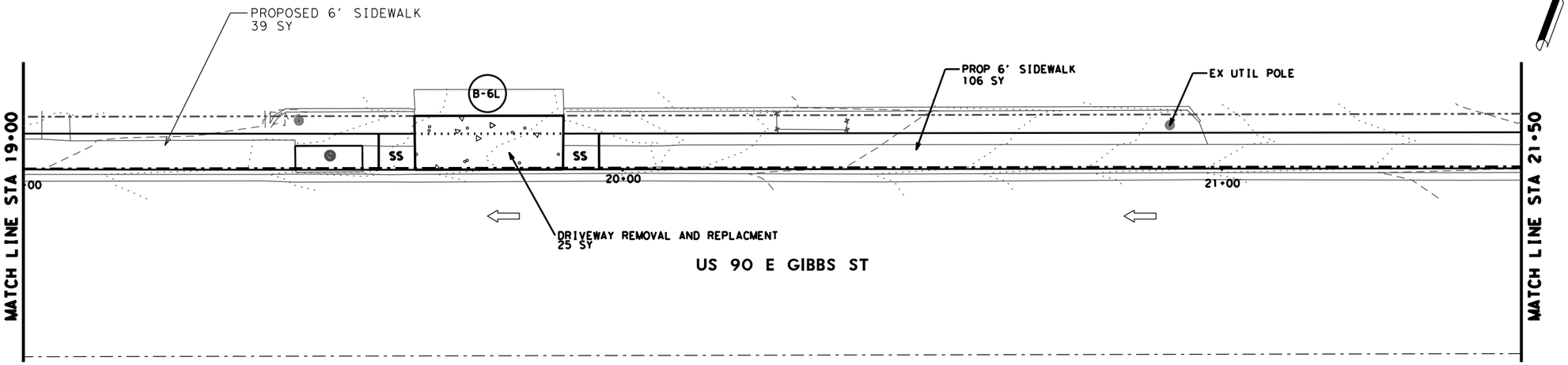
SIDEWALK PLAN

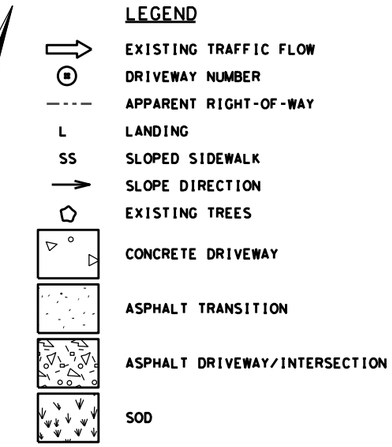
SHEET 2 OF 15

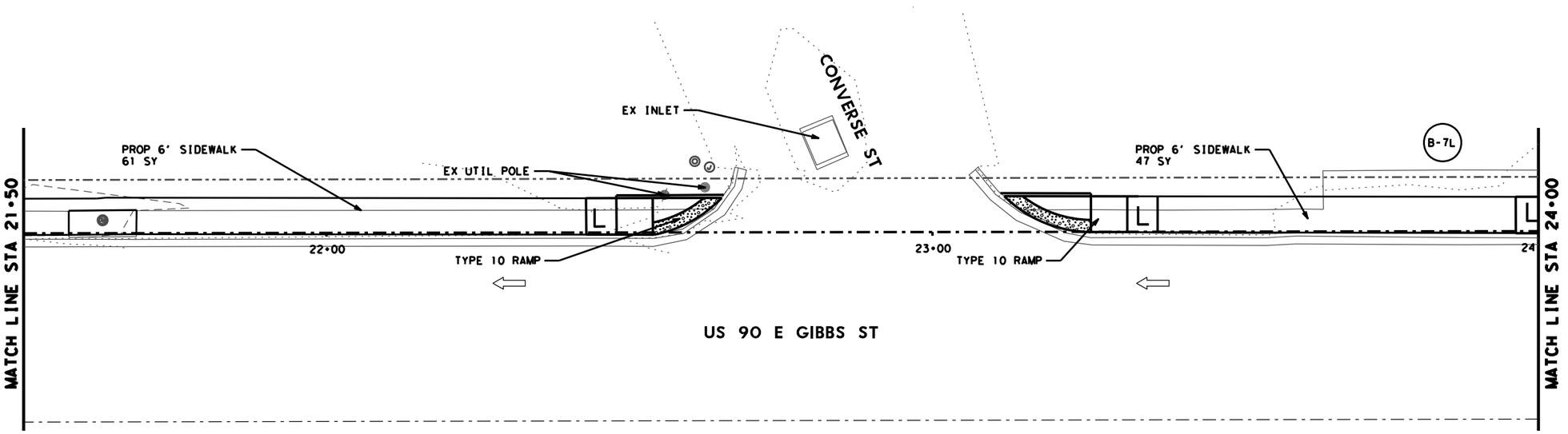
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

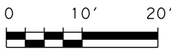
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		58

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC









100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12										25		253				2

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

SHEET 3 OF 15

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		59

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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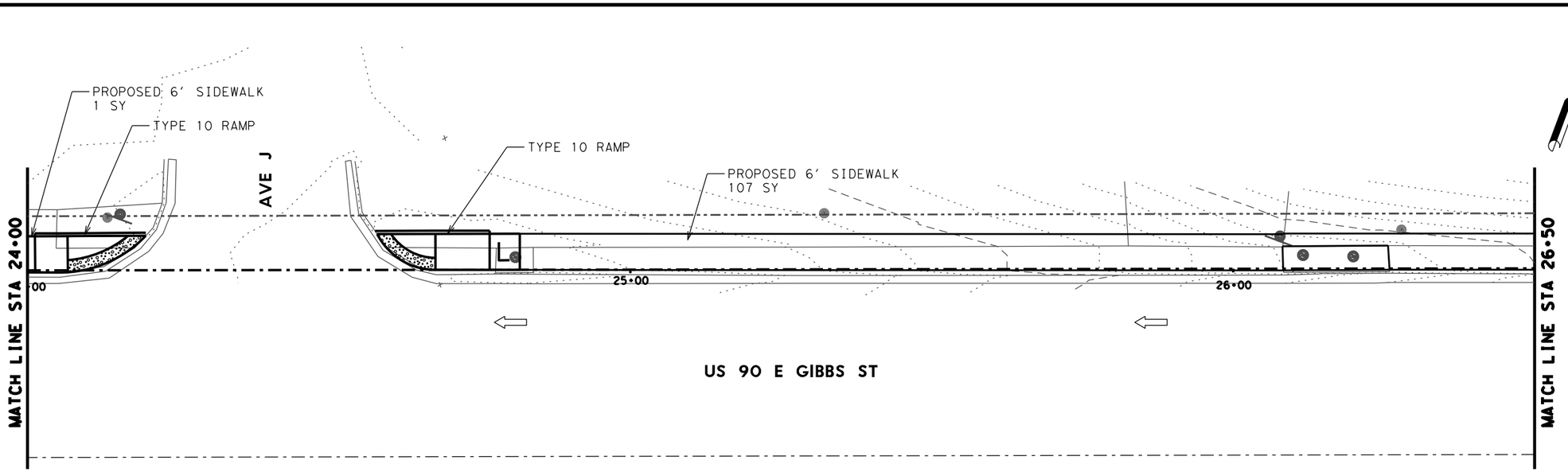
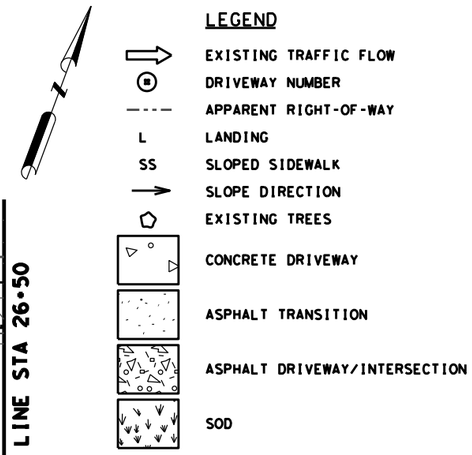
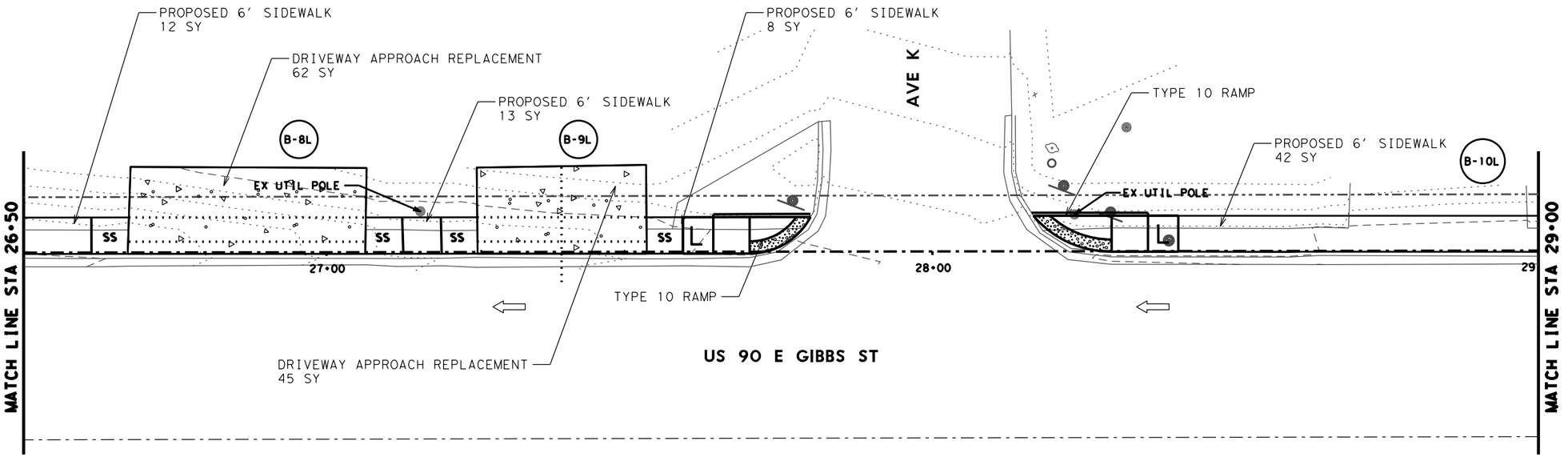






100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12										107		183				4

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/25/2021

US 90

SIDEWALK PLAN

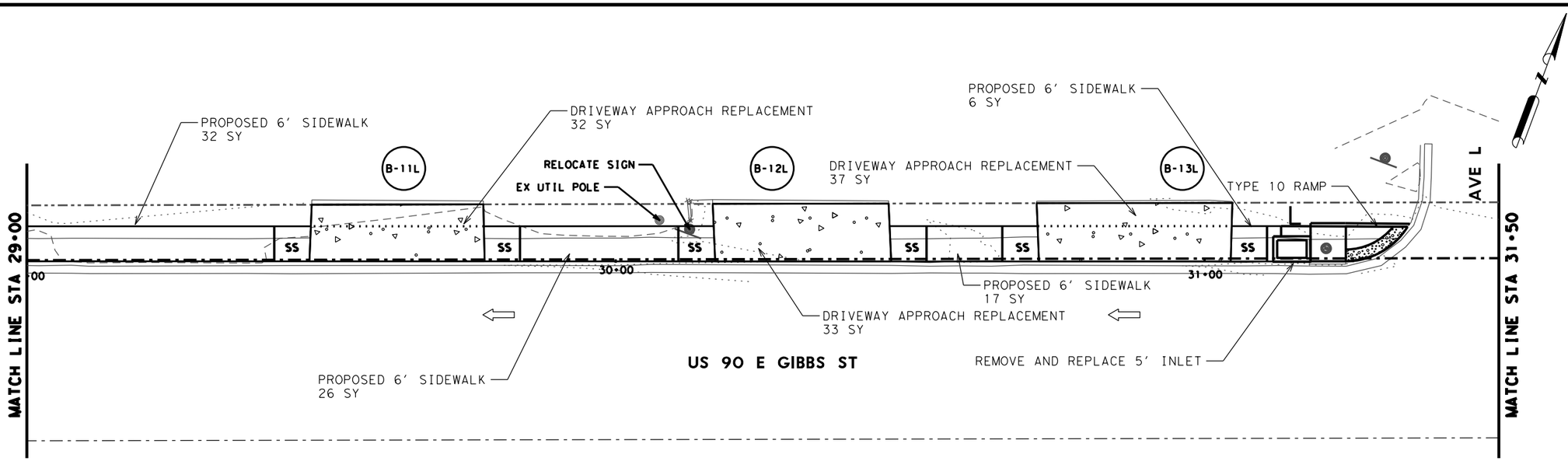
SHEET 4 OF 15

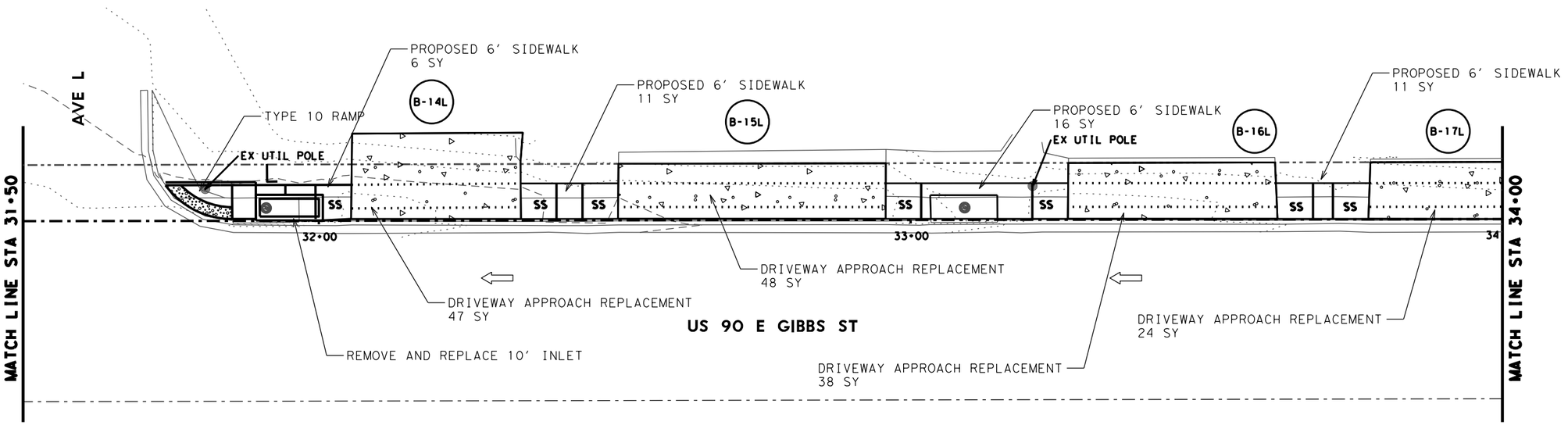
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		60

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC





LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12										259		125				2

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

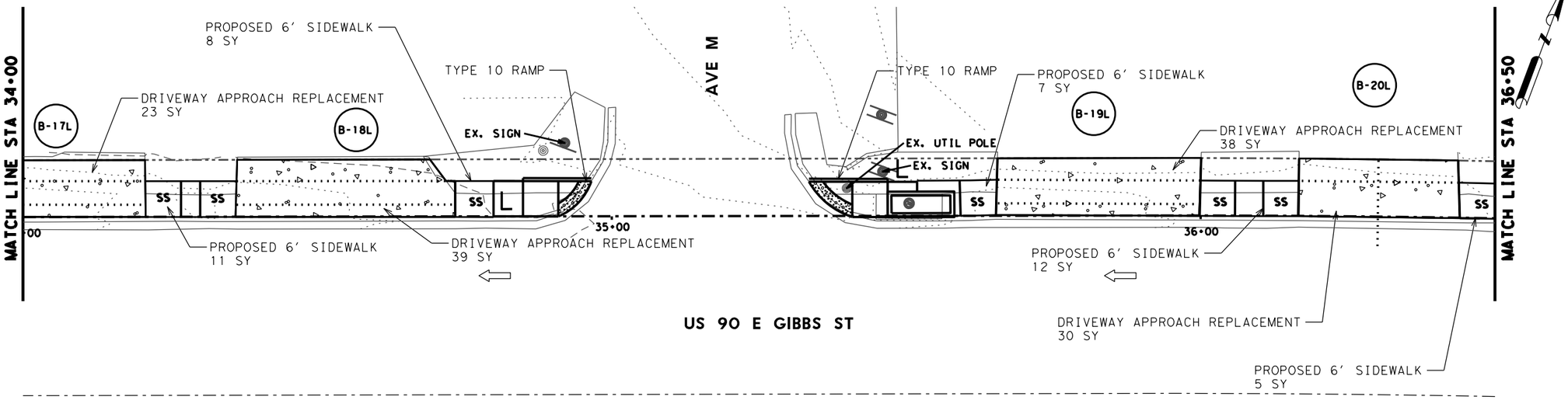
SHEET 5 OF 15

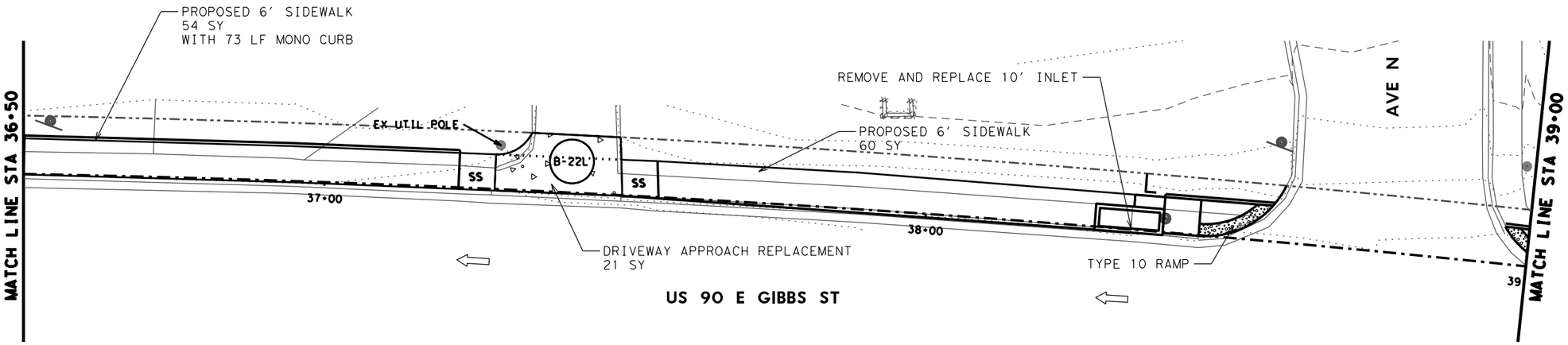
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		61

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC





LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013	531 6016	471 6003	531 6017
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(T Y E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	CURB RAMPS (TY 21)	GRATE & FRAME	CURB RAMPS (TY 22)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA	EA	EA	EA
0.12					73					151		157				3			

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
4/26/2021

US 90

SIDEWALK PLAN

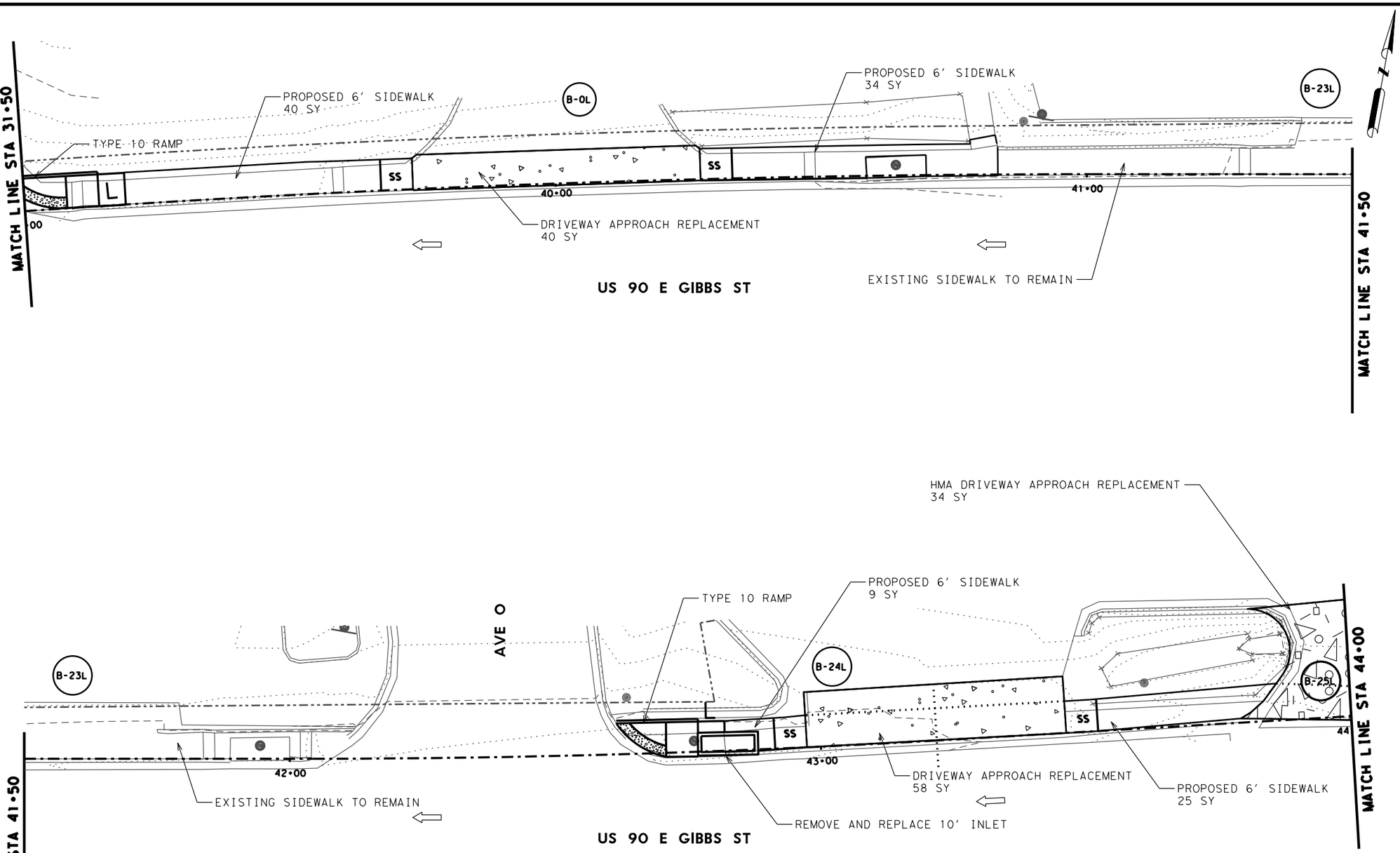
SHEET 6 OF 15

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		62

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12										98	34	108				2

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

SIDEWALK PLAN

SHEET 7 OF 15

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		63

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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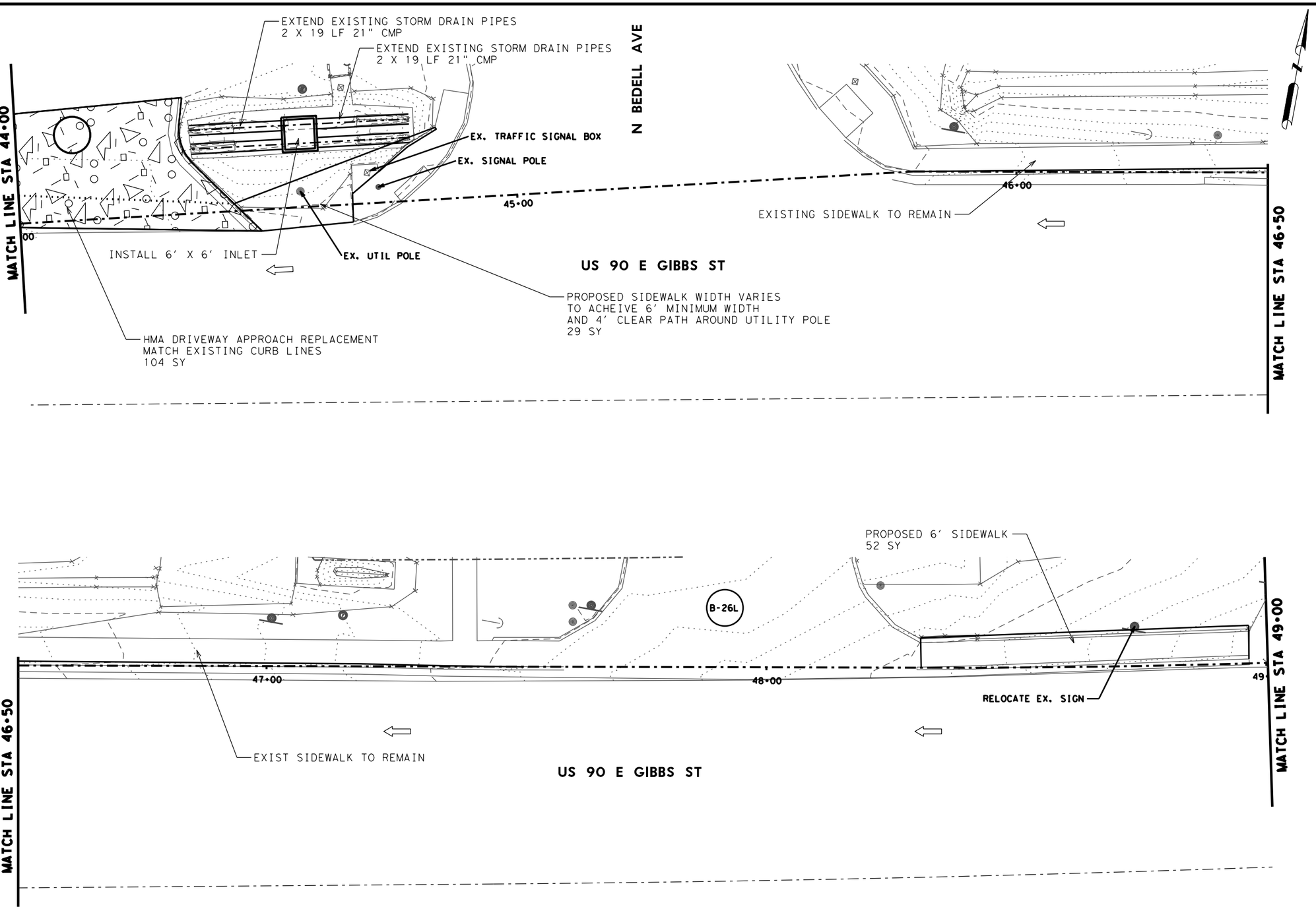

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12											104	81

ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
3/22/2021

US 90

SIDEWALK PLAN

SHEET 8 OF 15

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			64
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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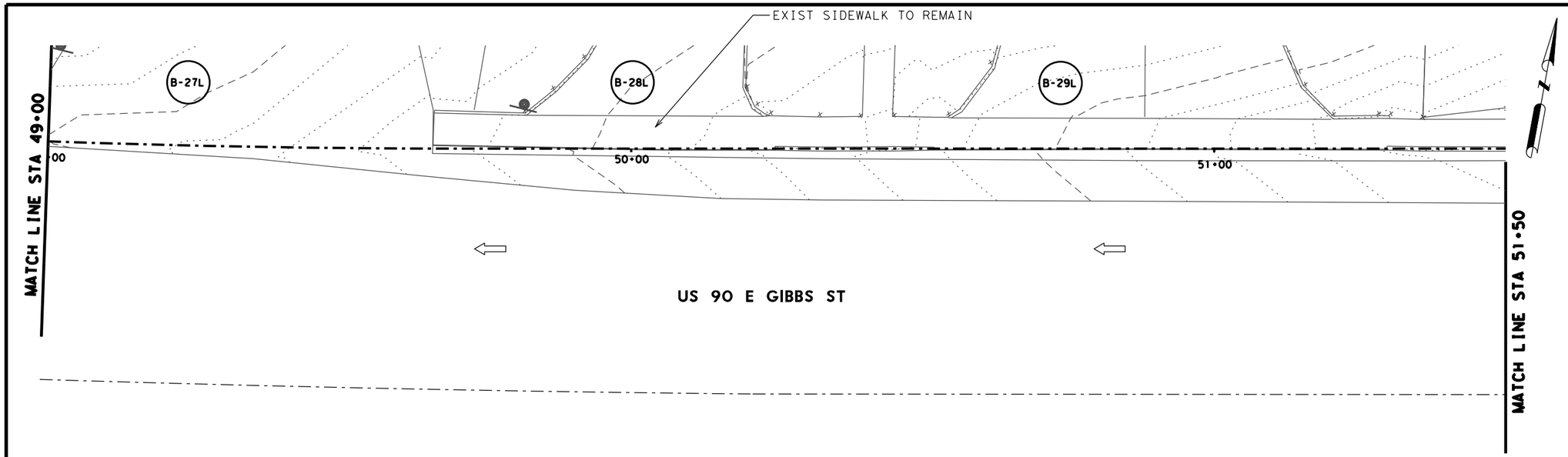

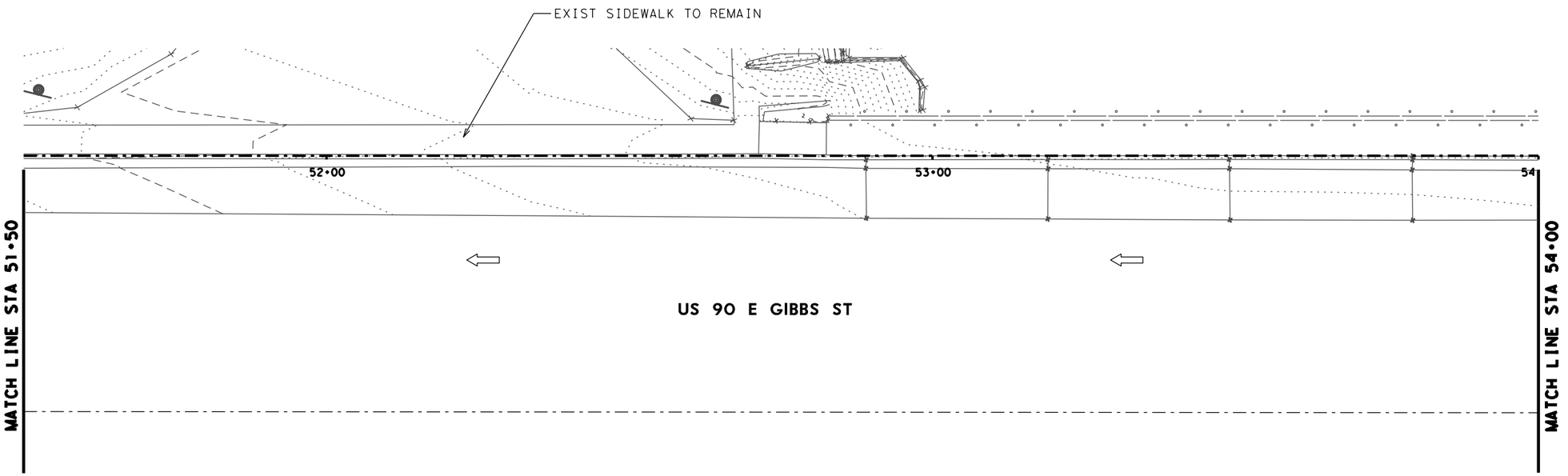

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10′ 20′

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/22/2021

US 90

SIDEWALK PLAN

SHEET 9 OF 15

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			65
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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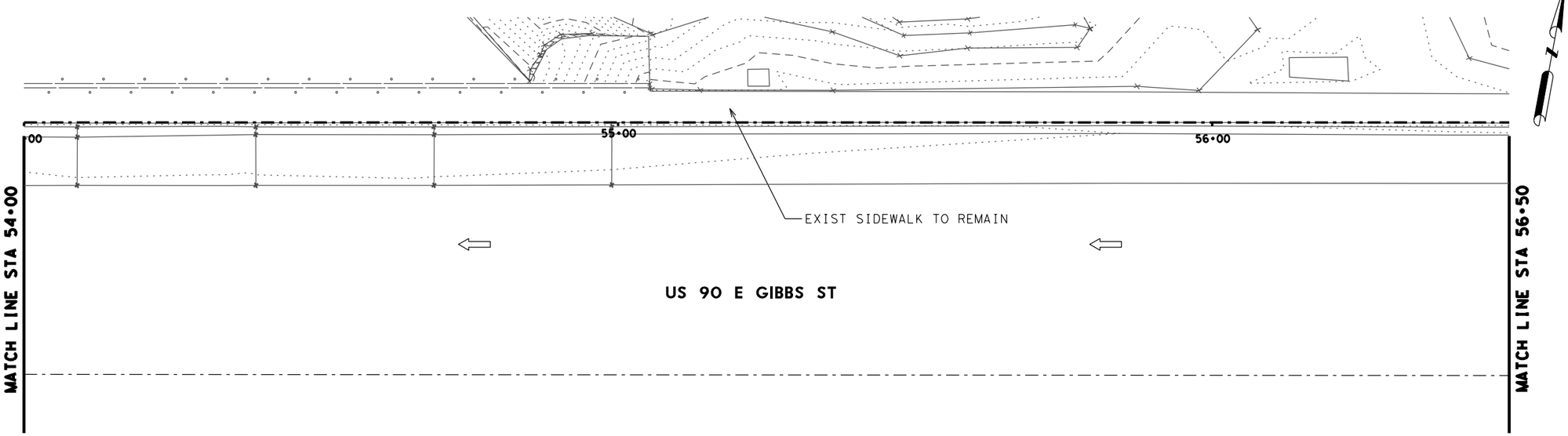

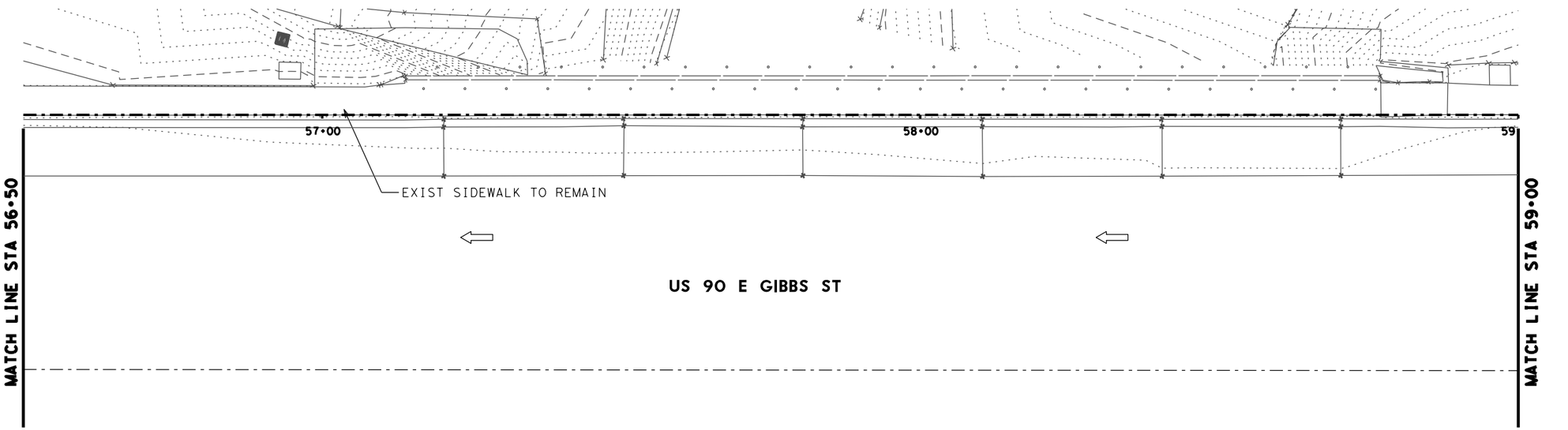

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10′ 20′

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

SIDEWALK PLAN

SHEET 10 OF 15

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			66
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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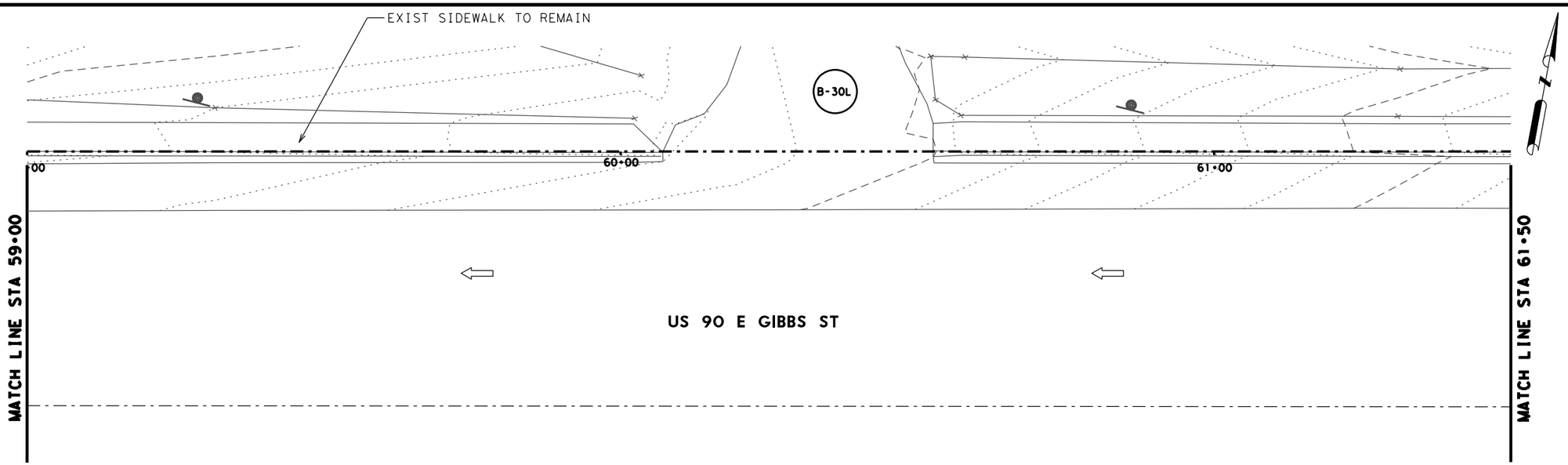

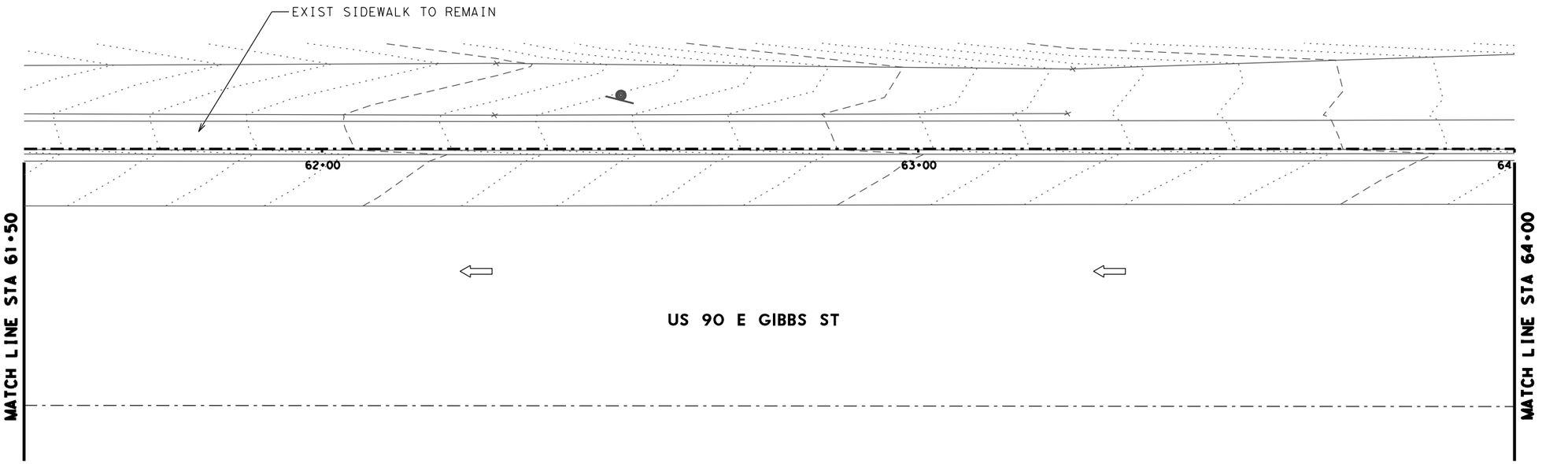

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10′ 20′

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

SIDEWALK PLAN

SHEET 11 OF 15

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			67
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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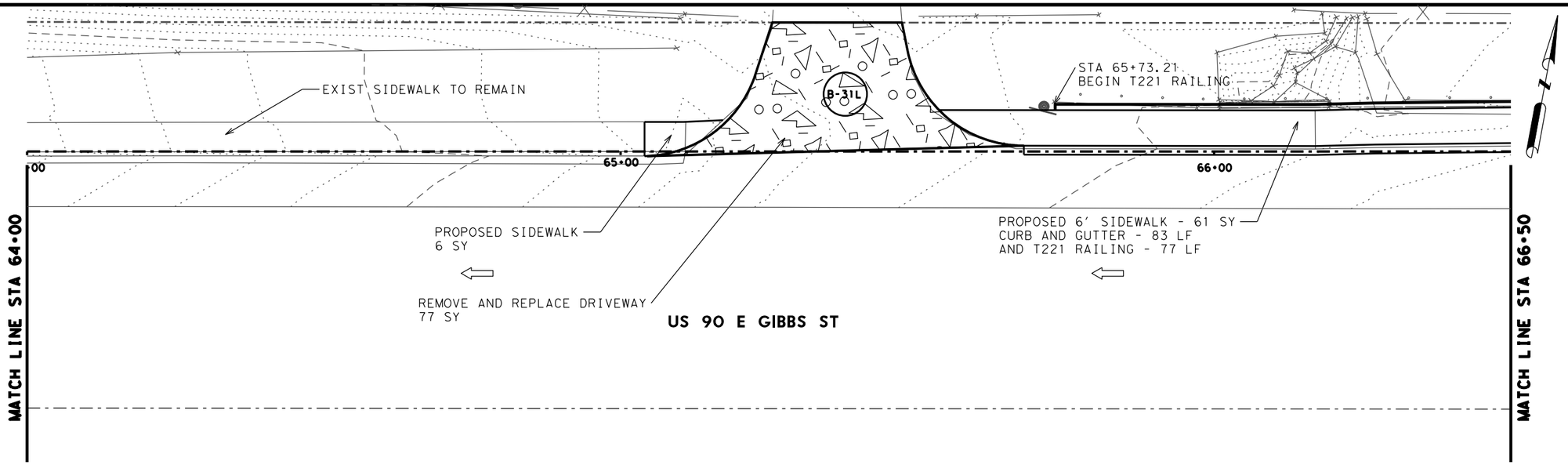
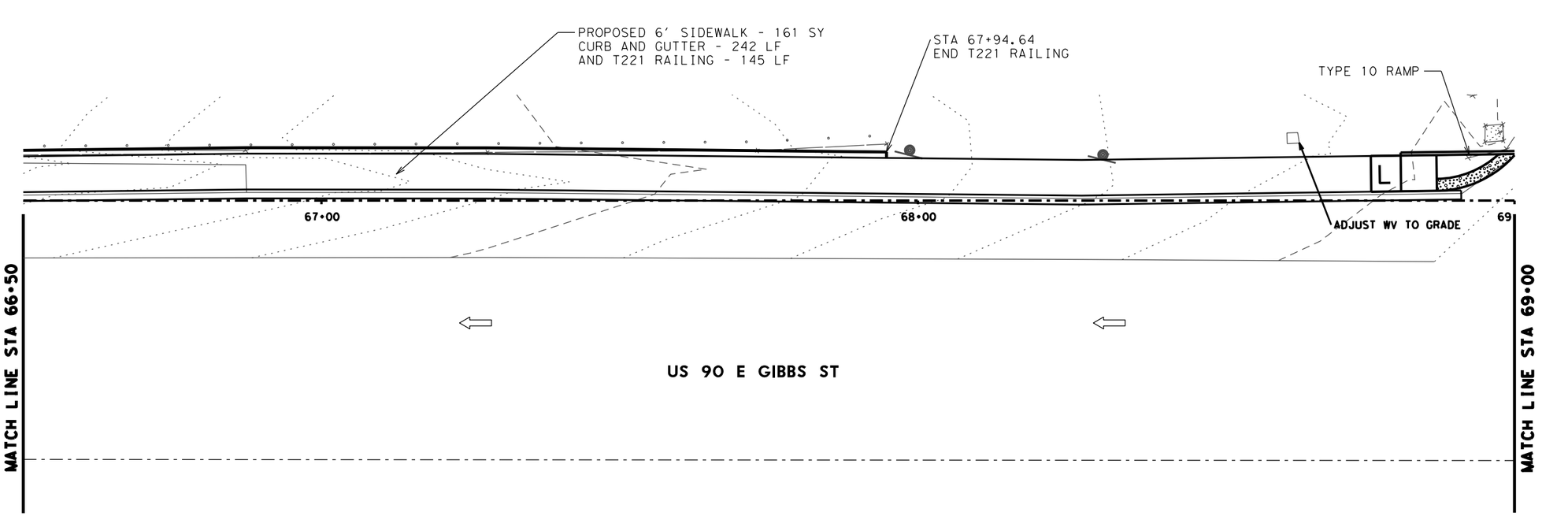




LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'

SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.10			222			325					77	228				1

Texas Department of Transportation®

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

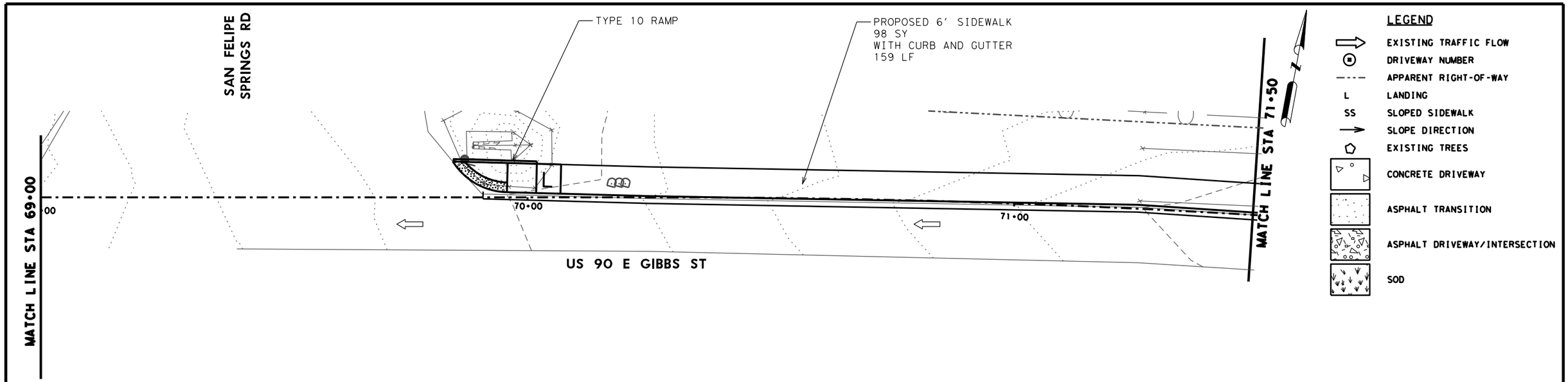
US 90

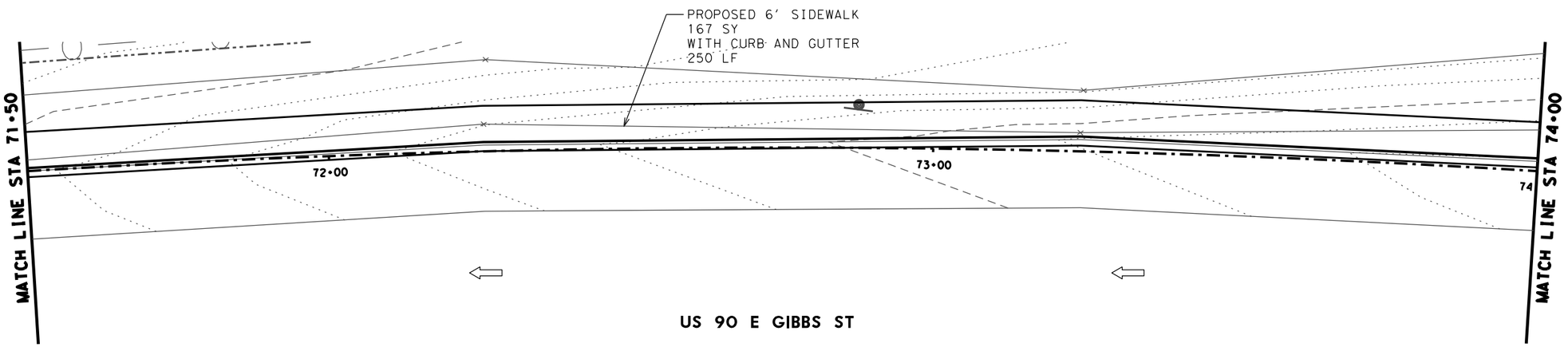
SIDEWALK PLAN

SHEET 12 OF 15

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			68
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC





0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12						409						265				1

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

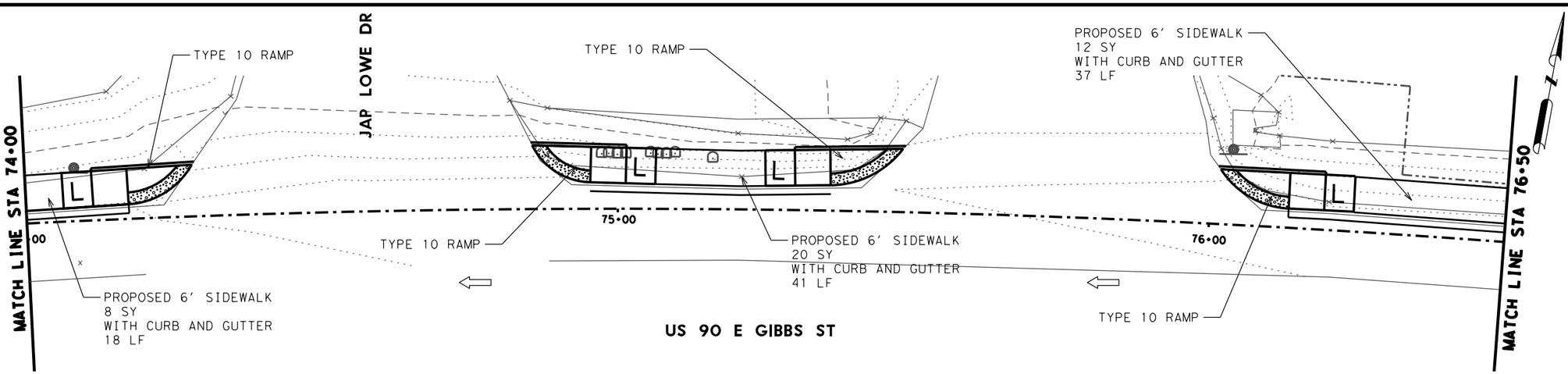
SIDEWALK PLAN

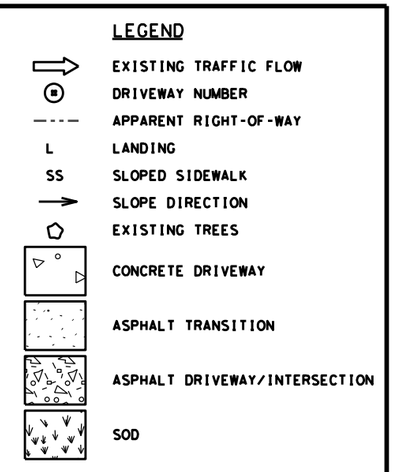
SHEET 13 OF 15

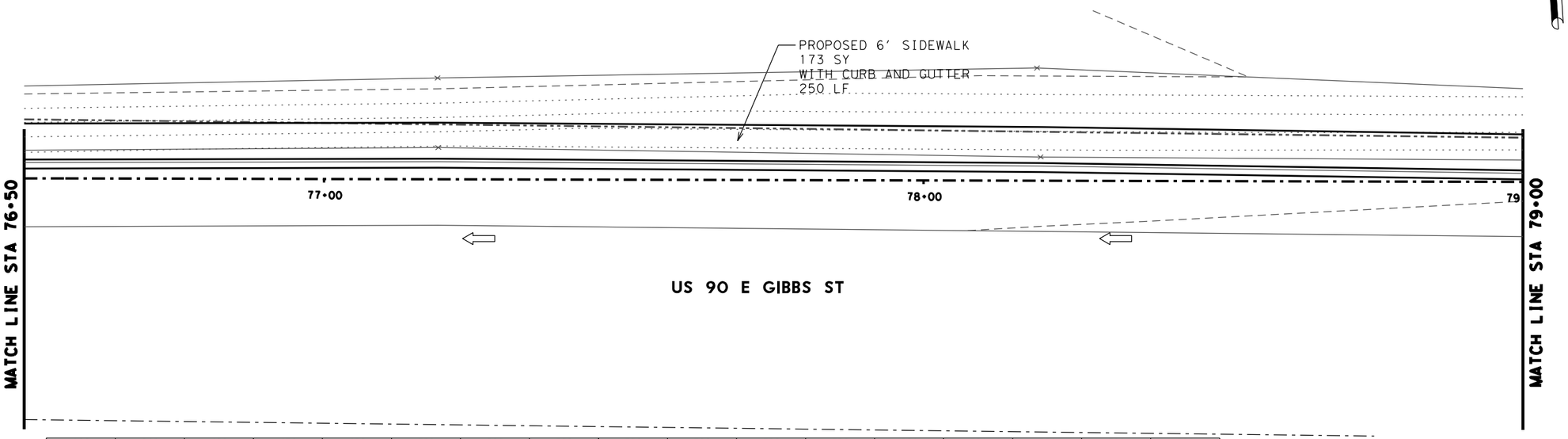
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			69
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC







100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12						346						213				4

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

US 90

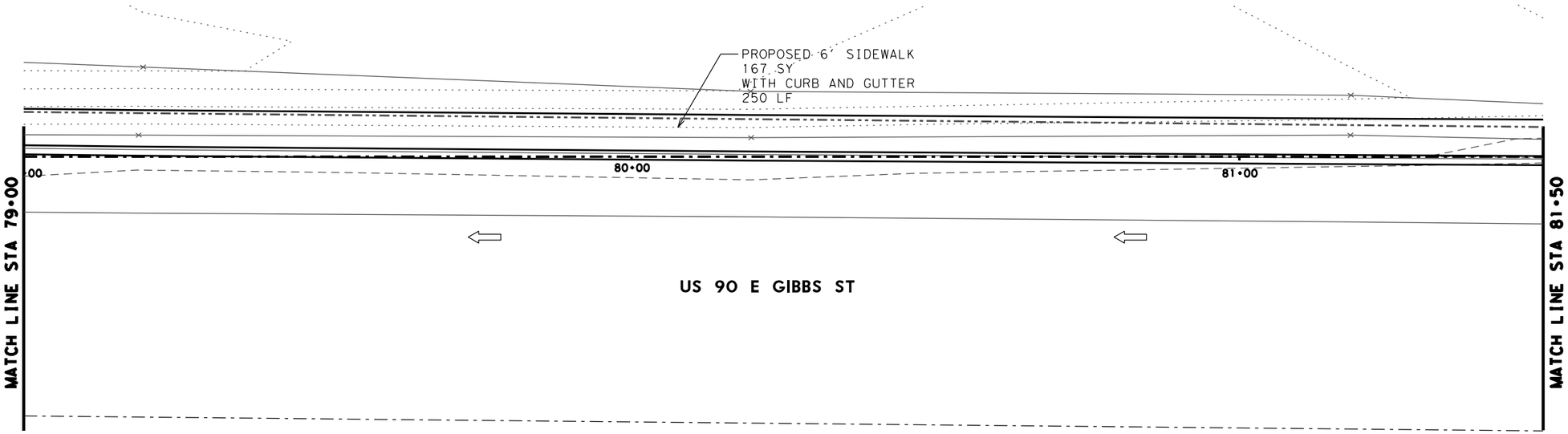
SIDEWALK PLAN

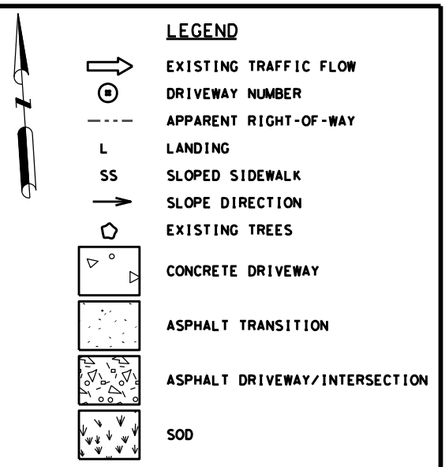
SHEET 14 OF 15

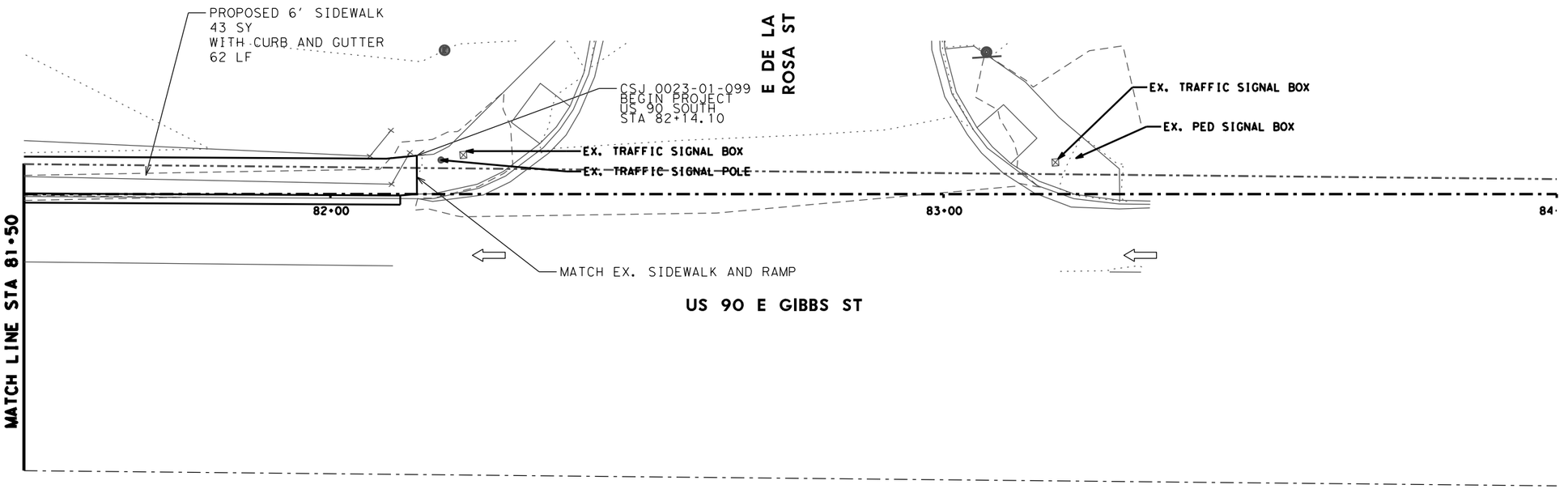
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

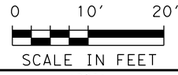
Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			70
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

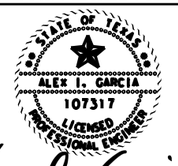








100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.08						312						210



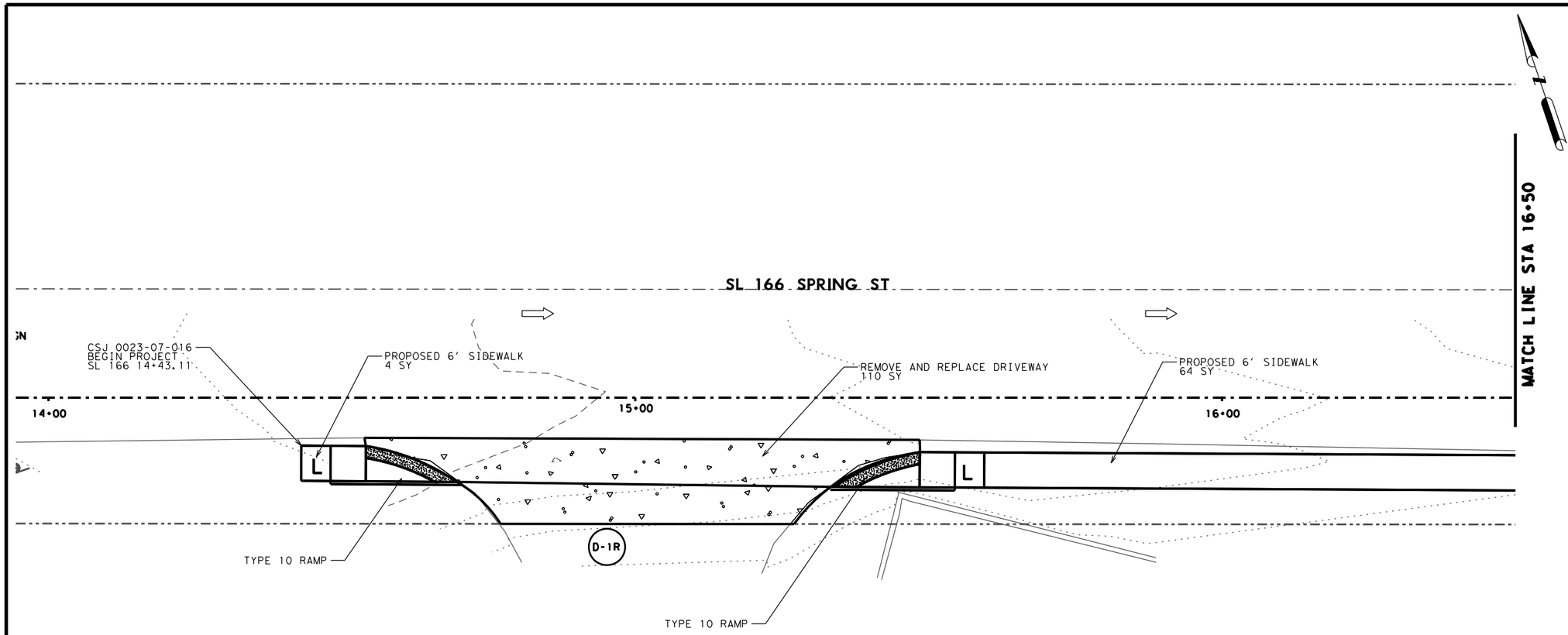
US 90

SIDEWALK PLAN

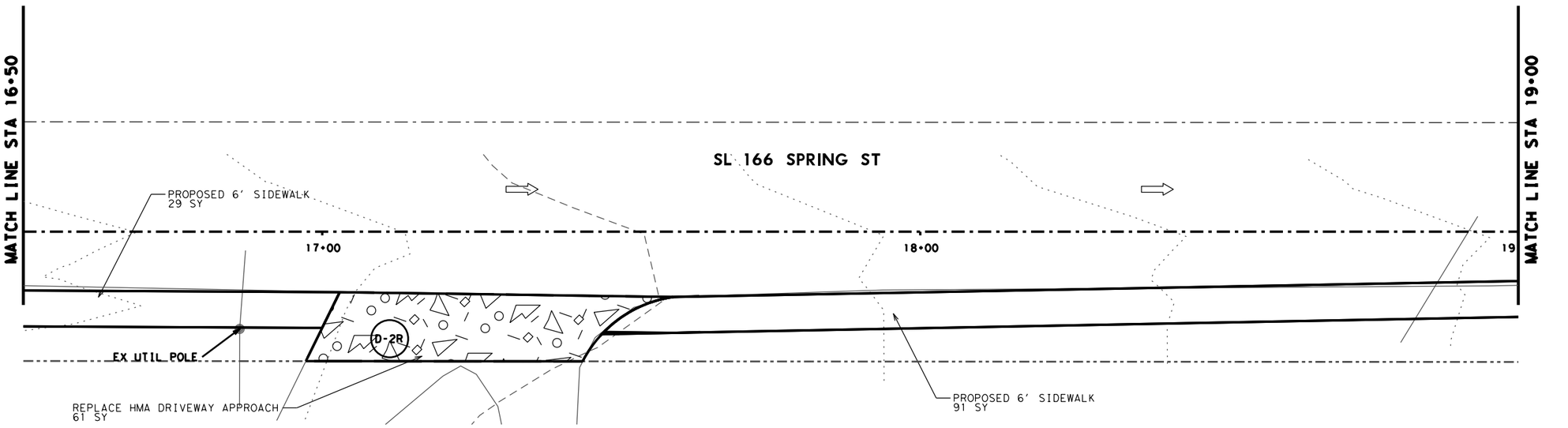
SHEET 15 OF 15

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			71
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.11										110	61	188				2



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

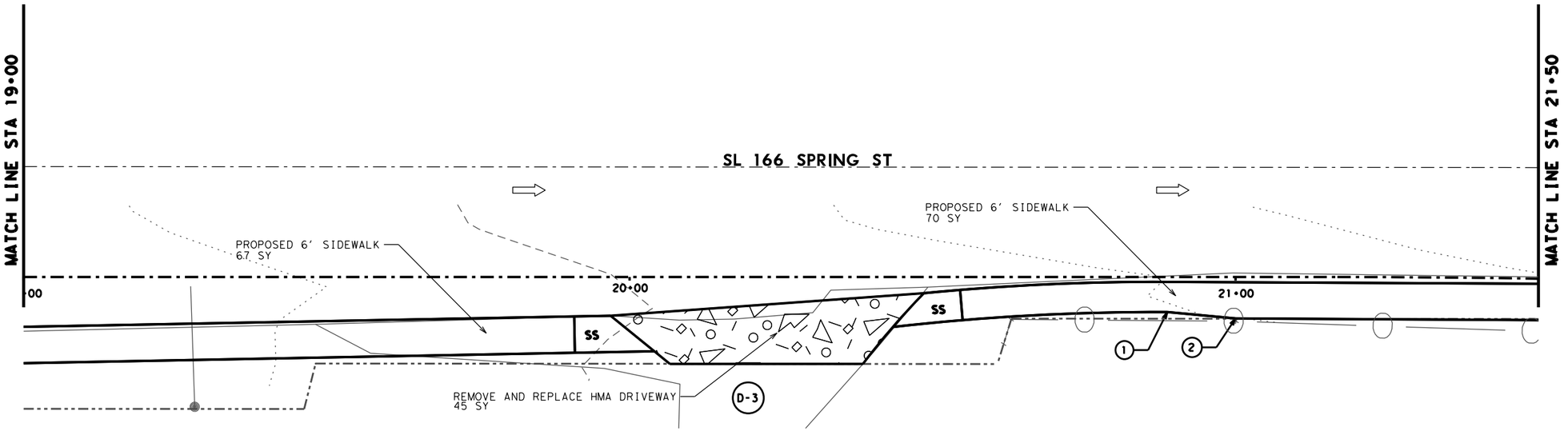
SL 166

SIDEWALK PLAN

SHEET 1 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			72
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



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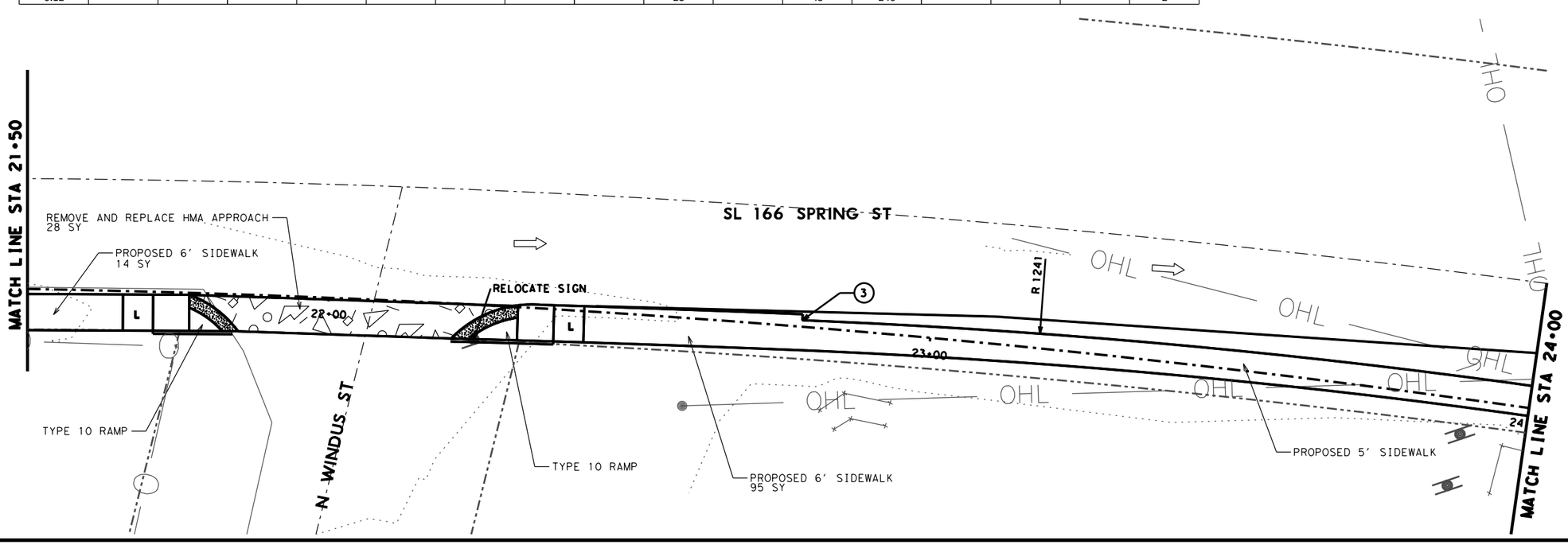
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12									28		45	246				2



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	20+88.76	5.80	RT
2	21+00.00	6.86	RT
3	22+78.64	1.09	LT

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

SL 166

SIDEWALK PLAN

SHEET 2 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			73
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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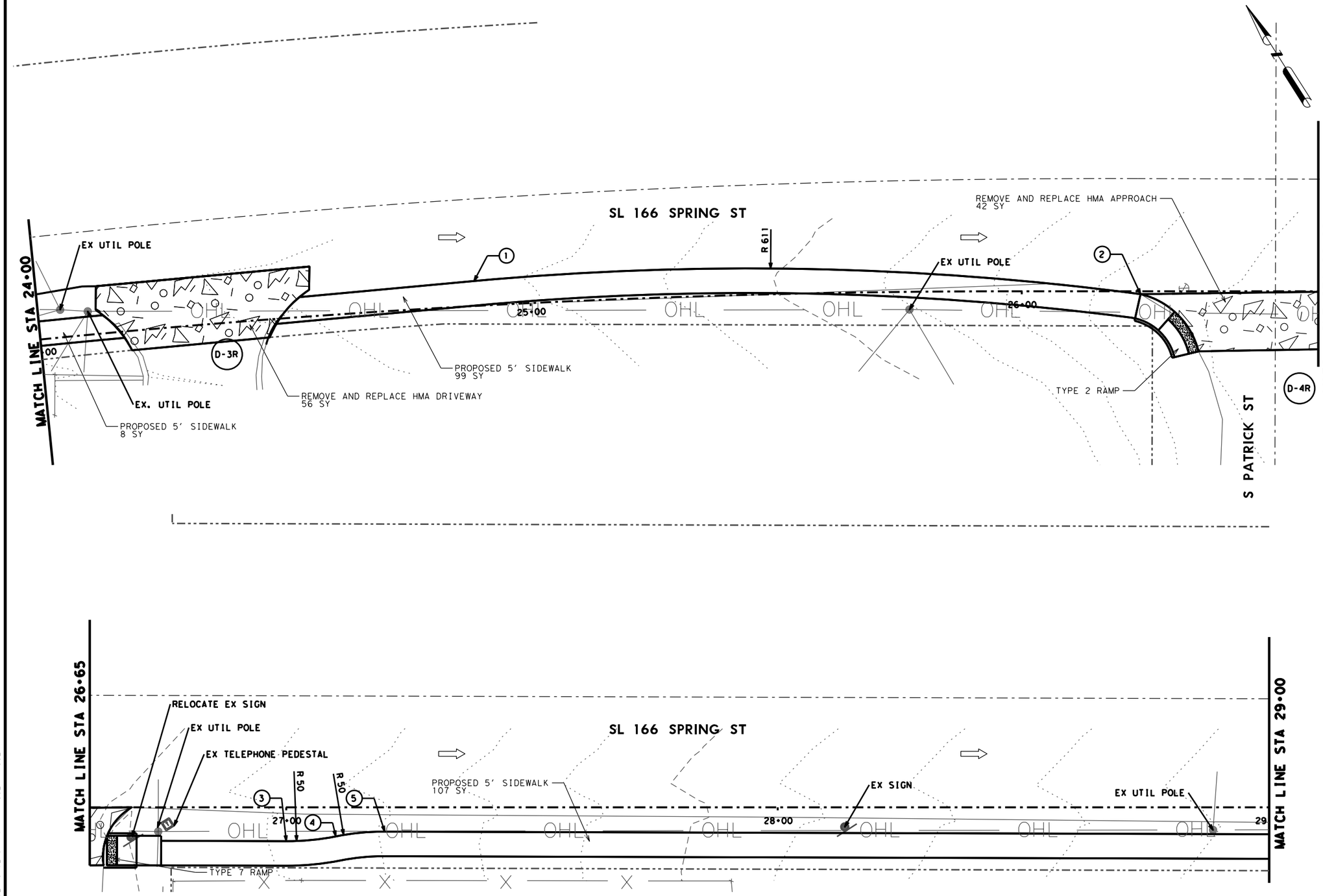

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	24+88.77	5.07	LT
2	26+24.19	0.57	RT
3	27+00.00	6.88	RT
4	27+10.07	5.91	RT
5	27+20.03	4.94	RT

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12									42		56	214	1		1

ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
3/25/2021

SL 166

SIDEWALK PLAN

SHEET 3 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			74
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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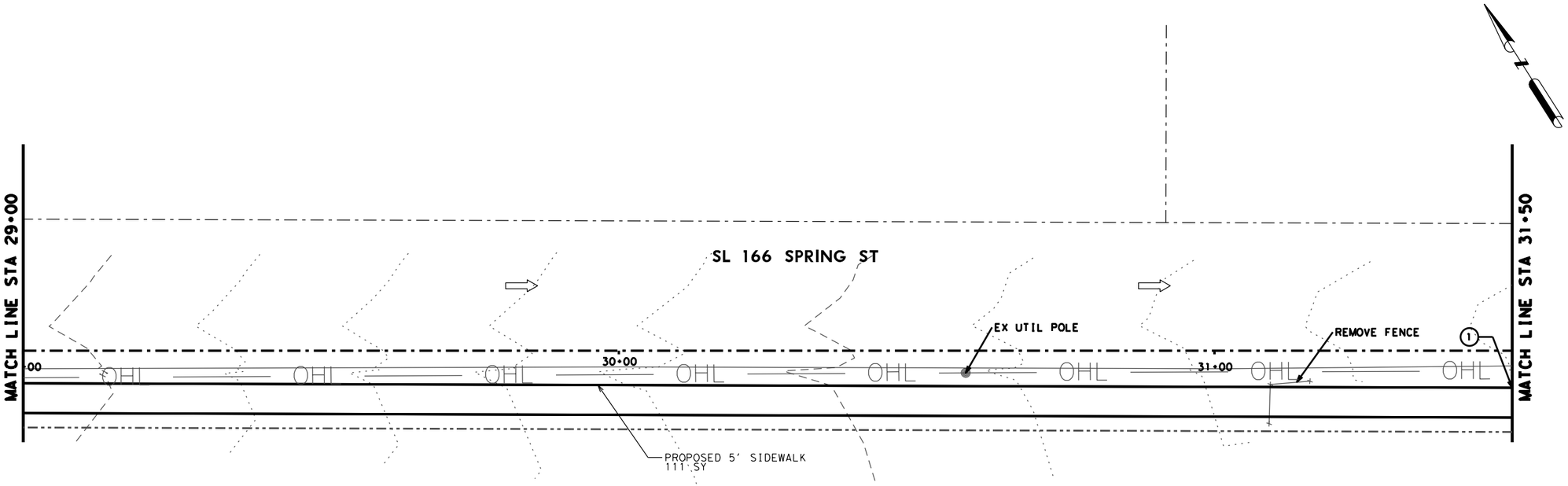
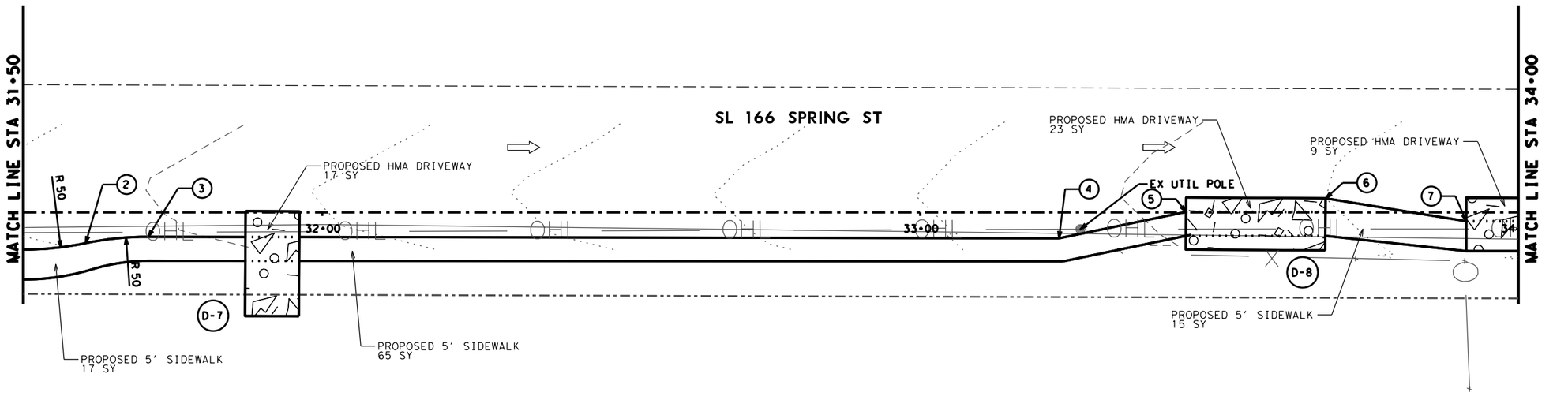


100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12											49	208



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	31+50.00	6.23	RT
2	31+60.43	5.15	RT
3	31+70.88	4.08	RT
4	33+23.19	4.34	RT
5	33+44.42	0.07	LT
6	33+67.75	2.35	LT
7	33+91.30	1.48	RT

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
3/5/2021

SL 166

SIDEWALK PLAN

SHEET 4 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 235-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			75
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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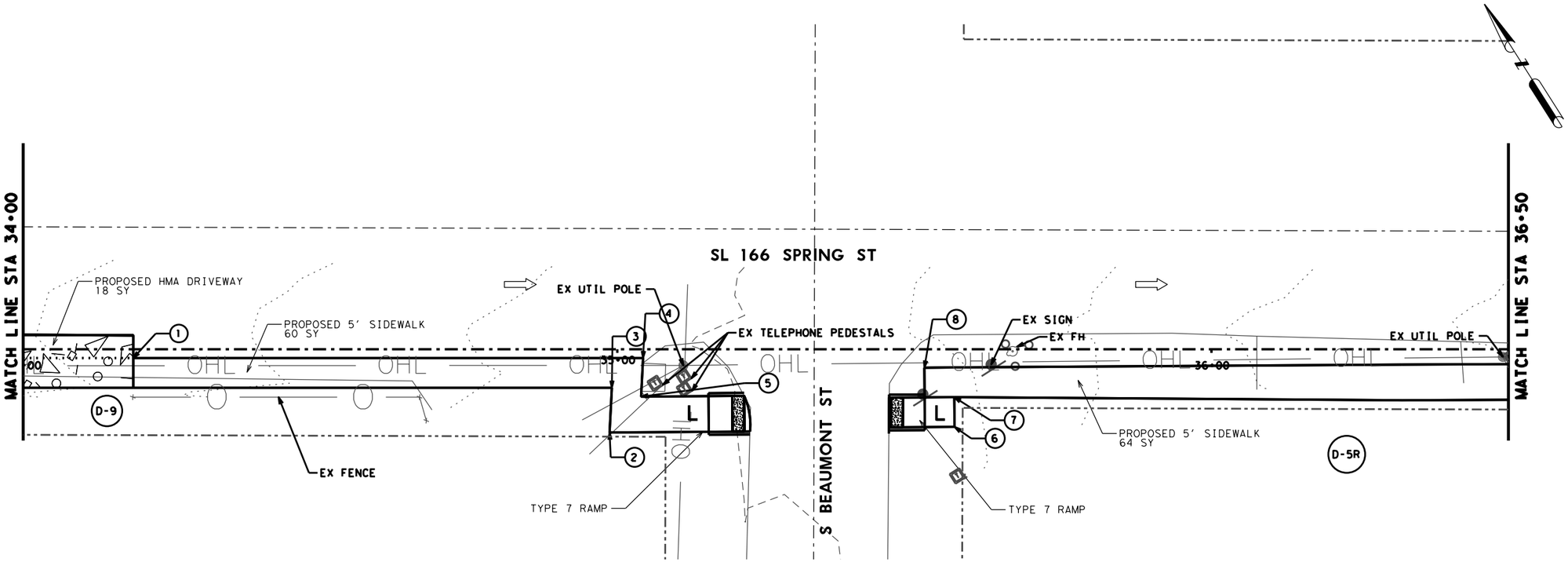

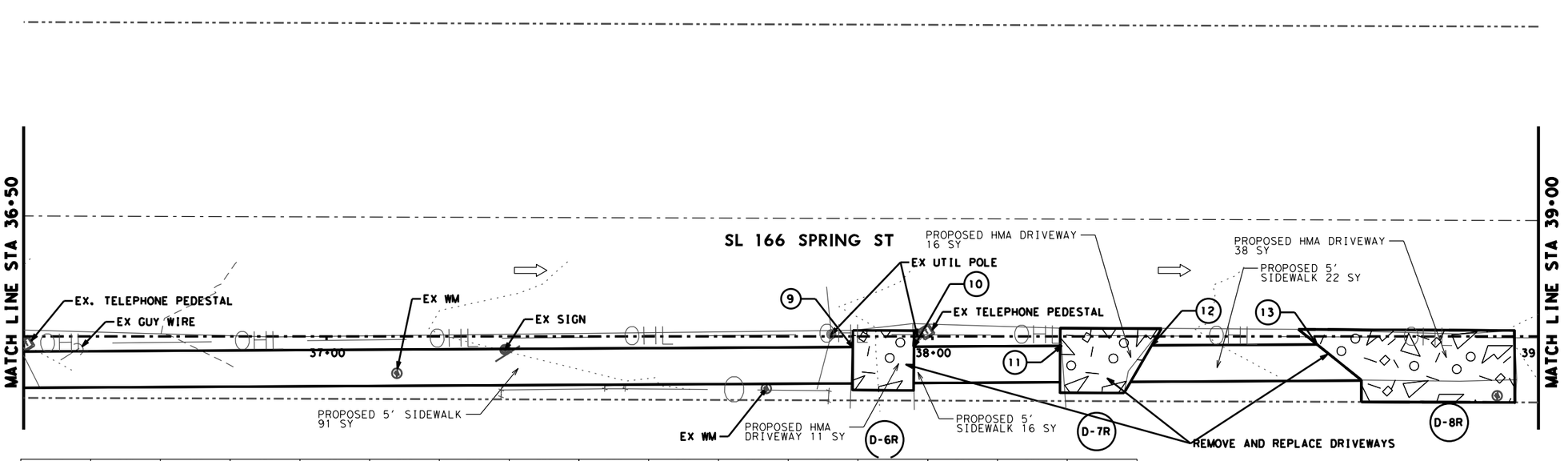

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12											83	253			2

POINT	STA	OFF	SIDE
1	34+18.52	1.48	RT
2	34+98.71	14.00	RT
3	34+99.09	6.48	RT
4	35+04.34	1.48	RT
5	35+04.02	7.96	RT
6	35+56.76	13.06	RT
7	35+56.72	8.06	RT
8	35+51.68	3.10	RT
9	37+86.83	1.74	RT
10	37+96.94	1.68	RT
11	38+21.30	1.55	RT
12	38+36.18	1.47	RT
13	38+63.46	1.32	RT

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
3/5/2021

SL 166

SIDEWALK PLAN

SHEET 5 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			76
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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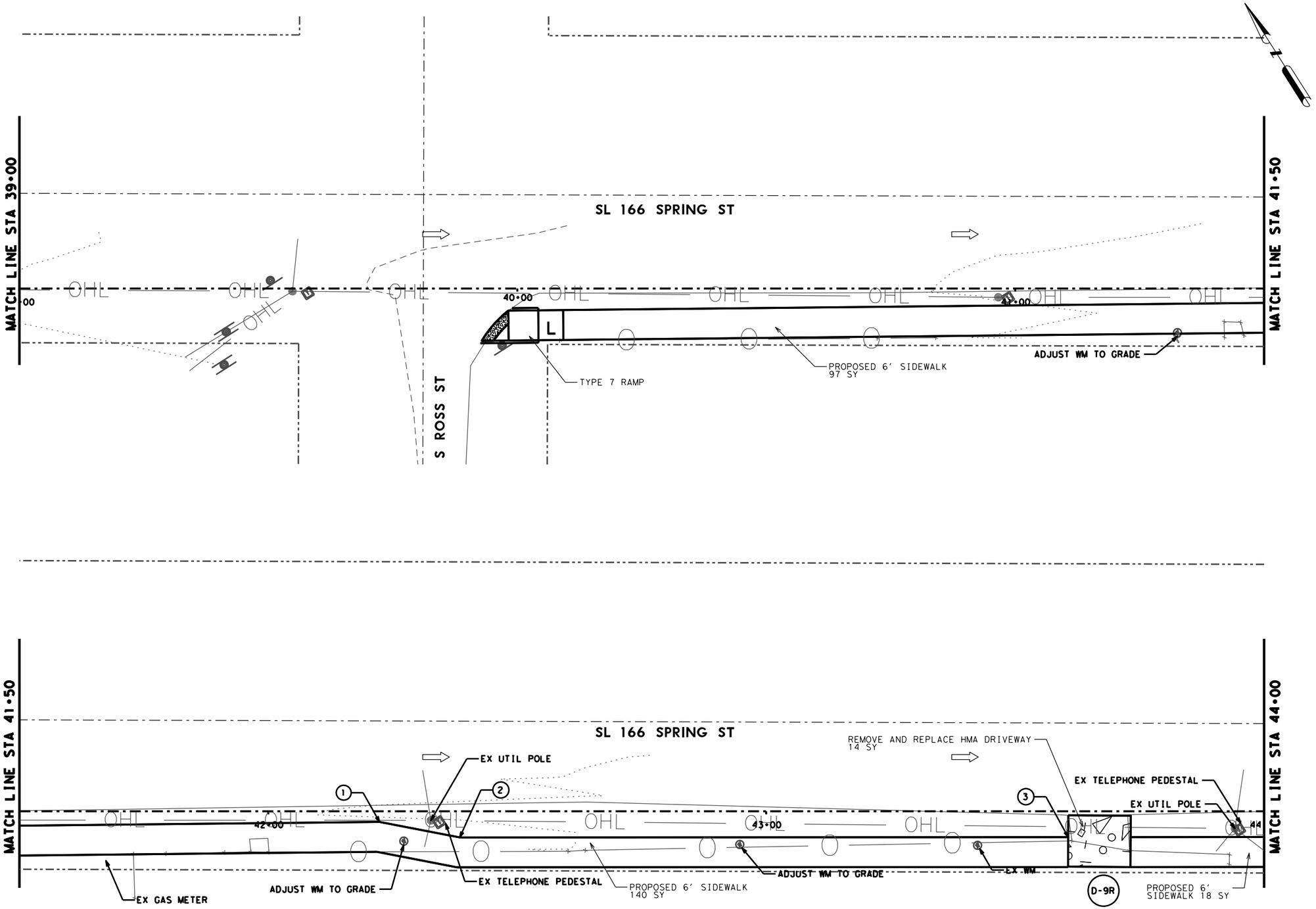


LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L LANDING
- SS SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	42+22.34	2.13	RT
2	42+38.45	5.25	RT
3	43+60.65	5.19	RT

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12											14	255			1

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

SL 166

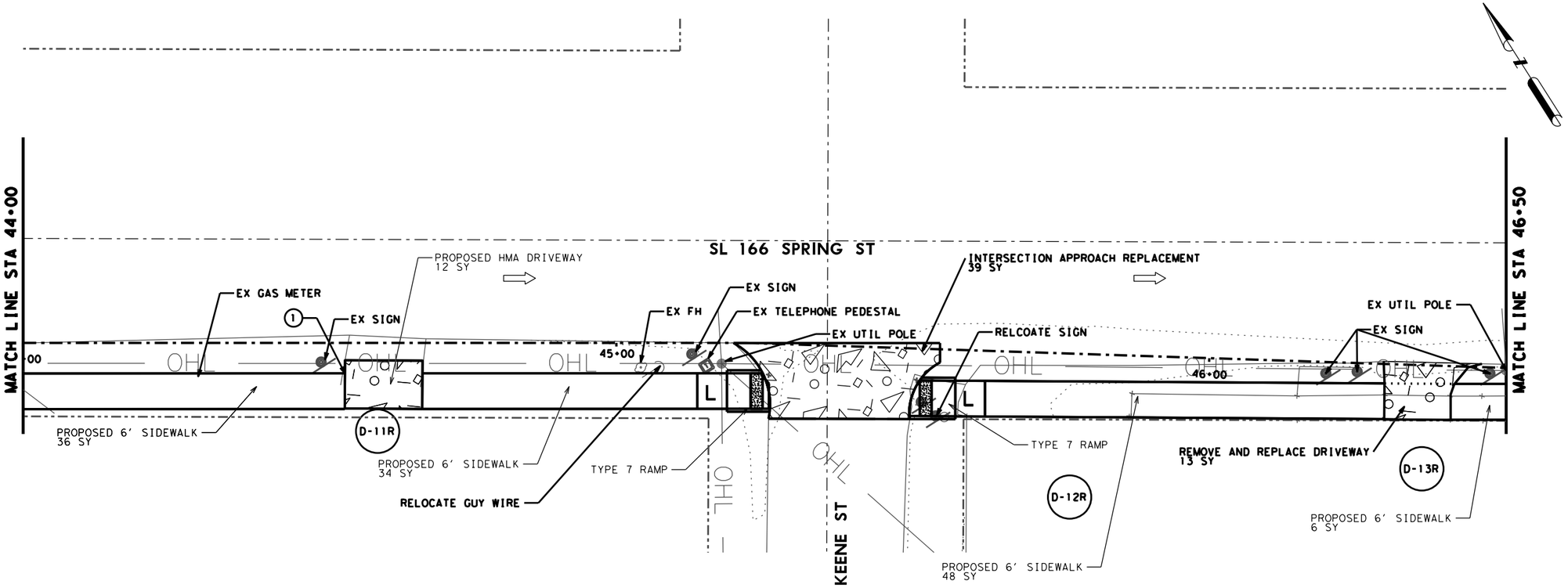
SIDEWALK PLAN

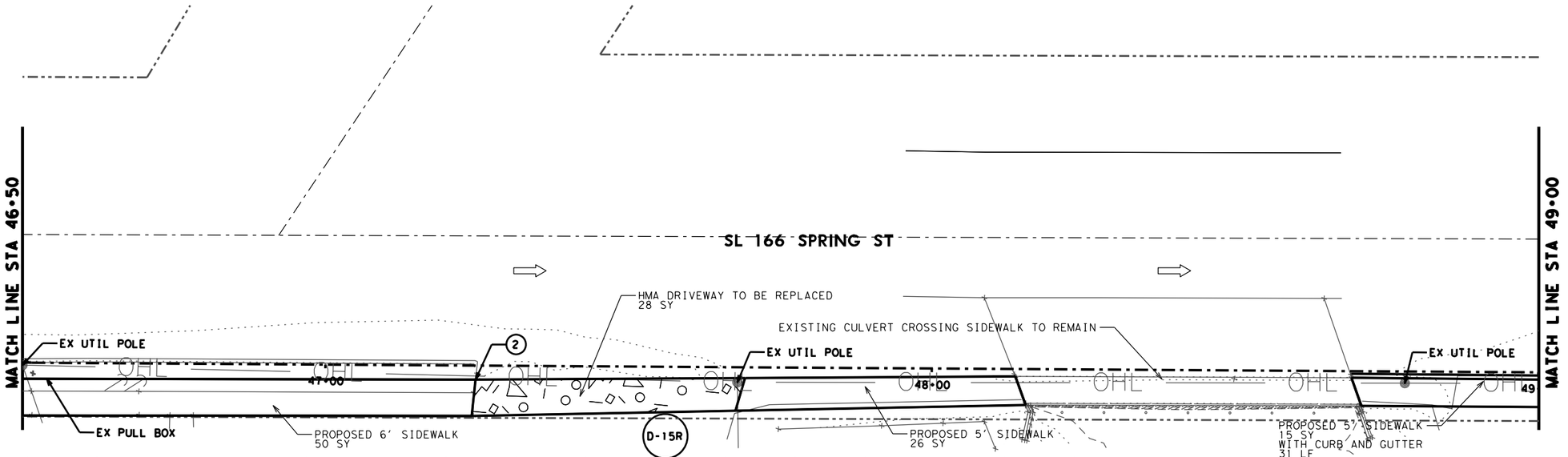
SHEET 6 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			77
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC





100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12						31			39		53	215			2

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	44+54.25	5.14	RT
2	47+24.79	2.31	RT

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/25/2021

SL 166

SIDEWALK PLAN

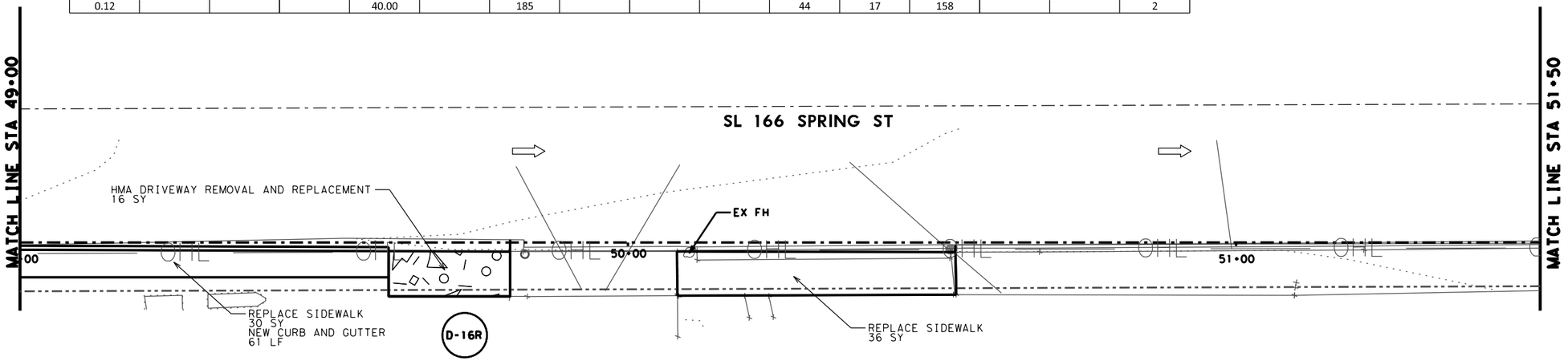
SHEET 7 OF 13

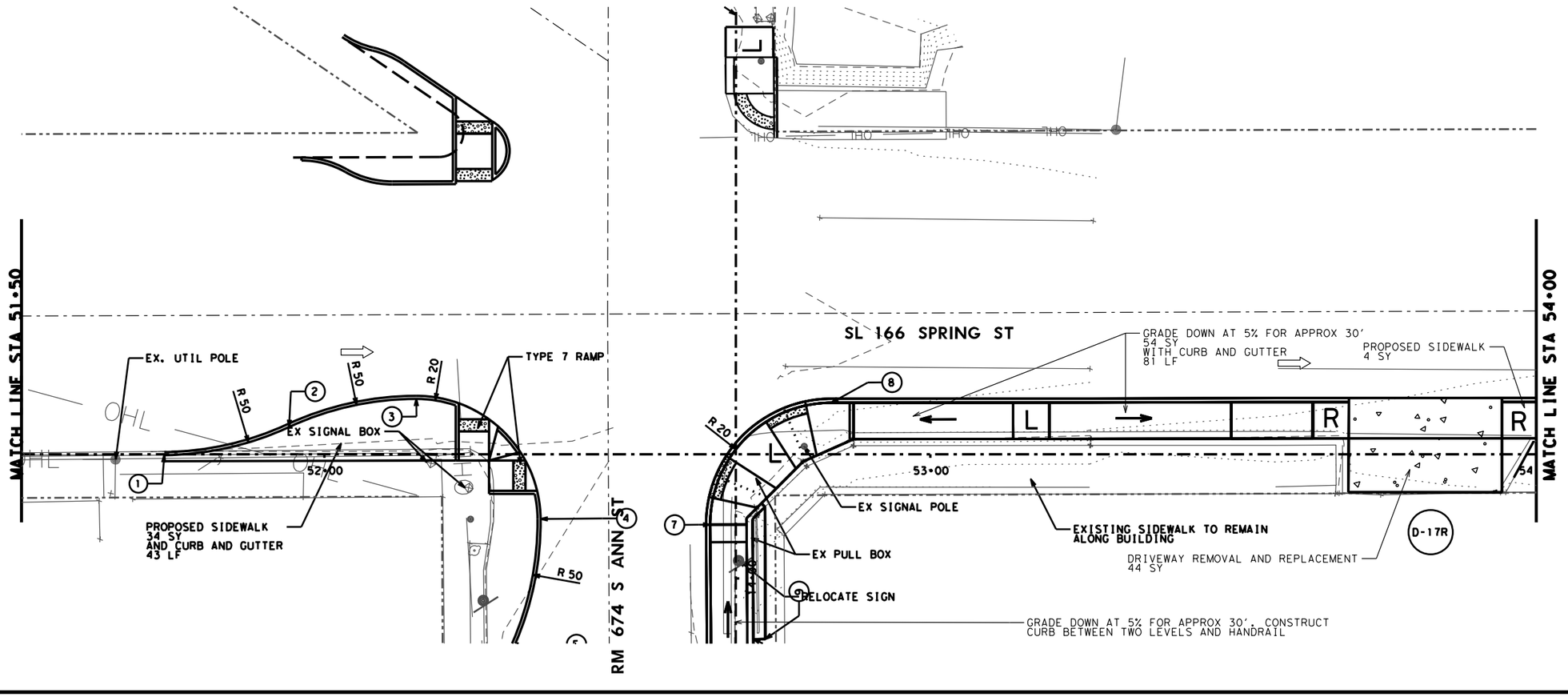
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			78
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12				40.00		185				44	17	158			2





LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	51+73.57	0.14	RT
2	51+94.17	4.50	LT
3	52+15.17	9.14	LT
4	52+35.68	10.67	RT
5	52+30.87	31.45	RT
6	52+26.57	52.22	RT
7	52+63.67	11.63	RT
8	52+83.66	8.50	LT

0 10′ 20′
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
3/5/2021

SL 166

SIDEWALK PLAN

SHEET 8 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			79
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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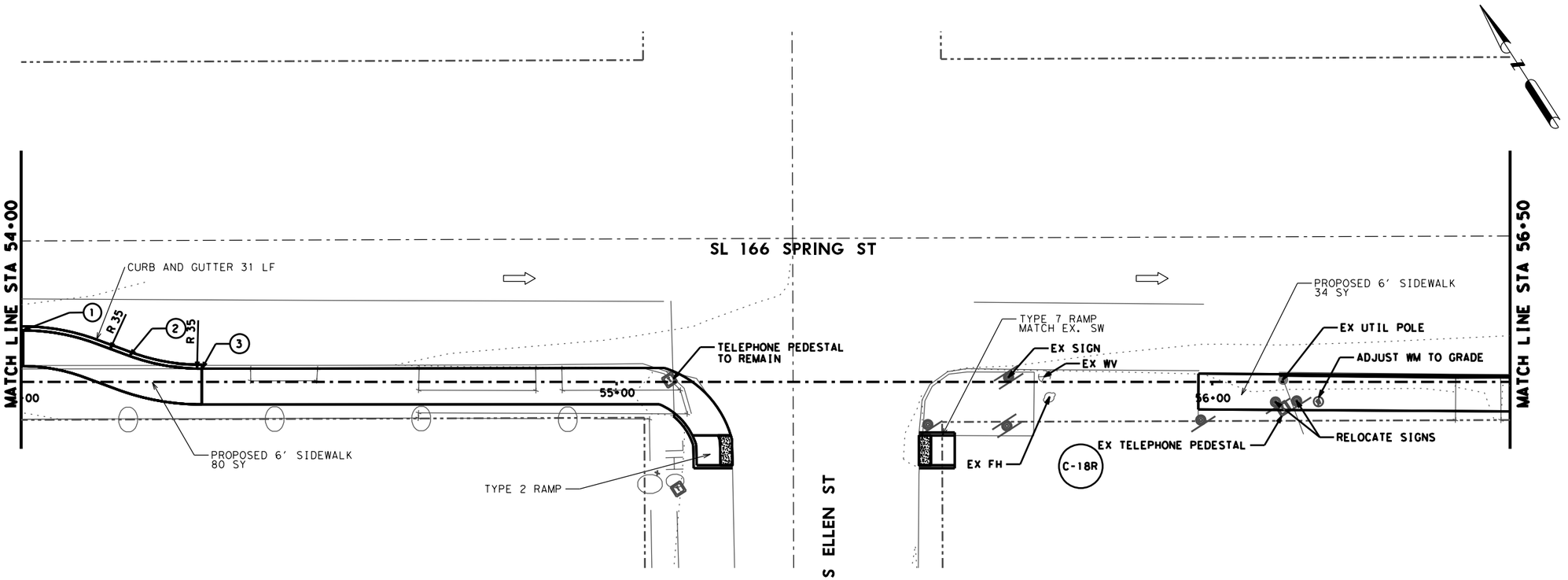


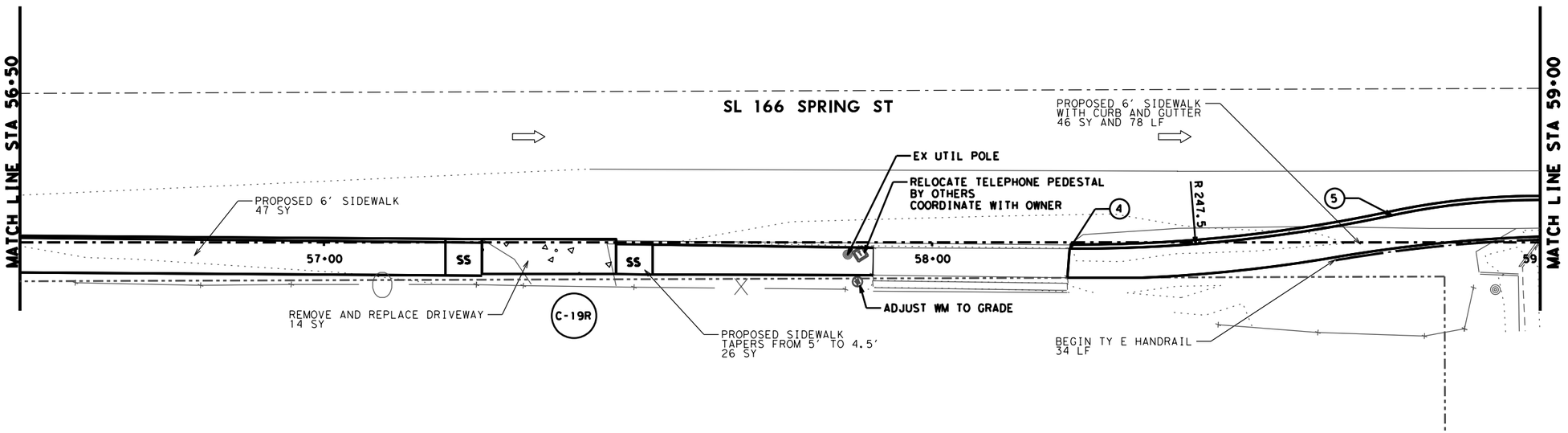
LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	54+00.34	8.64	LT
2	54+18.18	4.37	LT
3	54+30.35	2.20	LT
4	58+22.63	1.05	RT
5	58+75.66	4.44	LT

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12				34		109				14		233	1		1



STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/25/2021

SL 166

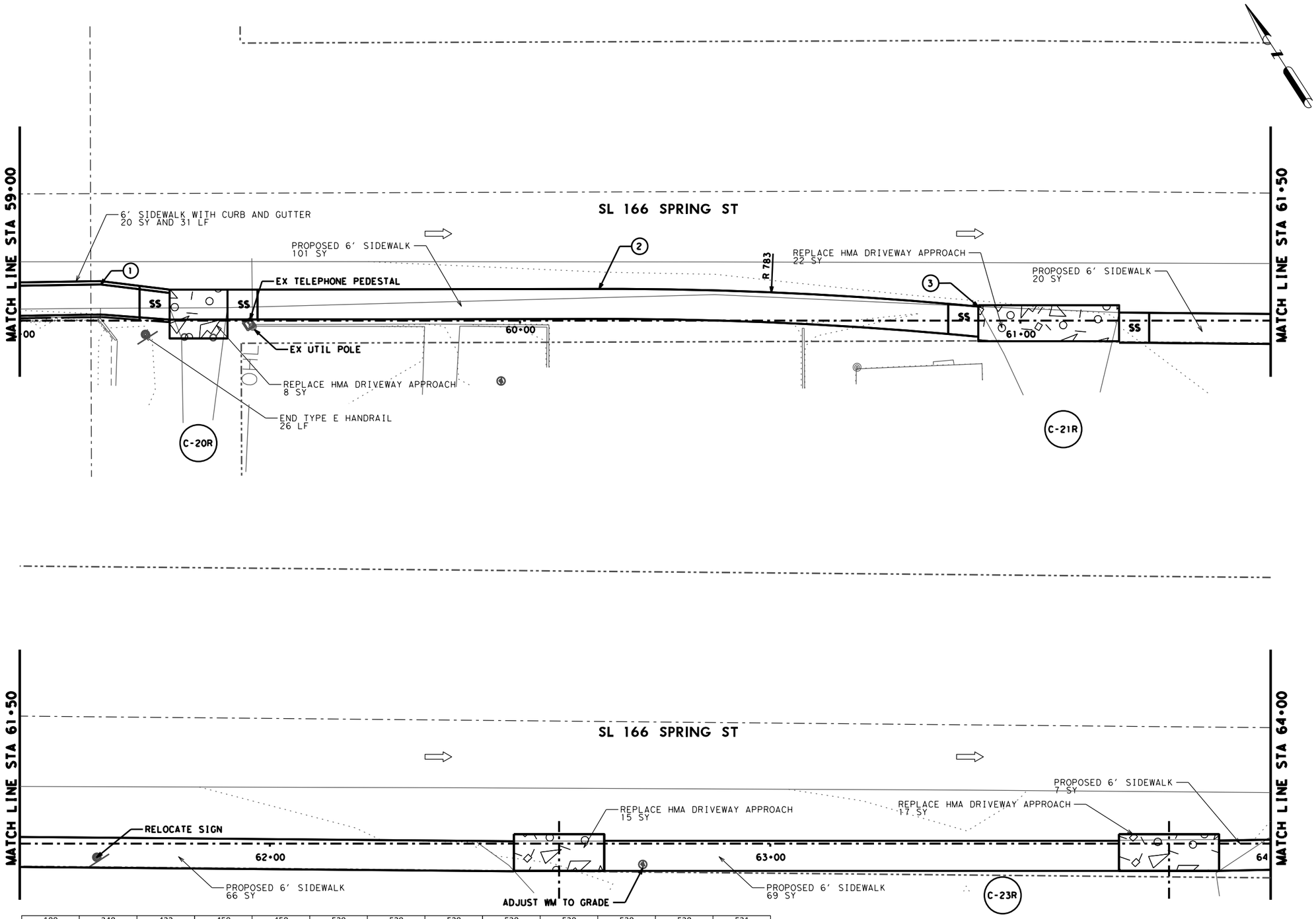
SIDEWALK PLAN

SHEET 9 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			80
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	59+16.20	7.21	LT
2	60+15.80	6.33	LT
3	60+91.57	2.79	LT

0 10' 20'

SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12				26		31					62	283

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
3/5/2021

SL 166

SIDEWALK PLAN

SHEET 10 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		81

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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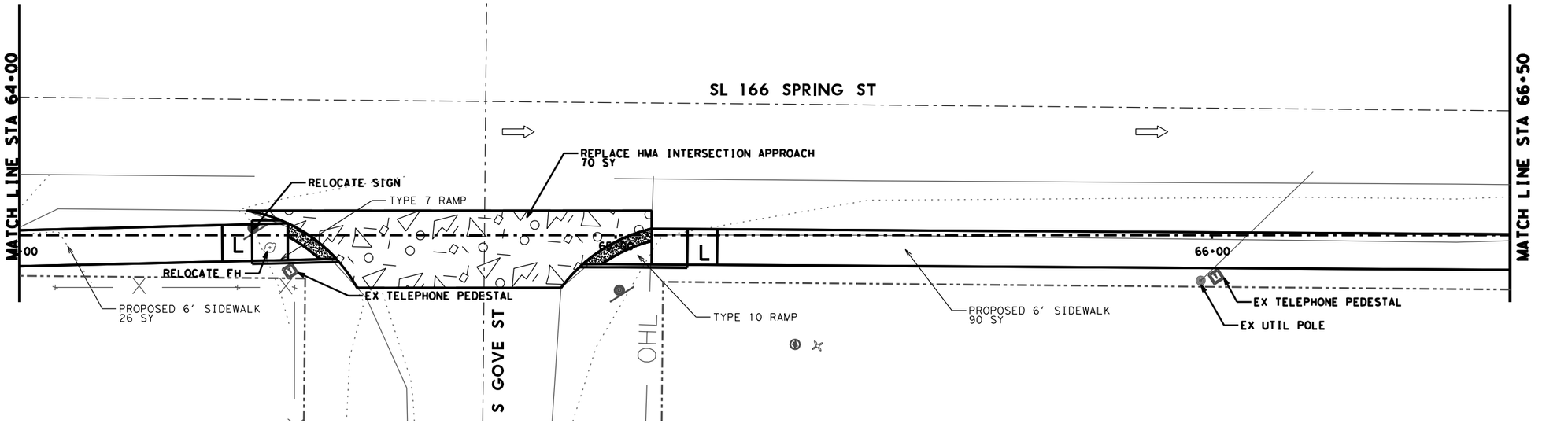
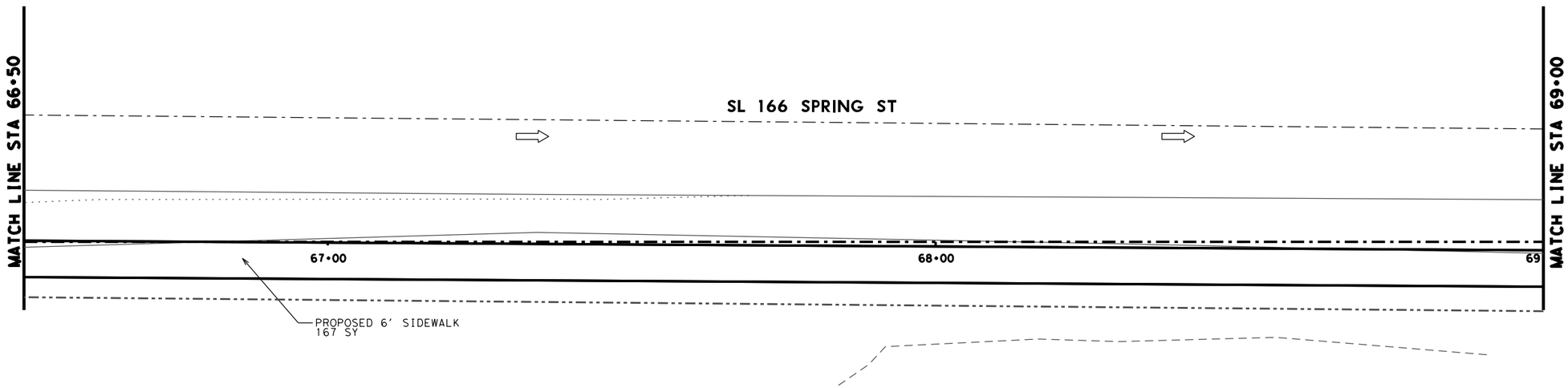


100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12									70			283			1	1



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L LANDING
- SS SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/22/2021

SL 166

SIDEWALK PLAN

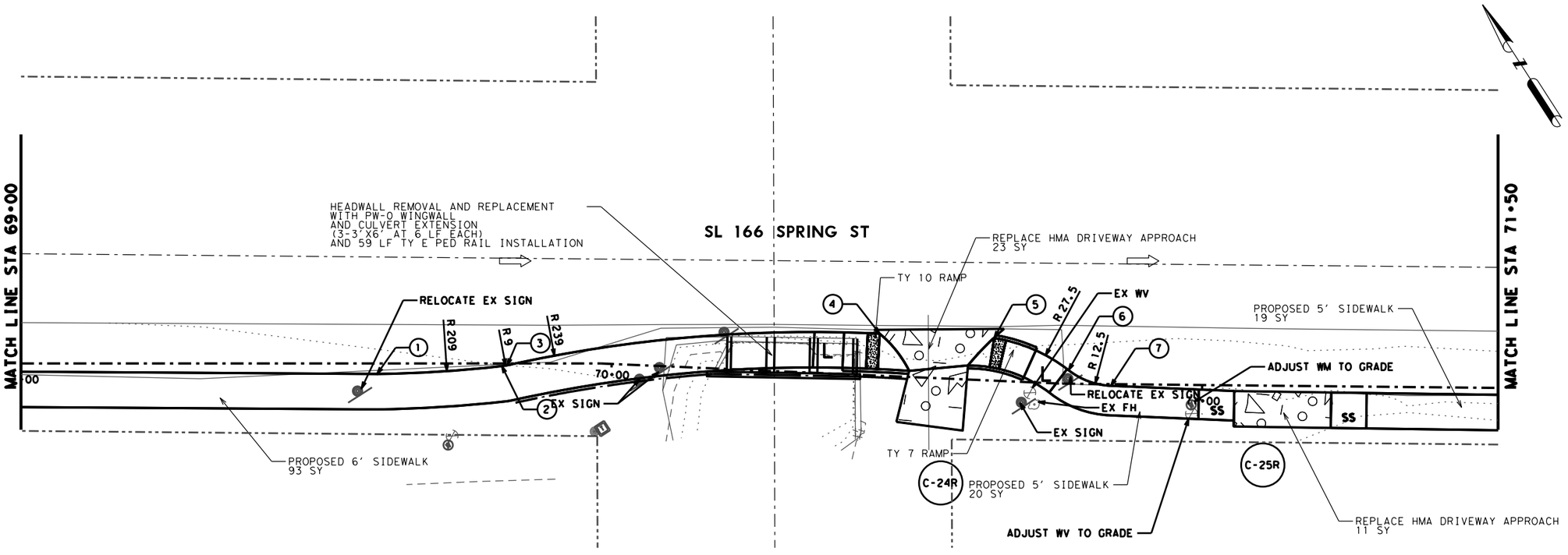
SHEET 11 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

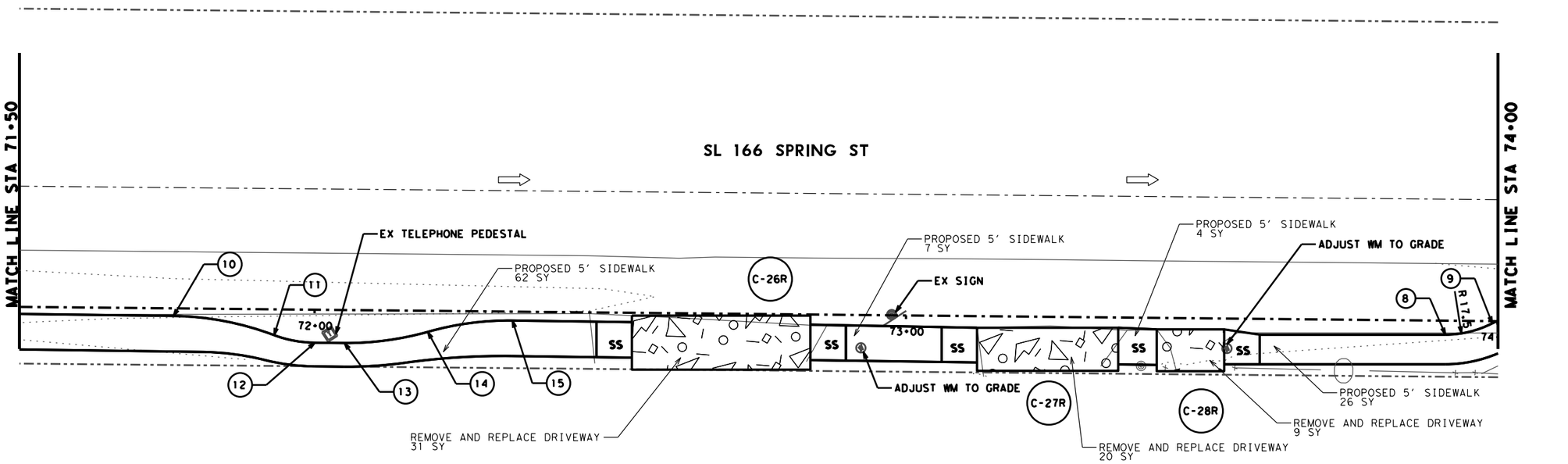
Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		82

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(T Y E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTION S (CONC)	INTERSECTION S (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12				59							85	231			1	1



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	69+60.29	1.77	RT
2	69+81.39	0.45	RT
3	69+82.31	0.30	RT
4	70+45.06	7.10	LT
5	70+64.49	7.23	LT
6	70+77.38	2.28	LT
7	70+84.55	0.27	RT
8	73+91.22	2.36	RT
9	73+99.14	0.39	RT
10	71+76.16	1.28	RT
11	71+93.20	4.34	RT
12	72+00.09	5.57	RT
13	72+05.04	5.10	RT
14	72+19.17	3.54	RT
15	72+33.47	1.51	RT

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX L. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/26/2021

SL 166

SIDEWALK PLAN

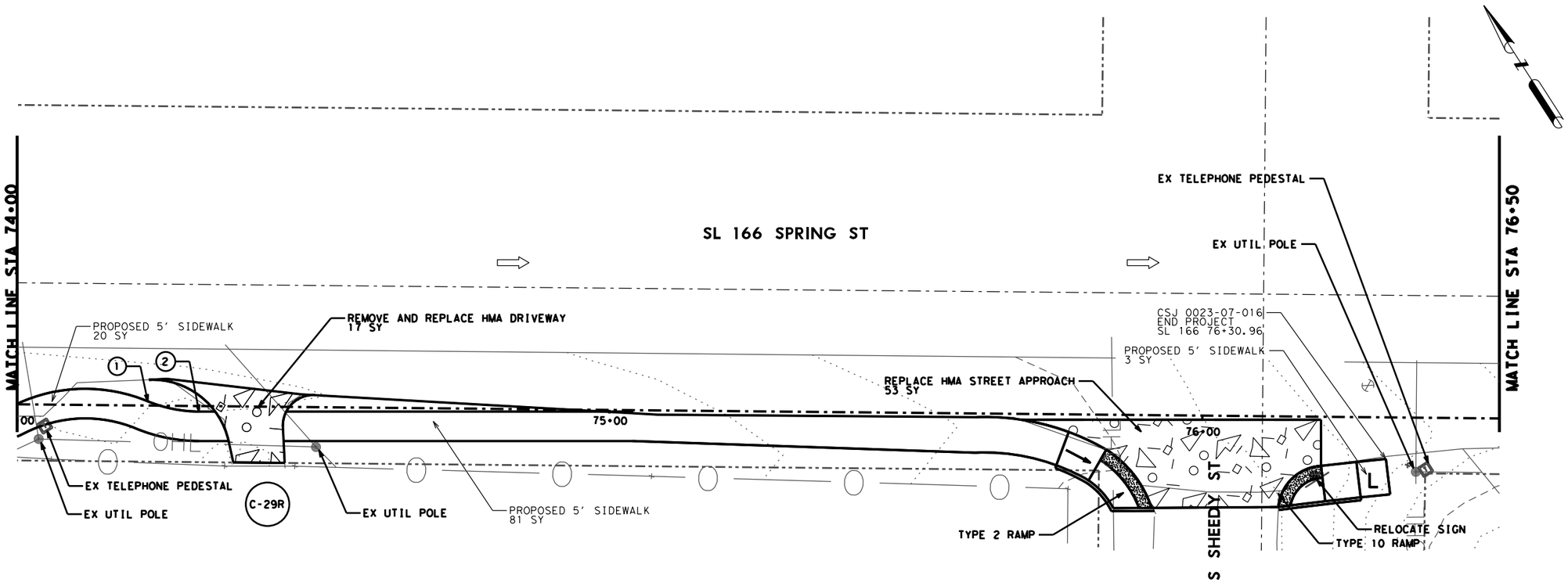
SHEET 12 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		83

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



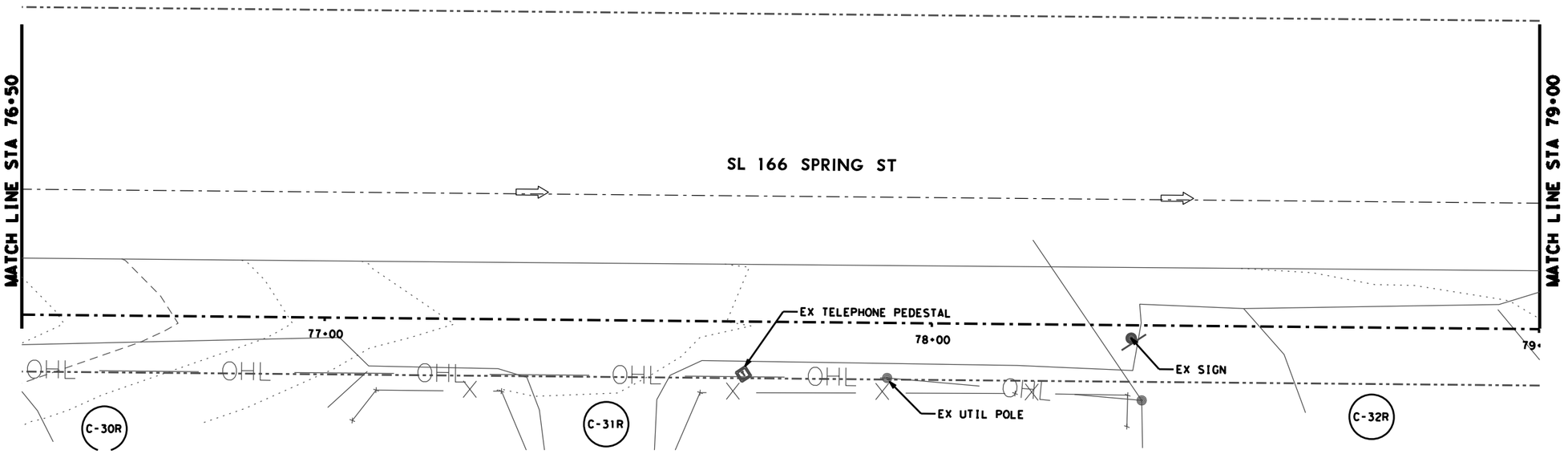
LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	74+22.14	0.72	LT
2	74+30.79	0.92	RT

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013	531 6016	471 6003	
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	CURB RAMPS (TY 21)	GRATE & FRAME	
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA	EA	EA	
0.06									54		17	105	1			1			



STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

SL 166

SIDEWALK PLAN

SHEET 13 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			84
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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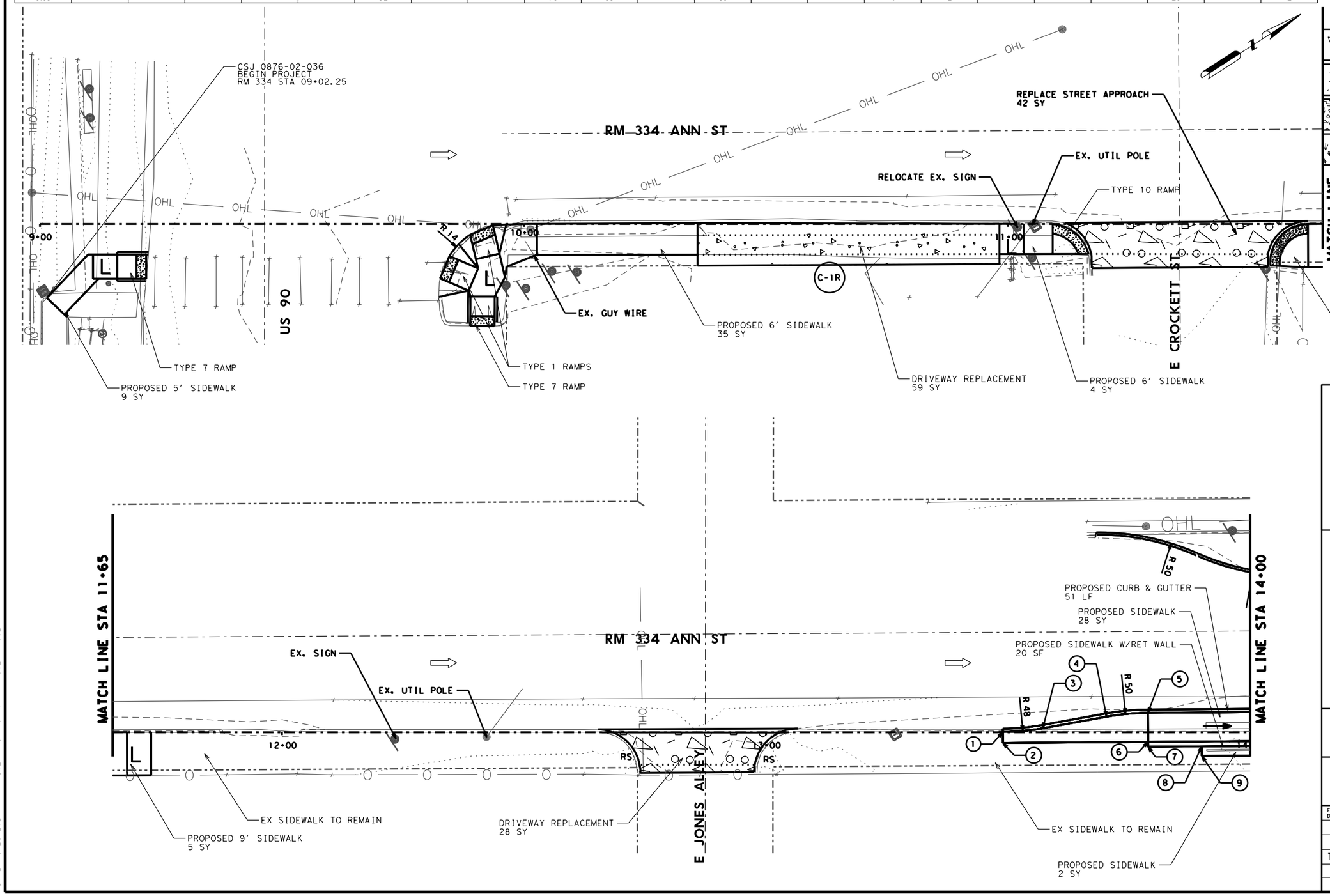
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(T Y E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTION S (CONC)	INTERSECTION S (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	CURB RAMPS (TY 21)	GRATE & FRAME	CURB RAMPS (TY 22)	CONC SIDEWALK (SPECIAL)(RE TAINING WALL)	CONC MEDIAN	CURB RAMPS (TY 1)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA	EA	EA	EA	SF	SY	EA
0.09						51			70	59		83			4	2				20		2



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	13+48.90	0.06	LT
2	13+48.91	2.20	LT
3	13+57.17	0.83	LT
4	13+70.33	3.21	LT
5	13+78.87	4.01	LT
6	13+78.91	1.99	RT
7	13+78.92	2.99	RT
8	13+89.99	2.92	RT
9	13+90.00	4.90	RT

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
3/26/2021

RM 334

SIDEWALK PLAN

SHEET 1 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			85
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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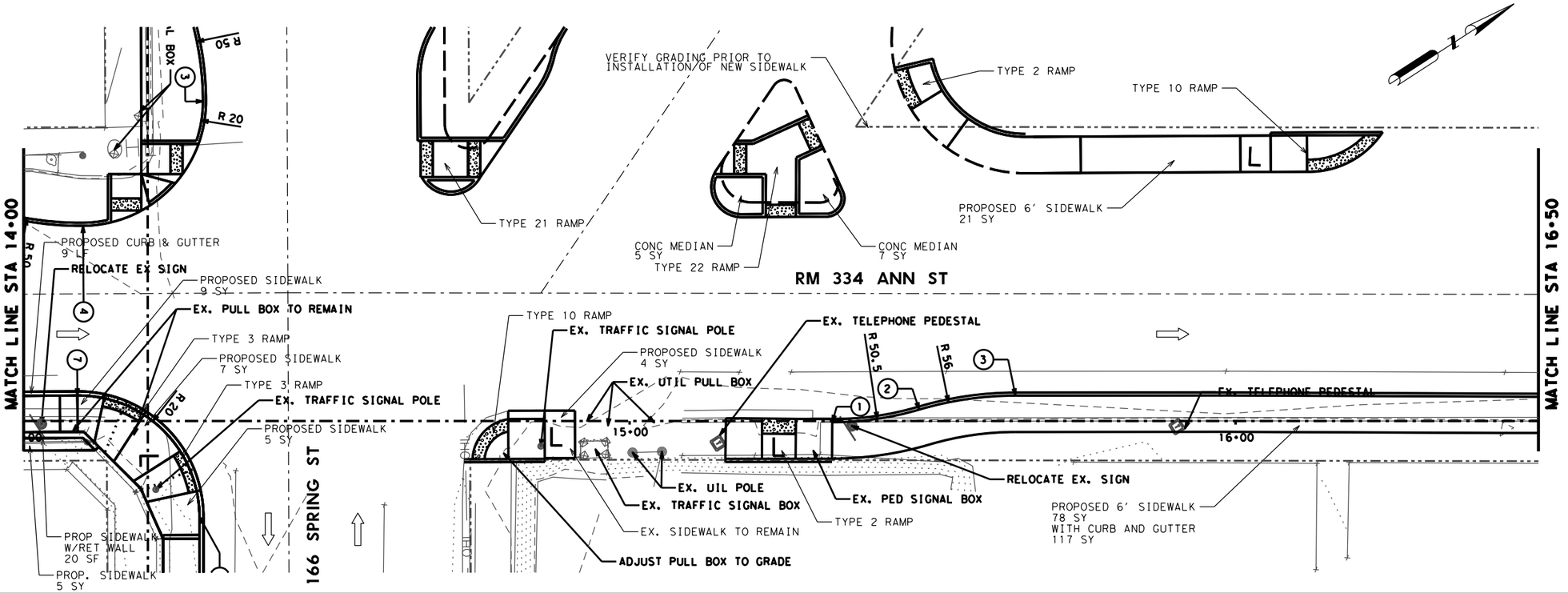


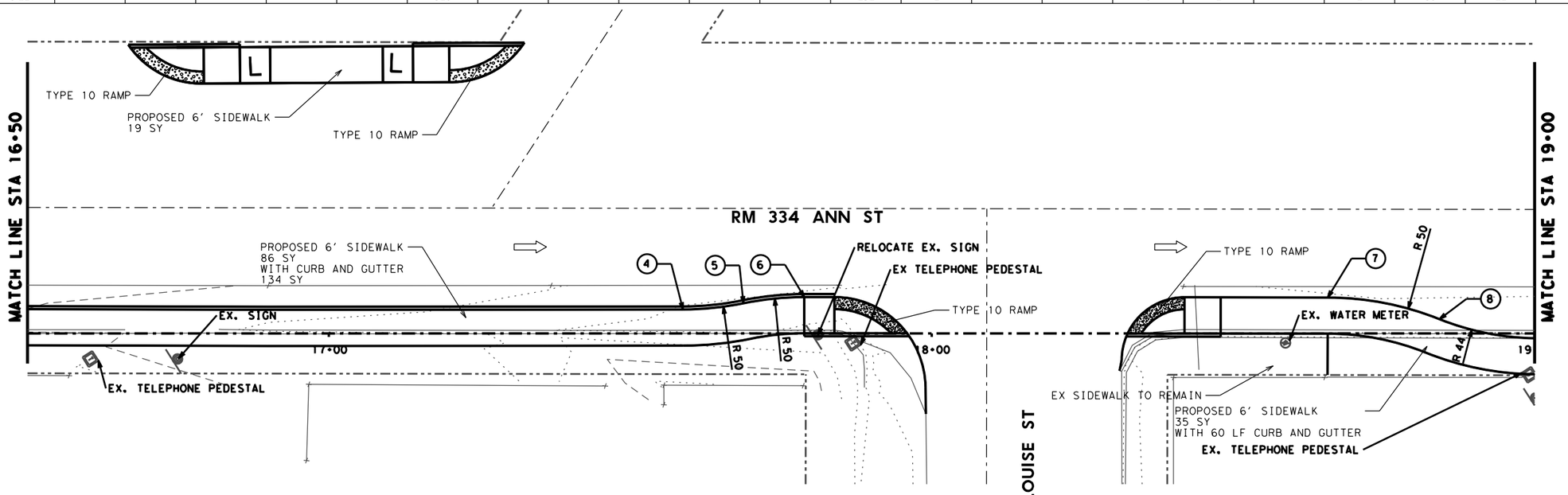
LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	15+33.47	0.19	RT
2	15+47.81	1.89	LT
3	15+63.69	4.20	LT
4	17+58.74	3.97	LT
5	17+68.76	4.99	LT
6	17+78.84	6.02	LT
7	18+65.68	5.95	LT
8	18+84.21	2.36	LT

100 6002	340 6050	432 6001	450 6004	450 6005	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013	531 6016	471 6003	531 6017	531 6057	536 6002	531 6004	531 6006
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(T Y E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)	CURB RAMPS (TY 21)	GRATE & FRAME	CURB RAMPS (TY 22)	CONC SIDEWALK (SPECIAL)(RETAINING WALL)	CONC MEDIAN	CURB RAMPS (TY 1)	CURB RAMPS (TY 3)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA	EA	EA	EA	SF	SY	EA	EA
0.12						320						252	2			6	1		1	80	12		2

0 10' 20'
SCALE IN FEET



STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/26/2021

RM 334

SIDEWALK PLAN

SHEET 2 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		86

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5113-03\Design\Sidewalks\RM334_RDW_SDWK_02.dgn
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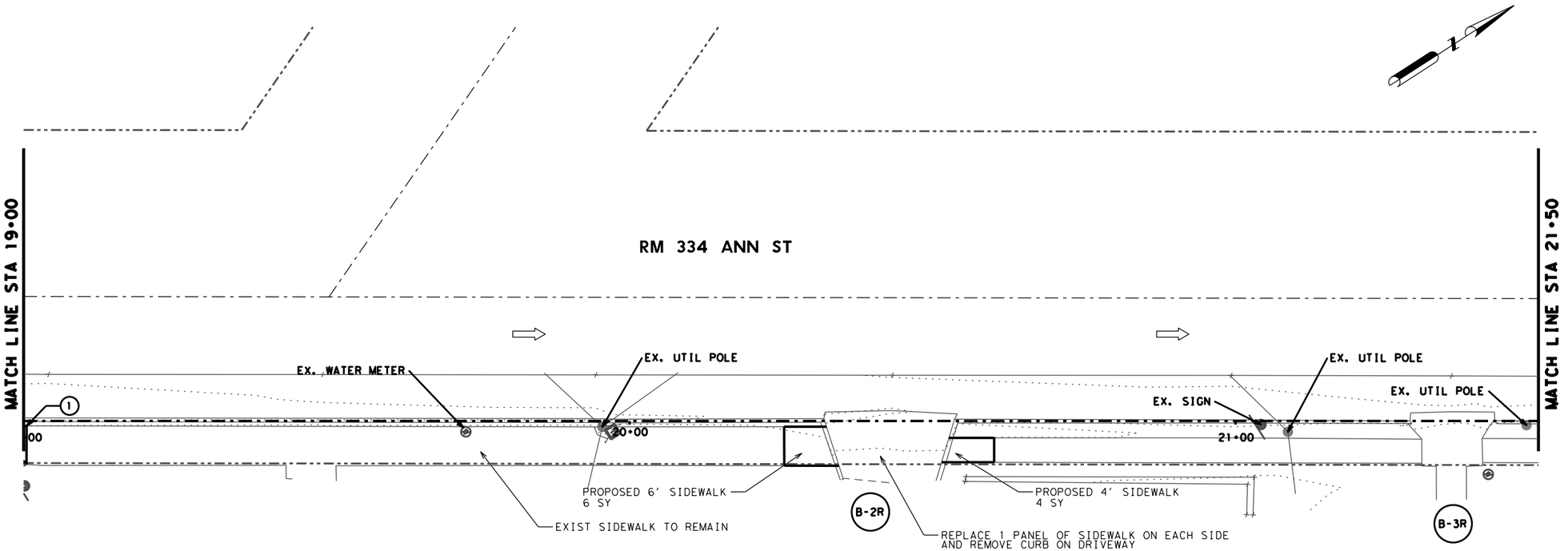
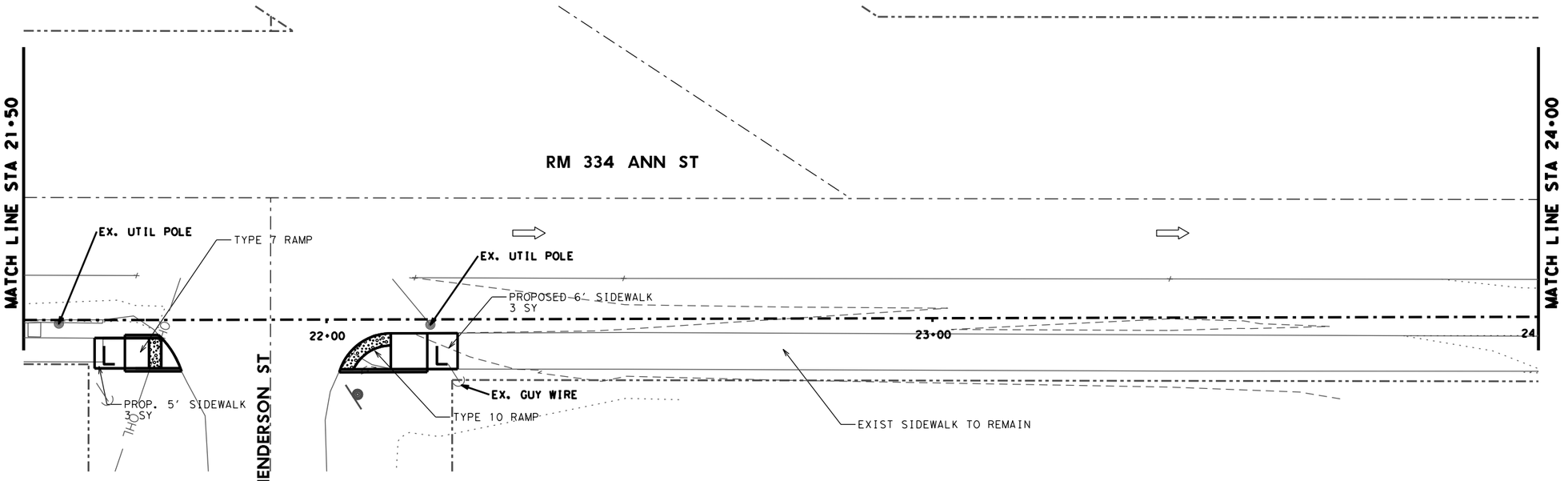


LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	19+00.49	0.80	RT

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12												16			1	1



0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/25/2021

RM 334

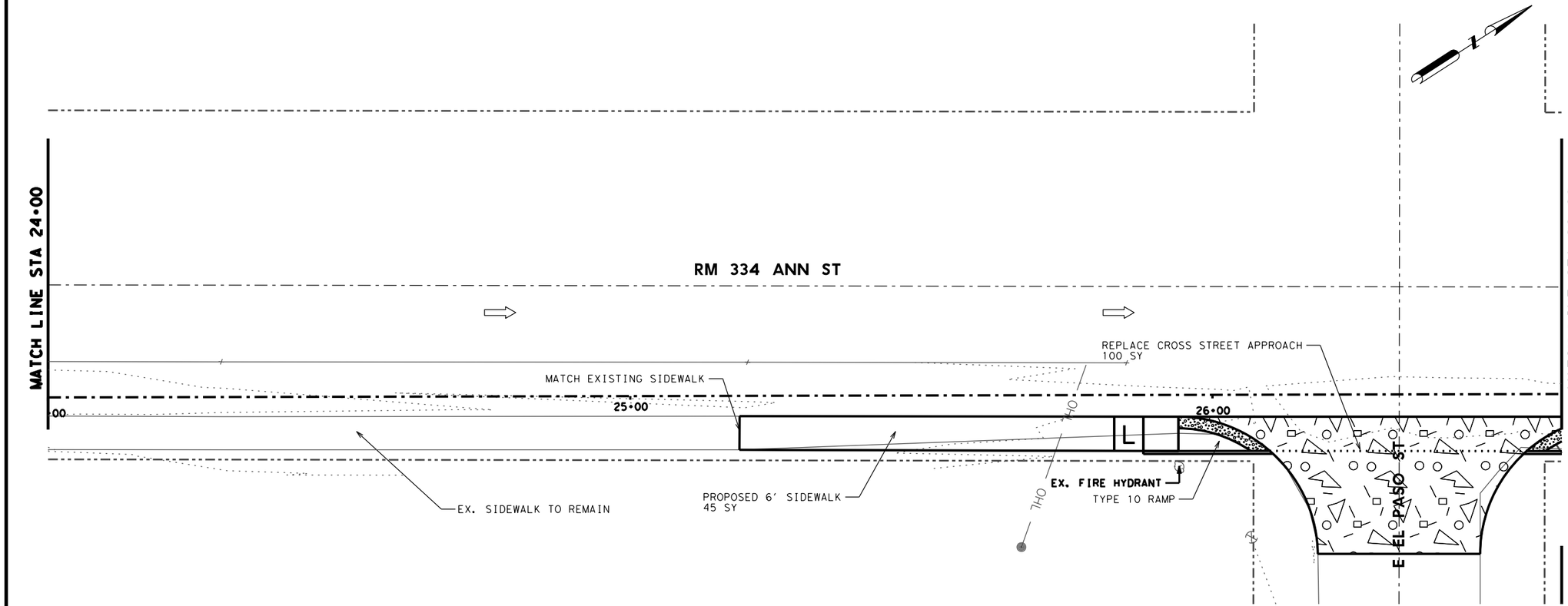
SIDEWALK PLAN

SHEET 3 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			87
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

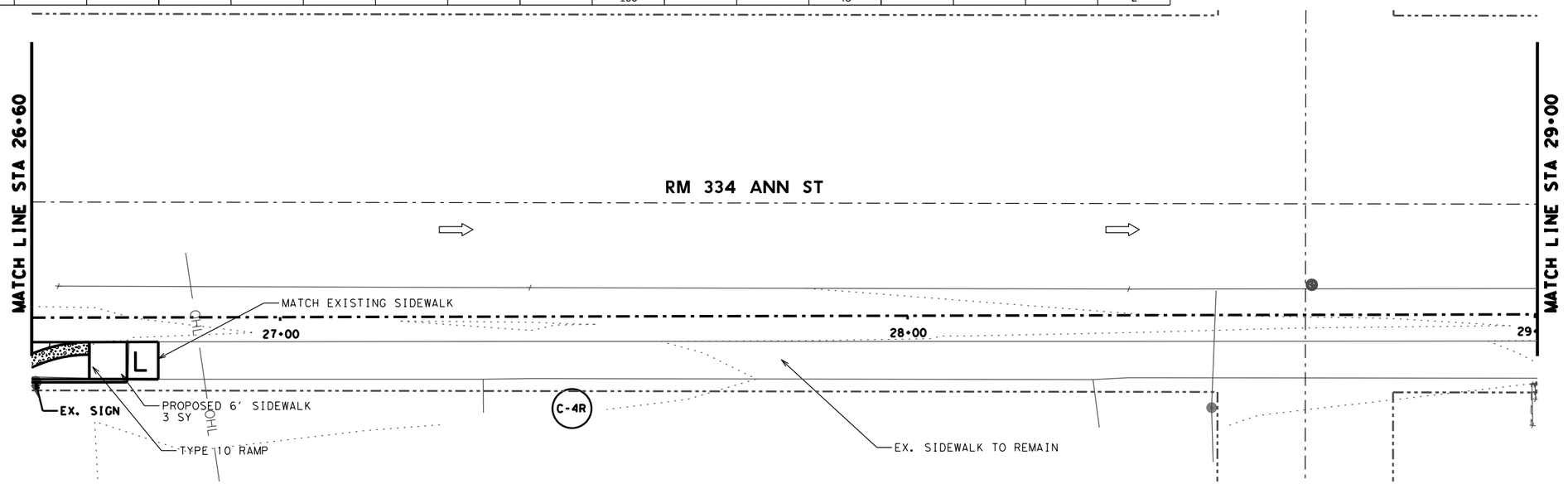


LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L LANDING
- SS SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12									100			48				2



STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/25/2021

RM 334

SIDEWALK PLAN

SHEET 4 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			88
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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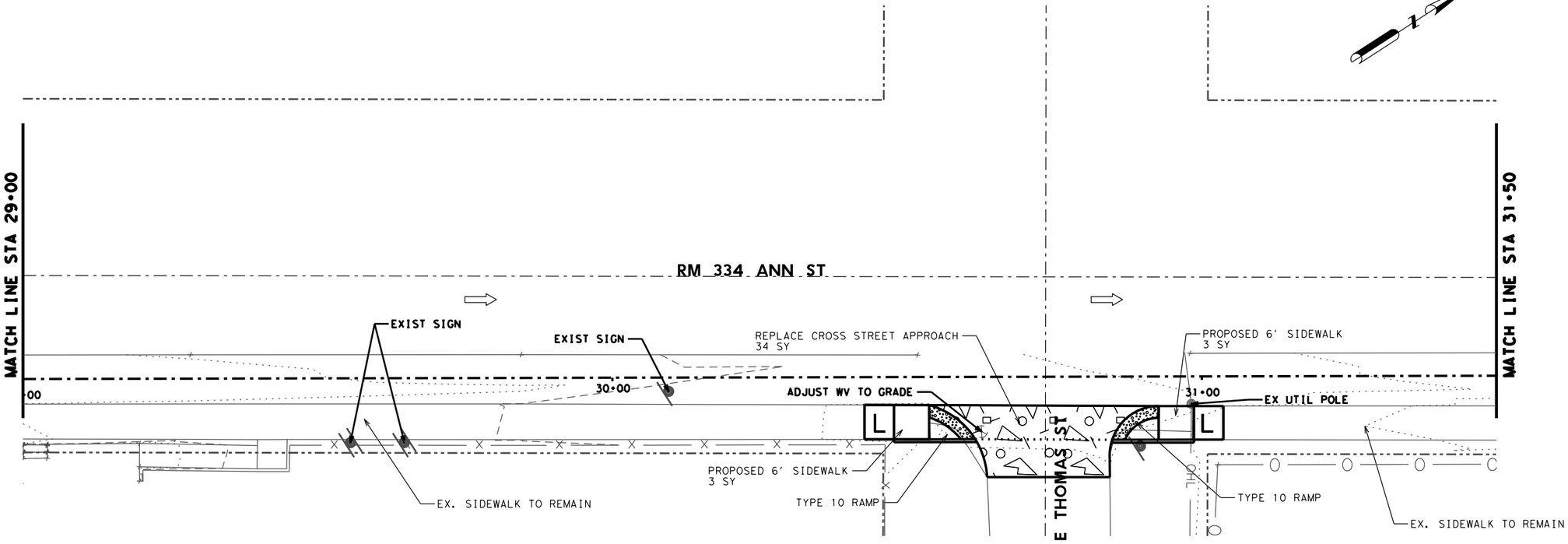
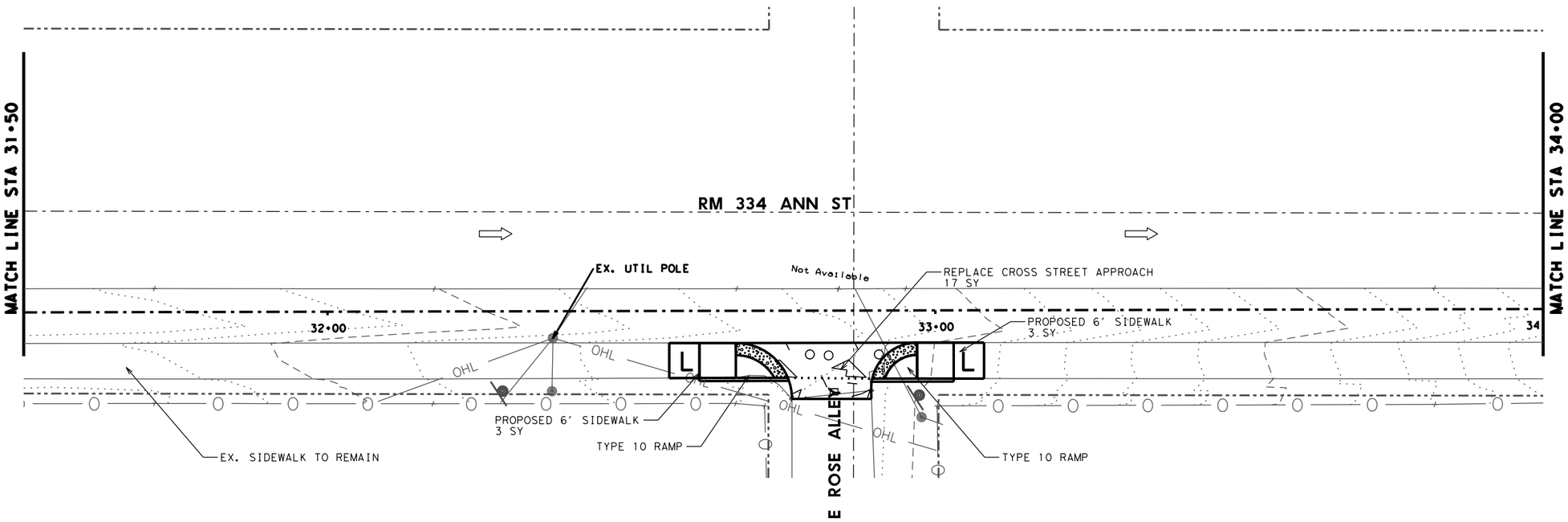


100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12									51			12				4



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L LANDING
- SS SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/25/2021

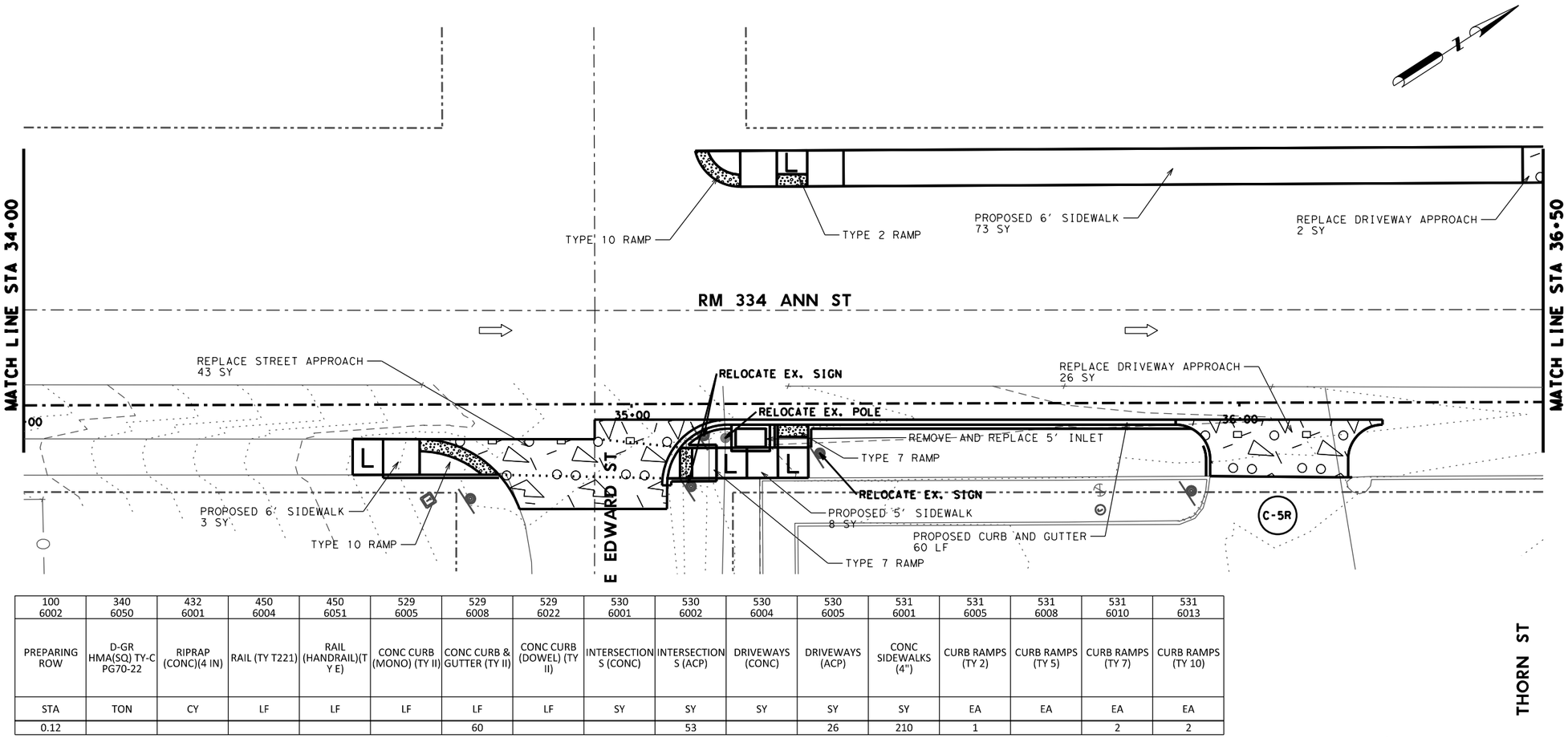
RM 334

SIDEWALK PLAN

SHEET 5 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			89
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'

SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010	531 6013
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(T Y E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTION S (CONC)	INTERSECTION S (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12						60			53		26	210	1		2	2

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/26/2021

RM 334

SIDEWALK PLAN

SHEET 6 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		90

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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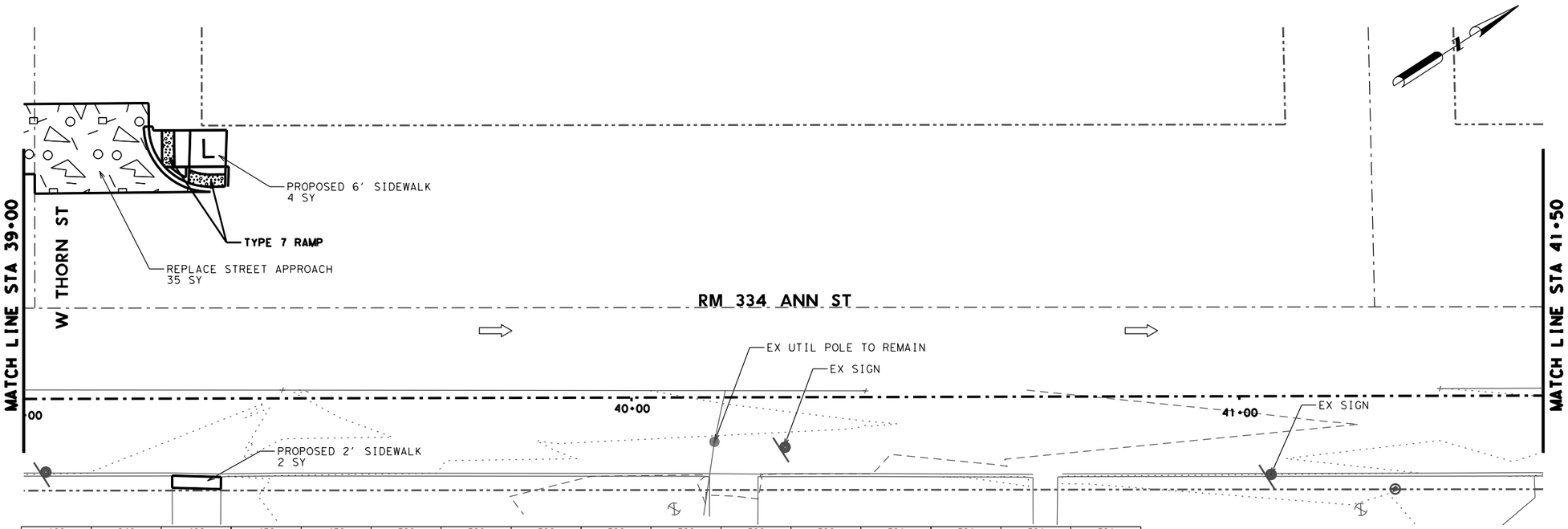
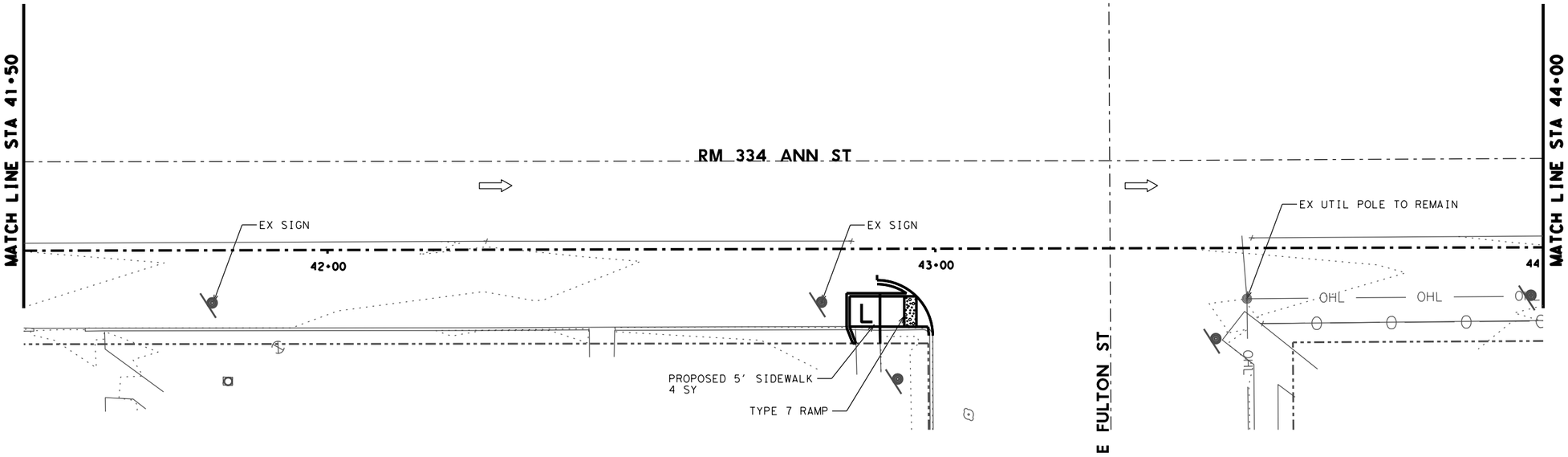


100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12									35			10			3



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
3/25/2021

RM 334

SIDEWALK PLAN

SHEET 7 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 235-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			91
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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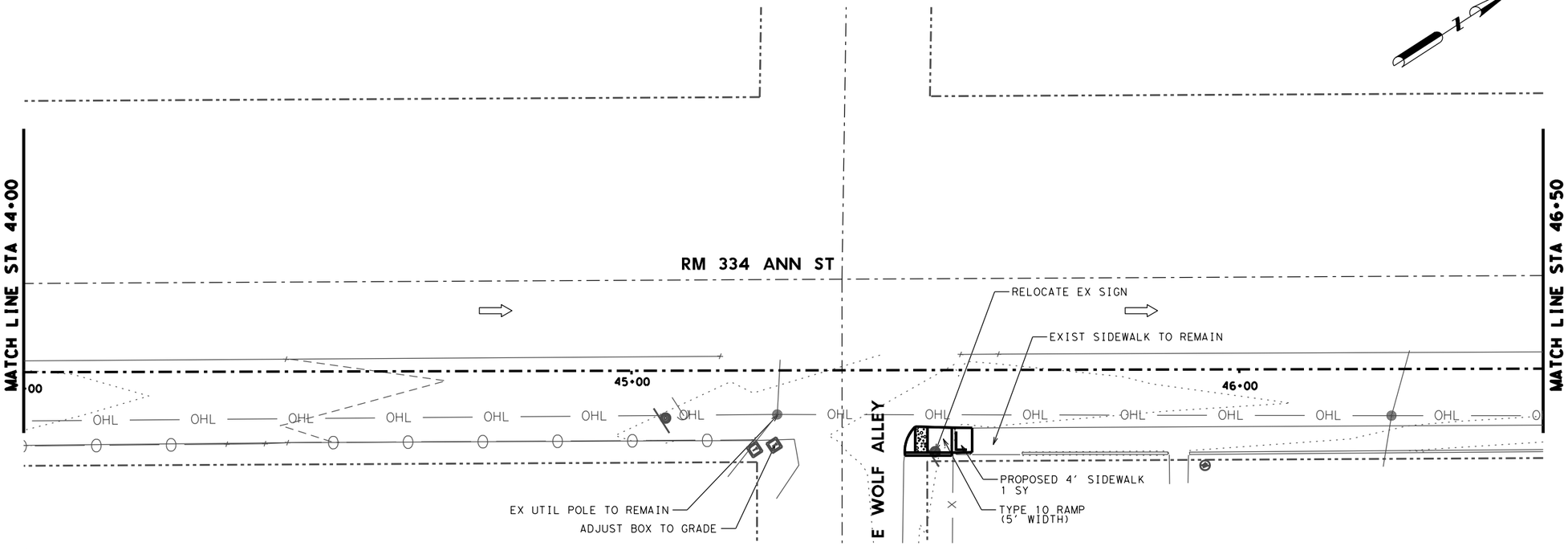

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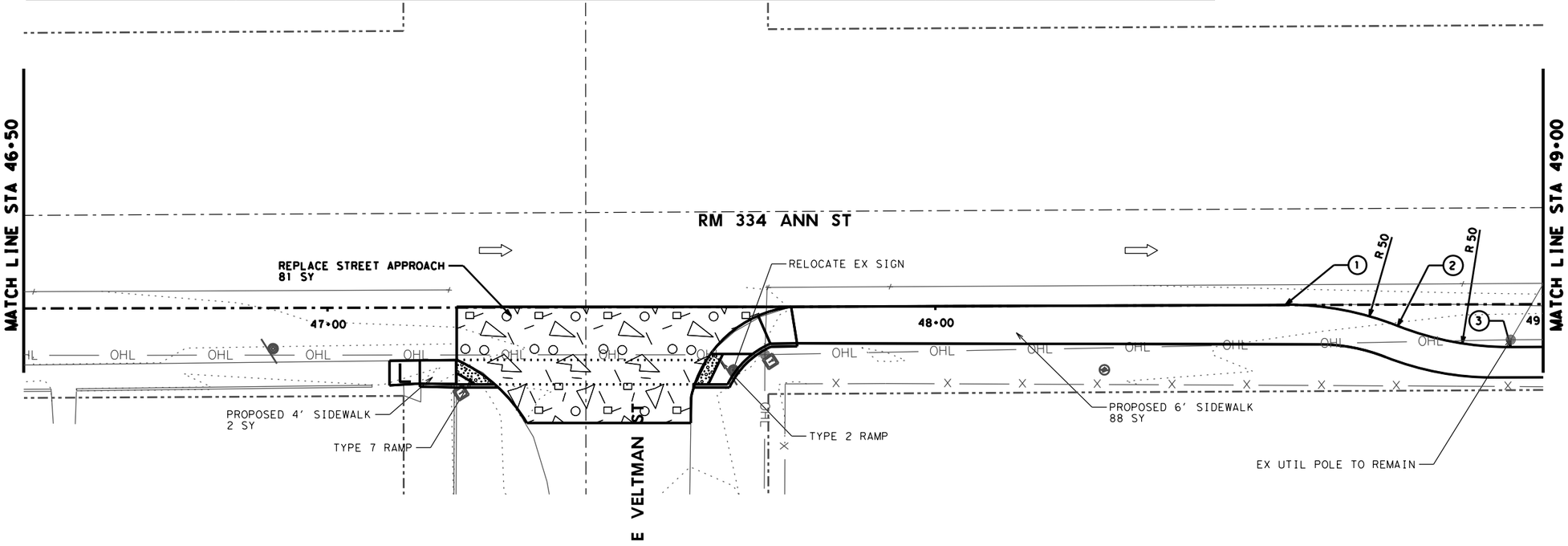
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.12									81			91	1		1	1



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	48+57.62	0.00	-
2	48+76.05	3.50	RT
3	48+94.64	7.05	RT

0 10' 20'

SCALE IN FEET

ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
3/25/2021

RM 334

SIDEWALK PLAN

SHEET 8 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			92
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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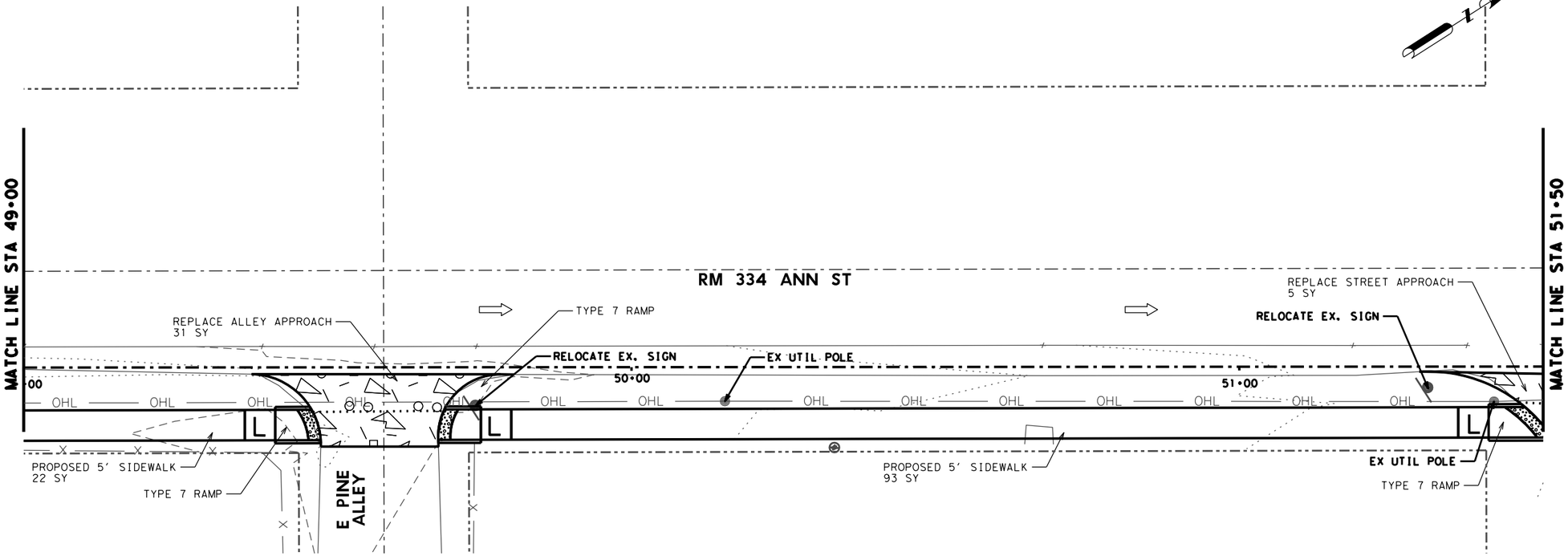
DATE: 3/25/2021 TIME: 5:09:57 PM USER: $USER$



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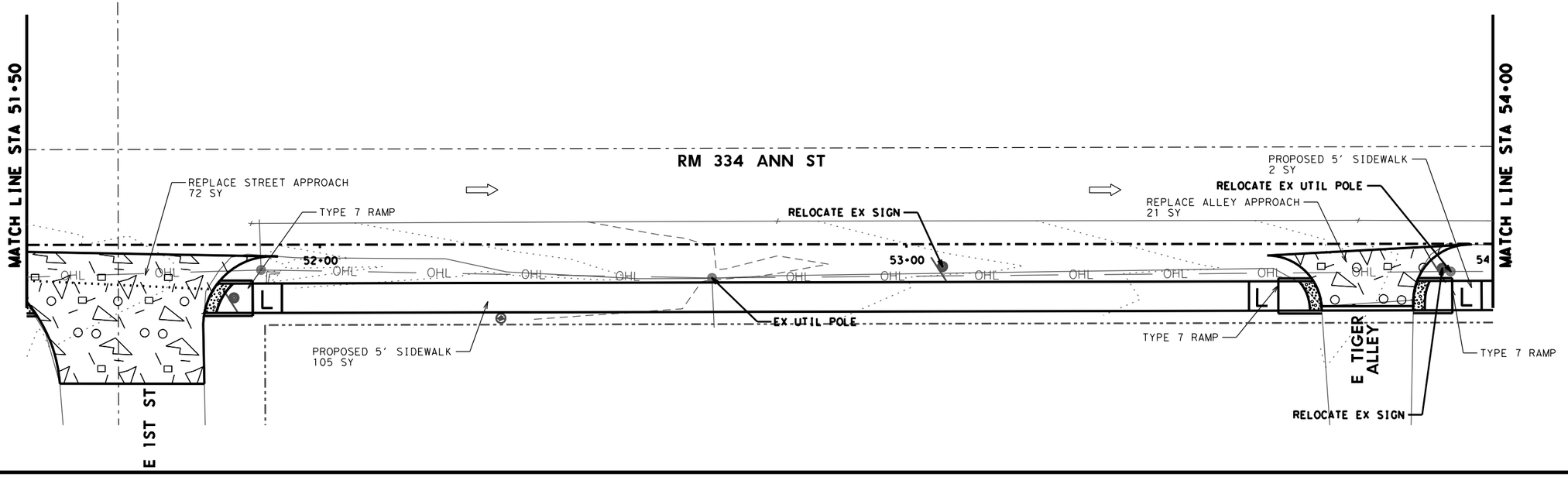
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12									129			222			6



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/25/2021

RM 334

SIDEWALK PLAN

SHEET 9 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			93
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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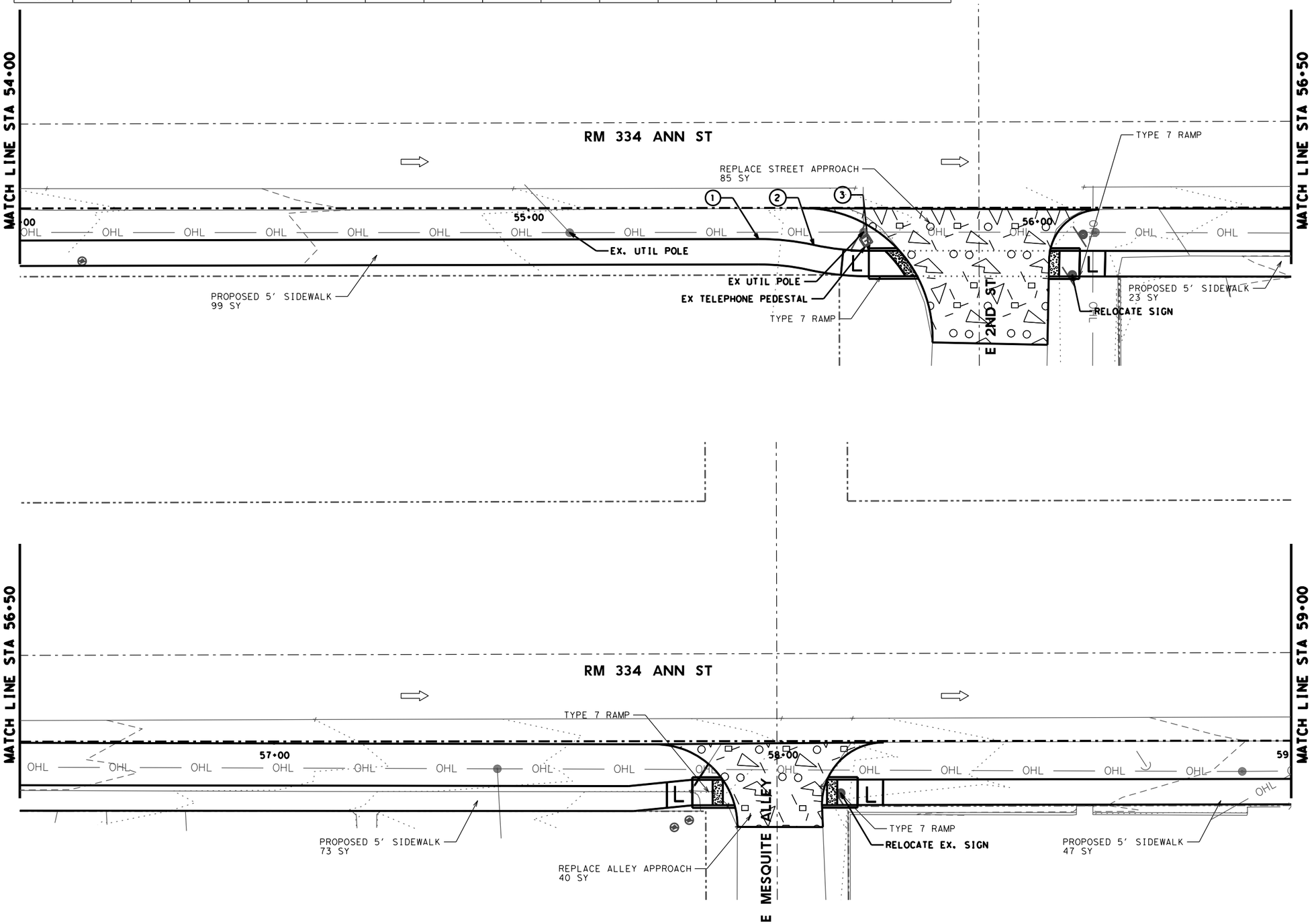
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12									125			242			4



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L LANDING
- SS SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

POINT	STA	OFF	SIDE
1	55+45.27	6.07	RT
2	55+56.10	7.23	RT
3	55+66.94	8.39	RT

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/25/2021

RM 334

SIDEWALK PLAN

SHEET 10 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			94
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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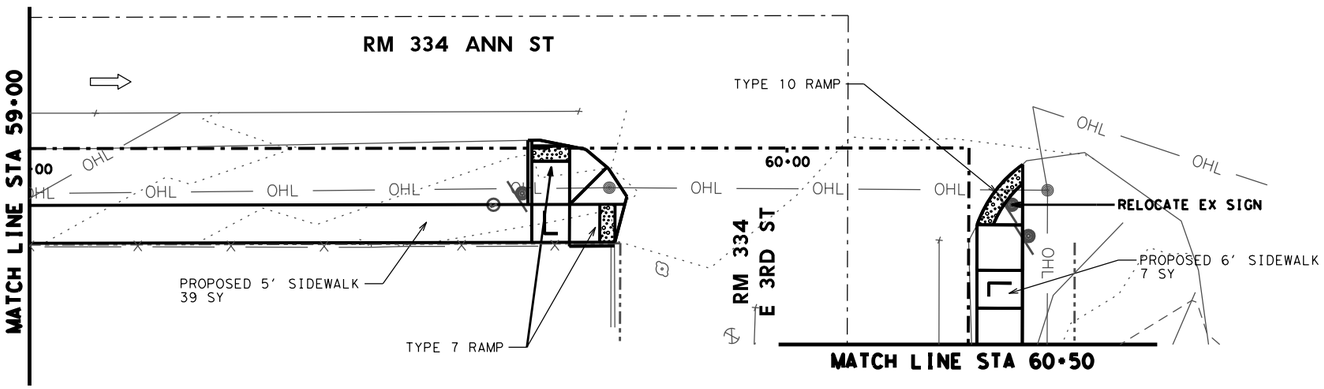
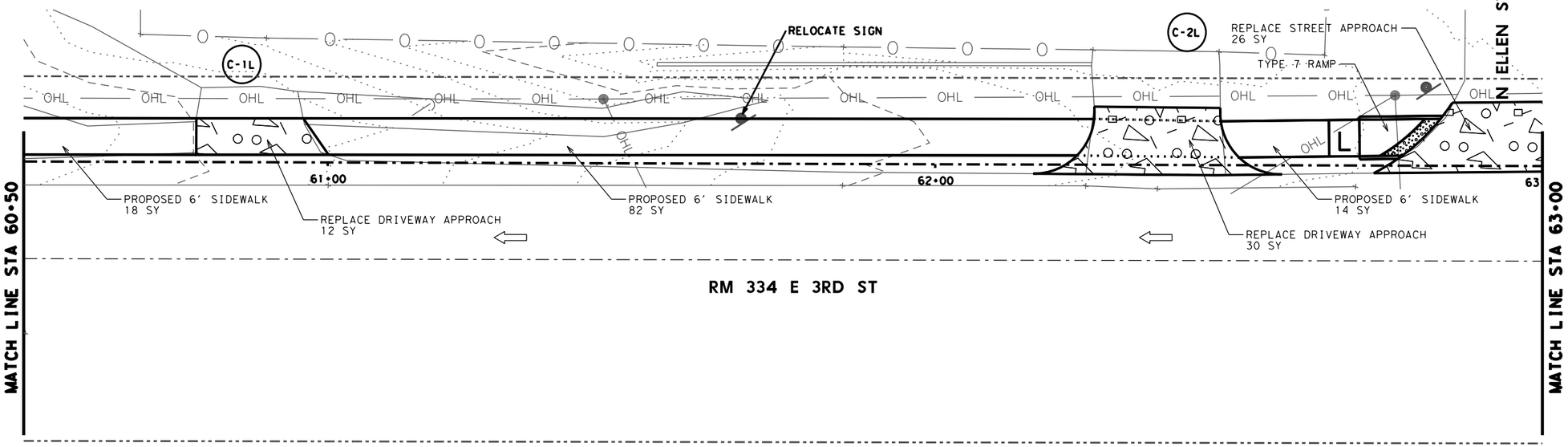
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)	CURB RAMPS (TY 10)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA	EA
0.10									26		42	161			3	1





LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/25/2021

RM 334

SIDEWALK PLAN

SHEET 11 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		95

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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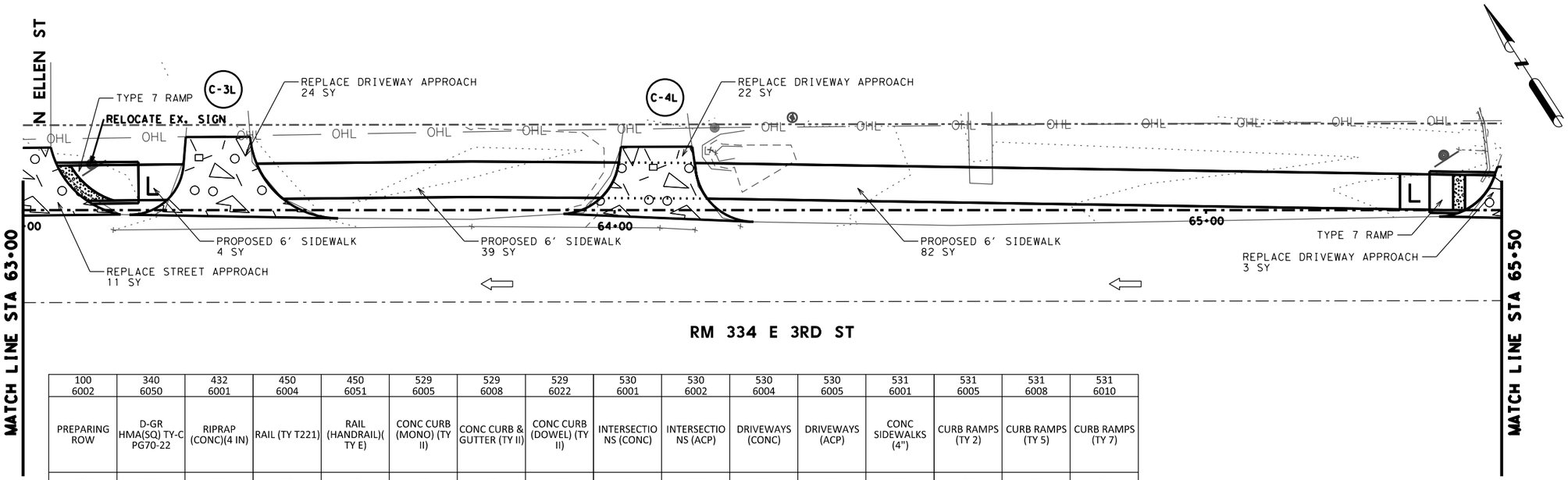
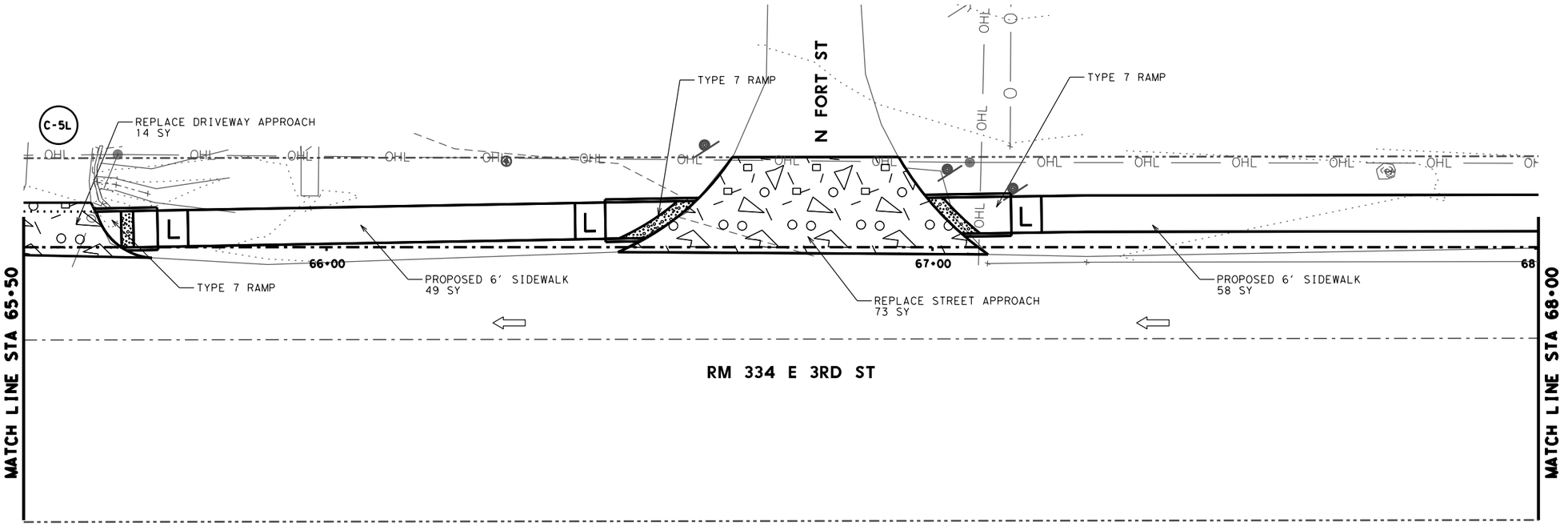


100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12									84		63	232			5



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/25/2021

RM 334

SIDEWALK PLAN

SHEET 12 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			96
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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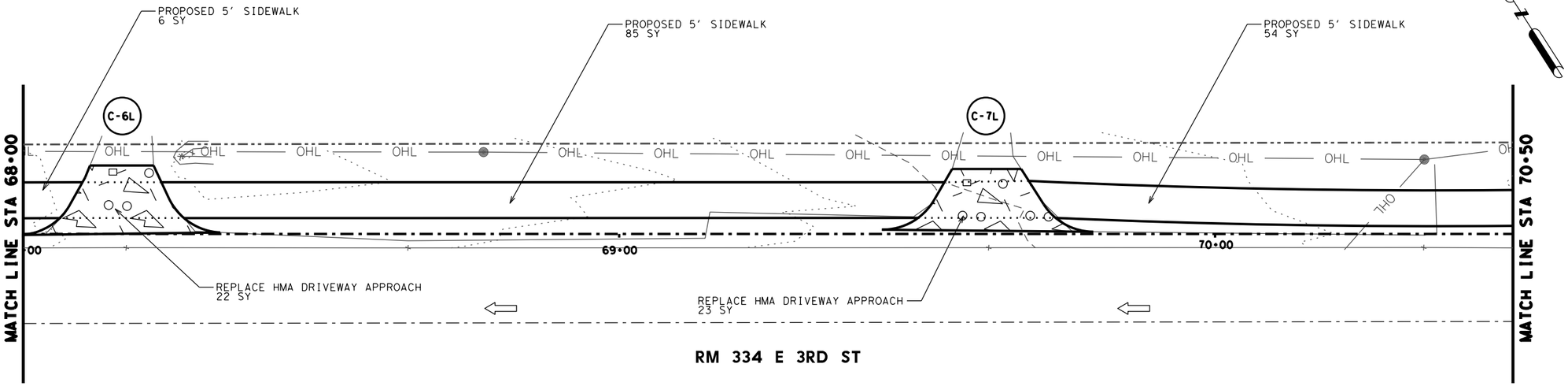
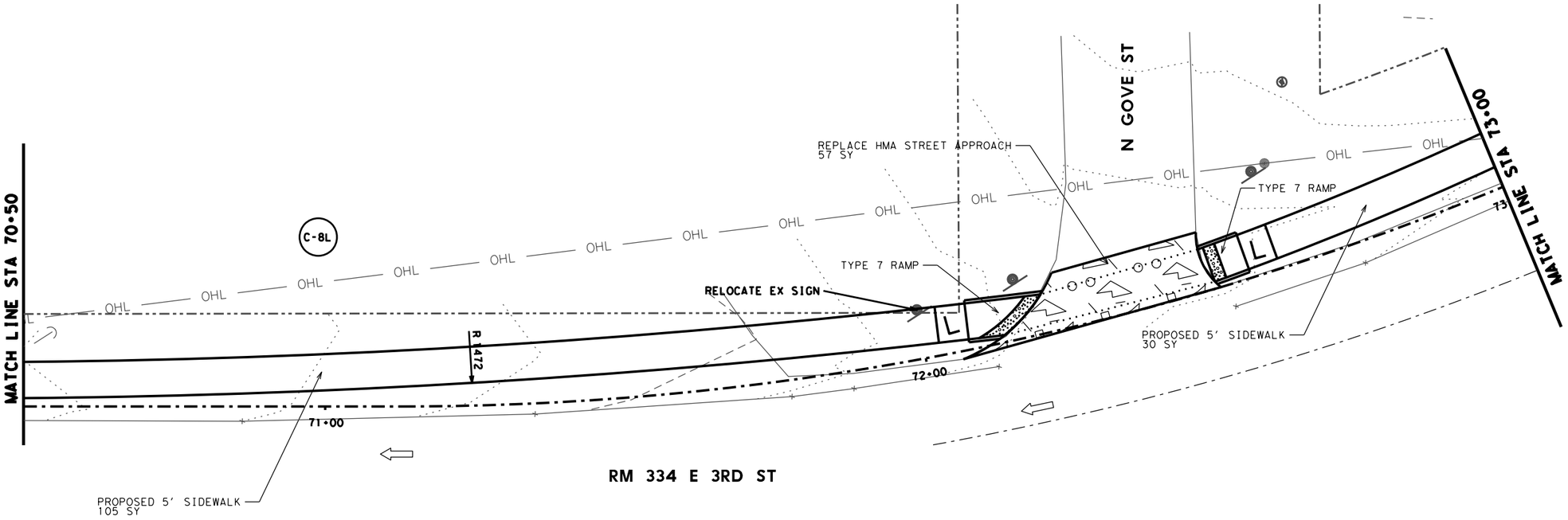




100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12									57		45	280			2

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
3/5/2021

RM 334

SIDEWALK PLAN

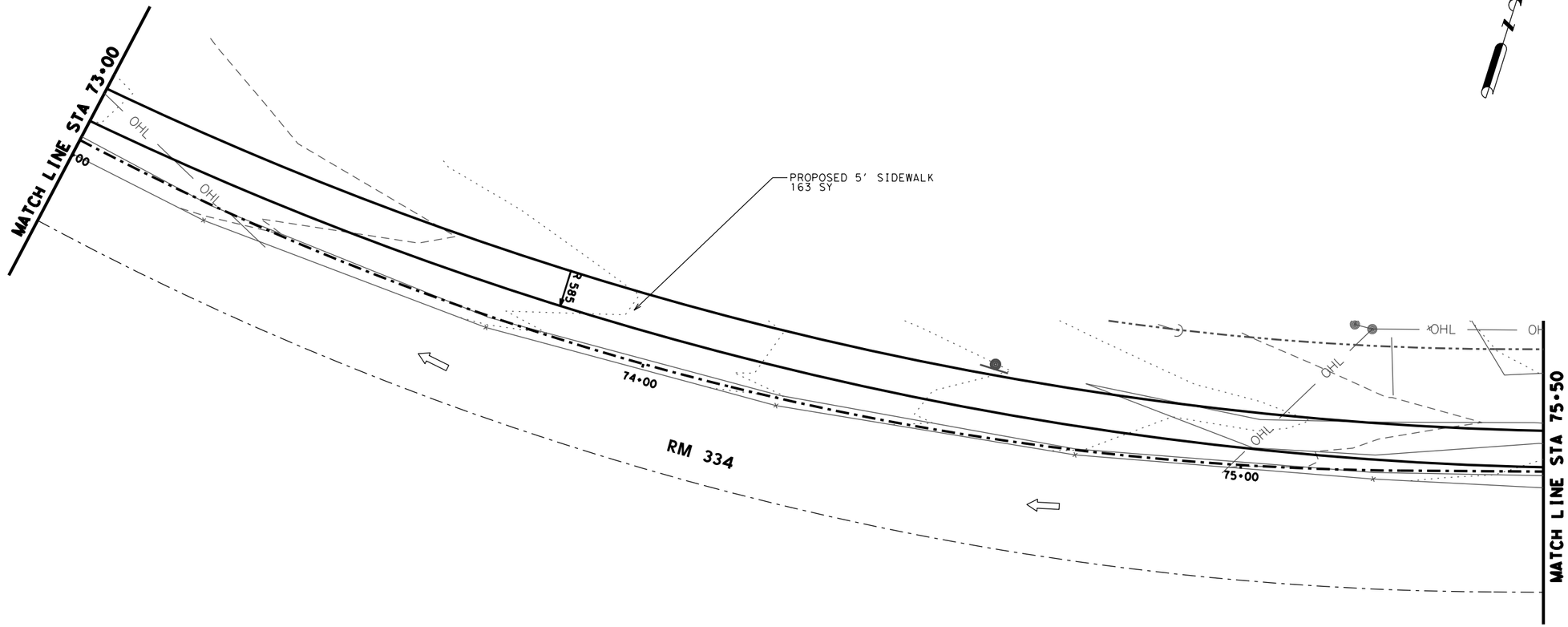
SHEET 13 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 235-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		97

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



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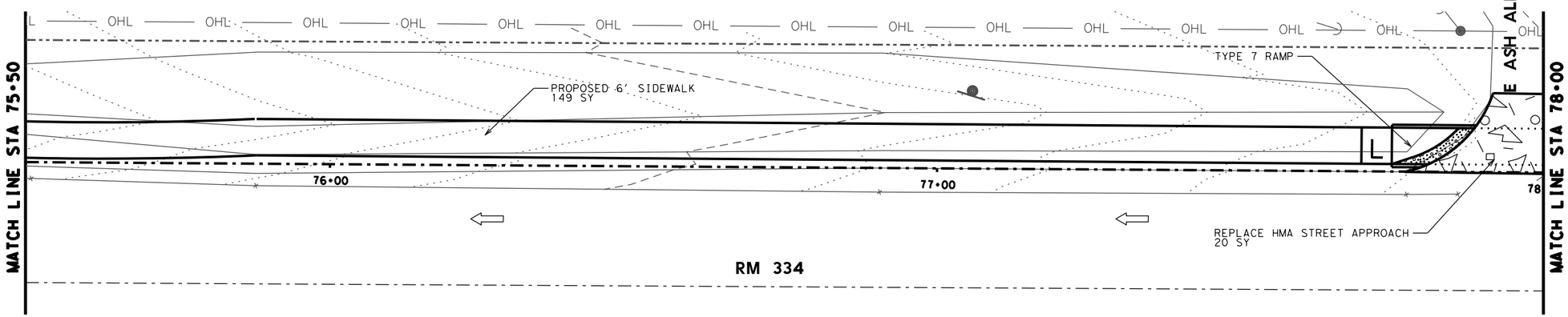
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12									20			312			1



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

SIDEWALK PLAN

SHEET 14 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			98
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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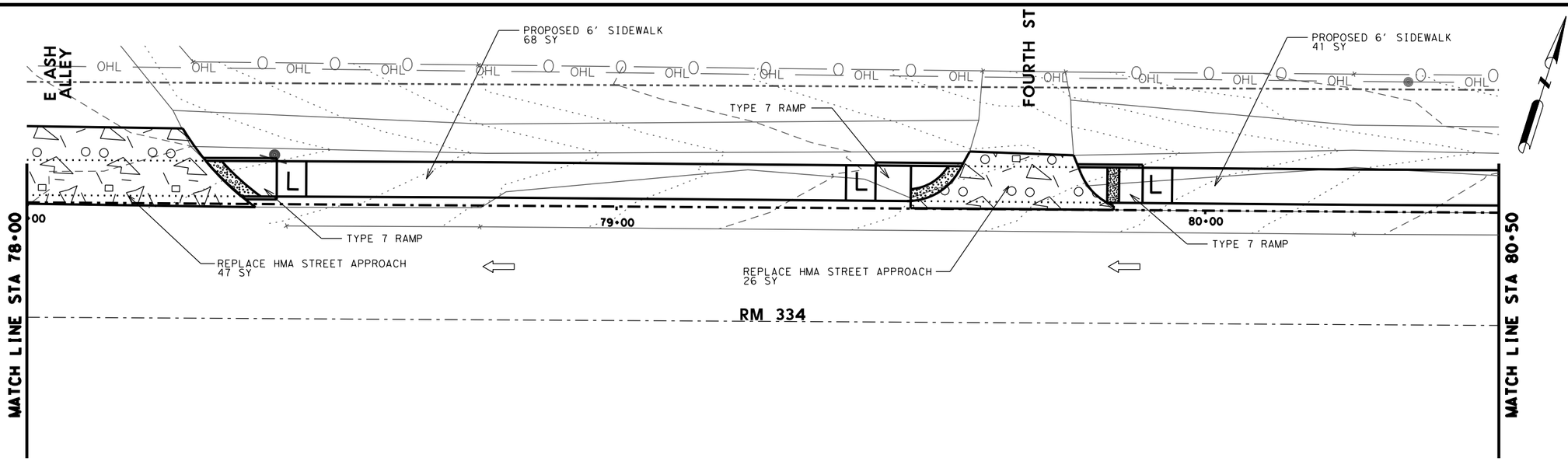
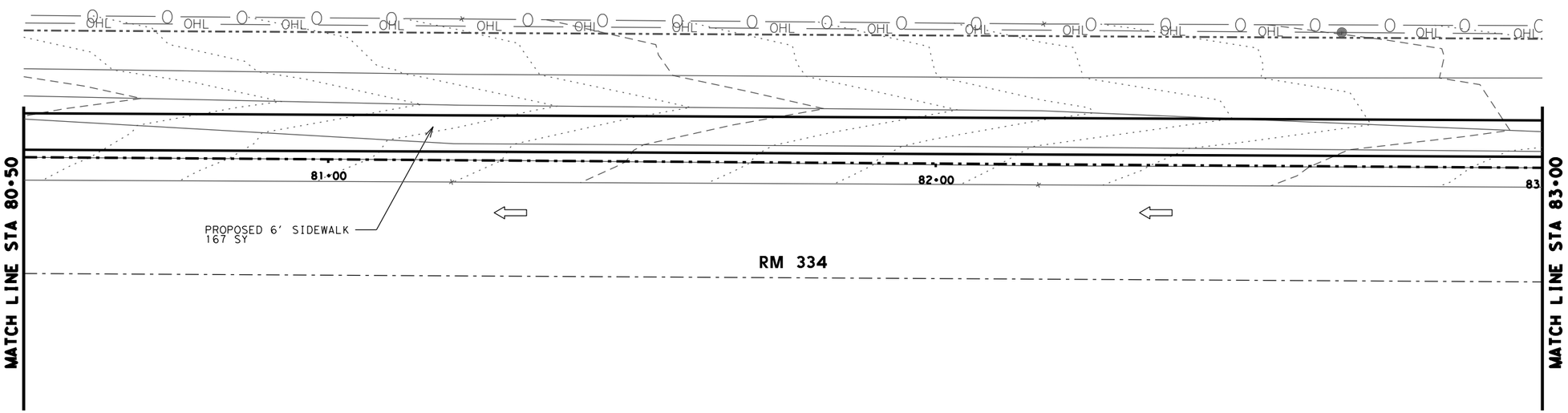


100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001	531 6005	531 6008	531 6010
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 5)	CURB RAMPS (TY 7)
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY	EA	EA	EA
0.12									73			276			3



LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED PROFESSIONAL ENGINEER
3/5/2021

RM 334

SIDEWALK PLAN

SHEET 15 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			99
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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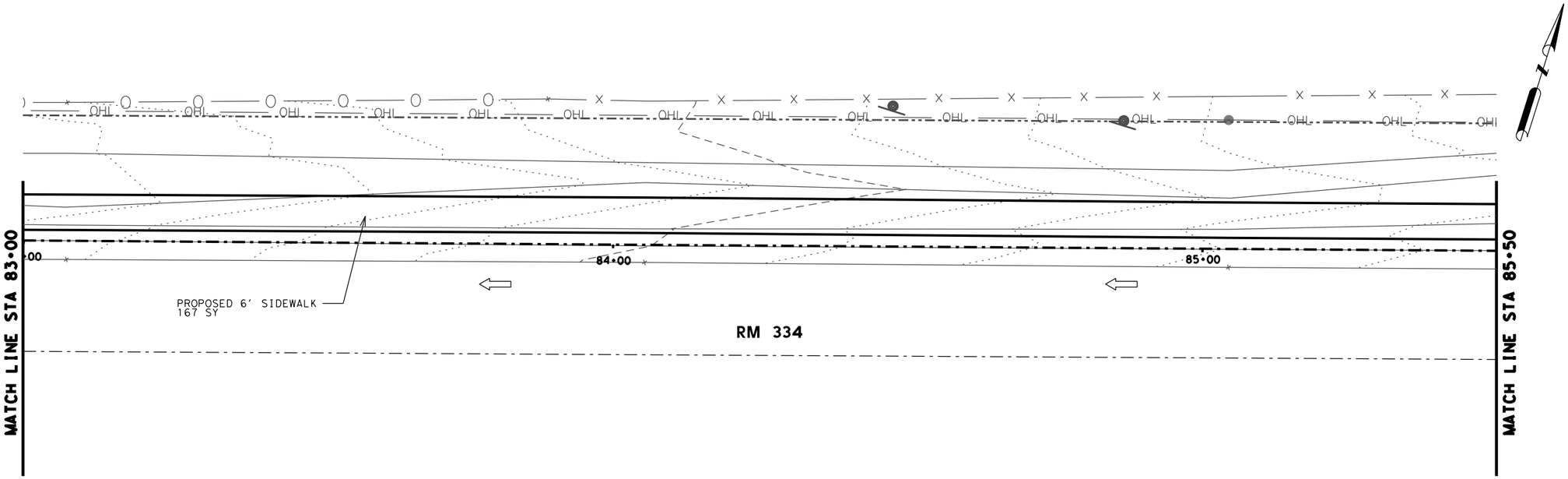

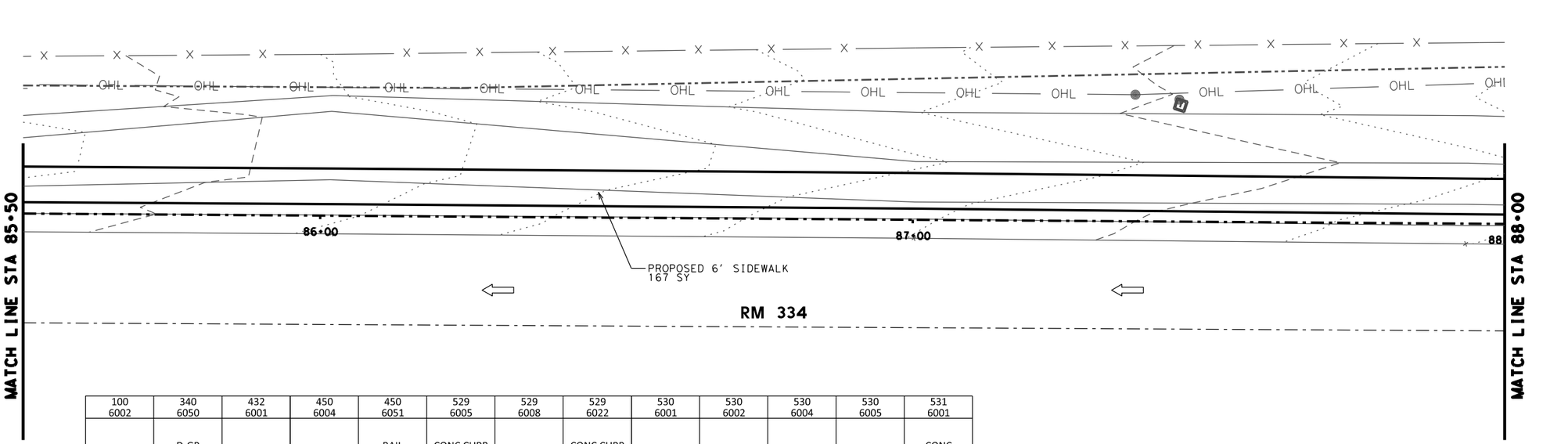

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PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12												334

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

RM 334

SIDEWALK PLAN

SHEET 16 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			100
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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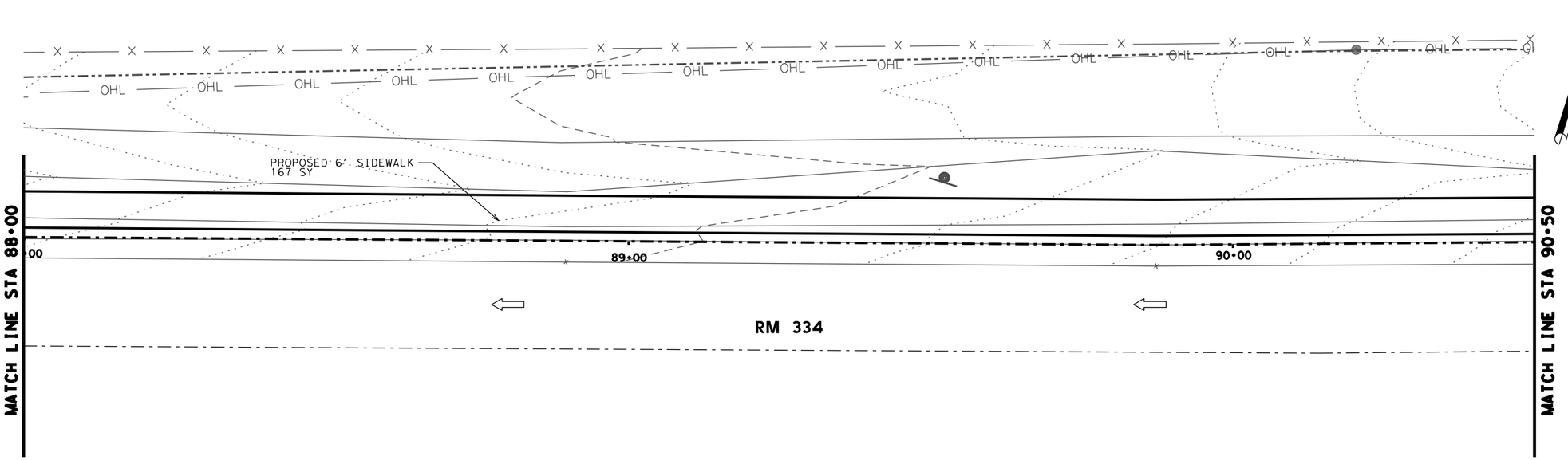

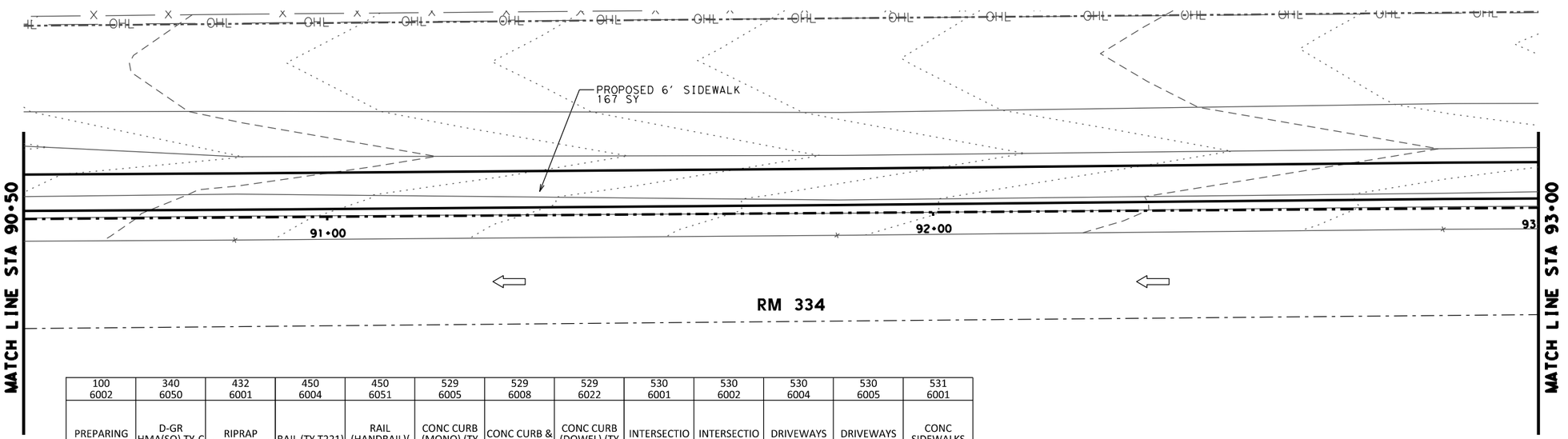

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PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12												334

LEGEND

- EXISTING TRAFFIC FLOW
- DRIVEWAY NUMBER
- APPARENT RIGHT-OF-WAY
- L — LANDING
- SS — SLOPED SIDEWALK
- SLOPE DIRECTION
- EXISTING TREES
- CONCRETE DRIVEWAY
- ASPHALT TRANSITION
- ASPHALT DRIVEWAY/INTERSECTION
- SOD

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

RM 334

SIDEWALK PLAN

SHEET 17 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			101
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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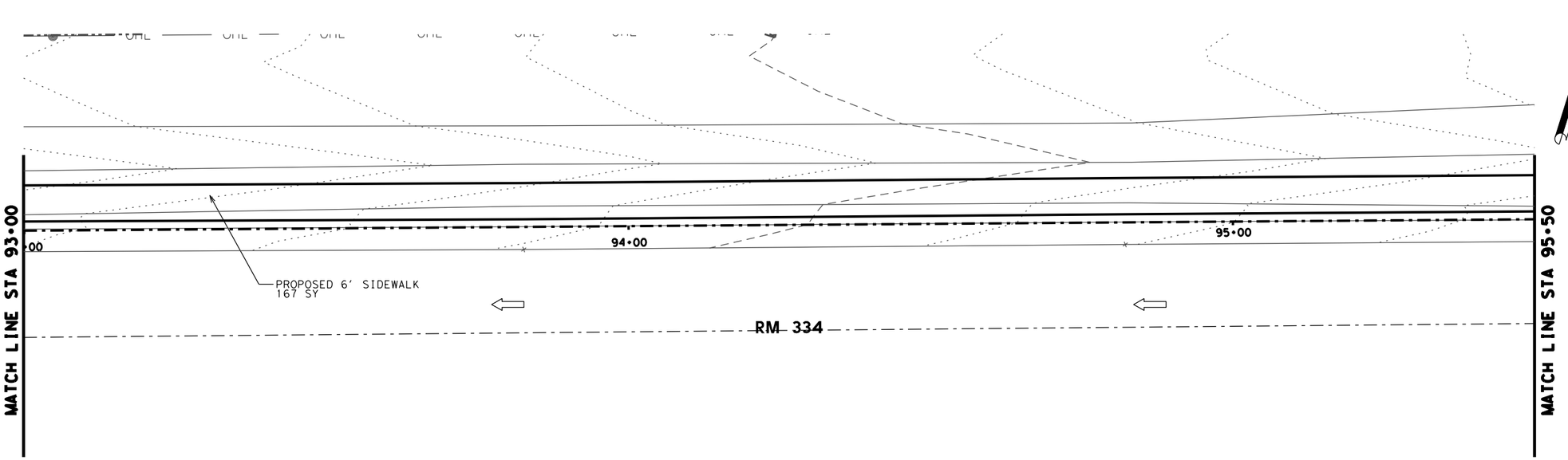

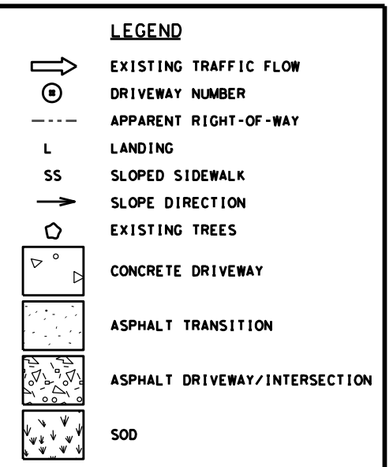

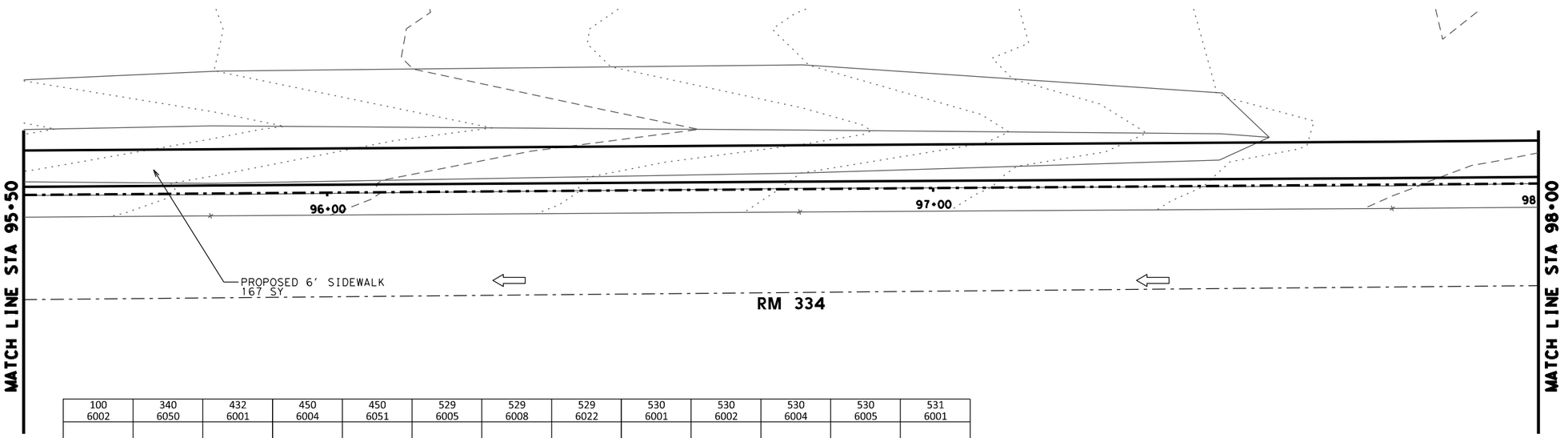

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PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12												333

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

RM 334

SIDEWALK PLAN

SHEET 18 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			102
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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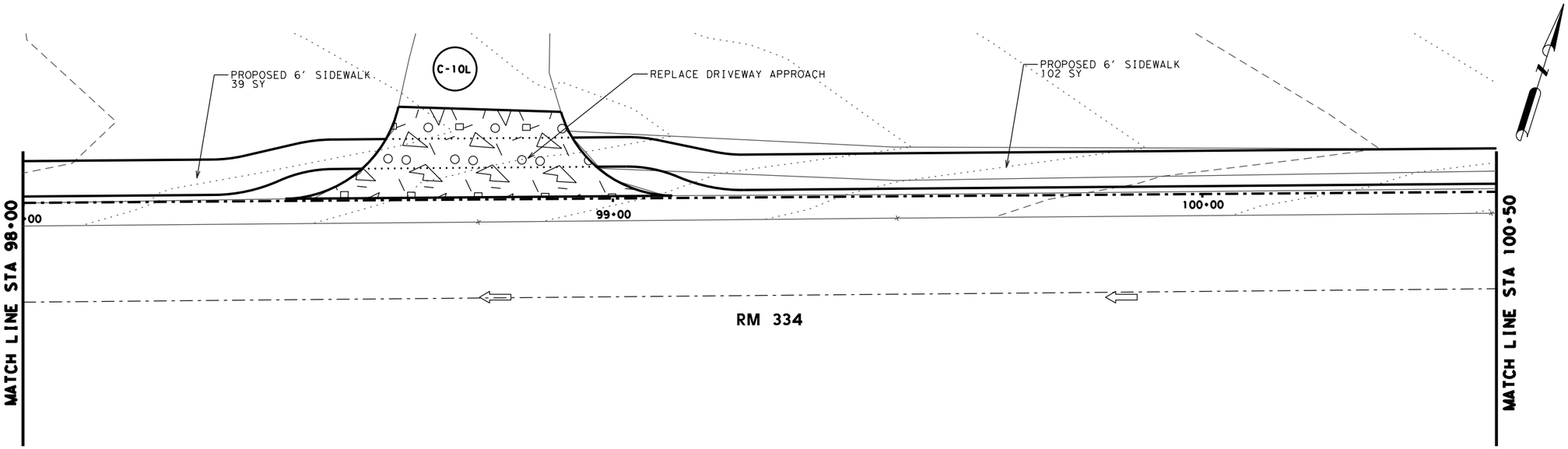

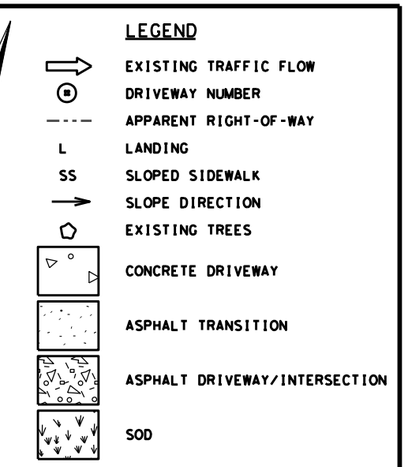

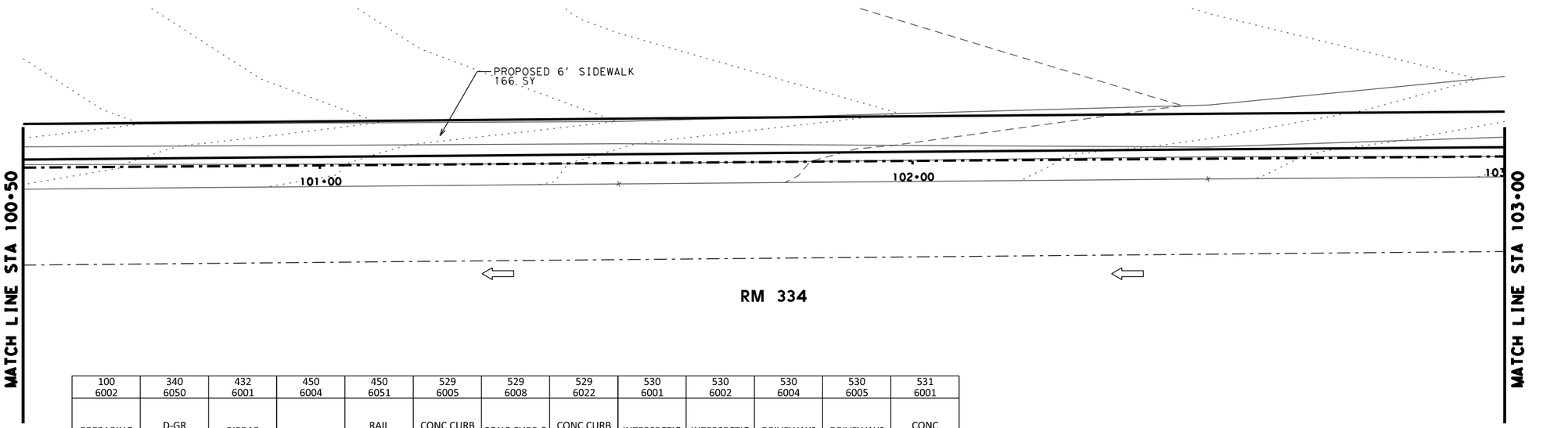

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIO NS (CONC)	INTERSECTIO NS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.12											63	306

0 10' 20'
SCALE IN FEET

RM 334

SIDEWALK PLAN

SHEET 19 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			103
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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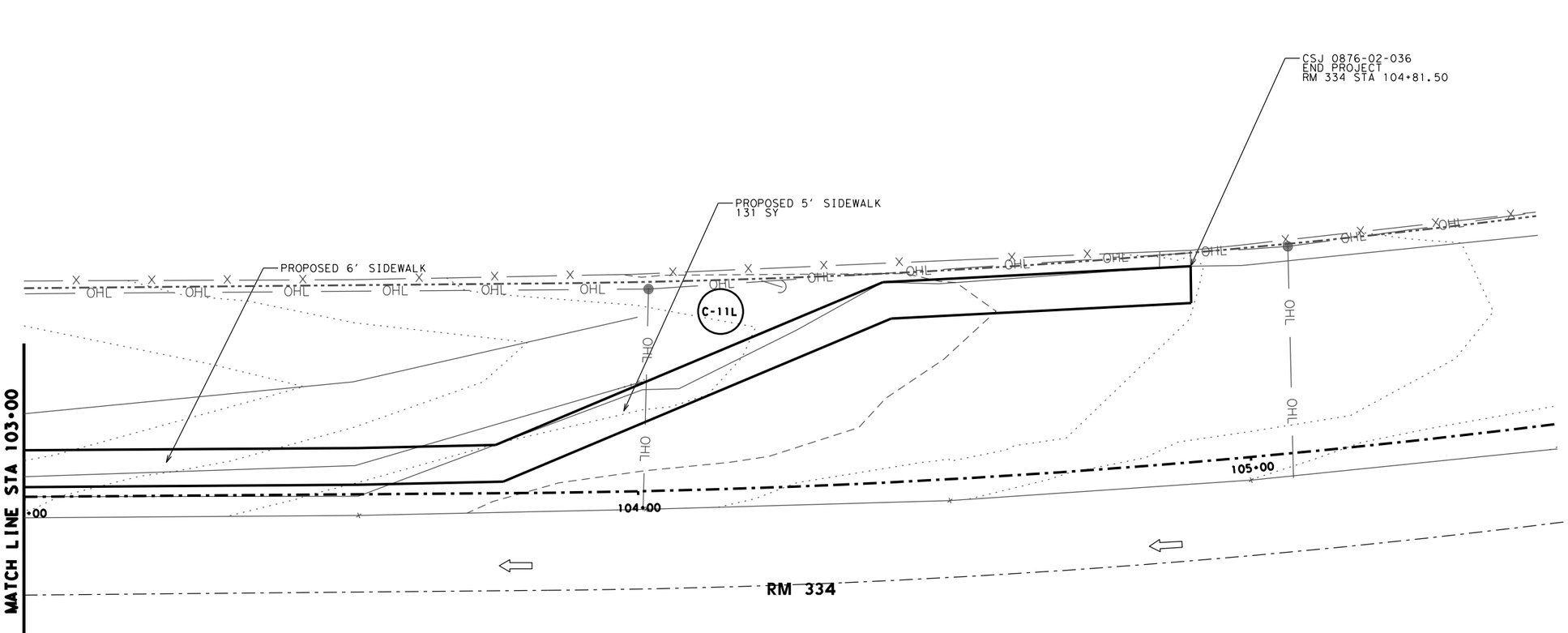

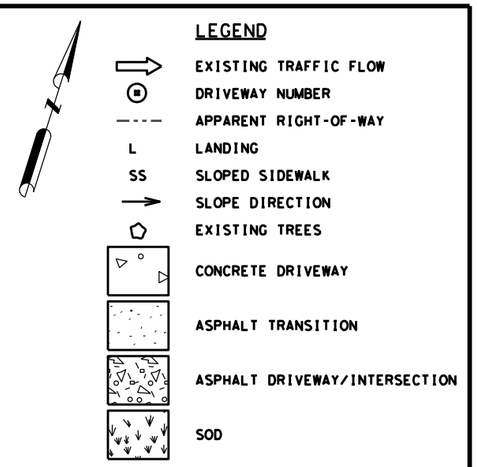

0 10' 20'
SCALE IN FEET

100 6002	340 6050	432 6001	450 6004	450 6051	529 6005	529 6008	529 6022	530 6001	530 6002	530 6004	530 6005	531 6001
PREPARING ROW	D-GR HMA(SQ) TY-C PG70-22	RIPRAP (CONC)(4 IN)	RAIL (TY T221)	RAIL (HANDRAIL)(TY E)	CONC CURB (MONO) (TY II)	CONC CURB & GUTTER (TY II)	CONC CURB (DOWEL) (TY II)	INTERSECTIONS (CONC)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")
STA	TON	CY	LF	LF	LF	LF	LF	SY	SY	SY	SY	SY
0.05												131

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

RM 334

SIDEWALK PLAN

SHEET 20 OF 20

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		104

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5113-03\Design\Sidewalks\RM334_RDW_SDWK_20.dgn
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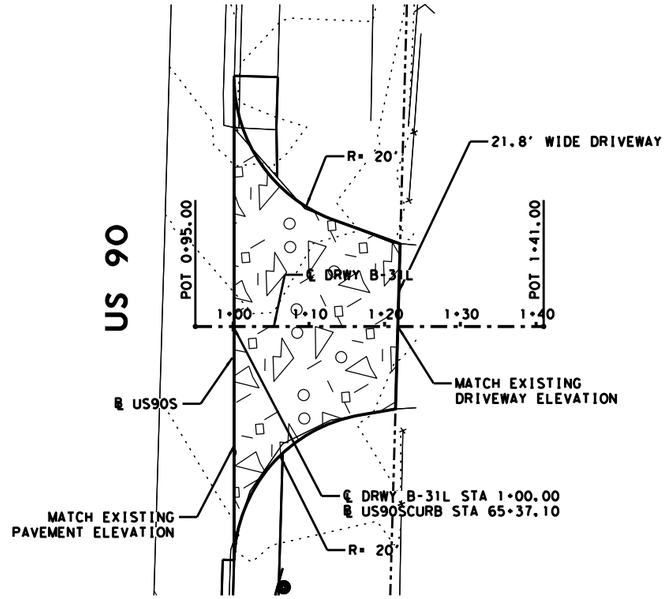
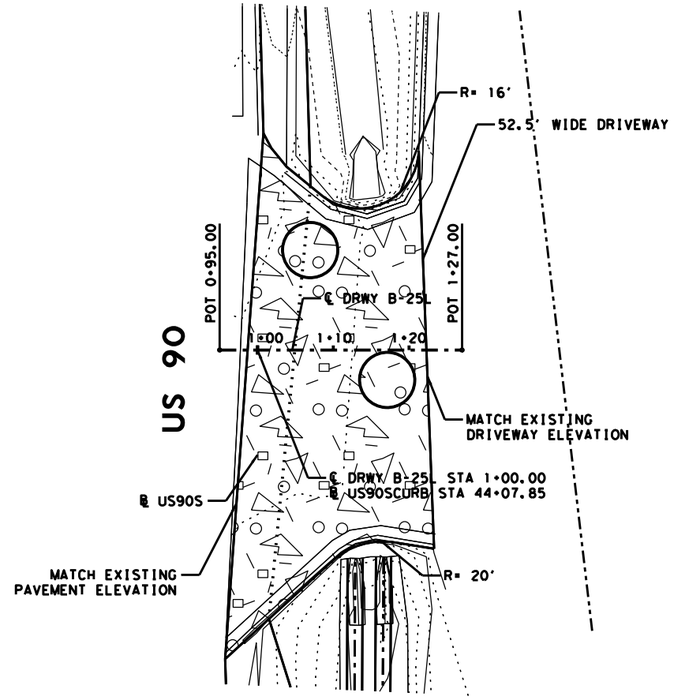


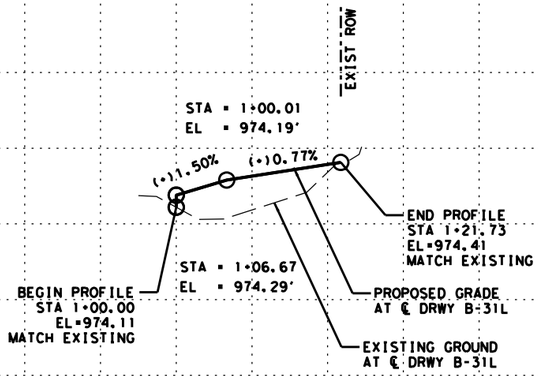
DRIVEWAY B-31L PLAN VIEW



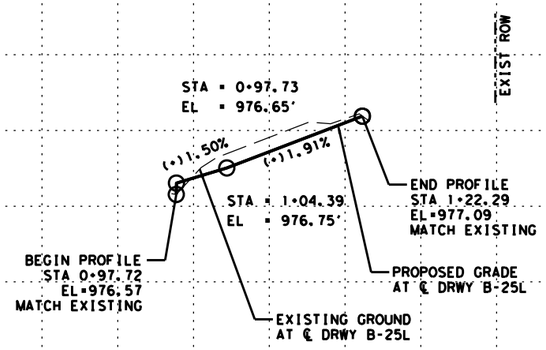
DRIVEWAY B-25L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY B-31L ELEVATION VIEW



DRIVEWAY B-25L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

SOUTH DRIVEWAY PLAN AND PROFILE

SHEET 1 OF 11

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			105
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5il3-03\Design\Sidewalks\zzUS90_SDWK PP_01.dgn
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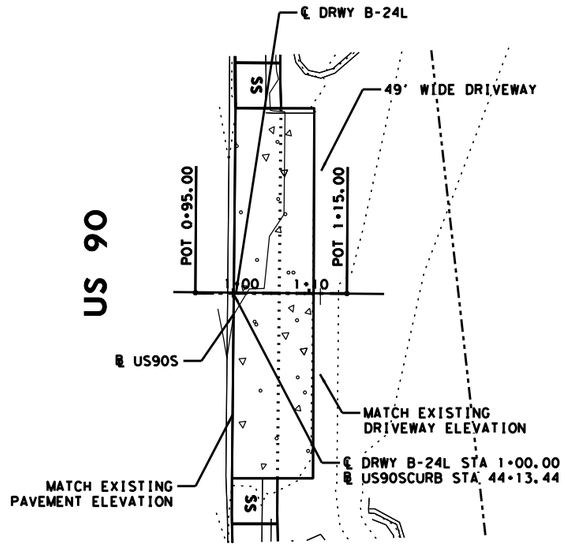
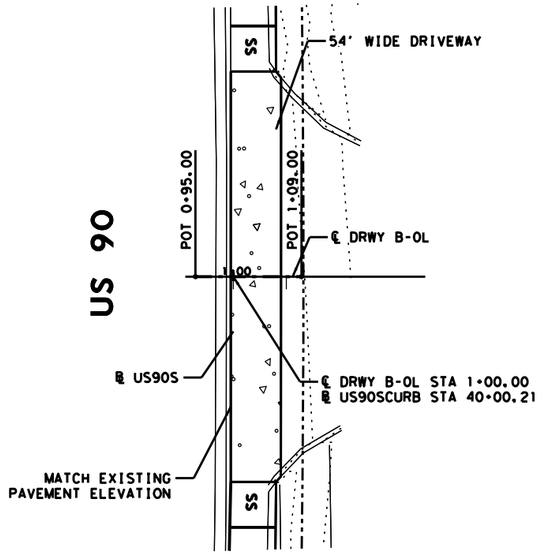


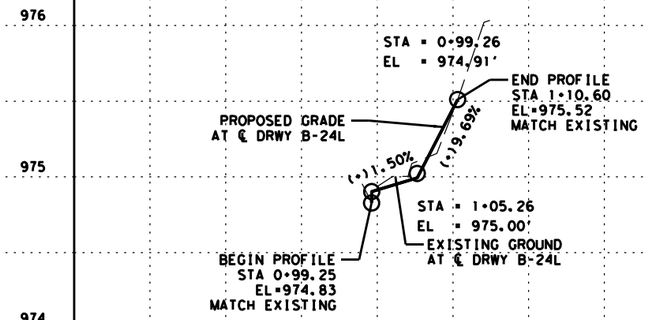
DRIVEWAY B-24L PLAN VIEW



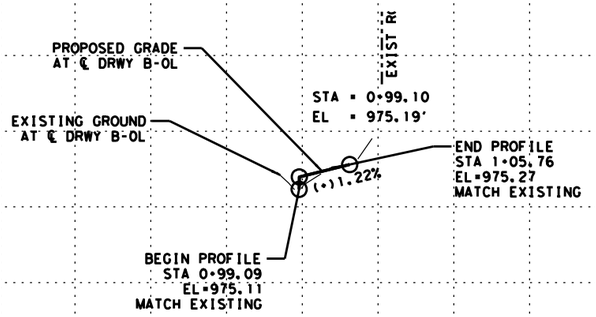
DRIVEWAY B-OL PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY B-24L ELEVATION VIEW



DRIVEWAY B-OL ELEVATION VIEW

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

3/5/2021

US 90

SOUTH DRIVEWAY PLAN AND PROFILE

SHEET 2 OF 11

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			106
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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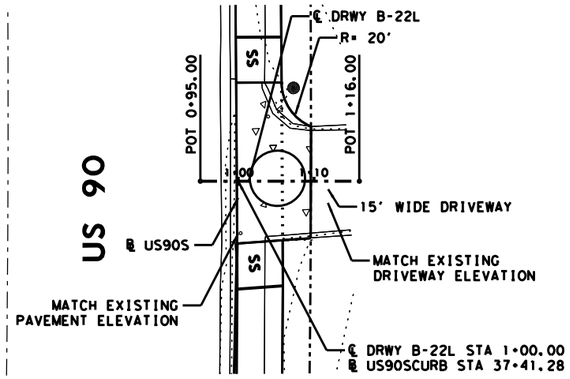
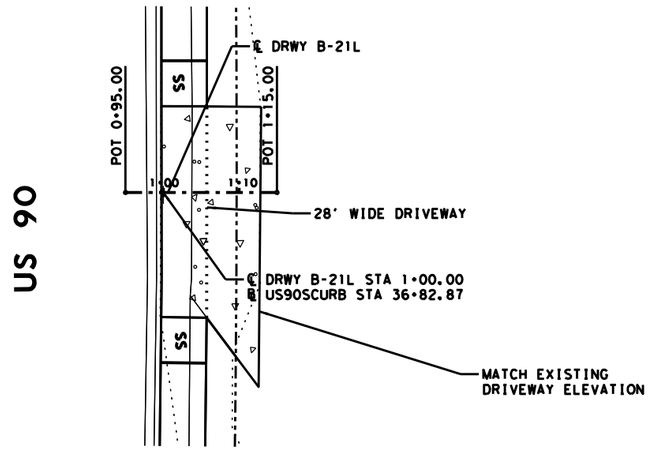
DATE: 3/5/2021 TIME: 6:15:49 PM USER: $USER$



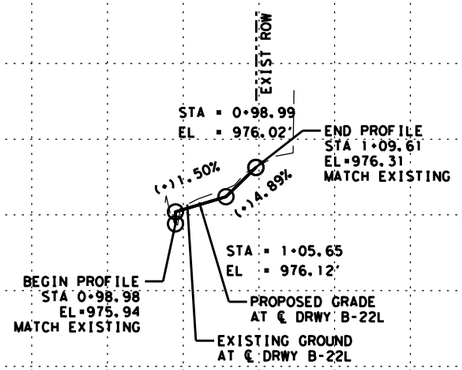
DRIVEWAY B-22L PLAN VIEW



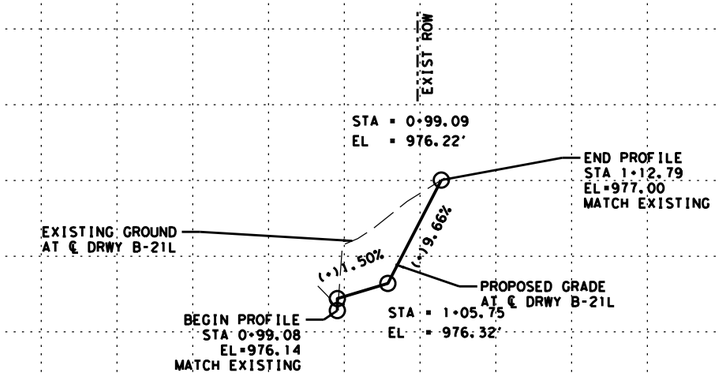
DRIVEWAY B-21L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY B-22L ELEVATION VIEW



DRIVEWAY B-21L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

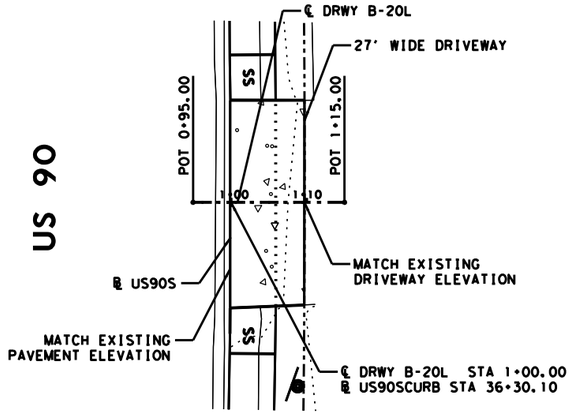
SOUTH DRIVEWAY PLAN AND PROFILE

SHEET 3 OF 11

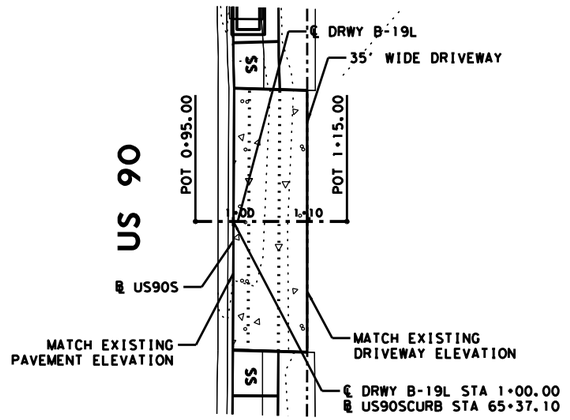
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			107
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



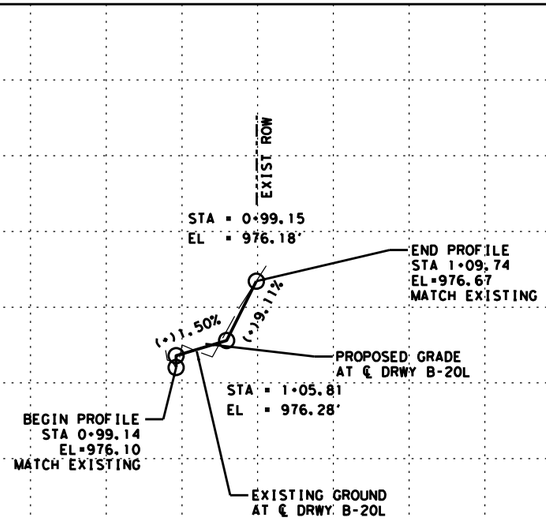
DRIVEWAY B-20L PLAN VIEW



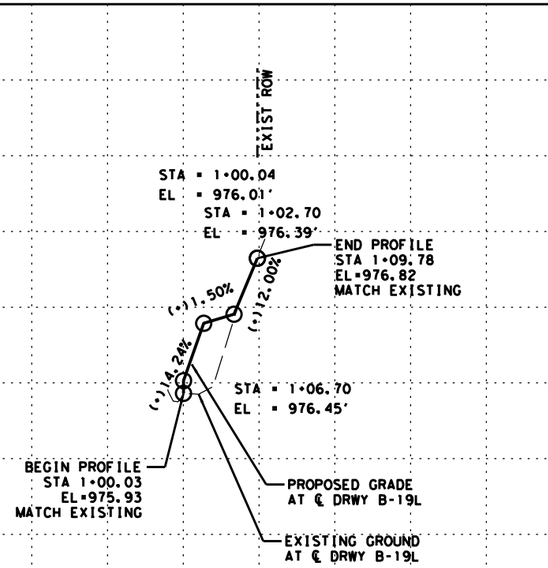
DRIVEWAY B-19L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY B-20L ELEVATION VIEW



DRIVEWAY B-19L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

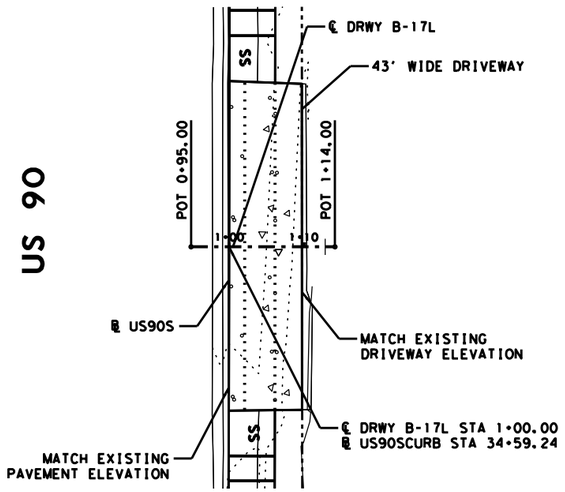
SOUTH DRIVEWAY PLAN AND PROFILE

SHEET 4 OF 11

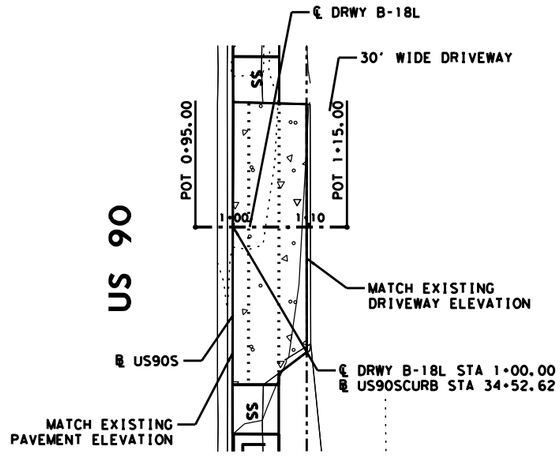
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			108
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



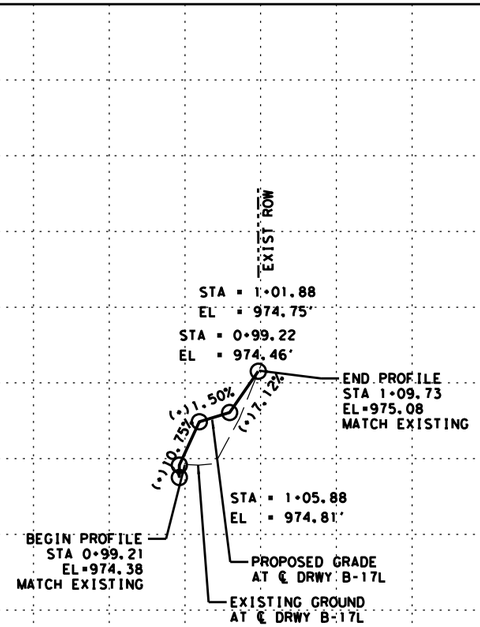
DRIVEWAY B-17L PLAN VIEW



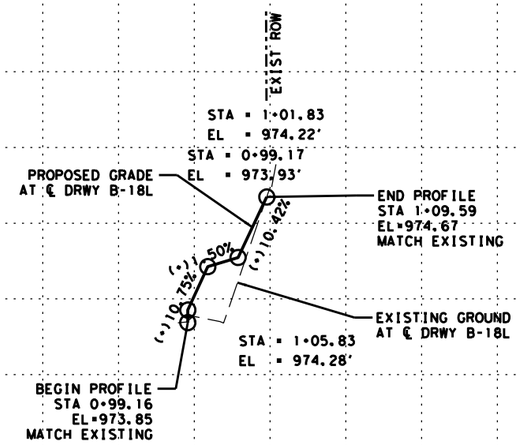
DRIVEWAY B-18L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY B-17L ELEVATION VIEW



DRIVEWAY B-18L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

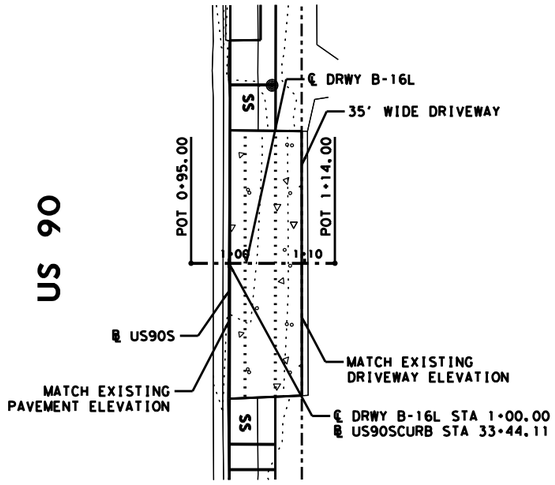
SOUTH DRIVEWAY PLAN AND PROFILE

SHEET 5 OF 11

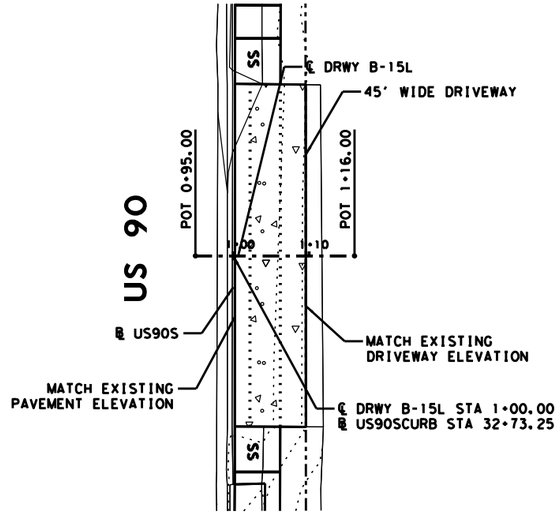
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			109
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



DRIVEWAY B-16L PLAN VIEW



DRIVEWAY B-15L PLAN VIEW

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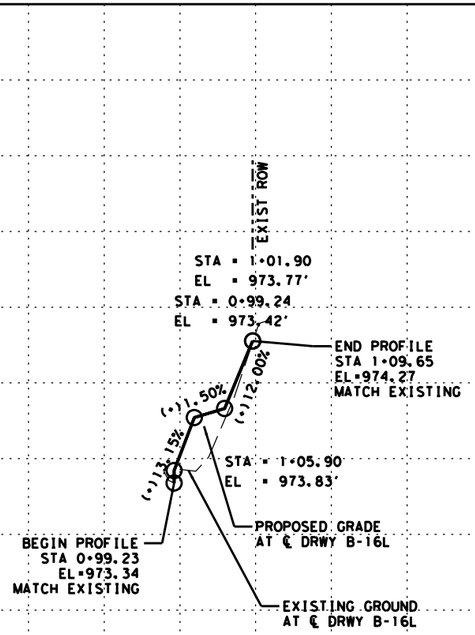
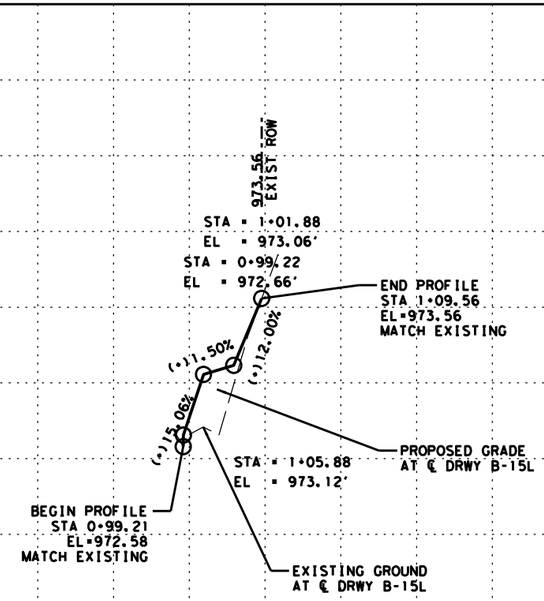
SCALE IN FEET



DRIVEWAY B-16L ELEVATION VIEW



DRIVEWAY B-15L ELEVATION VIEW

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
3/5/2021

US 90

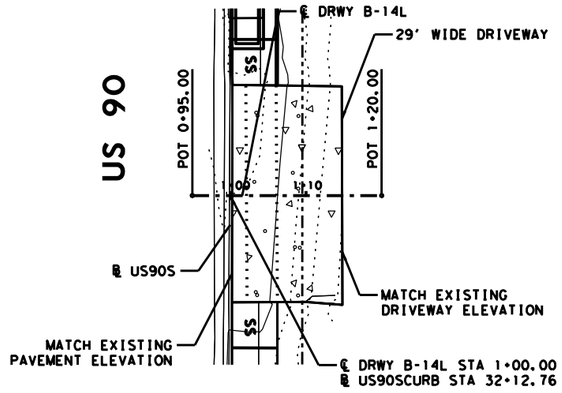
SOUTH DRIVEWAY PLAN AND PROFILE

SHEET 6 OF 11

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			110
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



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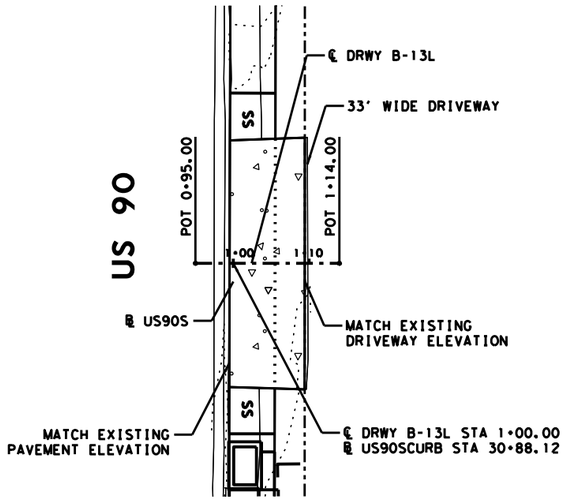
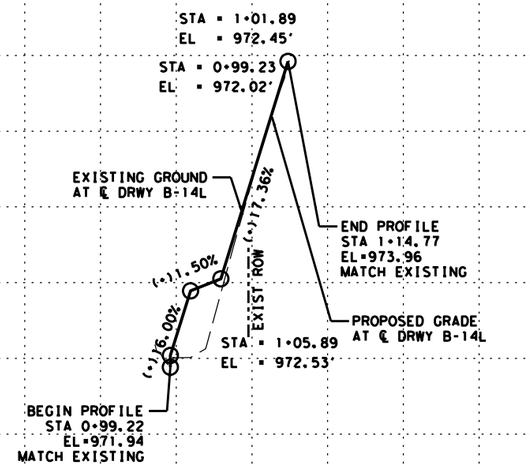


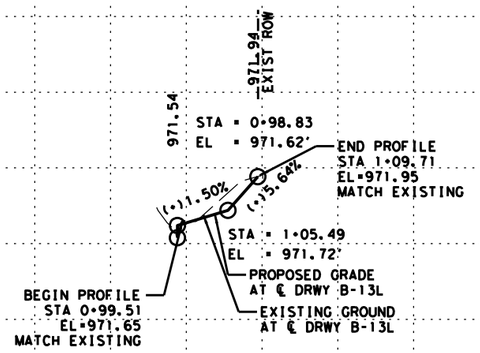
DRIVEWAY B-13L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY B-14L ELEVATION VIEW



DRIVEWAY B-13L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

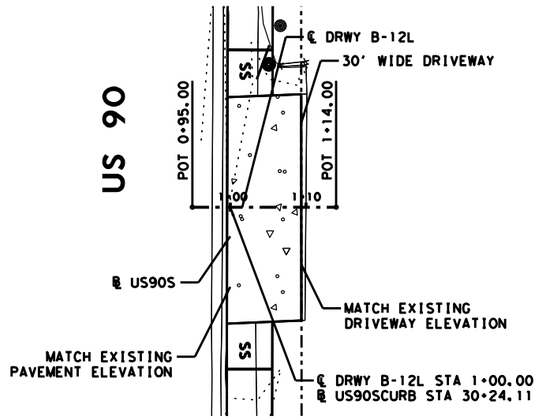
US 90

SOUTH DRIVEWAY PLAN AND PROFILE

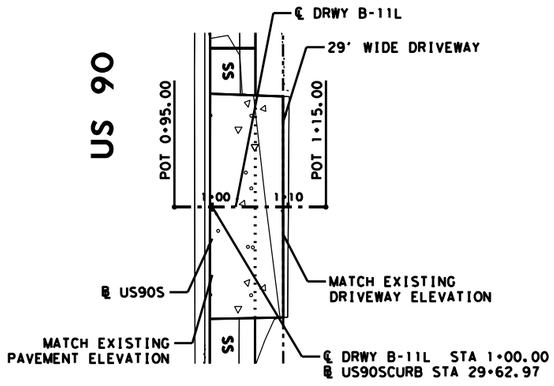
SHEET 7 OF 11

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			111
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



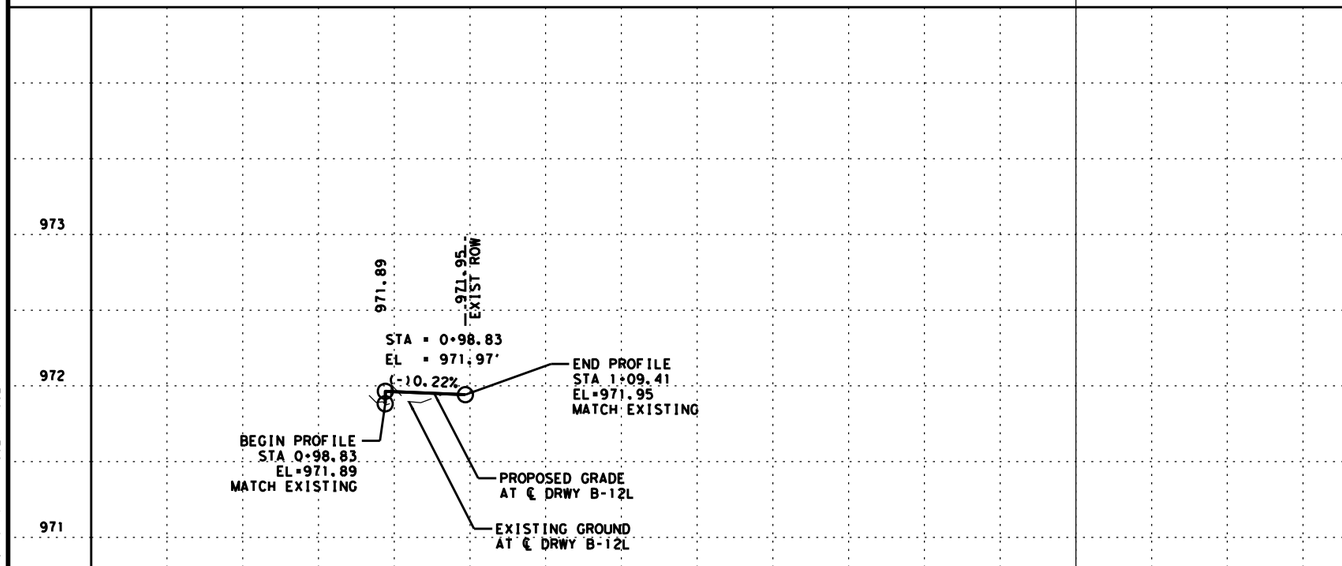
DRIVEWAY B-12L PLAN VIEW



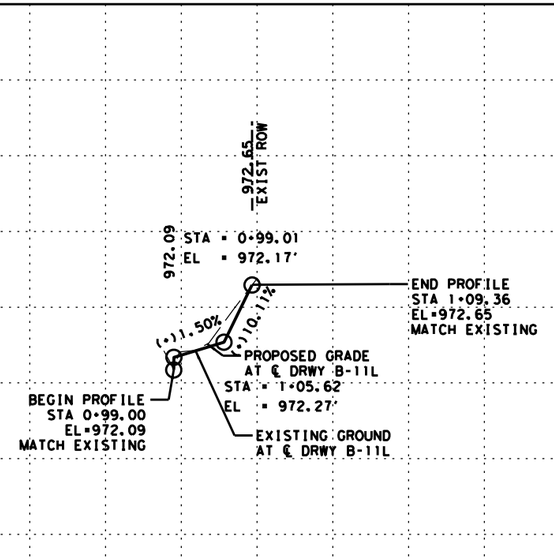
DRIVEWAY B-11L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY B-12L ELEVATION VIEW



DRIVEWAY B-11L ELEVATION VIEW

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
3/5/2021

US 90

SOUTH DRIVEWAY PLAN AND PROFILE

SHEET 8 OF 11

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			112
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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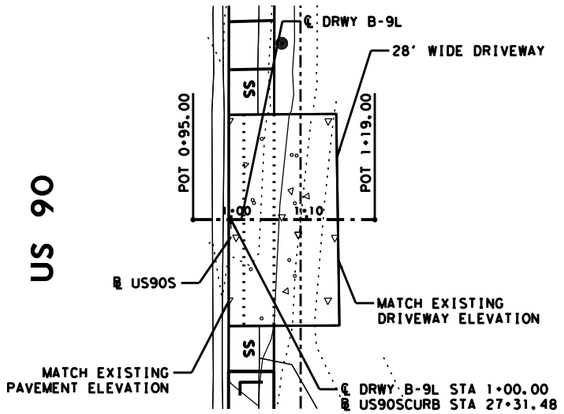
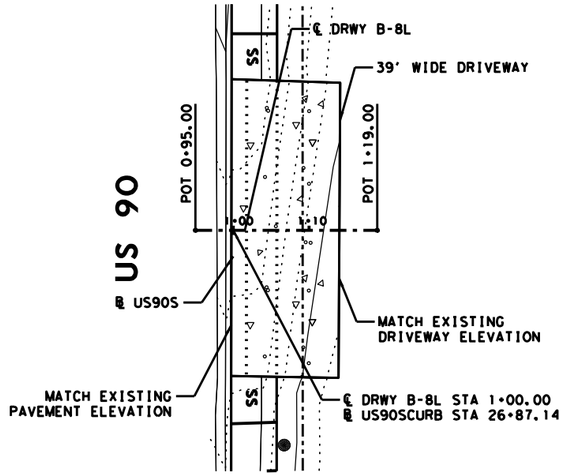


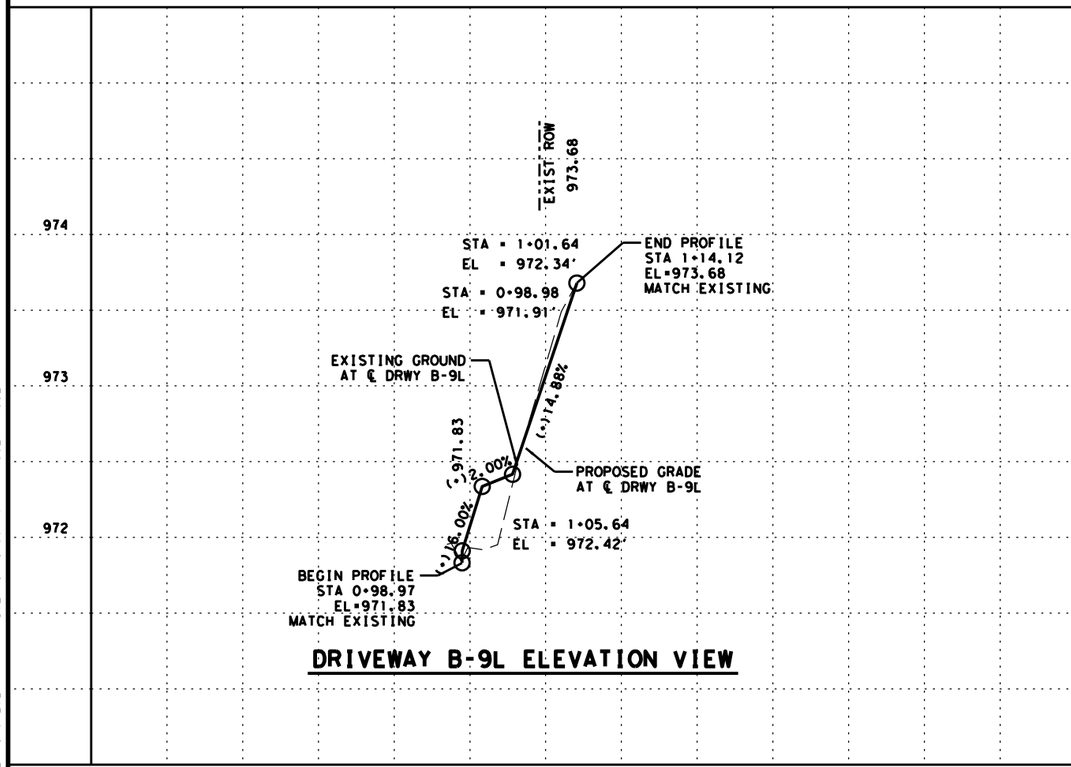
DRIVEWAY B-9L PLAN VIEW



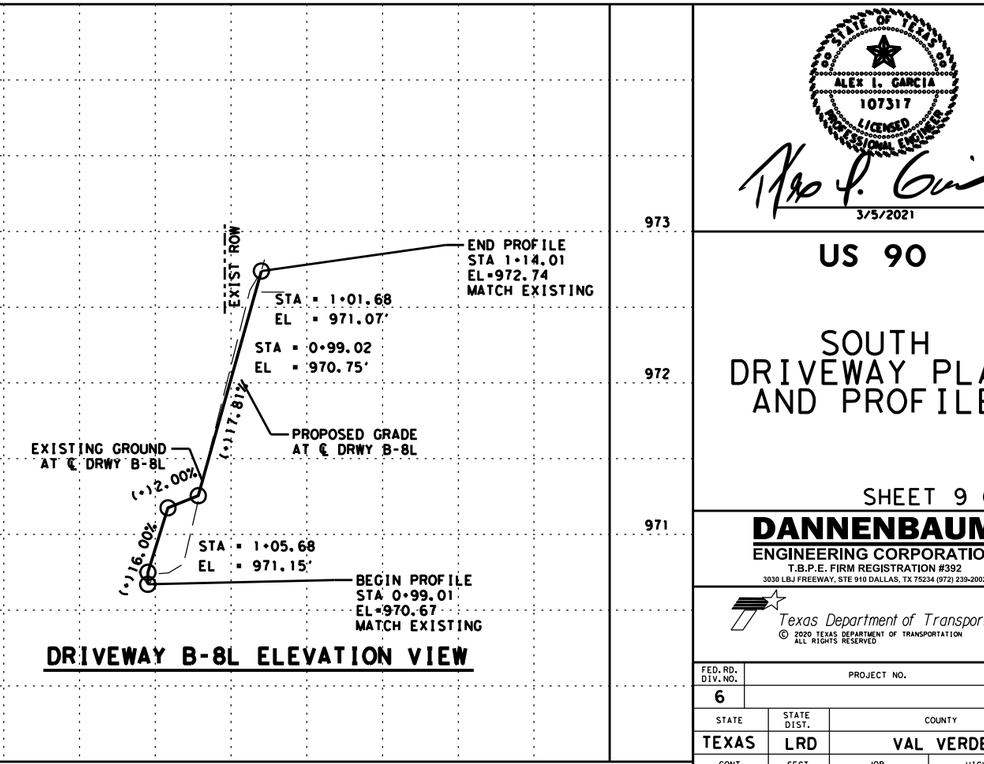
DRIVEWAY B-8L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY B-9L ELEVATION VIEW



DRIVEWAY B-8L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

SOUTH DRIVEWAY PLAN AND PROFILE

SHEET 9 OF 11

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			113
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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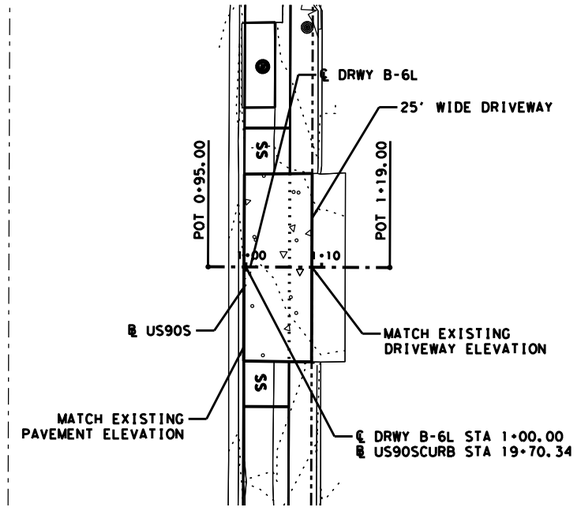
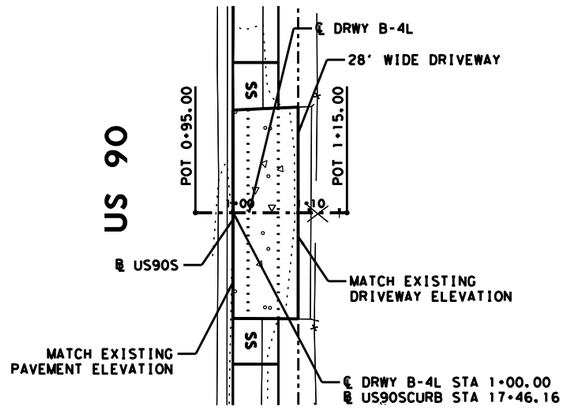
DATE: 3/5/2021 TIME: 6:16:58 PM USER: $USER$

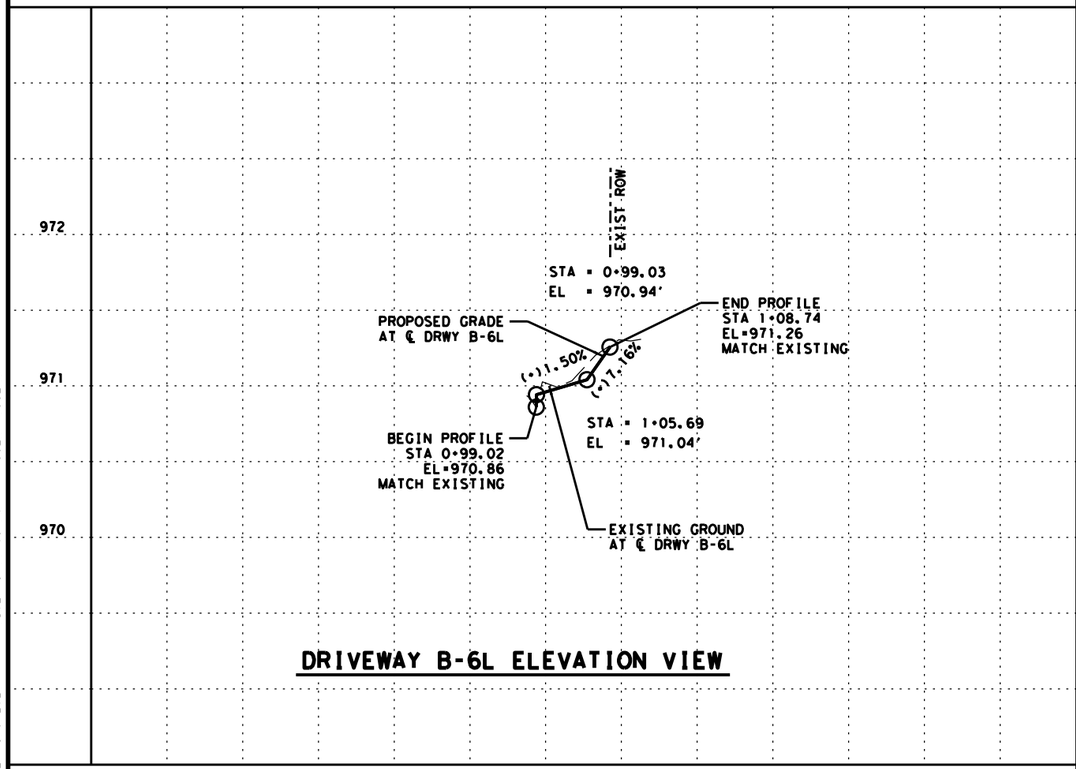


DRIVEWAY B-6L PLAN VIEW

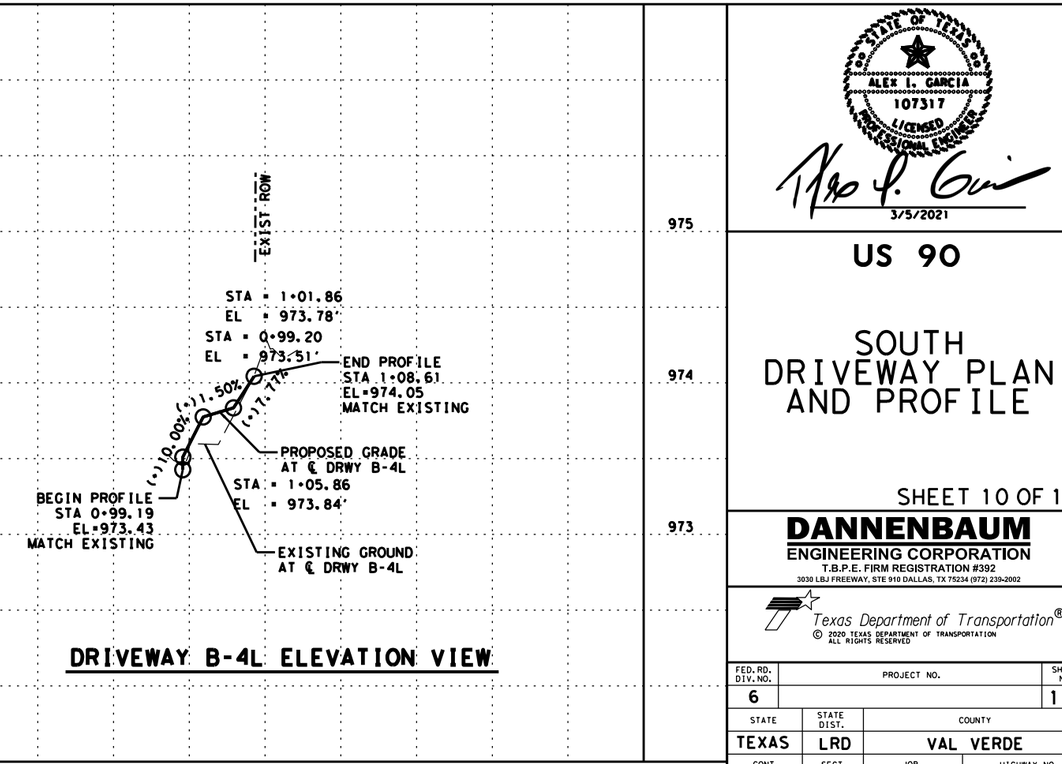


DRIVEWAY B-4L PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY B-6L ELEVATION VIEW



DRIVEWAY B-4L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

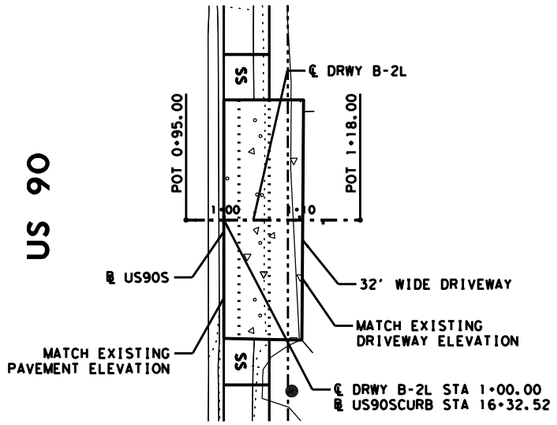
SOUTH DRIVEWAY PLAN AND PROFILE

SHEET 10 OF 11

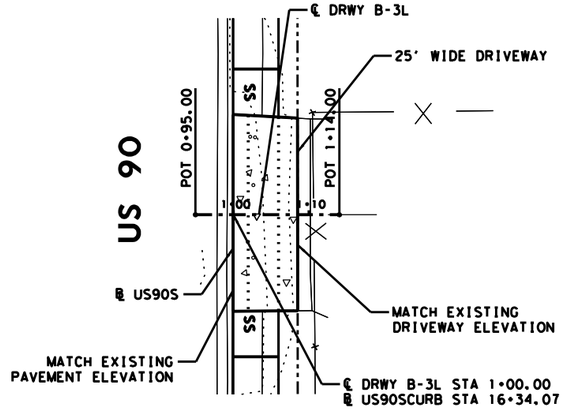
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			114
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



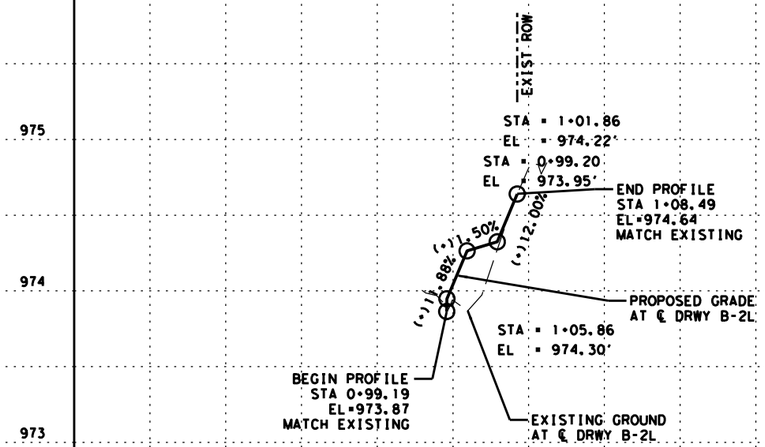
DRIVEWAY B-2L PLAN VIEW



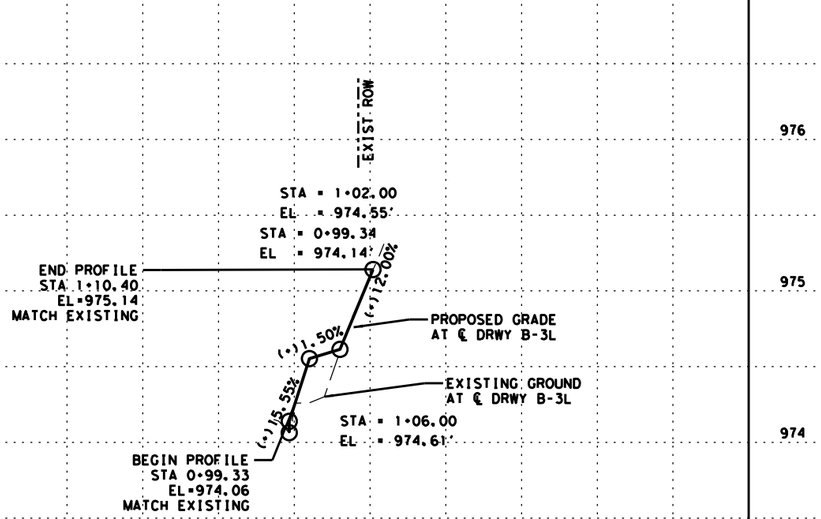
DRIVEWAY B-3L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY B-2L ELEVATION VIEW



DRIVEWAY B-3L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

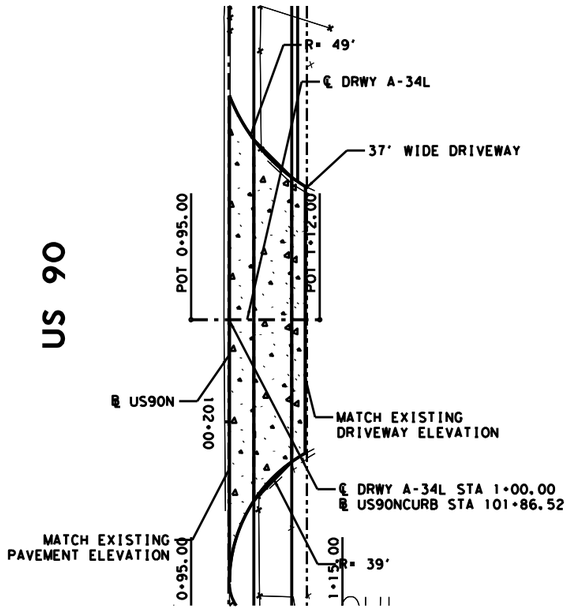
SOUTH DRIVEWAY PLAN AND PROFILE

SHEET 11 OF 11

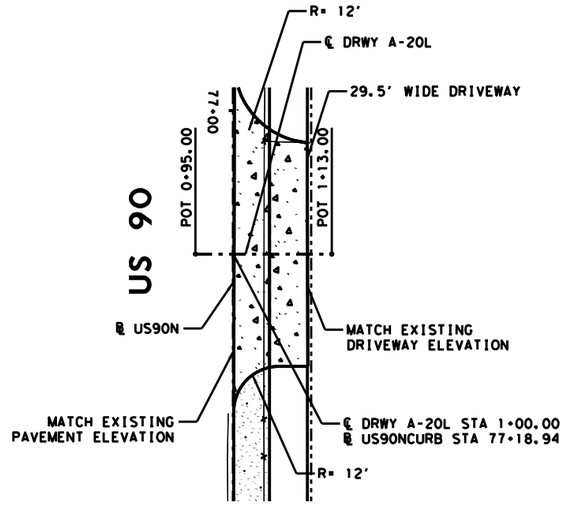
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			115
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



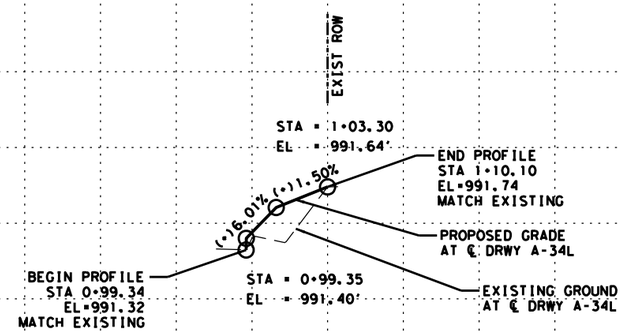
DRIVEWAY A-34L PLAN VIEW



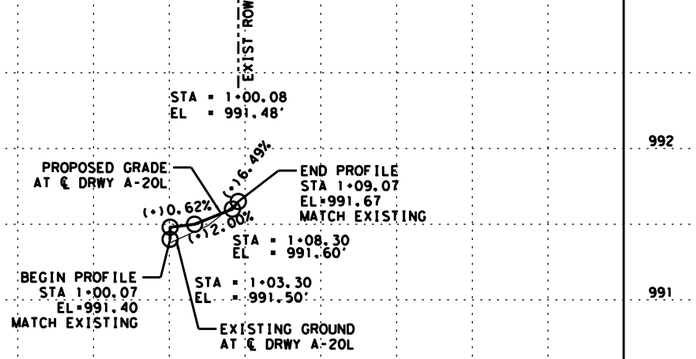
DRIVEWAY A-20L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY A-34L ELEVATION VIEW



DRIVEWAY A-20L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

US 90

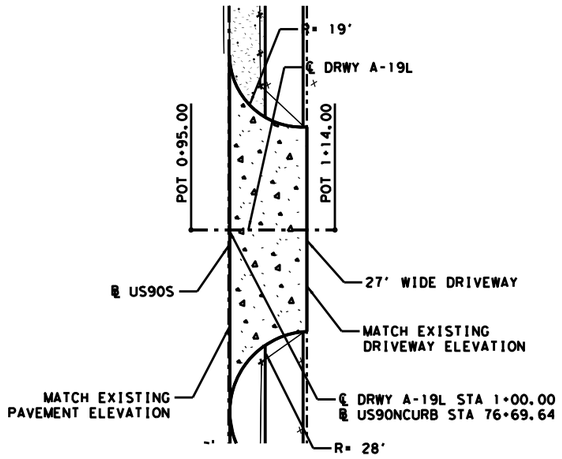
NORTH DRIVEWAY PLAN AND PROFILE

SHEET 1 OF 7

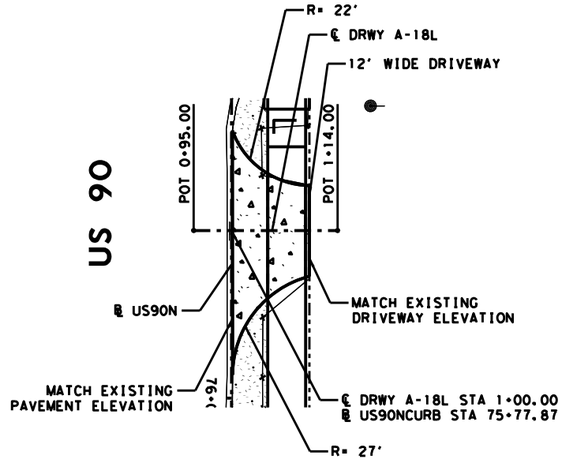
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		116

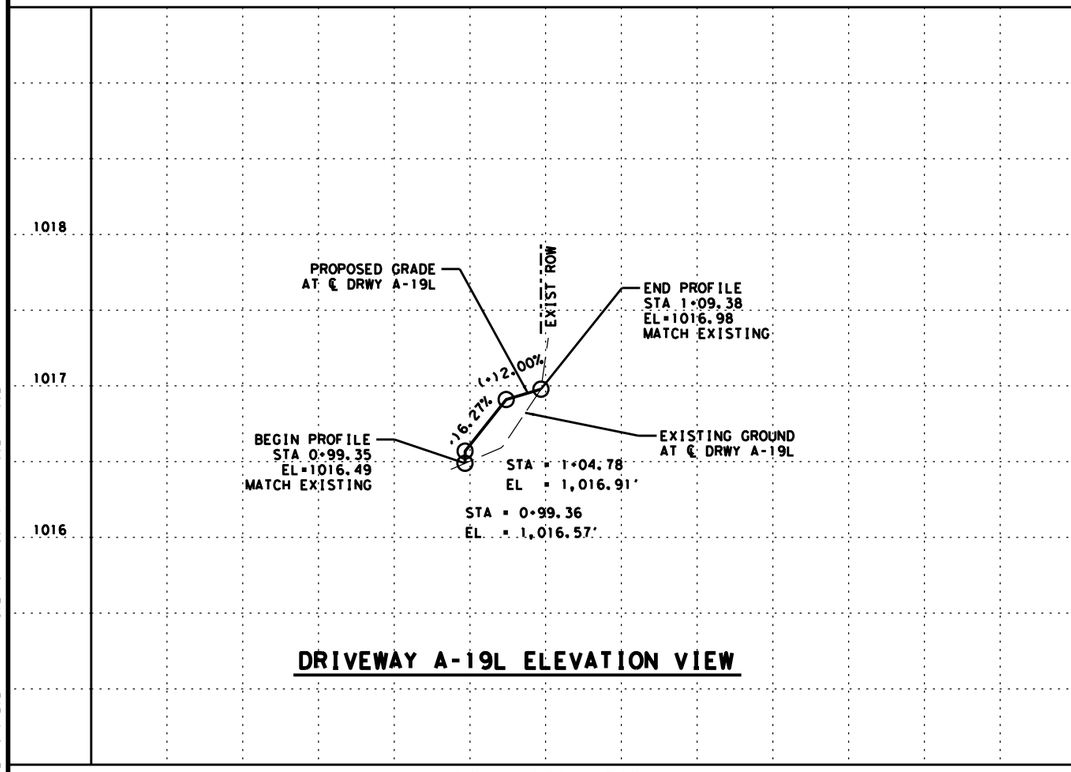
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



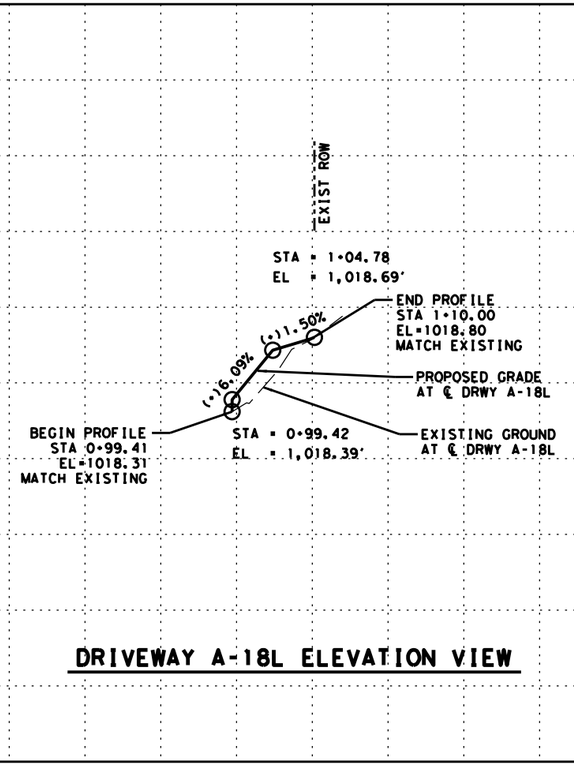
DRIVEWAY A-19L PLAN VIEW



DRIVEWAY A-18L PLAN VIEW



DRIVEWAY A-19L ELEVATION VIEW



DRIVEWAY A-18L ELEVATION VIEW

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

US 90

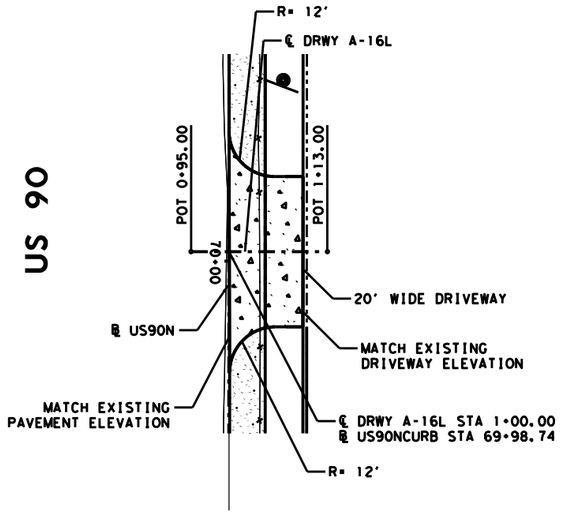
NORTH DRIVEWAY PLAN AND PROFILE

SHEET 2 OF 7

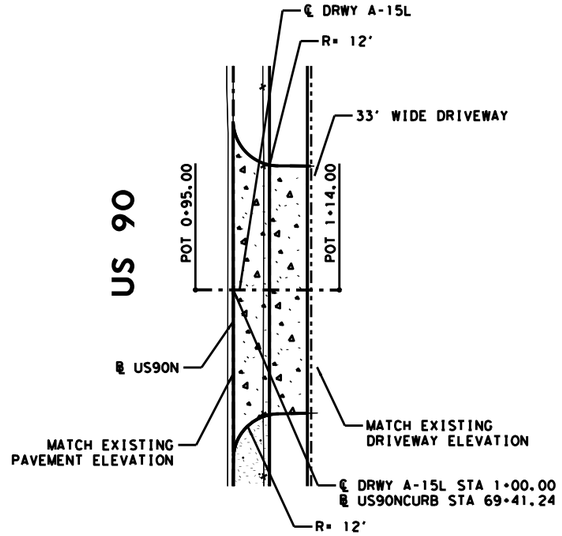
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			117
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



DRIVEWAY A-16L PLAN VIEW



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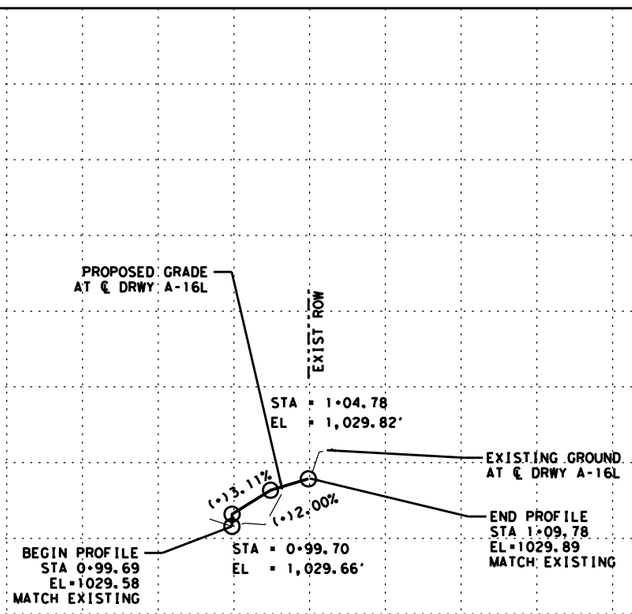
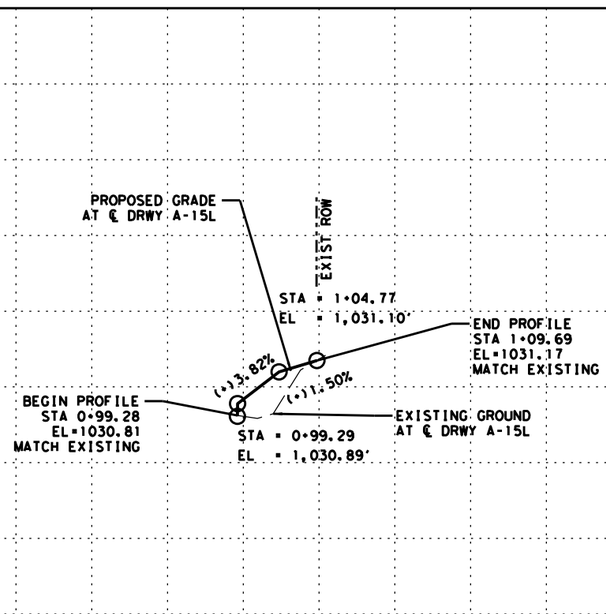


DRIVEWAY A-16L ELEVATION VIEW



DRIVEWAY A-15L ELEVATION VIEW

0 10' 20'
SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
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PROFESSIONAL ENGINEER
3/5/2021

US 90

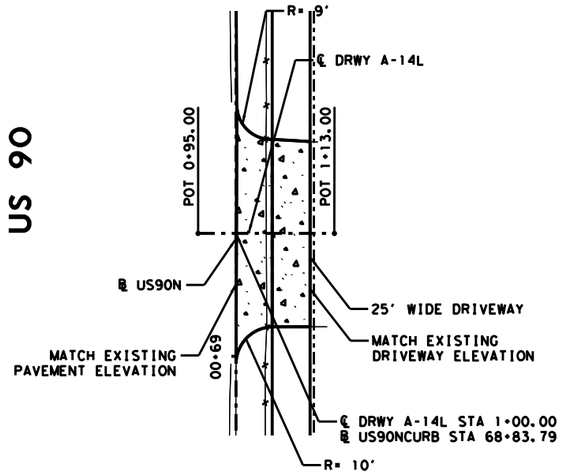
NORTH DRIVEWAY PLAN AND PROFILE

SHEET 3 OF 7

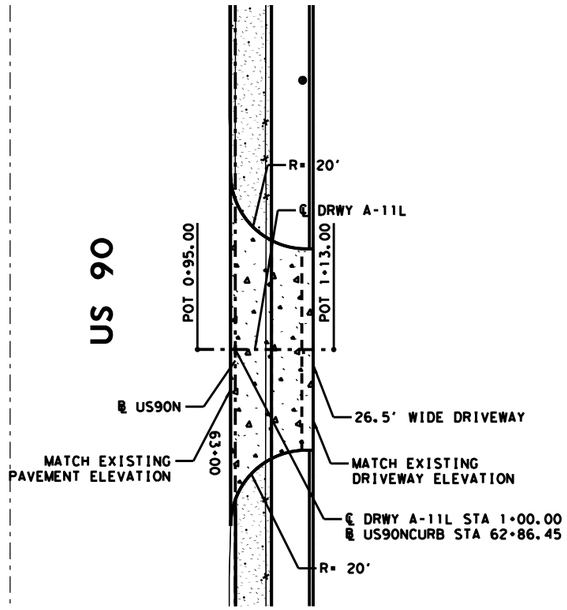
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			118
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

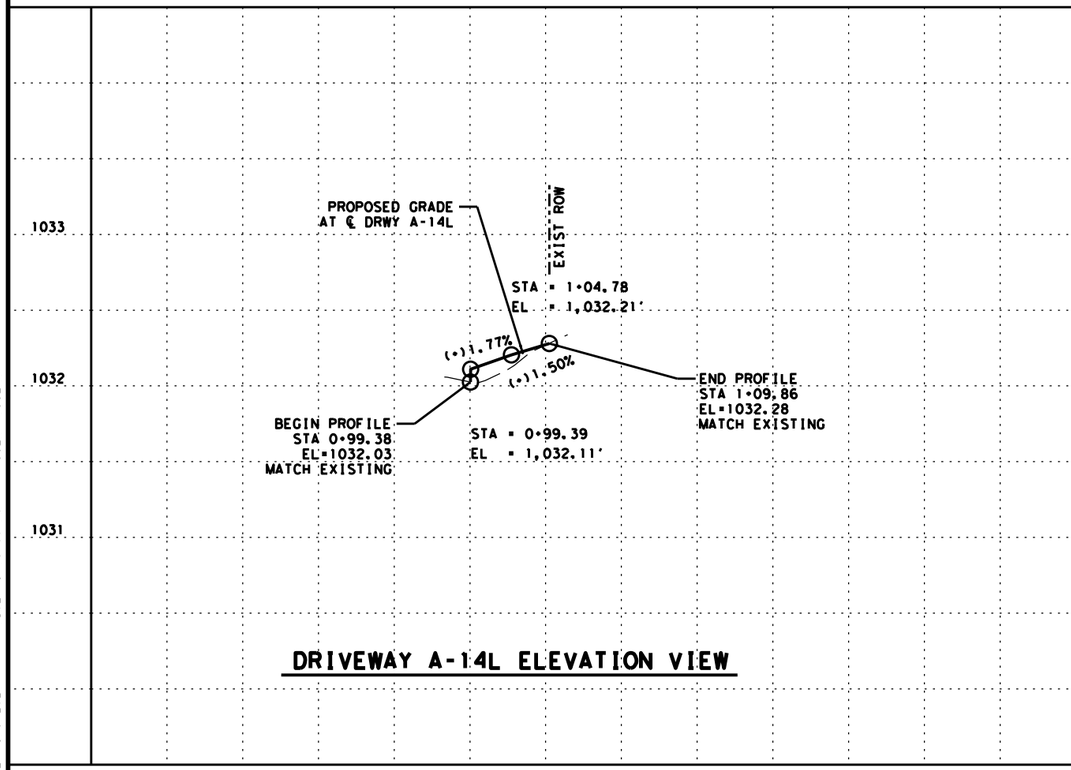


DRIVEWAY A-14L PLAN VIEW

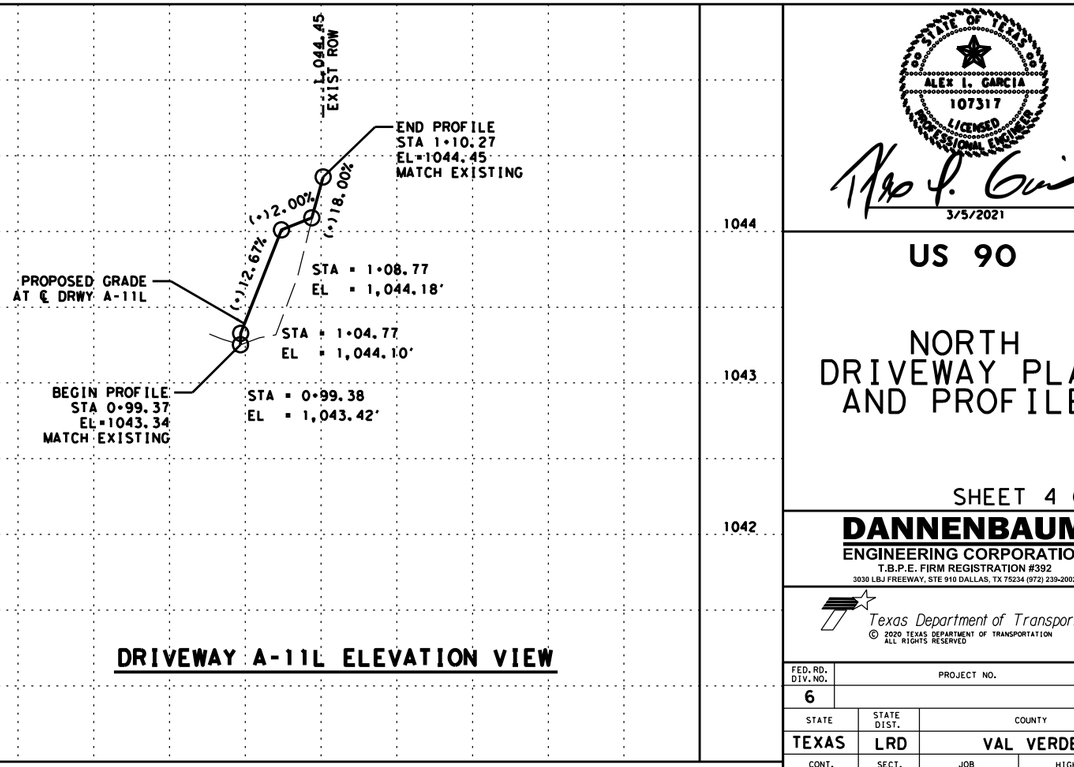


DRIVEWAY A-11L PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY A-14L ELEVATION VIEW



DRIVEWAY A-11L ELEVATION VIEW

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

US 90

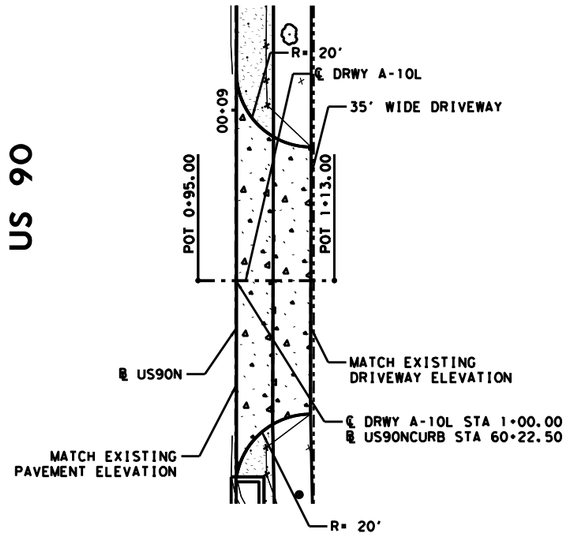
NORTH DRIVEWAY PLAN AND PROFILE

SHEET 4 OF 7

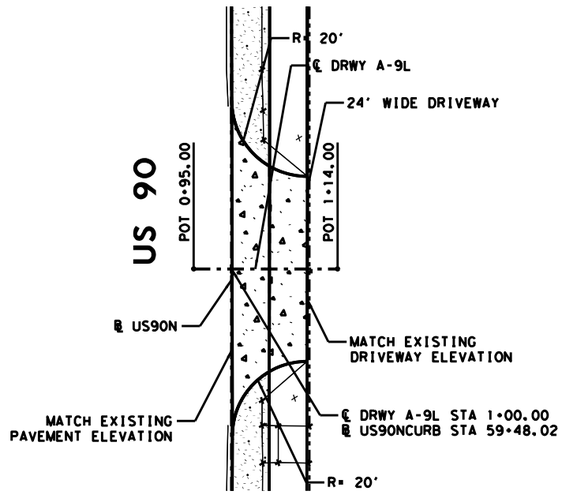
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			119
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



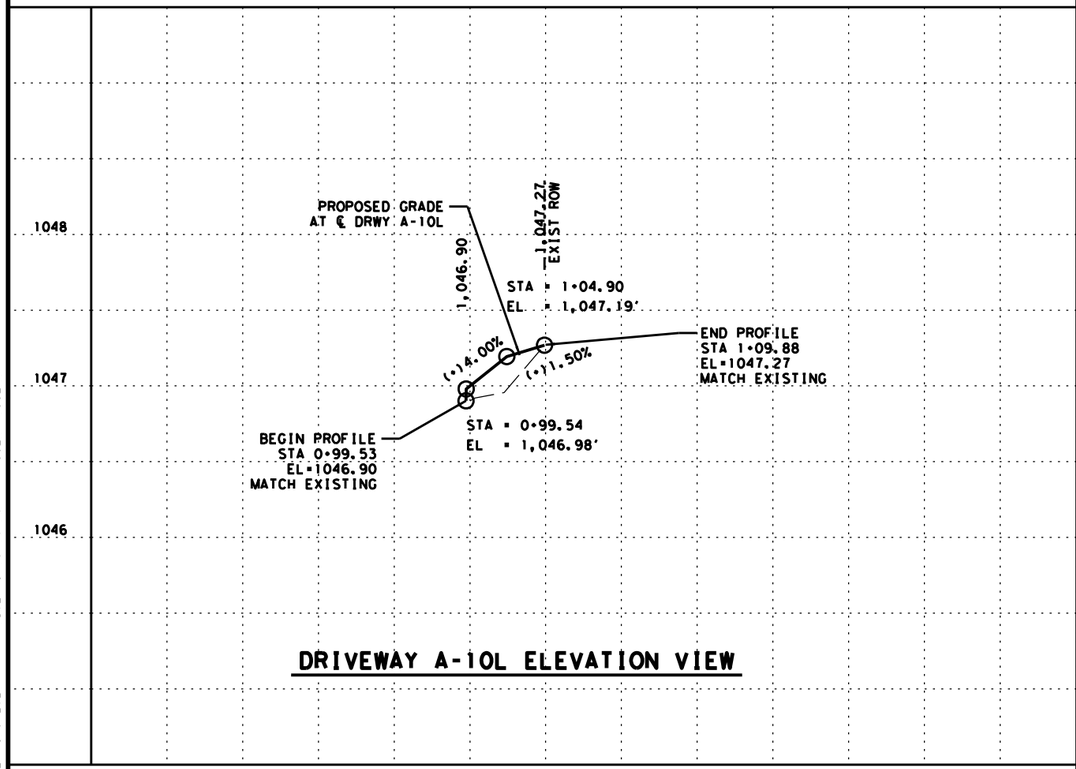
DRIVEWAY A-10L PLAN VIEW



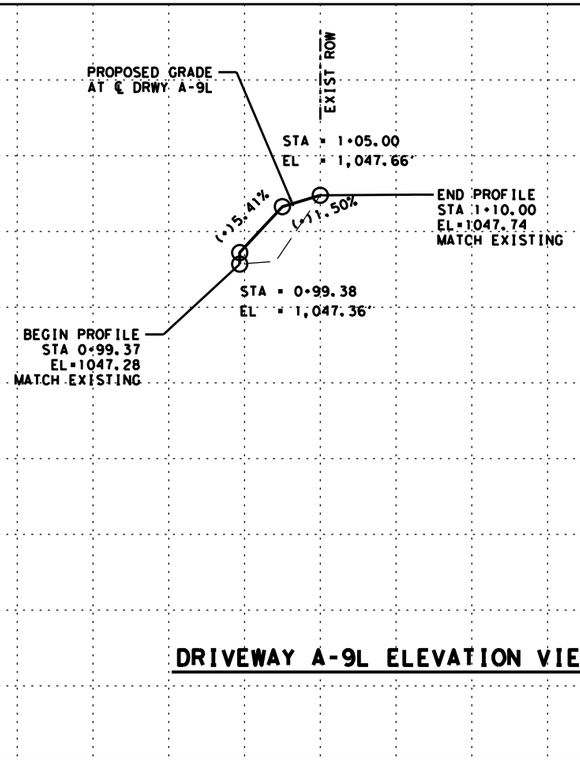
DRIVEWAY A-9L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY A-10L ELEVATION VIEW



DRIVEWAY A-9L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

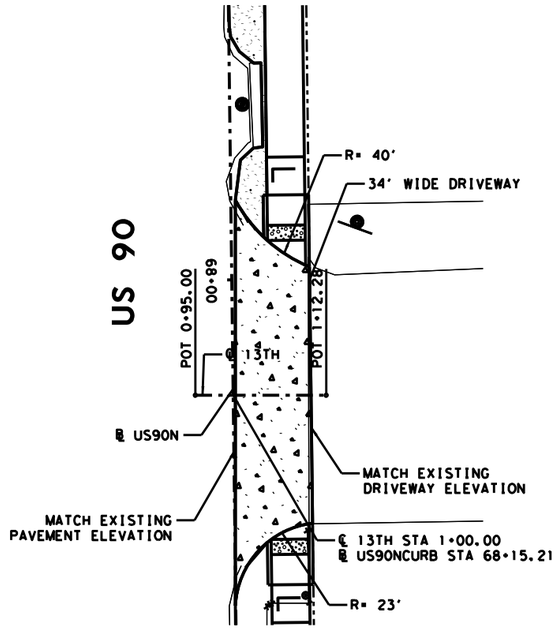
NORTH DRIVEWAY PLAN AND PROFILE

SHEET 5 OF 7

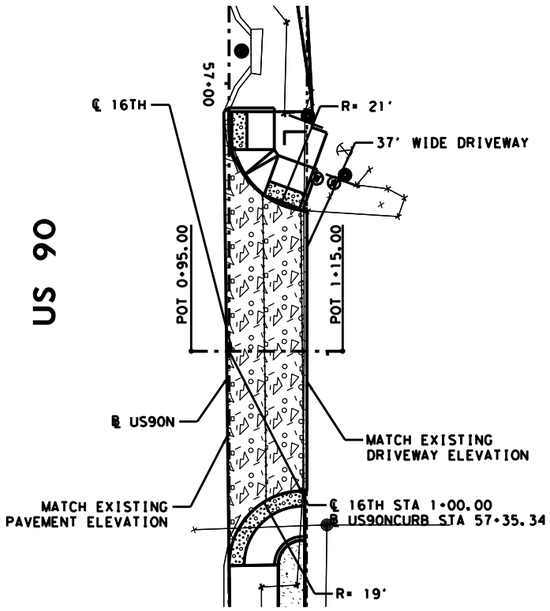
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

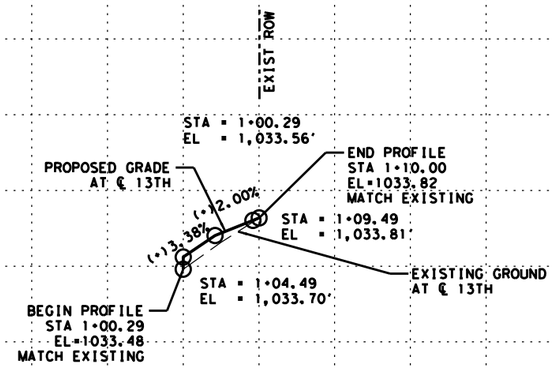
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			120
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



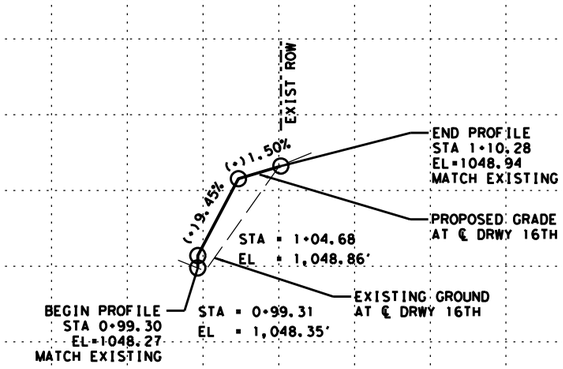
E 13TH ST PLAN VIEW



E 16TH ST PLAN VIEW



E 13TH ST ELEVATION VIEW



E 16TH ST ELEVATION VIEW

1+00 1+10 1+20

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

US 90

NORTH DRIVEWAY PLAN AND PROFILE

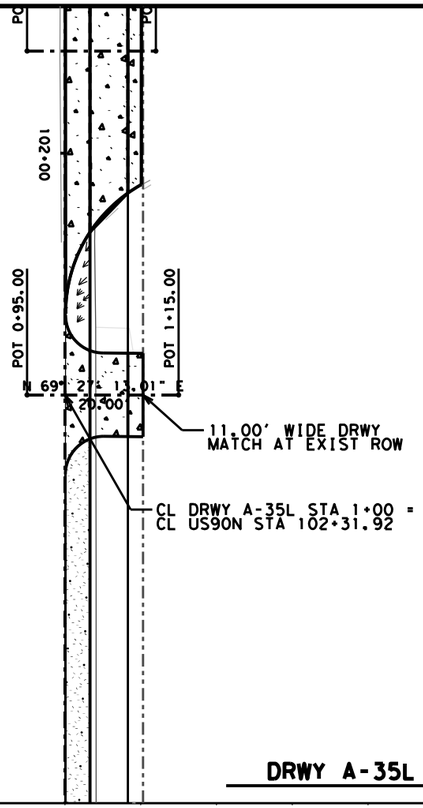
SHEET 6 OF 7

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

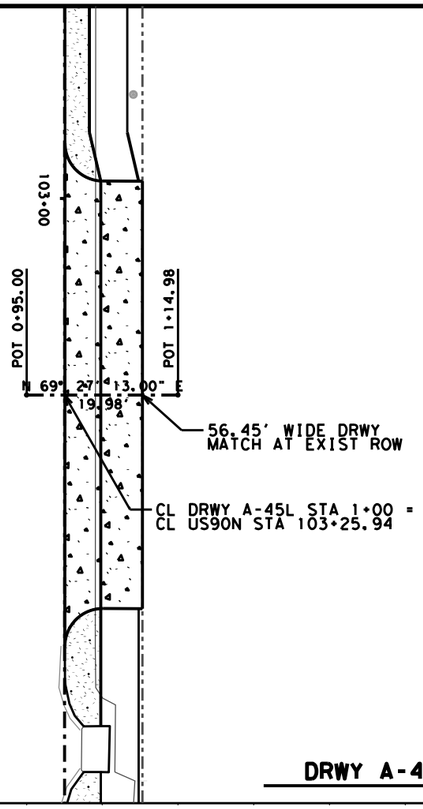
Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			121
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

US 90

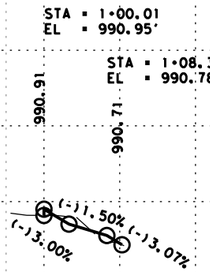


DRWY A-35L PLAN VIEW

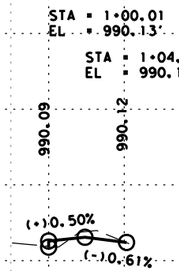


DRWY A-45L PLAN VIEW

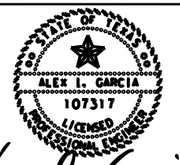
0 10' 20'
SCALE IN FEET



DRWY A-35L ELEVATION VIEW



DRWY A-45L ELEVATION VIEW



3/25/2021

US 90

NORTH DRIVEWAY PLAN AND PROFILE

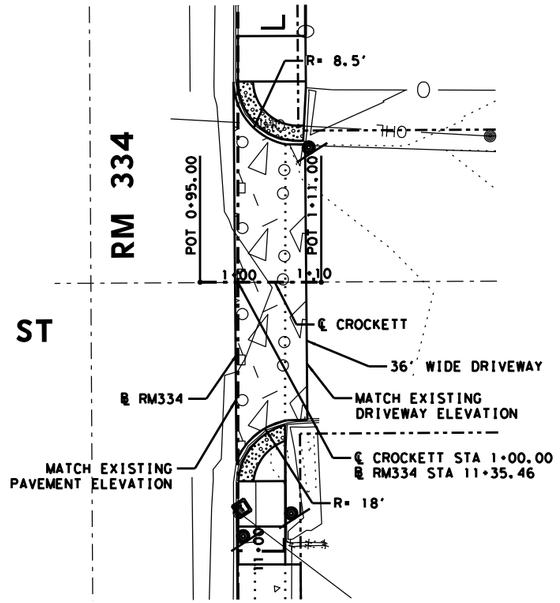
SHEET 7 OF 7

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

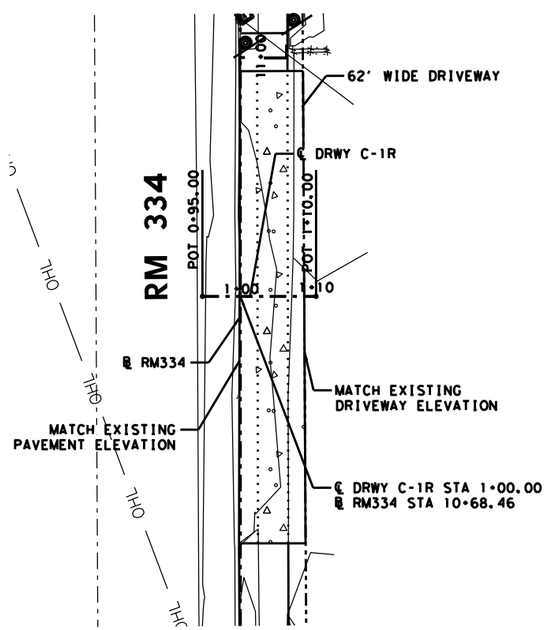
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			122
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5ii3-03\Design\Sidewalks\zzUS90_SDWK PP_18.dgn
DATE: 3/25/2021 TIME: 5:05:42 PM USER: $USER$



CROCKETT ST

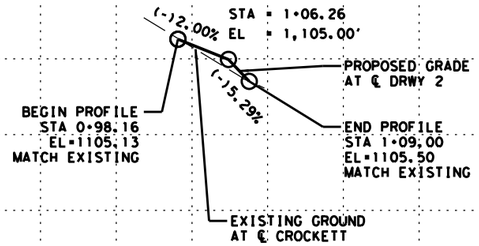
DRIVEWAY CROCKETT ST PLAN VIEW



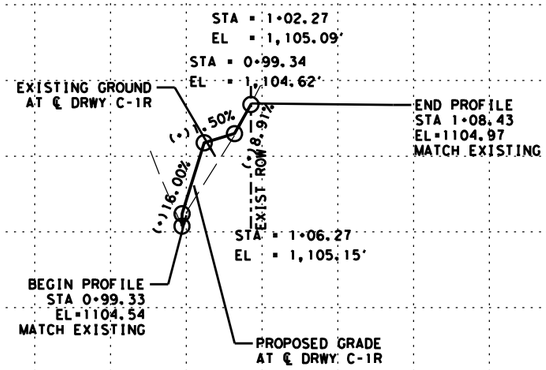
DRIVEWAY C-1R PLAN VIEW

0 10' 20'

SCALE IN FEET



CROCKETT ST ELEVATION VIEW



DRIVEWAY C-1R ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

DRIVEWAY PLAN AND PROFILE

SHEET 1 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			123
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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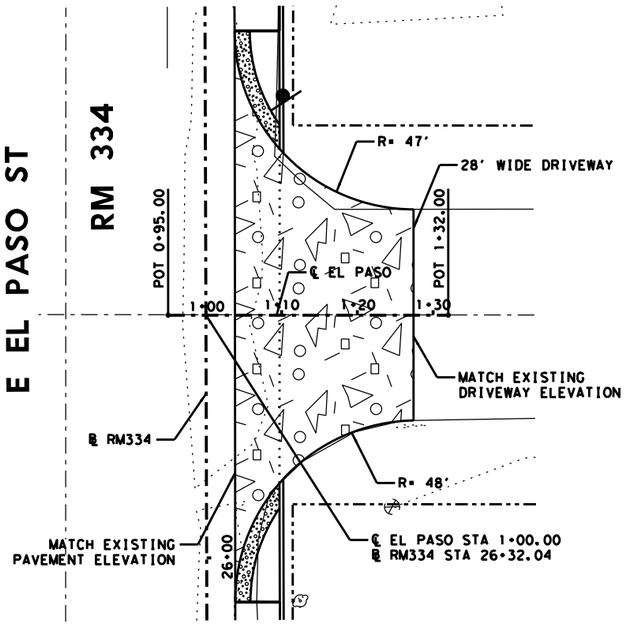
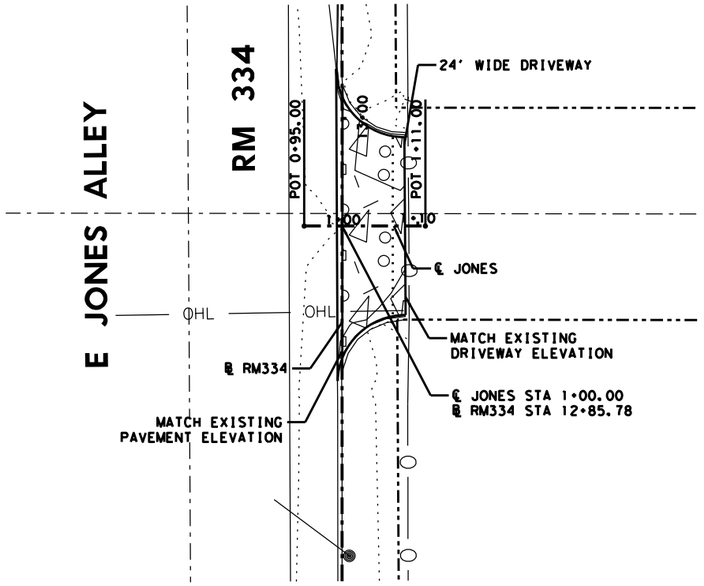
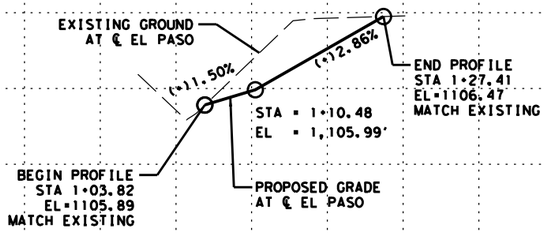


DRIVEWAY E EL PASO ST PLAN VIEW

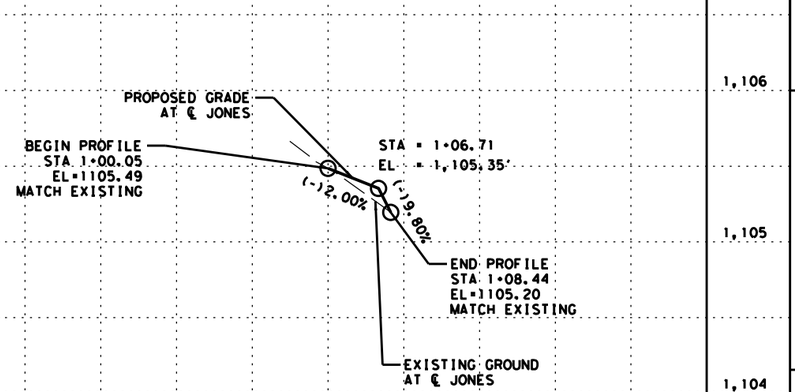


DRIVEWAY E JONES ALLEY PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY E EL PASO ST ELEVATION VIEW



DRIVEWAY E JONES ALLEY ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

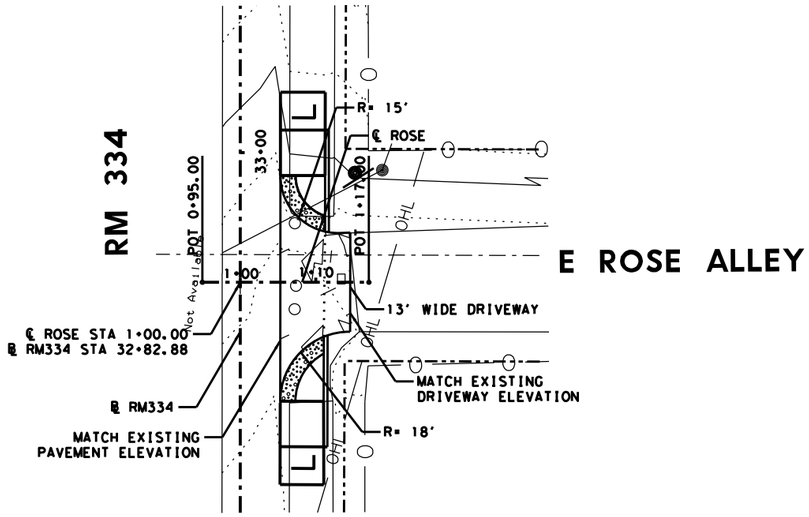
DRIVEWAY PLAN AND PROFILE

SHEET 2 OF 13

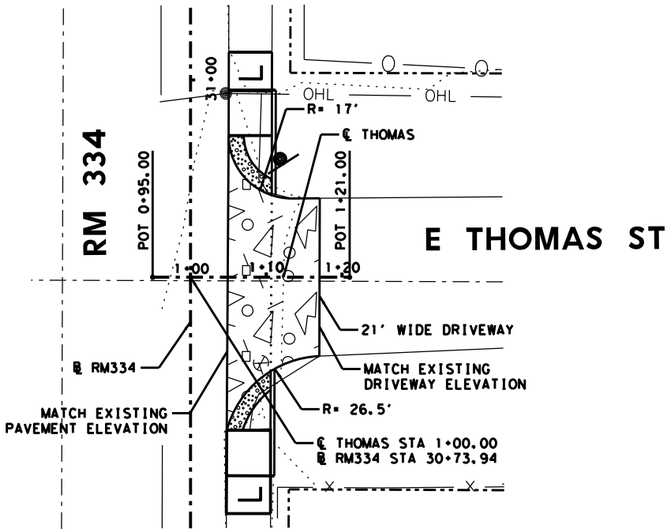
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			124
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



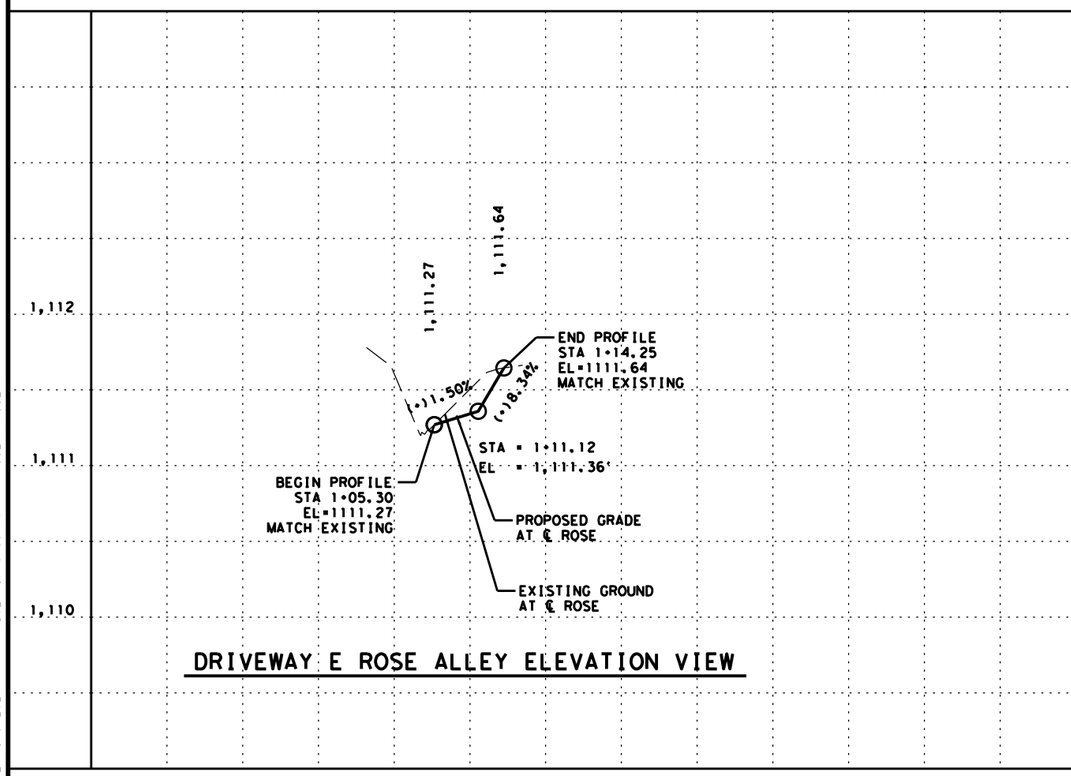
DRIVEWAY E ROSE ALLEY PLAN VIEW



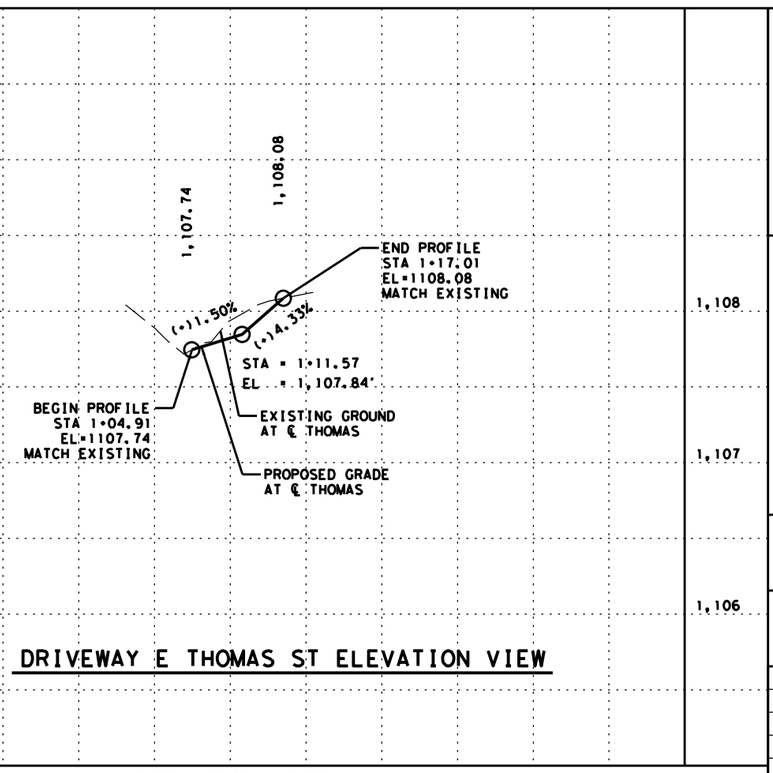
DRIVEWAY E THOMAS ST PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY E ROSE ALLEY ELEVATION VIEW



DRIVEWAY E THOMAS ST ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

RM 334

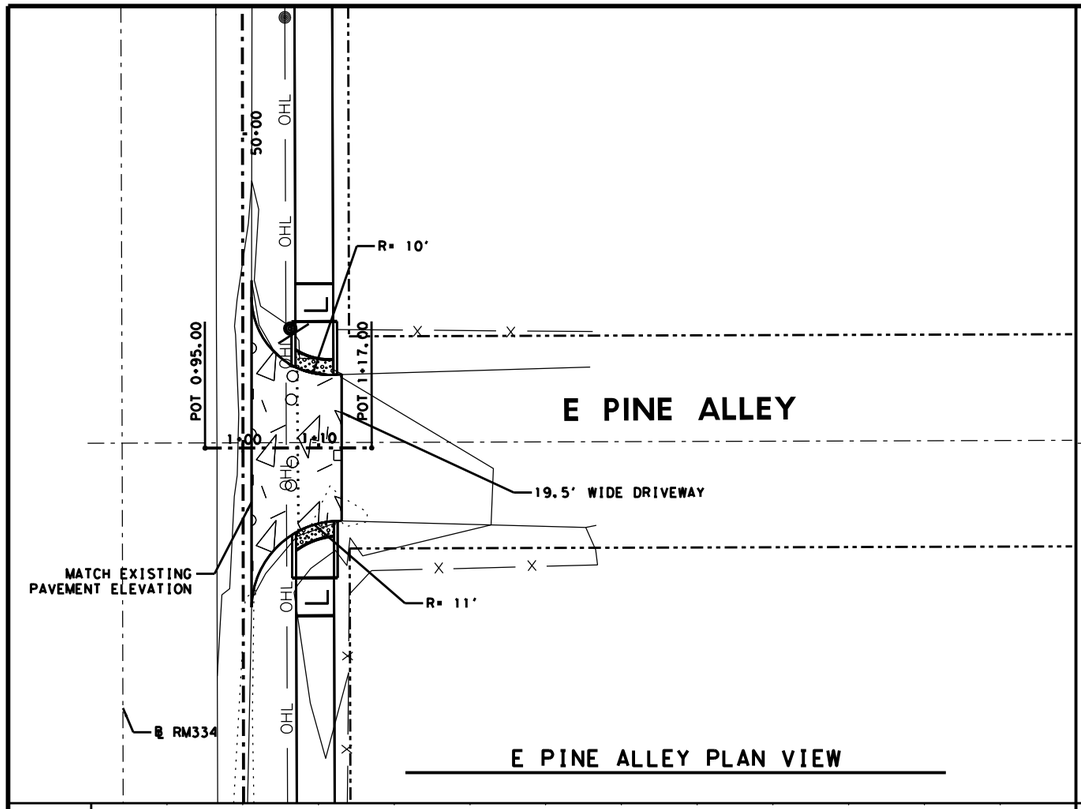
DRIVEWAY PLAN AND PROFILE

SHEET 3 OF 13

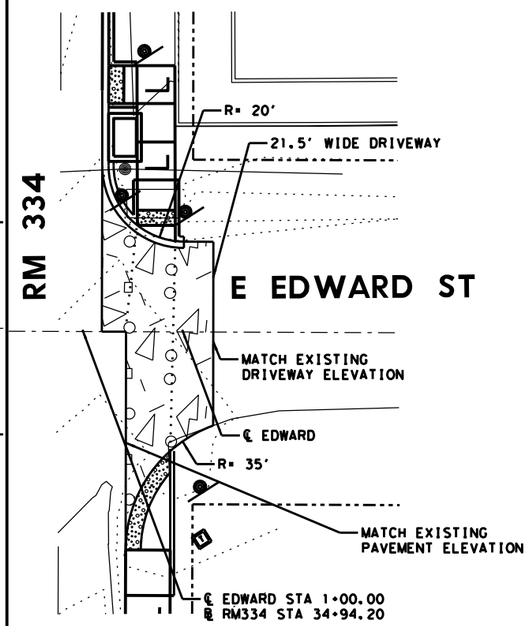
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

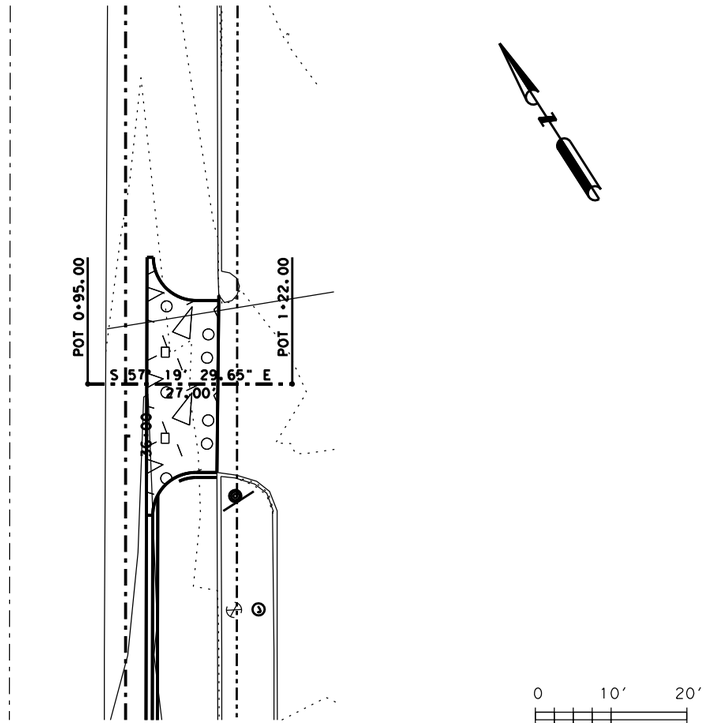
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			125
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



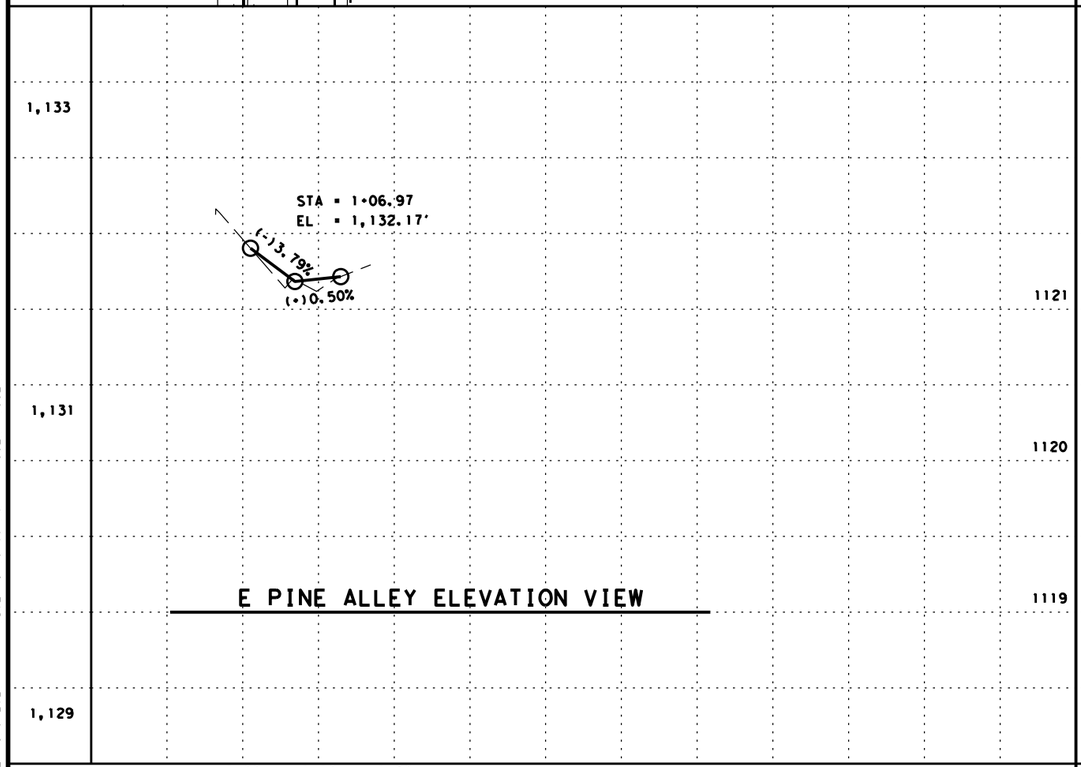
E PINE ALLEY PLAN VIEW



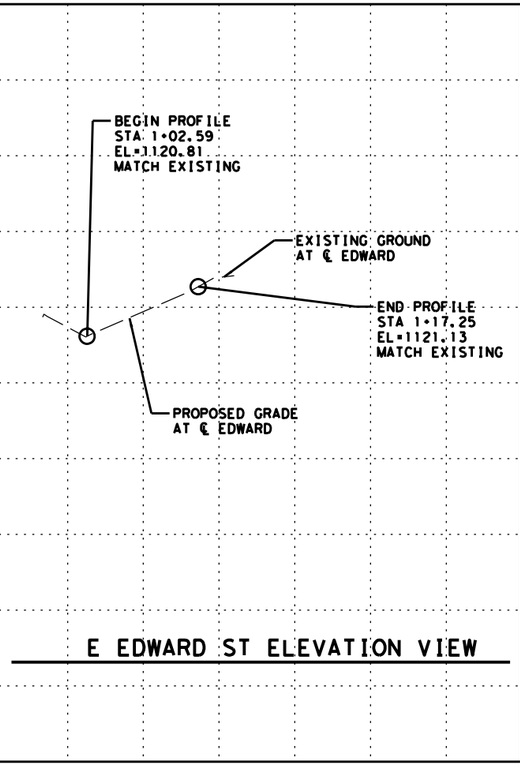
E EDWARD ST PLAN VIEW



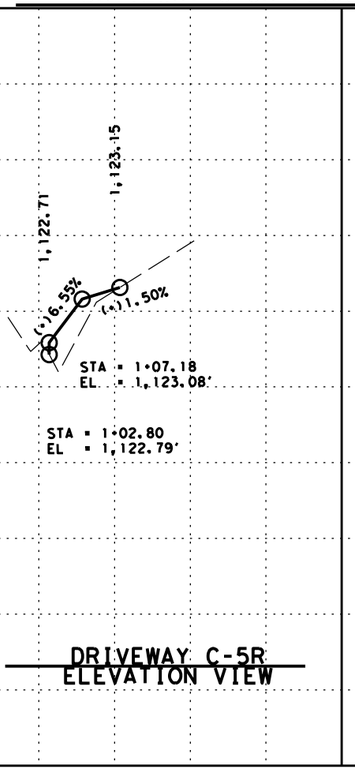
DRIVEWAY C-5R PLAN VIEW



E PINE ALLEY ELEVATION VIEW



E EDWARD ST ELEVATION VIEW



DRIVEWAY C-5R ELEVATION VIEW

ALEX L. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

3/5/2021

RM 334

DRIVEWAY PLAN AND PROFILE

SHEET 4 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			126
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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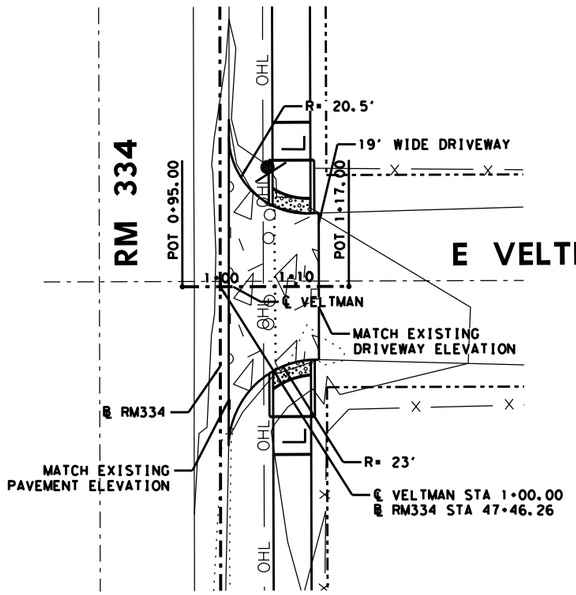
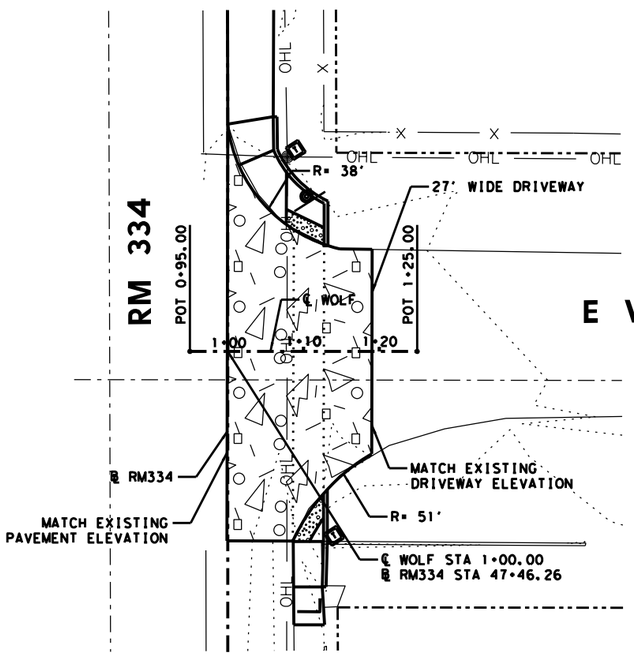


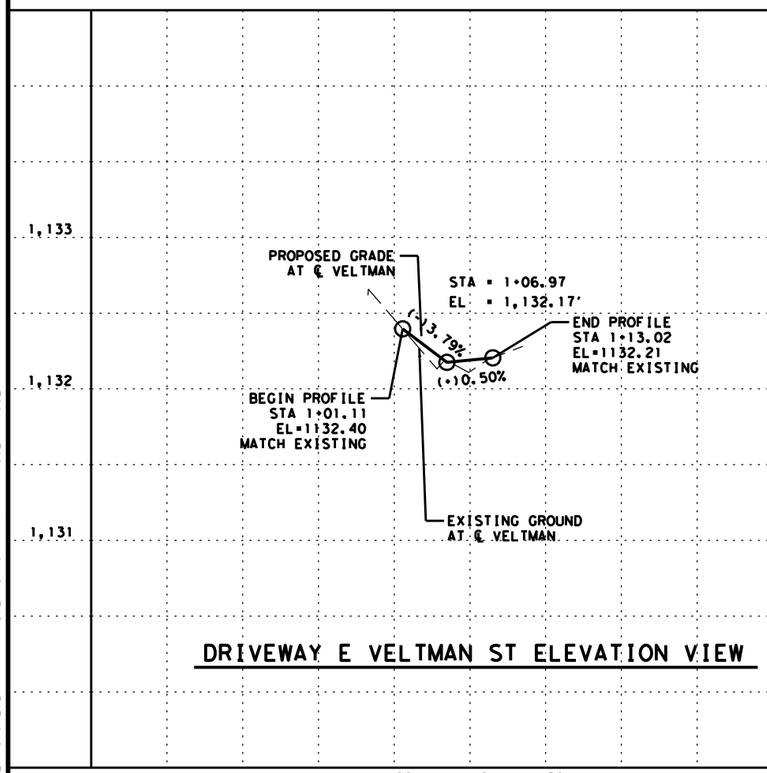
DRIVEWAY E VELTMAN ST PLAN VIEW



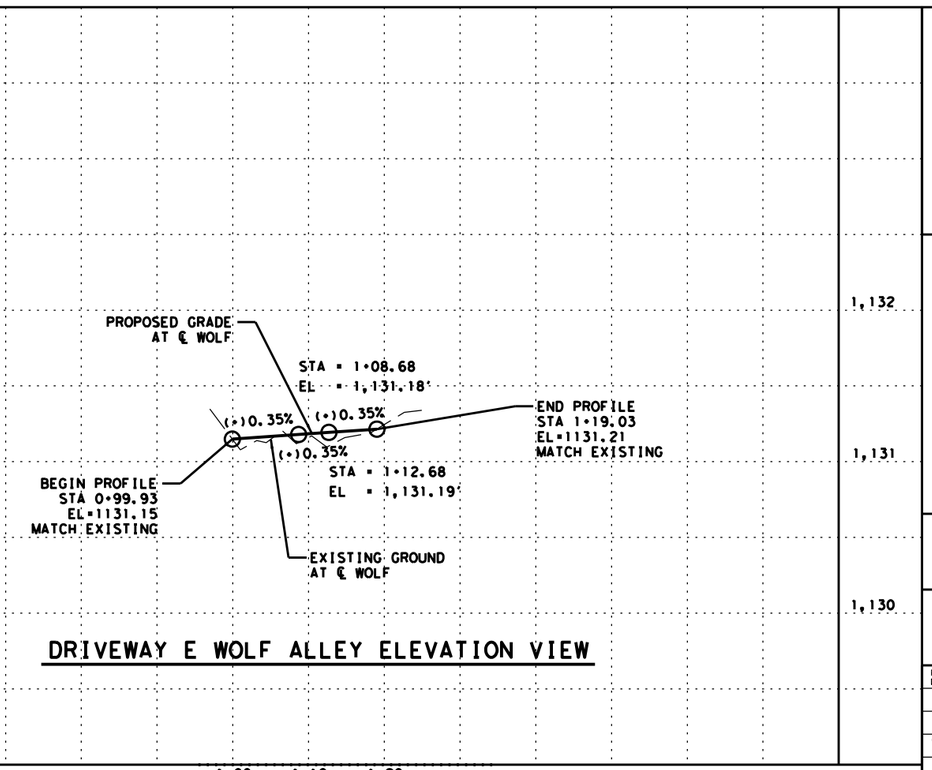
DRIVEWAY E WOLF ALLEY PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY E VELTMAN ST ELEVATION VIEW



DRIVEWAY E WOLF ALLEY ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

DRIVEWAY PLAN AND PROFILE

SHEET 5 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		127

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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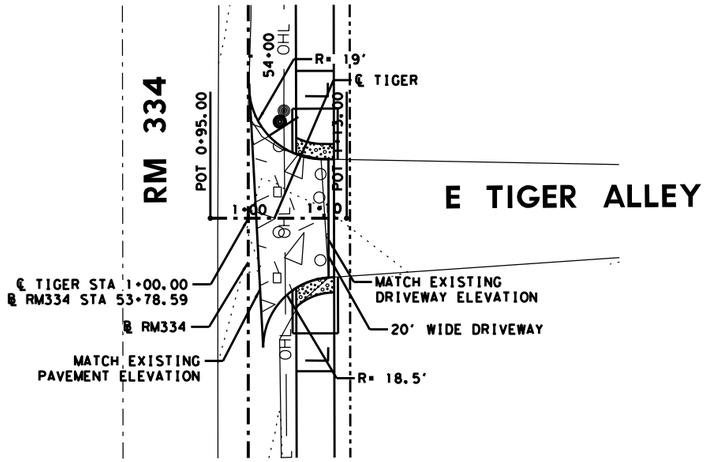
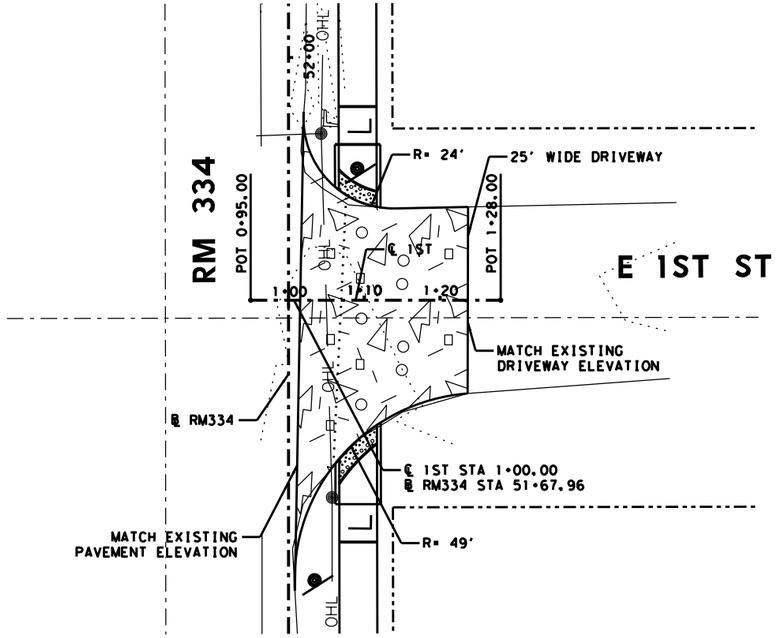
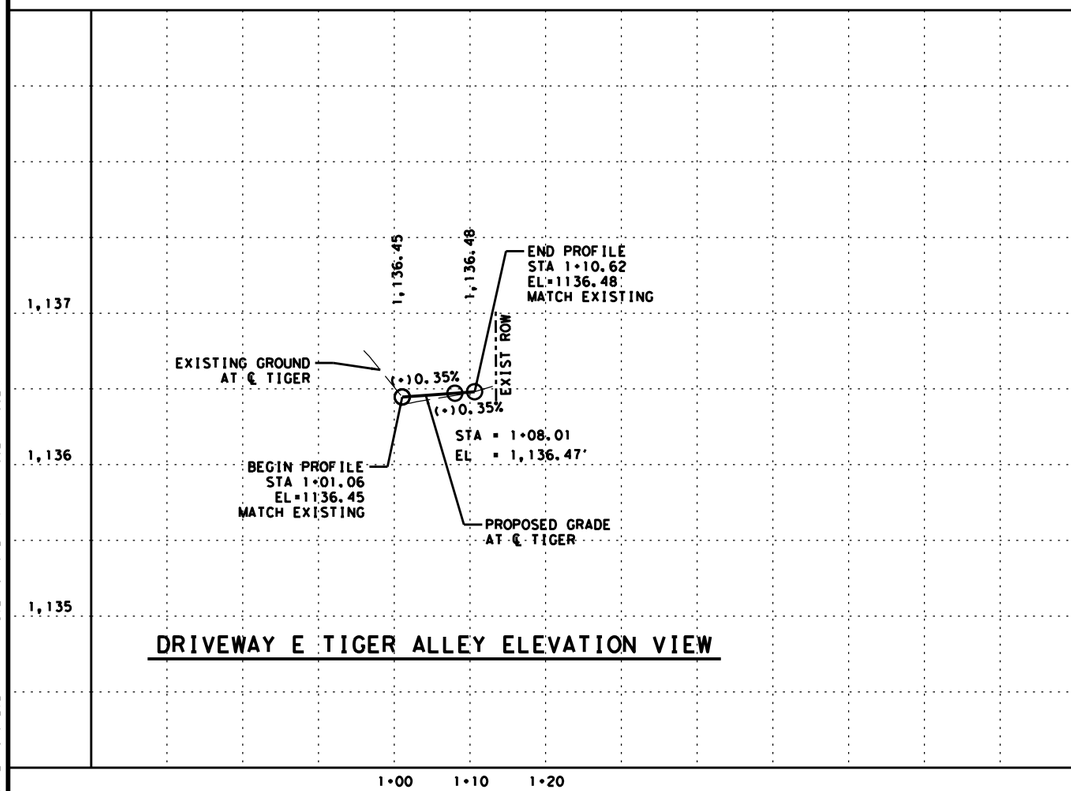


DRIVEWAY E TIGER ALLEY PLAN VIEW

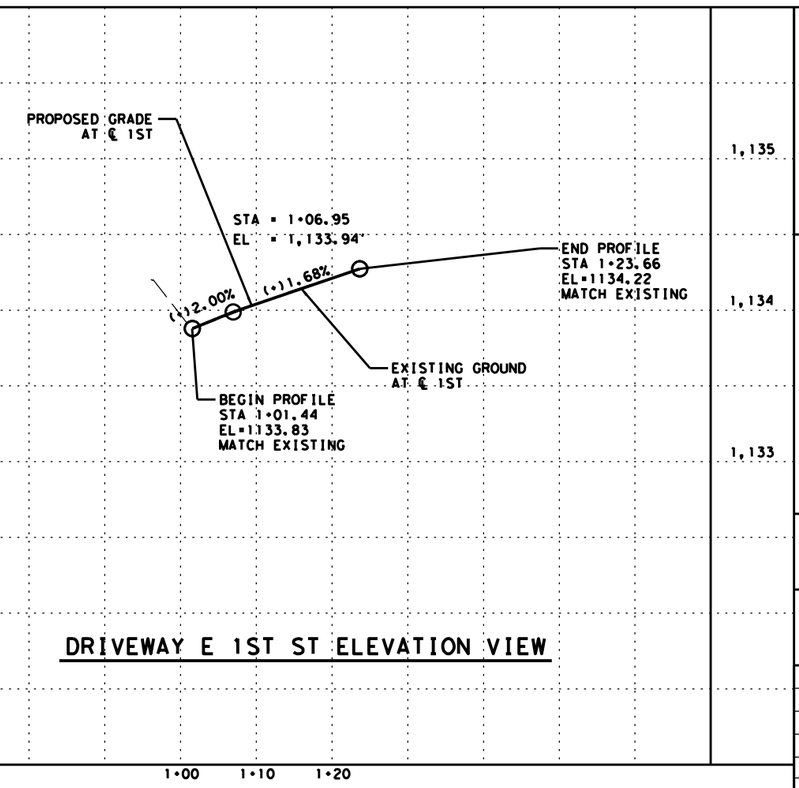


DRIVEWAY E 1ST ST PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY E TIGER ALLEY ELEVATION VIEW



DRIVEWAY E 1ST ST ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

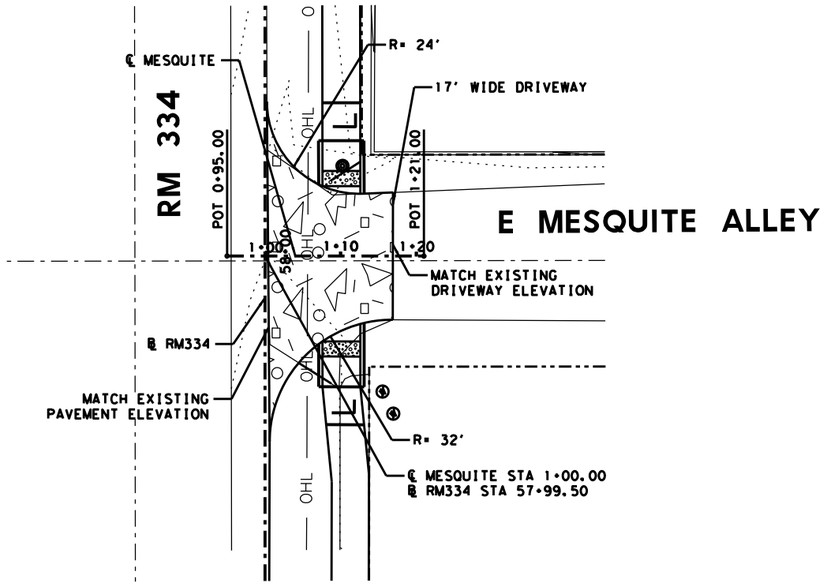
DRIVEWAY PLAN AND PROFILE

SHEET 6 OF 13

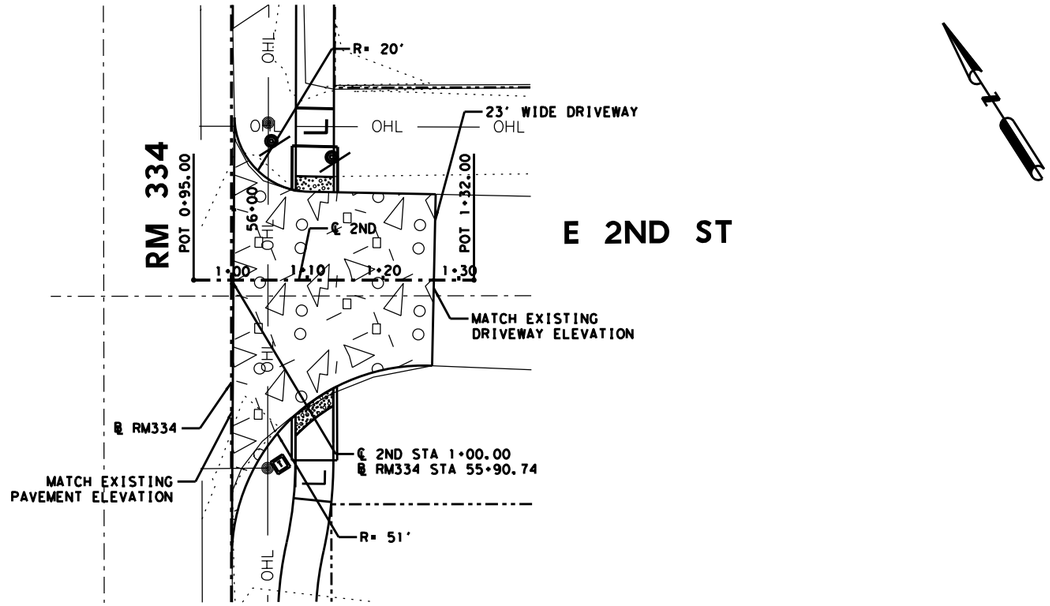
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			128
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

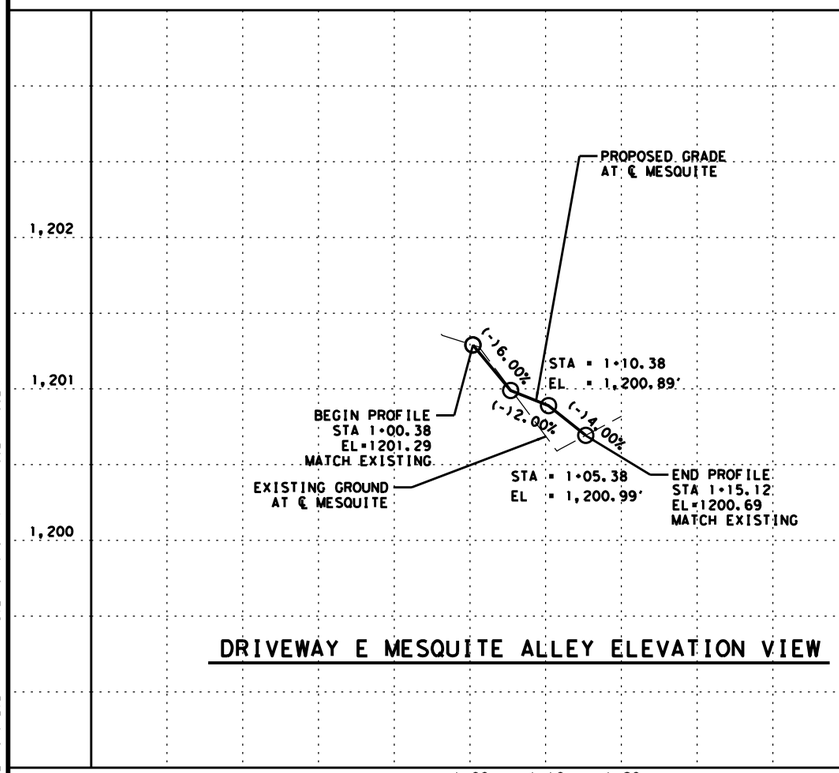


DRIVEWAY E MESQUITE ALLEY PLAN VIEW

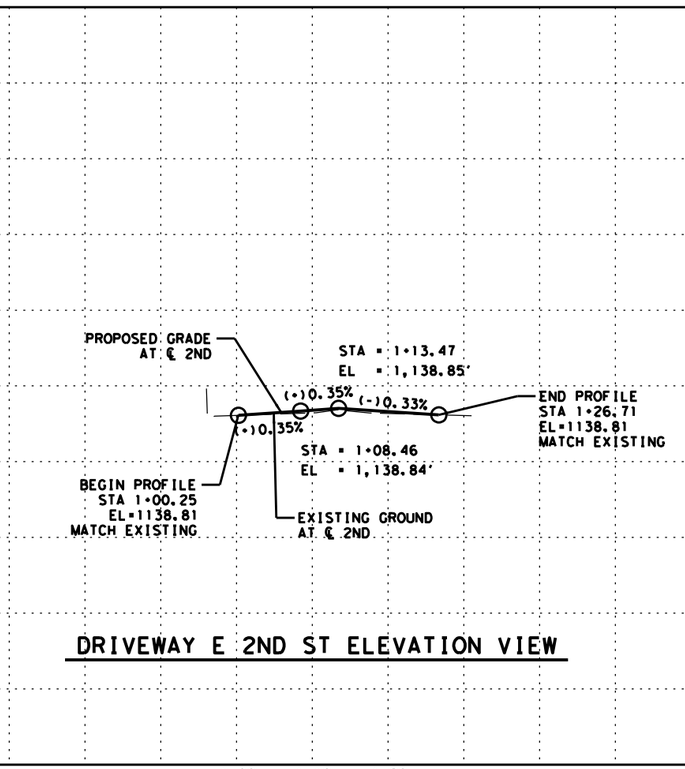


DRIVEWAY E 2ND ST PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY E MESQUITE ALLEY ELEVATION VIEW



DRIVEWAY E 2ND ST ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

DRIVEWAY PLAN AND PROFILE

SHEET 7 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		129

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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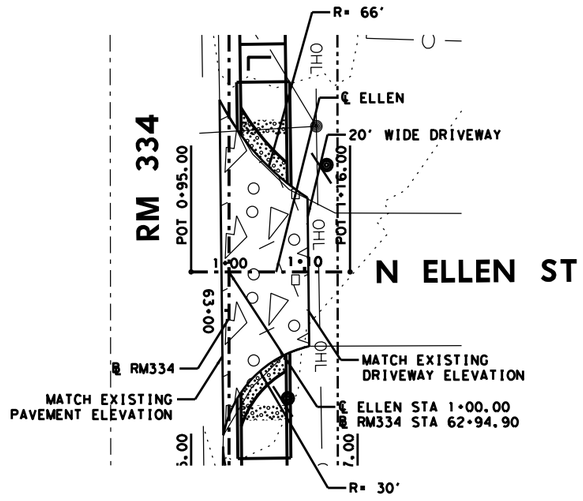
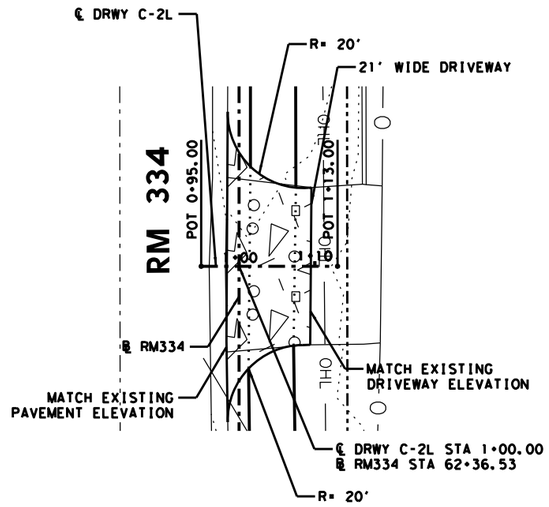


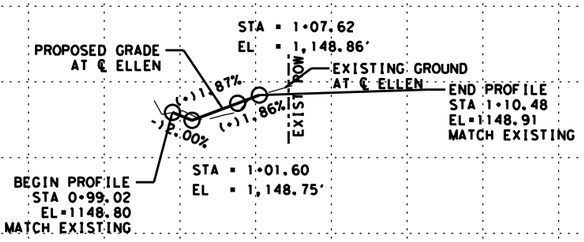
DRIVEWAY N ELLEN ST PLAN VIEW



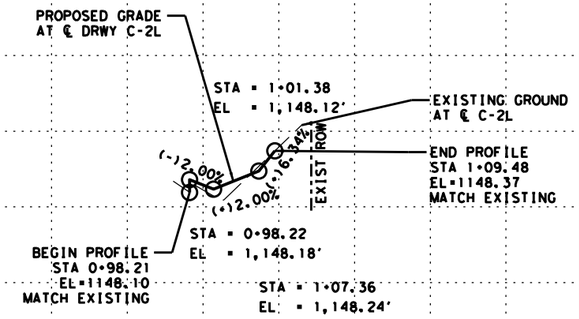
DRIVEWAY C-2L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY N ELLEN ST PLAN VIEW



DRIVEWAY C-2L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

DRIVEWAY PLAN AND PROFILE

SHEET 8 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		130

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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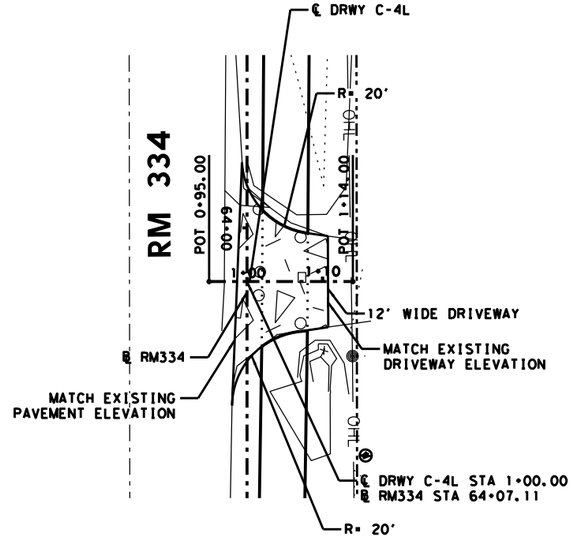
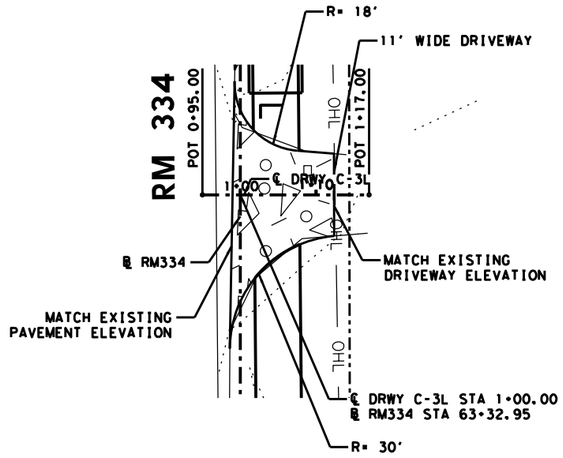


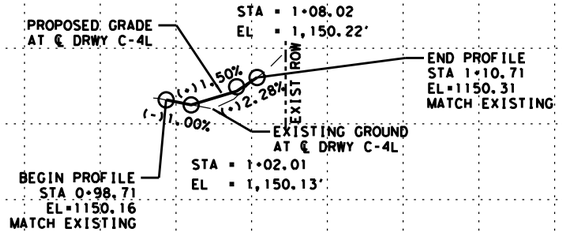
DRIVEWAY C-4L PLAN VIEW



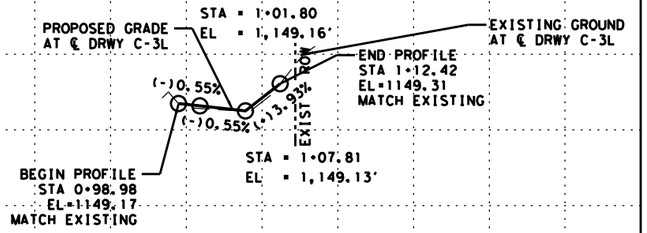
DRIVEWAY C-3L PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY C-4L ELEVATION VIEW



DRIVEWAY C-3L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

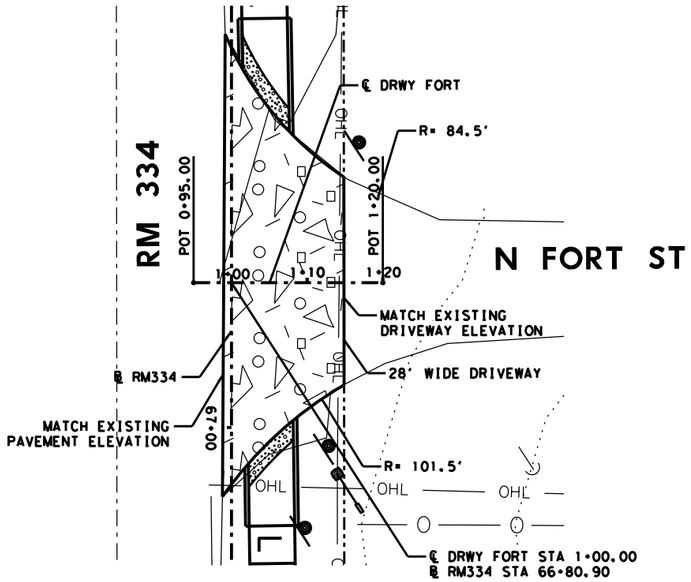
DRIVEWAY PLAN AND PROFILE

SHEET 9 OF 13

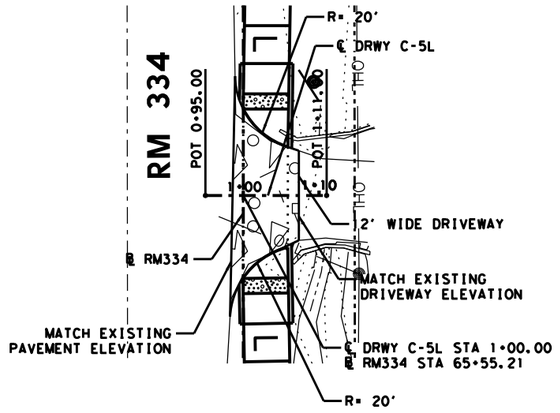
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			131
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

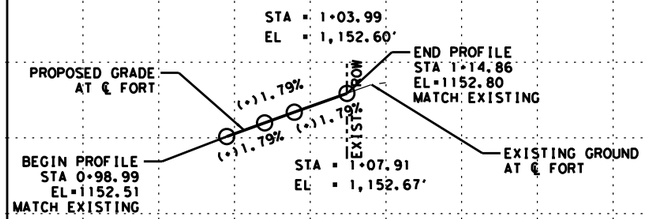


DRIVEWAY N FORT ST PLAN VIEW

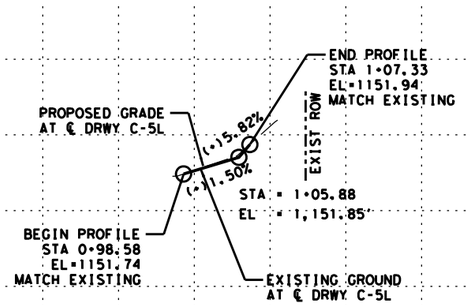


DRIVEWAY C-5L PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY N FORT ST ELEVATION VIEW



DRIVEWAY C-5L ELEVATION VIEW

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
3/5/2021

RM 334

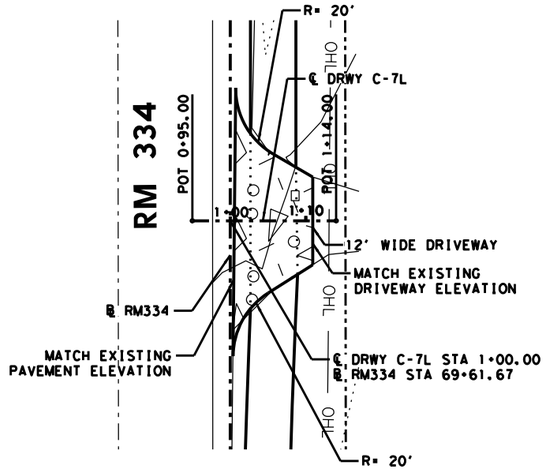
DRIVEWAY PLAN AND PROFILE

SHEET 10 OF 13

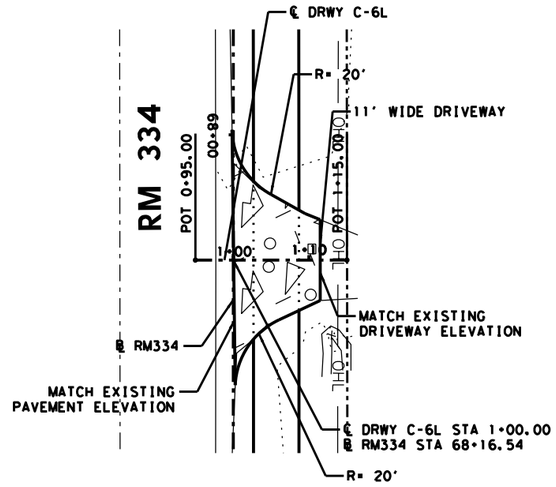
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			132
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

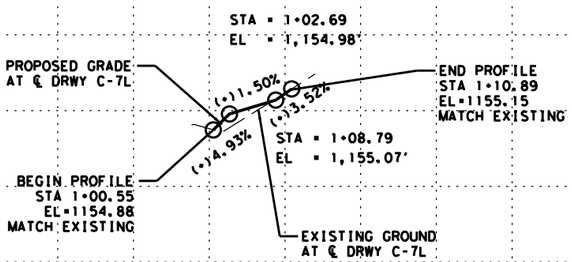


DRIVEWAY C-7L PLAN VIEW

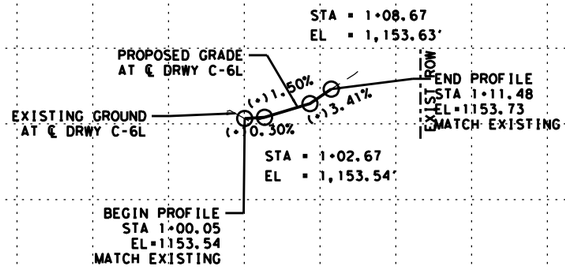


DRIVEWAY C-6L PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY C-7L ELEVATION VIEW



DRIVEWAY C-6L ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

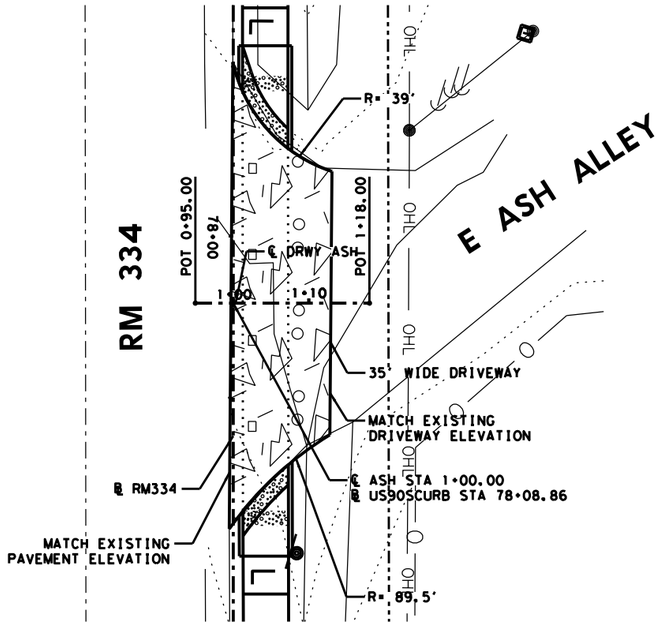
DRIVEWAY PLAN AND PROFILE

SHEET 11 OF 13

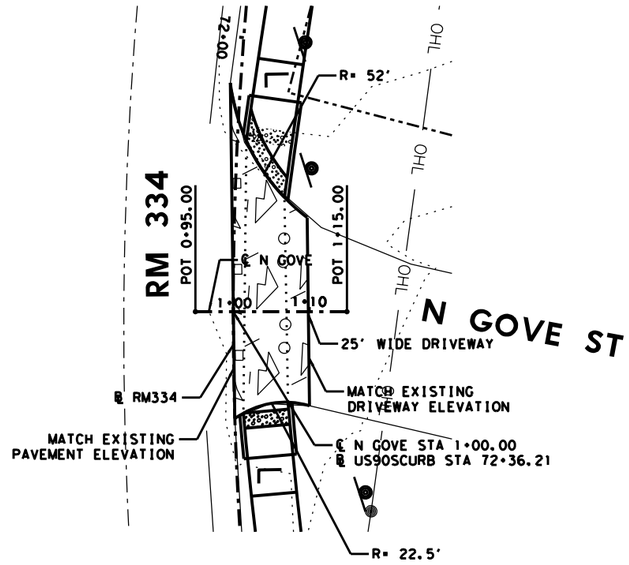
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			133
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



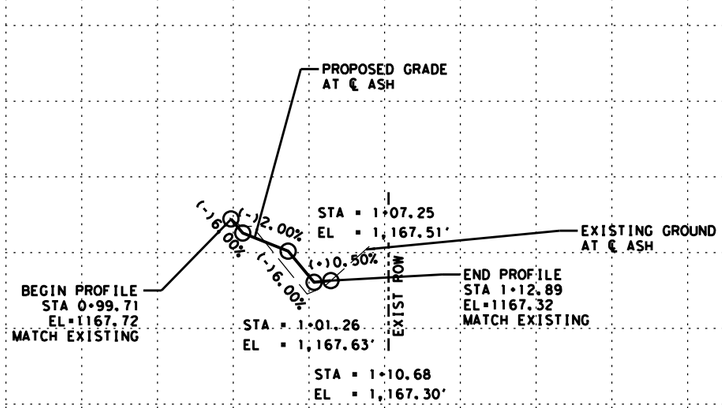
DRIVEWAY E ASH ALLEY PLAN VIEW



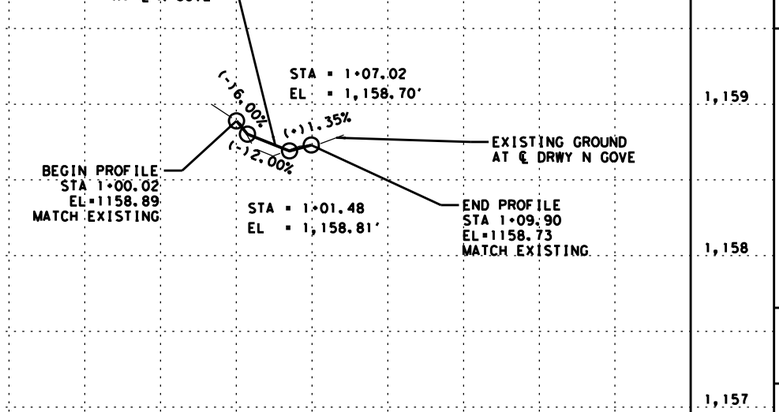
DRIVEWAY N GOVE ST PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY E ASH ALLEY ELEVATION VIEW



DRIVEWAY N GOVE ST ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

DRIVEWAY PLAN AND PROFILE

SHEET 12 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		134

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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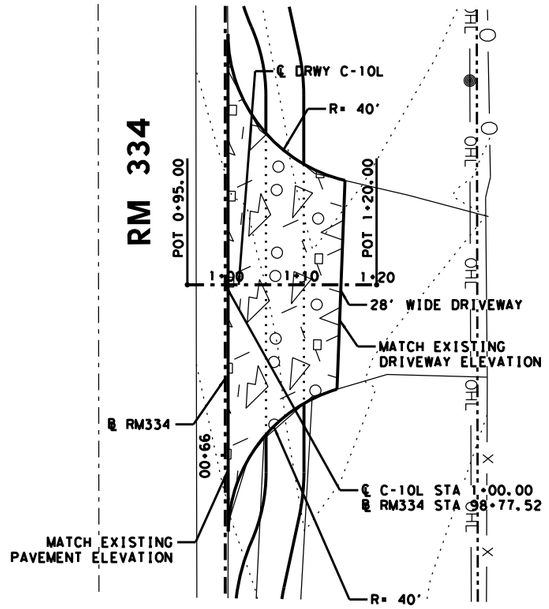
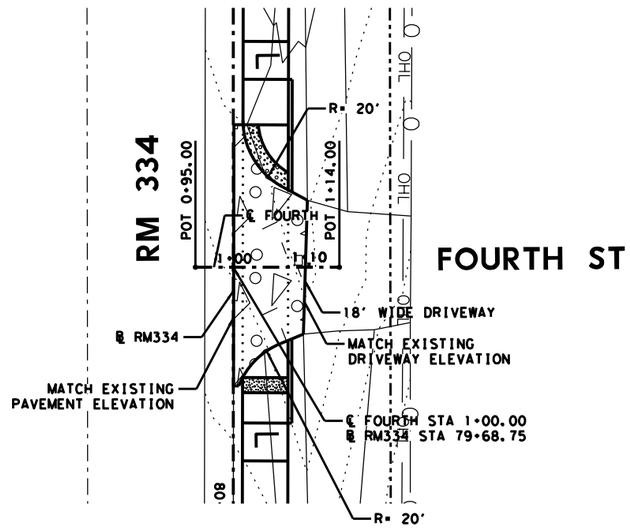


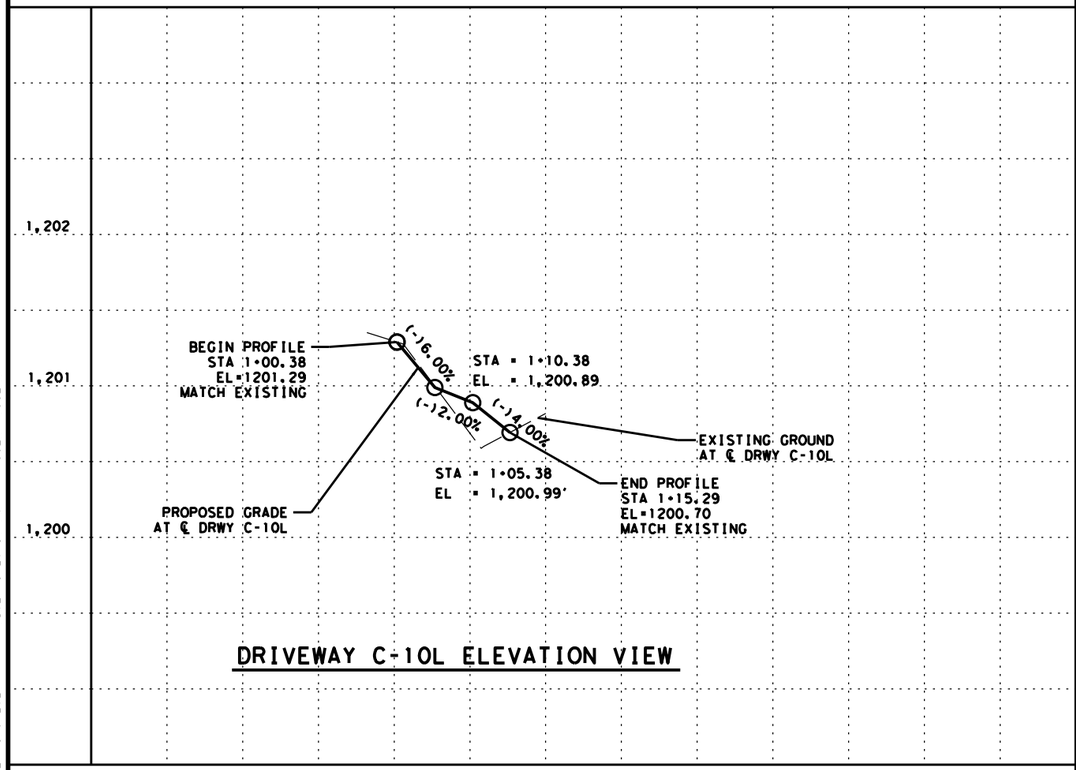
DRIVEWAY C-10L PLAN VIEW



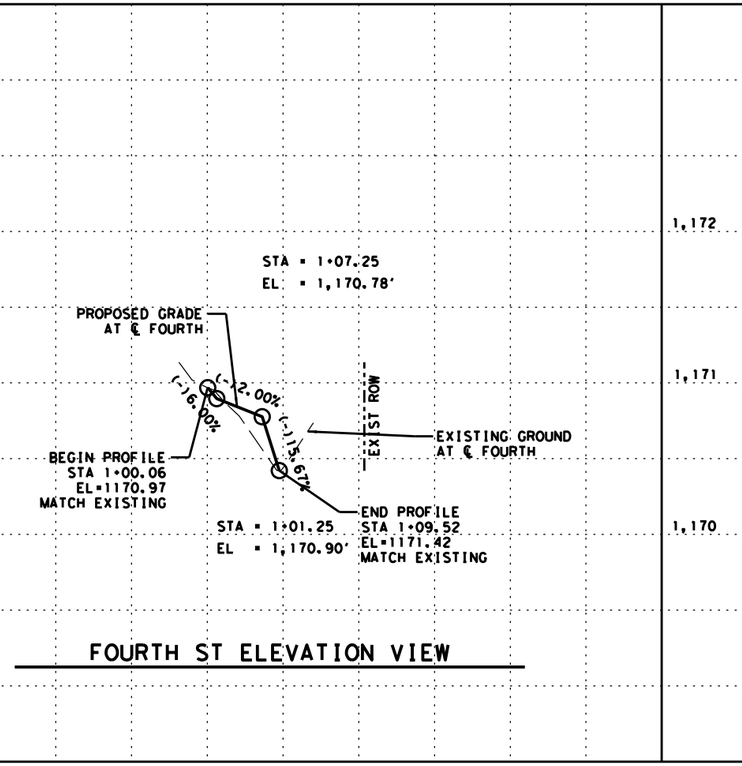
FOURTH ST PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY C-10L ELEVATION VIEW



FOURTH ST ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

RM 334

DRIVEWAY PLAN AND PROFILE

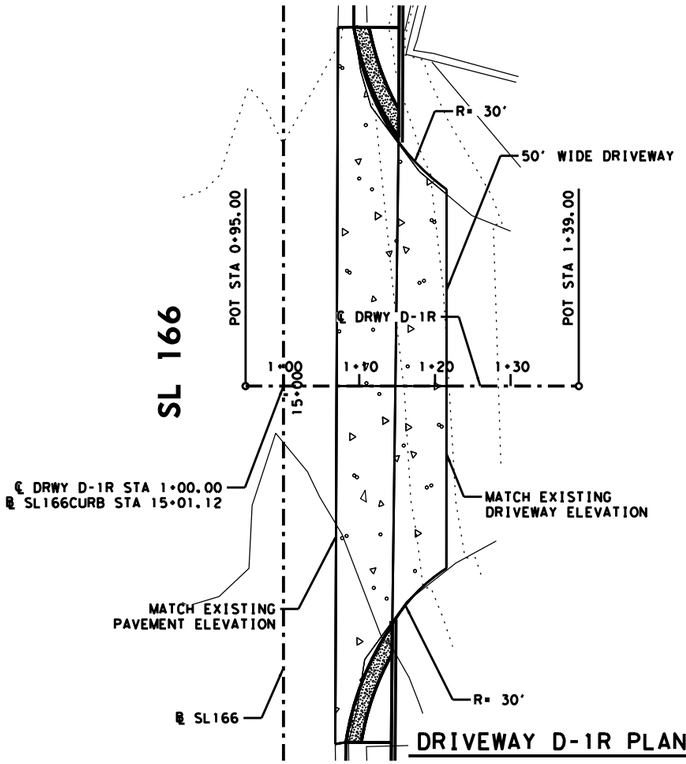
SHEET 13 OF 13

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

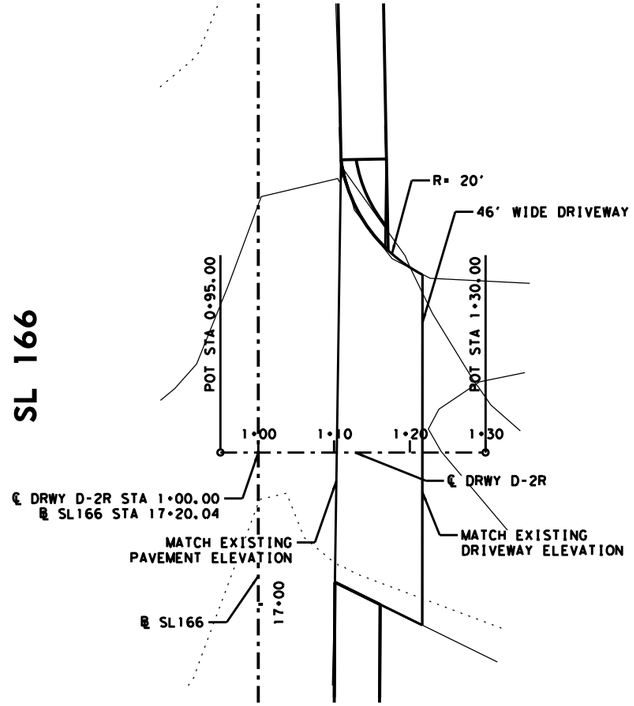
Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		135

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



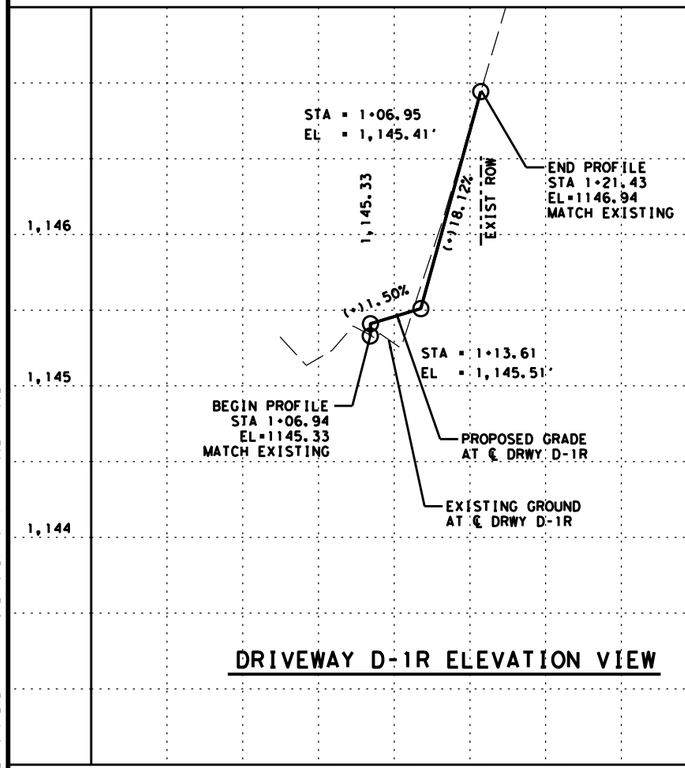
DRIVEWAY D-1R PLAN VIEW



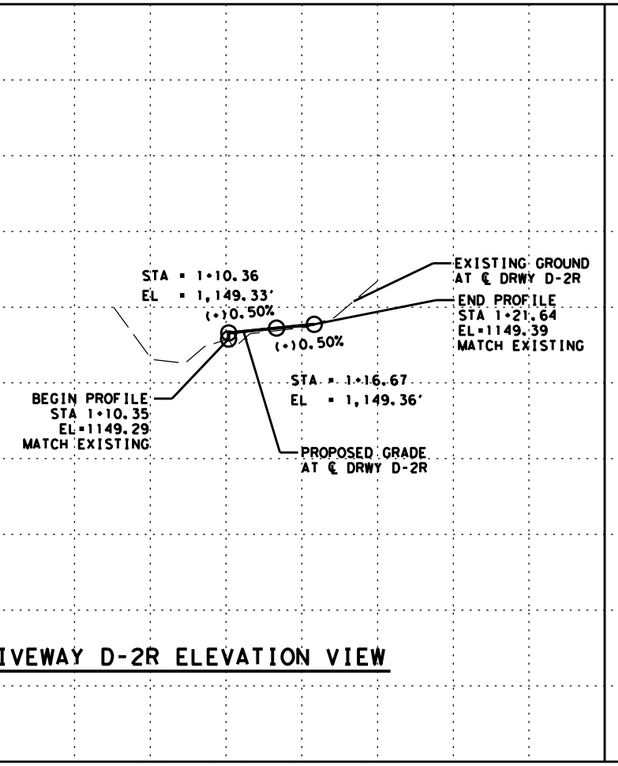
DRIVEWAY D-2R PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY D-1R ELEVATION VIEW



DRIVEWAY D-2R ELEVATION VIEW

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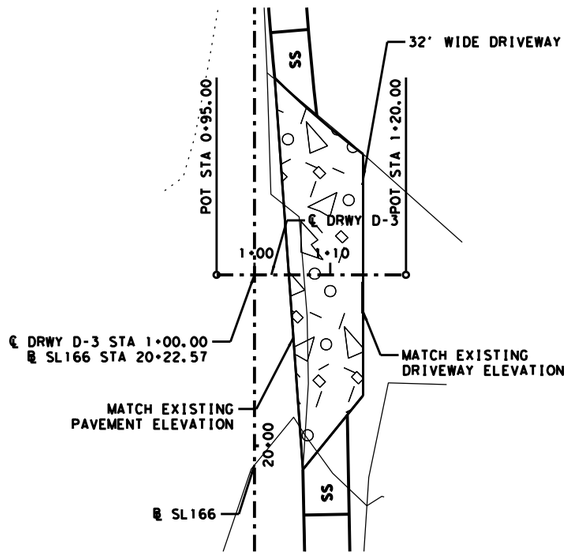
DRIVEWAY PLAN AND PROFILE

SHEET 1 OF16

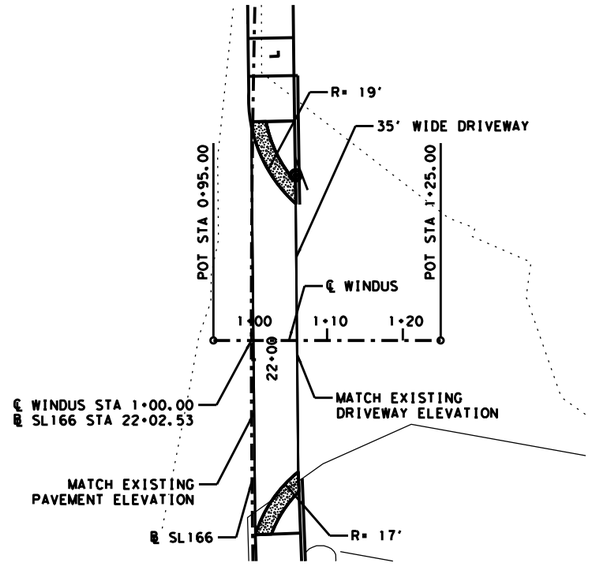
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 230-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			136
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

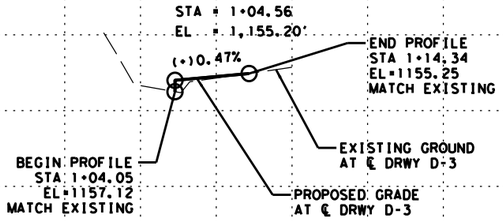


DRIVEWAY D-3 PLAN VIEW

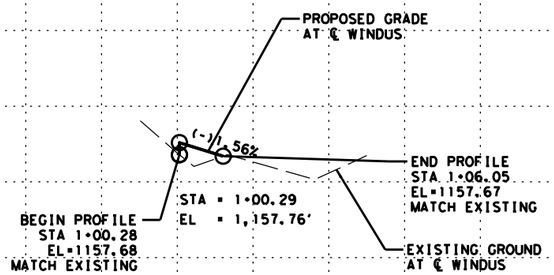


DRIVEWAY N WINDUS ST PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY D-3 ELEVATION VIEW



DRIVEWAY N WINDUS ST ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

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DRIVEWAY PLAN AND PROFILE

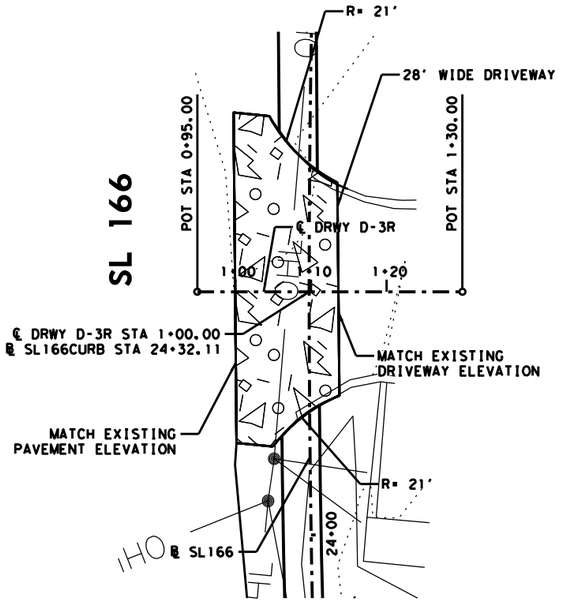
SHEET 2 OF16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

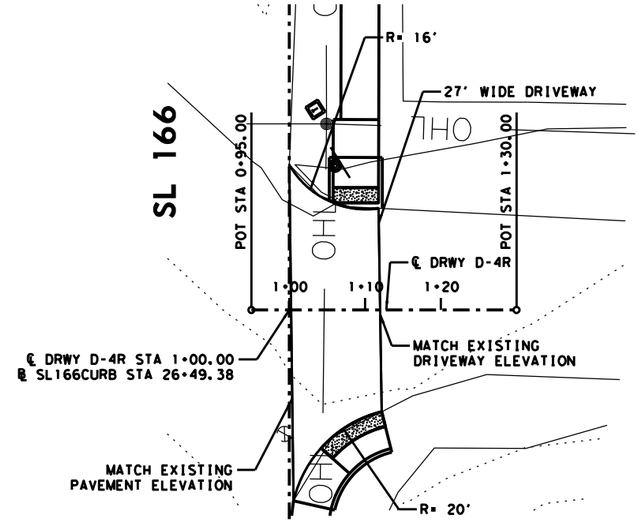
Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		137

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

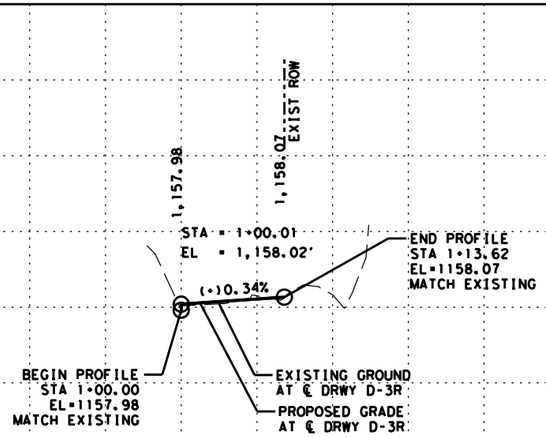


DRIVEWAY D-3R PLAN VIEW

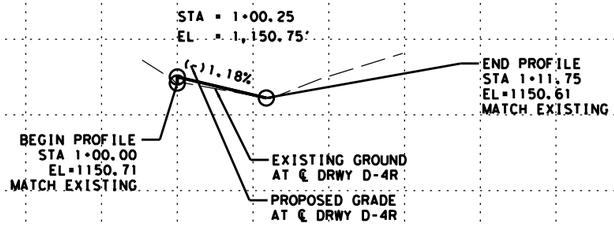


DRIVEWAY D-4R PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY D-3R ELEVATION VIEW



DRIVEWAY D-4R ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

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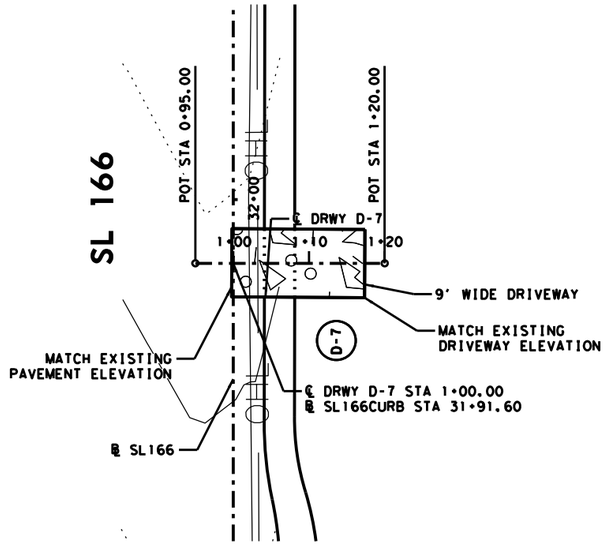
DRIVEWAY PLAN AND PROFILE

SHEET 3 OF16

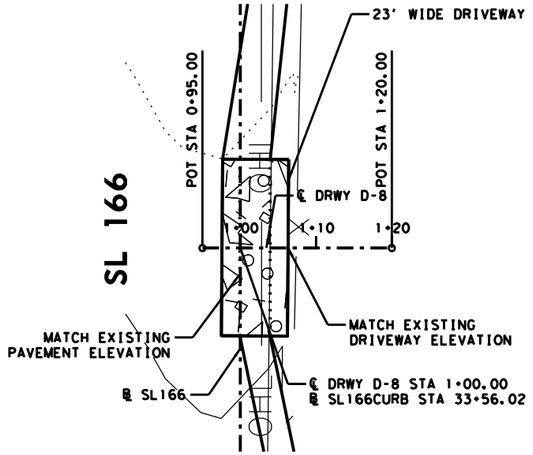
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			138
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

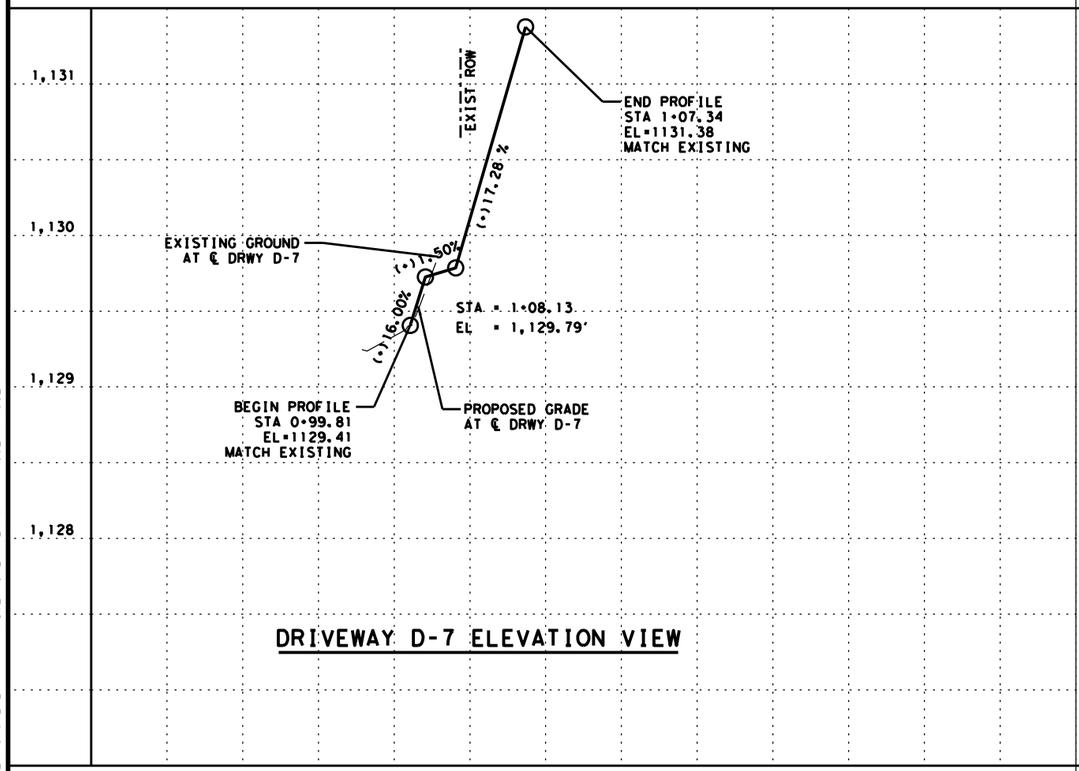


DRIVEWAY D-7 PLAN VIEW

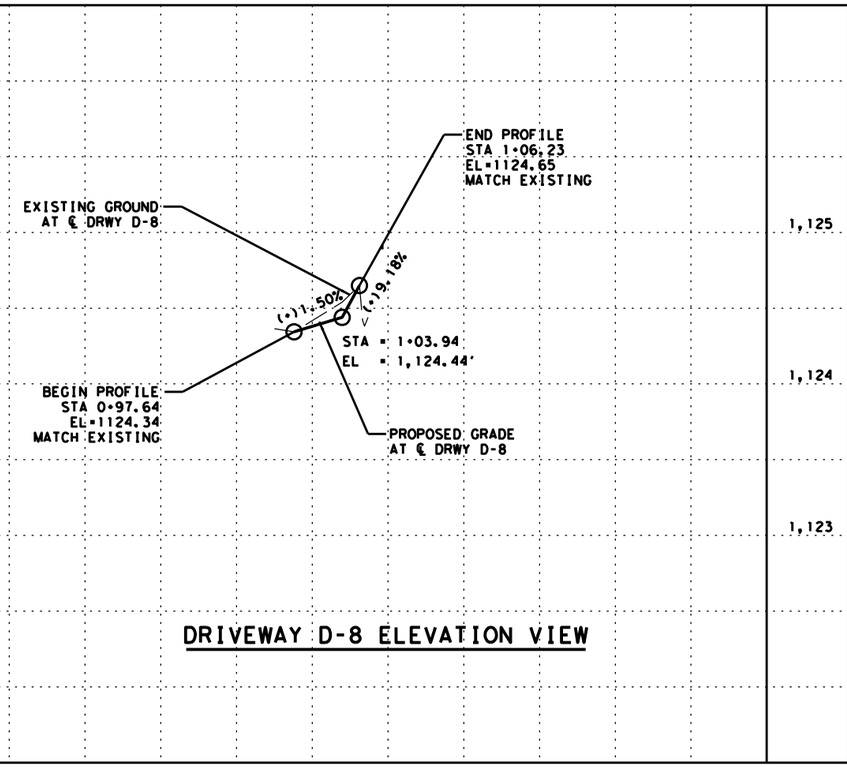


DRIVEWAY D-8 PLAN VIEW

0 10′ 20′
SCALE IN FEET



DRIVEWAY D-7 ELEVATION VIEW



DRIVEWAY D-8 ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

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DRIVEWAY PLAN AND PROFILE

SHEET 4 OF 16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			139
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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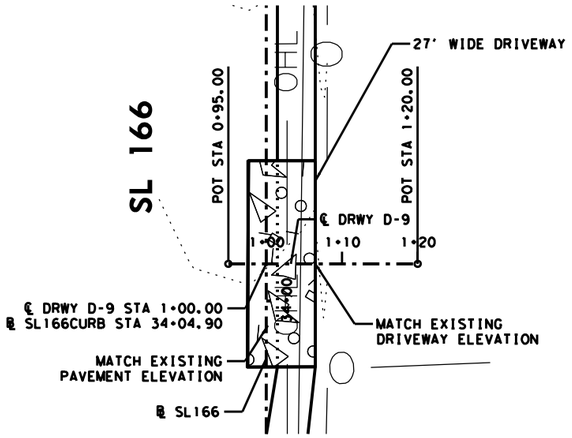
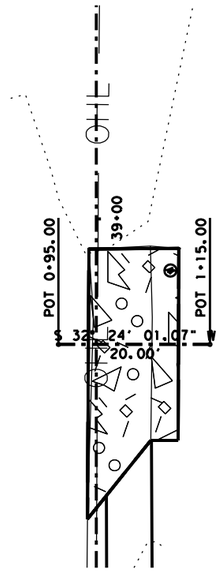
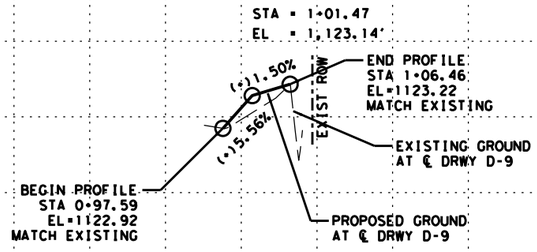


DRIVEWAY D-9 PLAN VIEW

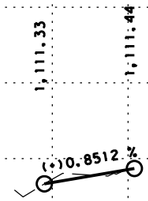


DRIVEWAY D-8R PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY D-9 ELEVATION VIEW



DRIVEWAY D-8R ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

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DRIVEWAY PLAN AND PROFILE

SHEET 5 OF 16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		140

STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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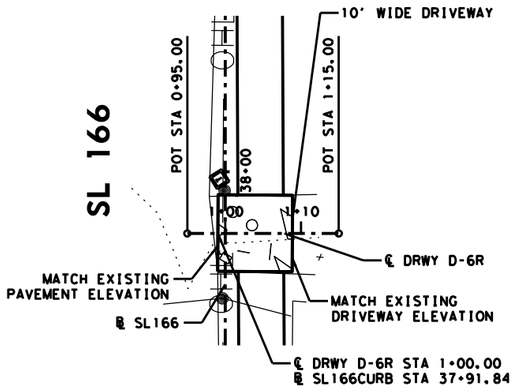
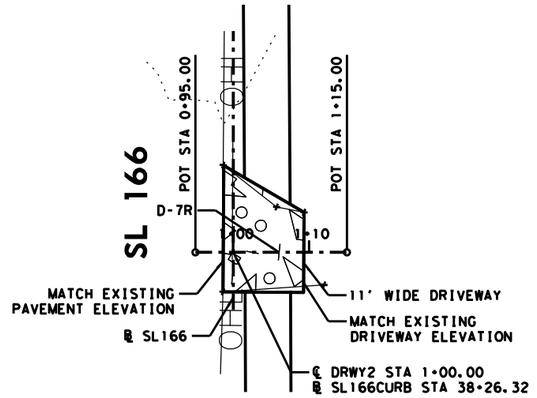
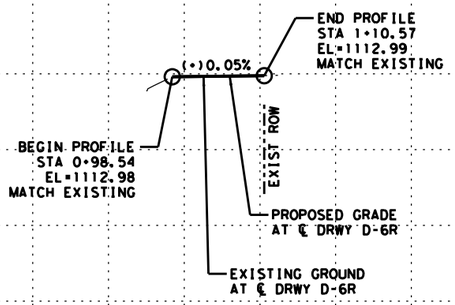


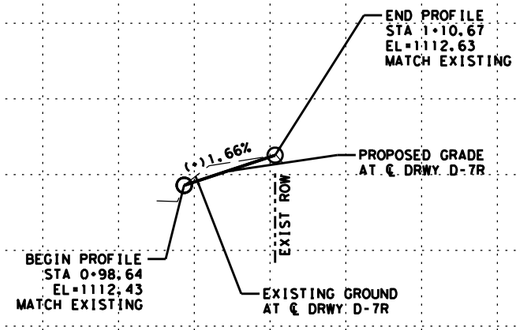
DRIVEWAY D-6R PLAN VIEW



DRIVEWAY D-7R PLAN VIEW



DRIVEWAY D-6R ELEVATION VIEW



DRIVEWAY D-7R ELEVATION VIEW

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

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DRIVEWAY PLAN AND PROFILE

SHEET 6 OF16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			141
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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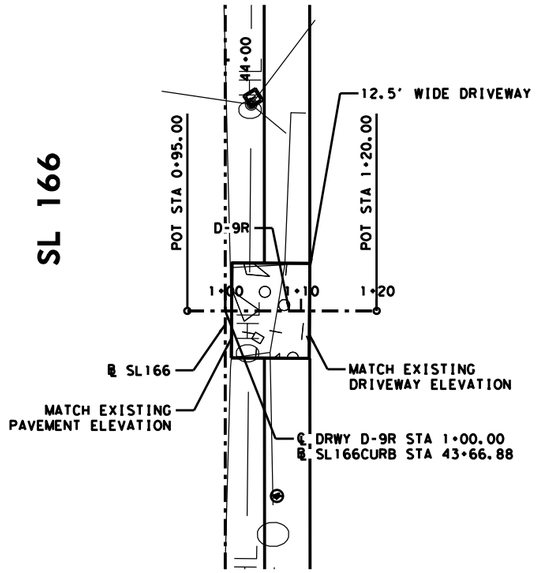
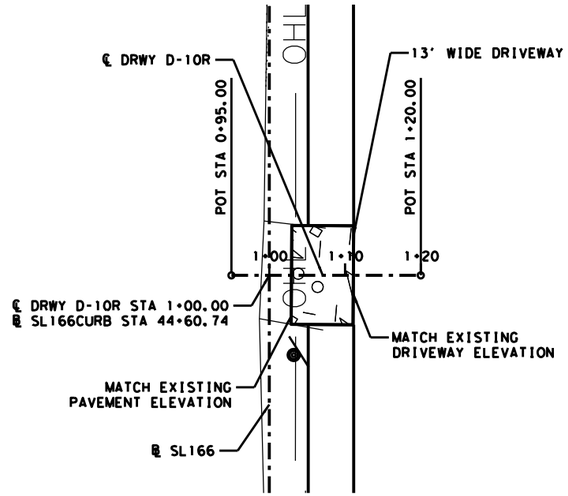
SL 166



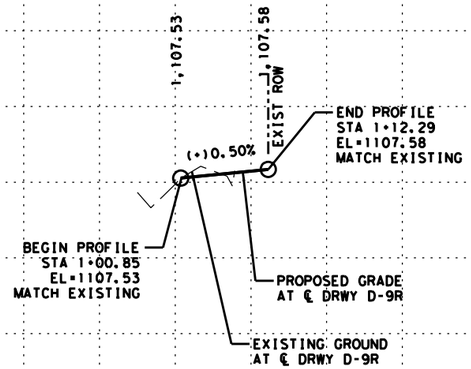
DRIVEWAY D-9R PLAN VIEW



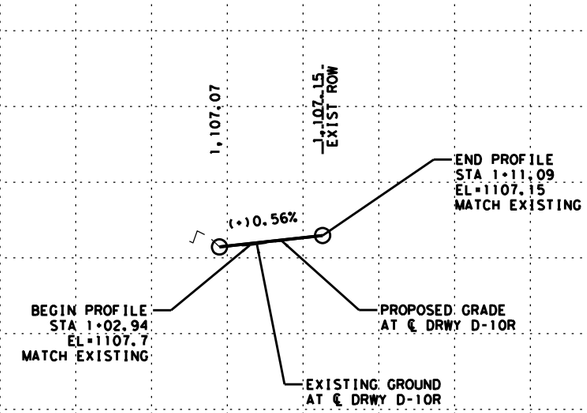
DRIVEWAY D-10R PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY D-9R ELEVATION VIEW



DRIVEWAY D-10R ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

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DRIVEWAY PLAN AND PROFILE

SHEET 7 OF16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			142
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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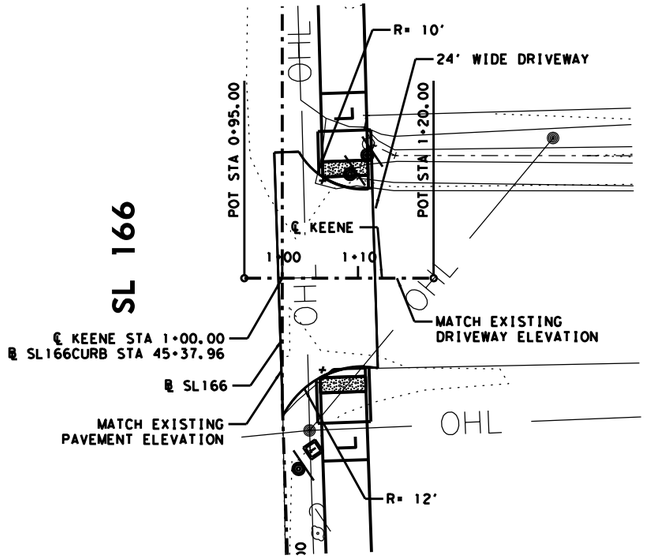
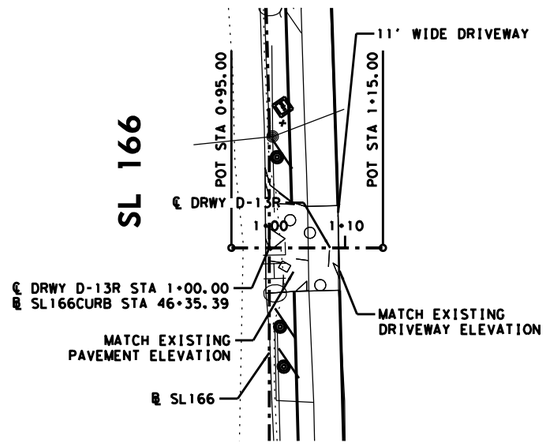
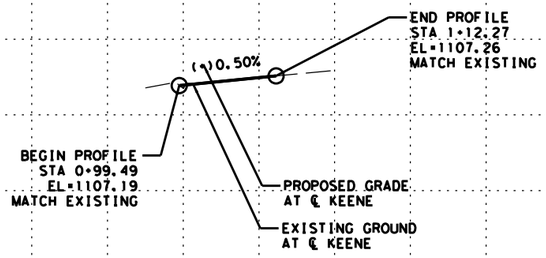


DRIVEWAY KEENE ST PLAN VIEW

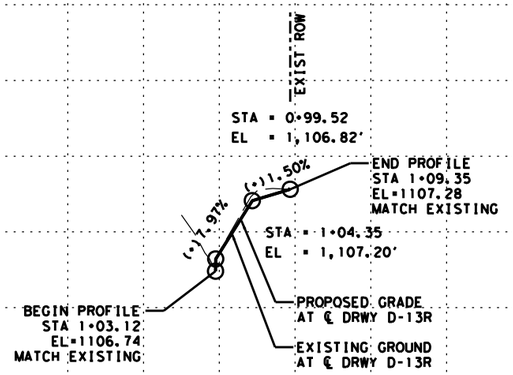


DRIVEWAY D-13R PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY KEENE ST ELEVATION VIEW



DRIVEWAY D-13R ELEVATION VIEW

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

SL 166

DRIVEWAY PLAN AND PROFILE

SHEET 8 OF16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			143
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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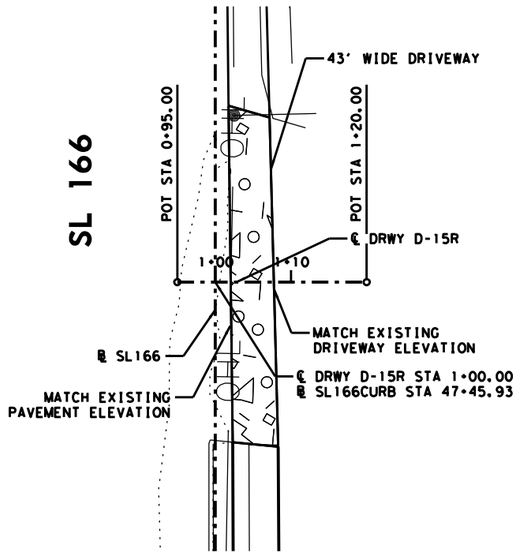
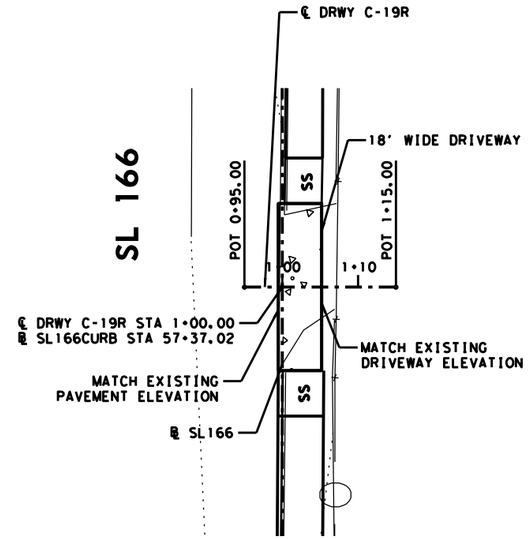
DATE: 3/5/2021 TIME: 6:21:48 PM USER: $USER$

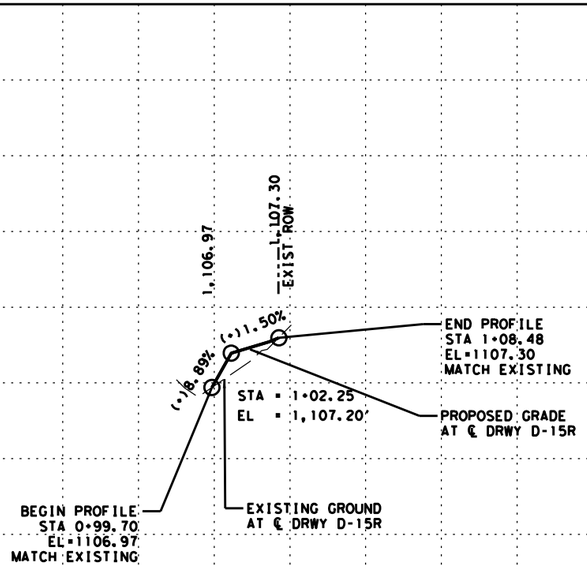


DRIVEWAY D-15R PLAN VIEW

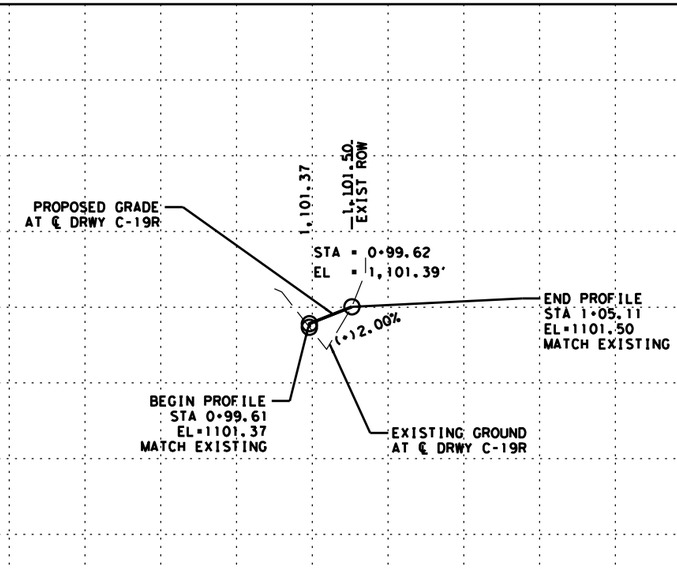


DRIVEWAY C-19R PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY D-15R ELEVATION VIEW



DRIVEWAY C-19R ELEVATION VIEW

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
3/5/2021

SL 166

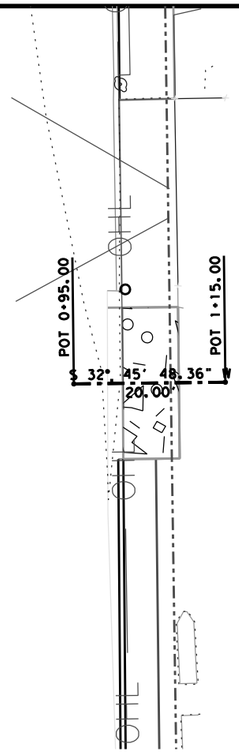
DRIVEWAY PLAN AND PROFILE

SHEET 9 OF16

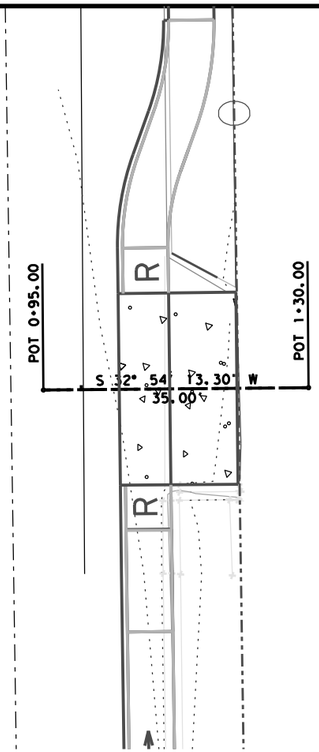
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			144
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

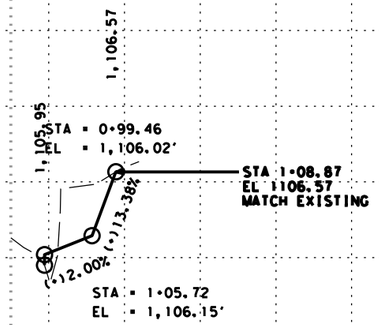


DRIVEWAY D-16R PLAN VIEW

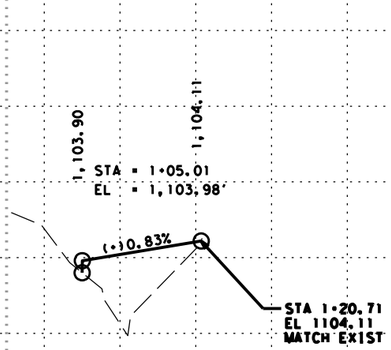


DRIVEWAY D-17R PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY D-16R ELEVATION VIEW



DRIVEWAY D-17R ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
3/5/2021

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DRIVEWAY PLAN AND PROFILE

SHEET 10 OF16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			145
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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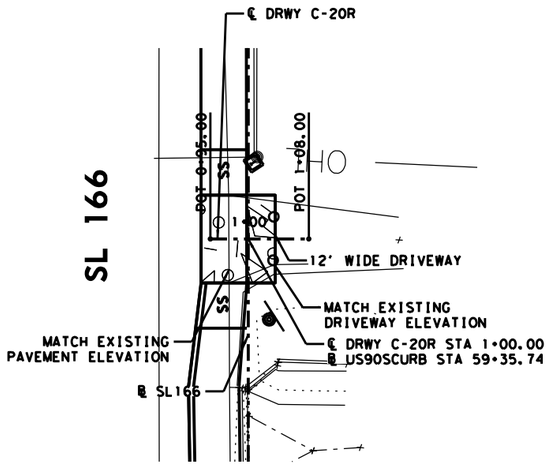
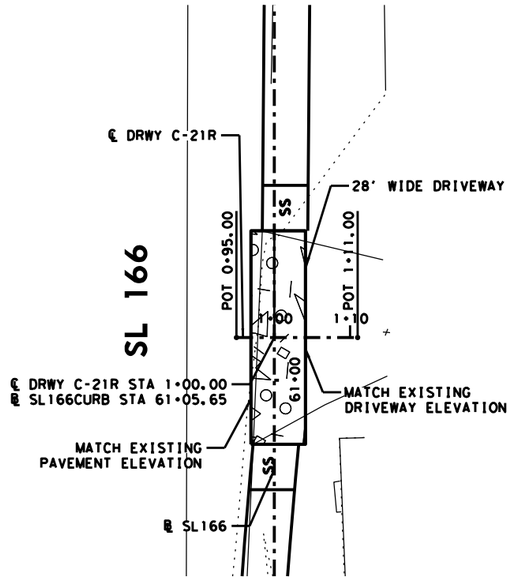
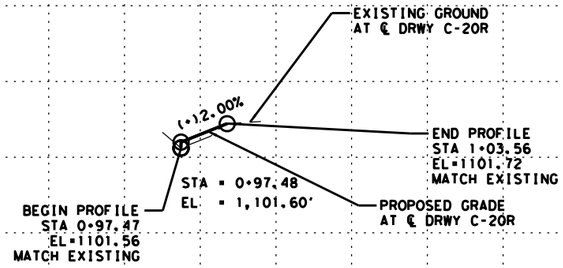


DRIVEWAY C-20R PLAN VIEW

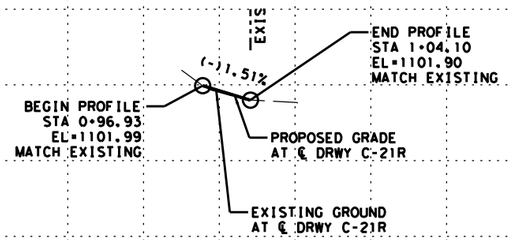


DRIVEWAY C-21R PLAN VIEW

0 10' 20'
SCALE IN FEET



DRIVEWAY C-20R ELEVATION VIEW



DRIVEWAY C-21R ELEVATION VIEW

ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
3/5/2021

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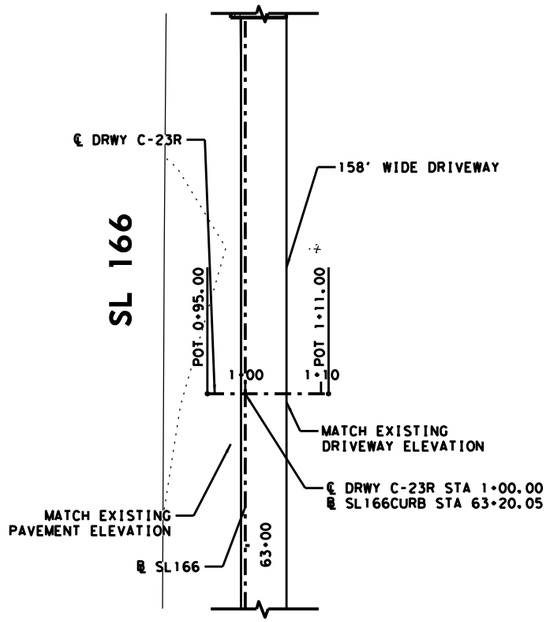
DRIVEWAY PLAN AND PROFILE

SHEET 11 OF 16

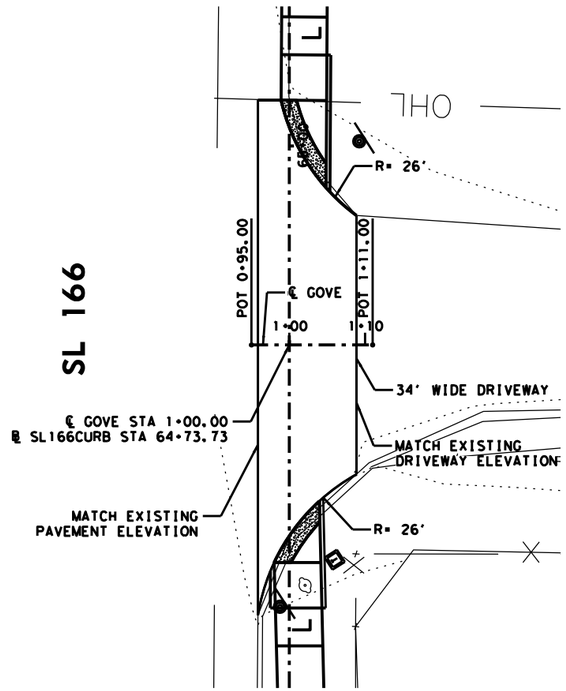
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

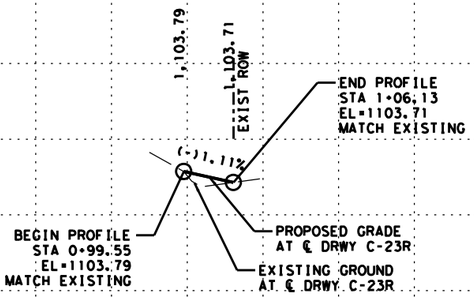
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			146
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



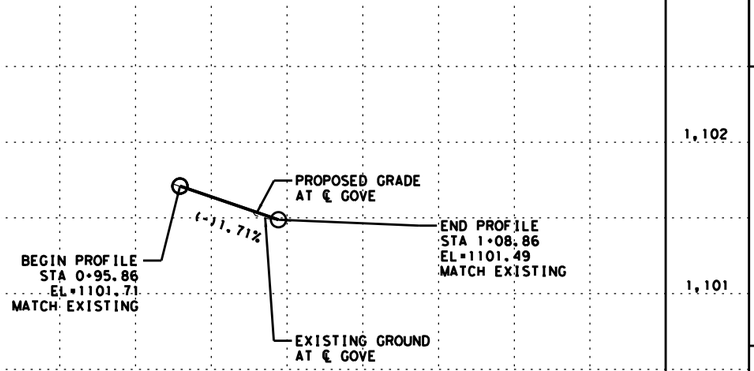
DRIVEWAY C-23R PLAN VIEW



DRIVEWAY S GOVE ST PLAN VIEW



DRIVEWAY C-23R ELEVATION VIEW



DRIVEWAY S GOVE ST ELEVATION VIEW

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

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DRIVEWAY PLAN AND PROFILE

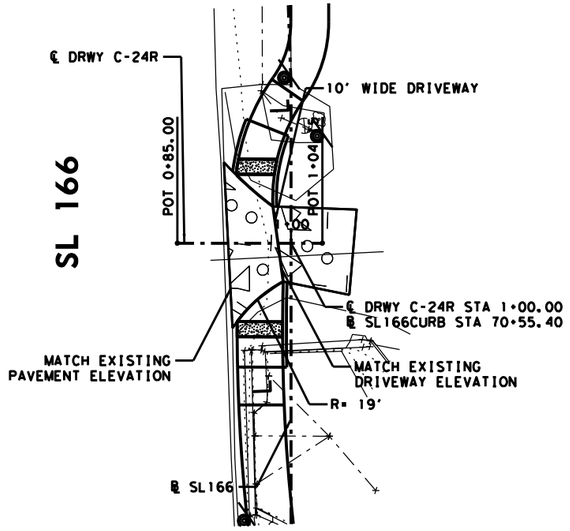
SHEET 12 OF 16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

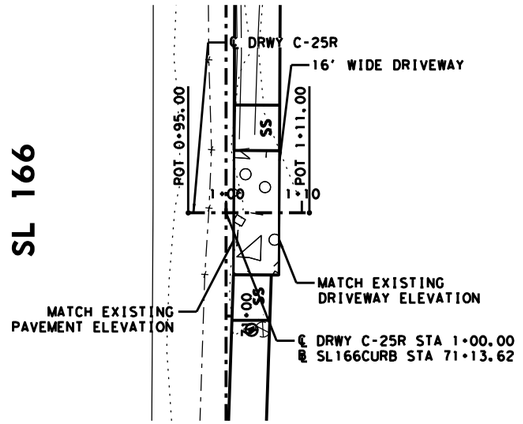
Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		147

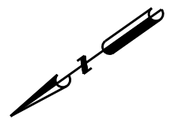
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

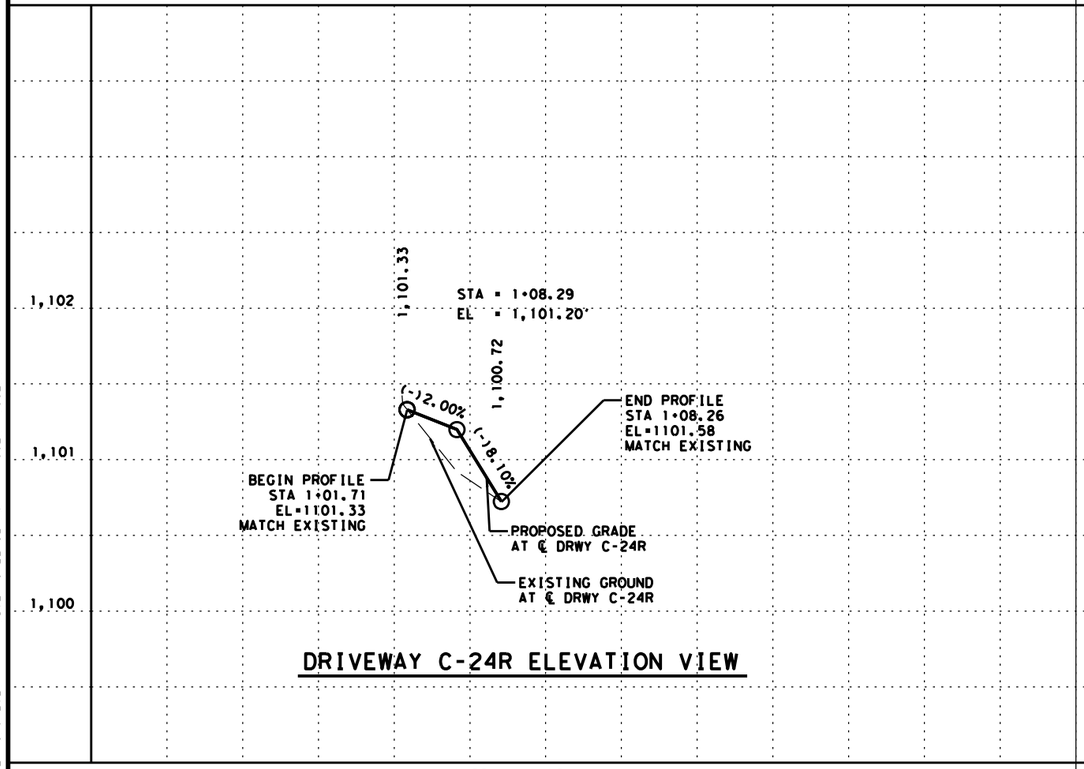


DRIVEWAY C-24R PLAN VIEW

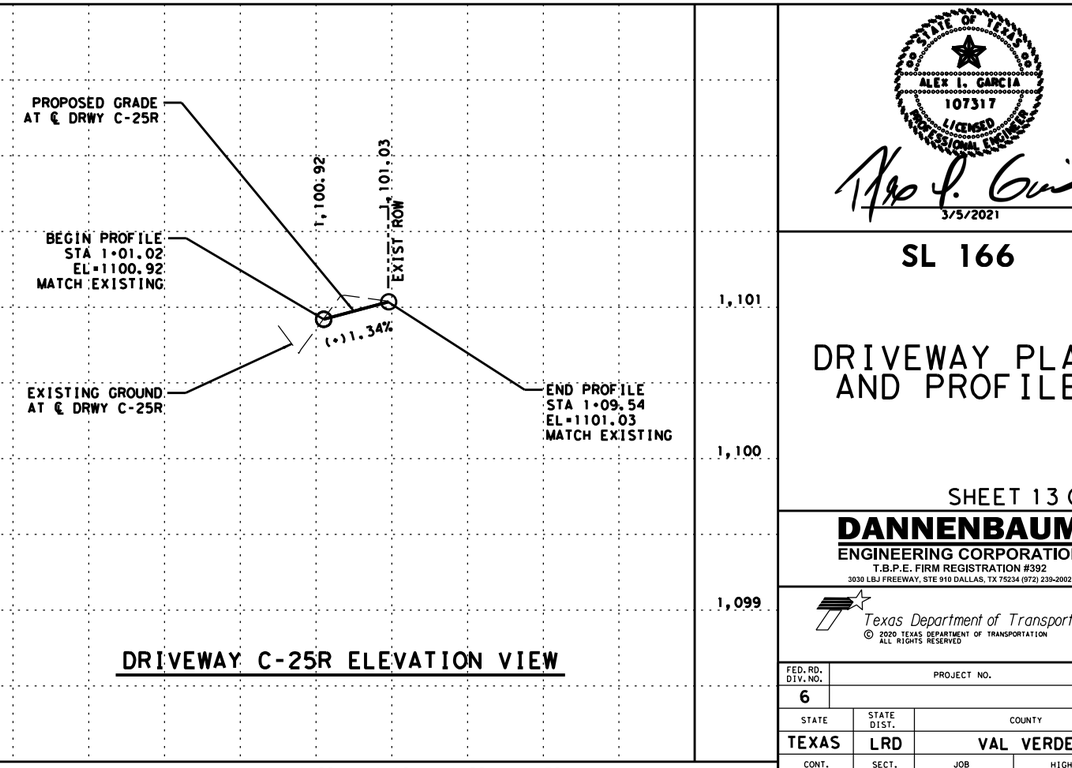


DRIVEWAY C-25R PLAN VIEW





DRIVEWAY C-24R ELEVATION VIEW



DRIVEWAY C-25R ELEVATION VIEW

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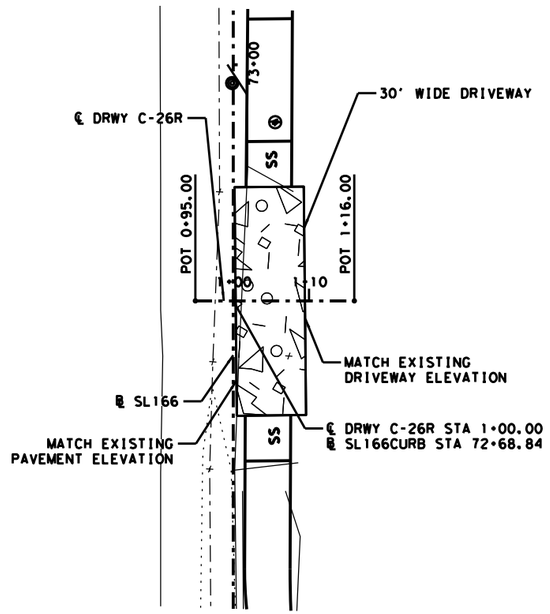
DRIVEWAY PLAN AND PROFILE

SHEET 13 OF 16

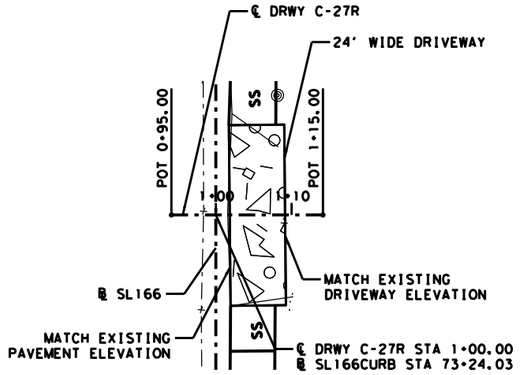
DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			148
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC



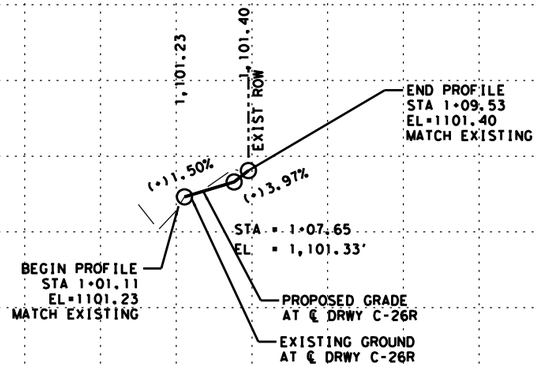
DRIVEWAY C-26R PLAN VIEW



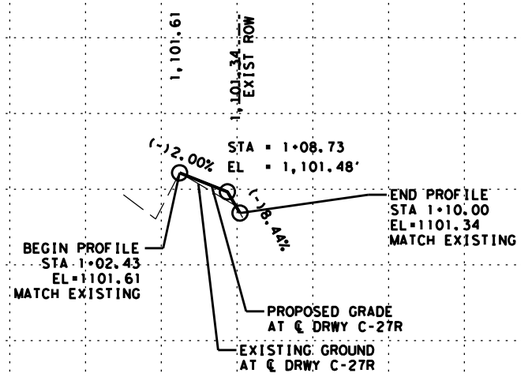
DRIVEWAY C-27R PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY C-26R ELEVATION VIEW



DRIVEWAY C-27R ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

SL 166

DRIVEWAY PLAN AND PROFILE

SHEET 14 OF 16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			149
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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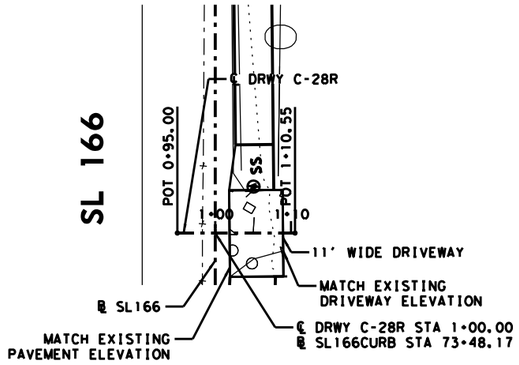
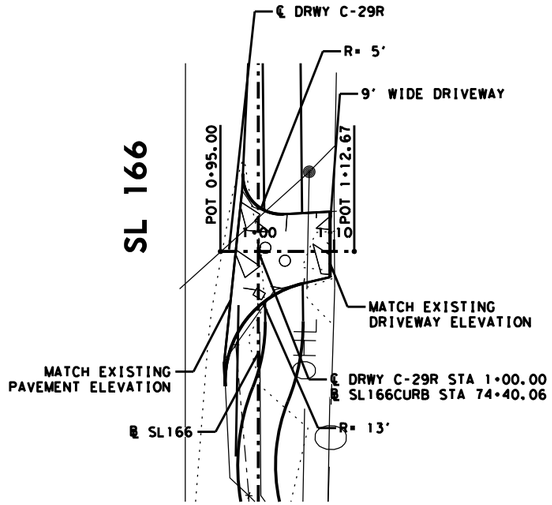


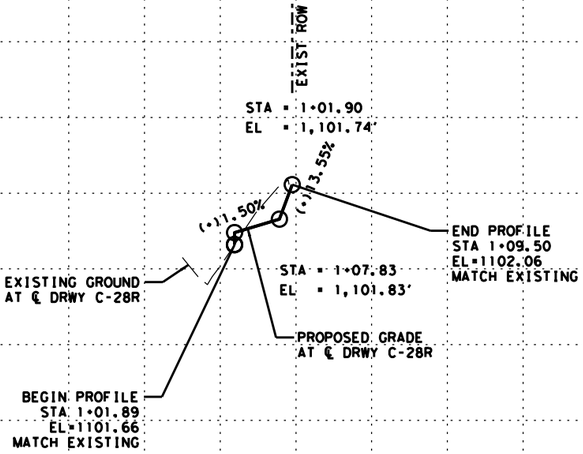
DRIVEWAY C-28R PLAN VIEW



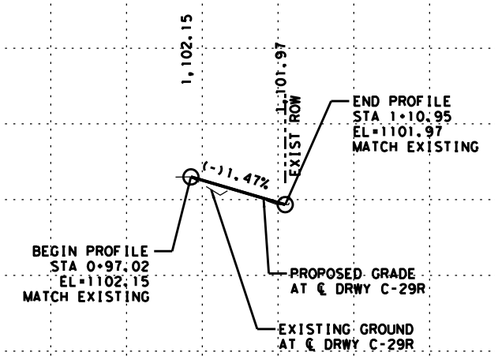
DRIVEWAY C-29R PLAN VIEW

0 10' 20'

SCALE IN FEET



DRIVEWAY C-28R ELEVATION VIEW



DRIVEWAY C-29R ELEVATION VIEW

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

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DRIVEWAY PLAN AND PROFILE

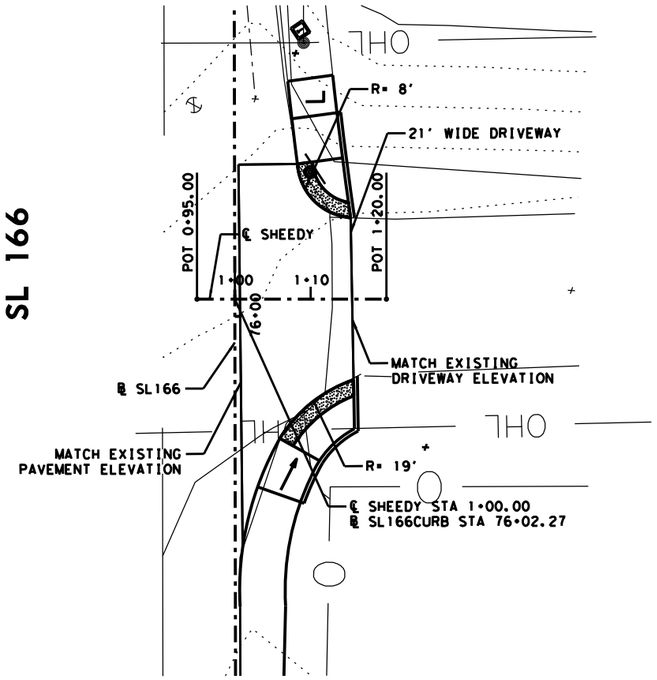
SHEET 15 OF 16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

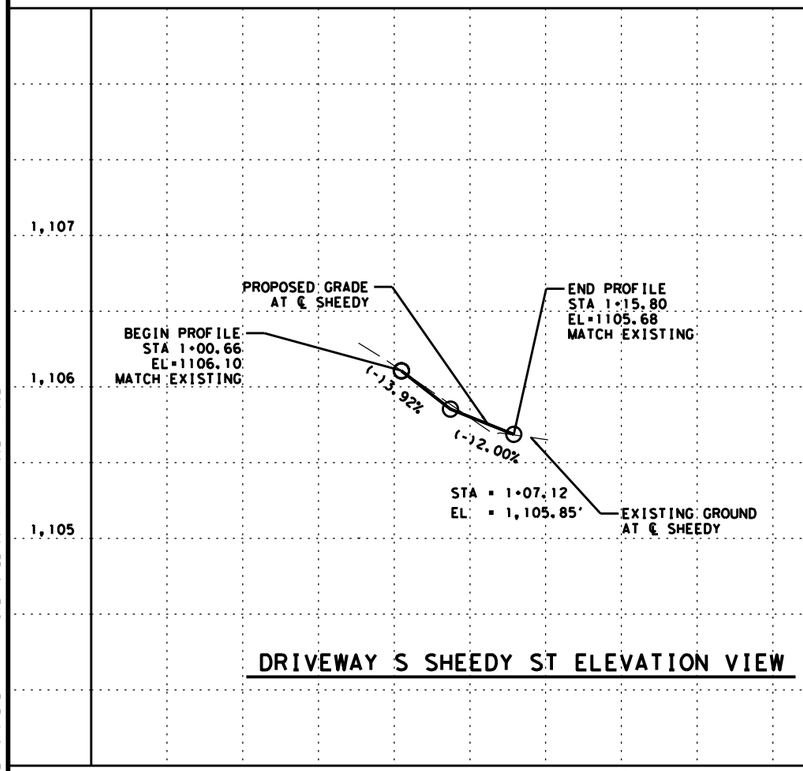
Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			150
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

SL 166



DRIVEWAY S SHEEDY ST PLAN VIEW



DRIVEWAY S SHEEDY ST ELEVATION VIEW

0 10' 20'

SCALE IN FEET

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

3/5/2021

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DRIVEWAY PLAN AND PROFILE

SHEET 16 OF 16

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3030 LBJ FREEWAY, STE 910 DALLAS, TX 75234 (972) 239-2002

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			151
STATE	STATE DIST.	COUNTY	
TEXAS	LRD	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073,ETC	US 90,ETC

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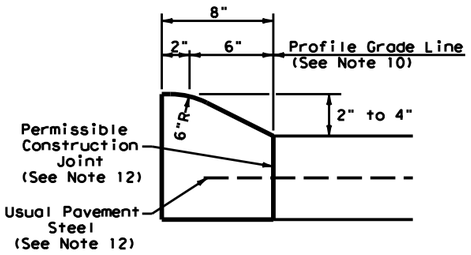
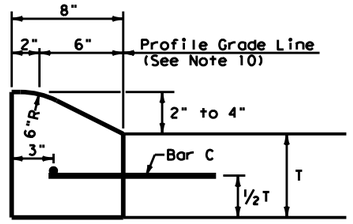
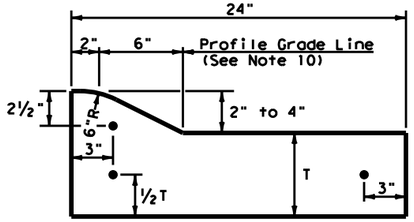


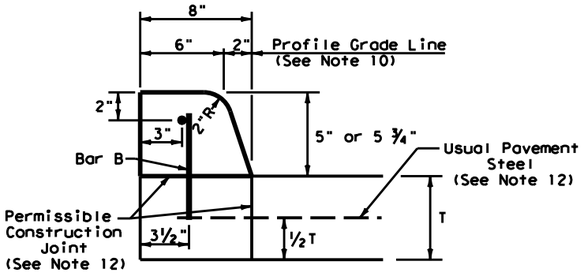
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



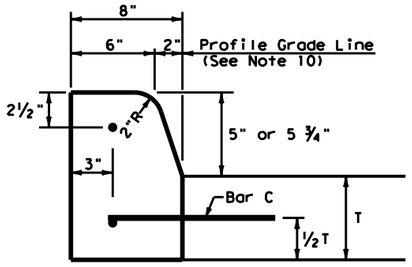
TYPE I CURB
2" - 4" HEIGHT



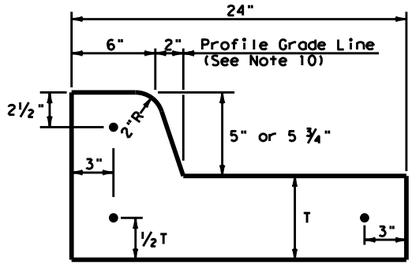
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



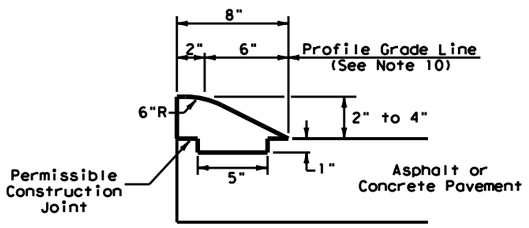
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



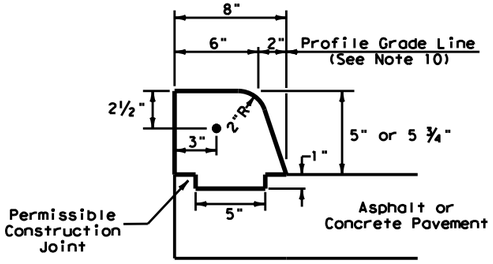
TYPE II CURB
5" - 5 ¾" HEIGHT



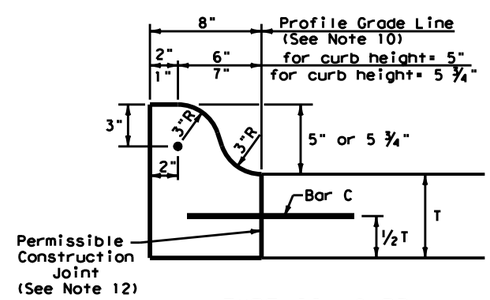
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



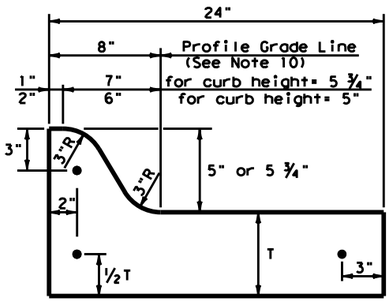
TYPE III CURB (KEYED)
2" - 4" HEIGHT



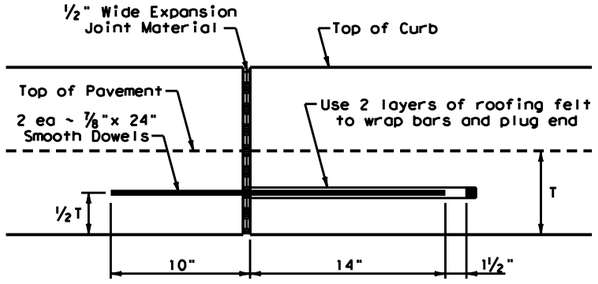
TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



TYPE IIa CURB
5" - 5 ¾" HEIGHT

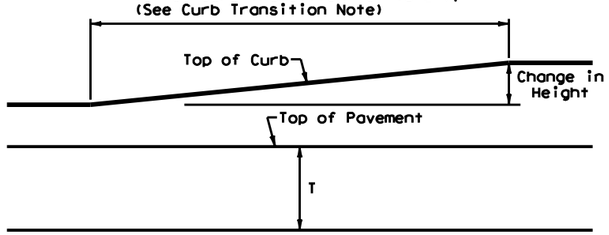


TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

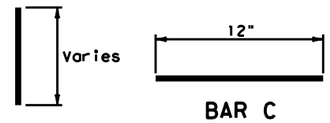
Curb Transition Note:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



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 synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Producer List (MPL), maintained by TxDOT, Construction Division.
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 placed on existing concrete pavement, the pavement shall be drilled and the reinforcing bars grouted in place.
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 vertical permissible construction joints are used, resulting in a longitudinal construction joint in the pavement, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans for longitudinal construction joints. Reinforcing steel for curb section shall then conform to that required for concrete curb.



BAR B BAR C

Texas Department of Transportation | Design Division Standard

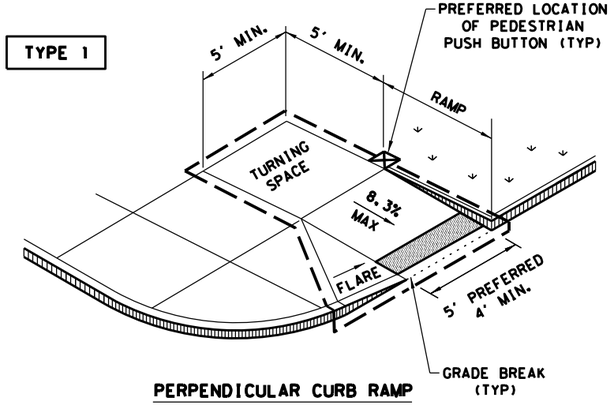
CONCRETE CURB AND CURB AND GUTTER

CCCG-12

FILE: cccg12.dgn	DN: TxDOT	CK: AM	DW: VP	CK: VP
© TxDOT: 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS UPDATED 2012 - VP	0022	10	073,ETC	US 90,ETC
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		152

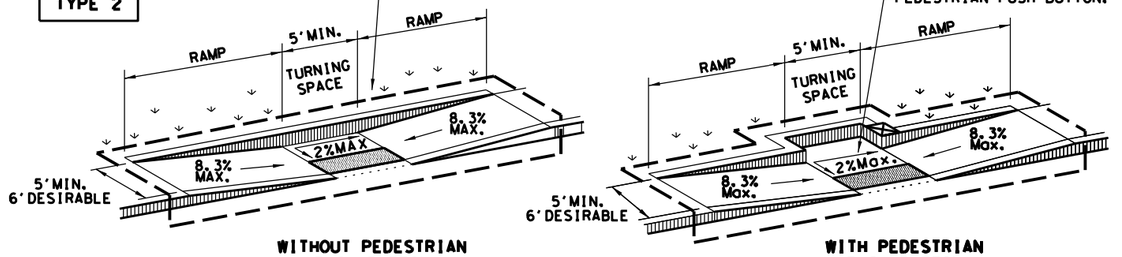
DATE: 3/5/2021
FILE: pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5113-03\Design\Standards\ped18.dgn

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

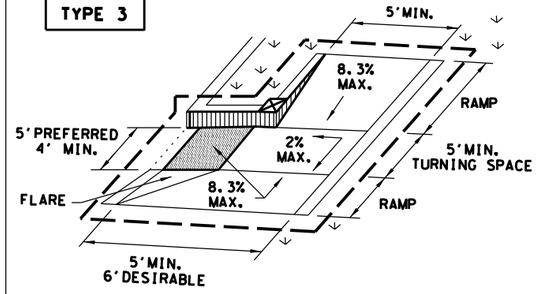


WITHOUT PEDESTRIAN PUSH BUTTON

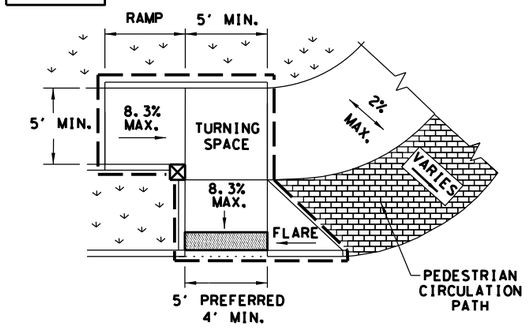
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

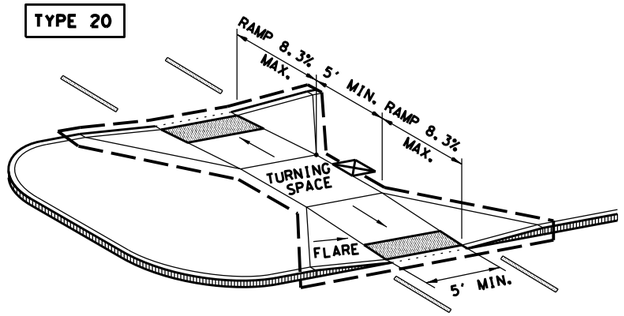


TYPE 6



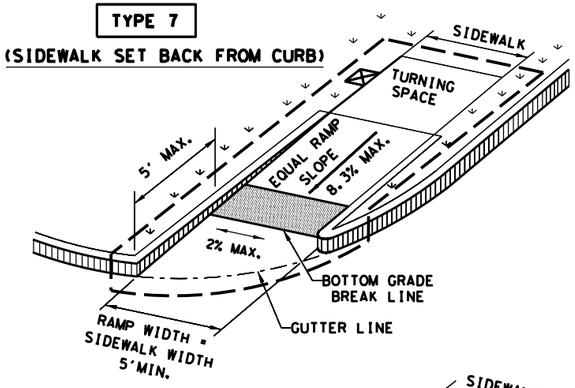
COMBINATION CURB RAMPS

TYPE 20

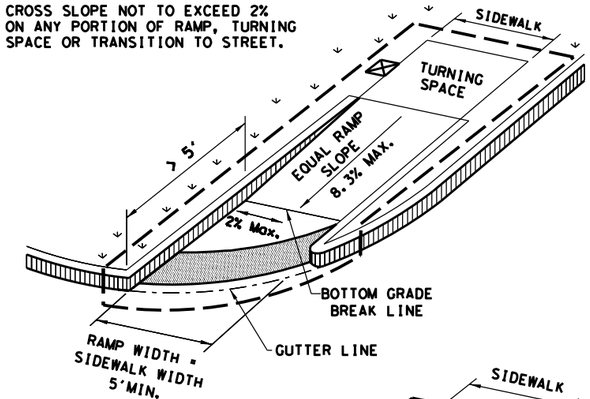


CURB RAMPS AT MEDIAN ISLANDS

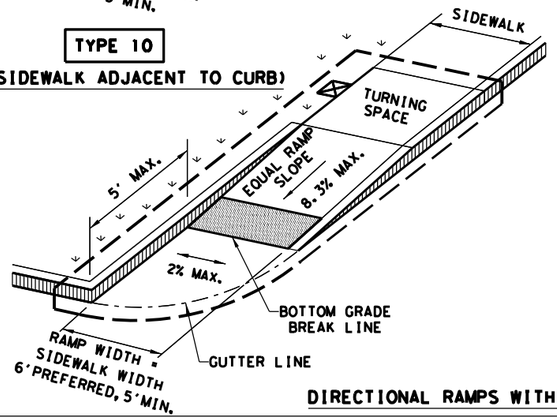
TYPE 7
(SIDEWALK SET BACK FROM CURB)



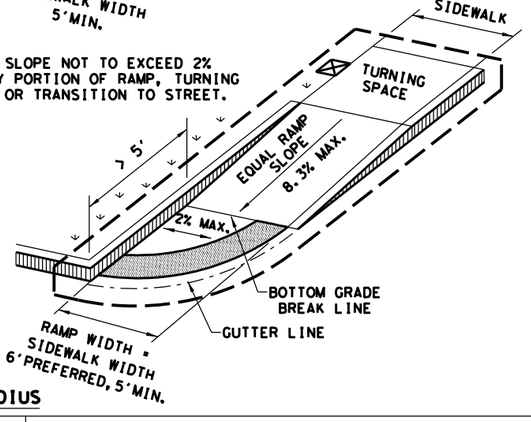
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10
(SIDEWALK ADJACENT TO CURB)

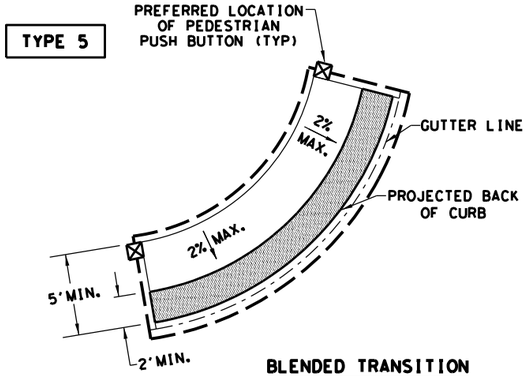


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

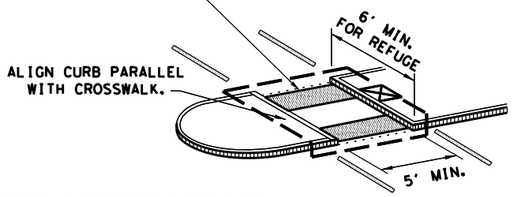
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

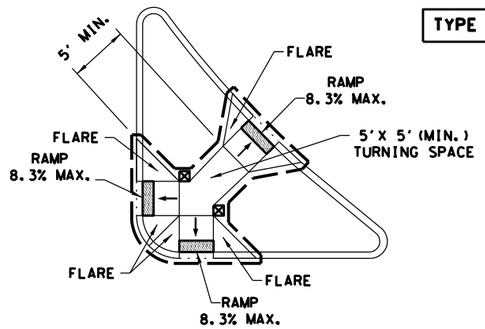
TYPE 21

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



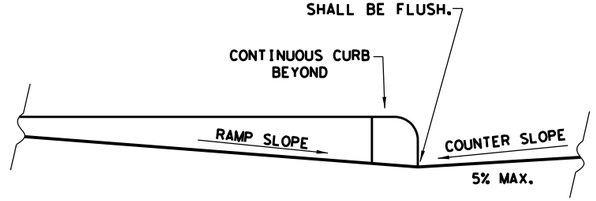
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

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



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK .....

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0022	10	073,ETC	US 90,ETC
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		153

DATE: 3/5/2021
FILE: pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5113-03\Design\Standards\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 applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

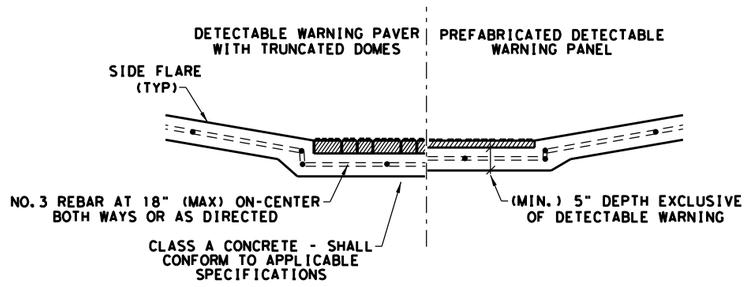
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

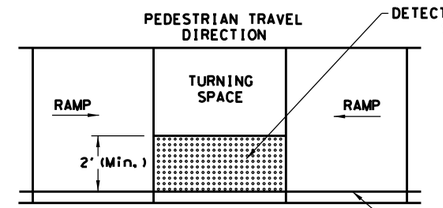
SIDEWALKS

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.

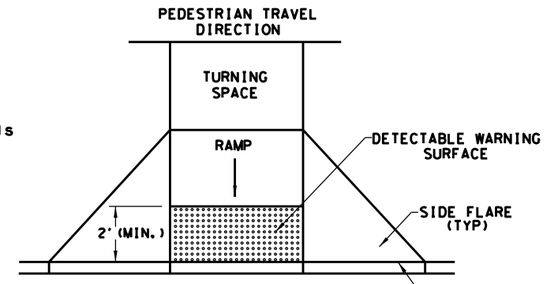


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

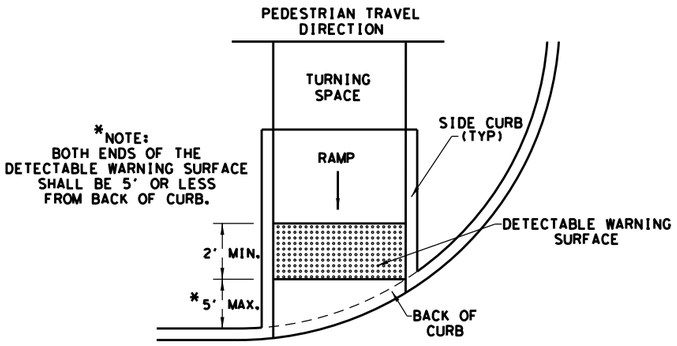
DETECTABLE WARNING SURFACE DETAILS



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.

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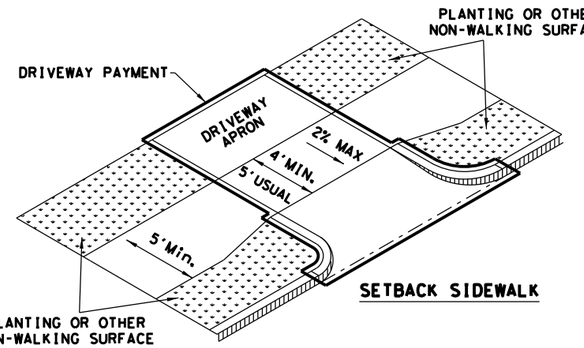
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

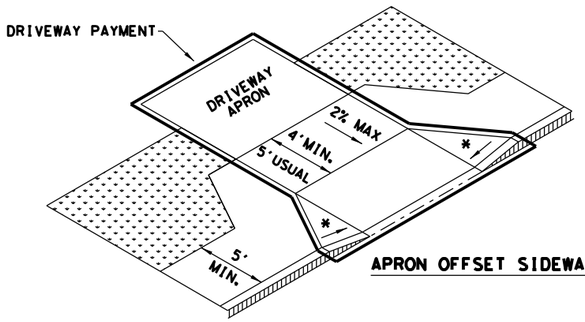
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0022	10	073, ETC	US 90, ETC
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		154

DATE: 3/5/2021
FILE: pw:\\donnenbaum-pw.bentley.com:donnenbaum-pw-01\Documents\Transportation\5113-03\Design\Standards\ped18.dgn

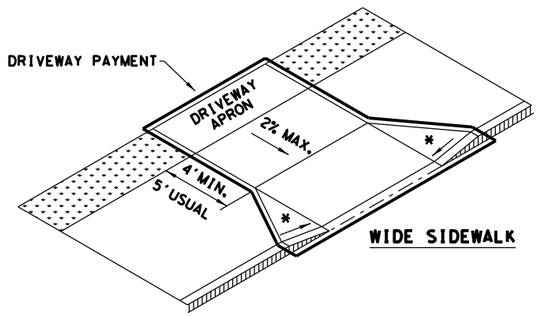
SIDEWALK TREATMENT AT DRIVEWAYS



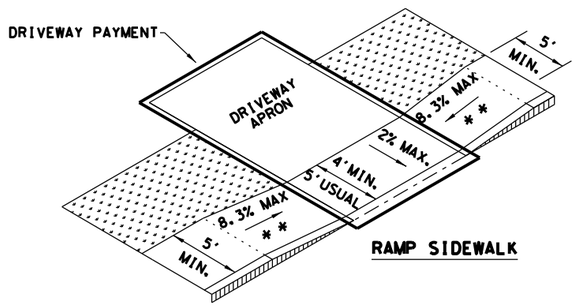
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

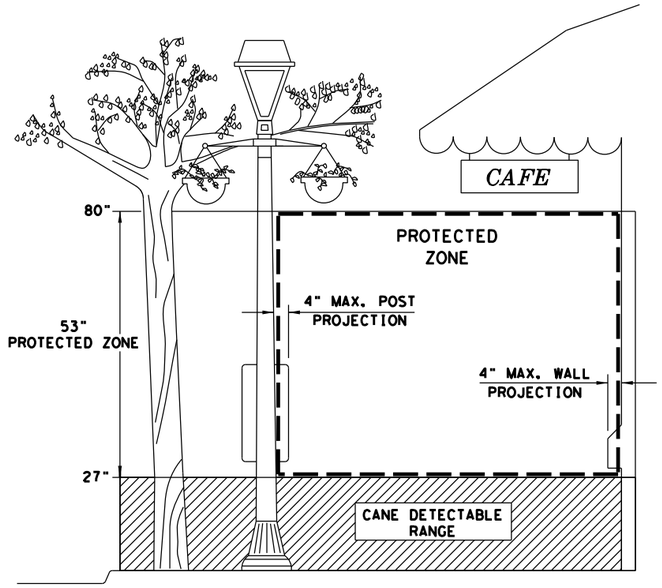


RAMP SIDEWALK

NOTES:

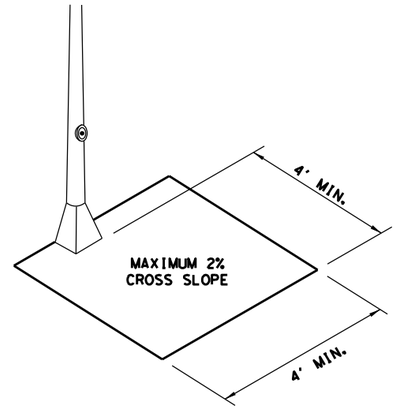
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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

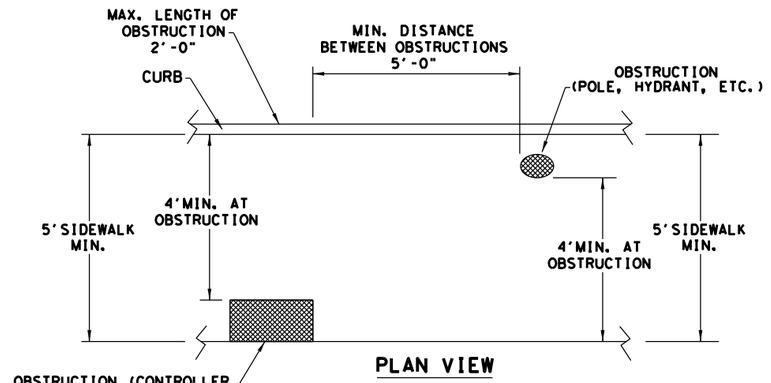


PROTECTED ZONE

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



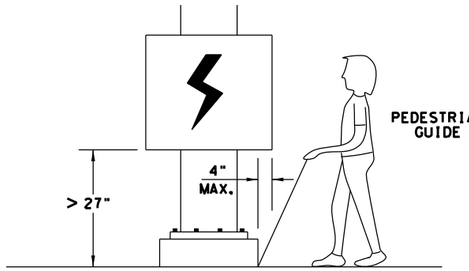
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



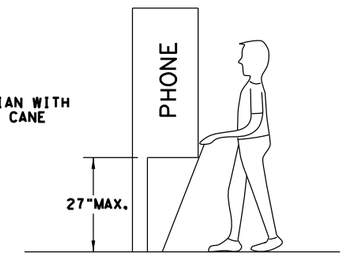
PLAN VIEW

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	0022	10	073,ETC		US 90,ETC
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST		COUNTY		SHEET NO.
	LRD		VAL VERDE		155

DATE: 3/5/2021
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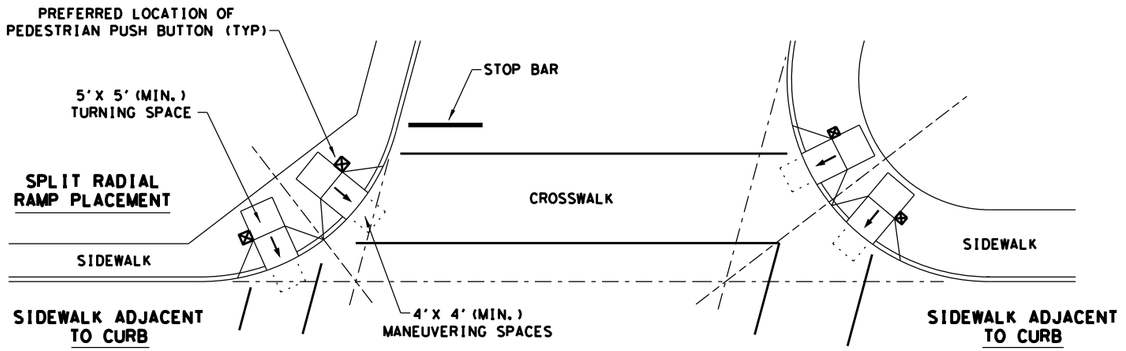
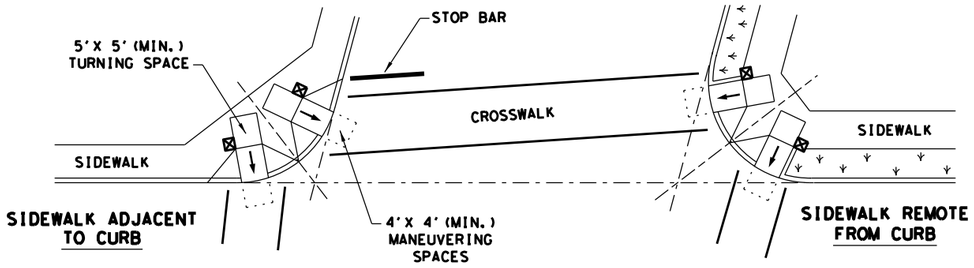
TYPICAL CROSSING LAYOUTS

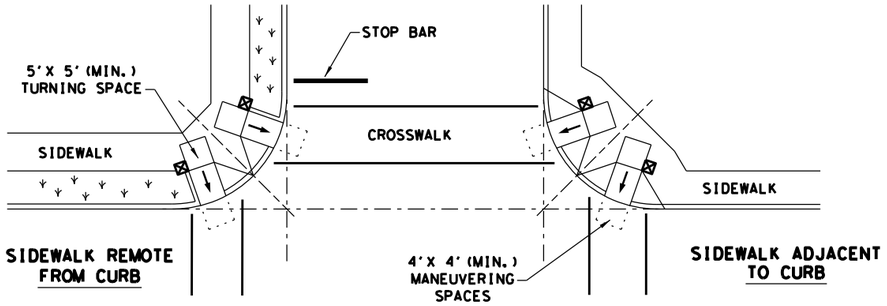
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



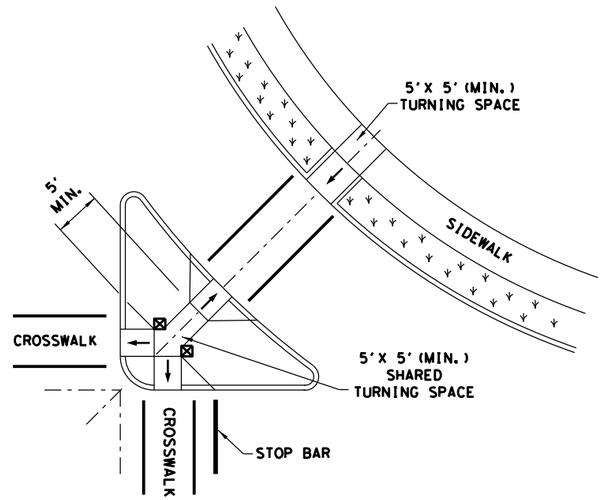
SKEWED INTERSECTION WITH "LARGE" RADIUS



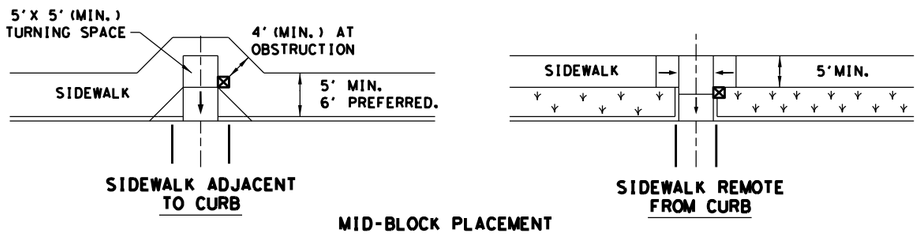
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

SHEET 4 OF 4

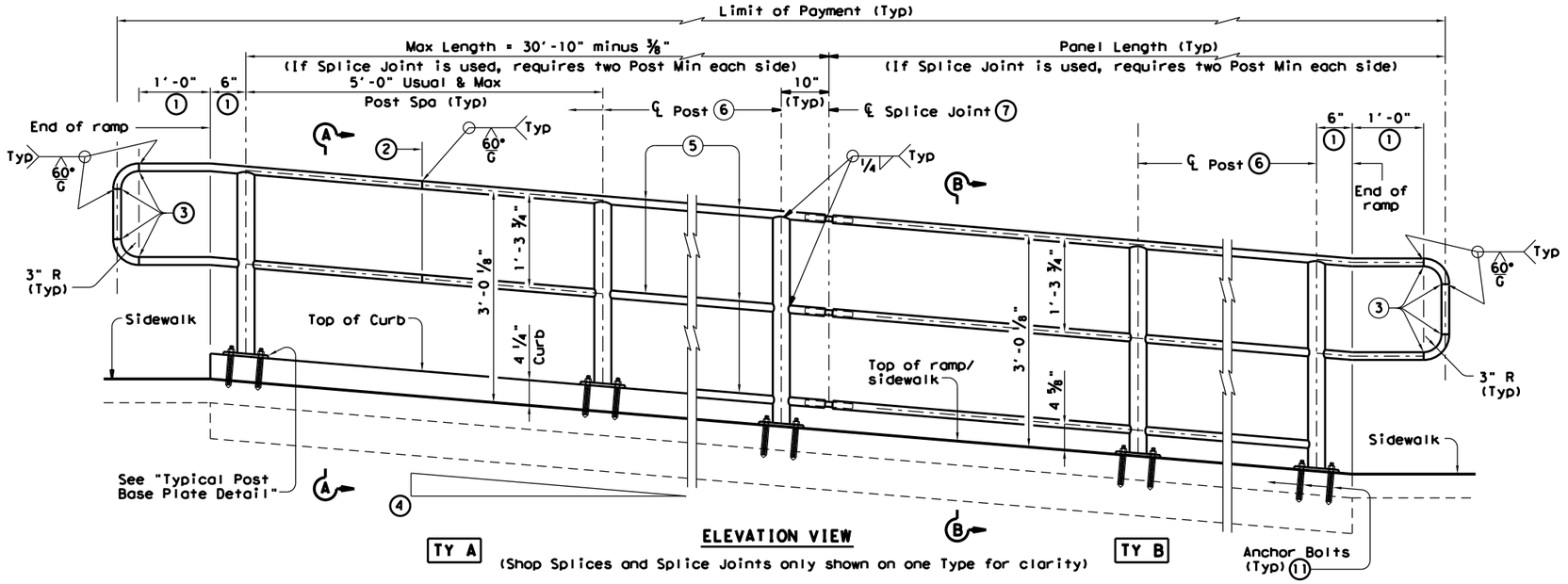
Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

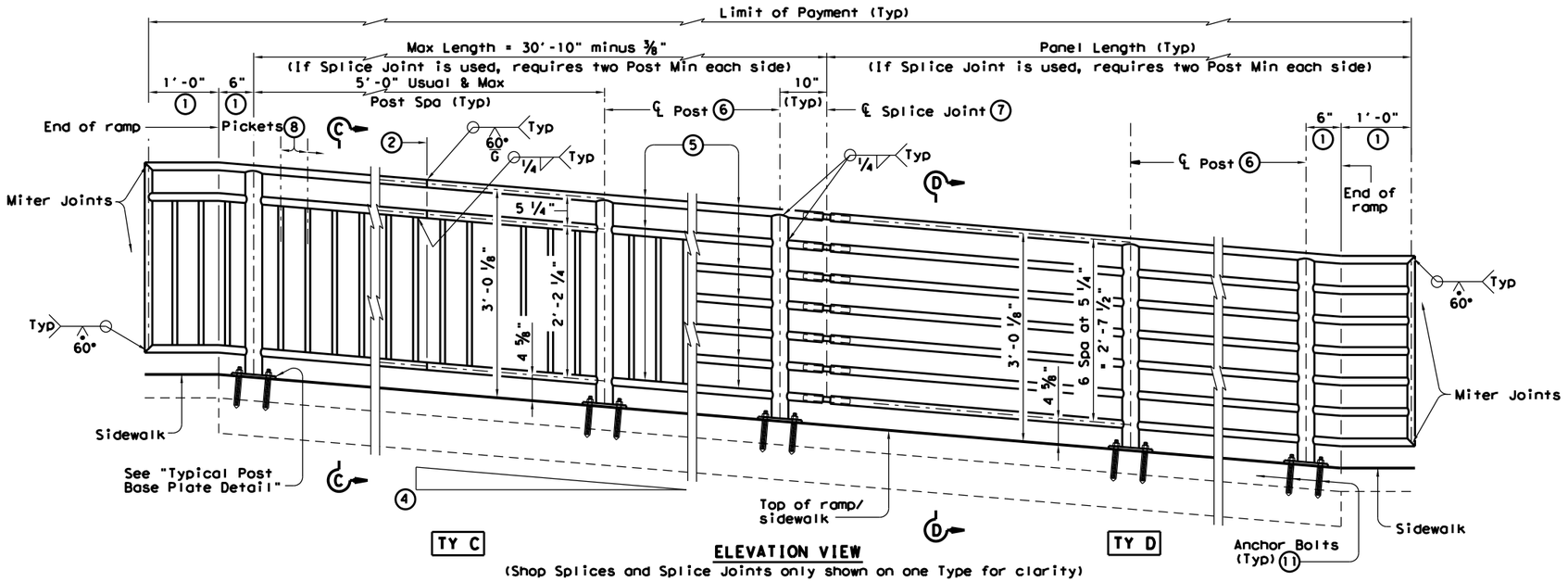
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0022	10	073,ETC	US 90,ETC
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		156

DATE: 3/5/2021
FILE: pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5113-03\Design\Standards\prd13.dgn



ELEVATION VIEW

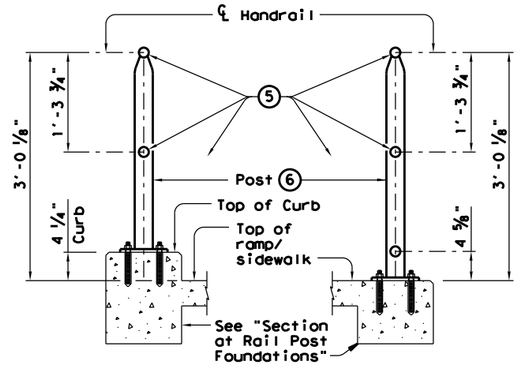
(Shop Splices and Splice Joints only shown on one Type for clarity)



ELEVATION VIEW

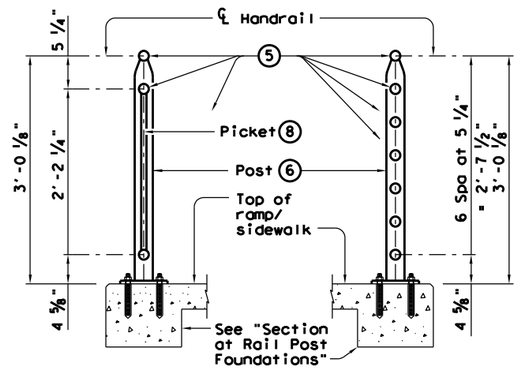
(Shop Splices and Splice Joints only shown on one Type for clarity)

RECOMMENDED USAGE (9)(10)	
Dropoff Height/ Condition	Recommended Rail Options
< 30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F



SECTION A-A
(Showing Handrail TY A)

SECTION B-B
(Showing Handrail TY B)



SECTION C-C
(Showing Handrail TY C)

SECTION D-D
(Showing Handrail TY D)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
9. When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
10. Not to be used on bridges.
11. See "General Notes" for anchor bolt information.

SHEET 1 OF 3

Texas Department of Transportation

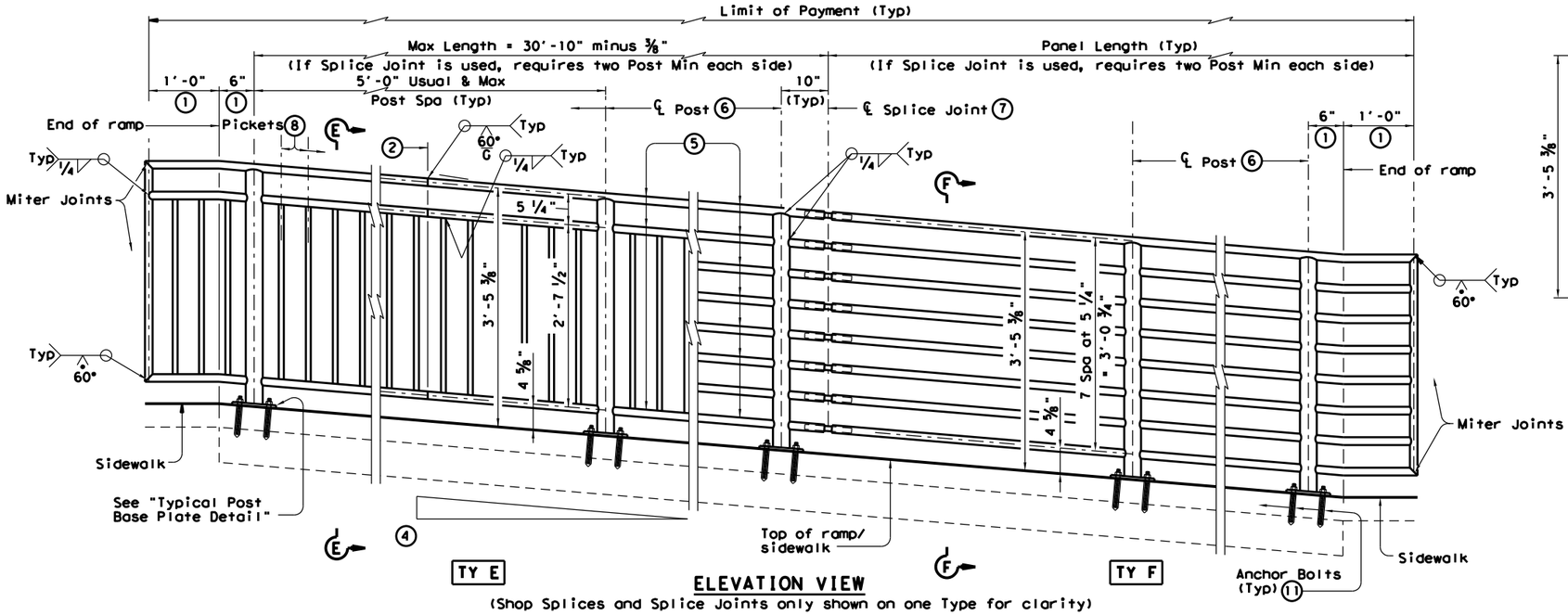
Design Division Standard

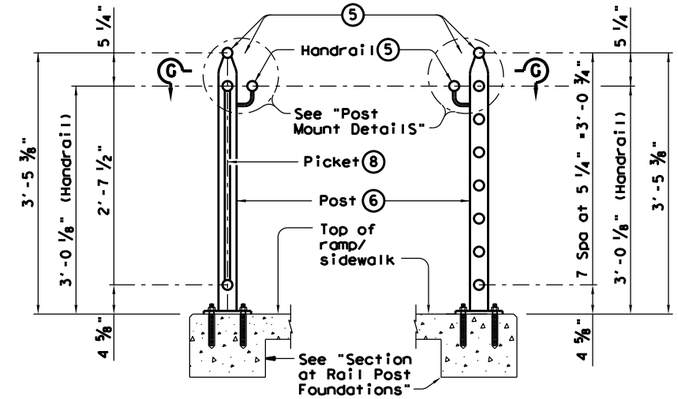
PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT Decmeber 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	0022	10	073,ETC	US 90,ETC
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		157

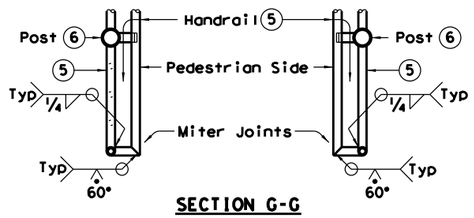
DATE: 3/5/2021
FILE: pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\S113-03\Design\Standards\prd13.dgn



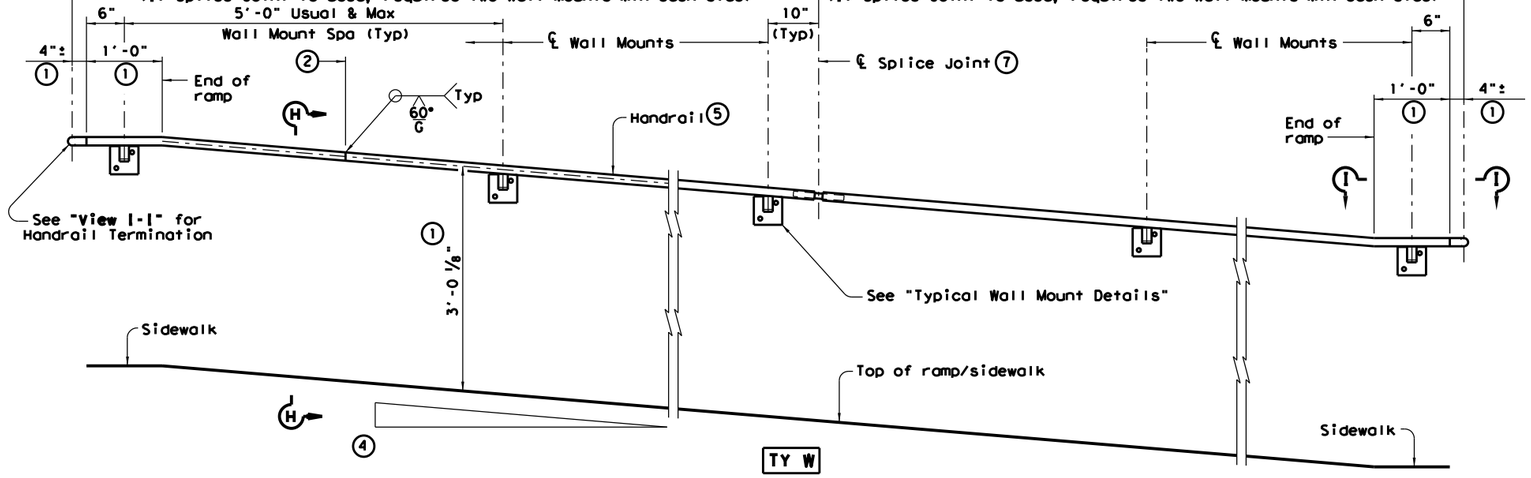


SECTION E-E
(Showing Handrail TY E)

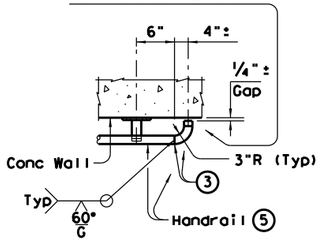
SECTION F-F
(Showing Handrail TY F)



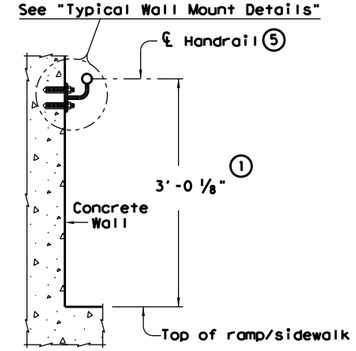
SECTION G-G
(Showing Handrail Termination)



ELEVATION VIEW



VIEW I-I
(Showing Handrail Termination)



SECTION H-H
(Showing Handrail TY W)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
11. See "General Notes" for anchor bolt information.

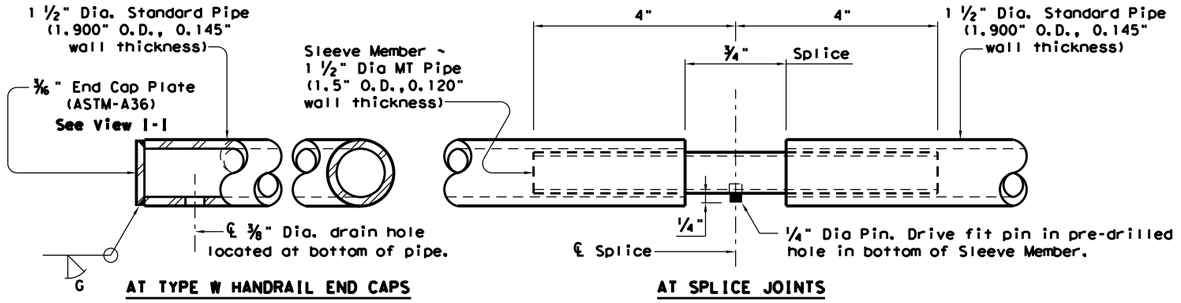
Texas Department of Transportation — Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	0022	10	073,ETC	US 90,ETC
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		158

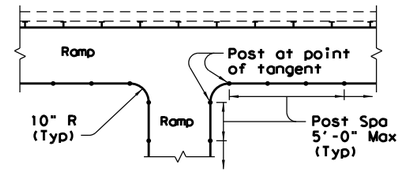
DATE: 3/5/2021
FILE: pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5113-03\Design\Standards\prd13.dgn



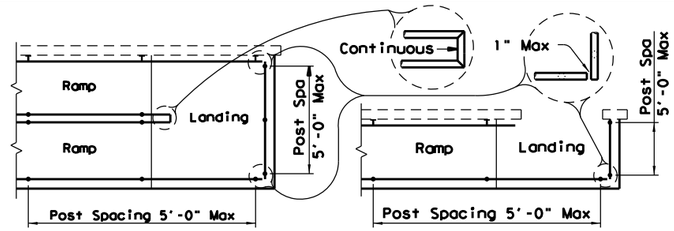
AT TYPE W HANDRAIL END CAPS

AT SPLICE JOINTS

HANDRAIL FABRICATION DETAILS



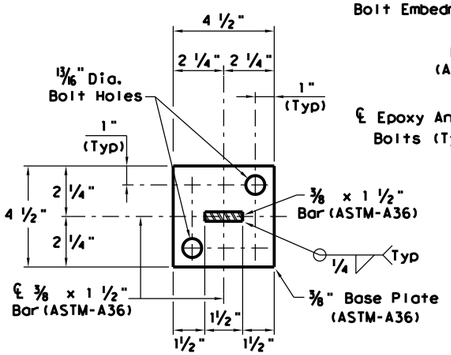
RAMP INTERSECTION



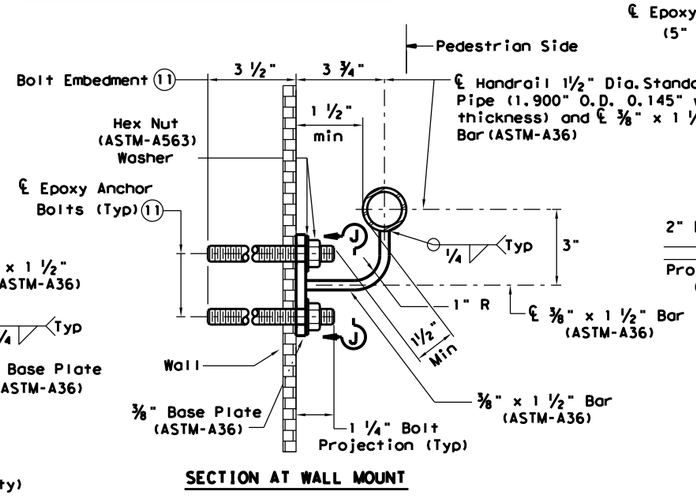
MULTI-LEVEL RAMP

SINGLE-LEVEL RAMP

PLAN SHOWING RAIL AT RAMP CONDITIONS

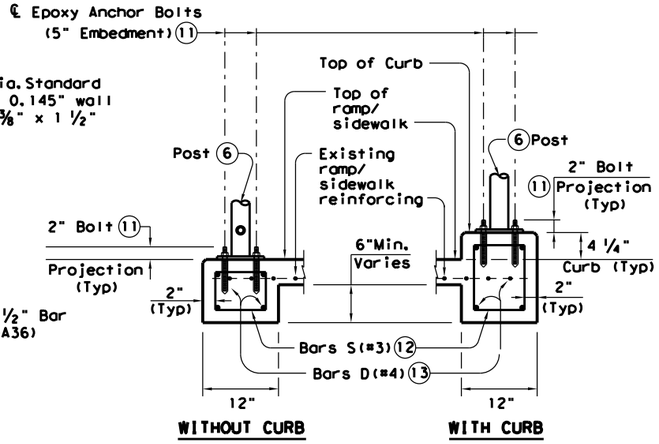


SECTION J-J
(Anchor Bolts not shown for clarity)



SECTION AT WALL MOUNT

TYPICAL WALL MOUNT DETAILS



WITHOUT CURB

WITH CURB

SECTION AT RAIL POST FOUNDATIONS

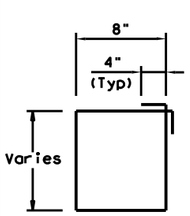
(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diamenter of top rail. Provide holes as needed in post for galvanizing drainage and venting.

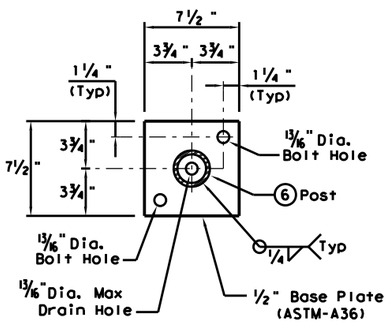
(11) See "General Notes" for anchor bolt information.

(12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).

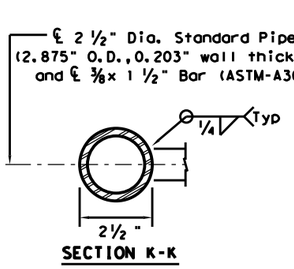
(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.



BARS S (#3)

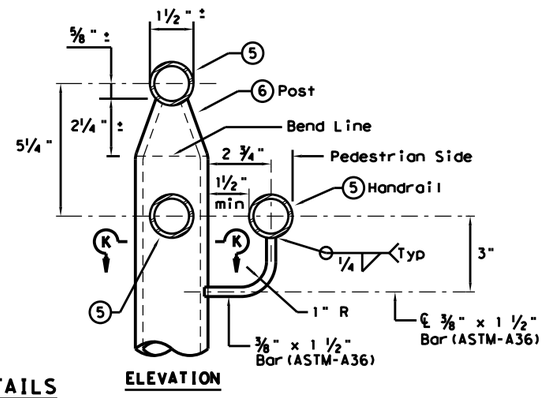


TYPICAL POST BASE PLATE DETAIL



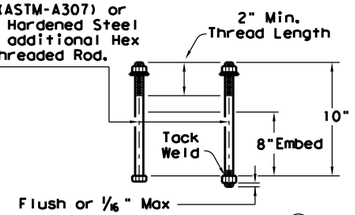
SECTION K-K

POST MOUNT DETAILS



ELEVATION

℄ ⅝" Dia. Hex Head Anchor Bolt (ASTM-A307) or Threaded Rod (ASTM-A36) with one Hardened Steel Washer placed under Hex Nut. One additional Hex Nut will be furnished for each Threaded Rod.



CAST-IN-PLACE ANCHOR BOLT OPTIONS (11)
(Used for Post Base Plate only)

GENERAL NOTES

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be ⅝" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. ⅝" Dia. threaded rod embedment depth for wall mounts is 3 ½" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be ⅝" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

All exposed edges will be rounded or chamfered to approximately ⅛" by grinding.

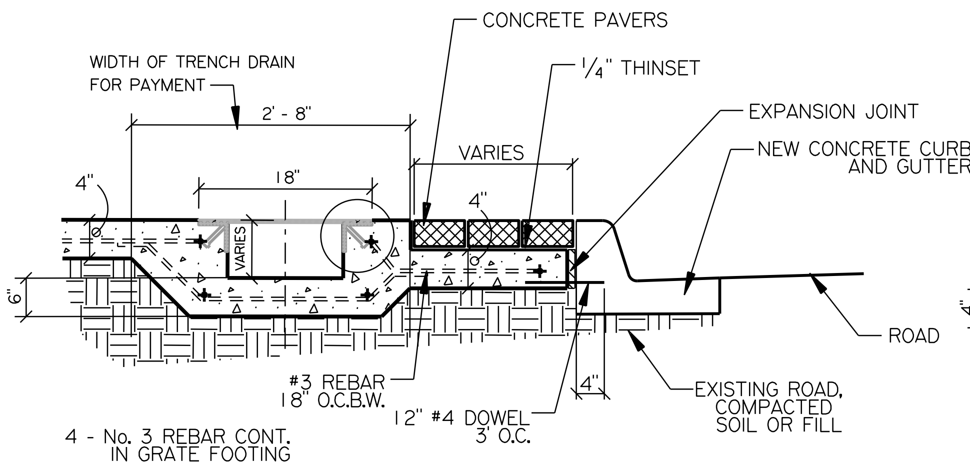
Texas Department of Transportation

Design Division Standard

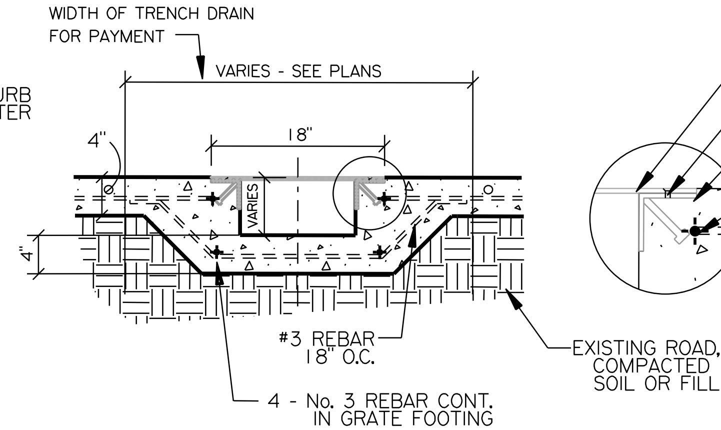
PEDESTRIAN HANDRAIL DETAILS

PRD-13

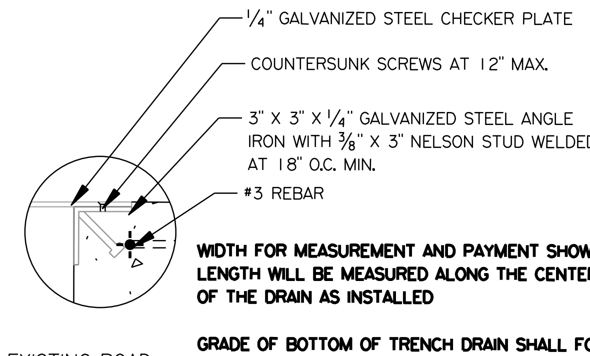
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	0022	10	073,ETC	US 90,ETC
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		159



ADJACENT TO CURB



REMOTE FROM CURB



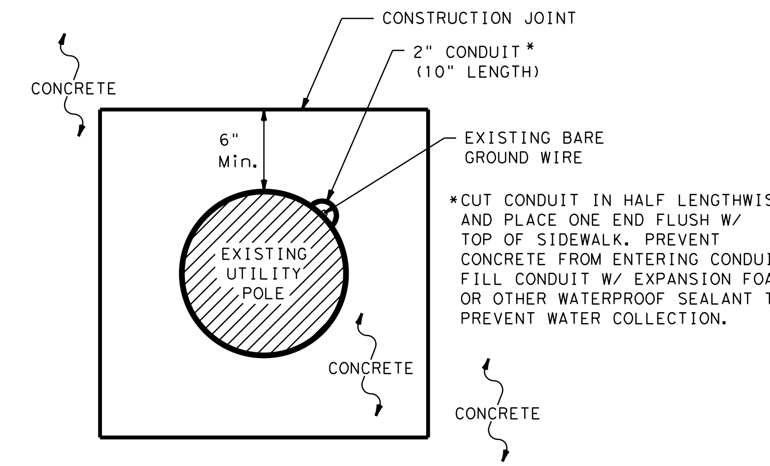
WIDTH FOR MEASUREMENT AND PAYMENT SHOWN. LENGTH WILL BE MEASURED ALONG THE CENTERLINE OF THE DRAIN AS INSTALLED

GRADE OF BOTTOM OF TRENCH DRAIN SHALL FOLLOW EXISTING GRADE OF GUTTER LINE UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.

GRATE CONNECTION

CONCRETE TRENCH DRAIN

NTS

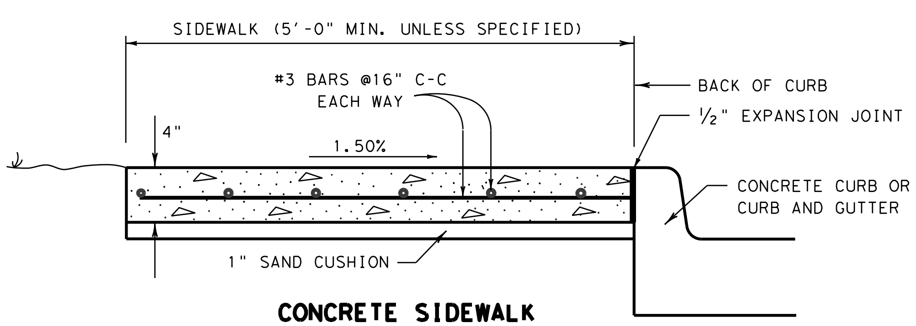


*CUT CONDUIT IN HALF LENGTHWISE AND PLACE ONE END FLUSH W/ TOP OF SIDEWALK. PREVENT CONCRETE FROM ENTERING CONDUIT. FILL CONDUIT W/ EXPANSION FOAM OR OTHER WATERPROOF SEALANT TO PREVENT WATER COLLECTION.

BARE GROUND WIRE PROTECTION

SUBSIDIARY TO ITEM 531, SIDEWALK OR CURB RAMP

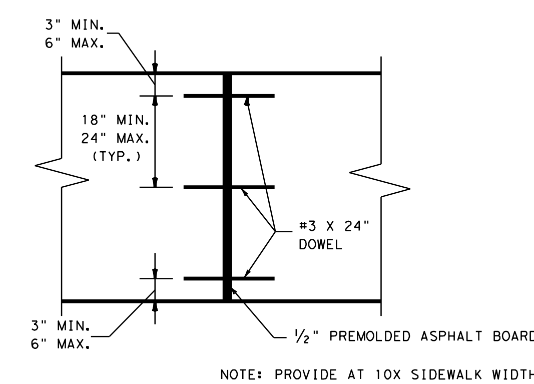
NTS



CONCRETE SIDEWALK
(ADJACENT TO CURB)

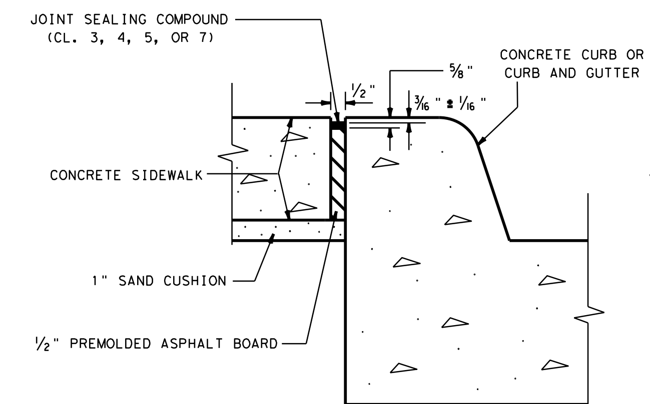
CONCRETE SIDEWALK DETAIL

NTS



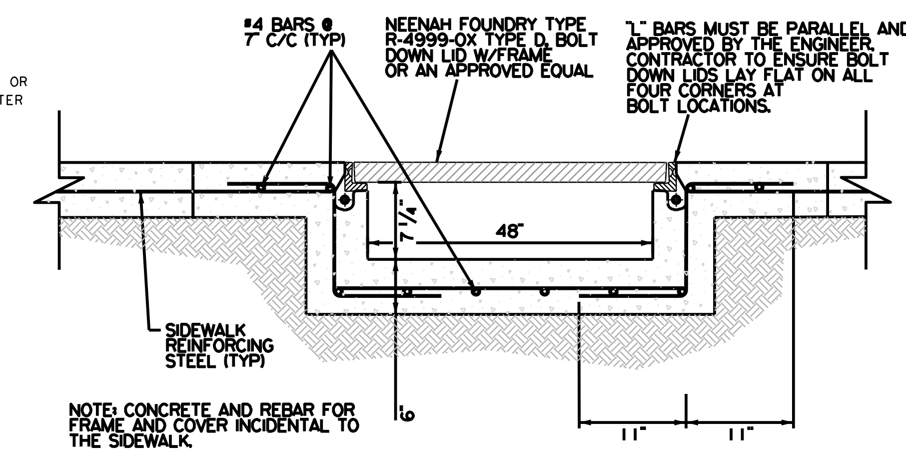
TRANSVERSE EXPANSION JOINT

NTS



1/2" EXPANSION JOINT

(SIDEWALK ADJACENT TO CURB) NTS



NOTE: CONCRETE AND REBAR FOR FRAME AND COVER INCIDENTAL TO THE SIDEWALK.

SIDEWALK (SPECIAL) (TYPE A)

(SIDEWALK BRIDGE) ITEM 531-6032

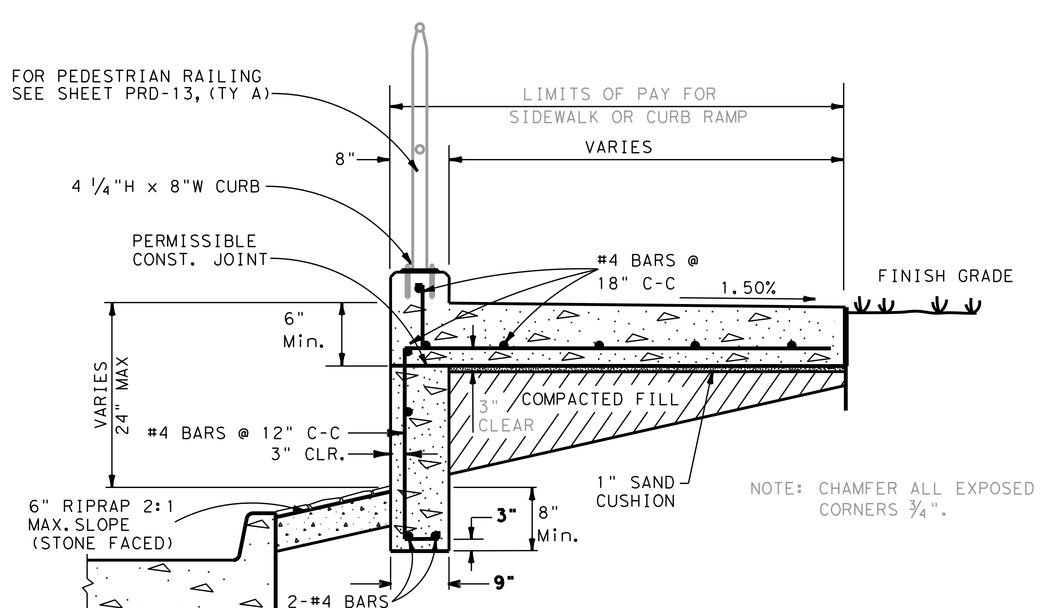
NTS

SEE PLAN SHEETS FOR LOCATIONS OF SIDEWALKS AND RETAINING WALLS.

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.

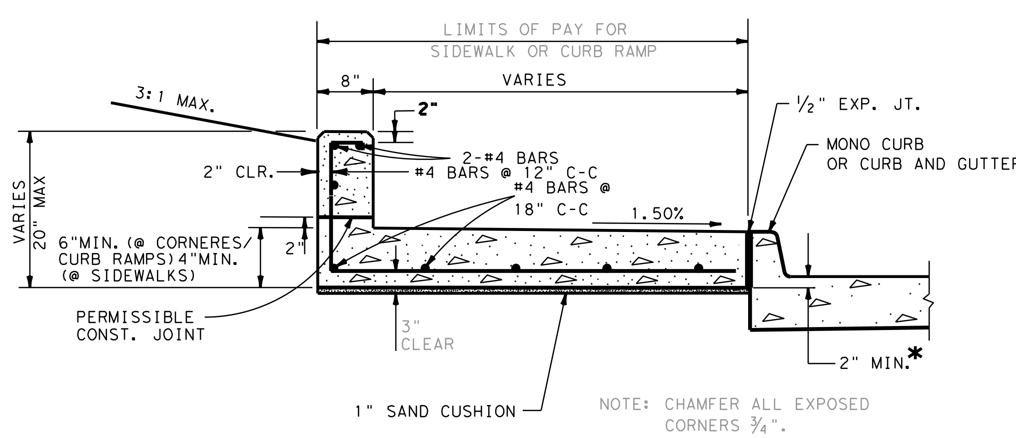
IF SIDEWALK WIDTH IS LESS THAN 5', PROVIDE 5' x 5' PASSING AREAS AT INTERVALS NOT TO EXCEED 200' SPACING.

SURFACE TREATMENT OF RETAINING WALL FACE DETAILED ELSEWHERE IN THE PLANS.



CONC SIDEWALK w/ RETAINING WALL

RETAINING WALL, (CAST-IN-PLACE) NTS



*2" MIN. REQUIRED FOR LATERAL SUPPORT.

CONC SIDEWALK OR RAMP w/ SIDE CURB

SIDE CURB SUBSIDIARY TO ITEM 531, SIDEWALK OR CURB RAMP NTS

03/05/2021

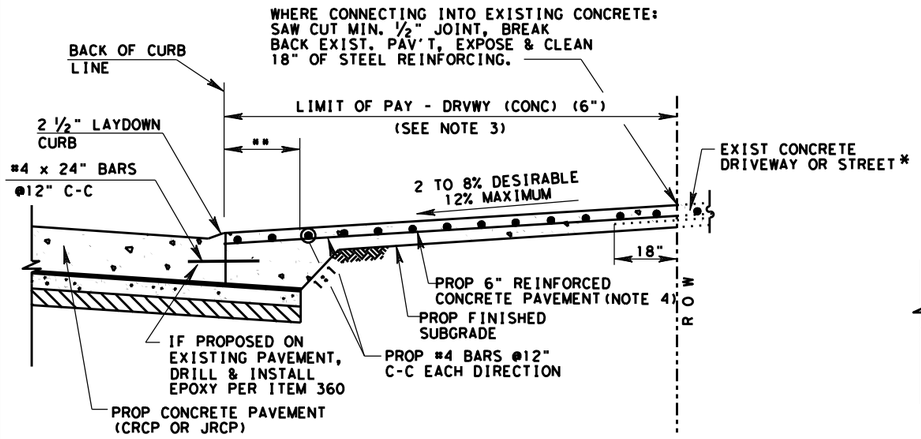
Texas Department of Transportation

MISC CONSTRUCTION DETAILS

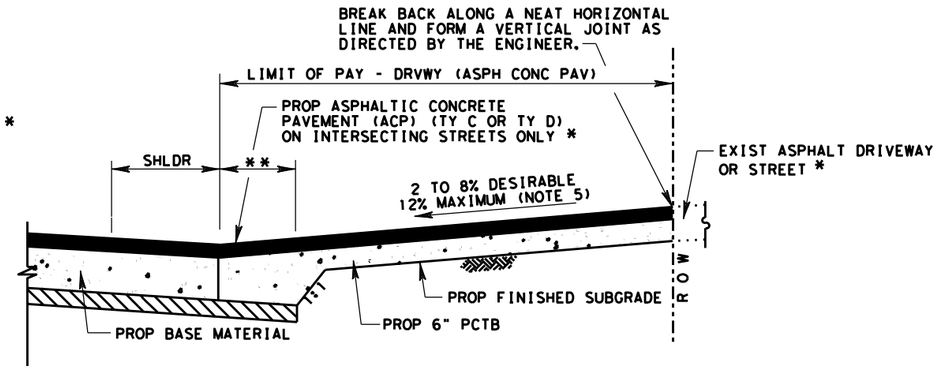
(SHT 1 OF 1)

ORIGINAL DRAWING	FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
	6	SEE TITLE SHEET		160
REVISIONS:	STATE	DIST.	COUNTY	
	TEXAS	LRD	VAL VERDE	
	CONT.	SECT.	JOB	HIGHWAY NO.
	0022	10	073,ETC	US 90,ETC

LEVELS DISPLAYED 1 3 6



PROPOSED DRIVEWAY DETAIL
REINFORCED CONCRETE AT CONCRETE CURB AND GUTTER ROADWAY



PROPOSED DRIVEWAY DETAIL
ASPHALT W/ PCTB AT ASPHALT ROADWAY

NOTES:

1. ALSO SEE SHEET 2 OF 2 FOR DRIVEWAY SLOPES WITH PROPOSED SIDEWALKS.
2. FOR INTERSECTIONS BUILT WITH CRCP PAVEMENT SEE CRCP DETAIL.
3. FAST TRACK CONCRETE IS PAID AS DRVWY (CONC) (FAST TRACK).
4. THICKNESS OF DRIVEWAY IS 6 INCHES FOR REGULAR AND FAST TRACK CONCRETE.
5. MAXIMUM SLOPE IS: 12% RESIDENTIAL 8% OTHERS

LEGEND:

PCTB- PORTLAND CEMENT TREATED BASE

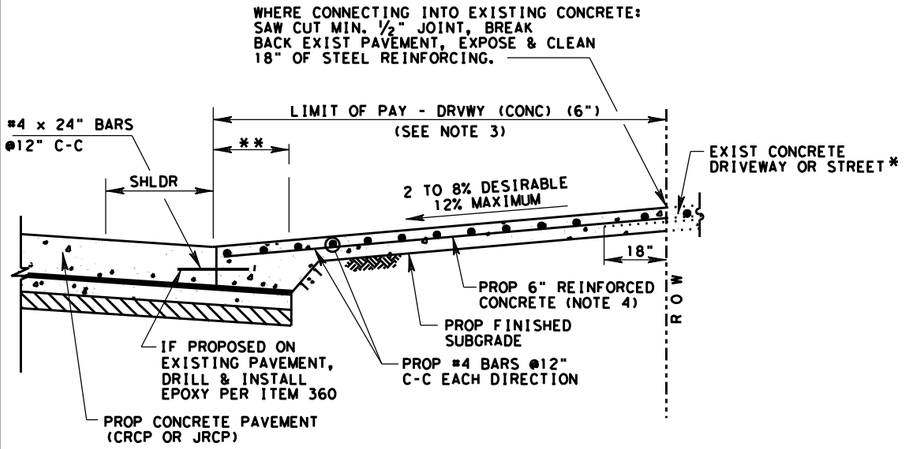
JRCP- JOINTED REINFORCED CONCRETE PAVEMENT

CRCP- CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

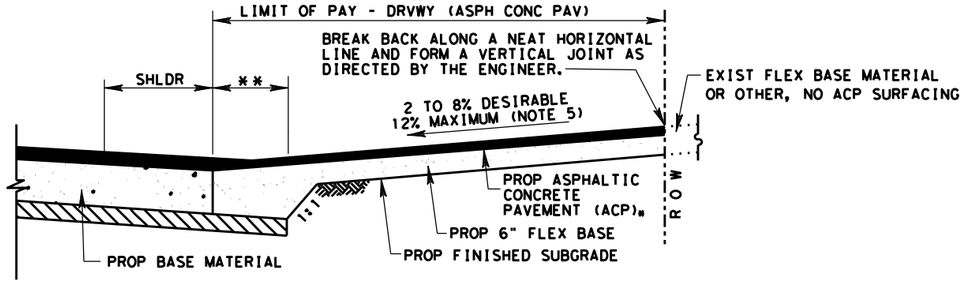
ACP- ASPHALTIC CONCRETE PAVEMENT

* FOR STREET INTERSECTIONS REFER TO PAVING DETAILS AND INTERSECTION DETAILS FOR REINFORCING STEEL AND SECTION REQUIREMENTS.

** PROPOSED LIMIT OF ROADWAY BASE AND/OR SUBGRADE



PROPOSED DRIVEWAY DETAIL
REINFORCED CONCRETE AT CONCRETE ROADWAY



PROPOSED DRIVEWAY DETAIL
ASPHALT W/ FLEX BASE AT ASPHALT ROADWAY

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107317
LICENSED PROFESSIONAL ENGINEER
03/05/2021

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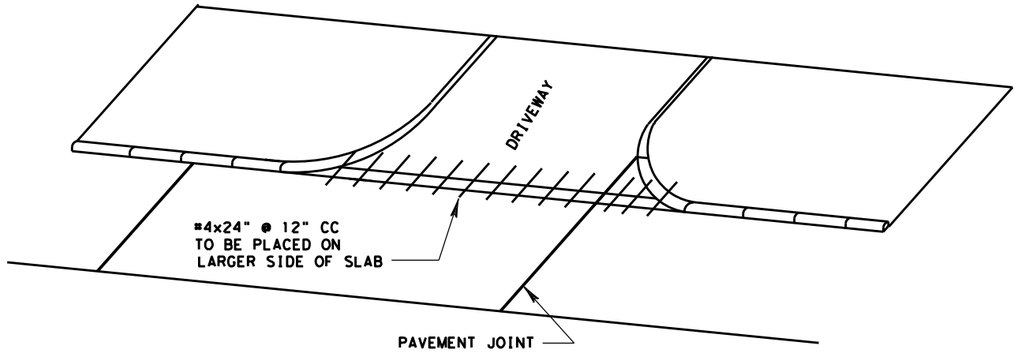
DRIVEWAY DETAILS

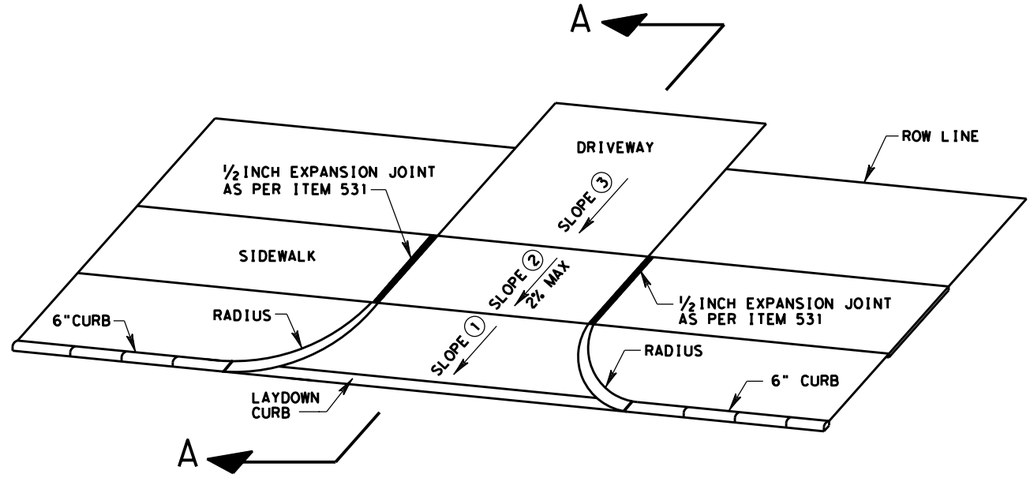
DD

FILE: STDB-8a.dgn	DN:	CK:	DW:	CK:		
© TxDOT SEPT. 2004	DIST	FED REG	PROJECT NO.			SHEET
REVISIONS 11/15 ADDED NOTE FOR PCTB 3/17 MODIFIED PAVEMENT SLOPES	LRD	6				161
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	VAL VERDE		0022	1073, ETC	90, ETC	

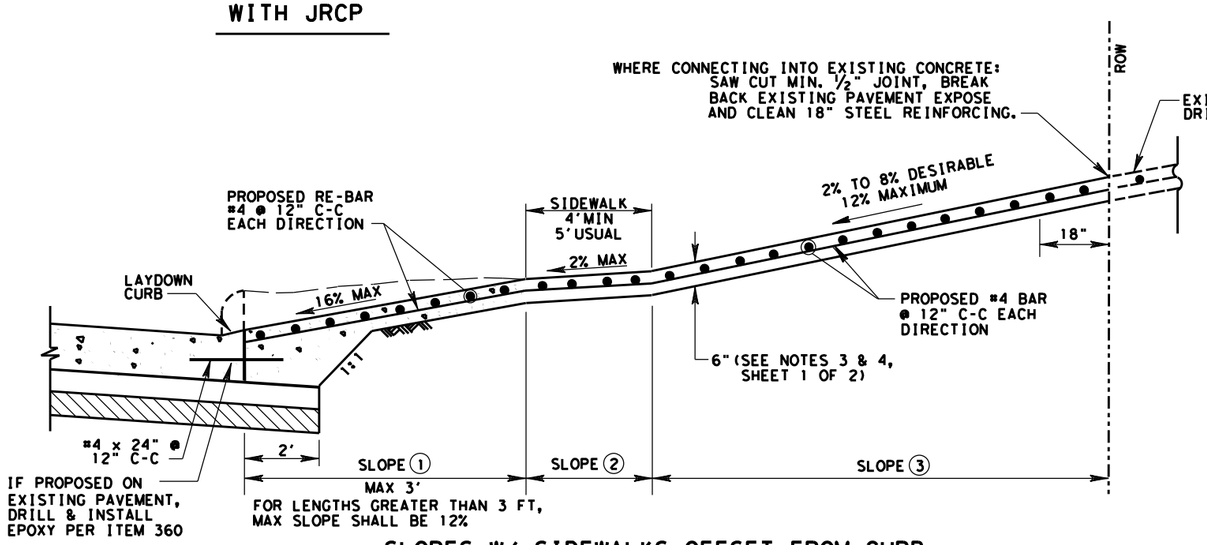
STDB8A



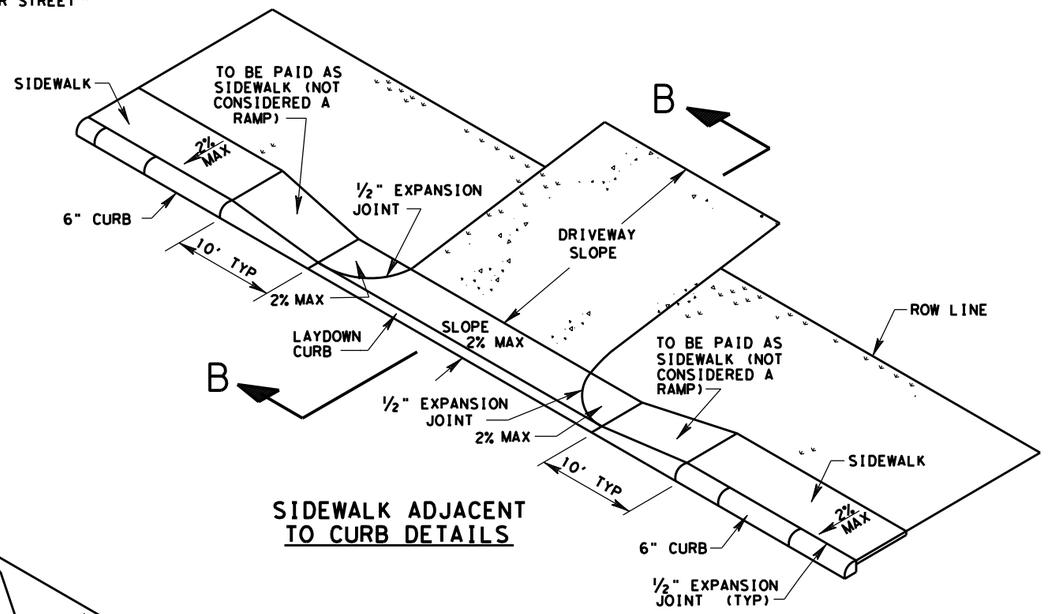
TIE BAR PLACEMENT WITH JRCP



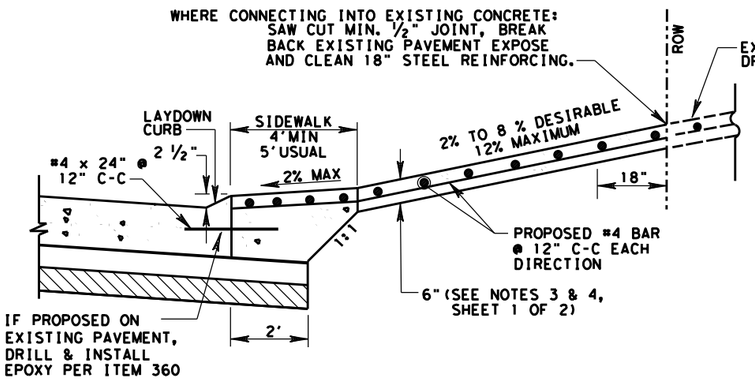
SIDEWALK OFFSET FROM CURB DETAILS



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



SIDEWALK ADJACENT TO CURB DETAILS



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

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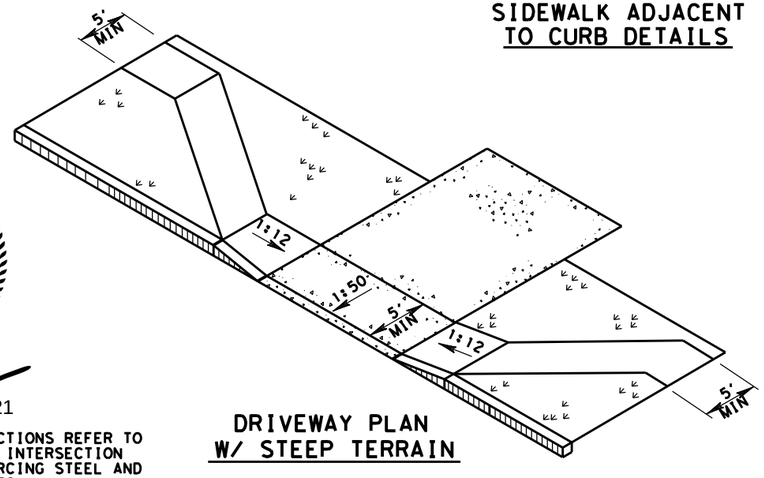
* FOR STREET INTERSECTIONS REFER TO PAVING DETAILS AND INTERSECTION DETAILS FOR REINFORCING STEEL AND SECTION REQUIREMENTS.



DRIVEWAY PLAN W/ STEEP TERRAIN

SHEET 2 OF 3

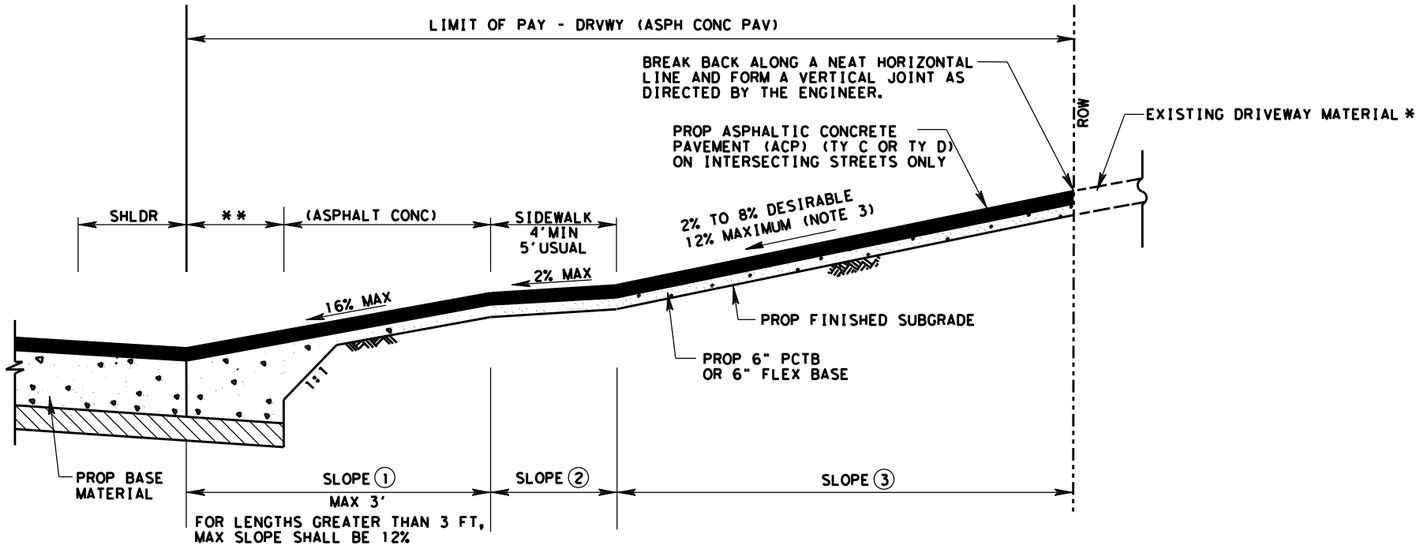
Texas Department of Transportation

DRIVEWAY DETAILS

DD

FILE: STDB-8b.dgn	DN:	CK:	DW:	CK:	
©TxDOT SEPT. 2004	DIST	FED REG	PROJECT NO.		SHEET
REVISIONS	LRD	6			162
9/09 ADDED NOTE FOR ITEM 360.	COUNTY		CONTROL	SECT	JOB	HIGHWAY
1/15 ADDED NOTE FOR PCTB	VAL VERDE		0022	1073,ETC	90,ETC

STDB8B



PROPOSED DRIVEWAY SLOPES
WITH SIDEWALKS OFFSET

NOTES:

1. ALSO SEE SHEET 2 OF 3 FOR DRIVEWAY SLOPES WITH PROPOSED SIDEWALKS.
2. FOR INTERSECTIONS BUILT WITH CRCP PAVEMENT SEE CRCP DETAIL.
3. MAXIMUM SLOPE IS: 12% RESIDENTIAL 8% OTHERS

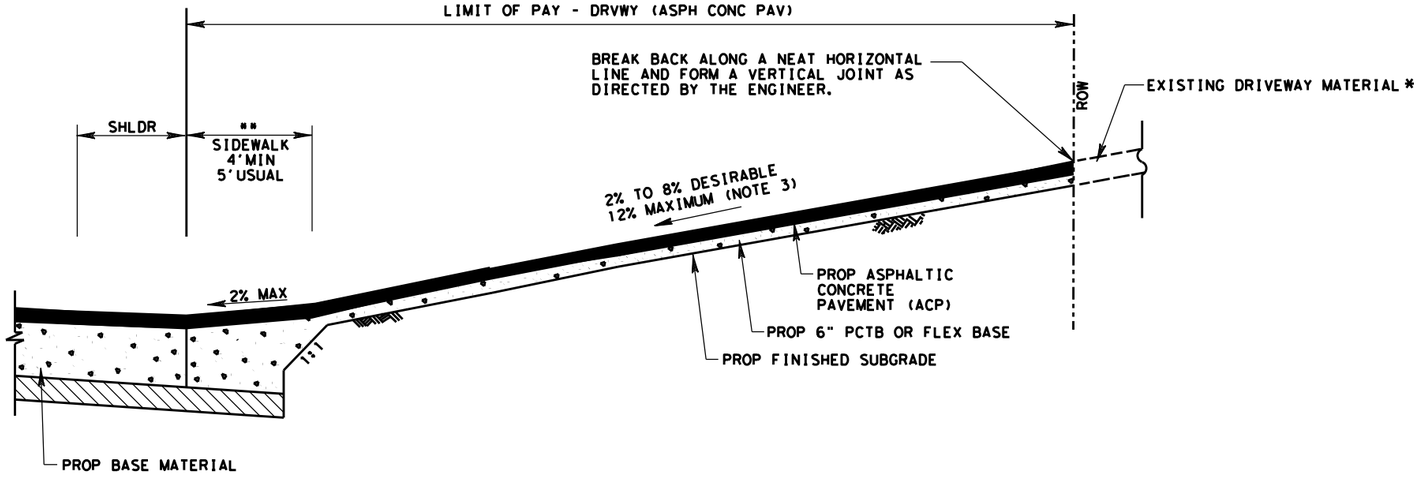
LEGEND:

PCTB- PORTLAND CEMENT TREATED BASE

ACP- ASPHALTIC CONCRETE PAVEMENT

* FOR STREET INTERSECTIONS REFER TO PAVING DETAILS AND INTERSECTION DETAILS.

** PROPOSED LIMIT OF ROADWAY BASE AND/OR SUBGRADE



PROPOSED DRIVEWAY SLOPES
WITH SIDEWALKS ADJACENT

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03/05/2021

SHEET 3 OF 3

Texas Department of Transportation

DRIVEWAY DETAILS

DD

FILE: STDB-8c.dgn	DN:	CK:	DW:	CK:		
© TxDOT SEPT. 2004	DIST	FED REG	PROJECT NO.			SHEET
REVISIONS 11/15 ADDED NOTE FOR PCTB 3/17 MODIFIED PAVEMENT SLOPES	LRD	6				163
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	VAL VERDE		0022	1073, ETC	90, ETC	

STDB8C

Culvert Station and/or Creek Name followed by applicable end (Lt, Rt or Both)	Description of Box Culvert No. Spans ~ Span X Height	Max Fill Height (Ft)	Applicable Box Culvert Standard (4)	Applicable Wingwall or End Treatment Standard	Skew Angle (0°,15°, 30° or 45°)	Side Slope or Channel Slope Ratio (SL:1)	T Culvert Top Slab Thickness (In)	U Culvert Wall Thickness (In)	C Estimated Curb Height (Ft)	Hw (1) Height of Wingwall (Ft)	A Curb to End of Wingwall (Ft)	B Offset of End of Wingwall (Ft)	Lw Length of Longest Wingwall (Ft)	Ltw Culvert Toewall Length (Ft)	Atw Anchor Toewall Length (Ft)	Riprap Apron (CY)	Class "C" Conc (Curb) (2) (CY)	Class "C" Conc (Wingwall) (3) (CY)	Total Wingwall Area (SF)
SL 166 - STA 70+30 (LT)	3 ~ 6' x 3'	1'	SCP-6	PW-1	0°	3:1	8"	7"	1.000 '	4.667 '	N/A	N/A	14.000 '	22.500 '	N/A	0.0	0.8	10.5	131

DISCLAIMER:
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NOTES:
Skew = 0° on SW-0, FW-0, SETB-CD, SETB-SW-0, and SETB-FW-0 standard sheets;
30° maximum for safety end treatment

SL:1 = Horizontal : 1 Vertical
· Side slope at culvert for flared or straight wingwalls.
· Channel slope for parallel wingwalls.
· Slope must be 3:1 or flatter for safety end treatments.

T = Box culvert top slab thickness. Dimension can be found on the applicable box culvert standard sheet.

U = Box culvert wall thickness. Dimension can be found on the applicable box culvert standard sheet.

C = Curb height

See applicable wing or end treatment standard sheets for calculations of Hw, A, B, Lw, Ltw, Atw, and Total Wingwall Area.

Hw = Height of wingwall

A = Distance from face of curb to end of wingwall (not applicable to parallel or straight wingwalls)

B = Offset of end of wingwall (not applicable to parallel or straight wingwalls)

Lw = Length of longest wingwall.

Ltw = Length of culvert toewall (not applicable when using riprap apron)

Atw = Length of anchor toewall (applicable to safety end treatment only)
Total Wingwall Area = Wingwall area in sq. ft. for two wingwalls (one structure end) if Lt or Rt.
Area for four wingwalls (two structure ends) if Both.

(1) Round the wall heights shown to the nearest foot for bidding purposes.

(2) Concrete volume shown is for box culvert curb only. For curbs using the Box Culvert Rail Mounting Details (RAC) standard sheet quantities shown must be increased by a factor of 2.25. If Class S concrete is required for the top slab of the culvert, also provide Class S concrete for the curb. Curb concrete is considered part of the Box Culvert for payment.

(3) Concrete volume shown is total of wings, footings, culvert toewall (if any), anchor toewalls (if any) and wingwall toewalls. Riprap aprons, culverts, and curb quantities are not included.

(4) Regardless of the type of culvert shown on this sheet, the Contractor has the option of furnishing cast-in-place or precast culverts unless otherwise shown elsewhere on the plans. If the Contractor elects to provide culverts of a different type than those shown on this sheet, it is the Contractor's responsibility to make the necessary adjustments to the dimensions and quantities shown.

STATE OF TEXAS
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03/05/2021

Texas Department of Transportation | Bridge Division Standard

BOX CULVERT SUPPLEMENT
WINGS AND END TREATMENTS

BCS

FILE: bcsstde1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT 0022	SECT 10	JOB 073,ETC	HIGHWAY US 90,ETC
REVISIONS	DIST LRD	COUNTY VAL VERDE		SHEET NO. 164

DATE: 3/5/2021 6:23:53 PM
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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

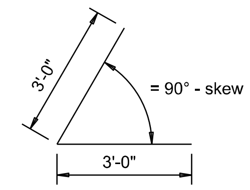
Maximum Wingwall Height Hw	Dimensions W	X	Y	Z	Variable Reinforcing: Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per ft of wing (2~wings) (4) Reinf (Lb/Ft)	Conc (CY/Ft)	Estimated Quantities per ft of Toewall (1~toewall) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2~wings)

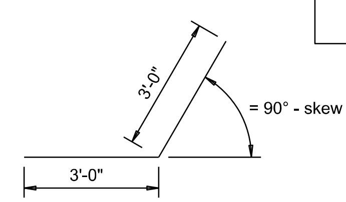
Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

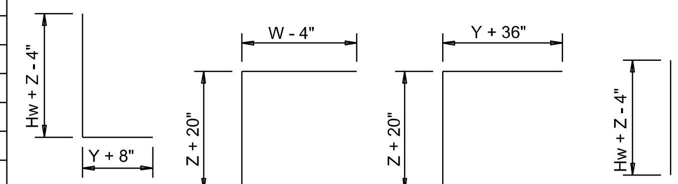
Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



BARS D1



BARS D2



BARS J1 BARS J2 BARS J3 BARS V

WING DIMENSION FORMULAS:

(All values are in feet.)

Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw ≥ 4'
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw < 4'

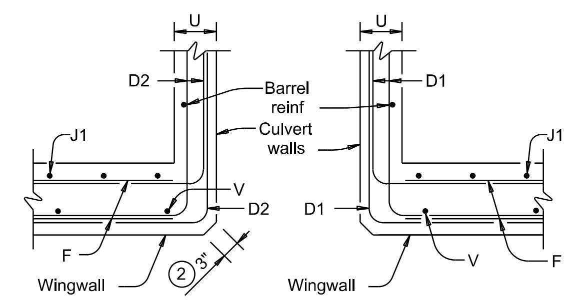
For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

For precast culverts:
Ltw = [(N) (2 U + S) + (N - 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) - 6 SF for Type PW-2 and Hw ≥ 4'
= (2)(Hw)(Lw) - 1.5 SF for Type PW-2 and Hw < 4'

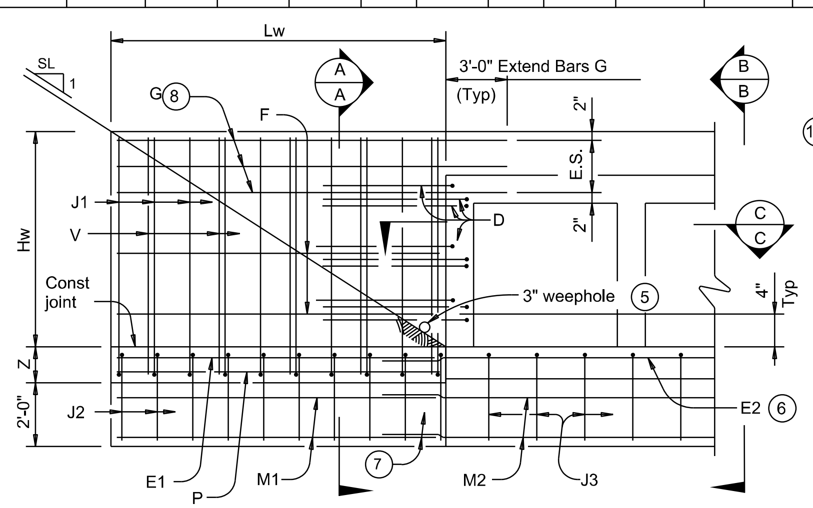
Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

See applicable box culvert standard sheet for S, H, T, and U values.

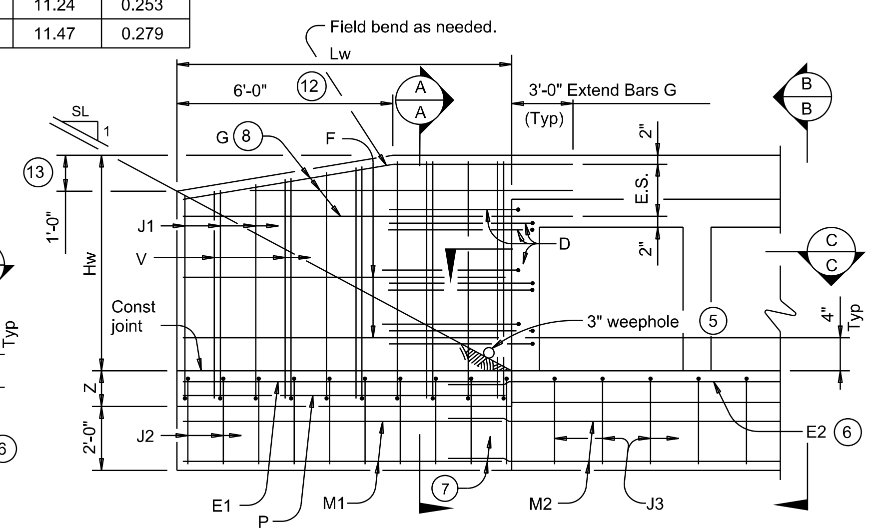
1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew ~ 1"
For 30° skew ~ 2"
For 45° skew ~ 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    · For structures without bridge rail, construct curbs no more than 3" above finished grade.
    · For structures with bridge rail, construct curbs flush with finished grade.
    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elswhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" for Hw < 4'.



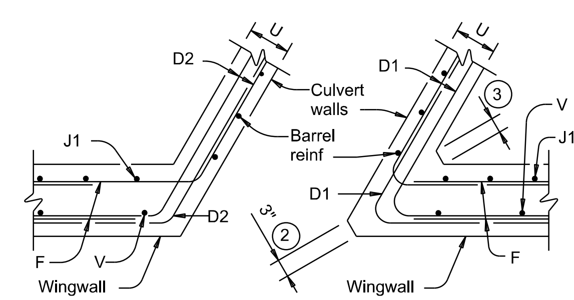
SECTION C-C - PW-1



PARTIAL ELEVATION - PW-1



PARTIAL ELEVATION - PW-2



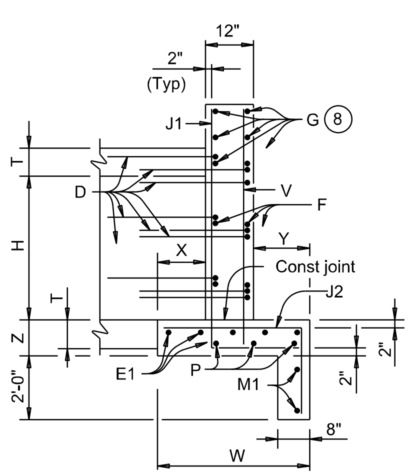
SECTION C-C - PW-2

DESIGNER NOTES:
Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

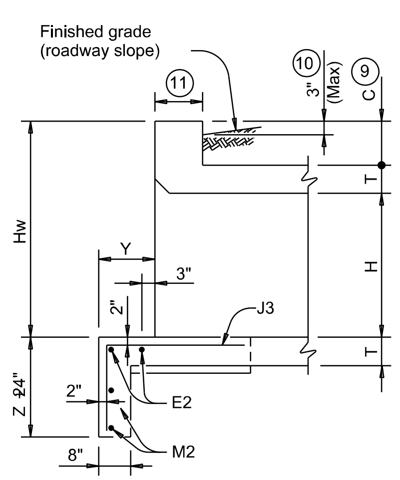
MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforing steel if required elsewhere in the plans.

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

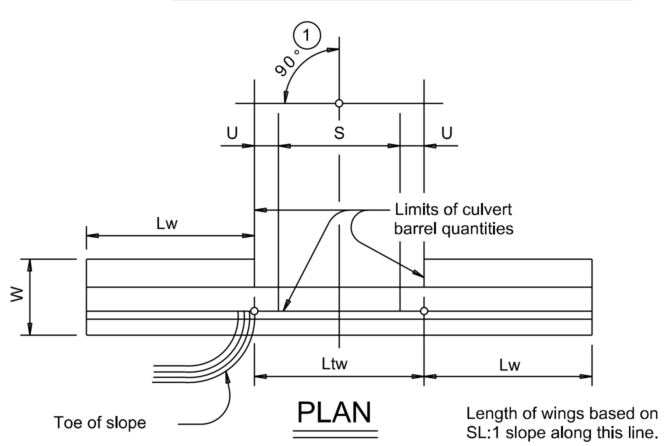
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing dimensions are out-to-out of bars.



SECTION A-A
(Showing wing reinforcement.)

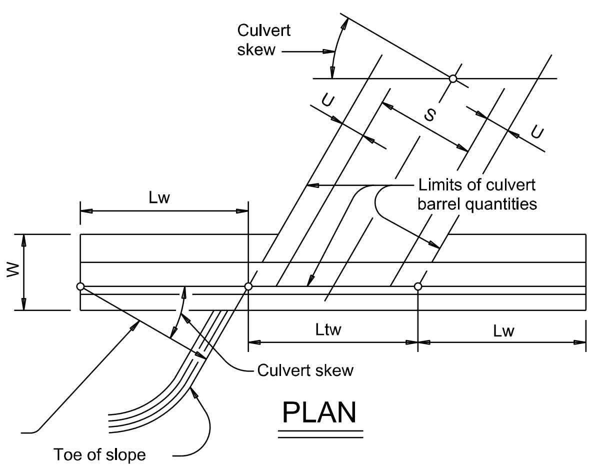


SECTION B-B
(Showing wing reinforcement.)



PLAN

DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

Texas Department of Transportation

Bridge Division Standard

CONCRETE WINGWALLS WITH PARALLEL WINGS FOR BOX CULVERTS TYPES PW-1 AND PW-2

PW

FILE: pwstde01-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT 0022	SECT 10	JOB 073,ETC	HIGHWAY US 90,ETC
REVISIONS	DIST LRD		COUNTY VAL VERDE	SHEET NO. 165

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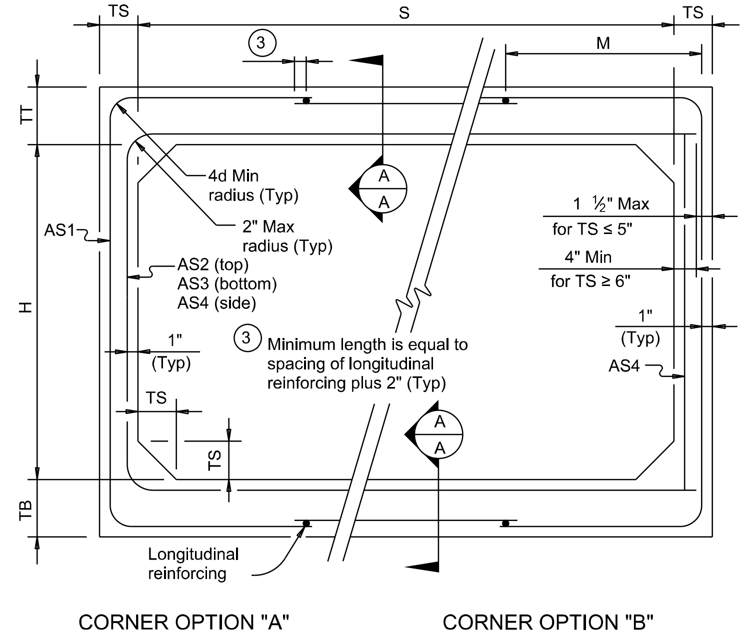
BOX DATA

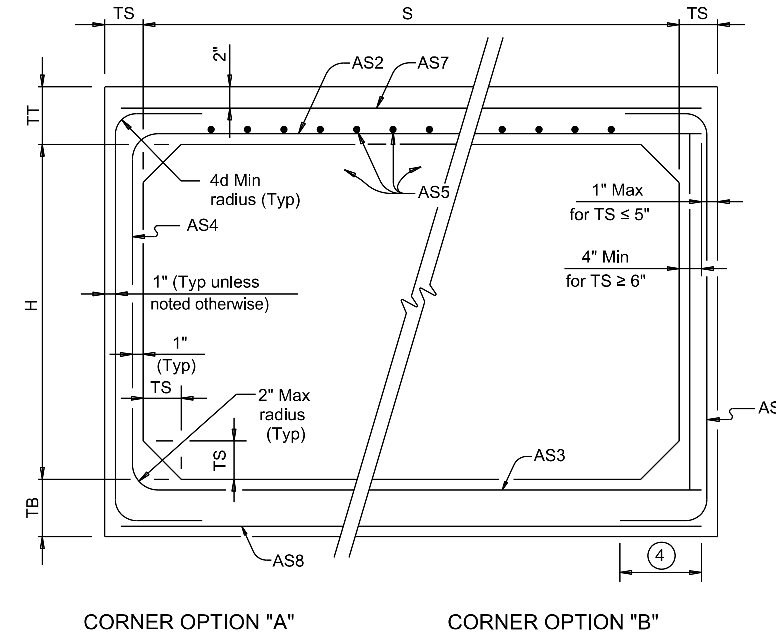
SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
6	2	8	7	7	< 2	-	0.23	0.27	0.19	0.17	0.19	0.19	0.17	7.2
6	2	7	7	7	2 < 3	43	0.25	0.21	0.17	0.17	-	-	-	6.8
6	2	7	7	7	3 - 5	43	0.20	0.17	0.17	0.17	-	-	-	6.8
6	2	7	7	7	10	39	0.20	0.17	0.17	0.17	-	-	-	6.8
6	2	7	7	7	15	39	0.26	0.20	0.20	0.17	-	-	-	6.8
6	2	7	7	7	20	39	0.34	0.26	0.26	0.17	-	-	-	6.8
6	2	7	7	7	25	39	0.43	0.32	0.32	0.17	-	-	-	6.8
6	2	7	7	7	30	39	0.52	0.38	0.39	0.17	-	-	-	6.8
6	3	8	7	7	< 2	-	0.20	0.31	0.22	0.17	0.19	0.19	0.17	7.9
6	3	7	7	7	2 < 3	43	0.21	0.24	0.19	0.17	-	-	-	7.5
6	3	7	7	7	3 - 5	39	0.17	0.18	0.17	0.17	-	-	-	7.5
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	-	-	-	7.5
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	-	-	-	7.5
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	-	-	-	7.5
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	-	-	-	7.5
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	-	-	-	7.5
6	4	8	7	7	< 2	-	0.19	0.34	0.25	0.17	0.19	0.19	0.17	8.6
6	4	7	7	7	2 < 3	43	0.19	0.27	0.21	0.17	-	-	-	8.2
6	4	7	7	7	3 - 5	39	0.17	0.21	0.19	0.17	-	-	-	8.2
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	-	-	-	8.2
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	-	-	-	8.2
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	-	-	-	8.2
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	-	-	-	8.2
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	-	-	-	8.2
6	5	8	7	7	< 2	-	0.19	0.37	0.28	0.17	0.19	0.19	0.17	9.3
6	5	7	7	7	2 < 3	43	0.17	0.30	0.24	0.17	-	-	-	8.9
6	5	7	7	7	3 - 5	43	0.17	0.23	0.21	0.17	-	-	-	8.9
6	5	7	7	7	10	39	0.17	0.22	0.23	0.17	-	-	-	8.9
6	5	7	7	7	15	38	0.17	0.28	0.29	0.17	-	-	-	8.9
6	5	7	7	7	20	38	0.20	0.37	0.38	0.17	-	-	-	8.9
6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	-	-	-	8.9
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	-	-	-	8.9
6	6	8	7	7	< 2	-	0.19	0.38	0.30	0.17	0.19	0.19	0.17	10
6	6	7	7	7	2 < 3	52	0.17	0.32	0.26	0.17	-	-	-	9.6
6	6	7	7	7	3 - 5	52	0.17	0.24	0.22	0.17	-	-	-	9.6
6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	-	-	-	9.6
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	-	-	-	9.6
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	-	-	-	9.6
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	-	-	-	9.6
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	-	-	-	9.6

(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

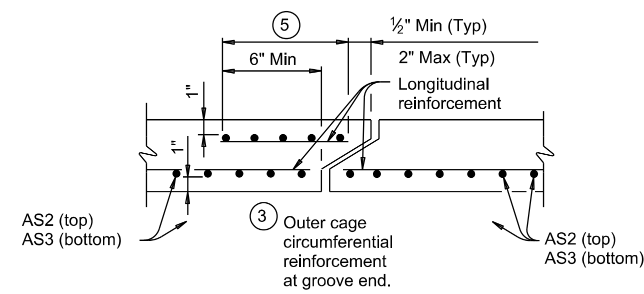


FILL HEIGHT 2 FT AND GREATER



FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

6'-0" SPAN

SCP-6

FILE: scp06sts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	DIST LRD		COUNTY VAL VERDE	SHEET NO. 166

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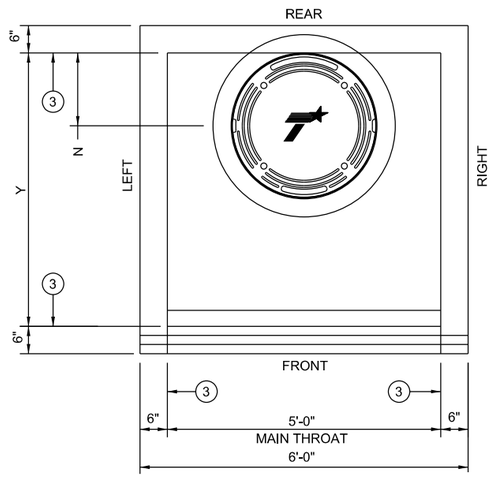
Size (Y)	N	MH Dia (2)
3'	9"	18"
4'	16"	32"
5'	16"	32"
6'	16"	32"

BAR TABLE	
BAR	SIZE
A1	#3
A2	#3
A3 (1)	#3
A4 (1)	#3
B1	#4
B2	#4
B3 (1)	#4
C (1)	#4
G	#4
L (1)	#5
Ra	#5
U1 (1)	#5
U2 (1)	#5

(1) Reinforcing bar used only with extension(s).

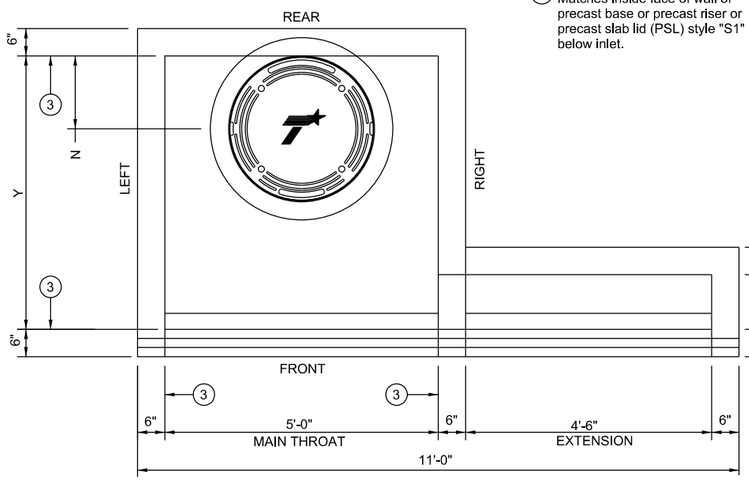
(2) Nominal ring and cover size.

(3) Matches inside face of wall of precast base or precast riser or precast slab lid (PSL) style "S1" below inlet.



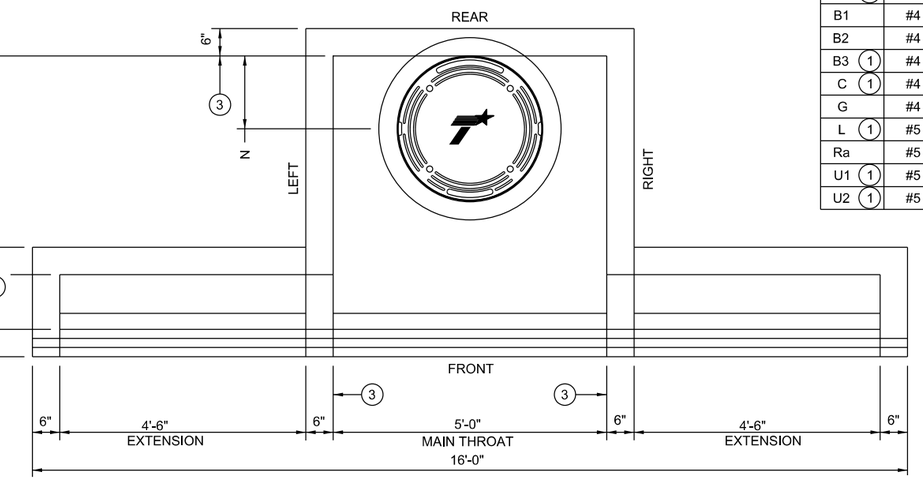
PLAN VIEW

(Shown without extensions.)
See SHEET 2 OF 4 for details.



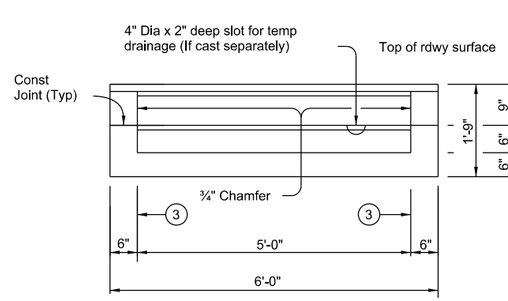
PLAN VIEW

(Showing one extension.)
See SHEET 3 OF 4 for details.



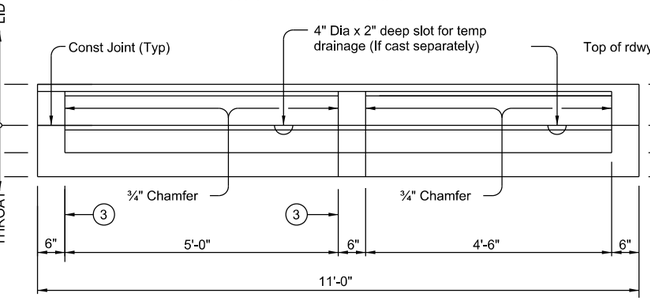
PLAN VIEW

(Showing extension on each side)
See SHEET 4 OF 4 for details.



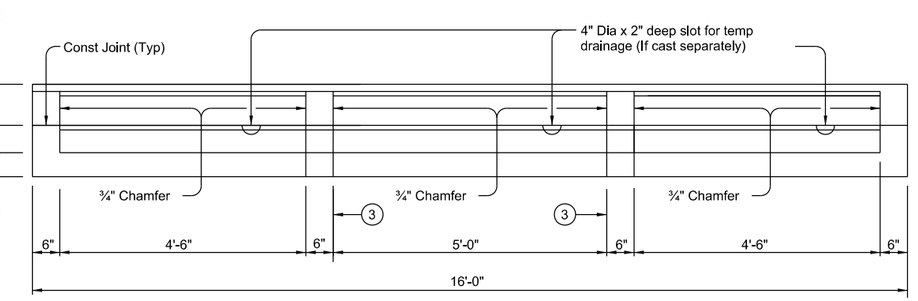
FRONT VIEW

(Shown without extensions.)
See SHEET 2 OF 4 for details.



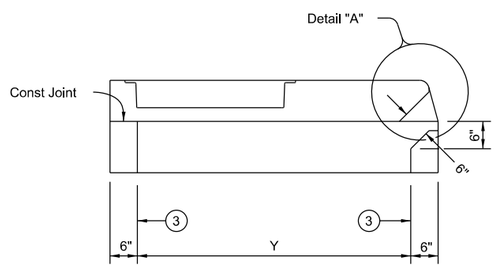
FRONT VIEW

(Showing one extension.)
See SHEET 3 OF 4 for details.



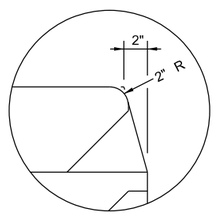
FRONT VIEW

(Showing extension on each side.)
See SHEET 4 OF 4 for details.



LEFT SIDE VIEW

(Extensions not shown for clarity.)



DETAIL "A"

CONSTRUCTION NOTES:

Chamfer all vertical edges of inlet lid ¾" as shown in Front View, Sheet 1 of 4.
Maintain 1 ½" clear cover to ends of all vertical reinforcing bars, unless otherwise noted.

MATERIAL NOTES:

Provide Class "S" concrete (f'c = 4,000 psi).
Provide Grade 60 reinforcing steel or equivalent area of WWR.
Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
The intent of this standard is to provide a cast-in-place lid to be used with precast base, precast riser or precast slab lid style "S1".
Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
Lid and throat may be cast monolithically or separately.
See Precast Base (PB) standard for details and notes not shown.
See Precast Slab Lid (PSL) standard for details and notes not shown.
See Curb & Gutter Transitions Details (CGT-PCO) standard for transition examples.
Extensions may be right, left, both, or none. Provide extensions as specified elsewhere in the plans.
Shop drawings for approval are not required.
Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.
Open area of main throat = 360 sq in.
Open area of one extension throat = 324 sq in.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING SHEET 1 OF 4

Texas Department of Transportation

Bridge Division Standard

CAST-IN-PLACE CURB INLET OUTSIDE ROADWAY

CCO

FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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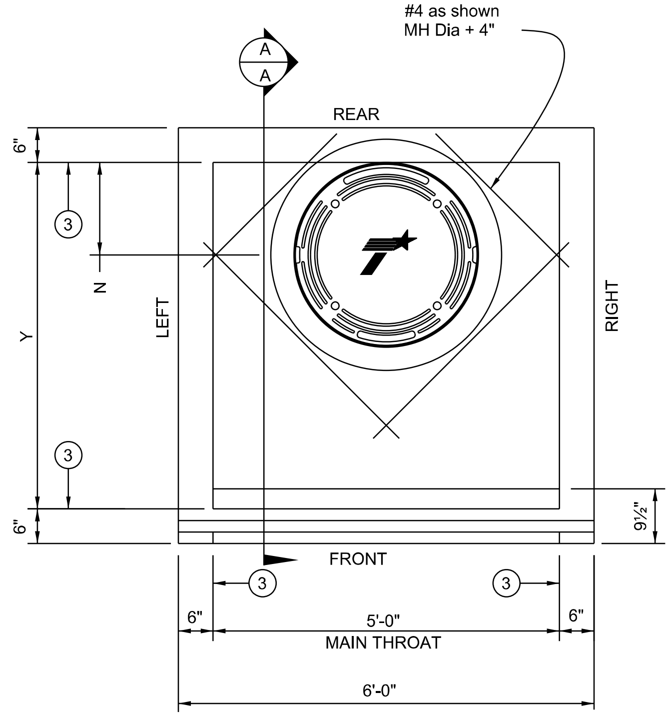
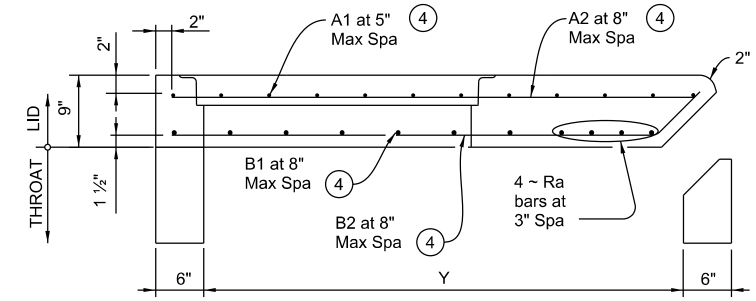
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		167

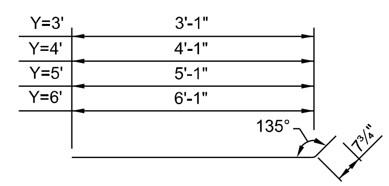


LID PLAN VIEW

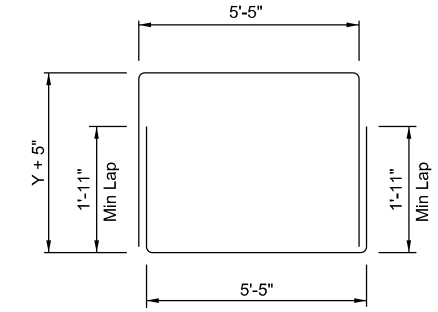
(Shown without extensions)



LID SECTION A-A

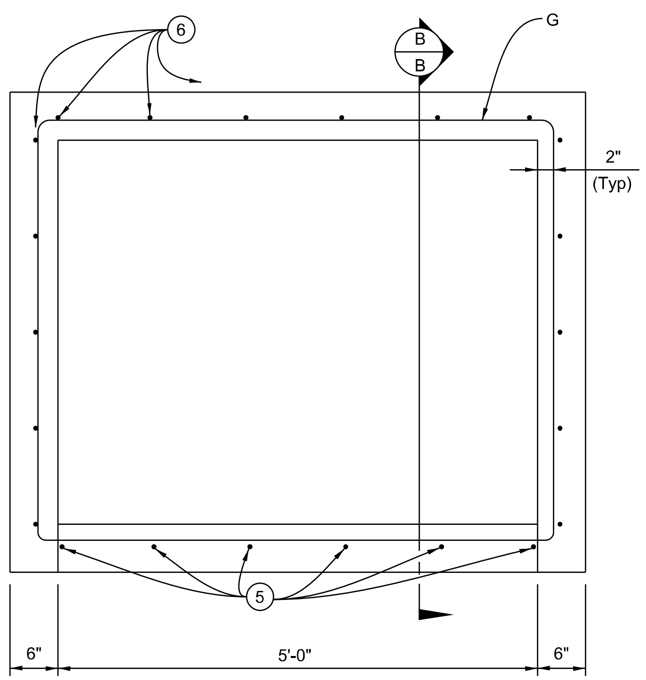


BARS B2 (4)



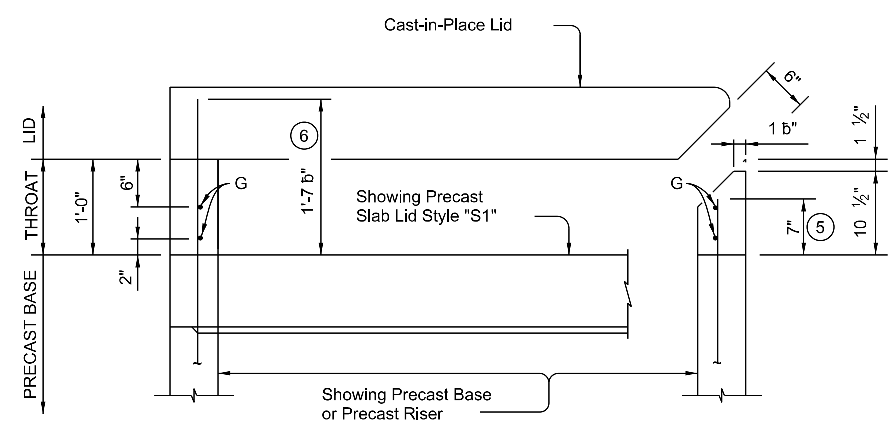
BARS G

Showing one complete bar.



THROAT PLAN VIEW

(Shown without extensions)



THROAT SECTION B-B

(Showing reinforcing bar extended from pecast base or precast riser or precast slab lid style "S1".)

(3) Matches inside face of wall of precast base or precast riser or precast slab lid style "S1" below inlet.

(4) Cut reinforcing bars as needed to provide 1 ½" clear to manhole.

(5) Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 7".

(6) Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 1'-7 b".

HL93 LOADING

SHEET 2 OF 4

Texas Department of Transportation

Bridge Division Standard

CAST-IN-PLACE CURB INLET OUTSIDE ROADWAY

CCO

FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0022	10	073,ETC	US 90,ETC
	DIST		COUNTY	SHEET NO.
	LRD		VAL VERDE	168

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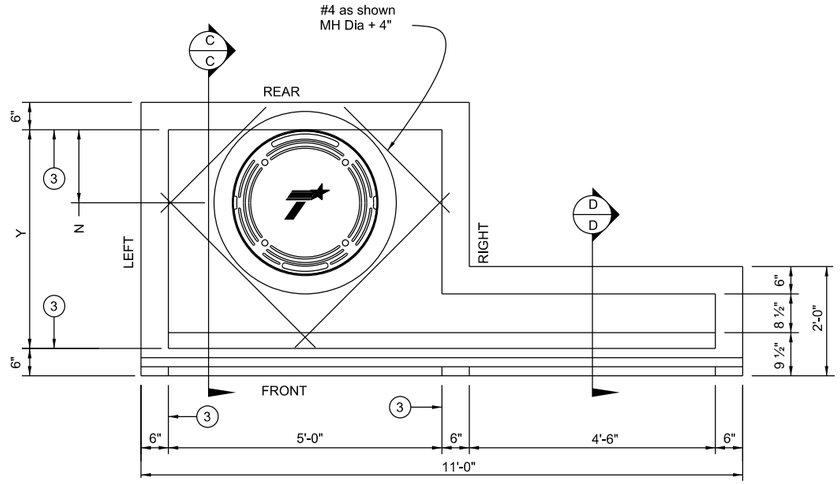
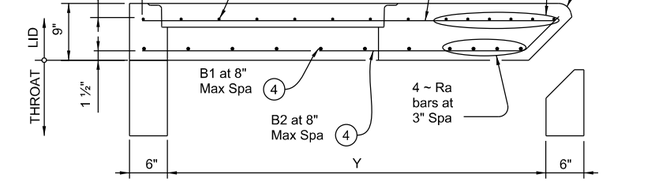
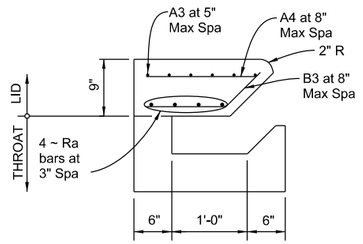


LID PLAN VIEW

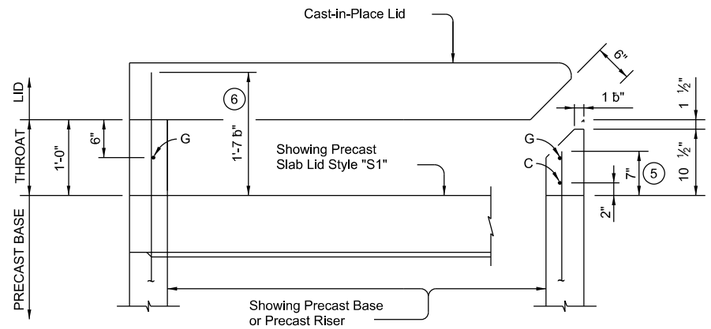
(Showing one extension.)



LID SECTION C-C

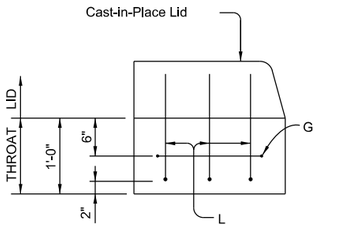


LID SECTION D-D

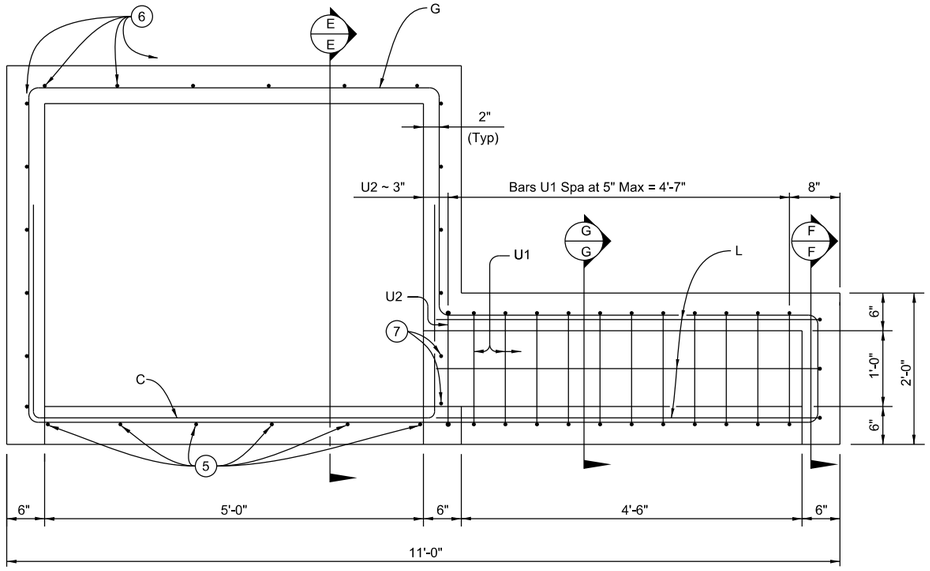


THROAT SECTION E-E

(Showing reinforcing bar extended from pecast base or precast riser or precast slab lid style "S1".)

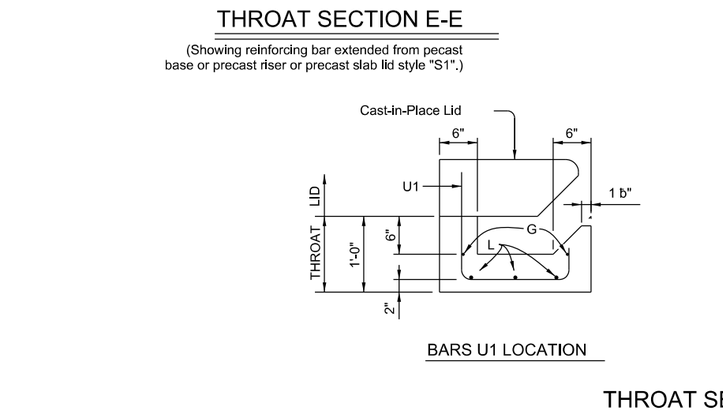


THROAT SECTION F-F



THROAT PLAN VIEW

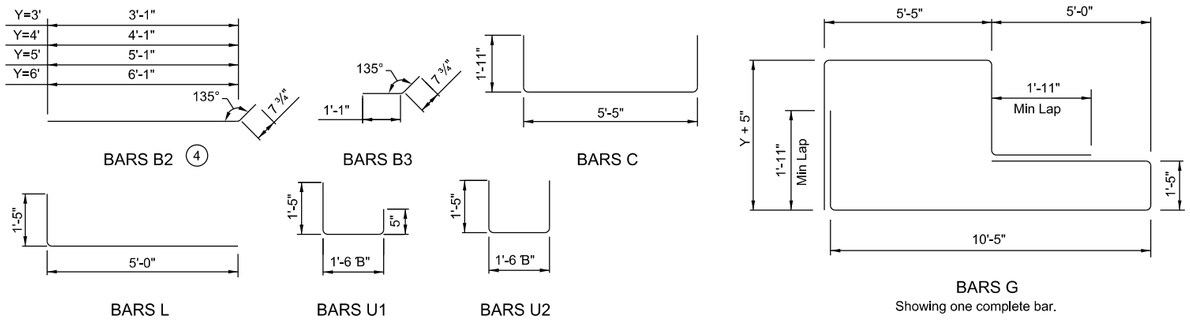
(Showing one extension.)



BARS U1 LOCATION

BARS U2 LOCATION

THROAT SECTION G-G



(3) Matches inside face of wall of precast base or precast riser or precast slab lid style "S1" below inlet.

(4) Cut reinforcing bars as needed to provide 1 ½" clear to manhole.

(5) Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 7".

(6) Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 1'-7 b".

(7) Do not extend reinforcing bars from precast base.

HL93 LOADING SHEET 3 OF 4

Texas Department of Transportation

Bridge Division Standard

CAST-IN-PLACE CURB INLET OUTSIDE ROADWAY

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REVISIONS	0022	10	073, ETC	US 90, ETC
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		169

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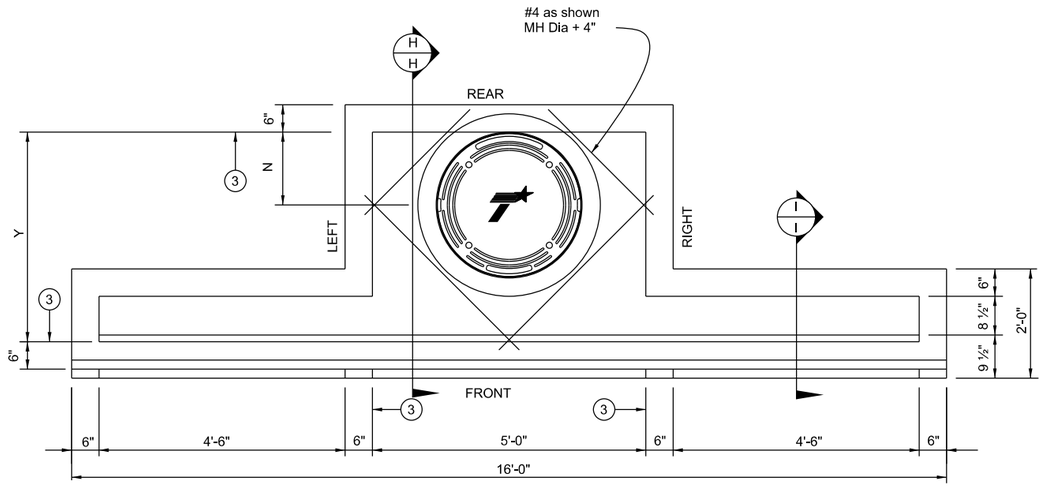
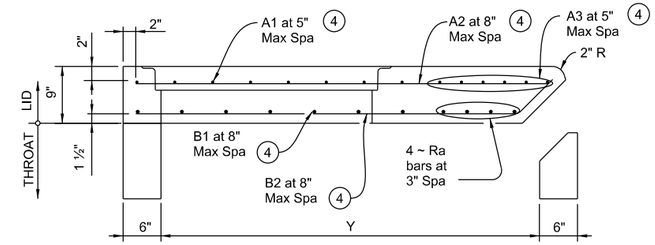
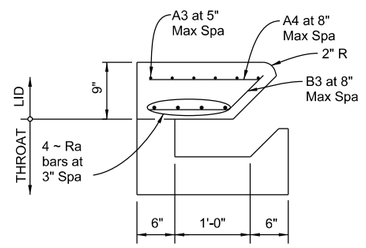


LID PLAN VIEW

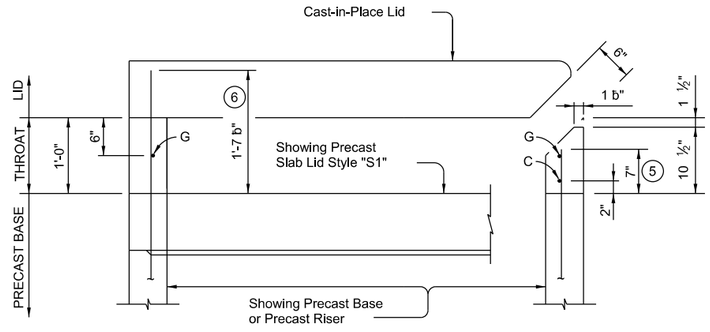
(Showing extension on each side.)



LID SECTION H-H

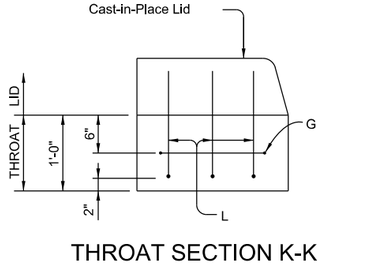


LID SECTION I-I

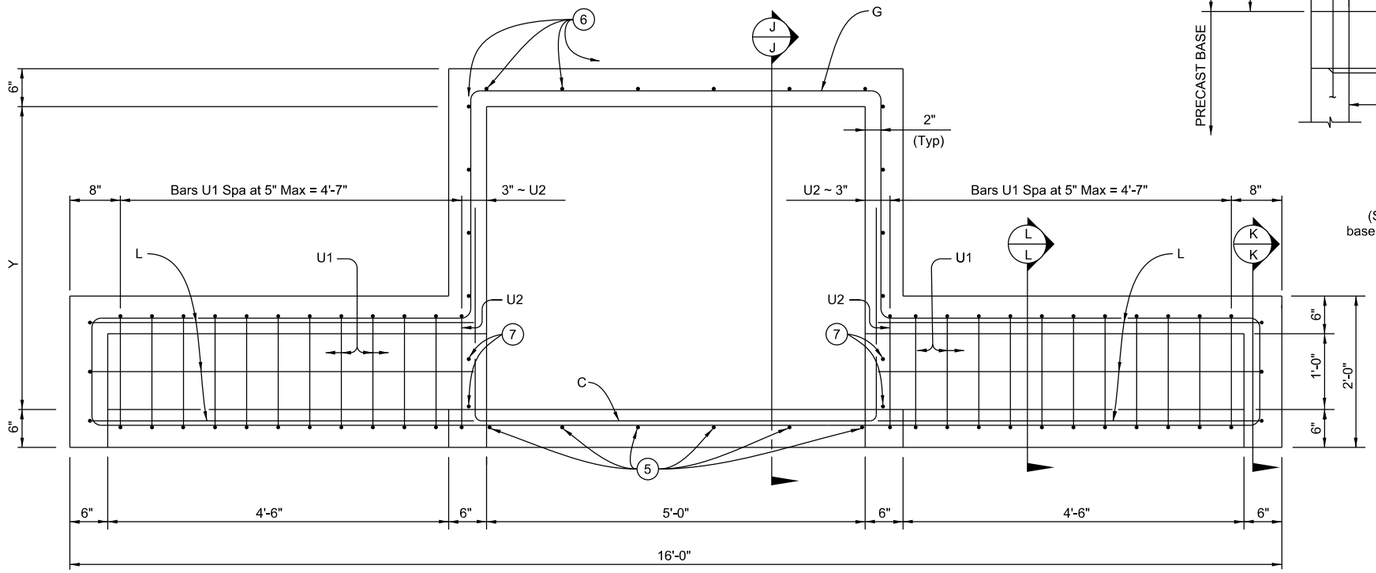


THROAT SECTION J-J

(Showing reinforcing bar extended from pecast base or precast riser or precast slab lid style "S1".)

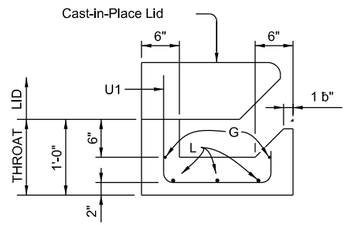


THROAT SECTION K-K

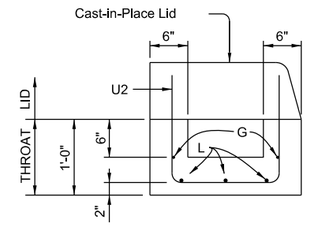


THROAT PLAN VIEW

(Showing extension on each side.)

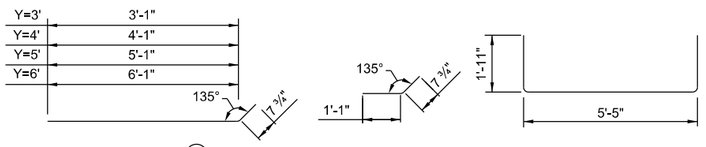


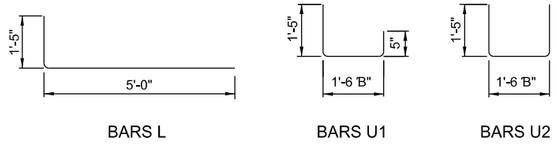
BARS U1 LOCATION

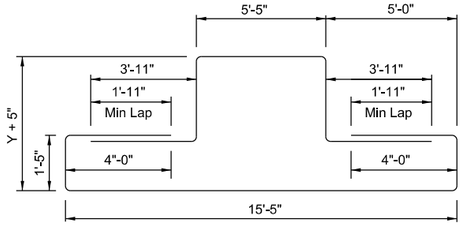


BARS U2 LOCATION

THROAT SECTION L-L







BARS G
Showing one complete bar.

3. Matches inside face of wall of precast base or precast riser or precast slab lid style "S1" below inlet.
4. Cut reinforcing bars as needed to provide 1 ½" clear to manhole.
5. Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 7".
6. Extend reinforcing bars from precast base or precast riser or precast slab lid style "S1" 1'-7 b".
7. Do not extend reinforcing bars from precast base.

HL93 LOADING SHEET 4 OF 4

Texas Department of Transportation

Bridge Division Standard

CAST-IN-PLACE CURB INLET OUTSIDE ROADWAY

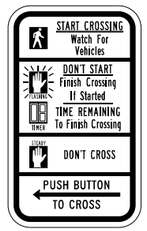
CCO

FILE: ccostds1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0022	10	073, ETC	US 90, ETC
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		170

PROPOSED SIGNS
(N. T. S.)

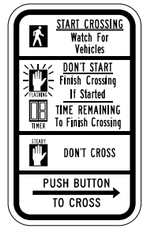
PB1, PB4

R10-3eL
9x15



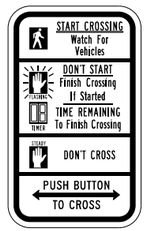
PB2

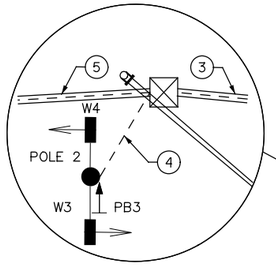
R10-3eR
9x15

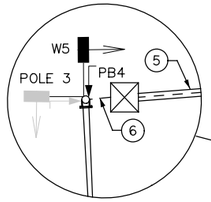


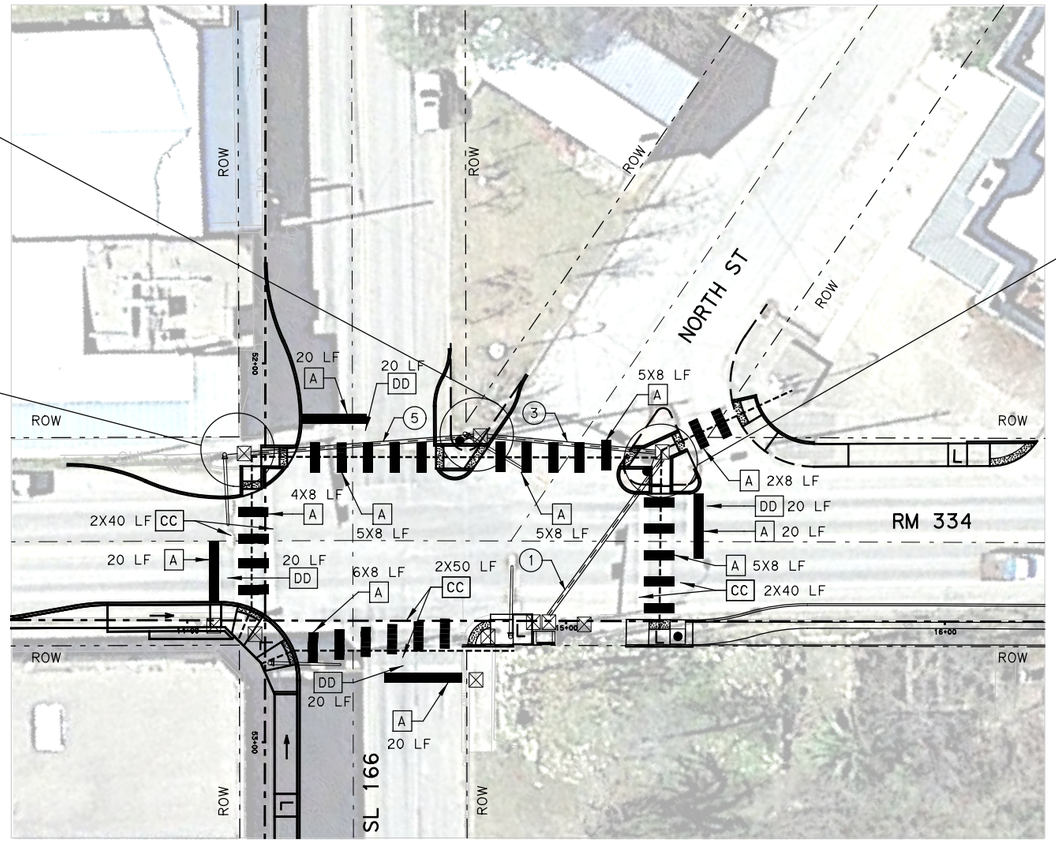
PB3

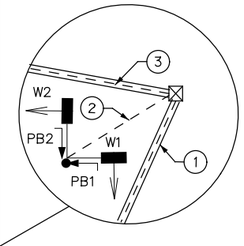
R10-3eLR
(MODIFIED)
9x15











LEGEND

- [A] REFL PAV MRK TY I (W) 24" (SLD) (100 MIL)
- [AA] ELIM EXT PAV MRK & MRKRS 4"
- [BB] ELIM EXT PAV MRK & MRKRS 8"
- [CC] ELIM EXT PAV MRK & MRKRS 12"
- [DD] ELIM EXT PAV MRK & MRKRS 24"
- EXIST SIGNAL CONTROLLER
- EXIST PEDESTIAN POLE
- EXIST GROUND BOX
- EXIST SIGNAL POLE WITH PEDESTRIAN PUSH BUTTON
- EXIST PEDESTRIAN SIGNAL HEAD
- EXIST PEDESTRIAN PUSH BUTTON
- PROP PEDESTRIAN SIGNAL HEAD
- PROP PEDESTRIAN PUSH BUTTON
- PROP PEDESTIAN POLE
- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)

0 20′ 40′
SCALE: 1"=40′

NOTES:

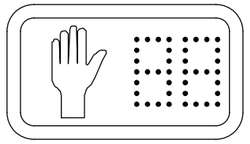
1. EXISTING SIGNAL TO REMAIN IF NOT SHOWN IN THE PLAN. INSTALL CONDUIT FROM EXITSING GROUND BOXES AS SHOWN. REUSE EXISTING GROUND BOXES AND CONDUITS IF POSSIBLE.
2. INSTALL PEDESTRIAN SIGNAL HEAD AND PUSH BUTTON ON EXISTING POLE 3.
3. EXISTING PAVEMENT MARKINGS TO REMAIN IF NOT SHOWN IN THE PLAN. REMOVE EXISTING PAVEMENT MARKINGS AS SHOWN.

POLE CHART		
POLE #	DESCRIPTION	FND TYPE
POLE 1	PROPOSED PEDESTRIAN POLE	SCREW AHCHOR
POLE 2	PROPOSED PEDESTRIAN POLE	SCREW AHCHOR
POLE 3	EXISTING SIGNAL POLE	EXISTING FND

PROPOSED SIGNAL HEADS
(N. T. S.)

1-SECTION, 1-WAY

W1, W2, W3, W4, W5



CONDUIT AND CONDUCTOR RUNS										
RUN NO.	CONDUIT (618)				CONDUCTORS (620)		CABLES (684)			
	2" (SCHD 80)				GROUND		PUSH BUTTON		PED SIGNAL	
	6046(TRENCH)		6047 (BORE)		6009*(#6 BARE)		6007(#12/2C)		6009(#12/4C)	
	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF
1			1	60	1	60	3	60	4	60
2	1	10			1	10	1	10	1	10
3			1	50	1	50	2	50	3	50
4	1	10			1	10	1	10	2	10
5			1	60	1	60	1	60	1	60
6	1	10			1	10	1	10	1	10
TOTAL		30		170		200		370		490

SUMMARY OF QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
618	6046	CONDT (PVC) (SCH 80) (2")	LF	30
618	6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	170
620	6009	ELEC CONDR (NO.6) BARE	LF	200
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	296
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	0
677	6005	ELIM EXT PAV MRK & MRKS (12")	LF	260
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	80
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	5
684	6007	TRF SIG CBL (TY A)(12 AWG)(2 CONDR)	LF	370
684	6009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	490
687	6001	PED POLE ASSEMBLY	EA	2
	*	SCREW-IN TYPE ANCHOR ASSEMBLY	EA	2
688	6001	PED DETECT PUSH BUTTON (APS)	EA	4
	**	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9" X 15") (R10-3e) (L)	EA	2
	**	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9" X 15") (R10-3e) (R)	EA	1
	**	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9" X 15") (R10-3e) (LR)	EA	1

NOTE: * SUBSIDIARY TO ITEM 687 6001; ** SUBSIDIARY TO ITEM 688 6001

STATE OF TEXAS
MOHAMMED S ULA
131559
LICENSED
PROFESSIONAL ENGINEER
Mohammed S Ula
03/25/2021

RM 334 AT SL 166

PEDESTRIAN SIGNAL AND PAVEMENT MARKING

SHEET 1 OF 1

infraTECH Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368
11111 WILCREST GREEN DR, SUITE 410
HOUSTON, TEXAS 77042

Texas Department of Transportation®

FED.RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			171
STATE	STATE DIST.	COUNTY	
TEXAS	22	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073, ETC.	US90, ETC.

5ii303RM334@SL166.dgn
DATE: 3/25/2021
TIME: 3:34:58 PM
USER: ysni

LEGEND

- [A] REFL PAV MRK TY I (W) 24" (SLD) (100 MIL)
- [AA] ELIM EXT PAV MRK & MRKRS 4"
- [BB] ELIM EXT PAV MRK & MRKRS 8"
- [CC] ELIM EXT PAV MRK & MRKRS 12"
- [DD] ELIM EXT PAV MRK & MRKRS 24"
- EXIST SIGNAL CONTROLLER
- EXIST PEDESTIAN POLE
- EXIST GROUND BOX
- EXIST SIGNAL POLE WITH PEDESTRIAN PUSH BUTTON

0 20 40

SCALE: 1"=40'

SUMMARY OF QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	172
677	6005	ELIM EXT PAV MRK & MRKS (12")	LF	80
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	132

NOTES:

1. EXISTING PEDESTRIAN SIGNALS TO REMAIN.
2. EXISTING PAVEMENT MARKINGS TO REMAIN IF NOT SHOWN IN THE PLAN. REMOVE EXISTING PAVEMENT MARKINGS AS SHOWN.

STATE OF TEXAS
MOHAMMED S ULA
131559
LICENSED
PROFESSIONAL ENGINEER
Mohammed S Ula
03/25/2021

RM 334 AT US 90

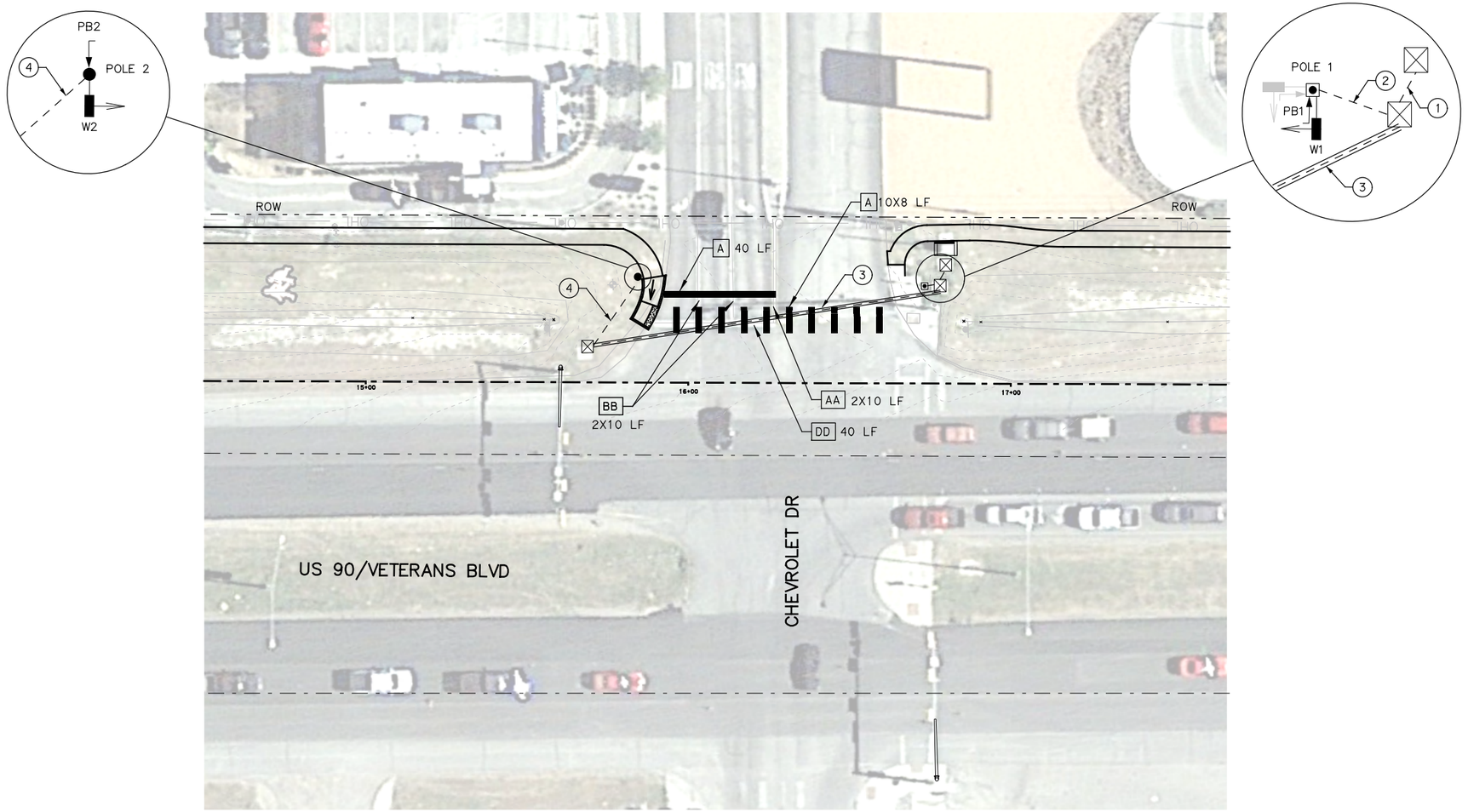
PEDESTRIAN SIGNAL AND PAVEMENT MARKING

SHEET 1 OF 1

infraTECH Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368
11111 WILCREST GREEN DR, SUITE 410
HOUSTON, TEXAS 77042

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			172
STATE	STATE DIST.	COUNTY	
TEXAS	22	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073, ETC.	US90, ETC.

5ii303RM334@US90.dgn
DATE: 3/25/2021 TIME: 3:34:59 PM USER: ysni



LEGEND

- A — REFL PAV MRK TY I (W) 24" (SLD) (100 MIL)
- AA — ELIM EXT PAV MRK & MRKRS 4"
- BB — ELIM EXT PAV MRK & MRKRS 8"
- CC — ELIM EXT PAV MRK & MRKRS 12"
- DD — ELIM EXT PAV MRK & MRKRS 24"
- EXIST SIGNAL CONTROLLER
- EXIST PEDESTIAN POLE
- EXIST GROUND BOX
- EXIST SIGNAL POLE WITH PEDESTRIAN PUSH BUTTON
- EXIST PEDESTRIAN SIGNAL HEAD
- EXIST PEDESTRIAN PUSH BUTTON
- PROP PEDESTRIAN SIGNAL HEAD
- PROP PEDESTRIAN PUSH BUTTON
- PROP PEDESTIAN POLE
- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)

0 20′ 40′

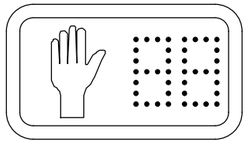
SCALE: 1"=40′

NOTES:

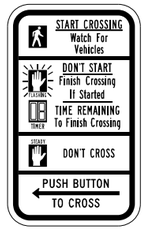
1. EXISTING SIGNAL TO REMAIN IF NOT SHOWN IN THE PLAN. INSTALL CONDUIT FROM EXITSING GROUND BOXES AS SHOWN. REUSE EXISTING GROUND BOXES AND CONDUITS IF POSSIBLE.
2. INSTALL PEDESTRIAN SIGNAL HEAD AND PUSH BUTTON ON EXISTING POLE 1.
3. EXISTING PAVEMENT MARKINGS TO REMAIN IF NOT SHOWN IN THE PLAN. REMOVE EXISTING PAVEMENT MARKINGS AS SHOWN.

POLE CHART		
POLE #	DESCRIPTION	FND TYPE
POLE 1	EXISTING PEDESTRIAN POLE	SCREW AHCHOR
POLE 2	PROPOSED PEDESTRIAN POLE	SCREW AHCHOR

PROPOSED SIGNAL HEADS
(N.T.S.)
1-SECTION, 1-WAY
W1 & W2



PROPOSED SIGNS
(N.T.S.)
PB1 & PB2



R10-3eL
9x15

CONDUIT AND CONDUCTOR RUNS										
RUN NO.	CONDUIT (618)				CONDUCTORS (620)		CABLES (684)			
	2" (SCHD 80)				GROUND		PUSH BUTTON		PED SIGNAL	
	6046(TRENCH)		6047 (BORE)		6009*(#6 BARE)		6007(#12/2C)		6009(#12/4C)	
	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF
1	1	10			1	10	2	10	2	10
2	1	10			1	10	1	10	1	10
3			1	120	1	120	1	120	1	120
4	1	30			1	30	1	30	1	30
TOTAL		50		120		170		180		180

SUMMARY OF QUANTITIES				
ITEM	CODE	DESCRIPTION	UNIT	QUANTITY
618	6046	CONDT (PVC) (SCH 80) (2")	LF	50
618	6047	CONDT (PVC) (SCH 80) (2") (BORE)	LF	120
620	6009	ELEC CONDR (NO.6) BARE	LF	170
666	6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	120
677	6001	ELIM EXT PAV MRK & MRKS (4")	LF	20
677	6003	ELIM EXT PAV MRK & MRKS (8")	LF	20
677	6007	ELIM EXT PAV MRK & MRKS (24")	LF	40
682	6018	PED SIG SEC (LED)(COUNTDOWN)	EA	2
684	6007	TRF SIG CBL (TY A)(12 AWG)(2 CONDR)	LF	180
684	6009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)	LF	180
687	6001	PED POLE ASSEMBLY	EA	1
	*	SCREW-IN TYPE ANCHOR ASSEMBLY	EA	1
688	6001	PED DETECT PUSH BUTTON (APS)	EA	2
	**	SIGN, PEDESTRIAN PUSHBUTTON (SYMBOL TYPE) (9" X 15") (R10-3e) (L)	EA	2

NOTE: * SUBSIDIARY TO ITEM 687 6001
** SUBSIDIARY TO ITEM 688 6001

STATE OF TEXAS
MOHAMMED S ULA
131559
LICENSED
PROFESSIONAL ENGINEER
Mohammed S Ula
03/25/2021

US 90 AT CHEVROLET DR

PEDESTRIAN SIGNAL AND PAVEMENT MARKING

SHEET 1 OF 1

infraTECH Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368
11111 WILCREST GREEN DR, SUITE 410
HOUSTON, TEXAS 77042

Texas Department of Transportation®

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			173
STATE	STATE DIST.	COUNTY	
TEXAS	22	VAL VERDE	
CONT.	SECT.	JOB	HIGHWAY NO.
0022	10	073, ETC.	US90, ETC.

5ii303US90@CHEVROLET.dgn TIME: 3:35:00 PM USER: ysni
DATE: 3/25/2021

DATE: 3/5/2021 6:24:34 PM
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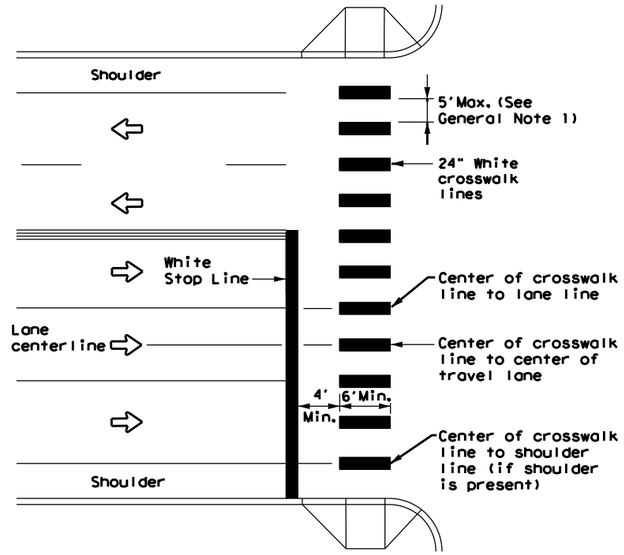


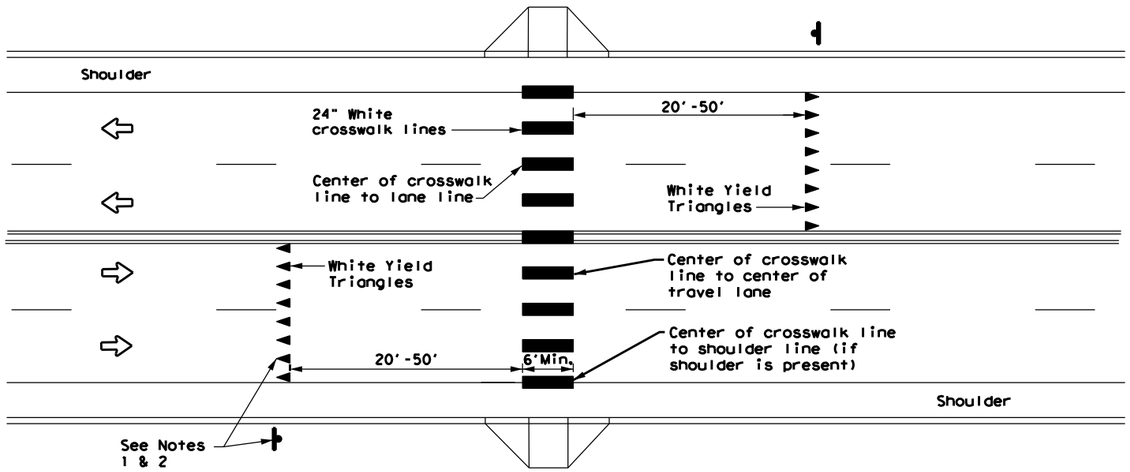
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar/Yield Triangles and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED MID BLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-20

FILE: pm4-20.dgn	DN:	CK:	DW:	CK:
© TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0022	10	073,ETC	US 90,ETC
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		174

220

DATE: 3/5/2021 6:24:42 PM
FILE: pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5113-03\Design\Standards\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)

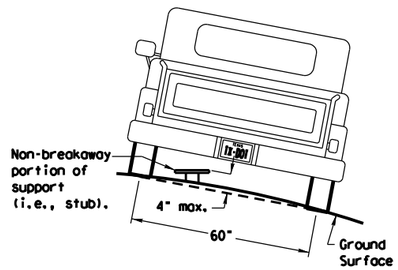
Anchor Type

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) to (SLIP-3))

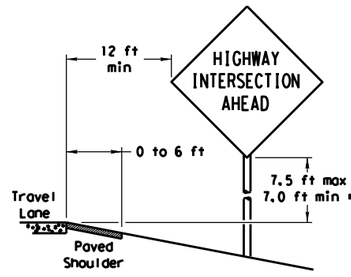
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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

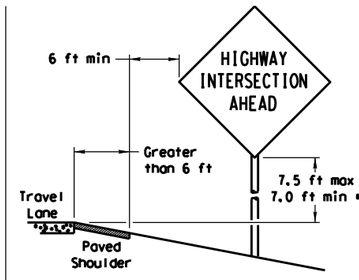
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

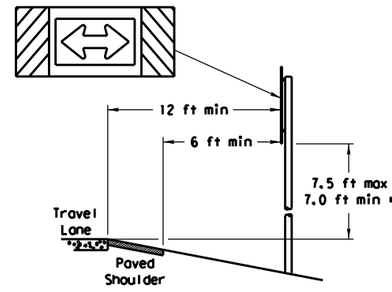
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



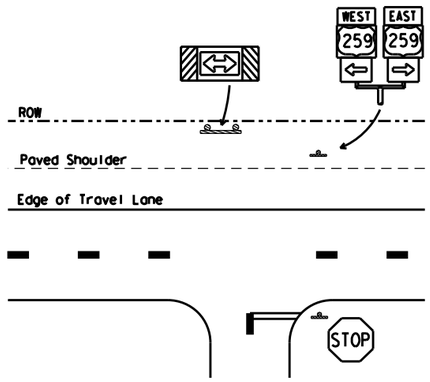
GREATER THAN 6 FT. WIDE

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

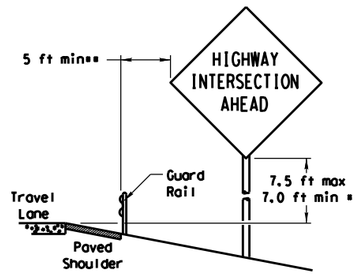
T-INTERSECTION



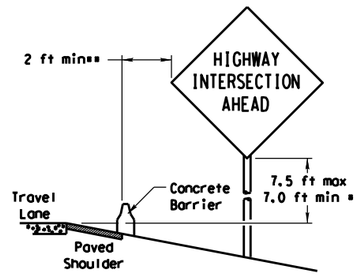
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER

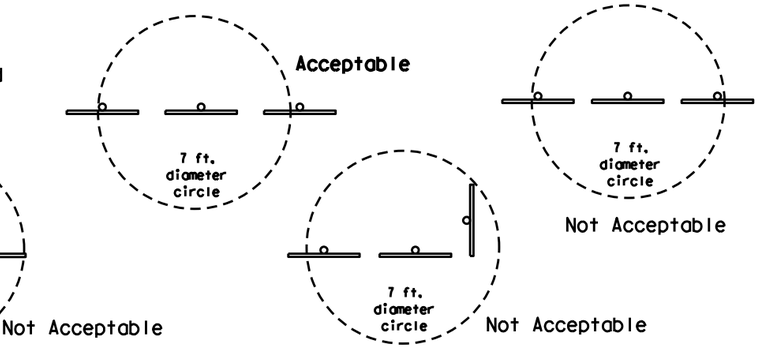


BEHIND GUARDRAIL



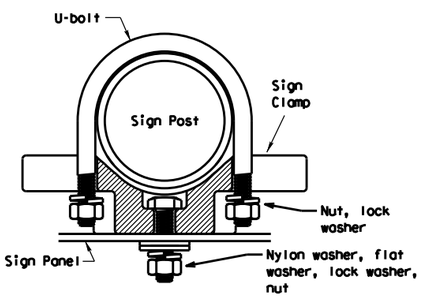
BEHIND CONCRETE BARRIER

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



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

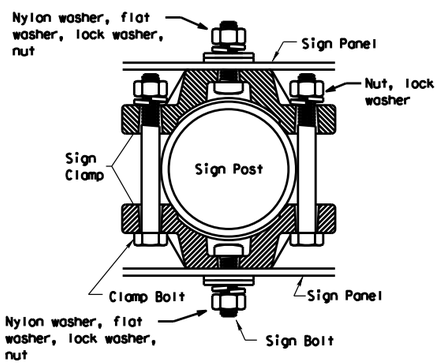


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

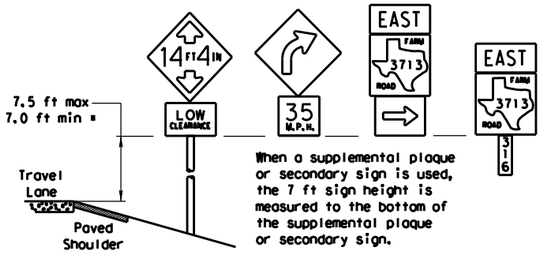
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



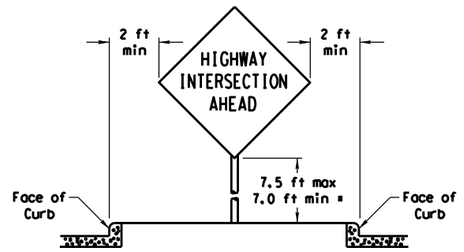
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



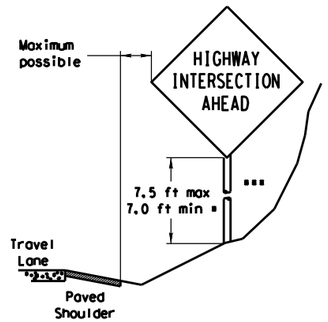
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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

▪ 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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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

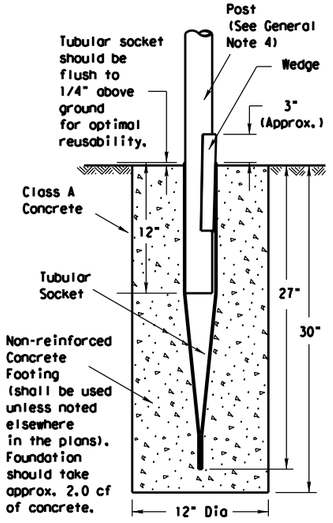
9-08 REVISIONS

CONT	SECT	JOB	HIGHWAY
0022	10	073,ETC	US 90,ETC

DIST	COUNTY	SHEET NO.
LRD	VAL VERDE	175

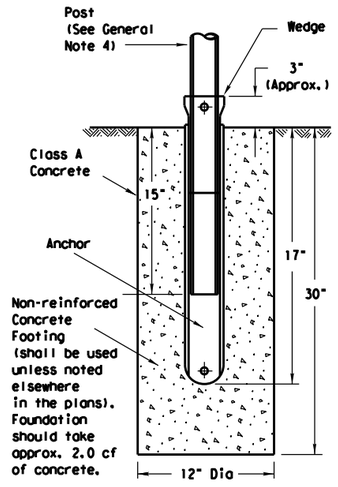
DATE: 3/5/2021 6:24:50 PM
FILE: pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5113-03\Design\Standards\smdtwt.dgn

Wedge Anchor Steel System



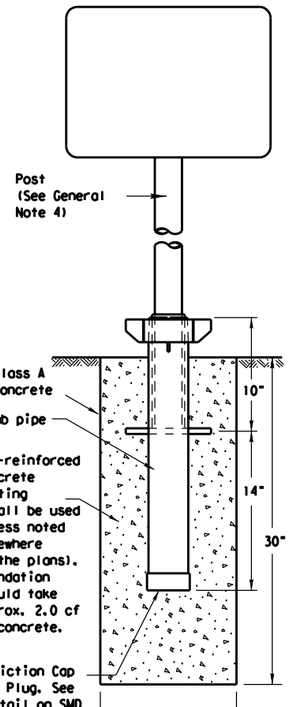
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

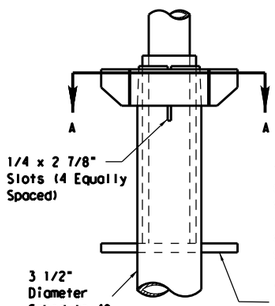


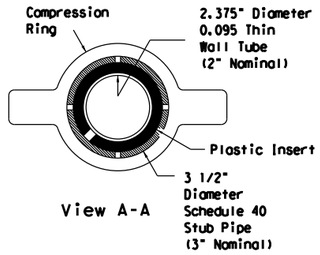
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



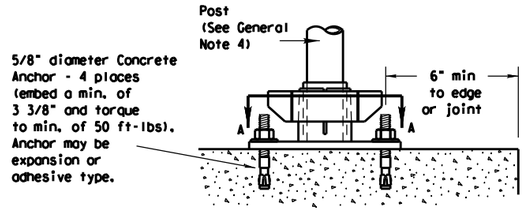
SM RD SGN ASSM TY TWT(X)UA(P)



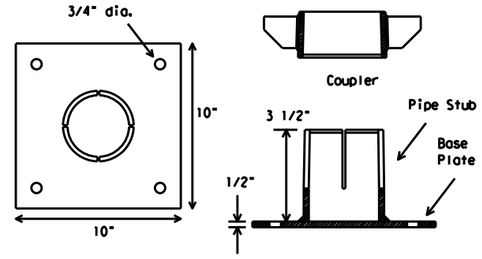


View A-A

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

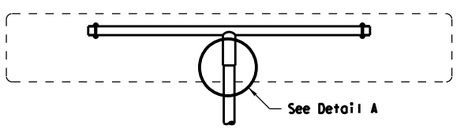


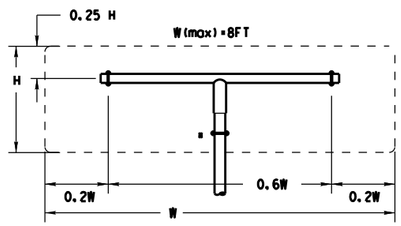
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. 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.



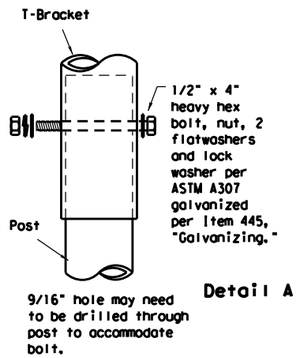
SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





SM RD SGN ASSM TY TWT(X)XX(T)
(= - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

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

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   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
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
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. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

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

9-08 REVISIONS

CONT	SECT	JOB	HIGHWAY
0022	10	073,ETC	US 90,ETC

DIST	COUNTY	SHEET NO.
LRD	VAL VERDE	176

DATE:
FILE:

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. Las Moras Creek

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.

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. Texas Horned Lizard - The Contractor will avoid harvester ant mound in the selection of PSLs where feasible
2. Texas Tortoise -The Contractor should cover utility trenches overnight, and should visually inspect all trenches before filling.
3. Reticulated Collared Lizard - This lizard may potentially occur in the project area. The Contractor shall avoid harming or handeling this species.
4. Texas Indigo Snake - This snake may potentially occur in the project area. The Contractor shall avoid harming or handeling this species.

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) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	0022	10	073,ETC.		US 90, ETC.
	DIST	COUNTY			SHEET NO.
	LAR	VAL VERDE			177

DRILL SEEDING WITH STRAW/HAY MULCH

PREFERRED RURAL/SMALL URBAN SEEDING METHOD

RECOMMENDED USES:
- PERMANENT SEEDING (BARE SOIL) (YEAR-ROUND)

REQUIRED BID ITEMS:

164 2033 DRILL SEEDING (PERM) (RURAL) (SANDY)
OR
164 2035 DRILL SEEDING (PERM) (RURAL) (CLAY)
OR
164 2037 DRILL SEEDING (PERM) (URBAN) (SANDY)
OR
164 2039 DRILL SEEDING (PERM) (URBAN) (CLAY)
AND
164 2045 STRAW OR HAY MULCHING
AND
314 2022 EMULS ASPH (EROSN CONT) (MS - 2 OR SS - 1)

CONSTRUCTION SEQUENCE:

■ **Refer** to Items 162 & 164 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2004 for specifications, dimensions, volumes and measurements that have been modified or not shown.

1. Distribute topsoil
   Refer to Item 160 for instructions and requirements. Uniformly distribute topsoil at a thickness of 6 inches unless otherwise specified in the plans.
2. Prepare seed bed
   Refer to section 164.3 for instructions.
3. Apply seed mixture
   Refer to Item 164 for instructions. Refer to "Seed Mix" shown on sheet 2 of 2 for a list of species and rates.
4. Apply fertilizer
   Refer to Item 166 for instructions.
5. Apply straw/hay mulch & emulsion
   Refer to section 164.3.E for instructions.
   Anchor mulch with emulsion (SS-1, CSS-1, MS-2, CMS-2); undiluted, at the following rates:
   Hay - 0.15 gallons/sy
   Straw - 0.30 gallons/sy

*Vegetative watering is not required unless otherwise specified in the general notes under Item 168.

STRAW/HAY MULCH SEEDING

PREFERRED RURAL/SMALL URBAN SEEDING METHOD

RECOMMENDED USES:
- PERMANENT SEEDING (BARE SOIL) (YEAR-ROUND)
- TEMPORARY SEEDING (BARE SOIL) (YEAR-ROUND)

REQUIRED BID ITEMS:

164 2013 STRAW / HAY MLCH SEED (PERM) (RURAL) (SANDY)
OR
164 2015 STRAW / HAY MLCH SEED (PERM) (RURAL) (CLAY)
OR
164 2017 STRAW / HAY MLCH SEED (PERM) (URBAN) (SANDY)
OR
164 2019 STRAW / HAY MLCH SEED (PERM) (URBAN) (CLAY)
OR
164 2047 STRAW / HAY MLCH SEED (TEMP) (WARM)
OR
164 2049 STRAW / HAY MLCH SEED (TEMP) (COOL)
OR
314 2022 EMULS ASPH (EROSN CONT) (MS - 2 OR SS - 1)

CONSTRUCTION SEQUENCE:

■ **Refer** to Items 162 & 164 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2004 for specifications, dimensions, volumes and measurements that have been modified or not shown.

1. Distribute topsoil
   Refer to Item 160 for instructions and requirements. Uniformly distribute topsoil at a thickness of 6 inches unless otherwise specified in the plans.
2. Prepare seed bed
   Refer to section 164.3 for instructions.
3. Apply seed mixture
   Refer to Item 164 for instructions. Refer to "Seed Mix" shown on sheet 2 of 2 for a list of species and rates.
4. Apply fertilizer
   Refer to Item 166 for instructions.
5. Apply straw/hay mulch & emulsion
   Refer to section 164.3.E for instructions.
   Anchor mulch with emulsion (SS-1, CSS-1, MS-2, CMS-2); undiluted, at the following rates:
   Hay - 0.15 gallons/sy
   Straw - 0.30 gallons/sy

*Vegetative watering is not required unless otherwise specified in the general notes under Item 168.

CELLULOSE FIBER MULCH SEEDING

PREFERRED LARGE URBAN SEEDING METHOD

RECOMMENDED USES:
- TEMPORARY SEEDING (BARE SOIL) (COOL ONLY)
- OVERSEEDING PERMANENT GRASSES INTO TEMP GRASSES (YEAR-ROUND)

REQUIRED BID ITEMS:

164 2031 CELL FBR MLCH SEED (TEMP) (COOL)
OR
164 2021 CELL FBR MLCH SEED (PERM) (RURAL) (SANDY)
OR
164 2023 CELL FBR MLCH SEED (PERM) (RURAL) (CLAY)
OR
164 2025 CELL FBR MLCH SEED (PERM) (URBAN) (SANDY)
OR
164 2027 CELL FBR MLCH SEED (PERM) (URBAN) (CLAY)

CONSTRUCTION SEQUENCE:

■ **Refer** to Items 162 & 164 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2004 for specifications, dimensions, volumes and measurements that have been modified or not shown.

1. Distribute topsoil
   Refer to Item 160 for instructions and requirements. Uniformly distribute topsoil at a thickness of 6 inches unless otherwise specified in the plans.
2. Prepare seed bed
   Refer to section 164.3 for instructions.
   Prior to seeding:
   - If seeding into bare ground - till soil to a 4 inch depth.
   - If seeding into temporary vegetation cover - mow at a height range of 4-7 inches.
3. Apply seed, fertilizer, and mulch mixture
   Refer to Items 164 and 166 for instructions.
   Refer to "Seed Mix" shown on sheet 2 of 2 for a list of species and rates.
   Use the 2-step method in which the seed and less than 10% of the required mulch is applied in the first application. The remainder of the mulch and is then applied in the subsequent applications.
4. Begin Vegetative Watering
   Initiate vegetative watering as follows:
   Cool temporary vegetation - within 5 days of placing the seed.
   Permanent vegetation - delay watering until after next rainfall of 1/2" or greater.

BROADCAST SEEDING

RECOMMENDED USES:
- TEMPORARY SEEDING (BARE SOIL) (COOL ONLY)
- OVERSEEDING PERMANENT GRASSES INTO TEMP GRASSES (YEAR-ROUND)

REQUIRED BID ITEMS:

164 2011 BROADCAST SEED (TEMP) (COOL)
OR
164 2001 BROADCAST SEED (PERM) (RURAL) (SANDY)
OR
164 2003 BROADCAST SEED (PERM) (RURAL) (CLAY)
OR
164 2005 BROADCAST SEED (PERM) (URBAN) (SANDY)
OR
164 2007 BROADCAST SEED (PERM) (URBAN) (CLAY)

CONSTRUCTION SEQUENCE:

■ **Refer** to Items 162 & 164 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2004 for specifications, dimensions, volumes and measurements that have been modified or not shown.

1. Distribute topsoil
   Refer to Item 160 for instructions and requirements. Uniformly distribute topsoil at a thickness of 6 inches unless otherwise specified in the plans.
2. Prepare seed bed
   Refer to section 164.3 for instructions.
   Prior to seeding:
   If seeding into bare ground - till soil to a 4 inch depth.
   If seeding into temporary vegetation cover - mow at a height range of 4-7 inches.
3. Apply seed mixture
   Refer to Items 164 and 166 for instructions.
   Refer to "Seed Mix" shown on sheet 2 of 2 for a list of species and rates.
4. Apply fertilizer
   Refer to Item 166 for instructions.
5. Begin Vegetative Watering
   Initiate vegetative watering as follows:
   Cool temporary vegetation - within 5 days of placing the seed.
   Permanent vegetation - delay watering until after next rainfall of 1/2" or greater.

03/05/2021

DRILL SEEDING

PREFERRED RURAL/URBAN OVER-SEEDING METHOD

RECOMMENDED USES:
- OVERSEEDING PERMANENT GRASSES INTO TEMP GRASSES (YEAR-ROUND)

REQUIRED BID ITEMS:

164 2033 DRILL SEEDING (PERM) (RURAL) (SANDY)
OR
164 2035 DRILL SEEDING (PERM) (RURAL) (CLAY)
OR
164 2037 DRILL SEEDING (PERM) (URBAN) (SANDY)
OR
164 2039 DRILL SEEDING (PERM) (URBAN) (CLAY)

CONSTRUCTION SEQUENCE:

■ **Refer** to Items 162 & 164 of the Texas Standard Specifications for Construction of Highways, Streets, and Bridges 2004 for specifications, dimensions, volumes and measurements that have been modified or not shown.

1. Distribute topsoil
   Refer to Item 160 for instructions and requirements. Uniformly distribute topsoil at a thickness of 6 inches unless otherwise specified in the plans.
2. Prepare seed bed
   Refer to section 164.3 for instructions.
   Prior to seeding:
   If seeding into bare ground - till soil to a 4 inch depth.
   If seeding into temporary vegetation cover - mow at a height range of 4-7 inches.
3. Apply seed mixture
   Refer to Items 164 and 166 for instructions.
   Refer to "Seed Mix" shown on sheet 2 of 2 for a list of species and rates.
4. Apply fertilizer
   Refer to Item 166 for instructions.
5. Begin Vegetative Watering
   Initiate vegetative watering as follows:
   Cool temporary vegetation - within 5 days of placing the seed.
   Permanent vegetation - delay watering until after next rainfall of 1/2" or greater.

TEXAS DEPARTMENT OF TRANSPORTATION
LAREDO DISTRICT

SHEET 1 OF 2

REVEGETATION NOTES AND SPECIFICATIONS

© TxDOT JANUARY 2002	DN: -	CK: -	DW: -	CK: -
REVISIONS				

STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
22	6		178

COUNTY	CONTROL	SECTION	JOB	HIGHWAY
VAL VERDE	0022	10	073,ETC	US 90,ET

LEVELS DISPLAYED
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17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62

DATE:
ACC:
FILE:
DN:
CK:
DW:
CK:

030F.DGN

PERMANENT SOIL STABILIZATION

*SEED QUANTITIES ARE POUNDS PURE LIVE SEED PER ACRE.

PERMANENT SEED MIX

January 15 thru May 01

RURAL	*	URBAN	*
■ Clay Soils		**■ Clay Soils**	
Green Sprangletop	0.3	Green Sprangletop	0.3
Sideoats Grama (Haskell)	3.6	Sideoats Grama (Haskell)	4.5
Plains Bristlegrass	1.2	Buffalograss (Texoka)	1.6
Buffalograss (Texoka)	3.2	Bermudagrass	1.8
Bermudagrass	1.2		
Illinois Bundleflower	1.0		
■ Sandy Soils		**■ Sandy Soils**	
Green Sprangletop	0.3	Green Sprangletop	0.3
Bermudagrass	1.2	Bermudagrass	1.0
Sand Dropseed	0.2	Buffalograss	3.2
Lehmans Lovegrass	0.3	Sand Dropseed	0.3
Purple Prairieclover	0.5		

May 01 thru September 01

RURAL	*	URBAN	*
■ Clay Soils		**■ Clay Soils**	
Green Sprangletop	0.3	Green Sprangletop	0.3
Sideoats Grama (Haskell)	3.6	Sideoats Grama (Haskell)	4.5
Plains Bristlegrass	1.2	Buffalograss (Texoka)	1.6
Buffalograss (Texoka)	1.6	Bermudagrass	1.2
Bermudagrass	1.2	Foxtail Millet	3.0
Illinois Bundleflower	1.0	Browntop Millet	6.0
Foxtail Millet	3.0		
Browntop Millet	6.0		
■ Sandy Soils		**■ Sandy Soils**	
Green Sprangletop	0.3	Green Sprangletop	0.3
Bermudagrass	0.6	Bermudagrass	0.8
Sand Dropseed	0.2	Buffalograss	3.2
Lehmans Lovegrass	0.2	Sand Dropseed	0.3
Purple Prairieclover	0.5	Foxtail Millet	3.0
Foxtail Millet	3.0	Browntop Millet	6.0
Browntop Millet	6.0		

September 01 thru January 15

RURAL	*	URBAN	*
■ Clay Soils		**■ Clay Soils**	
Green Sprangletop	0.3	Green Sprangletop	0.3
Sideoats Grama (Haskell)	3.6	Sideoats Grama (Haskell)	4.5
Plains Bristlegrass	1.2	Buffalograss (Texoka)	1.6
Buffalograss (Texoka)	1.6	Bermudagrass	1.8
Bermudagrass	1.2	Oats	40.0
Illinois Bundleflower	1.0		
Oats	40.0		
■ Sandy Soils		**■ Sandy Soils**	
Green Sprangletop	0.3	Green Sprangletop	0.3
Bermudagrass	0.6	Bermudagrass	0.8
Sand Dropseed	0.2	Buffalograss	3.2
Lehmans Lovegrass	0.2	Sand Dropseed	0.3
Purple Prairieclover	0.5	Oats	40.0
Oats	40.0		

TEMPORARY SOIL STABILIZATION

*SEED QUANTITIES ARE POUNDS PURE LIVE SEED PER ACRE.

TEMPORARY SEED MIX

February15 thru September 31

WARM SEASON

Foxtail Millet	6.0
Browntop Millet	15.0

October 01 thru February 15

COOL SEASON

Oats	72.0

VEGETATIVE WATERING FOR SEED AND SOD

ITEM 168---VEGETATIVE WATERING

RURAL---NO VEGETATIVE WATERING

URBAN---TEMPORARY IRRIGATION---REFER TO IRRIGATION PLAN SHEETS FOR ZONE TIMES.

URBAN---TRUCK IRRIGATION---REFER TO WATERING SCHEDULE BELOW:

WATERING SCHEDULE

	FIRST 14 DAYS	14-28 DAYS	28-42 DAYS	TOTAL CYCLES
Seeded Sites	Twice per day	Twice per day	Once per day	70
Sodded Sites	Twice per day	Once per day	———	42

Refer to General Notes for standard watering rate. However, rate and frequency may be adjusted, with the approval of the engineer, to meet site conditions.

SEEDING NOTES:

1. All seed shall meet labelling, delivery, analysis, and testing requirements as described in Item 164.2.A.
2. All drill seeding shall be accomplished using a pasture or rangeland type drill seeder. Grain drills or Brillion seeders are not acceptable. Seedbed prep is required, even for no-till drill seeders, when seeding into bare soil.
3. All seed shall be drilled to a depth of 1/4 inch to 1/2 inch.
4. Seeding with compost:
   - Prior to seeding, one inch of compost shall be applied to the soil followed by an application of fertilizer. Refer to Item 166 Fertilizer for specifications and application rate.
   - Compost/fertilizer shall be tilled into the soil to a depth of four inches. Seed into prepared seedbed.
5. Where drill seeding is specified, and site conditions prevent it, broadcast seeding is permitted as approved by the engineer.
6. CELL FIBER MULCH SEEDING shall only be used where site conditions prevent drill seeding (refer to plan sheets for type of seeding). Seeding shall be a two-step process as detailed above.
7. Vegetative watering shall be paid for under Item 168. Watering rate and specifications shall be as shown on sheet 2 of 2 under Item 168.

STATE OF TEXAS
ALEX I. GARCIA
107317
LICENSED
PROFESSIONAL ENGINEER

03/05/2021

TEXAS DEPARTMENT OF TRANSPORTATION
LAREDO DISTRICT

SHEET 2 OF 2

REVEGETATION NOTES AND SPECIFICATIONS

©TxDOT JANUARY 2002	DN: -	CK: -	DW: -	CK: -
REVISIONS				

STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
22	6		179

COUNTY	CONTROL	SECTION	JOB	HIGHWAY
VAL VERDE	0022	10	073,ETC	US 90,ETC

DN:
CK:
DW:
CK:

DATE:
ACC:
FILE:

LEVELS DISPLAYED
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3/8/2021
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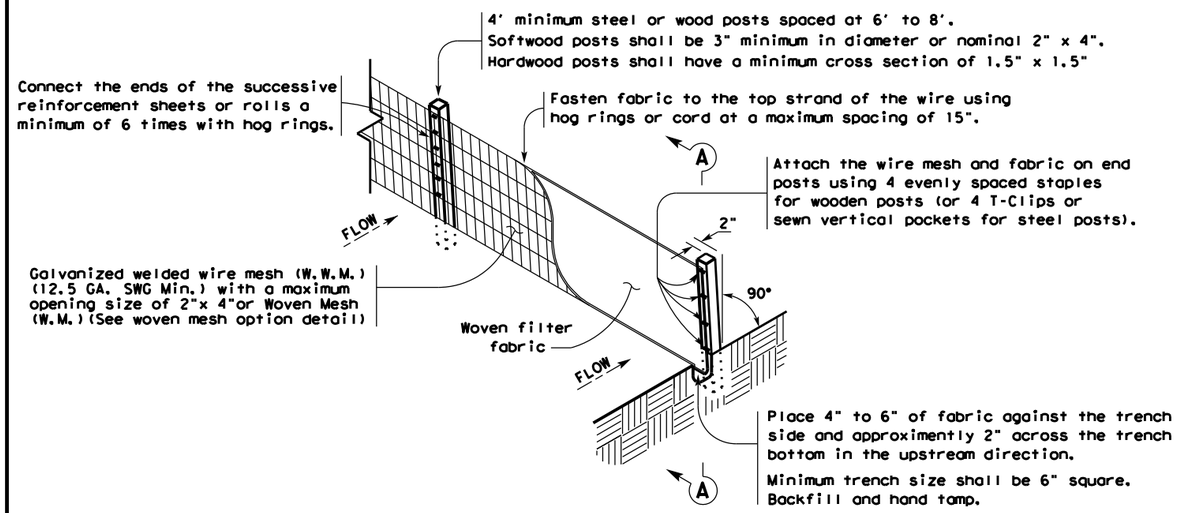
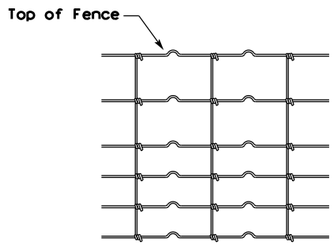
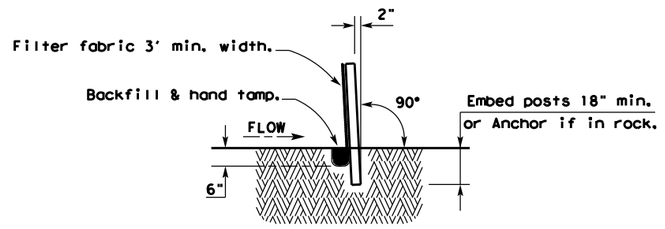


TEMPORARY SEDIMENT CONTROL FENCE

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.

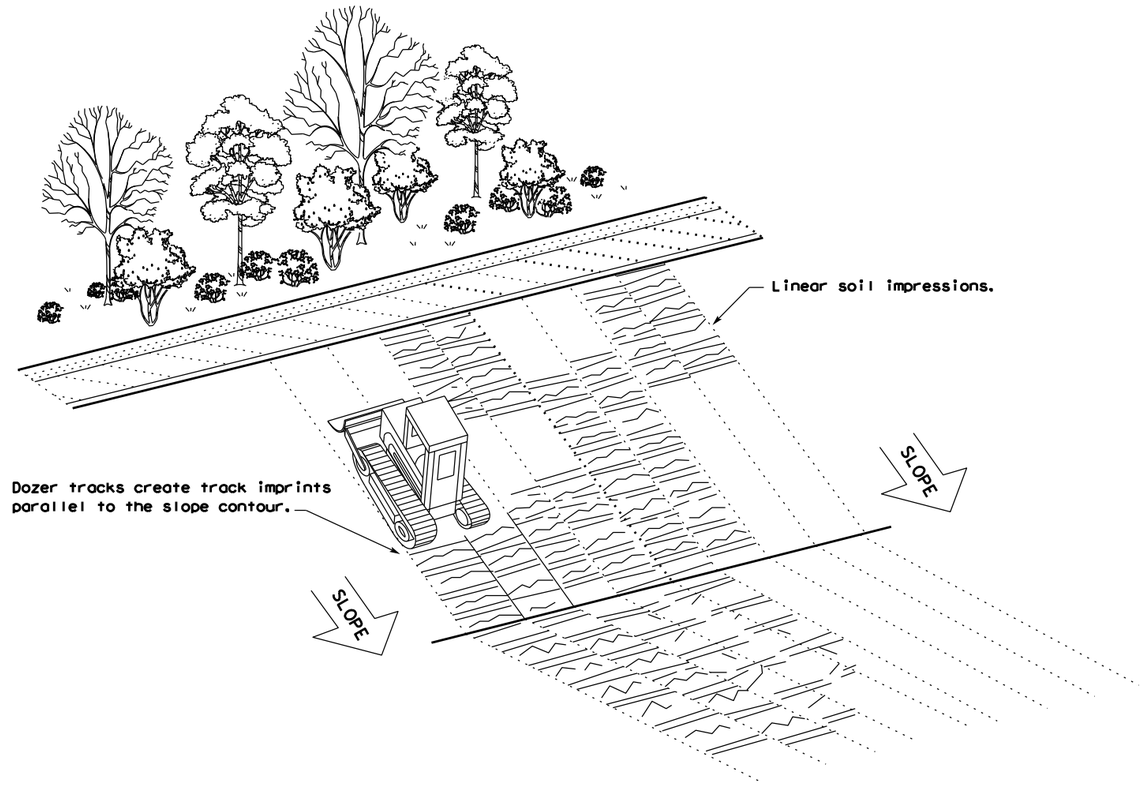
LEGEND

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	0022	10	073, ETC	US 90, ETC
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		180

DATE: 3/5/2021
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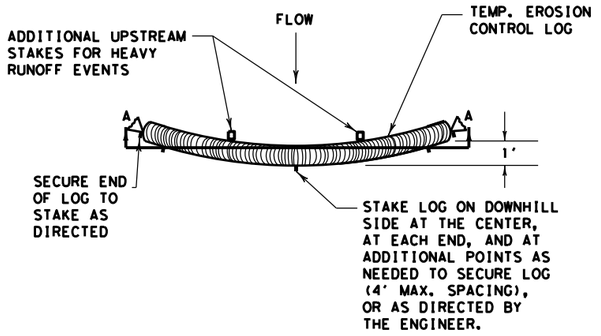
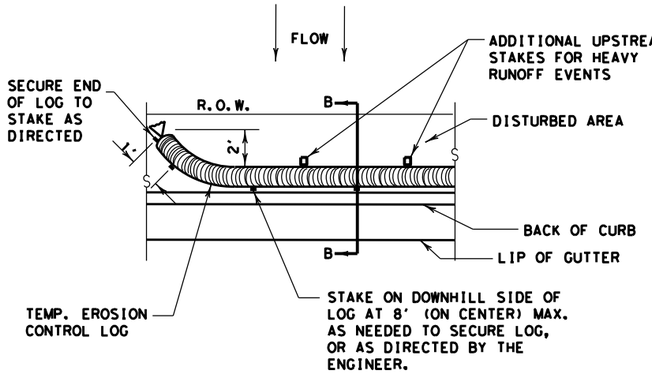
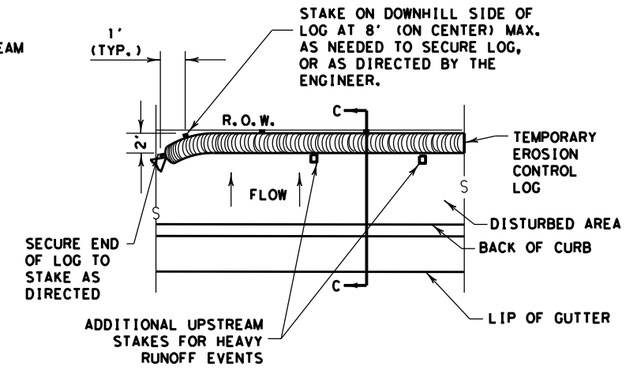


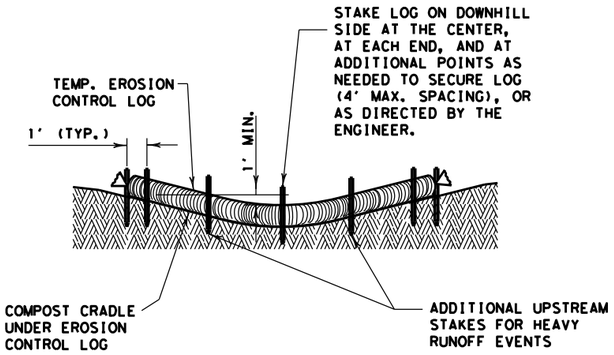
PLAN VIEW



PLAN VIEW



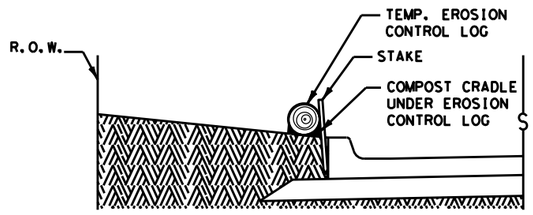
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

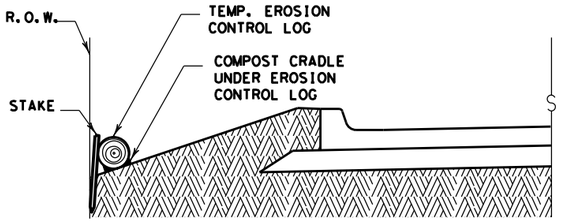
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

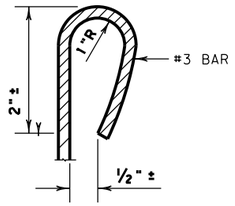
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

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.

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

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.

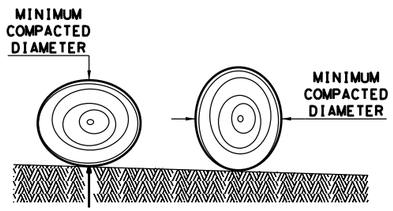
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

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.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

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
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	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		181

DATE: 3/5/2021
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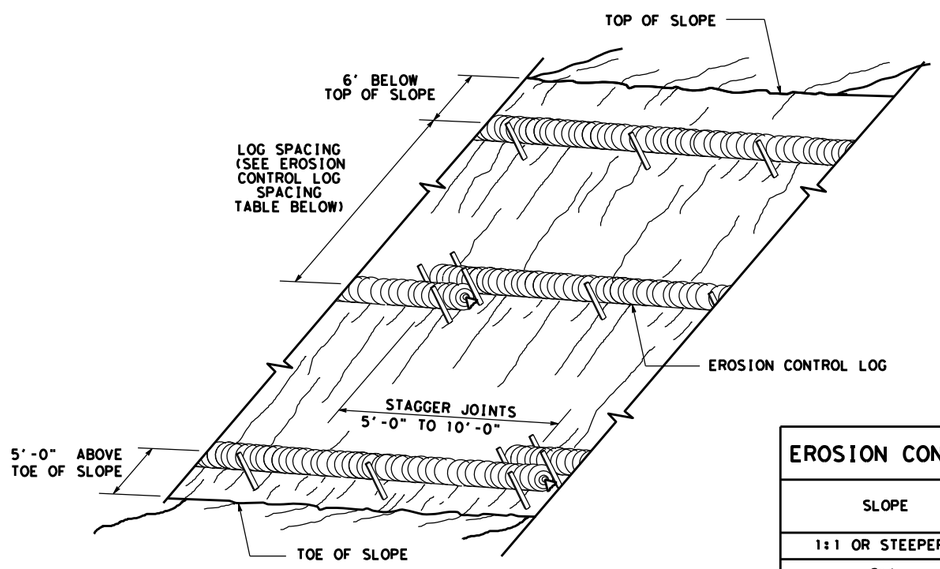
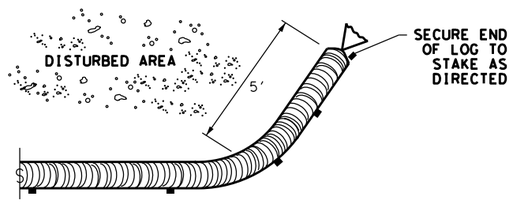


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

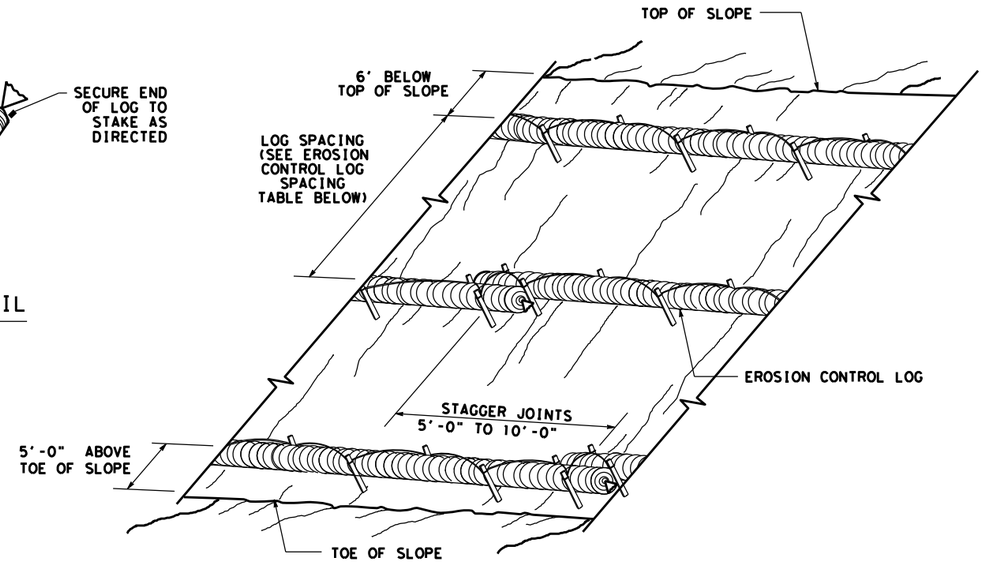
CL-SST



END SECTION RAP DETAIL

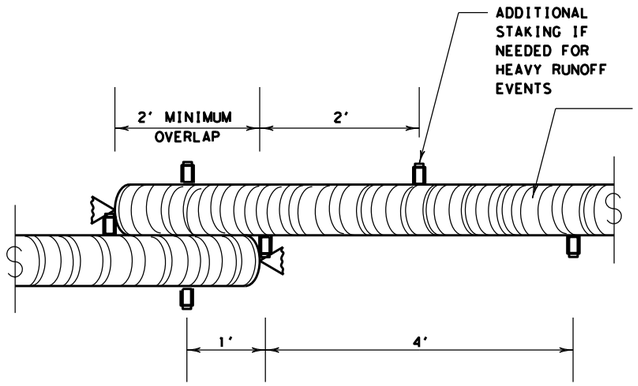
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

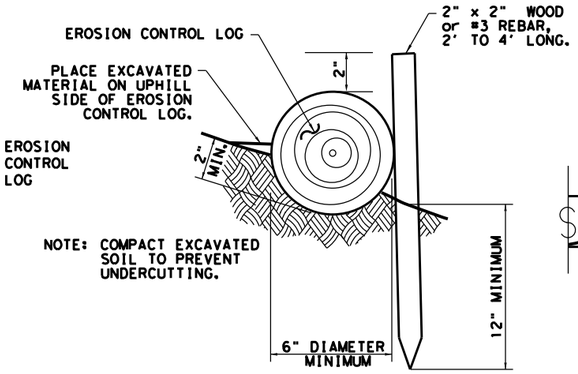
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

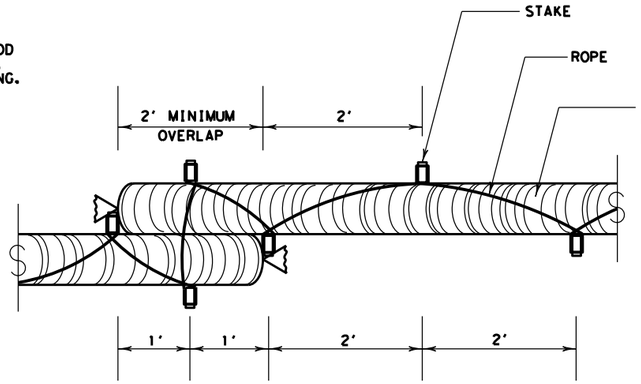


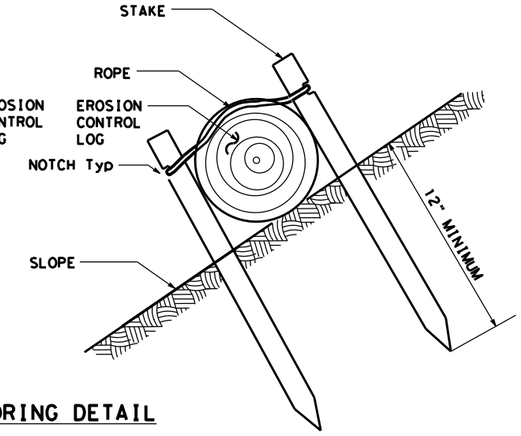


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

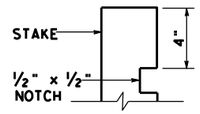
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

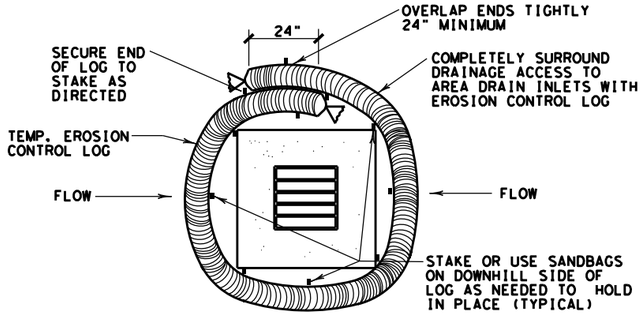
SHEET 2 OF 3

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

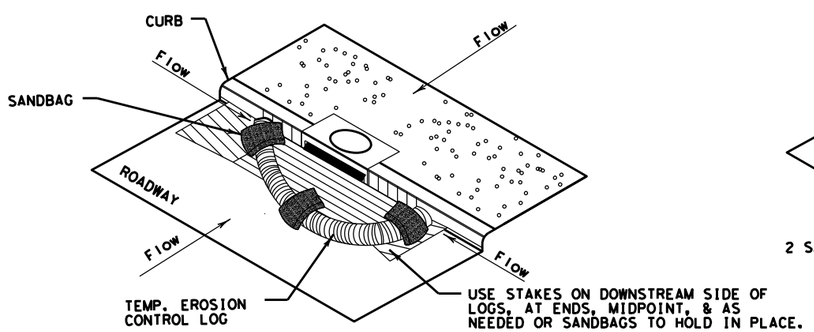
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0022	10	073,ETC	US 90,ETC
	DIST	COUNTY		SHEET NO.
	LRD	VAL VERDE		182

DATE: 3/5/2021
FILE: pw:\\dannenbaum-pw.bentley.com:dannenbaum-pw-01\Documents\Transportation\5113-03\Design\Standards\ec916.dgn



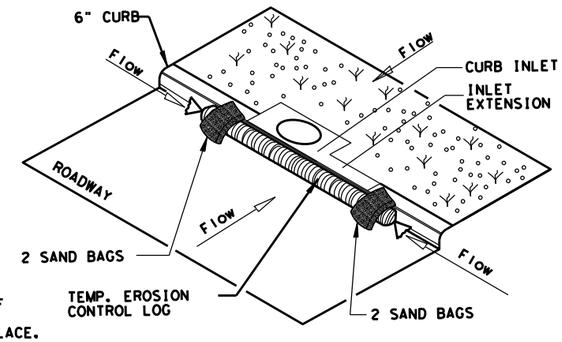
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

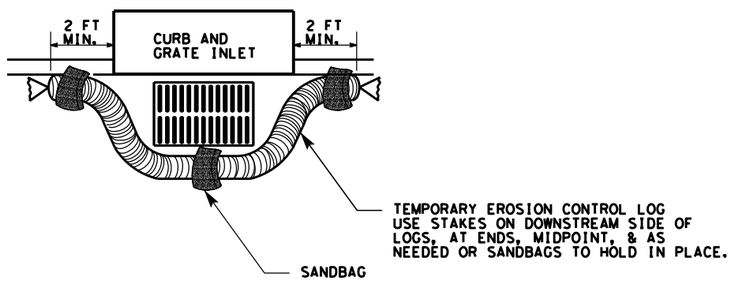
CL-CI



EROSION CONTROL LOG AT CURB INLET

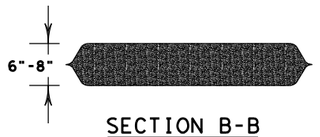
CL-CI

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.

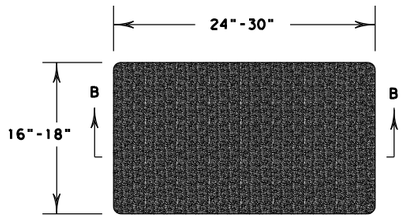


EROSION CONTROL LOG AT CURB & GRADE INLET

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	0022	10	073, ETC		US 90, ETC	
	DIST	COUNTY			SHEET NO.	
	LRD	VAL VERDE			183	