

FINAL PLANS

NAME OF CONTRACTOR: \_\_\_\_\_  
 DATE OF LETTING: \_\_\_\_\_  
 DATE WORK BEGAN: \_\_\_\_\_  
 DATE WORK COMPLETED: \_\_\_\_\_  
 DATE WORK ACCEPTED: \_\_\_\_\_  
 SUMMARY OF CHANGE ORDERS: \_\_\_\_\_

INDEX SEE SHEET 2

Exhibit B  
 STATE OF TEXAS  
 DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED  
 DCTA TRAIL CONNECTION SEGMENT A

CITY OF LEWISVILLE PROJECT NO. P2205  
 CSJ: 0918-46-331

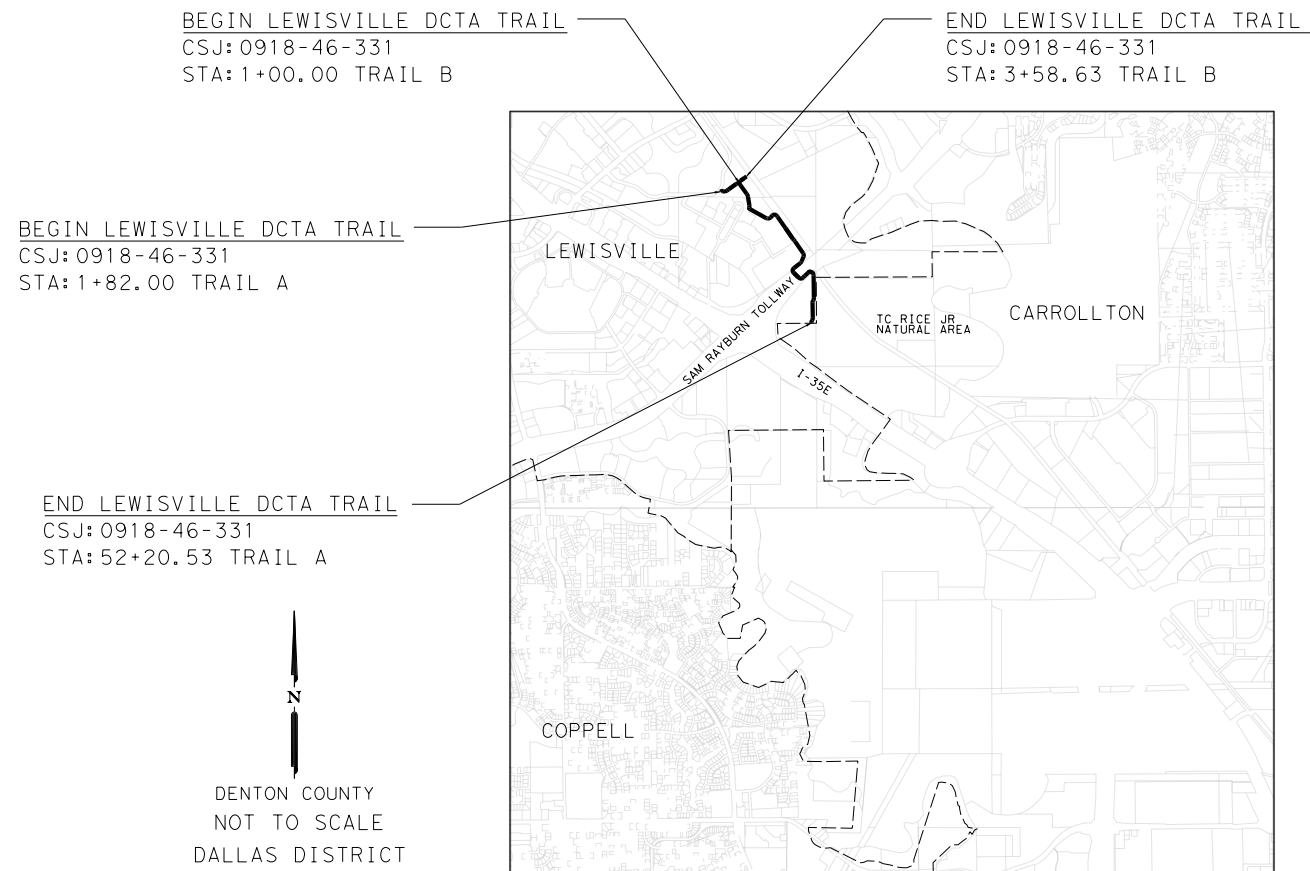
LEWISVILLE DCTA TRAIL CONNECTION- SEGMENT A  
 DENTON COUNTY

LIMITS FROM: DENTON TO DALLAS TRAIL FROM DCTA HEBRON  
 TO: STATION TO CARROLLTON CITY LIMIT

TOTAL LENGTH OF PROJECT = 5,336 FT. = 1.01 MI.

TYPE OF WORK: CONSTRUCT SHARED-USE PATH

CONSISTING OF: GRADING, CONCRETE PAVEMENTS, RETAINING WALLS,  
 SIGNAGE, DRAINAGE CULVERTS, AND PAVEMENT MARKINGS



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

REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION REQUIRED. TDLR NO. TABS2024018470

WORK WAS COMPLETED ACCORDING TO THE PLANS AND CONTRACT.

Signature of Registrant \_\_\_\_\_ Date \_\_\_\_\_

EQUATIONS: NONE  
 EXCEPTIONS: NONE  
 RAILROAD CROSSINGS: NONE

© 2025 by Texas Department of Transportation; all rights reserved

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXXX (XXX) TAPS		HIGHWAY NO. VA
GRAPHICS MC	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK KG	TEXAS	DALLAS	DENTON	1
CHECK KL	CONTROL	SECTION	JOB	
	0918	46	331	

NOTE: TDLR INSPECTION REQUIRED  
 DESIGN SPEED = 18 MPH  
 TRAIL DESIGN TO COMPLY WITH AASHTO AND TMUTCD STANDARDS.



**half**  
 2601 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

SUBMITTED FOR LETTING: August, 29  
 \_\_\_\_\_, PE LGPP  
 PROJECT MANAGER  
 TBPEFRM # F-312



CONCURRENCE: August 29, 2025

\_\_\_\_\_  
 STACIE ANAYA, DIRECTOR  
 PARKS & RECREATION DEPARTMENT

\_\_\_\_\_  
 Randy Simon  
 RANDY SIMON, CAPITAL IMPROVEMENT  
 PROJECT MANAGER  
 PARKS & RECREATION DEPARTMENT

\_\_\_\_\_  
 Mary Ayala  
 MARY AYALA, SENIOR CIVIL ENGINEER  
 ENGINEERING DEPARTMENT



SUBMITTED FOR LETTING \_\_\_\_\_  
 \_\_\_\_\_, P.E.  
 AREA ENGINEER

RECOMMENDED FOR LETTING \_\_\_\_\_  
 \_\_\_\_\_, P.E.  
 DEPARTMENT OF TRANSPORTATION  
 PLANNING AND DEVELOPMENT

APPROVED FOR LETTING: \_\_\_\_\_  
 \_\_\_\_\_, P.E.  
 DISTRICT ENGINEER

## INDEX OF SHEETS

### I. GENERAL

1	COVER SHEET
2	INDEX OF SHEETS
3	SURVEY CONTROL PLAN
4	TYPICAL SECTIONS
5	GENERAL NOTES
6	TXDOT GENERAL NOTES
7	SUMMARY OF QUANTITIES
8 - 9	SUMMARY OF SMALL SIGNS

### II. TRAFFIC CONTROL STANDARDS

10	TCP (1-2)-18
11	TCP (2-4)-18
12 - 23	BC(1)-21 - BC(12)-21

### III. ROADWAY

24	SHEET LAYOUT
25 - 29	GEOMETRIC LAYOUT TRAIL A
30	GEOMETRIC LAYOUT TRAIL B
31 - 43	TRAIL A PLAN & PROFILE
44	TRAIL B PLAN & PROFILE
45 - 46	GRADING PLAN

### ROADWAY STANDARDS

47	JS-14
48 - 51	PED-18 (1 - 4)
52 54	PRD-13 (1 - 3)

### IV. RETAINING WALL

55 - 59	RETAINING WALL PLAN AND PROFILE
60	RETAINING WALL GRADING PLAN
61	HEADWALL STRUCTURAL GENERAL NOTES
62	SEGMENTED WALL STRUCTURAL GENERAL NOTES
63 - 65	CAST-IN-PLACE HEADWALL DETAILS
66 - 68	SEGMENTED WALL DETAILS

### V. DRAINAGE

69	DRAINAGE AREA MAP
70	HYDRAULIC CALCULATIONS
71	CULVERT PLAN & PROFILE
72	CONCRETE SCUPPER DETAIL
73	STORM DRAIN DETAILS

### DRAINAGE STANDARDS

NONE

### VI. UTILITIES

NONE

### VII. BRIDGES

NONE

### VIII. TRAFFIC ITEMS

74	PAVEMENT MARKINGS & SIGNAGE SHEET LAYOUT
75 - 81	PAVEMENT MARKINGS & SIGNAGE PLAN

### TRAFFIC STANDARDS

82	SMD GEN -08
83	SMD (SLIP-1) -08 DAL
84	SMD (SLIP-2) -08
85	SMD (SLIP-3) -08
86	TSR (3) -13
87	TSR (4) -13
88	TSR (5) -13
89	PM (1) -12
90	BLPM-10
91	PM4-20

### IX. RAILROAD

NONE

### X. ENVIRONMENTAL ISSUES

92	STORMWATER POLLUTION PREVENTION PLAN
93 - 94	STORMWATER POLLUTION PREVENTION PLAN (SW3P)
95	ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC) (DAL)

### ENVIRONMENTAL STANDARDS

96	EC (1) -16
97	EC (3) -16
98 - 100	EC (9) -16 (1-3)
101	VEGETATION ESTABLISHMENT SHEET (DALLAS DISTRICT)

### XI. MISCELLANEOUS ITEMS

102	DEMOLITION PLAN LAYOUT
103 - 109	DEMOLITION PLAN TRAIL
110	REVEGETATION PLAN SHEET LAYOUT
111 - 117	REVEGETATION PLAN TRAIL
118 160	CROSS SECTIONS



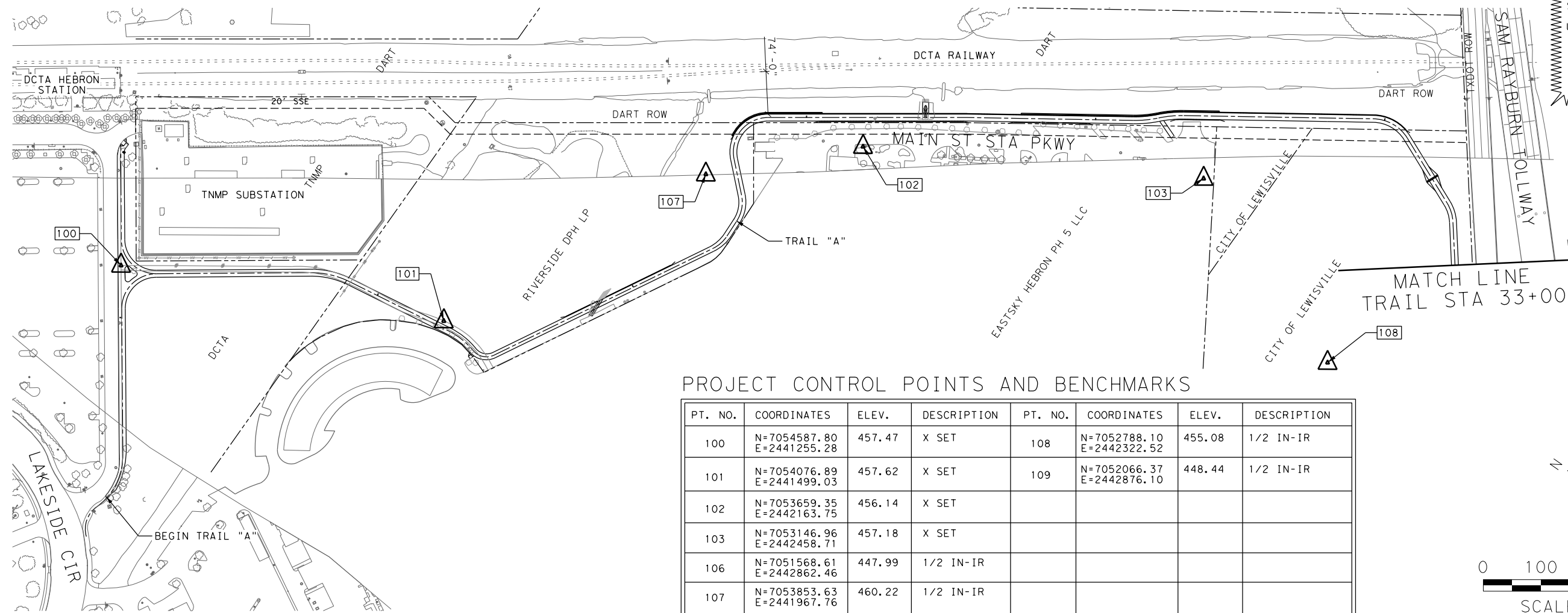
DCTA TRAIL LEWISVILLE

INDEX OF SHEETS

SCALE: AS NOTED SHEET 01 OF 01

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 2
CHECK XX	CONTROL	SECTION 0918	JOB 46	
CHECK XX			331	

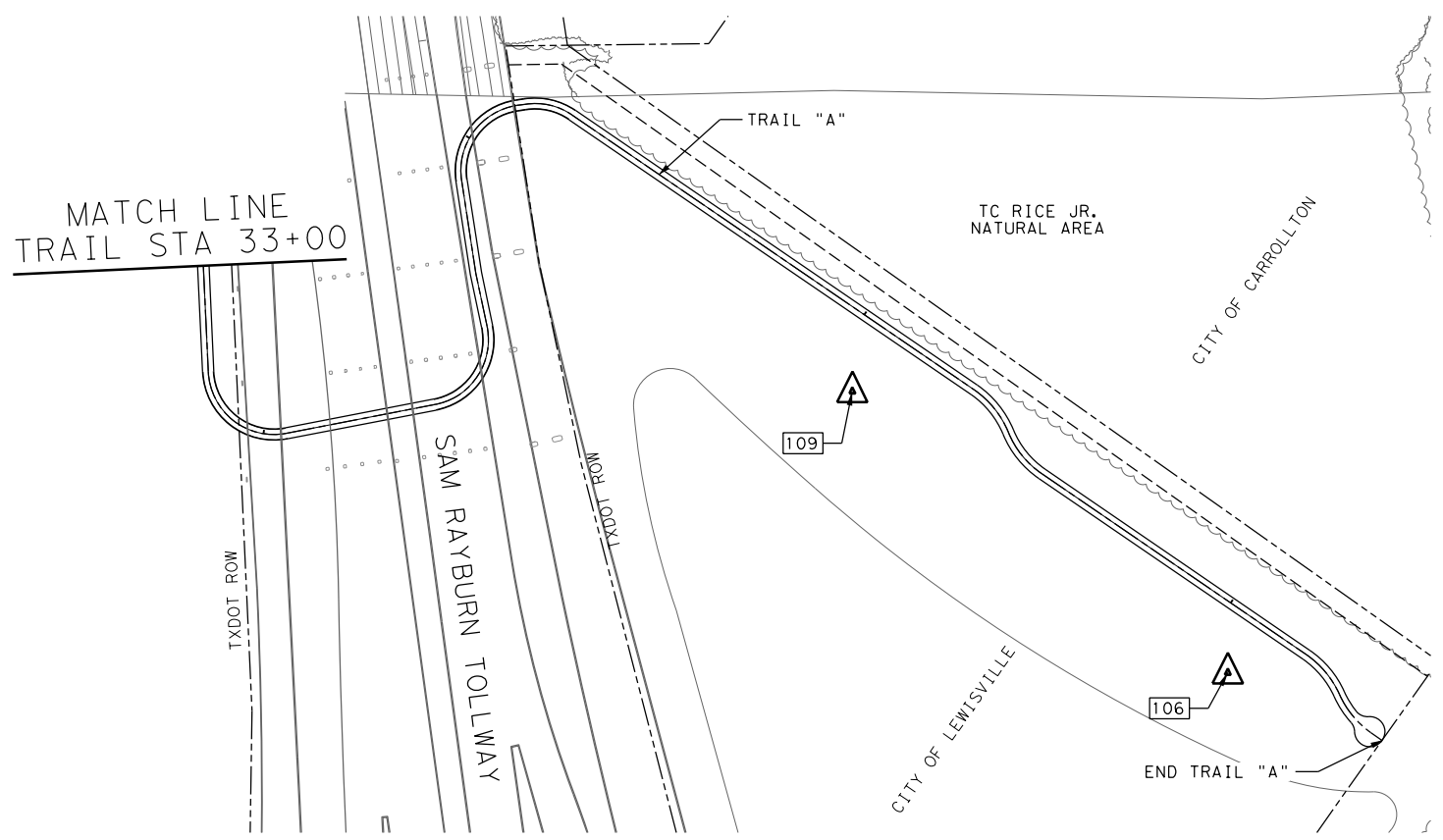
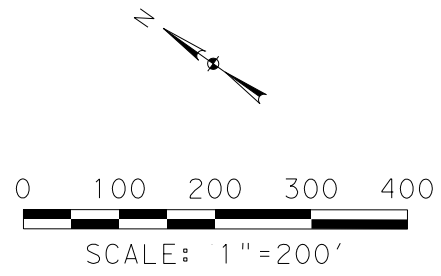
A:\45000s\45685\001\CADD\Sheet\TW\01-General\G101-SV\*CTRL--45685.dgn  
 DATE: 8/29/2025 TIME: 9:26:25 AM PROJECT # 45685 OFFICE: MCA  
 ch2583



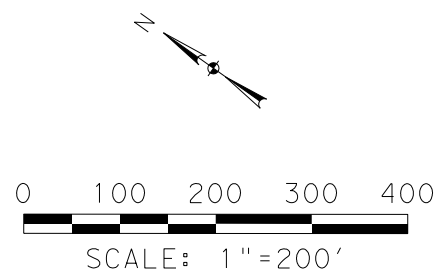
! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TEST IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

PROJECT CONTROL POINTS AND BENCHMARKS

PT. NO.	COORDINATES	ELEV.	DESCRIPTION	PT. NO.	COORDINATES	ELEV.	DESCRIPTION
100	N=7054587.80 E=2441255.28	457.47	X SET	108	N=7052788.10 E=2442322.52	455.08	1/2 IN-IR
101	N=7054076.89 E=2441499.03	457.62	X SET	109	N=7052066.37 E=2442876.10	448.44	1/2 IN-IR
102	N=7053659.35 E=2442163.75	456.14	X SET				
103	N=7053146.96 E=2442458.71	457.18	X SET				
106	N=7051568.61 E=2442862.46	447.99	1/2 IN-IR				
107	N=7053853.63 E=2441967.76	460.22	1/2 IN-IR				



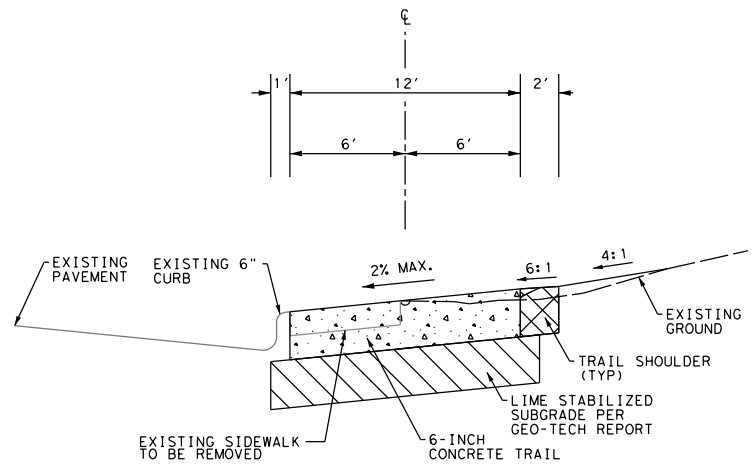
NOTE:  
 1. THE BASIS OF BEARING IS THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE (4202), NORTH AMERICAN DATUM OF 1983. ALL DISTANCES SHOWN HEREON ARE SURFACE ADJUSTED USING A COMBINED SCALE FACTOR OF 1.000150630.



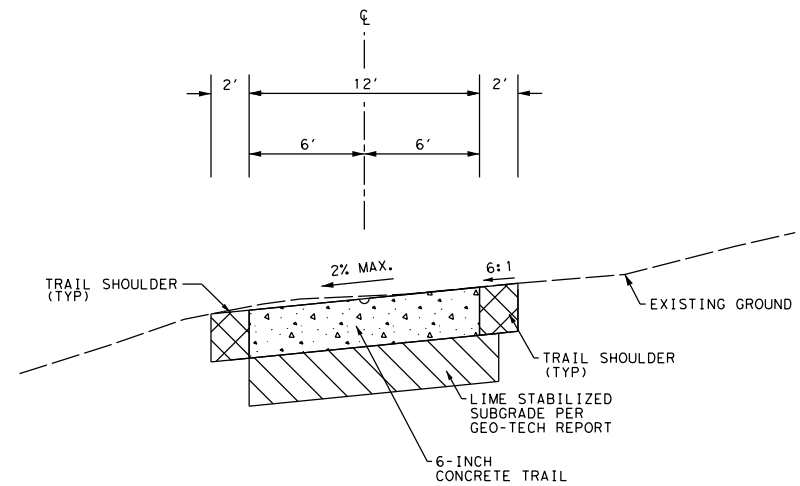
DCTA TRAIL LEWISVILLE  
 SURVEY CONTROL PLAN

SCALE: AS NOTED		SHEET 01 OF 01	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331
			3

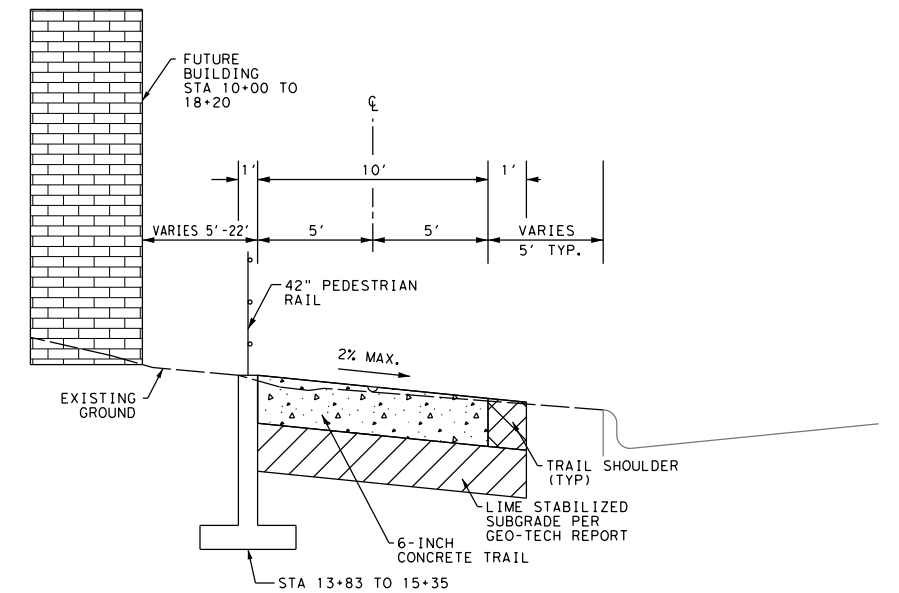
A:\45000s\45685\001\CADD\Sheets\TW\01-General\G102-Typical\*Sections-45685.dgn  
 DATE: 8/29/2025  
 TIME: 9:26:25 AM  
 PROJECT # 45685 OFFICE:MCA  
 ch2583



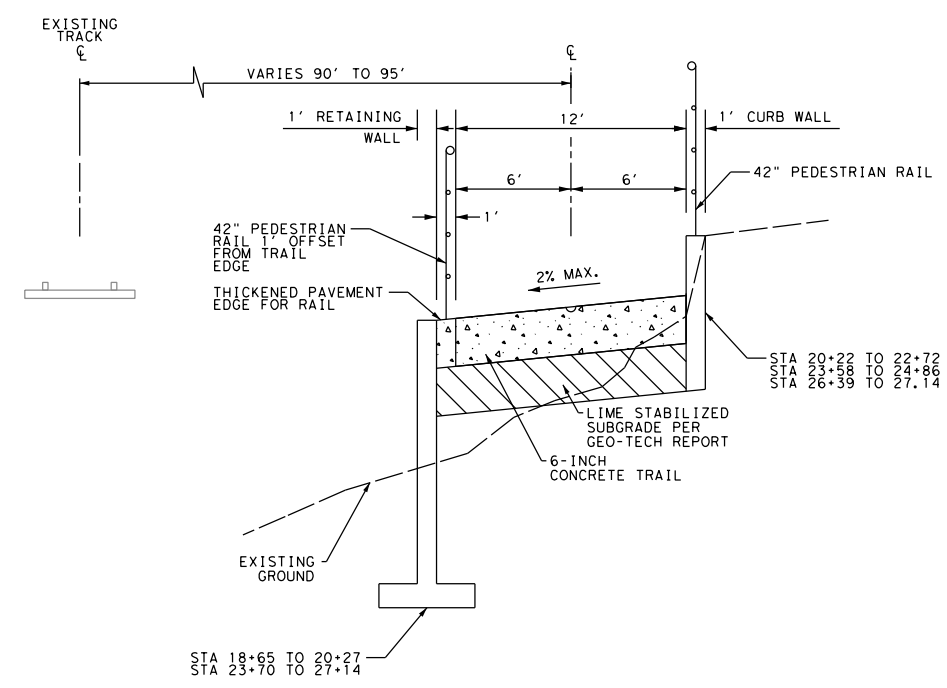
**01** TYPICAL SECTION TRAIL 'A'  
 SCALE: 1"=10'  
 STATIONS: 1+82 TO 5+50  
 TRAIL 'B' STATIONS: 1+00 TO 3+59



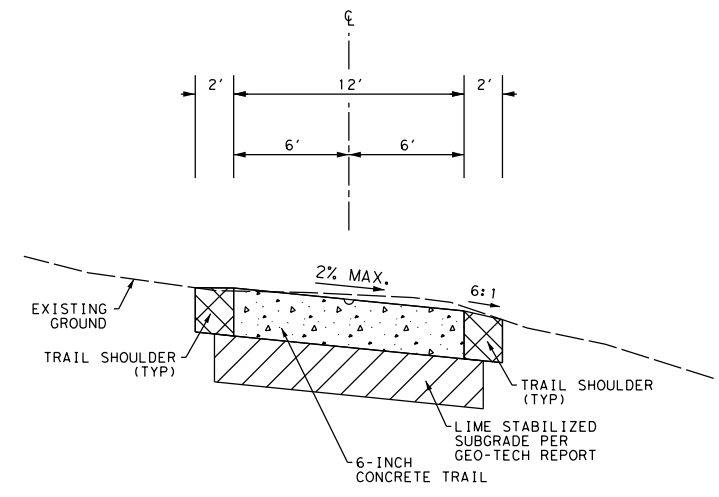
**02** TYPICAL SECTION STATIONS: 5+50 TO 11+00  
 SCALE: 1"=10'  
 18+20 TO 18+65  
 27+14 TO 37+50



**03** TYPICAL SECTION STATIONS: 11+00 TO 18+20  
 SCALE: 1"=10'



**04** TYPICAL SECTION STATIONS: 18+65 TO 27+14  
 SCALE: 1"=10'



**05** TYPICAL SECTION STATIONS: 37+50 TO END  
 SCALE: 1"=10'



DCTA TRAIL LEWISVILLE

TYPICAL SECTIONS

SCALE: AS NOTED		SHEET 01 OF 01	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331

REFER TO GEOTECHNICAL ENGINEERING REPORT  
 BY: CMJ ENGINEERING, INC.  
 PROJECT NO. 117-24-358 (REVISED)  
 DATE: AUGUST 7, 2024

ch2583  
 OFFICE:IMCA  
 PROJECT # 45685  
 TIME:9:26:27 AM  
 DATE:8/29/2025  
 A:\45000s\45685\001\CADD\Sheet\FW\01-General\G103-GN-45685.dgn

GENERAL PROJECT NOTES

1. TOPOGRAPHICAL MAPPING SHOWN CURRENTLY PER 2020 NCTCOG VELOWEB MAPPING. CONTRACTOR TO NOTIFY ARCHITECT OF ANY DISCREPANCIES BETWEEN THE PLAN TOPOGRAPHY AND THE CURRENT EXISTING CONDITIONS.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION, SIZE, AND MATERIAL OF ALL UTILITIES AFFECTED BY CONSTRUCTION PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL CONTACT ALL AFFECTED UTILITIES 48 HOURS PRIOR TO CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE MADE TO EXISTING UTILITIES WITH NO EXPENSE TO THE CLIENT OR CONSULTANT.  
 DIG TESS 811  
 CITY OF LEWISVILLE PUBLIC WORKS 972-219-3510  
 DENTON COUNTY TRANSPORTATION AUTHORITY 940-243-0077  
 DALLAS AREA RAPID TRANSIT (DART) 214-979-1111  
 TNMP (TEXAS-NEW MEXICO POWER) 888-866-7456  
 NTTA (NORTH TEXAS TOLLWAY AUTHORITY) 817-731-6882  
 RIOTECH (RIO GRANDE PACIFIC TECHNOLOGY) 817-731-7187  
 RACHAEL TWIGGS- TXDOT DALLAS DISTRICT) 214-320-6669
3. CONTRACTOR TO NOTIFY THE OWNER IMMEDIATELY WHEN ANY DISCREPANCY IS FOUND BETWEEN PLANS AND EXISTING CONDITIONS. IN THE EVENT A DISCREPANCY IS FOUND, THE CONTRACTOR WILL NOTIFY THE CITY AND REQUEST RFI TO RESOLVE THE ISSUE. THE CONTRACTOR SHALL COORDINATE DIRECTLY WITH THE CITY OF LEWISVILLE PARK MANAGER ON ANY CONSTRUCTION RELATED ISSUES, QUESTIONS, OR RFIs.
4. THE CONTRACTOR IS RESPONSIBLE FOR SECURING ACCESS TO THE CONSTRUCTION SITE, SUBJECT TO APPROVAL FROM THE CITY OF LEWISVILLE AND DART.
5. WHERE EXISTING UTILITIES OR SERVICE LINES ARE CUT, BROKEN OR DAMAGED, THE CONTRACTOR SHALL REPLACE OR REPAIR THE UTILITIES OR SERVICE LINES WITH THE SAME TYPE OF ORIGINAL MATERIAL AND CONSTRUCTION, OR BETTER, UNLESS OTHERWISE SHOWN OR NOTED ON THE PLANS, AT HIS OWN COST AND EXPENSE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PARK MANAGER AT ONCE OF ANY CONFLICTS IN GRADES AND ALIGNMENT.
6. EXISTING UTILITIES SHOWN ARE TAKEN FROM AVAILABLE RECORDS PROVIDED BY THE CITY AND FIELD LOCATIONS OF SURFACE APPURTENANCES. LOCATIONS SHOWN ARE GENERALLY SCHEMATIC IN NATURE AND MAY NOT ACCURATELY REFLECT THE SIZE AND LOCATION OF EACH PARTICULAR UTILITY. SOME UTILITY LINES MAY NOT BE SHOWN. CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ACTUAL FIELD LOCATION AND PROTECTION OF EXISTING FACILITIES WHETHER SHOWN OR NOT. CONTRACTOR SHALL ALSO ASSUME RESPONSIBILITY FOR REPAIRS TO EXISTING FACILITIES, WHETHER SHOWN OR NOT, IF DAMAGED BY CONTRACTOR'S ACTIVITIES. DIFFERENCES IN HORIZONTAL OR VERTICAL LOCATION OF EXISTING UTILITIES SHALL NOT BE A BASIS FOR ADDITIONAL EXPENSE.
7. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING SIDEWALKS AND ROADS ADJACENT TO THE PROJECT FREE FROM MUD AND DEBRIS FROM THE CONSTRUCTION AREA.
8. THE CONTRACTOR SHALL ADOPT APPROPRIATE CONSTRUCTION SITE MANAGEMENT PRACTICES TO PREVENT THE DISCHARGE OF OILS, GREASE, PAINTS, GASOLINE AND OTHER POLLUTANTS TO STORM WATER THAT IS CONSISTENT WITH SW3P MANAGEMENT PRACTICES. APPROPRIATE PRACTICES CAN INCLUDE:
  - DESIGNATING AREAS FOR EQUIPMENT MAINTENANCE AND REPAIR;
  - REGULAR COLLECTION OF WASTE;
  - CONVENIENTLY LOCATED TRASH RECEPTACLES; AND
  - DESIGNATING AND CONTROLLING EQUIPMENT WASHDOWN.
9. THE CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE/EXIT AT ALL TRAFFIC EXIT POINTS PRIOR TO EXITING ONTO ANY PAVED ROADWAY.
10. THE ACCESS AND WORK AREAS SHALL BE SECURED DURING NON-WORKING HOURS AS DEFINED BY THE CITY AND DART.
11. CONTRACTOR IS RESPONSIBLE FOR, AND MUST OBTAIN PRIOR TO CONSTRUCTION, ALL NECESSARY CONSTRUCTION PERMITS REQUIRED BY THE CITY OF LEWISVILLE.
12. CONTRACTOR IS REQUIRED TO STAKE THE ALIGNMENT AND LIMITS OF EASEMENTS THROUGH PRIVATE PROPERTY. THE ALIGNMENT WILL BE REQUIRED TO BE APPROVED BY THE CITY PRIOR TO PROCEEDING WITH CONSTRUCTION OF THE TRAIL. CONTRACTOR SHALL REFER TO THE OFFICIAL EASEMENT DOCUMENTATION LOCATED WITHIN THE SPECIFICATIONS.
13. ADEQUATE MEASURES SHALL BE TAKEN TO PREVENT EROSION. IN THE EVENT THAT SIGNIFICANT EROSION OCCURS AS A RESULT OF CONSTRUCTION, THE CONTRACTOR SHALL RESTORE THE ERODED AREAS TO ORIGINAL CONDITION OR BETTER.
14. PRIOR TO CONSTRUCTION, A PRE- CONSTRUCTION MEETING SHALL BE HELD WITH REPRESENTATIVES FROM ALL CONTRACTORS, THE ENGINEER, AND THE CITY OF LEWISVILLE.
15. ALL WORK SHALL BE PERFORMED WITHIN THE CITIES RIGHT-OF-WAY, EASEMENTS OR IN PUBLIC-OWNED PROPERTY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN PERMISSION AND REQUIRED PERMITS TO USE PRIVATE PROPERTY, IF NECESSARY FOR THE PURPOSES OF CONSTRUCTION, STAGING, STOCKPILE, STORAGE OR REFUSE AREAS. THE CONTRACTOR SHALL PROVIDE WRITTEN EVIDENCE TO THE CITY PRIOR TO USE.

PAVEMENT MARKING AND SIGNAGE NOTES

1. REFER TO STANDARD DETAIL SHEETS FOR PAVEMENT MARKING AND SIGN INSTALLATION DETAIL.
2. SIGNS ARE TO BE PLACED IN ACCORDANCE WITH THE 2009 EDITION MUTCD, REVISION 1 AND 2 UPDATED MARCH, 2014, MINIMUM 2' FROM THE EDGE OF PAVEMENT.
3. BIKE LANE SIGNAGE TO BE PLACED IN ACCORDANCE WITH THE AASHTO 2024, FIFTH EDITION, GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES.

CONTACT (OWNER)

STACIE ANAYA  
 DIRECTOR  
 LEWISVILLE PARKS AND RECREATION DEPARTMENT

PH: 972-219-3550  
 EMAIL: SANAYA@CITYOFLEWISVILLE.COM

RANDY SIMON  
 CAPITAL IMPROVEMENT PROJECT MANAGER  
 LEWISVILLE PARKS AND RECREATION DEPARTMENT

PH: 972-219-3749  
 EMAIL: RSIMON@CITYOFLEWISVILLE.COM

GENERAL PROJECT NOTES (CONT.)

16. BARRICADING AND TRAFFIC CONTROL DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", PART VI IN PARTICULAR. TRAFFIC FLOW AND ACCESS SHALL BE MAINTAINED DURING ALL PHASES OF THE CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC SAFETY MEASURES FOR WORK ON PROJECT AND CONFORMS TO TXDOT STANDARDS.
17. CONTRACTOR TO SUBMIT A "TRAFFIC CONTROL PLAN" FOR APPROVAL BY THE CITY PRIOR TO BEGINNING WORK. FLOODPLAIN PERMIT WILL BE REQUIRED PRIOR TO BEGINNING WORK. CONTRACTOR TO VERIFY ALL REQUIRED PERMITS HAVE BEEN APPROVED PRIOR TO BEGINNING WORK.
18. ANY DAMAGES THAT MAY OCCUR TO REAL PROPERTY OR EXISTING IMPROVEMENTS SHALL BE RESTORED BY THE CONTRACTOR TO AT LEAST THE SAME CONDITION THAT THE REAL PROPERTY OR EXISTING IMPROVEMENTS WERE IN PRIOR TO THE DAMAGES. THIS RESTORATION SHALL BE SUBJECT TO THE OWNER'S APPROVAL; MOREOVER, THIS RESTORATION SHALL NOT BE A BASIS FOR ADDITIONAL COMPENSATION TO THE CONTRACTOR. RESTORATION SHALL INCLUDE, BUT NOT BE LIMITED TO, REGRASSING, REVEGETATION, REPLACING FENCES, REPLACING TREES, ETC.
19. CONTRACTOR SHALL REVIEW THE GEOTECHNICAL REPORT LOCATED IN THE SPECIFICATIONS PRIOR TO BEGINNING WORK. CONTRACTOR SHALL REFERENCE THE GEOTECH REPORT FOR SUBGRADE INFORMATION AND REBAR CONFIGURATION.
20. CONSTRUCTION TRAFFIC ROUTES SHALL BE COORDINATED WITH CITY OF LEWISVILLE PRIOR TO CONSTRUCTION. ALL DISTURBED AND/OR COMPACTED AREAS DUE TO CONSTRUCTION SHALL BE AERATED AND REVEGETATED WITH BERMUDA SOD TO ORIGINAL CONDITION AT NO ADDITIONAL EXPENSE TO THE CITY OF LEWISVILLE OR CONSULTANT.
21. PRIOR TO CONSTRUCTION, THE OWNER OR OWNER'S REPRESENTATIVE SHALL APPROVE THE LOCATION OF ALL EROSION CONTROL APPLICATIONS.
22. THE CONTRACTOR SHALL USE THE LIMITS OF EROSION CONTROL UNITS AS THE LIMITS OF DISTURBANCE AND ACCESS UNLESS OTHERWISE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE.
23. ALL AREAS DIRECTLY ADJACENT TO TRAIL, IMMEDIATE GRADING REQUIRED FOR CONSTRUCTION OF THE TRAIL, AND SLOPES 4:1 AND LESSER SHALL RECEIVE BERMUDA SOD, UNLESS OTHERWISE NOTED.
24. ALL AREAS DISTURBED DURING CONSTRUCTION, OUTSIDE OF THE IMMEDIATE GRADING REQUIRED FOR THE TRAIL CONSTRUCTION, SHALL RECEIVE BERMUDA SEED HYDROMULCHED, UNLESS OTHERWISE APPROVED BY THE CITY. SEEDED/HYDROMULCHED AREAS ARE TO BE MANUALLY WATERED FOR A PERIOD NO LESS THAN 30 DAYS UNTIL SEEDS ARE GERMINATED AND PROVIDE MINIMUM 80% VEGETATIVE COVERAGE. ALL DISTURBED AREAS OUTSIDE OF THE IMMEDIATE CONSTRUCTION AREAS SHALL BE HYDROSEEDING BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE CITY.
25. CONTRACTOR TO LOCATE AND IDENTIFY ALL EXISTING IRRIGATION EQUIPMENT AFFECTED BY CONSTRUCTION AND SHALL REPAIR AND ADJUST PER TCEQ IRRIGATION STANDARDS. REPAIRS TO INCLUDE BUT NOT LIMITED TO PVC PIPE, HEADS, CONTROL VALVES AND WIRING. SYSTEM SHALL MEET OR EXCEED CURRENT IRRIGATION SYSTEM FUNCTION. FOR ALL AFFECTED PROPERTIES, CONTRACTOR TO SUBMIT PRODUCT DATA AND DRAWINGS FOR PROPOSED IRRIGATION IMPROVEMENTS. IRRIGATION DESIGN AND/OR INSTALLATION WORK SHALL BE PERFORMED BY OR UNDER THE SUPERVISION OF A LICENSED IRRIGATOR IN THE STATE OF TEXAS.
26. CONTRACTOR TO PROVIDE PHASING PLAN PRIOR TO CONSTRUCTION (INCLUDING STREAM AND WETLAND CROSSINGS).
27. CONTRACTOR IS RESPONSIBLE FOR SECURING AND RESTRICTING USE OF THE TRAIL DURING CONSTRUCTION. THE CONTRACTOR MAINTAINS FULL RESPONSIBILITY OF THE TRAIL AND CONSTRUCTION AREA UNTIL FINAL ACCEPTANCE BY THE CITY.
28. CONTRACTOR IS TO SCHEDULE A SITE VISIT WITH CITY PARKS PROJECT MANAGER TO IDENTIFY TREES THAT WILL REQUIRE TREE PROTECTION FENCING PRIOR TO CONSTRUCTION. TREE PROTECTION, FENCING, MULCHING AND ALL INCIDENTALS SHALL BE CONSIDERED SUBIDIARY TO THE PROJECT.
29. ALL LONGITUDINAL TRAIL SLOPES SHALL NOT EXCEED 5%, INCLUDING INSIDE RADII. ALL CROSS SLOPES SHALL NOT EXCEED 2%. ALL CROSS SLOPE TRANSITIONS SHALL OCCUR OVER A MINIMUM DISTANCE OF 15 LINEAR FEET.



DCTA TRAIL LEWISVILLE

GENERAL NOTES

SCALE: AS NOTED		SHEET 01 OF 01	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331

- Item 5--**  
 5-1 Taper ACP placed at curb inlets, traffic inlets and slotted drains.
- 5-2 A horizontal boom or equivalent equipment is required for construction in the vicinity of the CPS Energy electric lines to provide vertical clearance of equipment during construction. Contact CPS Energy Utility Coordination Group sixteen (16) week in anticipation of pole bracing. The estimated duration for pole bracing is 6 to 10 weeks (or longer if temporary construction easements are required) after invoice is paid. For de-energizing or sleeving of the overhead electrical lines depicted on the plans, please contact CPS Energy Utility Coordination Group sixteen (16) week in anticipation of needed de-energization. The estimated duration for de-energizing is approximately 4 to 6 weeks (after invoice is paid) but could vary on system scenario and back feed requirements. De-energizing may not be possible in all instances or may be restricted during specific periods of time due to load demand. Contractor will be reimbursed for the invoice cost for pole bracing and/or de-energizing or sleeving through force account.
- 5-3 Prevention of Migratory Bird Nesting
- It is anticipated that migratory birds, a protected group of species, may try to nest on bridges, culverts, vegetation, or gravel substrate, at any time of the year. The preferred nesting season for migratory birds is from February 15 through October 1. When practicable, schedule construction operations outside of the preferred nesting season. Otherwise, nests containing migratory birds must be avoided and no work will be performed in the nesting areas until the young birds have fledged.
- Structures
- Bridge and culvert construction operations cannot begin until swallow nesting prevention is implemented, until after October 1 if it's determined that swallow nesting is actively occurring, or until it's determined swallow nests have been abandoned. If the State installed nesting deterrent on the bridges and culverts, maintain the existing nesting deterrent to prevent swallow nesting until October 1 or completion of the bridge and culvert work, whichever occurs earlier. If new nests are built and occupied after the beginning of the work, do not perform work that can interfere with or discourage swallows from returning to their nests. Prevention of swallow nesting can be performed by one of the following methods:
- By February 15 begin the removal of any existing mud nests and all other mud placed by swallows for the construction of nests on any portion of the bridge and culverts. The Engineer will inspect the bridges and culverts for nest building activity. If swallows begin nest building, scrape, or wash down all nest sites. Perform these activities daily unless the Engineer determines the need to do this work more frequently. Remove nests and mud through October 1 or until bridge and culvert construction operations are completed.
  - By February 15 place a nesting deterrent (which prevents access to the bridge and culvert by swallows) on the entire bridge (except deck and railing) and culverts. This work is subsidiary to the various bid items.
- No extension of time or compensation payment will be granted for a delay or suspension of work caused by nesting swallows
- 5-4 Provide a non-intrusive back-up alarm system on all heavy equipment used in close proximity to residential areas. This item is subsidiary to various bid items.
- 5-5 When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with "Standard Operating Procedure for Alternate Precast Proposal Submission" found online at <https://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/publication/s/bridge.html#design>. Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.
- 5-6 Excavation within 5 feet of an existing CPS Energy pole will require pole bracing. Contact CPS Energy utility coordination to request pole bracing (Customer Engineering 210-353-4050). The estimated duration for the pole bracing process is approximately 10 to 15 weeks.

- Item 506--**  
 506-1A An Inspector will perform a regularly scheduled SWP3 inspection every 7 calendar days.  
 506-2 Failure to address items noted on the SW3P inspection report within two report cycles may result in the Department stopping all construction operations, exclusive of time charges, or withholding that month's estimate until the SW3P deficiencies are corrected unless the Engineer determines that the area is too wet to correct SW3P deficiencies.
- 506-3 Failure to correctly maintain daily monitoring reports and submitting to TxDOT on a daily/weekly basis may result in the monthly estimate being withheld.

**SW3P RESPONSIBILITIES**

**TxDOT Area of Responsibility**

Responsible for the area defined by the limits of the subject project, except for those areas utilized and operated by the contractor. These areas include, though are not limited to, areas used for field offices, equipment and/or material storage, and concrete or asphalt plants.

**TxDOT Operational Responsibility**

Responsible for seeking coverage under the TPDES Construction General Permit (CGP) and operating the project within the requirements of the CGP for discharging storm water from the subject project and to notify MS4 permit holders of the intent to discharge storm water.

File a Notice of Termination with TCEQ upon completion of the project when the exposed areas have been stabilized with a vegetative cover of at least 70%.

**Contractor Area of Responsibility**

Responsible for all areas under their direct operational control which includes, though not limited to, areas used for field offices, equipment and/or material storage, and concrete or asphalt plants. These areas may be located on or off the subject project's R.O.W.

**Contractor Operational Responsibility**

Responsible for seeking coverage under the TPDES Construction General Permit (CGP) and adhering to all requirements of the permit for discharging storm water from the areas under their operational control. Perform regular inspections, prepare a written report of deficiencies, and repair deficiencies within the time frame set forth by the permit. File a Notice of Termination with TCEQ upon completion of the project when the exposed areas have been stabilized with a vegetative cover of at least 70%.

Responsible under contractual obligations to TxDOT to install, clean, repair, replace or remove sediment and erosion control devices as indicated on TxDOT's Inspection Reports, or as required by daily construction practices, within the time frame set forth by the permit.

**SPECIFICATION DATA**

TABLE 1: SOIL CONSTANTS REQUIREMENTS

Item	Description	Plasticity Index		Note
		MAX	MIN	
132	Embk(OC)(Type C)	40	8	1

Note 1: material excavated from the project must meet the pi requirements when used in the top 10 feet of embankment that supports the pavement structure or other locations shown in the plans. Do not use shale and obtain approval to incorporate shaley clay produced by the construction project.

Table 2: Basis of Estimate for Permanent Construction

ITEM	DESCRIPTION	THICKNESS	RATE	QUANTITY
162	Block Sod	N/A		SY
164	DRILL SEED (PERM) (R) (C)	N/A		SY
166 *	Fertilizer (12-6-6)	N/A	500 Lb/Ac	Ton
168	Vegetative Watering (Warm)**	N/A	7 MG/Ac/Day	MG
260	HYDRATED LIME (SLURRY)		5% BY WT	TON
310	Prime Coat (MC-30)	N/A	0.20 Gal/SY	Gal

\* For contractor's information only  
 \*\* Adjust for actual field conditions/temperatures as necessary. See Vegetation Establishment Plan Sheet for estimated daily rates.

Note:  
 (1) Base material weight based on 1.50 Ton/CY (dry- compacted)  
 (2) Asphalt weight based on 110 Lbs/SY/In  
 (3) Subgrade weight based on \_\_\_ Ton/CY (dry-compactd)

Table 3: Basis of Estimate for Temporary Erosion Control Items

Item	Description	Rate	Quantity
164	Drill Seeding (Temp) (Warm)	See Specifications	SY
166*	Fertilizer (12-6-6)	500 Lb/Ac	Ton
168	Vegetative Watering (Warm)**	7 MG/Ac/Day	MG
164	Drill Seeding (Temp) (Cool)	See Specifications	SY
166*	Fertilizer (12-6-6)	500 Lb/Ac	Ton
168	Vegetative Watering (Cool)**	1 MG/Ac/Day	MG

\*For Contractor's Information Only.\*\* Adjust for Actual Field Conditions/ Temperatures as Necessary. See Vegetation Establishment Sheet for estimated daily rates.

**General**

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

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

The disturbed area for this project, as shown on the plans is 7.66 acres. However, the Total Disturbed Area (TDA) will establish the required authorization for storm water discharges. The TDA of this project will be determined by the sum of the disturbed area in all project locations in the contract, and all disturbed area on all Project-Specific Locations (PSL) located in the project limits and/or within 1 mile of the project limits. The department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction site as shown on the plans, according to the TDA of the project. The contractor will obtain any required authorization from the TCEQ for the discharge of storm water from any PSL for construction support activities on or off of the project row according to the TDA of the project. When the TDA for the project exceeds 1 acre, provide a copy of the appropriate application of permit (NOI, or Construction Site Notice) to the engineer, for any PSL located in the project limits or within 1 mile of the project limits. Follow the directives and adhere to all requirements set forth in the TCEQ, Texas Pollution Discharge Elimination System, Construction General Permit (TPDES, CGP).

This project required \_\_\_\_\_ with environmental resources agencies. There is a high probability that an environmentally sensitive area could be encountered on the contractor designated Project-Specific Locations (PSL) for this project (haul roads, equipment staging areas, borrow pits, disposal sites, field offices, storage areas, parking areas, etc.). Item 7.19.F, "Project-Specific Locations", will provide a listing of regulatory agencies that may need to be contacted regarding this project. Prior to contract letting, bidders may request electronic earthwork information by email. Email: RACHAEL.TWIGGS@TXDOT.GOV

Earthwork files will be provided by email or by using TxDOT's Dropbox FTP Service.

Bidders may also obtain a free computer diskette that contains earthwork information from the engineer's office. Paper copies of cross-sections may be produced by using the provided free diskette at the bidders' expense and at copying companies. This data is for non-construction purposes only and it is the responsibility of the prospective bidder to validate the enclosed data with appropriate plans, specifications and estimate for the project(s).

Install traffic marking signs prior to sealcoat application and remove within three days after placement of traffic markings.

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

Use established industry and utility safety practices to erect poles, luminaries, signs or structures near any overhead or underground utility. Consult with the appropriate utility company prior to beginning such work.

Underground utilities owned by the Texas Department of Transportation may be present within the Right-Of-Way on this project. For signal, illumination, surveillance, and communications & control maintained by TxDOT, call the TxDOT Traffic Signal Office (214-320-6682) for locates a minimum of 48 hours in advance of excavation. For irrigation systems, call TxDOT Maintenance Landscape Office (214-320-6205) for locates a minimum of 48 hours in advance of excavation. If city or town owned irrigation facilities are present, call the appropriate department of the local city or town a minimum of 48 hours in advance of excavation. The Contractor is liable for all damages incurred to the above mentioned utilities when working without having the utilities located prior to excavation. For the project to be deemed complete, permanently stabilize all unpaved disturbed areas of the project with a vegetative cover at a minimum of 70% density for the control of erosion.

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

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

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

Submit pre-letting questions, by email only, to the attention of Area Engineer or Assistant Area Engineer. Email: RACHAEL.TWIGGS@TXDOT.GOV. Answers will be provided by email.

An electronic file containing pre-letting questions and TxDOT answers will be provided upon email request.

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

Provide the Engineer with a copy of all Disadvantage Business Enterprise (DBE) subcontractor agreements prior to commencing work.

Provide the Engineer with a copy of all Small Business Enterprise (SBE) subcontractor agreements prior to commencing work.

**ITEM 160:**

Sequence construction operations to salvage topsoil from one location and spread on areas ready to receive topsoil. Keep stockpiling of topsoil to a minimum.

Use fertile clay or loam from the project site not more than two feet below natural grade as topsoil.

**ITEM 161:**

Provide tickets representing quantity of compost delivered to site.



DCTA TRAIL LEWISVILLE

TXDOT GENERAL NOTES

SCALE: AS NOTED SHEET 01 OF 01

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
MC	6	SEE TITLE SHEET		VA
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MC	TEXAS	DAL	DENTON	6
CHECK	CONTROL	SECTION	JOB	
XX	0918	46	331	

CH2583 OFFICE: MCA PROJECT # 45685 DATE: 8/29/2025 TIME: 9:26:31 AM A: \\45000s\45685\001\CADD\Sheet\TW\01-General\G104-QS-45685.dgn

**SUMMARY OF DEMOLITION ITEMS**

ITEM NO.	100-7003	104-7006	104-7013	479-7001	479-7003	479-7004	496-7006	496-7007	628-7002	644-7065
SHEET	PREP ROW (TREE REMOVE) (0"-12" DIA)	REMOVING CONC (RIPRAP)	REMOVING CONC (SIDEWALK, RAMP OR SUP)	ADJUSTING MANHOLES	ADJUSTING MANHOLES & INLETS	ADJUSTING MANHOLES (UTILITY BOX)	REMOV STR (HEADWALL)	REMOV STR (PIPE)	REMOVE ELECTRICAL SERVICES	RELOCATE SM RD SN SUP&AM TY 10BWG (EA)
	EA	SY	SY	EA	EA	EA	EA	LF	EA	EA
2 OF 8	2		422		2	2				1
3 OF 8	4		761						1	
4 OF 8	2	57	0			2	1			
5 OF 8	1	84	0	1				8		
6 OF 8		0	0							
7 OF 8		0	0							
8 OF 8		0	0							
TOTAL FOR PROJECT	9	141	1,183	1	2	4	1	8	1	1

**SUMMARY OF SIGNAGE & MARKINGS ITEMS**

ITEM NO.	644-7001	666-7267	666-7346	666-7404	678-7001
SHEET	IN SM RD SN SUP&AM TY 10BWG (1) SA (P)	RE PROFILE PM TY 1 (Y) 4" (SLD) (100MIL)	PAVEMENT SLER (4")	REFL PAV MRK TY 1 (W) (4") (SLD) (100MIL)	PAV SURF PREP FOR MRK (4")
	EA	LF	LF	LF	LF
1 OF 7	4	342	440	98	440
2 OF 7	5	657	815	158	815
3 OF 7	1	800	1,184	384	1,184
4 OF 7	2	800	800		800
5 OF 7		800	1,210	410	1,210
6 OF 7		800	1,286	486	1,286
7 OF 7	1	720	720		720
TOTAL FOR PROJECT	13	4,919	6,455	1,536	6,455

**SUMMARY OF ROADWAY ITEMS**

ITEM NO.	100-7002	432-7014	450-7062	531-7003	531-7005	479-7007
SHEET	PREPARING ROW (STA)	RIPRAP (MOW STRIP) (5 IN)	RAIL (HANDRAIL) (TY E)	CONC SIDEWALKS (6")	CURB RAMPS (TY 1)	ADJUSTING WATER VALVE
	STA	CY	LF	SY	EA	EA
1 OF 14	4	0.49		393		
2 OF 14	4			595		
3 OF 14	4			513	1	2
4 OF 14	4	0.76	221	450		
5 OF 14	4	2.64	338	560		
6 OF 14	4	2.01	728	578		
7 OF 14	4	3.34	400	602		
8 OF 14	4			577		
9 OF 14	4			534		
10 OF 14	4			534		
11 OF 14	4			534		
12 OF 14	4			534		
13 OF 14	3			477		
14 OF 14	3			359	1	
TOTAL FOR PROJECT CSJ 0918-46-331	54	9.24	1687	7240	2	2

**SUMMARY OF MISCELLANEOUS ITEMS**

ITEM NO.	500-7001	506-7020	506-7024	506-7039	506-7041	506-7044	506-7046
SHEET	MOBILIZATION	CONSTRUCTION EXITS (INSTALL) (TY 1)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)
	LS	SY	SY	LF	LF	LF	LF
1 OF 1	1	300	300	5,530	5,530	759	759
TOTAL FOR PROJECT	1	300	300	5,530	5,530	759	759

**SUMMARY OF LANDSCAPE ITEMS**

ITEM NO.	162-7002	164-7015	168-7001
SHEET	BLOCK SODDING	DRILL SEED (TEMP-WARM-COOL)	VEGETATIVE WATERING
	SY	SY	TGL
2 OF 8	138	138	4.5
3 OF 8	557	557	16.5
4 OF 8	1,559	1,559	48.0
5 OF 8	917	917	28.5
6 OF 8	605	605	19.5
7 OF 8	357	357	10.5
8 OF 8	327	327	9.0
TOTAL FOR PROJECT	4,460	4,460	136.5

NOTE:  
VEGETATIVE WATERING APPLICATION RATE = 6.8 MG/AC/CYCLE AT 22 CYCLES

**SUMMARY OF DRAINAGE ITEMS**

ITEM NO.	432-7025	464-7011	464-7013	467-7024	5032-7001
SHEET	RIPRAP (STONE TY R) (DRY) (24 IN)	RC PIPE (CL III) (48 IN)	RC PIPE (CL III) (60 IN)	SET (TY 1) (48 IN) (4:1) (C)	CONCRETE SCUPPER
	CY	LF	LF	EA	EA
1 OF 1	24	21	34	1	1
TOTAL FOR PROJECT CSJ 0918-46-331	24	21	34	1	1

**SUMMARY OF EARTHWORK ITEMS**

ITEM NO.	110-7003	132-7008
SHEET	EXCAVATION (SPECIAL)	EMBANKMENT (FNL) (DC) (TY C1)
	CY	CY
1 OF 14	63	2
2 OF 14	137	
3 OF 14	46	47
4 OF 14	152	526
5 OF 14	187	259
6 OF 14	102	163
7 OF 14	126	98
8 OF 14	77	38
9 OF 14	289	
10 OF 14	68	
11 OF 14	100	
12 OF 14	97	
13 OF 14	83	
14 OF 14	57	2
TOTAL FOR PROJECT	1,584	1,135

**SUMMARY OF RETAINING WALL ITEMS**

ITEM NO.	420-7067	423-7013	423-7016	556-7007
SHEET	CL C CONC (MISC)	RETAINING WALL (CONC BLOCK)	RETAINING WALL (CAST-IN-PLACE)	PIPE UNDERDRAIN (TY 7) (4")
	CY	SF	SF	LF
1 OF 3 (HEADWALL)			1,506	
2 OF 3 (HEADWALL)	49.7			
1 OF 3 (MSE WALL)		2,828		978
TOTAL FOR PROJECT	49.7	2,828	1,506	978



Texas Department of Transportation  
© 2024











DCTA TRAIL LEWISVILLE

**SUMMARY OF QUANTITIES**

SCALE: NTS		SHEET 01 OF 01	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331
			7

# SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)	
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		
										PREFABRICATED		1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels
01 OF 07	1	W11-15		18X18	X		10BWG	1	SA	P		
		W16-9P		24X12	X							
	2	R5-1		30X30	X		10BWG	1	SA	P		
		R7-201P (RED)		12X6	X							
	3	W5-4a		18X18	X		10BWG	1	SA	P		
	4	W2-3R		18X18	X		10BWG	1	SA	P		
02 OF 07	1	W2-3L		18X18	X		10BWG	1	SA	P		
	2	W2-5		18X18	X		10BWG	1	SA	P		
	3	W1-1L		18X18	X		10BWG	1	SA	P		
	4	W5-4a		18X18	X		10BWG	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.  
<http://www.txdot.gov/>

- NOTE:**
- Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
  - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
  - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).








## SUMMARY OF SMALL SIGNS

SOSS SHEET 1 OF 3

FILE: SLMS16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	091846		331	VA
4-16	DIST	COUNTY	SHEET NO.	
8-16	DAL	DENTON	8	

# SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION	
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	
02 OF 07	5	W1-1R		18X18	X		10BWG	1	SA	P	
03 OF 07	1	W5-4a		18X18	X		10BWG	1	SA	P	
04 OF 07	1	W1-10L		18X18	X		10BWG	1	SA	P	
	2	W1-10R		18X18	X		10BWG	1	SA	P	
07 OF 07	1	W14-1		18X18	X		10BWG	1	SA	P	

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.  
<http://www.txdot.gov/>

- NOTE:**
- Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
  - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
  - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).



## SUMMARY OF SMALL SIGNS

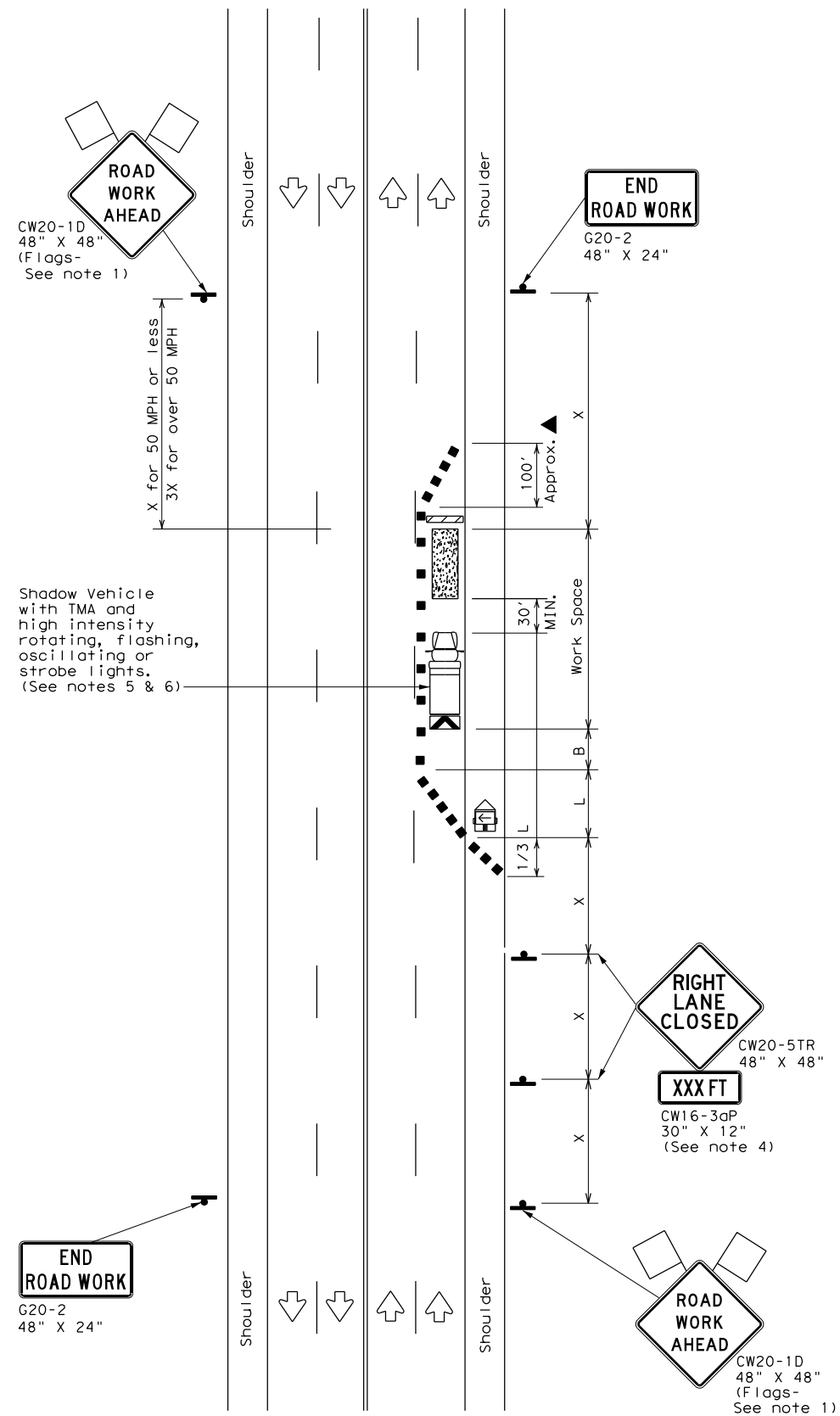
SOSS SHEET 2 OF 3

FILE: SLMS16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	091846	331	VA	
4-16	DIST	COUNTY	SHEET NO.	
8-16	DAL	DENTON	9	

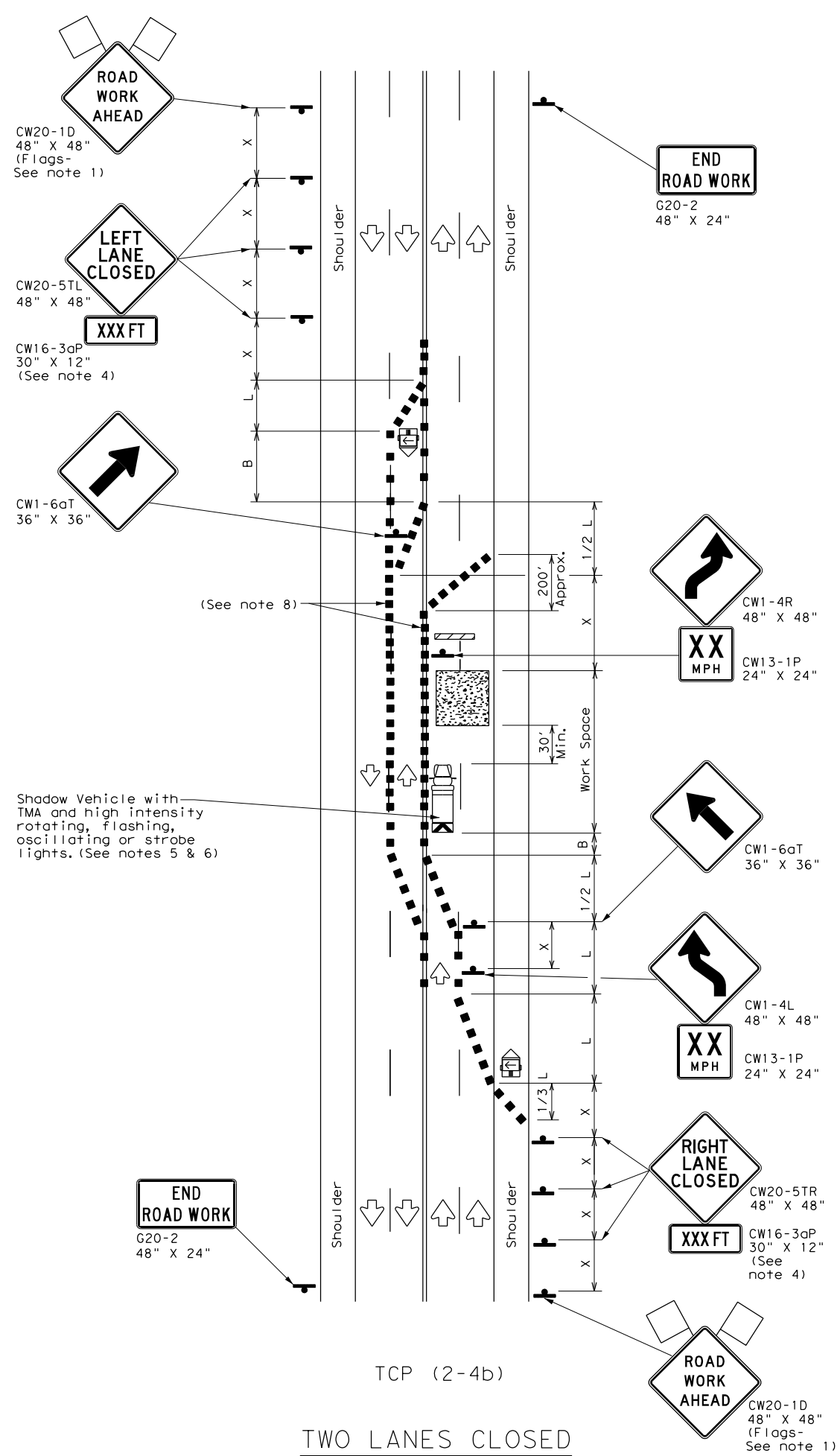


DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



TCP (2-4a)  
ONE LANE CLOSED



TCP (2-4b)  
TWO LANES CLOSED

LEGEND

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			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 = WS <sup>2</sup> / 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
- Flags attached to signs where shown, are REQUIRED.
  - 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.
  - The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
  - 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.
  - 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.
  - 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)
- 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)
- 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.



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	0918	46	331	VA
8-95 3-03	DIST	COUNTY	SHEET NO.	
1-97 2-12	DAL	DENTON	11	
4-98 2-18				

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

DATE:  
 FILE:

**BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:**

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

**WORKER SAFETY NOTES:**

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

**COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES**

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT <a href="http://www.txdot.gov">http://www.txdot.gov</a>
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

SHEET 1 OF 12



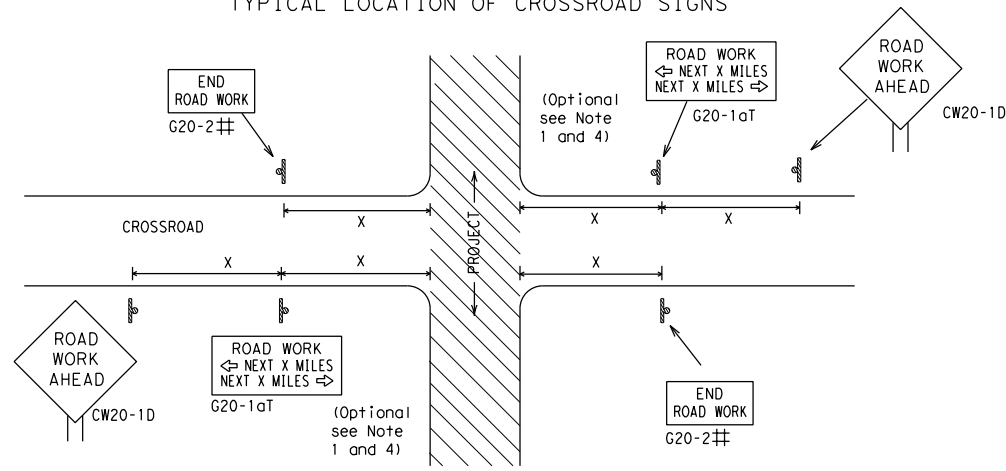
**BARRICADE AND CONSTRUCTION  
 GENERAL NOTES  
 AND REQUIREMENTS**

**BC (1) - 21**

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
	REVISIONS	0918	46	331	VA				
4-03	7-13	DIST	COUNTY	SHEET NO.					
9-07	8-14	DAL	DENTON	12					
5-10	5-21								

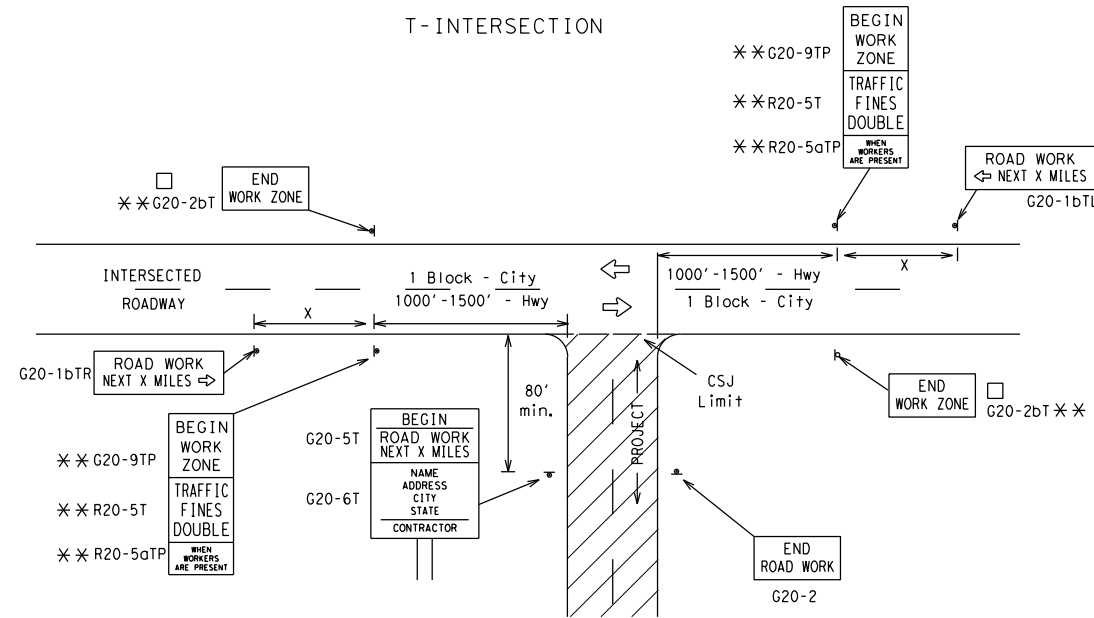
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

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)
- 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.
  - The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK" (G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
  - 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.
  - 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.
  - Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
  - 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

- 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.
- 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<sup>1,5,6</sup>

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

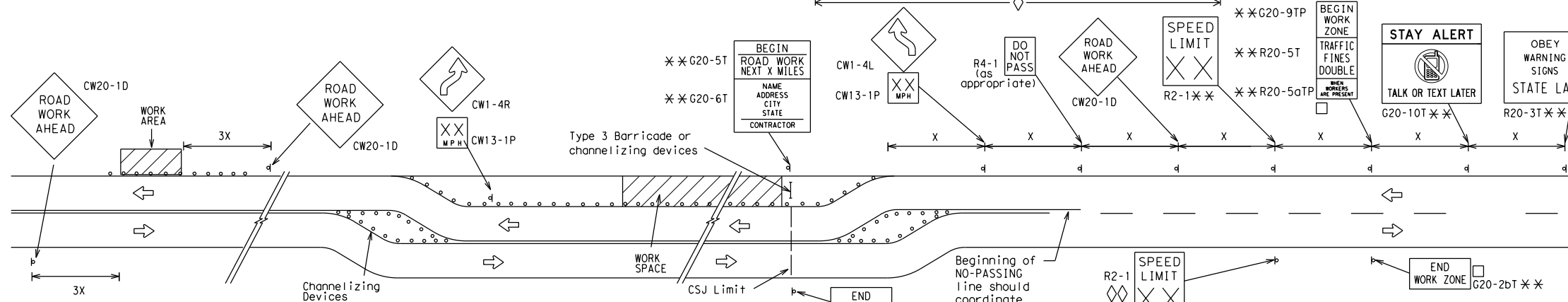
\* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

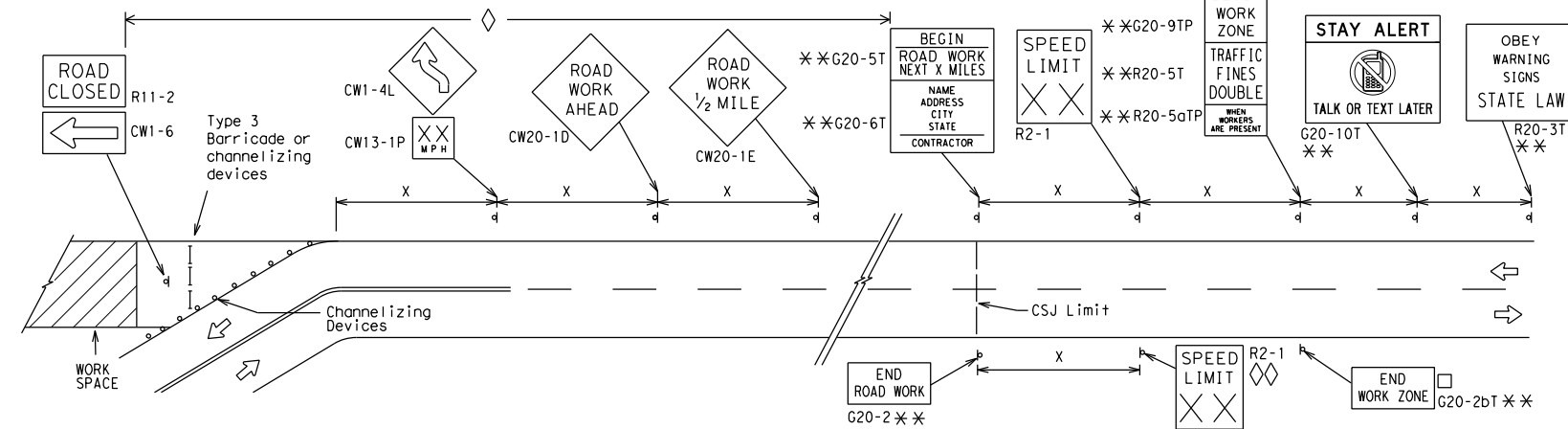
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
- Only diamond shaped warning sign sizes are indicated.
- 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

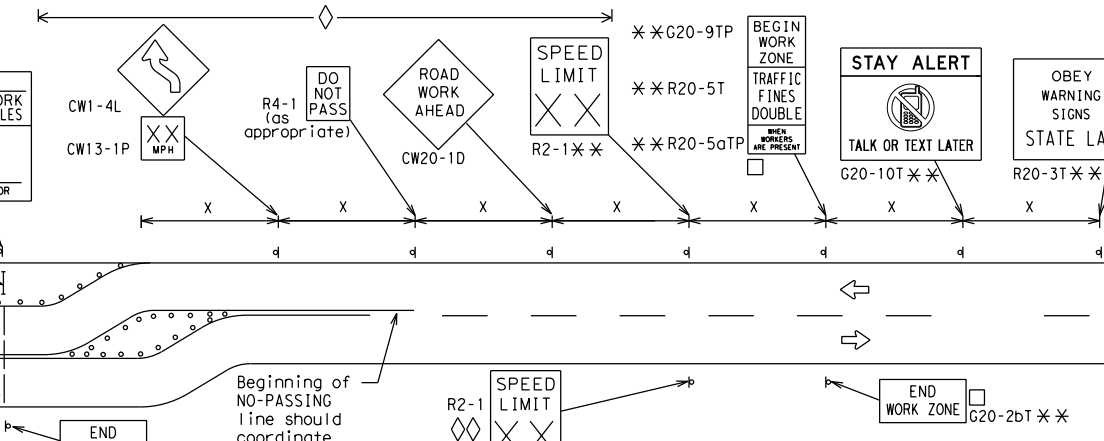


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

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



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



NOTES

- The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-5T) sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.
- The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.
- CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.
- Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.
- Contractor will install a regulatory speed limit sign at the end of the work zone.

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

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

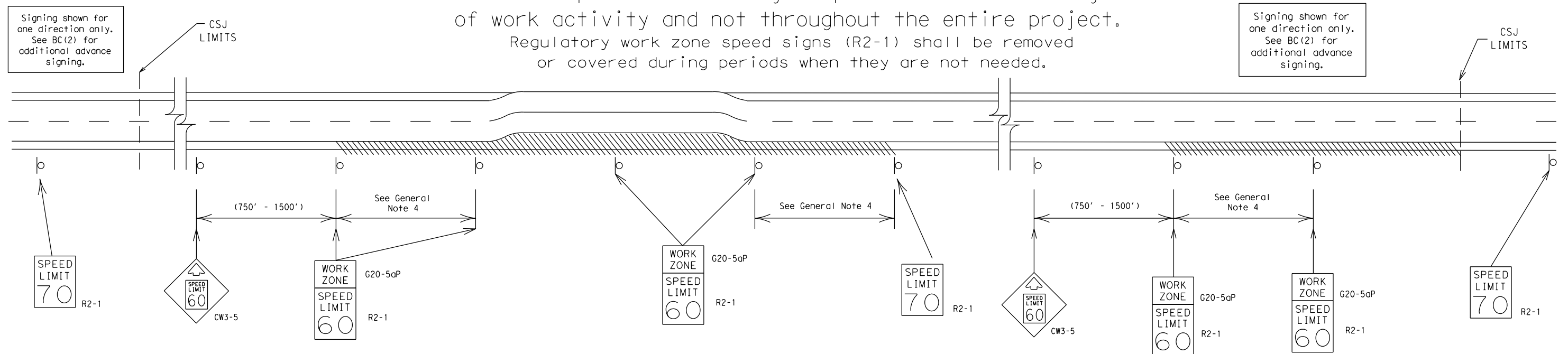
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	DAL	DENTON	13	

DATE: FILE:

# 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:

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- other conditions readily apparent to the driver

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

### SHORT TERM WORK ZONE SPEED LIMITS

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

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

### GENERAL NOTES

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- 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
- Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- 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.
- Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- Techniques that may help reduce traffic speeds include but are not limited to:
  - Law enforcement.
  - Flagger stationed next to sign.
  - Portable changeable message sign (PCMS).
  - Low-power (drone) radar transmitter.
  - Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
- 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.

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

DATE:  
FILE:

SHEET 3 OF 12



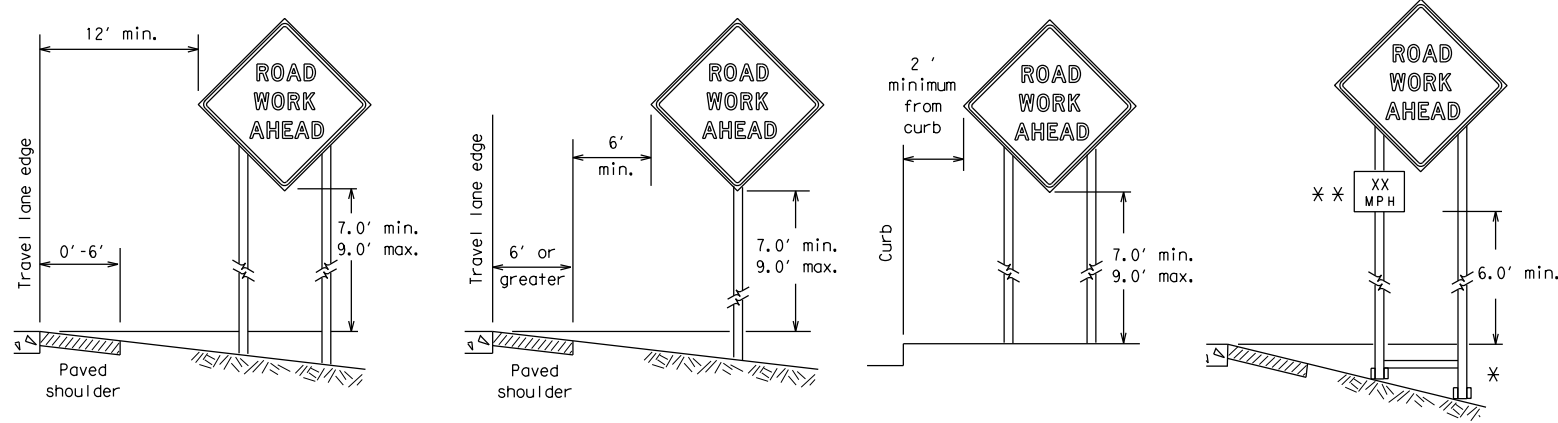
## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		0918	46	331	VA
9-07	8-14	DIST	COUNTY	SHEET NO.	
7-13	5-21	DAL	DENTON	14	

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

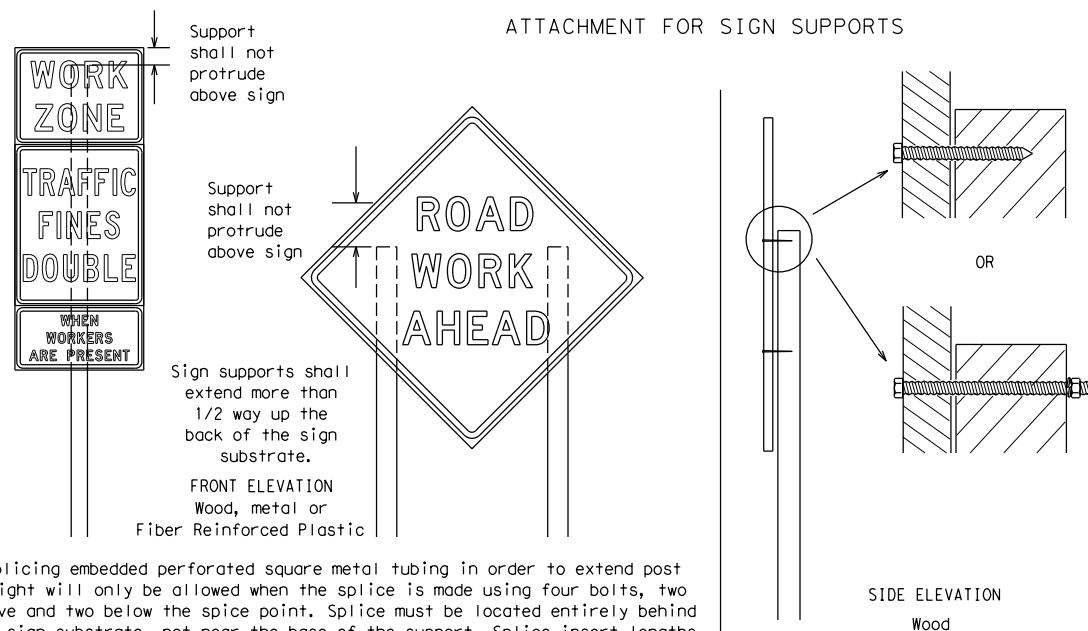
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



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

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

ATTACHMENT FOR SIGN SUPPORTS



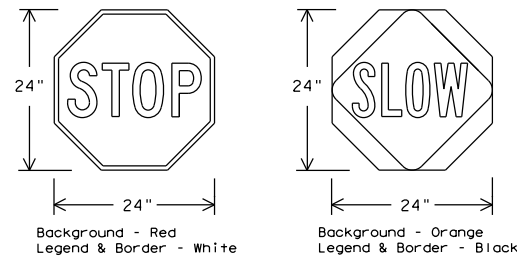
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B <sub>FL</sub> OR C <sub>FL</sub> SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B<sub>FL</sub> or Type C<sub>FL</sub>, 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 fire 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.

SHEET 4 OF 12



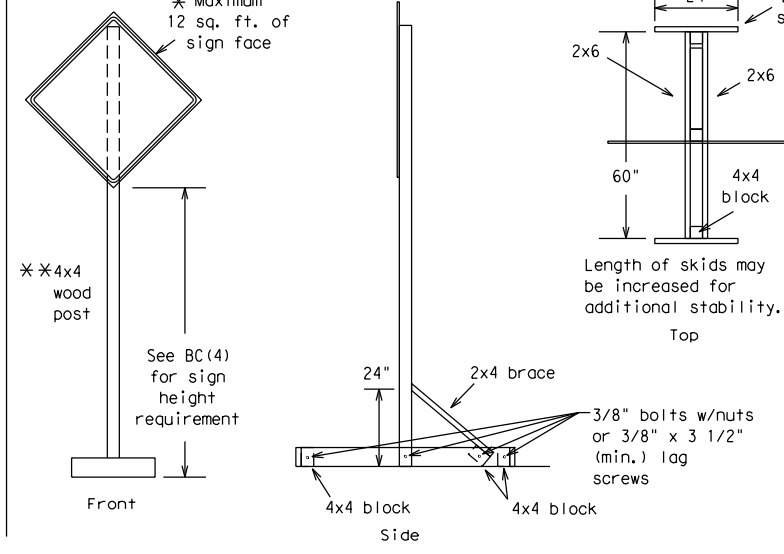
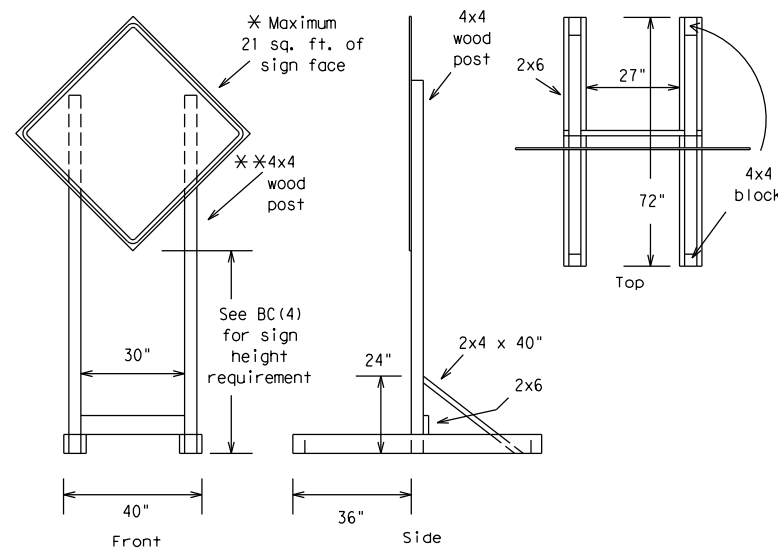
BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DN:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0918	46	331	VA				
9-07	8-14	DIST		COUNTY	SHEET NO.				
7-13	5-21	DAL		DENTON	15				

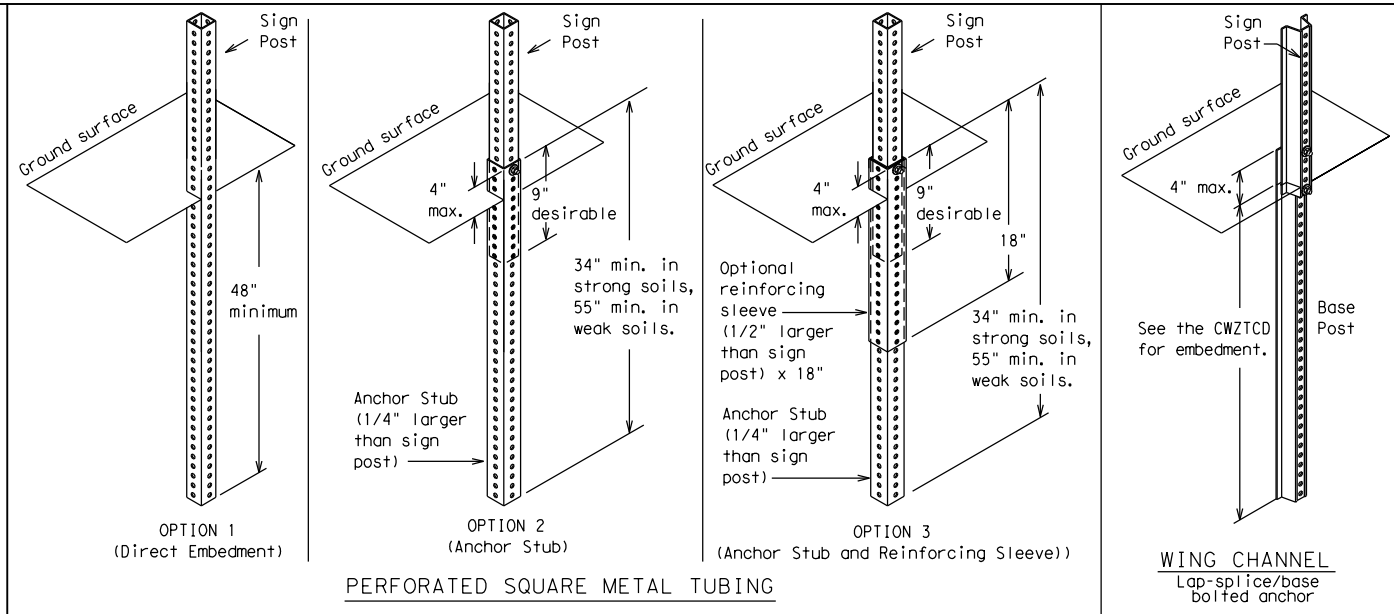
DATE:  
FILE:

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



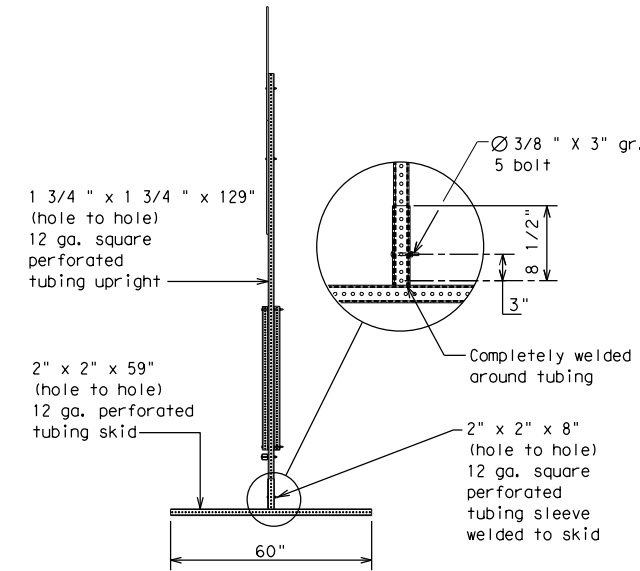
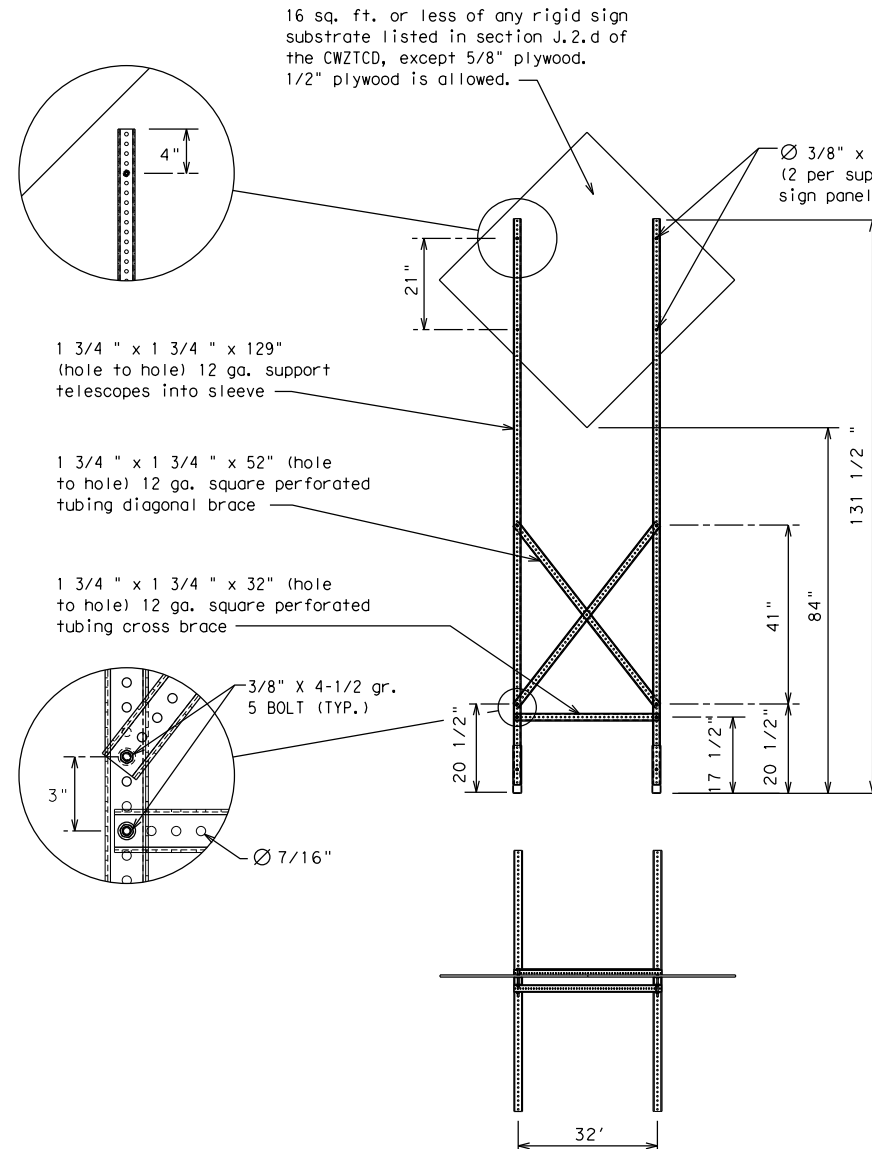
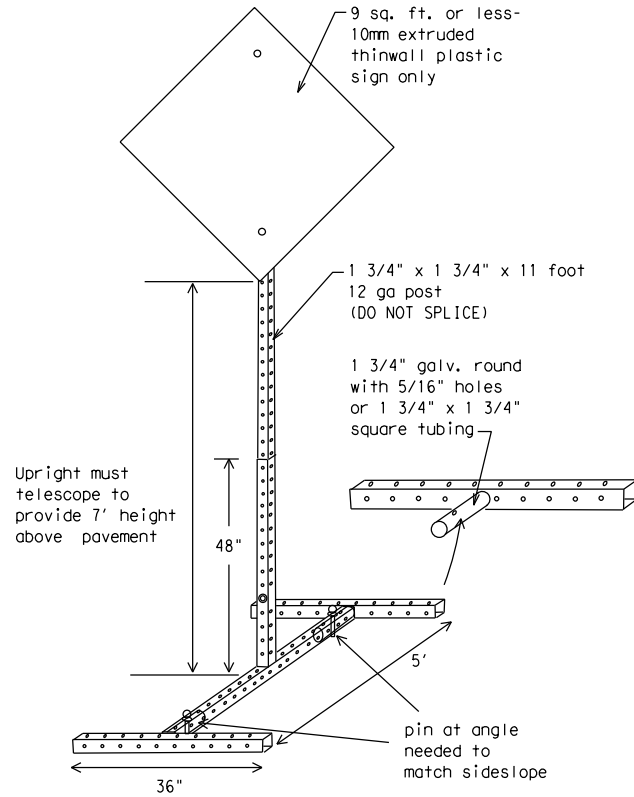
### SKID MOUNTED WOOD SIGN SUPPORTS

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



### GROUND MOUNTED SIGN SUPPORTS

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



### SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

### WEDGE ANCHORS

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

### OTHER DESIGNS

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

### GENERAL NOTES

- 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.
- No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
- 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.

SHEET 5 OF 12



## BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0918	46	331	VA				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	DAL	DENTON	16					

DATE:  
FILE:

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

# RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

## PORTABLE CHANGEABLE MESSAGE SIGNS

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- 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.
- 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.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- 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.
- 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.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- 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.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- 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.
- 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.
- Each line of text should be centered on the message board rather than left or right justified.
- 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.

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

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Canot	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLRS
High-Occupancy Vehicle	HOV	Tuesday	TUES
Highway	HWY	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	ITS	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

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

## Phase 1: Condition Lists

### Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE
ROAD CLOSED AT SH XXX
ROAD CLSD AT FM XXXX
RIGHT X LANES CLOSED
CENTER LANE CLOSED
NIGHT LANE CLOSURES
VARIOUS LANES CLOSED
EXIT CLOSED
MALL DRIVEWAY CLOSED
XXXXXXXX BLVD CLOSED

### Other Condition List

FRONTAGE ROAD CLOSED
SHOULDER CLOSED XXX FT
RIGHT LN CLOSED XXX FT
RIGHT X LANES OPEN
DAYTIME LANE CLOSURES
I-XX SOUTH EXIT CLOSED
EXIT XXX CLOSED X MILE
RIGHT LN TO BE CLOSED
X LANES CLOSED TUE - FRI
ROADWORK XXX FT
FLAGGER XXXX FT
RIGHT LN NARROWS XXXX FT
MERGING TRAFFIC XXXX FT
LOOSE GRAVEL XXXX FT
DETOUR X MILE
ROADWORK PAST SH XXXX
BUMP XXXX FT
TRAFFIC SIGNAL XXXX FT
ROAD REPAIRS XXXX FT
LANE NARROWS XXXX FT
TWO-WAY TRAFFIC XX MILE
CONST TRAFFIC XXX FT
UNEVEN LANES XXXX FT
ROUGH ROAD XXXX FT
ROADWORK NEXT FRI-SUN
US XXX EXIT X MILES
LANES SHIFT *

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

## Phase 2: Possible Component Lists

### Action to Take/Effect on Travel List

MERGE RIGHT
DETOUR NEXT X EXITS
USE EXIT XXX
STAY ON US XXX SOUTH
TRUCKS USE US XXX N
WATCH FOR TRUCKS
EXPECT DELAYS
REDUCE SPEED XXX FT
USE OTHER ROUTES
STAY IN LANE *

### Location List

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

### Warning List

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

### \*\* Advance Notice List

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

\*\* See Application Guidelines Note 6.

## APPLICATION GUIDELINES

- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- 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.
- 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

- The words RIGHT, LEFT and ALL can be interchanged as appropriate.
- Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
- EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
- Highway names and numbers replaced as appropriate.
- ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- AHEAD may be used instead of distances if necessary.
- FT and MI, MILE and MILES interchanged as appropriate.
- AT, BEFORE and PAST interchanged as needed.
- 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

- 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.
- 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.
- 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.
- 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.

SHEET 6 OF 12



BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

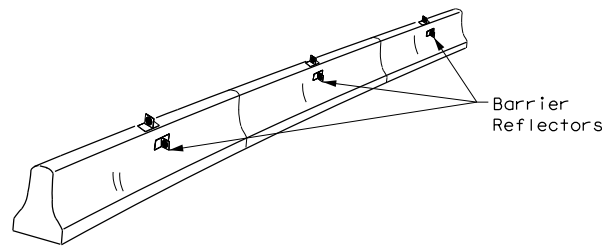
BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DN: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	DAL	DENTON	17	

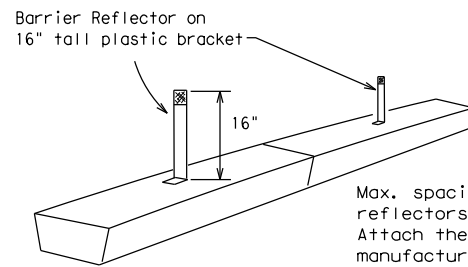
DATE: FILE:

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

- 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).
- 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)



**LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES**

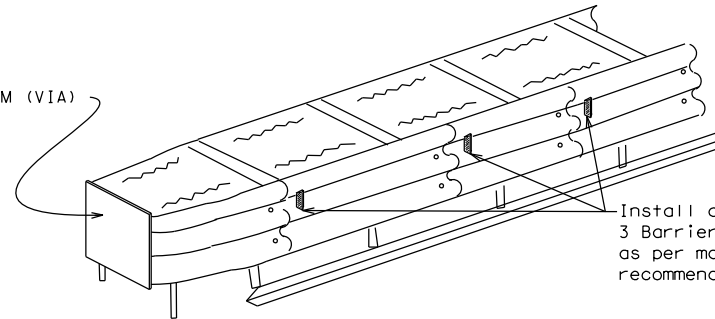
LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

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

LOW PROFILE CONCRETE BARRIER (LPCB)

- 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.
- 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.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.

See D & OM (VIA)



Install a minimum of 3 Barrier Reflectors as per manufacturer's recommendations.

**DELINEATION OF END TREATMENTS**

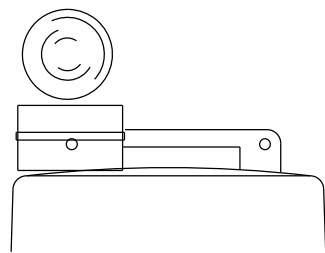
**END TREATMENTS FOR CTB'S USED IN WORK ZONES**

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

**BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS**

**WARNING LIGHTS**

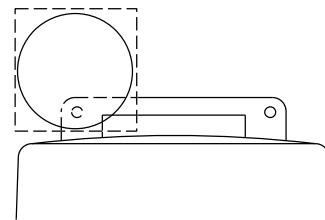
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet 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<sub>FL</sub> or C<sub>FL</sub> Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
- 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".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- 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.
- 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.
- The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.



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

**WARNING LIGHTS MOUNTED ON PLASTIC DRUMS**

- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- 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.
- 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.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.



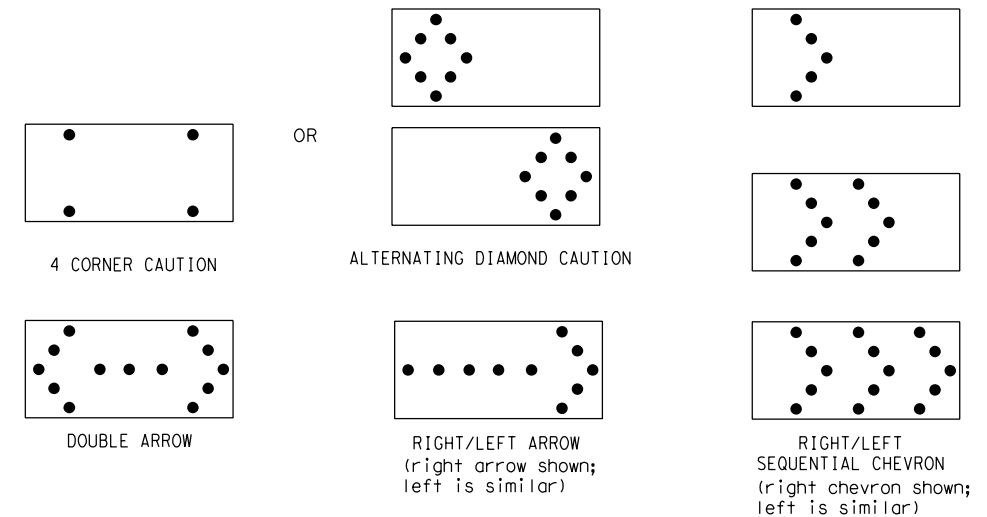
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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

- 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.
- 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.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- 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.
- 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.
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- 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.

- 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.
- 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.
- 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.
- The Flashing Arrow Board should be able to display the following symbols:



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
- The straight line caution display is NOT ALLOWED.
- 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.
- 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.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- 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.
- 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**

SHEET 7 OF 12

**TRUCK-MOUNTED ATTENUATORS**

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- 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.
- 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.



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

BC (7) - 21

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DN:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0918	46	331	VA				
9-07	8-14	DIST	COUNTY		SHEET NO.				
7-13	5-21	DAL	DENTON		18				

DATE:  
FILE:

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

DATE:  
FILE:

**GENERAL NOTES**

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- 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.
- 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.
- 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).
- 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.
- 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:

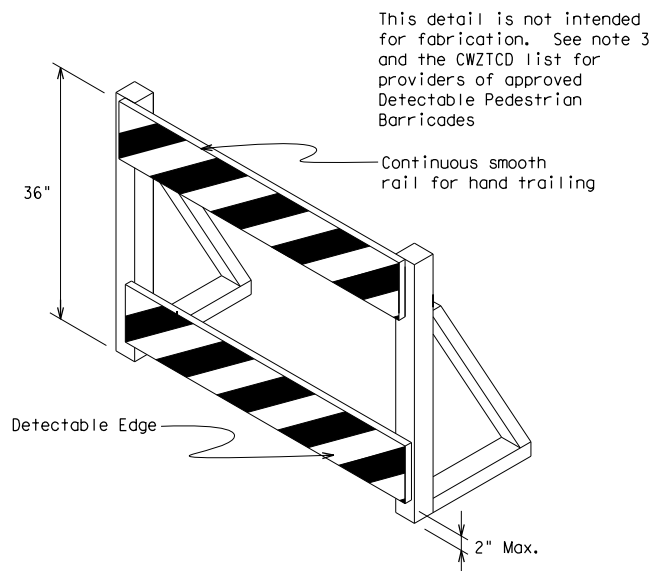
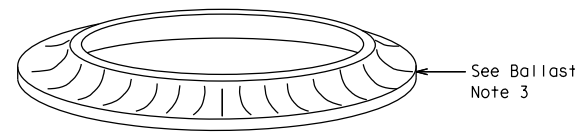
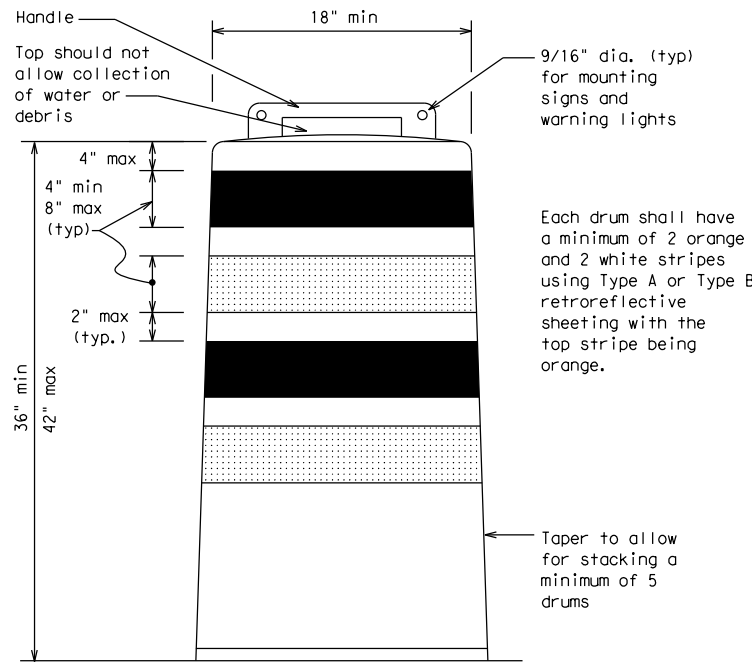
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- 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.
- 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.
- 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.
- 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.
- 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.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a maximum unballasted weight of 11 lbs.
- Drum and base shall be marked with manufacturer's name and model number.

**RETROREFLECTIVE SHEETING**

- The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
- 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.

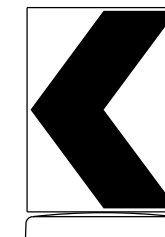
**BALLAST**

- 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.
- 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.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- 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.
- 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.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.

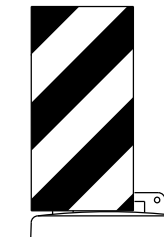


**DETECTABLE PEDESTRIAN BARRICADES**

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



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



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

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

**SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS**

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- Chevrons and other work zone signs with an orange background shall be manufactured with Type B<sub>FL</sub> or Type C<sub>FL</sub> Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
- Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- 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.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- 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.
- 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.

SHEET 8 OF 12

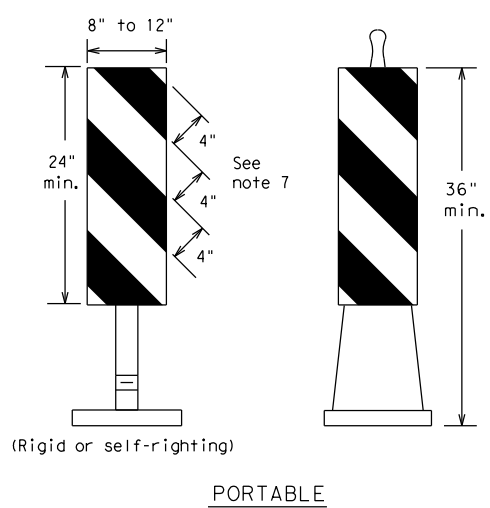
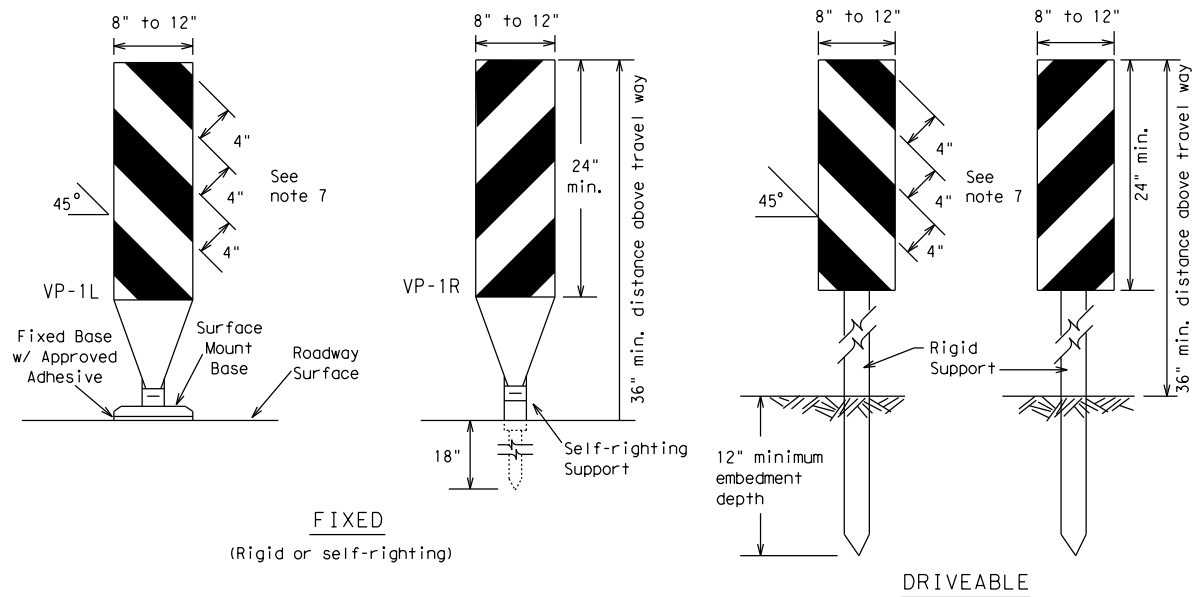


**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

BC(8)-21

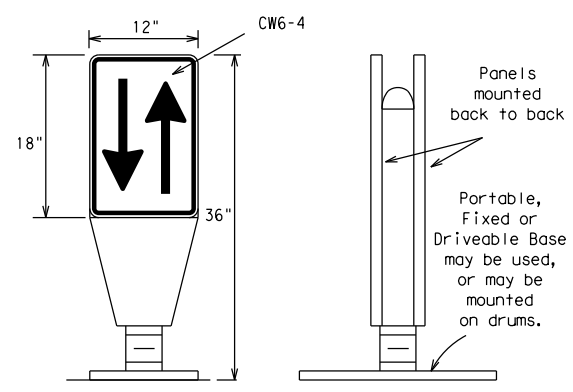
FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DN:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0918	46	331	VA				
4-03	8-14	DIST	COUNTY	SHEET NO.					
9-07	5-21	DAL	DENTON	19					
7-13									

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



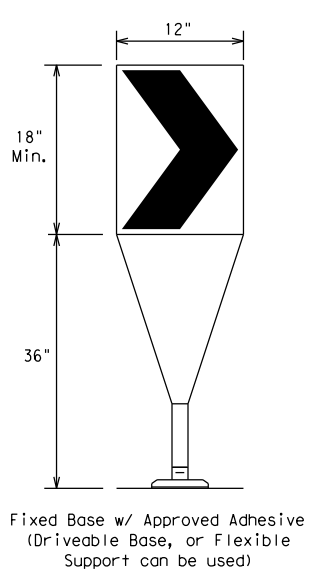
**VERTICAL PANELS (VPs)**

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



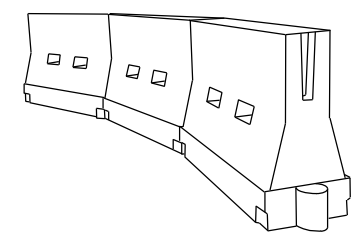
**OPPOSING TRAFFIC LANE DIVIDERS (OTLD)**

- 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.
- The OTLD may be used in combination with 42" cones or VPs.
- Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
- The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B<sub>FL</sub> or Type C<sub>FL</sub> conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.



- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- 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.
- 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.
- To be effective, the chevron should be visible for at least 500 feet.
- Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B<sub>FL</sub> or Type C<sub>FL</sub> conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
- 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**



**LONGITUDINAL CHANNELIZING DEVICES (LCD)**

- 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.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

**WATER BALLASTED SYSTEMS USED AS BARRIERS**

- Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
- 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.
- 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.
- 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.
- 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 cones 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**

**GENERAL NOTES**

- 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).
- 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.
- 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).
- 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.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- 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.
- 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.

Posted Speed	Formula	Minimum Desirable Taper Lengths * *			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	L = WS <sup>2</sup> / 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



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

BC (9) - 21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DN: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	DAL	DENTON	20	

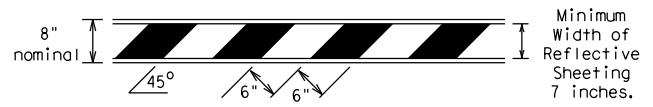
DATE: FILE:

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

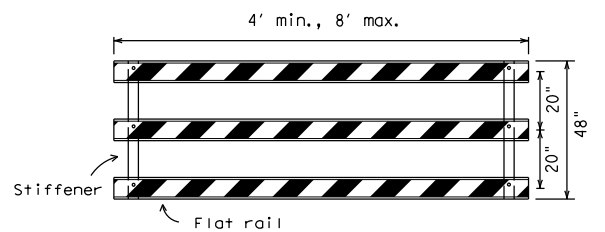
**TYPE 3 BARRICADES**

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

Barricades shall NOT be used as a sign support.



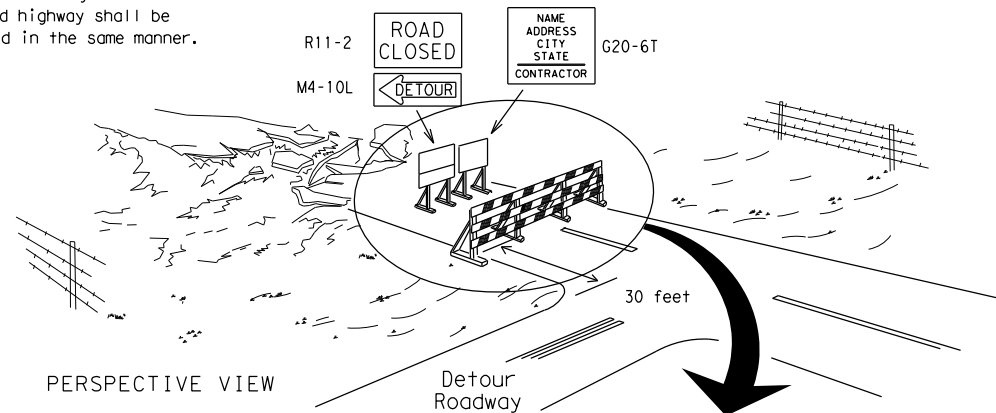
**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



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

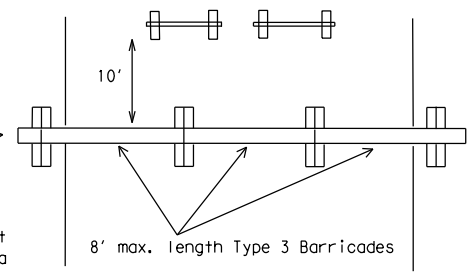
**TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES**

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



PERSPECTIVE VIEW

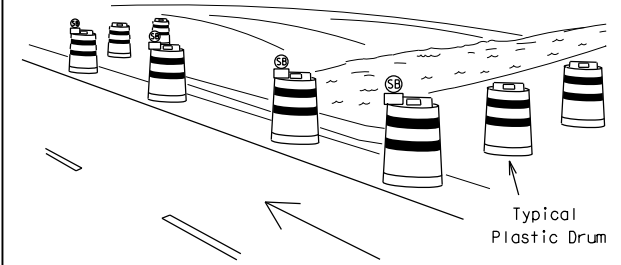
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



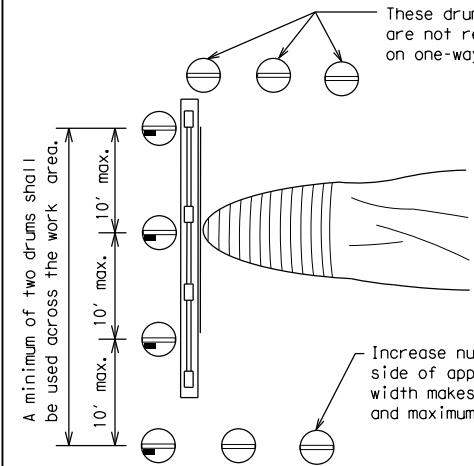
PLAN VIEW

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

**TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION**



PERSPECTIVE VIEW

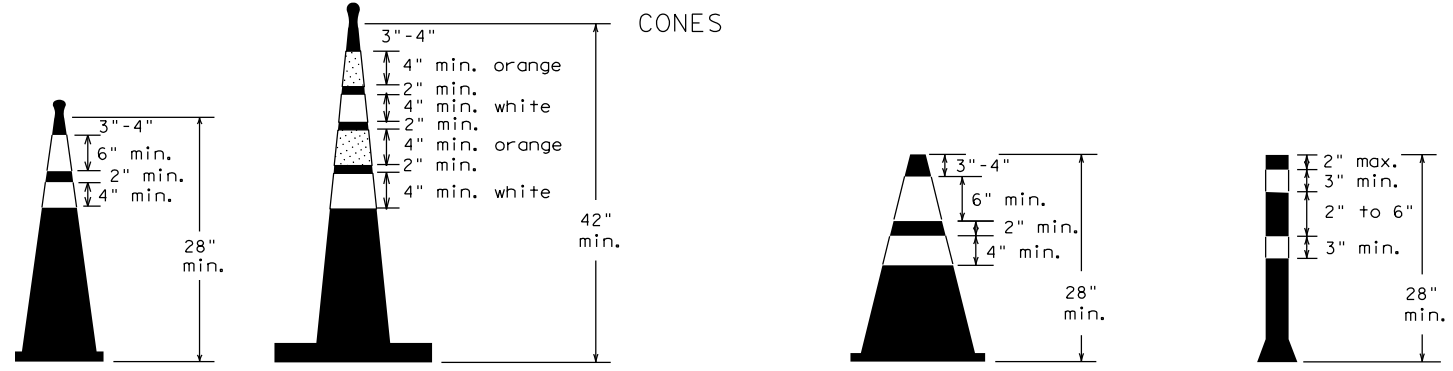


PLAN VIEW

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

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

**CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS**



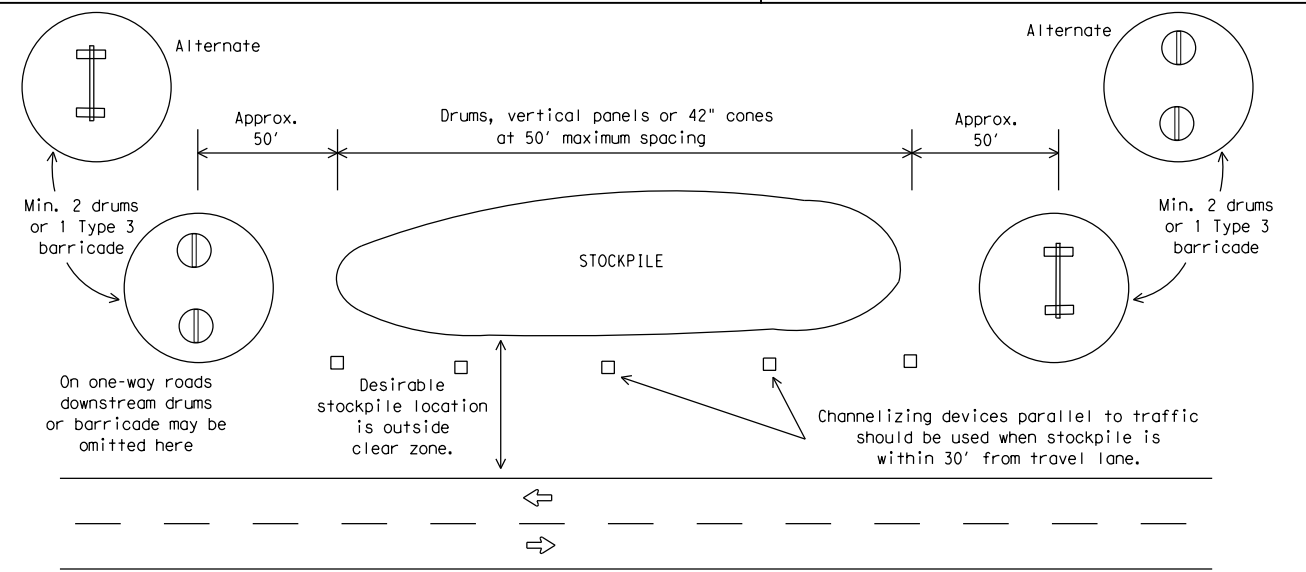
Two-Piece cones

One-Piece cones

Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.  
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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



**TRAFFIC CONTROL FOR MATERIAL STOCKPILES**



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC(10)-21**

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	DAL	DENTON	21	

WORK ZONE PAVEMENT MARKINGS

GENERAL

- 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.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- 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).
- 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.
- All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC(12).
- 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

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

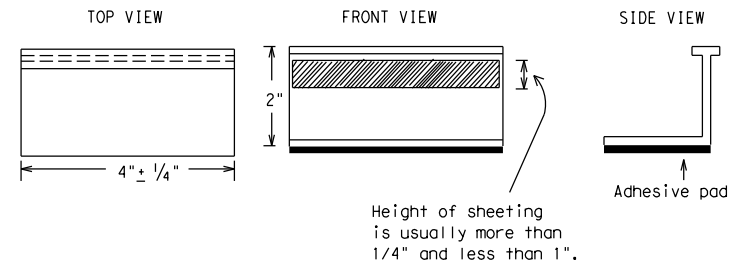
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- 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.
- 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.
- 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

- 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.
- 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.
- 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".
- The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
- Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
- Blast cleaning may be used but will not be required unless specifically shown in the plans.
- Over-painting of the markings SHALL NOT BE permitted.
- Removal of raised pavement markers shall be as directed by the Engineer.
- 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.
- 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

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- 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.
  - 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.
  - 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.
- Small design variances may be noted between tab manufacturers.
- 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

- Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
- All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
- 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).

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

DATE:  
FILE:

SHEET 11 OF 12

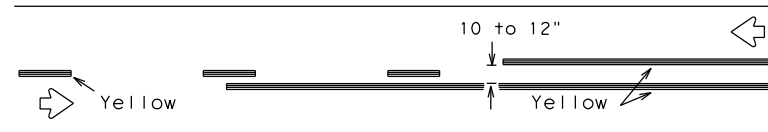


BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

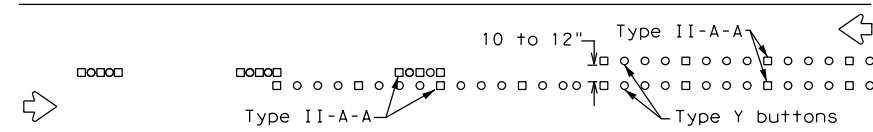
BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
2-98 9-07 5-21	DIST	COUNTY	SHEET NO.	
1-02 7-13	DAL	DENTON	22	
11-02 8-14				

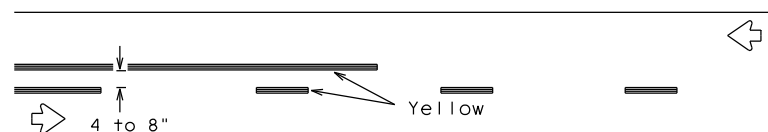
## PAVEMENT MARKING PATTERNS



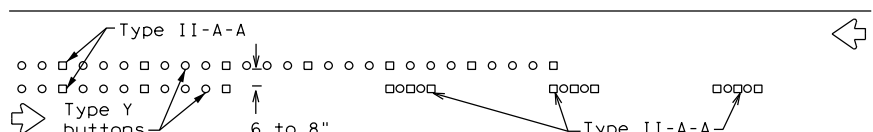
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



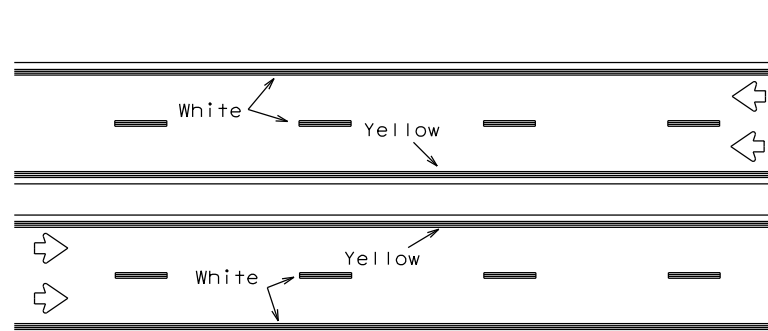
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



RAISED PAVEMENT MARKERS - PATTERN B

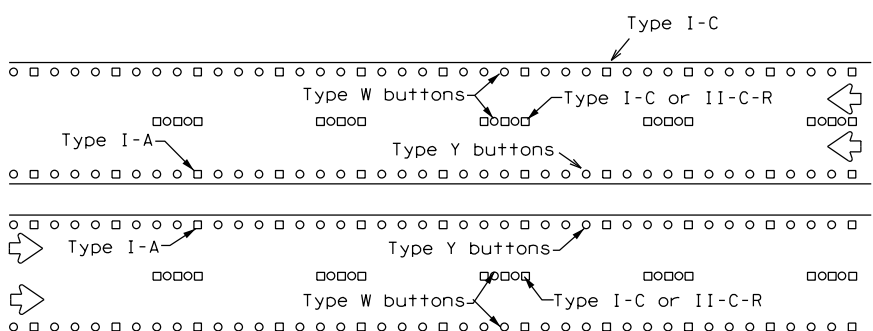
Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

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



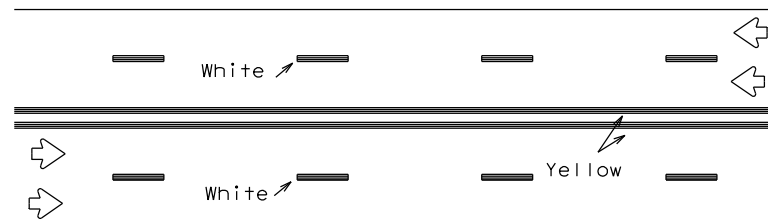
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



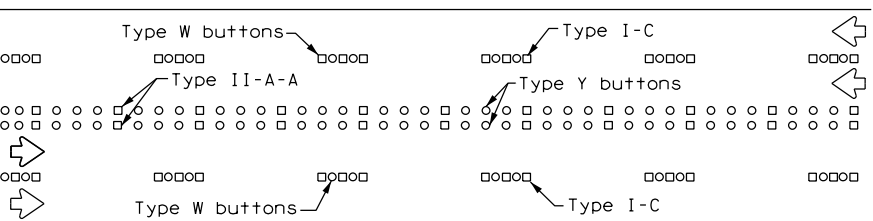
RAISED PAVEMENT MARKERS

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



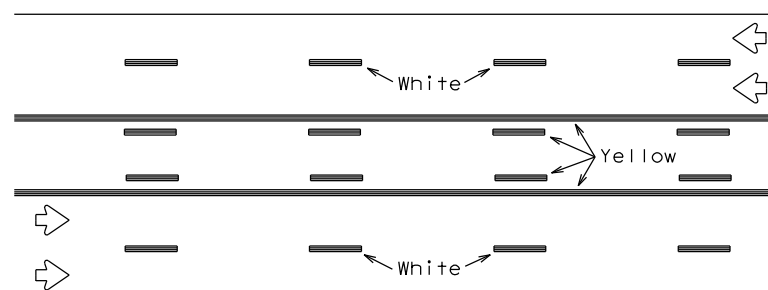
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



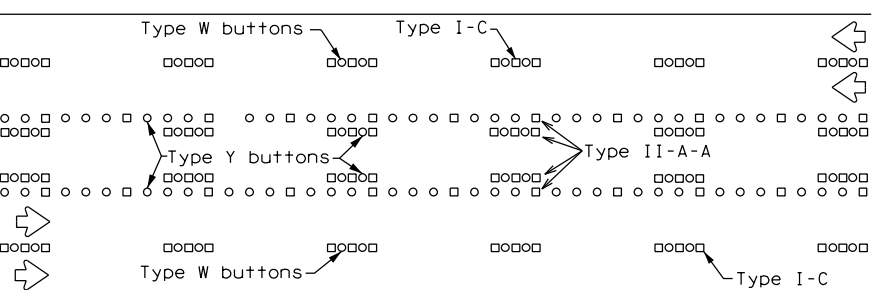
RAISED PAVEMENT MARKERS

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

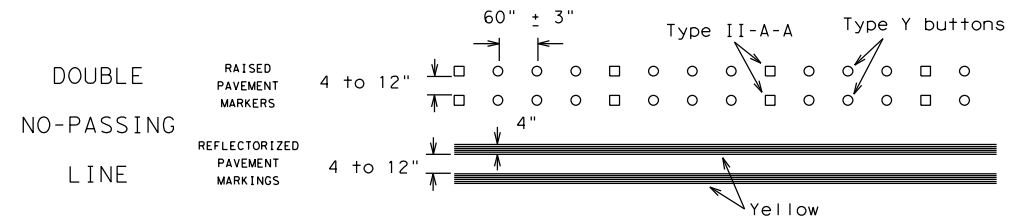
Prefabricated markings may be substituted for reflectorized pavement markings.



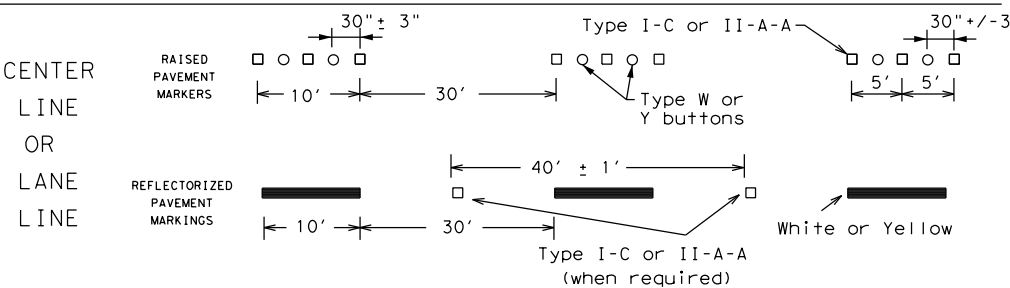
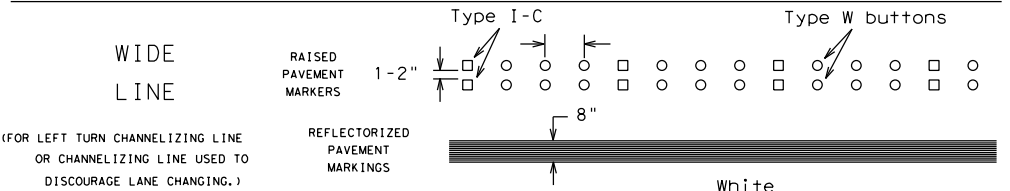
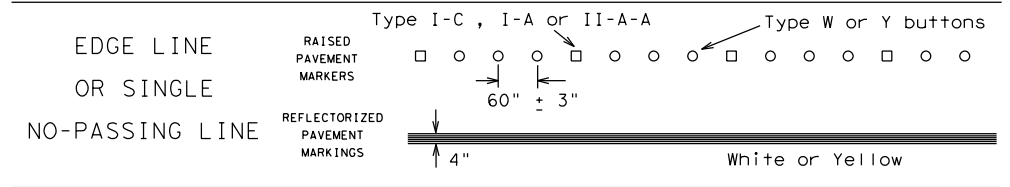
RAISED PAVEMENT MARKERS

## TWO-WAY LEFT TURN LANE

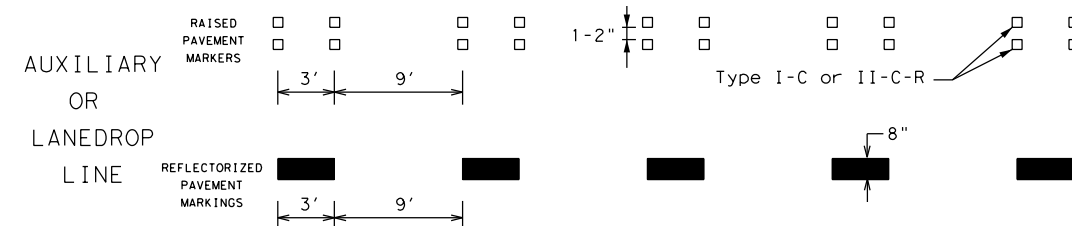
## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



### SOLID LINES

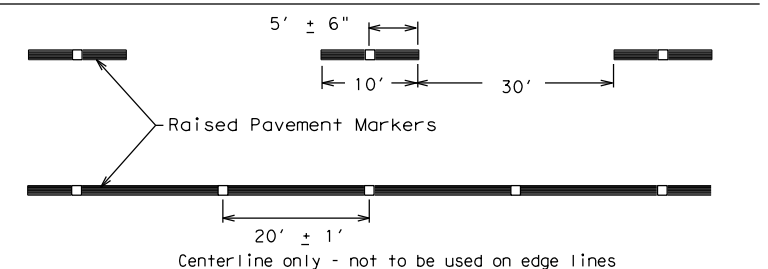


### BROKEN LINES



### 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.



SHEET 12 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

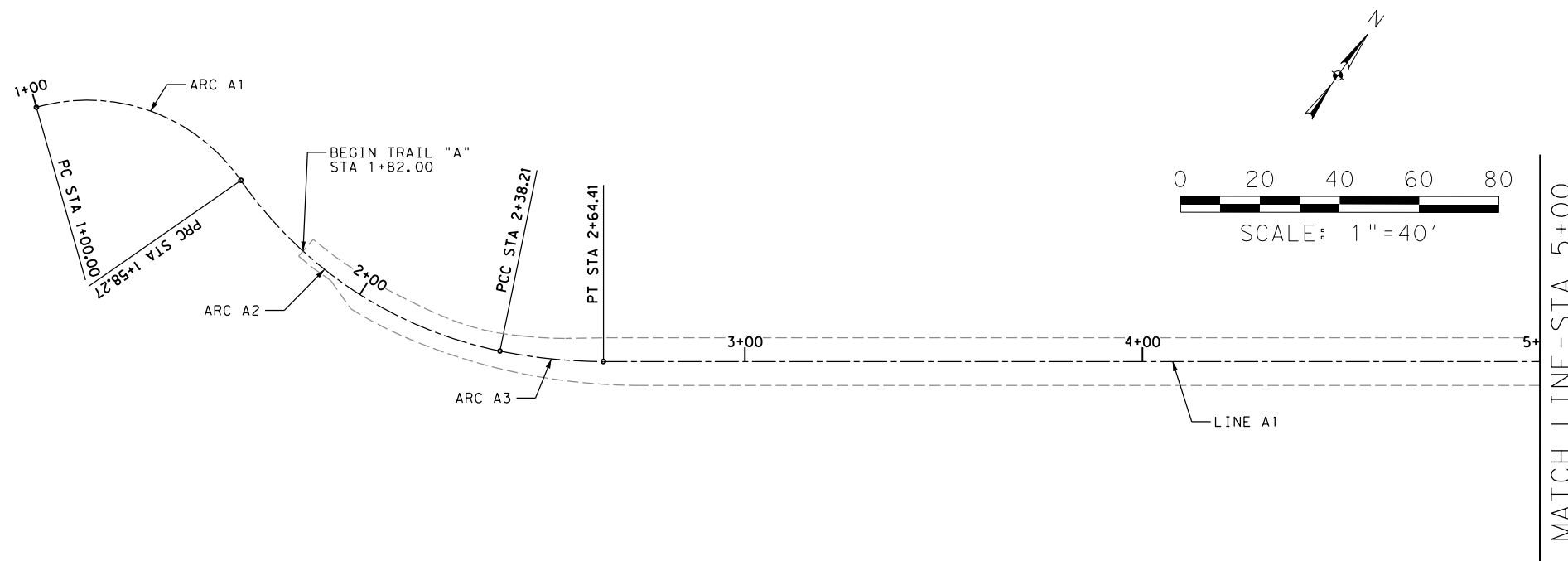
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DN: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
1-97 9-07 5-21				
2-98 7-13	DIST	COUNTY	SHEET NO.	
11-02 8-14	DAL	DENTON	23	

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

DATE: FILE:

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."





**CURVE DATA**

ARC A1	ARC A2
I = 71° 02' 17"	I = 43° 37' 10"
R = 47.00'	R = 105.00'
T = 33.55'	T = 42.02'
L = 58.27'	L = 79.94'
CL = 54.61'	CL = 78.02'
CB = N 73° 58' 02" E	CB = N 87° 40' 34" E

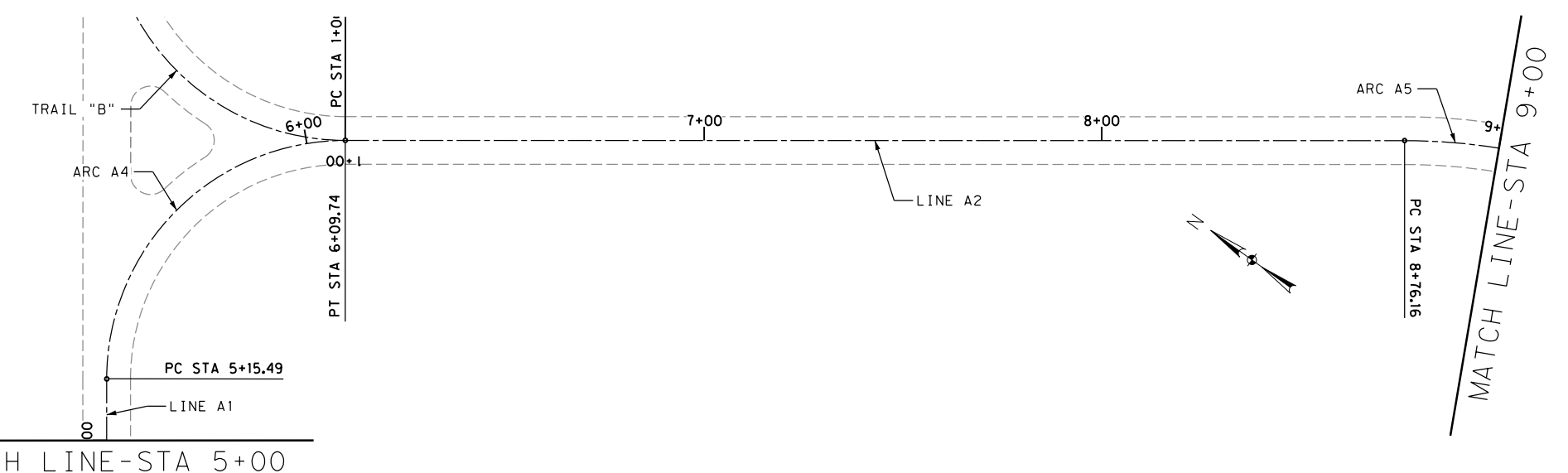
ARC A3	ARC A4
I = 11° 32' 49"	I = 90° 00' 00"
R = 130.00'	R = 60.00'
T = 13.14'	T = 60.00'
L = 26.20'	L = 94.25'
CL = 26.16'	CL = 84.85'
CB = N 60° 05' 35" E	CB = S 80° 40' 50" E

ARC A5	ARC A6
I = 26° 52' 59"	I = 24° 15' 41"
R = 150.00'	R = 127.49'
T = 35.85'	T = 27.40'
L = 70.38'	L = 53.98'
CL = 69.74'	CL = 53.58'
CB = S 22° 14' 20" E	CB = S 3° 19' 60" W

ARC A7
I = 76° 44' 39"
R = 30.00'
T = 23.75'
L = 40.18'
CL = 37.25'
CB = S 22° 54' 30" E

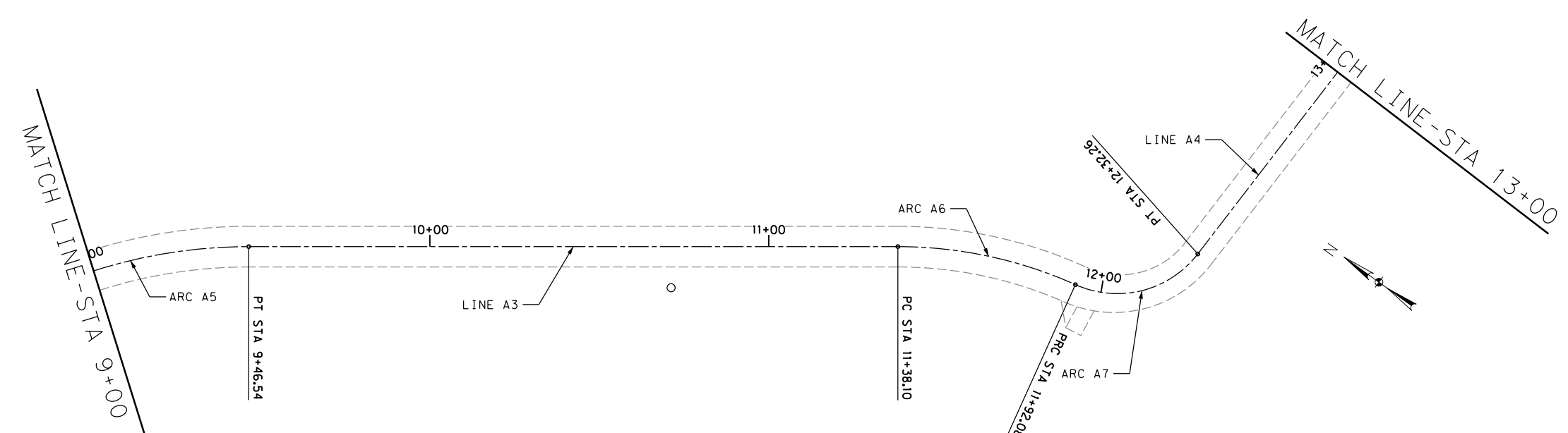


**LINE DATA**

LINE A1	LINE A2
B = N 54° 19' 10" E	B = S 35° 40' 50" E
D = 251.08'	D = 266.42'

LINE A3	LINE A4
B = S 8° 47' 51" E	B = S 61° 16' 49" E
D = 191.55'	D = 421.12'

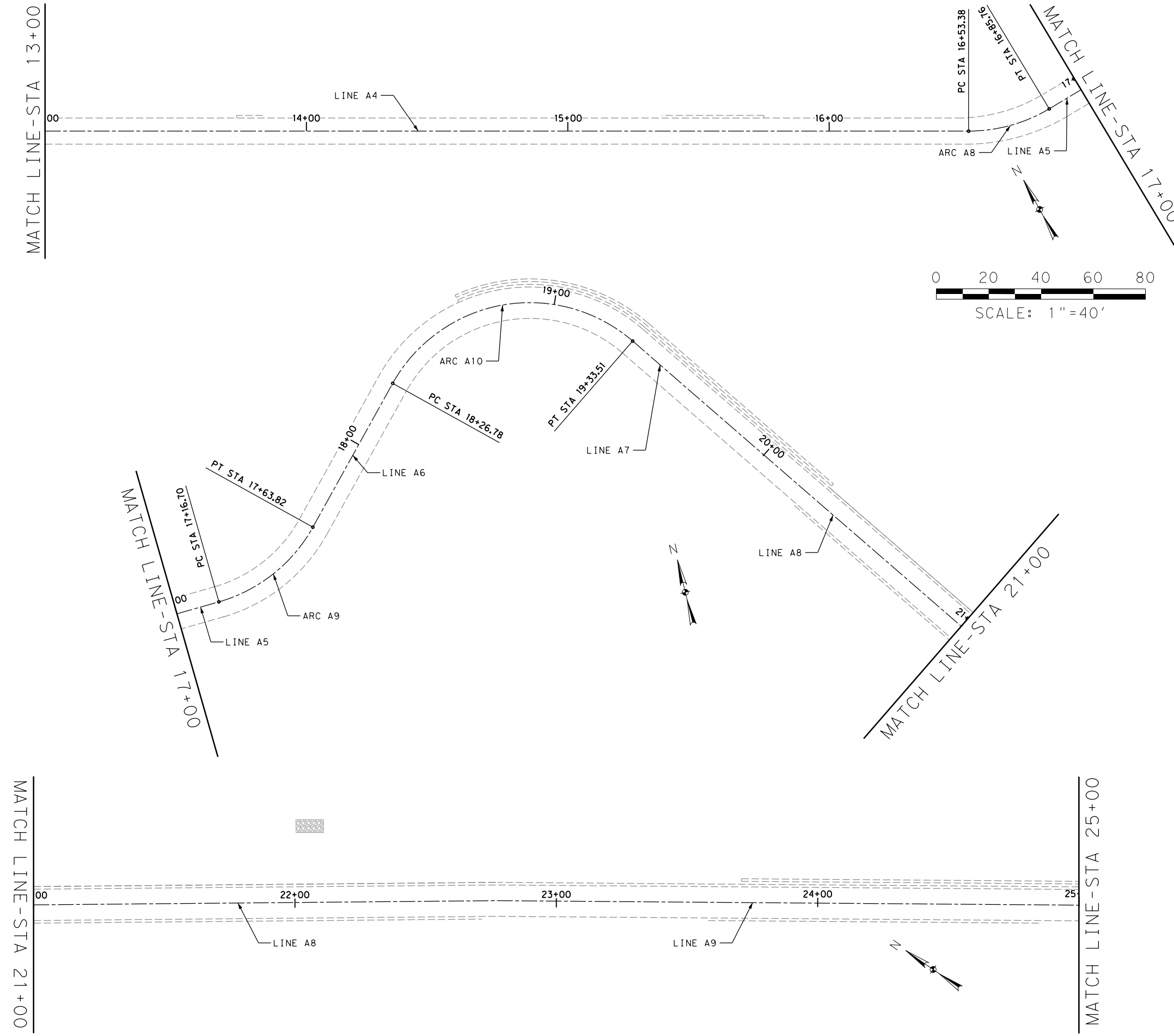


DCTA TRAIL LEWISVILLE  
DCTA TRAIL A  
GEOMETRIC LAYOUT  
BEGIN 1+00 TO STA 13+00

SCALE: AS NOTED SHEET 01 OF 06

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
MC	6	SEE TITLE SHEET		VA
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MC	TEXAS	DAL	DENTON	25
CHECK	CONTROL	SECTION	JOB	
XX	0918	46	331	

A:\45000s\45685\001\CADD\Sheet\FW\03-Roadway\L103-GEO-45685.dgn DATE: 8/29/2025 TIME: 9:26:53 AM PROJECT # 45685 OFFICE: MCA ch2583



**CURVE DATA**

ARC A8	ARC A9
I = 30° 54' 54"	I = 44° 59' 60"
R = 60.00'	R = 60.00'
T = 16.59'	T = 24.85'
L = 32.37'	L = 47.12'
CL = 31.98'	CL = 45.92'
CB = S 76° 44' 16" E	CB = N 65° 18' 17" E

ARC A10
I = 101° 55' 05"
R = 60.00'
T = 73.99'
L = 106.73'
CL = 93.20'
CB = S 86° 14' 10" E

**LINE DATA**

LINE A4	LINE A5
B = S 61° 16' 49" E	B = N 87° 48' 17" E
D = 421.12'	D = 30.94'

LINE A6	LINE A7
B = N 42° 48' 17" E	B = S 35° 16' 37" E
D = 62.96'	D = 27.93'

LINE A8	LINE A9
B = S 35° 16' 37" E	B = S 34° 19' 05" E
D = 316.13'	D = 287.18'



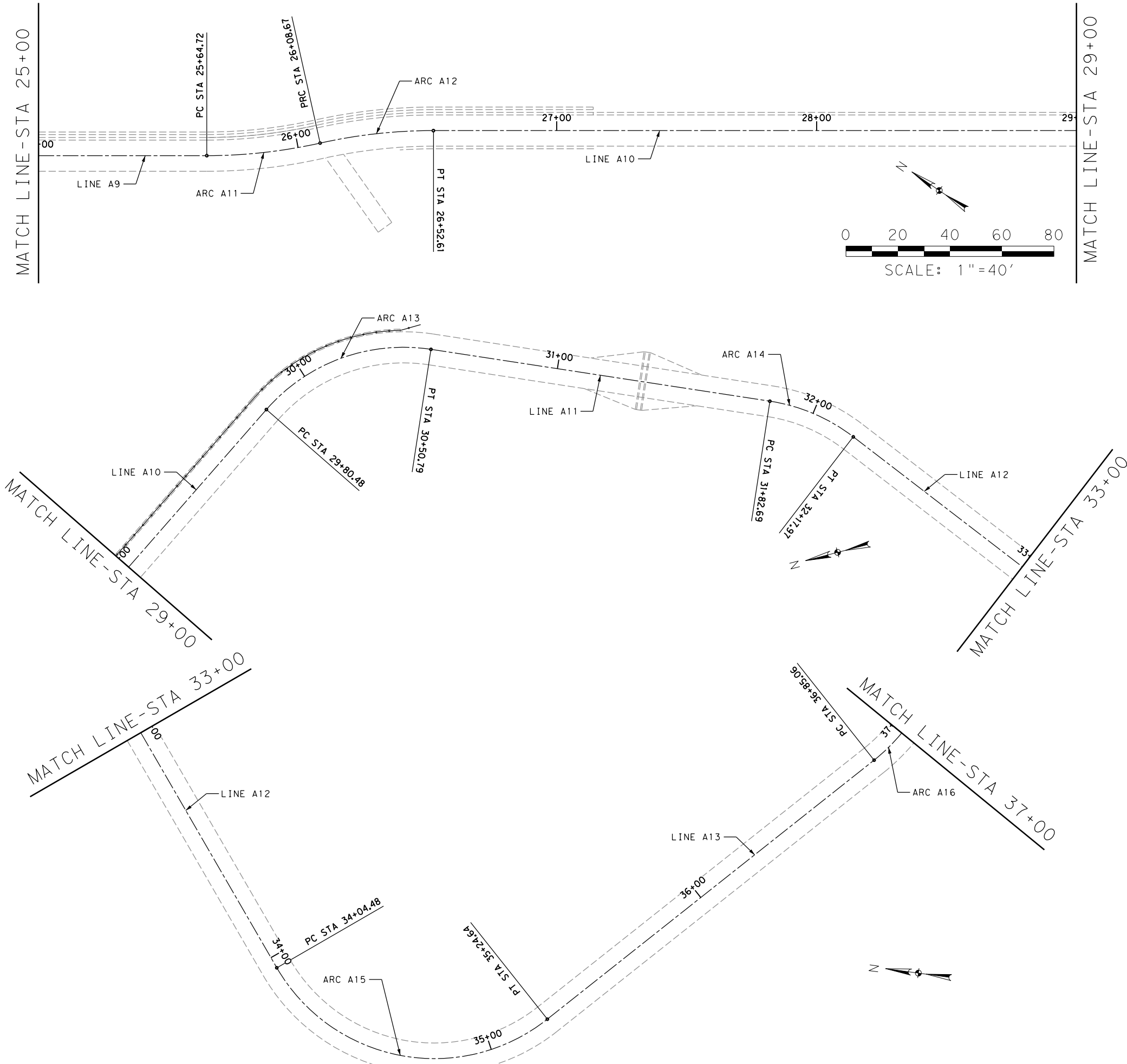
DCTA TRAIL LEWISVILLE

DCTA TRAIL A  
GEOMETRIC LAYOUT  
STA 13+00 TO STA 25+00

SCALE: AS NOTED SHEET 02 OF 06

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
MC	6	SEE TITLE SHEET		VA
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MC	TEXAS	DAL	DENTON	26
CHECK XX	CONTROL	SECTION	JOB	
XX	0918	46	331	

A:\45000s\45685\001\CADD\Sheet\FTW\03-Roadway\L104-GEO-45685.dgn  
 DATE: 8/29/2025 9:26:57 AM  
 PROJECT # 45685 OFFICE:MCA  
 ch2583



**CURVE DATA**

<b>ARC A11</b> I= 12° 35' 22" R= 200.00' T= 22.06' L= 43.95' CL= 43.86' CB= S 40° 36' 47" E	<b>ARC A12</b> I= 12° 35' 22" R= 200.00' T= 22.06' L= 43.95' CL= 43.86' CB= S 40° 36' 47" E
<b>ARC A13</b> I= 57° 32' 59" R= 70.00' T= 38.44' L= 70.31' CL= 67.39' CB= S 5° 32' 36" E	<b>ARC A14</b> I= 28° 52' 44" R= 70.00' T= 18.02' L= 35.28' CL= 34.91' CB= S 37° 40' 16" W
<b>ARC A15</b> I= 98° 20' 52" R= 70.00' T= 81.02' L= 120.15' CL= 105.94' CB= S 2° 56' 12" W	<b>ARC A16</b> I= 90° 52' 48" R= 70.00' T= 71.08' L= 111.03' CL= 99.75' CB= N 88° 19' 22" E

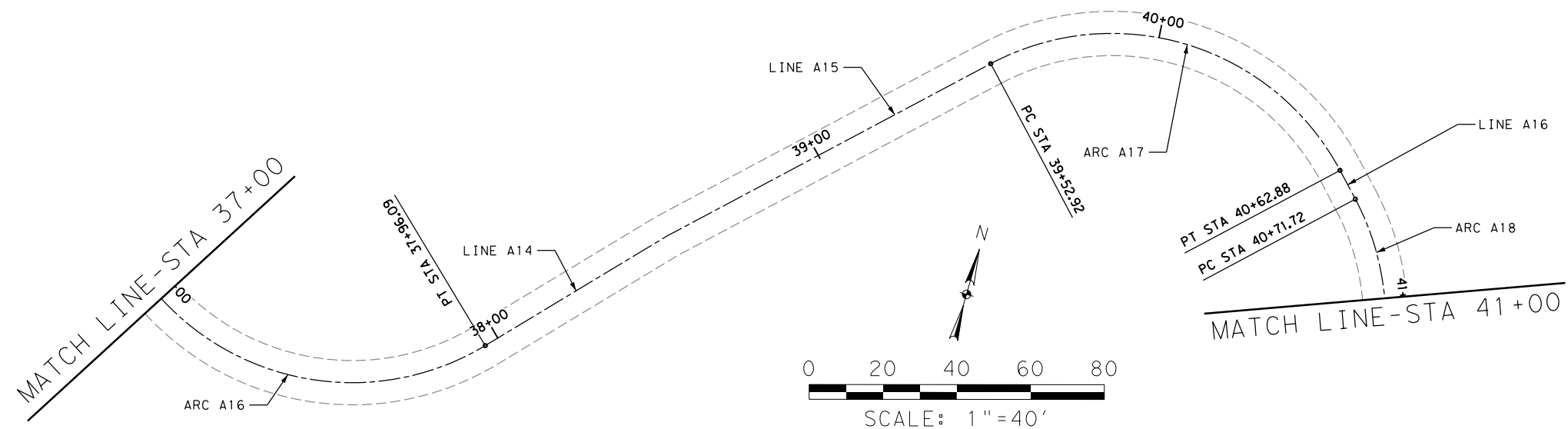
**LINE DATA**

<b>LINE A9</b> B= S 34° 19' 05" E D= 287.18'	<b>LINE A10</b> B= S 34° 19' 05" E D= 327.87'
<b>LINE A11</b> B= S 23° 13' 54" W D= 131.89'	<b>LINE A12</b> B= S 52° 06' 38" W D= 186.51'
<b>LINE A13</b> B= S 46° 14' 14" E D= 160.42'	

**DCTA TRAIL LEWISVILLE**  
**DCTA TRAIL A**  
**GEOMETRIC LAYOUT**  
**STA 25+00 TO STA 37+00**

SCALE: AS NOTED SHEET 03 OF 06

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 27
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

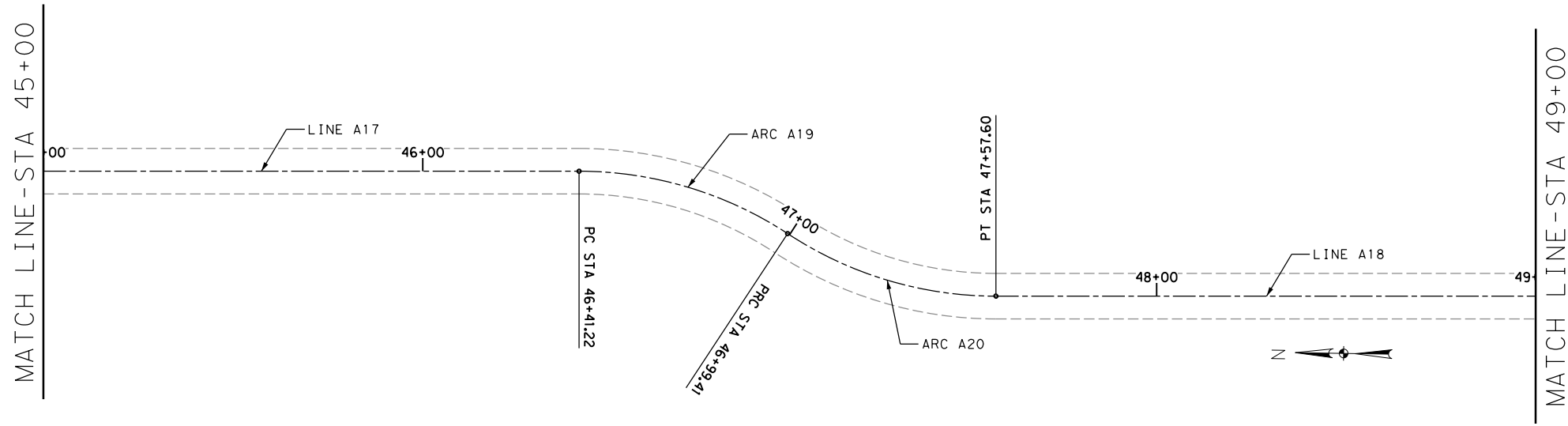
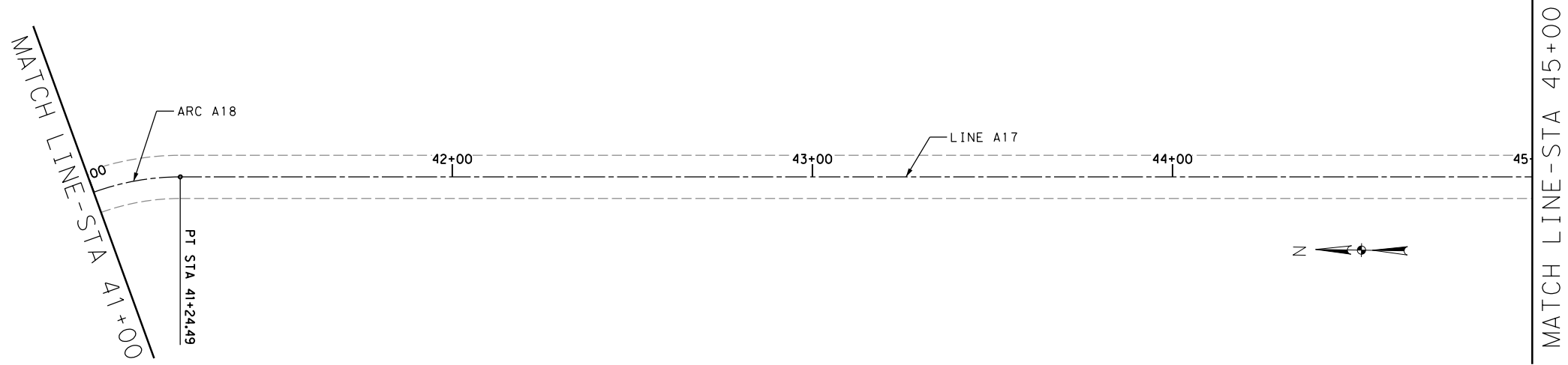


**CURVE DATA**

<b>ARC A16</b> I= 90° 52' 48" R= 70.00' T= 71.08' L= 111.03' CL= 99.75' CB= N 88° 19' 22" E	<b>ARC A17</b> I= 89° 59' 60" R= 70.00' T= 70.00' L= 109.96' CL= 98.99' CB= S 89° 04' 43" E
<b>ARC A18</b> I= 43° 11' 07" R= 70.00' T= 27.70' L= 52.76' CL= 51.52' CB= S 22° 29' 10" E	<b>ARC A19</b> I= 33° 20' 23" R= 100.00' T= 29.94' L= 58.19' CL= 57.37' CB= S 15° 46' 35" W
<b>ARC A20</b> I= 33° 20' 23" R= 100.00' T= 29.94' L= 58.19' CL= 57.37' CB= S 15° 46' 35" W	

**LINE DATA**

<b>LINE A14</b> B= N 42° 52' 58" E D= 57.49'	<b>LINE A15</b> B= N 45° 55' 17" E D= 99.40'
<b>LINE A16</b> B= S 44° 04' 43" E D= 8.85'	<b>LINE A17</b> B= S 0° 53' 36" E D= 516.73'
<b>LINE A18</b> B= S 0° 53' 36" E D= 339.83'	

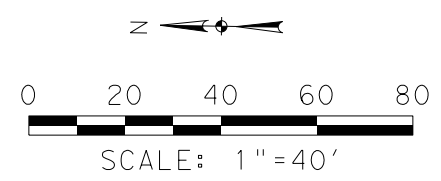
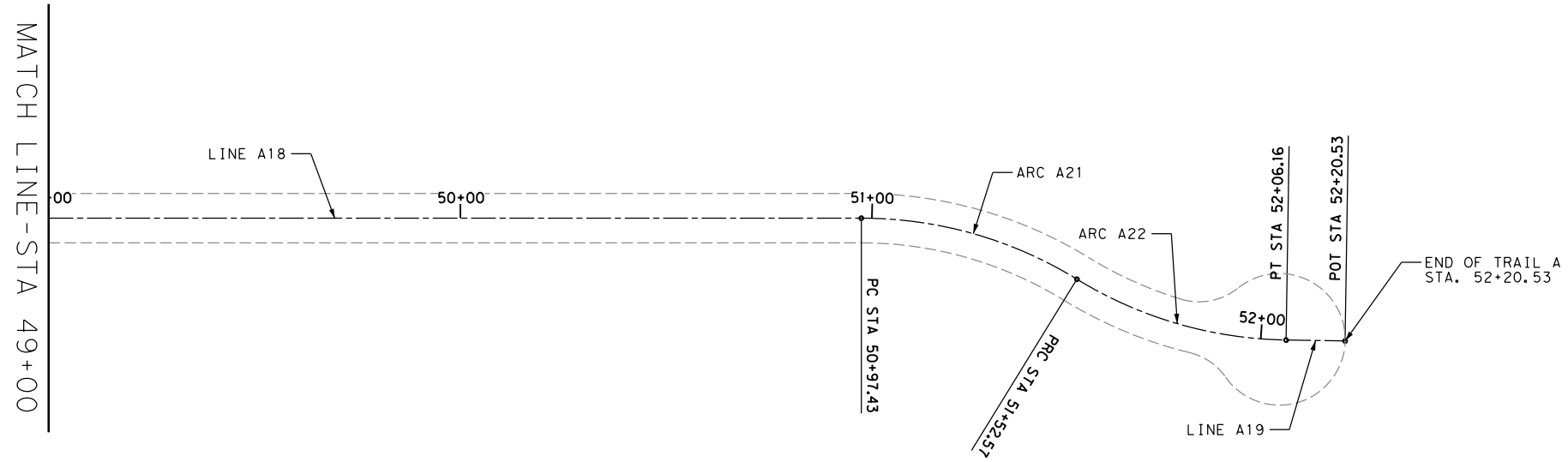


DCTA TRAIL LEWISVILLE

DCTA TRAIL A  
GEOMETRIC LAYOUT  
STA 37+00 TO STA 49+00

SCALE: AS NOTED SHEET 04 OF 06

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 28
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



CURVE DATA

ARC A21	ARC A22
I = 31° 35' 41"	I = 30° 42' 05"
R = 100.00'	R = 100.00'
T = 28.29'	T = 27.45'
L = 55.14'	L = 53.58'
CL = 54.45'	CL = 52.95'
CB = S 14° 54' 15" W	CB = S 15° 21' 03" W

LINE DATA

LINE A18	LINE A19
B = S 0° 53' 36" E	B = S 0° 00' 00" E
D = 339.83'	D = 14.37'

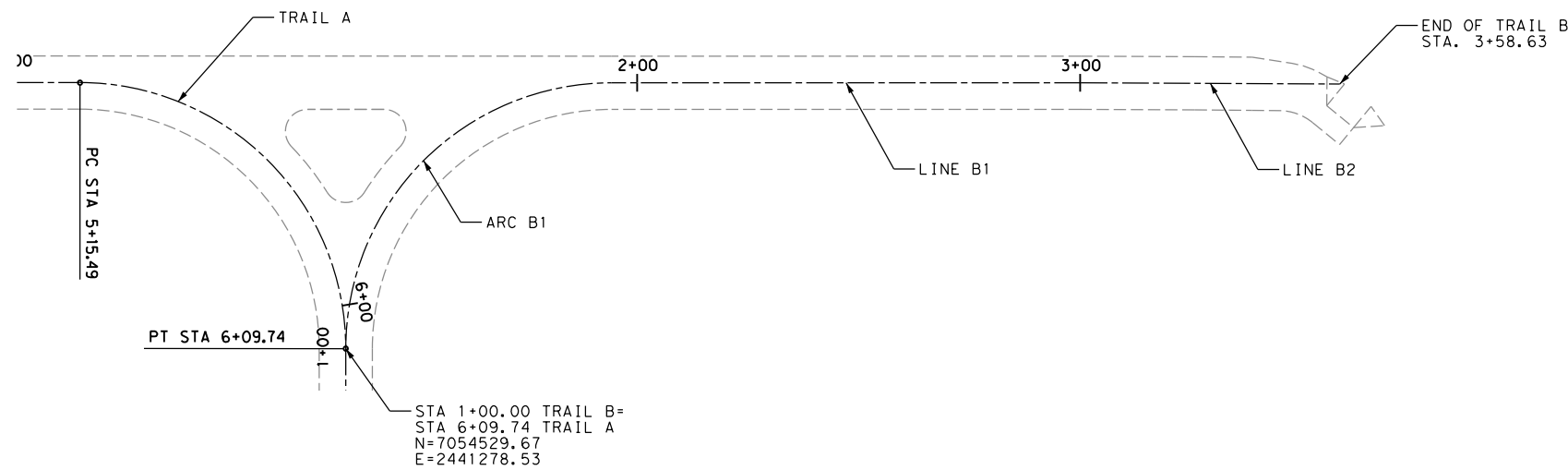
2601 MEACHAM BLVD., SUITE 600  
FORT WORTH, TX 76137-4204  
(817) 847-1422

© 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A  
 GEOMETRIC LAYOUT  
 STA 49+00 TO END

SCALE: AS NOTED SHEET 05 OF 06

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
MC	6	SEE TITLE SHEET		VA
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MC	TEXAS	DAL	DENTON	29
CHECK XX	CONTROL	SECTION	JOB	
CHECK XX	0918	46	331	



CURVE DATA

ARC B1

I = 89° 59' 60"

R = 60.00'

T = 60.00'

L = 94.25'

CL = 84.85'

CB = N 9° 19' 10" E

LINE DATA

LINE B1	LINE B2
B = S 54° 19' 10" W	B = S 54° 32' 47" W
D = 105.91'	D = 58.47'

DCTA TRAIL LEWISVILLE

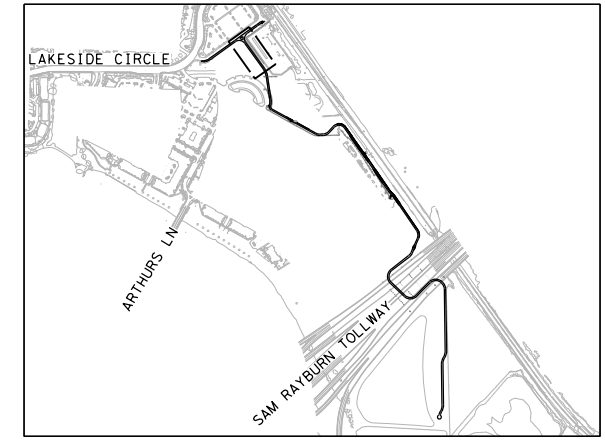
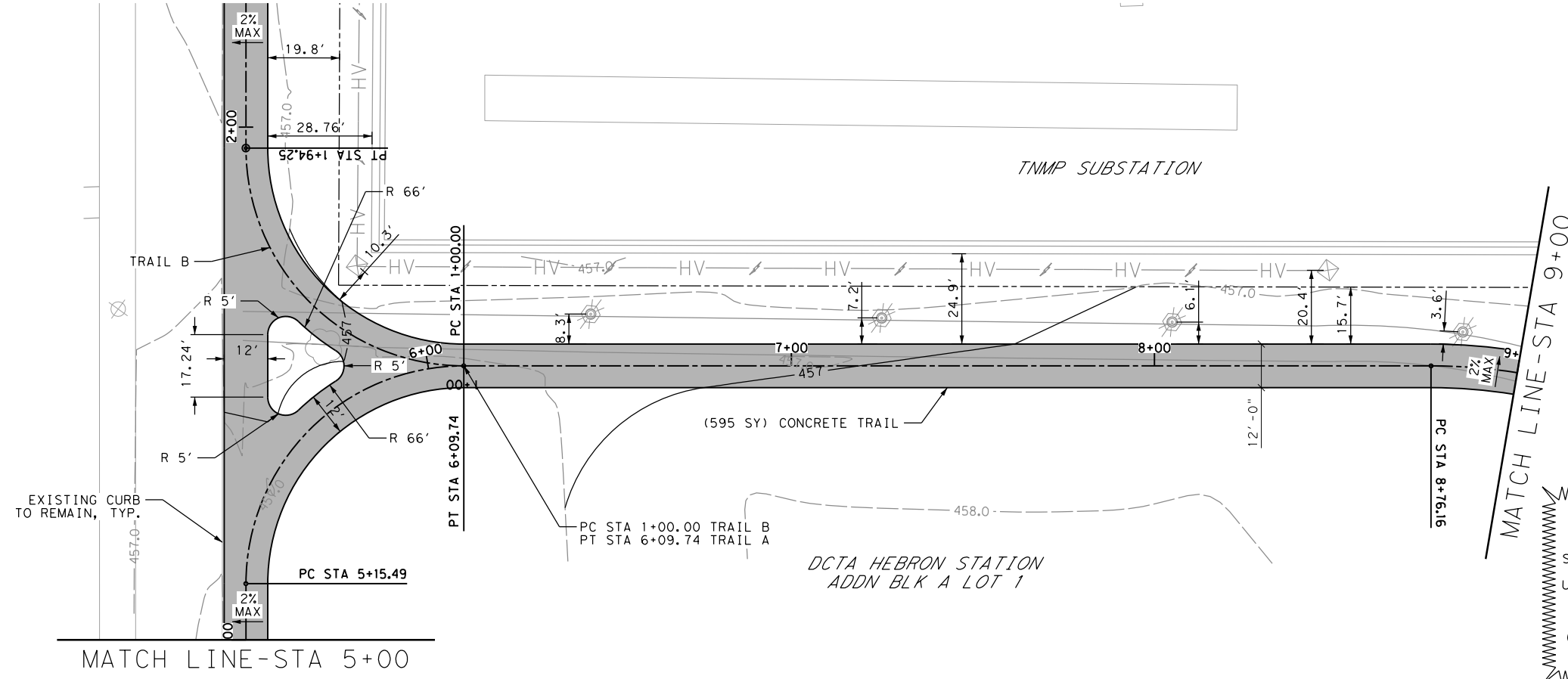
DCTA TRAIL B  
GEOMETRIC LAYOUT  
BEGIN 1+00 TO END

SCALE: AS NOTED SHEET 06 OF 06

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 30
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



DATE: 8/29/2025 TIME: 9:27:17 AM PROJECT # 45685 OFFICE: MCA ch2583



KEY MAP - N. T. S.

- NOTES:
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

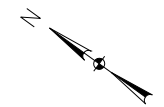
LEGEND

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377

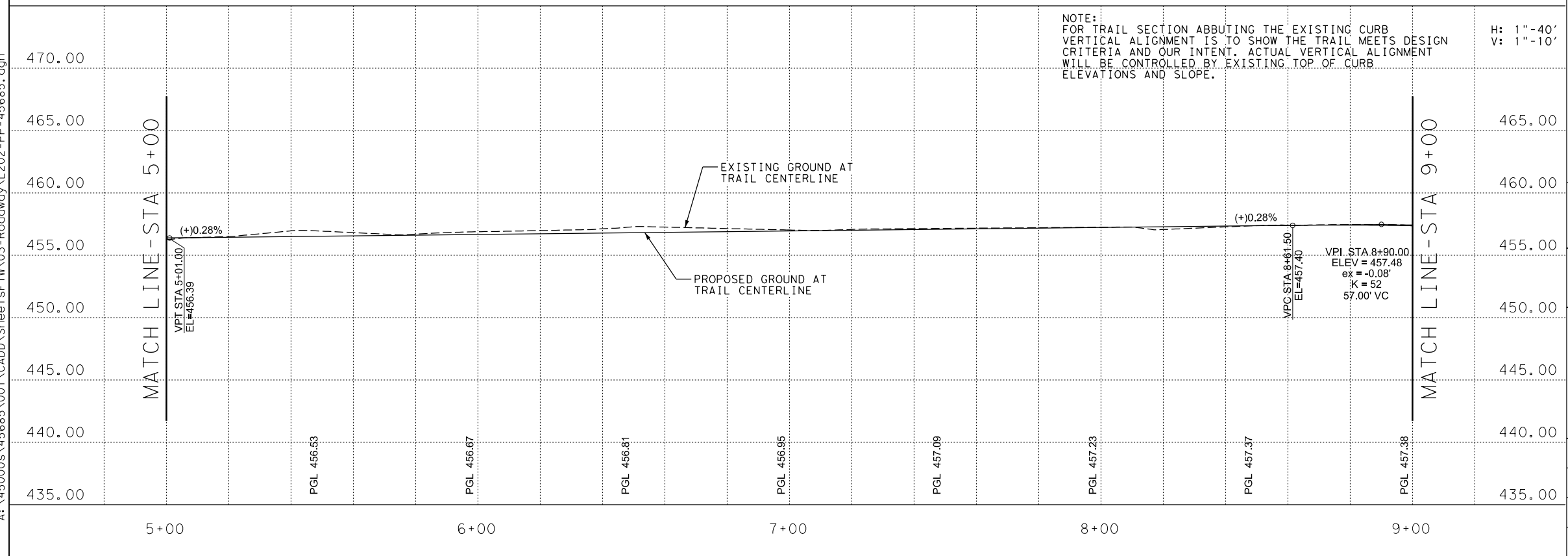


SCALE: 1" = 40'

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
531-7003	CONC. SIDEWALKS (6")	SY	595

NOTE:  
FOR TRAIL SECTION ABUTTING THE EXISTING CURB VERTICAL ALIGNMENT IS TO SHOW THE TRAIL MEETS DESIGN CRITERIA AND OUR INTENT. ACTUAL VERTICAL ALIGNMENT WILL BE CONTROLLED BY EXISTING TOP OF CURB ELEVATIONS AND SLOPE.

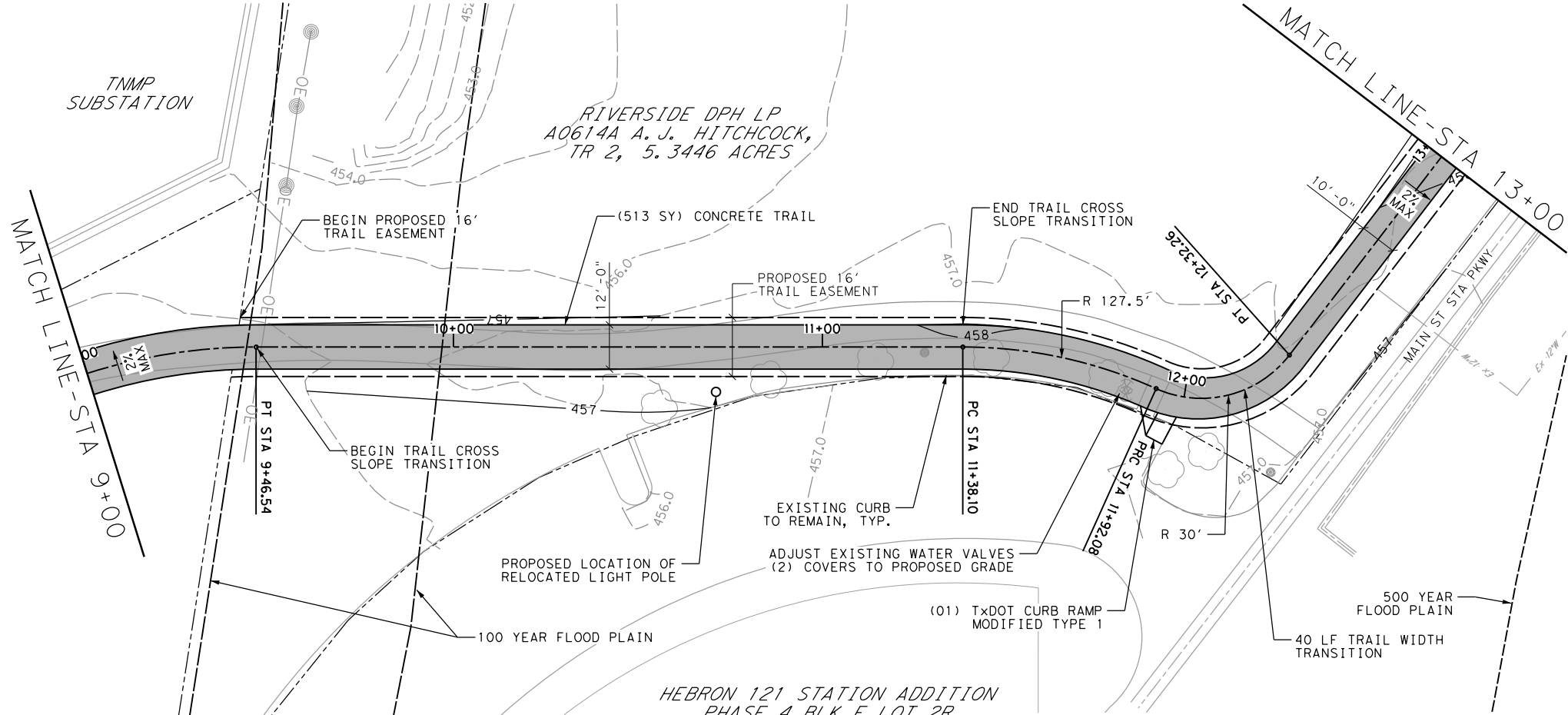
H: 1" = 40'  
V: 1" = 10'



DCTA TRAIL LEWISVILLE  
DCTA TRAIL A LEWISVILLE  
PAVING PLAN AND PROFILE  
STA 5+00 TO STA 9+00

SCALE: AS NOTED SHEET 02 OF 14

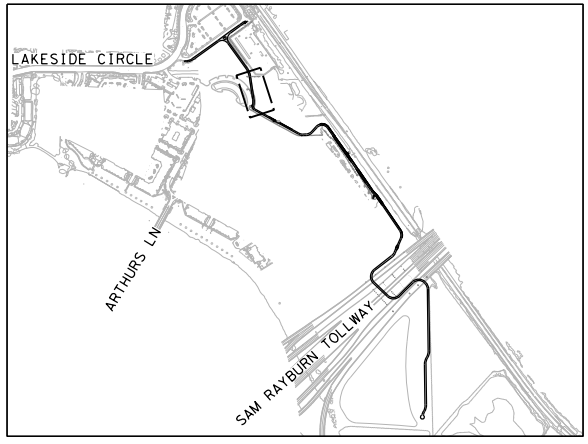
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 32
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



NOTE:  
1. FROM STA 12+00 TO 17+25, TRAIL GRADING IS DICTATED BY GOING 2% UP FROM EXISTING CURB ALL THE WAY THROUGH THE TRAIL SECTION TO ACCOUNT FOR FUTURE PARALLEL PARKING ADJACENT TO THE TRAIL.

NOTES:  
1. REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.  
2. UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

! CAUTION UTILITIES IN THE AREA !  
\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377



KEY MAP - N. T. S.

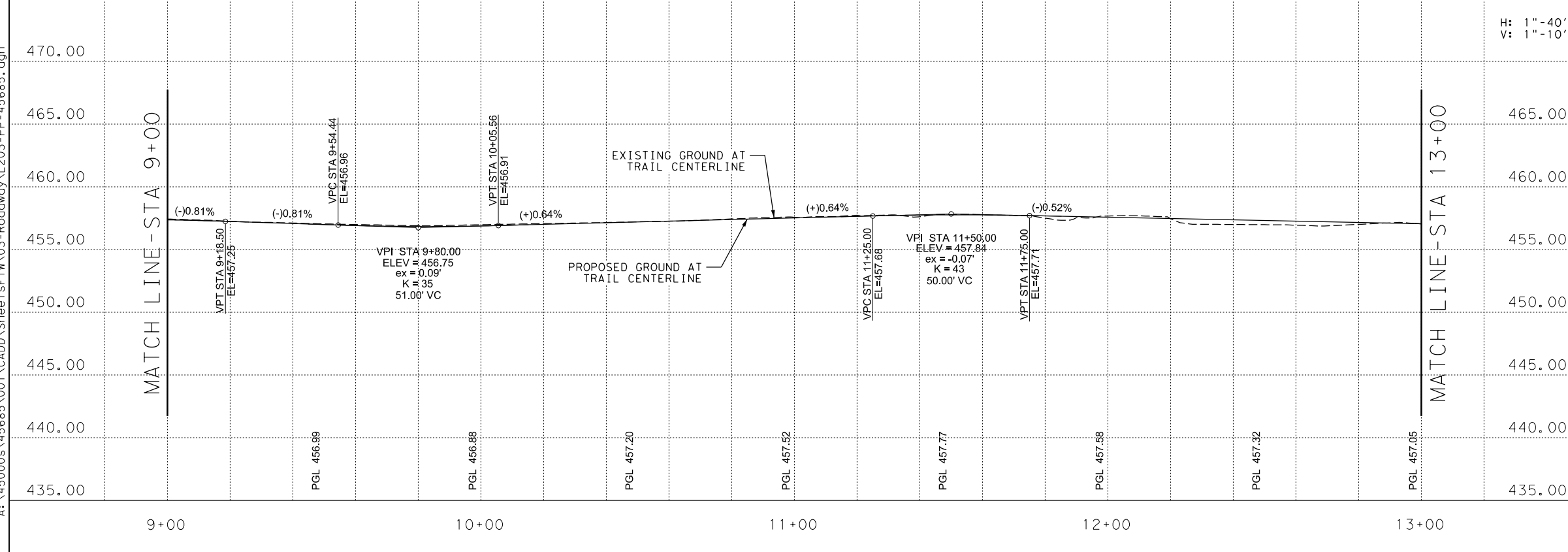
LEGEND

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL



SCALE: 1" = 40'

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
531-7003	CONC. SIDEWALKS (6")	SY	513
531-7005	CURB RAMP (TY 1)	EA	1
479-7007	ADJUSTING WATER VALVE	EA	2



H: 1" = 40'  
V: 1" = 10'



**halff** 2601 MEACHAM BLVD., SUITE 600 FORT WORTH, TX 76137-4204 (817) 847-1422

Texas Department of Transportation © 2024

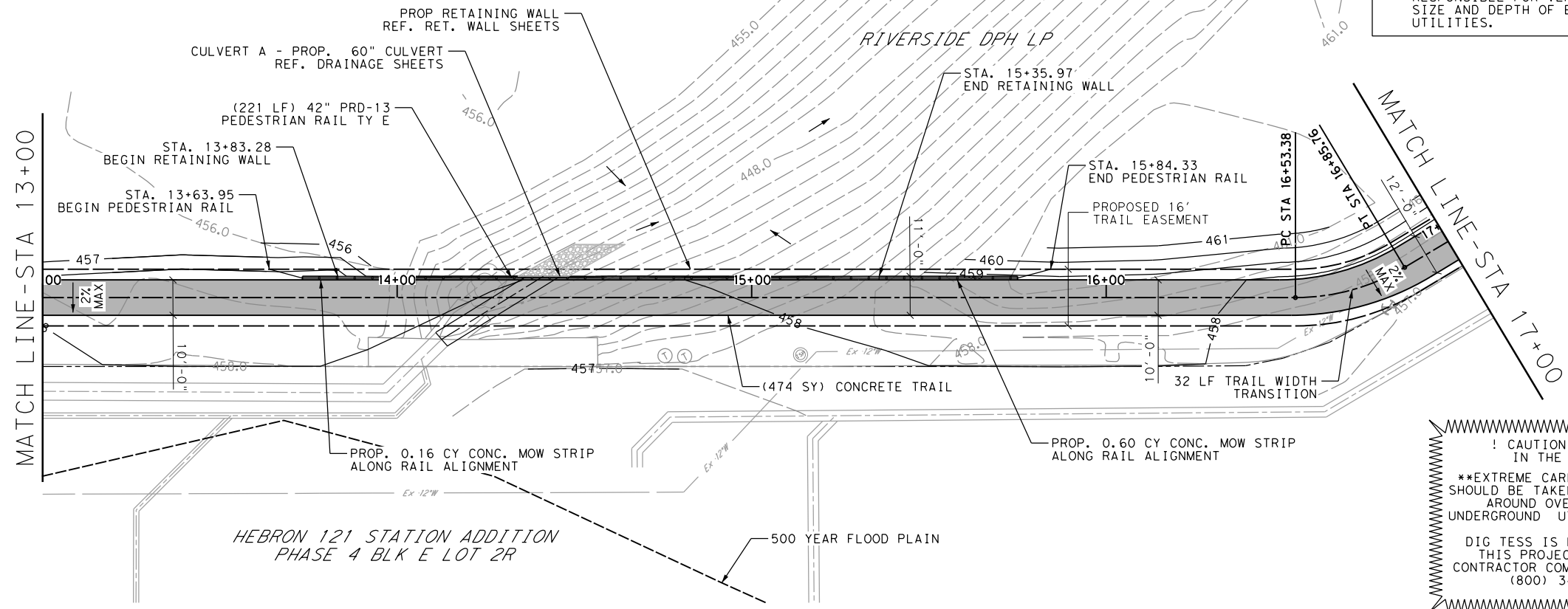
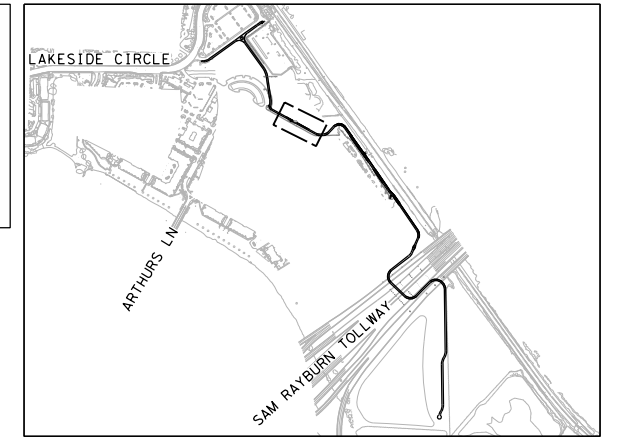
DCTA TRAIL LEWISVILLE

DCTA TRAIL A LEWISVILLE PAVING PLAN AND PROFILE STA 9+00 TO STA 13+00

SCALE: AS NOTED SHEET 03 OF 14

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 33
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

NOTES:  
 1. REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.  
 2. UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.



KEY MAP - N. T. S.

LEGEND

- CENTERLINE
- 457- PROP. CONTOUR
- 457- EXIST. CONTOUR
- PROP. CONC. TRAIL

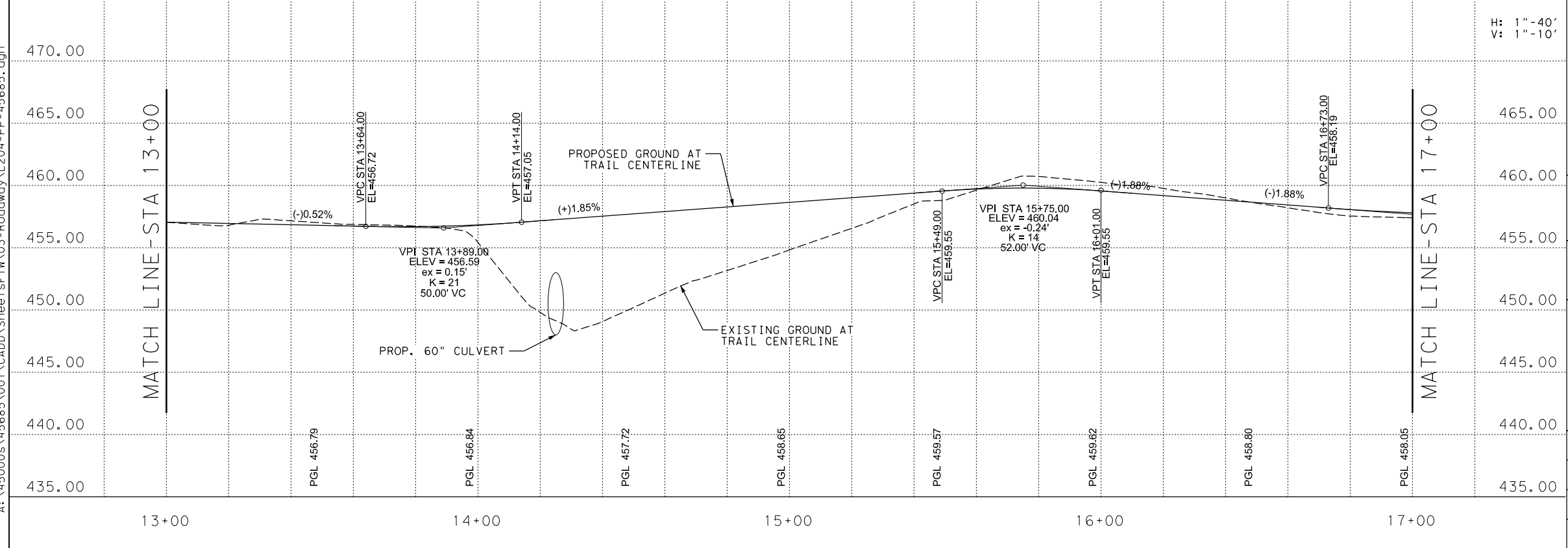
! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

SCALE: 1" = 40'

NOTE:  
 1. FROM STA 12+00 TO 17+25, TRAIL GRADING IS DICTATED BY GOING 2% UP FROM EXISTING CURB ALL THE WAY THROUGH THE TRAIL SECTION TO ACCOUNT FOR FUTURE PARALLEL PARKING ADJACENT TO THE TRAIL.

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
432-7014	RIPRAP (MOW STRIP) (5 IN)	CY	0.76
450-6082	RAIL (PEDESTRIAN) (SPL)	LF	221
531-7003	CONC. SIDEWALKS (6")	SY	450



STATE OF TEXAS  
 MARK CANTU  
 153810  
 LICENSED PROFESSIONAL ENGINEER

8-29-25

halff  
 2601 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

Texas Department of Transportation  
 © 2024

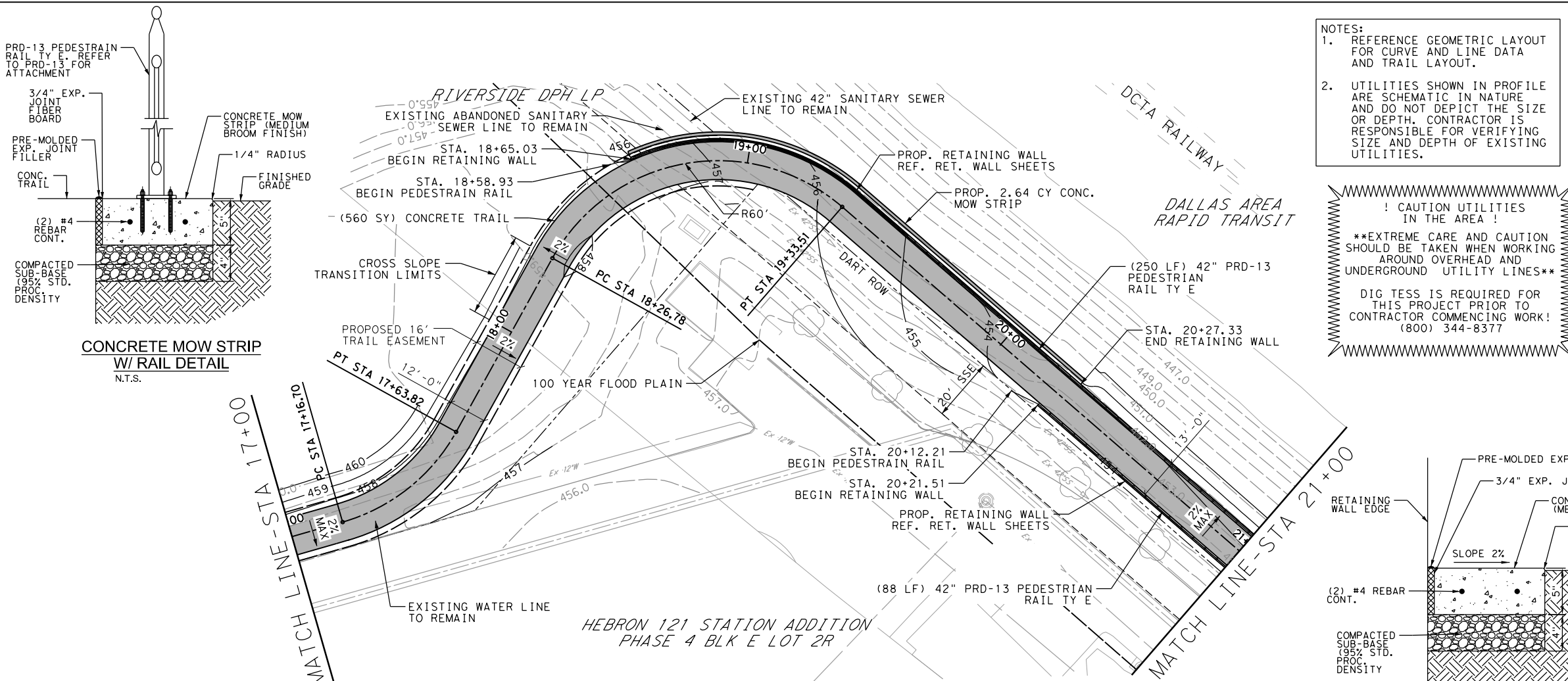
DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 PAVING PLAN AND PROFILE  
 STA 13+00 TO STA 17+00

SCALE: AS NOTED SHEET 04 OF 14

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 34
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

TIME: 9:27:23 AM FILE: L204-PP-45685.dgn

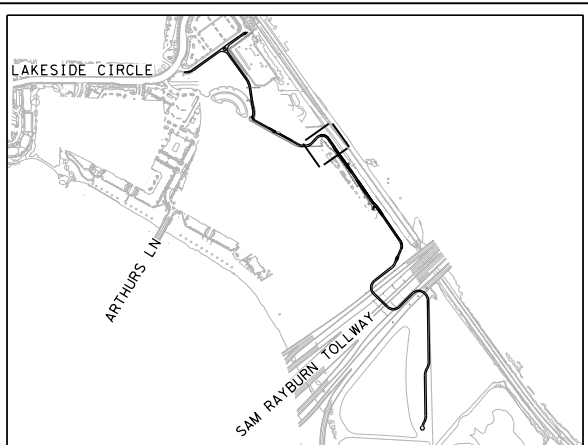
DATE: 8/29/2025 TIME: 9:27:26 AM PROJECT # 45685 OFFICE: MCA CH2583



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
432-7014	RIPRAP (MOW STRIP) (5 IN)	CY	2.64
450-7062	RAIL (HANDRAIL) (TY E)	LF	338
531-7003	CONC. SIDEWALKS (6")	SY	560

NOTES:  
 1. REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.  
 2. UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

CAUTION UTILITIES IN THE AREA!  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



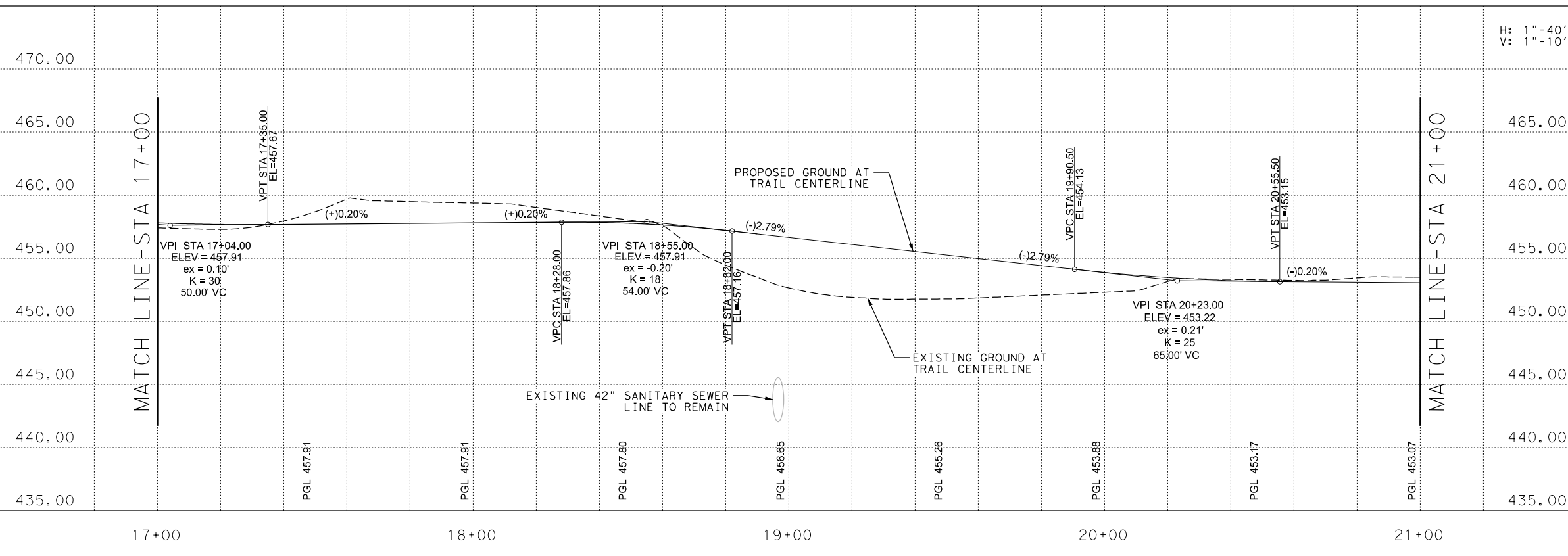
LEGEND

- CENTERLINE
- 457- PROP. CONTOUR
- 457- EXIST. CONTOUR
- PROP. CONC. TRAIL

CONCRETE MOW STRIP W/ RAIL DETAIL N.T.S.

CONCRETE MOW STRIP DETAIL N.T.S.

SCALE: 1" = 40'



STATE OF TEXAS  
 MARK CANTU  
 153810  
 LICENSED PROFESSIONAL ENGINEER

8-29-25

halff  
 2601 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

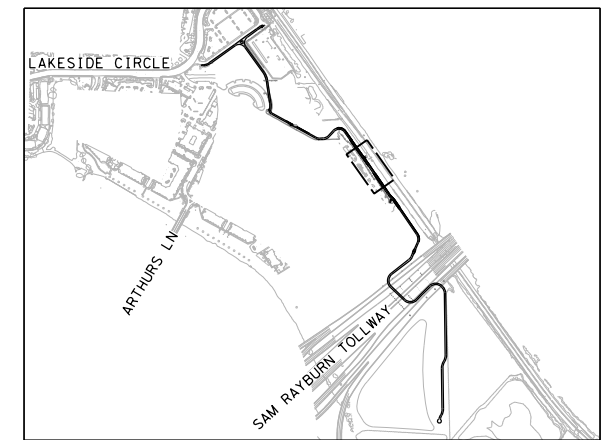
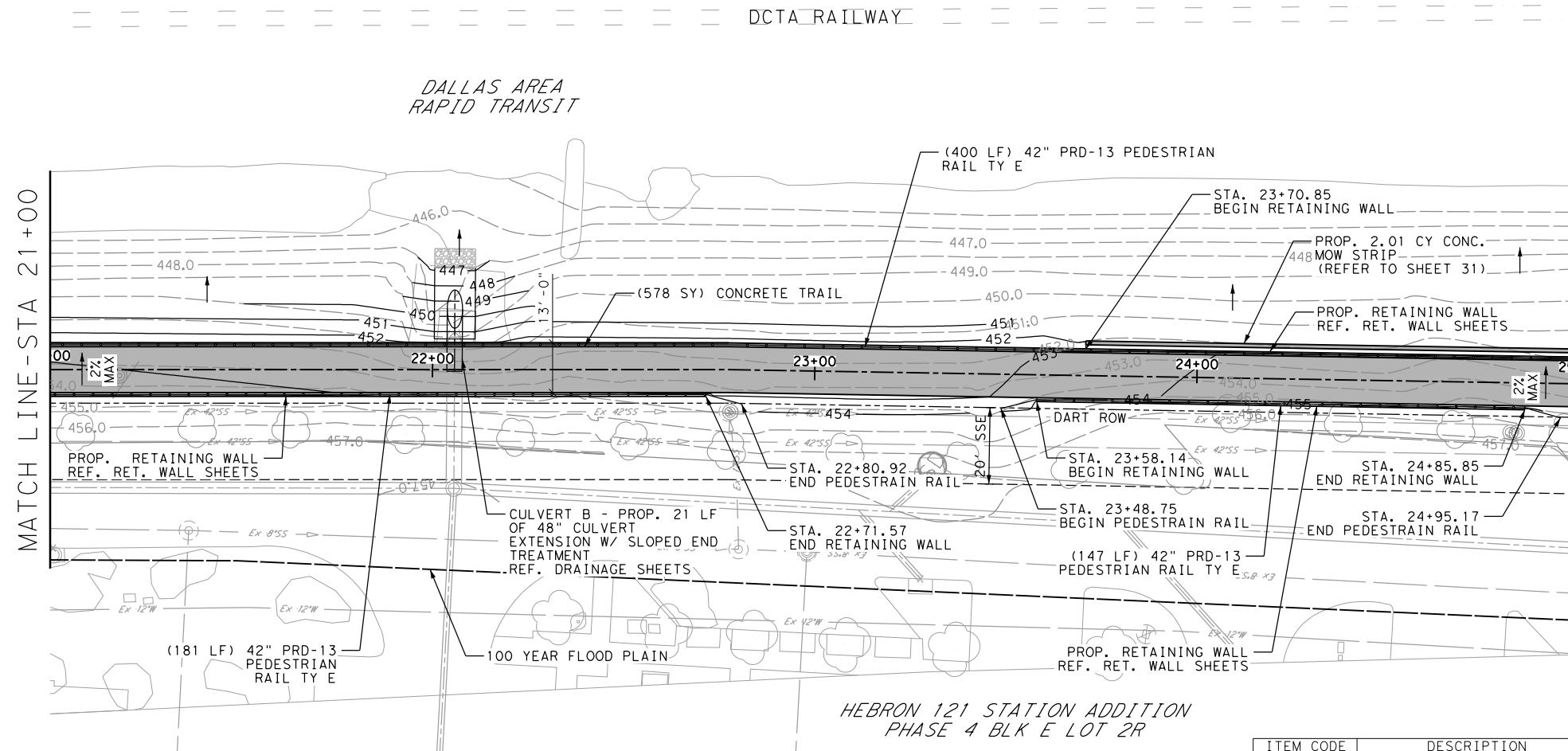
Texas Department of Transportation  
 © 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 PAVING PLAN AND PROFILE  
 STA 17+00 TO STA 21+00

SCALE: AS NOTED SHEET 05 OF 14

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 35
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

TIME: 9:27:26 AM FILE: L205-PP-45685.dgn



KEY MAP - N.T.S.

- NOTES:
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

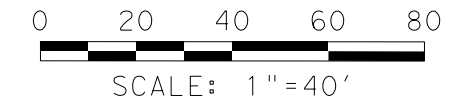
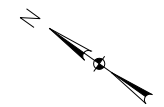
LEGEND

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL

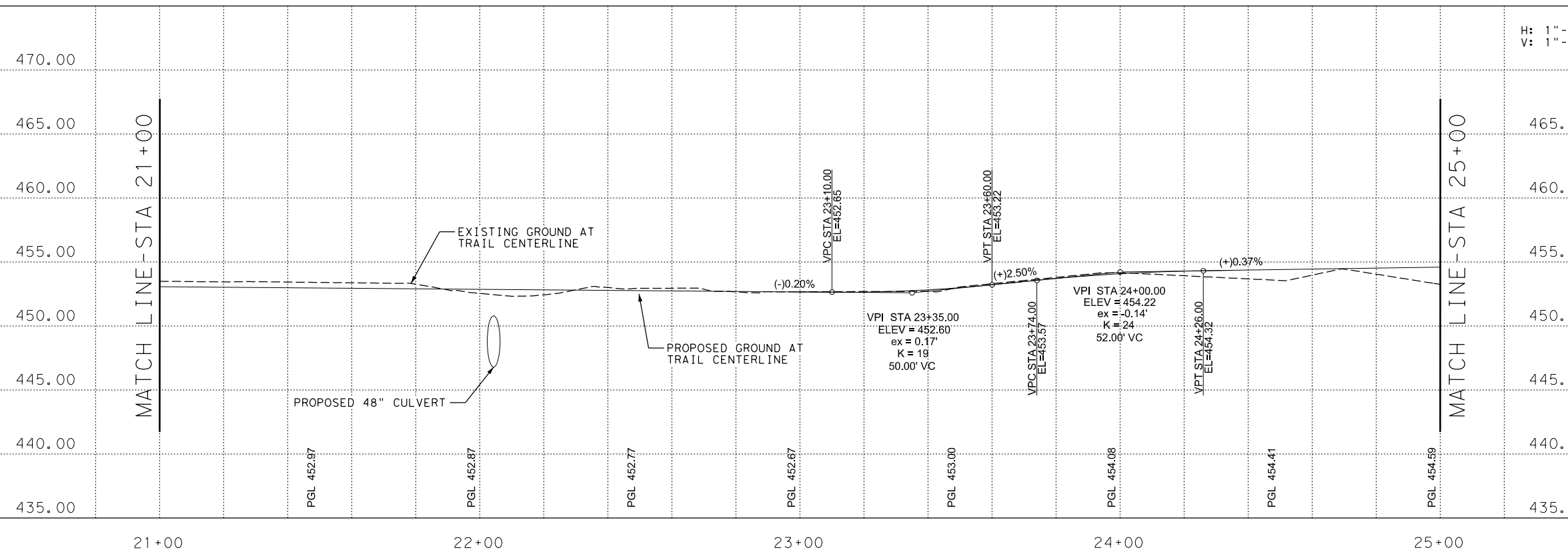
! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
432-7014	RIPRAP (MOW STRIP) (5 IN)	CY	2.01
450-7062	RAIL (HANDRAIL) (TY E)	LF	728
531-7003	CONC. SIDEWALKS (6")	SY	578

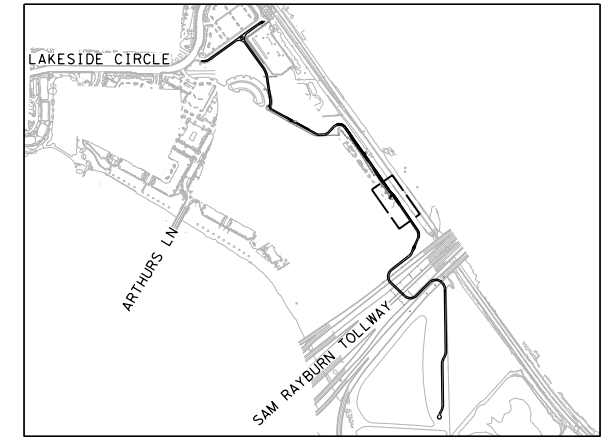
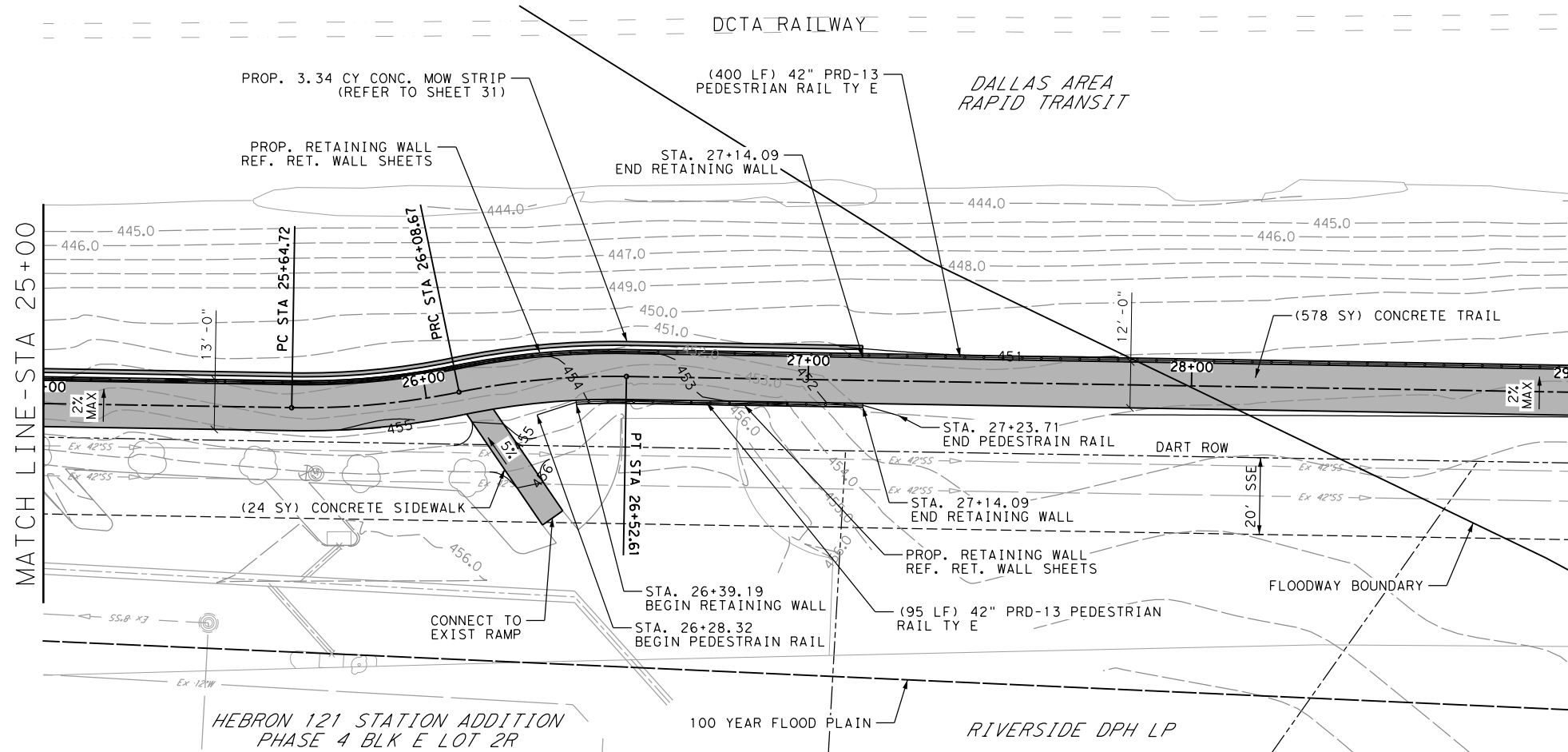


DCTA TRAIL LEWISVILLE

DCTA TRAIL A LEWISVILLE PAVING PLAN AND PROFILE STA 21+00 TO STA 25+00

SCALE: AS NOTED SHEET 06 OF 14

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 36
CHECK XX	CONTROL	SECTION	JOB	
CHECK XX	0918	46	331	



KEY MAP - N. T. S.

- NOTES:
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

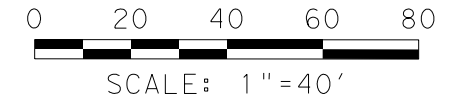
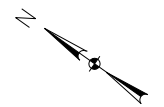
LEGEND

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL

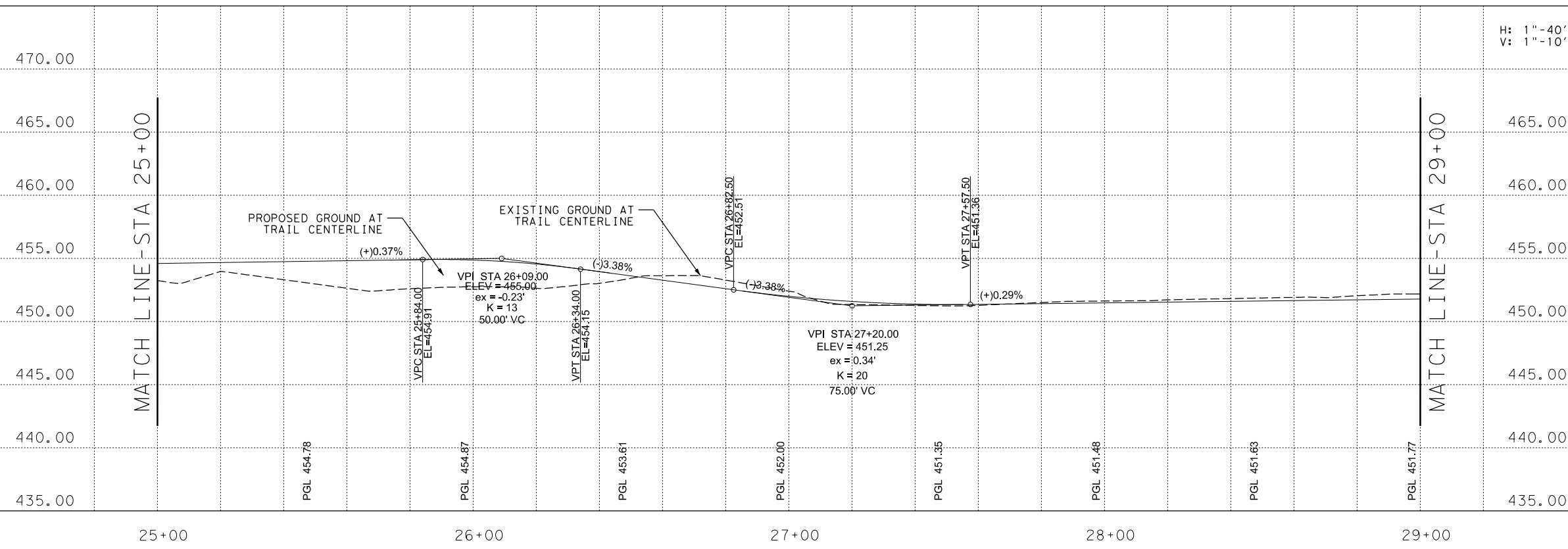
! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
432-7014	RIPRAP (MOW STRIP) (5 IN)	CY	3.34
450-7062	RAIL (HANDRAIL) (TY E)	LF	400
531-7003	CONC. SIDEWALKS (6")	SY	602



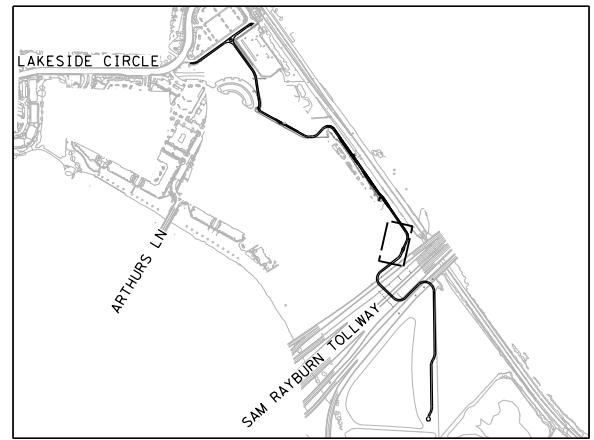
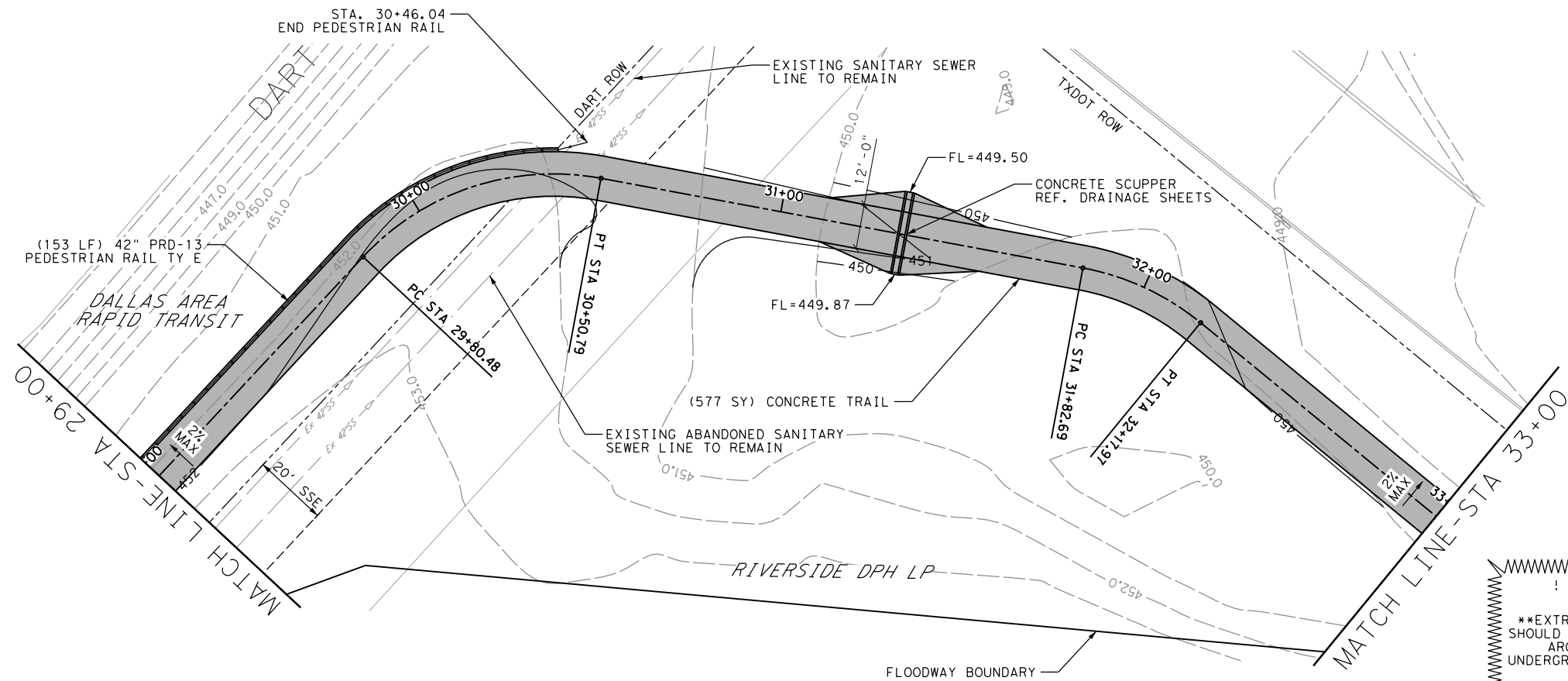
DCTA TRAIL LEWISVILLE

DCTA TRAIL A LEWISVILLE PAVING PLAN AND PROFILE STA 25+00 TO STA 29+00

SCALE: AS NOTED SHEET 07 OF 14

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 37
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

ch2583  
 PROJECT # 45685 OFFICE:MCA  
 DATE: 8/29/2025 TIME: 9:27:41 AM  
 A: \\45000s\45685\001\CADD\Sheet\TW\03-Roadway\L208-PP-45685.dgn



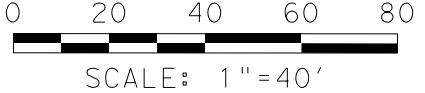
KEY MAP - N. T. S.

- NOTES:
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

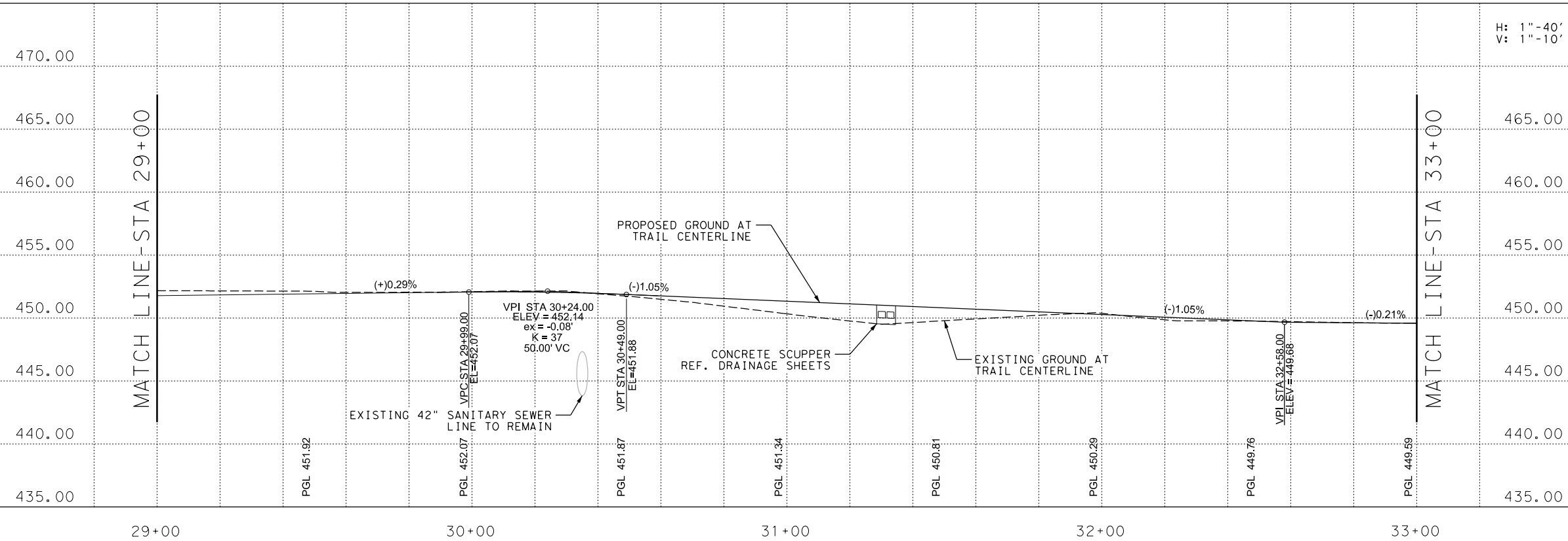
LEGEND

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
531-7003	CONC. SIDEWALKS (6")	SY	577

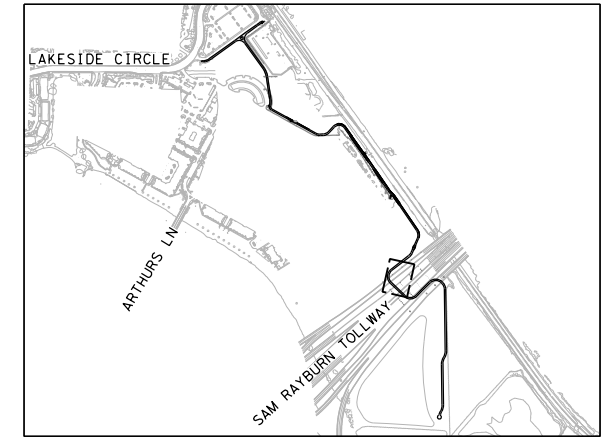
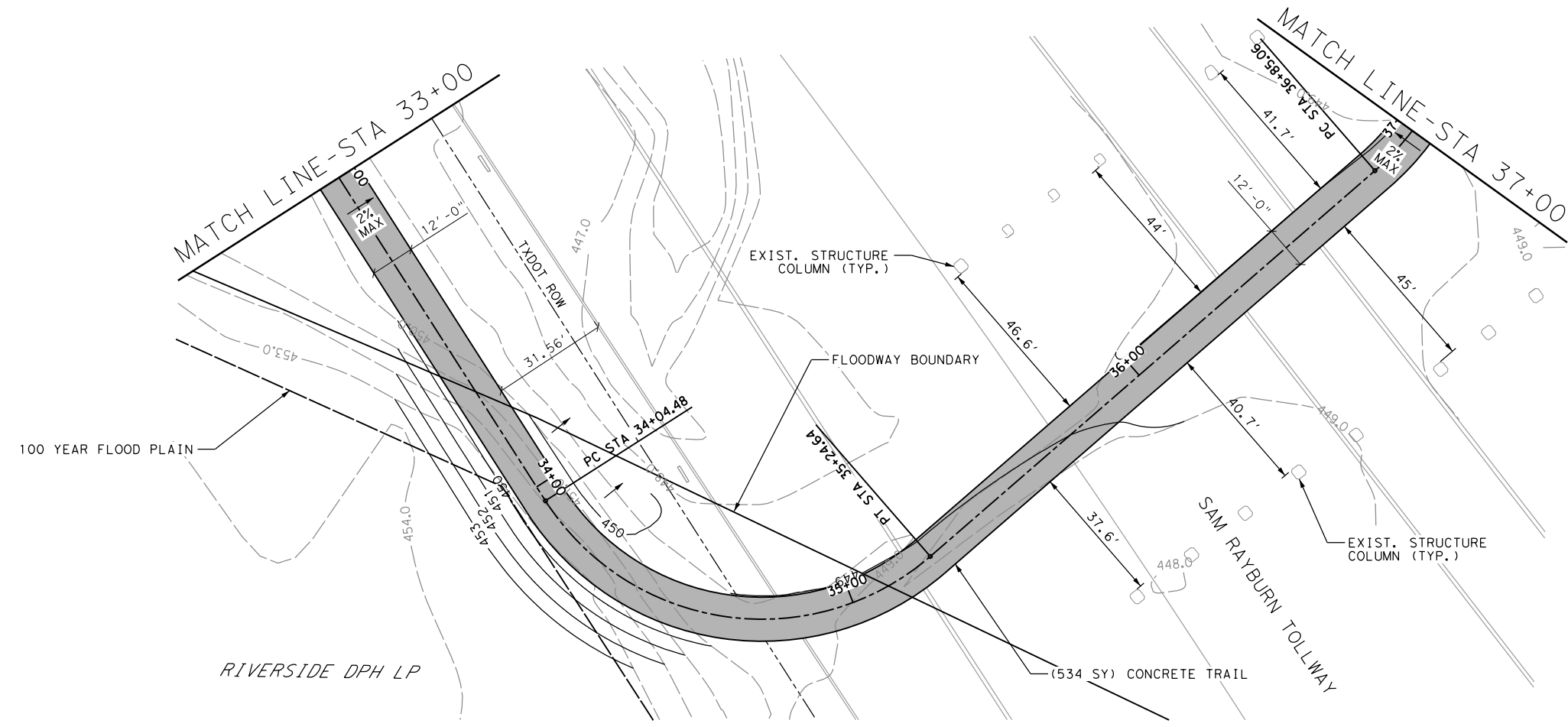


DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 PAVING PLAN AND PROFILE  
 STA 29+00 TO STA 33+00

SCALE: AS NOTED SHEET 08 OF 14

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 38
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

DATE: 8/29/2025 TIME: 9:27:46 AM PROJECT # 45685 OFFICE: MCA  
 A: \\45000s\45685\001\CADD\Sheet\TW\03-Roadway\L209-PP-45685.dgn



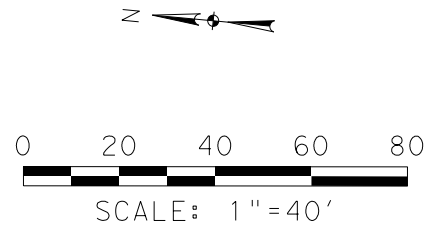
KEY MAP - N. T. S.

- NOTES:**
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

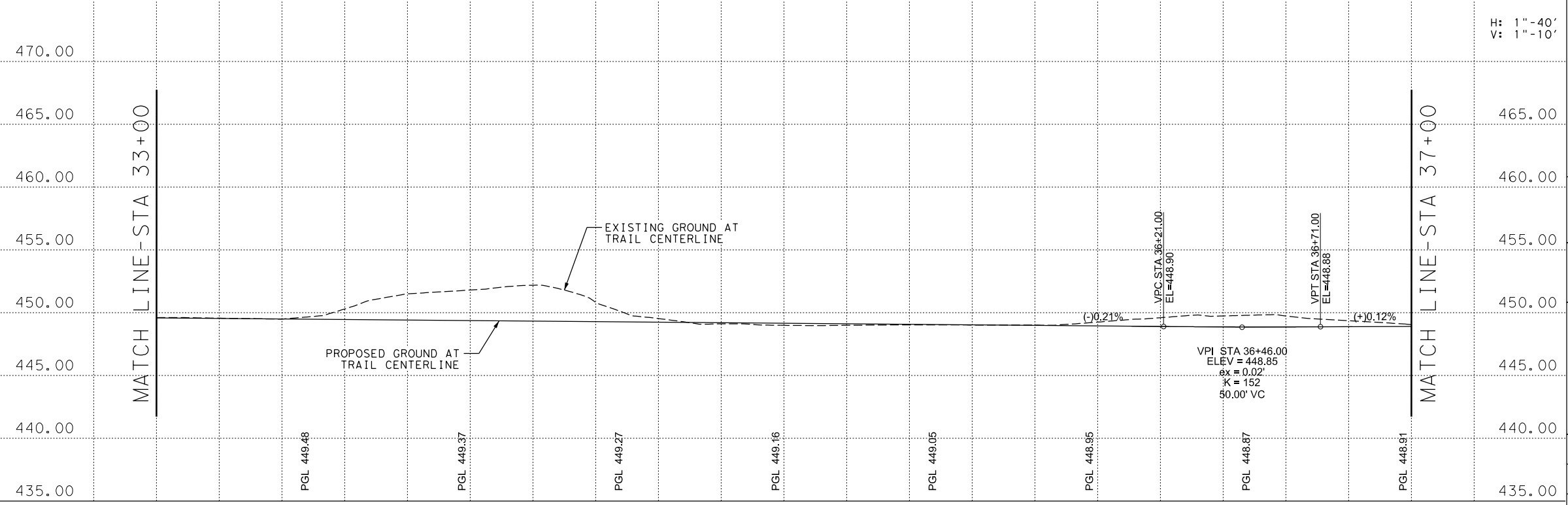
**LEGEND**

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
531-7003	CONC. SIDEWALKS (6")	SY	534



2801 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

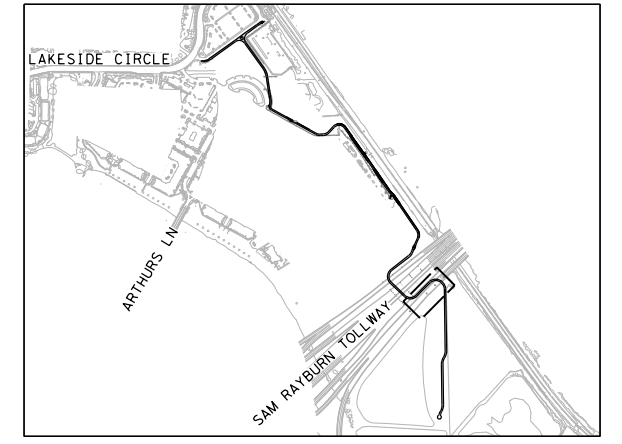
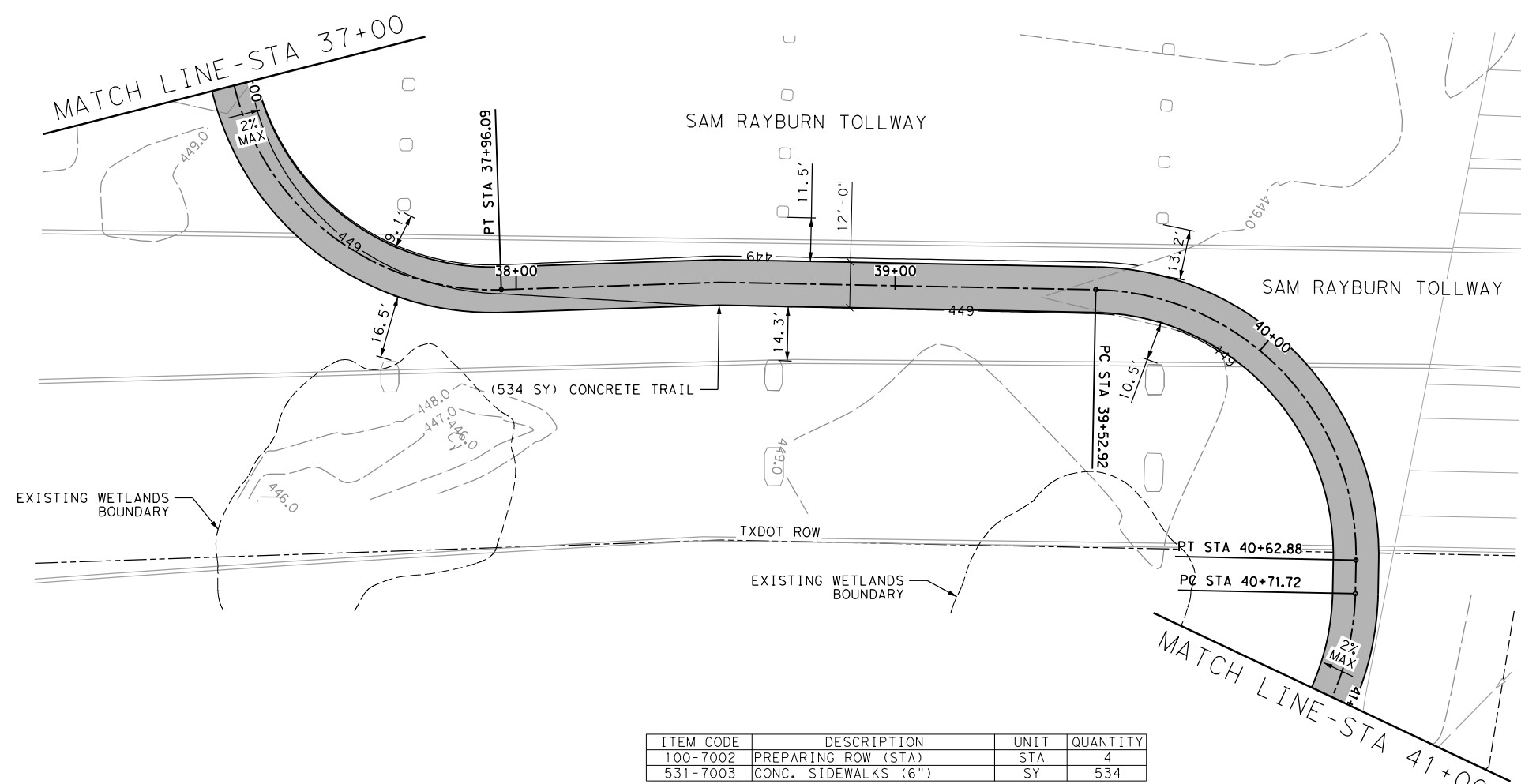
© 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 PAVING PLAN AND PROFILE  
 STA 33+00 TO STA 37+00

SCALE: AS NOTED SHEET 09 OF 14

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 39
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

DATE: 8/29/2025 TIME: 9:27:49 AM PROJECT # 45685 OFFICE: MCA



KEY MAP - N. T. S.

- NOTES:
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

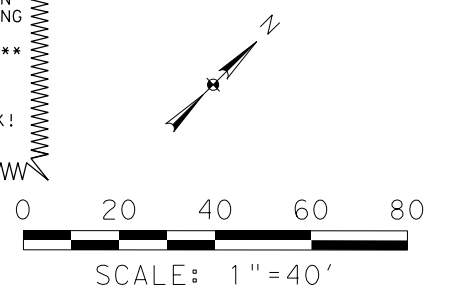
LEGEND

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL

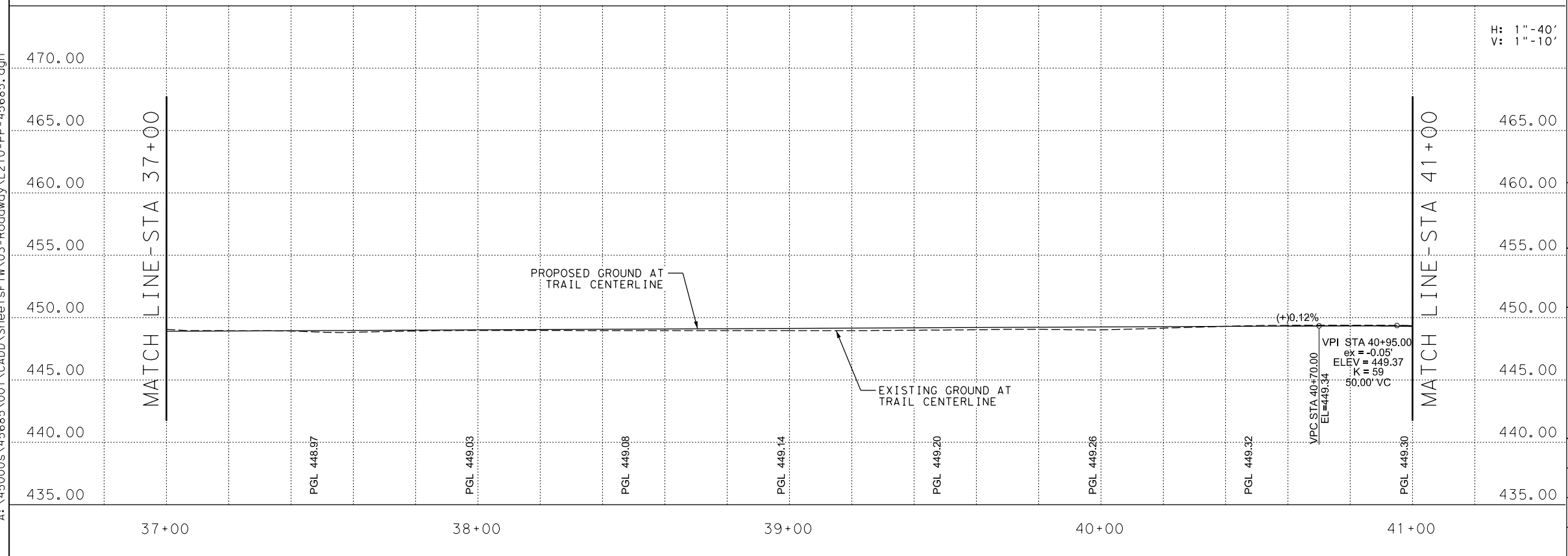
! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
531-7003	CONC. SIDEWALKS (6")	SY	534

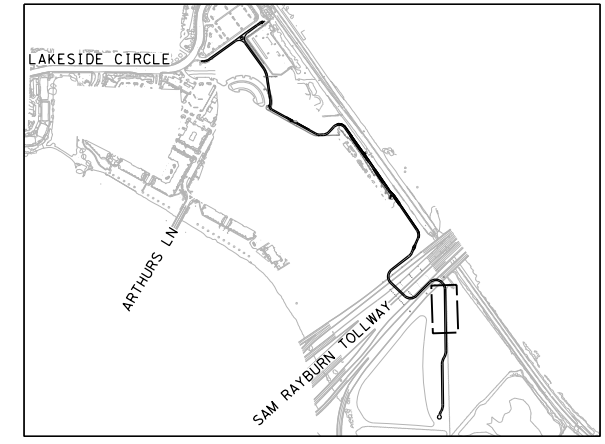
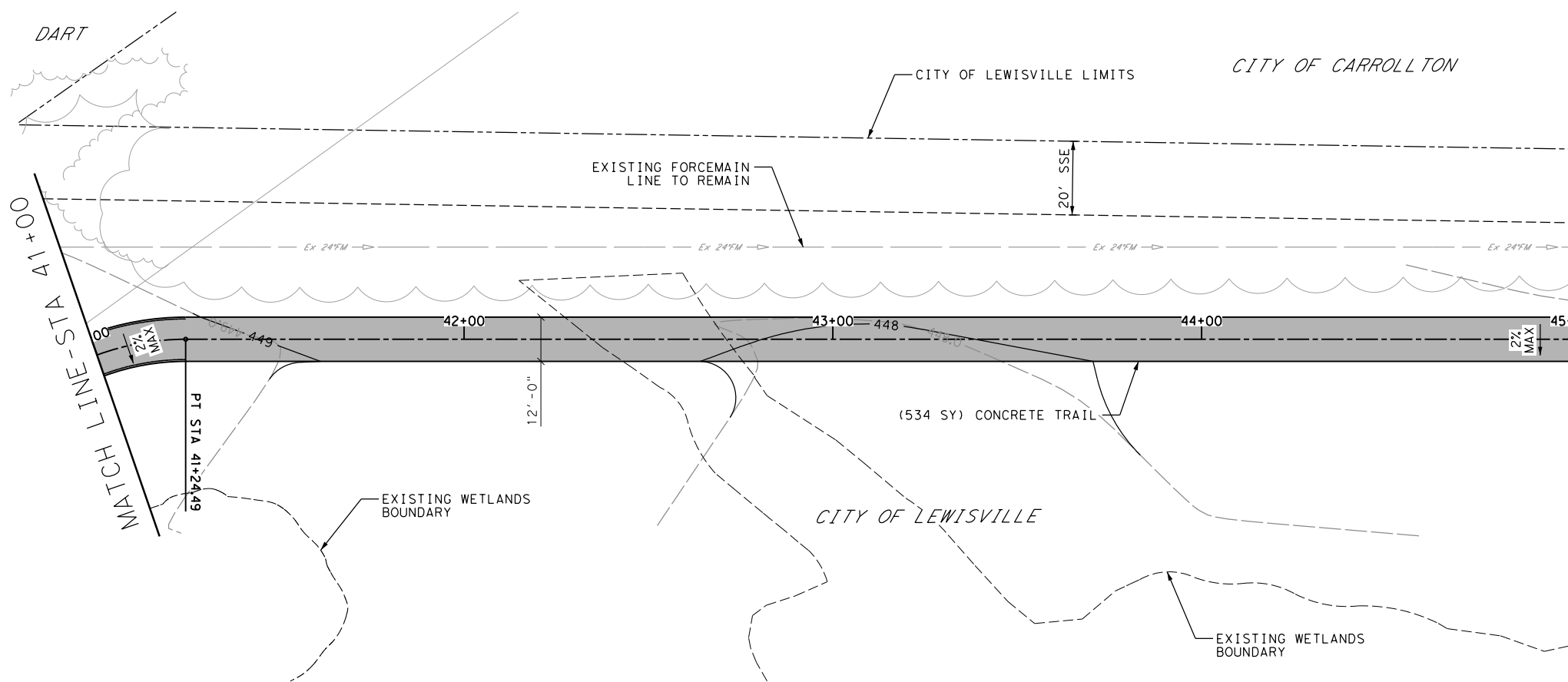


Texas Department of Transportation  
© 2024

DCTA TRAIL LEWISVILLE  
DCTA TRAIL A LEWISVILLE  
PAVING PLAN AND PROFILE  
STA 37+00 TO STA 41+00

SCALE: AS NOTED SHEET 10 OF 14

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 40
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



- NOTES:**
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

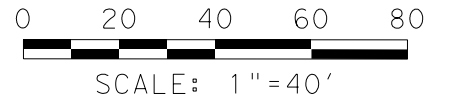
**LEGEND**

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL

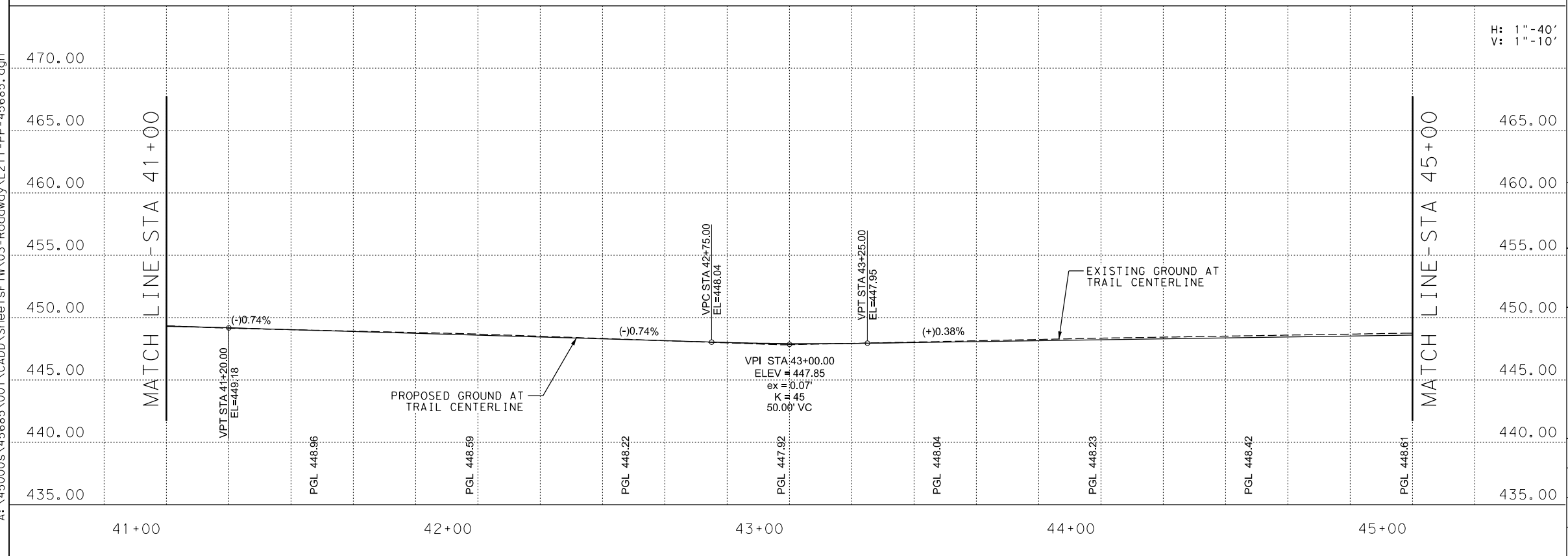
! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
531-7003	CONC. SIDEWALKS (6")	SY	534

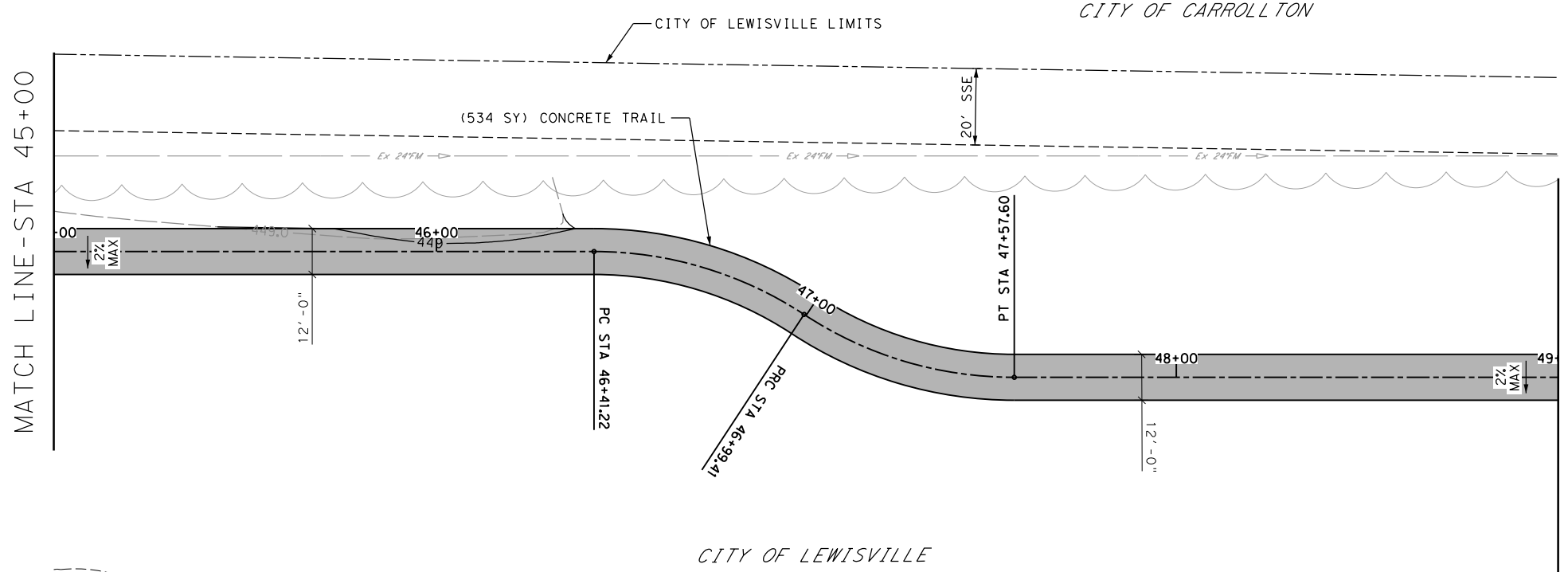


DCTA TRAIL LEWISVILLE

DCTA TRAIL A LEWISVILLE PAVING PLAN AND PROFILE STA 41+00 TO STA 45+00

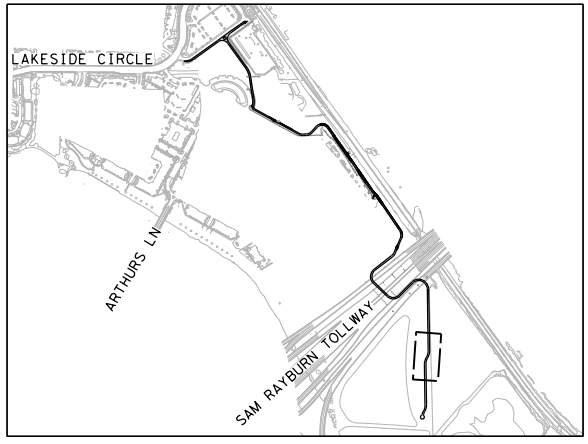
SCALE: AS NOTED SHEET 11 OF 14

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 41
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



NOTES:  
 1. REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.  
 2. UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



KEY MAP - N. T. S.

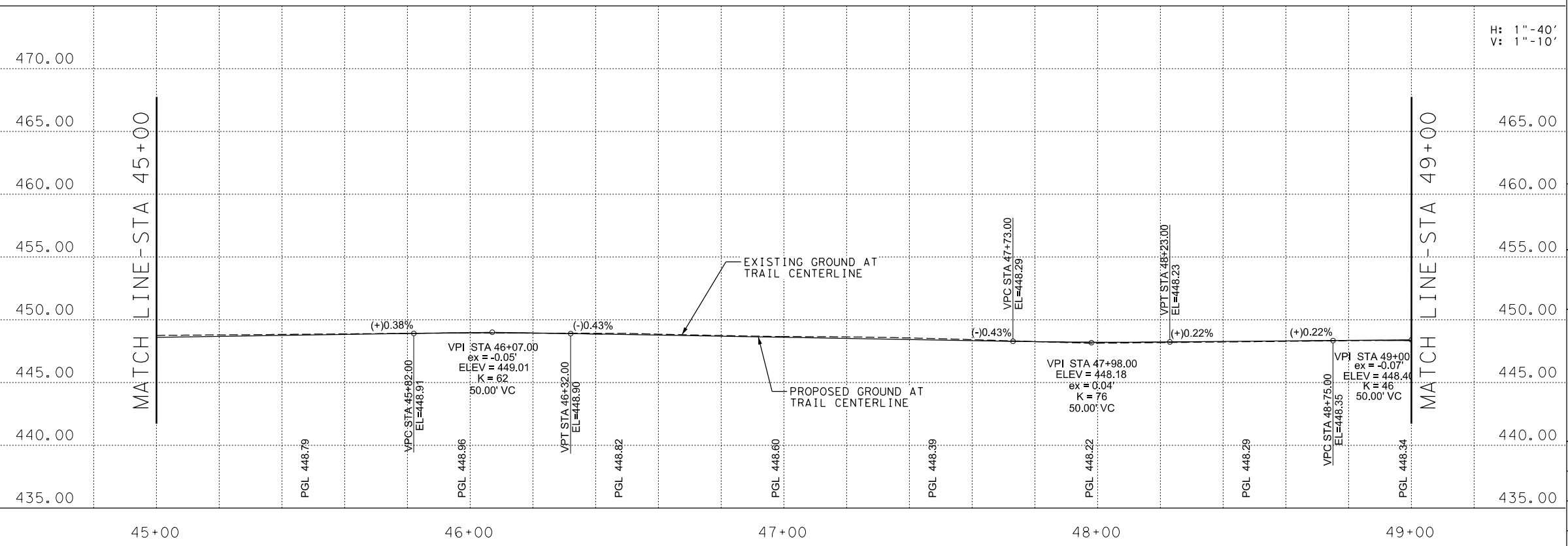
LEGEND

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL



SCALE: 1" = 40'

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	4
531-7003	CONC. SIDEWALKS (6")	SY	534

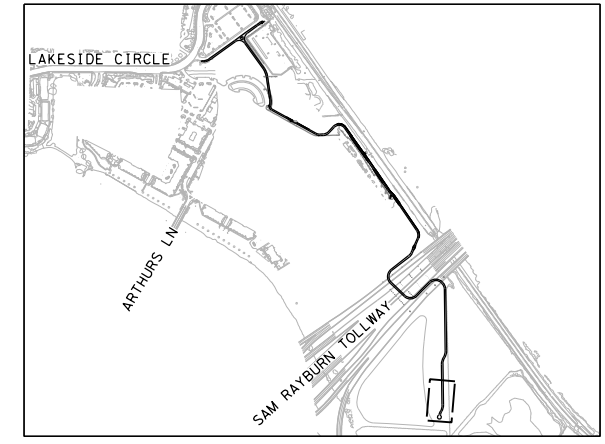
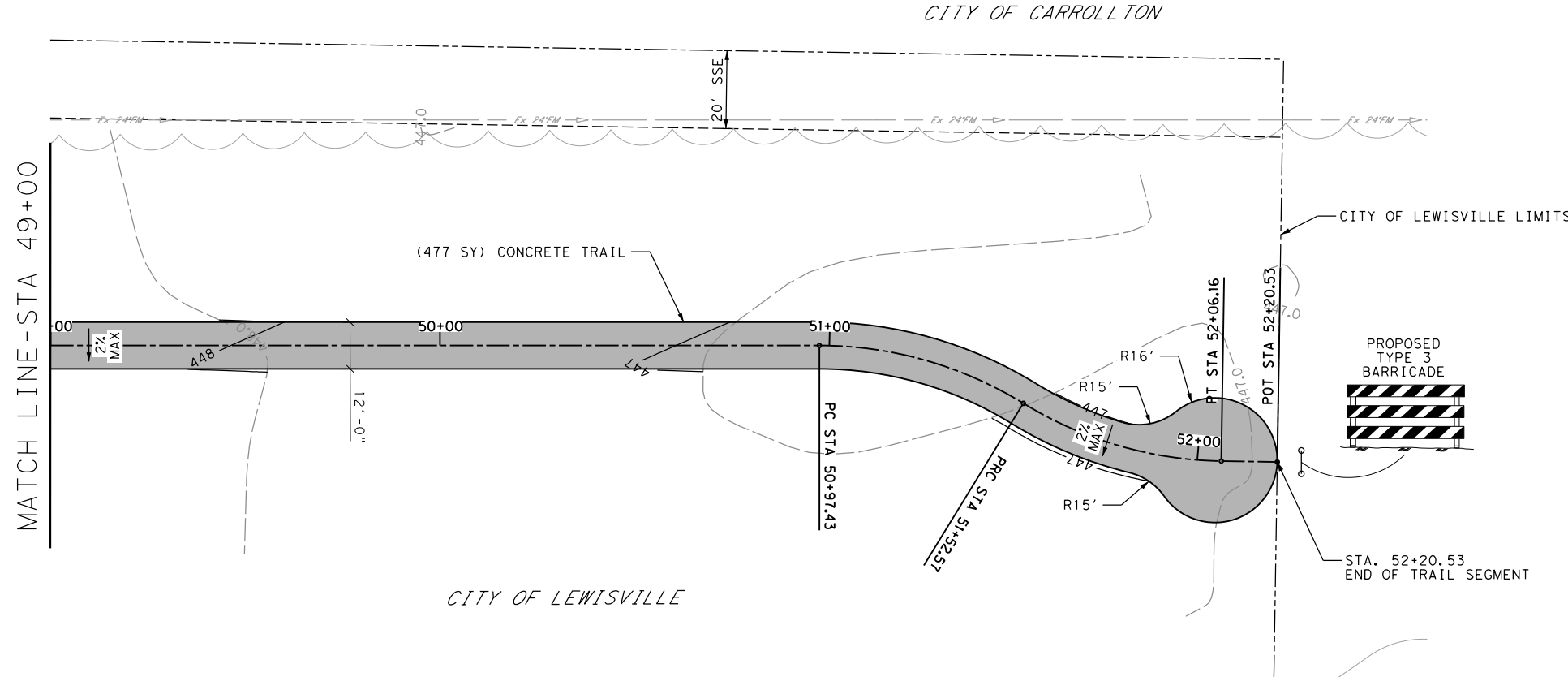


H: 1" = 40'  
V: 1" = 10'

DCTA TRAIL LEWISVILLE

DCTA TRAIL A LEWISVILLE PAVING PLAN AND PROFILE STA 45+00 TO STA 49+00

SCALE: AS NOTED	SHEET 12 OF 14		
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331

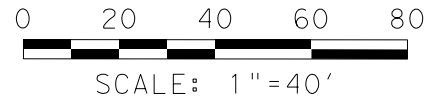


NOTES:  
 1. REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.  
 2. UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

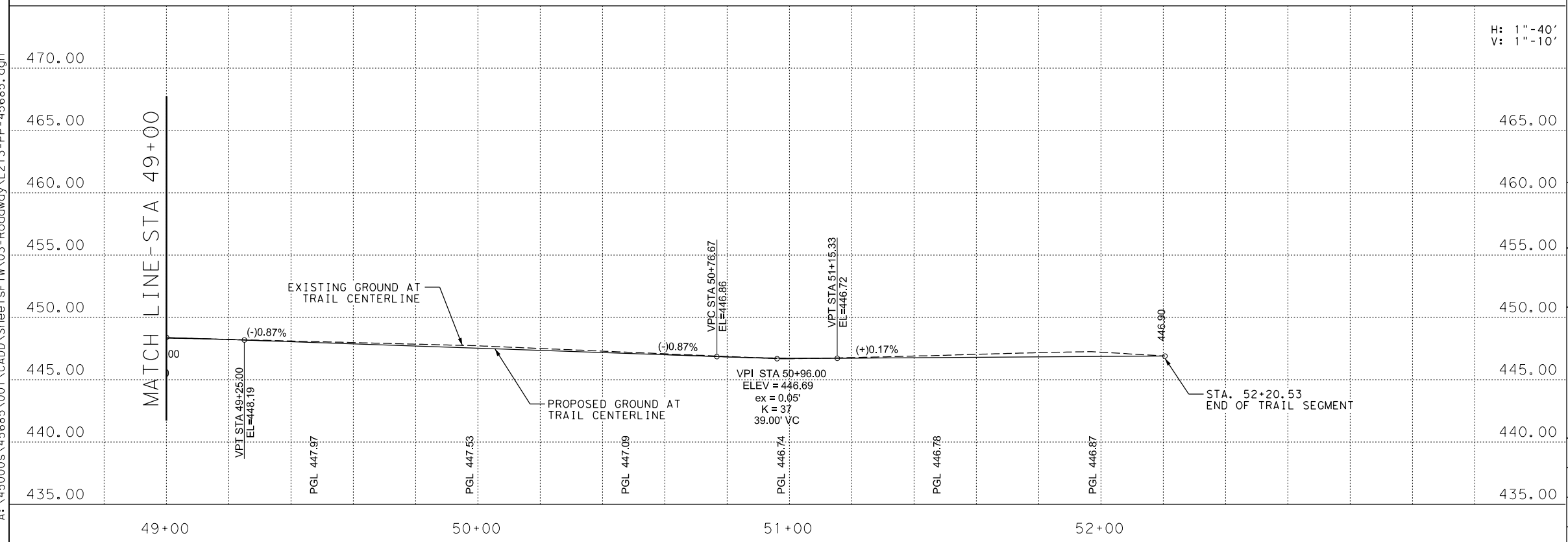
LEGEND

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



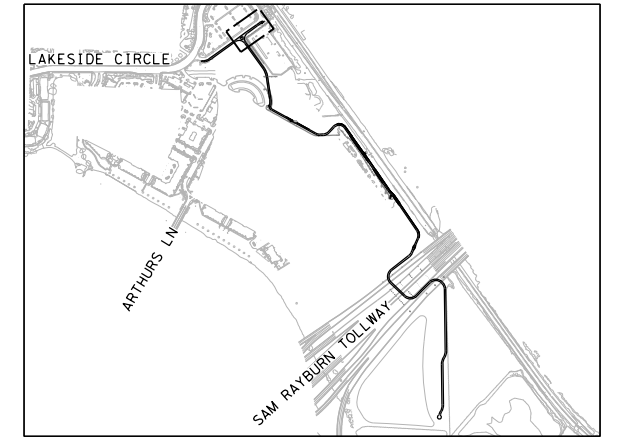
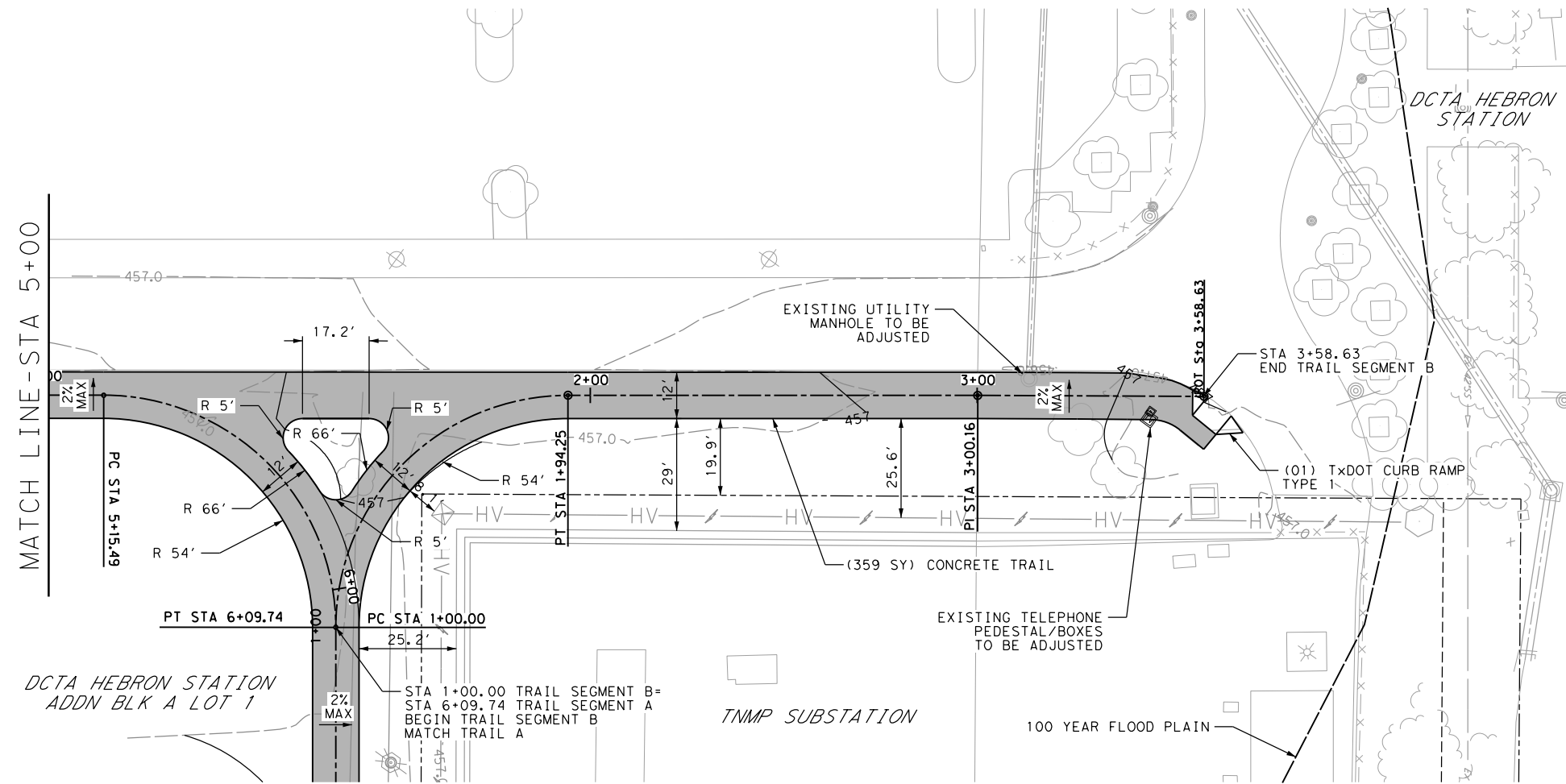
ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	3
531-7003	CONC. SIDEWALKS (6")	SY	477



DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 PAVING PLAN AND PROFILE  
 STA 49+00 TO END

SCALE: AS NOTED SHEET 13 OF 14

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 43
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



- NOTES:
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

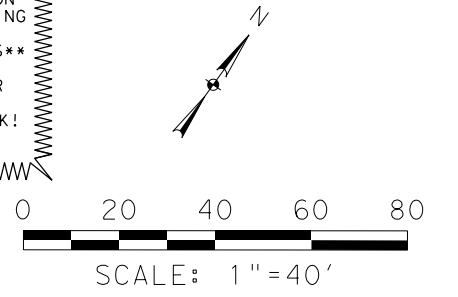
LEGEND

---	CENTERLINE
-457-	PROP. CONTOUR
-457-	EXIST. CONTOUR
■	PROP. CONC. TRAIL

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

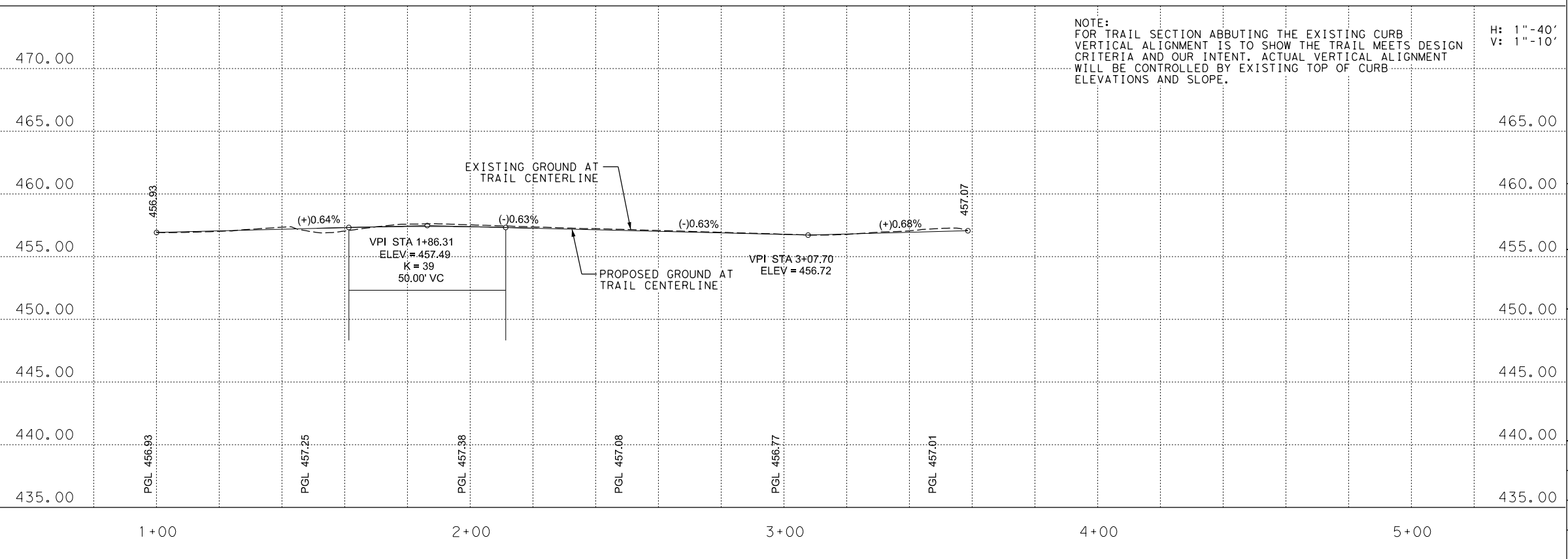
DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7002	PREPARING ROW (STA)	STA	3
531-7003	CONC. SIDEWALKS (6")	SY	359
531-7010	CURB RAMPS (TY 1)	EA	1

NOTE:  
 FOR TRAIL SECTION ABUTTING THE EXISTING CURB VERTICAL ALIGNMENT IS TO SHOW THE TRAIL MEETS DESIGN CRITERIA AND OUR INTENT. ACTUAL VERTICAL ALIGNMENT WILL BE CONTROLLED BY EXISTING TOP OF CURB ELEVATIONS AND SLOPE.

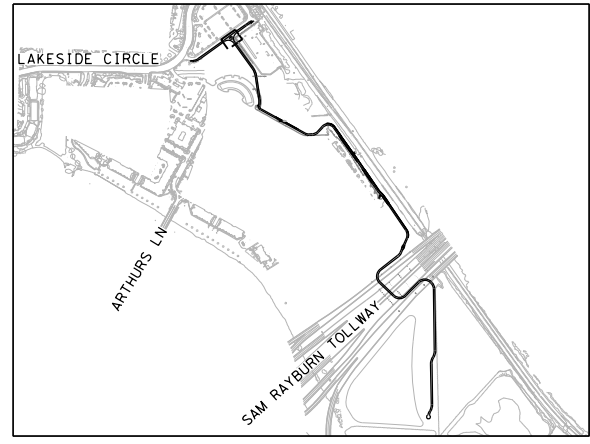
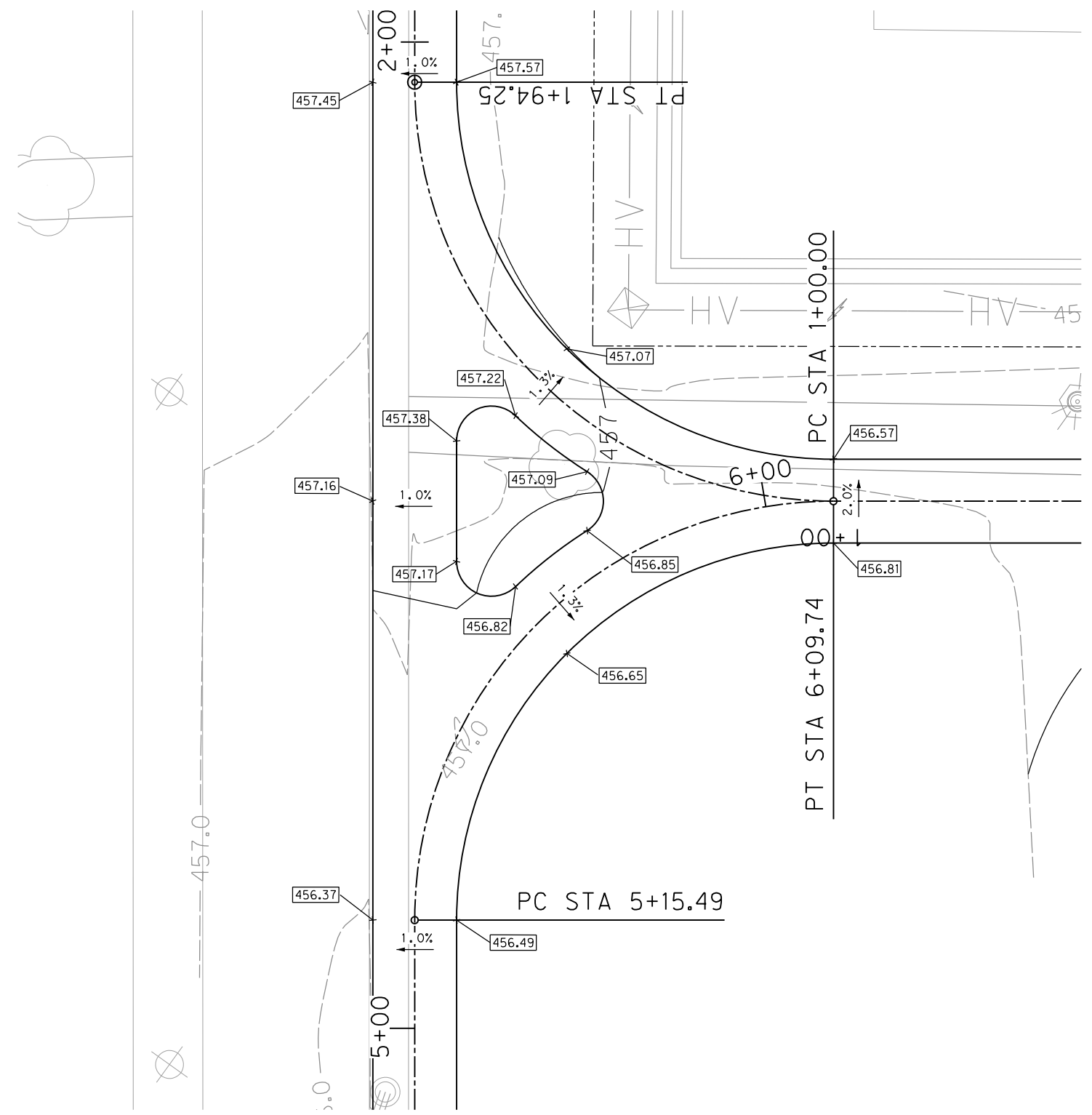
H: 1" = 40'  
 V: 1" = 10'



DCTA TRAIL LEWISVILLE  
 DCTA TRAIL B LEWISVILLE  
 PAVING PLAN AND PROFILE  
 BEGIN TO STA 3+58.63

SCALE: AS NOTED SHEET 14 OF 14

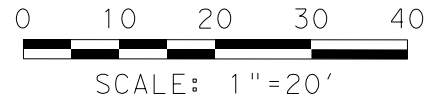
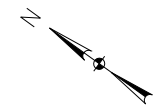
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 44
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



KEY MAP - N. T. S.

- NOTES:
1. REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  2. UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

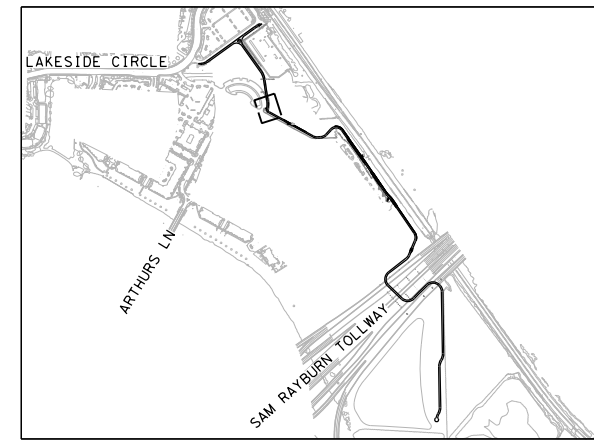
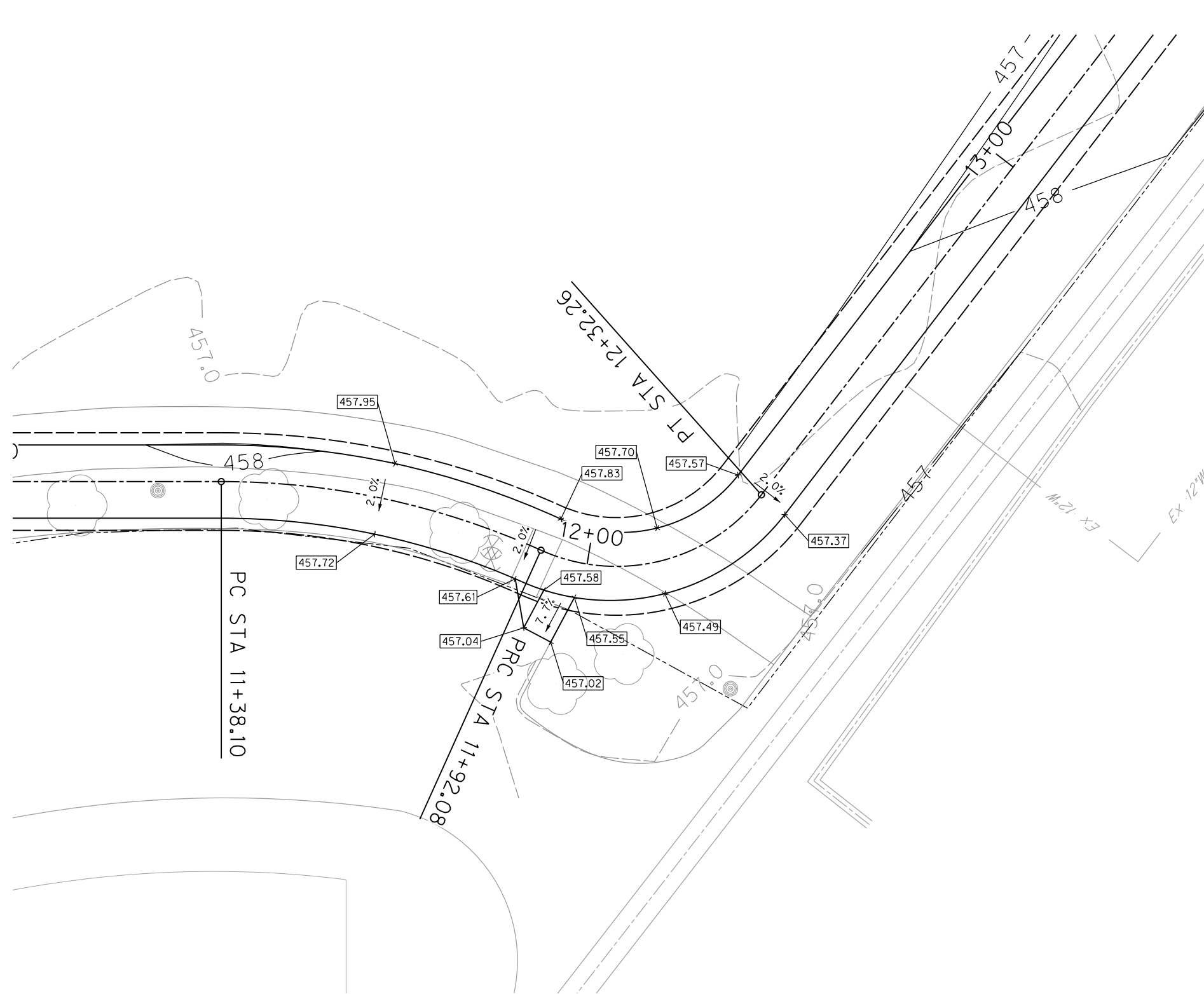


**halff** 2801 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

Texas Department of Transportation  
 © 2024

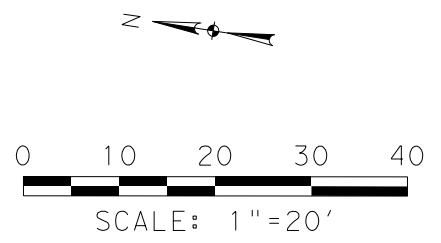
DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 ENLARGEMENT GRADING PLAN  
 SHEET 1 OF 2

SCALE: AS NOTED		SHEET 01 OF 02	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION 46	JOB 331
CHECK XX	0918	46	331
			HIGHWAY NO. VA
			SHEET NO. 45



- NOTES:
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



**halff** 2801 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

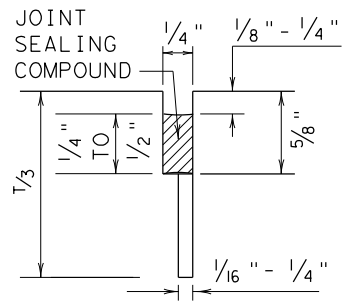
Texas Department of Transportation  
 © 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 ENLARGEMENT GRADING PLAN  
 SHEET 2 OF 2

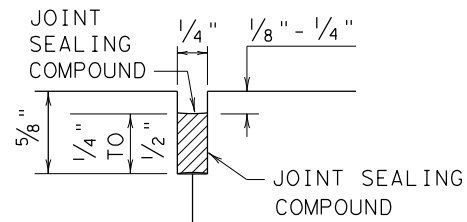
SCALE: AS NOTED		SHEET 02 OF 02	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION 46	JOB 331
CHECK XX	0918	46	331
			46

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

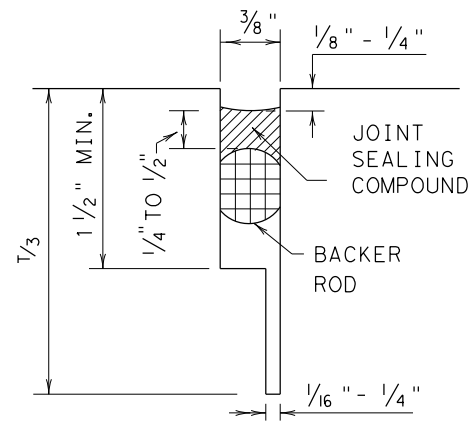
### METHOD B: JOINT SEALING COMPOUND



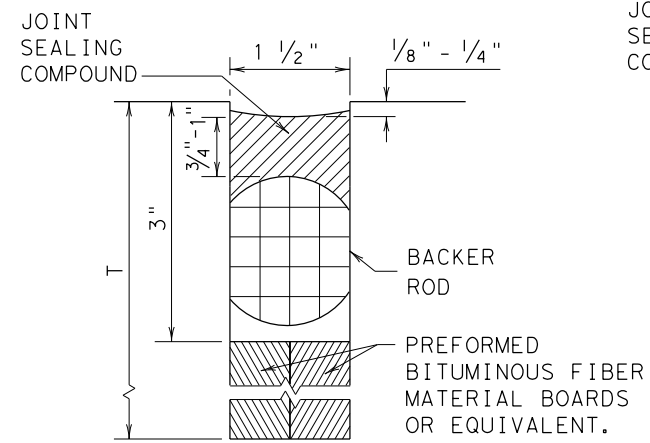
LONGITUDINAL SAWED CONTRACTION JOINT



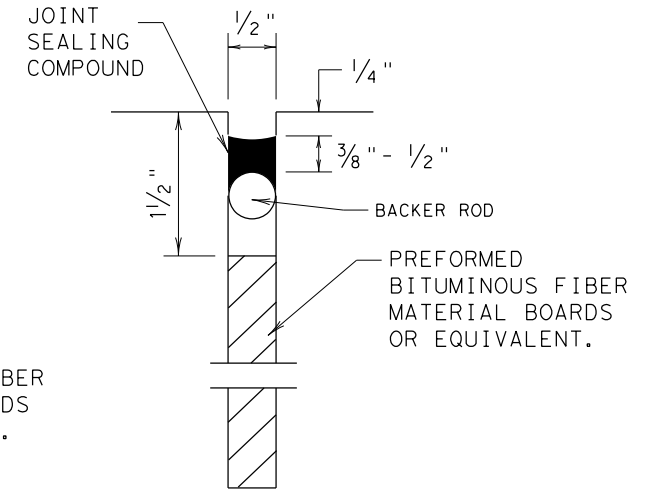
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

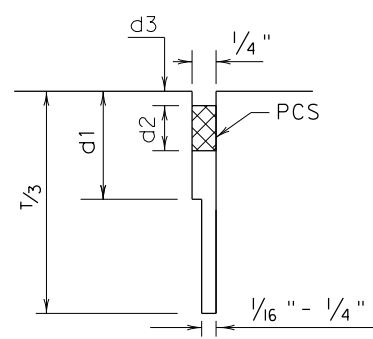


TRANSVERSE FORMED EXPANSION JOINT

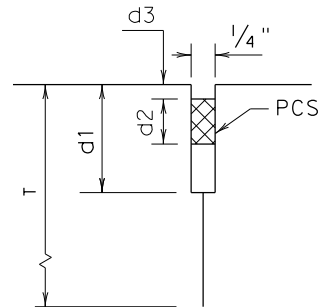


FORMED ISOLATION JOINT

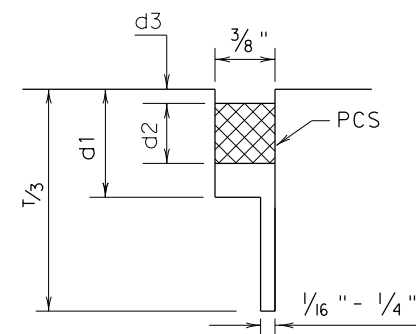
### METHOD A: PREFORMED COMPRESSION SEALS (PCS) (DMS-6310 CLASS 6)



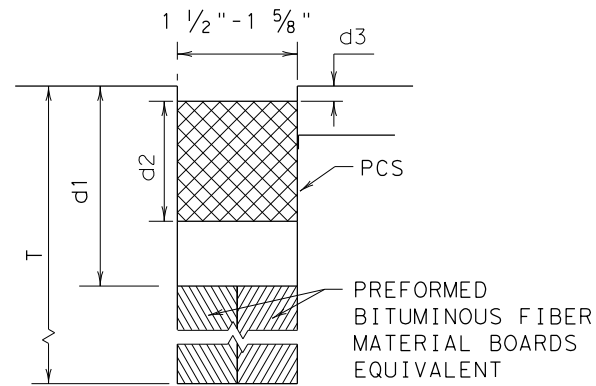
LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



TRANSVERSE FORMED EXPANSION JOINT

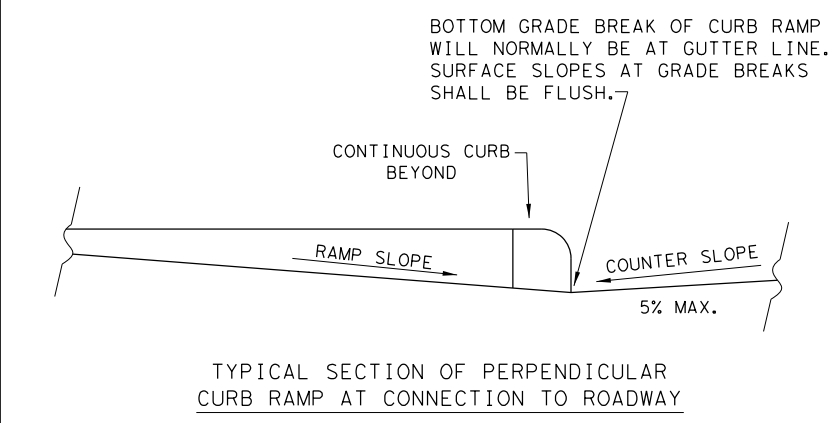
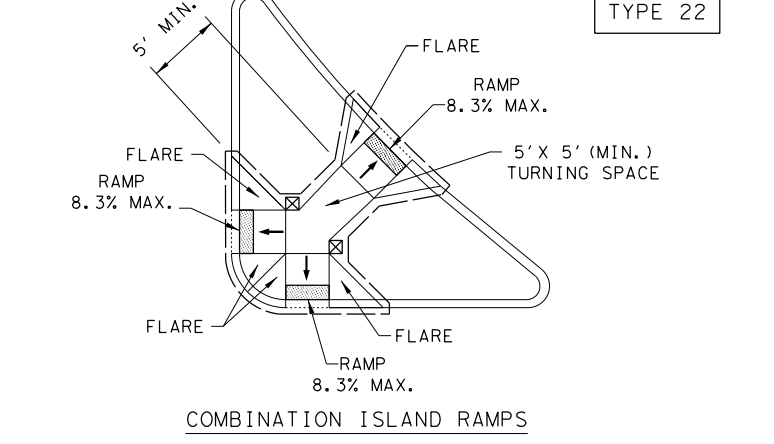
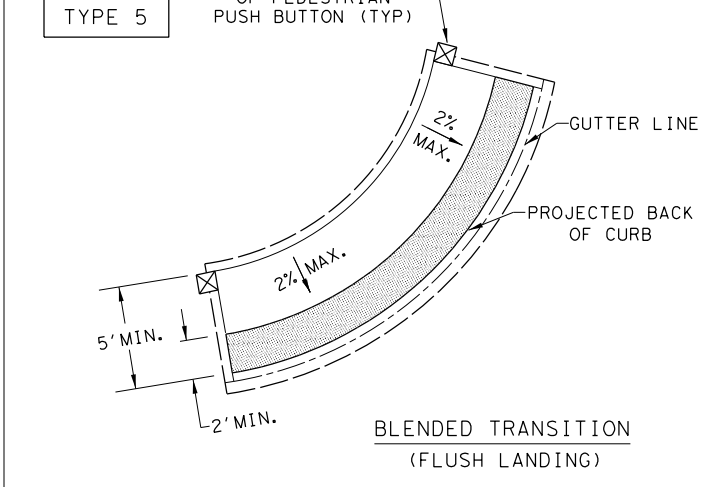
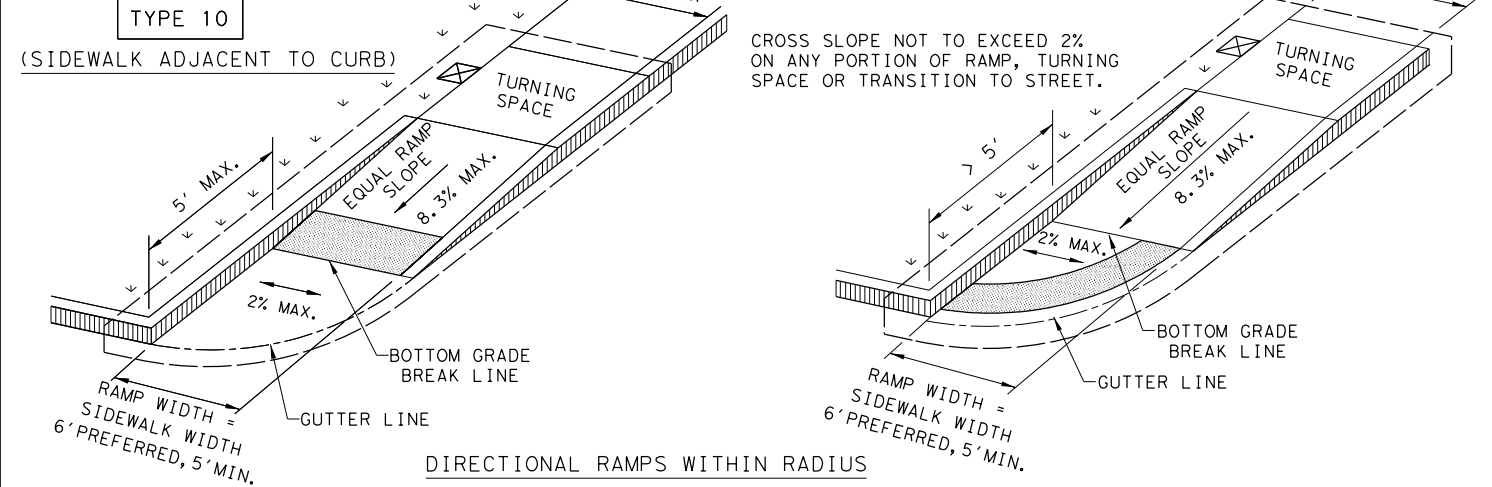
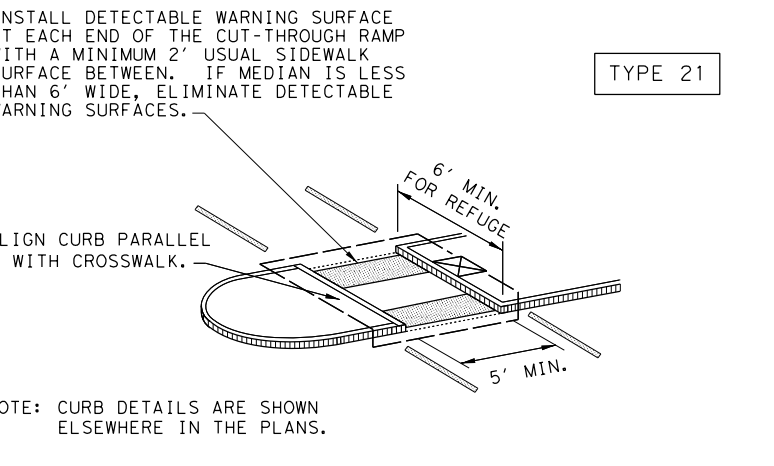
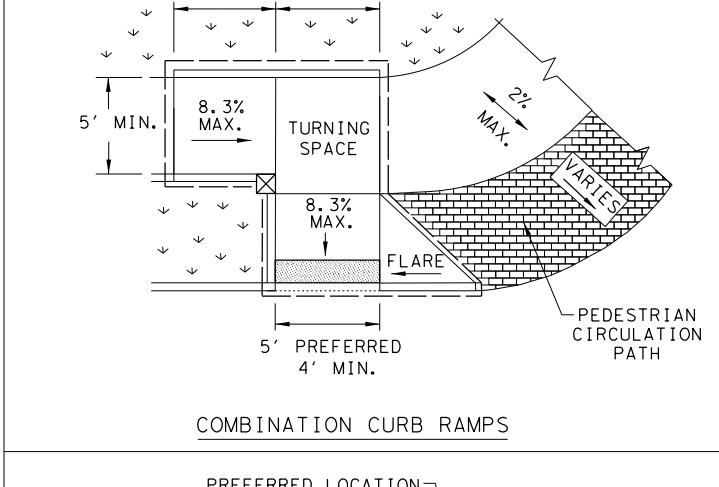
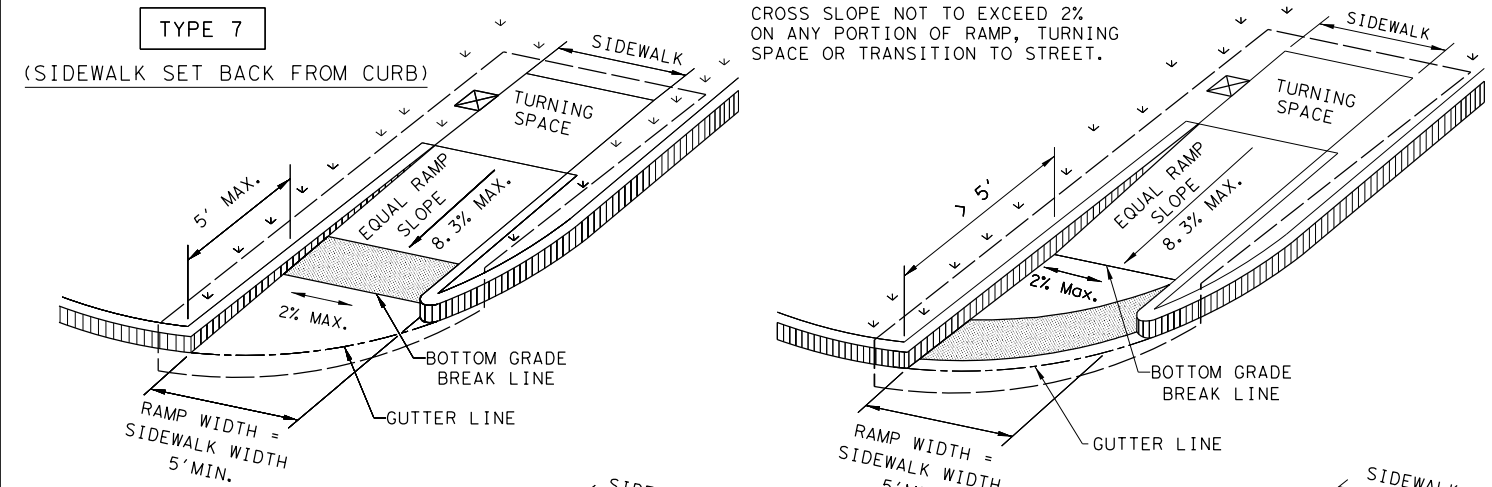
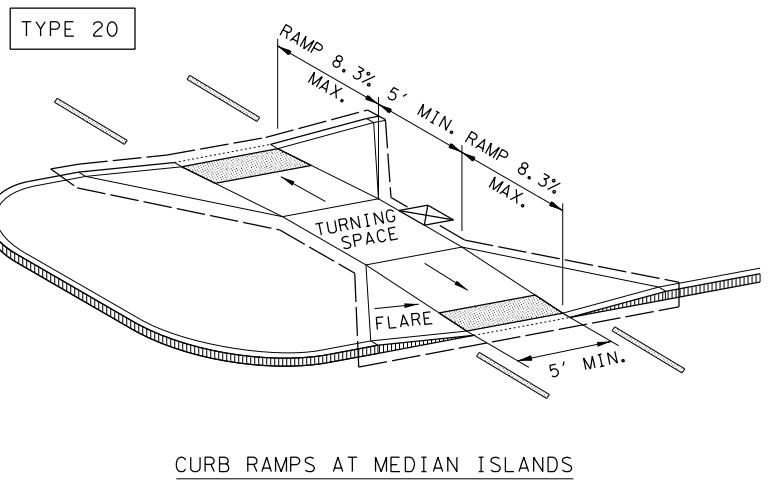
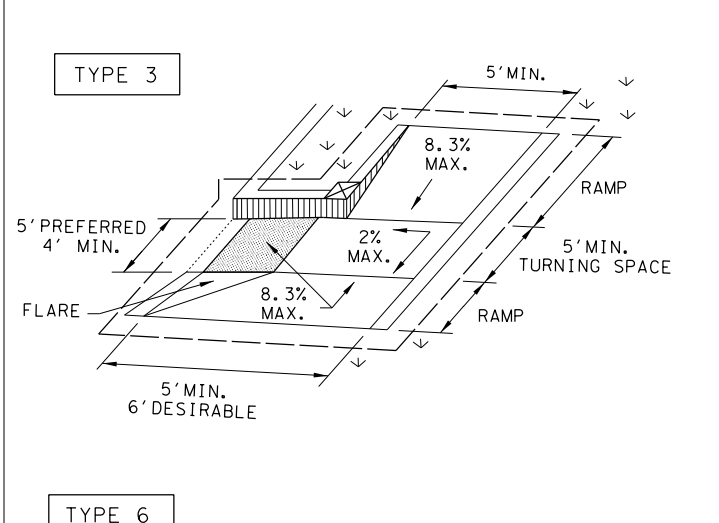
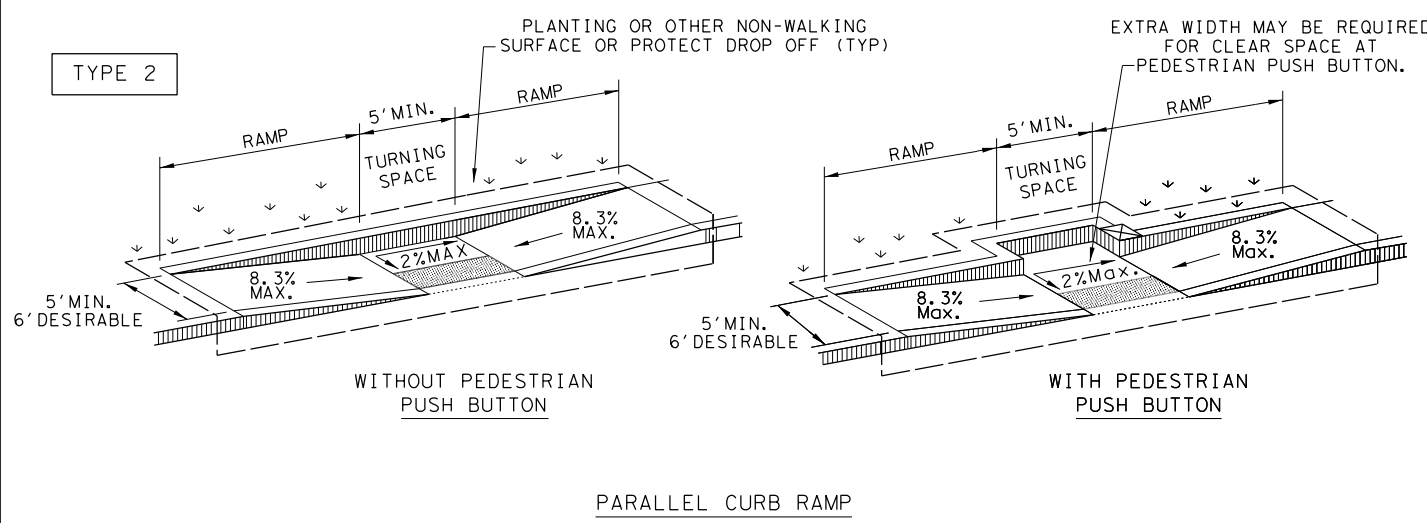
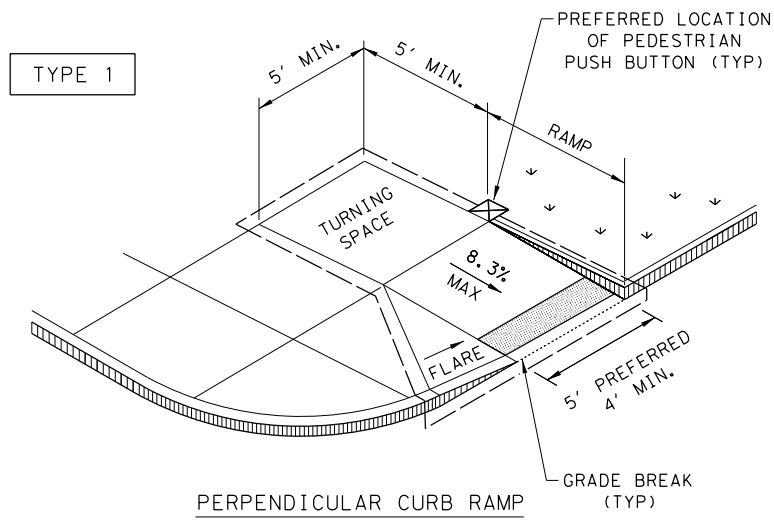
### GENERAL NOTES

- UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
- THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
- THE JOINT RESERVOIR FOR SEALANT OR PCS SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINTS AND THE SAWED JOINTS.
- DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
- REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
- FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
- FOR TRANSVERSE SAWED CONTRACTION, TRANSVERSE FORMED EXPANSION JOINT, AND ISOLATION JOINT USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4, 5, 7, OR 8 FOR MAINTAINING EXISTING JOINTS.
- THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 "CLEANING AND SEALING JOINTS" OR ITEM 713 "CLEANING AND SEALING JOINTS AND CRACKS (CONCRETE PAVEMENT)".
- ISOLATION JOINTS ACCOMMODATE HORIZONTAL AND VERTICAL MOVEMENTS THAT OCCUR BETWEEN A PAVEMENT AND A STRUCTURE. ISOLATION JOINTS MAY BE USED FOR BRIDGE ABUTMENTS, INTERSECTIONS, CURB AND GUTTER, OLD AND NEW PAVEMENTS, OR AROUND DRAINAGE INLETS, MANHOLES, FOOTINGS AND LIGHTING STRUCTURES.

DATE:  
FILE:

				<b>Design Division Standard</b>	
CONCRETE PAVING DETAILS JOINT SEALS JS-14					
FILE: js14.dgn	DN: TxDOT	DN: HC	DN: HC	CK: AN	
© TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0918	46	331	VA	
	DIST	COUNTY	SHEET NO.		
	DAL	DENTON	47		

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



**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.

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

DETECTABLE WARNING SURFACE

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	DW: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
REVISED 08, 2009	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	DAL	DENTON	48	
REVISED 01, 2018				

DATE:  
FILE:

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

**GENERAL NOTES**

**CURB RAMP**

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**

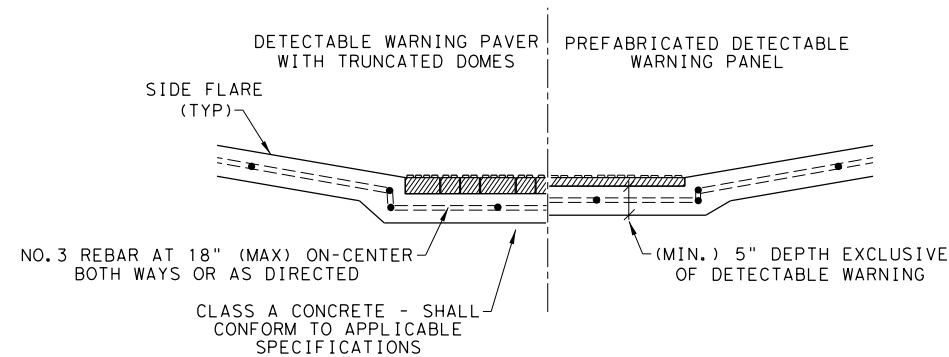
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

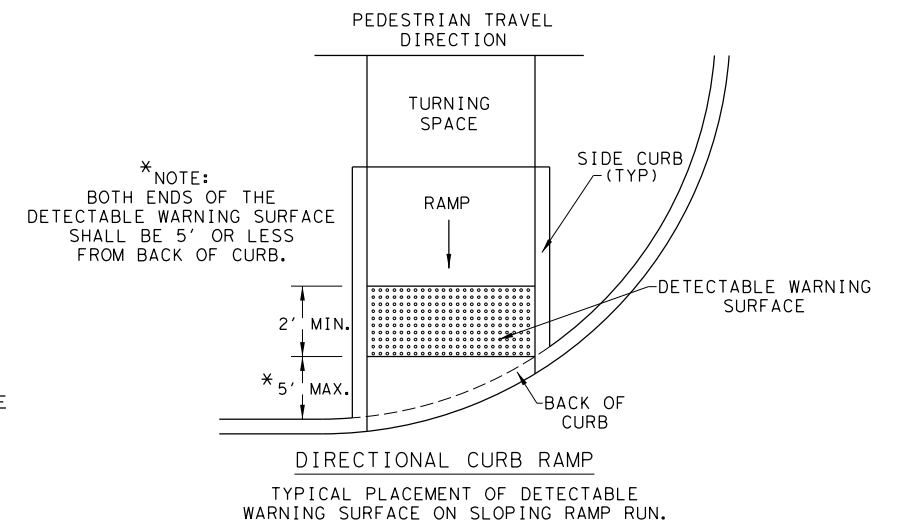
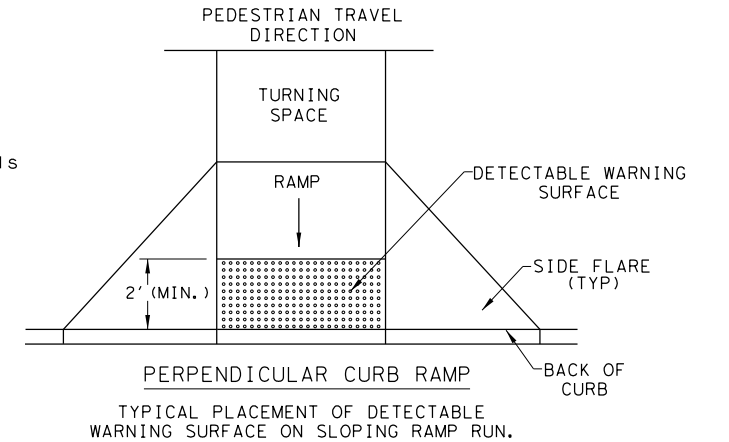
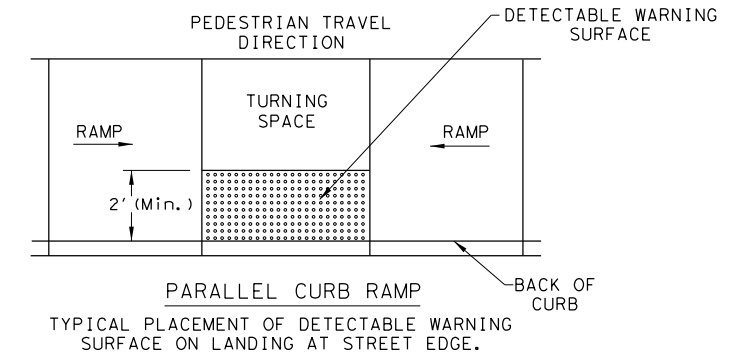
**SIDEWALKS**

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**



SHEET 2 OF 4



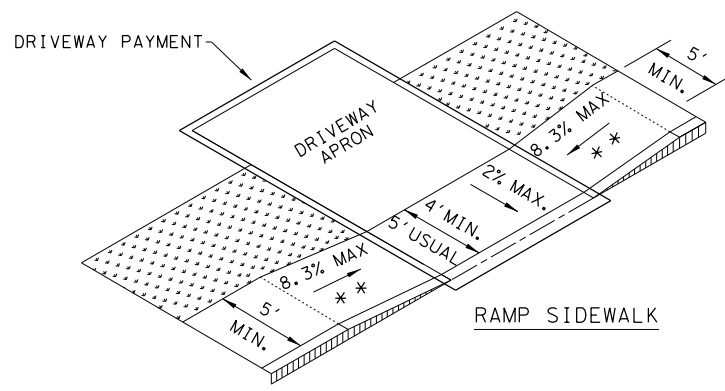
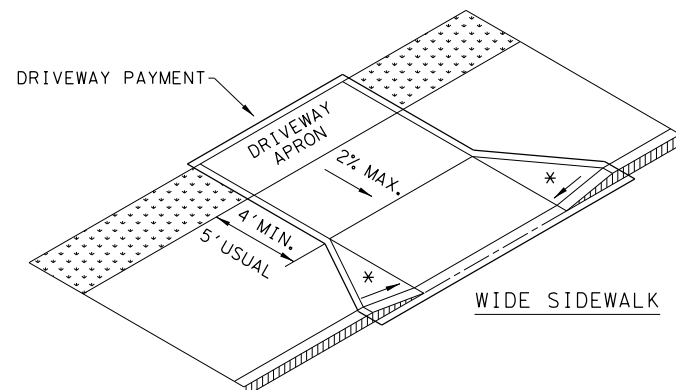
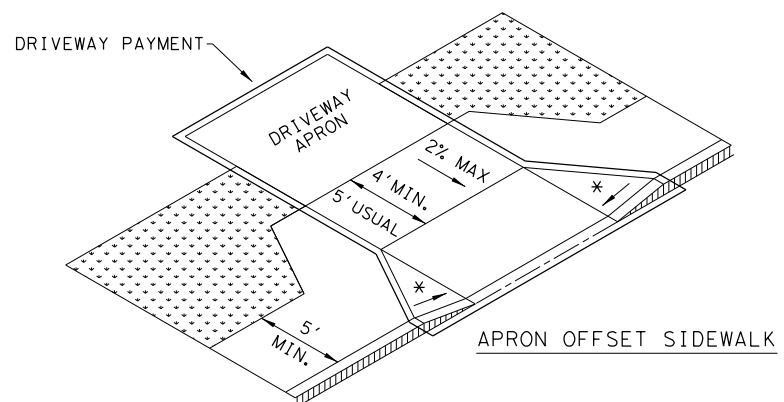
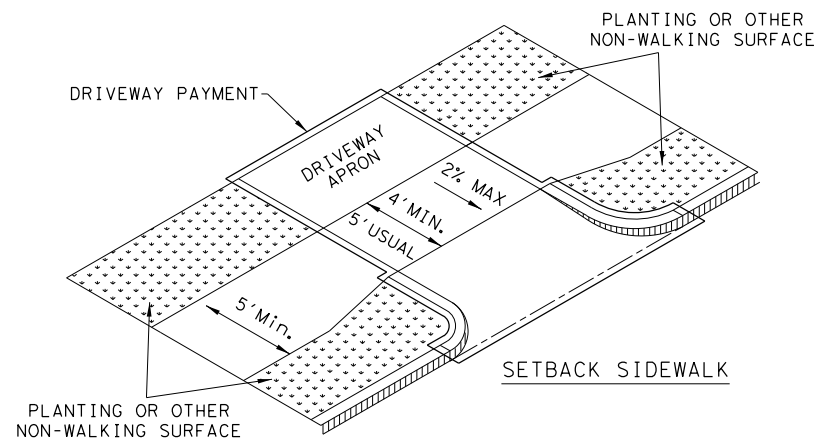
PEDESTRIAN FACILITIES  
CURB RAMPS  
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
REVISED 08, 2005	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	DAL	DENTON	49	
REVISED 01, 2018				

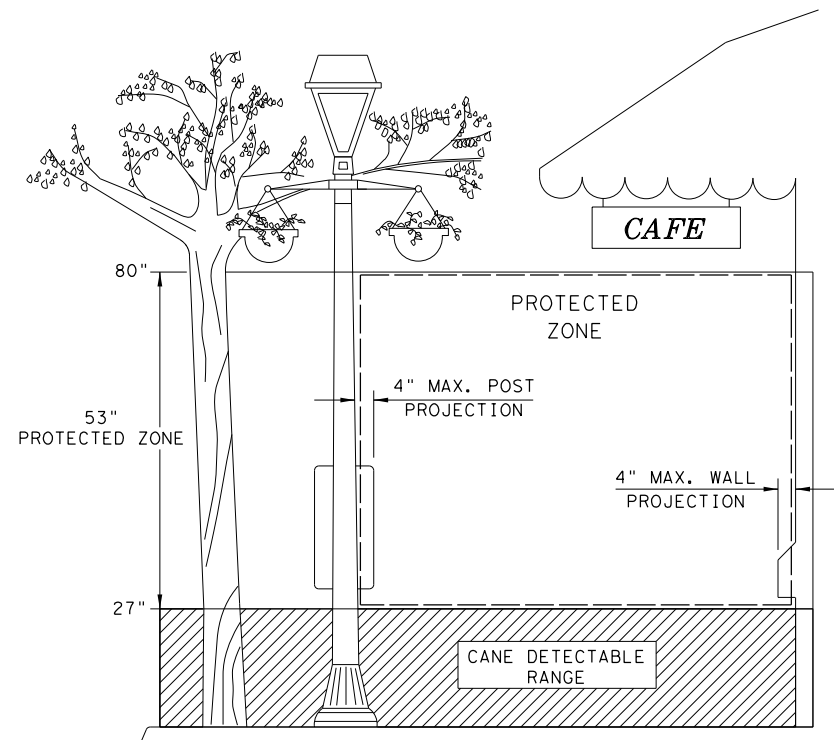
DATE:  
FILE:

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

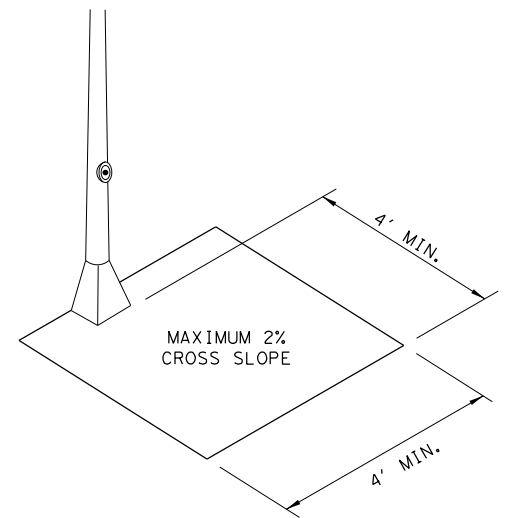
SIDEWALK TREATMENT AT DRIVEWAYS



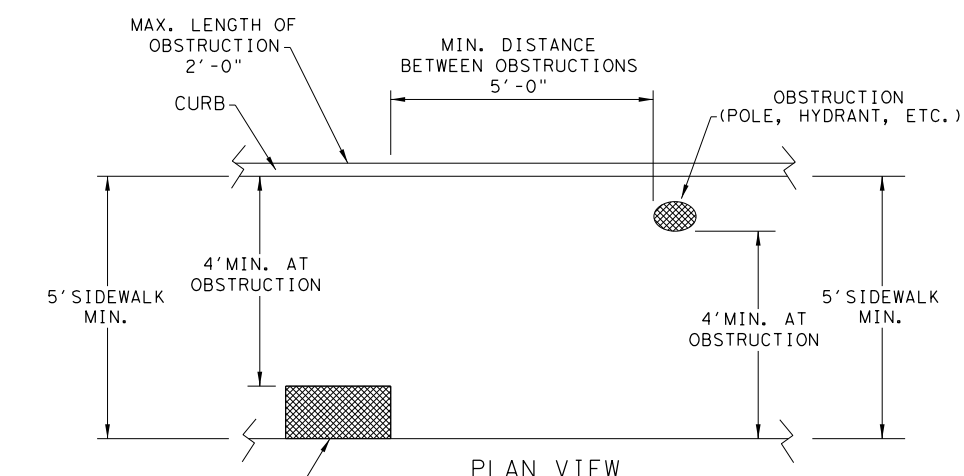
NOTES:  
 \* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.  
 \* \* IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.



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

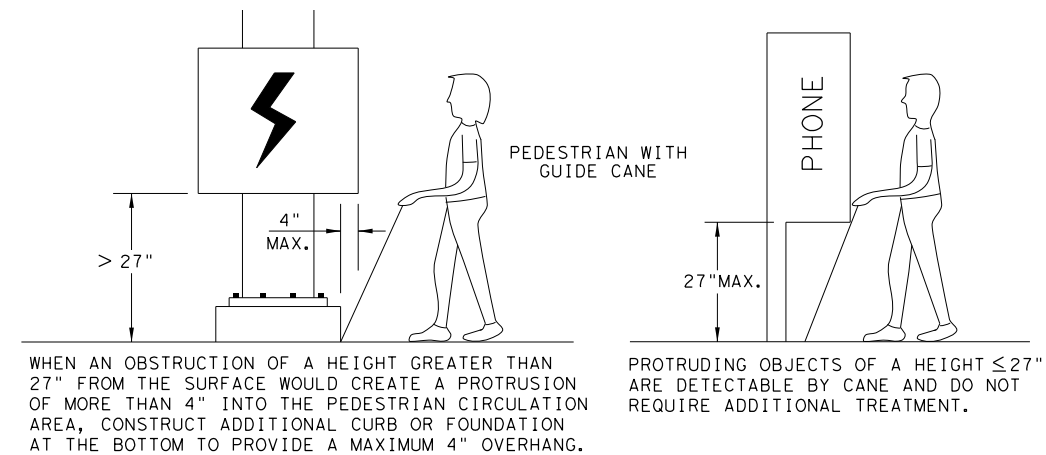


CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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.



DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

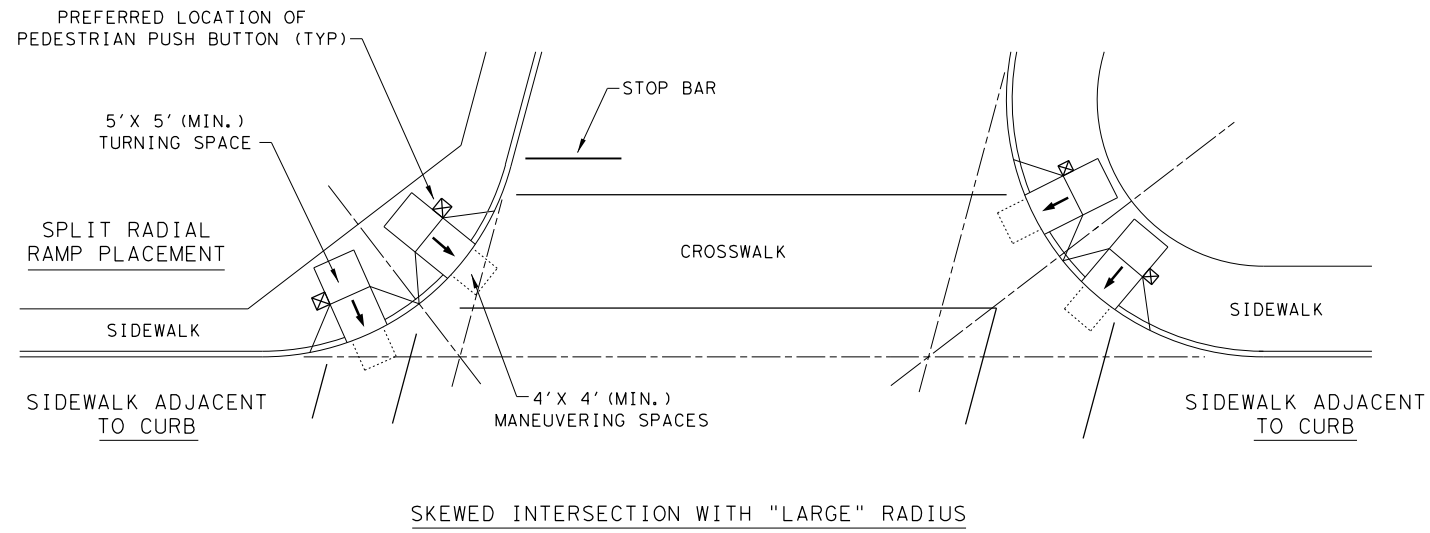
PEDESTRIAN FACILITIES  
 CURB RAMPS  
 PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
REVISED 08, 2005	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	DAL	DENTON	50	
REVISED 01, 2018				

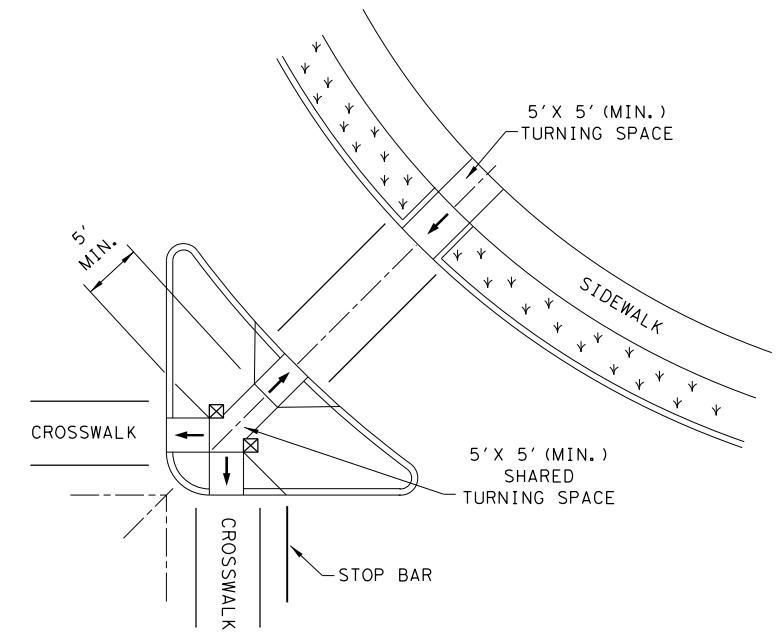
DATE:  
 FILE:

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

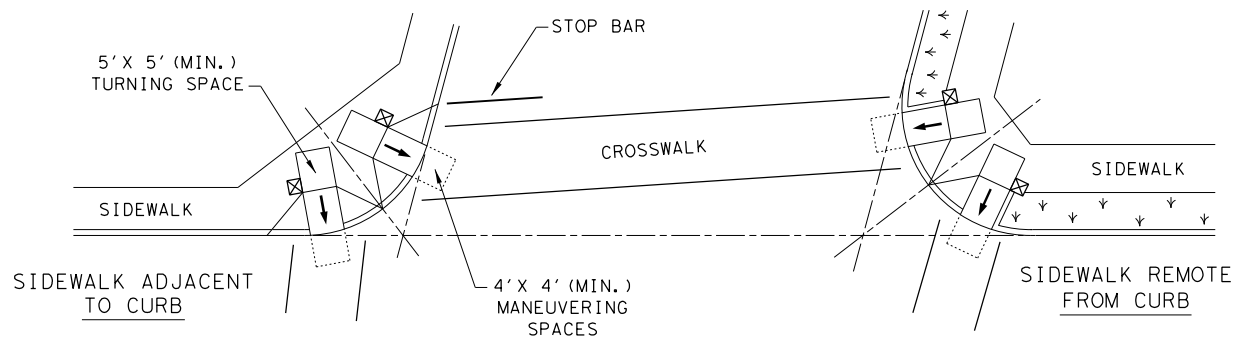
TYPICAL CROSSING LAYOUTS  
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



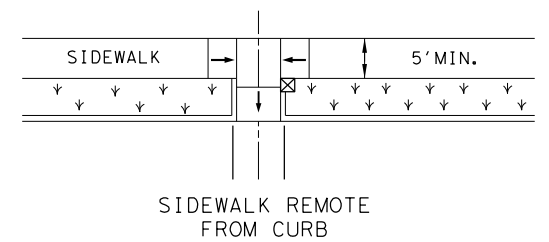
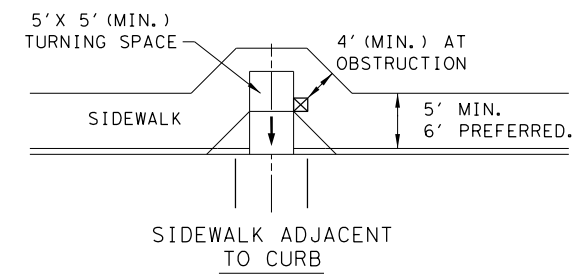
SKewed INTERSECTION WITH "LARGE" RADIUS



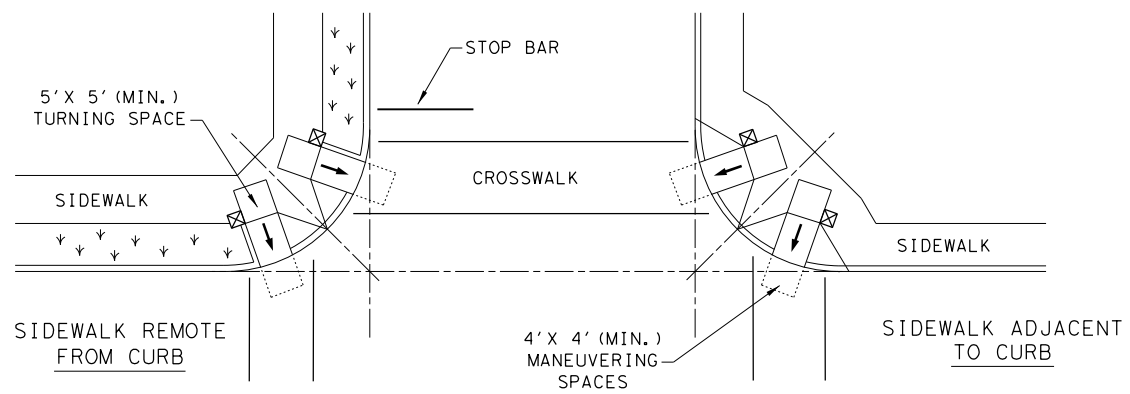
AT INTERSECTION  
W/FREE RIGHT TURN & ISLAND



SKewed INTERSECTION WITH "SMALL" RADIUS



MID-BLOCK PLACEMENT  
PERPENDICULAR RAMPS



NORMAL INTERSECTION WITH "SMALL" RADIUS

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. ↙ ↘ ↙ ↘ ↙ ↘

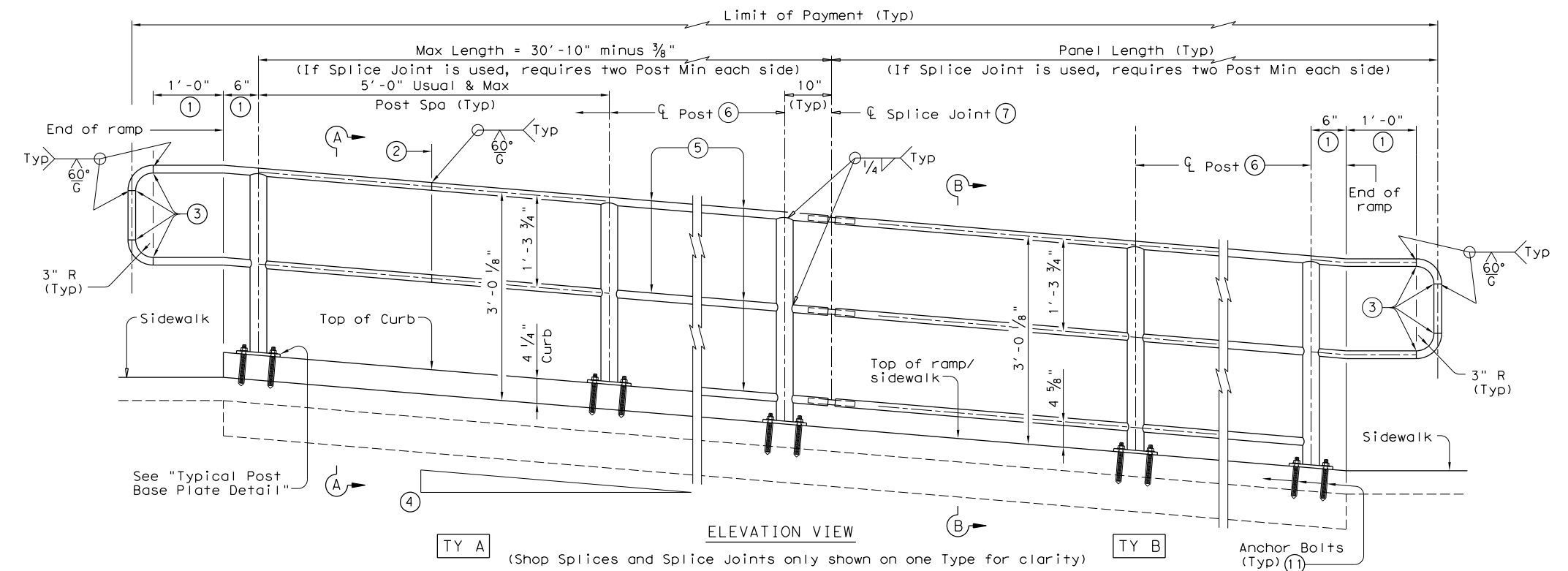


PEDESTRIAN FACILITIES  
CURB RAMPS  
PED-18

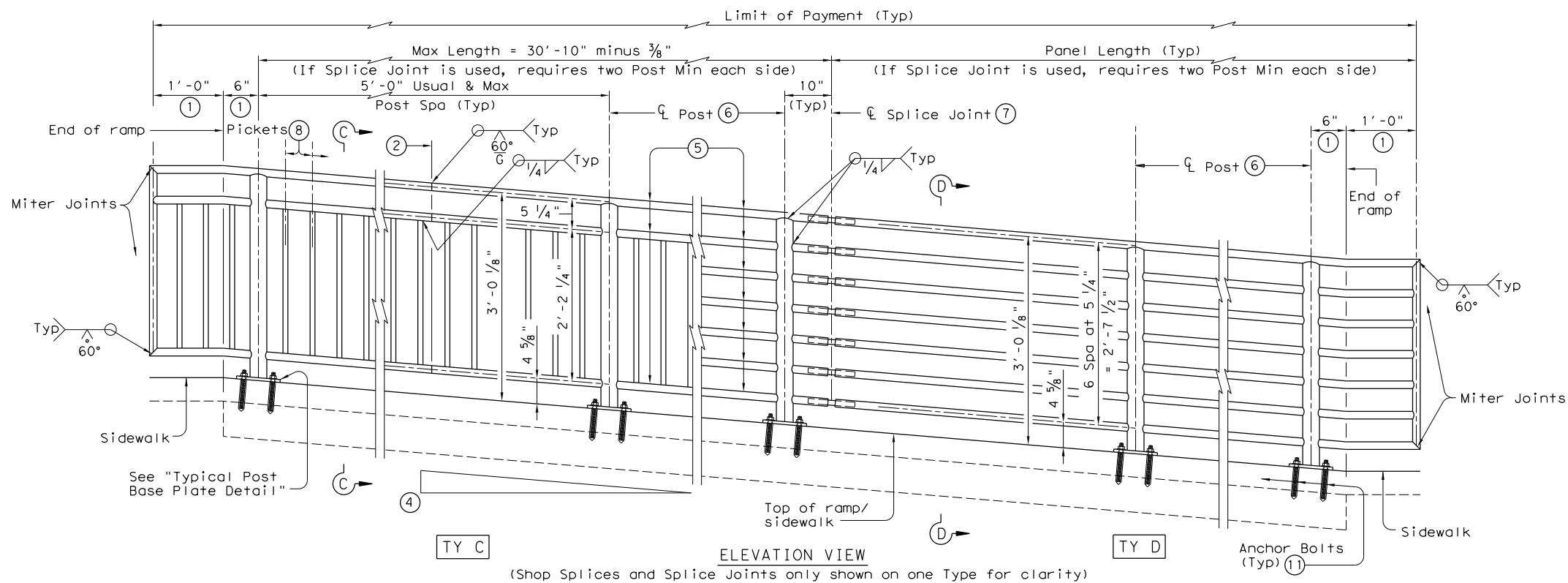
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
REVISED 08, 2005	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	DAL	DENTON	51	
REVISED 01, 2018				

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

DATE:  
FILE:

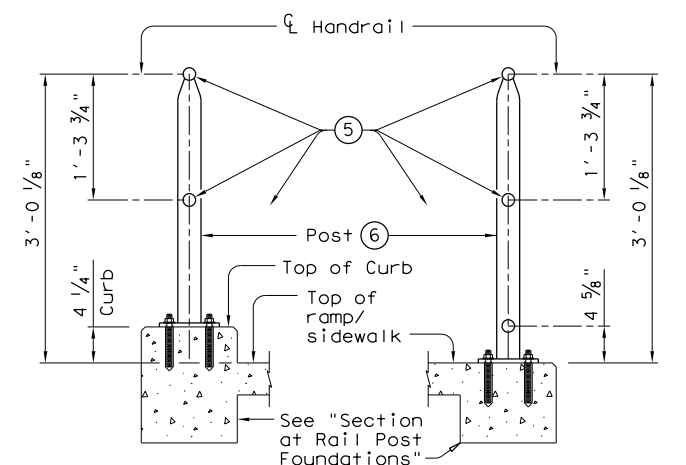


TY A (Shop Splices and Splice Joints only shown on one Type for clarity)

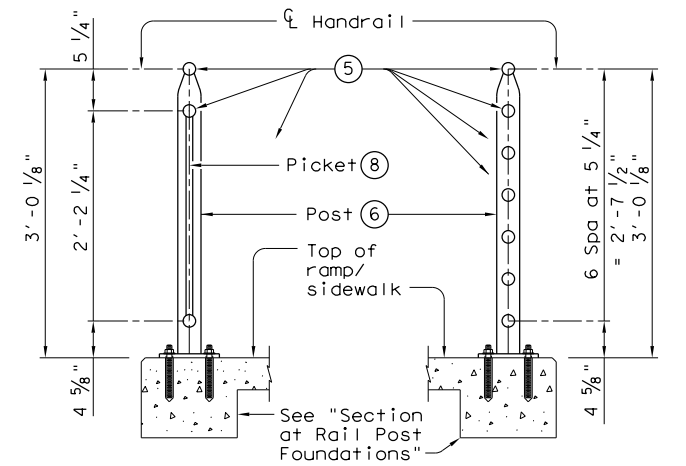


TY C (Shop Splices and Splice Joints only shown on one Type for clarity)

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)

SHEET 1 OF 3

- 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 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.

- ⑥ 2 1/2" 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 5/8" Dia. Round Bar equal spacing at 4 1/2" 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.

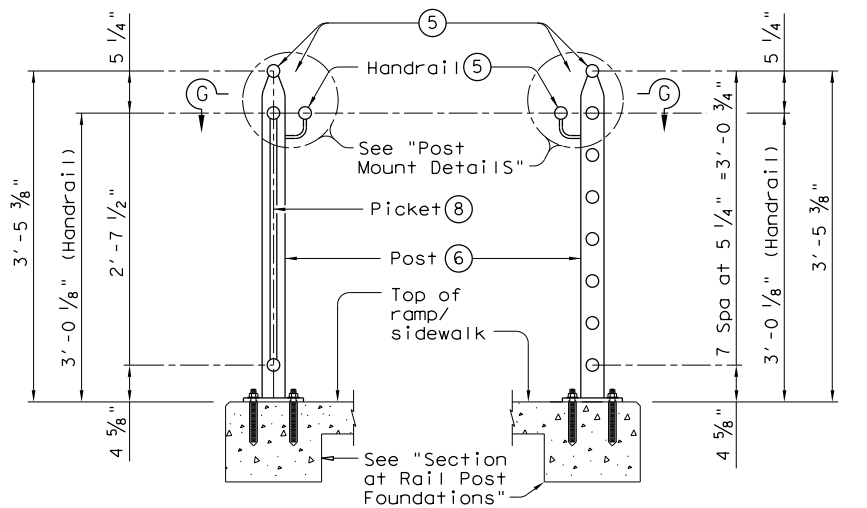
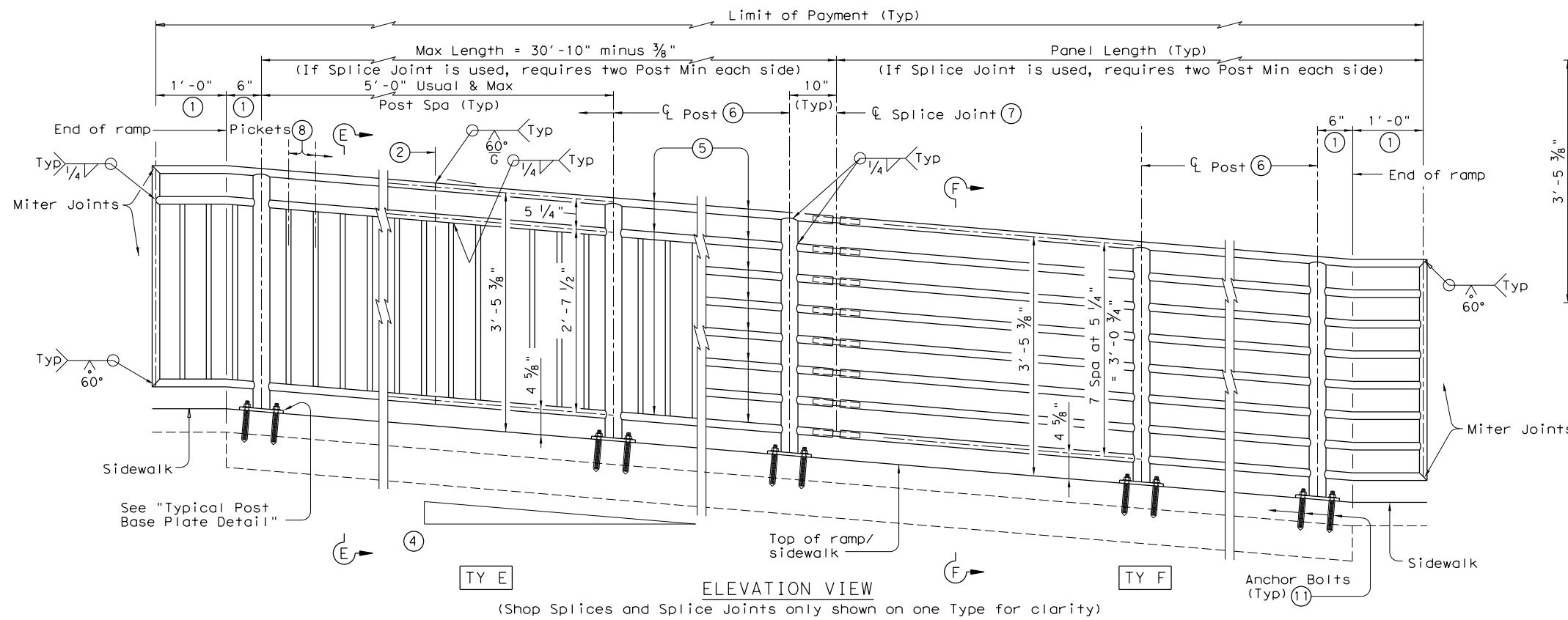
**Texas Department of Transportation** Design Division Standard

## PEDESTRIAN HANDRAIL DETAILS

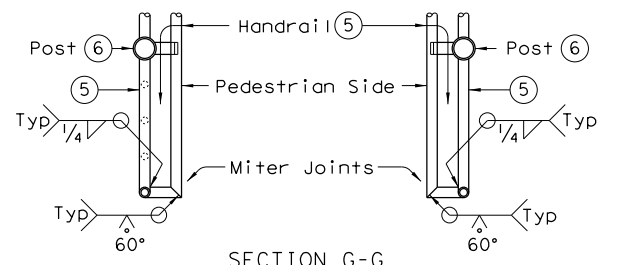
### PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
© TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.	
	DAL	DENTON	52	

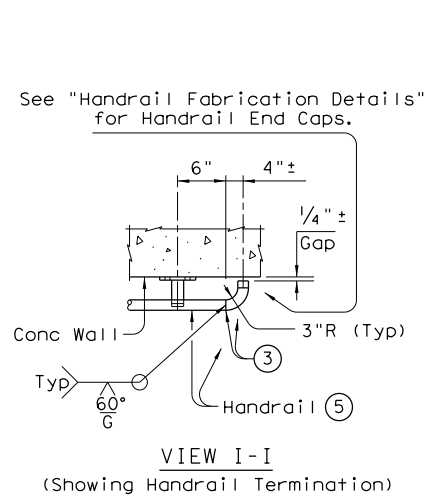
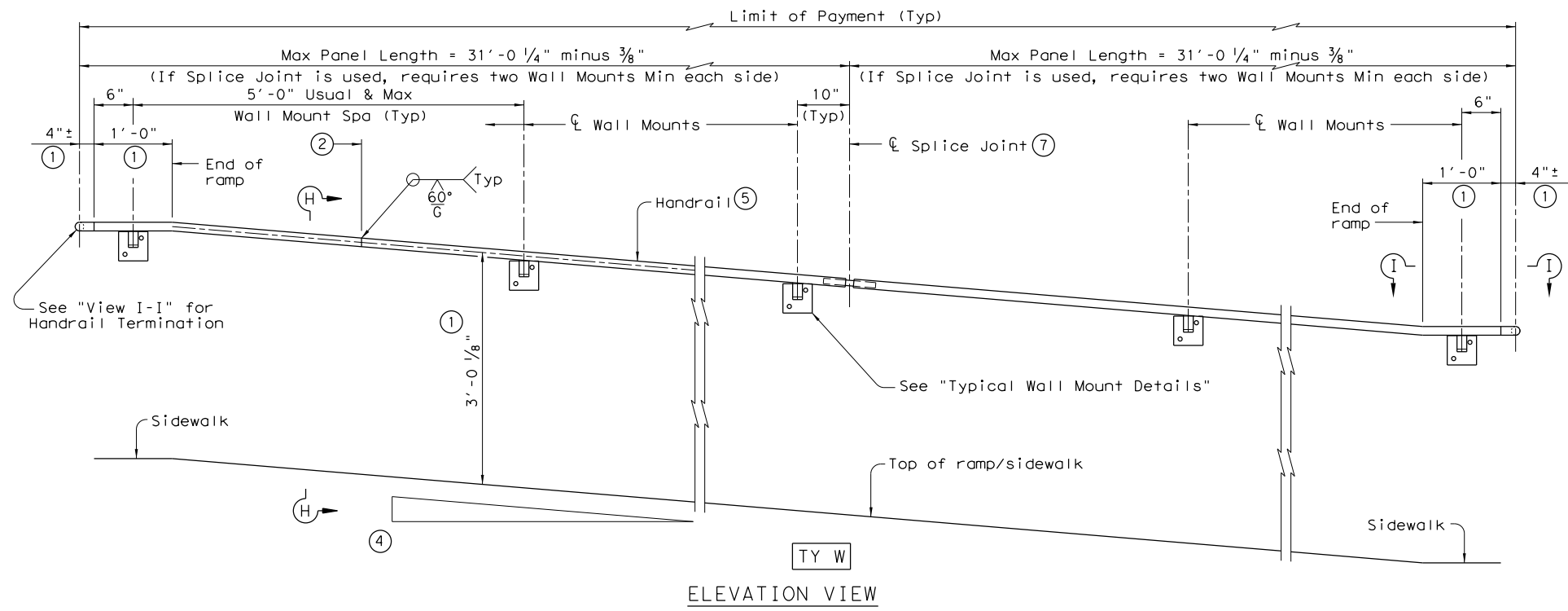
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



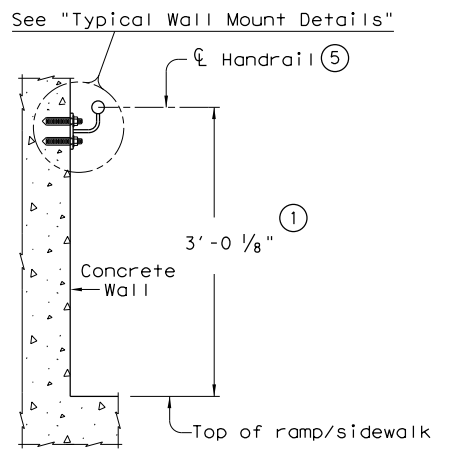
SECTION E-E (Showing Handrail TY E) SECTION F-F (Showing Handrail TY F)



SECTION G-G (Showing Handrail Termination)



VIEW I-I (Showing Handrail Termination)



SECTION H-H (Showing Handrail TY W)

SHEET 2 OF 3

- 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 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
- ⑥ 2 1/2" 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 5/8" Dia. Round Bar equal spacing at 4 1/2" Max. Plumb all pickets.
- ⑪ See "General Notes" for anchor bolt information.

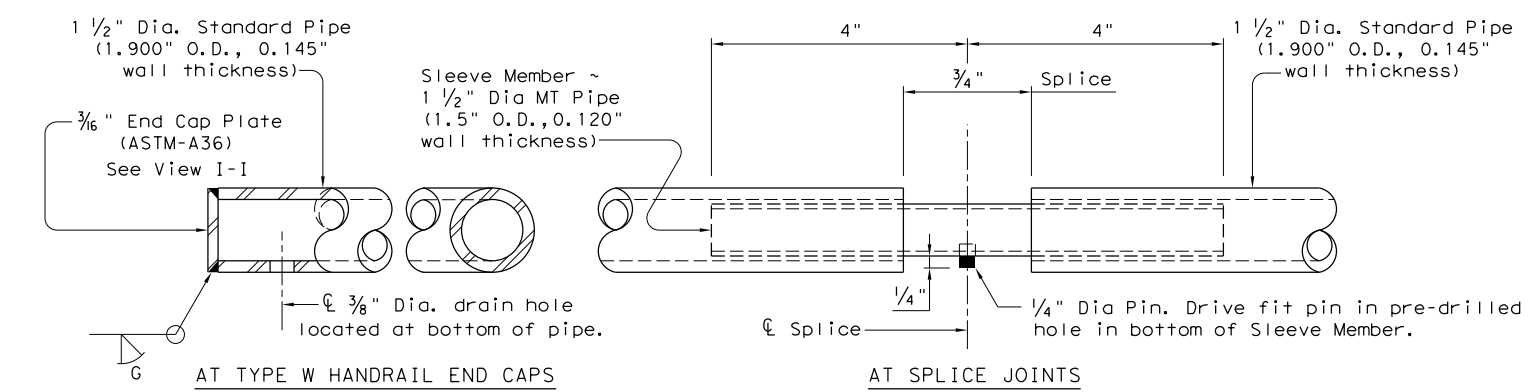


PEDESTRIAN HANDRAIL  
DETAILS  
PRD-13

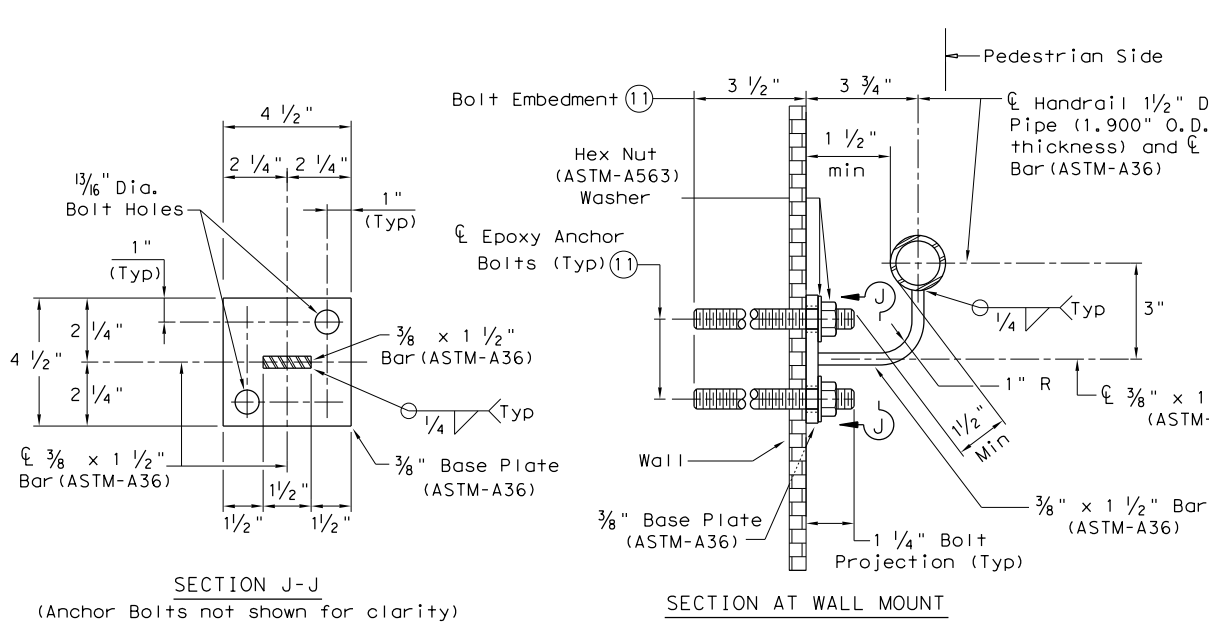
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
© TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.	
	DAL	DENTON	53	

DATE:  
FILE:

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

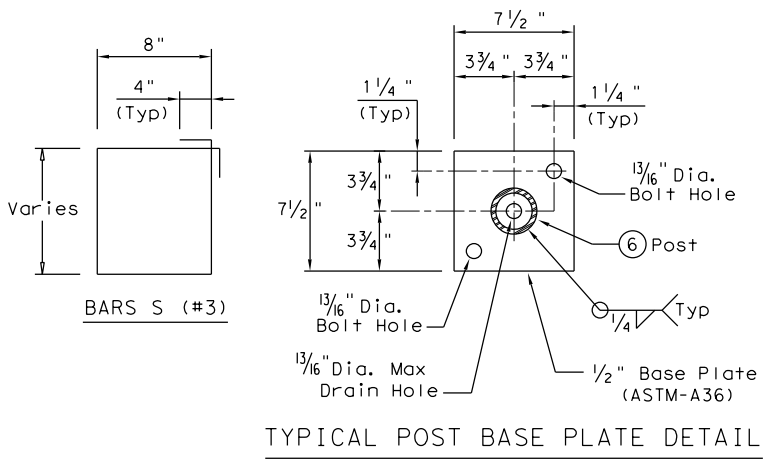


**HANDRAIL FABRICATION DETAILS**

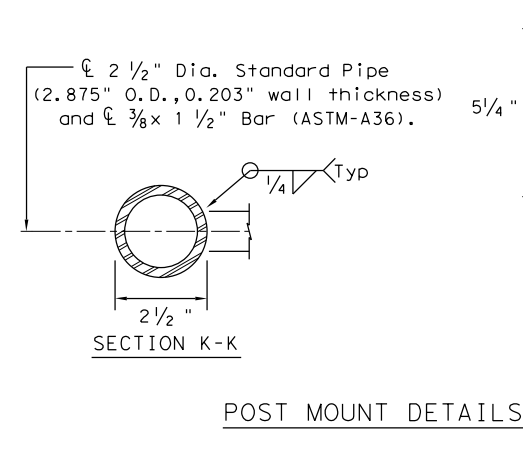


**TYPICAL WALL MOUNT DETAILS**

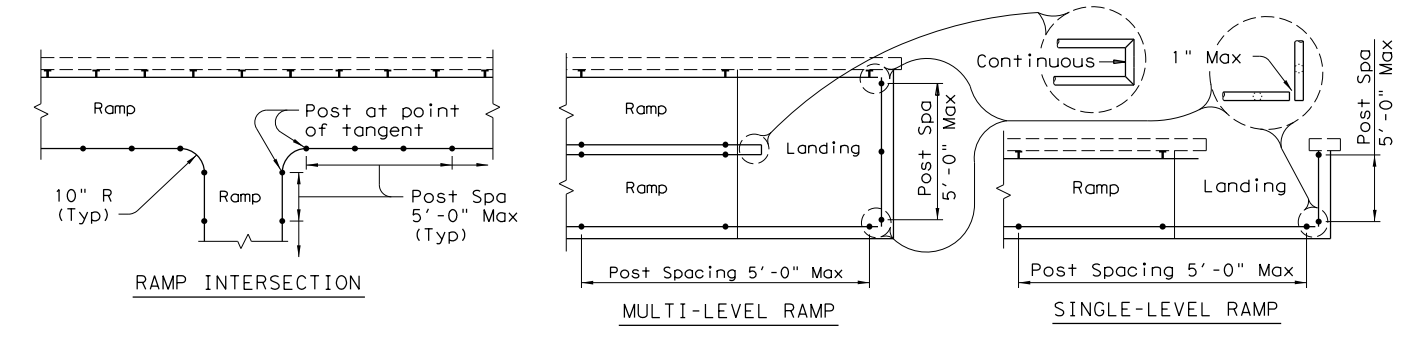
- (5) 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
- (6) 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diameter 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 1/2" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.



**TYPICAL POST BASE PLATE DETAIL**



**POST MOUNT DETAILS**



**PLAN SHOWING RAIL AT RAMP CONDITIONS**

**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 5/8" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. 3/8" Dia. threaded rod embedment depth for wall mounts is 3 1/2" 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, "Epoxyes 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 5/8" 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.

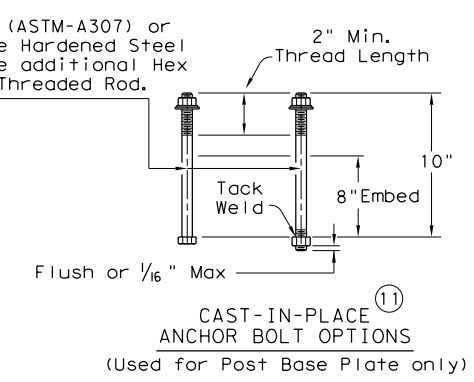
For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

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.

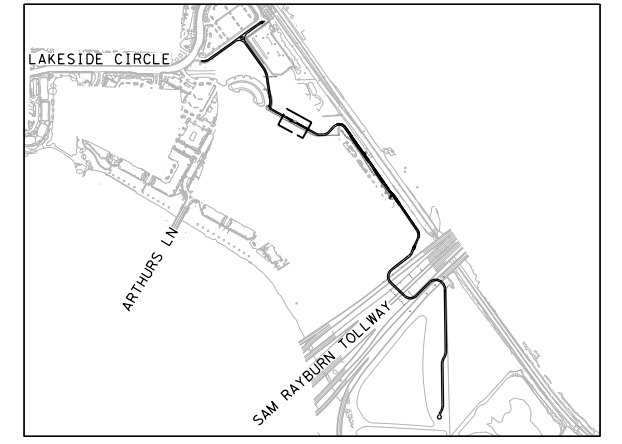
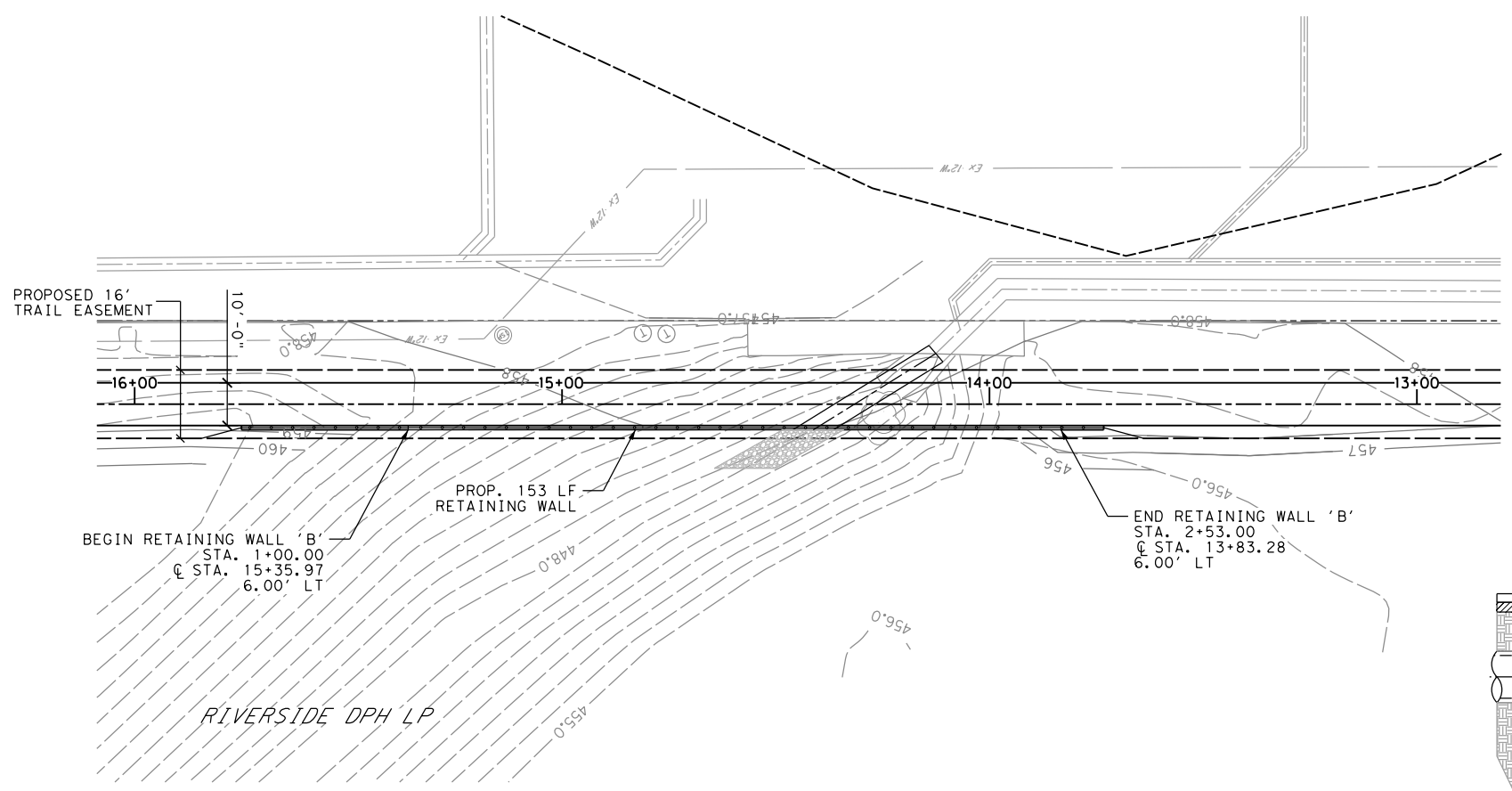
All exposed edges will be rounded or chamfered to approximately 1/8" by grinding.



		<b>Design Division Standard</b>	
<h2>PEDESTRIAN HANDRAIL DETAILS</h2> <h3>PRD-13</h3>			
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR
© TxDOT December 2006	CONT	SECT	JOB
REVISIONS	0918	46	331
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.
	DAL	DENTON	54

DATE: FILE:

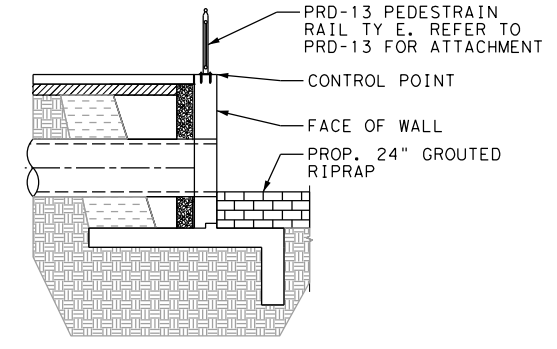
ch2583  
 PROJECT # 45685 OFFICE:MCA  
 TIME:9:28:29 AM  
 DATE:8/29/2025  
 A:\45000s\45685\001\CADD\Sheets\TW\04-Retaining Wall\RW102-RWPP-45685.dgn



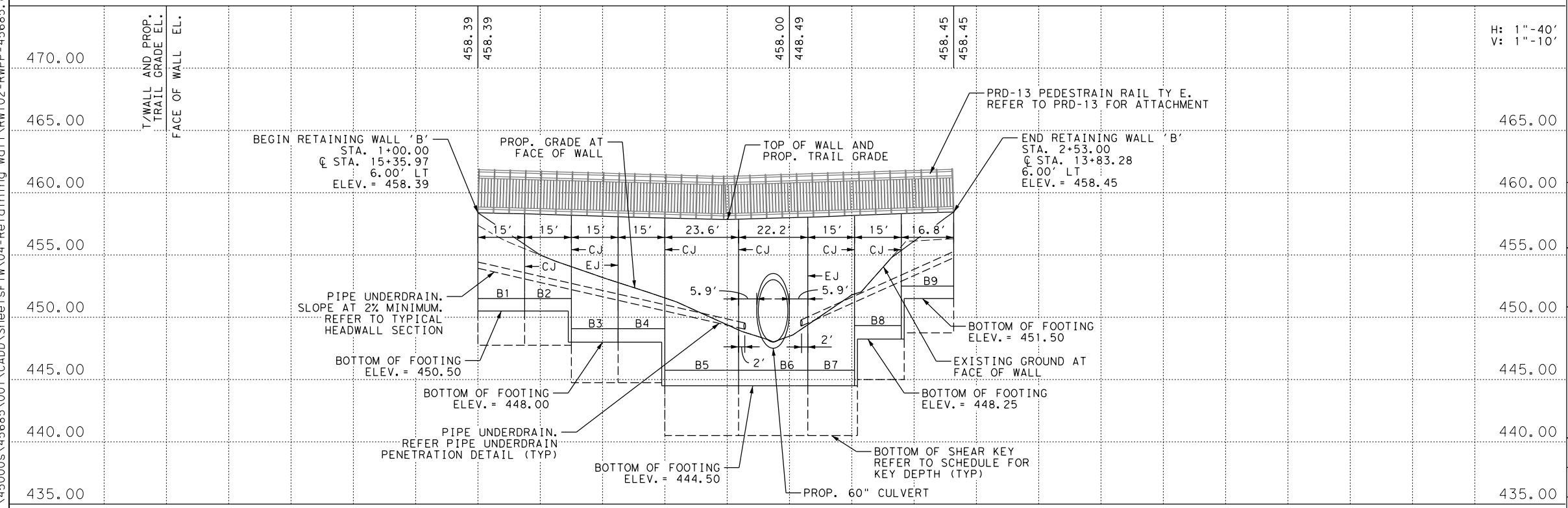
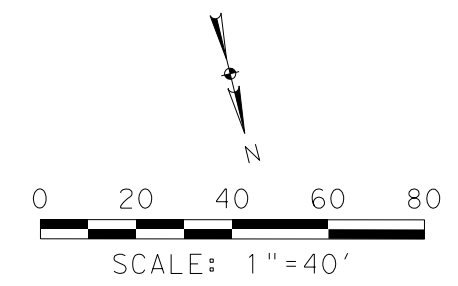
KEY MAP - N. T. S.

- NOTES:**
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



WALL SECTION



STATE OF TEXAS  
 KEVIN J. GRONWALDT  
 130871  
 LICENSED PROFESSIONAL ENGINEER

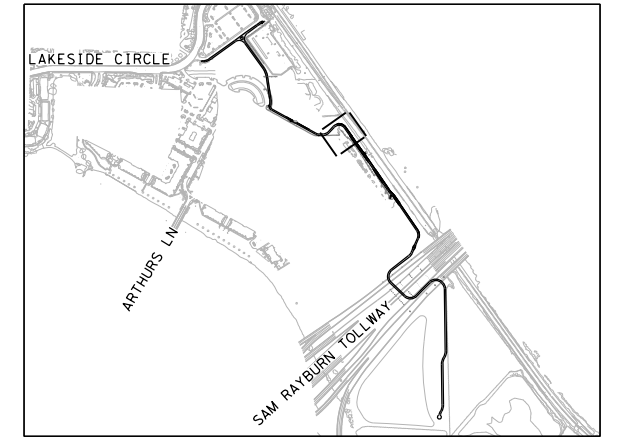
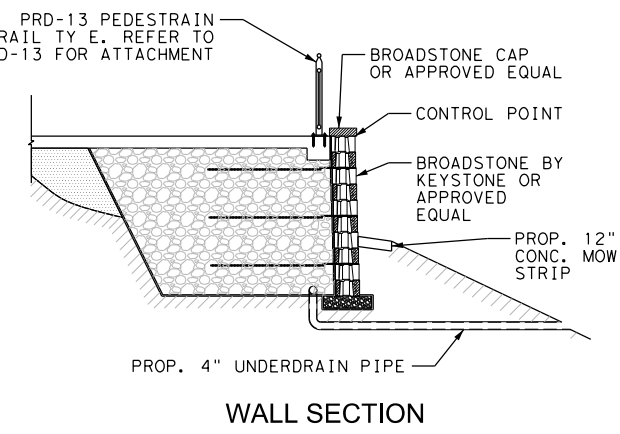
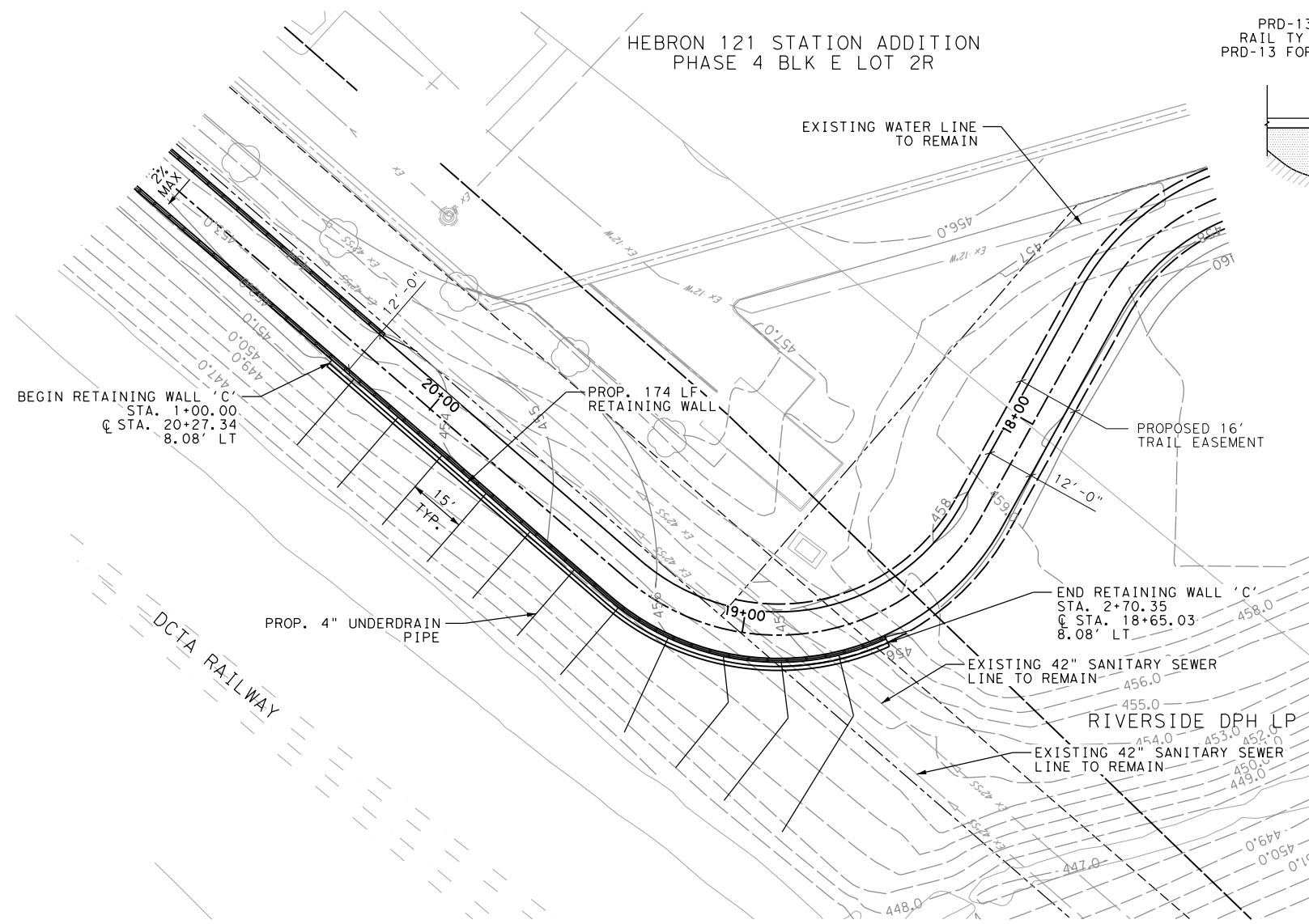
2801 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

Texas Department of Transportation  
 © 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 RETAINING WALL B  
 PLAN AND PROFILE

SCALE: AS NOTED		SHEET 01 OF 05	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL 0918	SECTION 46	JOB 331
			SHEET NO. 55

ch2583  
PROJECT # 45685 OFFICE:MCA  
TIME:9:28:31 AM  
DATE:8/29/2025  
A:\45000s\45685\001\CADD\Sheet\TW\04-Retaining Wall\RW103-RWPP-45685.dgn

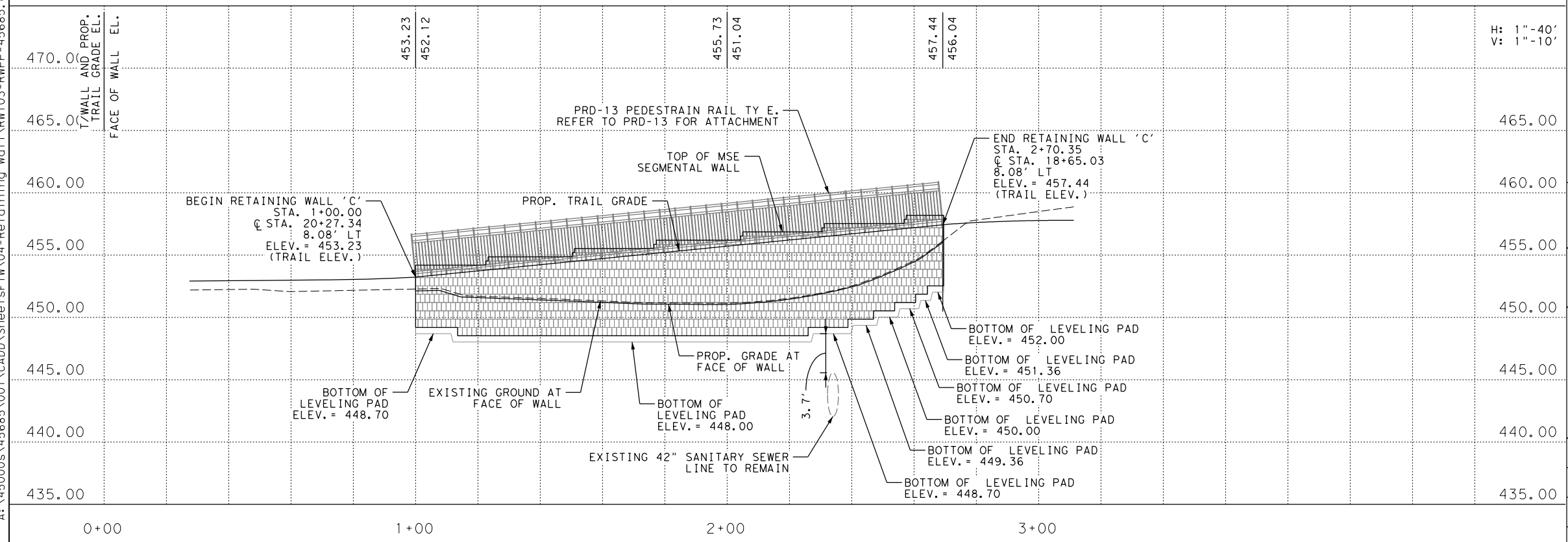
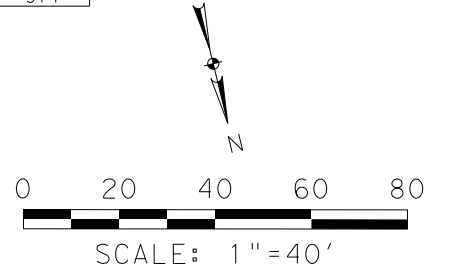


- NOTES:
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

CAUTION! UTILITIES IN THE AREA!  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
556-7007	PIPE UNDERDRAIN (TY 7) (4")	LF	314

CAUTION! SS LINE IN VICINITY. CONTRACTOR SHALL NOTIFY CLIENT BEFORE DIGGING. CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATION OF SEWER LINE PRIOR TO TRAIL AND RETAINING WALL CONSTRUCTION.

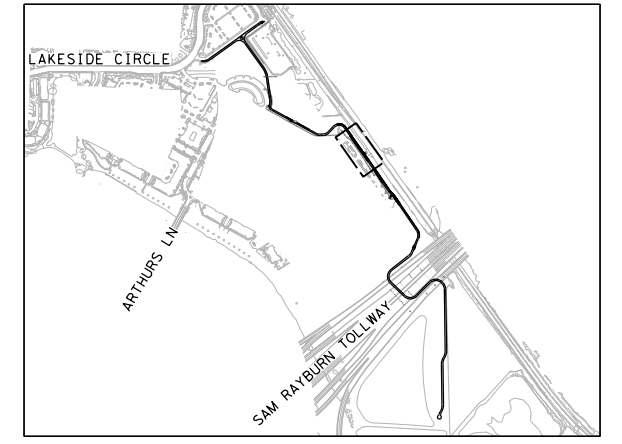
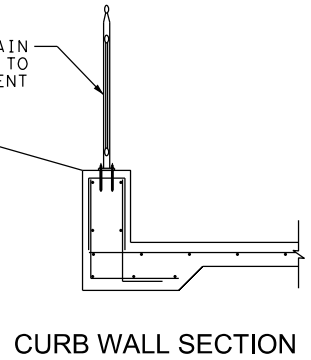
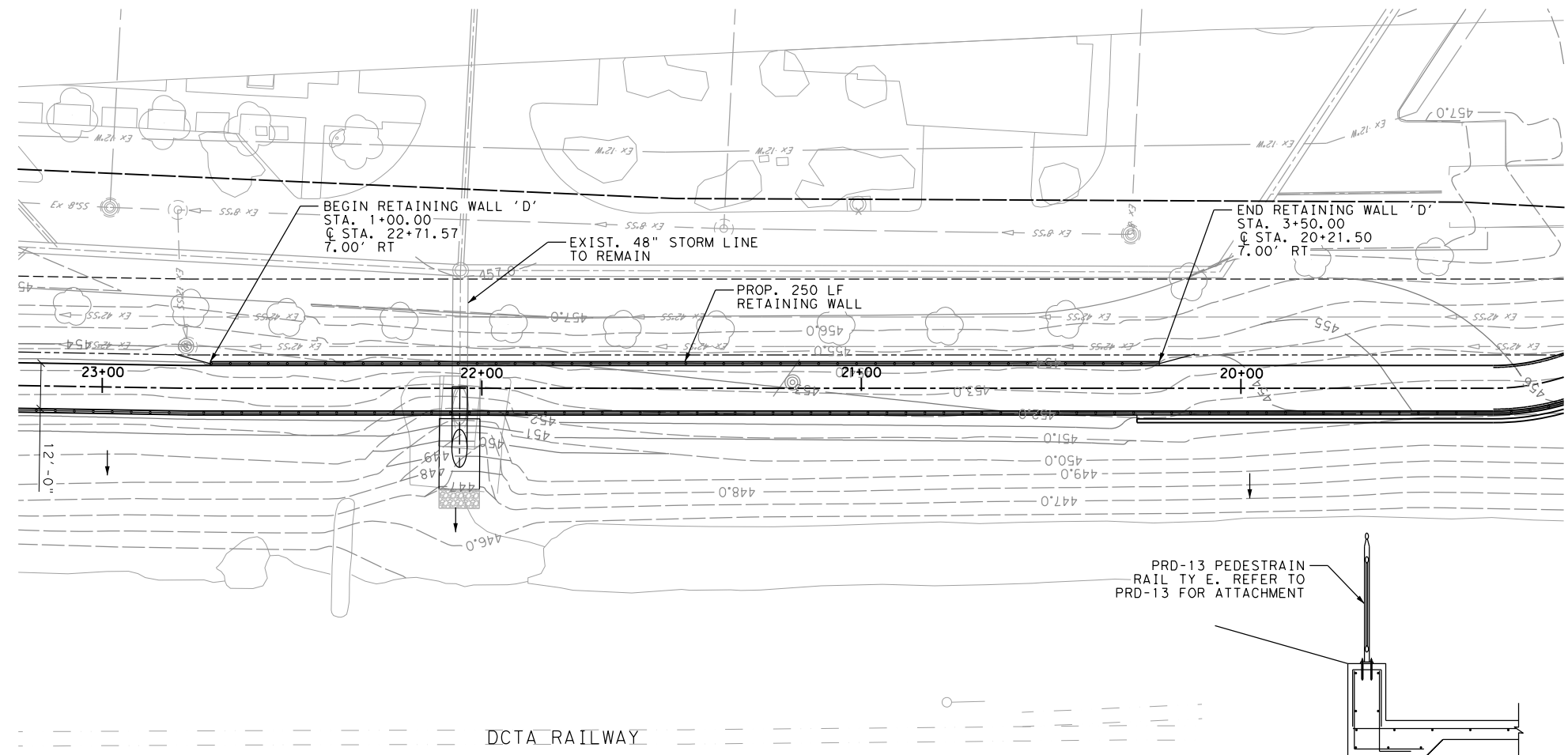


DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 RETAINING WALL 'C'  
 PLAN AND PROFILE

SCALE: AS NOTED SHEET 02 OF 05

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 56
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

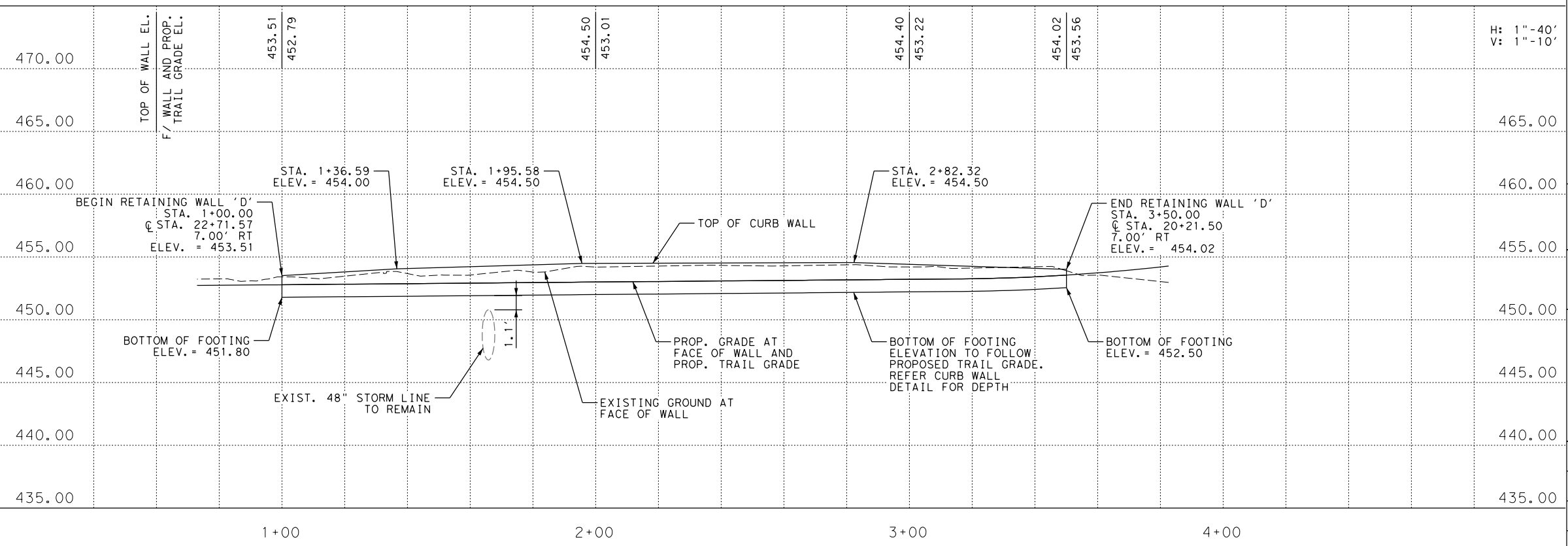
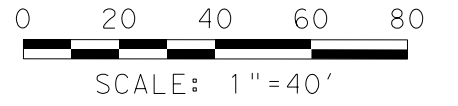
ch2583  
 PROJECT # 45685 OFFICE:MCA  
 TIME:9:28:33 AM DATE:8/29/2025  
 A:\45000s\45685\001\CADD\Sheet\TW\04-Retaining Wall\RW104-RWPP-45685.dgn



- NOTES:**
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

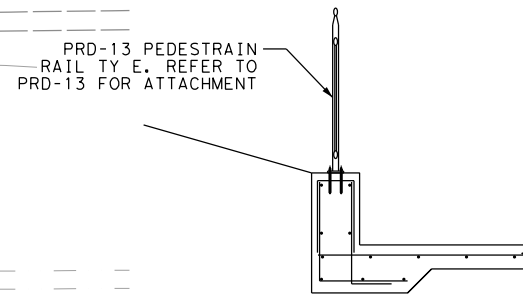
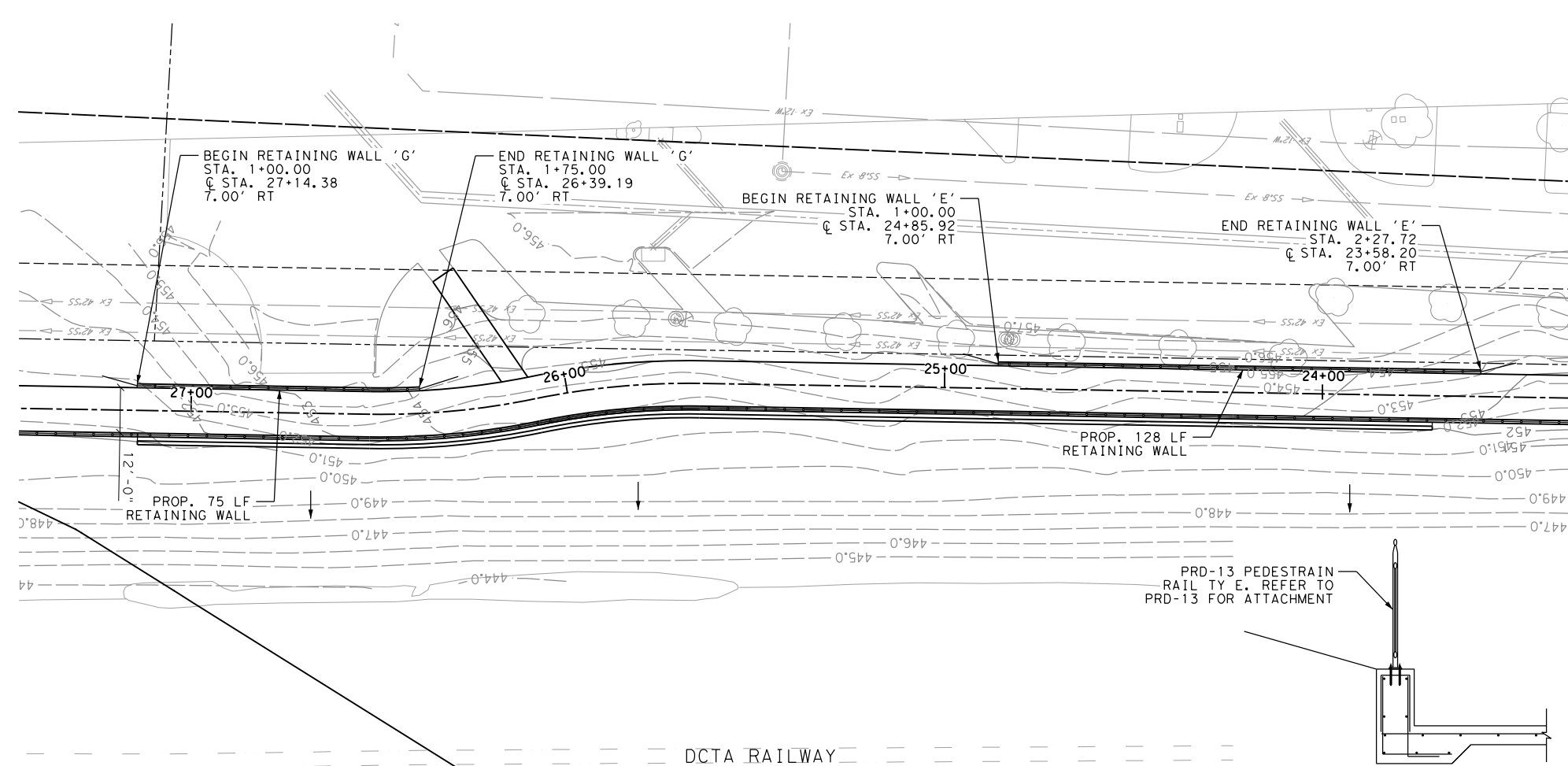
CAUTION! SS LINE IN VICINITY. CONTRACTOR SHALL NOTIFY CLIENT BEFORE DIGGING. CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATION OF SEWER LINE PRIOR TO TRAIL AND RETAINING WALL CONSTRUCTION.



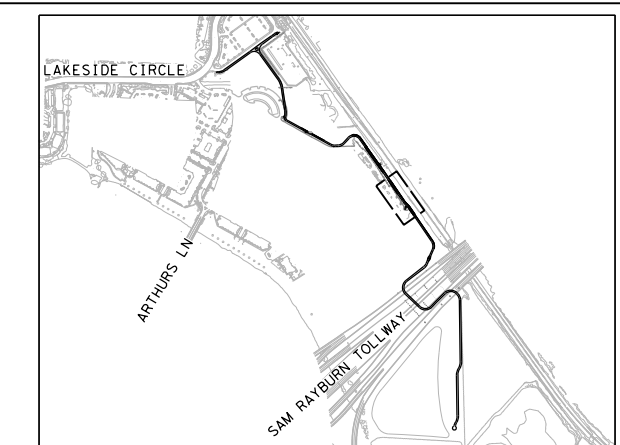
DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 RETAINING WALL 'D'  
 PLAN AND PROFILE

SCALE: AS NOTED		SHEET 03 OF 05	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331
			57

ch2583  
 PROJECT # 45685 OFFICE:MCA  
 TIME:9:28:34 AM DATE:8/29/2025  
 A:\45000s\45685\001\CADD\Sheet\FW04-Retaining Wall\RW105-RWPP-45685.dgn



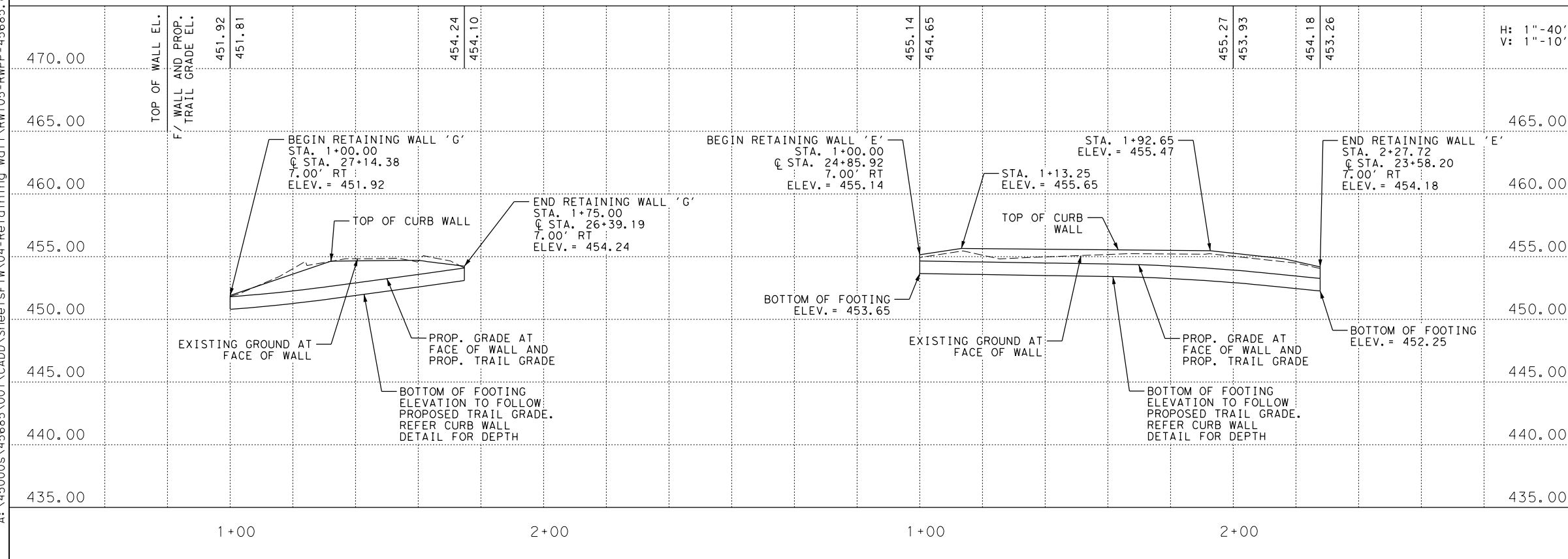
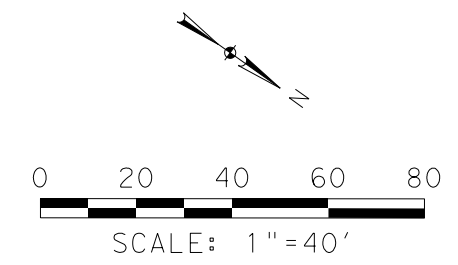
CURB WALL SECTION



KEY MAP - N.T.S.

- NOTES:
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



STATE OF TEXAS  
 KEVIN J. GRONWALDT  
 130871  
 LICENSED PROFESSIONAL ENGINEER

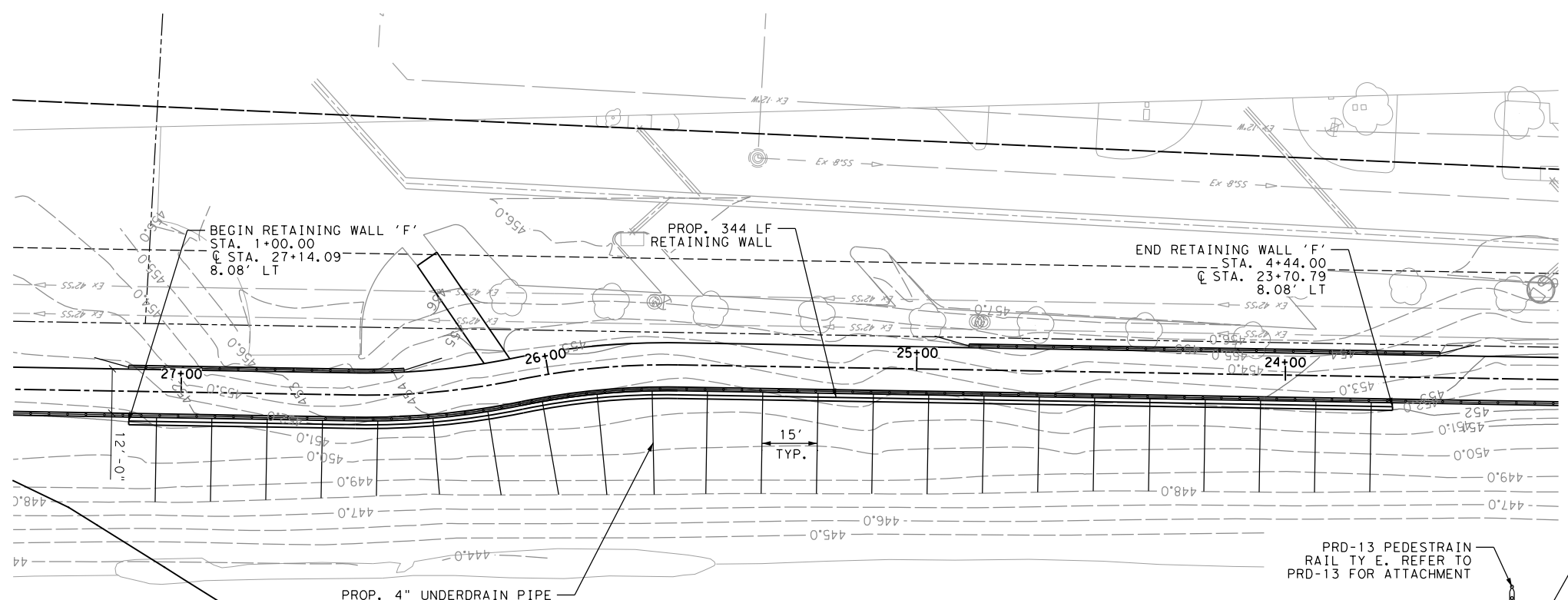
2601 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

Texas Department of Transportation  
 © 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 RETAINING WALL E & G  
 PLAN AND PROFILE

SCALE: AS NOTED		SHEET 04 OF 05	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331
			58

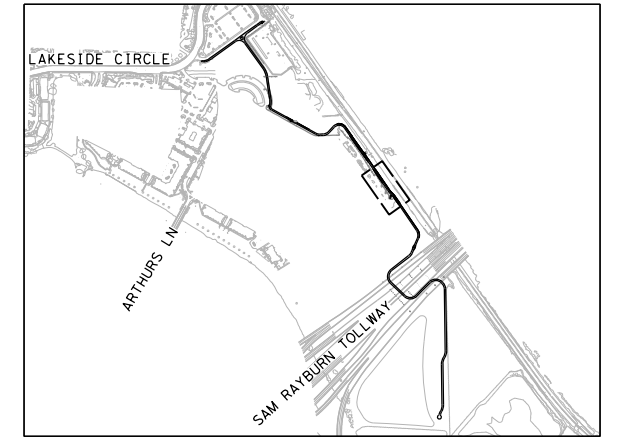
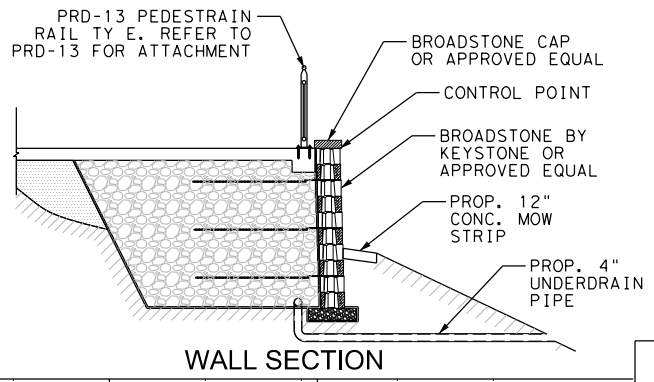
ch2583  
 PROJECT # 45685 OFFICE:MCA  
 TIME:9:28:36 AM  
 DATE:8/29/2025  
 A:\45000s\45685\001\CADD\Sheet\TW\04-Retaining Wall\RW106-RWPP-45685.dgn



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
556-7007	PIPE UNDERDRAIN (TY 7) (4")	LF	657

CAUTION! SS LINE IN VICINITY. CONTRACTOR SHALL NOTIFY CLIENT BEFORE DIGGING. CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATION OF SEWER LINE PRIOR TO TRAIL AND RETAINING WALL CONSTRUCTION.

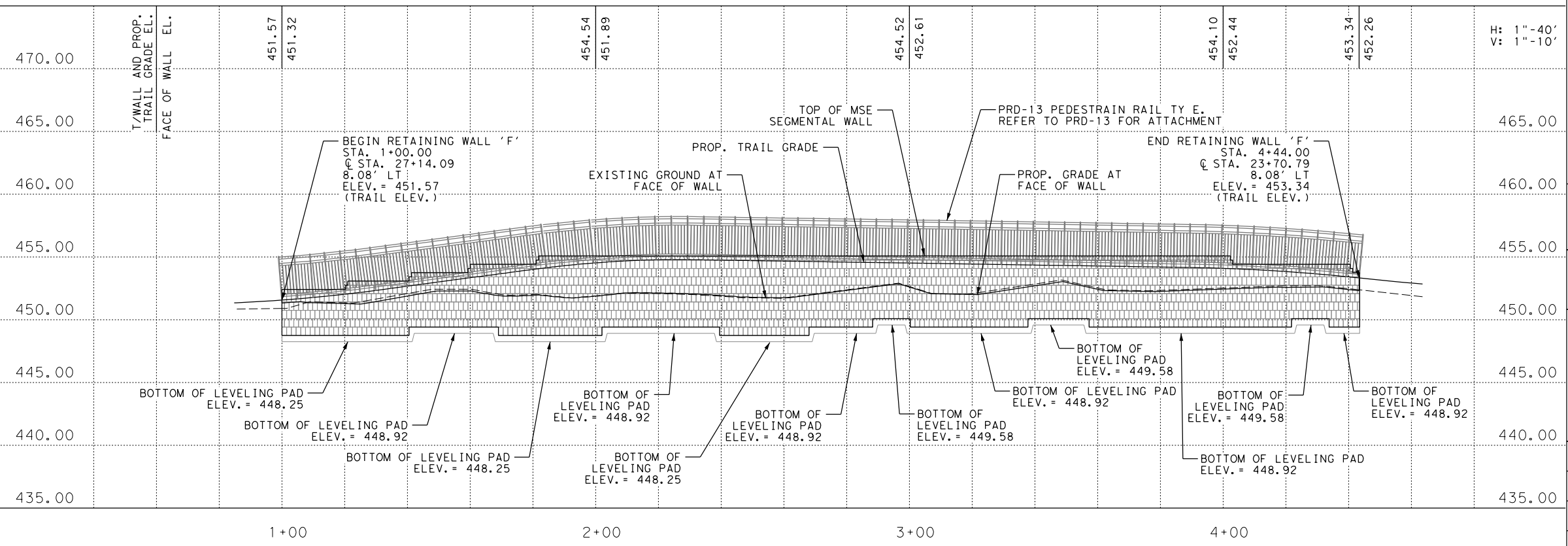
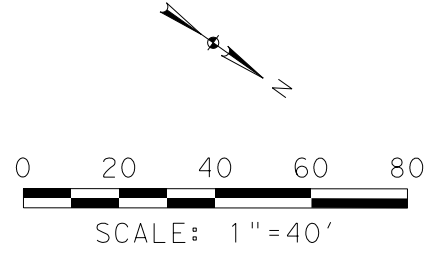
DCTA RAILWAY



KEY MAP - N.T.S.

- NOTES:
- REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  - UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.

! CAUTION UTILITIES IN THE AREA!  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



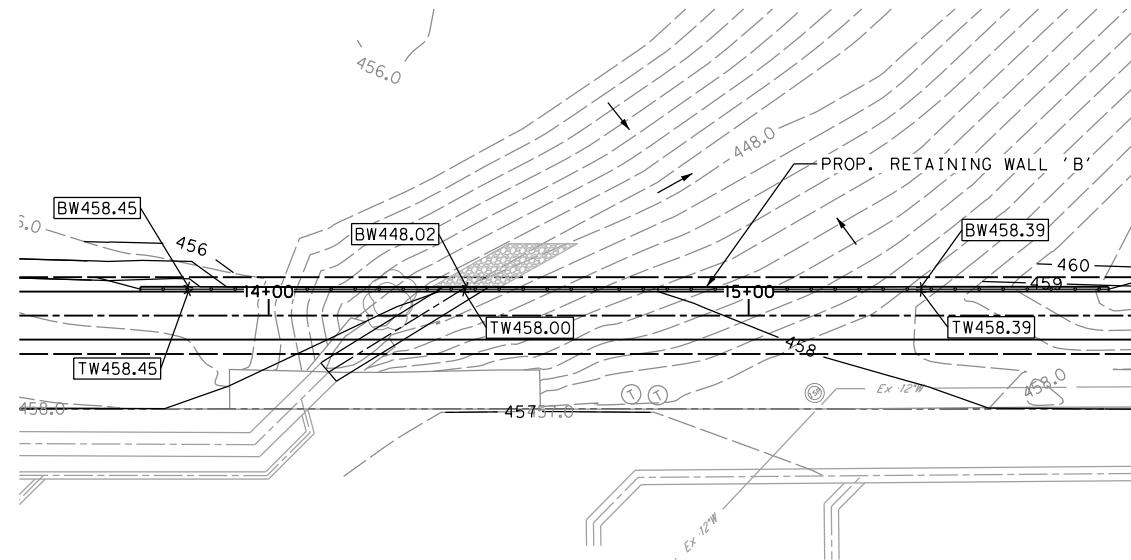
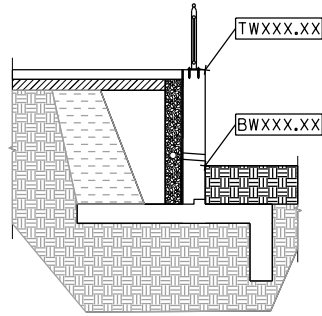
2601 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

Texas Department of Transportation  
 © 2024

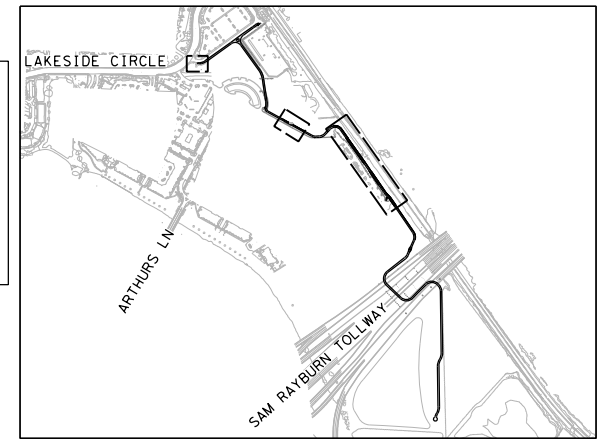
DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 RETAINING WALL F  
 PLAN AND PROFILE

SCALE: AS NOTED SHEET 05 OF 05

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 59
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



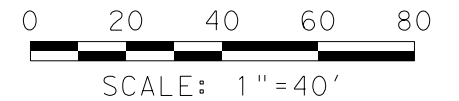
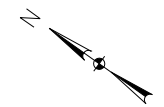
- NOTES:
1. REFERENCE GEOMETRIC LAYOUT FOR CURVE AND LINE DATA AND TRAIL LAYOUT.
  2. UTILITIES SHOWN IN PROFILE ARE SCHEMATIC IN NATURE AND DO NOT DEPICT THE SIZE OR DEPTH. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SIZE AND DEPTH OF EXISTING UTILITIES.



KEY MAP - N.T.S.

LEGEND

- CENTERLINE
- 457- PROP. CONTOUR
- 457- EXIST. CONTOUR
- BWXXX.XX BOTTOM OF WALL
- TWXXX.XX TOP OF WALL



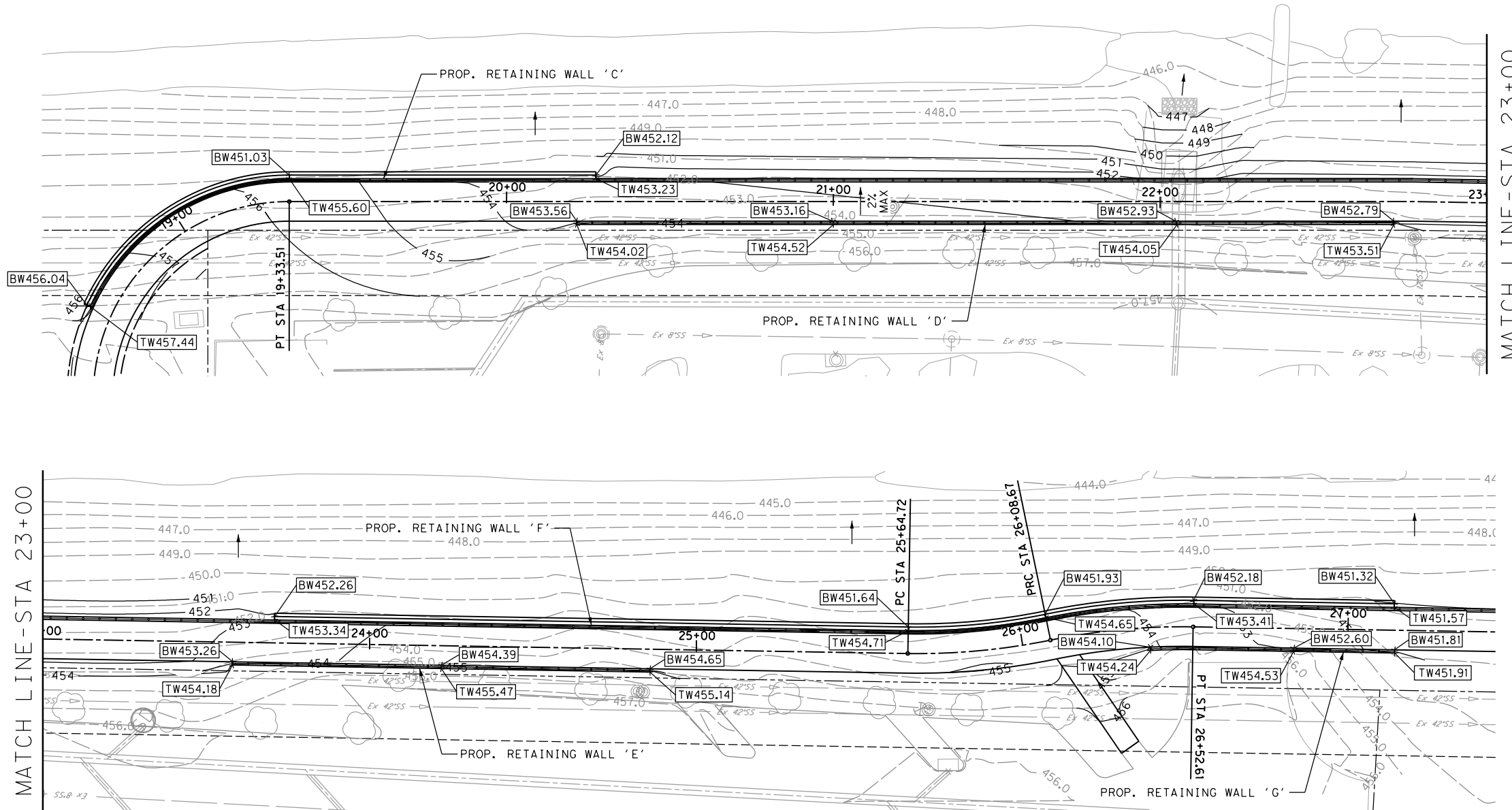
**halff** 2601 MEACHAM BLVD., SUITE 600 FORT WORTH, TX 76137-4204 (817) 847-1422



DCTA TRAIL LEWISVILLE

DCTA TRAIL A LEWISVILLE  
RETAINING WALL GRADING PLAN

SCALE: AS NOTED		SHEET 01 OF 01	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331
			60



MATCH LINE - STA 23+00

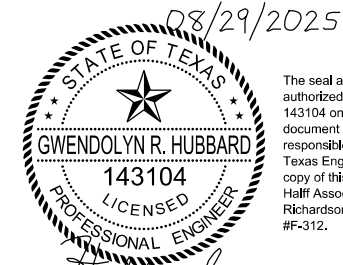
MATCH LINE - STA 23+00

HEADWALL DESIGN NOTES:

1. THE STRUCTURAL DESIGN IS IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AND ALL APPLICABLE PROVISIONS OF THE CITY OF LEWISVILLE, TEXAS.
2. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH TEXAS DEPARTMENT OF TRANSPORTATION 2024 "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES" ITEM 423 "RETAINING WALLS".
3. CONTRACTOR SHALL LOCATE EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION OF THIS PROJECT. CONTRACTOR SHALL NOTIFY OWNER OF ANY POTENTIAL CONFLICTS IN A TIMELY MANNER.
4. CONTRACTOR SHALL PROVIDE TEMPORARY ERECTION BRACING AND SHORING OF ALL STRUCTURAL WORK AS REQUIRED FOR STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.
5. GEOTECHNICAL INFORMATION IS BASED ON PROJECT NO. 117-24-358 DATED AUGUST 7, 2024 AND ADDITIONAL EMAIL CORRESPONDENCE BY CMJ ENGINEERING, INC.
6. DESIGN OF RETAINING WALLS IS BASED ON THE FOLLOWING VALUES:  
 EQUIVALENT AT-REST LATERAL FLUID PRESSURE.....50 PCF  
 W/ 3.5H:1V BACK SLOPE.....64 PCF  
 EQUIVALENT PASSIVE LATERAL FLUID PRESSURE.....240 PCF  
 TOTAL SOIL UNIT WEIGHT.....120 PCF  
 ALLOWABLE SOIL BEARING PRESSURE..... 2500 PSF  
 SURCHARGE.....250 PSF
7. RETAINING WALL FOOTINGS SHALL BE FOUNDED INTO THE NATURAL SOILS, BELOW THE EXISTING FILL SOILS AT LEAST 3 FEET BELOW THE LOWEST EXISTING GRADE INTO STIFF TO VERY STIFF CLAY SOILS.
8. FOUNDATION CONSTRUCTION SHALL BE MONITORED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER OR TESTING AGENCY TO OBSERVE THE FOLLOWING ITEMS:  
 -IDENTIFICATION OF BEARING MATERIAL  
 -ADEQUATE PENETRATION OF THE FOUNDATION EXCAVATION INTO THE BEARING LAYER  
 -THE BASE AND SIDES OF THE EXCAVATION ARE CLEAN OF LOOSE CUTTINGS  
 -WHEN SEEPAGE IS ENCOUNTERED, WHETHER IT IS SUFFICIENT AMOUNT TO REQUIRE THE USE OF EXCAVATION DEWATERING METHODS
9. HEADWALL BACKFILL SHALL MEET THE REQUIREMENTS OF TXDOT ITEM 423 TYPE DS BACKFILL. BACKFILL SHALL NOT BE WATER JETTED DURING INSTALLATION.
10. CONCRETE SHALL BE PLACED AS SOON AS PRACTICAL AFTER COMPLETION OF THE EXCAVATING, CLEANING, REINFORCING STEEL PLACEMENT AND OBSERVATION. EXCAVATION FOR A SHALLOW FOUNDATION SHALL BE FILLED WITH CONCRETE BEFORE THE END OF THE WORKDAY, OR SOONER IF REQUIRED, TO PREVENT DETERIORATION OF THE BEARING MATERIAL. IF DELAYS OCCUR, THE EXCAVATION SHALL BE DEEPENED AS NECESSARY AND CLEANED, IN ORDER TO PROVIDE A FRESH BEARING SURFACE. IF MORE THAN 24 HOURS OF EXPOSURE OF THE BEARING SURFACE IS ANTICIPATED IN THE EXCAVATIONS, A "MUD SLAB" SHALL BE USED TO PROTECT THE BEARING SURFACES. IF A MUD SLAB IS USED, THE FOUNDATION EXCAVATIONS SHALL INITIALLY BE OVER-EXCAVATED BY APPROX. 4 INCHES AND A LEAN CONCRETE MUD SLAB OF APPROX. 4 INCHES IN THICKNESS SHALL BE PLACED IN THE BOTTOM OF THE EXCAVATIONS IMMEDIATELY FOLLOWING EXPOSURE OF THE BEARING SURFACE.

HEADWALL CAST-IN-PLACE DESIGN NOTES:

1. MIXES SHALL BE DESIGNED TO PROVIDE CONCRETE WITH A COMPRESSIVE STRENGTH AT 28 DAYS (f'c) AS FOLLOWS:  
 -ALL CONCRETE: CLASS C 3,600 PSI
2. COARSE AGGREGATE GRADE NO. 2-5 ARE PERMITTED
3. STEEL REINFORCING BARS SHALL CONFORM TO ASTM A-615 GRADE 60.
4. ALL ADDITIVES SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS. THE USE OF CALCIUM CHLORIDE IS PROHIBITED.
5. FILTER FABRIC SHALL CONFORM TO TXDOT DEPARTMENTAL MATERIAL SPECIFICATION DMS-6200. FILTER FABRIC SHALL HAVE A MINIMUM OVERLAP OF 18 INCHES. WATERPROOFING TYPE 10 SHALL CONFORM TO TXDOT DEPARTMENTAL MATERIAL SPECIFICATION DMS-6300
6. IF UNDISTURBED SOIL AT TOE AND FACE OF KEY IS DISTURBED DUE TO EXCAVATION OR FOR ANY REASON, COMPACT THE SOIL ACCORDING TO THE GEOTECHNICAL REPORT.
7. CONSTRUCTION JOINTS SHALL BE LOCATED AT 15 FT INTERVALS AND EXPANSION JOINTS SHALL BE LOCATED AT 45 FT MAX INTERVALS UNLESS OTHERWISE NOTED ON THE WALL PROFILE.



The seal appearing on this document was authorized by Gwendolyn R. Hubbard, PE# 143104 on 08/29/2025. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act. The record copy of this drawing is on file at the offices of Half Associates, Inc. 1201 N. Bowser Road, Richardson, Texas, 75081. TBPELS FIRM #F-312.

*Gwen Hubbard*



1201 NORTH BOWSER ROAD  
 RICHARDSON, TX 75081-2275  
 (214) 346-6200  
 TBPELS FIRM # 312



DCTA TRAIL LEWISVILLE

DCTA TRAIL A LEWISVILLE  
 HEADWALL STRUCTURAL  
 GENERAL NOTES

SCALE: AS NOTED SHEET 01 OF 01

DESIGN GRH	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS MWB	6	STP XXX (XXX) TAPS		VA
CHECK GRH	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK ESC	TEXAS	DAL	TARRANT	61
	CONTROL	SECTION	JOB	
	0918	46	331	

CONCRETE SEGMENTAL RETAINING WALL GENERAL NOTES:

PART 1 - GENERAL

SEGMENTAL WALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH TEXAS DEPARTMENT OF TRANSPORTATION 2024 "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES" ITEM 423 "RETAINING WALLS" AS WELL AS SCHEDULED CONCRETE BLOCK MANUFACTURER REQUIREMENTS.

CONTRACTOR SHALL BE TRAINED AND CERTIFIED BY LOCAL MANUFACTURER OR EQUIVALENT ACCREDITED ORGANIZATION. CONTRACTOR SHALL FOLLOW GUIDELINES AND SPECIFICATIONS AS DICTATED BY THE SEGMENTAL WALL MANUFACTURER FOR UNIT AND GEOGRID INSTALLATION AND WATER MANAGEMENT UNLESS SPECIFIED OTHERWISE IN THESE DRAWINGS.

1.01 SECTION INCLUDES

- A. RETAINING WALL SYSTEM CONSTRUCTED OF CONCRETE SEGMENTAL RETAINING WALL UNITS.
- B. GEOSYNTHETIC REINFORCEMENT FABRIC
- C. LEVELING PAD BASE
- D. REINFORCED BACKFILL
- E. DRAINAGE PIPE
- F. GEOTEXTILE FILTER FABRIC
- G. CONSTRUCTION ADHESIVES

1.02 SUBMITTALS

- A. SUBMIT THE FOLLOWING:
  - 1. PRODUCT DATA: MATERIAL DESCRIPTION AND INSTALLATION INSTRUCTIONS FOR EACH MANUFACTURED PRODUCT SPECIFIED.
  - 2. SHOP DRAWINGS: RETAINING WALL SYSTEM, INCLUDING WALL ELEVATION VIEWS, GEOSYNTHETIC REINFORCEMENT LAYOUT, PERTINENT DETAILS, AND DRAINAGE PROVISIONS. THE SHOP DRAWINGS SHALL BE SIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS.
  - 3. SAMPLES
    - a. FURNISH ONE UNIT IN THE COLOR AND FACE PATTERN SPECIFIED, IF REQUESTED.
    - b. FURNISH 12 INCH SQUARE OR LARGER PIECE OF THE GEOSYNTHETIC REINFORCEMENT SPECIFIED, IF REQUESTED.
  - 4. TEST REPORTS: INDEPENDENT LABORATORY REPORTS STATING MOISTURE ABSORPTION AND COMPRESSIVE STRENGTH PROPERTIES OF THE CONCRETE RETAINING WALL UNITS MEET THE PROJECT SPECIFICATIONS WHEN TESTED IN ACCORDANCE WITH ASTM C140, SECTIONS 6, 8 AND 9.
  - 5. SUBMITTALS SHALL COMPLY WITH TXDOT SHOP/WORKING DRAWING SUBMITTAL REQUIREMENTS AND SHALL INCLUDE SHOP DRAWINGS, PRODUCT DATA, SUPPLIER AND INSTALLER QUALIFICATIONS, SOIL TESTING, REINFORCEMENT TESTING CERTIFICATES AND CALCULATIONS.

1.03 DELIVERY, STORAGE AND HANDLING

- A. DELIVER, STORE, AND HANDLE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, IN SUCH A MANNER AS TO PREVENT DAMAGE. CHECK THE MATERIALS UPON DELIVERY TO ASSURE THAT PROPER MATERIAL HAS BEEN RECEIVED. STORE ABOVE GROUND ON WOOD PALLETS OR BLOCKING. REMOVE DAMAGED OR OTHERWISE UNSUITABLE MATERIAL, WHEN SO DETERMINED, FROM THE SITE.
  - 1. EXPOSED FACES OF CONCRETE WALL UNITS SHALL BE FREE OF CHIPS, CRACKS, STAINS, AND OTHER IMPERFECTIONS DETRACTING FROM THEIR APPEARANCE, WHEN VIEWED FROM A DISTANCE OF 10 FEET.
  - 2. PREVENT MUD, WET CEMENT, ADHESIVES AND SIMILAR MATERIALS, WHICH MAY HARM APPEARANCE OF UNITS, FROM COMING IN CONTACT WITH SYSTEM COMPONENTS.
- B. GEOSYNTHETICS (INCLUDING GEOSYNTHETIC REINFORCEMENT, GEOTEXTILE FILTER, PRE-FABRICATED DRAINAGE COMPOSITE) SHALL BE DELIVERED, STORED AND HANDLED IN ACCORDANCE WITH ASTM D4873.

1.04 EXTRA MATERIALS

- A. FURNISH OWNERS REPRESENTATIVE WITH 5 REPLACEMENT UNITS IDENTICAL TO THOSE INSTALLED ON THE PROJECT.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. CONCRETE RETAINING WALL UNITS: "BROADSTONE" AS MANUFACTURED BY KEYSTONE RETAINING WALL SYSTEMS OR APPROVED EQUAL.
  - 1. PHYSICAL REQUIREMENTS
    - a. MEET REQUIREMENTS OF ASTM C1372, EXCEPT THE MAXIMUM WATER ABSORPTION SHALL BE LIMITED TO 7 PERCENT, AND UNIT HEIGHT DIMENSIONS SHALL NOT VARY MORE THAN PLUS OR MINUS 1/8 INCH FROM THAT SPECIFIED IN THE ASTM REFERENCE, NOT INCLUDING TEXTURED FACE.
    - b. UNIT FACE AREA, 18-INCH UNIT: NOT LESS THAN 1.0 SQUARE FEET.
    - c. COLOR: STANDARD MANUFACTURERS' COLOR AS SPECIFIED BY OWNER.
    - d. FACE PATTERN GEOMETRY: MEDLEY
    - e. TEXTURE: TO BE SELECTED BY OWNER
- B. WALL UNITS HOLLOW CORES SHALL BE FILLED WITH TXDOT ITEM 423 TYPE DS BACKFILL AND SHALL BE COMPACTED USING A PLATE COMPACTOR ON TOP OF WALL UNITS.
- C. UNITS SHALL HAVE A VERTICAL SETBACK USING INTEGRAL SHEAR CONNECTION LUGS TO PROVIDE A 1/4" SETBACK PER COURSE (APPROX. 2.4 DEG. OVERALL BATTER).
- C. GEOSYNTHETIC REINFORCEMENT: POLYESTER FIBER GEOGRID "STRATA SYSTEM SG200" OR APPROVED EQUAL.
- D. LEVELING PAD BASE
  - 1. AGGREGATE BASE: CRUSHED STONE OR GRANULAR FILL MEETING THE FOLLOWING GRADATION AS DETERMINED IN ACCORDANCE WITH ASTM 0448:
 

PERCENT PASSING	SIEVE SIZE
100	.....1 INCH
35 TO 70	.....NO. 4
10 TO 35	.....NO. 40
3 TO 10	.....NO. 200

E. BASE THICKNESS: 6 INCHES (MINIMUM COMPACTED THICKNESS).

- F. REINFORCED BACKFILL: SHALL MEET TXDOT ITEM 423 TYPE DS BACKFILL REQUIREMENTS.
  - 1. COMPACTION SHALL BE BETWEEN 95 AND 100 PERCENT OF STANDARD PROCTOR (ASTM D 698) MAXIMUM DRY DENSITY.
  - 2. MAXIMUM PARTICLE SIZE FOR BACKFILL IS 2 INCHES.
  - 3. UNSUITABLE SOILS ARE ORGANIC SOILS AND THOSE SOILS CLASSIFIED AS CH, OH, MH, OL, OR PT.
- G. EMBANKMENT BACKFILL: ON-SITE SOILS OR CLEAN SELECT FILL.
  - 1. PLACED IN LOSE LIFTS NOT EXCEEDING 8-INCHES
  - 2. LIQUID LIMIT LESS THAN 60 AND NO ROCK GREATER THAN 4-INCHES MAX DIMENSION
  - 3. FILL MATERIALS SHALL BE COMPACTED FROM 95 TO 100 PERCENT OF STANDARD PROCTOR (ASTM D 698) MAXIMUM DRY DENSITY.
  - 5. MOISTURE CONTENT SHALL RANGE FROM 2 PERCENTAGE POINTS BELOW OPTIMUM TO 5 PERCENTAGE POINTS ABOVE OPTIMUM
- H. DRAINAGE PIPE: PERFORATED OR SLOTTED PVC OR CORRUGATED HDPE PIPE MANUFACTURED IN ACCORDANCE WITH TXDOT ITEM 556 TYPE 6 OR 7 SLOPED AT 1% MINIMUM.
- I. CONSTRUCTION ADHESIVE: EXTERIOR GRADE ADHESIVE AS RECOMMENDED BY THE RETAINING WALL UNIT MANUFACTURER.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. EXAMINE THE AREAS AND CONDITIONS UNDER WHICH THE RETAINING WALL SYSTEM IS TO BE ERECTED, AND NOTIFY THE ENGINEER OF RECORD IN WRITING OF CONDITIONS DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK. DO NOT PROCEED WITH THE WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
- B. PROMPTLY NOTIFY THE WALL DESIGN ENGINEER OF SITE CONDITIONS WHICH MAY AFFECT WALL PERFORMANCE, SOIL CONDITIONS OBSERVED OTHER THAN THOSE ASSUMED, OR OTHER CONDITIONS THAT MAY REQUIRE A REEVALUATION OF THE WALL DESIGN.
- C. VERIFY THE LOCATION OF EXISTING STRUCTURES AND UTILITIES PRIOR TO EXCAVATION.

3.02 PREPARATION

- A. ENSURE SURROUNDING STRUCTURES ARE PROTECTED FROM THE EFFECTS OF WALL EXCAVATION.
- B. EXCAVATION SUPPORT, IF REQUIRED, IS THE RESPONSIBILITY OF THE CONTRACTOR, INCLUDING THE STABILITY OF THE EXCAVATION AND IT'S INFLUENCE ON ADJACENT PROPERTIES AND STRUCTURES.

3.03 EXCAVATION

- A. EXCAVATE TO THE LINES AND GRADES SHOWN ON THE DRAWINGS. OVER-EXCAVATION NOT APPROVED BY THE CIVIL ENGINEER WILL NOT BE PAID FOR BY THE OWNER. REPLACEMENT OF THESE SOILS WITH COMPACTED FILL AND/OR WALL SYSTEM COMPONENTS WILL BE REQUIRED AT THE CONTRACTOR'S EXPENSE. USE CARE IN EXCAVATING TO PREVENT DISTURBANCE OF THE BASE BEYOND THE LINES SHOWN.

3.04 FOUNDATION PREPARATION

- A. EXCAVATE FOUNDATION SOIL AS REQUIRED FOR FOOTING OR BASE DIMENSION SHOWN ON THE DRAWINGS, OR AS DIRECTED BY THE PROJECT GEOTECHNICAL ENGINEER OR TESTING AGENCY. THE PROPOSED WALL SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 95% OF STANDARD PROCTOR (ASTM D698) PRIOR TO PLACEMENT OF BASE MATERIALS. AREAS THAT RUT AND/OR YIELD SHALL BE REMOVED TO FIRMER SOILS AND REPLACED WITH COMPACTED IN-SITU FILL (SEE "EARTHWORK" SECTION FROM THE GEOTECHNICAL REPORT FOR FILL TYPE AND COMPACTION REQUIREMENTS).
- B. A PROJECT GEOTECHNICAL ENGINEER OR TESTING AGENCY REPRESENTATIVE SHALL BE ON SITE TO EXAMINE FOUNDATION SOIL TO ENSURE THAT THE ACTUAL FOUNDATION SOIL STRENGTH MEETS OR EXCEEDS THAT INDICATED ON THE DRAWINGS AND IN THE GEOTECHNICAL REPORT. REMOVE SOIL NOT MEETING THE REQUIRED STRENGTH. OVERSIZE RESULTING SPACE SUFFICIENTLY FROM THE FRONT OF THE BLOCK TO THE BACK OF THE REINFORCEMENT, AND BACKFILL WITH SUITABLE COMPACTED BACKFILL MATERIALS.
- C. THE WALL SUBGRADE SHALL BE FOUNDED A MINIMUM OF 3-FEET BELOW EXISTING GRADE INTO STIFF TO VERY STIFF CLAY SOILS. A LEAN CONCRETE MUDMAT CAN BE CONSIDERED TO PROTECT THE BEARING SURFACE IF THE EXCAVATION MUST BE OPEN FOR A PERIOD GREATER THAN 24 HOURS.
- D. FILL OVER-EXCAVATED AREAS WITH SUITABLE COMPACTED BACKFILL MEETING TXDOT ITEM 423 TYPE DS. REFER SECTION 2.01 F FOR REQUIREMENTS.

3.05 BASE COURSE PREPARATION

- A. PLACE BASE MATERIALS TO THE DEPTHS AND WIDTHS SHOWN ON THE DRAWINGS, UPON UNDISTURBED SOILS, OR FOUNDATION SOILS PREPARED IN ACCORDANCE WITH ARTICLE 3.04.
  - 1. EXTEND THE LEVELING PAD LATERALLY AT LEAST 6 INCHES IN FRONT AND BEHIND THE LOWERMOST CONCRETE RETAINING WALL UNIT
  - 2. PROVIDE AGGREGATE BASE COMPACTED TO 6 INCHES THICK (MINIMUM).
  - 3. THE CONTRACTOR MAY AT THEIR OPTION, PROVIDE A CONCRETE LEVELING PAD 6" THICK, 2500 PSI CONCRETE AND UNREINFORCED, IN LIEU OF THE AGGREGATE BASE.
- B. COMPACT AGGREGATE BASE MATERIALS TO 95 PERCENT OF STANDARD PROCTOR (ASTM D 698) TO PROVIDE A LEVEL, HARD SURFACE ON WHICH TO PLACE FIRST THE FIRST COURSE OF UNITS.
- C. PREPARE BASE MATERIALS TO ENSURE COMPLETE CONTACT WITH RETAINING WALL UNITS. GAPS ARE NOT ALLOWED.

3.06 UNIT INSTALLATION

- A. INSTALL UNITS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
- B. ENSURE THAT UNITS ARE IN FULL CONTACT WITH BASE. CARE SHALL BE TAKEN TO DEVELOP STRAIGHT LINES AND SMOOTH CURVES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- C. MAXIMUM STACKED VERTICAL HEIGHT OF WALL UNITS PRIOR TO BACKFILL PLACEMENT AND COMPACTION SHALL NOT EXCEED TWO COURSES.

3.07 GEOGRID INSTALLATION

- A. INSTALL BLOCK UNITS TO DESIGNATED HEIGHT OF FIRST GEOGRID LAYER. CUT GEOGRID TO DESIGNED LENGTH AND PLACE ON TOP OF BLOCK UNITS WITHIN 1-INCH OF THE FACE OF THE UNIT.
- B. FOLLOW MANUFACTURER'S GUIDELINES FOR OVERLAP REQUIREMENTS AND CURVED WALL GEOGRID LAYOUT.
- C. PLACE NEXT COURSE OF BLOCK UNITS ON TOP OF GRID AND FILL BLOCK CORES TO LOCK IN PLACE. REMOVE SLACK AND FOLDS IN GRID AND ANCHOR TO HOLD IN PLACE PRIOR TO BACKFILL PLACEMENT ON THE GEOGRID. ADJACENT SHEETS OF GEOGRID SHALL BE BUTTED AGAINST EACH OTHER AT THE WALL FACE TO ACHIEVE 100 PERCENT COVERAGE.
- D. GEOGRID LENGTHS SHALL BE CONTINUOUS. SPLICED CONNECTIONS BETWEEN SHORTER PIECES OF GEOGRID OR GAPS GREATER THAN 2-INCHES BETWEEN ADJACENT PIECES OF GEOGRID ARE NOT PERMITTED.

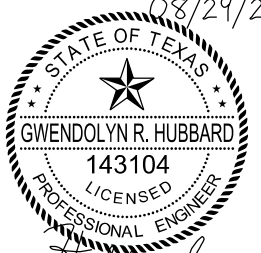
3.08 REINFORCED BACKFILL PLACEMENT

- A. REINFORCED BACKFILL SHALL BE PLACED, SPREAD, AND COMPACTED TO MINIMIZE DEVELOPMENT OF SLACK IN GEOGRID.
- B. BACKFILL SHALL BE PLACED AND COMPACTED IN LIFTS NOT EXCEEDING 6-INCHES WHERE HAND OPERATED COMPACTION IS USED OR 8-INCHES WHERE HEAVY COMPACTION EQUIPMENT IS USED.
- C. HEAVY COMPACTION EQUIPMENT SHALL OPERATE NO CLOSER THAN 5 FEET FROM THE BACK OF THE CONCRETE UNITS.
- D. TRACKED CONSTRUCTION EQUIPMENT SHALL NO BE OPERATED DIRECTLY ON THE GEOGRID. A MINIMUM FILL THICKNESS OF 6-INCHES IS REQUIRED PRIOR TO OPERATION OF TRACKED VEHICLES OVER THE GEOGRID.

3.09 CAP INSTALLATION

- A. PRIOR TO PLACEMENT OF CAP UNITS, THE UPPER SURFACE OF THE TOP COURSE SHALL BE CLEANED OF SOIL AND ANY OTHER MATERIAL.
- B. CAP UNITS SHALL BE GLUED TO THE UNDERLYING WALL UNITS WITH AN ALL-WEATHER EXTERIOR CONSTRUCTION ADHESIVE RECOMMENDED BY THE BLOCK MANUFACTURER.

08/29/2025



The seal appearing on this document was authorized by Gwendolyn R. Hubbard, PE# 143104 on 08/29/2025. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act. The record copy of this drawing is on file at the offices of Halff Associates, Inc. 1201 N. Bowser Road, Richardson, Texas, 75081. TBPELS FIRM #F-312.

*Gwen Hubbard*



1201 NORTH BOWSER ROAD  
RICHARDSON, TX 75081-2275  
(214) 346-6200  
TBPELS FIRM # 312



Texas Department of Transportation  
© 2024

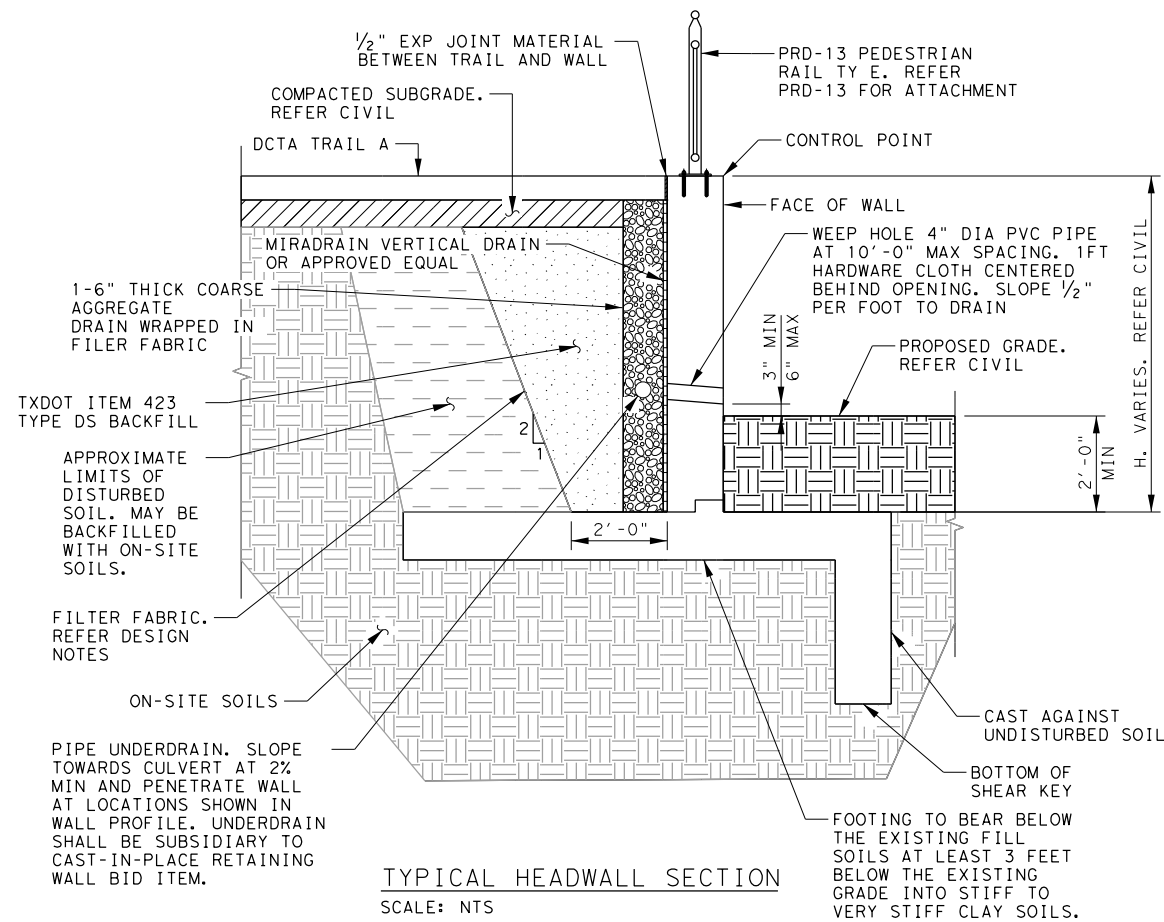
DCTA TRAIL LEWISVILLE  
DCTA TRAIL A LEWISVILLE  
SEGMENTED WALL STRUCTURAL  
GENERAL NOTES

SCALE: AS NOTED SHEET 01 OF 01

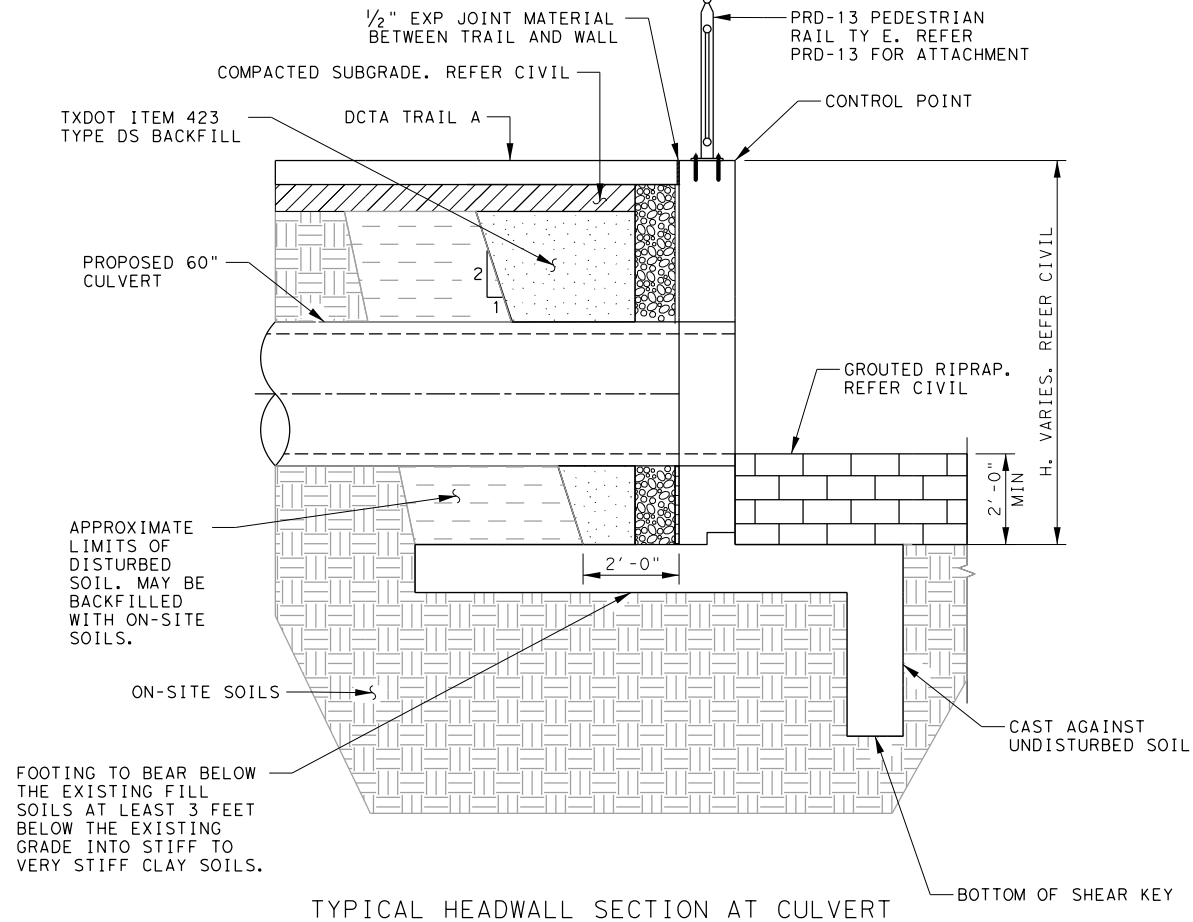
DESIGN GRH	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS MWB	6	STP XXX(XXX) TAPS		VA
CHECK GRH	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK ESC	TEXAS	DAL	TARRANT	62
	CONTROL	SECTION	JOB	
	0918	46	331	

DATE:8/29/2025 TIME:9:28:43 AM PROJECT # 45685 OFFICE:IMCA CH2583  
 A:\45000s\45685\001\CADD\Sheet\SRCH\S102-STR GN-45685.dgn

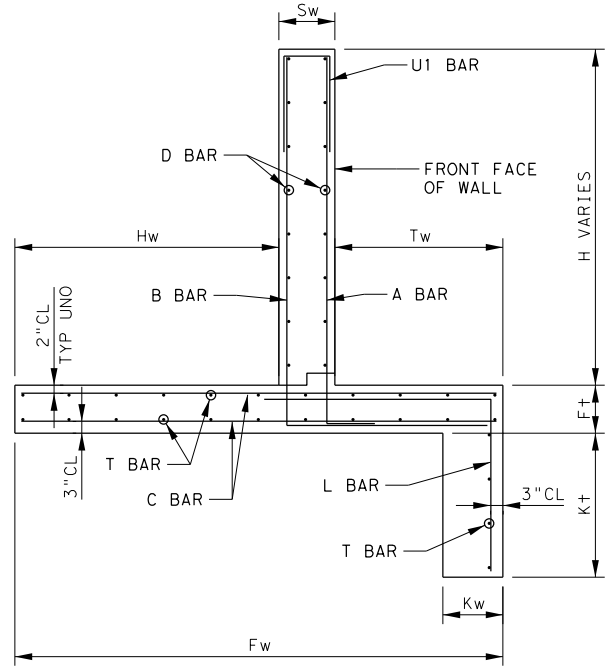
DATE: 8/29/2025 TIME: 9:28:45 AM PROJECT # 45685 OFFICE: MCA  
 A: \\45000s\45685\001\CADD\Sheet\SRCH\S103-RWDTL-45685.dgn



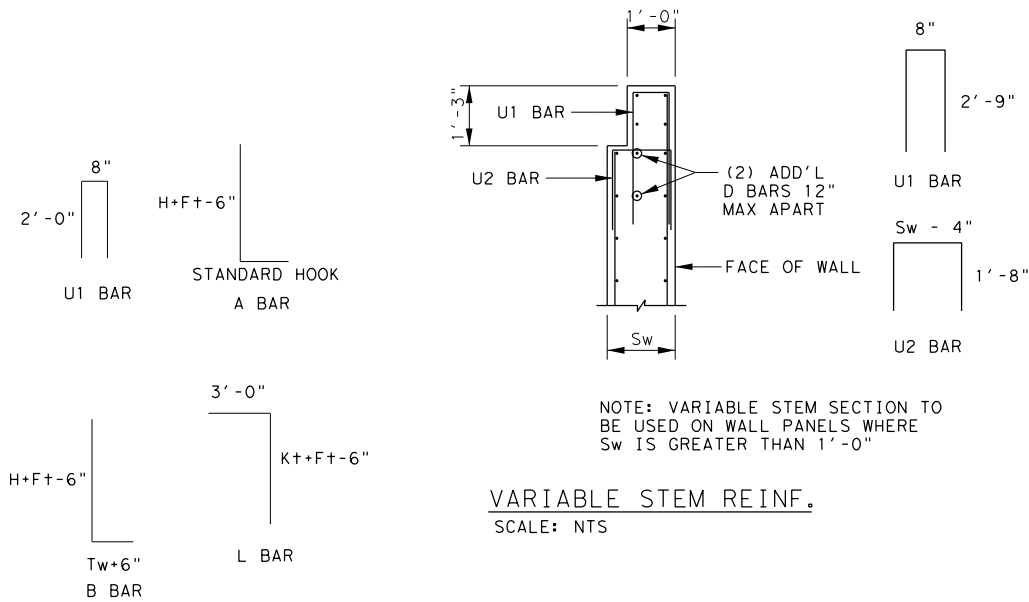
TYPICAL HEADWALL SECTION  
SCALE: NTS



TYPICAL HEADWALL SECTION AT CULVERT  
SCALE: NTS



TYPICAL SECTION REINF.  
SCALE: NTS



VARIABLE STEM REINF.  
SCALE: NTS

CAST-IN-PLACE HEADWALL			
BID ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
423-7016	RETAINING WALL (CAST-IN-PLACE)	SF	1,506

PANEL	CONCRETE DIMENSIONS								REINFORCEMENT SCHEDULE								QUANTITY (SF)
	H (FT) MAX	Tw	Hw	Fw	Ft	Kw	Kt	Sw	A	B	C	L	D	T	U1	U2	
	WALL A																
B1, B2, B9	7	2'-6"	4'-0"	7'-6"	1'-0"	1'-0"	2'-9"	1'-0"	#6 @ 9" O.C.	#6 @ 9" O.C.	#6 @ 9" O.C.	#6 @ 9" O.C.	#5 @ 12" O.C.	#5 @ 12" O.C.	#4 @ 9" O.C.	NA	328
B3, B4, B8	9.25	3'-0"	6'-0"	10'-0"	1'-1"	1'-1"	3'-9"	1'-1"	#6 @ 9" O.C.	#6 @ 9" O.C.	#6 @ 9" O.C.	#6 @ 9" O.C.	#5 @ 12" O.C.	#5 @ 12" O.C.	#4 @ 9" O.C.	NA	417
B5-B7	12.5	4'-6"	7'-2"	13'-0"	1'-3"	1'-4"	4'-6"	1'-5"	#8 @ 9" O.C.	#8 @ 9" O.C.	#8 @ 9" O.C.	#8 @ 9" O.C.	#5 @ 12" O.C.	#5 @ 12" O.C.	#4 @ 9" O.C.	#4 @ 9" O.C.	761

08/29/2025

The seal appearing on this document was authorized by Gwendolyn R. Hubbard, PE# 143104 on 08/29/2025. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act. The record copy of this drawing is on file at the offices of Halff Associates, Inc. 1201 N. Bowser Road, Richardson, Texas, 75081. TBPELS FIRM #F-312.

*Gwen Hubbard*

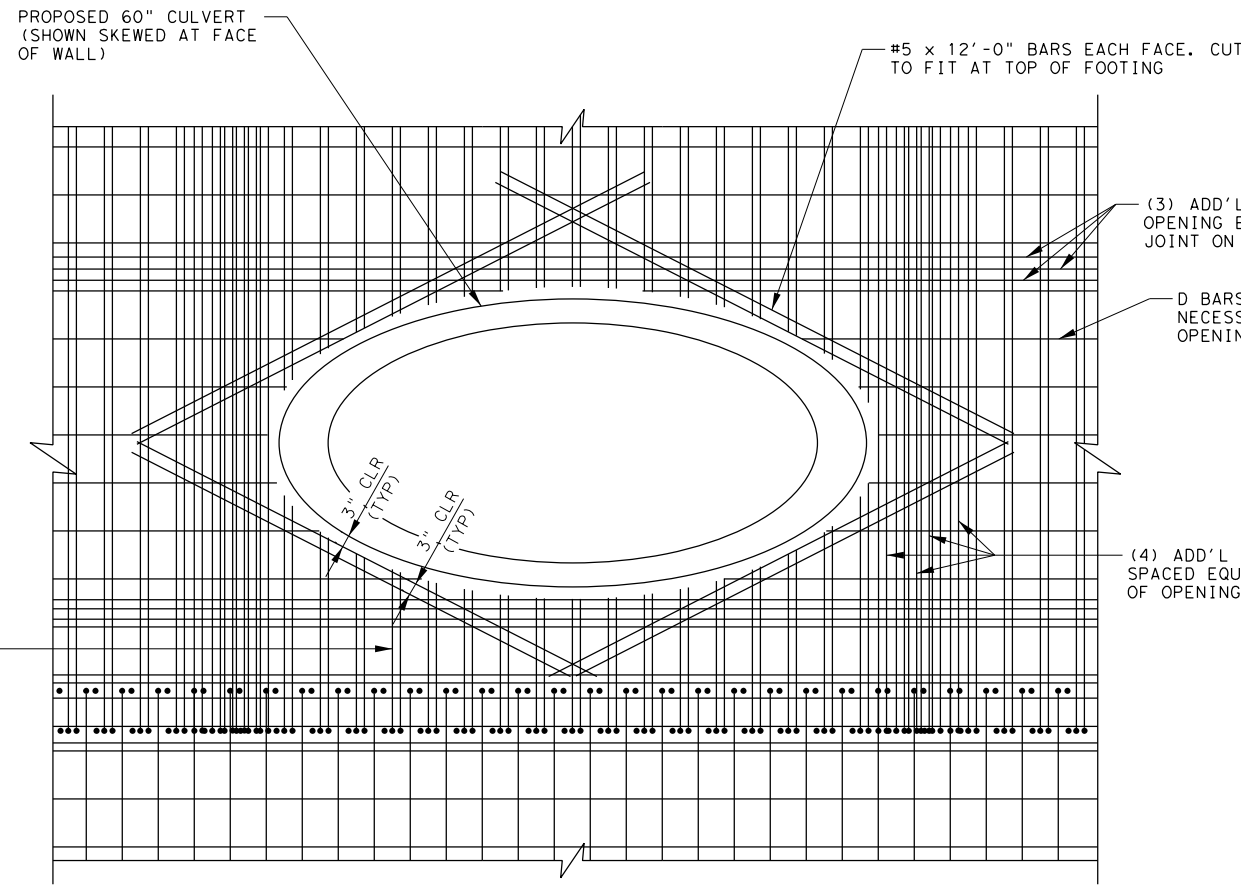
1201 NORTH BOWSER ROAD  
RICHARDSON, TX 75081-2275  
(214) 346-6200  
TBPELS FIRM # 312

© 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 CAST-IN-PLACE  
 HEADWALL DETAILS

SCALE: AS NOTED	SHEET 01 OF 03		
DESIGN GRH	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
GRAPHICS MWB	6	STP XXX (XXX) TAPS	VA
CHECK GRH	STATE	DISTRICT	COUNTY
CHECK ESC	TEXAS	DAL	TARRANT
	CONTROL	SECTION	JOB
	0918	46	331

DATE: 8/29/2025 TIME: 9:28:48 AM PROJECT # 45685 OFFICE: MCA  
 A: \\45000s\45685\001\CADD\Sheet\SRCH\S104-RWDTL-45685.dgn



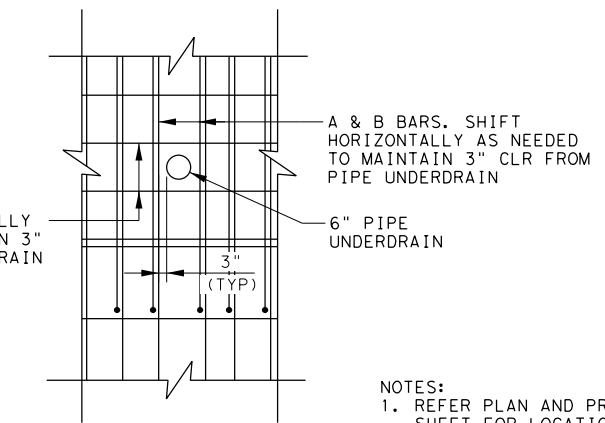
A AND B BAR.  
CUT AS  
NECESSARY AT  
OPENING

#5 x 12'-0" BARS EACH FACE. CUT  
TO FIT AT TOP OF FOOTING

(3) ADD'L D BARS ABOVE AND BELOW  
OPENING EACH FACE. EXTEND TO PANEL  
JOINT ON EITHER SIDE OF OPENING.

D BARS. CUT AS  
NECESSARY AT  
OPENING

(4) ADD'L A AND B BARS  
SPACED EQUALLY WITHIN 2'-0"  
OF OPENING ON BOTH SIDES

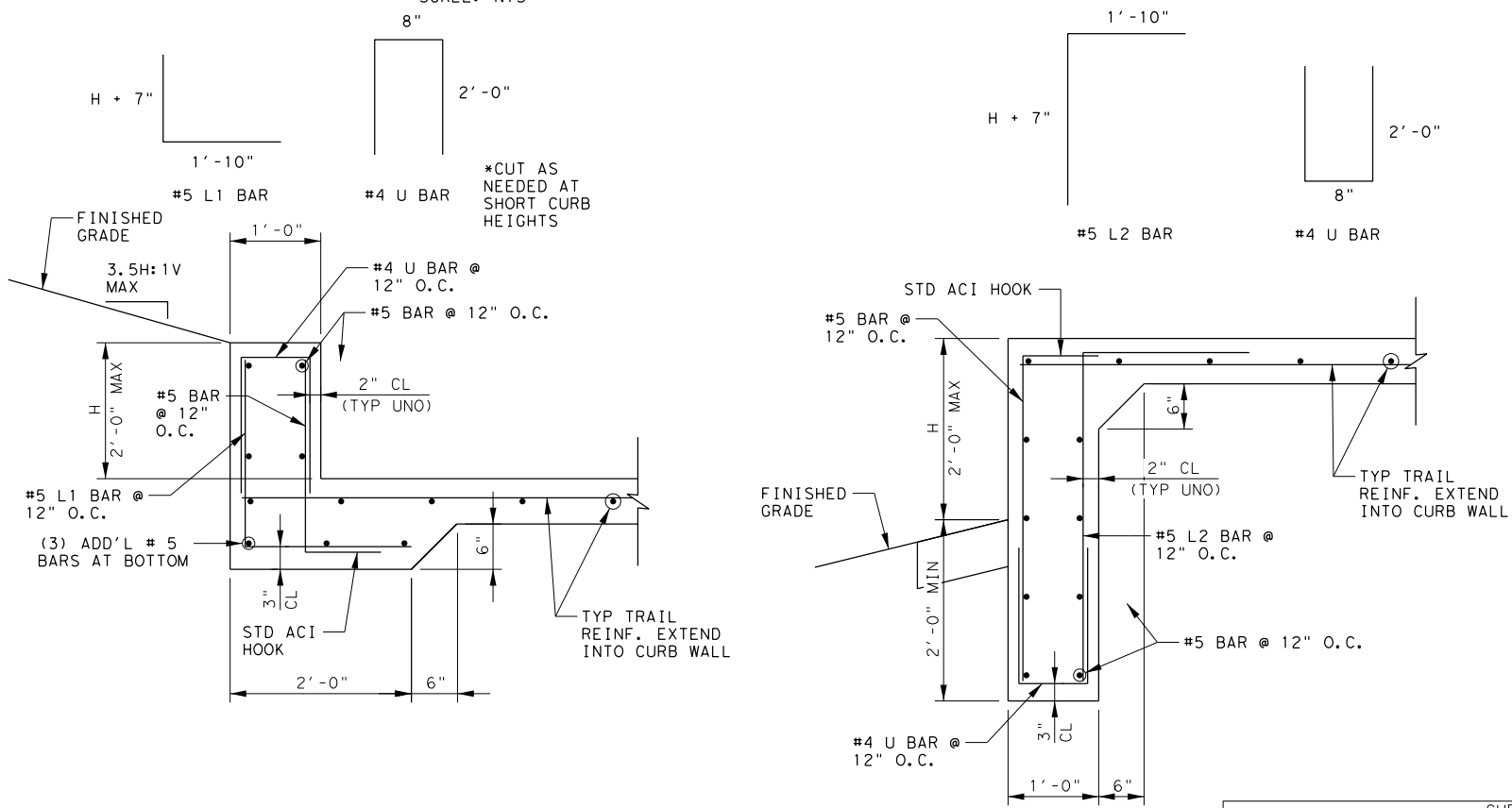


NOTES:  
1. REFER PLAN AND PROFILE  
SHEET FOR LOCATION OF  
UNDERDRAIN PENETRATION.  
2. ADDITIONAL TYP RETAINING  
WALL REINF. NOT SHOWN FOR  
CLARITY.

UNDERDRAIN PENETRATION DETAIL  
SCALE: NTS

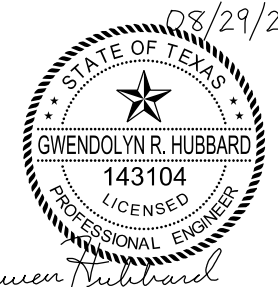
TYP REINF. AT PIPE PENETRATION  
SCALE: NTS

NOTE: REFER TYPICAL SECTION  
REINF. DETAIL FOR TYPICAL WALL  
REINFORCEMENT



TYP CURB WALL REINF. SECTIONS  
SCALE: 1/2" = 1'-0"

CURB WALL			
BID ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
420-7067	CL C CONC (MISC)	CY	49.7



The seal appearing on this document was authorized by Gwendolyn R. Hubbard, PE# 143104 on 08/29/2025. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act. The record copy of this drawing is on file at the offices of Half Associates, Inc. 1201 N. Bowser Road, Richardson, Texas, 75081. TBPELS FIRM #F-312.



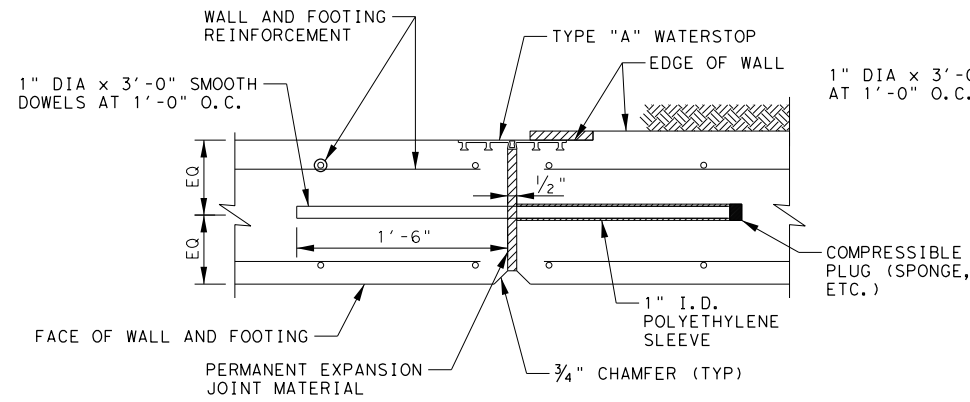
DCTA TRAIL LEWISVILLE  
DCTA TRAIL A LEWISVILLE  
CAST-IN-PLACE  
HEADWALL DETAILS

DESIGN GRH	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXX(XXX) TAPS		HIGHWAY NO. VA
GRAPHICS MWB	STATE TEXAS	DISTRICT DAL	COUNTY TARRANT	SHEET NO. 64
CHECK GRH	CONTROL	SECTION	JOB	
CHECK ESC	0918	46	331	

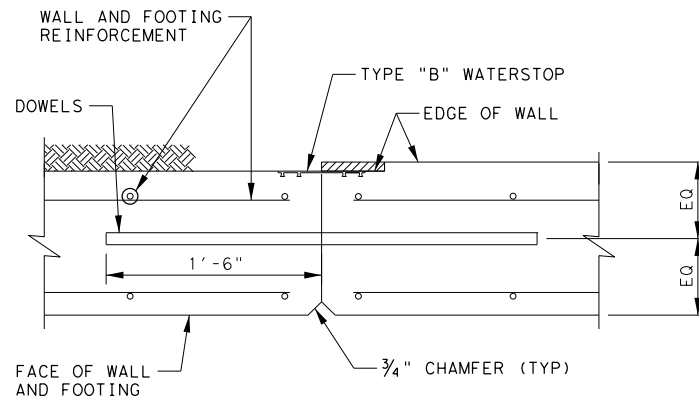
SCALE: AS NOTED

SHEET 02 OF 03

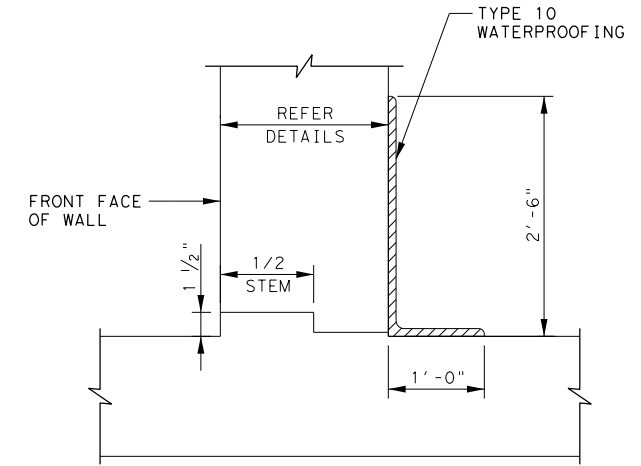
DATE: 8/29/2025 TIME: 9:28:49 AM PROJECT # 45685 OFFICE: MCA  
 A: \\45000s\45685\001\CADD\Sheet\SRCH\S105-RWDTL - 45685.dgn



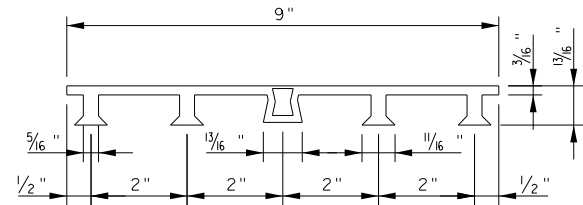
NOTE: TERMINATE TYPE "A" AND "B" WATERSTOPS 6" FROM TOP OF WALL  
**EXPANSION JOINT (EJ)**  
 SCALE: NTS



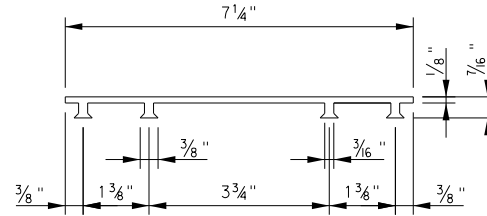
**CONSTRUCTION JOINT (CJ)**  
 SCALE: NTS



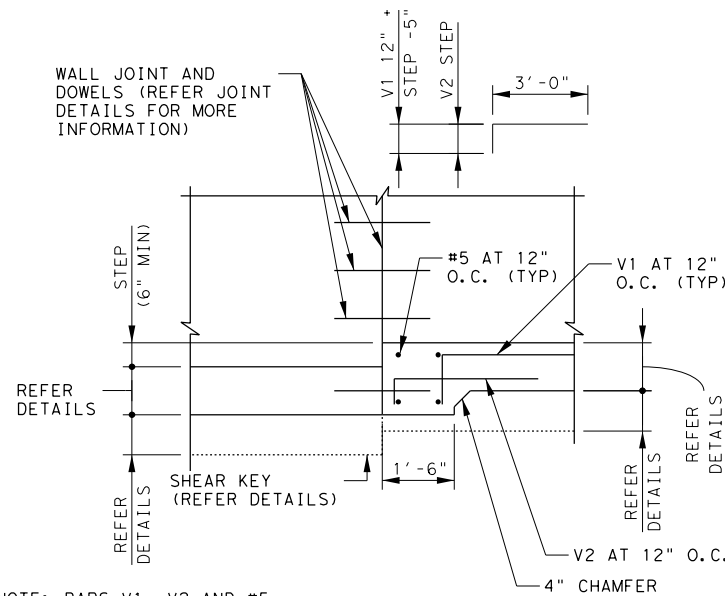
**JOINT AND WATERPROOFING DETAIL**  
 SCALE: NTS



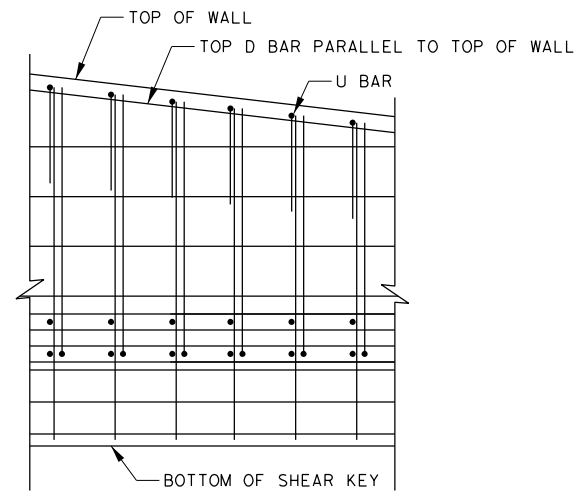
**PVC WATERSTOP TYPE "A"**  
 SCALE: NTS



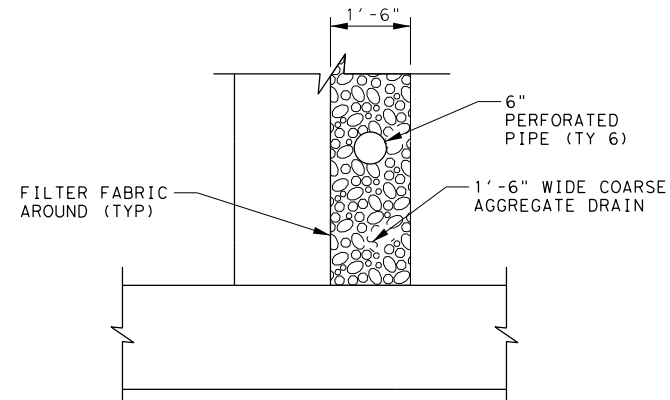
**PVC WATERSTOP TYPE "B"**  
 SCALE: NTS



NOTE: BARS V1, V2 AND #5 BARS SHOWN ARE IN ADDITION TO TYPICAL FOOTING REINFORCEMENT  
**FOOTING STEP DETAIL**  
 SCALE: NTS



NOTE: SEE TYPICAL SECTION FOR REINF.  
**SLOPED WALL DETAIL**  
 SCALE: NTS



**UNDERDRAIN DETAIL**  
 SCALE: NTS

08/29/2025

The seal appearing on this document was authorized by Gwendolyn R. Hubbard, PE# 143104 on 08/29/2025. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act. The record copy of this drawing is on file at the offices of Half Associates, Inc. 1201 N. Bowser Road, Richardson, Texas, 75081. TBPELS FIRM #F-312.

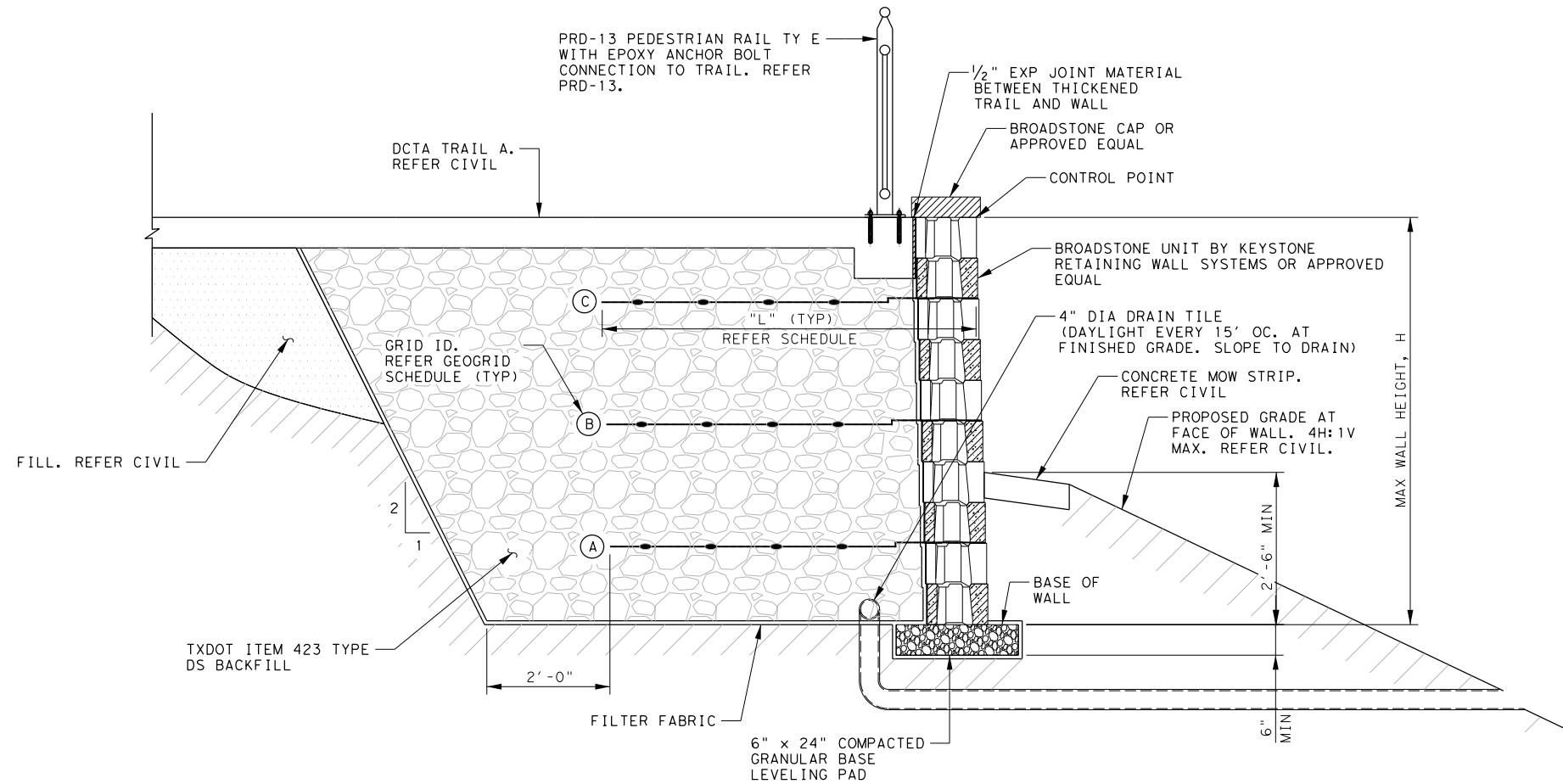
*Gwen Hubbard*

1201 NORTH BOWSER ROAD  
 RICHARDSON, TX 75081-2275  
 (214) 346-6200  
 TBPELS FIRM # 312

© 2024

**DCTA TRAIL LEWISVILLE**  
**DCTA TRAIL A LEWISVILLE**  
**CAST-IN-PLACE**  
**HEADWALL DETAILS**

SCALE: AS NOTED		SHEET 03 OF 03	
DESIGN GRH	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	
GRAPHICS MWB	6	STP XXX (XXX) TAPS	
CHECK GRH	TEXAS	DISTRICT	COUNTY
CHECK ESC	CONTROL	SECTION	JOB
	0918	46	331
			65



TYPICAL MSE WALL SECTION  
SCALE: 3/8" = 1'-0"

- NOTES:
- DRAINAGE PIPE RUNNING PARALLEL TO THE BASE OF WALL IS SUBSIDIARY TO BID ITEM 423-7013
  - RETAINING WALL QUANTITY CALCULATED FROM TOP OF WALL TO TOP OF LEVELING PAD

MAX WALL HEIGHT, (FT)	NO. OF WALL (UNITS)	GEOGRID LENGTH AND PLACEMENT, HEIGHT FROM BASE OF WALL					MIN LENGTH (FT)
		GRID A	GRID B	GRID C	GRID D		
3'-4"	5	0'-8"	2'-0"	-	-	-	4'-0"
4'-0"	6	1'-4"	2'-8"	-	-	-	4'-0"
4'-8"	7	1'-4"	3'-4"	-	-	-	5'-0"
5'-4"	8	1'-4"	2'-8"	4'-0"	-	-	5'-0"
6'-0"	9	1'-4"	3'-4"	4'-8"	-	-	6'-0"
6'-8"	10	1'-4"	3'-4"	5'-4"	-	-	6'-0"
7'-4"	11	1'-4"	3'-4"	4'-8"	6'-0"	-	6'-0"
8'-0"	12	1'-4"	3'-4"	5'-4"	6'-8"	-	8'-0"

MSE WALL			
BID ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
423-7013	RETAINING WALL (CONC BLOCK)	SF	2,828
556-7007	PIPE UNDERDRAINS (TY 7) (6")	LF	978*

\* BID ITEM 556-7007 QUANTITY IS FOR PIPE UNDERDRAIN THAT RUNS PERPENDICULAR TO WALL ONLY

GEOGRID SCHEDULE  
SCALE: NTS

08/29/2025

The seal appearing on this document was authorized by Gwendolyn R. Hubbard, PE# 143104 on 08/29/2025. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act. The record copy of this drawing is on file at the offices of Half Associates, Inc. 1201 N. Bowser Road, Richardson, Texas, 75081. TBPELS FIRM #F-312.

Gwen Hubbard

1201 NORTH BOWSER ROAD  
RICHARDSON, TX 75081-2275  
(214) 346-6200  
TBPELS FIRM # 312

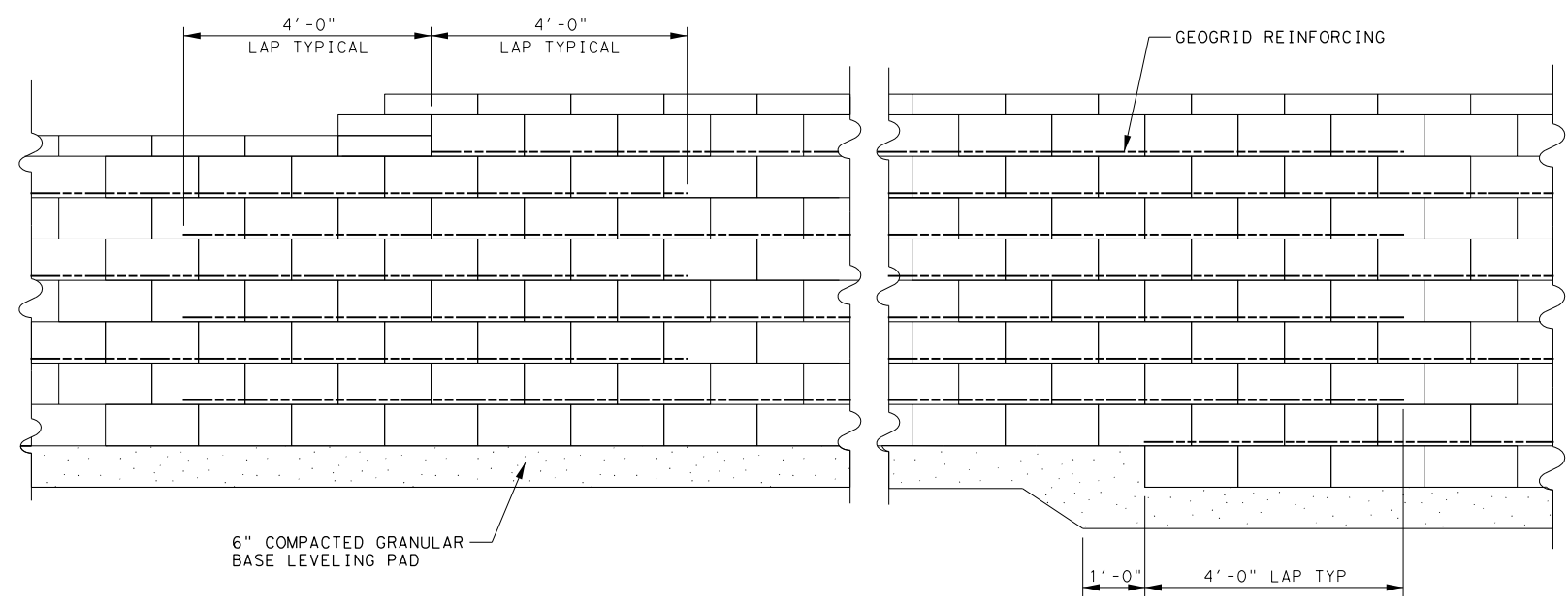
© 2024

DCTA TRAIL LEWISVILLE  
DCTA TRAIL A LEWISVILLE  
SEGMENTED WALL  
DETAILS

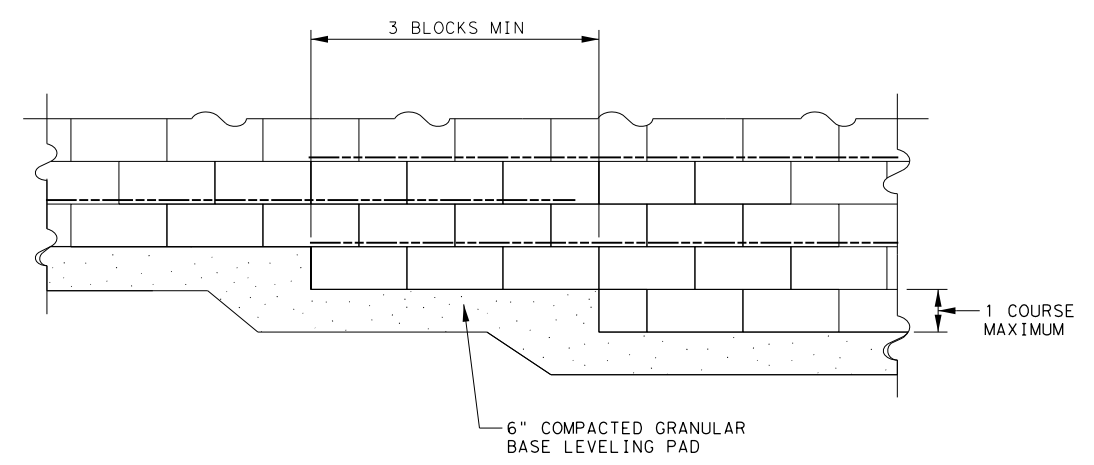
SCALE: AS NOTED SHEET 01 OF 03

DESIGN GRH	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	6	STP XXX (XXX) TAPS		VA
GRAPHICS MWB	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK GRH	TEXAS	DAL	TARRANT	66
CHECK ESC	CONTROL	SECTION	JOB	
	0918	46	331	

ch2583  
 PROJECT # 45685 OFFICE:MCA  
 TIME:9:28:52 AM  
 DATE:8/29/2025  
 A:\45000s\45685\001\CADD\Sheet\SRCH\S107-RWDTL-45685.dgn

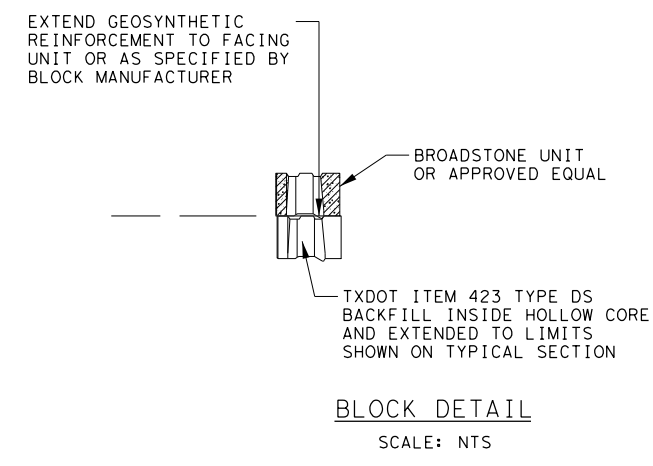


TYPICAL MSE WALL GEOGRID LAP  
SCALE: 1" = 3'-0"

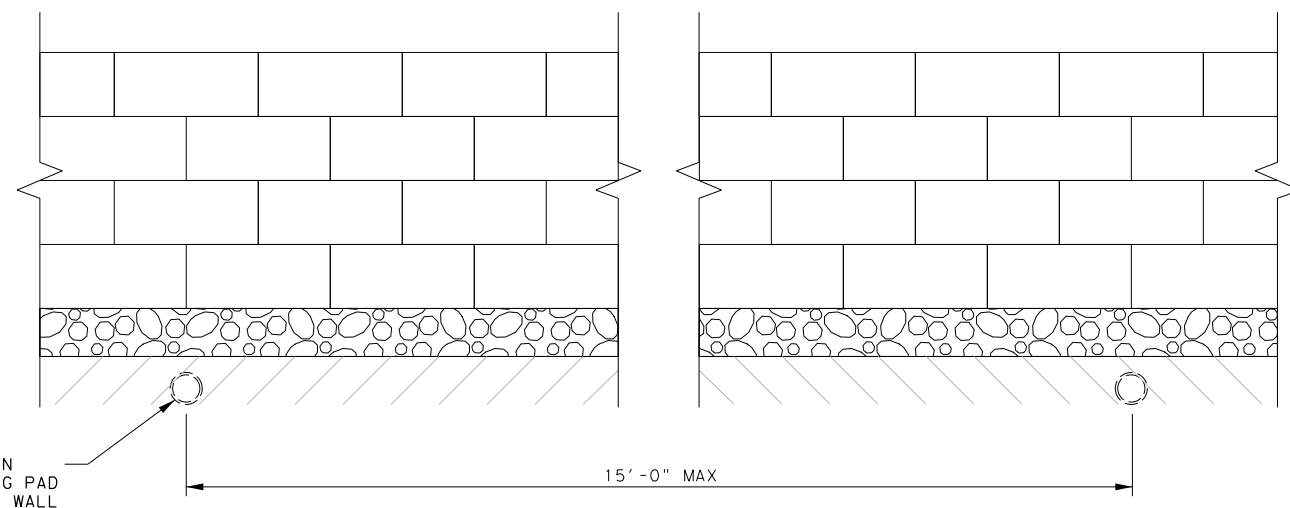
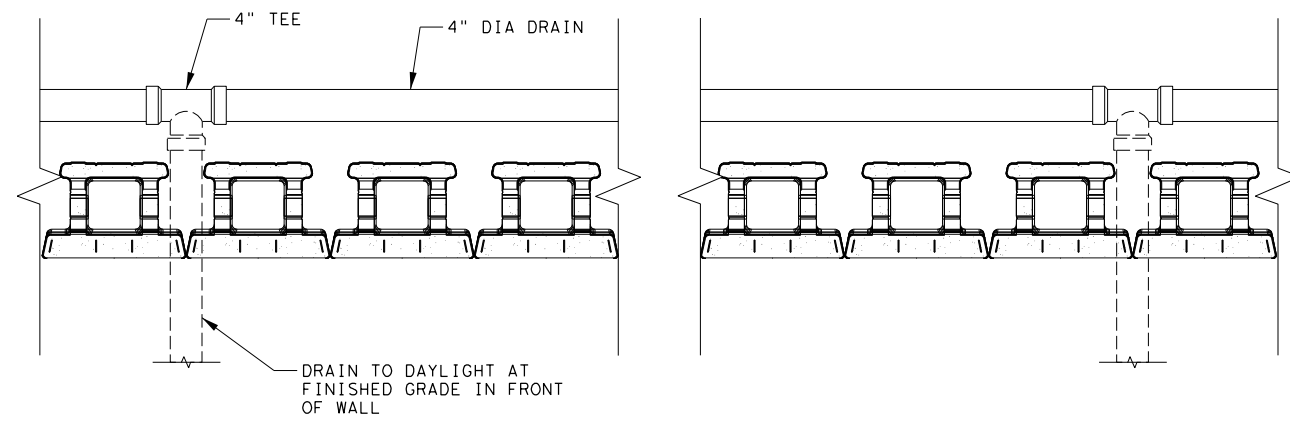


TYPICAL STEP DETAIL  
SCALE: 1" = 3'-0"

NOTE: REFER SEGMENTED CONCRETE BLOCK MANUFACTURER FOR ADDITIONAL INSTALLATION INFORMATION



BLOCK DETAIL  
SCALE: NTS



DRAIN DAYLIGHT DETAIL  
SCALE: 1/2" = 1'-0"

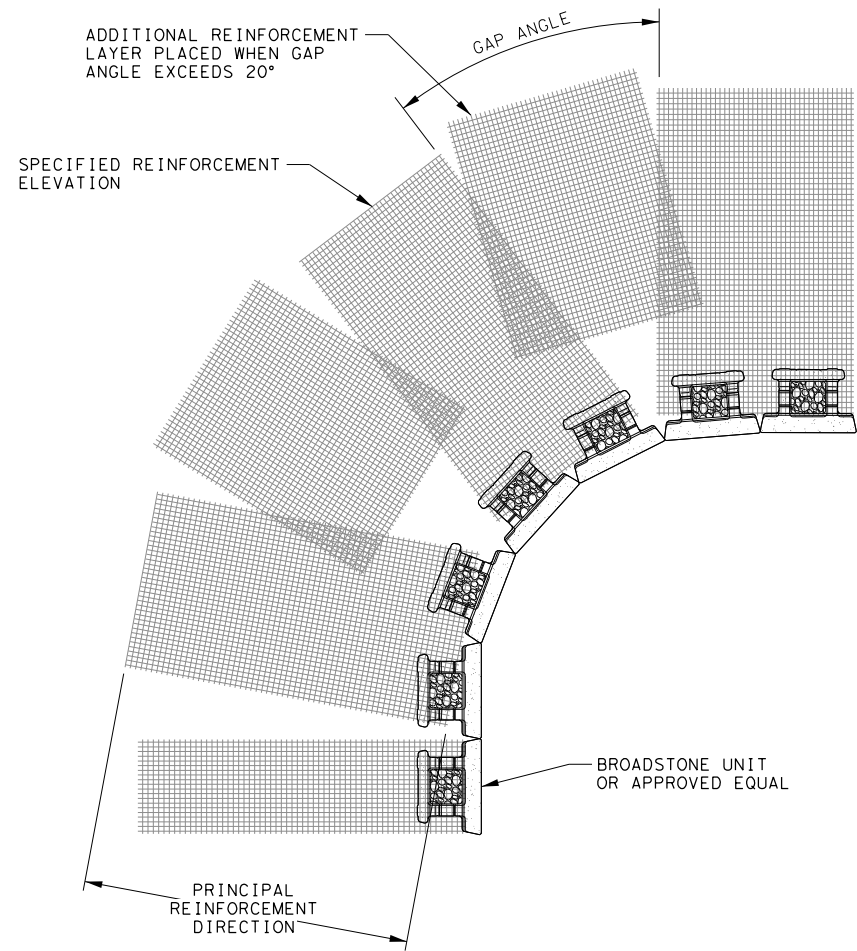
08/29/2025

The seal appearing on this document was authorized by Gwendolyn R. Hubbard, PE# 143104 on 08/29/2025. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act. The record copy of this drawing is on file at the offices of Half Associates, Inc. 1201 N. Bowser Road, Richardson, Texas, 75081. TBPELS FIRM #F-312.

*Gwen Hubbard*

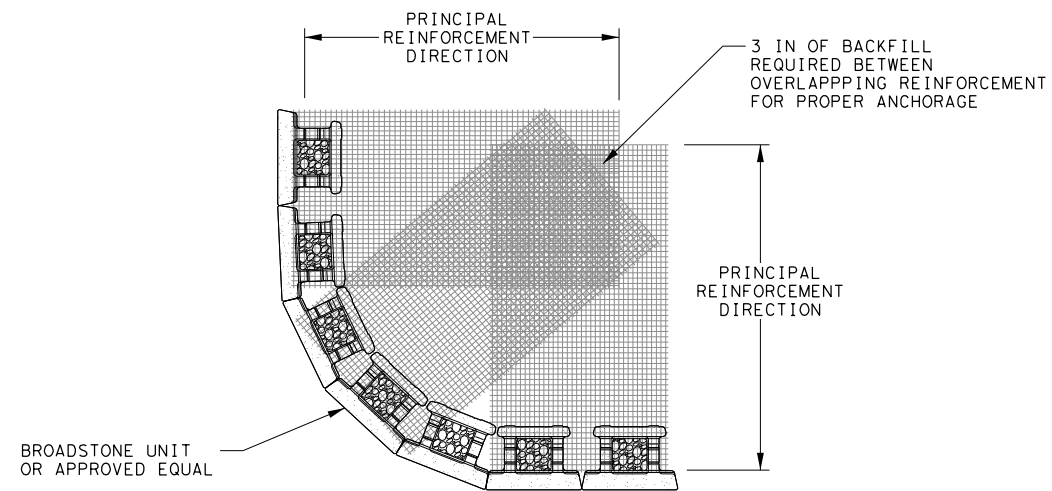
DCTA TRAIL LEWISVILLE  
DCTA TRAIL A LEWISVILLE  
SEGMENTED WALL  
DETAILS

SCALE: AS NOTED		SHEET 02 OF 03	
DESIGN GRH	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXX(XXX) TAPS	HIGHWAY NO. VA
GRAPHICS MWB	STATE TEXAS	DISTRICT DAL	COUNTY TARRANT
CHECK GRH	CONTROL	SECTION	JOB
CHECK ESC	0918	46	331
			67



**MSE RETAINING WALL INSIDE CURVE DETAIL**  
 SCALE: NTS

NOTE: MEASURE, CUT, AND ORIENT THE GEOGRID PER THE GEOGRID SCHEDULE AND THE GEOGRID MANUFACTURER'S SPECIFICATIONS



**CONCRETE BLOCK RETAINING WALL OUTSIDE CURVE DETAIL**  
 SCALE: NTS

NOTE: REFER SEGMENTED CONCRETE BLOCK MANUFACTURER FOR ADDITIONAL INSTALLATION INFORMATION

08/29/2025

The seal appearing on this document was authorized by Gwendolyn R. Hubbard, PE# 143104 on 08/29/2025. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act. The record copy of this drawing is on file at the offices of Half Associates, Inc. 1201 N. Bowser Road, Richardson, Texas, 75081. TBPELS FIRM #F-312.

*Gwen Hubbard*

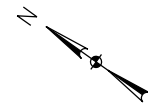
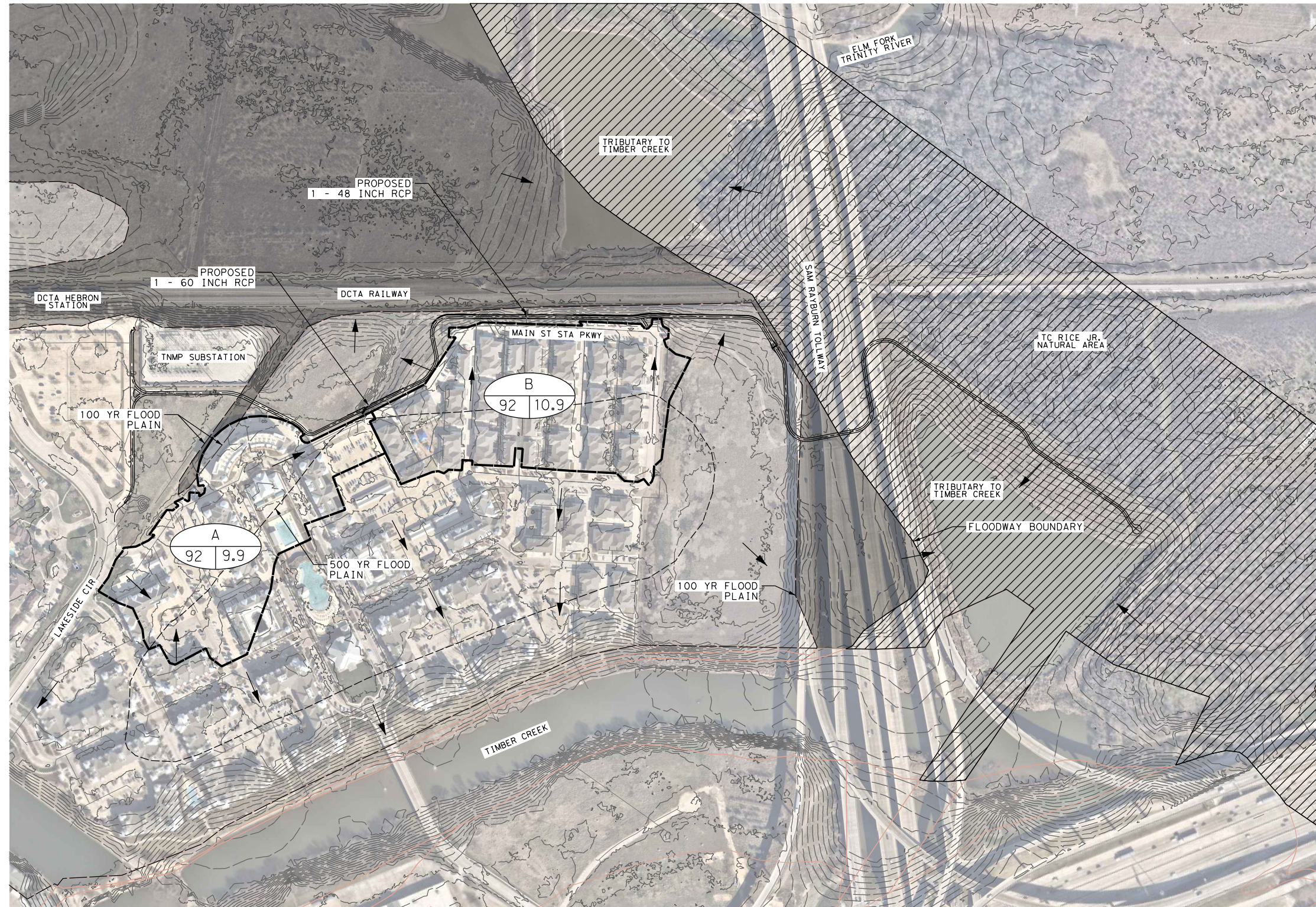
1201 NORTH BOWSER ROAD  
 RICHARDSON, TX 75081-2275  
 (214) 346-6200  
 TBPELS FIRM # 312

© 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL A LEWISVILLE  
 SEGMENTED WALL  
 DETAILS

SCALE: AS NOTED SHEET 03 OF 03

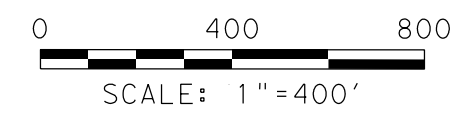
DESIGN GRH	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS MWB	6	STP XXX (XXX) TAPS		VA
CHECK GRH	STATE	DISTRICT	COUNTY	SHEET NO. 68
CHECK ESC	TEXAS	DAL	TARRANT	
	CONTROL	SECTION	JOB	
	0918	46	331	



**LEGEND**

DRAINAGE AREA: A circle divided into two sections, one labeled 'X' and the other 'XX.X', with 'CN' and 'AREA' labels pointing to the sections.

- DRAINAGE AREA BOUNDARY
- - - 1-FT CONTOURS
- 100-YEAR FLOODPLAIN
- ▨ 100-YEAR FLOODWAY



Professional Engineer Seal for Mark Cantu, State of Texas, License No. 153810. The seal includes a signature and the date 8-29-25.

**halff** 2601 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

Texas Department of Transportation  
 © 2024

DCTA TRAIL LEWISVILLE  
 DRAINAGE AREA MAP

SCALE: AS NOTED SHEET 01 OF 01

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 69
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

PROPOSED RUNOFF COMPUTATIONS

Drainage	Basin Information			Computed C	Cumulative CA	Time of Concentration				Intensity				Flow			
	Area (Ac)	Previous Area (Ac) for C=0.3	Impervious Area (Ac) for C=0.9			Tc (minute)	Tc Used	I <sup>2</sup> (in/hr)	I <sub>10</sub> (in/h)	I <sup>25</sup> (in/hr)	I <sub>100</sub> (in/h)	Q <sup>2</sup> (cfs)	Q <sub>10</sub> (cfs)	Q <sub>50</sub> (cfs)	Q <sub>100</sub> (cfs)		
A	9.9	1.80	8.10	0.86	8.48	2.12	10.00	4.32	6.50	7.70	9.46	36.62	55.11	65.28	80.20		
B	10.9	3.30	7.60	0.77	8.44	2.09	10.00	4.32	6.50	7.70	9.46	36.45	54.85	64.97	79.82		

Culvert Computations - HEC-RAS Method

Culvert	Total Discharge Q(10) cfs	Culvert Length LF	U/S Flowline FT	D/S Flowline FT	Slope %	Number of Barrels	Pipe Size FT	Box Size FT x FT	"n" Culvert	Headwater EL FT	Normal Depth FT	Critical Depth FT	TW Velocity FT/S
Culvert A	80.20	40.00	448.10	448.08	0.05%	1	5.0	-	0.013	452.40	3.98	2.72	8.40
Culvert B	79.82	21.00	446.80	446.79	0.05%	1	4.0	-	0.013	452.05	3.28	3.05	9.84

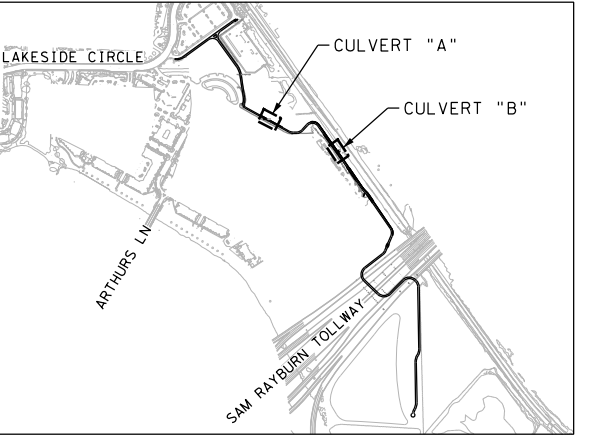
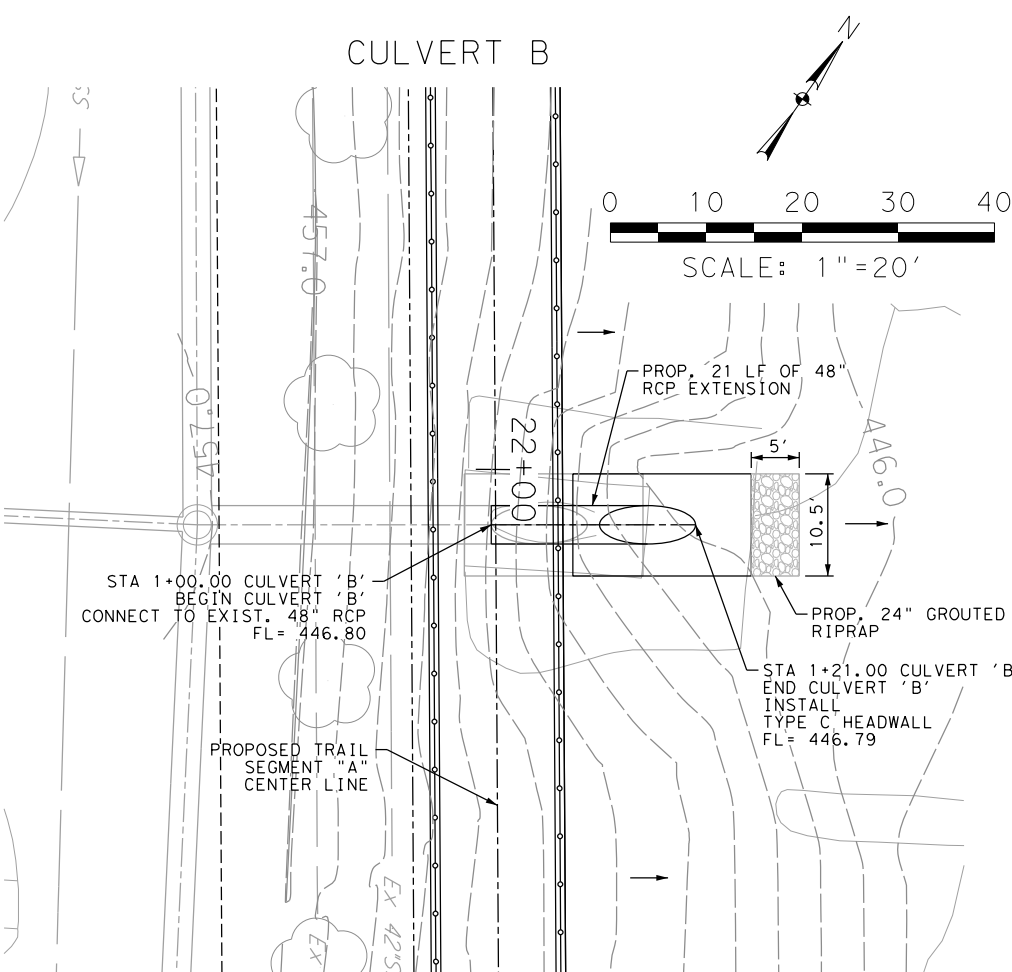
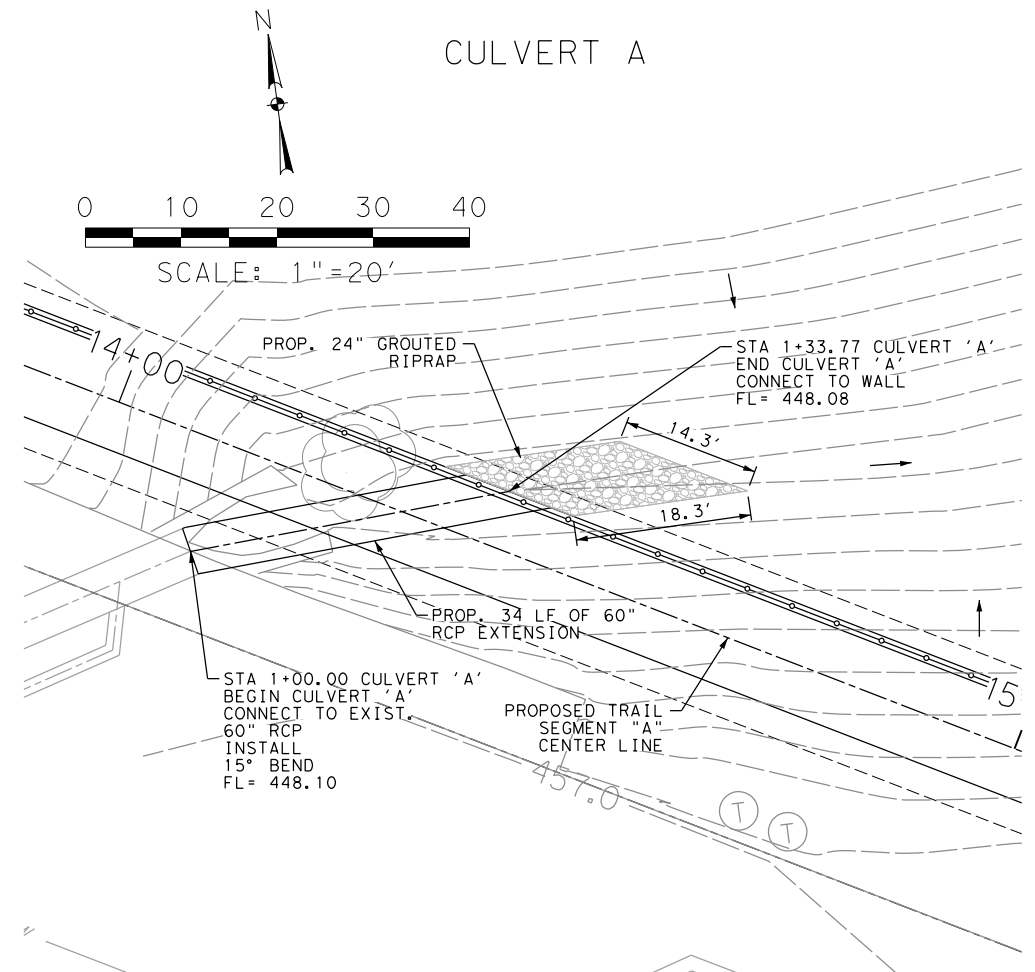


DCTA TRAIL LEWISVILLE

HYDRAULIC CALCULATIONS

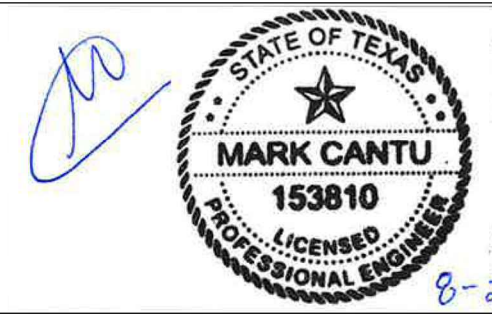
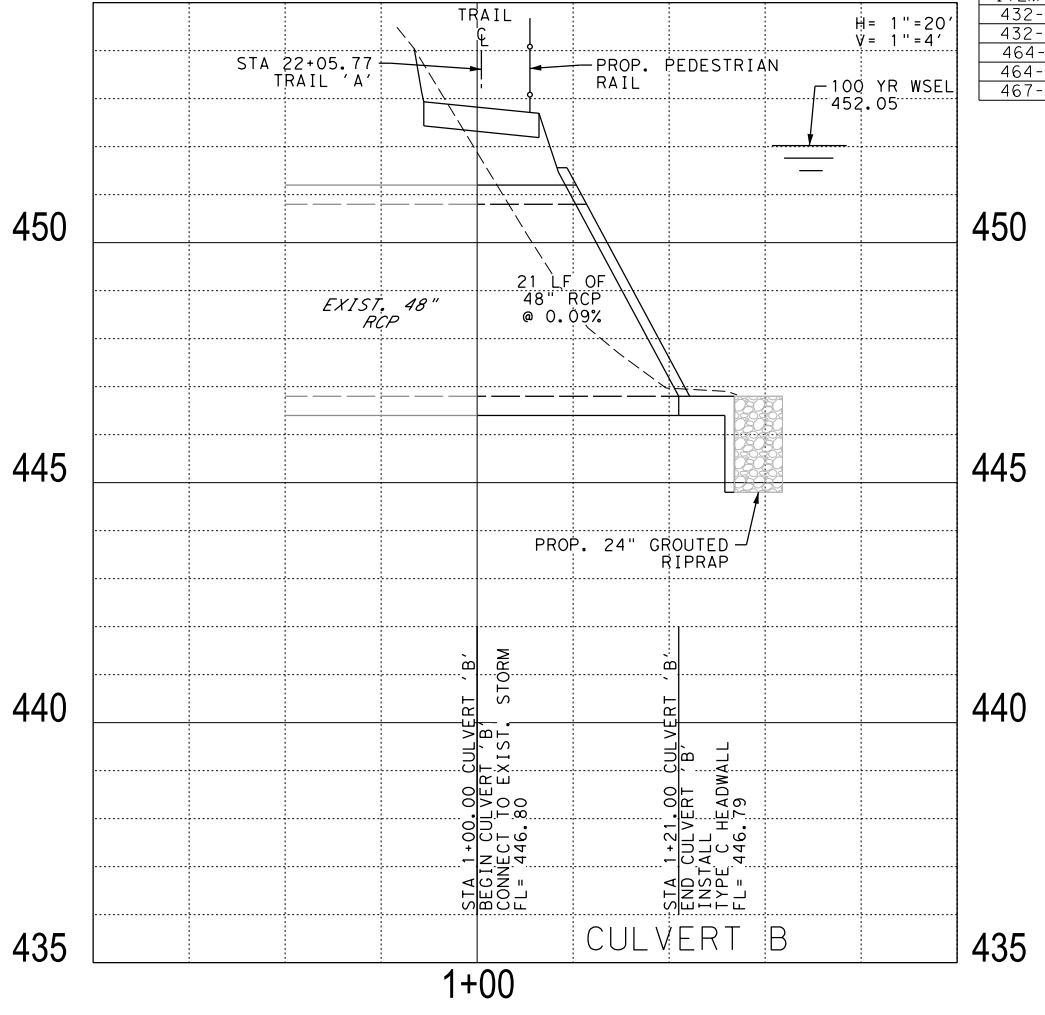
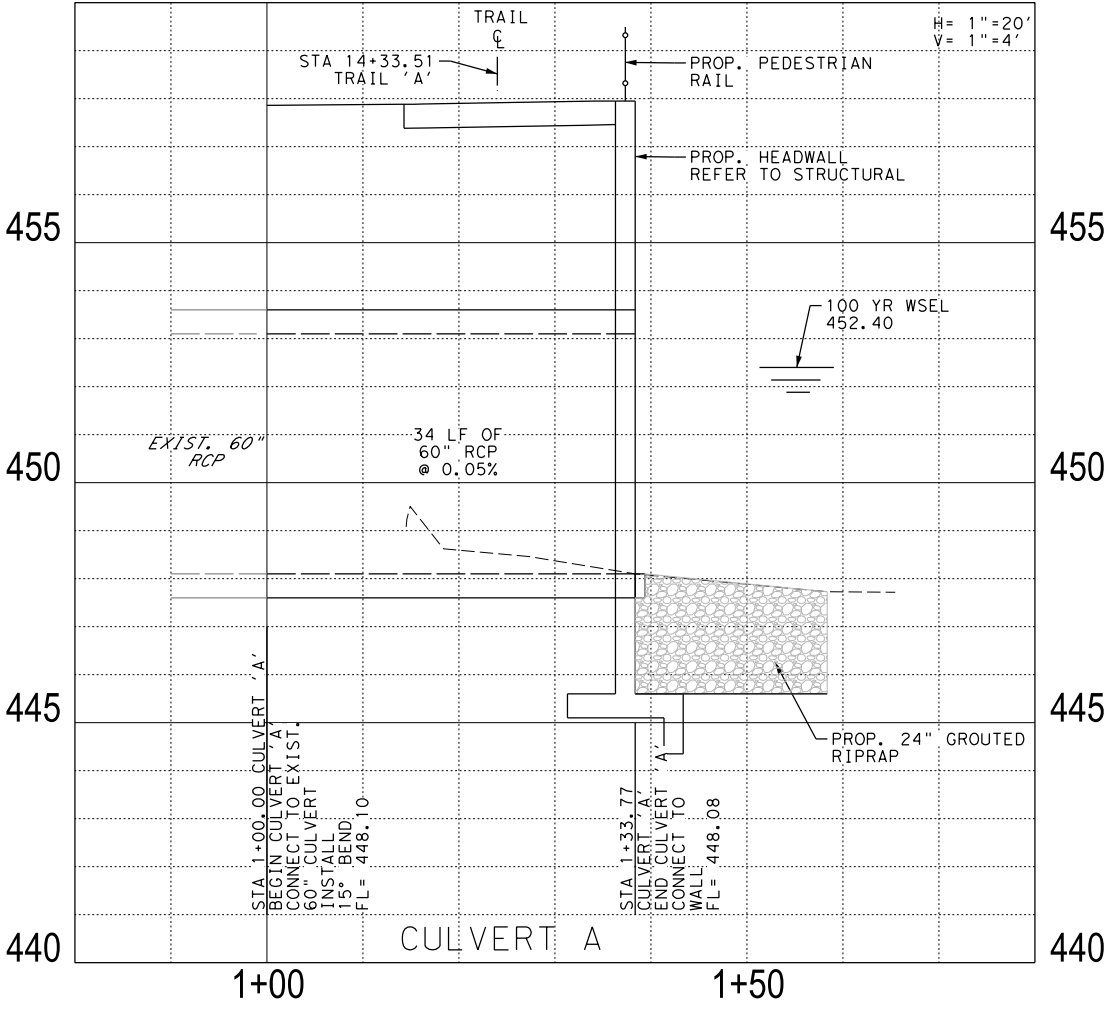
SCALE: NTS SHEET 1 OF 1

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 70
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



- KEY MAP - N. T. S.
- NOTE:
- CONTRACTOR MUST MAINTAIN THE CONVEYANCE AND THE CAPACITY OF THE STORMWATER SYSTEM AT ALL TIMES.
  - BOX CULVERTS SHALL BE FOUNDED UPON A MINIMUM 1-FOOT CRUSHED STONE PAD WITH GEOTEXTILE "SEPARATOR" FABRIC BELOW THE STONE PAD. (SUBSIDIARY TO CULVERTS)
  - THE CULVERT EXCAVATION BACKFILL BELOW AND THREE FEET BEYOND THE PROPOSED PAVEMENT SHALL CONSIST OF EITHER FLOWABLE BACKFILL OR PROPERLY COMPACTED FLEXIBLE BASE IN ORDER TO REDUCE BACKFILL SETTLEMENT AND THE POTENTIAL FOR DIFFERENTIAL MOVEMENT/DISTRESS.
  - REFER TO GEOTECH REPORT FOR ADDITIONAL INFORMATION.

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
432-7025	RIPRAP (STONE TY R) (DRY) (24 IN)	CY	24
432-7050	BEDDING MATERIAL (6 IN)	CY	0
464-7011	RC PIPE (CL III) (48 IN)	LF	21
464-7013	RC PIPE (CL III) (60 IN)	LF	34
467-7024	SET (TY I) (48 IN) (4:1) (C)	EA	1

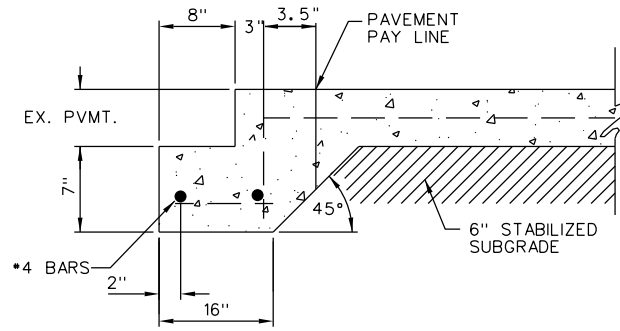


Texas Department of Transportation  
© 2024

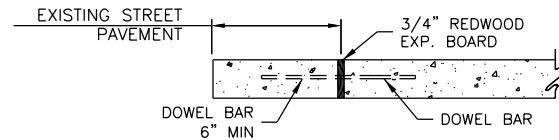
DCTA TRAIL LEWISVILLE  
CULVERT PLAN AND PROFILE

SCALE: AS NOTED SHEET 01 OF 01

DESIGN MC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	6	SEE TITLE SHEET		VA
GRAPHICS MC	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK XX	TEXAS	DAL	DENTON	71
CHECK XX	CONTROL	SECTION	JOB	
	0918	46	331	

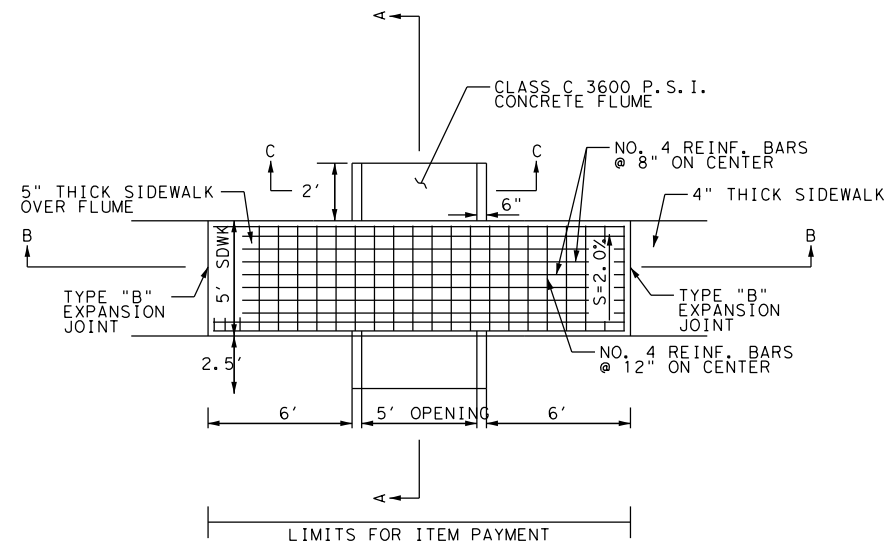


NOTE: PAVEMENT BARS TO BE BENT DOWN INTO HEADER AND PAVEMENT TO BE MONOLITHIC  
**CONCRETE PAVEMENT HEADER**  
 N.T.S.

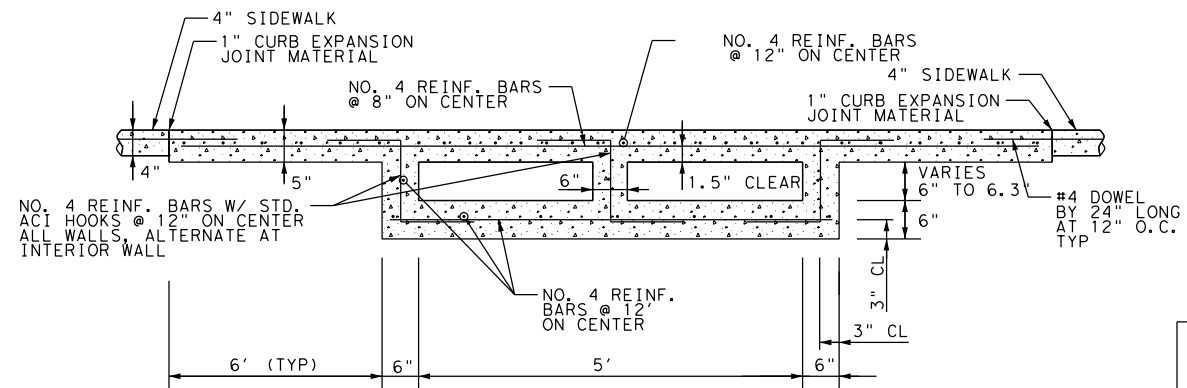


NOTE: ANCHORAGE JOINTS SHALL BE USED AT ALL CONNECTIONS TO EXISTING PAVEMENT  
 NOTE: DOWEL AND EPOXY #4 REINFORCING STEEL BARS INTO THE EXISTING PAVEMENT A MINIMUM OF (6) SIX INCHES AT 24" CENTERS AND HAVE A MINIMUM OF 15" LAP.

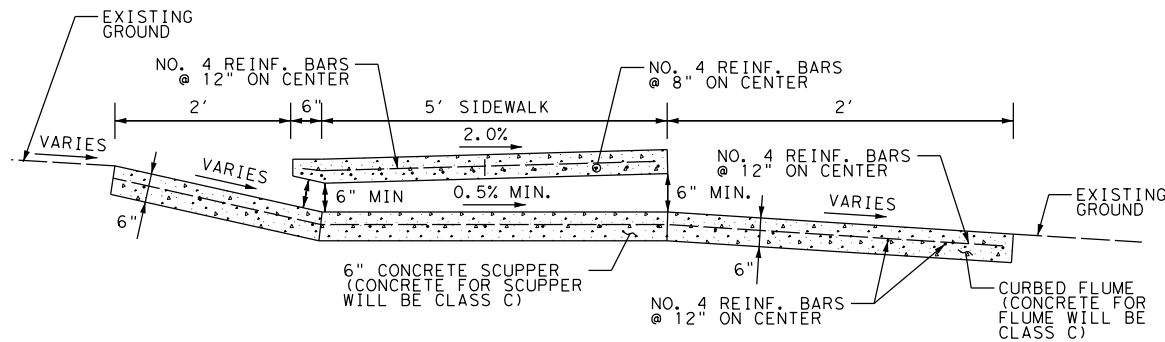
**ANCHORAGE JOINT DETAIL**



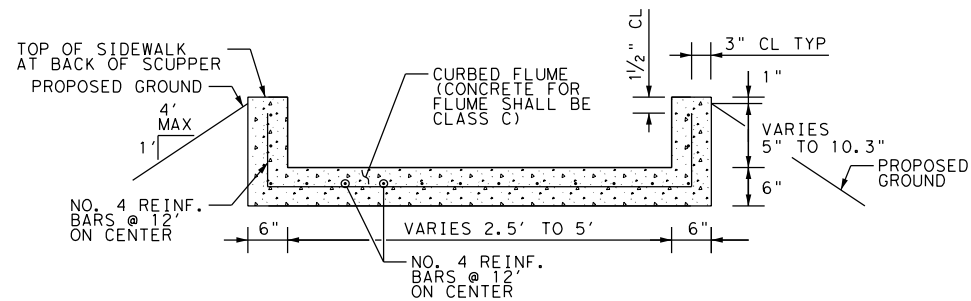
**CONCRETE SCUPPER DETAIL**  
 NOT TO SCALE



**CONCRETE SCUPPER DETAIL SECTION B-B**  
 NOT TO SCALE



**CONCRETE SCUPPER DETAIL SECTION A-A**  
 NOT TO SCALE



**CONCRETE SCUPPER DETAIL SECTION C-C**  
 NOT TO SCALE

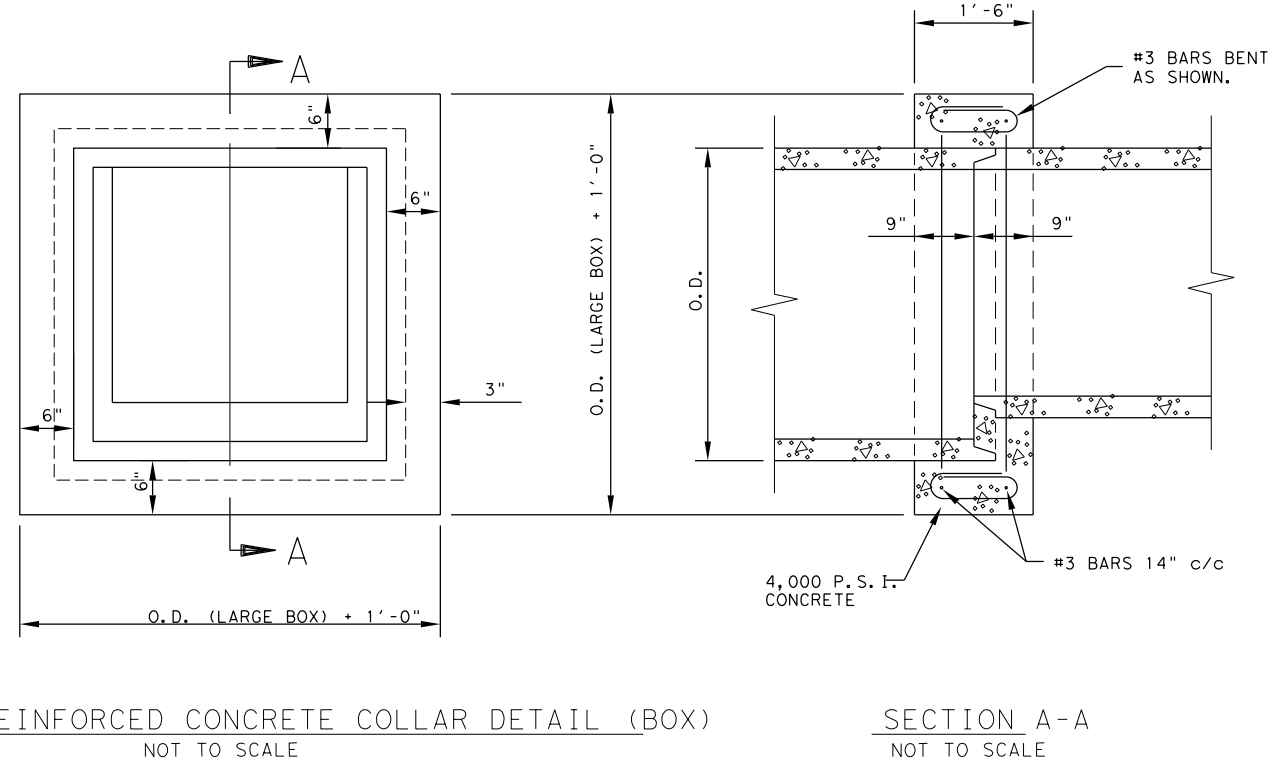
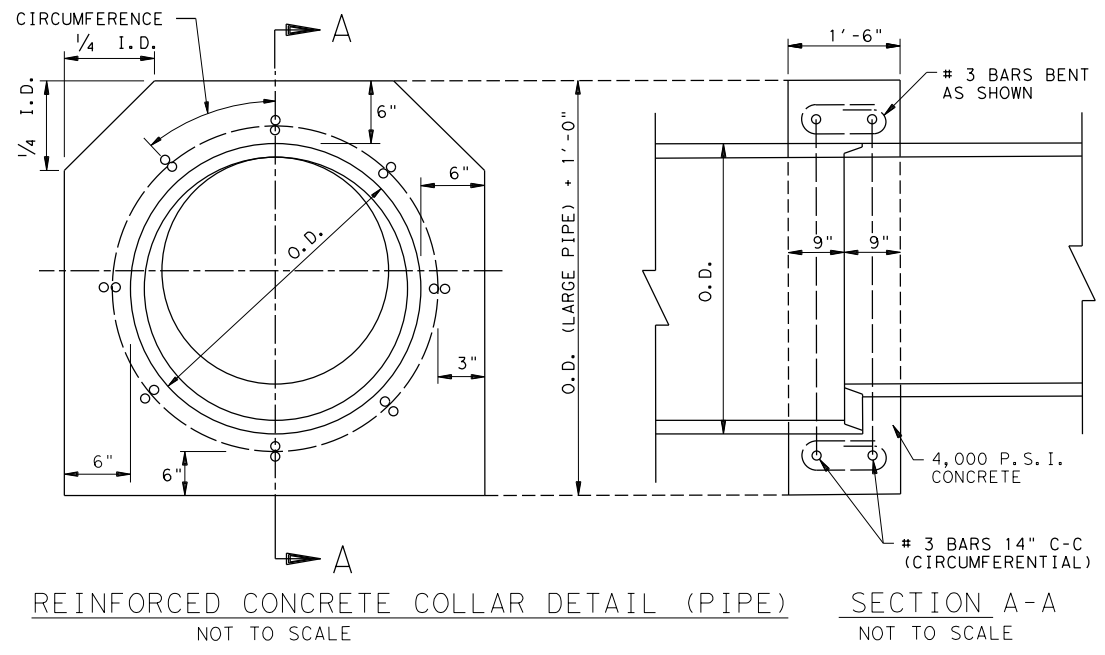


Texas Department of Transportation  
 © 2024

DCTA TRAIL LEWISVILLE

CONCRETE SCUPPER DETAIL

SCALE: AS NOTED		SHEET 01 OF 01	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331

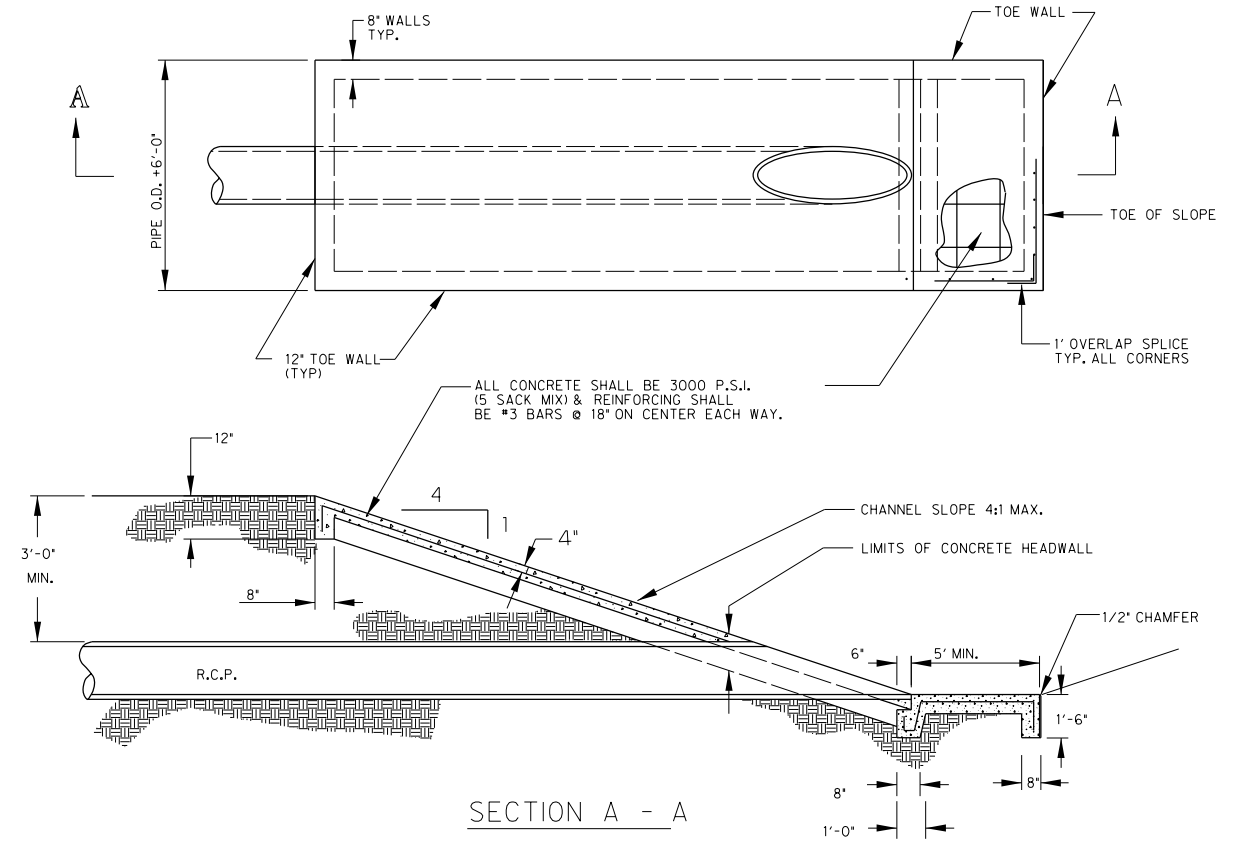


**NOTES APPLICABLE TO PIPE & BOX COLLARS**

**FITTINGS COLLARS AND CONNECTIONS:**

(A) The Contractor shall use only pre-fabricated fittings on new construction projects. Field connections shall be made only to existing pipe with City approval. The connection shall be a smooth connection and concrete wrapped on the outside and inside.

(B) Concrete collars shall be constructed per the Concrete Collar Details on this sheet at all storm drain size and at grade changes or in curves where the joint is being pulled more than recommended by the manufacturer. Please also refer to the details on this sheet and COG Item 508.3.4.1.



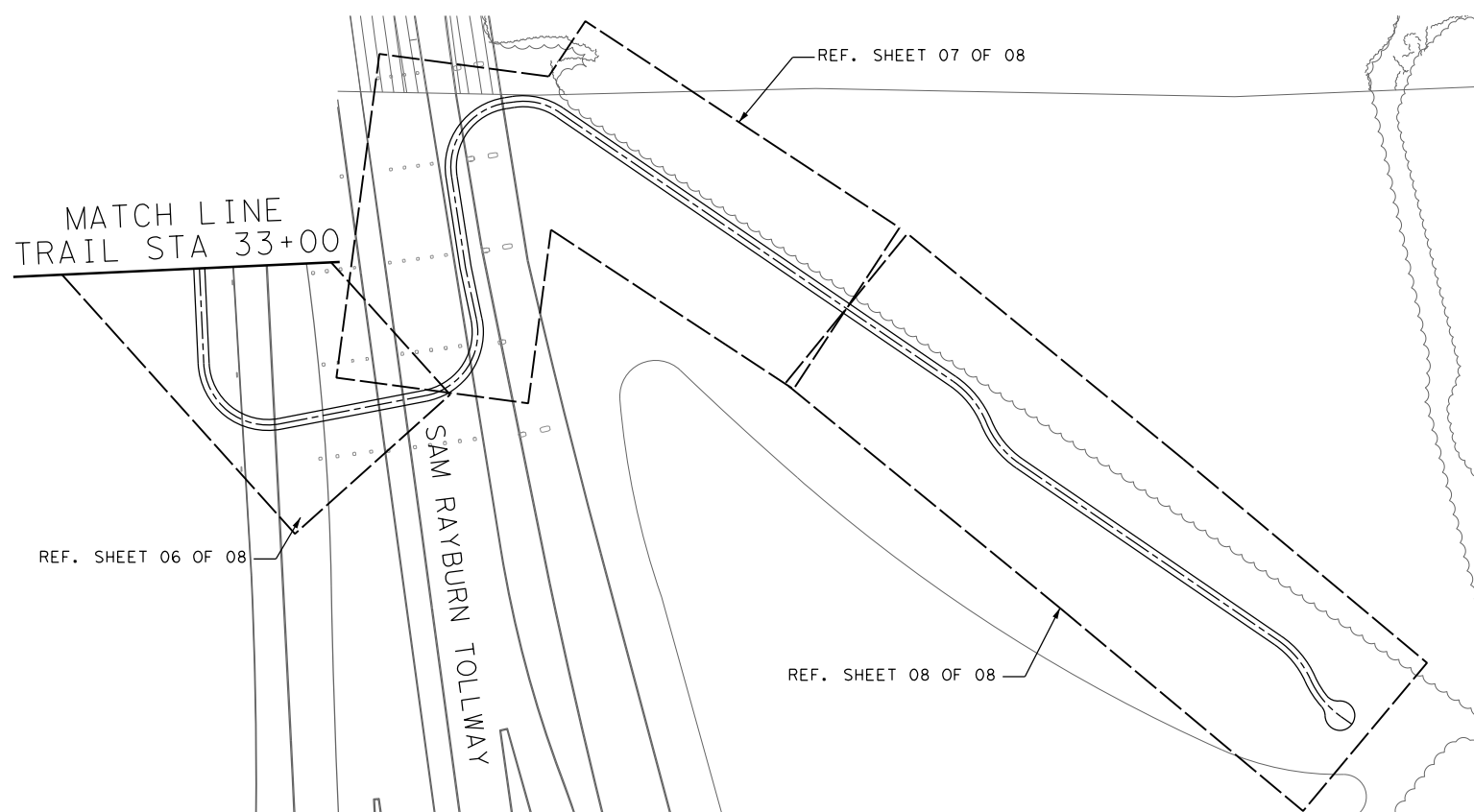
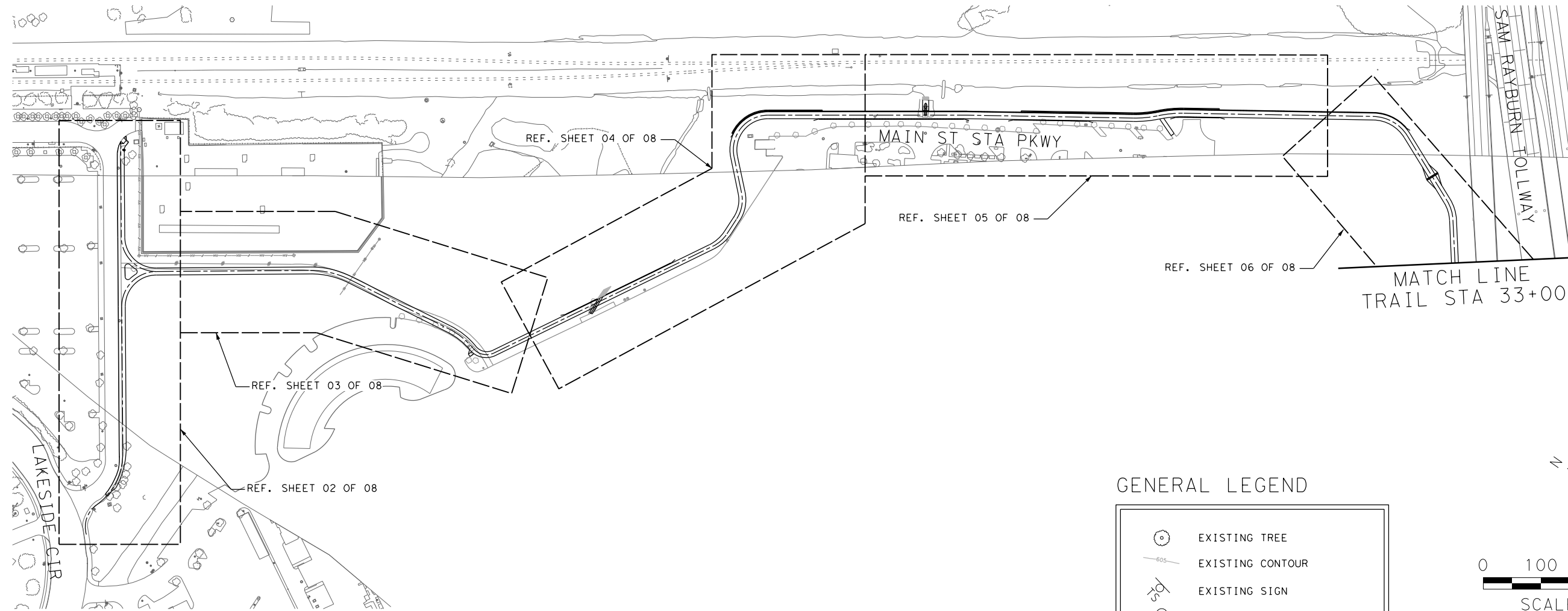
NOTE:  
ALL LAPS AND EXTENSIONS OF REINFORCING BARS SHALL BE A TOTAL OF 26 BAR DIAMETERS UNLESS NOTED OTHERWISE

TYPE "C" HEADWALL  
NOT TO SCALE



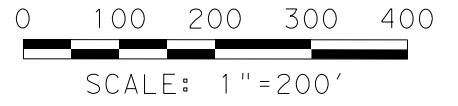
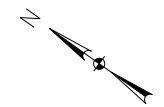
DCTA TRAIL LEWISVILLE  
STORM DRAIN DETAILS

SCALE: AS NOTED		SHEET 01 OF 01	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL 0918	SECTION 46	JOB 331
			SHEET NO. 73



GENERAL LEGEND

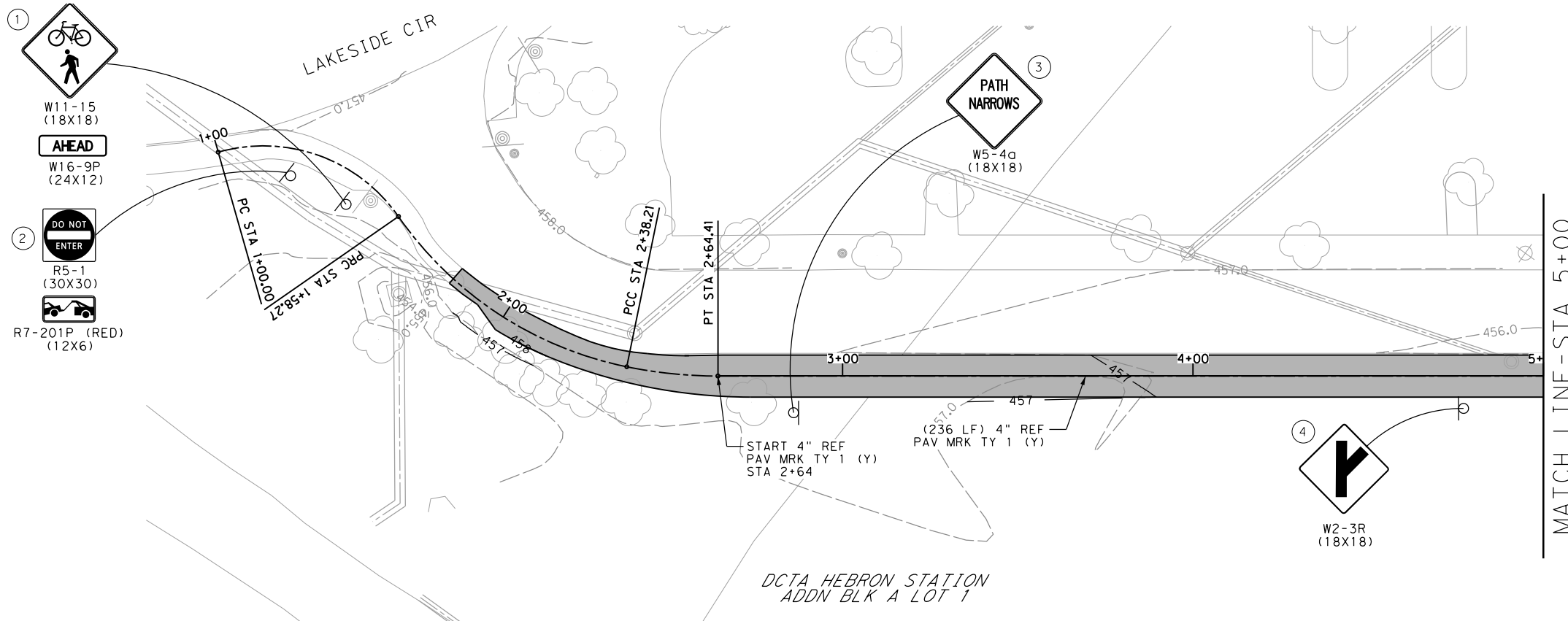
	EXISTING TREE		EXISTING CONTOUR
	EXISTING SIGN		EXISTING LIGHT POLE
	EXISTING FENCE POST		EXISTING MAN HOLE
	EXISTING WATER METER		PROPOSED MINOR CONTOUR
	EXISTING FIRE HYDRANT		PROPOSED MAJOR CONTOUR
	EXISTING ELECTRIC BOX		CENTER LINE
	EXISTING WATER VALVE		EXISTING TREE TO BE PROTECTED
	EXISTING GUY WIRE		EXISTING TREE TO BE REMOVED
	EXISTING FENCE LINE		EXISTING TREE
	EXISTING SANITARY SEWER (XX" - SIZE)		TO BE REMOVED BY CONTRACTOR
	EXISTING WATER LINE (XX" - SIZE)		
	EXISTING REINFORCED CONCRETE PIPE (EX. 24" RCP)		



DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE  
 PAVEMENT MARKINGS & SIGNAGE PLAN  
 SHEET LAYOUT

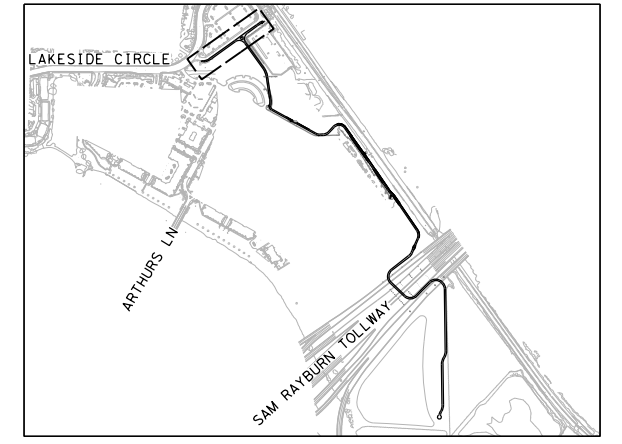
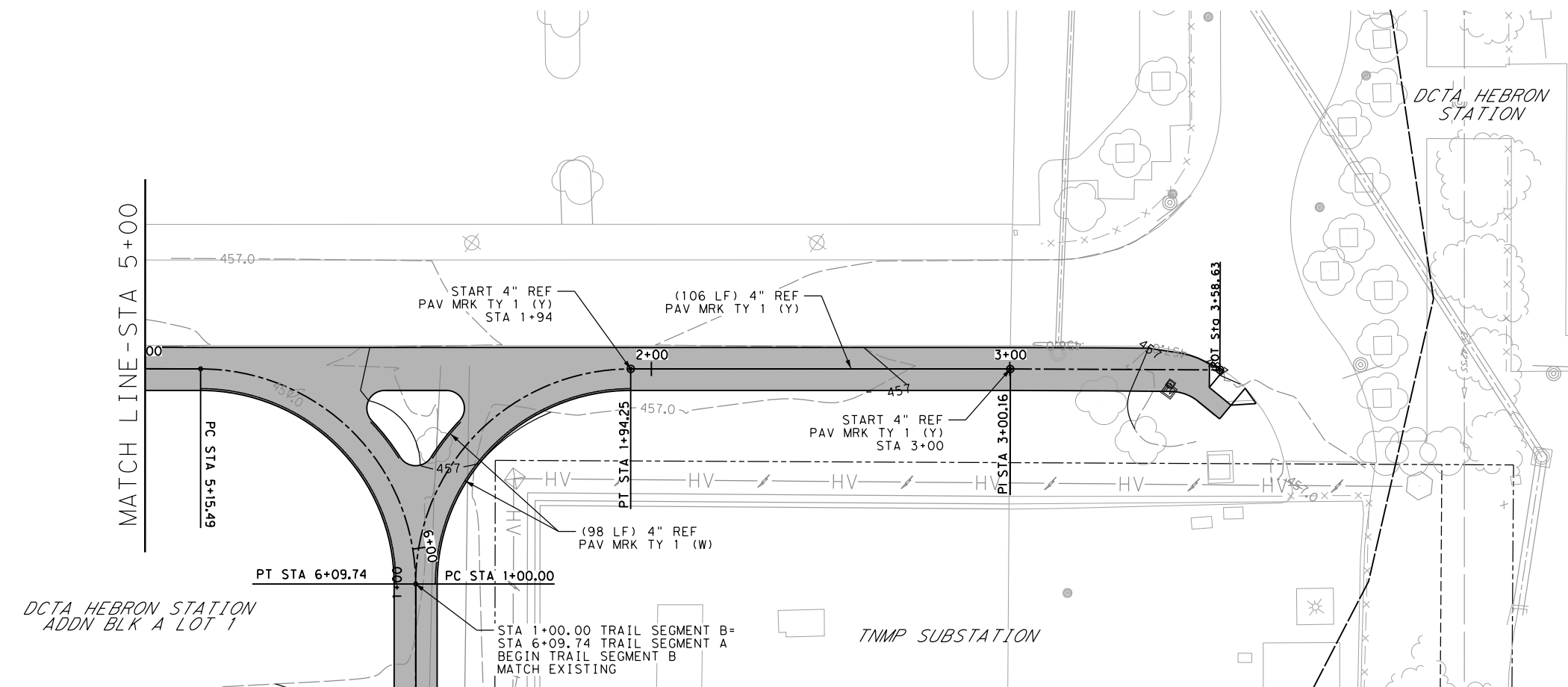
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 74
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

DATE: 8/29/2025 TIME: 9:29:26 AM PROJECT # 45685 OFFICE: MCA  
 A:\45000s\45685\001\CADD\Sheets\TW\08-Traffic\Items\L252-PMS-45685.dgn



- ① W11-15 (18X18)  
**AHEAD**  
 W16-9P (24X12)
- ② DO NOT ENTER  
 R5-1 (30X30)  
 R7-201P (RED) (12X6)

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
644-7001	IN SM RD SN SUP&AM TY 10BWG (1) SA (P)	EA	4
666-7267	RE PROFILE PM TY I (Y) 4" (SLD) (100MIL)	LF	342
666-7346	PAVEMENT SLER (4")	LF	440
666-7404	REFL PAV MRK TY I (W) (4") (SLD) (100MIL)	LF	98
678-7001	PAV SURF PREP FOR MRK (4")	LF	440

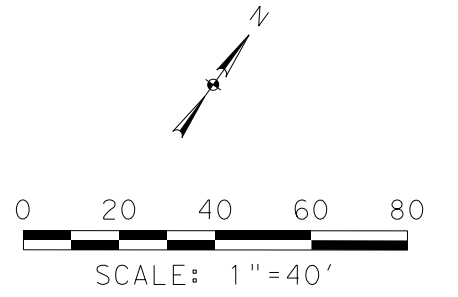


**KEY MAP - N. T. S.**

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

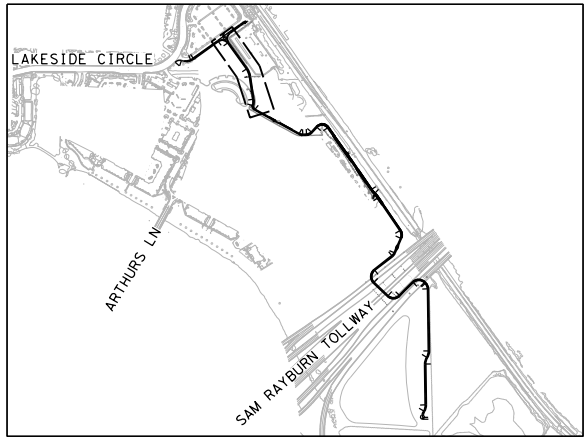
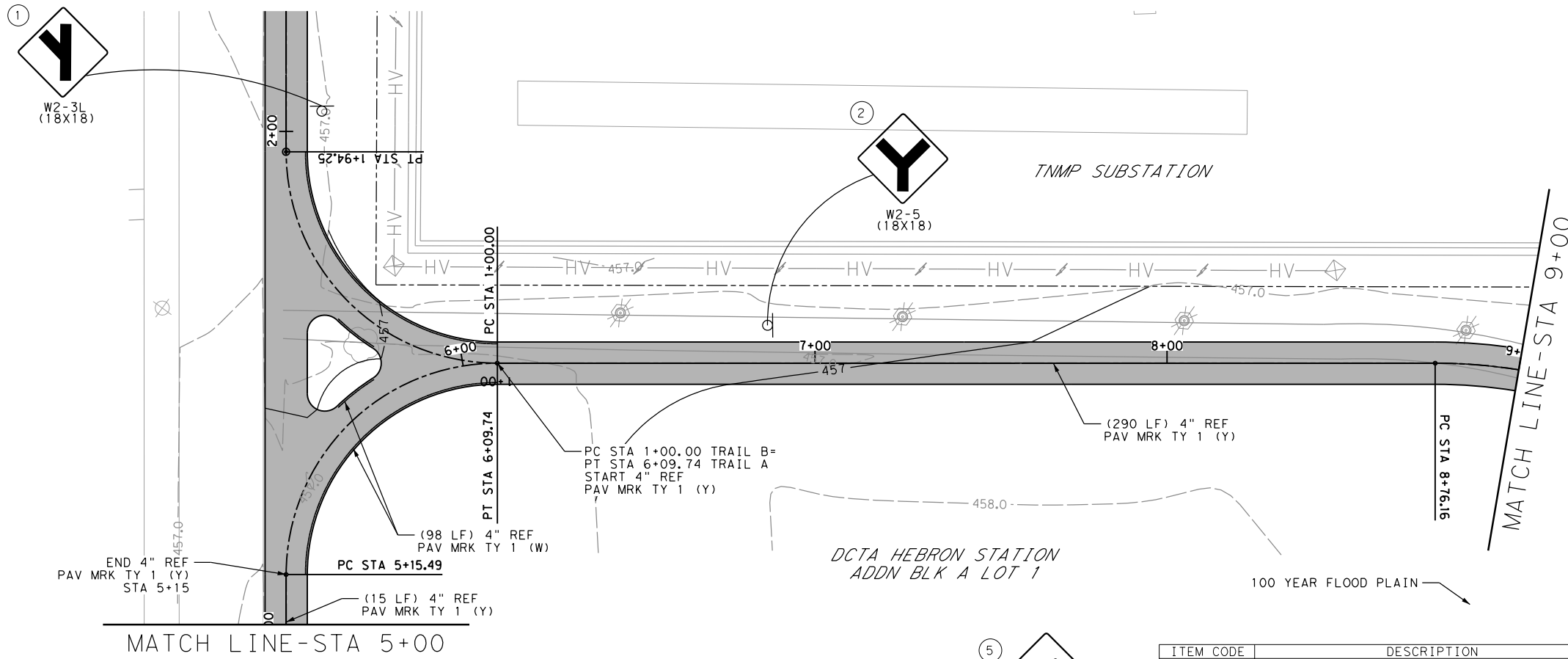


DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE  
 PAVEMENT MARKINGS & SIGNAGE PLAN  
 BEGIN TO STA 5+00 TRAIL A  
 1+00 TO END TRAIL B

SCALE: AS NOTED SHEET 01 OF 07

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 75
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

DATE: 8/29/2025 TIME: 9:29:32 AM PROJECT # 45685 OFFICE: MCA  
 A:\45000s\45685\001\CADD\Sheets\TW\08-Traffic\Items\L253-PMS-45685.dgn

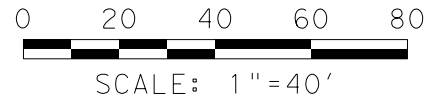
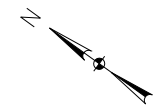


**KEY MAP - N.T.S.**

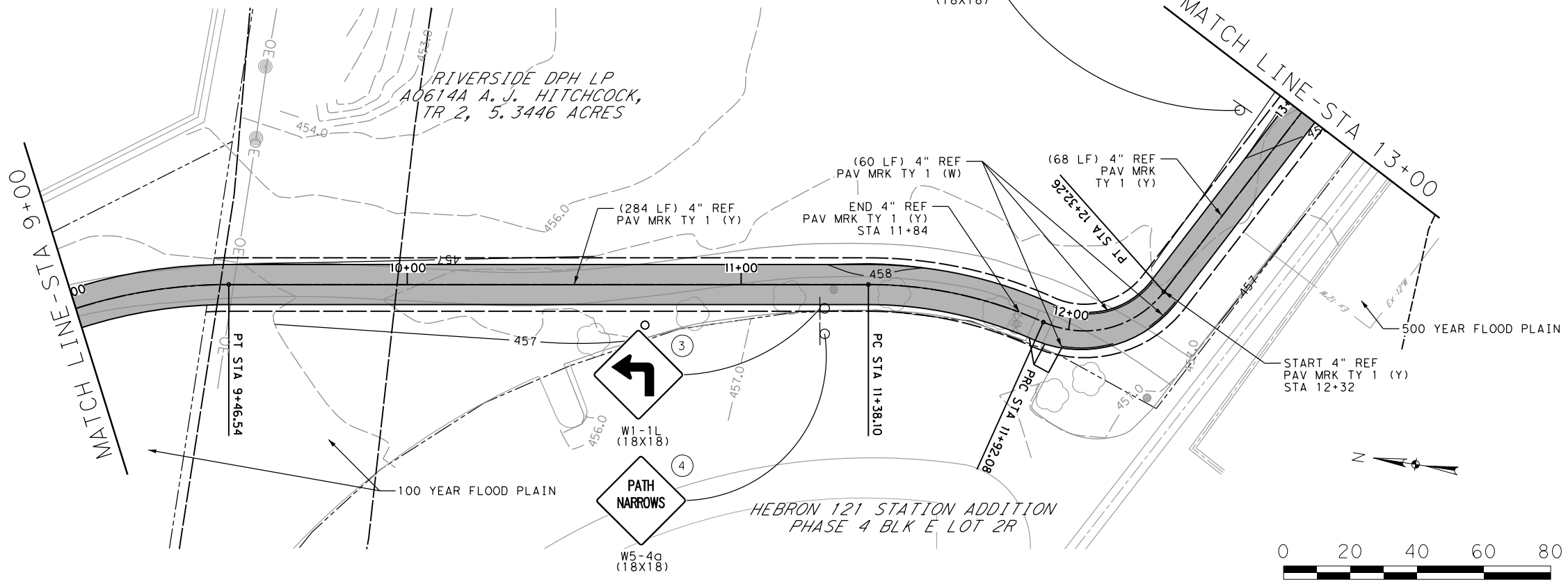
! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
644-7001	IN SM RD SN SUP&AM TY 10BWG (1) SA (P)	EA	5
666-7267	RE PROFILE PM TY 1 (Y) 4" (SLD) (100MIL)	LF	657
666-7346	PAVEMENT SLER (4")	LF	815
666-7404	REFL PAV MRK TY 1 (W) (4") (SLD) (100MIL)	LF	158
678-7001	PAV SURF PREP FOR MRK (4")	LF	815

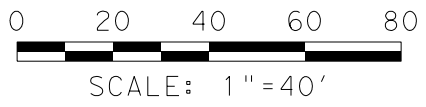


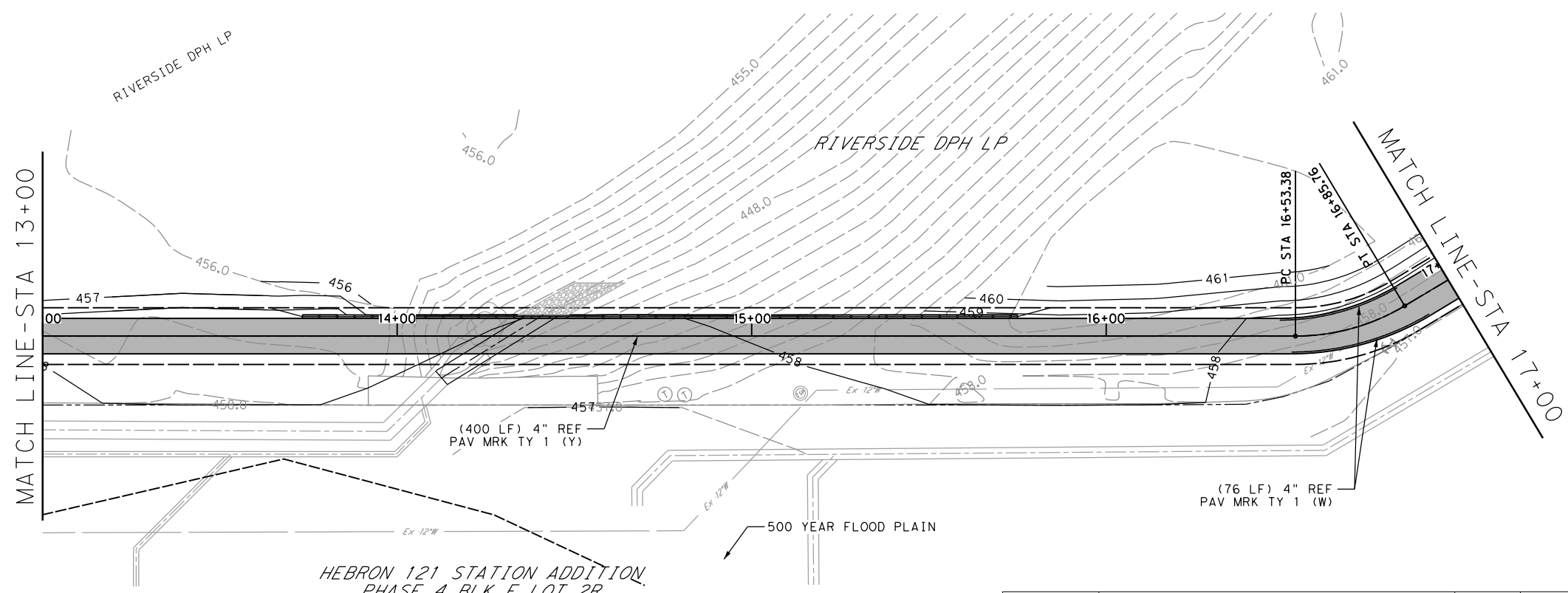
Texas Department of Transportation  
 © 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE  
 PAVEMENT MARKINGS & SIGNAGE PLAN  
 STA 5+00 TO STA 13+00

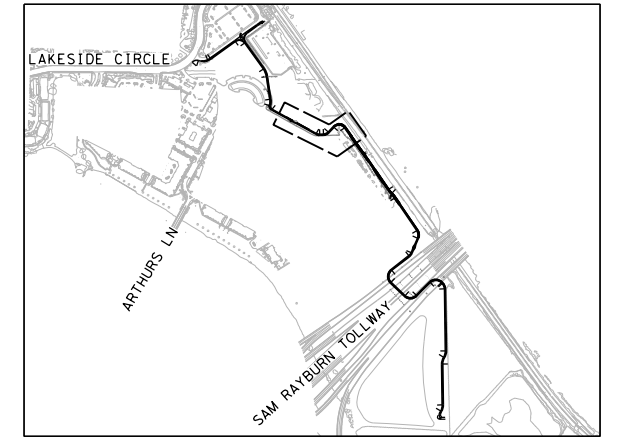
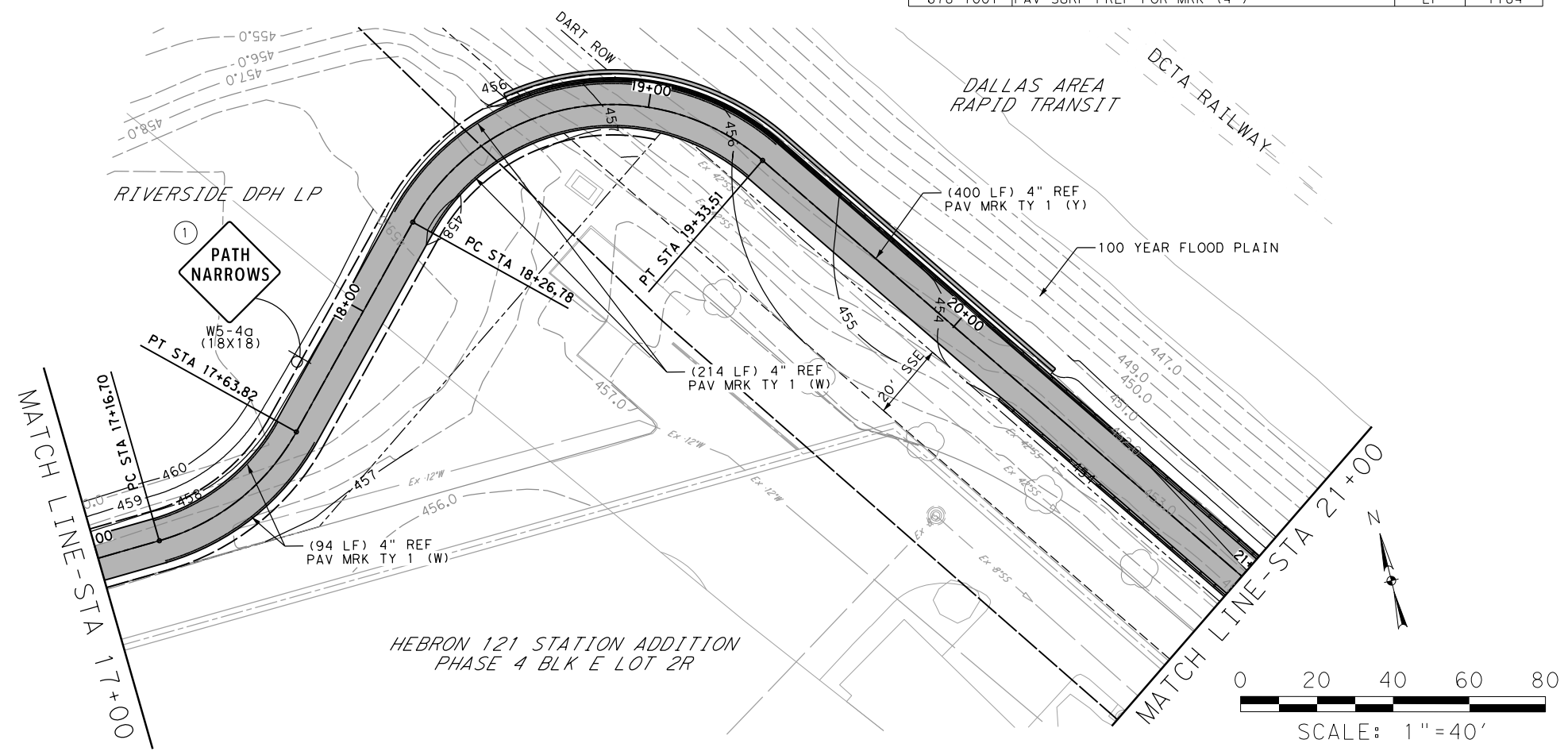
SCALE: AS NOTED SHEET 02 OF 07

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL 0918	SECTION 46	JOB 331
CHECK XX			76





ITEM CODE	DESCRIPTION	UNIT	QUANTITY
644-7001	IN SM RD SN SUP&AM TY 10BWG (1) SA (P)	EA	1
666-7267	RE PROFILE PM TY I (Y) 4" (SLD) (100MIL)	LF	800
666-7346	PAVEMENT SLER (4")	LF	1184
666-7404	REFL PAV MRK TY I (W) (4") (SLD) (100MIL)	LF	384
678-7001	PAV SURF PREP FOR MRK (4")	LF	1184

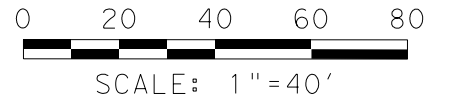


**KEY MAP - N.T.S.**

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377



*Signature*

**STATE OF TEXAS**

**MARK CANTU**

**153810**

**LICENSED PROFESSIONAL ENGINEER**

*8-29-25*

**halff**

2601 MEACHAM BLVD., SUITE 600  
FORT WORTH, TX 76137-4204  
(817) 847-1422

**Texas Department of Transportation**

© 2024

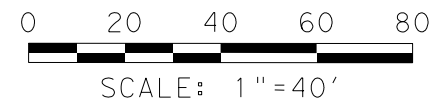
**DCTA TRAIL LEWISVILLE**

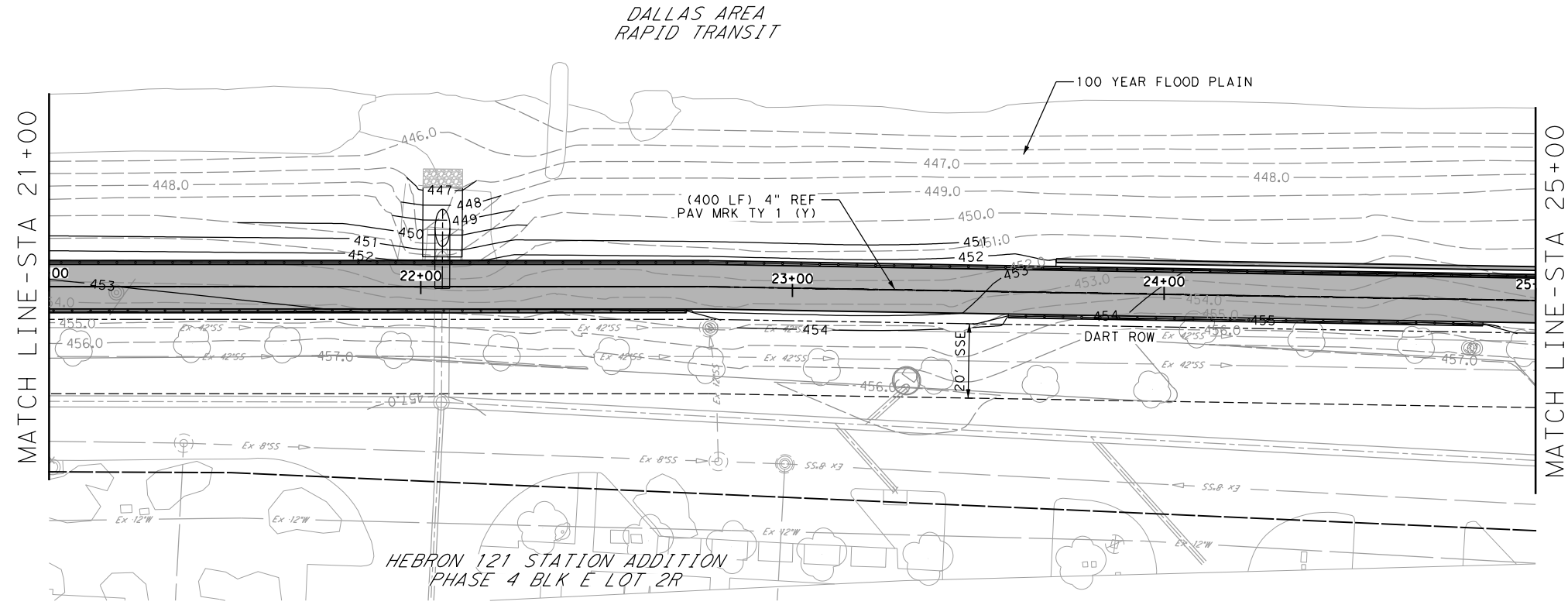
**DCTA TRAIL LEWISVILLE PAVEMENT MARKINGS & SIGNAGE PLAN**

**STA 13+00 TO STA 21+00**

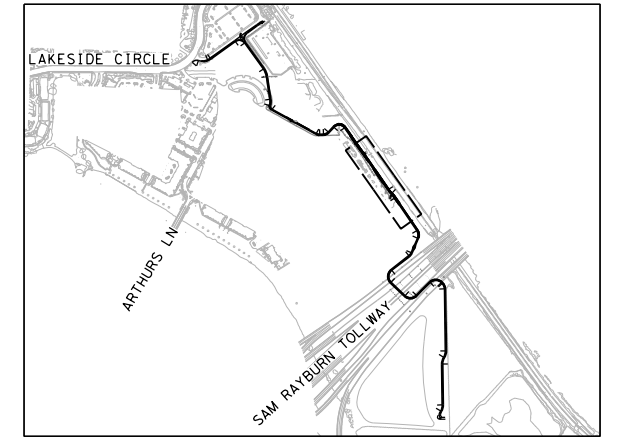
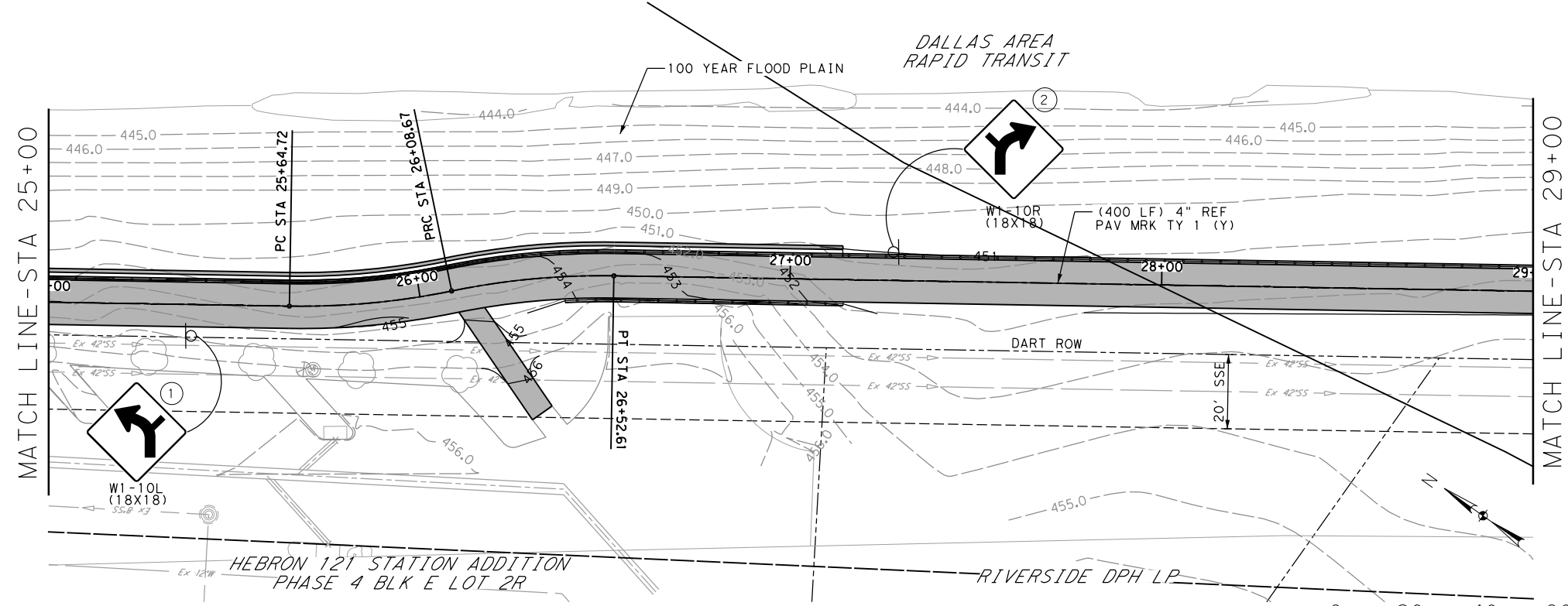
SCALE: AS NOTED SHEET 03 OF 07

DESIGN MC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
MC	6	SEE TITLE SHEET		VA
GRAPHICS MC	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK XX	TEXAS	DAL	DENTON	77
CHECK XX	CONTROL	SECTION	JOB	
CHECK XX	0918	46	331	





ITEM CODE	DESCRIPTION	UNIT	QUANTITY
644-7001	IN SM RD SN SUP&AM TY 10BWG (1) SA (P)	EA	2
666-7267	RE PROFILE PM TY I (Y) 4" (SLD) (100MIL)	LF	800
666-7346	PAVEMENT SLER (4")	LF	800
678-7001	PAV SURF PREP FOR MKR (4")	LF	800

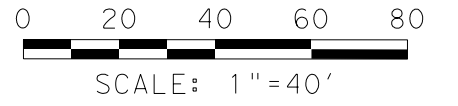
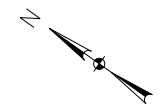


**KEY MAP - N. T. S.**

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377



Professional Engineer Seal for Mark Cantu, License No. 153810, State of Texas. The seal includes a star and the text 'STATE OF TEXAS', 'MARK CANTU', '153810', 'LICENSED', and 'PROFESSIONAL ENGINEER'. A handwritten signature and date '8-29-25' are present.

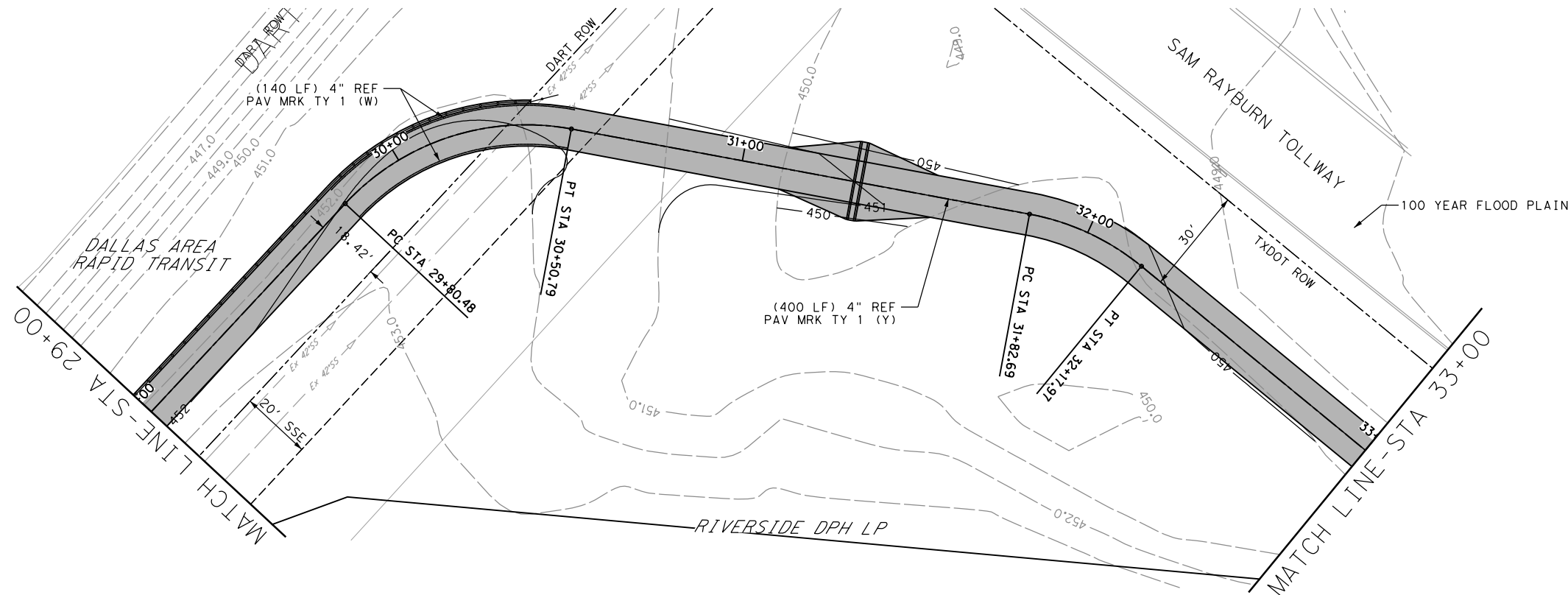
**halff** logo and address: 2601 MEACHAM BLVD., SUITE 600 FORT WORTH, TX 76137-4204 (817) 847-1422

Texas Department of Transportation logo and copyright notice: © 2024

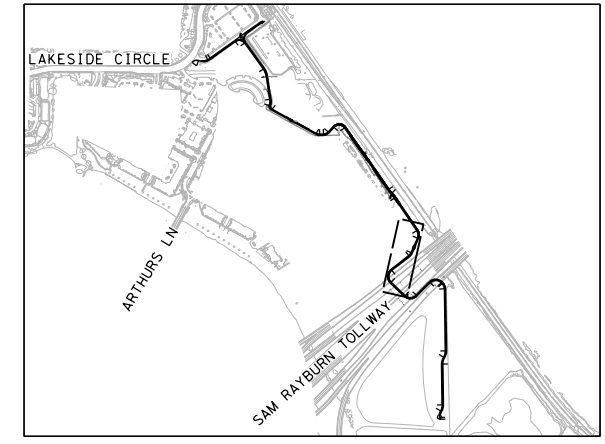
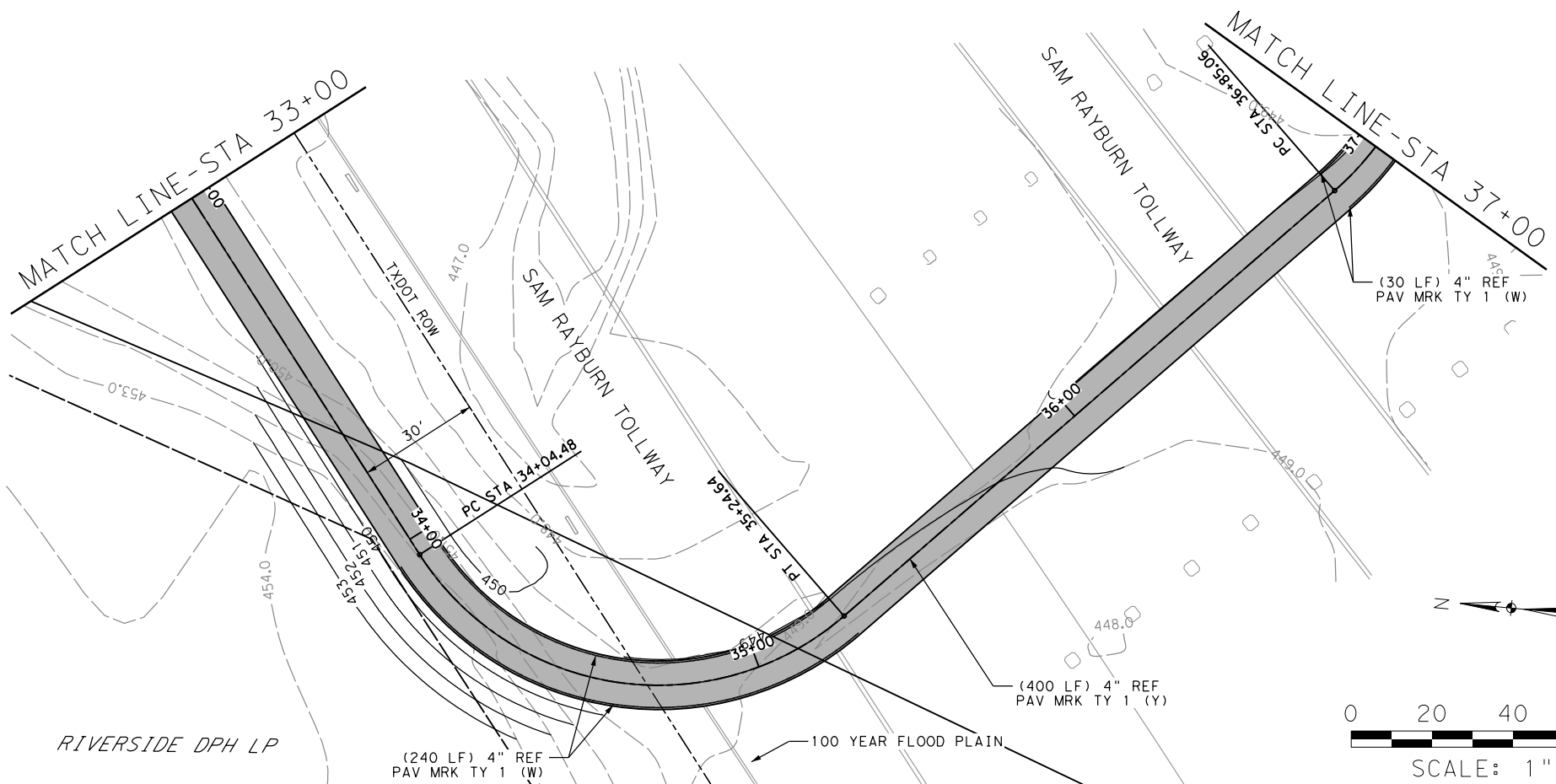
DCTA TRAIL LEWISVILLE  
DCTA TRAIL LEWISVILLE  
PAVEMENT MARKINGS & SIGNAGE PLAN  
STA 21+00 TO STA 29+00

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 78
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

ch2583  
 PROJECT # 45685 OFFICE:MCA  
 DATE: 8/29/2025 TIME: 9:29:44 AM  
 A:\45000s\45685\001\CADD\Sheets\TW\08-Traffic\Items\L256-PMS-45685.dgn



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
666-7267	RE PROFILE PM TY I (Y) 4" (SLD) (100MIL)	LF	800
666-7346	PAVEMENT SLER (4")	LF	1210
666-7404	REFL PAV MRK TY I (W) (4") (SLD) (100MIL)	LF	410
678-7001	PAV SURF PREP FOR MRK (4")	LF	1210

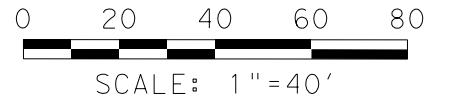


**KEY MAP - N.T.S.**

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



Professional Engineer Seal for Mark Cantu, State of Texas, License No. 153810. Includes a signature and the date 8-29-25.

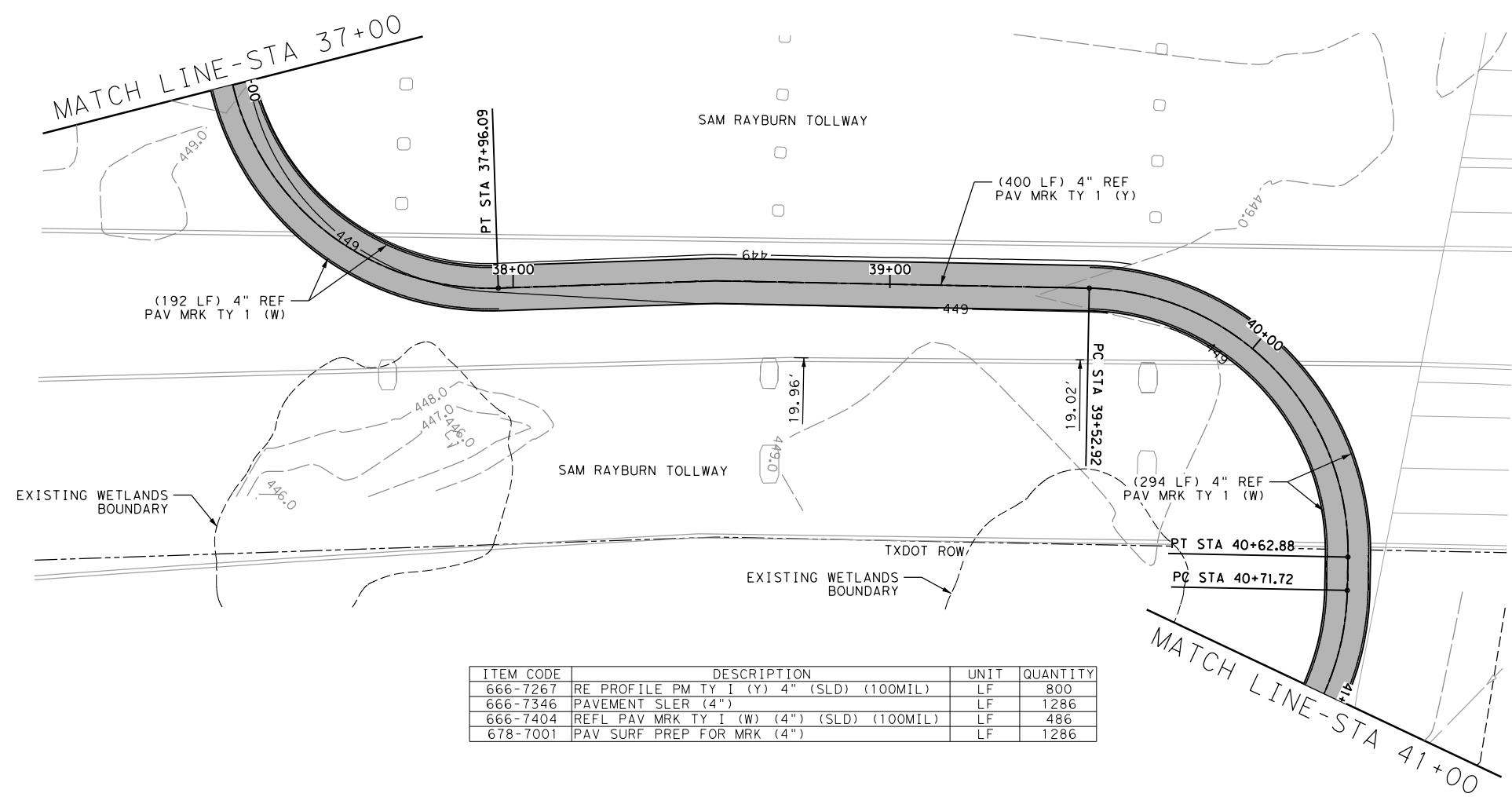
**halff** logo and address: 2801 MEACHAM BLVD., SUITE 600 FORT WORTH, TX 76137-4204 (817) 847-1422

Texas Department of Transportation logo and copyright notice: © 2024

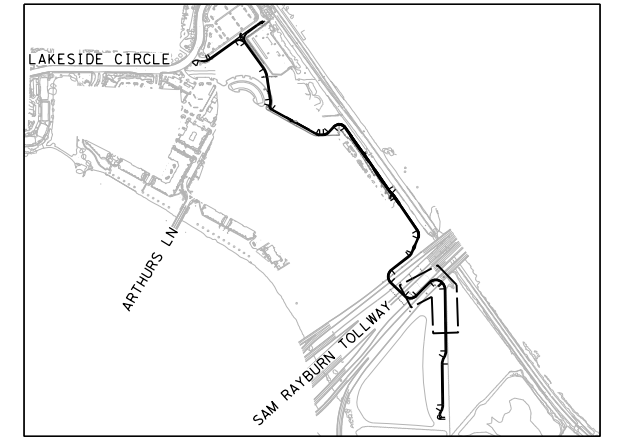
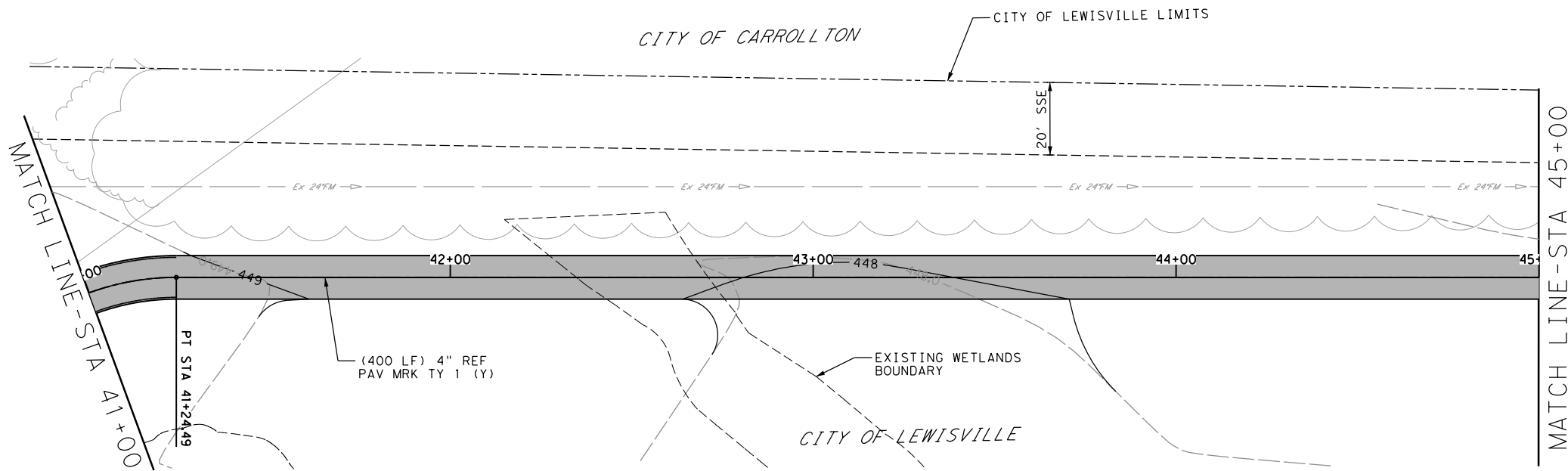
DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE  
 PAVEMENT MARKINGS & SIGNAGE PLAN  
 STA 29+00 TO STA 37+00

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL 0918	SECTION 46	JOB 331
CHECK XX			SHEET NO. 79

ch2583 PROJECT # 45685 OFFICE:MCA DATE:8/29/2025 TIME:9:29:47 AM A:\45000s\45685\001\CADD\Sheets\TW\08-Traffic\Items\L257-PMS-45685.dgn



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
666-7267	RE PROFILE PM TY I (Y) 4" (SLD) (100MIL)	LF	800
666-7346	PAVEMENT SLER (4")	LF	1286
666-7404	REFL PAV MRK TY I (W) (4") (SLD) (100MIL)	LF	486
678-7001	PAV SURF PREP FOR MRK (4")	LF	1286

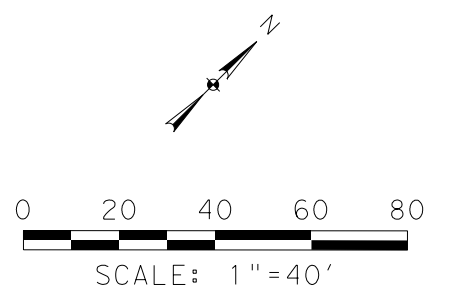


**KEY MAP - N.T.S.**

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377

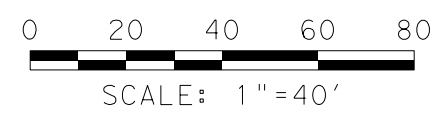


DCTA TRAIL LEWISVILLE

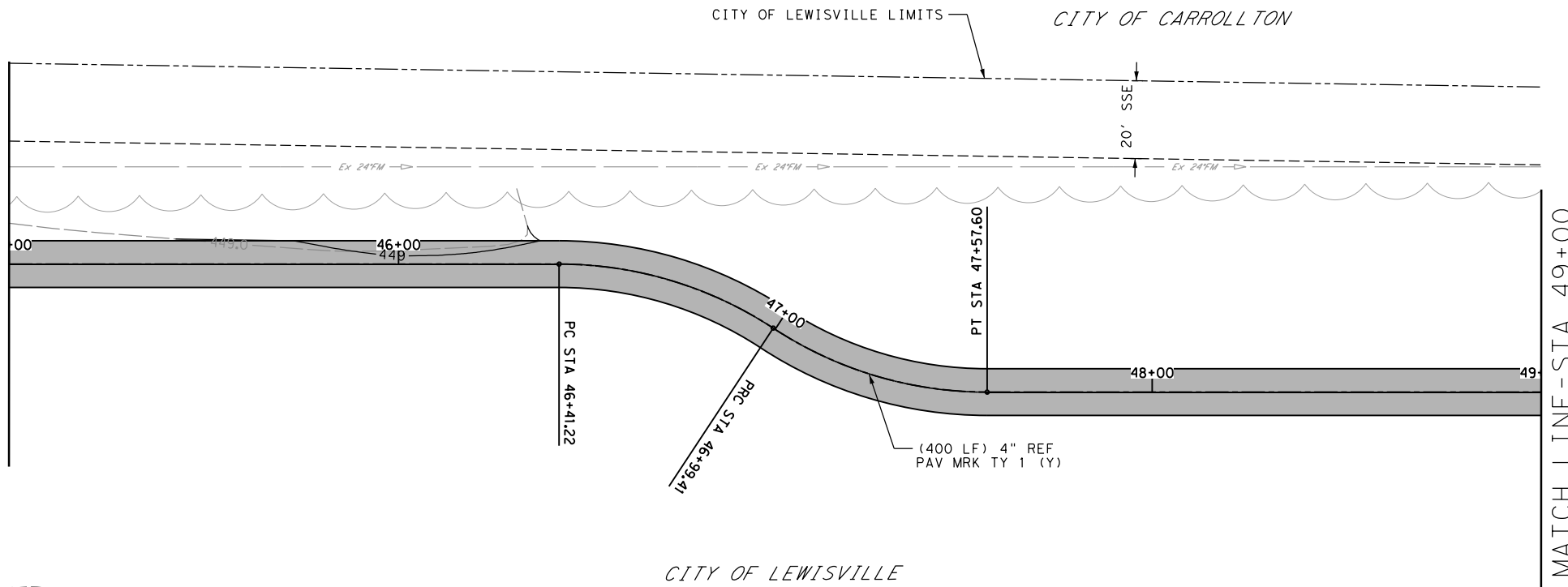
DCTA TRAIL LEWISVILLE  
PAVEMENT MARKINGS & SIGNAGE PLAN  
STA 37+00 TO STA 45+00

SCALE: AS NOTED SHEET 06 OF 07

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 80
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



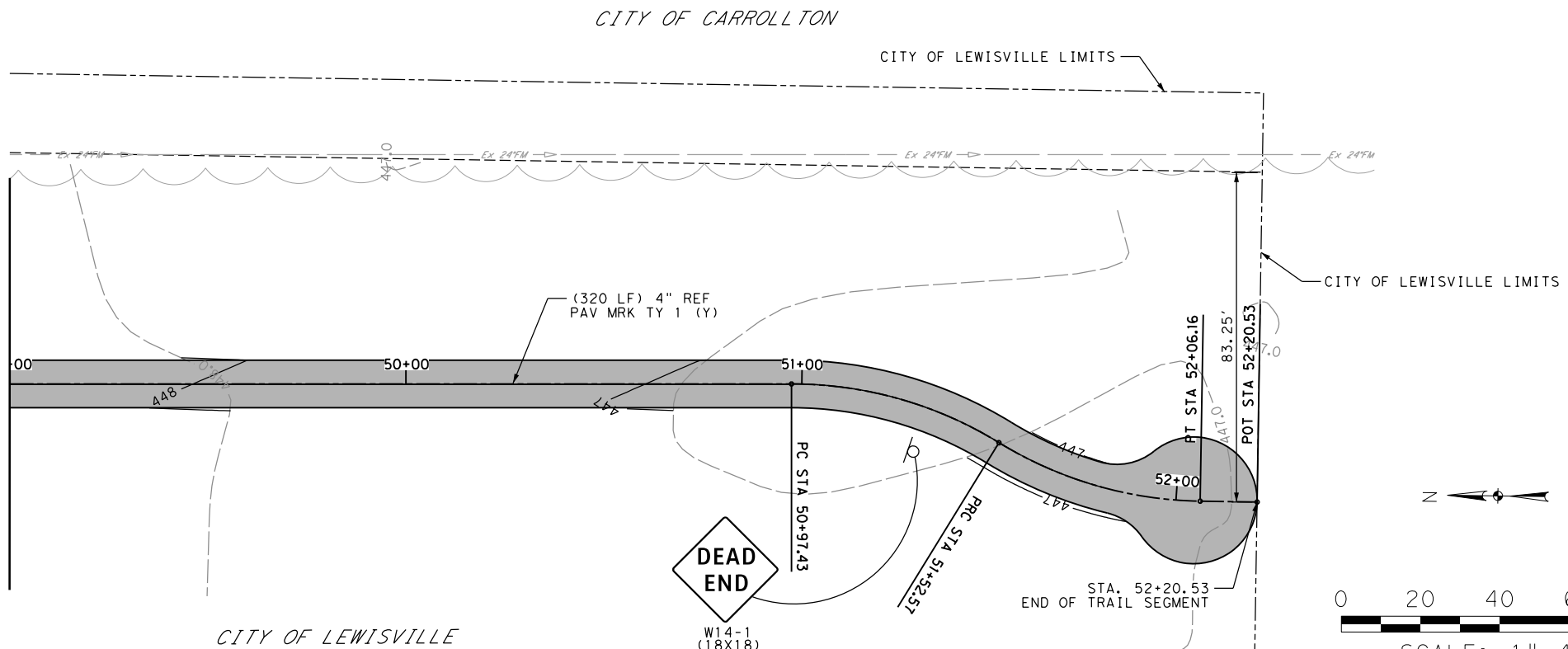
MATCH LINE - STA 45+00



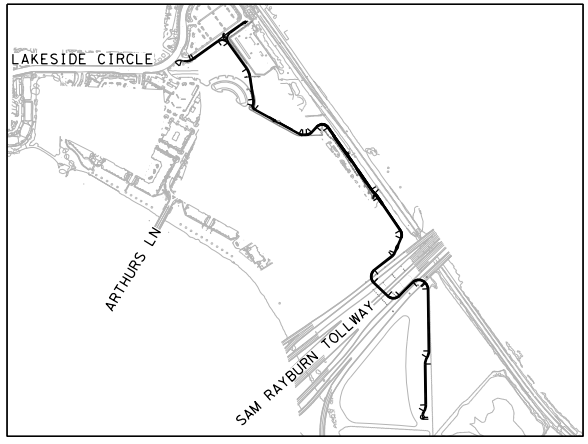
MATCH LINE - STA 49+00

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
666-7267	RE PROFILE PM TY I (Y) 4" (SLD) (100MIL)	LF	720
666-7346	PAVEMENT SLER (4")	LF	720
678-7001	PAV SURF PREP FOR MRK (4")	LF	720
644-7001	IN SM RD SN SUP&AM TY 10BWG (1) SA (P)	EA	1

MATCH LINE - STA 49+00



MATCH LINE - STA 52+00

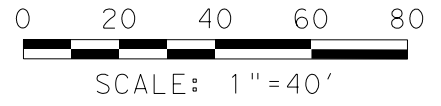


**KEY MAP - N. T. S.**

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377



DCTA TRAIL LEWISVILLE

DCTA TRAIL LEWISVILLE  
PAVEMENT MARKINGS & SIGNAGE PLAN  
STA 45+00 TO END

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL 0918	SECTION 46	JOB 331
CHECK XX			SHEET NO. 81

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

## 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) \_\_\_\_\_

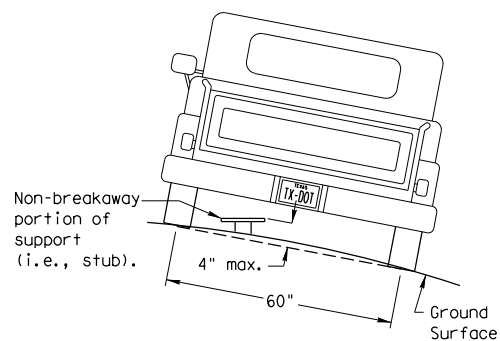
Anchor Type \_\_\_\_\_

- 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-3))

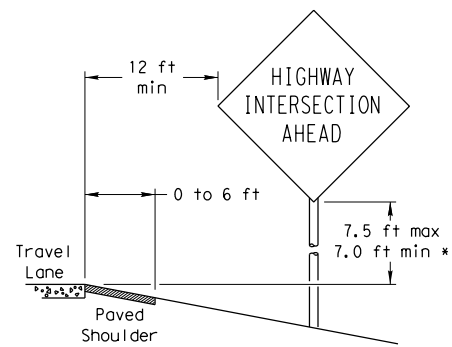
## REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

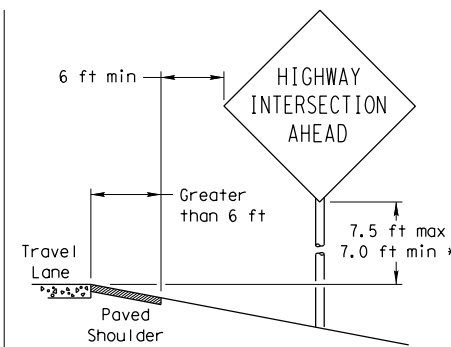
## SIGN LOCATION

### PAVED SHOULDERS



LESS THAN 6 FT. WIDE

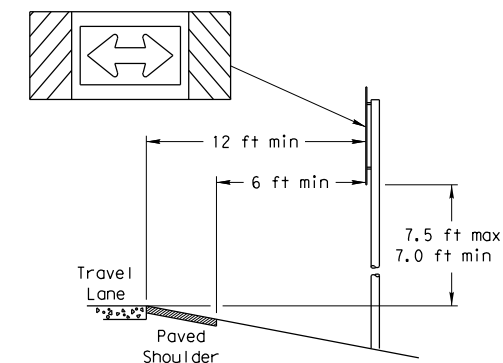
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



GREATER THAN 6 FT. WIDE

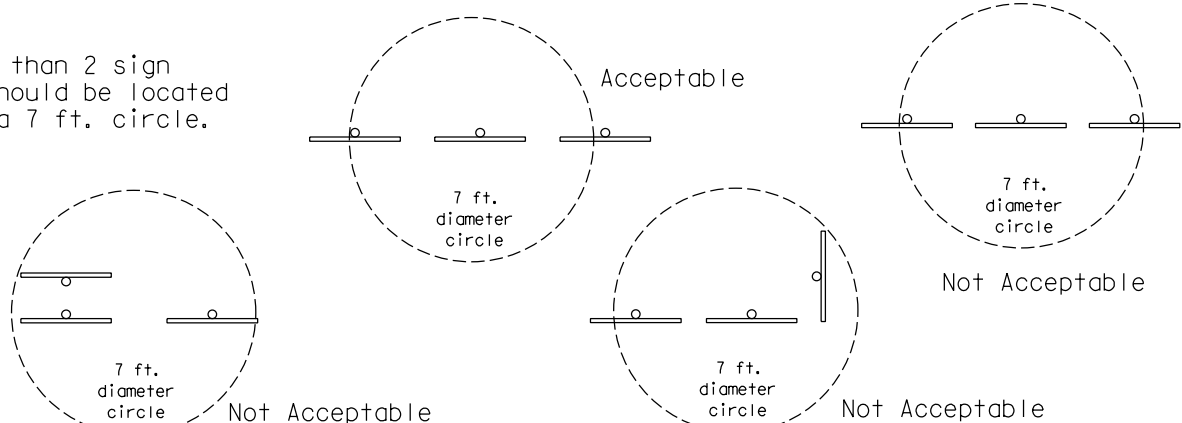
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

### T-INTERSECTION

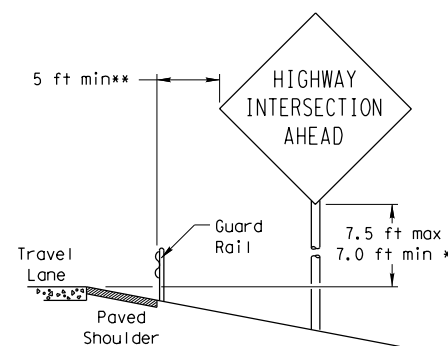


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

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

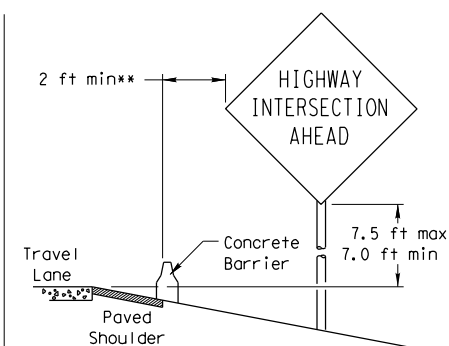


### BEHIND BARRIER



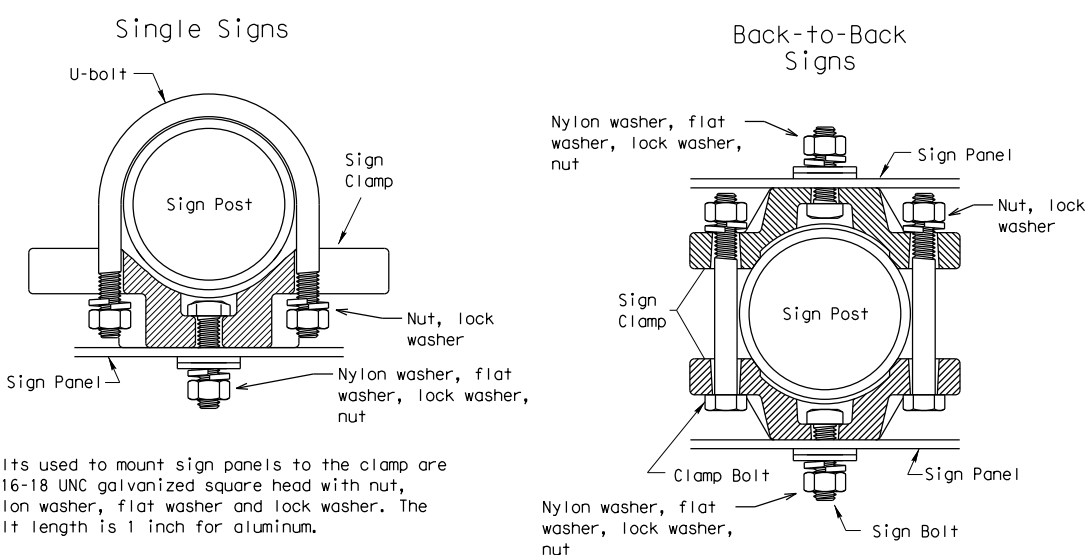
BEHIND GUARDRAIL

\*\*Sign clearance based on distance required for proper guard rail or concrete barrier performance.



BEHIND CONCRETE BARRIER

## TYPICAL SIGN ATTACHMENT DETAIL



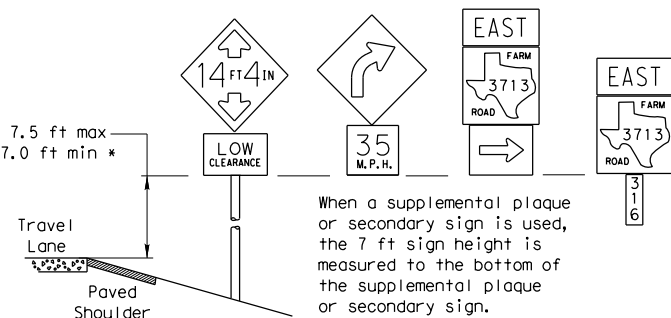
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

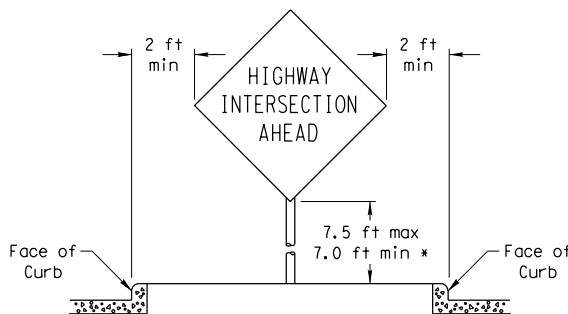
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

### SIGNS WITH PLAQUES

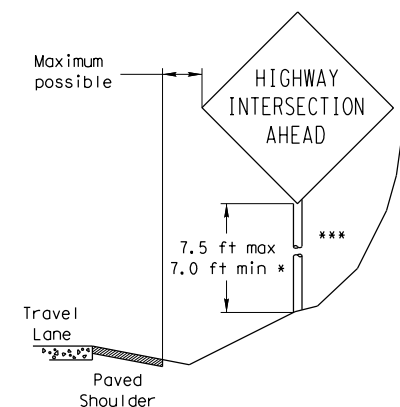


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

### CURB & GUTTER OR RAISED ISLAND



### RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

\*\*\* Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

\* 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>



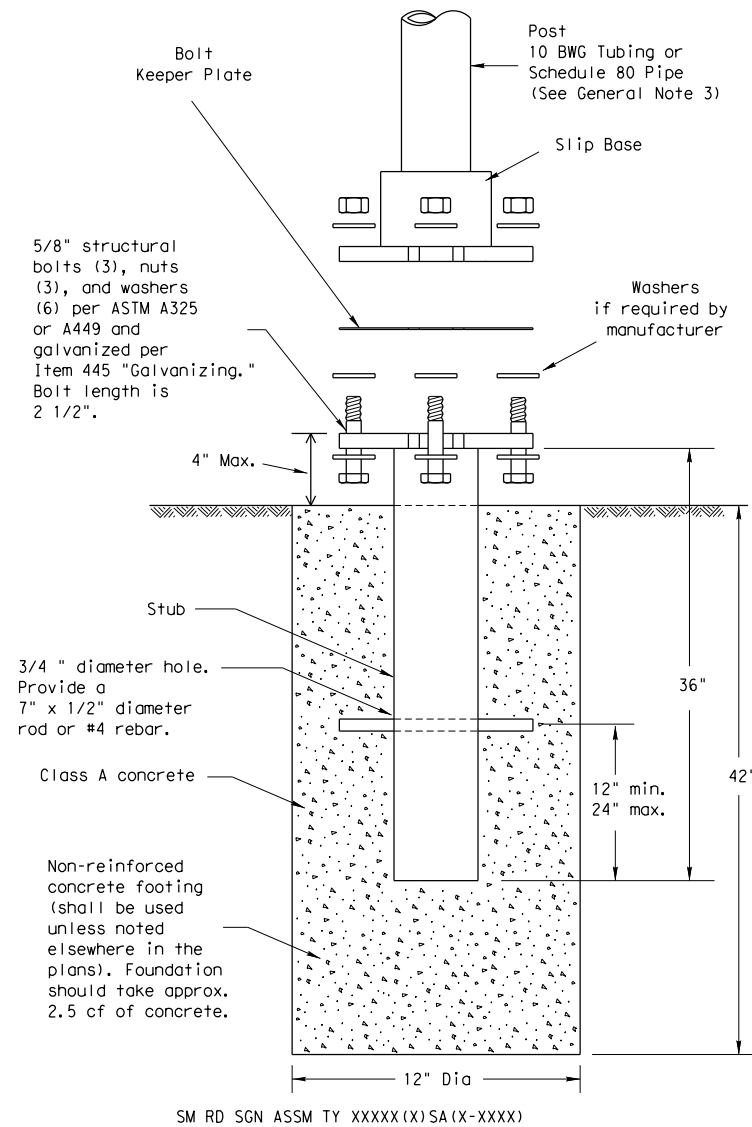
## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

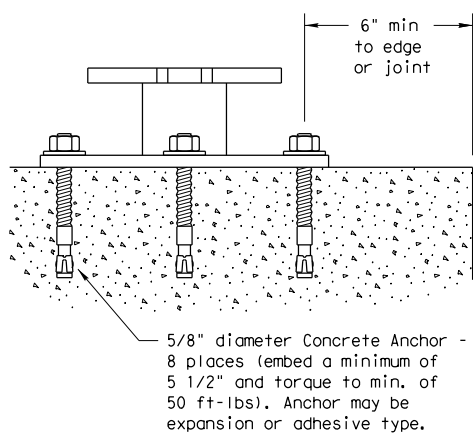
© TxDOT July 2002		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0918	46	331	VA
		DIST	COUNTY		SHEET NO.
		DAL	DENTON		82

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

# TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS

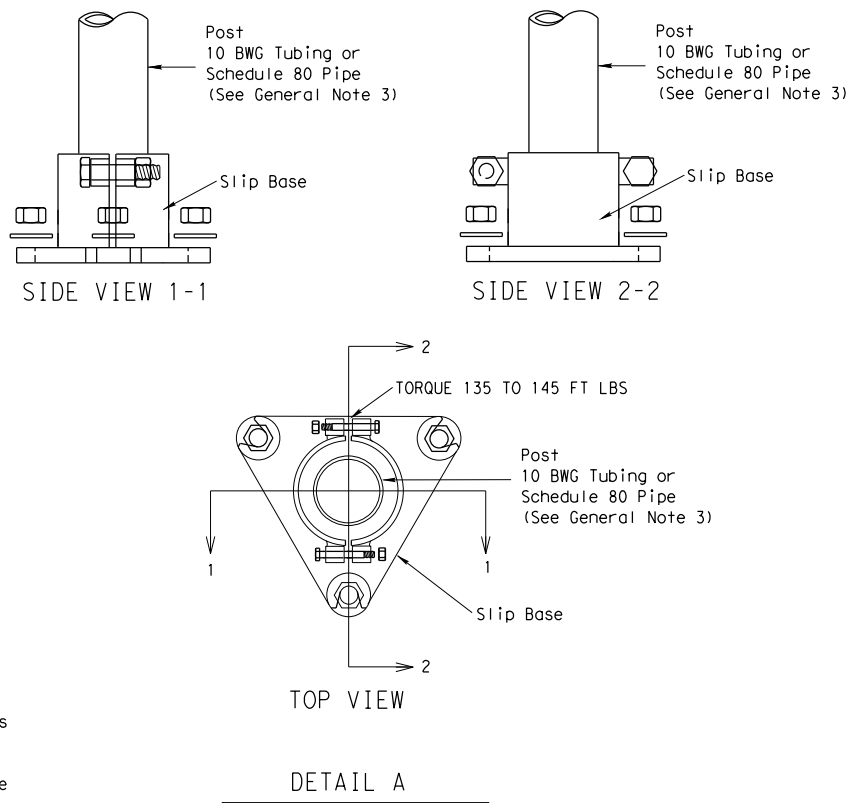


## CONCRETE ANCHOR



Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxyes and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

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




### GENERAL NOTES:

- Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
- Material used as post with this system shall conform to the following specifications:
  - 10 BWG Tubing (2.875" outside diameter)
    - 0.134" nominal wall thickness
    - Seamless or electric-resistance welded steel tubing or pipe
    - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
    - Other steels may be used if they meet the following:
      - 55,000 PSI minimum yield strength
      - 70,000 PSI minimum tensile strength
      - 20% minimum elongation in 2"
    - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
    - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
    - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
  - Schedule 80 Pipe (2.875" outside diameter)
    - 0.276" nominal wall thickness
    - Steel tubing per ASTM A500 Gr C
    - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
      - 46,000 PSI minimum yield strength
      - 62,000 PSI minimum tensile strength
      - 21% minimum elongation in 2"
    - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
    - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
    - Galvanization per ASTM A123
- See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: <http://www.txdot.gov/publications/traffic.htm>
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

### ASSEMBLY PROCEDURE

- Foundation**
- Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
  - The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
  - Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
  - Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
  - The triangular slipbase system is multidirectional and is designed to release when struck from any direction.
- Support**
- Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
  - Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

ADDED DETAIL A FOR CLAMP BASE  
10-2010

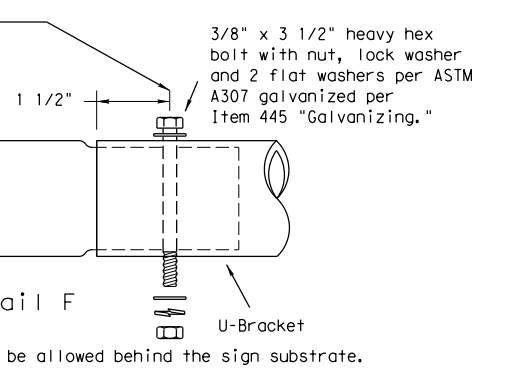
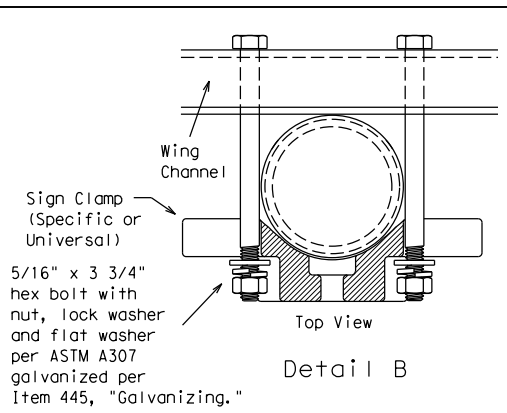
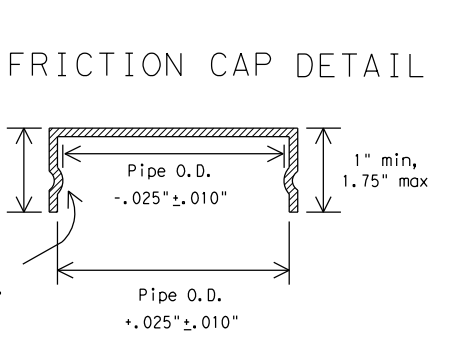
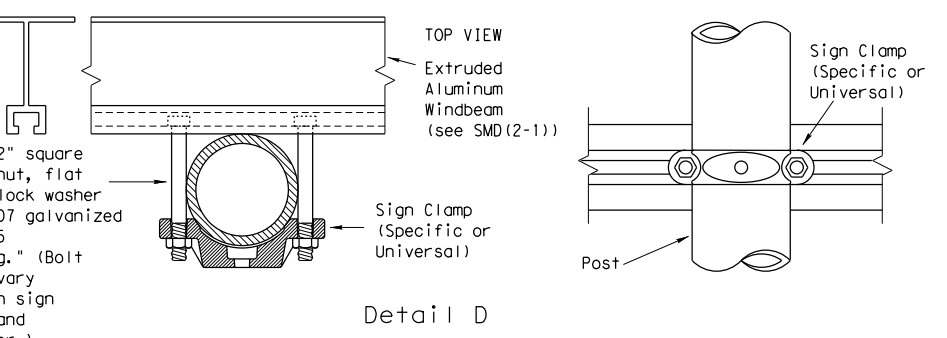
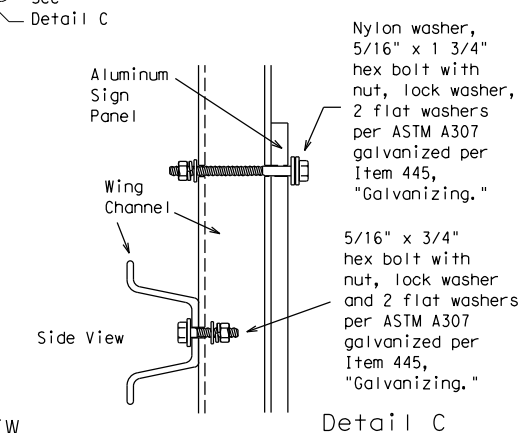
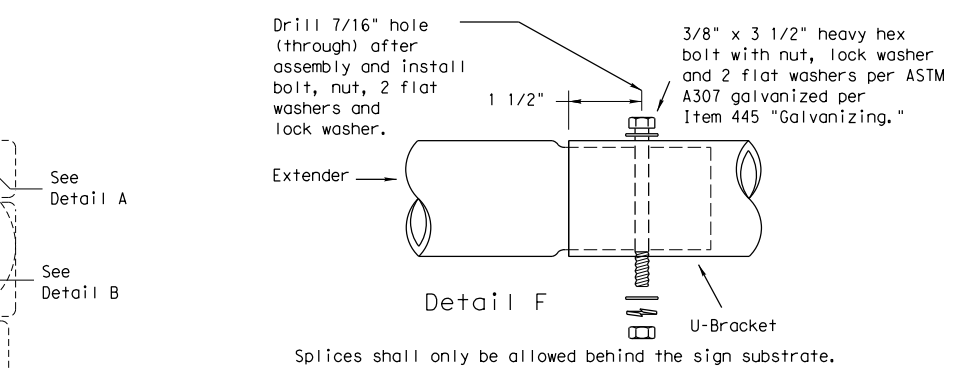
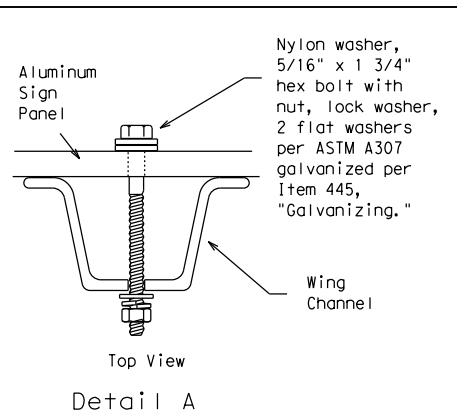
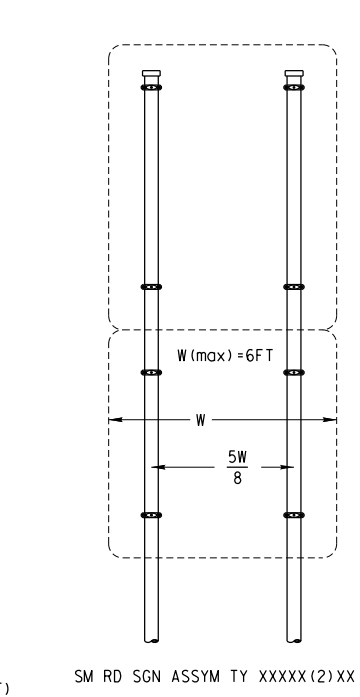
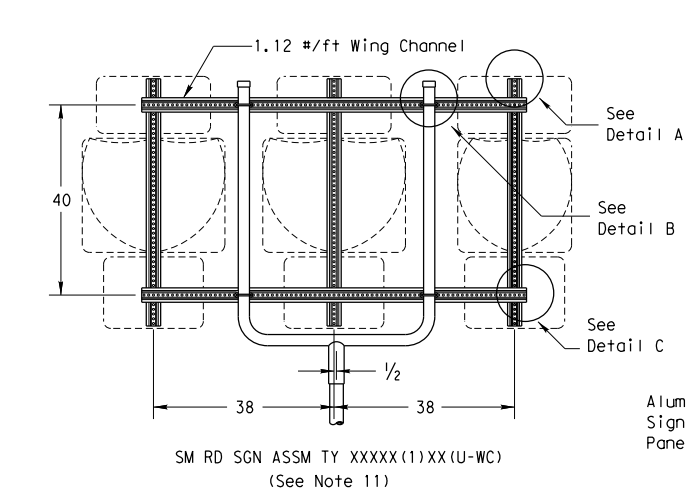
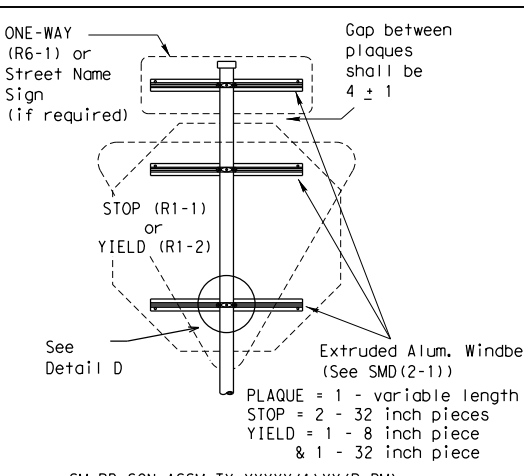
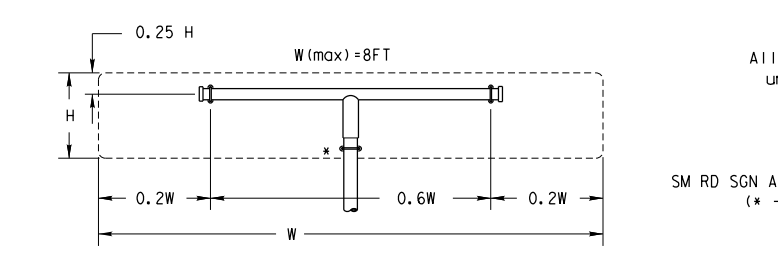
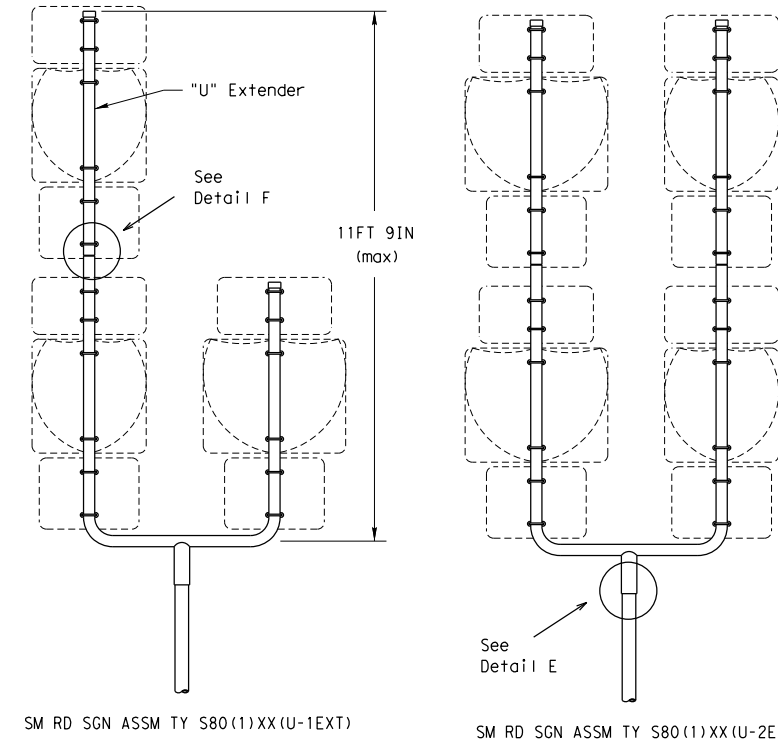
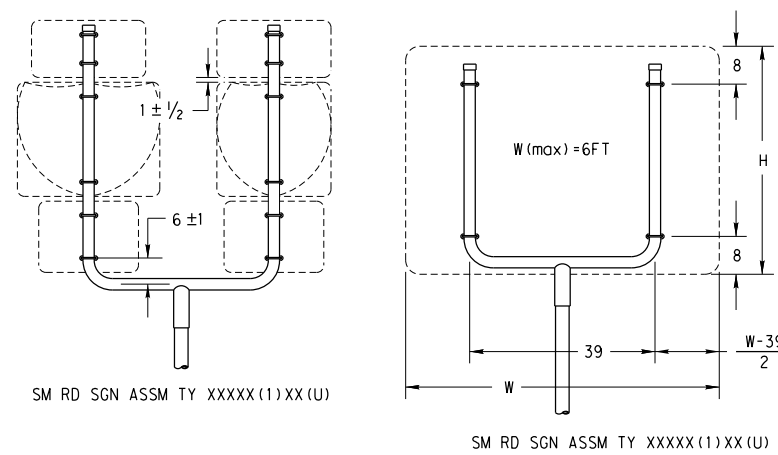
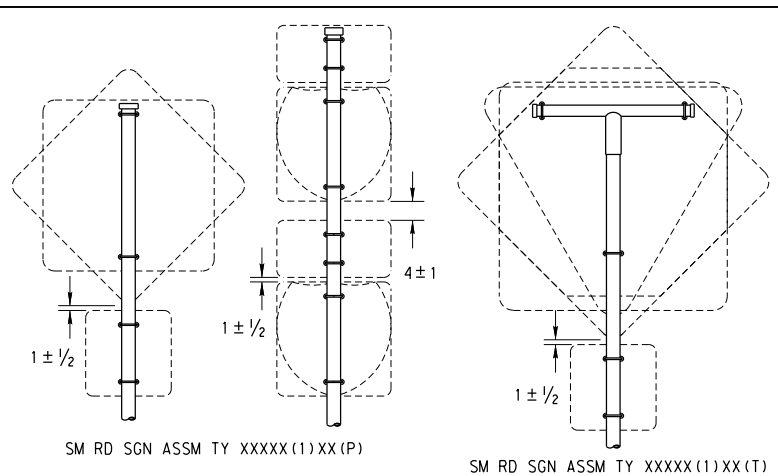

 Texas Department of Transportation  
 Dallas District Standard

SIGN MOUNTING DETAILS  
 SMALL ROADSIDE SIGNS  
 TRIANGULAR SLIPBASE SYSTEM  
 SMD(SLIP-1)-08(DAL)

© TxDOT July 2002		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
12-10 (DISTRICT)		0918	46	331	VA
ADDED CLAMP BASE		DIST	COUNTY	SHEET NO.	
DETAIL FOR SLIP		DAL	DENTON	83	
BASE INSTALLATION					
26B					

DATE:  
FILE:

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



GENERAL NOTES:

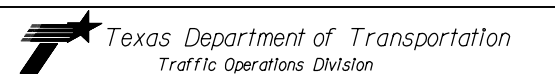
- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG       | 1          | 16 SF          |
| 10 BWG       | 2          | 32 SF          |
| Sch 80       | 1          | 32 SF          |
| Sch 80       | 2          | 64 SF          |
- The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
- When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
- Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
- Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be fitted with Friction Caps.
- Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT		
SIGN DESCRIPTION	SUPPORT	
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY S80(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)	

All dimensions are in english unless detailed otherwise.

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

Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture. Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.



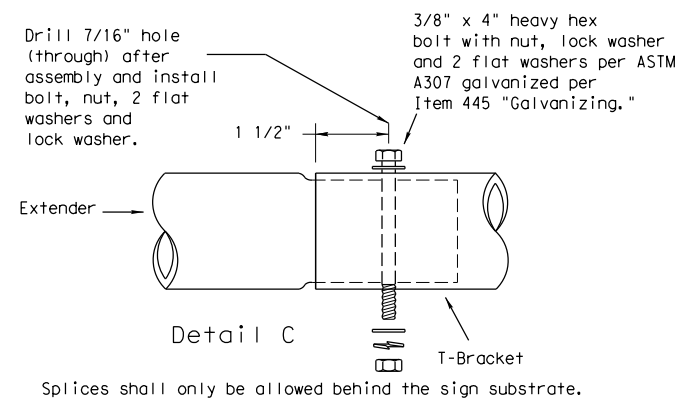
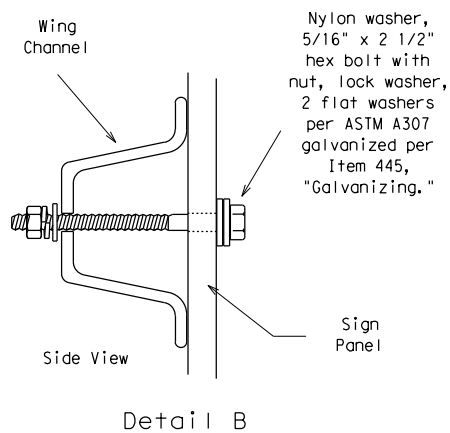
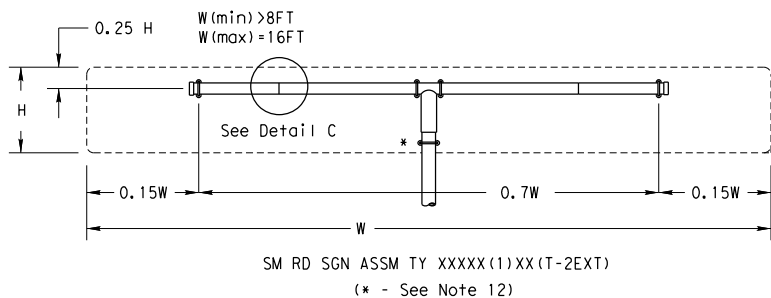
SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS  
TRIANGULAR SLIPBASE SYSTEM  
SMD(SLIP-2)-08

© TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
9-08	REVISONS	CONT	SECT	JOB	HIGHWAY
		0918	46	331	VA
		DIST	COUNTY		SHEET NO.
		DAL	DENTON		84

DATE:  
FILE:

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

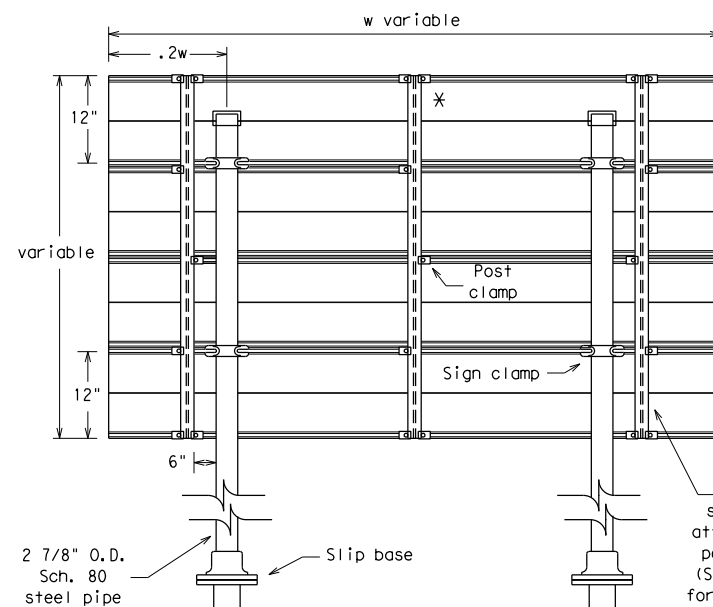
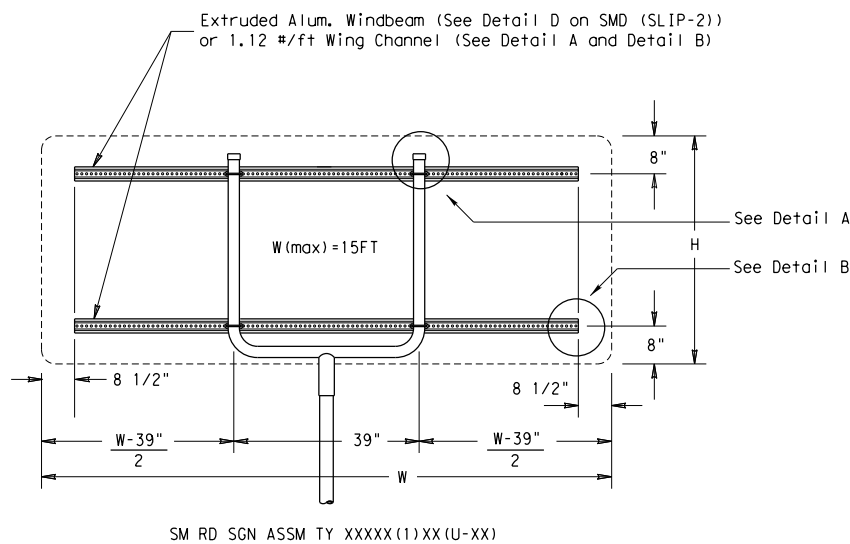
DATE:  
FILE:



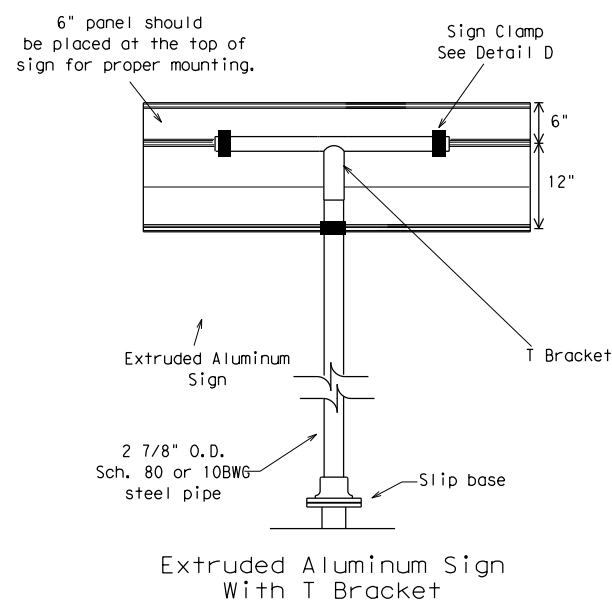
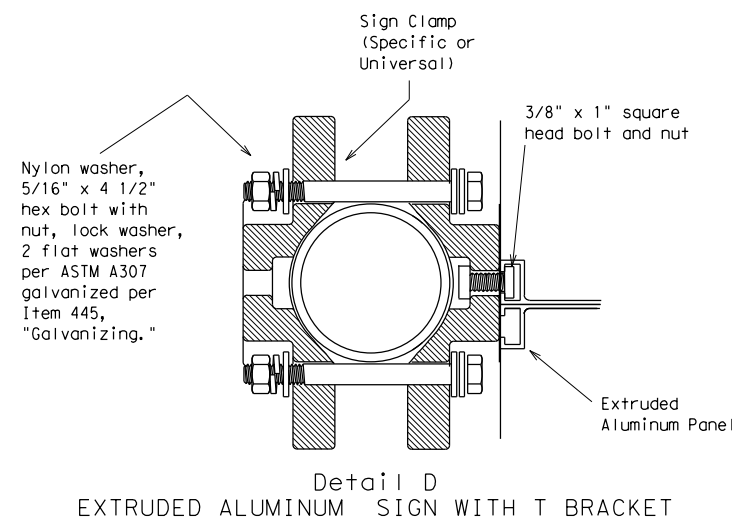
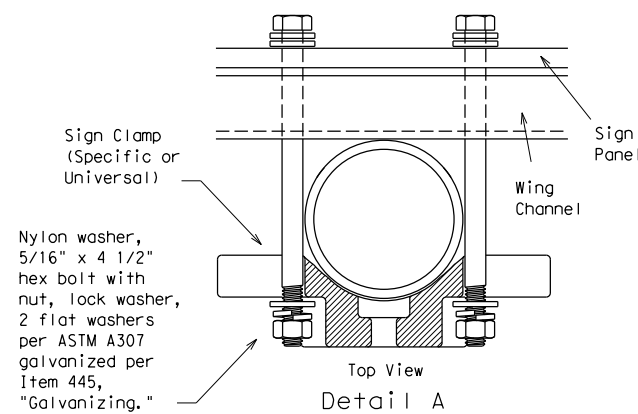
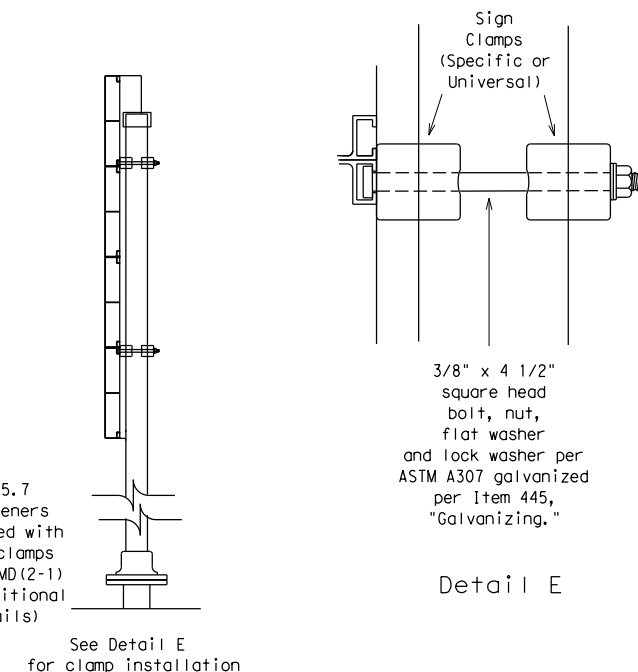
GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

- The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
- When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
- Sign blanks shall be the sizes and shapes shown on the plans.
- Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be fitted with Friction Caps.



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



Use Extruded Alum. Windbeam as stiffeners See SMD (2-1) for additional details  
See Detail E for clamp installation

		REQUIRED SUPPORT	
		SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)	
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)	
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)	
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)	
	48x60-inch signs	TY S80(1)XX(T)	
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)	
	48x60-inch signs	TY S80(1)XX(T)	
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)	
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)	
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)	

Texas Department of Transportation  
Traffic Operations Division

SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS  
TRIANGULAR SLIPBASE SYSTEM  
SMD(SLIP-3)-08

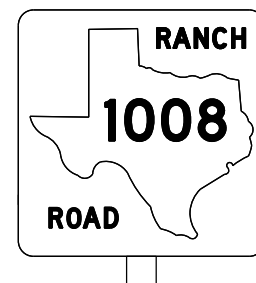
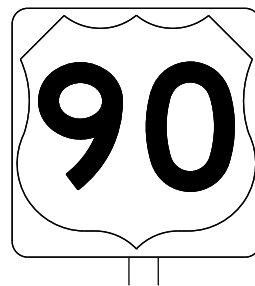
© TxDOT July 2002		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0918	46	331	VA
		DIST	COUNTY		SHEET NO.
		DAL	DENTON		85

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

DATE: FILE:

## REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

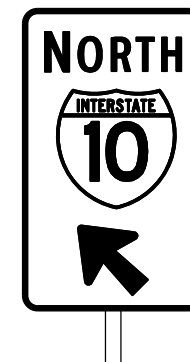
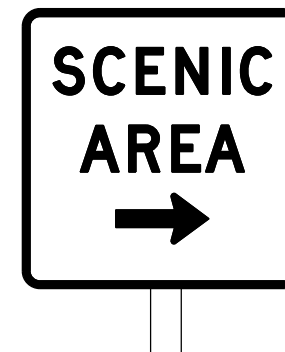
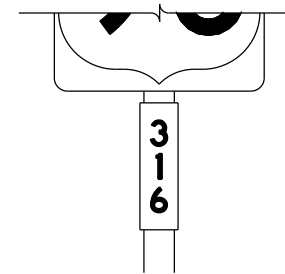
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

## REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

## GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).
4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.
6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

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

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:  
<http://www.txdot.gov/>



## TYPICAL SIGN REQUIREMENTS

TSR(3) - 13

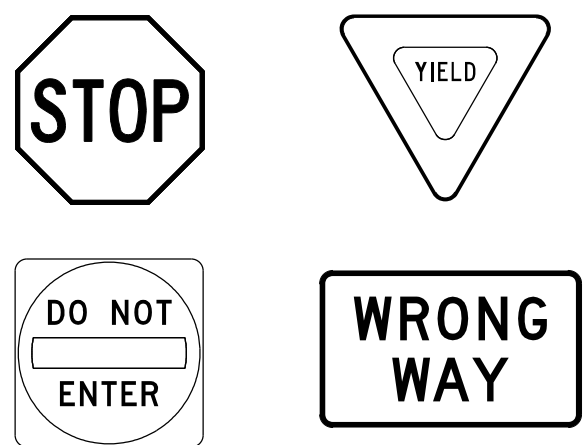
FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
12-03 7-13	DIST	COUNTY	SHEET NO.	
9-08	DAL	DENTON	86	

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

DATE: FILE:

### REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

### REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

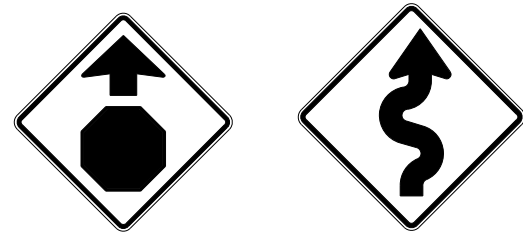
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

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

### REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B <sub>FL</sub> OR C <sub>FL</sub> SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

### REQUIREMENTS FOR SCHOOL SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B <sub>FL</sub> OR C <sub>FL</sub> SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

### GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
- Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:  
<http://www.txdot.gov/>



## TYPICAL SIGN REQUIREMENTS

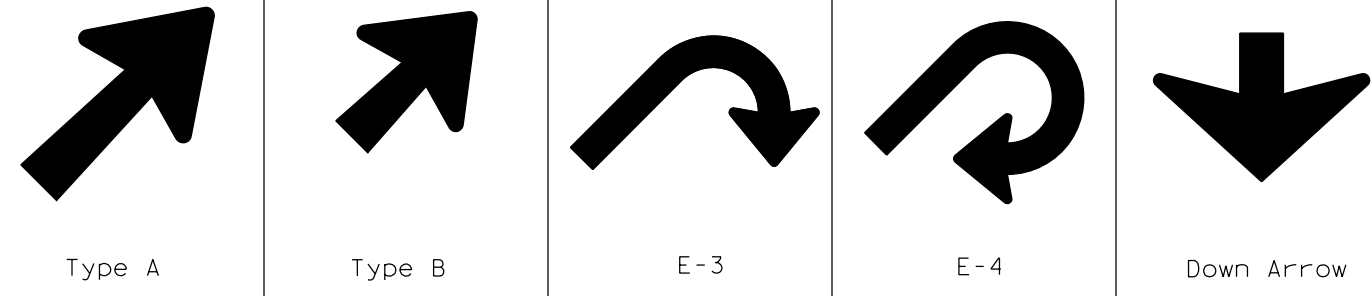
TSR(4) - 13

FILE:	tsr4-13.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0918	46	331	VA				
12-03	7-13	DIST	COUNTY	SHEET NO.					
9-08		DAL	DENTON	87					

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

### ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



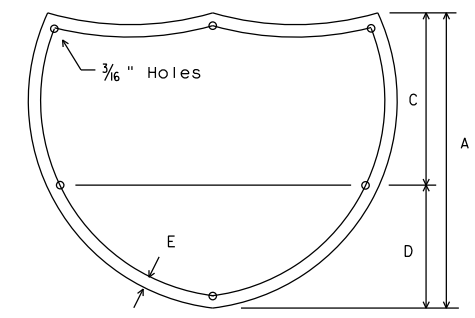
TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

NOTE  
 Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

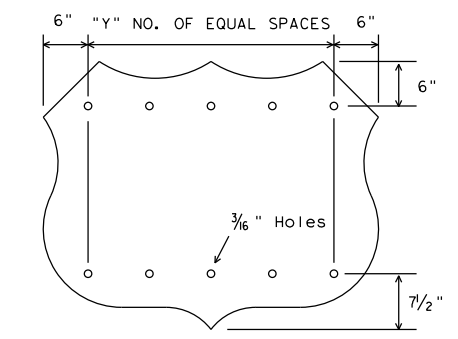
The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:  
<http://www.txdot.gov/>

### SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)



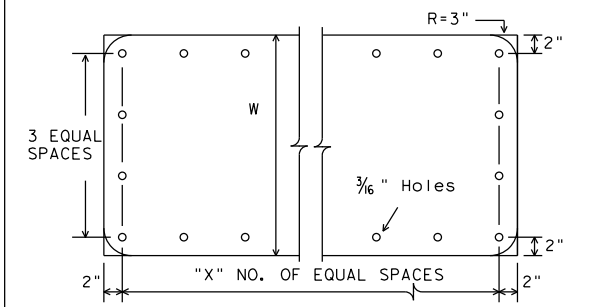
INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4



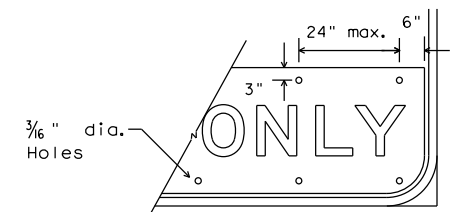
U.S. ROUTE MARKERS

Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



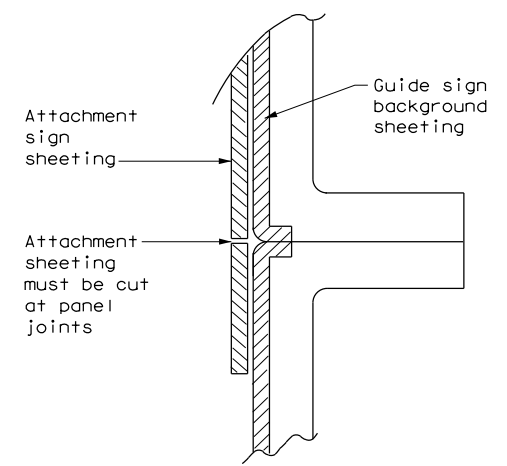
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5



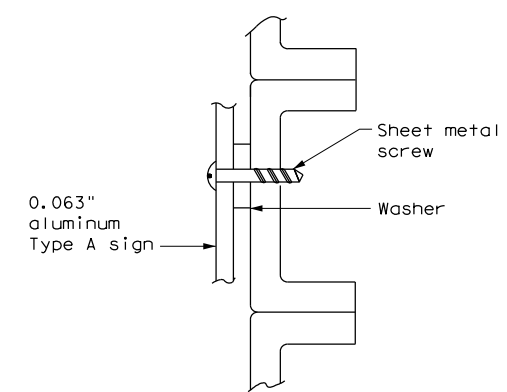
EXIT ONLY PANEL

### MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)

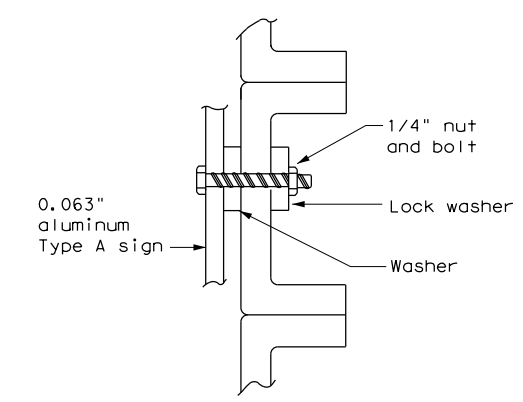


DIRECT APPLIED ATTACHMENT

NOTE:  
 1. Sheeting for legend, symbols, and borders must be cut at panel joints.  
 2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



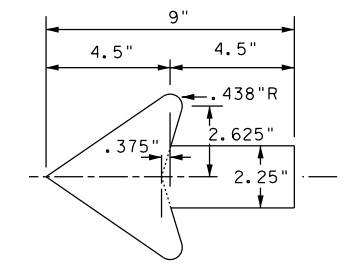
SCREW ATTACHMENT



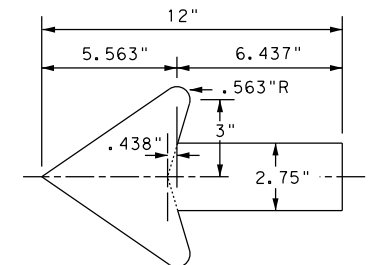
NUT/BOLT ATTACHMENT

NOTE:  
 Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

### ARROW DETAILS for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.



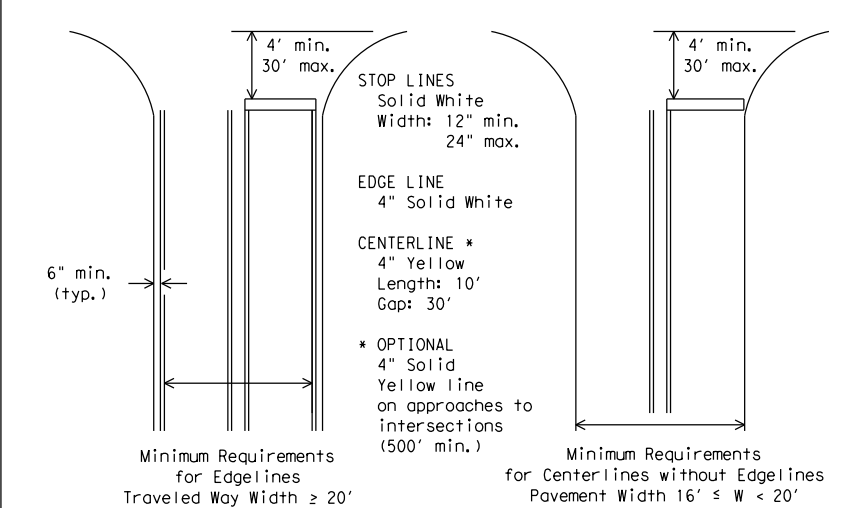
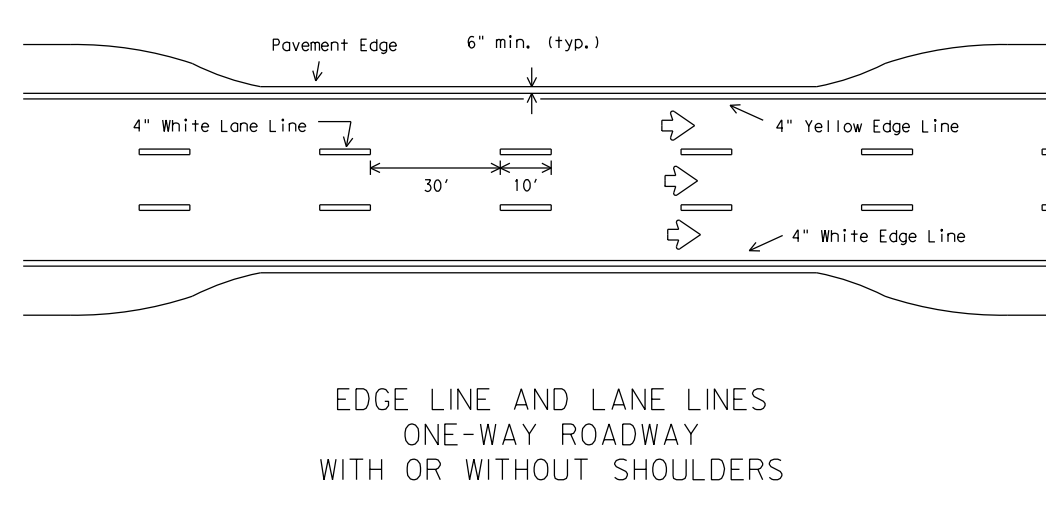
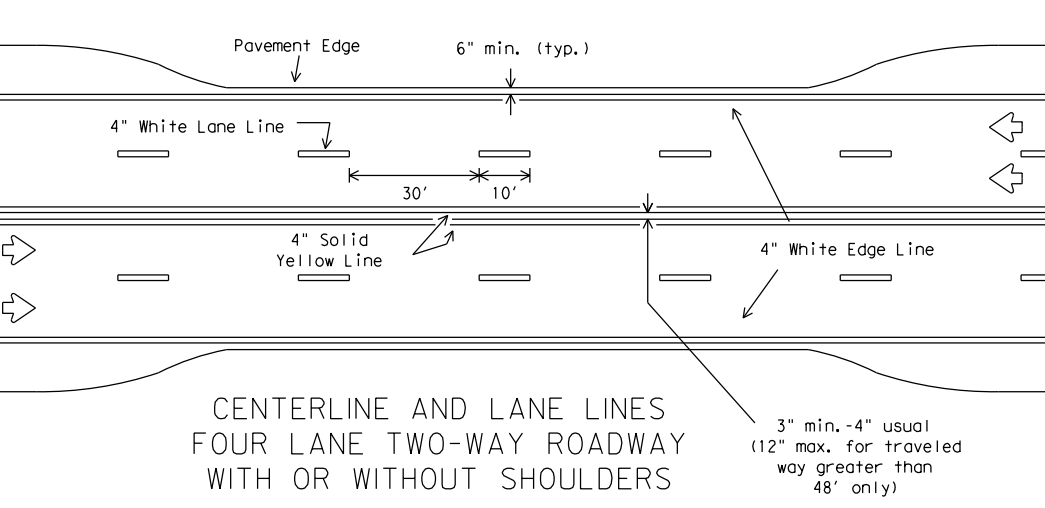
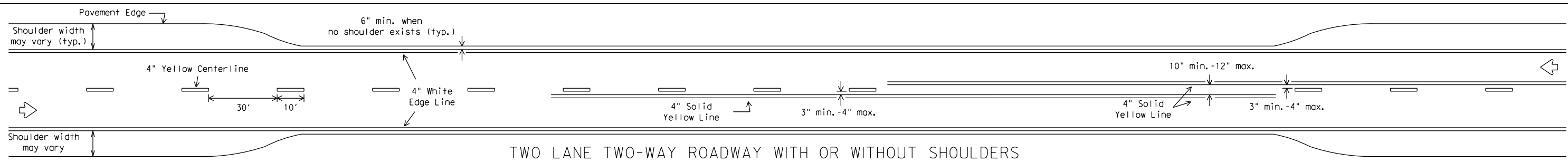
## TYPICAL SIGN REQUIREMENTS

TSR(5) - 13

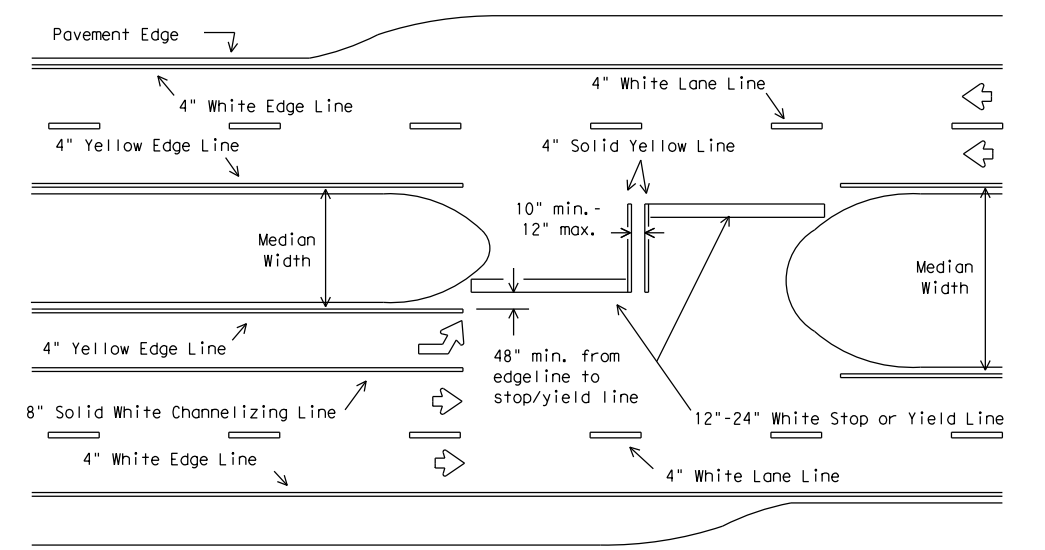
FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
12-03 7-13	DIST	COUNTY	SHEET NO.	
9-08	DAL	DENTON	88	

DATE:  
 FILE:

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

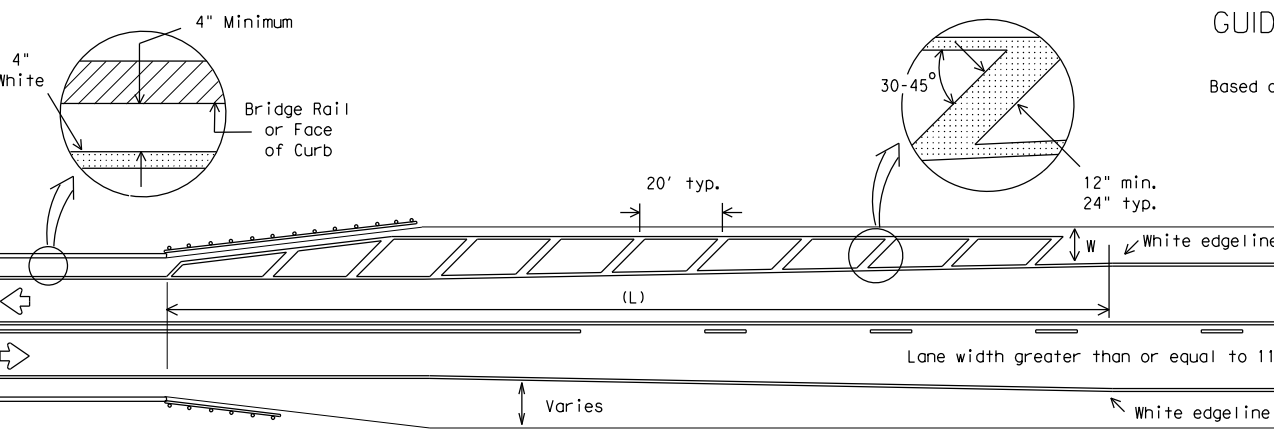


GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE  
Based on Traveled Way and Pavement Widths for Undivided Highways



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and of opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

FOUR LANE DIVIDED ROADWAY INTERSECTIONS



- NOTES:
- No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
  - For crosshatching length (L) see Table 1.
  - The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
  - The crosshatching is not required if delineators or barrier reflectors are used along the structure.
  - For guard fence details, refer elsewhere in the plans.

ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

TABLE 1 - TYPICAL LENGTH (L)

Posted Speed *	Formula
≤ 40	$L = \frac{WS^2}{60}$
≥ 45	$L = WS$

\* 85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit. Crosshatching length should be rounded up to nearest 5 foot increment.  
L=Length of Crosshatching (FT.) W=Width of Offset (FT.) S=Posted Speed (MPH)

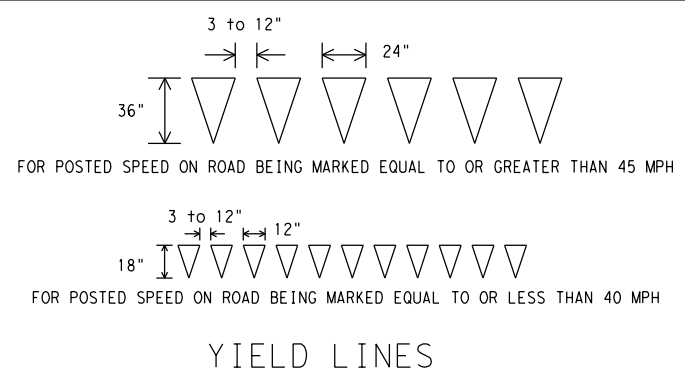
EXAMPLES:  
An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the crosshatching should be:  
 $L = 8 \times 70 = 560$  ft.  
A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the crosshatching should be:  
 $L = 4(40)^2 / 60 = 106.67$  ft. rounded to 110 ft.

GENERAL NOTES

- Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
- The traveled way includes only that portion of the roadway used for vehicular travel and not the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to inside of edgeline of a two lane roadway.

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

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



YIELD LINES



TYPICAL STANDARD PAVEMENT MARKINGS

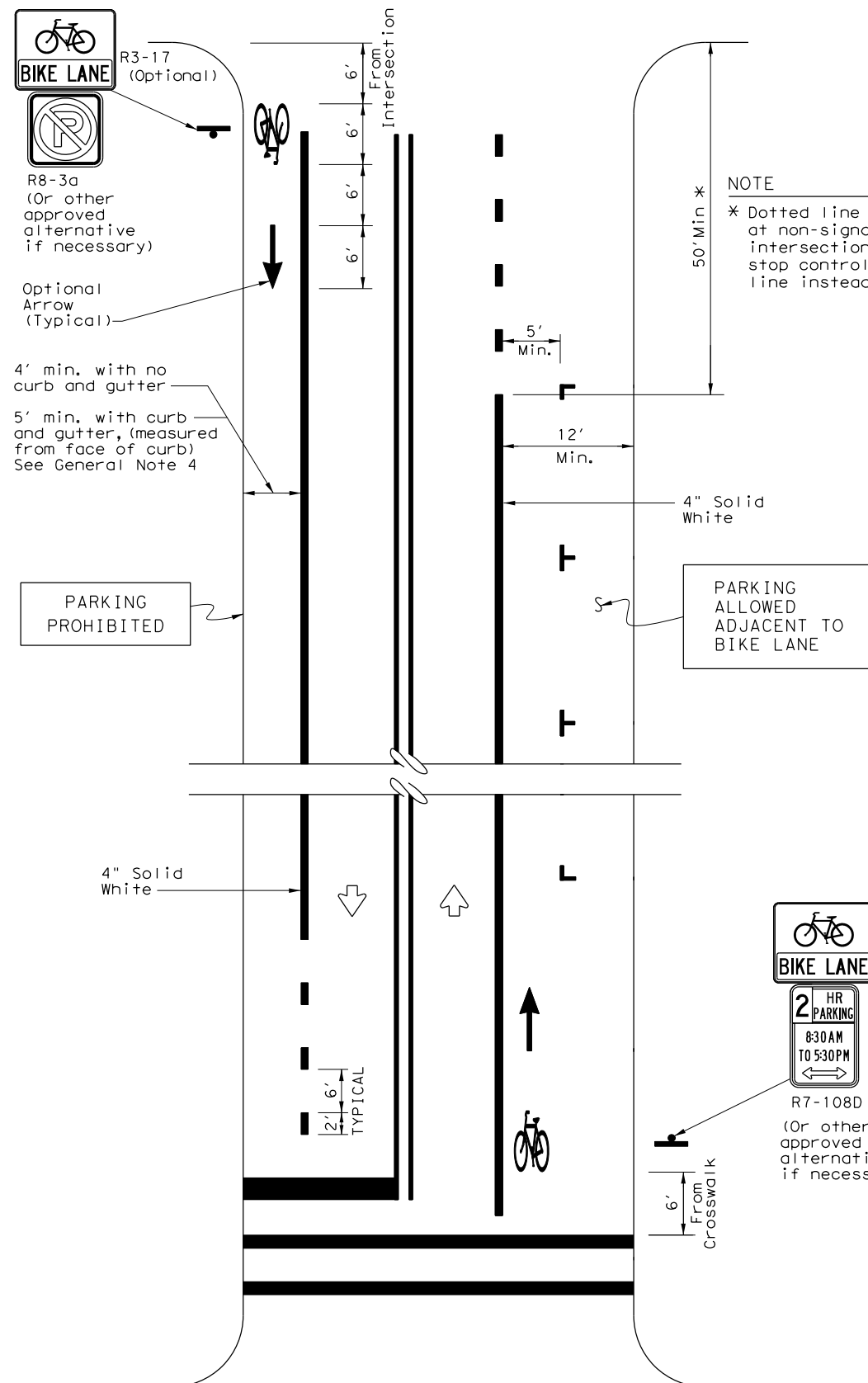
PM(1) - 12

© TxDOT November 1978	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
8-95 2-12	0918	46	331	VA
5-00	DIST	COUNTY		SHEET NO.
8-00	DAL	DENTON		89
3-03				

DATE:  
FILE:

DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for incorrect results or damages resulting from its use.

DATE:  
FILE:



NOTES

1. Bicycle lane pavement markings typically repeated after each intersection or signalized driveway.
2. On uninterrupted sections of roadway, bicycle lane pavement markings typically repeated as follows:  
-1200' for 45 MPH or less roads  
-2500' for 50 MPH and greater roads.

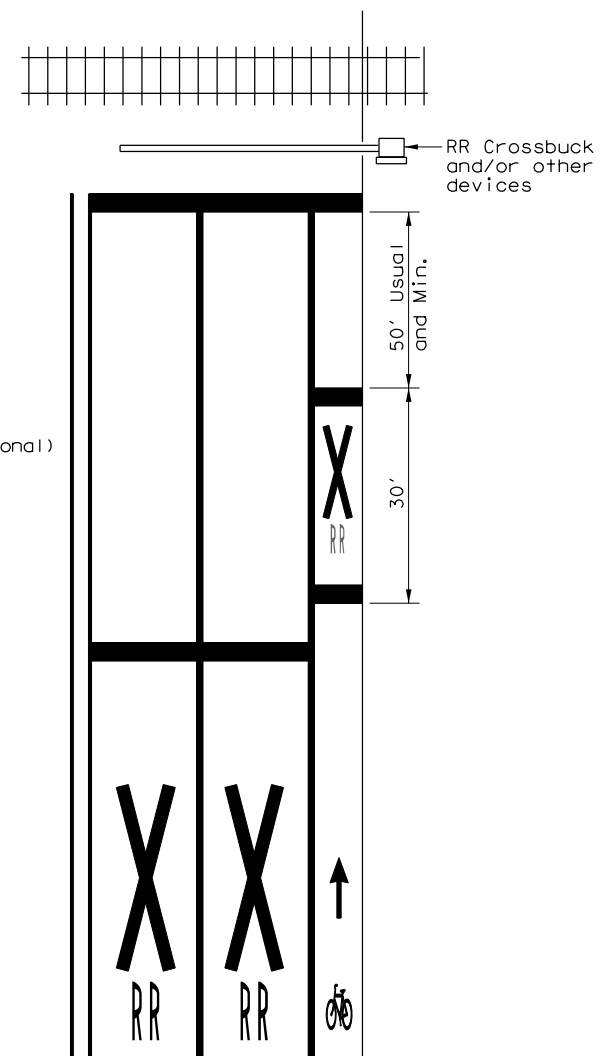
TWO-WAY STREET

GENERAL NOTES

1. All bicycle lane pavement markings shall be white unless otherwise noted.
2. All pavement marking materials shall meet the required Department Material Specifications as specified by the plans.
3. Exact sign placement and details are shown elsewhere in the plans.
4. The current edition of AASHTO'S Guide for the Development of Bicycle Facilities should be referenced for variations in design, other geometric conditions, and lane width options.
5. Other bicycle lane symbol or word markings as shown in the Texas Manual on Uniform Traffic Control Devices may be used. Details for words, arrows and symbols as shown in the Standard Highway Sign Designs for Texas.
6. The "BIKE LANE" (R3-17) sign with the "AHEAD" (R3-17a) sign mounted directly below should be installed in advance of the beginning of a marked bike lane.
7. The "BIKE LANE" (R3-17) sign with the "END" (R3-17b) sign mounted directly below should be installed at the end of marked bicycle lane.

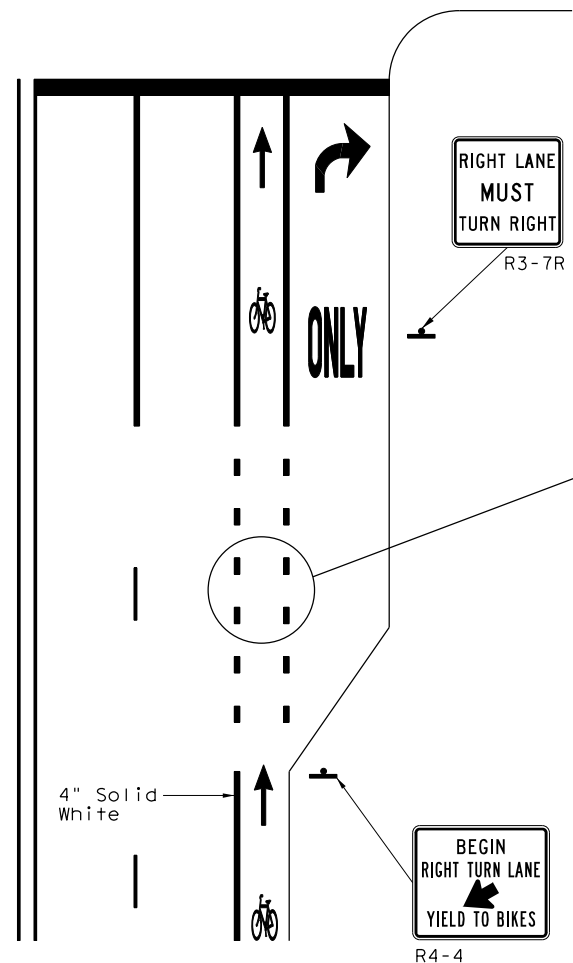
LEGEND	
	Sign
	Traffic Flow

SPECIFICATION REFERENCE TABLE	
Traffic Paint	DMS-8200
Hot Applied Thermoplastic	DMS-8220
Permanent Prefabricated Pavement Markings	DMS-8240
Glass Traffic Beads	DMS-8290

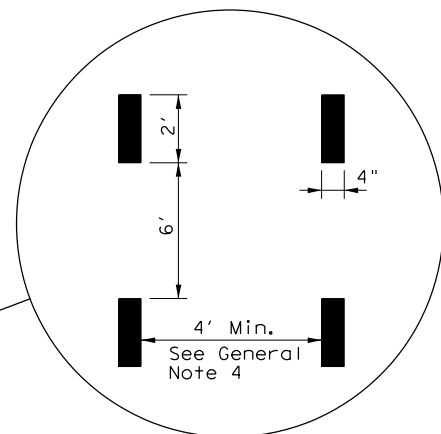


(See RCPM Standard for travel lane details)

RAILROAD CROSSING APPROACH



RIGHT TURN ONLY LANE



DETAIL "A"

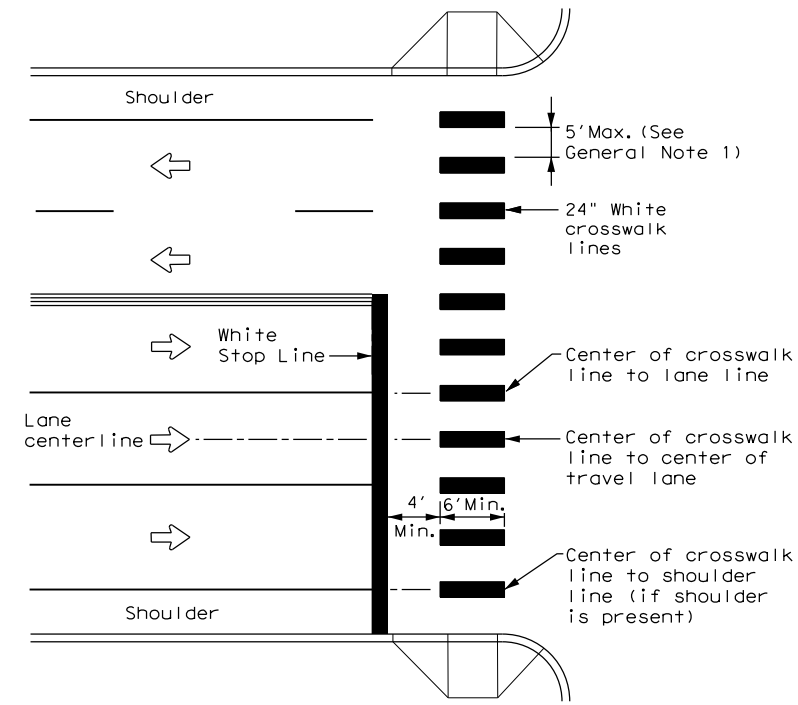
Texas Department of Transportation  
Traffic Operations Division

BICYCLE LANE PAVEMENT MARKINGS

BLPM-10

© TxDOT	May 2010	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS		CONT	SECT	JOB	HIGHWAY
		0918	46	331	VA
		DIST	COUNTY		SHEET NO.
		DAL	DENTON		90

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



HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

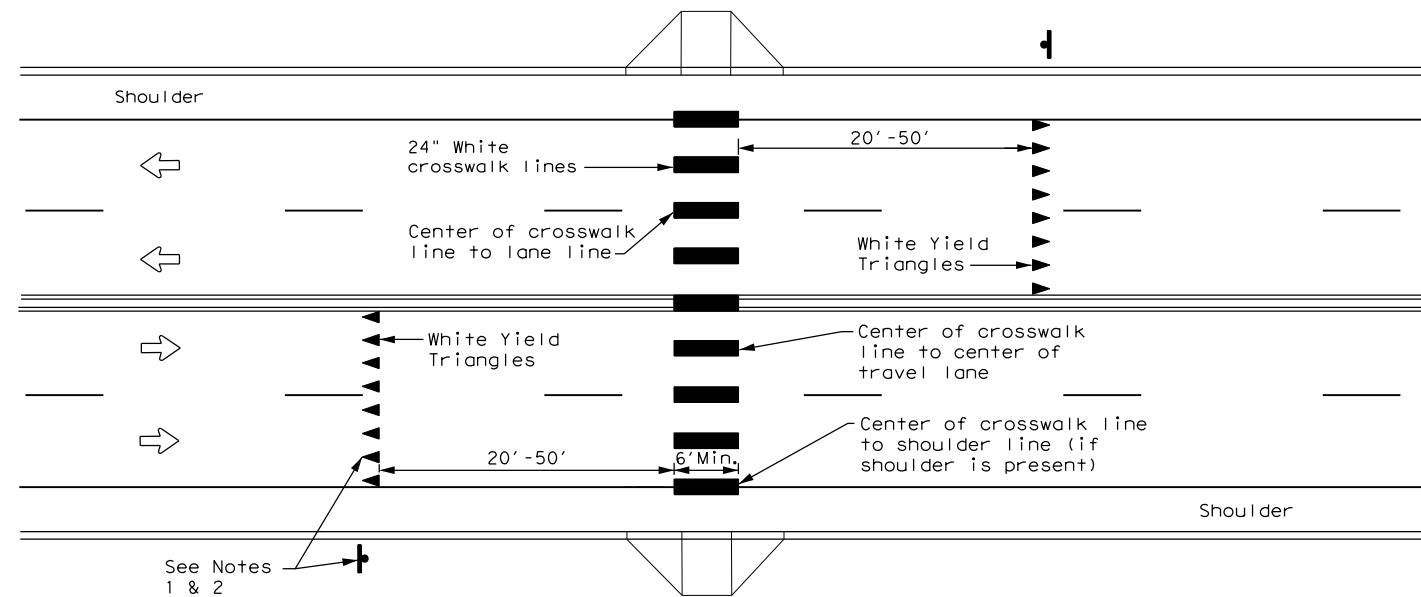
GENERAL NOTES

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.

DATE: DATE TIME  
FILE: DOCUMENT NAME

<p>CROSSWALK PAVEMENT MARKINGS</p> <p>PM(4) - 20</p>			
FILE: pm4-20.dgn	DN:	CK:	DW:
© TxDOT June 2020	CONT	SECT	JOB
REVISIONS	0918	46	331
	DIST	COUNTY	SHEET NO.
	DAL	DENTON	91



**STORMWATER POLLUTION PREVENTION PLAN (SWP3):**

**2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE**

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

**2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:**

**T / P**

- Protection of Existing Vegetation
- Vegetated Buffer Zones
- Soil Retention Blankets
- Geotextiles
- Mulching/ Hydromulching
- Soil Surface Treatments
- Temporary Seeding
- Permanent Planting, Sodding or Seeding
- Biodegradable Erosion Control Logs
- Rock Filter Dams/ Rock Check Dams
- Vertical Tracking
- Interceptor Swale
- Riprap
- Diversion Dike
- Temporary Pipe Slope Drain
- Embankment for Erosion Control
- Paved Flumes
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**2.2 SEDIMENT CONTROL BMPs:**

**T / P**

- Biodegradable Erosion Control Logs
- Dewatering Controls
- Inlet Protection
- Rock Filter Dams/ Rock Check Dams
- Sandbag Berms
- Sediment Control Fence
- Stabilized Construction Exit
- Floating Turbidity Barrier
- Vegetated Buffer Zones
- Vegetated Filter Strips
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

**T / P**

- Sediment Trap
  - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - 3,600 cubic feet of storage per acre drained
- Sedimentation Basin
  - Not required (<10 acres disturbed)
  - Required (>10 acres) and implemented.
    - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - 3,600 cubic feet of storage per acre drained
  - Required (>10 acres), but not feasible due to:
    - Available area/Site geometry
    - Site slope/Drainage patterns
    - Site soils/Geotechnical factors
    - Public safety
    - Other: \_\_\_\_\_

**2.3 PERMANENT CONTROLS:**

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
Riprap	14+50	14+50
Riprap	22+00	22+00

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

**2.4 OFFSITE VEHICLE TRACKING CONTROLS:**

- Excess dirt/mud on road removed daily
- Haul roads dampened for dust control
- Loaded haul trucks to be covered with tarpaulin
- Stabilized construction exit
- Daily street sweeping
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**2.5 POLLUTION PREVENTION MEASURES:**

- Chemical Management
- Concrete and Materials Waste Management
- Debris and Trash Management
- Dust Control
- Sanitary Facilities
- Other: Capture saw-cutting debris and concrete slurry for proper disposal.
- Other: Maintain paved surfaces free of project sedimentation and debris.
- Other: Maintain project area and adjacent properties free from nuisance dust.
- Other: Avoid storing portable sanitary units, concrete washouts or chemicals within 50 feet upgradient of receiving water or drainage conveyances without adequate pollution controls.

**2.6 VEGETATED BUFFER ZONES:**

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To
Vegetated Buffer	9+00	52+20

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

**2.7 ALLOWABLE NON-STORMWATER DISCHARGES:**

- Fire hydrant flushings
- Irrigation drainage
- Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- Potable water sources
- Springs
- Uncontaminated groundwater
- Water used to wash vehicles or control dust
- Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

**2.8 DEWATERING:**

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

**2.9 INSPECTIONS:**

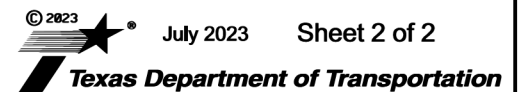
All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

When dewatering activities are present, a daily inspection will be conducted once per day during those activities and documented in accordance with CGP and TxDOT requirements.

**2.10 MAINTENANCE:**

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

**STORMWATER POLLUTION PREVENTION PLAN (SWP3)**



FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6	STP XXX (XXX) TAPS			94
STATE	STATE DIST.	COUNTY		
TEXAS	DAL	DENTON		
CONT.	SECT.	JOB	HIGHWAY NO.	
0918	46	331	VA	

**STORMWATER POLLUTION PREVENTION PLAN (SWP3):**

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with soil disturbing activity and for projects that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

**1.0 SITE/PROJECT DESCRIPTION**

**1.1 PROJECT CONTROL SECTION JOB (CSJ):**

0918-46-331 (DCTA Trail Connection, Segment A)

**1.2 PROJECT LIMITS:**

From: DCTA Hebron Station at Lakeside Circle

To: Carrollton City Limits Southwest of DCTA Railway at SH 121

**1.3 PROJECT COORDINATES:**

BEGIN: (Lat) 33.0085656, (Long) -96.9601255

END: (Lat) 33.0002561, (Long) -96.9536723

**1.4 TOTAL PROJECT AREA (Acres):** 2.14

**1.5 TOTAL AREA TO BE DISTURBED (Acres):** 2.14

**1.6 NATURE OF CONSTRUCTION ACTIVITY:**

Construction of a new 12-foot-wide, 1.02-mile-long pedestrian trail with retaining walls, drainage improvements, and signage.

**1.7 MAJOR SOIL TYPES:**

Soil Type	Description
63 - Ovan clay	Occasionally flooded
88 - Trinity-Urban land complex	Occasionally flooded, 0 to 1 percent slopes
FriA - Frito silty clay	Occasionally flooded, 0 to 1 percent slopes

Existing vegetation within and adjacent to the project area includes both maintained and undisturbed herbaceous land cover (4.4 acres, 90% of project area) consisting of bermudagrass, Johnsongrass, and western ragweed; and emergent wetland (0.03 acre, 0.6%) consisting of southern cattail, marsh seedbox, and Cherokee sedge. Remaining portions of the project area consist of impervious parking areas and sidewalk.

**1.8 PROJECT SPECIFIC LOCATIONS (PSLs):**

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- PSLs determined during preconstruction meeting
- PSLs determined during construction
- No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

**1.9 CONSTRUCTION ACTIVITIES:**

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

- Mobilization
- Install sediment and erosion controls
- Blade existing topsoil into windrows, prep ROW, clear and grub
- Remove existing pavement
- Grading operations, excavation, and embankment
- Excavate and prepare subgrade for proposed pavement widening
- Remove existing culverts, safety end treatments (SETs)
- Remove existing metal beam guard fence (MBGF), bridge rail
- Install proposed pavement per plans
- Install culverts, culvert extensions, SETs
- Install mow strip, MBGF, bridge rail
- Place flex base
- Rework slopes, grade ditches
- Blade windrowed material back across slopes
- Revegetation of unpaved areas
- Achieve site stabilization and remove sediment and erosion control measures

- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**1.10 POTENTIAL POLLUTANTS AND SOURCES:**

- Sediment laden stormwater from stormwater conveyance over disturbed area
- Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- Solvents, paints, adhesives, etc. from various construction activities
- Transported soils from offsite vehicle tracking
- Construction debris and waste from various construction activities
- Contaminated water from excavation or dewatering pump-out water
- Sanitary waste from onsite restroom facilities
- Trash from various construction activities/receptacles
- Long-term stockpiles of material and waste
- Discharges from concrete washout activities, runoff from concrete cutting activities, and other concrete related activities.

- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**1.11 RECEIVING WATERS:**

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
Elm Fork Trinity River	#0822, Impairment - Cadmium in water
Timber Creek	Timber Creek to Elm Fork Trinity River - #0822, Impairment - Cadmium in water

\* Add (\*) for impaired waterbodies with pollutant in ( ).

**1.12 ROLES AND RESPONSIBILITIES:** City of Carrollton

- Development of plans and specifications Contractor
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Perform SWP3 inspections
- Maintain SWP3 records and update to reflect daily operations
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years

- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**1.13 ROLES AND RESPONSIBILITIES:** City of Carrollton Contractor

- Day To Day Operational Control
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Maintain schedule of major construction activities
- Install, maintain and modify BMPs
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years

- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:**

MS4 Entity
City of Denton - (940) 349-7162
City of Dallas - (214) 670-3146
City of Arlington - (817) 272-2185
City of Fort Worth - (817) 392-1234
Texas Department of Transportation - MS4@txdot.gov

**STORMWATER POLLUTION PREVENTION PLAN (SWP3)**

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6	STP XXX (XXX) TAPS			93
STATE	STATE DIST.	COUNTY		
TEXAS	DAL	DENTON		
CONT.	SECT.	JOB	HIGHWAY NO.	
0918	46	331	VA	

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

Notes To Designer: 1. Do not alter Sheet Design or Font style, size or weight - match text attributes. 2. If additional space is needed for a numbered section, fence and adjust sections up or down as needed for proportioning and readability but do not relocate from its relative position. 3. All areas should be addressed thoroughly and verify the necessary pay items are set up to support actions needed. Filled Out, XXX/XXX Prepared By Name/Section

I. STORMWATER POLLUTION PREVENTION PLAN-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List adjacent MS 4 Operator(s) that receive discharges from this project. They need to be notified prior to construction activities. (Note: Leave blank only if no adjacent MS 4 Operator(s) are affected.)

- 1. CITY OF LEWISVILLE PHASE II MS4 - CONTACT JASON LONGBINE

No Action Required Required Action

Action Number:

- 1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000. 2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer. 3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors. 4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas. No equipment is allowed in any stream channel below the ordinary High Water Mark except on approved temporary stream crossings or drill pads.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

- No Permit Required Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected) Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters) Individual 404 Permit Required Other Nationwide Permit Required: NWP# 3(a)

Required Actions: List Waters of the US Permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

- 1. AT-GRADE SIDEWALK - STA 42+20 - UNNAMED TRIBUTARY TO LEWISVILLE LAKE - ADJACENT WETLAND NWP 14 with PCN

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices for applicable 401 General Conditions: (Note: If CORP Permit not required, do not check boxes.)

Table with 3 columns: Erosion, Sedimentation, Post-Construction TSS. Includes checkboxes for items like Temporary Vegetation, Silt Fence, Vegetative Filter Strips, etc.

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

No Action Required Required Action

Action Number:

- 1.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751 & 752 in order to comply with requirements for invasive species, beneficial landscaping and tree/brush removal commitments.

No Action Required Required Action

Action Number:

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS TREATY ACT.

No Action Required Required Action

Action Number:

- 1. The following species could be present in the project area: Monarch butterfly, eastern box turtle, eastern spotted skunk, prairie skink, Spragues pipit, Streckers chorus frog, timber (canebrake) rattlesnake, Texas garter snake, western box turtle, western hog-nosed skunk, western chicken turtle, and Woodhouse's toad. 2. Contractor to implement the following BMPs from Beneficial Management Practices: Avoiding, Minimizing, and Mitigating Impacts of Transportation Projects on State Natural Resources available at: https://ftp.txdot.gov/pub/txdot-info/env/toolkit/300-01-bmp.pdf. a. Section 1.2 Vegetation BMP b. Section 1.4 Water Quality BMP c. Section 2.6.1 Aquatic Amphibian and Reptile BMP (barrier fencing not required) d. Section 2.6.2 Terrestrial Amphibian and Reptile BMP

Special Notes:

- 1. Avoid harming all wildlife species if encountered and allow them to safely leave the project site. Due diligence should be used to avoid killing or harming any wildlife species in the implementation of transportation projects. 2. If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. 3. The Migratory Bird Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade or transport any migratory bird, nest, young, feather or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations. The contractor would remove all old migratory bird nests from any structure or trees where work would be done from October 1 to February 15. In addition, the contractor would be prepared to prevent migratory birds from building nest(s) between February 15 to October 1. In the event that migratory birds are encountered on-site during project construction, efforts to avoid adverse impacts on protected birds, active nests, eggs and/or young would be observed.

LIST OF ABBREVIATIONS

Table listing abbreviations such as BMP, CGP, DSHS, FHWA, MOA, MOU, MS4, MBTA, NOT, NWP, NOI, SPCC, SW3P, PCN, PSL, TCEQ, TPDES, TPWD, TxDOT, T&E, USACE, USFWS, etc.

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. Obtain and keep on-site Safety Data Sheets (SDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the SDS. In the event of a spill, take actions to mitigate the spill as indicated in the SDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- \* Dead or distressed vegetation (not identified as normal) \* Trash piles, drums, containers, barrels, etc. \* Undesirable smells or odors \* Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation(s) or replacement(s) (bridge class structures not including box culverts)?

Yes No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

Yes No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

No Action Required Required Action

Action Number:

- 1. 2. 3.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

No Action Required Required Action

Action Number:

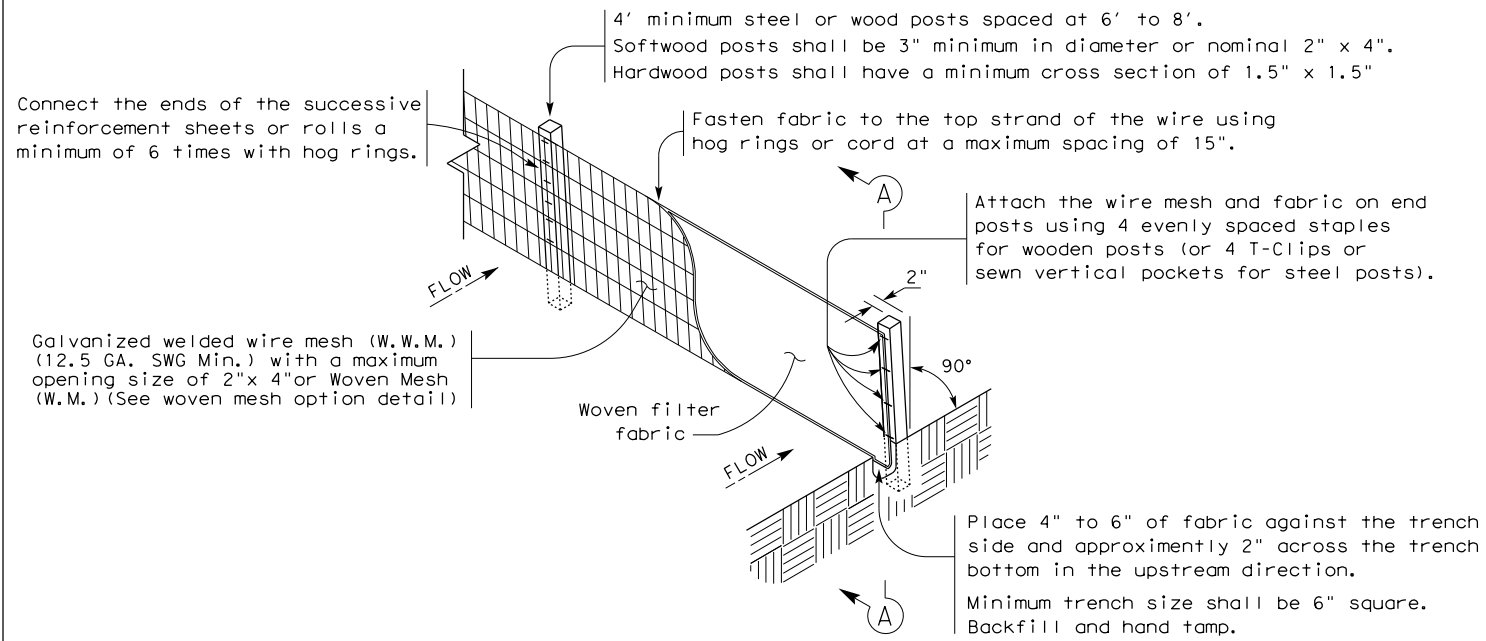
- 1.

GENERAL NOTE:

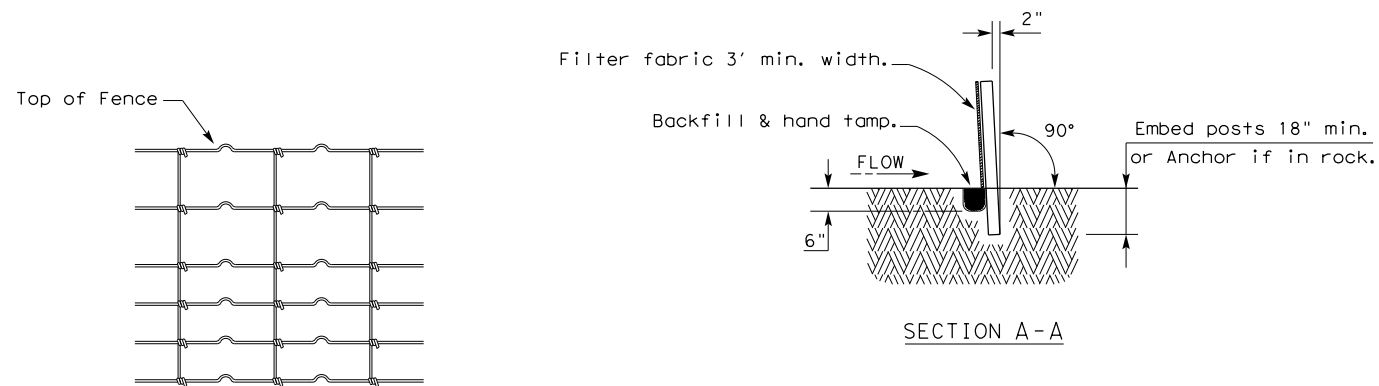
Any change orders and/or deviations from the final design must be reported to the Engineer prior to commencement of construction activities, as additional environmental clearance may be required.

Texas Department of Transportation Dallas District ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC) table with columns for FED. RD. DIV. NO., FEDERAL AID PROJECT NO., HIGHWAY NO., STATE, DISTRICT, COUNTY, CONTROL, SHEET NO.

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



TEMPORARY SEDIMENT CONTROL FENCE



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.

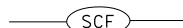
**SEDIMENT CONTROL FENCE USAGE GUIDELINES**

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<sup>2</sup>. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

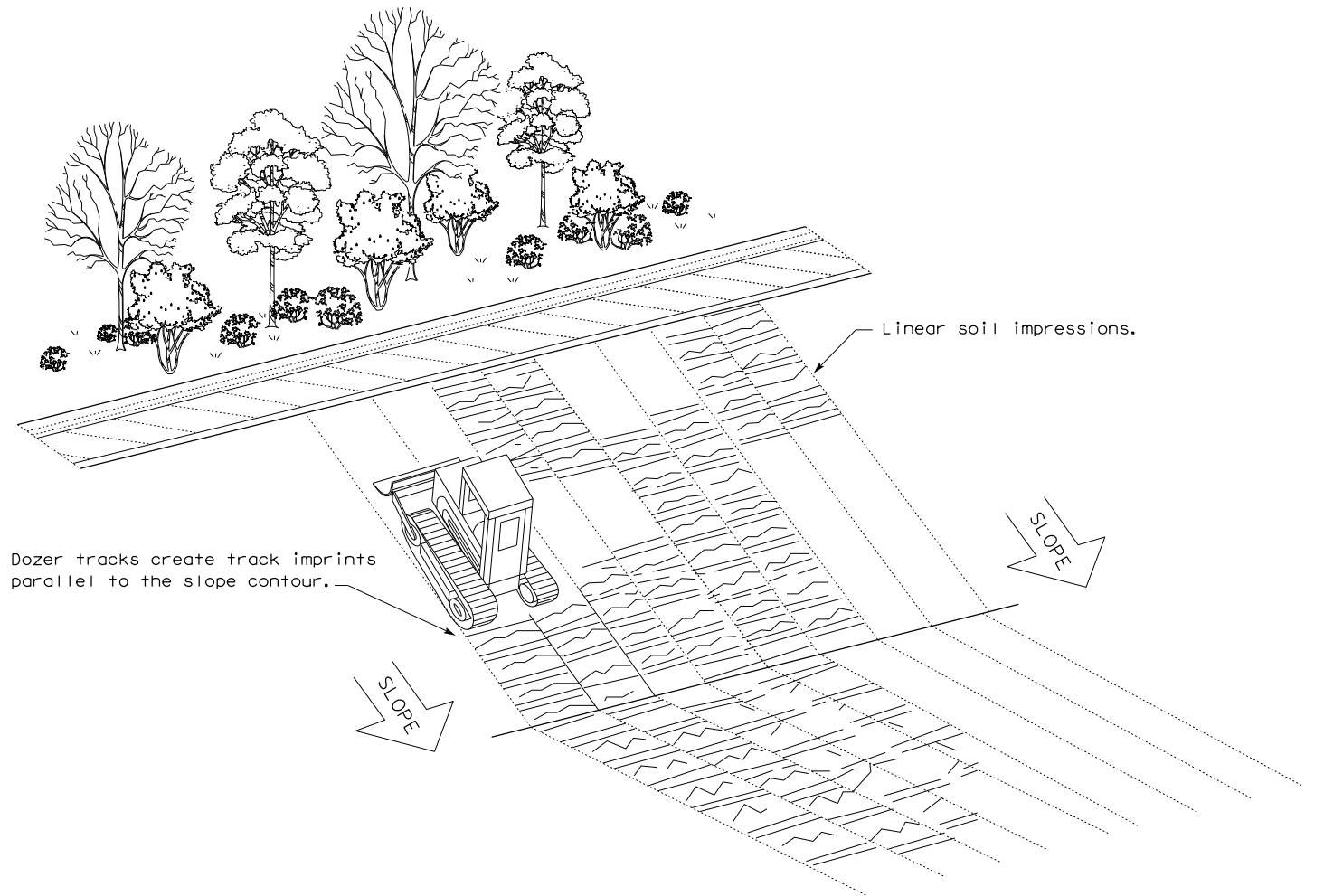
**LEGEND**

Sediment Control Fence



**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 continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

DATE  
FILE

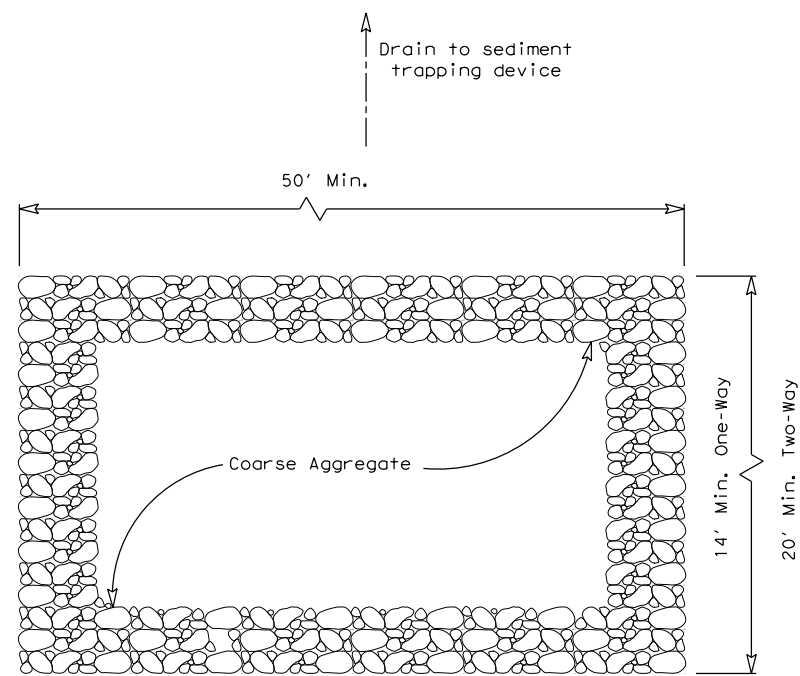


TEMPORARY EROSION,  
SEDIMENT AND WATER  
POLLUTION CONTROL MEASURES  
FENCE & VERTICAL TRACKING  
EC(1)-16

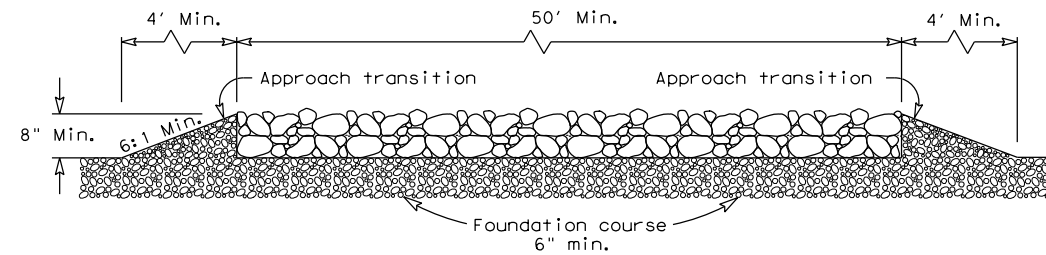
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
	DIST	COUNTY		SHEET NO.
	DAL	DENTON		96

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

DATE: 8/29/2025  
FILE: A:\450000\45685\001\CADD\Sheets\TW09-Env\Environmental\Standards\L405-ec316.dgn



PLAN VIEW

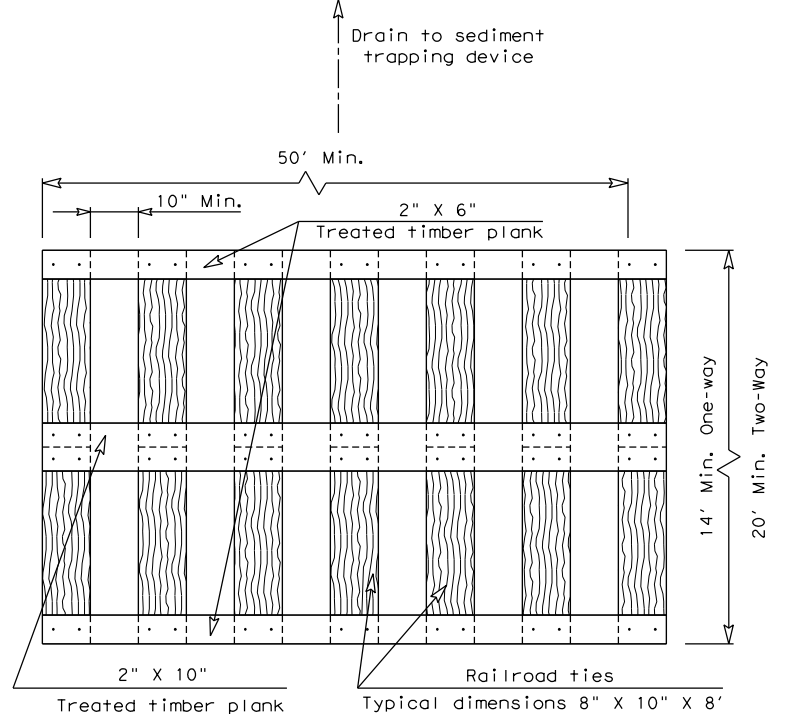


ELEVATION VIEW

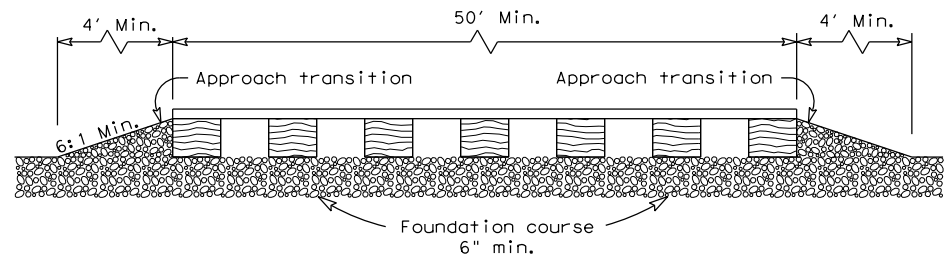
CONSTRUCTION EXIT (TYPE 1)  
ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

- The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
- The coarse aggregate should be open graded with a size of 4" to 8".
- The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
- The construction exit shall be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW

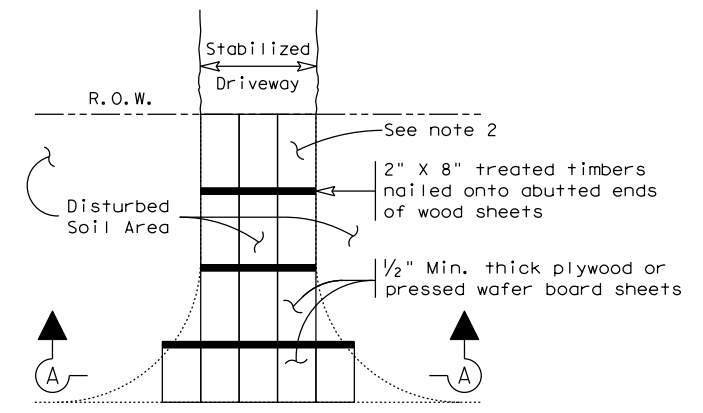


ELEVATION VIEW

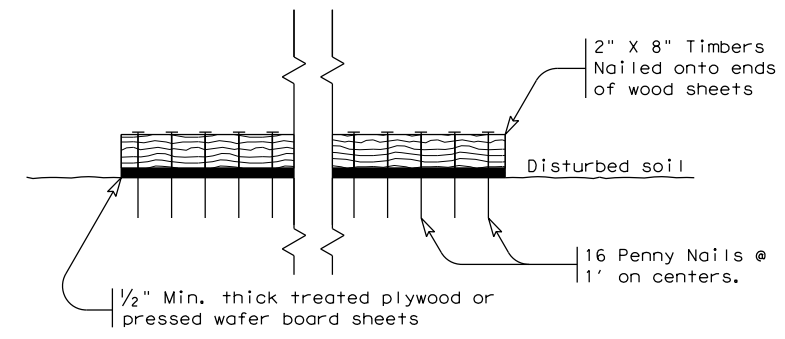
CONSTRUCTION EXIT (TYPE 2)  
TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

- The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
- The treated timber planks shall be attached to the railroad ties with 1/2" x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- The construction exit should be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



Paved Roadway  
PLAN VIEW



SECTION A-A  
CONSTRUCTION EXIT (TYPE 3)  
SHORT TERM

GENERAL NOTES (TYPE 3)

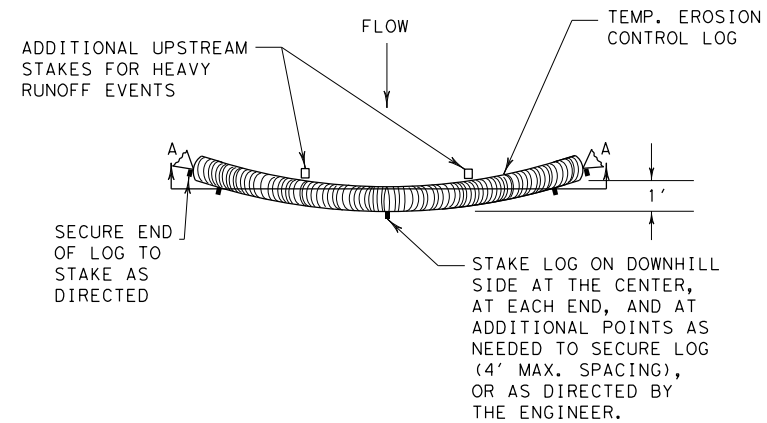
- The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
- The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.



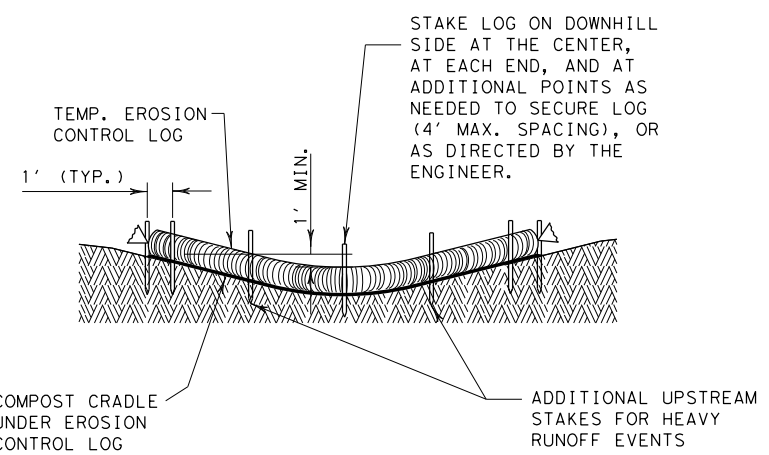
TEMPORARY EROSION,  
SEDIMENT AND WATER  
POLLUTION CONTROL MEASURES  
CONSTRUCTION EXITS  
EC (3) - 16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
	0918	46	331	VA
	DIST	COUNTY	SHEET NO.	
	DAL	DENTON	97	

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



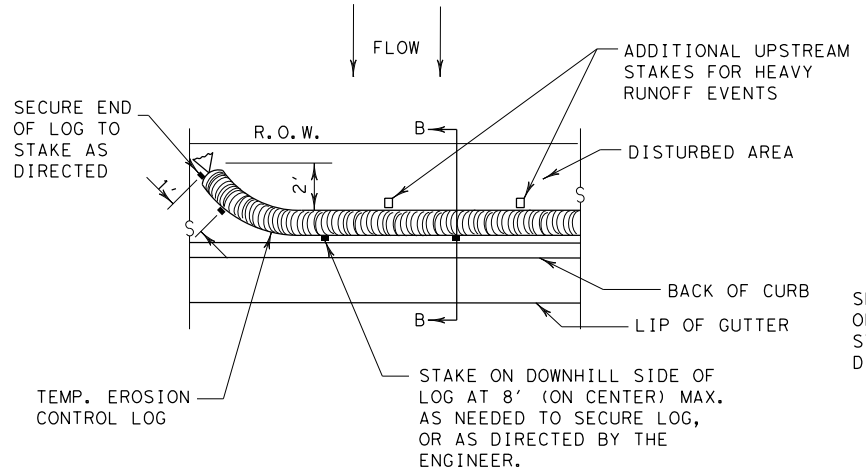
PLAN VIEW



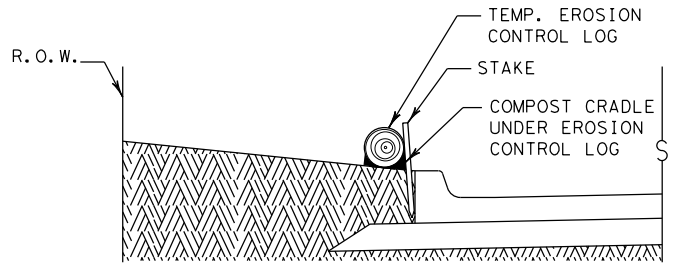
SECTION A-A

EROSION CONTROL LOG DAM

CL-D



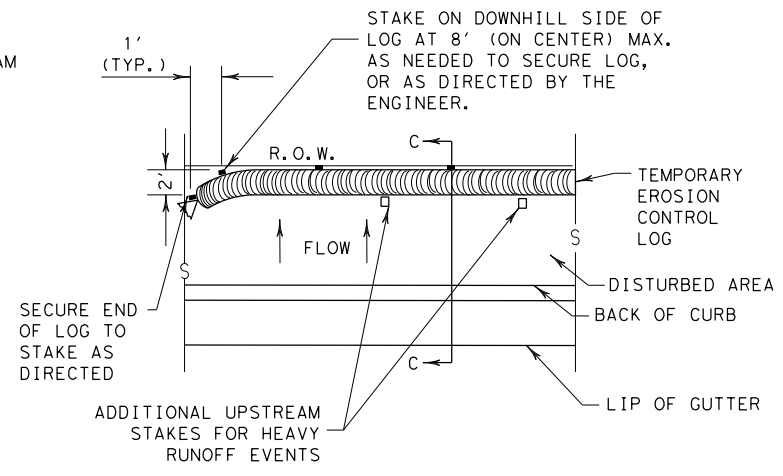
PLAN VIEW



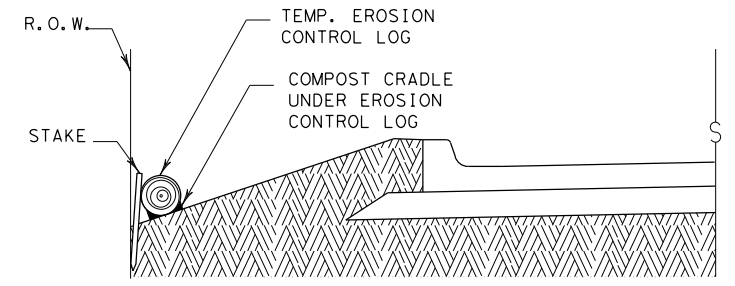
SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



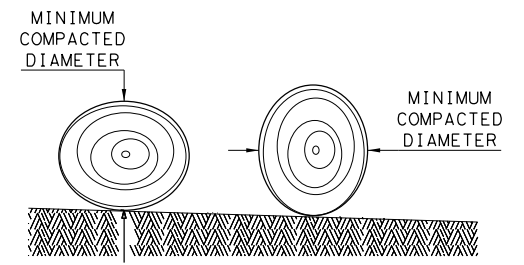
PLAN VIEW



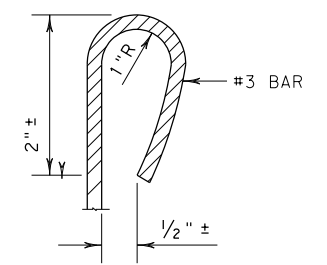
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS



REBAR STAKE DETAIL

**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.

**GENERAL NOTES:**

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'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

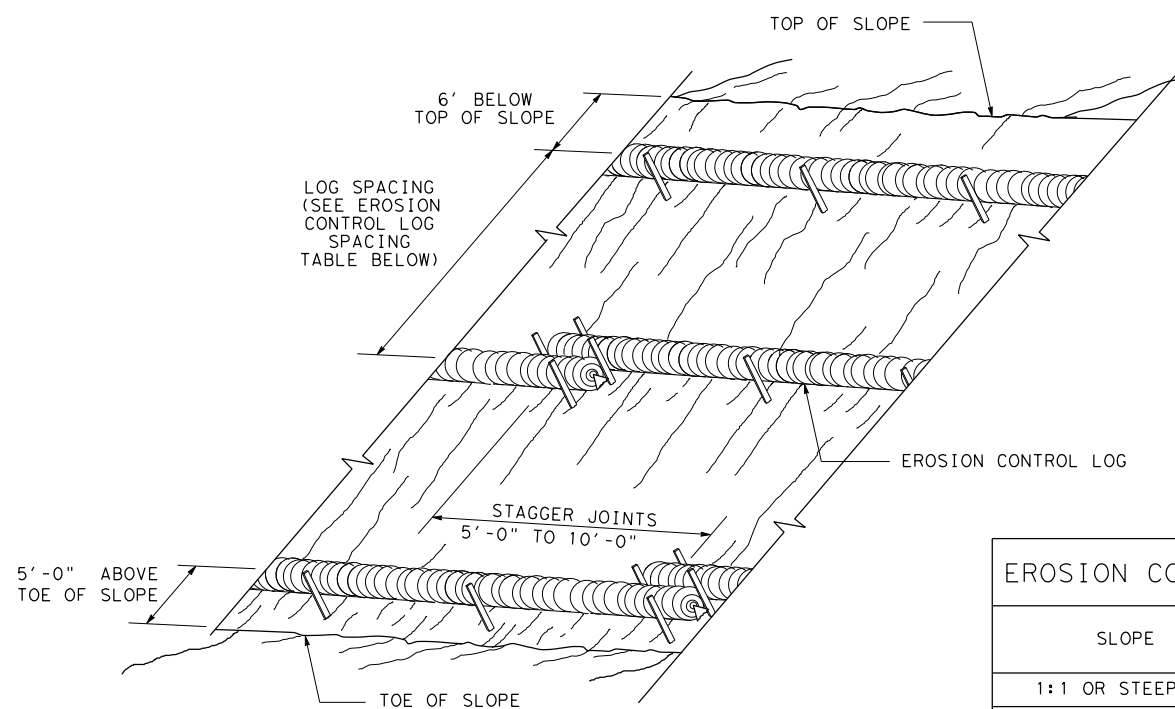
SHEET 1 OF 3

		<b>Design Division Standard</b>	
<p>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</p> <p>EROSION CONTROL LOG</p> <p>EC (9) - 16</p>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT SECT	JOB	HIGHWAY
REVISIONS	0918 46	331	VA
	DIST	COUNTY	SHEET NO.
	DAL	DENTON	98

DATE: FILE:

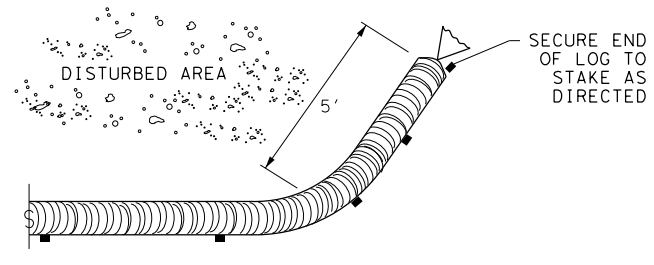
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:

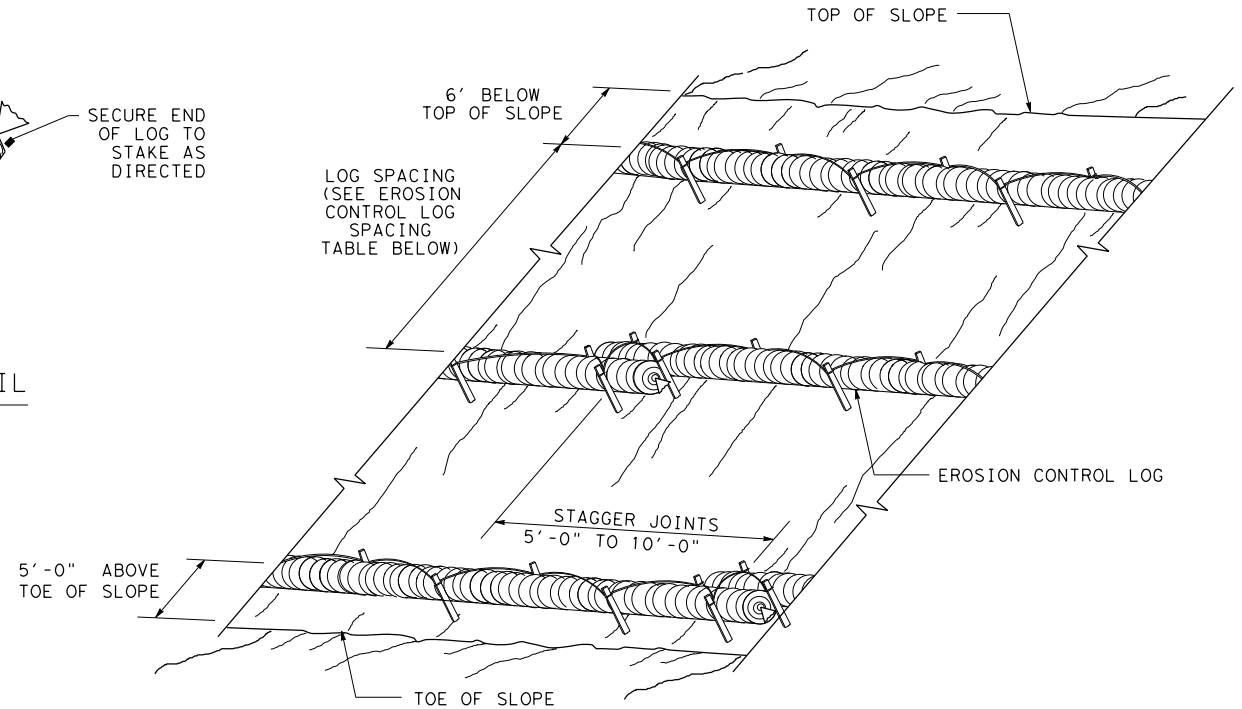


EROSION CONTROL LOGS ON SLOPES  
STAKE AND TRENCHING ANCHORING

CL-SST



END SECTION RAP DETAIL

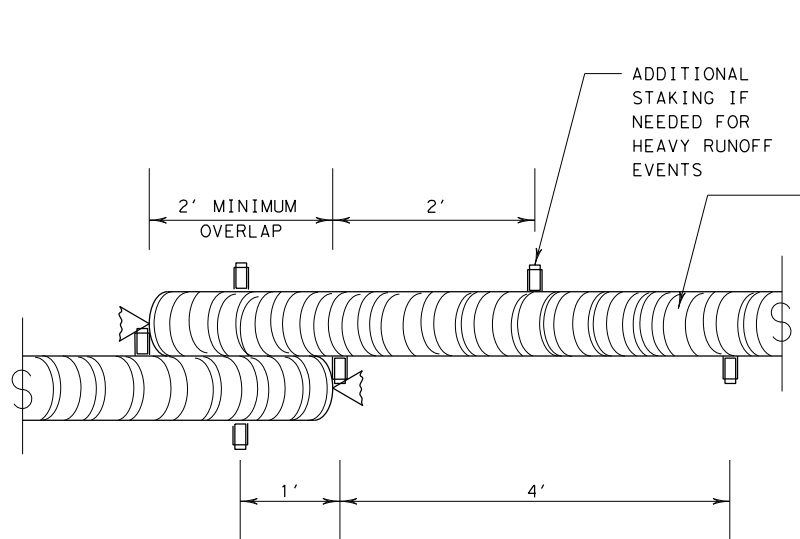


EROSION CONTROL LOGS ON SLOPES  
STAKE AND LASHING ANCHORING

CL-SSL

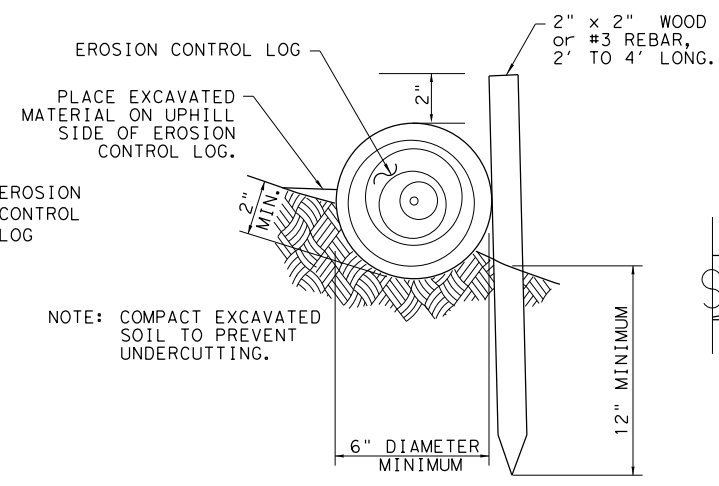
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

\* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:  
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;  
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART

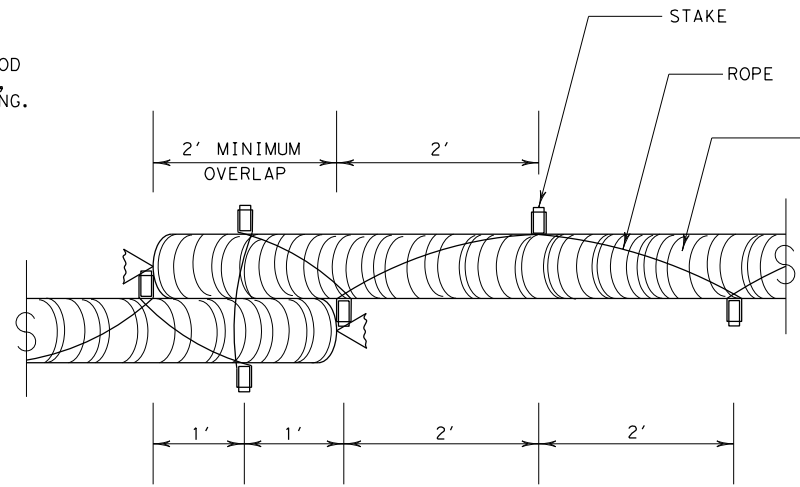


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

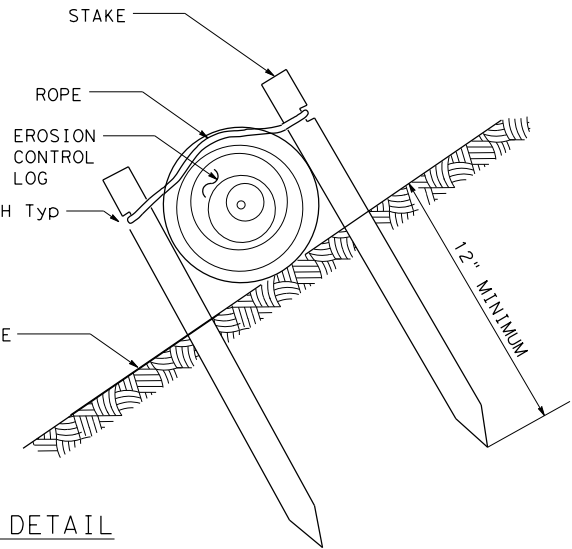


NOTE: COMPACT EXCAVATED SOIL TO PREVENT UNDERCUTTING.



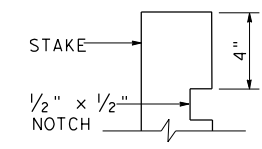
STAKE AND LASHING ANCHORING DETAIL

CL-SSL



LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"

TRENCH DEPTH TABLE

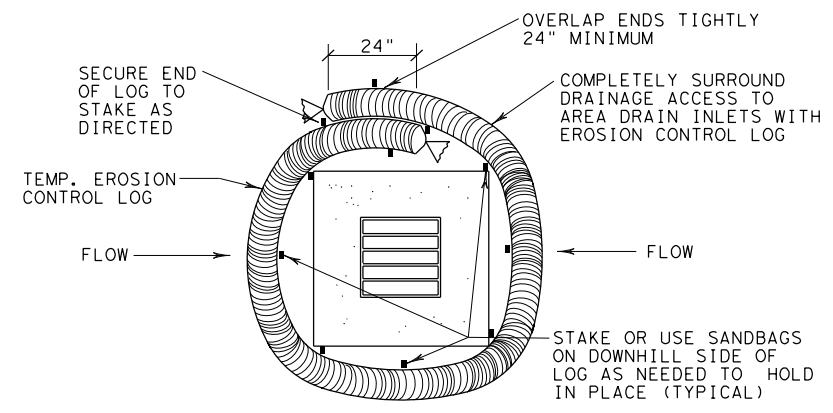


STAKE NOTCH DETAIL

SHEET 2 OF 3

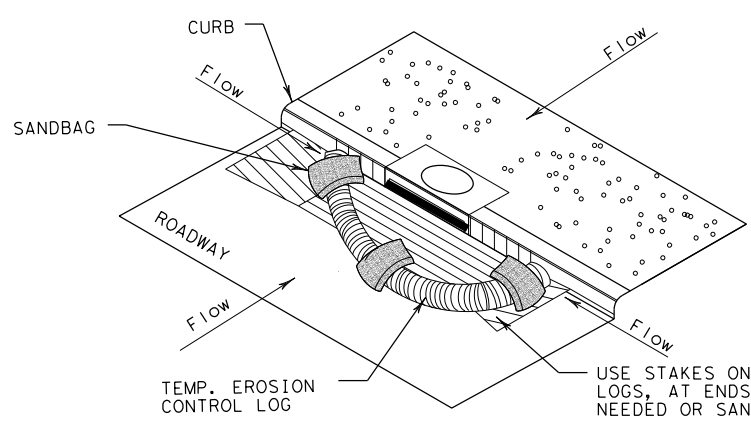
		<b>Design Division Standard</b>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16			
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT SECT	JOB	HIGHWAY
REVISIONS	0918 46	331	VA
DIST	COUNTY	SHEET NO.	
DAL	DENTON	99	

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



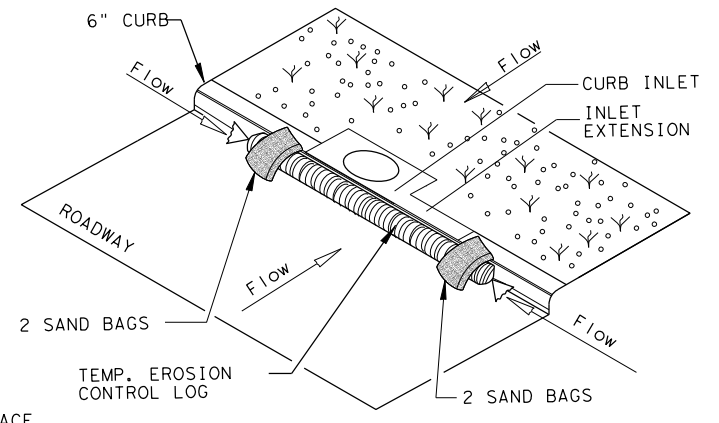
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

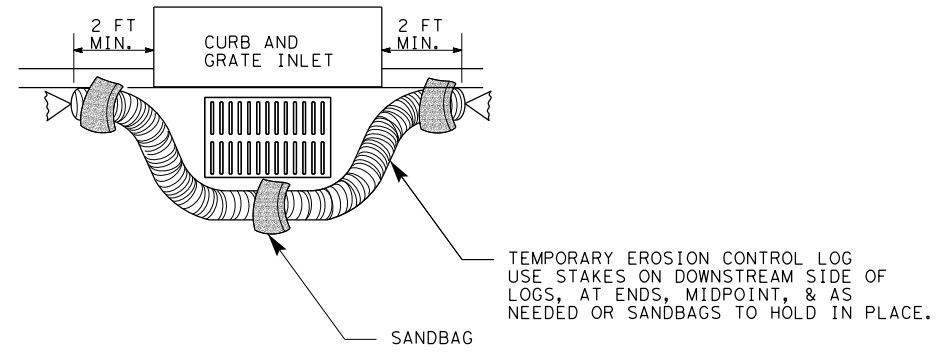
CL-CI



EROSION CONTROL LOG AT CURB INLET

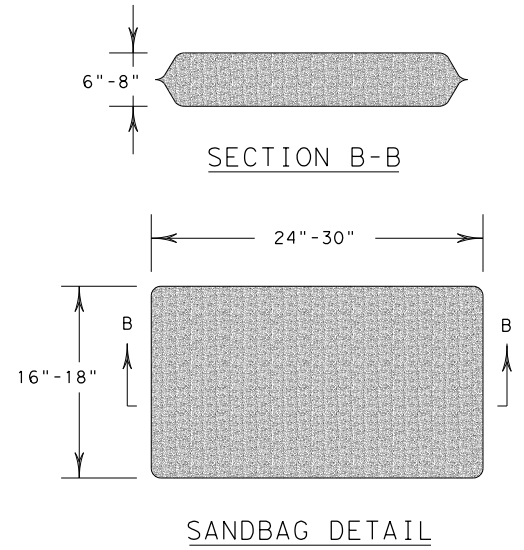
CL-CI

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



SANDBAG DETAIL

SHEET 3 OF 3



TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES  
EROSION CONTROL LOG  
EC (9) - 16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0918	46	331	VA
	DIST	COUNTY		SHEET NO.
	DAL	DENTON		100

DATE:  
FILE:

SURFACE PREPARATION ITEM 160\* FURN & PLACE TOPSOIL / ITEM 161\* COMPOST MANUF TOPSOIL (4") SY

Table with 1 column: SURFACE PREPARATION. Content: Prepare planting area surface BEFORE placing Topsoil, Compost, Fertilizer, Seed and/or Sod. Once project area has been completed to final lines, grade and compaction, remove objectionable materials from planting area surface and scarify existing surface to a depth of 4-inches, unless otherwise specified or directed.

Refer to Items 160 and 161 of TxDOT 2024 Standard Specifications\* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.

- TOPSOIL NOTES:
1. When Topsoil is specified under Item 160, use suitable material salvaged from the project ROW in accordance with Item 160 specifications, and/or secure additional good material from approved sources.
2. Topsoil shall include only the top 6-inches of its native surface, and be easily cultivated, fertile, erosion-resistant and free of objectionable materials. Topsoil obtained from sites outside of the ROW must come from approved sources and have a pH between 5.5 and 8.5 su.
3. Place Topsoil on pre-scarified surface, spread to a uniform loose cover at thickness specified, and shape per plans.
4. Water and roll the finished surface with a light roller or other suitable equipment per Item 160.3; do not over-compact.

- COMPOST NOTES:
1. When Compost Manufactured Topsoil (4") is specified under Item 161, use compost meeting all requirements of Item 161.2 and Table 1. Provide quality control (QC) documentation and obtain Engineer approval prior to compost delivery.
2. Contractor shall provide tickets/invoices that document material type, quantity and placement for all compost delivered.
3. Additional topsoil may be required to be imported to achieve the compost/topsoil mix ratio. Topsoil must meet Item 160 specifications.

Table with 1 column: APPLICATION OF COMPOST MANUFACTURED TOPSOIL (4"). Content: AFTER Surface Preparation, uniformly spread a 1-inch layer of compost on-grade with 3-inches topsoil over pre-scarified planting area. (25% compost and 75% topsoil - 1" compost and 3" topsoil.) Then mix compost and topsoil together by cultivating the compost into the topsoil (by till or disk) to a 4-inch (4") depth. Roll the finished surface with a light corrugated drum; do not over-compact.

FERTILIZER ITEM 166\* FERTILIZER TON

Table with 1 column: SOIL ANALYSIS FOR FERTILIZER APPLICATION RATE. Content: Unless otherwise stated in the plans, Contractor shall perform at least one soil analysis on each project before fertilization, and submit results to Engineer with recommended fertilizer rates based on soil analysis. Engineer may direct sample location(s). Soil analysis may be waived if both compost and sod are used on entire project.

- FERTILIZER NOTES:
1. Refer to Item 166 of TxDOT 2024 Standard Specifications\* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.
2. Apply fertilizer BEFORE seeding, or AFTER placing sod.
3. Use fertilizer containing nitrogen (N), phosphoric acid (P) and potash (K) nutrients, unless otherwise specified. At least 50% of the Nitrogen component shall be a slow-release sulfur-coated urea as described in Item 166.3. Do not apply more than 60-pounds (lbs) Nitrogen per acre without Engineer concurrence.
4. Deliver fertilizer in bags, clearly labeled to show contents, unless otherwise specified or approved prior to delivery. When non-bagged, loose fertilizer is approved, provide documentation for each load of material delivered, to validate authenticity of the material.
5. Apply fertilizer uniformly, as a dry, granular material, essentially dust-free, and do not mix with water for application as a slurry.
6. When both temporary and permanent seeding are specified for the same area, apply half of the required fertilizer before the temporary seeding operation and the other half before the permanent seeding operation.

SEEDING FOR EROSION CONTROL ITEM 164\* DRILL SEED SY

Table with 4 columns: PERMANENT SEEDING MIXES (ADD FLOWER SEEDING MIX TO PERMANENT SEED, ALL SOILS) PERMANENT SEED PLANTING SEASON: FEB. 1 TO MAY 15, TEMPORARY SEEDING MIX DRILL SEED (TEMP\_WARM\_COOL), RURAL CLAY SOILS (PERM\_RURAL\_CLAY), RURAL SANDY SOILS (PERM\_RURAL\_SAND), URBAN CLAY SOILS (PERM\_URBAN\_CLAY), URBAN SANDY SOILS (PERM\_URBAN\_SAND). Includes Pure Live Seed Rate \*\* and lists various seed types and quantities.

- SEEDING NOTES:
1. When seeding is specified under Item 164, refer to TxDOT 2024 Standard Specifications\* for specifications, dimensions, volumes, and measurements that have been modified or not shown. Materials and construction shall meet all specifications.
2. Conduct seeding upon completion of each applicable construction stage (dependent upon planting season requirements), without compensation for additional move-ins.
3. Place seed AFTER preparing planting area surface. Refer to Surface Preparation detail this sheet, as well as Topsoil Item 160 and Compost Manufactured Topsoil Item 161 when specified. Apply fertilizer per Item 166 BEFORE seeding, per specifications and this sheet, to help drill the fertilizer into the soil.
4. When temporary grasses are well-established and more than 2-inches tall, mow planting area before seeding permanent grasses; mowing for this purpose will be subsidiary. When vegetation is not already well-established, scarify planting area to a depth as described in Item 164.3, before temporary seeding and before permanent seeding.
5. Seed material must be appropriate to the location, soil type and season. Use the seed mix species and pure live seed rates designated in Tables 1-5 of the TxDOT 2024 Standard Specifications\* for Item 164, unless otherwise specified.
6. All seed shall meet labeling, delivery, analysis, and testing requirements described in Item 164.2.1. Deliver seed in labeled, unopened bags or containers to Engineer prior to planting.
7. Uniformly plant seed over the designated planting area, along the contour of slopes, and drill seed to a depth as described in Item 164.3.5.
8. Hydroseeding per Item 164.2.5.2 and 164.3.4 may be allowed, when specified or Engineer concurs. For hydroseeding, increase PLS rate by 25% and avoid microplastics.
9. Implement and continue Vegetative Watering per the schedule, rate and volume specified under Item 168.

Table with 1 column: TXDOT REFERENCE MATERIALS:
\* "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES" 2024
• "A GUIDANCE TO ROADSIDE VEGETATION ESTABLISHMENT" 2004
• ONLINE TRAINING COURSE: MNT415 REVEGETATION DURING CONSTRUCTION
• DALLAS DISTRICT "VEGETATION ESTABLISHMENT GUIDELINES"

SODDING FOR EROSION CONTROL ITEM 162\* BLOCK SODDING SY

Table with 3 columns: BLOCK OR ROLL SOD, COMMON NAME (Common Bermuda Grass), BOTANICAL NAME (Cynodon dactylon)

- SODDING NOTES:
1. Refer to Item 162 of TxDOT 2024 Standard Specifications\* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.
2. Place sod between the average date of the last freeze in the Spring and 6 weeks before the average date of the first freeze in the Fall, per the Texas Almanac for the project area.
3. Place sod only AFTER soil surface preparation is complete as detailed in this sheet. Dry soil may require pre-watering.
4. Place all sod (blocks or rolls) within 24-hours of delivery to the site, and keep moist from the time it is dug up until it is planted. Sod with dried roots will not be accepted.
5. Place sod with joints alternating on each row to prevent all joints from lining up, and place blocks firmly against adjacent blocks. Roll, tamp and trim sod per Item 162.3.
6. Place fertilizer promptly AFTER sodding operation is complete in each area.
7. Water sod immediately following placement, and continue Vegetative Watering per Item 168.

VEGETATIVE WATERING FOR ESTABLISHING SEED AND SOD ITEM 168\* VEGETATIVE WATERING TGL

Table with 4 columns: WATERING SCHEDULE, SEASON (Usual Months), RATE, TIME SCHEDULE, TOTAL WATER ESTIMATE. Includes rows for SPRING & FALL, SUMMER, and WINTER, and a Notes section.

- VEGETATIVE WATERING NOTES:
1. Refer to Item 168 of TxDOT 2024 Standard Specifications\* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.
2. Use clean water, free of industrial waste and other substances harmful to vegetation growth, per Item 168.2.
3. For seeding, use Vegetative Watering to keep the seed bed moist during germination; not to provide initial watering. [After drill seeding, postpone watering operations until site receives at least 1/2-inch of natural rainfall in a single day. Also delay watering operations for warm season grasses until soil temperature exceeds 70 degrees F.]
4. For sod, water immediately.
5. All water distribution equipment shall be furnished and operated to provide water at a uniform and controllable rate. Use a metering device on all watering equipment.
6. Evenly distribute water over entire area designated for seeding and/or sodding, using even spray patterns that do not disturb seed bed and/or dislodge seed from seed bed.
7. Do not water between the hours of 12:00 p.m. and 6:00 p.m. when daytime temperatures exceed 95 degrees F.
8. After initial establishment period, continue intermittent watering of newly established seed or sod at a rate of approximately 1-inch water/week, during summer months until end of contract.
9. If 1/4-inch or more of rainfall occurs on site on any given working day, no vegetative watering will be needed on that working day. (Note: 1/4-inch of rain equals 7,000 gallons of water per acre.)
10. Should the Contractor fail to apply the specified amount of water within the time allowed, any seed or sod in poor condition shall be replaced, fertilized, and watered at Contractor's expense.

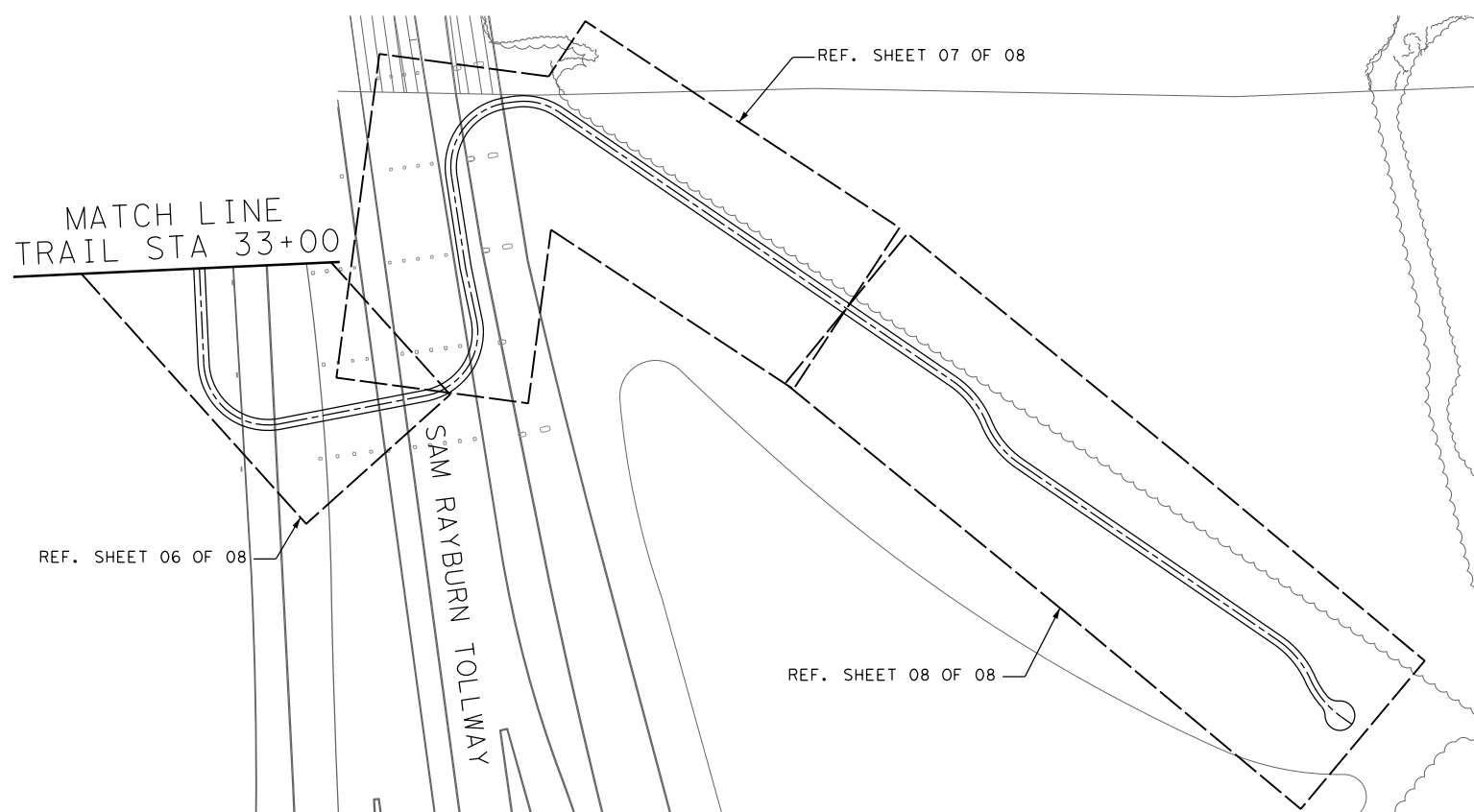
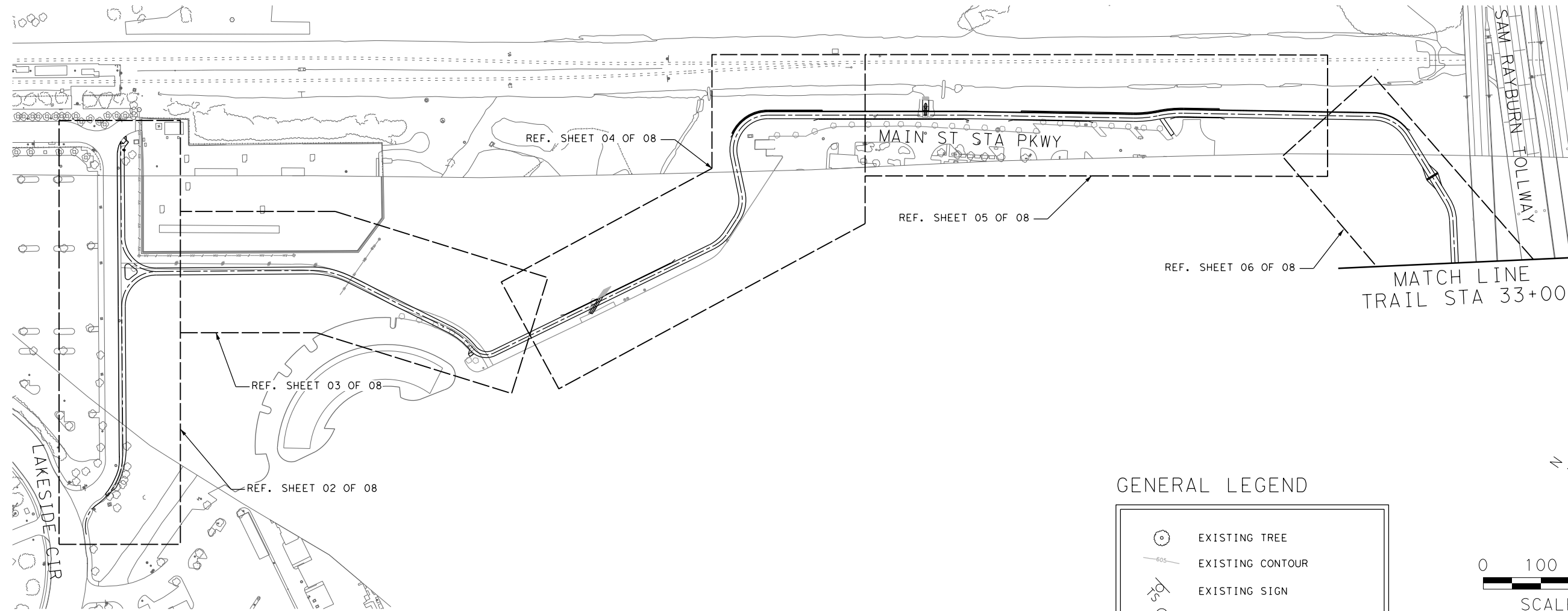
ROADSIDE MOWING ITEM 730\* AC

- MOWING NOTES:
1. During project construction, once seed is established, use mowing to promote permanent grasses by mowing any remaining temporary grasses.
2. Also mow established turf and ROW grasses in designated areas of project limits as specified or directed by Engineer.
3. Remove litter and debris prior to mowing.
4. Do not mow on wet ground when soil rutting can occur.
5. Hand-trim around obstructions and stormwater control devices as needed.
6. Maintain paved surfaces free of tracked soils and clipped vegetation.

Table with 1 column: SEQUENCE OF WORK:
• SCARIFY SURFACE SOIL.
• PREPARE / PLACE TOPSOIL, OR
• PREPARE / PLACE COMPOST MANUFACTURED TOPSOIL.
• APPLY FERTILIZER AND THEN PLACE SEEDING, OR
• PLACE SOD AND THEN APPLY FERTILIZER.
• CONDUCT VEGETATIVE WATERING.
• CONDUCT ROADSIDE MOWING, AS DIRECTED.

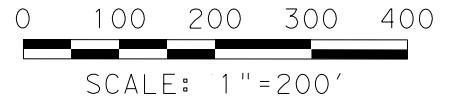
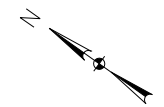


Table with 1 column: VEGETATION ESTABLISHMENT SHEET (DALLAS DISTRICT). Includes TEMPLATE REVISION DATE: 07/17/24 and a table with columns: DESIGN RAD, GRAPHICS, CHECK, FEDERAL RD. DIV. NO., FEDERAL AID PROJECT NO., HIGHWAY NO., SHEET NO., TEXAS, DALLAS, DENTON, CONTROL, SECTION, JOB, 0918, 46, 331, 101.



GENERAL LEGEND

	EXISTING TREE		EXISTING CONTOUR
	EXISTING SIGN		EXISTING LIGHT POLE
	EXISTING FENCE POST		EXISTING MAN HOLE
	EXISTING WATER METER		PROPOSED MINOR CONTOUR
	EXISTING FIRE HYDRANT		PROPOSED MAJOR CONTOUR
	EXISTING ELECTRIC BOX		CENTER LINE
	EXISTING WATER VALVE		EXISTING TREE TO BE PROTECTED
	EXISTING GUY WIRE		EXISTING TREE TO BE REMOVED
	EXISTING FENCE LINE		EXISTING TREE
	EXISTING SANITARY SEWER (XX" - SIZE)		TO BE REMOVED BY CONTRACTOR
	EXISTING WATER LINE (XX" - SIZE)		
	EXISTING REINFORCED CONCRETE PIPE		

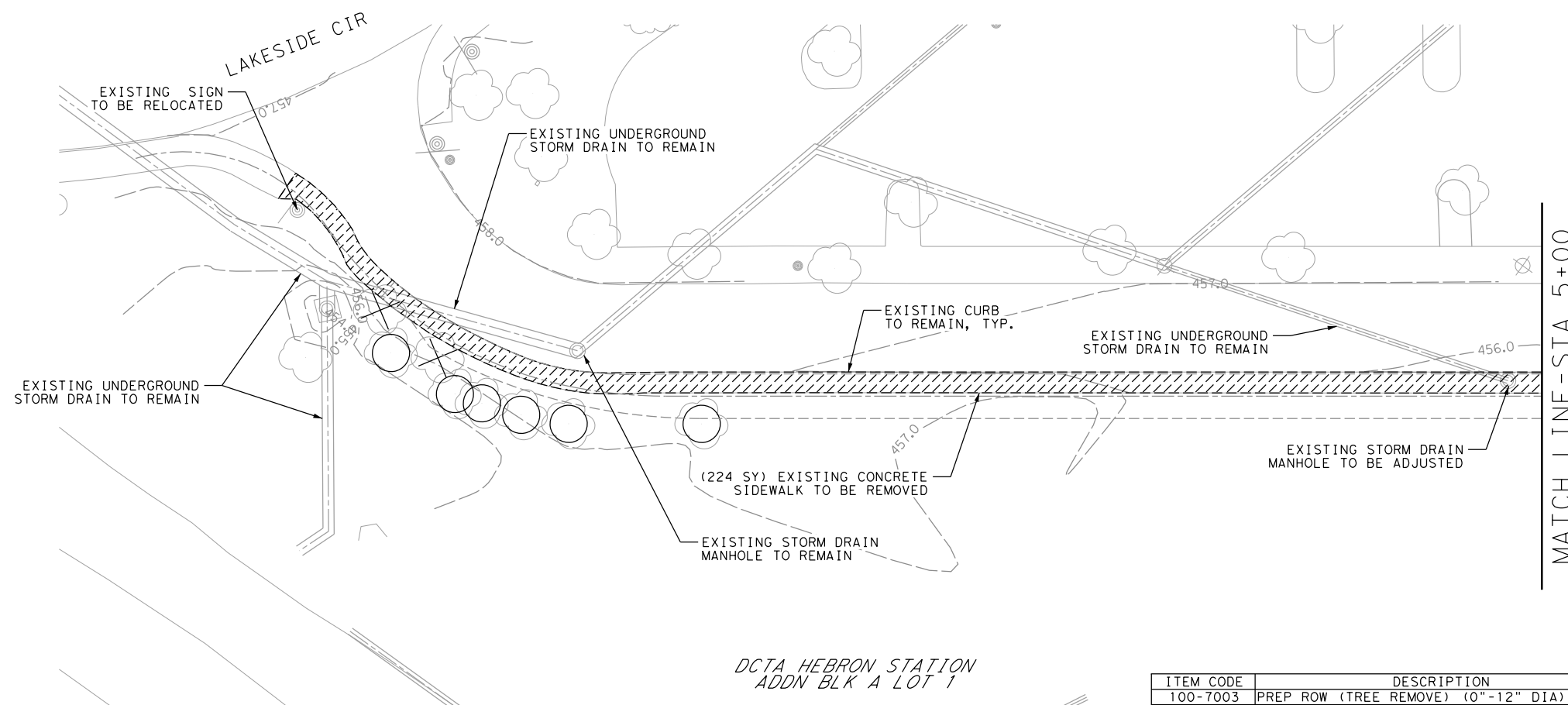


2801 MEACHAM BLVD., SUITE 600  
FORT WORTH, TX 76137-4204  
(817) 847-1422

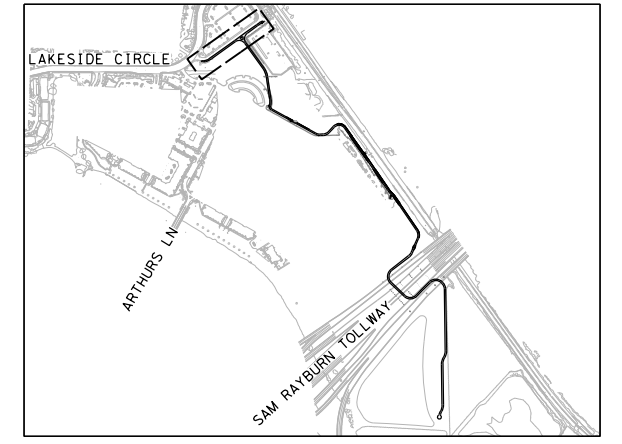
TEXAS Department of Transportation  
© 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE  
 DEMOLITION PLAN LAYOUT

SCALE: AS NOTED	SHEET 01 OF 08		
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331



DCTA HEBRON STATION  
ADDN BLK A LOT 1



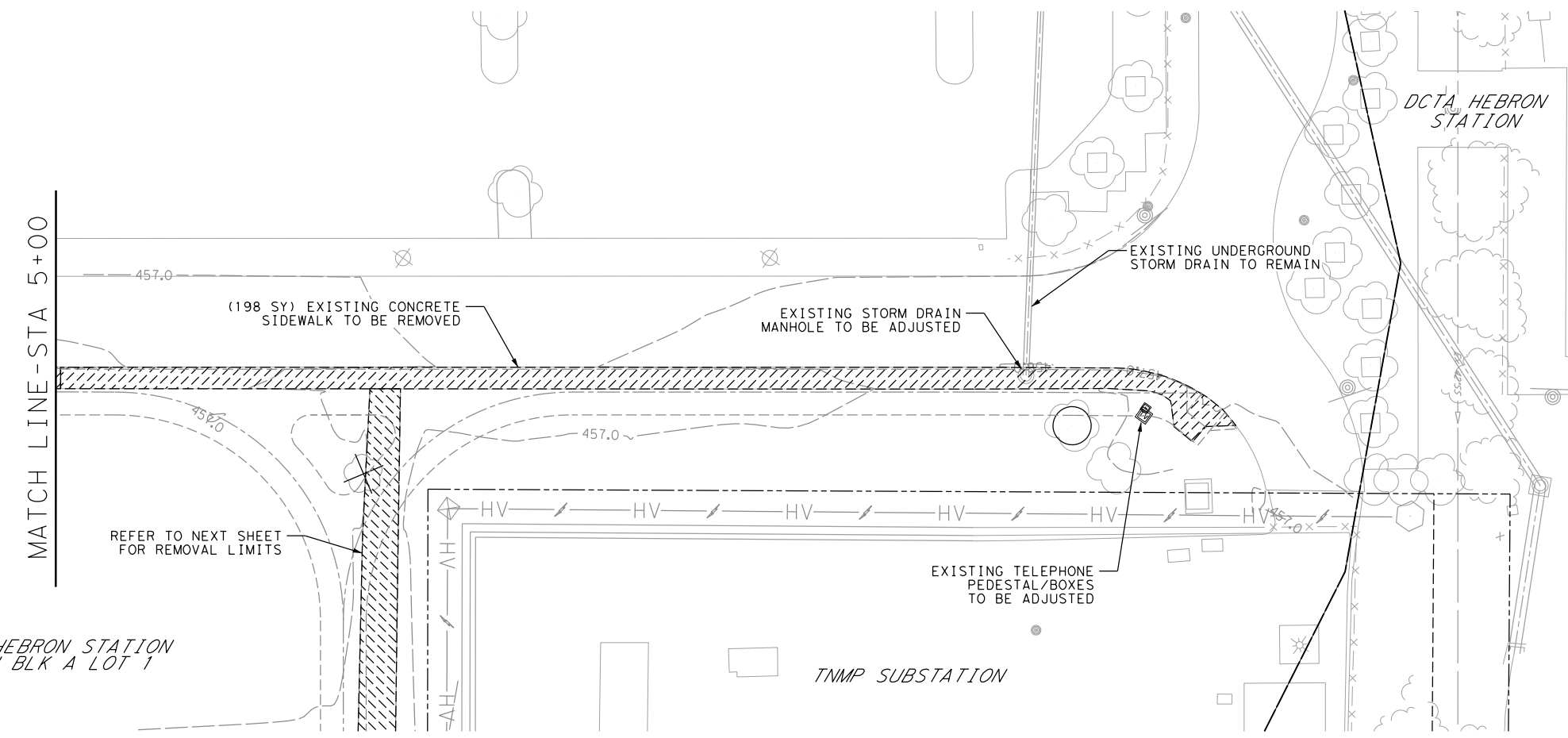
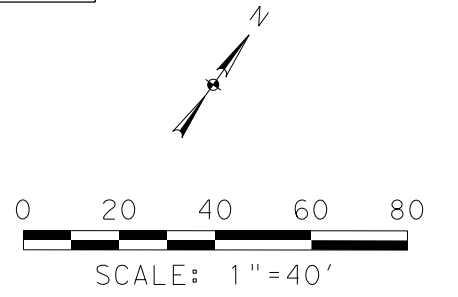
KEY MAP - N. T. S.

**GENERAL LEGEND**

- EXISTING TREE TO BE PROTECTED
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN
- TO BE REMOVED BY CONTRACTOR

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7003	PREP ROW (TREE REMOVE) (0"-12" DIA)	EA	2
104-7013	REMOVING CONC (SIDEWALK, RAMP, OR SUP)	SY	422
479-7003	ADJUSTING MANHOLES & INLETS	EA	2
479-7004	ADJUSTING MANHOLES (UTILITY BOX)	EA	2
644-7065	RELOCATE SM RD SN SUP&AM TY 10BWG (EA)	EA	1



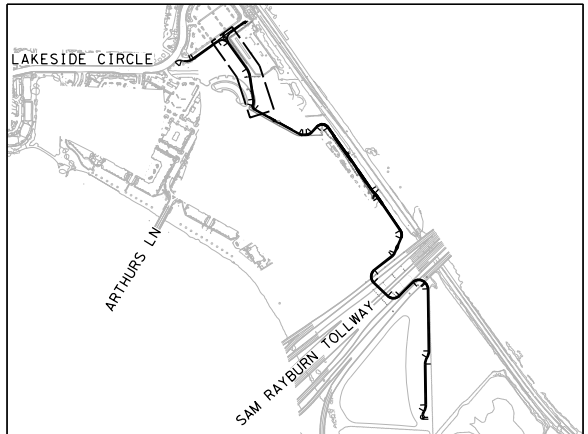
DCTA HEBRON STATION  
ADDN BLK A LOT 1

TNMP SUBSTATION

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE  
 DEMOLITION PLAN  
 BEGIN TO STA 5+00 TRAIL A  
 1+00 TO END TRAIL B

SCALE: AS NOTED SHEET 02 OF 08

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 103
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

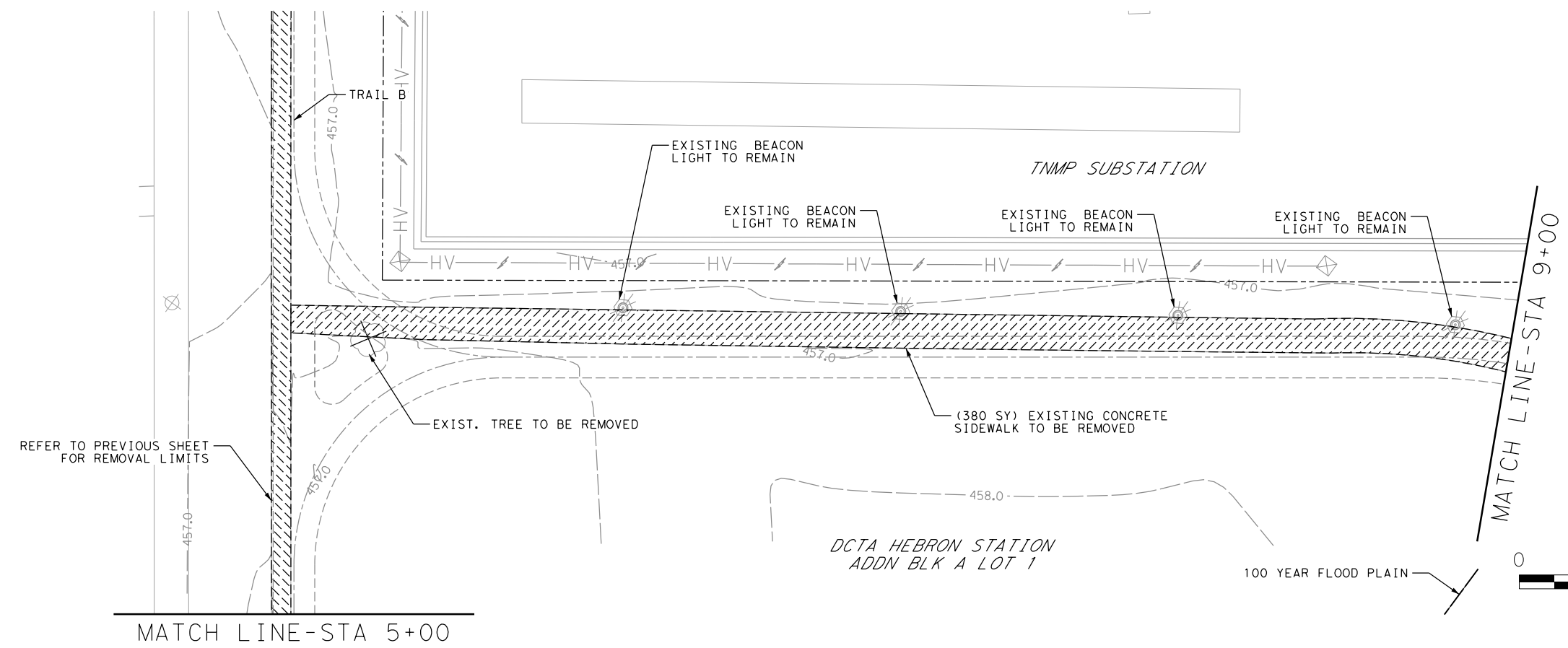


KEY MAP - N.T.S.

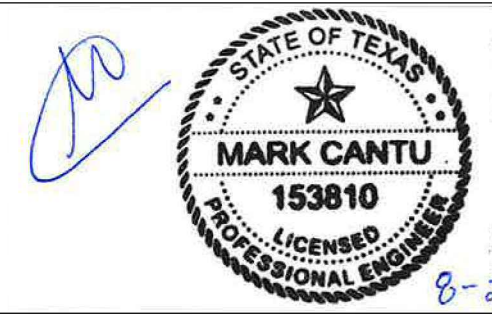
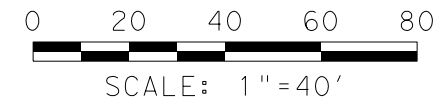
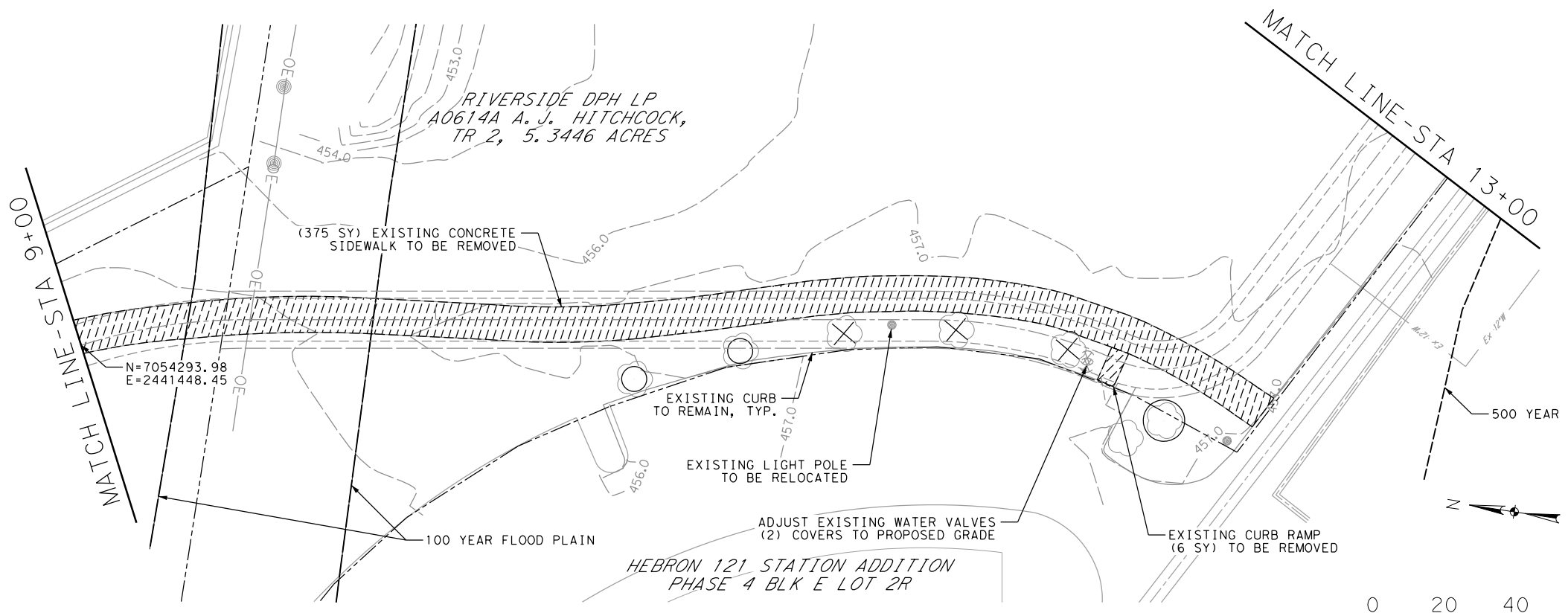
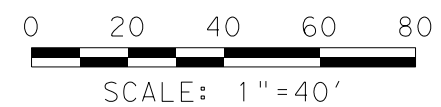
CAUTION UTILITIES IN THE AREA!  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

**GENERAL LEGEND**

	EXISTING TREE TO BE PROTECTED
	EXISTING TREE TO BE REMOVED
	EXISTING TREE TO REMAIN
	TO BE REMOVED BY CONTRACTOR



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7003	PREP ROW (TREE REMOVE) (0"-12" DIA)	EA	4
104-7013	REMOVING CONC (SIDEWALK, RAMP, OR SUP)	SY	761
628-7002	REMOVE ELECTRICAL SERVICES	EA	1

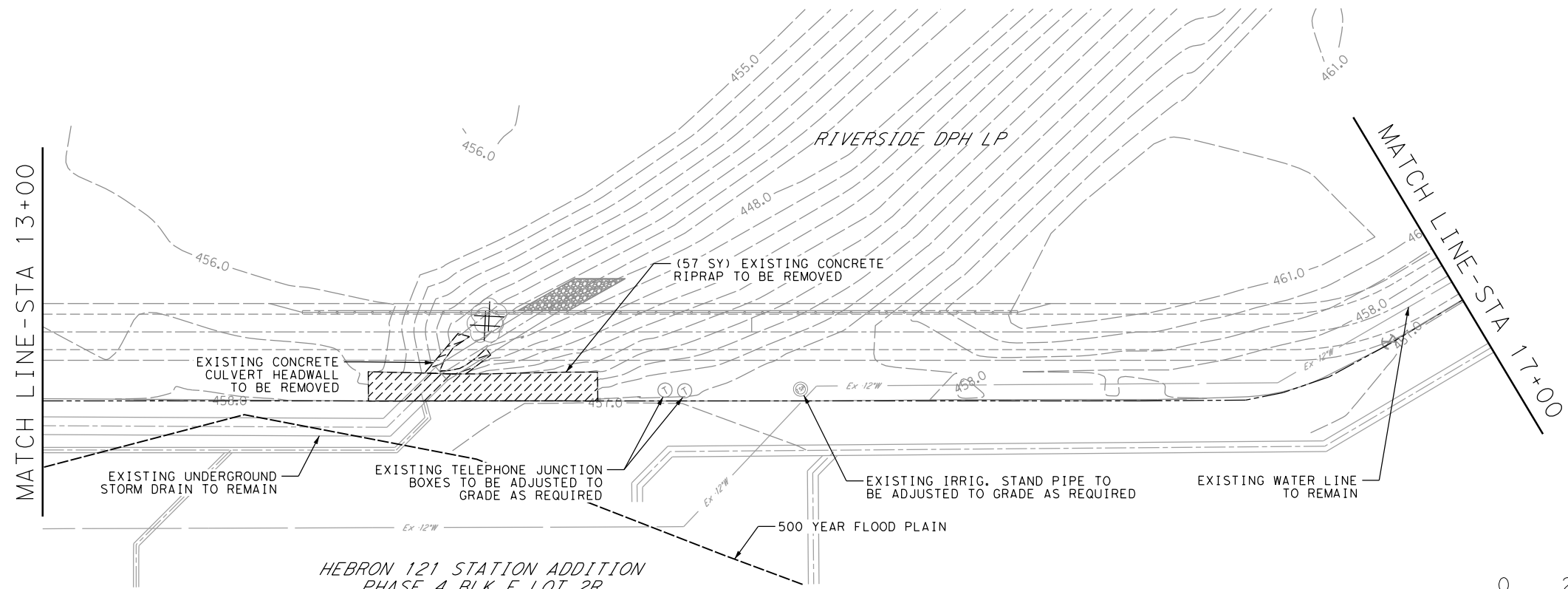


DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE  
 DEMOLITION PLAN  
 STA 5+00 TO STA 13+00

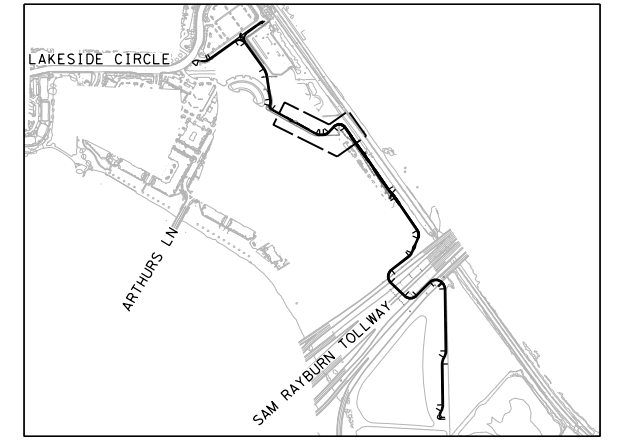
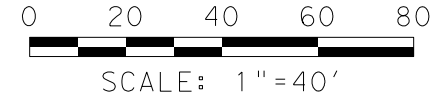
SCALE: AS NOTED SHEET 03 OF 08

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL 0918	SECTION 46	JOB 331
CHECK XX			SHEET NO. 104

ch2583  
 PROJECT # 45685 OFFICE:MCA  
 DATE: 8/29/2025 TIME: 9:31:12 AM  
 A: \\45000s\45685\001\CADD\Sheet\FW\10-Mi\sce\1\aneous\104-DEMO-45685.dgn



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7003	PREP ROW (TREE REMOVE) (0"-12" DIA)	EA	2
104-7006	REMOVING CONC (RIPRAP)	SY	57
479-7004	ADJUSTING MANHOLES (UTILITY BOX)	EA	2
479-7006	REMOV STR (HEADWALL)	EA	1



**KEY MAP - N. T. S.**

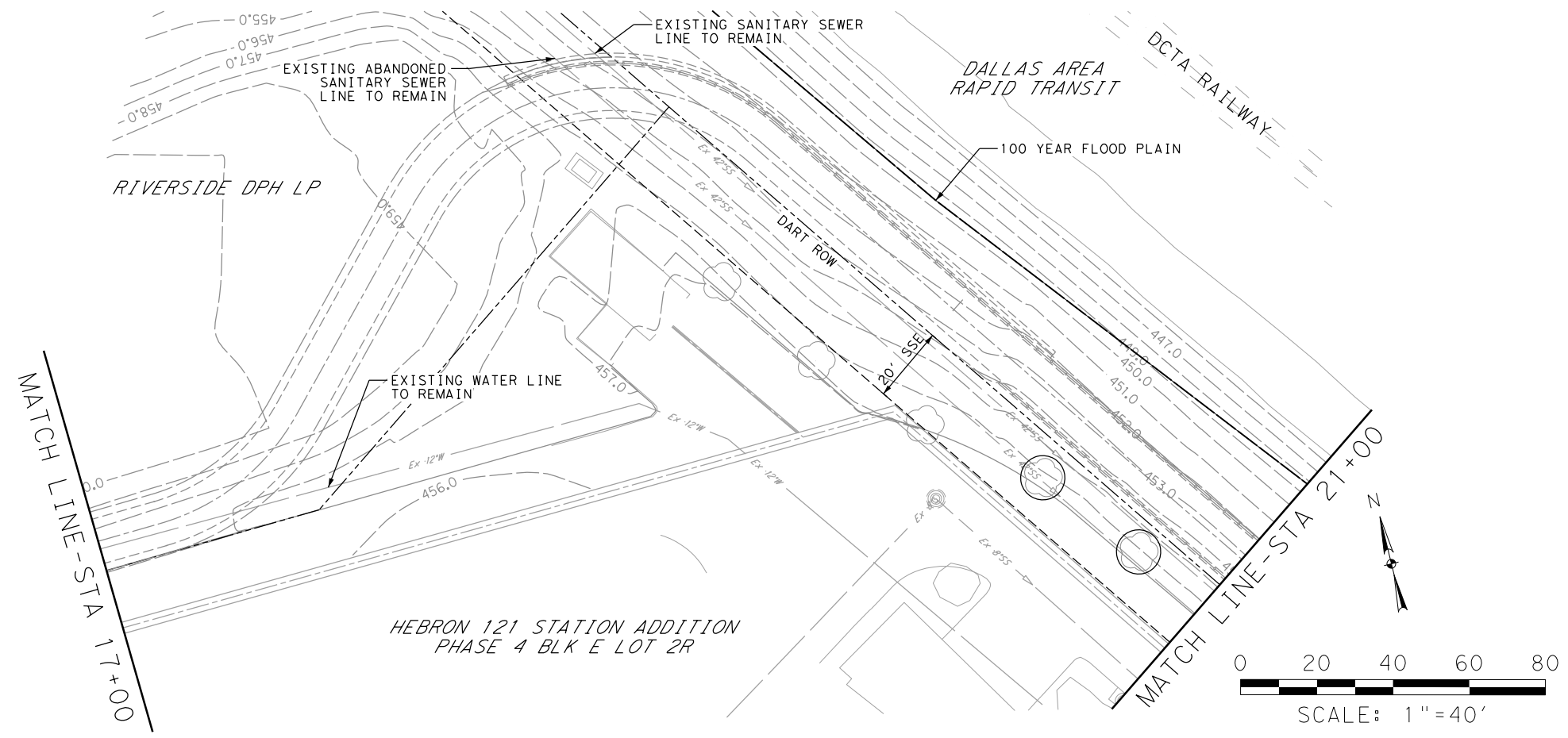
! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

**GENERAL LEGEND**

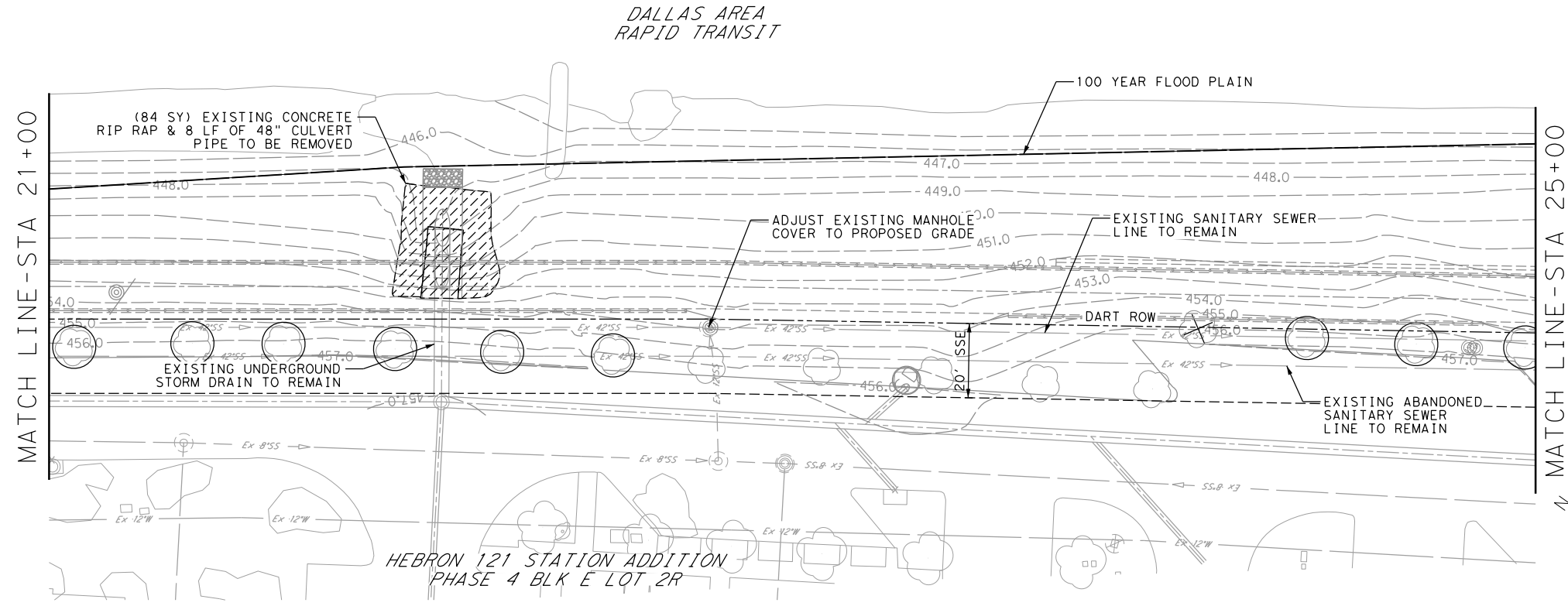
- EXISTING TREE TO BE PROTECTED
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN
- TO BE REMOVED BY CONTRACTOR



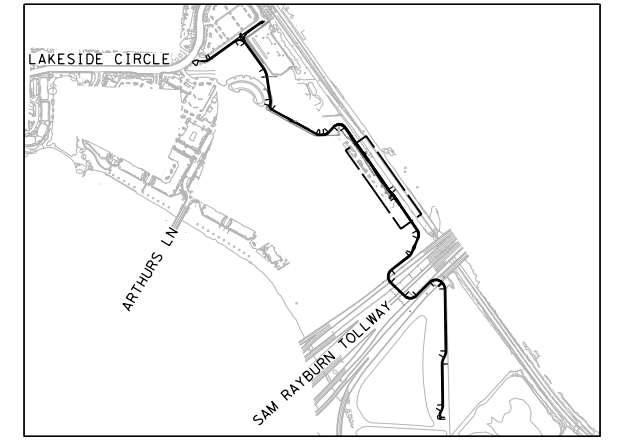
DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE  
 DEMOLITION PLAN  
 STA 13+00 TO STA 21+00

SCALE: AS NOTED SHEET 04 OF 08

DESIGN MC	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
MC	6	SEE TITLE SHEET		VA
GRAPHICS MC	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK XX	TEXAS	DAL	DENTON	105
CHECK XX	CONTROL	SECTION	JOB	
CHECK XX	0918	46	331	



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
100-7003	PREP ROW (TREE REMOVE) (0"-12" DIA)	EA	1
104-7006	REMOVING CONC (RIPRAP)	SY	84
479-7001	ADJUSTING MANHOLES	EA	1
479-7007	REMOV STR (PIPE)	LF	8



**KEY MAP - N.T.S.**

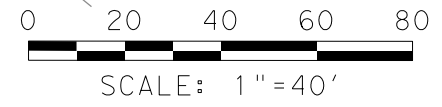
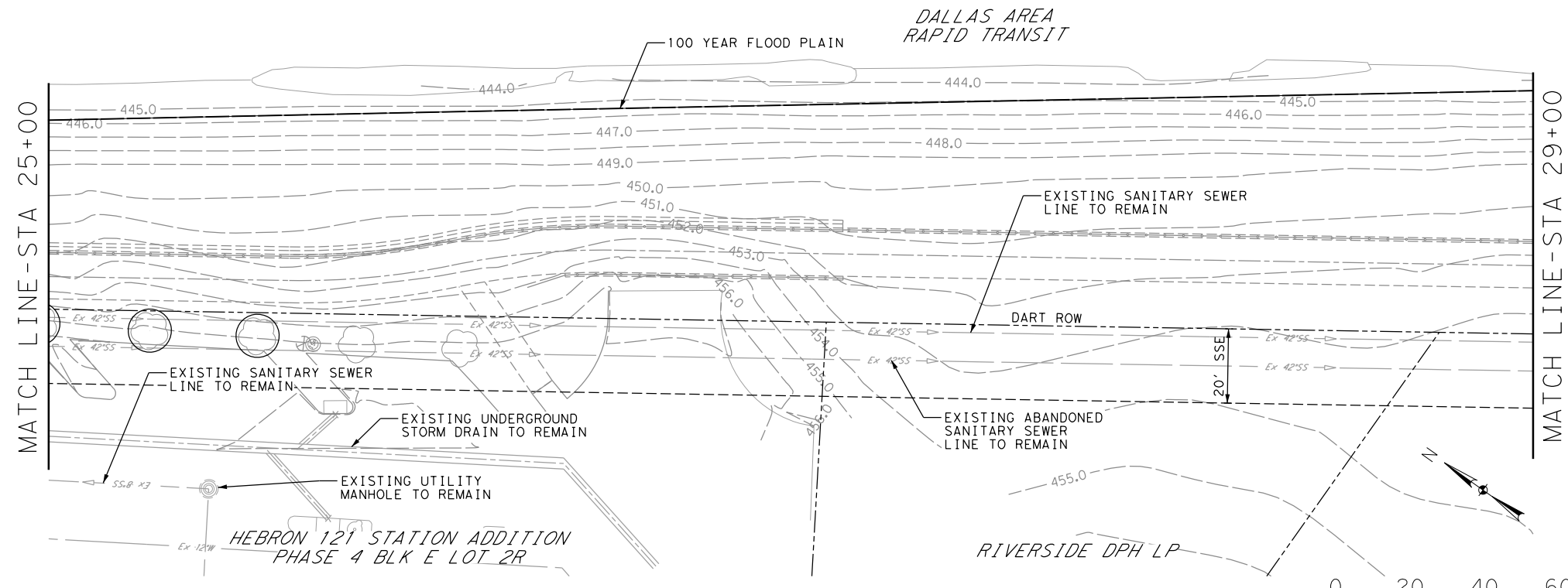
! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377

**GENERAL LEGEND**

- EXISTING TREE TO BE PROTECTED
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN
- TO BE REMOVED BY CONTRACTOR



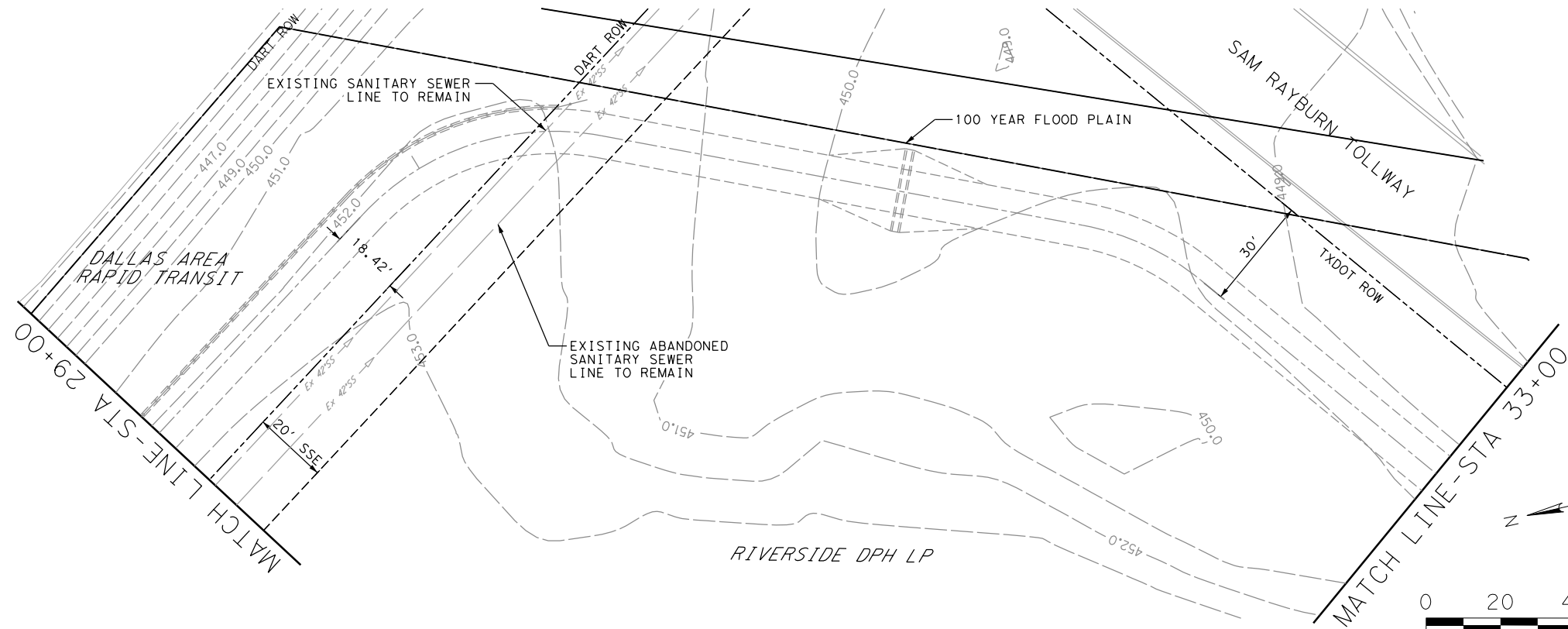
Texas Department of Transportation  
© 2024

DCTA TRAIL LEWISVILLE  
DCTA TRAIL LEWISVILLE DEMOLITION PLAN  
STA 21+00 TO STA 29+00

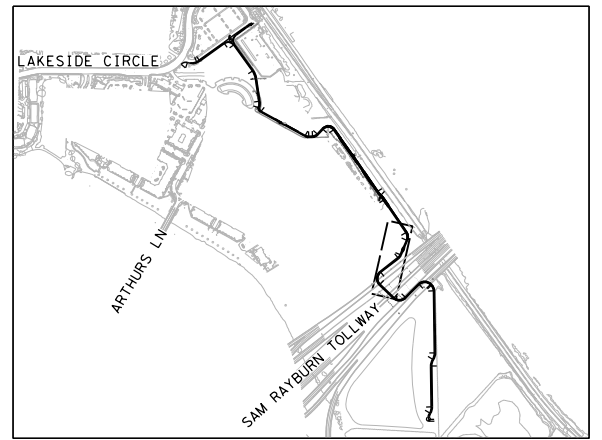
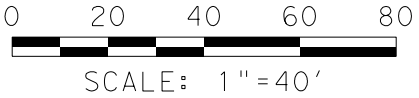
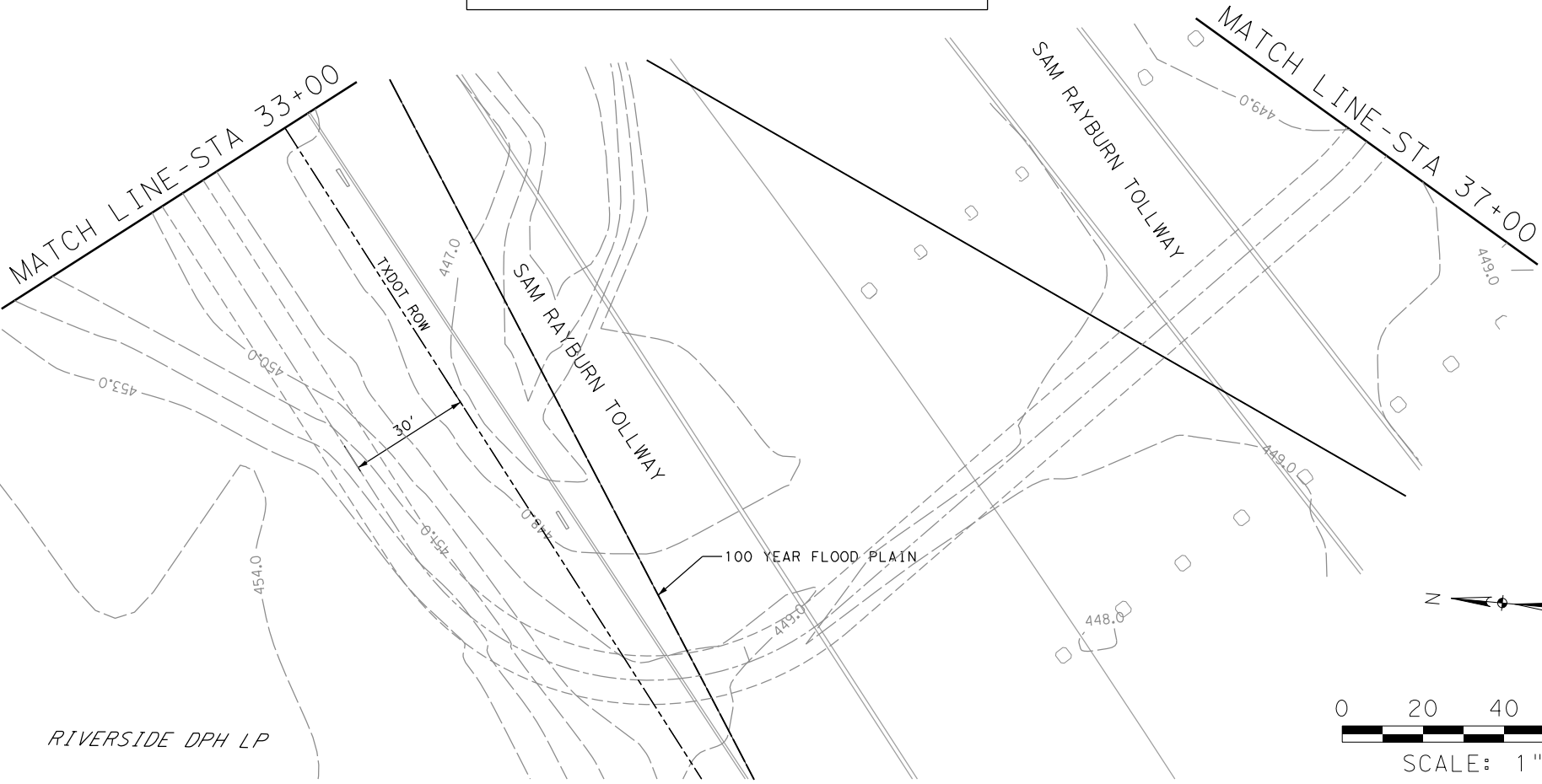
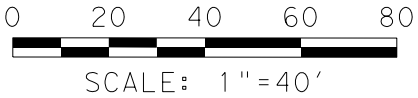
SCALE: AS NOTED SHEET 05 OF 08

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 106
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

ch2583 PROJECT # 45685 OFFICE:MCA DATE:8/29/2025 TIME:9:31:21 AM A:\45000s\45685\001\CADD\Sheet\FW\10-Mi\sce\laneous\106-DEMO-45685.dgn



**NOTE:**  
 1. OVERPASS COLUMNS SHALL REMAIN AND BE UNDISTURBED BY CONSTRUCTION ACTIVITY.



**KEY MAP - N.T.S.**

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

**GENERAL LEGEND**

	EXISTING TREE TO BE PROTECTED
	EXISTING TREE TO BE REMOVED
	EXISTING TREE TO REMAIN
	TO BE REMOVED BY CONTRACTOR

**STATE OF TEXAS**  
 MARK CANTU  
 153810  
 LICENSED PROFESSIONAL ENGINEER  
 8-29-25

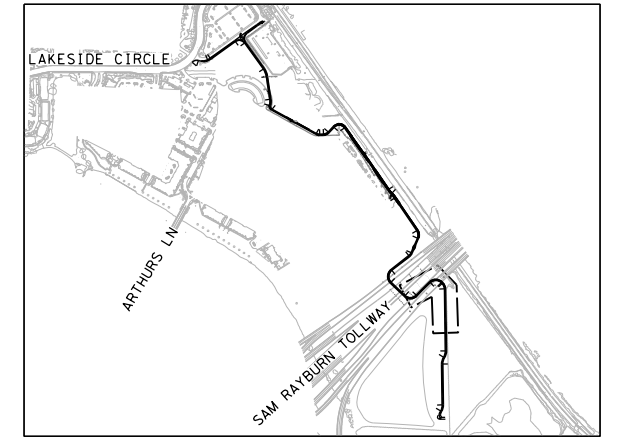
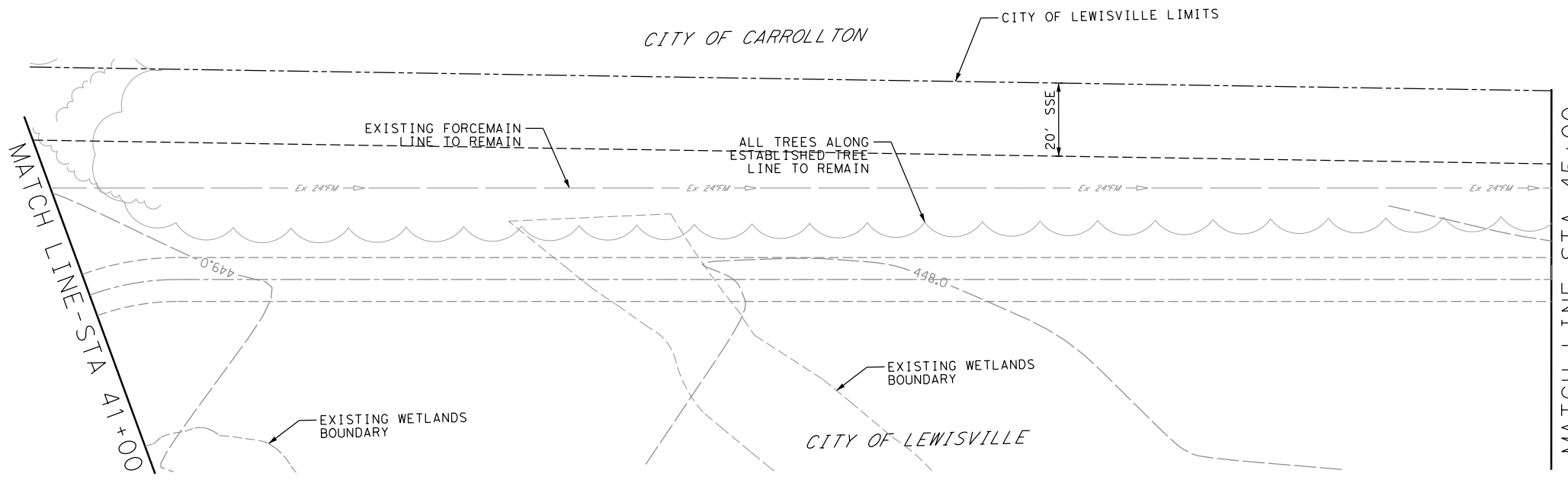
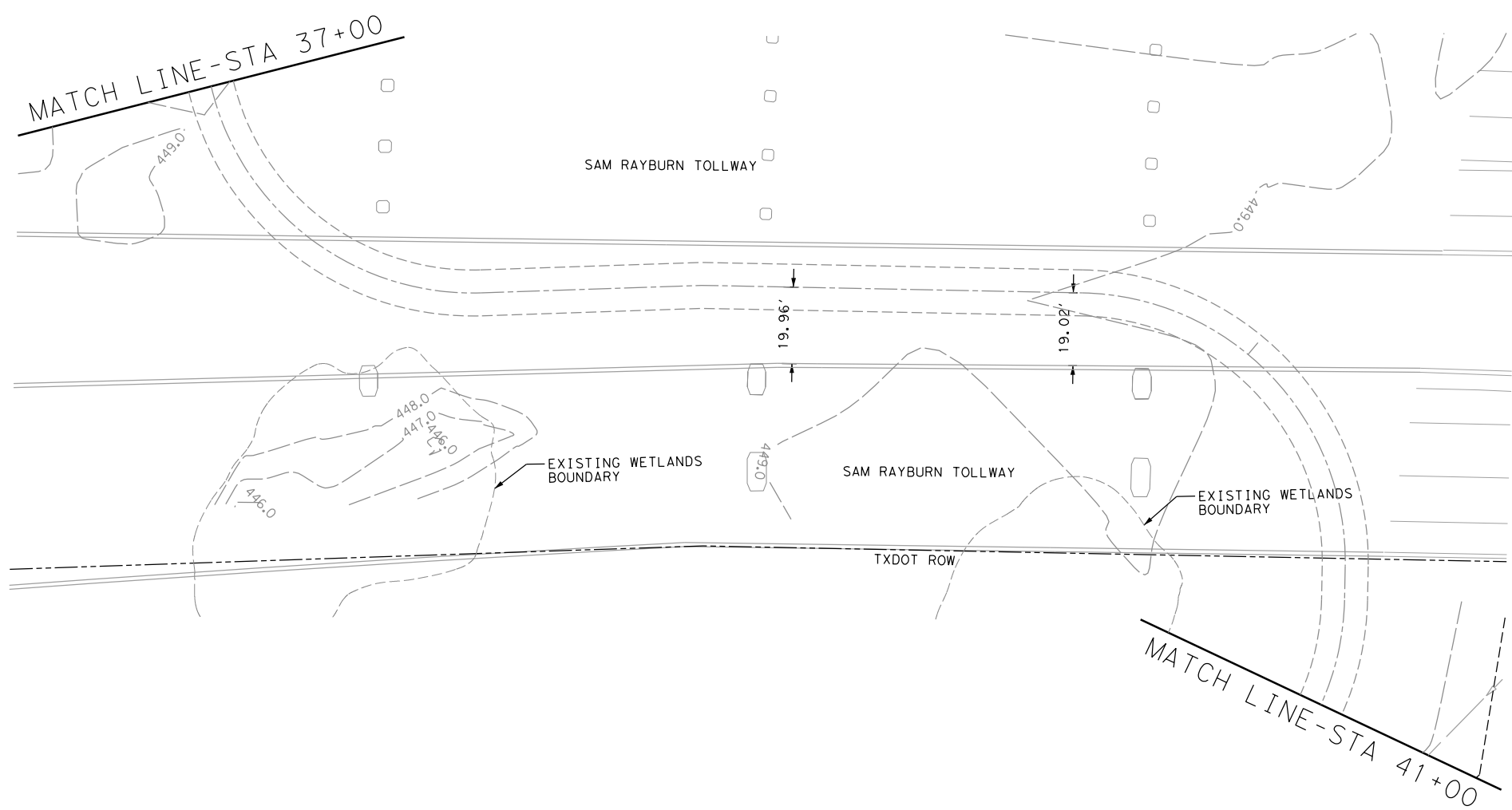
2601 MEACHAM BLVD., SUITE 600  
 FORT WORTH, TX 76137-4204  
 (817) 847-1422

Texas Department of Transportation  
 © 2024

DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE  
 DEMOLITION PLAN  
 STA 29+00 TO STA 37+00

SCALE: AS NOTED	SHEET 06 OF 08		
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL 0918	SECTION 46	JOB 331
CHECK XX			107

ch2583 PROJECT # 45685 OFFICE:MCA DATE:8/29/2025 TIME:9:31:24 AM A:\45000s\45685\001\CADD\Sheet\FW\10-Mi\scel\laneous\107-DEMO-45685.dgn

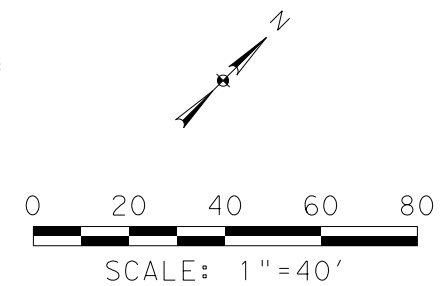


**KEY MAP - N.T.S.**

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377



**GENERAL LEGEND**

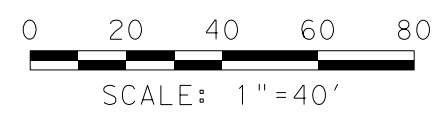
- EXISTING TREE TO BE PROTECTED
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN
- TO BE REMOVED BY CONTRACTOR

Texas Department of Transportation  
© 2024

DCTA TRAIL LEWISVILLE  
DCTA TRAIL LEWISVILLE DEMOLITION PLAN  
STA 37+00 TO STA 45+00

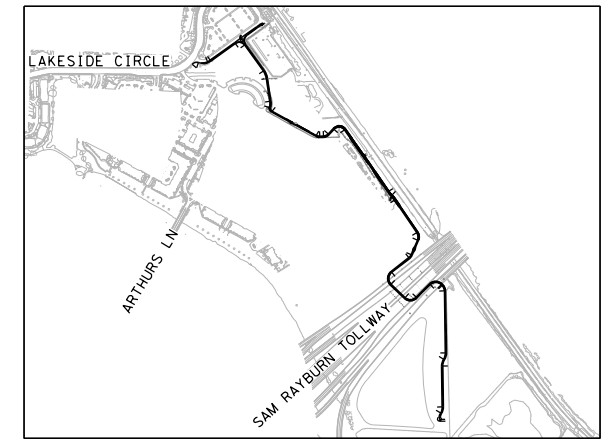
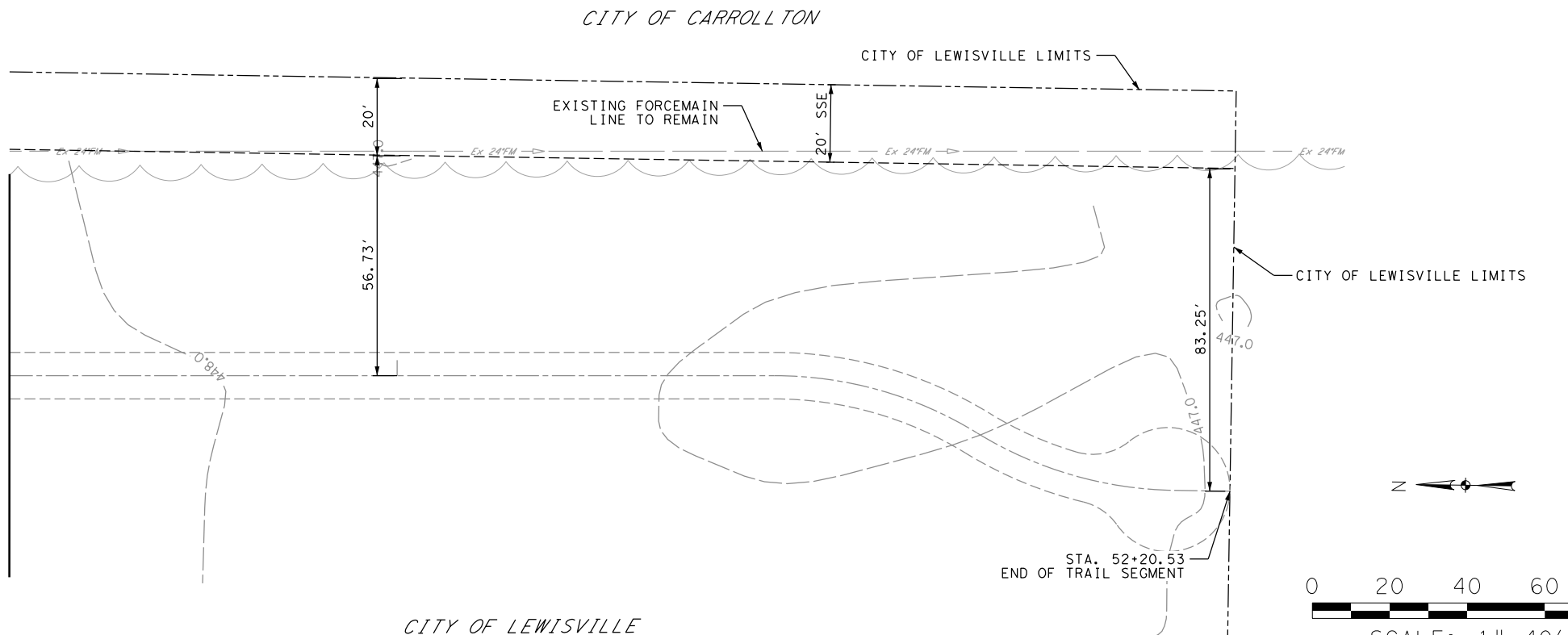
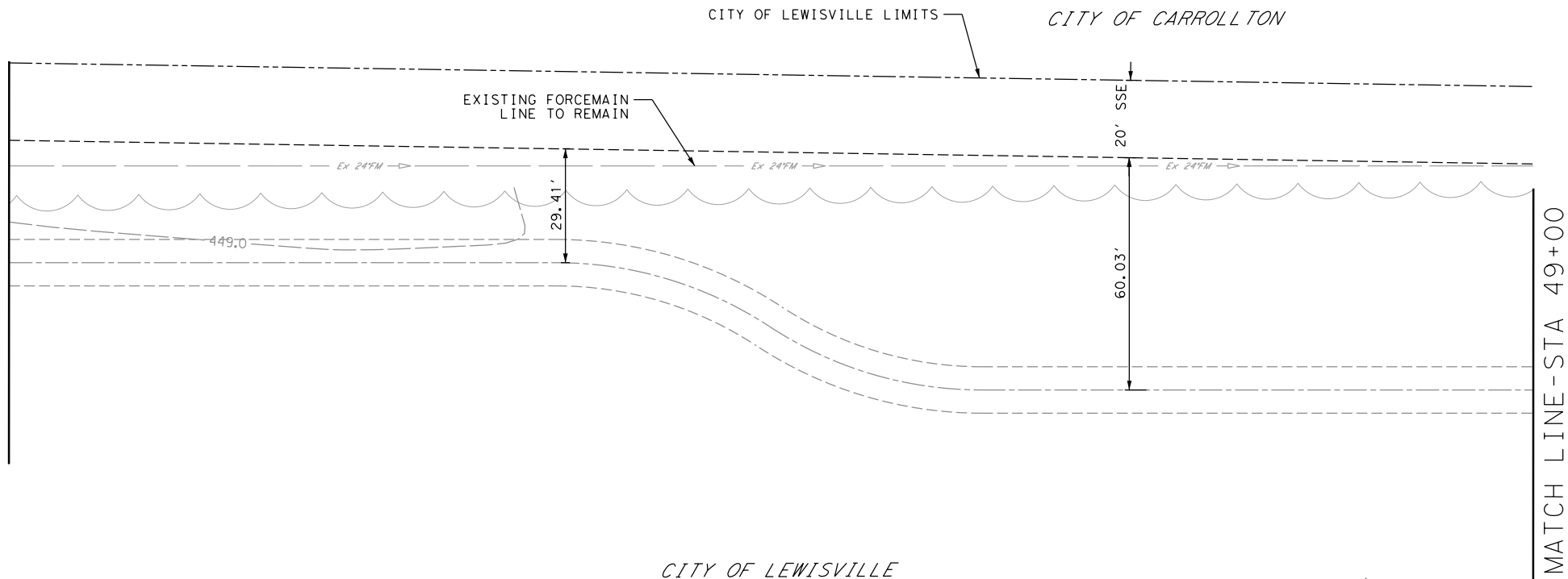
SCALE: AS NOTED SHEET 07 OF 08

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 108
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



MATCH LINE - STA 45+00

MATCH LINE - STA 49+00



KEY MAP - N. T. S.

! CAUTION UTILITIES IN THE AREA !

\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

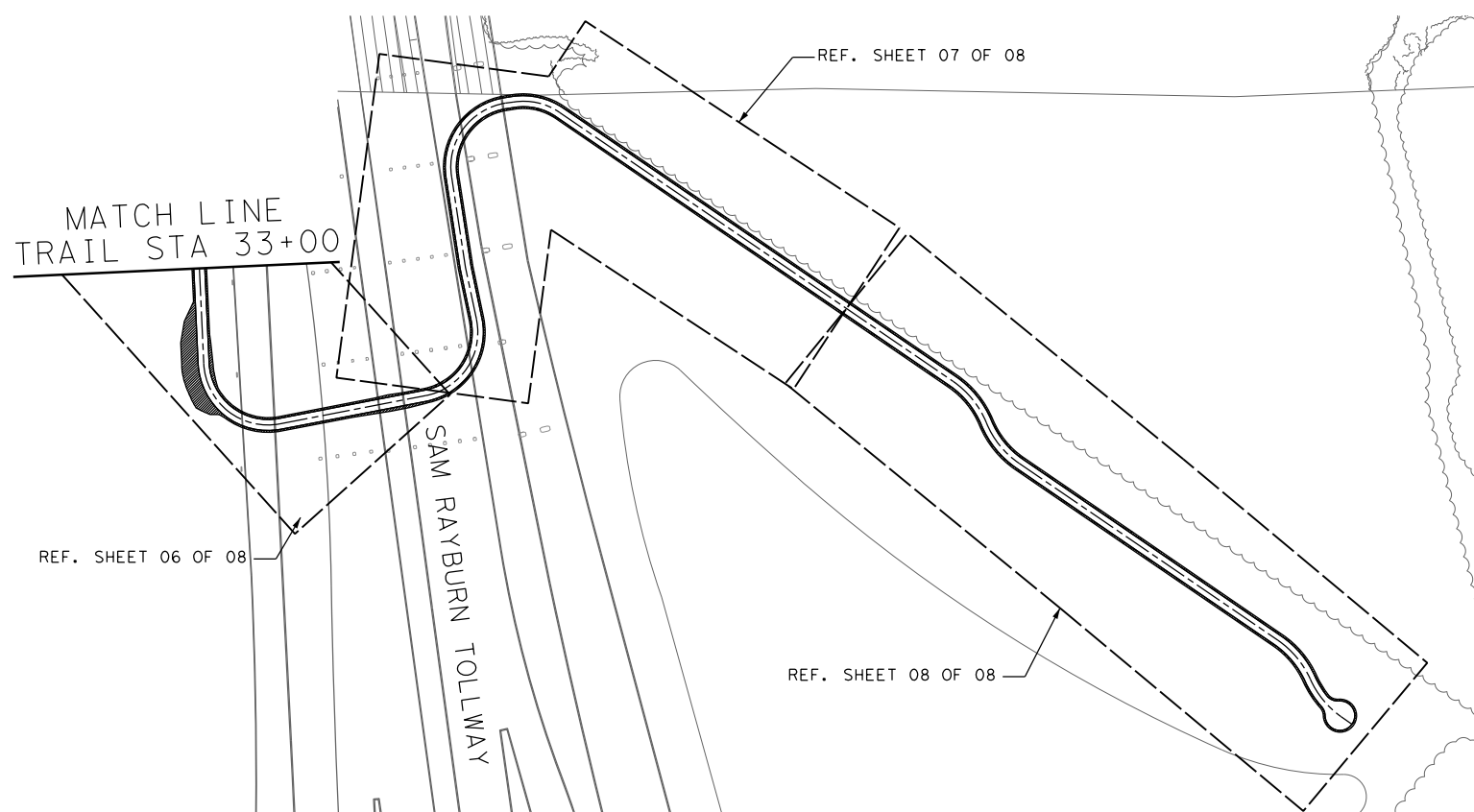
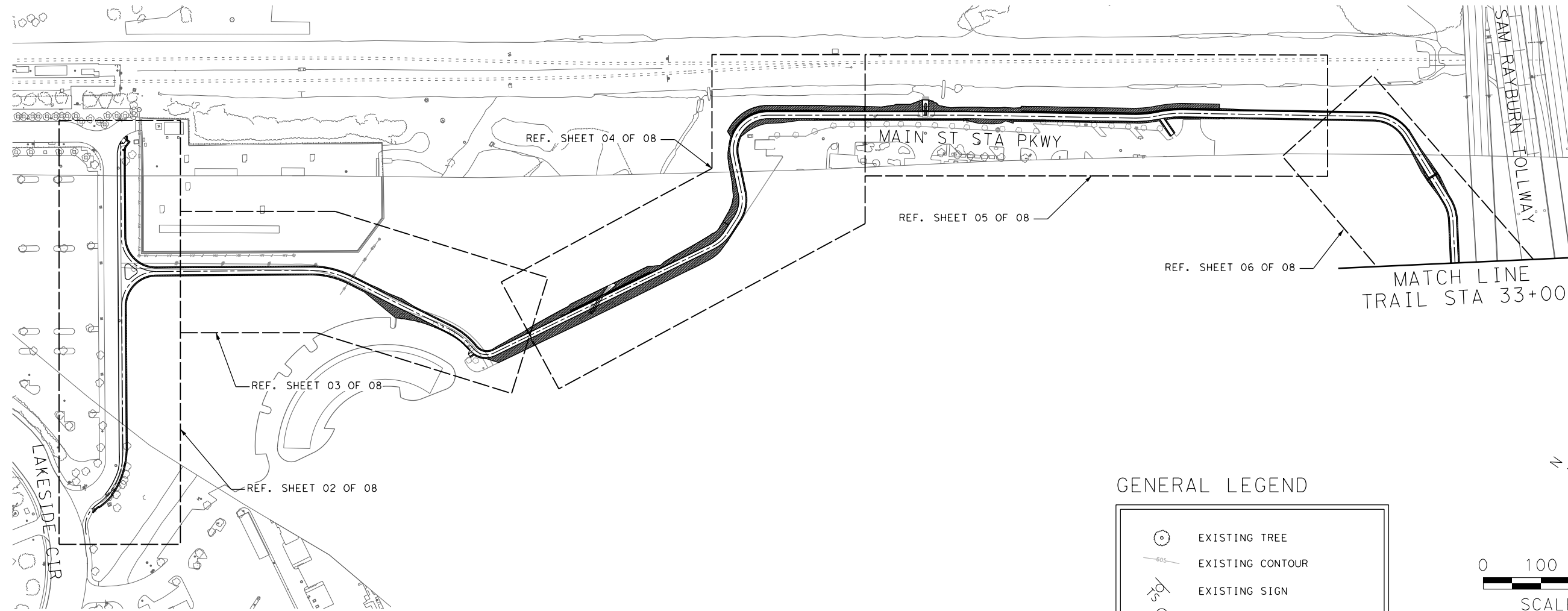
DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
(800) 344-8377

	EXISTING TREE TO BE PROTECTED
	EXISTING TREE TO BE REMOVED
	EXISTING TREE TO REMAIN
	TO BE REMOVED BY CONTRACTOR



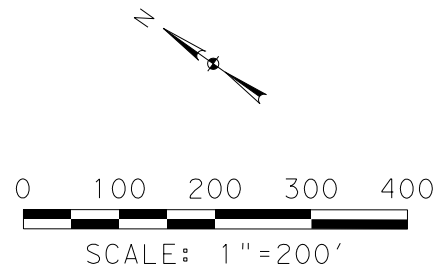
DCTA TRAIL LEWISVILLE  
DCTA TRAIL LEWISVILLE  
DEMOLITION PLAN  
STA 45+00 TO END

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 109
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



GENERAL LEGEND

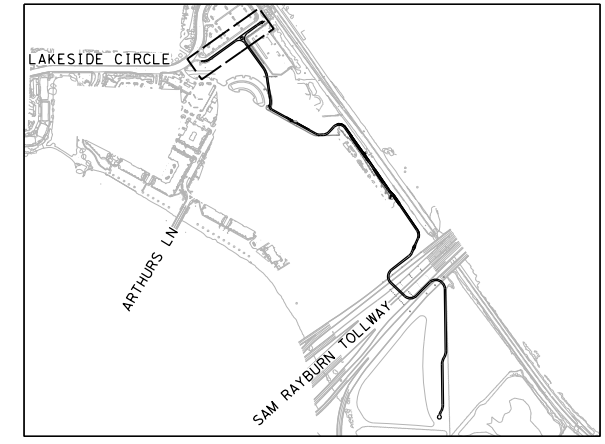
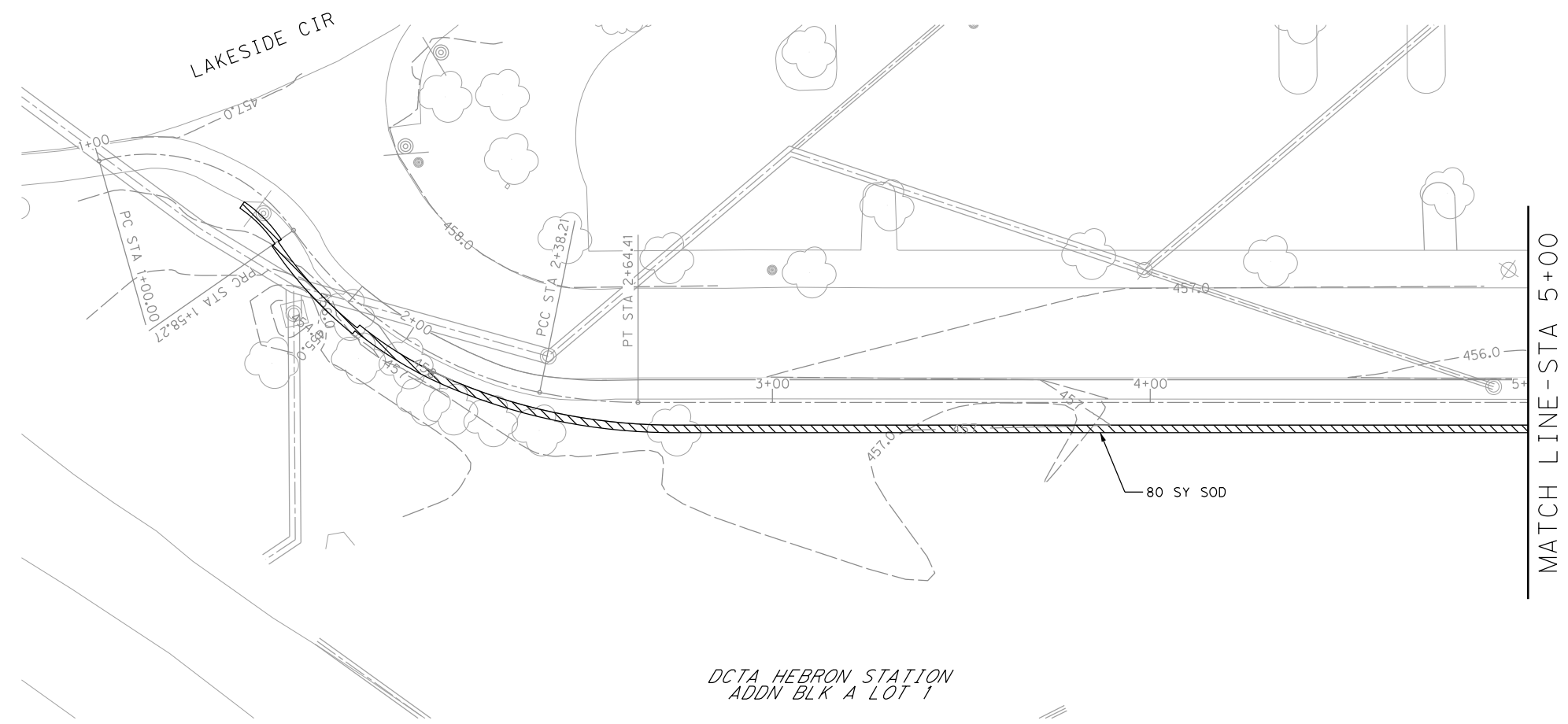
	EXISTING TREE		EXISTING CONTOUR
	EXISTING SIGN		EXISTING LIGHT POLE
	EXISTING FENCE POST		EXISTING MAN HOLE
	EXISTING WATER METER		PROPOSED MINOR CONTOUR
	EXISTING FIRE HYDRANT		PROPOSED MAJOR CONTOUR
	EXISTING ELECTRIC BOX		CENTER LINE
	EXISTING WATER VALVE		EXISTING WATER METER
	EXISTING GUY WIRE		EXISTING FIRE HYDRANT
	EXISTING FENCE LINE		EXISTING ELECTRIC BOX
	EXISTING SANITARY SEWER (12" - SIZE)		EXISTING WATER VALVE
	EXISTING WATER LINE (6" - SIZE)		EXISTING GUY WIRE
	EXISTING REINFORCED CONCRETE PIPE (24" RCP)		EXISTING FENCE LINE
	PROJECT CONTROL POINT		EXISTING SANITARY SEWER (12" - SIZE)
	EXISTING POWER POLE		EXISTING WATER LINE (6" - SIZE)
	FOUND IRON ROD		EXISTING REINFORCED CONCRETE PIPE (24" RCP)
	EXISTING TREE TO BE PROTECTED		
	EXISTING TREE TO BE REMOVED		
	EXISTING TREE		
	TO BE REMOVED BY CONTRACTOR		



DCTA TRAIL LEWISVILLE

DCTA TRAIL LEWISVILLE REVEGETATION PLAN LAYOUT

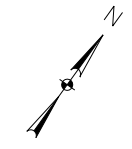
SCALE: AS NOTED		SHEET 01 OF 08	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXX (XXX) TAPS	
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL	SECTION	JOB
CHECK XX	0918	46	331
			110



KEY MAP - N. T. S.

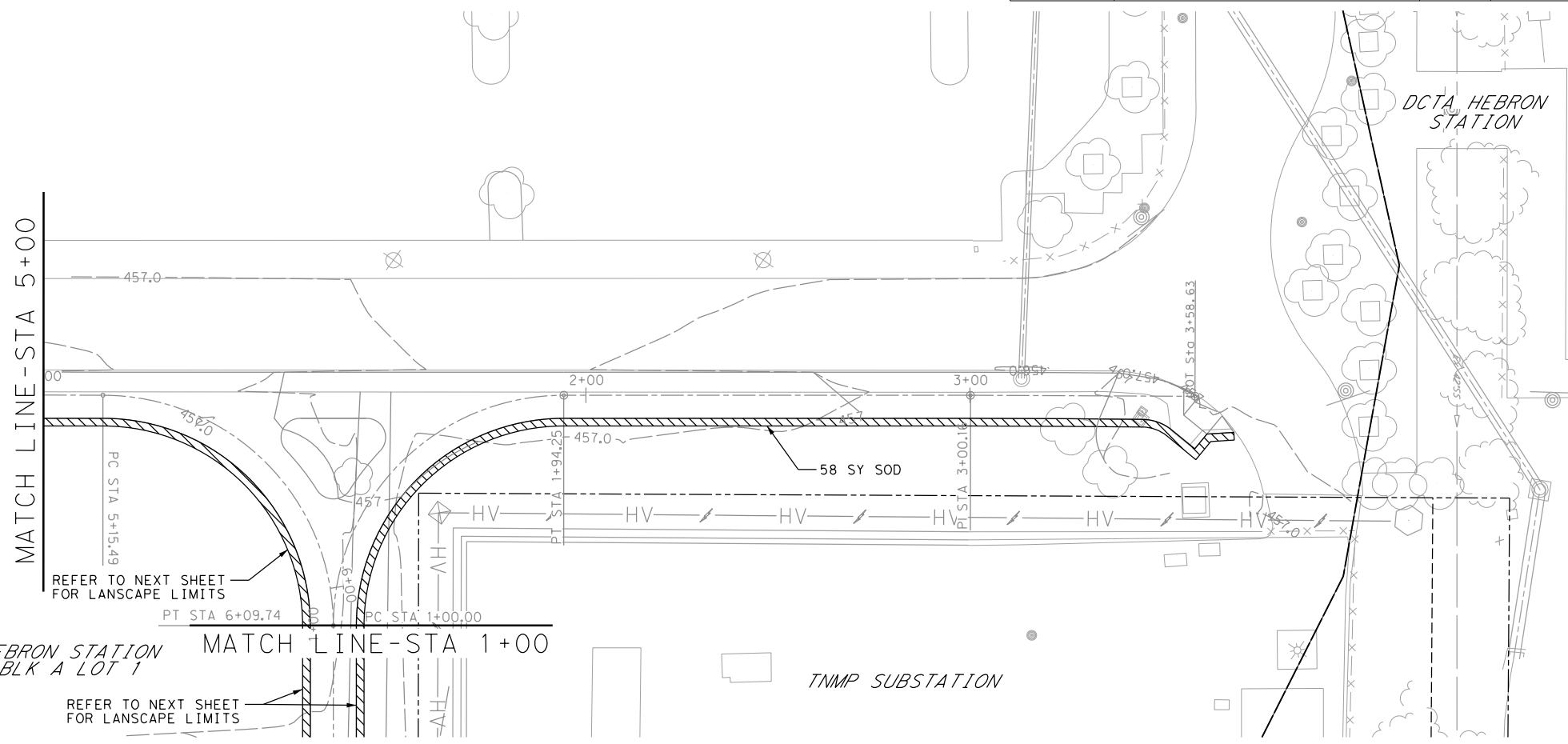
**NOTE:**  
 ALL OTHER DISTURBED AREAS OUTSIDE OF THE DESIGNATED SOD HATCHING SHALL BE REVEGETATED WITH SOD OR HYDROMULCH AS PART OF THIS CONTRACT. THE CONTRACTOR IS RESPONSIBLE FOR FINAL QUANTITIES OF SOD/HYDROMULCHED AREA AND FOR ENSURING PROPER VEGETATION COVERAGE IS ESTABLISHED PER THE CITY'S CODE AND THE OWNERS FINAL ACCEPTANCE. SOD/HYDROMULCH QUANTITIES FOR ADDITIONAL AREAS DISTURBED DURING CONSTRUCTION SHALL BE CONSIDERED SUBSIDIARY TO TXDOT ITEM 162/164.

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



DCTA HEBRON STATION  
 ADDN BLK A LOT 1

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
162-7002	BLOCK SODDING	SY	138
164-7015	DRILL SEED (TEMP-WARM-COOL)	SY	138
168-7001	VEGETATIVE WATERING	TGL	4.5



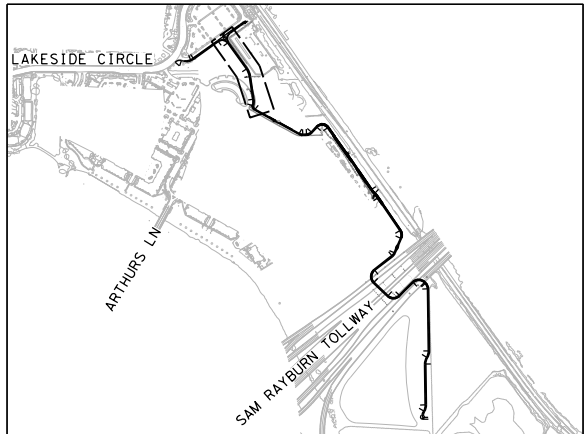
DCTA HEBRON STATION  
 ADDN BLK A LOT 1

REFER TO NEXT SHEET FOR LANDSCAPE LIMITS



DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE REVEGETATION PLAN  
 BEGIN TO STA 5+00 TRAIL A 1+00 TO END TRAIL B

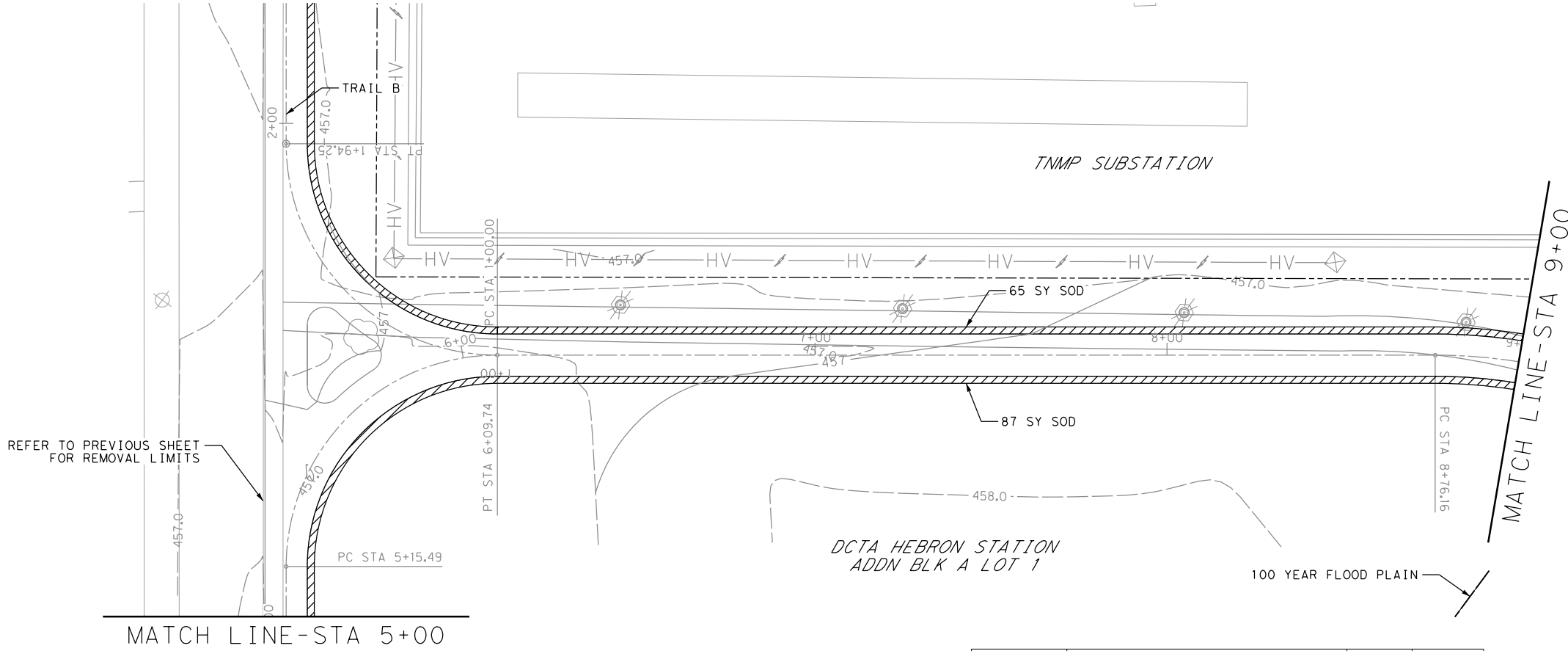
SCALE: AS NOTED		SHEET 02 OF 08	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXX(XXX) TAPS	HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL 0918	SECTION 46	JOB 331
CHECK XX			SHEET NO. 111



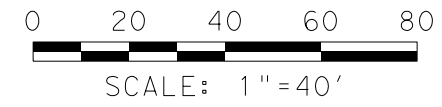
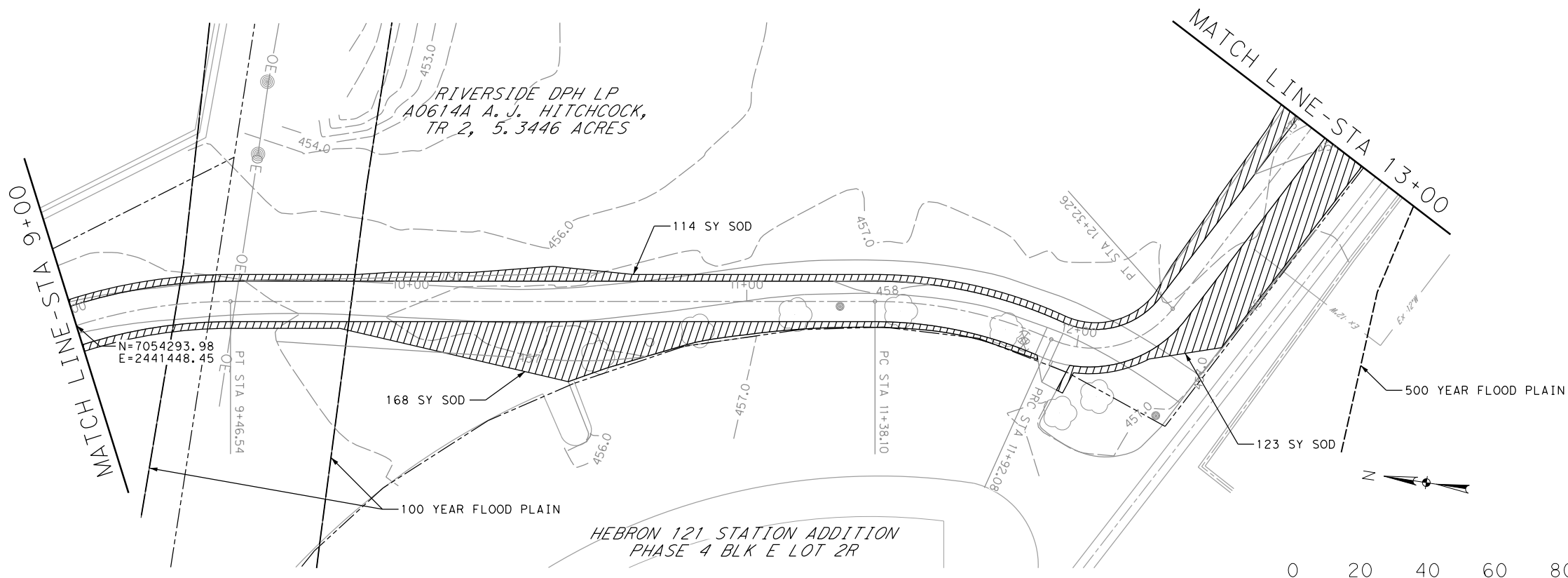
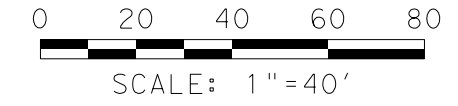
KEY MAP - N.T.S.

CAUTION UTILITIES IN THE AREA!  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

NOTE:  
 ALL OTHER DISTURBED AREAS OUTSIDE OF THE DESIGNATED SOD HATCHING SHALL BE REVEGETATED WITH SOD OR HYDROMULCH AS PART OF THIS CONTRACT. THE CONTRACTOR IS RESPONSIBLE FOR FINAL QUANTITIES OF SOD/HYDROMULCHED AREA AND FOR ENSURING PROPER VEGETATION COVERAGE IS ESTABLISHED PER THE CITY'S CODE AND THE OWNERS FINAL ACCEPTANCE. SOD/HYDROMULCH QUANTITIES FOR ADDITIONAL AREAS DISTURBED DURING CONSTRUCTION SHALL BE CONSIDERED SUBSIDIARY TO TXDOT ITEM 162/164.

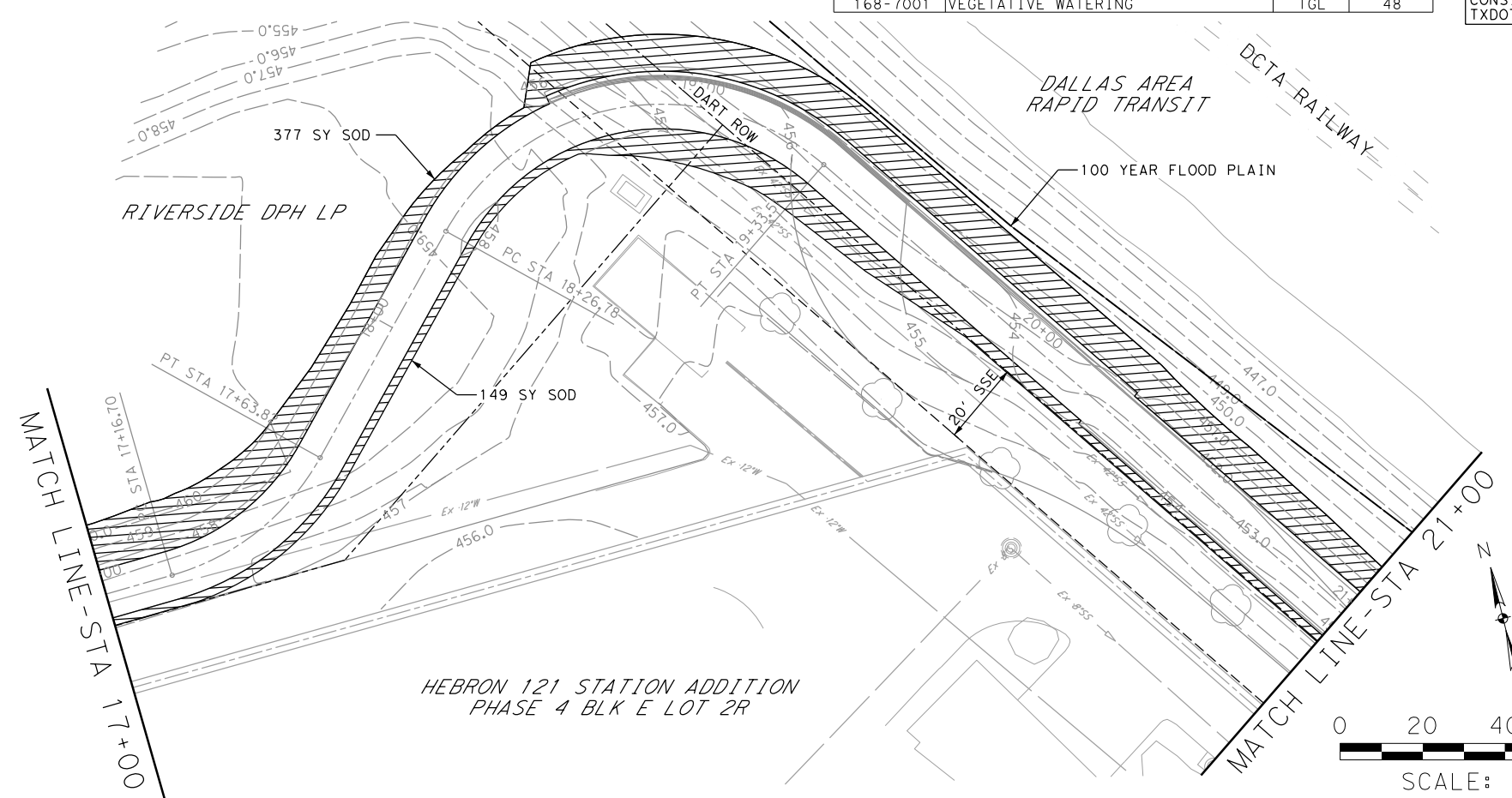
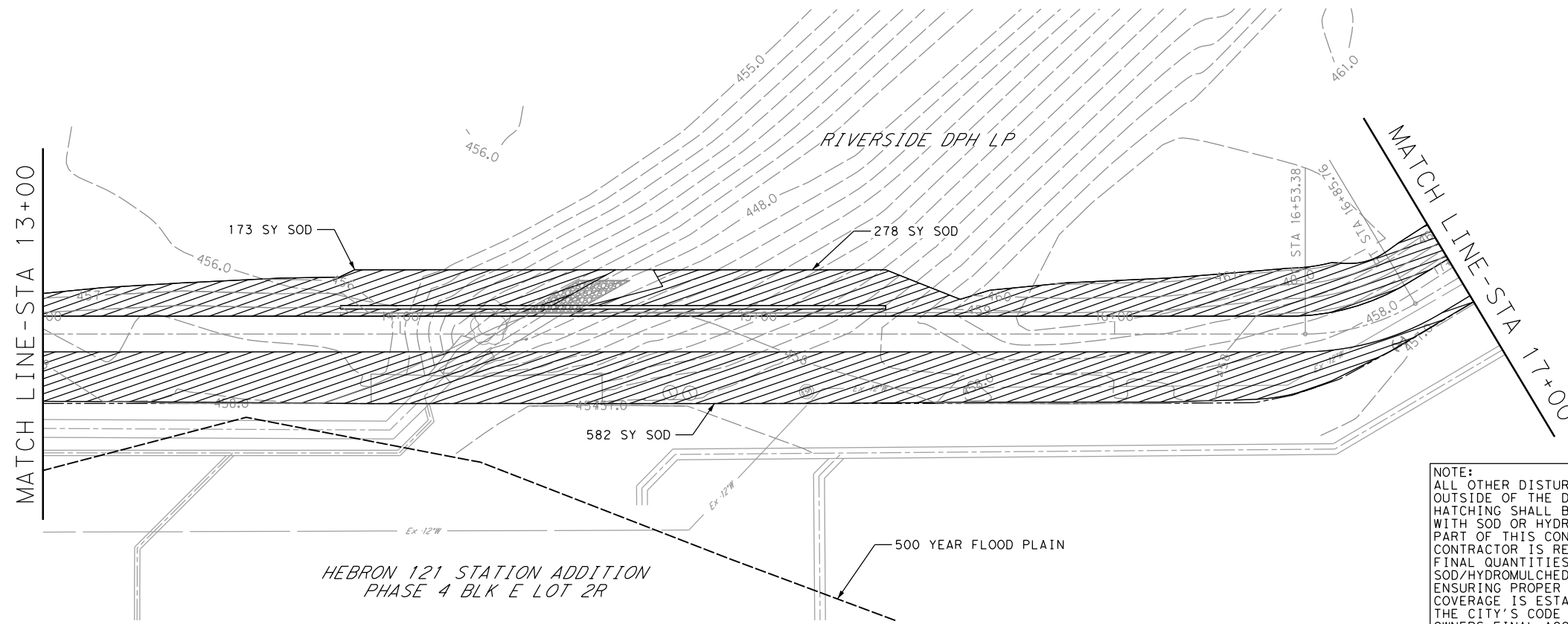


ITEM CODE	DESCRIPTION	UNIT	QUANTITY
162-7002	BLOCK SODDING	SY	557
164-7015	DRILL SEED (TEMP-WARM-COOL)	SY	557
168-7001	VEGETATIVE WATERING	TGL	16.5



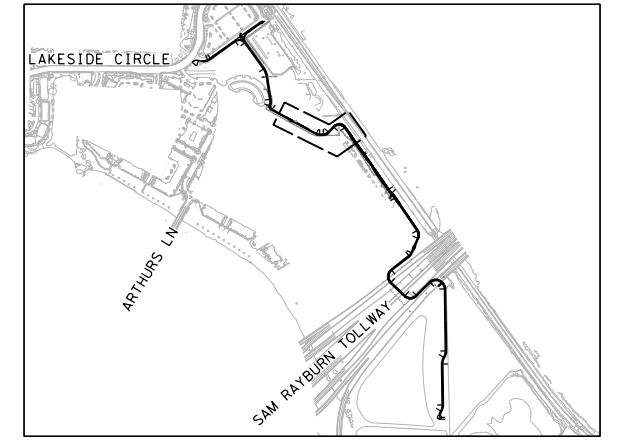
DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE REVEGETATION PLAN  
 STA 5+00 TO STA 13+00

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXX(XXX) TAPS		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 112
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
162-7002	BLOCK SODDING	SY	1,559
164-7015	DRILL SEED (TEMP-WARM-COOL)	SY	1,559
168-7001	VEGETATIVE WATERING	TGL	48

NOTE:  
 ALL OTHER DISTURBED AREAS OUTSIDE OF THE DESIGNATED SOD HATCHING SHALL BE REVEGETATED WITH SOD OR HYDROMULCH AS PART OF THIS CONTRACT. THE CONTRACTOR IS RESPONSIBLE FOR FINAL QUANTITIES OF SOD/HYDROMULCHED AREA AND FOR ENSURING PROPER VEGETATION COVERAGE IS ESTABLISHED PER THE CITY'S CODE AND THE OWNERS FINAL ACCEPTANCE. SOD/HYDROMULCH QUANTITIES FOR ADDITIONAL AREAS DISTURBED DURING CONSTRUCTION SHALL BE CONSIDERED SUBSIDIARY TO TXDOT ITEM 162/164.

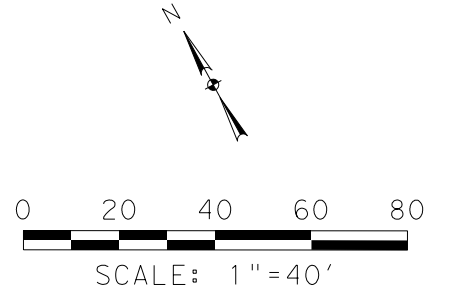


KEY MAP - N.T.S.

CAUTION UTILITIES IN THE AREA!

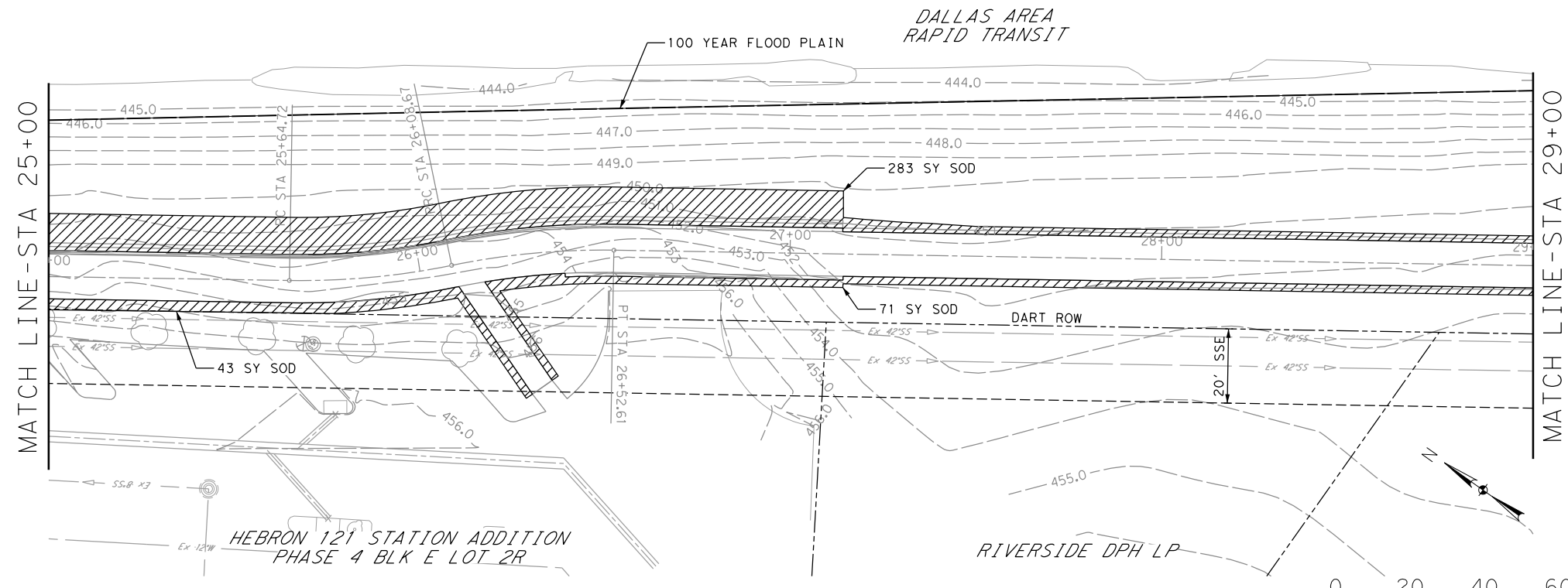
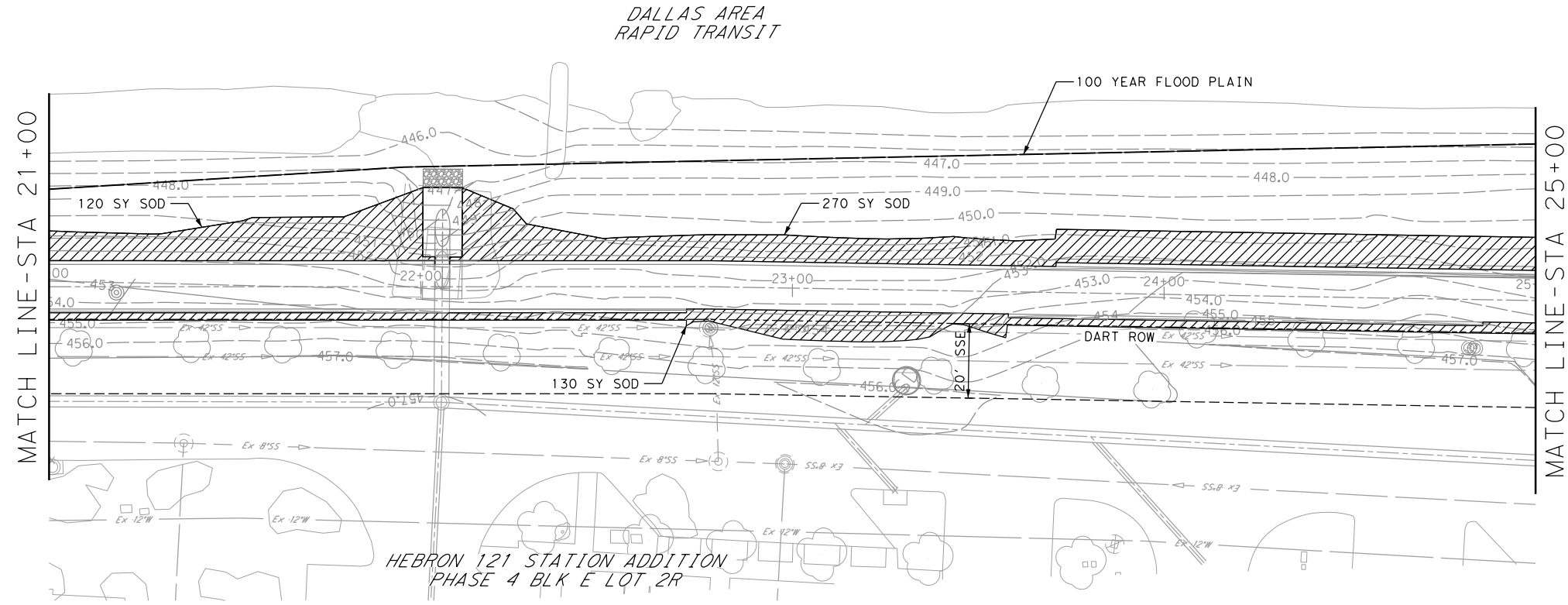
\*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

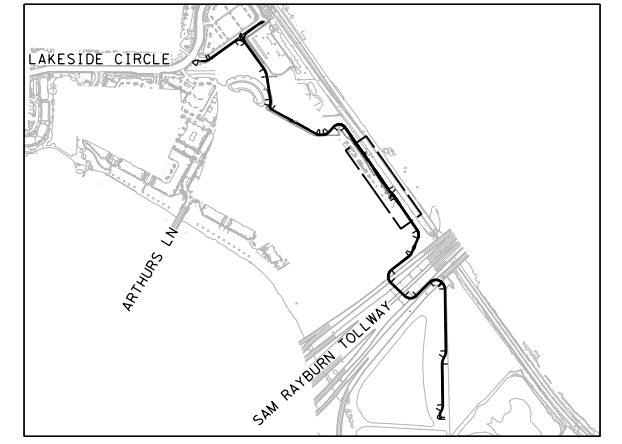


DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE REVEGETATION PLAN  
 STA 13+00 TO STA 21+00

SCALE: AS NOTED	SHEET 04 OF 08		
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXX (XXX) TAPS	HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL 0918	SECTION 46	JOB 331
CHECK XX			SHEET NO. 113



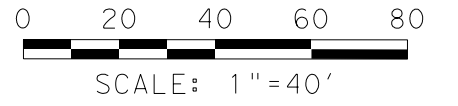
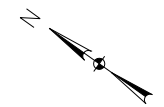
ITEM CODE	DESCRIPTION	UNIT	QUANTITY
162-7002	BLOCK SODDING	SY	917
164-7015	DRILL SEED (TEMP-WARM-COOL)	SY	917
168-7001	VEGETATIVE WATERING	TGL	28.5



KEY MAP - N. T. S.

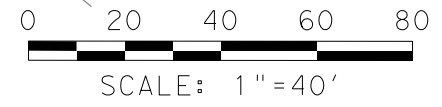
NOTE: ALL OTHER DISTURBED AREAS OUTSIDE OF THE DESIGNATED SOD HATCHING SHALL BE REVEGETATED WITH SOD OR HYDROMULCH AS PART OF THIS CONTRACT. THE CONTRACTOR IS RESPONSIBLE FOR FINAL QUANTITIES OF SOD/HYDROMULCH AREA AND FOR ENSURING PROPER VEGETATION COVERAGE IS ESTABLISHED PER THE CITY'S CODE AND THE OWNERS FINAL ACCEPTANCE. SOD/HYDROMULCH QUANTITIES FOR ADDITIONAL AREAS DISTURBED DURING CONSTRUCTION SHALL BE CONSIDERED SUBSIDIARY TO TXDOT ITEM 162/164.

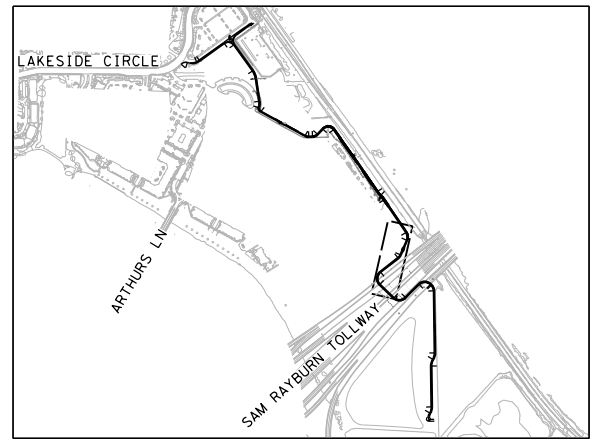
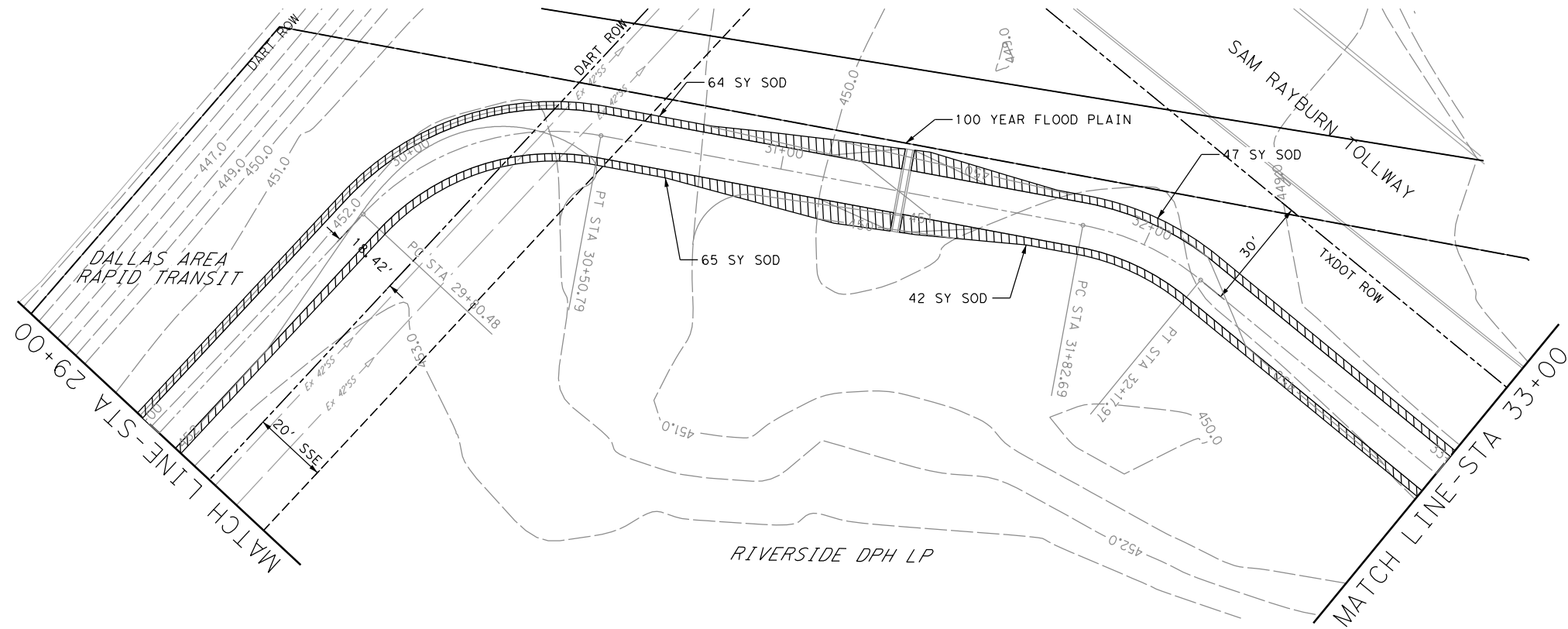
CAUTION UTILITIES IN THE AREA!  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE REVEGETATION PLAN  
 STA 21+00 TO STA 29+00

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXX(XXX) TAPS		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 114
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	

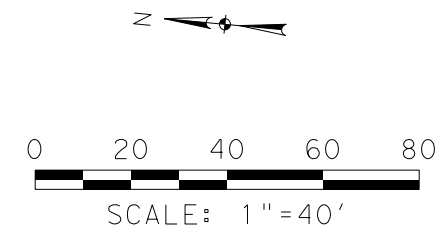
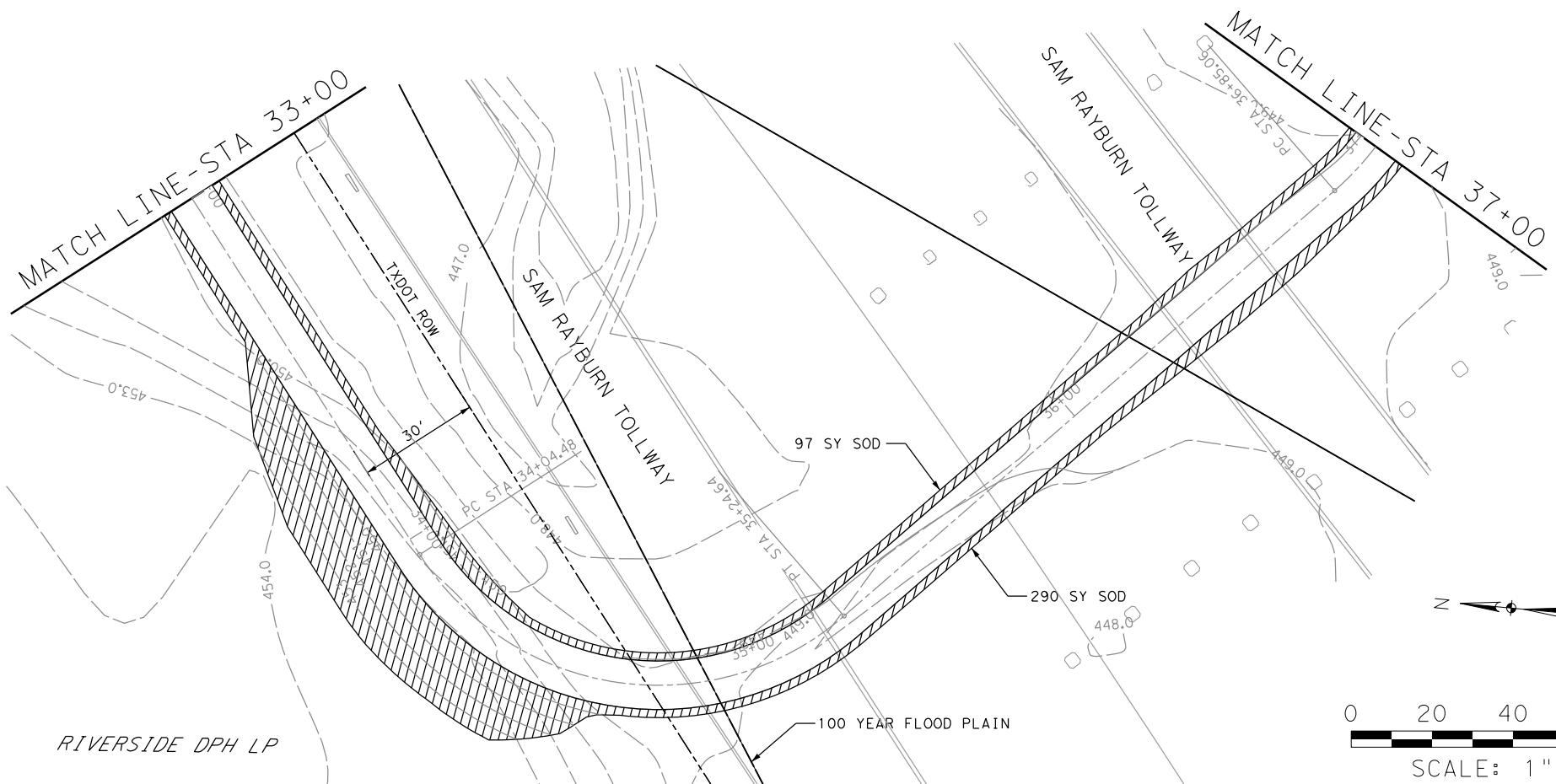
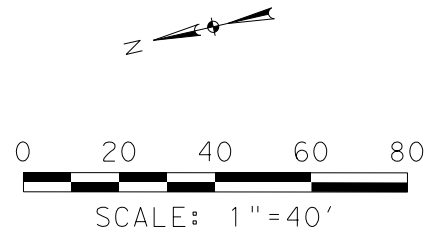




**NOTE:**  
 ALL OTHER DISTURBED AREAS OUTSIDE OF THE DESIGNATED SOD HATCHING SHALL BE REVEGETATED WITH SOD OR HYDROMULCH AS PART OF THIS CONTRACT. THE CONTRACTOR IS RESPONSIBLE FOR FINAL QUANTITIES OF SOD/HYDROMULCHED AREA AND FOR ENSURING PROPER VEGETATION COVERAGE IS ESTABLISHED PER THE CITY'S CODE AND THE OWNERS FINAL ACCEPTANCE. SOD/HYDROMULCH QUANTITIES FOR ADDITIONAL AREAS DISTURBED DURING CONSTRUCTION SHALL BE CONSIDERED SUBSIDIARY TO TXDOT ITEM 162/164.

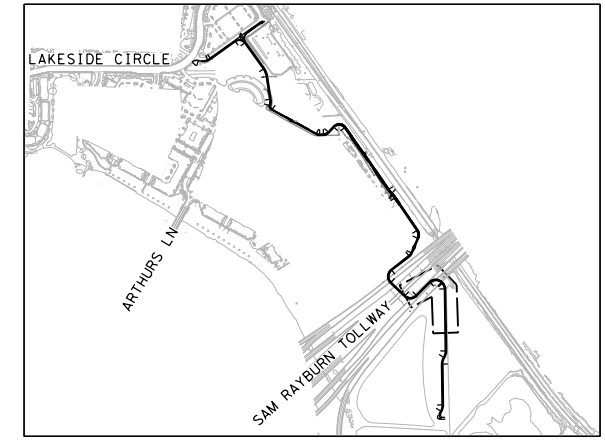
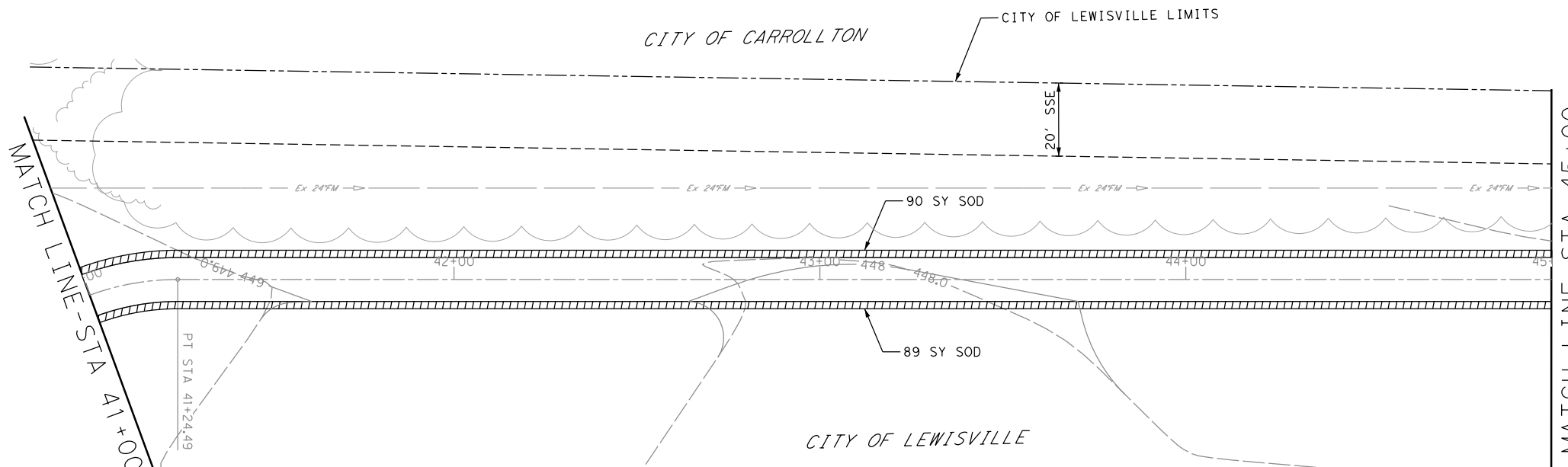
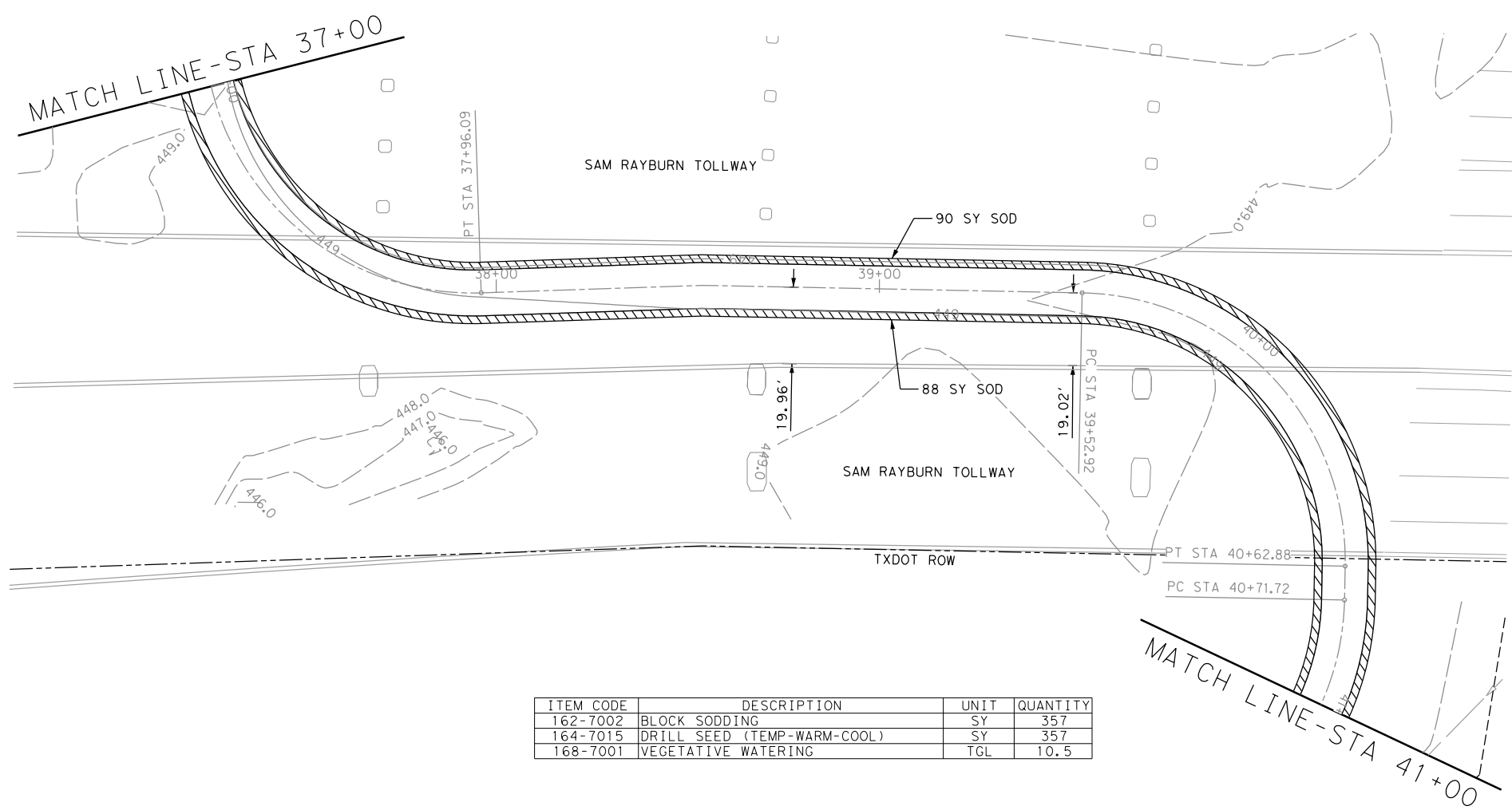
**! CAUTION UTILITIES IN THE AREA !**  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

ITEM CODE	DESCRIPTION	UNIT	QUANTITY
162-7002	BLOCK SODDING	SY	605
164-7015	DRILL SEED (TEMP-WARM-COOL)	SY	605
168-7001	VEGETATIVE WATERING	TGL	19.5



DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE  
 REVEGETATION PLAN  
 STA 29+00 TO STA 37+00

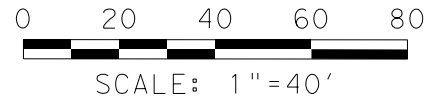
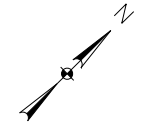
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXX (XXX) TAPS		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 115
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



KEY MAP - N.T.S.

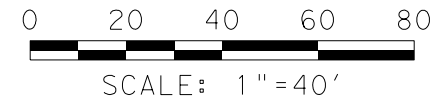
NOTE:  
 ALL OTHER DISTURBED AREAS OUTSIDE OF THE DESIGNATED SOD HATCHING SHALL BE REVEGETATED WITH SOD OR HYDROMULCH AS PART OF THIS CONTRACT. THE CONTRACTOR IS RESPONSIBLE FOR FINAL QUANTITIES OF SOD/HYDROMULCHED AREA AND FOR ENSURING PROPER VEGETATION COVERAGE IS ESTABLISHED PER THE CITY'S CODE AND THE OWNERS FINAL ACCEPTANCE. SOD/HYDROMULCH QUANTITIES FOR ADDITIONAL AREAS DISTURBED DURING CONSTRUCTION SHALL BE CONSIDERED SUBSIDIARY TO TXDOT ITEM 162/164.

! CAUTION UTILITIES IN THE AREA !  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*  
 DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377



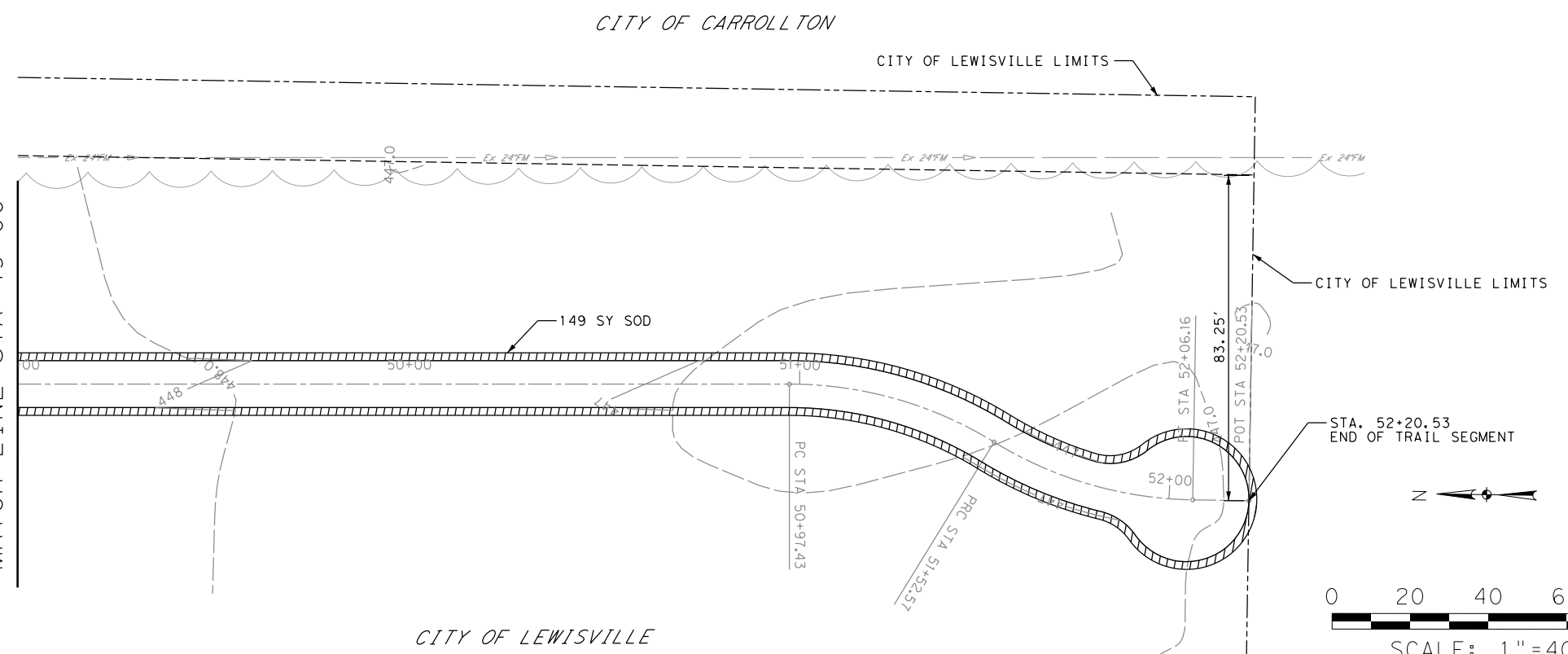
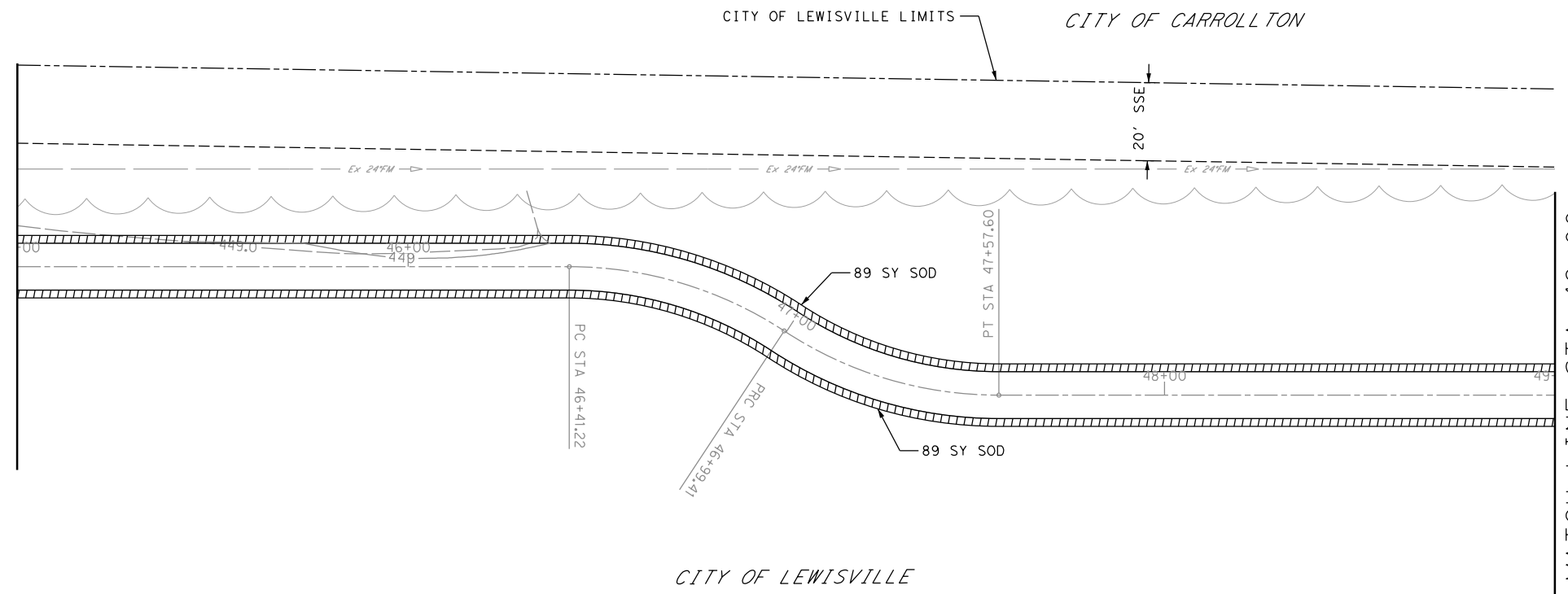
DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE REVEGETATION PLAN  
 STA 37+00 TO STA 45+00

SCALE: AS NOTED		SHEET 07 OF 08	
DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXX (XXX) TAPS	HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON
CHECK XX	CONTROL 0918	SECTION 46	JOB 331
CHECK XX			116

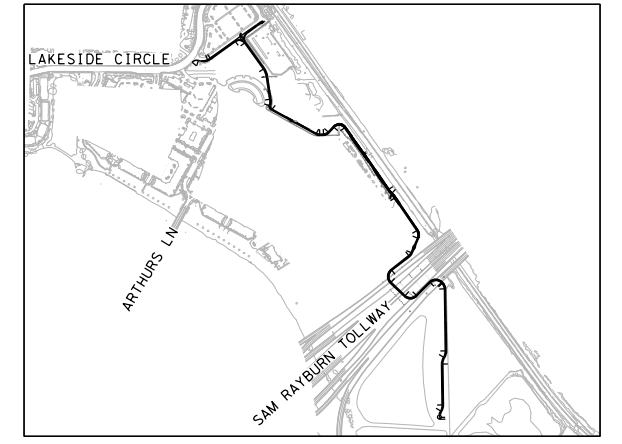


MATCH LINE - STA 45+00

MATCH LINE - STA 49+00



ITEM CODE	DESCRIPTION	UNIT	QUANTITY
162-7002	BLOCK SODDING	SY	327
164-7015	DRILL SEED (TEMP-WARM-COOL)	SY	327
168-7001	VEGETATIVE WATERING	TGL	9

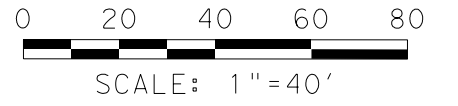
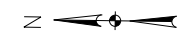


**KEY MAP - N.T.S.**

**NOTE:**  
 ALL OTHER DISTURBED AREAS OUTSIDE OF THE DESIGNATED SOD HATCHING SHALL BE REVEGETATED WITH SOD OR HYDROMULCH AS PART OF THIS CONTRACT. THE CONTRACTOR IS RESPONSIBLE FOR FINAL QUANTITIES OF SOD/HYDROMULCHED AREA AND FOR ENSURING PROPER VEGETATION COVERAGE IS ESTABLISHED PER THE CITY'S CODE AND THE OWNERS FINAL ACCEPTANCE. SOD/HYDROMULCH QUANTITIES FOR ADDITIONAL AREAS DISTURBED DURING CONSTRUCTION SHALL BE CONSIDERED SUBSIDIARY TO TXDOT ITEM 162/164.

**CAUTION UTILITIES IN THE AREA!**  
 \*\*EXTREME CARE AND CAUTION SHOULD BE TAKEN WHEN WORKING AROUND OVERHEAD AND UNDERGROUND UTILITY LINES\*\*

DIG TESS IS REQUIRED FOR THIS PROJECT PRIOR TO CONTRACTOR COMMENCING WORK!  
 (800) 344-8377

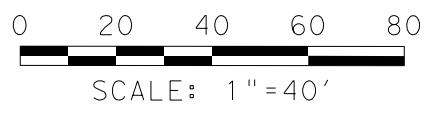


SCALE: 1" = 40'



DCTA TRAIL LEWISVILLE  
 DCTA TRAIL LEWISVILLE REVEGETATION PLAN  
 STA 45+00 TO END

DESIGN MC	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. STP XXX (XXX) TAPS		HIGHWAY NO. VA
GRAPHICS MC	STATE TEXAS	DISTRICT DAL	COUNTY DENTON	SHEET NO. 117
CHECK XX	CONTROL 0918	SECTION 46	JOB 331	



SCALE: 1" = 40'