EXHIBIT B

CITY OF LEWISVILLE, TEXAS

CONSTRUCTION PLANS FOR

EAST COLLEGE STREET IMPROVEMENTS

CITY PROJECT NO. XXXXX

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VICINITY MAP

0 1000' 2000'

SCALE IN FEET

FINAL SUBMITTAL

AUGUST 2024

MAYOR

TJ GILMORE

CITY COUNCIL

KRISTIN GREEN
BRANDON JONES
BOB TROYER
WILLIAM J. MERIDITH
RONNI CADE
PATRICK KELLY

CITY MANAGER

CLAIRE POWELL

Sidney Green Jr. , P.E. 08/08/2024

* THE TxDOT STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN SELECTED BY THE ENGINEER OF RECORD OR UNDER HIS RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

, P.E. 08/09/2024

THE TXDOT STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN SELECTED BY THE ENGINEER OF RECORD OR UNDER HIS RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

PROJECT DESCRIPTION:
E. COLLEGE ST FROM N. MILL ST TO RAILROAD ST= 2200 LF
DESIGN SPEED= 30 MPH
ADDED PARKING SPACES= 20

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
Sidney Green Jr.
08/08/2024

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GENERAL NOTES:

1. THE CITY OF LEWISVILLE'S INSPECTOR OVERTIME POLICY ALLOWS THE CONTRACTOR TO WORK FROM 7:00 AM TO SUNSET, MONDAY THROUGH FRIDAY. ANY REQUEST TO WORK ON A SATURDAY MUST BE MADE PRIOR TO 12:00 PM ON THURSDAY AFTERNOON AND WILL REQUIRE A MINIMUM FOUR (4) HOUR CHARGE. WORKING HOURS ON SATURDAY MUST REMAIN BETWEEN 9:00 AM AND 6:00 PM. THE CONTRACTOR SHALL PAY OVERTIME CHARGES OF $110.00 PER HOUR TO THE CITY OF LEWISVILLE FOR WORK OUTSIDE THE NORMAL WORK WEEK (8:00 AM TO 5:00 PM MONDAY THROUGH FRIDAY). NO WORK IS ALLOWED ON SUNDAYS OR CITY HOLIDAYS WITHOUT WRITTEN APPROVAL FROM THE CITY ENGINEER OR DESIGNER.

2. REFERENCES TO HALF-SIZE PLAN SHEETS ARE INTENDED TO INDICATE 11"X17" SHEETS. REFERENCES TO FULL-SIZE PLAN SHEETS ARE INTENDED TO INDICATE 22"X34" SHEETS.

3. ANY TESTING THAT FAILS TO MEET CITY OF LEWISVILLE REQUIREMENTS SHALL BE RE-TESTED AT THE CONTRACTOR'S EXPENSE.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MOWING AND LITTER REMOVAL IN THE PUBLIC RIGHT OF WAY AND DESIGNATED EASEMENTS WITHIN THE CONSTRUCTION LIMITS AS OFTEN AS NECESSARY AND AS DIRECTED BY THE ENGINEER. AT NO TIME SHALL WEEDS WITHIN THE PROJECT LIMITS REACH A HEIGHT GREATER THAN TWELVE(12) INCHES. NO ADDITIONAL PAYMENT WILL BE MADE FOR MOWING AND LITTER REMOVAL AND ANY ASSOCIATED COSTS WILL BE CONSIDERED INCIDENTAL TO THE JOB.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A TWO (2) YEAR, 100% MAINTENANCE BOND TO THE CITY OF LEWISVILLE FOR ALL PUBLIC IMPROVEMENTS (WATER, SANITARY SEWER, STORM DRAINAGE, PAVEMENT, SIDEWALK, RETAINING WALL, TRAFFIC SIGNALS, PAVEMENT MARKINGS, AND EXCAVATION/FILL) WITHIN RIGHT-OF-WAYS OR EASEMENTS.

6. NO WATER JETTING IS ALLOWED FOR WATER, SANITARY SEWER AND STORM SEWER DRAINAGE CONSTRUCTION.

7. THERE SHALL BE NO FILLING IN THE FLOODPLAIN OR DUMPING WITHIN THE CITY OF LEWISVILLE WITHOUT AN APPROVED GRADING PLAN AND/OR FILL PERMIT.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING ALL FIELD CHANGES TO THE PLANS. THE PROJECT ENGINEER SHALL INCORPORATE THESE CHANGES IN "RECORD DRAWINGS".

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING EROSION CONTROL IN ACCORDANCE WITH THE EROSION CONTROL PLAN PREPARED BY THE ENGINEER AND/OR AS IDENTIFIED ON THE STORM WATER POLLUTION PREVENTION PLAN (S.W.P.P.P.). THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL DEVICES WHEN FIELD CONDITIONS WARRANT OR AS DIRECTED BY THE CITY OF LEWISVILLE OR THE PROJECT ENGINEER.

10. THE PERMITTED OPERATOR SHALL SUBMIT COPIES OF THE NOTICE OF INTENT (N.O.I.) AND THE NOTICE OF TERMINATION (N.O.T.) TO THE CITY OF LEWISVILLE ENGINEERING DIVISION AND THE PROJECT ENGINEER AS PART OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ).

11. THE CONTRACTOR SHALL REMOVE AND REPLACE ANY CONCRETE PAVEMENT (DRIVE APPROACHES/ STREET PANELS) WITHIN FIVE (5) DAYS OF SAW CUTTING THE PAVEMENT.

12. ALL SUBGRADES FOR PUBLIC STREET IMPROVEMENT SHALL BE TESTED FOR SULFATES PRIOR TO SUBGRADE TREATMENT. FILL MATERIALS CONTAINING SULFATES WILL NOT BE ALLOWED FOR USE WITHIN PUBLIC EASEMENTS OR RIGHTS-OF-WAYS.

13. THE MAXIMUM P.I. ALLOWED FOR A TREATED SUBGRADE IS 15.

14. THE CONTRACTOR IS RESPONSIBLE FOR ALL THIRD PARTY COSTS ASSOCIATED WITH THE CONSTRUCTION OF THIS PROJECT. (i.e. INSPECTIONS, FLAGGERS, TRAFFIC CONTROL PERFORMED BY POLICE OFFICERS AND ETC.)

15. PRIOR TO ANY CONSTRUCTION THE CONTRACTOR SHALL FAMILIARIZE THEMSELF WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS, THE PLANS INCLUDING ALL NOTES, THE CITY OF LEWISVILLE STANDARDS FOR CONSTRUCTION AND ANY OTHER APPLICABLE STANDARDS AND SPECIFICATIONS RELEVANT TO THE PROPER COMPLETION OF THE WORK SPECIFIED. FAILURE ON THE PART OF THE CONTRACTOR TO FAMILIARIZE THEMSELF WITH ALL STANDARDS OR SPECIFICATIONS PERTAINING TO THIS WORK SHALL IN NO WAY RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR PERFORMING THE WORK IN ACCORDANCE WITH ALL SUCH APPLICABLE STANDARDS AND SPECIFICATIONS.

16. IN THE EVENT AN ITEM IS NOT COVERED IN THE CITY OF LEWISVILLE CONSTRUCTION STANDARDS, SPECIFICATIONS, AND DETAILS, THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS 4TH ED. (OCTOBER 2004) SHALL APPLY WITH CONCURRING NOTIFICATION TO THE CITY ENGINEER AND PROJECT ENGINEER. THE ENGINEER SHALL HAVE THE FINAL DECISION ON ALL CONSTRUCTION MATERIALS, METHODS, AND PROCEDURES.

17. NO TREES OUTSIDE PROJECT SLOPE EASEMENTS SHALL BE CUT EXCEPT ON SPECIFIC AUTHORITY OF THE ENGINEER. THE CONTRACTOR SHALL PROTECT THE EXISTING TREES, BUSHES, LANDSCAPING PLANTS, AND LAWNS UNLESS NOTED OTHERWISE ON THE DRAWINGS. ANY DAMAGE TO THE EXISTING TREES, BUSHES, LANDSCAPING PLANTS, OR LAWNS CAUSED BY THE CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE CITY, AT THE CONTRACTORS EXPENSE.

18. VERIFY LOCATIONS OF FRANCHISE UTILITIES BEFORE BEGINNING EXCAVATION. IF NECESSARY, DIG TEST DITCHES TO DETERMINE ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHALL NOTIFY A REPRESENTATIVE OF THE FRANCHISE UTILITIES NOT LESS THAN 72 HOURS BEFORE BEGINNING WORK WITHIN THE AGENCIES' R.O.W.'S OR NEAR THEIR FACILITIES.

CITY OF LEWISVILLE (PUBLIC WORKS)	ONCOR (TRANSMISSION)
972-219-3510	817-215-6237
UTILITY LINE LOCATOR	ATMOS
800-DIG-TESS	214-364-5764
VERIZON BUSINESS	AT&T (LEGACY)
972-729-6404	214-467-5492
VERIZON	TIME WARNER CABLE
940-231-3606	214-320-7406
TEXAS NEW MEXICO POWER	GRANDE COMMUNICATIONS
972-353-5022	972-410-0584
FRONTIER	CHARTER-SPECTRUM
214-897-1749	972-670-1222

19. ALL EXISTING UTILITIES ARE AS PER AVAILABLE RECORDS. THE CONTRACTOR SHALL FIELD VERIFY DEPTH AND LOCATION OF ALL UTILITIES.

20. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF ALL UNDERGROUND AND OTHER UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING UTILITIES IMMEDIATELY AT NO ADDITIONAL COST TO THE CITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UTILITY COMPANIES IN THE AREA OF CONSTRUCTION A MINIMUM OF 72 HOURS PRIOR TO ANY EXCAVATION.

21. CONSTRUCTION INSPECTION WILL BE PERFORMED BY REPRESENTATIVES OF THE CITY, ENGINEER, GEOTECHNICAL TESTING LAB ENGINEER, AND REVIEWING AUTHORITIES AND AGENCIES. UNRESTRICTED ACCESS SHALL BE PROVIDED TO THEM AT ALL TIMES. CONTRACTOR IS RESPONSIBLE FOR UNDERSTANDING AND SCHEDULING REQUIRED INSPECTIONS.

22. ALL WORK SHALL CONFORM TO THE CITY OF LEWISVILLE CONSTRUCTION STANDARDS, SPECIFICATIONS, AND DETAILS, UNLESS SHOWN OTHERWISE IN THE PLANS AND SPECIFICATIONS.

23. CONTRACTOR SHALL TAKE PICTURES OR VIDEO PRIOR TO CONS CONDITION. COPIES SHALL BE PROVIDED TO THE CITY AND ENGINEER. THIS SHALL BE CONSIDERED SUBSIDIARY TO MOBILIZATION.

24. THE CONTRACTOR SHALL NOT UNLOAD OR STORE MATERIALS, PERMIT WORKERS TO PARK, NOR PARK EQUIPMENT WITHIN THE STREET RIGHT-OF-WAY WHERE THE STREET IS OPEN TO PUBLIC TRAVEL WITHOUT PRIOR APPROVAL OF THE CITY.

25. THE CONTRACTOR SHALL PROVIDE AT LEAST ONE CHEMICALLY TREATED PORTABLE TOILET FOR EVERY 20 PERSONNEL ON THE JOB SITE, A MINIMUM OF ONE TOILET IS REQUIRED. THE UNIT(S) SHALL REMAIN ON THE SITE DURING ALL ACTIVE PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL ENFORCE THE USE OF THE FACILITIES BY ALL PERSONNEL AT THE SITE. THE UNIT(S) SHALL BE OBSCURED FROM PUBLIC VIEW TO THE GREATEST EXTENT PRACTICABLE. THE PORTABLE TOILETS SHALL BE CLEANED A MINIMUM OF ONE TIME PER WEEK.

26. THE CONTRACTOR SHALL NOTIFY ALL EMERGENCY UNITS, SCHOOL DISTRICTS, AND THE US POSTAL SERVICE OPERATING WITHIN THE AREA OF THE PROPOSED WORK OF STREET OR LANE CLOSURES AND CONSTRUCTION SCHEDULES A MINIMUM OF 48 HOURS PRIOR TO BEGINNING WORK.

27. LEWISVILLE I.S.D. DEPARTMENT OF TRANSPORTATION
972-221-4557
CITY OF LEWISVILLE FIRE AND RESCUE DEPARTMENT
972-219-3580
CITY OF LEWISVILLE POLICE DEPARTMENT
972-219-3600
US POSTAL SERVICE
972-436-9941

28. ACCESS TO ABUTTING PROPERTY DURING THE CONSTRUCTION OF THIS PROJECT MUST BE MAINTAINED FOR EMERGENCY AND LOCAL TRAFFIC AT ALL TIMES.

29. THE CONTRACTOR SHALL MAINTAIN FIRE EMERGENCY VEHICLE ACCESS TO FIRE HYDRANTS THROUGHOUT THE DURATION OF THE PROJECT. INACTIVE FIRE HYDRANTS SHALL BE BAGGED. THE CONTRACTOR MAY ONLY CLOSE ONE FIRE HYDRANT AT A TIME.

30. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO THE PROJECT FREE OF MUD AND DEBRIS FROM CONSTRUCTION AT ALL TIMES.

31. SOD ALL AREAS FROM BACK OF CURB TO CONSTRUCTION LIMITS. SOIL UNDER SOD SHALL BE 4" OF OFF SITE TOPSOIL APPROVED BY ENGINEER. ALL OTHER DISTURBED AREAS SHALL BE SEEDED WITH BERMUDA GRASS DURING SUMMER MONTHS (MAY1 TO AUGUST 30). WINTER RYE OR FESCUE GRASS MAY BE PLANTED DURING TIMES OTHER THAN THE SUMMER MONTHS AS A TEMPORARY MEASURE UNTIL SUCH TIME AS THE PERMANENT PLANTING CAN BE MADE. DISTURBED AREAS THAT ARE SEEDED SHALL BE CHECKED PERIODICALLY TO SEE THAT THE GRASS COVERAGE IS PROPERLY MAINTAINED. DISTURBED AREAS SHALL BE WATERED, FERTILIZED, AND RESEEDED IF NECESSARY. RESEEDING IF NECESSARY WILL BE INCIDENTAL.

32. MAIL BOXES WILL BE RESET AS DIRECTED BY THE ENGINEER AND IN ACCORDANCE WITH USPS REGULATIONS. CONTINUOUS MAIL SERVICE SHALL BE PROVIDED DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE THE USE OF TEMPORARY MAILBOXES USED DURING CONSTRUCTION WITH THE USPS.

33. THE CONTRACTOR SHALL PLACE THE PROJECT SIGNS AS DIRECTED BY THE ENGINEER. THE PROJECT SIGNS ARE SUBSIDIARY TO THE VARIOUS BID ITEMS. THE PROJECT SIGN SHALL BE COMPLETE IN PLACE WITHIN 10 DAYS OF NOTICE TO PROCEED.

34. ALL DIMENSIONS AND COORDINATES SHOWN ARE TO THE PROPOSED CENTERLINE OF THE PAVEMENT, PIPE, ETC. AND THE FACE OF CURB, UNLESS NOTED OTHERWISE.

35. ALL BARRICADES, WARNING SIGNS, LIGHTS, DEVICES, ETC., FOR THE GUIDANCE AND PROTECTION OF TRAFFIC AND PEDESTRIANS MUST CONFORM TO THE INSTALLATION SHOWN IN THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AS CURRENTLY AMENDED, TEXAS DEPARTMENT OF TRANSPORTATION.

36. ANY EXCESS FILL MATERIAL MUST BE DISPOSED OF OFFSITE.

PAVING NOTES

1. TYPICAL PAVEMENT THICKNESS AND STRENGTHS SHALL BE AS FOLLOWS UNLESS SHOWN DIFFERENTLY ON THE CONSTRUCTION PLANS.
   - 8" - 3,600 PSI COMP. WITH 5.5 SACK MIN. CONTENT
   - 8" - 3,750 PSI COMP. WITH 6 SACK MIN. CONTENT FOR ANY HAND POURS
   - 8" - 4,200 PSI (3 DAY) COMP. WITH 8 SACK MIN. FOR ANY HIGH EARLY STRENGTH FOR REPLACEMENT OF EXISTING COMMERCIAL DRIVEWAYS
   - 6" - 4,200 PSI (3 DAY) COMP. WITH 8 SACK MIN. FOR ANY HIGH EARLY STRENGTH FOR REPLACEMENT OF EXISTING RESIDENTIAL DRIVEWAYS
   - 5" REINFORCED CONCRETE SIDEWALK - 3,000 PSI

2. REINFORCED CONCRETE PAVEMENT
   1. ALL CURBS SHALL BE PLACED INTEGRAL WITH PAVEMENT.
   2. CURBS SHALL MEET THE SAME STRENGTH AS SPECIFIED FOR THE CONCRETE PAVEMENT.
   3. DETAIL AND ARRANGEMENT OF JOINTS, ALL TYPES, SHALL BE AS SHOWN ON SHEET PDT-01 OF THE STANDARD CONSTRUCTION DETAILS.
   4. BAR LAPS SHALL BE 30 DIAMETERS. (12" MINIMUM)
   5. PAVEMENT SHALL BE REINFORCED WITH NO. 4 BARS ON 18" CTRS. BOTH WAYS AND TIED AT EVERY SPLICE.

3. A SUBBASE PREPARATION TEST SHALL BE PERFORMED AT 100 FOOT INTERVALS. THE FLEXBASE SHALL BE 6" CRUSHED LIMESTONE BASE MATERIAL (TXDOT ITEM 247, GRADE 1-2, TYPE A) COMPACTED TO 95% OR GREATER OF STANDARD PROCTOR DENSITY AT A MOISTURE CONTENT OF -2 TO +2 PERCENT OF OPTIMUM MOISTURE (REFERENCE ASTM D1557). THE FLEXBASE SHALL BE PLACED ON 6" COMPACTED SUBGRADE. THE SUBGRADE SHALL BE COMPACTED TO 95% OR GREATER OF STANDARD PROCTOR DENSITY AT A MOISTURE CONTENT OF -2 TO +3 PERCENT OF OPTIMUM MOISTURE (REFER TO ASTM D698).

4. ALL EXPANSION JOINTS SHALL BE DOWELED. THE DOWEL SHALL BE ¾ INCH IN DIAMETER AND 24 INCHES LONG WITH AN EXPANSION JOINT ON ONE END. THE DOWEL SHALL BE GREASED ON THE EXPANSION JOINT END ONLY. THE EXPANSION JOINT SHALL HAVE A ⅜ INCH REDWOOD TEAR OFF STRIP. ALL REDWOOD WILL HAVE PRE-DRILLED OR DRILLED HOLES FOR THE DOWELS TO GO THROUGH.

5. ALL DRIVEWAYS SHALL BE CONSTRUCTED TO RIGHT-OF-WAY UNLESS NOTED OTHERWISE IN CONSTRUCTION PLANS AND/OR CROSS SECTIONS. ALL DRIVEWAYS SHALL MATCH EXISTING ELEVATIONS AT END OF RECONSTRUCTION. ALL DRIVEWAY MATERIALS BEYOND RIGHT-OF-WAY LIMITS SHALL MATCH EXISTING MATERIALS. ALL CONSTRUCTION JOINTS SHALL BE DOWELED. THE DOWEL SHALL BE 5/8 INCH IN DIAMETER AND 24 INCHES LONG. THE DOWELS SHALL BE AT 12" ON CENTER, DRILLED AT 1.0' AND COATED WITH EPOXY RESIN.

6. ALL PAVEMENT, DRIVEWAYS, PARKING AREAS, SIDEWALKS AND OTHER MATERIAL REQUIRED TO BE REMOVED SHALL BE CONSIDERED SUBSIDIARY TO THE RIGHT-OF-WAY PREPARATION BID ITEM.

7. THE CONTRACTOR SHALL MAINTAIN ACCESS FOR ALL PROPERTY OWNERS, RESIDENTS, BUSINESSES, AND CITY FACILITIES DURING CONSTRUCTION. AT NO TIME SHOULD A BUSINESS DRIVEWAY BE CLOSED, FOR ANY CONSTRUCTION ACTIVITY WITHIN THE BUSINESS DRIVEWAY. ONLY HALF THE DRIVEWAY WIDTH CAN BE CLOSED FOR CONSTRUCTION WHILE THE OTHER HALF MUST BE OPEN AT ALL THE TIME.

8. IF A PROPERTY HAS TWO OR MORE DRIVEWAYS THE CONTRACTOR SHALL CONSTRUCT ONE DRIVEWAY AT A TIME TO MAINTAIN ACCESS.

9. AT THE DISCRETION OF THE CITY OF LEWISVILLE, THERE SHALL BE A SLUMP TEST OF CONCRETE DELIVERED. CONCRETE CYLINDERS SHALL BE DRAWN AT INTERVALS TO BE DETERMINED BY THE CITY OF LEWISVILLE INSPECTORS. THERE SHALL BE BREAKS AT 7 DAYS AND 28 DAYS (3 DAY BREAK FOR HIGH EARLY STRENGTH CONCRETE).

10. ALL CONSTRUCTION JOINTS TO BE IN ACCORDANCE WITH CITY DETAIL 2.2 SHEET PDT-01.

11. CONCRETE STREET PAVEMENT SHALL BE CONSTRUCTED BY USE OF A PAVING MACHINE PER NCTCOG SECTION 303.4 EQUIPMENT.

SIDEWALK NOTES

1. BARRIER FREE RAMPS WILL BE BUILT WITH THIS PROJECT. LOCATIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER TO CLEAR OBSTRUCTIONS.

2. SIDEWALK AND BARRIER FREE RAMP CONSTRUCTION SHALL COMPLY WITH ADA, PROWAG AND TAS REGULATIONS.

3. ANY EXCAVATION, FILL, BACKFILLING OR GRADING REQUIRED IN THE CONSTRUCTION OF THE SIDEWALK OR RETAINING WALLS SHALL BE CONSIDERED SUBSIDIARY TO THE COST OF CONSTRUCTION OF THE SIDEWALK.

TRAFFIC CONTROL NOTES

1. CONTRACTOR MUST SUBMIT A DETAILED TRAFFIC CONTROL PLAN CONFORMING TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE PLAN SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS. THE PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AT LEAST 1 WEEK PRIOR TO CONSTRUCTION. THE PLAN MUST INCLUDE ALL NECESSARY SIGNS AND TRAFFIC CONTROL DEVICES REQUIRED PER THE MUTCED TO IMPLEMENT THIS CONSTRUCTION PHASING PLAN.

2. THE CONSTRUCTION PHASING PLANS ARE FOR BID PURPOSES ONLY. AN ALTERNATE PLAN MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

3. THE BID ITEM FOR TRAFFIC CONTROL SHALL INCLUDE ALL BARRICADES, SIGNS, CONCRETE TRAFFIC BARRIERS, AND TEMPORARY PAVEMENT MARKINGS AND SHALL INCLUDE ALL MATERIALS, TOOLS, LABOR, AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK.

4. PAYMENT FOR TRAFFIC CONTROL WILL BE PRO-RATED ON A MONTHLY BASIS FOR THE DURATION OF THE PROJECT.

STORM DRAINAGE NOTES

1. ALL STORM DRAIN BENDS AND WYE CONNECTIONS SHALL BE MADE WITH PRECAST SECTIONS, UNLESS THE ENGINEER APPROVES FIELD CONNECTIONS. ANY BEND WITH A GAP LARGER THAN 1" SHALL INCLUDE CONCRETE COLLAR. ALL PIPE SIZE CHANGES SHALL BE MADE WITH PRECAST ENLARGERS/REDUCERS, UNLESS THE ENGINEER APPROVES FIELD CONNECTIONS.

2. PIPE MUST BE KEPT CLEAN OF BROKEN CONCRETE, DIRT, OR ANY OTHER DEBRIS RESULTING FROM CONSTRUCTION OPERATIONS.

LANDSCAPE GENERAL NOTES

1. SUBSTITUTIONS WILL BE PERMITTED ONLY UPON SUBMISSION OF PROOF THAT ANY PLANT IS NOT OBTAINABLE AND AUTHORIZATION BY THE OWNER OR HIS REPRESENTATIVE BY A CHANGE ORDER PROVIDING FOR THE USE OF THE NEAREST EQUIVALENT OBTAINABLE SIZE OR VARIETY OF PLANT HAVING THE SAME ESSENTIAL CHARACTERISTICS AT NO ADDITIONAL COST TO OWNER.

2. PLANTS SHALL BE PACKED AND PROTECTED DURING DELIVERY AND AFTER ARRIVAL AT THE SITE, AGAINST CLIMATIC, SEASONAL, WIND DAMAGE, OR OTHER INJURIES, AND AT NO TIME SHALL BE ALLOWED TO DRY OUT.

3. ALL PLANT MATERIAL SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE.

4. AT THE END OF THE GUARANTEE PERIOD THE OWNER'S REPRESENTATIVE AND LANDSCAPE CONTRACTOR SHALL INSPECT PLANT MATERIAL. ANY PLANT MATERIAL UNDER THIS CONTRACT THAT IS DEAD OR OF AN UNSATISFACTORY GROWTH CONDITION SHALL BE REMOVED AND REPLACED IN A TIMELY FASHION BY THE LANDSCAPE CONTRACTOR, AT NO COST TO THE OWNER.

5. THE CONTRACTOR SHALL REMOVE ALL TREE STALKING AT THE END OF THE WARRANTY PERIOD OR IN NO CASE LATER THAN 1 COMPLETE GROWING SEASON AFTER PLANTING.

6. THE LANDSCAPE CONTRACTOR AND OWNER'S REPRESENTATIVE SHALL CONDUCT AN ON-SITE INSPECTION OF ALL WORK AND MATERIALS TO DETERMINE COMPLIANCE OF WORK WITH THE CONSTRUCTION DOCUMENTS.

7. THE LANDSCAPE CONTRACTOR SHALL WITHIN REASONABLE MEANS PROVIDE THE OWNER'S REPRESENTATIVE WITH SUFFICIENT DATA TO DEMONSTRATE COMPLIANCE WITH CONSTRUCTION DOCUMENTS.

8. THE LANDSCAPE CONTRACTOR SHALL BE NOTIFIED IN WRITING OF ANY NON-CONFORMING ITEMS, WHICH ARE TO BE CORRECTED. (PUNCH-LIST)

9. THE LANDSCAPE CONTRACTOR AND OWNER'S REPRESENTATIVE SHALL CONDUCT AN ON SITE INSPECTION TO VERIFY COMPLETENESS OF PUNCH LIST ITEMS.

10. ACCEPTANCE OF WORK BY THE OWNER SHALL BEGIN UPON VERIFYING COMPLETION OF PUNCH LIST ITEMS AND RECEIPT OF ALL DELIVERABLE ITEMS TO OWNER INCLUDING LETTER OF GUARANTEE: RELEASE OF LIENS WAIVER, AS BUILT MYLAR DRAWING DENOTING DEVIATIONS FROM CONTRACT DRAWINGS, PRODUCT DATA AND MAINTENANCE GUIDE.

11. THE LANDSCAPE CONTRACTOR SHALL RECEIVE WRITTEN NOTIFICATION OF DATE OF FINAL ACCEPTANCE AND ENDING DATE OF REQUIRED GUARANTEE PERIODS FROM THE OWNERS REPRESENTATIVE.

12. REPLACE ANY EXISTING IRRIGATION DISTURBED DURING CONSTRUCTION WITH MATERIALS EQUAL TO OR BETTER THAN THE ORIGINAL AT THE CONTRACTOR'S EXPENSE PRIOR TO THE FINAL APPROVAL OF THE JOB.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
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137592
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08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
GENERAL NOTES & LEGEND

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

FAN JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
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Date: Aug. 08, 2024 - 02:08:52 PM
Office:On Site Date:Aug. 08, 2024 - 02:08:52 PM User:02446 File:N:\F\Drawings\1. General\cv-trt-gn-notes01.sht

EROSION & SEDIMENTATION CONTROL NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH THE TCEQ'S TPDES REGULATIONS CONCERNING EROSION AND SEDIMENT CONTROL.

2. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE AND INSPECTED BY CITY OR ITS REPRESENTATIVE PRIOR TO ANY CONSTRUCTION ACTIVITIES. THEY SHALL REMAIN IN PLACE AND FUNCTIONAL UNTIL AFTER THE PROPOSED IMPROVEMENTS ARE IN PLACE.

3. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO THE PROJECT FREE OF MUD AND DEBRIS FROM CONSTRUCTION AT ALL TIMES.

4. SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS INDICATED ON THE PLANS PRIOR TO ANY EMBANKMENT OR EXCAVATION WORK BEING DONE. WHEN THE PROJECT IS COMPLETE AND THE ENTIRE PROJEC SITE IS COMPLETELY STABILIZED, THE SEDIMENT CONTROLL DEVICES AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROPRIATE MANNER. THE CONTRACTOR HAS THE ULTIMATE RESPONSIBILITY FOR THE EFFECTIVE CONTROL OF EROSION AND SEDIMENTATION.

5. THE CONTRACTOR SHALL SEED OR SOD A COMPLETED EMBANKMENT AS SOON AS PRACTICABLE, BUT NO LATER THAN 14 DAYS AFTER SAID EMBANKMENT IS COMPLETE.

6. THE SITE SHALL BE REVIEWED WEEKLY AND AFTER ANY MAJOR STORM (1/4 INCH OR GREATER). ADJUSTMENTS/REPAIRS TO THE EROSION CONTROL DEVICES SHALL BE MADE AS NEEDED.

SURVEY LEGEND (SYMBOLS)

	TEMPORARY BENCH MARK
	BOLLARD
	BUSH
	SANITARY SEWER CLEANOUT
COL	COLUMN
	CONTROL POINT
E	ELECTRIC BOX
E	ELECTRIC METER
	FIRE HYDRANT
G	GAS METER
GMW	GAS MONITORING WELL
GP	GAS PUMP
	GUY WIRE
GV	GAS VALVE
HB	HOSE BIB
	IRRIGATION CONTROL VALVE
	LIGHT POLE
	MAILBOX
MISC	MISCELLANEOUS
	MONUMENT FOUND
	POST (STEEL/WOOD/CONCRETE)
	POWER POLE
	SIGNAL BOX
D	STORM DRAIN MANHOLE
	SIGN
	SIGNAL LIGHT
S	SANITARY SEWER MANHOLE
	TELEPHONE PEDESTAL
	TREE
	UTILITY SIGN
W	WATER METER
	WATER VALVE

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
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08/08/2024

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12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL

GENERAL NOTES & LEGEND

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-gn-notes02.sht

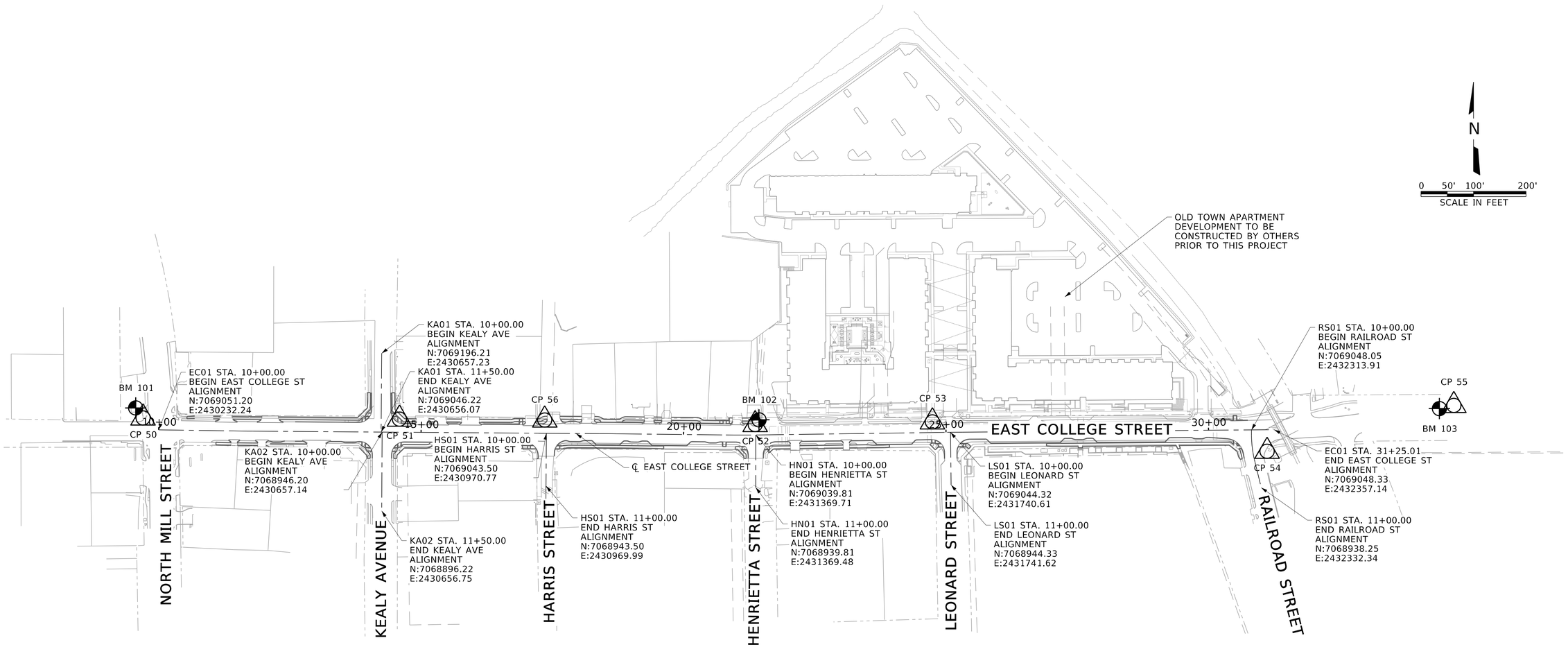
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BENCH MARK LOCATIONS

POINT	NORTHING	EASTING	DESCRIPTION	STATION	OFFSET
101	7069092.98	2430188.56	BOX CUT W/X CUT	-	-
102	7069068.62	2431375.84	RR SPIKE	21+44.02	28.74' LT
103	7069088.26	2432672.05	BOX CUT W/X CUT	-	-

CONTROL POINTS

CP	NORTHING	EASTING	ELEVATION	DESCRIPTION	STATION	OFFSET
50	7069073.89	2430202.54	518.69	X CUT IN CONCRETE	-	-
51	7069071.02	2430690.96	509.34	CP 1/2" CIRS	14+58.54	25.10' LT
52	7069059.65	2431368.63	515.63	CP 1/2" CIRS	21+36.65	19.85' LT
53	7069064.30	2431706.19	509.79	CP 1/2" CIRS	24+74.30	20.39' LT
54	7069007.43	2432343.64	480.43	CP 1/2" CIRS	31+11.25	40.81' RT
55	7069094.17	2432699.55	473.40	CP 1/2" CIRS	-	-
56	7069071.02	2430690.96	504.19	X CUT IN CONCRETE	17+35.36	25.38' LT

* GENERAL NOTES *

1. COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983, NORTH CENTRAL ZONE (4202) AND SCALED TO SURFACE BY USING THE SURFACE FACTOR OF 1.000150630 (0,0 BASE POINT). ELEVATIONS WERE ESTABLISHED BY A CLOSED LEVEL LOOP USING CITY OF LEWISVILLE CONTROL POINT NO. 25 AS BENCHMARK (ELEV=525.18)

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CITY OF LEWISVILLE
EAST COLLEGE STREET

CIVIL
HORIZONTAL CONTROL AND PROJECT LAYOUT

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
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FILE NAME	cv-trt-pl-cont01.sht

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EAST COLLEGE STREET ALIGNMENT (EC01)

Beginning chain EC01 description
Feature: Geom_Centerline

Point EC011 N 7,069,051.1998 E 2,430,232.2359 Sta 10+00.00

Course from EC011 to PC EC01_3 S 89° 02' 14.74" E Dist 139.1800

Curve Data

Curve EC01_3
P.I. Station 11+59.39 N 7,069,048.5222 E 2,430,391.6029
Delta = 0° 27' 47.40" (LT)
Degree = 1° 08' 45.30"
Tangent = 20.2095
Length = 40.4188
Radius = 5,000.0000
External = 0.0408
Long Chord = 40.4187
Mid. Ord. = 0.0408
P.C. Station 11+39.18 N 7,069,048.8617 E 2,430,371.3962
P.T. Station 11+79.60 N 7,069,048.3460 E 2,430,411.8116
C.C. N 7,074,048.1561 E 2,430,455.3926
Back = S 89° 02' 14.74" E
Ahead = S 89° 30' 02.13" E
Chord Bear = S 89° 16' 08.44" E

Course from PT EC01_3 to PC EC01_6 S 89° 30' 02.13" E Dist 543.0715

Curve Data

Curve EC01_6
P.I. Station 17+29.00 N 7,069,043.5573 E 2,430,961.1954
Delta = 0° 08' 42.52" (LT)
Degree = 1° 08' 45.30"
Tangent = 6.3331
Length = 12.6663
Radius = 5,000.0000
External = 0.0040
Long Chord = 12.6663
Mid. Ord. = 0.0040
P.C. Station 17+22.67 N 7,069,043.6125 E 2,430,954.8625
P.T. Station 17+35.34 N 7,069,043.5182 E 2,430,967.5284
C.C. N 7,074,043.4226 E 2,430,998.4435
Back = S 89° 30' 02.13" E
Ahead = S 89° 38' 44.65" E
Chord Bear = S 89° 34' 23.39" E

Course from PT EC01_6 to PC EC01_9 S 89° 38' 44.65" E Dist 103.8516

Curve Data

Curve EC01_9
P.I. Station 18+55.78 N 7,069,042.7735 E 2,431,087.9669
Delta = 0° 22' 48.70" (RT)
Degree = 1° 08' 45.30"
Tangent = 16.5891
Length = 33.1782
Radius = 5,000.0000
External = 0.0275
Long Chord = 33.1781
Mid. Ord. = 0.0275
P.C. Station 18+39.19 N 7,069,042.8760 E 2,431,071.3781
P.T. Station 18+72.37 N 7,069,042.5608 E 2,431,104.5547
C.C. N 7,064,042.9716 E 2,431,040.4630
Back = S 89° 38' 44.65" E
Ahead = S 89° 15' 55.96" E
Chord Bear = S 89° 27' 20.31" E

Course from PT EC01_9 to PC EC01_12 S 89° 15' 55.96" E Dist 208.2294

Curve Data

Curve EC01_12
P.I. Station 21+11.87 N 7,069,039.4908 E 2,431,344.0383
Delta = 1° 26' 00.29" (LT)
Degree = 2° 17' 30.59"
Tangent = 31.2739
Length = 62.5445
Radius = 2,500.0000
External = 0.1956
Long Chord = 62.5428
Mid. Ord. = 0.1956
P.C. Station 20+80.60 N 7,069,039.8917 E 2,431,312.7670
P.T. Station 21+43.14 N 7,069,039.8723 E 2,431,375.3098
C.C. N 7,071,539.6863 E 2,431,344.8128
Back = S 89° 15' 55.96" E
Ahead = N 89° 18' 03.75" E
Chord Bear = S 89° 58' 56.10" E

Course from PT EC01_12 to PC EC01_15 N 89° 18' 03.75" E Dist 358.8643

Curve Data

Curve EC01_15
P.I. Station 25+16.47 N 7,069,044.4264 E 2,431,748.6073
Delta = 0° 19' 53.11" (RT)
Degree = 1° 08' 45.30"
Tangent = 14.4610
Length = 28.9218
Radius = 5,000.0000
External = 0.0209
Long Chord = 28.9218
Mid. Ord. = 0.0209
P.C. Station 25+02.00 N 7,069,044.2500 E 2,431,734.1474
P.T. Station 25+30.93 N 7,069,044.5192 E 2,431,763.0679
C.C. N 7,064,044.6221 E 2,431,795.1414
Back = N 89° 18' 03.75" E
Ahead = N 89° 37' 56.86" E
Chord Bear = N 89° 28' 00.31" E

Course from PT EC01_15 to EC0117 N 89° 37' 56.86" E Dist 594.0871

Point EC0117 N 7,069,048.3301 E 2,432,357.1428 Sta 31+25.01

Ending chain EC01 description

KEALY AVENUE ALIGNMENT (KA01)

Beginning chain BL31 description
Feature: Geom_Centerline

Point BL311 N 7,069,146.2140 E 2,430,656.8449 Sta 10+00.00

Course from BL311 to BL312 S 0° 26' 47.96" W Dist 100.0000

Point BL312 N 7,069,046.2170 E 2,430,656.0654 Sta 11+00.00

Ending chain BL31 description

KEALY AVENUE ALIGNMENT (KA02)

Beginning chain BL32 description
Feature: Geom_Centerline

Point BL321 N 7,069,046.2008 E 2,430,657.9208 Sta 10+00.00

Course from BL321 to BL322 S 0° 26' 47.96" W Dist 100.0000

Point BL322 N 7,068,946.2039 E 2,430,657.1413 Sta 11+00.00

Ending chain BL32 description

HARRIS STREET ALIGNMENT (HS01)

Beginning chain BL35 description
Feature: Geom_Centerline

Point BL351 N 7,069,043.4981 E 2,430,970.7673 Sta 10+00.00

Course from BL351 to BL352 S 0° 26' 47.96" W Dist 100.0000

Point BL352 N 7,068,943.5012 E 2,430,969.9878 Sta 11+00.00

Ending chain BL35 description

HENRIETTA STREET ALIGNMENT (HN01)

Beginning chain BL37 description
Feature: Geom_Centerline

Point BL371 N 7,069,039.8103 E 2,431,369.7106 Sta 10+00.00

Course from BL371 to BL372 S 0° 07' 46.94" W Dist 100.0000

Point BL372 N 7,068,939.8105 E 2,431,369.4842 Sta 11+00.00

Ending chain BL37 description

LEONARD STREET ALIGNMENT (LS01)

Beginning chain BL38 description
Feature: Geom_Centerline

Point BL381 N 7,069,044.3247 E 2,431,740.6075 Sta 10+00.00

Course from BL381 to BL382 S 0° 34' 43.27" E Dist 100.0000

Point BL382 N 7,068,944.3298 E 2,431,741.6175 Sta 11+00.00

Ending chain BL38 description

RAILROAD STREET ALIGNMENT (RS01)

Beginning chain BL39 description
Feature: Geom_Centerline

Point BL391 N 7,069,048.0527 E 2,432,313.9102 Sta 10+00.00

Course from BL391 to PC BL39_3 S 0° 22' 03.14" E Dist 11.0321

Curve Data

Curve BL39_3
P.I. Station 10+34.10 N 7,069,013.9572 E 2,432,314.1289
Delta = 13° 09' 23.93" (LT)
Degree = 28° 38' 52.40"
Tangent = 23.0641
Length = 45.9254
Radius = 200.0000
External = 1.3255
Long Chord = 45.8245
Mid. Ord. = 1.3168
P.C. Station 10+11.03 N 7,069,037.0208 E 2,432,313.9809
P.T. Station 10+56.96 N 7,068,991.5326 E 2,432,319.5226
C.C. N 7,069,038.3038 E 2,432,513.9768
Back = S 0° 22' 03.14" E
Ahead = S 13° 31' 27.06" E
Chord Bear = S 6° 56' 45.10" E

Course from PT BL39_3 to BL395 S 13° 31' 27.06" E Dist 54.8007

Point BL395 N 7,068,938.2514 E 2,432,332.3380 Sta 11+11.76

Ending chain BL39 description

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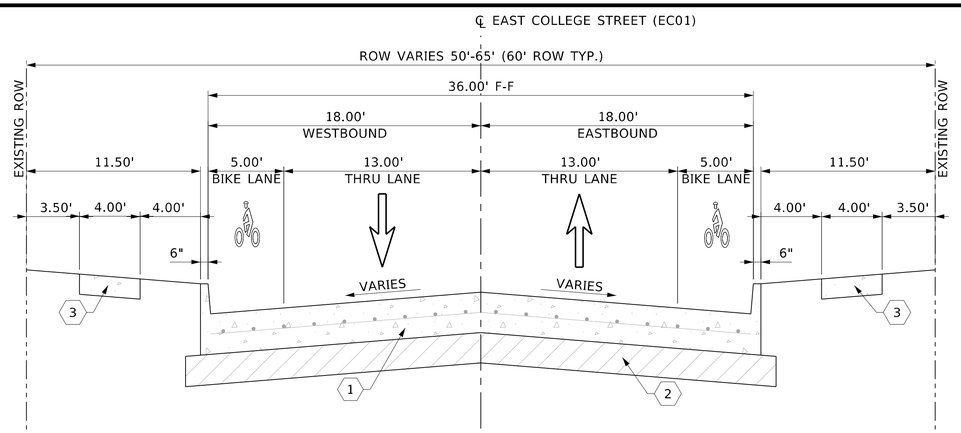
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EAST COLLEGE STREET IMPROVEMENTS
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DATE AUG 2022
DESIGNED STG
DRAWN BA
CHECKED ADH
REVISED
BY DATE
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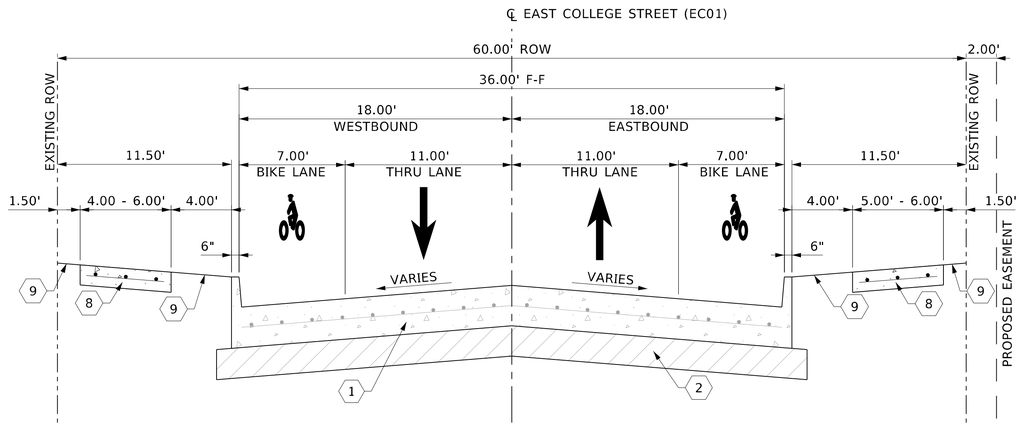
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EXISTING EAST COLLEGE STREET
TYPICAL SECTION

1

NOT TO SCALE

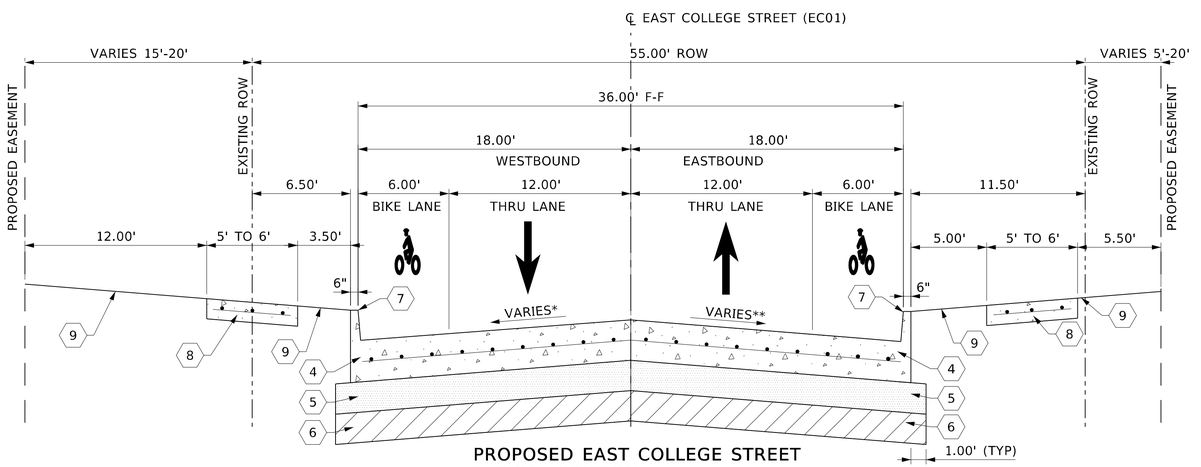


PROPOSED EAST COLLEGE STREET
TYPICAL SECTION

2

NOT TO SCALE

STA. 10+40.00 TO STA. 12+60.00



PROPOSED EAST COLLEGE STREET
TYPICAL SECTION

3

NOT TO SCALE

STA. 12+60.00 TO STA. 15+80.00

EAST COLLEGE STREET SUPER ELEVATION TABLE		
STATION	CROSS SLOPE %	
	WESTBOUND*	EASTBOUND**
12+60.00	-2.00%	-2.00%
12+90.00	-2.00%	-1.00%
13+60.00	-2.00%	-1.00%
13+80.00	-1.80%	-1.00%
14+70.00	-1.80%	+1.00%
14+90.00	-2.00%	+0.40%
15+03.25	-2.00%	0.00%
15+70.00	-2.00%	-2.00%

LEGEND

1. EXISTING 6"-8" CONCRETE PAVEMENT
2. EXISTING 6" TREATED SUBGRADE
3. EXISTING 5" CONCRETE SIDEWALK
4. 8" REINFORCED CONCRETE PAVEMENT (#4 BAR @ 18" OCEW, MIN. 3,750 PSI @ 14 DAYS)
5. 6" FLEXIBLE BASE (TXDOT ITEM 247, TYPE A GRADE 1-2) (SEE NOTES 3 AND 4)
6. 8" COMPACTED SUBGRADE, MIN 95% (SEE NOTE 5)
7. 6" MONOLITHIC CONCRETE CURB
8. 5" REINFORCED CONCRETE SIDEWALK (#3 BARS @ 24" OCEW, MIN. 3,000 PSI)
9. 4" TOPSOIL AND BLOCK SODDING (SEE NOTE 2)
10. 5" STAMPED AND COLORED CONCRETE
11. 6" HOT-MIX-ASPHALT-CONCRETE: 2" TYPE D ASPHALT 4" TYPE B ASPHALT
12. PRIME COAT (APP RATE 0.2 GAL/SY)

NOTES

1. SUBGRADE SHALL BE MIXED TO A DEPTH OF 6" FOR LIME APPLICATION. LIME SHALL BE APPLIED AT RATE OF 6% BY WEIGHT, MINIMUM QUANTITY 45LBS/SY.
2. SLOPE MAY VARY FROM 2.00% (MIN) TO 4:1 (MAX) EITHER UP OR DOWN FROM BACK OF CURB TO FRONT OF SIDEWALK AND BACK OF SIDEWALK TO RIGHT OF WAY.
3. FLEXBASE SHALL BE USED ONLY WHERE REQUIRED WITHIN LIMITS OF PROPOSED PAVEMENT TO BRING THE BASE MATERIAL TO ADEQUATE GRADE PRIOR TO CONCRETE PAVEMENT PLACEMENT.
4. FLEXBASE SHALL BE 6" CRUSHED LIMESTONE BASE MATERIAL COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY. MOISTURE CONTENT SHALL RANGE FROM -2% TO +2% OF OPTIMUM PER ASTM DD1557.
5. SUBGRADE SHALL BE COMPACTED TO THE EXTENT NECESSARY TO PROVIDE NOT LESS THAN 95% STANDARD PROCTOR DENSITY. MOISTURE CONTENT SHALL RANGE FROM -2% TO +3% OF OPTIMUM PER ASTM D698.

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TYPICAL SECTIONS

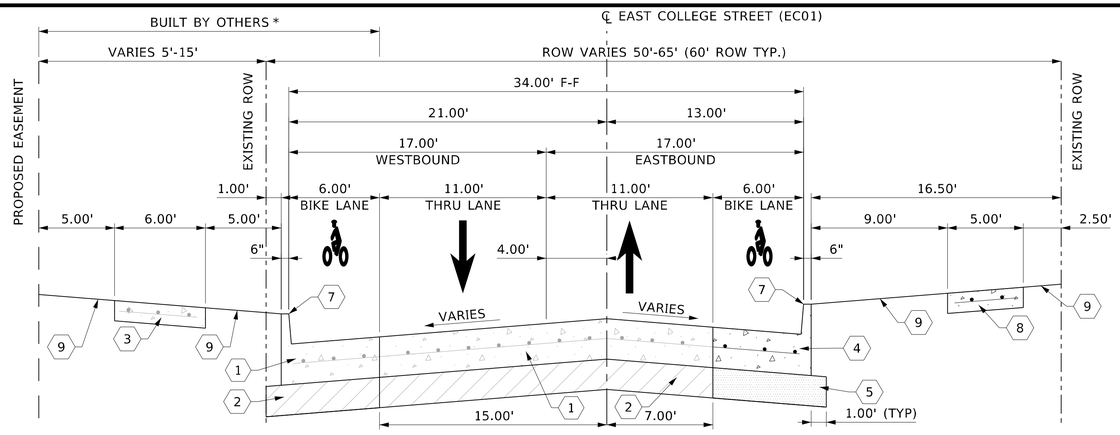
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F&N JOB NO. LEW21241
DATE AUG 2022
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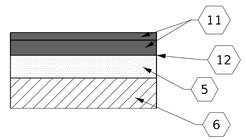
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Date: Aug. 08, 2024 - 02:09:10 PM



PROPOSED EAST COLLEGE STREET TYPICAL SECTION

4

NOT TO SCALE
STA. 17+00.00 TO STA. 18+05.00
STA. 18+85.00 TO STA. 19+30.00
STA. 20+15.00 TO STA. 23+55.00



ASPHALT PAVEMENT TYPICAL SECTION

7

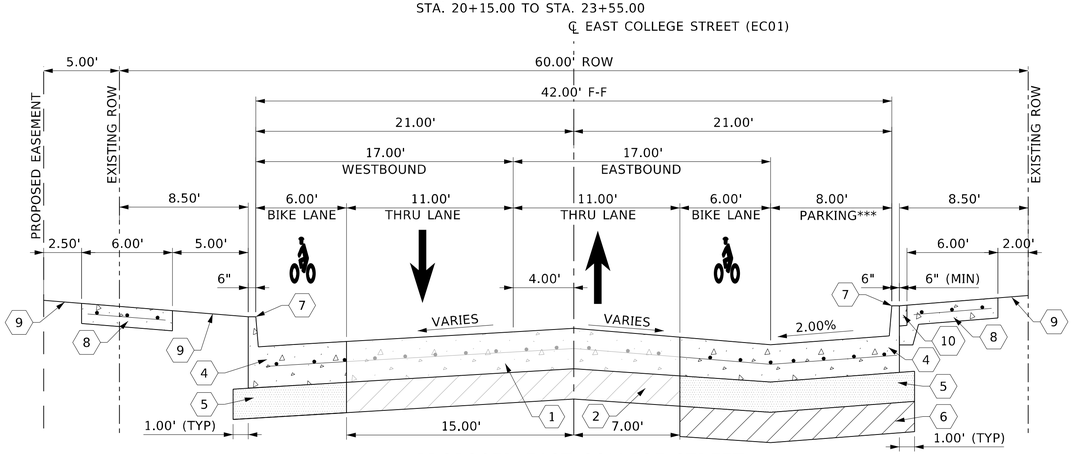
NOT TO SCALE
STA. 10+43.62 TO STA. 11+20.00

* - WESTBOUND TRAVEL AND BIKE LANE SECTIONS ARE BEING CONSTRUCTED BY OTHERS FROM STA 21+32 TO STA 30+20

** - CONTRACTOR TO USE EX SIDEWALK AND WALL FROM STA 23+91 TO STA 24+85 AND STA 25+28 TO STA 26+91

*** - PROPOSED ON-STREET PARKING SPOTS ALONG EASTBOUND LANES LOCATED FROM STA 18+01.93 TO 18+88.07, STA 19+29.93 TO 20+16.08, STA 23+57.93 TO 24+44.07, STA 25+74.93 TO 27+27.07 AND STA 27+77.93 TO 29+27.07

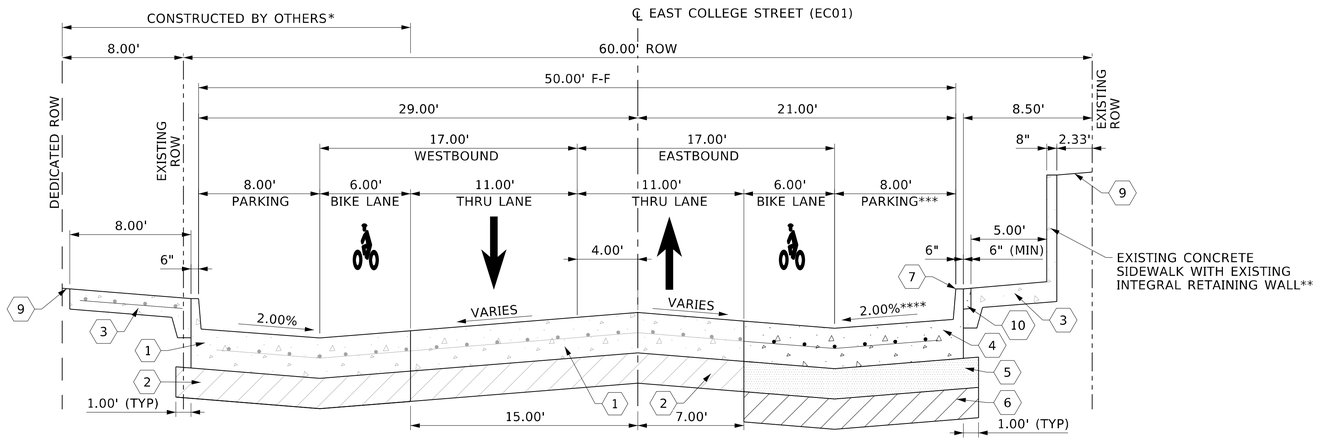
**** - PROPOSED ON-STREET PARKING LANE SLOPE CHANGES TO 1.00% FROM STA 19+35.00 TO 20+16.00, STA 23+58.00 TO 24+44.00, AND STA 25+75.00 TO 27+27.00.



PROPOSED EAST COLLEGE STREET TYPICAL SECTION

5

NOT TO SCALE
STA. 17+75.00 TO STA. 21+32.00



PROPOSED EAST COLLEGE STREET TYPICAL SECTION

6

NOT TO SCALE
STA. 21+35.00 TO STA. 31+75.00

LEGEND

1. EXISTING 6"-8" CONCRETE PAVEMENT
2. EXISTING 6" TREATED SUBGRADE
3. EXISTING 5" CONCRETE SIDEWALK
4. 8" REINFORCED CONCRETE PAVEMENT (#4 BAR @ 18" OCEW, MIN. 3,750 PSI @ 14 DAYS)
5. 6" FLEXIBLE BASE (TXDOT ITEM 247, TYPE A GRADE 1-2) (SEE NOTES 3 AND 4)
6. 8" COMPACTED SUBGRADE, MIN 95% (SEE NOTE 5)
7. 6" MONOLITHIC CONCRETE CURB
8. 5" REINFORCED CONCRETE SIDEWALK (#3 BARS @ 24" OCEW, MIN. 3,000 PSI)
9. 4" TOPSOIL AND BLOCK SODDING (SEE NOTE 2)
10. 5" STAMPED AND COLORED CONCRETE
11. 6" HOT-MIX-ASPHALT-CONCRETE: 2" TYPE D ASPHALT 4" TYPE B ASPHALT
12. PRIME COAT (APP RATE 0.2 GAL/SY)

NOTES

1. SUBGRADE SHALL BE MIXED TO A DEPTH OF 6" FOR LIME APPLICATION. LIME SHALL BE APPLIED AT RATE OF 6% BY WEIGHT, MINIMUM QUANTITY 45LBS/SY.
2. SLOPE MAY VARY FROM 2.00% (MIN) TO 4:1 (MAX) EITHER UP OR DOWN FROM BACK OF CURB TO FRONT OF SIDEWALK AND BACK OF SIDEWALK TO RIGHT OF WAY.
3. FLEXBASE SHALL BE USED ONLY WHERE REQUIRED WITHIN LIMITS OF PROPOSED PAVEMENT TO BRING THE BASE MATERIAL TO ADEQUATE GRADE PRIOR TO CONCRETE PAVEMENT PLACEMENT.
4. FLEXBASE SHALL BE 6" CRUSHED LIMESTONE BASE MATERIAL COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY. MOISTURE CONTENT SHALL RANGE FROM -2% TO +2% OF OPTIMUM PER ASTM DD1557.
5. SUBGRADE SHALL BE COMPACTED TO THE EXTENT NECESSARY TO PROVIDE NOT LESS THAN 95% STANDARD PROCTOR DENSITY. MOISTURE CONTENT SHALL RANGE FROM -2% TO +3% OF OPTIMUM PER ASTM D698.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
TYPICAL SECTIONS

NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-gn-typ02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TYP-02
SEQ. 7

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Plot Scale: 10.000 '= 1 in. Project:Freese and Nichols, Inc. - True Type Fonts
Date: Aug. 08, 2024 - 02:09:11 PM

NORTH MILL STREET

422 N. MILLS ST
NORTH POINT
CHRISTIAN CHURCH
VOLUME 2620, PAGE 576
D.R.D.C.T.

1

EXISTING ROW

EXISTING 10'x10'
DRAINAGE EASEMENT

PROPOSED TEMPORARY
CONSTRUCTION EASEMENT

121 E. COLLEGE ST
GEORGE M. GREEN
DOCUMENT NO. 2006-81035
O.P.R.D.C.T.

3

EXISTING ROW

KEALY AVENUE

EXISTING ROW

EAST COLLEGE STREET

10+00 11+00 12+00 13+00 14+00

℄ EAST COLLEGE STREET (EC01)

MATCHLINE 14+50

EXISTING ROW

PROPOSED TEMPORARY
CONSTRUCTION EASEMENT

PROPOSED TEMPORARY
CONSTRUCTION EASEMENT

PROPOSED PERMANENT
SIDEWALK EASEMENT

EXISTING ROW

EXISTING ROW

2

324 N. MILL ST
BLOCK 1, KEALY ADDITION
DOCUMENT NO. 2009-113384
O.P.R.D.C.T.

4

122 E. COLLEGE ST
CROSS VENTURES ADDITION
DOCUMENT NO. 2016-2133
P.R.D.C.T.

6

136 E. COLLEGE ST
MORROW ADDITION, LOT 1, BLOCK A
DOCUMENT NO. 2014-391
O.P.R.D.C.T.

N

0 10' 20' 40'
SCALE IN FEET

LEGEND

- EXISTING PROPERTY LINE
- EXISTING BUILDING LINE
- EXISTING ROW
- PROPOSED ROW
- PROPOSED PERMANENT SIDEWALK EASEMENT
- PROPOSED TEMPORARY CONSTRUCTION EASEMENT

201 E. COLLEGE ST
BU-CO SUBDIVISION
CABINET B, PAGE 97
P.R.D.C.T.

EXISTING ROW

EXISTING 6.75'x15'
DRAINAGE EASEMENT

5

203 E. COLLEGE ST
BU-CO SUBDIVISION
CABINET B, PAGE 97
P.R.D.C.T.

7

9

DEED RELIED ON
CALLED 13.81 ACRES
J-B HOLDINGS, INC.
DOCUMENT NO. 2015-21178
D.R.D.C.T.

OWNER: CITY OF LEWISVILLE
PER DCAD

DRAINAGE EASEMENT AND UTILITY
RIGHT OF WAY DEED
CITY OF LEWISVILLE
DOCUMENT NO. 1994-57368
D.R.D.C.T.

329 E. COLLEGE ST
CAROLINE BEREND
DOCUMENT NO. 2014-69338
O.P.R.D.C.T.

11

N

PROPOSED TEMPORARY
CONSTRUCTION EASEMENT

PROPOSED TEMPORARY
CONSTRUCTION EASEMENT

EXISTING ROW

PROPOSED TEMPORARY
CONSTRUCTION EASEMENT

PROPOSED PERMANENT
SIDEWALK EASEMENT

EAST COLLEGE STREET

15+00 16+00 17+00 18+00 19+

℄ EAST COLLEGE STREET (EC01)

MATCHLINE 14+50

MATCHLINE 19+00

PROPOSED TEMPORARY
CONSTRUCTION EASEMENT

EXISTING ROW

EXISTING ROW

PROPOSED TEMPORARY
CONSTRUCTION EASEMENT

EXISTING ROW

EXISTING ROW

HARRIS STREET

8

326 N. KEALY AVE
MORROW CABINETS, INC.
DOCUMENT NO. 2013-15404
O.P.R.D.C.T.

10

226 E. COLLEGE ST
BOBO PROPERTIES
VOLUME 1798, PAGE 272
D.R.D.C.T.

12

E. COLLEGE ST
GJW HOLDINGS, LLC
DOCUMENT NO. 2015-121700
O.P.R.D.C.T.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE

EAST COLLEGE STREET IMPROVEMENTS

CIVIL

RIGHT-OF-WAY AND EASEMENT PLAN
BEGIN TO STA 19+00

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
CHECKED ADH

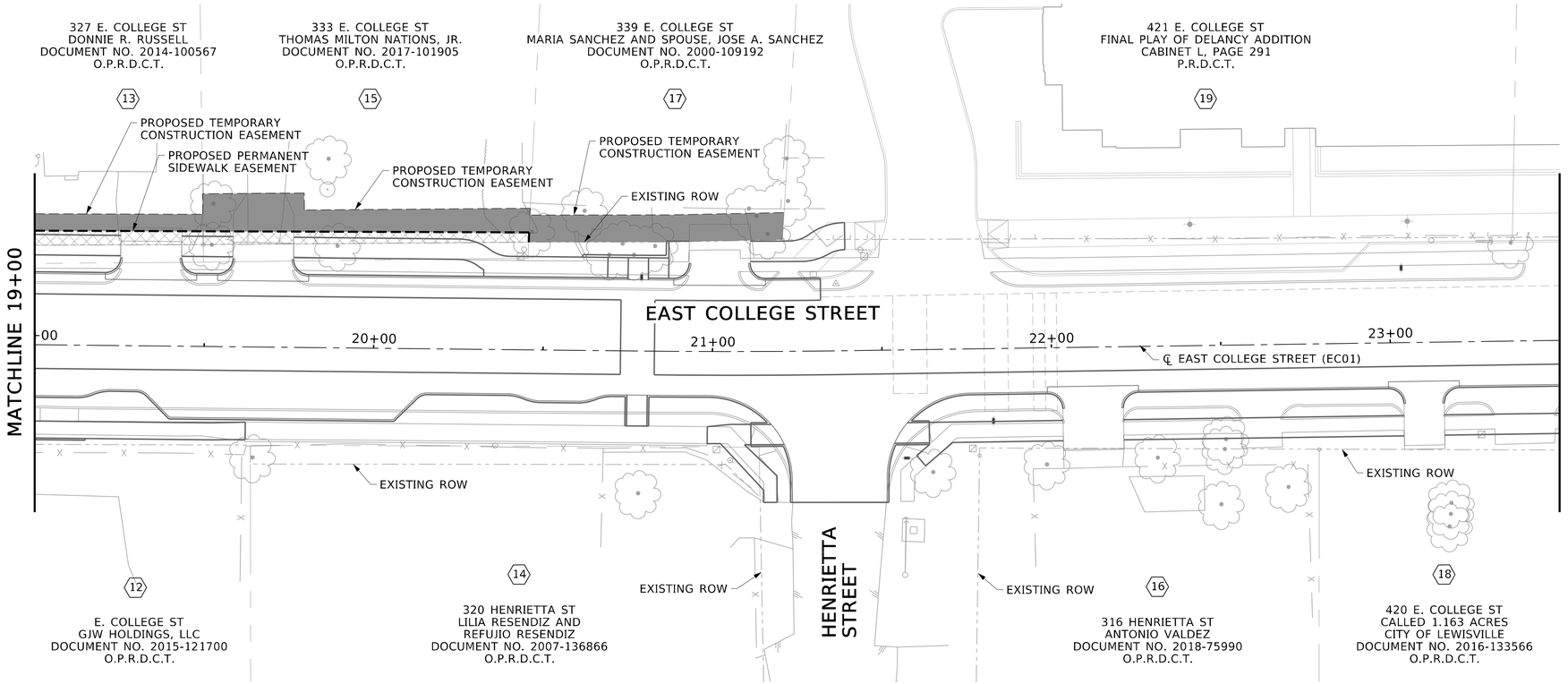
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
ROW-01

SEQ.
8

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Project: Freese and Nichols, Inc. - Trips Type Fonts



FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
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Dallas, TX 75251
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
RIGHT-OF-WAY AND EASEMENT PLAN
STA 19+00 TO STA 28+00

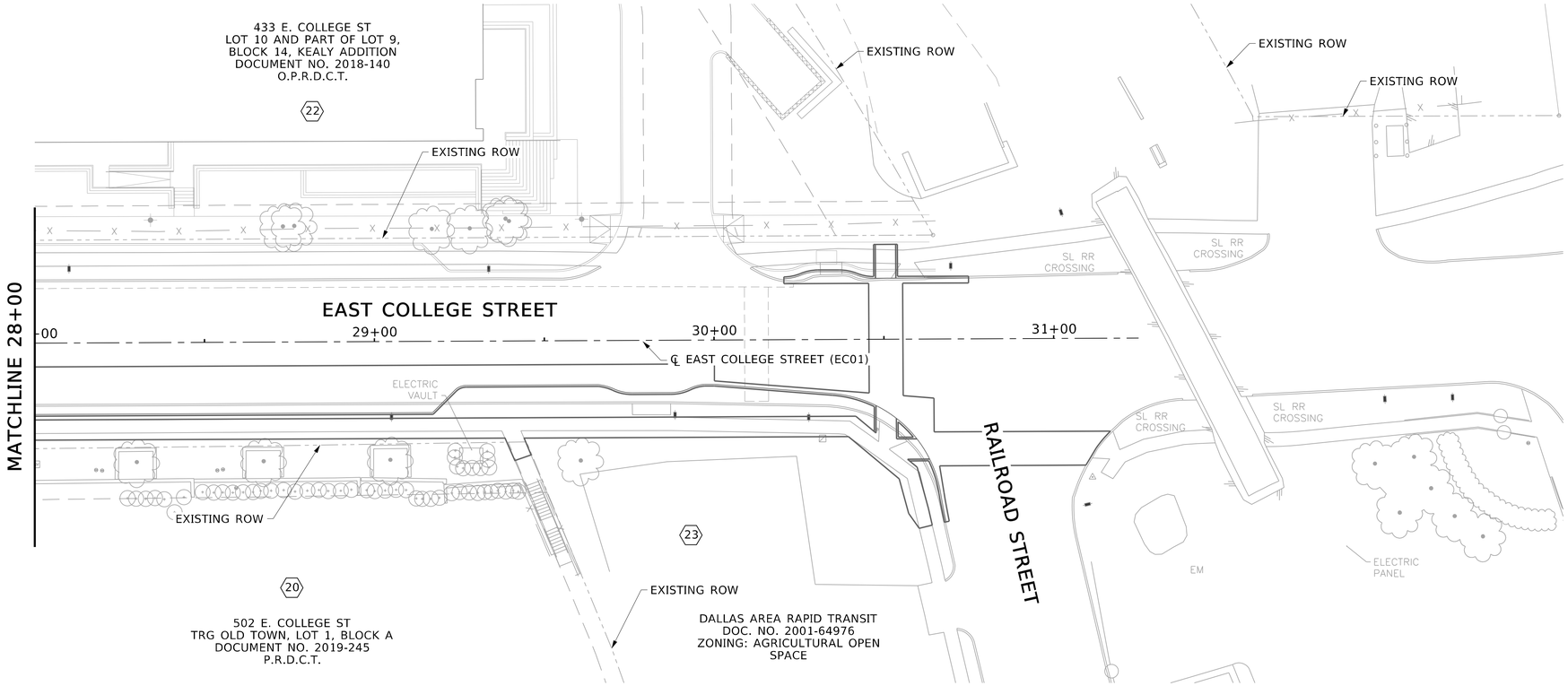
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-row02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET ROW-02
SEQ. 9

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Model: Default
Project Freese and Nichols, Inc. - True Type Fonts



N

0 10' 20' 40'
SCALE IN FEET

LEGEND

- EXISTING PROPERTY LINE
- EXISTING BUILDING LINE
- EXISTING ROW
- PROPOSED ROW
- PROPOSED PERMANENT SIDEWALK EASEMENT
- PROPOSED TEMPORARY CONSTRUCTION EASEMENT

PARCELS								
PARCEL	OWNER DESCRIPTION	OWNER ADDRESS	CITY	STATE	ZIPCODE	ROW ACQUISITION (ACRES)	PSE ACQUISITION (ACRES)	TCE ACQUISITION (ACRES)
1	NORTH POINT CHRISTIAN CHURCH	422 N. MILL ST.	LEWISVILLE	TEXAS	75057	-	-	0.0170
2	KEALY ADDITION	324 N. MILL ST.	LEWISVILLE	TEXAS	75057	-	-	-
3	GEORGE M. GREEN	121 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	-
4	CROSS VENTURES ADDITION	122 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	0.0080
5	BU-CO	201 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	0.0137
6	MORROW ADDITION	136 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	0.0022	0.0374
7	BU-CO	203 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	0.0158
8	MORROW CABINETS, INC.	326 N KEALY AVE.	LEWISVILLE	TEXAS	75057	-	-	0.0126
9	J-B HOLDINGS, INC	E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	0.0161	0.0073
10	BOBO PROPERTIES	226 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	0.0819
11	OMAR AND ELIZABETH HERNANDEZ	329 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	0.0097	0.0093
12	GJW HOLDINGS, LLC	E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	0.0146
13	DONNIE R. RUSSELL	327 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	0.0076	0.0090
14	LILIA AND REFUJIO RESENDIZ	320 HENRIETTA ST.	LEWISVILLE	TEXAS	75057	-	-	-
15	THOMAS MILTON NATIONS, JR.	333 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	0.0075	0.0181
16	ANTONIO VALDEZ	316 HENRIETTA ST.	LEWISVILLE	TEXAS	75057	-	-	-
17	MARIA AND JOSE SANCHEZ	339 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	0.0138
18	CITY OF LEWISVILLE	420 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	-
19	DELANCY ADDITION	421 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	-
20	TRG OLD TOWN	502 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	-
21	KEALY ADDITION	433 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	-
22	KEALY ADDITION	433 E COLLEGE ST.	LEWISVILLE	TEXAS	75057	-	-	-
23	DALLAS AREA RAPID TRANSIT	E COLLEGE ST.	LEWISVILLE	TEXAS	75057		-	-

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
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Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
RIGHT-OF-WAY AND EASEMENT PLAN
STA 28+00 TO END

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
CHECKED ADH
FILE NAME cv-trt-pl-row03.sht

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET ROW-03
SEQ. 10

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TRAFFIC CONTROL NARRATIVE

GENERAL:

1. CONTRACTOR SHALL SETUP CHANNELIZING DEVICES, SIGNS AND BARRICADES PER TCP(2-1)-18, TCP(2-2)-18 AND BC(1-12)-21.
2. CONTRACTOR SHALL LAYOUT LANE CLOSURES PER TCP DETAILS. MAINTAIN A MINIMUM WIDTH OF 10 FEET FOR THRU LANES.
3. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS AND CROSS STREETS THROUGHOUT THE DURATION OF CONSTRUCTION. FOR ANY DRIVEWAY OR STREET CLOSURE, CONTRACTOR MUST GIVE OWNER A MINIMUM 48 HOUR WRITTEN NOTICE.
4. CONTRACTOR SHALL CONSTRUCT IMPROVEMENTS TO HARRIS STREET EITHER BEFORE OR AFTER COMPLETING THE PARKING LOT AND DRIVEWAY RECONSTRUCTION AT THE 226 E COLLEGE STREET PROPERTY.
5. ALL CROSS STREETS SHALL BE CONSTRUCTED ONE HALF AT A TIME. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS WHEN RECONSTRUCTING DRIVEWAYS.
6. CONTRACTOR SHALL NOTIFY ALL EMERGENCY UNITS, SCHOOL DISTRICTS, AND USPS OPERATING WITHIN THE AREA OF PROPOSED WORK OF STREET OR LANE CLOSURES AND CONSTRUCTION SCHEDULES.
7. CONTRACTOR MUST SUBMIT A DETAILED TRAFFIC CONTROL PLAN CONFORMING TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE PLAN SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS. THE PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AT LEAST 1 WEEK PRIOR TO CONSTRUCTION. THE PLAN MUST INCLUDE ALL NECESSARY SIGNS AND TRAFFIC CONTROL DEVICES REQUIRED PER THE MUTCED TO IMPLEMENT THIS CONSTRUCTION PHASING PLAN.

PHASE I (EASTBOUND ON EAST COLLEGE ST)

1. SHUT DOWN EAST COLLEGE STREET BIKES AND SHIFT BOTH EB AND WB THRU LANES TO NORTH. INSTALL CHANNELIZING DEVICES AND SW3P CONTROLS AS REQUIRED.
2. REMOVE EXISTING EB LANE PAVEMENT, SIDEWALK, AND DRIVEWAYS AS SHOWN IN PLANS.
3. CONSTRUCT EB PAVEMENT FOR AREAS SHOWN IN PLANS ON EAST COLLEGE STREET.

PHASE II (WESTBOUND ON EAST COLLEGE ST)

1. SHUT DOWN EAST COLLEGE STREET BIKES AND SHIFT BOTH EB AND WB THRU LANES TO SOUTH. INSTALL CHANNELIZING DEVICES AND SW3P CONTROLS AS REQUIRED.
2. REMOVE EXISTING WB LANE PAVEMENT, SIDEWALK, AND DRIVEWAYS AS SHOWN IN PLANS.
3. CONSTRUCT WB PAVEMENT FOR AREAS SHOWN IN PLANS ON EAST COLLEGE STREET.
4. INSTALL PERMANENT PAVEMENT MARKINGS AND SIGNAGE AS SHOWN IN PLANS.
5. THE DRIVEWAYS LOCATED AT STATIONS 17+08.37 AND 17+52.66 ARE TO BE CONSTRUCTED AT SEPERATE TIMES.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL

CONSTRUCTION NARRATIVE

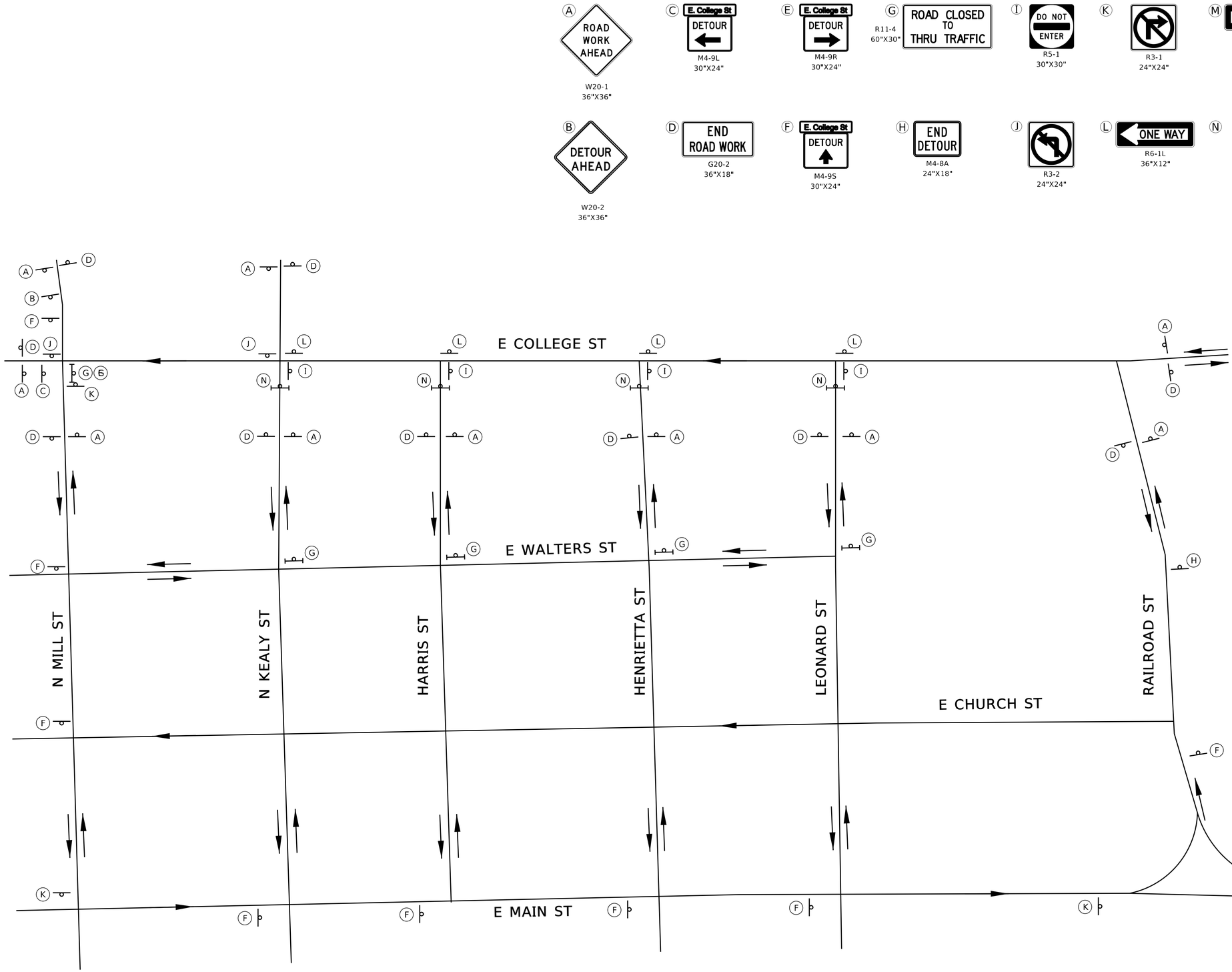
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-gn-narrative01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0" 1"

SHEET NAR-01
SEQ. 11

MicroStation V8 User:02446 OfficeOn Site
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Date: Aug 08, 2024 - 02:09:28 PM



NOTES:

1. SIGNING SHOWN ON THIS SHEET IS DIAGRAMMATIC ONLY AND DOES NOT SERVE AS A TRAFFIC CONTROL PLAN.
2. DURING ACTIVE WORK PERIODS, LIMIT THE WORK AREA TO ONE INTERSECTION OR ONE BLOCK AT A TIME WHILE PROVIDING CONTINUOUS ACCESS ALONG ADJACENT SIDE STREETS AND ALLEYS.
3. DURING NON-WORK PERIOD HOURS, CONTRACTOR SHALL RESTORE ACCESS THROUGH INTERSECTION AND TO AFFECTED DRIVEWAYS.
4. PROVIDE A MINIMUM 48 HOUR ADVANCE NOTIFICATION TO RESIDENTS OF ANY IMPACTS TO STREET/DRIVEWAY ACCESS.
5. CONTRACTOR SHALL MAINTAIN ACCESS FOR DELIVERIES AND TRASH COLLECTION. THIS INCLUDES MARKING TRASH BINS AND MOVING TO ACCESSIBLE AREAS, AND RETURNING THEM TO PROPERTIES ON DESIGNATED GARBAGE/RECYCLE COLLECTION DAYS.
6. EMERGENCY ACCESS SHALL BE MADE AVAILABLE AT ALL TIMES TO ALL PROPERTIES DURING CONSTRUCTION. EQUIPMENT SUCH AS STEEL PLATES TO CLOSE TRENCHES SHALL BE AVAILABLE ON SITE AT ALL TIMES TO PROVIDE EMERGENCY ACCESS.

LEGEND:

- SIGN MOUNTED ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH SIGN

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED PROFESSIONAL ENGINEER
08/08/2024

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12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
DETOUR PLAN
PHASE I

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-pl-detour01.sht

NO.	ISSUES	BY	DATE

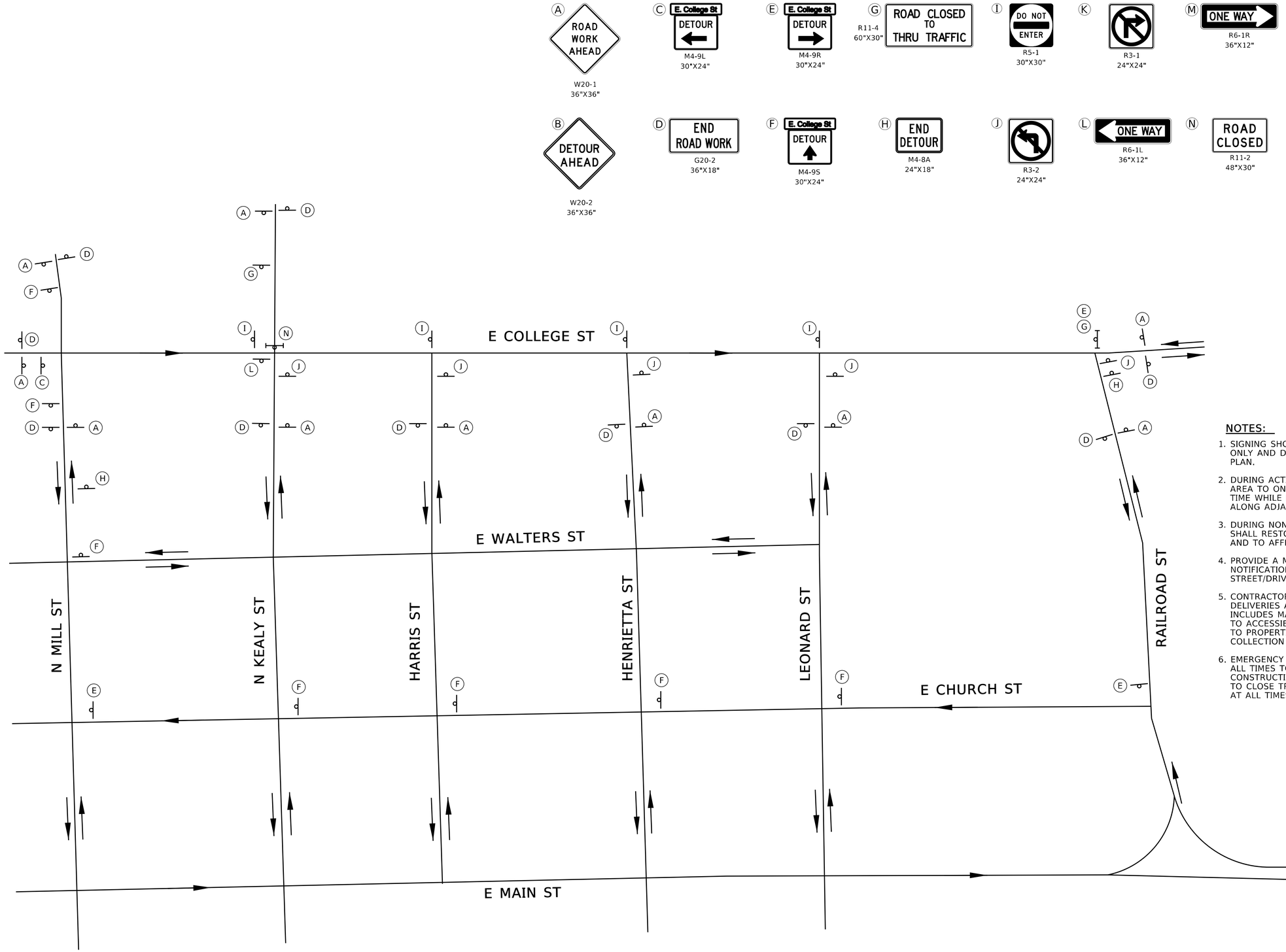
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SHEET
DTP-01

SEQ.
12

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NOTES:

1. SIGNING SHOWN ON THIS SHEET IS DIAGRAMMATIC ONLY AND DOES NOT SERVE AS A TRAFFIC CONTROL PLAN.
2. DURING ACTIVE WORK PERIODS, LIMIT THE WORK AREA TO ONE INTERSECTION OR ONE BLOCK AT A TIME WHILE PROVIDING CONTINUOUS ACCESS ALONG ADJACENT SIDE STREETS AND ALLEYS.
3. DURING NON-WORK PERIOD HOURS, CONTRACTOR SHALL RESTORE ACCESS THROUGH INTERSECTION AND TO AFFECTED DRIVEWAYS.
4. PROVIDE A MINIMUM 48 HOUR ADVANCE NOTIFICATION TO RESIDENTS OF ANY IMPACTS TO STREET/DRIVEWAY ACCESS.
5. CONTRACTOR SHALL MAINTAIN ACCESS FOR DELIVERIES AND TRASH COLLECTION. THIS INCLUDES MARKING TRASH BINS AND MOVING TO ACCESSIBLE AREAS, AND RETURNING THEM TO PROPERTIES ON DESIGNATED GARBAGE/RECYCLE COLLECTION DAYS.
6. EMERGENCY ACCESS SHALL BE MADE AVAILABLE AT ALL TIMES TO ALL PROPERTIES DURING CONSTRUCTION. EQUIPMENT SUCH AS STEEL PLATES TO CLOSE TRENCHES SHALL BE AVAILABLE ON SITE AT ALL TIMES TO PROVIDE EMERGENCY ACCESS.

LEGEND:

- SIGN MOUNTED ON TEMPORARY SUPPORT
- TYPE III BARRICADE WITH SIGN

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
DETOUR PLAN
PHASE II

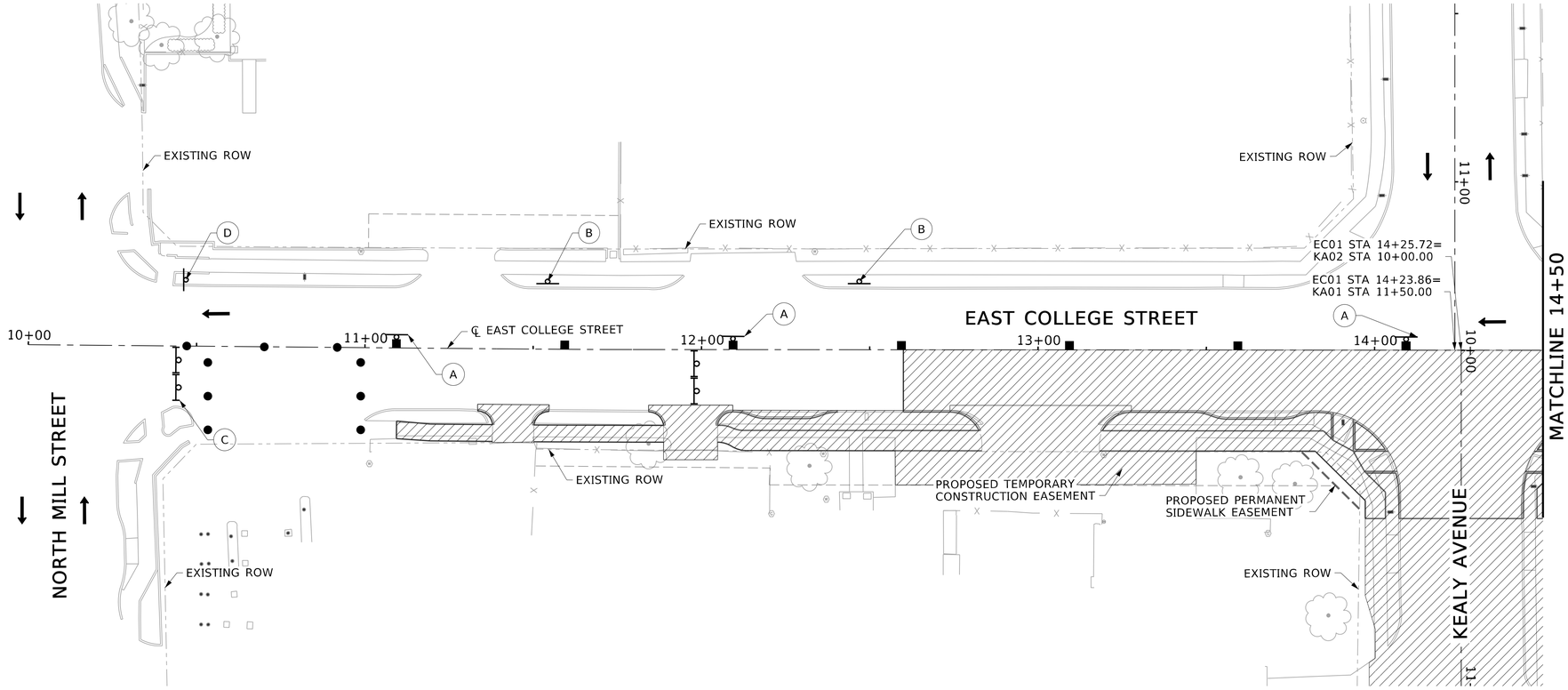
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DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
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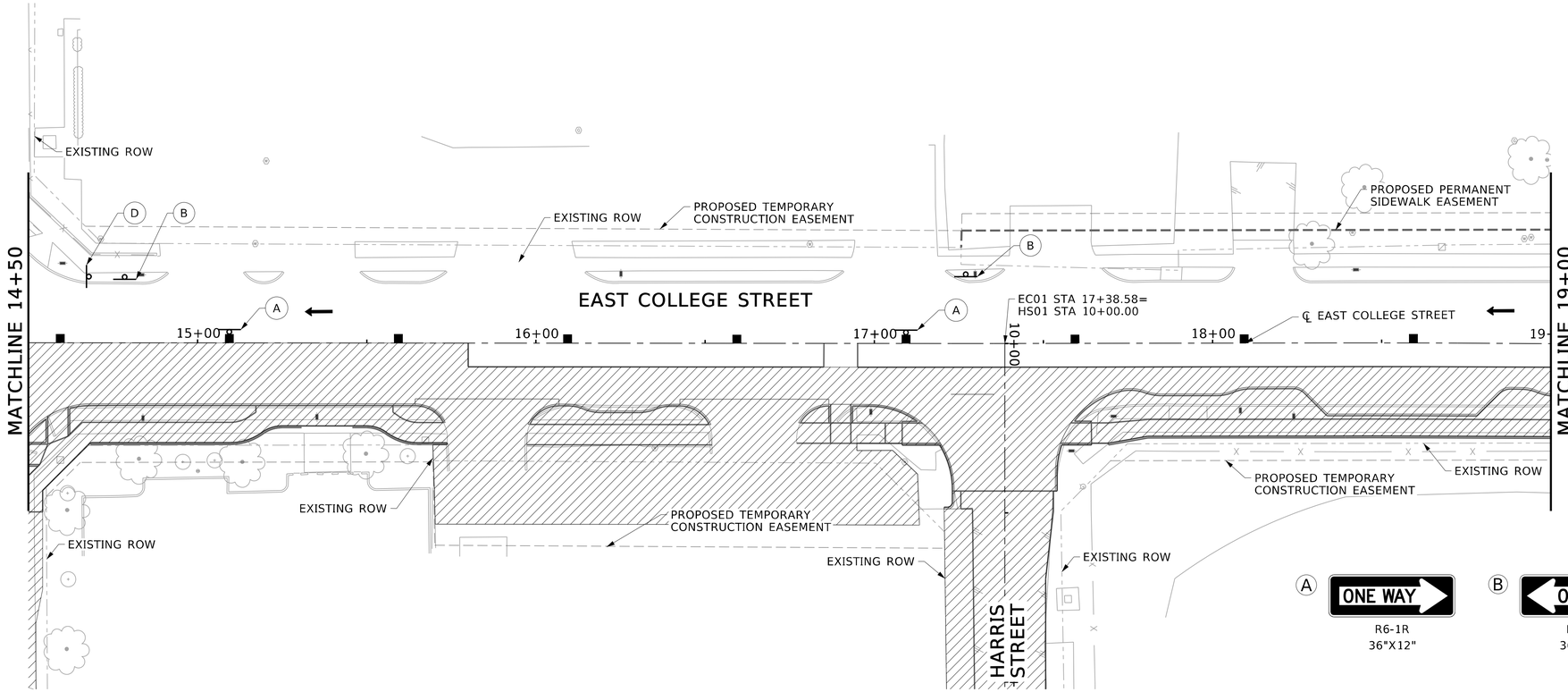
NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
DTP-02
SEQ.
13

MicroStation V8 User: 02446 Office:On Site
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Plot Scale: 200.000 ' / in. Project: Freese and Nichols, Inc. - True Type Fonts
Date: Aug. 08, 2024 - 02:09:39 PM





N

0 10' 20' 40'
SCALE IN FEET

LEGEND

- PHASE I CONSTRUCTION
- TYPE III BARRICADE WITH SIGN
- TRAFFIC DIRECTION OF FLOW
- BARRELS
- CONES
- SIGN

NOTES

1. SIGNAGE SHOWN ON THIS SHEET IS DIAGRAMMATIC ONLY AND DOES NOT SERVE AS A TRAFFIC CONTROL PLAN.
2. DURING ACTIVE WORK PERIODS, LIMIT THE WORK TO ONE INTERSECTION OR ONE BLOCK AT A TIME WHILE PROVIDING CONTINUOUS ACCESS ALONG ADJACENT SIDE STREETS AND ALLEYS.
3. DURING NON-WORK PERIOD HOURS, CONTRACTOR SHALL RESTORE ACCESS THROUGH INTERSECTION AND TO AFFECTED DRIVEWAYS.
4. PROVIDE A MINIMUM 48 HOUR ADVANCE NOTIFICATION TO RESIDENTS OF ANY IMPACT TO STREET/DRIVEWAY ACCESS.
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B — ONE WAY — R6-1L — 36"X12"

C — ROAD CLOSED — R11-2 — 48"X30"

D — DO NOT ENTER — R5-1 — 30"X30"

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS — SIDNEY T. GREEN JR. — 137592 — LICENSED PROFESSIONAL ENGINEER

08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

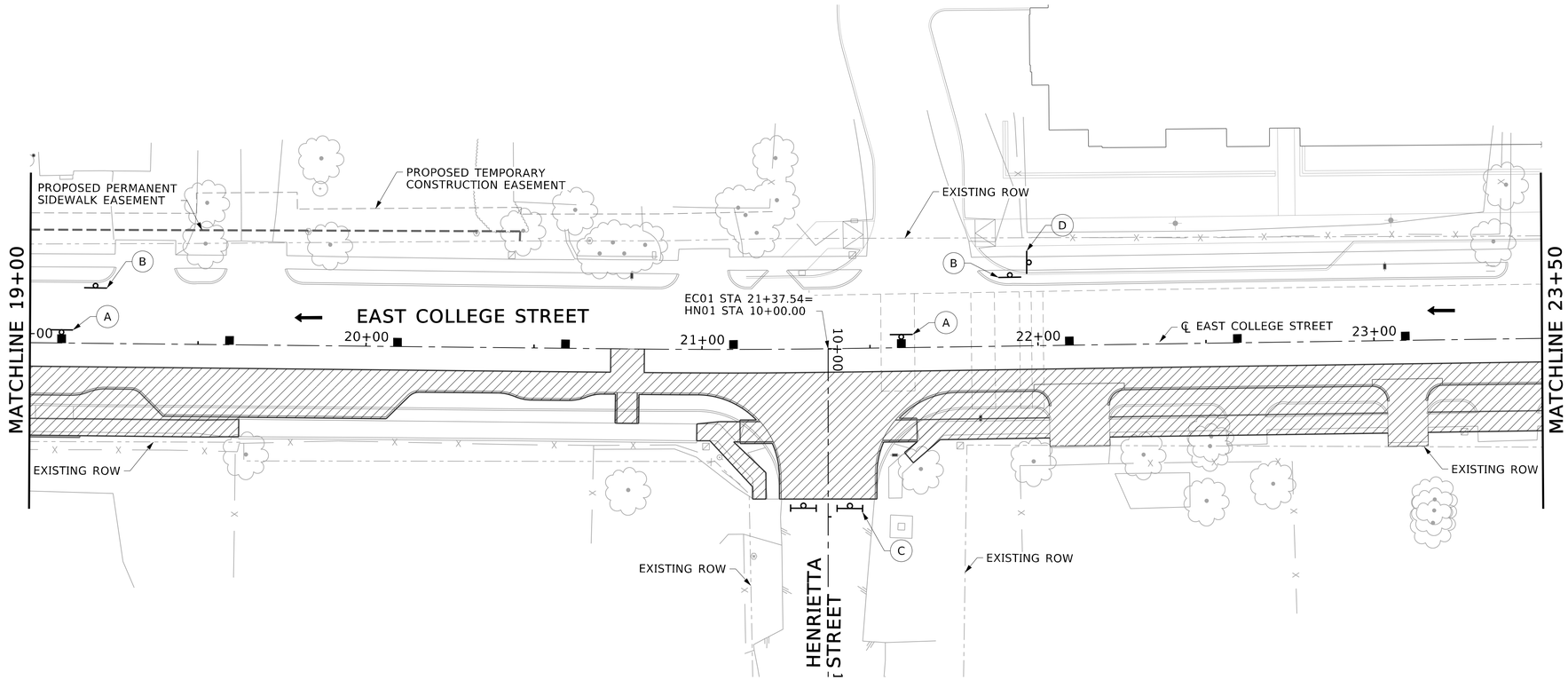
CIVIL
TRAFFIC CONTROL PHASE 1
BEGIN TO STA 19+00

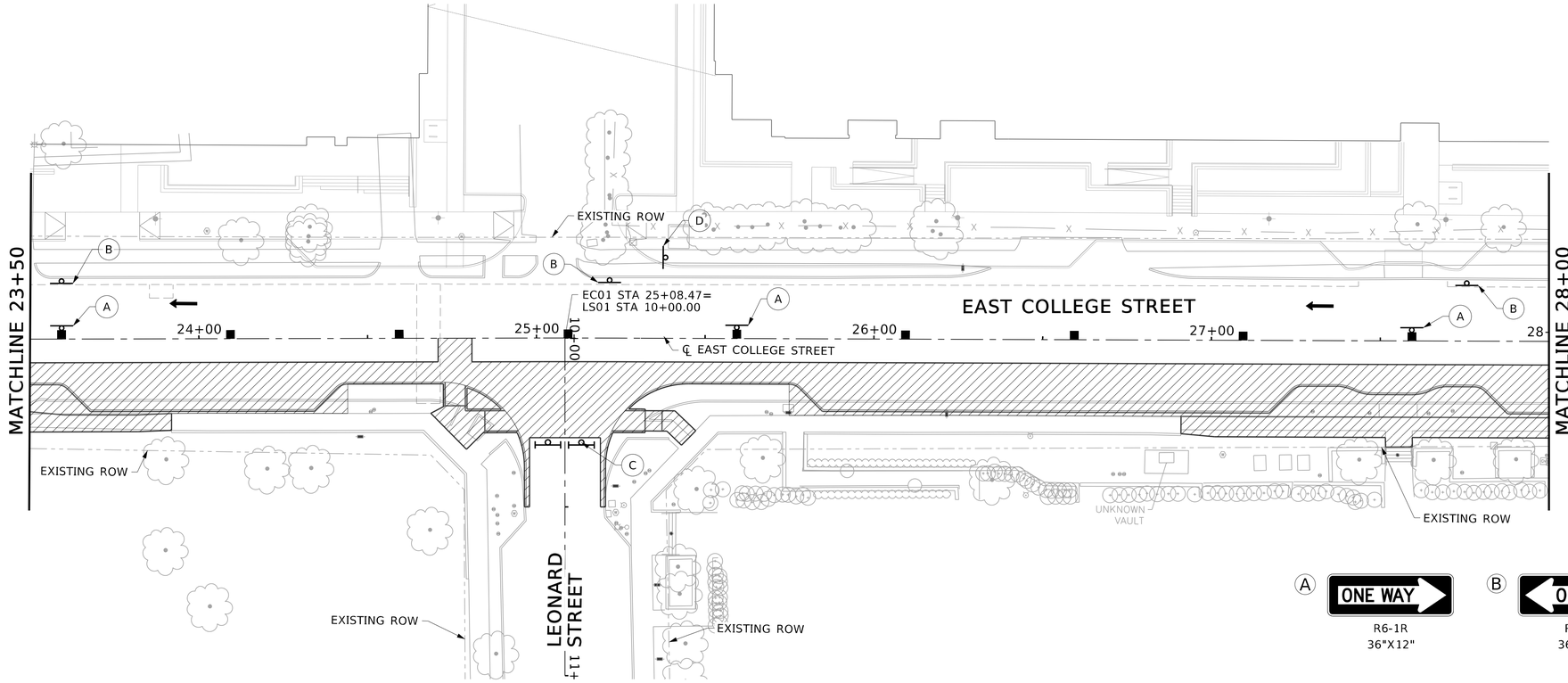
F&N JOB NO.	DATE	BY	NO.	ISSUES
LEW21241				
DATE AUG 2022				
DESIGNED STG				
DRAWN BA				
REVISED				
CHECKED ADH				
FILE NAME cv-trt-pl-tcp01.sht				

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
TCP-01
SEQ.
14

MicroStation V8 User: 02446 Office:On Site
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Model: Default
Project: Freese and Nichols, Inc. - True Type Fonts





N

0 10' 20' 40'
SCALE IN FEET

LEGEND

- PHASE I CONSTRUCTION
- TYPE III BARRICADE WITH SIGN
- TRAFFIC DIRECTION OF FLOW
- BARRELS
- CONES
- SIGN

NOTES

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
TRAFFIC CONTROL PHASE 1
STA 19+00 TO 28+00

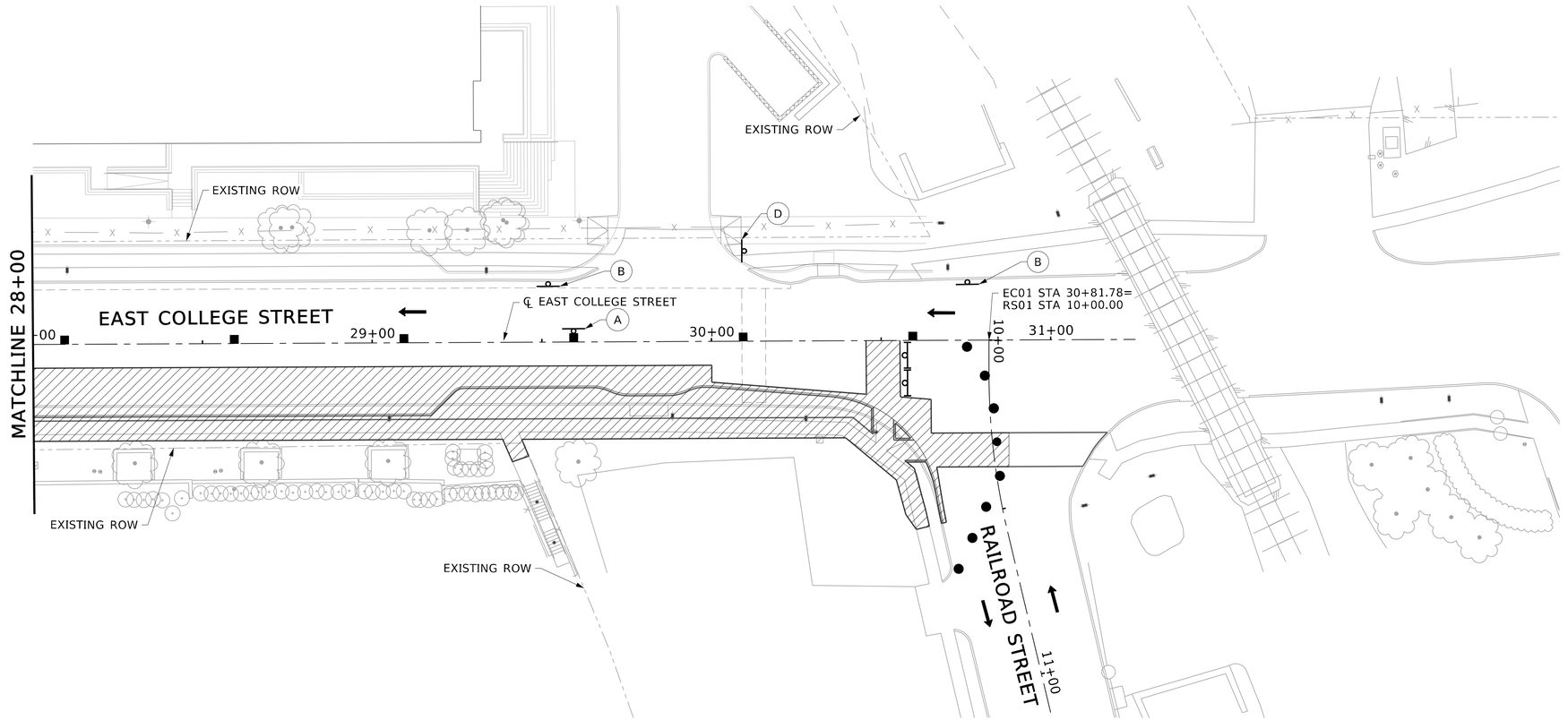
F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH

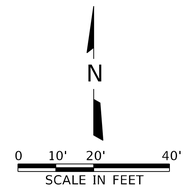
NO.	ISSUES	BY	DATE	FILE NAME
				cv-trt-pl-tcp02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TCP-02
SEQ. 15

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Plotted: Aug. 08, 2024 - 02:09:56 PM
Model: Default
Project: Freese and Nichols, Inc. - True Type Fonts





LEGEND

- PHASE I CONSTRUCTION
- TYPE III BARRICADE WITH SIGN
- TRAFFIC DIRECTION OF FLOW
- BARRELS
- CONES
- SIGN

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R6-1R
36"X12"



R6-1L
36"X12"



R11-2
48"X30"



R5-1
30"X30"

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TEXAS REGISTERED ENGINEERING FIRM F-2144

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CITY OF LEWISVILLE

EAST COLLEGE STREET IMPROVEMENTS

CIVIL

TRAFFIC CONTROL PHASE 1
STA 28+00 TO END

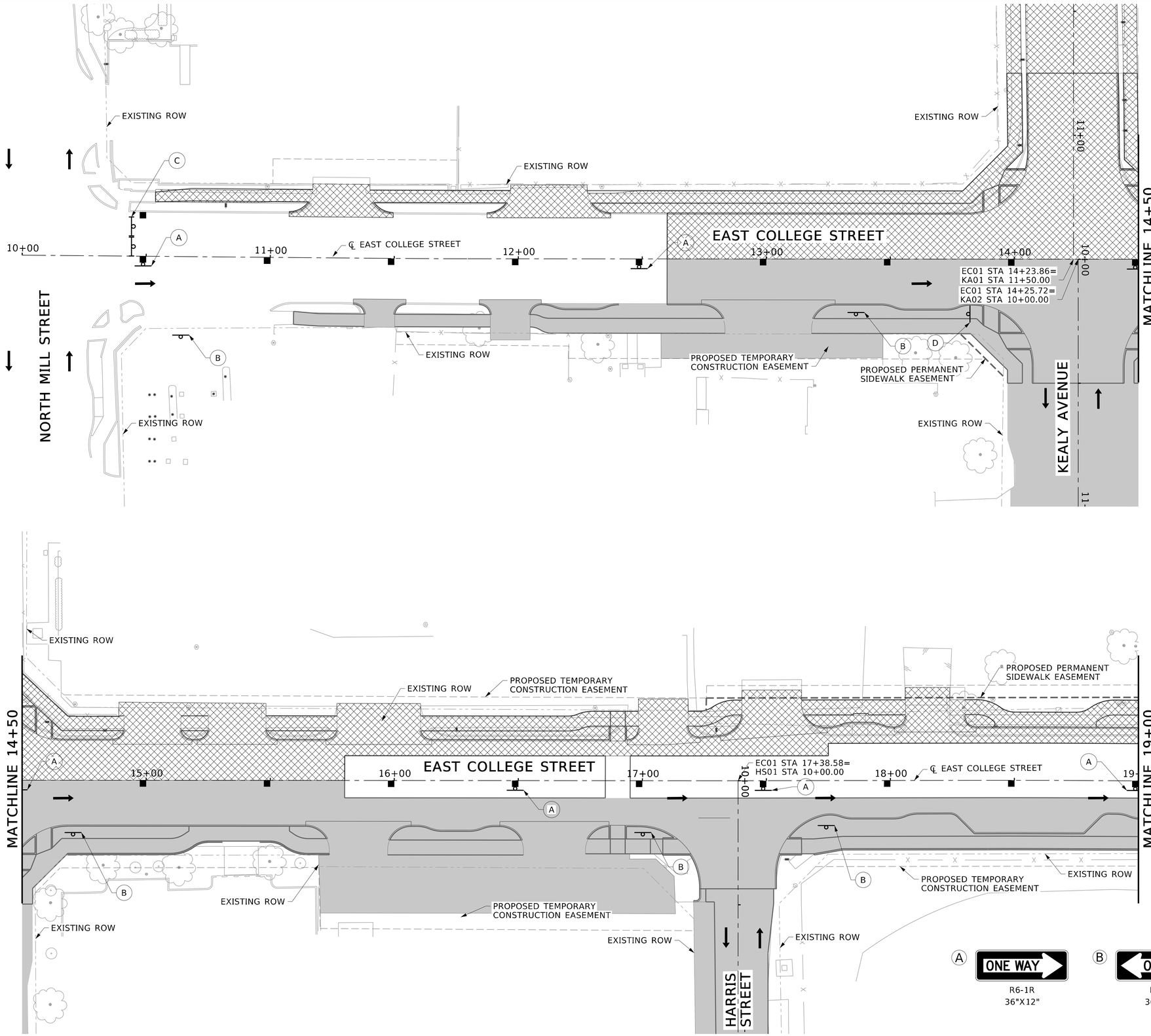
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DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
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NO. ISSUES | BY | DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TCP-03
SEQ. 16

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Date: Aug. 08, 2024 - 02:10:02 PM Project: Freese and Nichols, Inc. - True Type Fonts



LEGEND

- PHASE II CONSTRUCTION
- PREVIOUSLY CONSTRUCTED
- TYPE III BARRICADE WITH SIGN
- TRAFFIC DIRECTION OF FLOW
- BARRELS
- CONES
- SIGN

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TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS — SIDNEY T. GREEN JR. — 137592 — LICENSED PROFESSIONAL ENGINEER
08/08/2024

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12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
TRAFFIC CONTROL PHASE 2
BEGIN TO STA 19+00

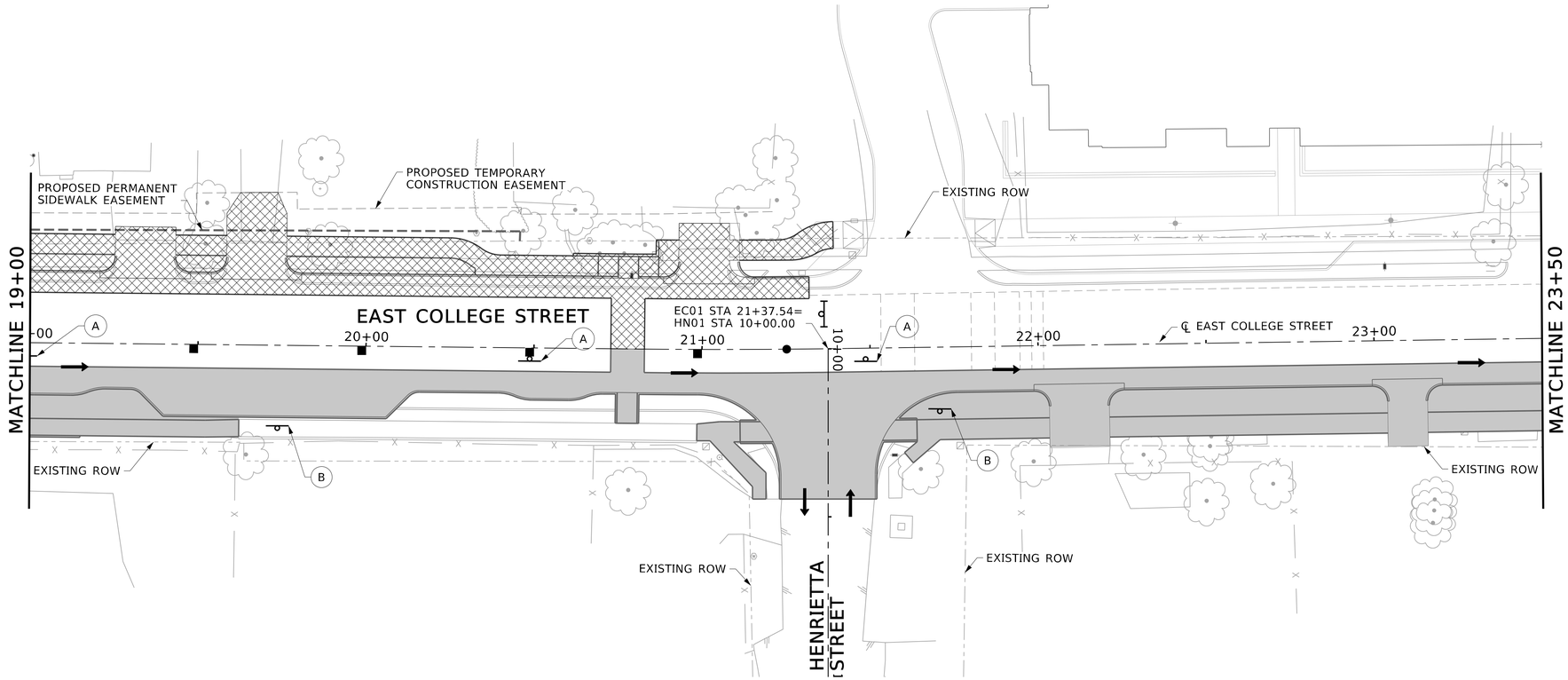
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DRAWN	BA
REVISED	
CHECKED	ADH
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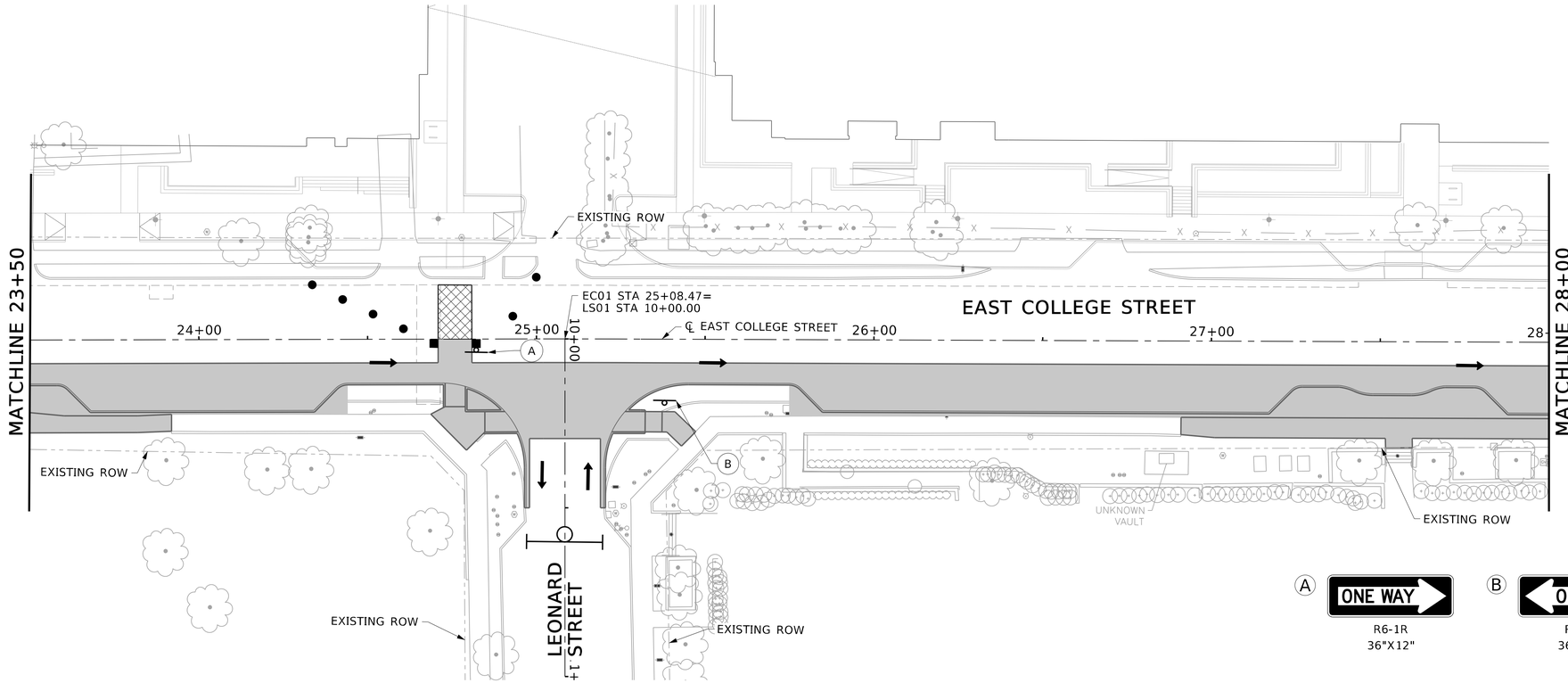
NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

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SEQ. 17

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Date: Aug. 08, 2024 - 02:10:04 PM
Model: Default
Project: Freese and Nichols, Inc. - True Type Fonts





N

0 10' 20' 40'
SCALE IN FEET

LEGEND

- PHASE II CONSTRUCTION
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
EAST COLLEGE STREET PHASE 2
TRAFFIC CONTROL PHASE 2
STA 19+00 TO 28+00

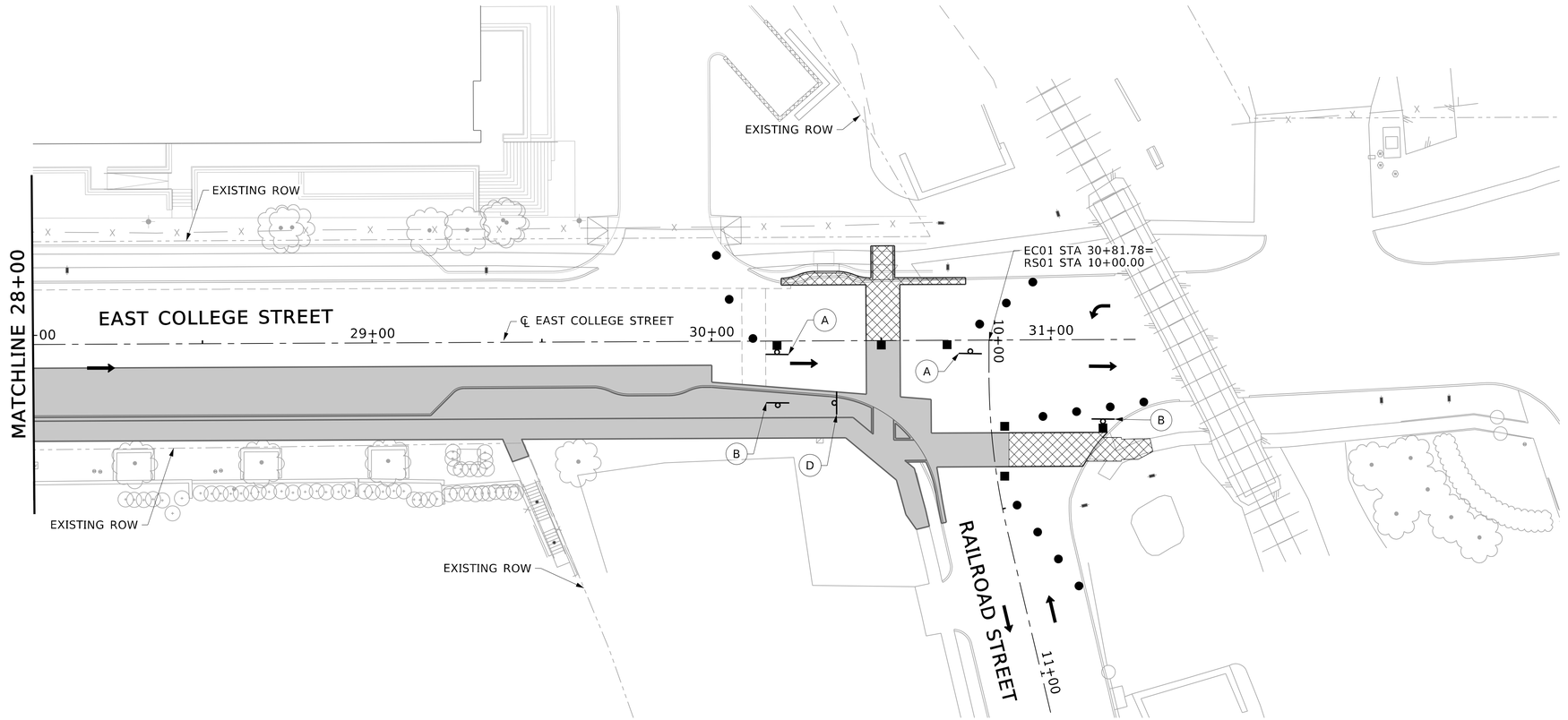
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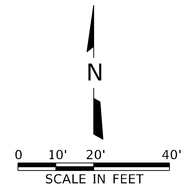
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DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-tcp05.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TCP-05
SEQ. 18

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Date: Aug. 08, 2024 - 02:10:09 PM Project Freese and Nichols, Inc. - True Type Fonts





LEGEND

- PHASE II CONSTRUCTION
- PREVIOUSLY CONSTRUCTED
- TYPE III BARRICADE WITH SIGN
- TRAFFIC DIRECTION OF FLOW
- BARRELS
- CONES
- SIGN

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R6-1R
36"X12"



R6-1L
36"X12"



R11-2
48"X30"



R5-1
30"X30"

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CITY OF LEWISVILLE

EAST COLLEGE STREET IMPROVEMENTS

CIVIL

TRAFFIC CONTROL PHASE 2
STA 28+00 TO END

F&N JOB NO.	LEW21241
DATE	AUG 2022
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DRAWN	BA
REVISED	
CHECKED	ADH
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NO.	ISSUES	BY	DATE

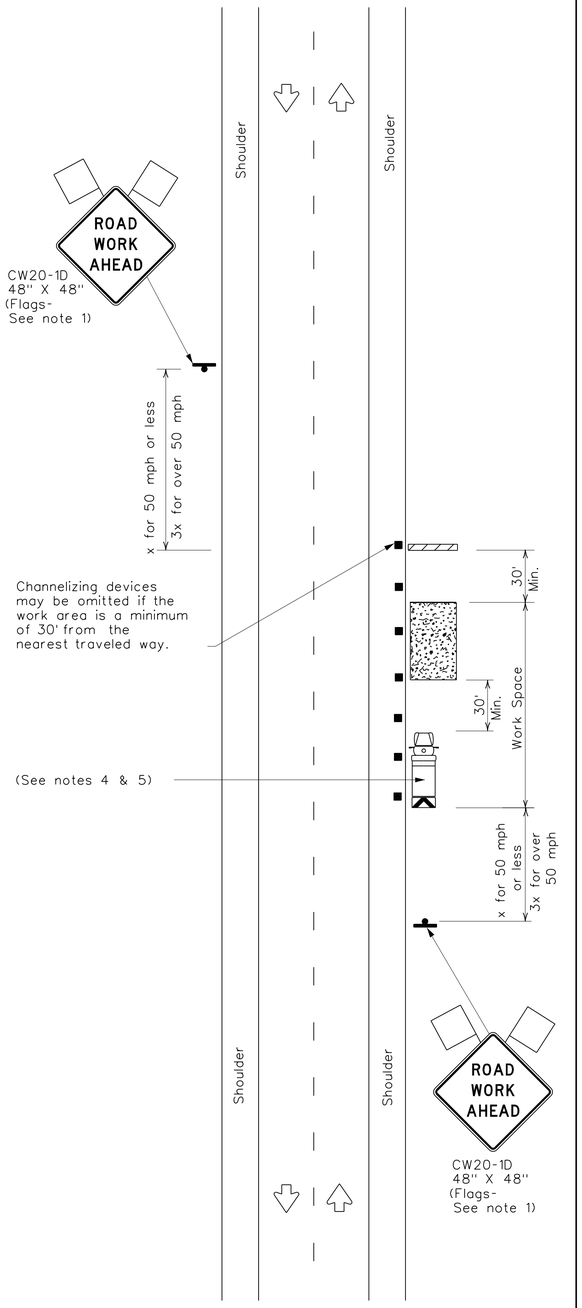
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SHEET
TCP-06
SEQ.
19

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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.

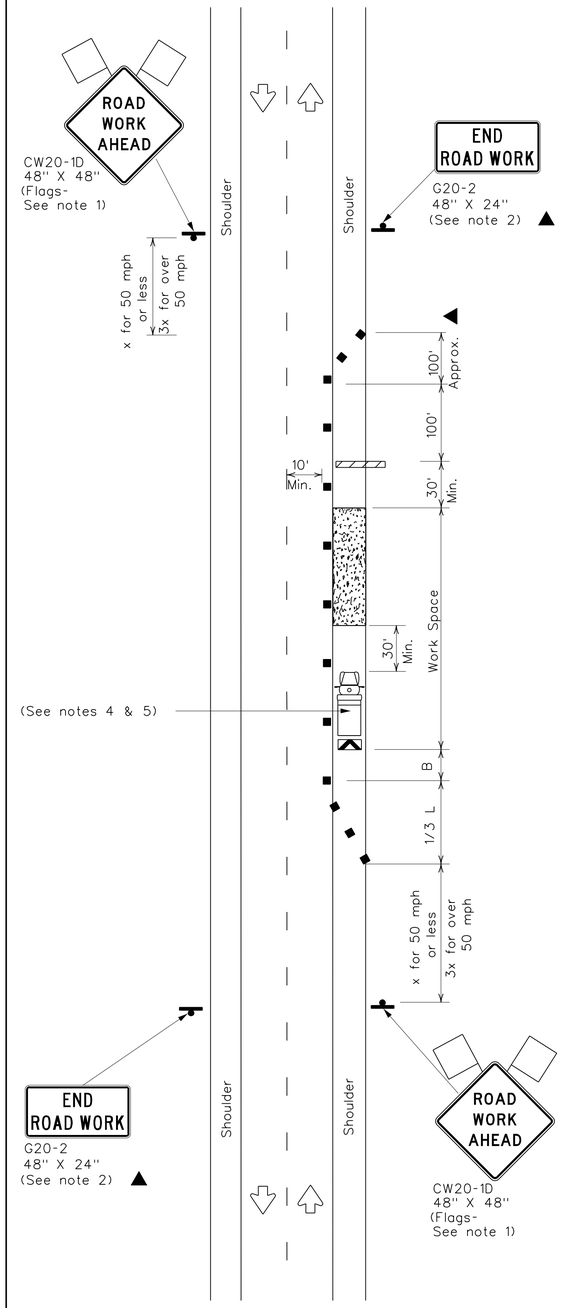
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TCP (2-1a)

WORK SPACE NEAR SHOULDER

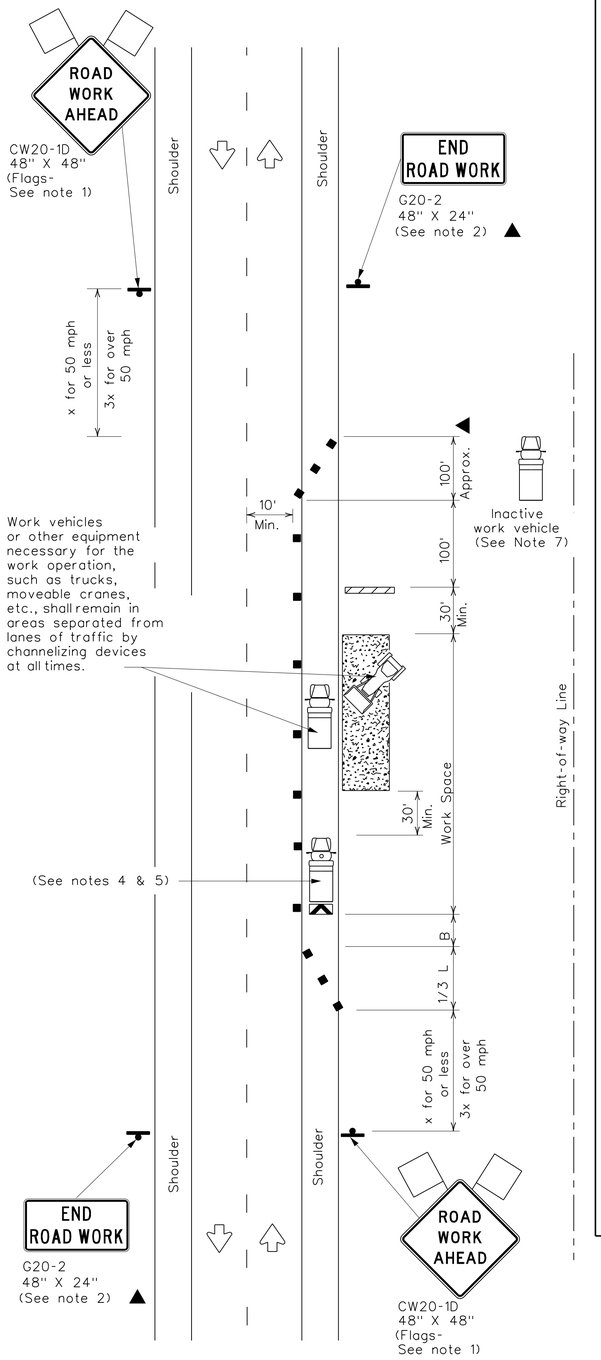
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER

Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER

Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

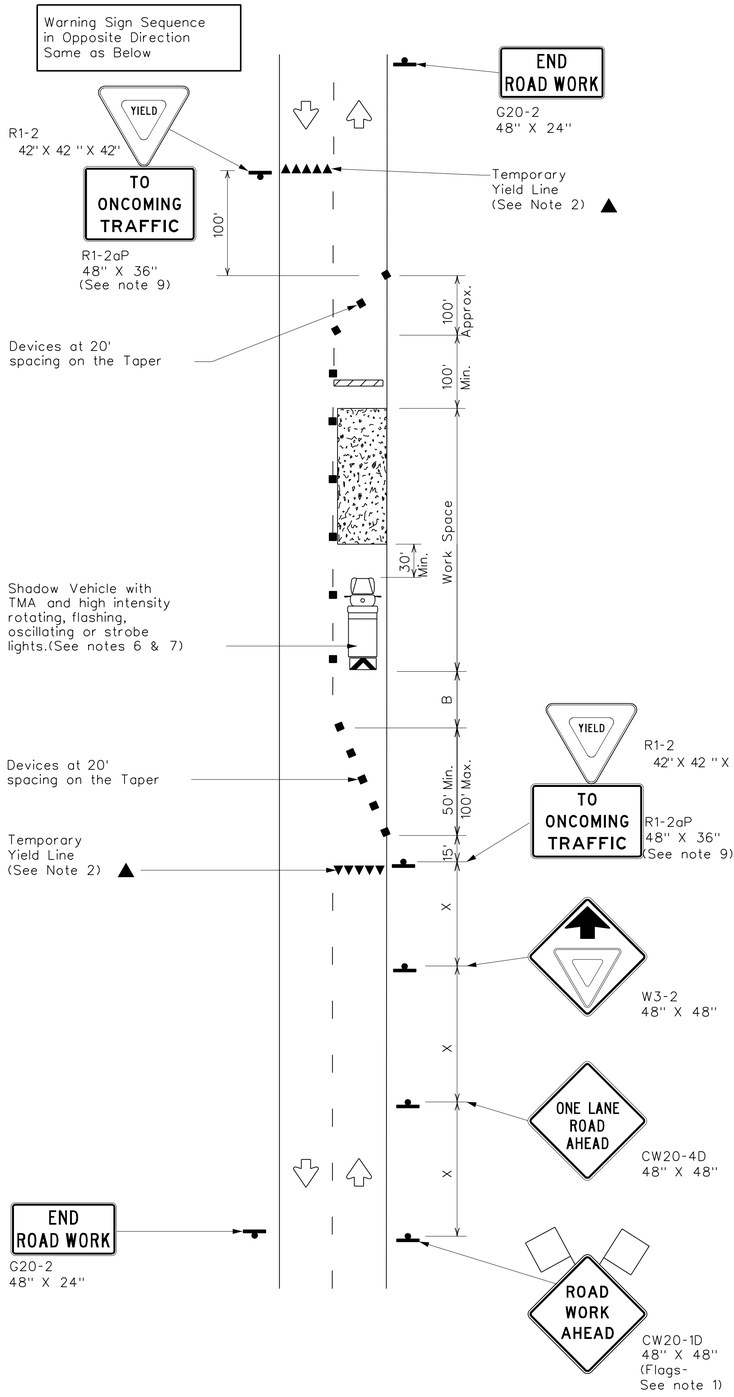
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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS				
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8-95 2-12				20
1-97 2-18				

161

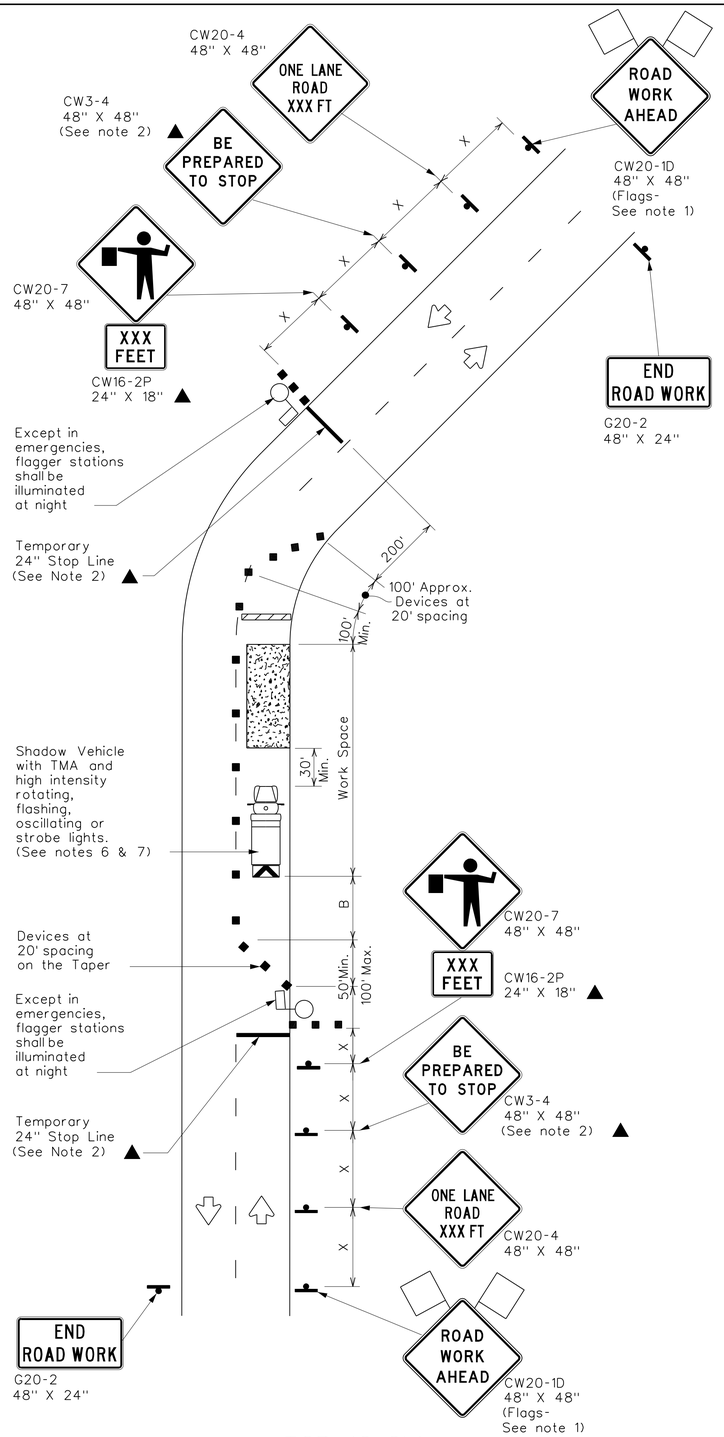
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TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



TCP (2-2b)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

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

TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situtations.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

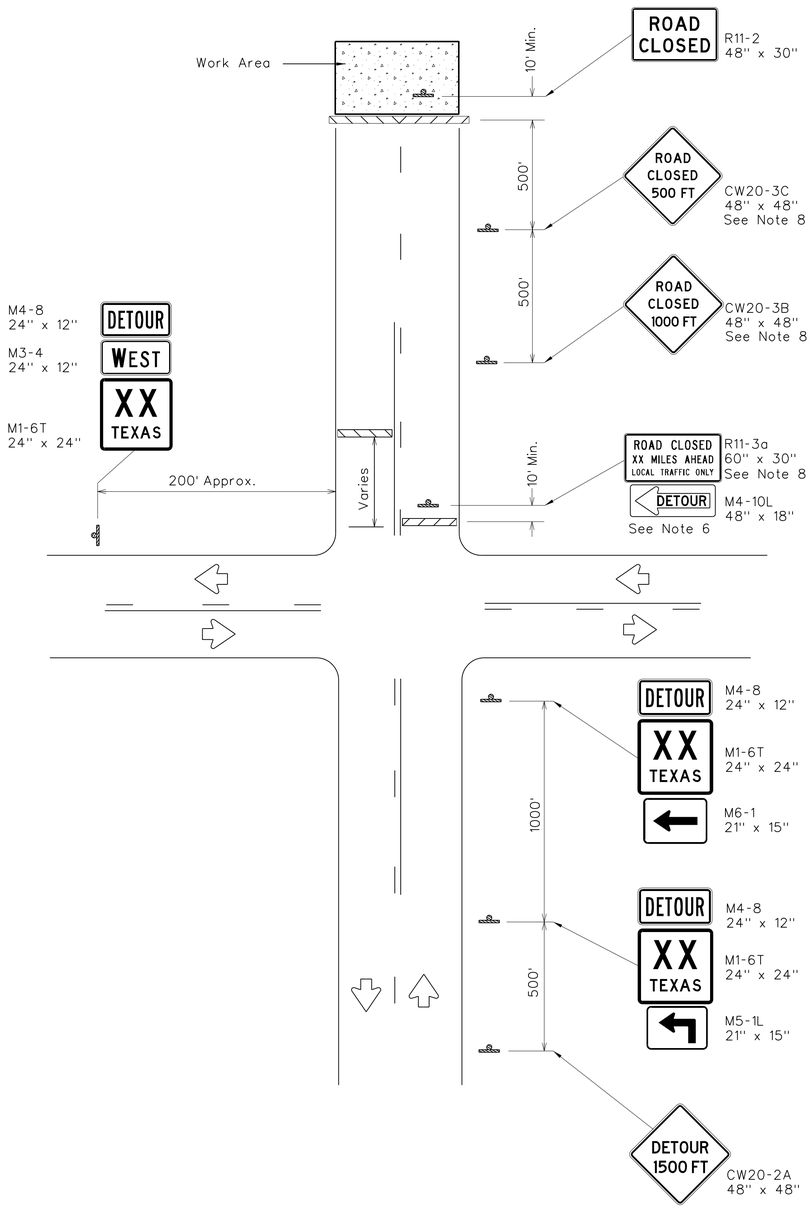
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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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1-97 2-12				21
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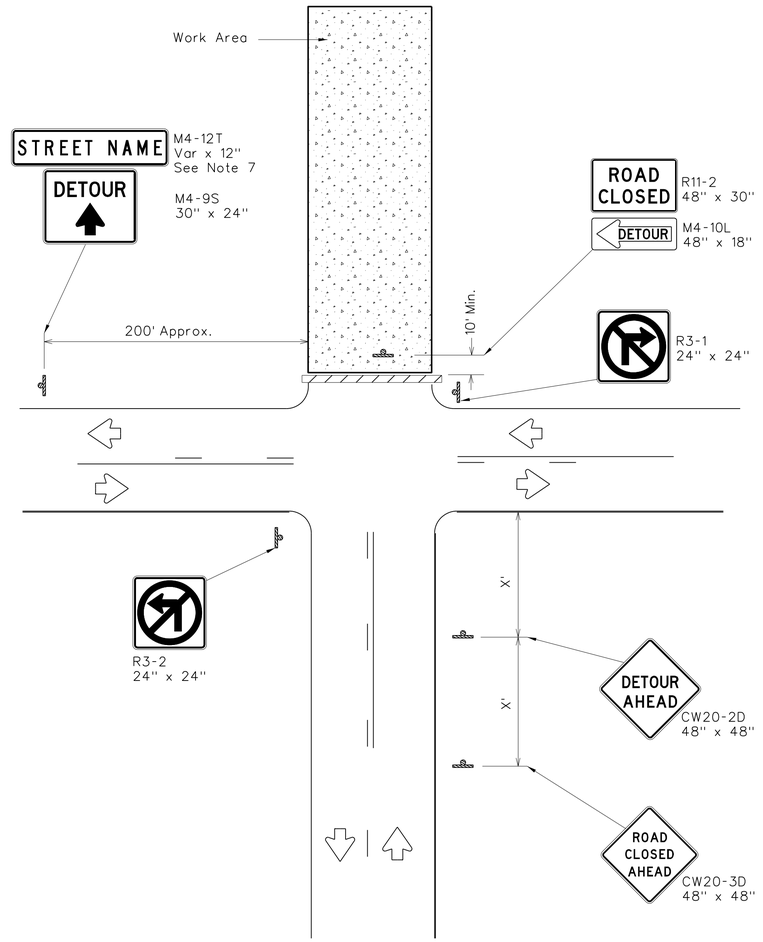
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ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

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

LEGEND	
	Type 3 Barricade
	Sign

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

* Conventional Roads Only

GENERAL NOTES

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.

2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).

3. Stockpiled materials shall not be placed on the traffic side of barricades.

4. Barricades at the road closure should extend from pavement edge to pavement edge.

5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.

6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.

7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.

8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.

9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

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©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS				
1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03				22

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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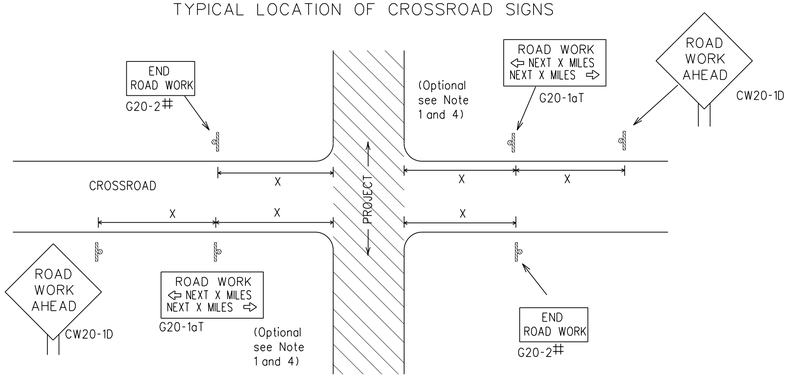
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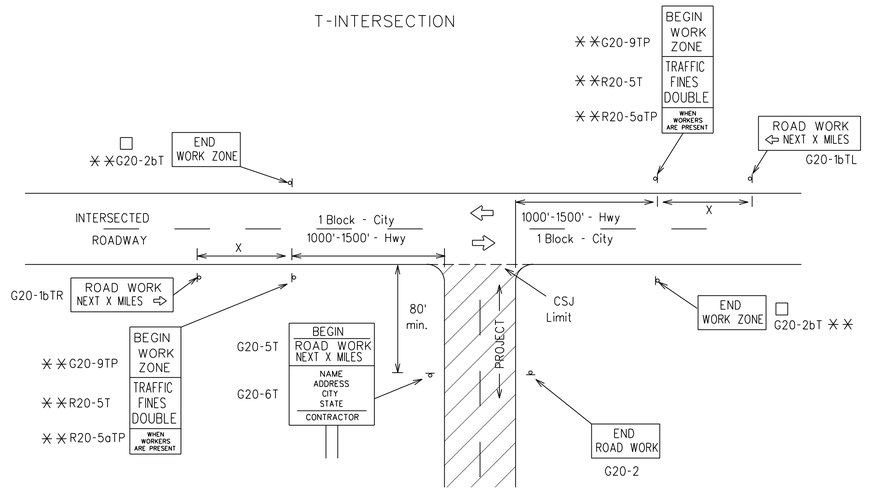
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING

1,5,6

SIZE

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

SPACING

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

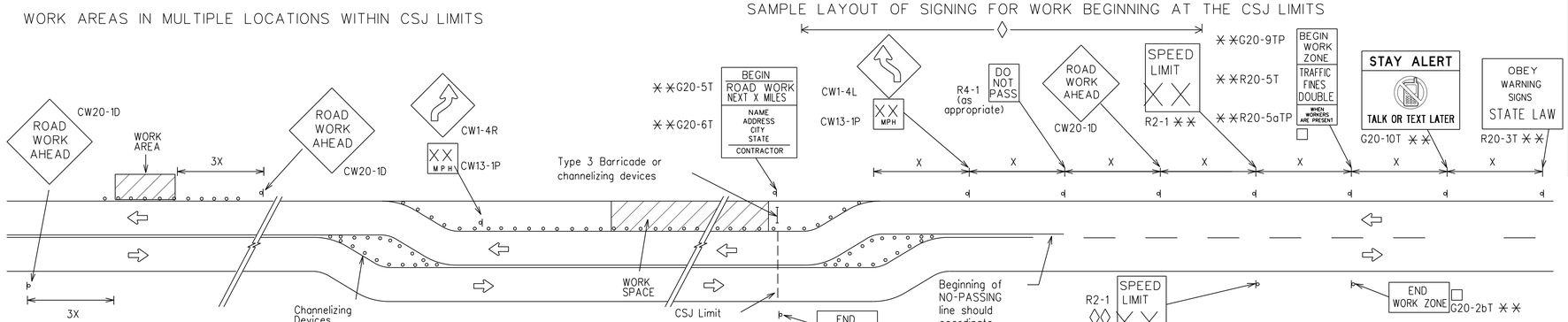
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

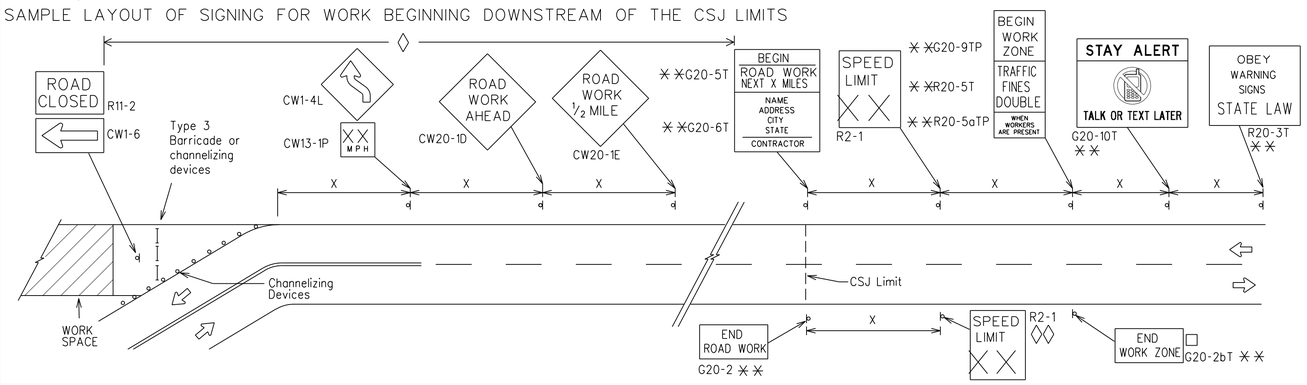
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING 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.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				24

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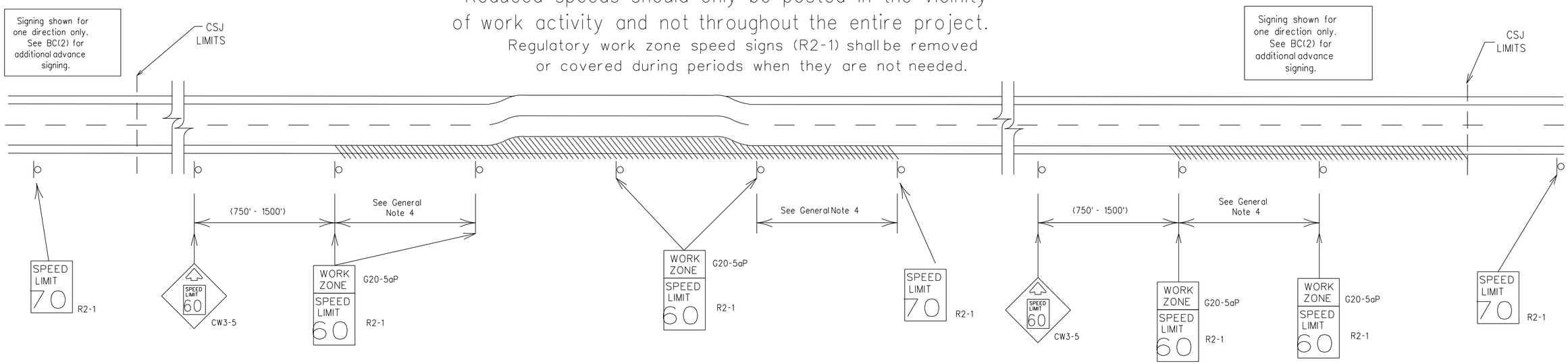
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.
Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

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Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

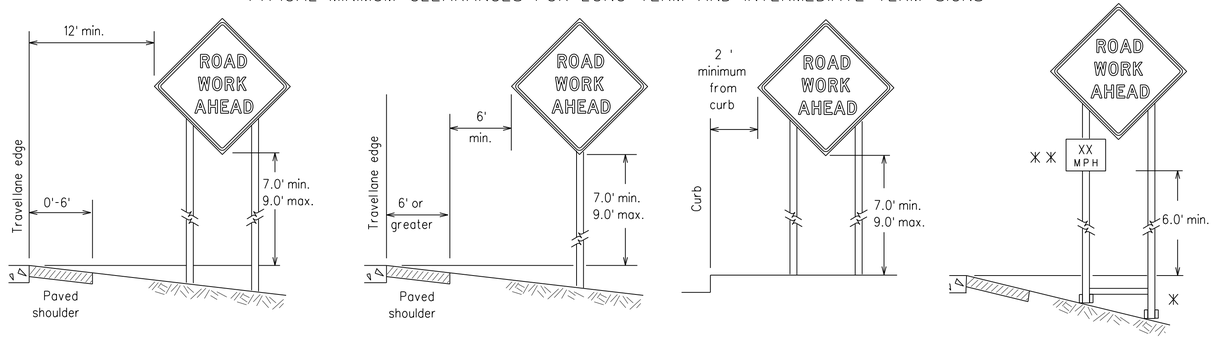
BC(3)-21

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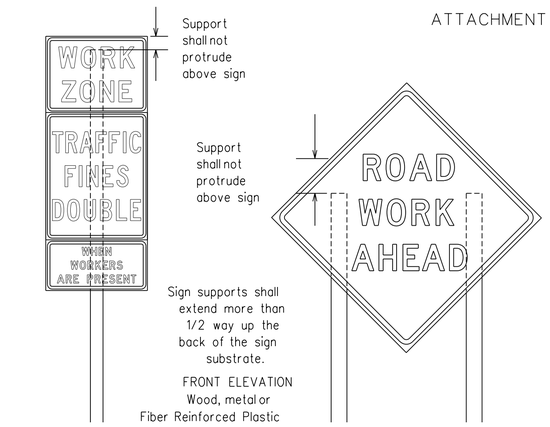
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



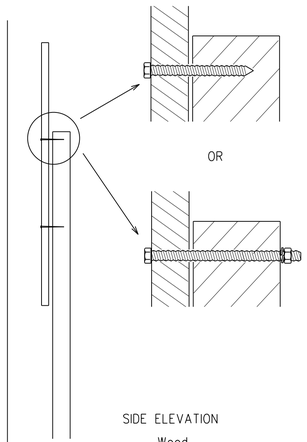
⁂ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic



SIDE ELEVATION
Wood

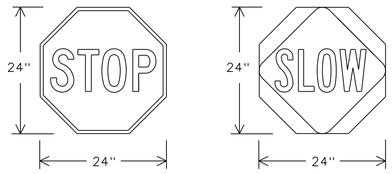
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				26

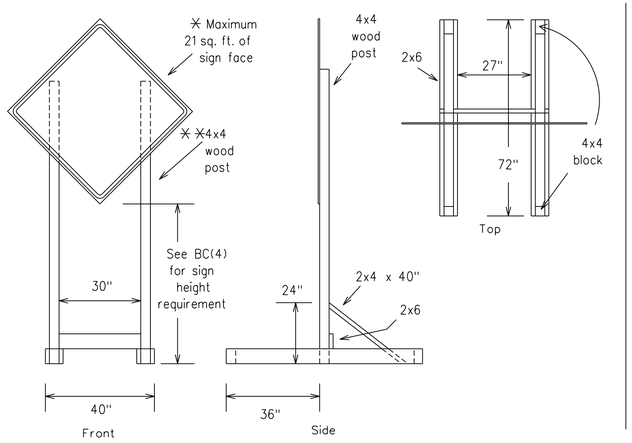
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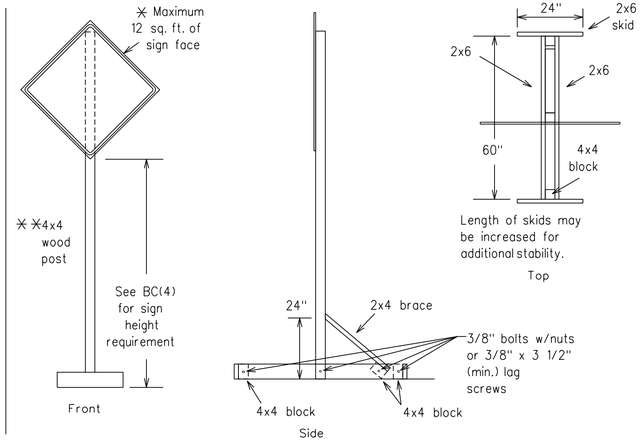
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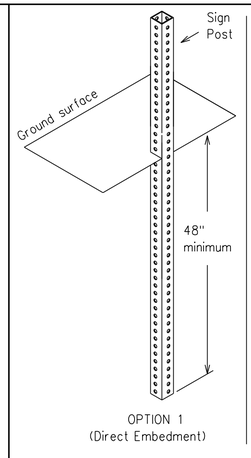
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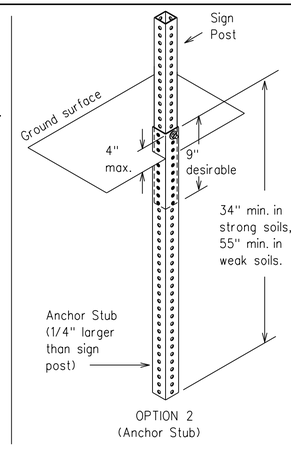


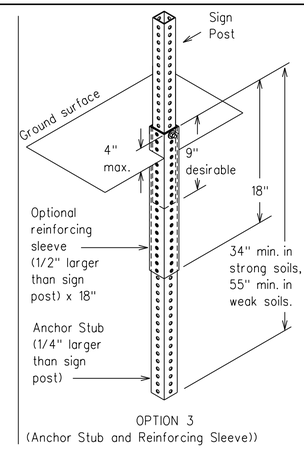


SKID MOUNTED WOOD SIGN SUPPORTS

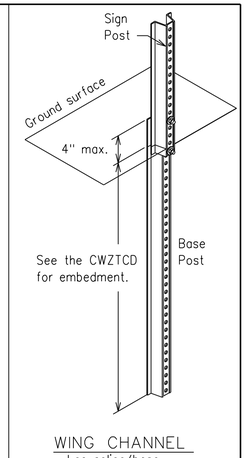
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS







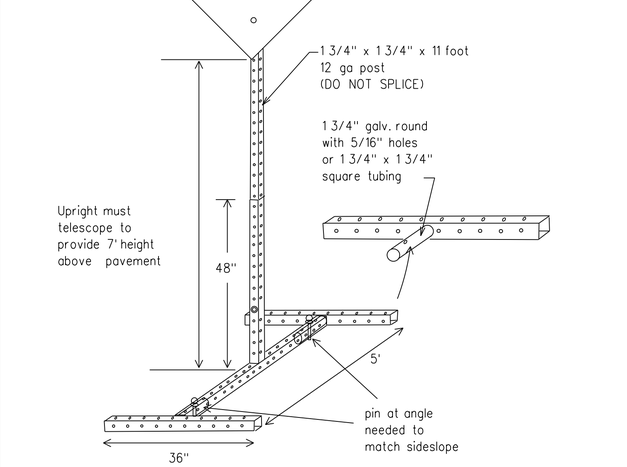
PERFORATED SQUARE METAL TUBING

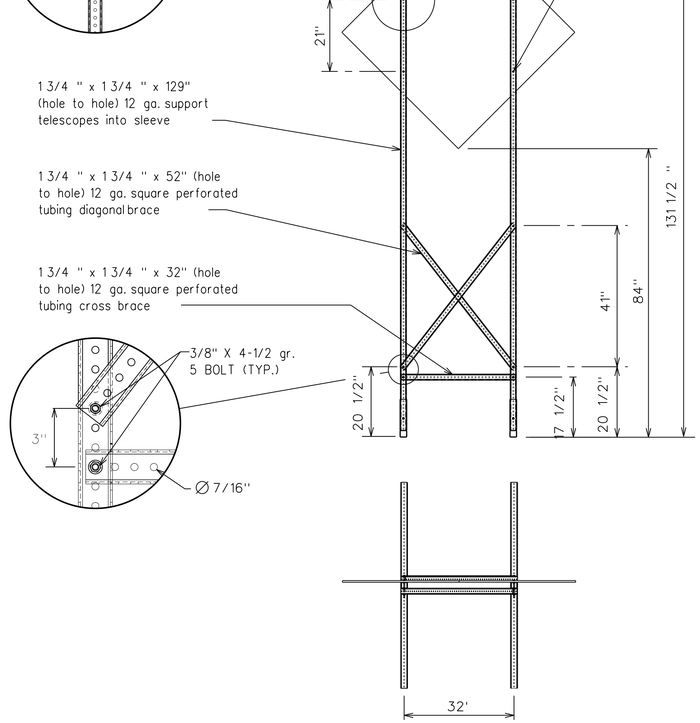


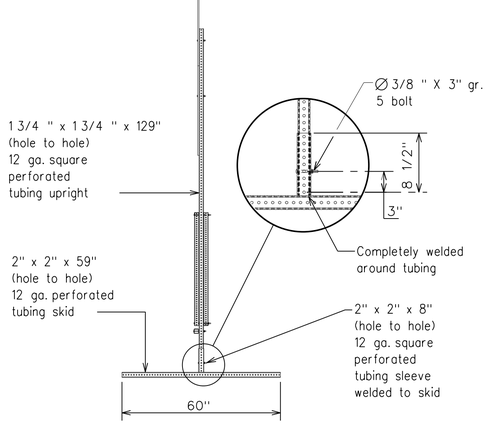
WING CHANNEL
Lap-splice/base bolted anchor

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

SHEET 5 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				27

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				28

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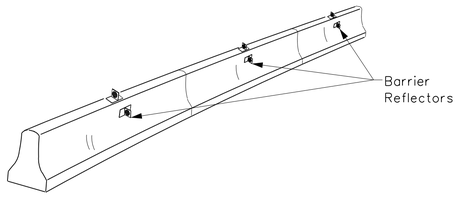
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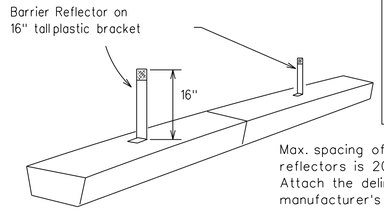
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1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors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



CONCRETE TRAFFIC BARRIER (CTB)

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

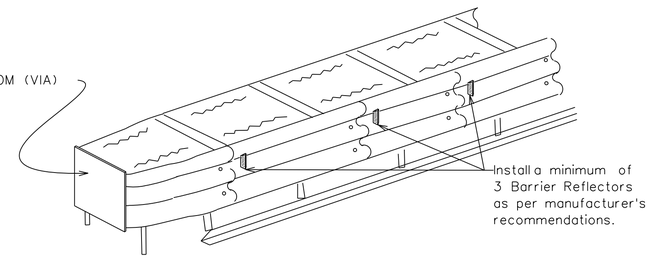


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

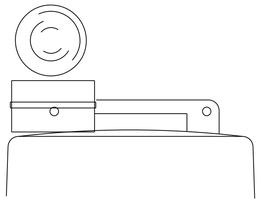


DELINEATION OF END TREATMENTS

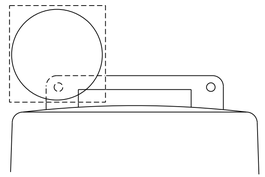
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

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

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

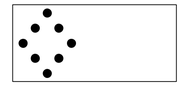
1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate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

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

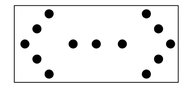
1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION"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

4 CORNER CAUTION

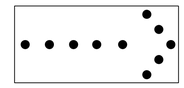
OR



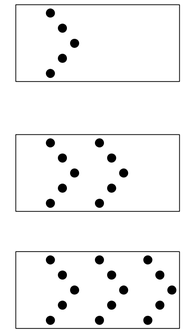
ALTERNATING DIAMOND CAUTION



DOUBLE ARROW



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



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

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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21				29

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

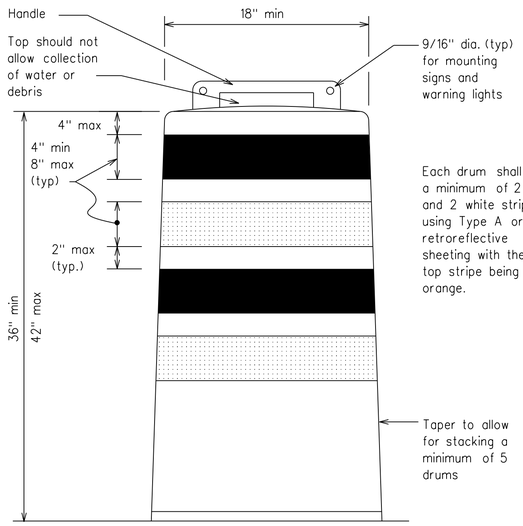
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

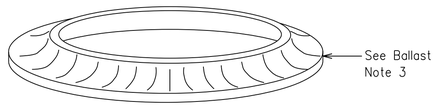
RETROREFLECTIVE SHEETING

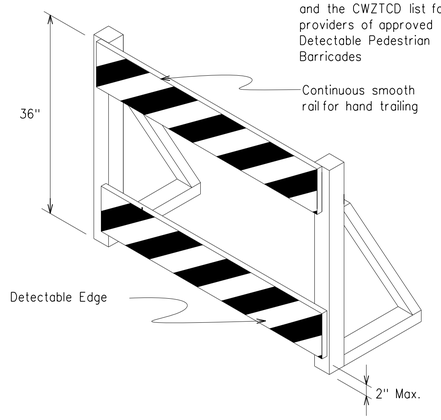
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

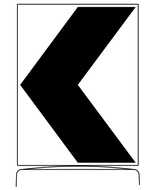




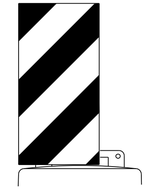


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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9-07 5-21				30
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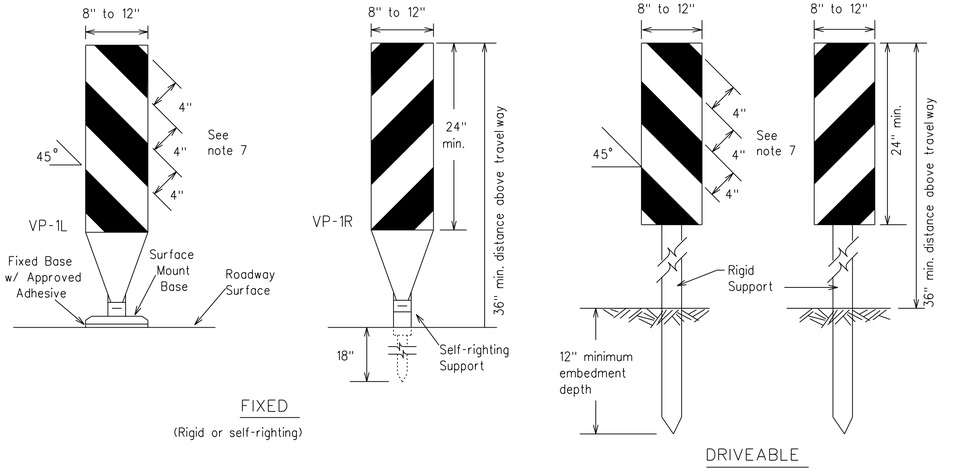
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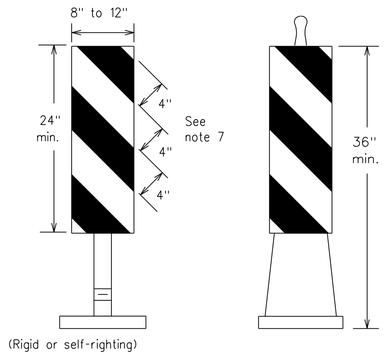
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FIXED

(Rigid or self-righting)

DRIVEABLE

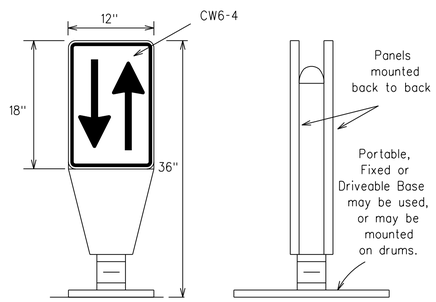


(Rigid or self-righting)

PORTABLE

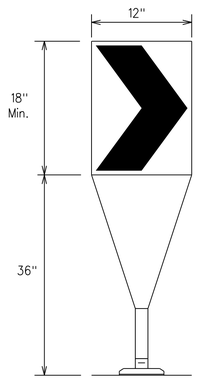
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



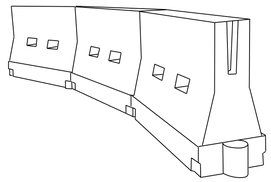
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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7-13 5-21				31

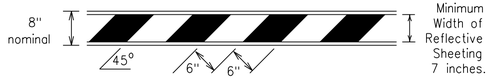
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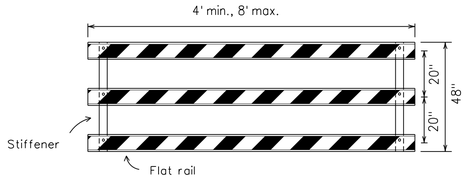
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



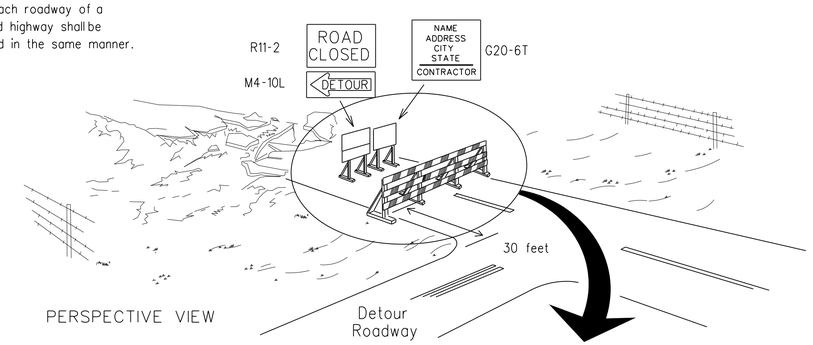
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

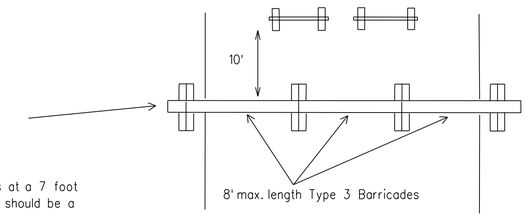
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

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

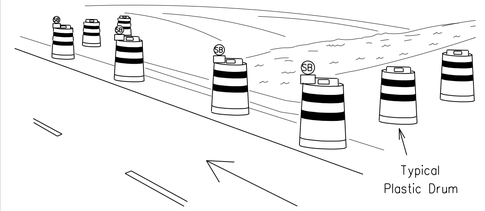
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

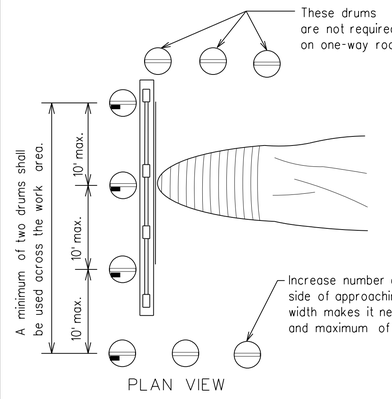
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

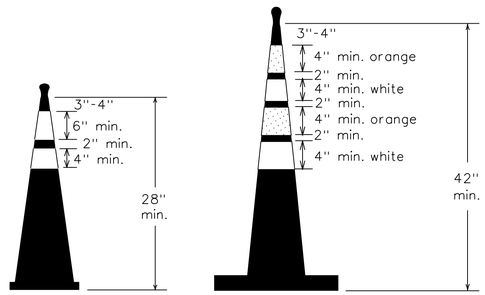
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



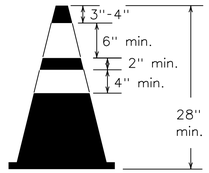
PLAN VIEW

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

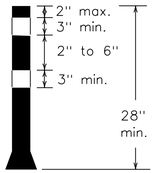
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

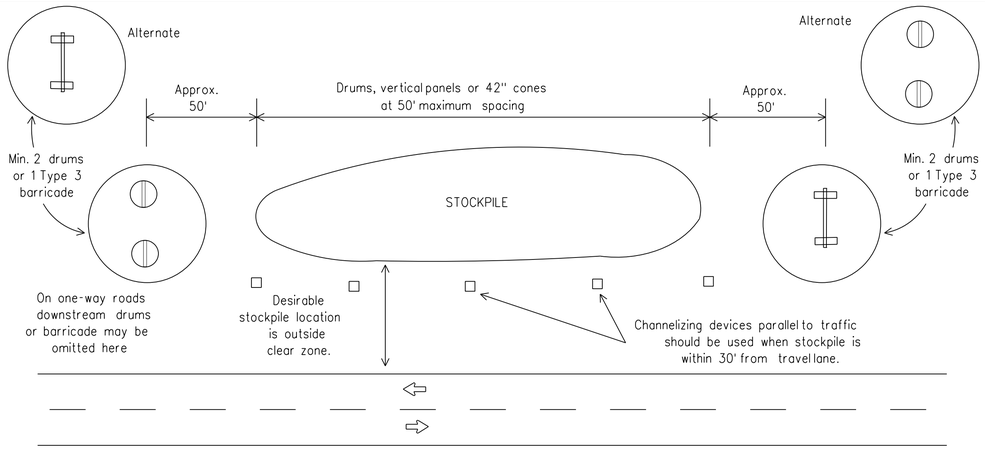


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

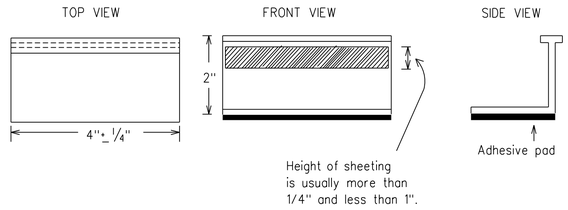
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

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Texas Department of Transportation

Traffic Safety Division Standard

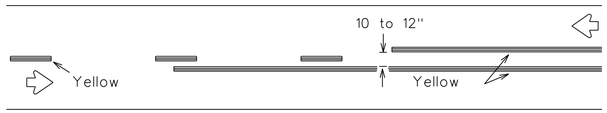
BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

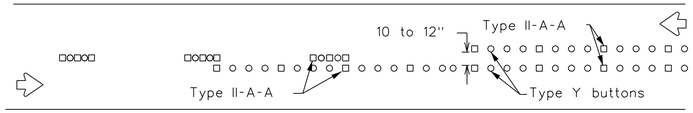
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11-02 8-14				33

105

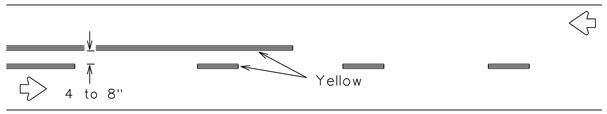
PAVEMENT MARKING PATTERNS



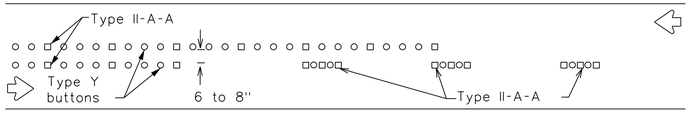
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



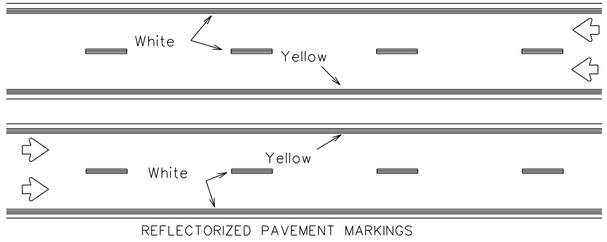
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



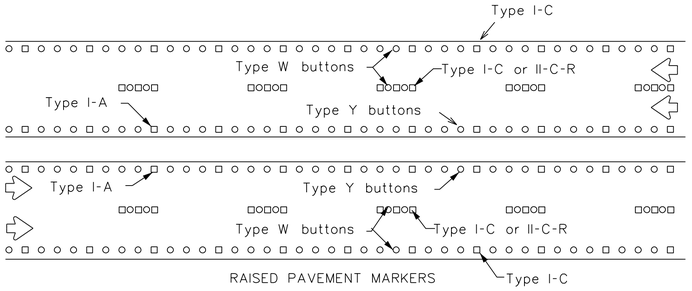
RAISED PAVEMENT MARKERS - PATTERN B

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

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



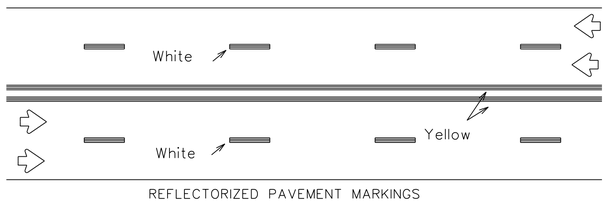
REFLECTORIZED PAVEMENT MARKINGS



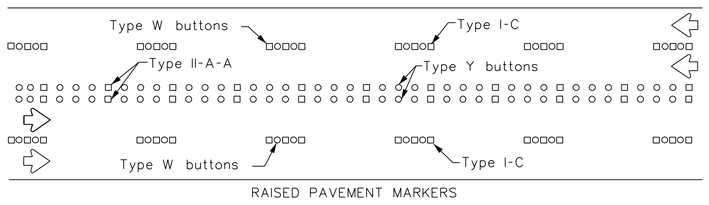
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



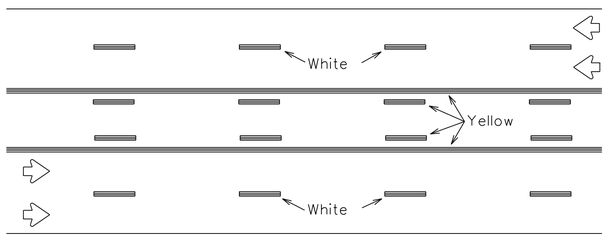
REFLECTORIZED PAVEMENT MARKINGS



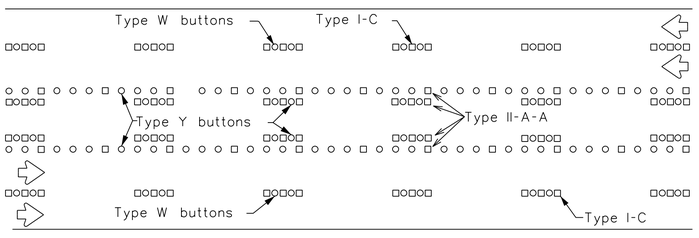
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

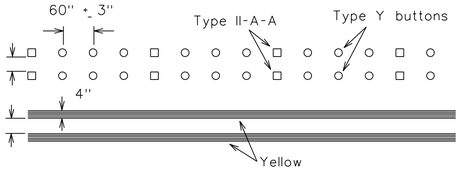
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

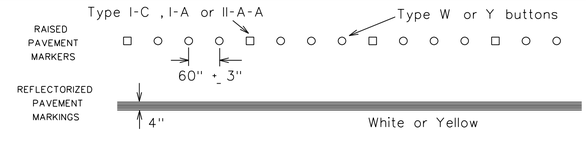
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

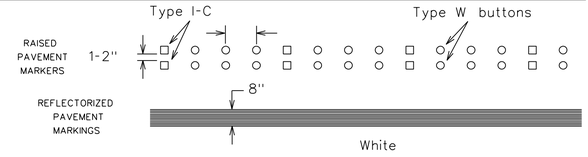


EDGE LINE OR SINGLE NO-PASSING LINE



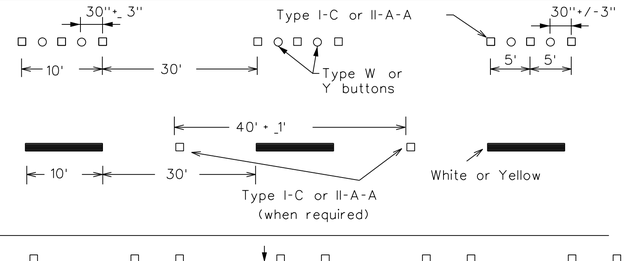
WIDE LINE

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

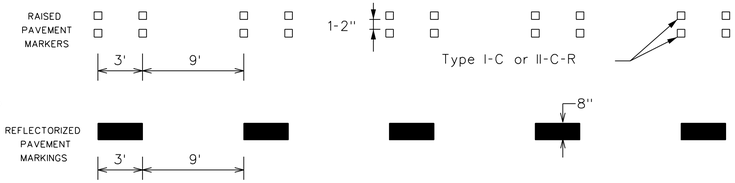


BROKEN LINES

CENTER LINE OR LANE LINE

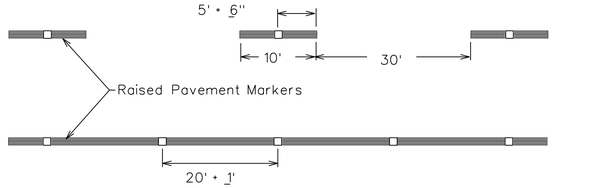


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

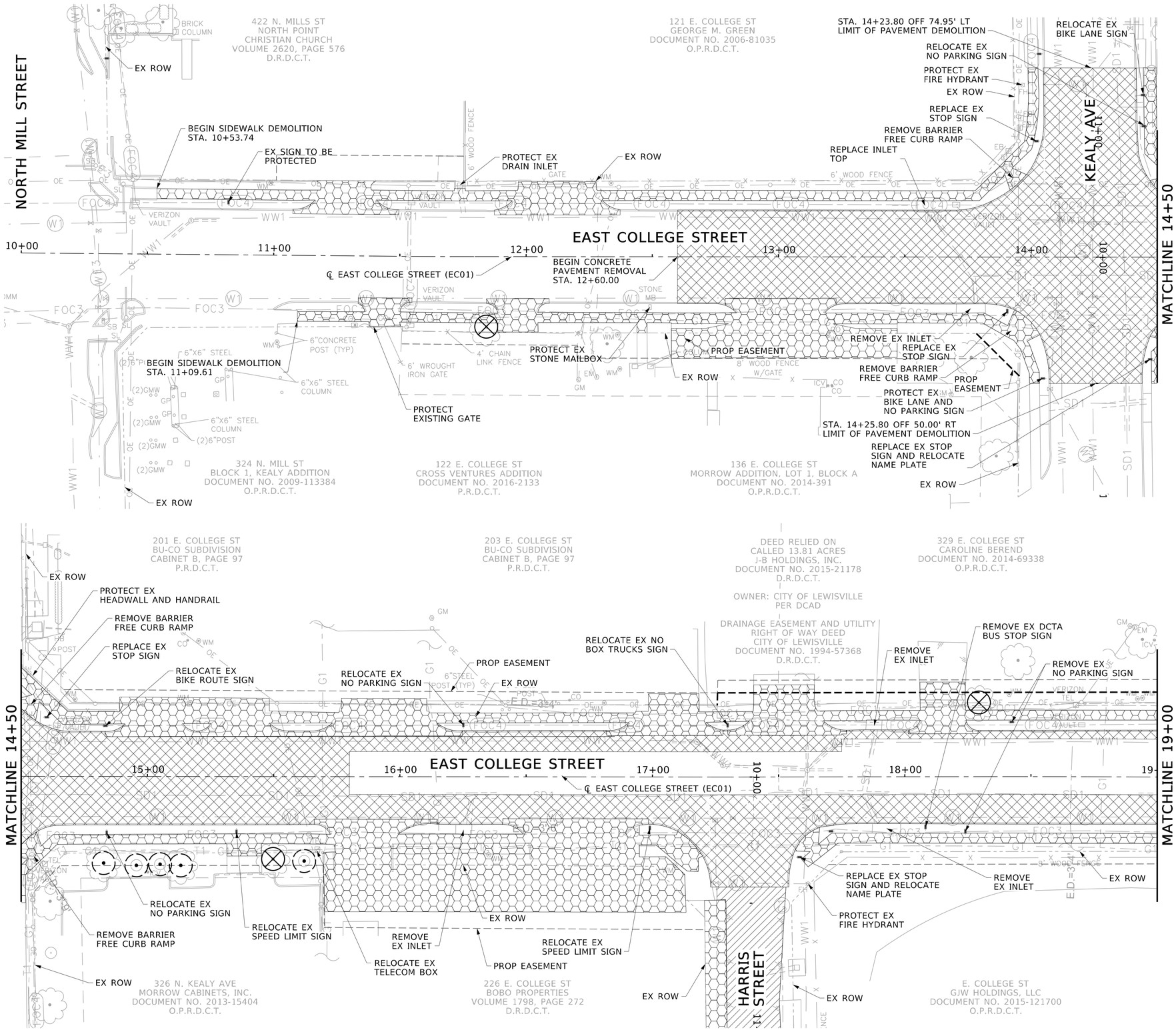
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©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	DIST	COUNTY		SHEET NO. 34

106

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DATE:
FILE:

MicroStation V8 User: 02446 Office:On Site
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Plot Scale: 2.0 '/ In. Model: Default
Date: Aug. 08, 2024 - 02:10:26 PM Project:Freese and Nichols, Inc. - True Type Fonts



LEGEND

- CONCRETE PAVING AND CURB REMOVAL
- CONCRETE REMOVAL (DRIVEWAY, SIDEWALK OR RIPRAP)
- ASPHALT REMOVAL
- STONE WALL REMOVAL
- TREE PROTECTION
- TREE REMOVAL

NOTES:

1. REMOVAL OF ALL ITEMS REQUIRED TO CONSTRUCT THE PROJECT SHALL BE SUBSIDIARY TO THE PROJECT UNLESS OTHERWISE PAID FOR IN THE CONTRACT.
2. REFER TO SHEETS EU-01 THRU EU-03 FOR EXISTING UTILITIES AND PROPOSED MINOR UTILITY ADJUSTMENTS.
3. REFER TO SHEETS PM-01 THRU PM-03 FOR PLANS FOR SIGNS THAT ARE TO BE REPLACED OR REMOVED
4. REFER TO SHEETS LP-01 THRU LP-03 FOR TREE PRESERVATION PLAN

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214)217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
DEMOLITION PLAN
BEGIN TO STA 19+00

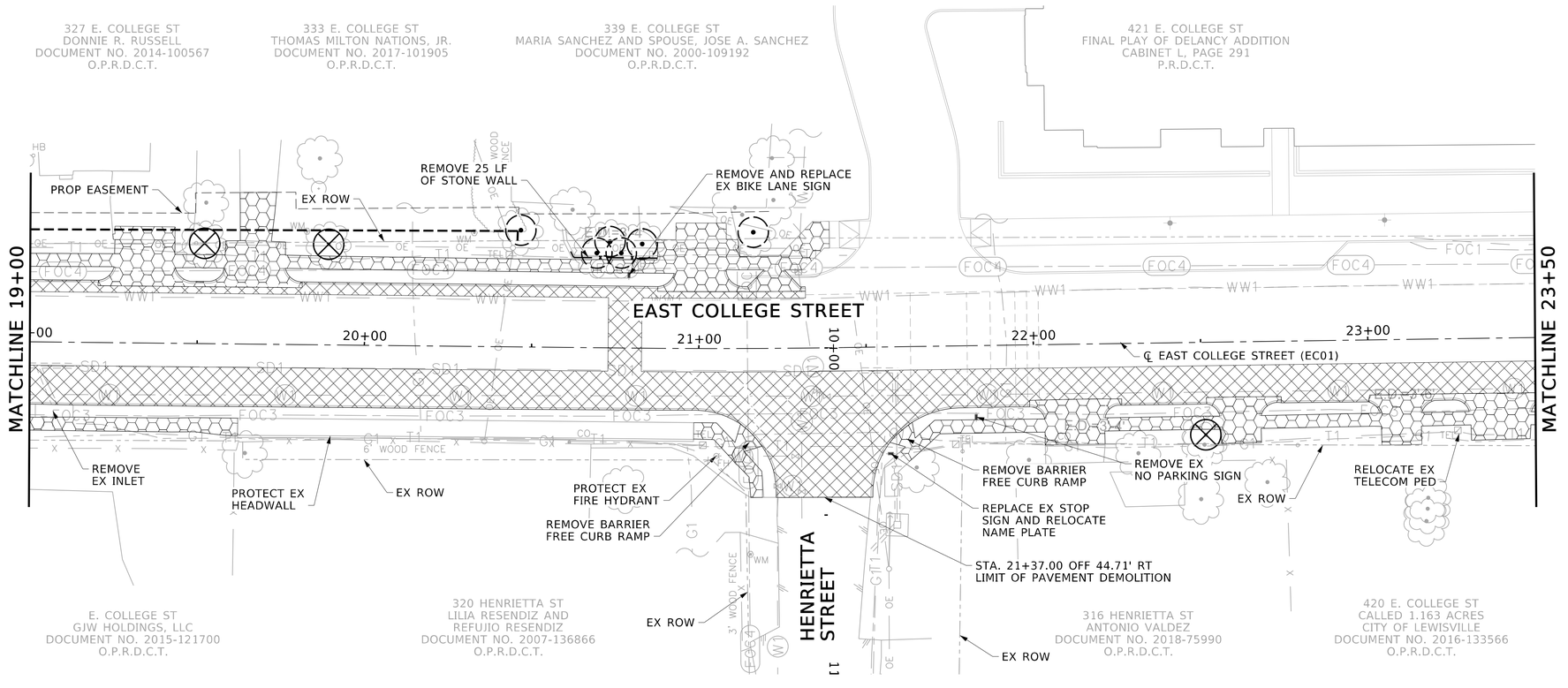
NO.	ISSUES	BY	DATE

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DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-pl-demo01.sht

SHEET
DM-01
SEQ.
35

MicroStation V8 User:02446 Office:On Site
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NOTES:

1. REMOVAL OF ALL ITEMS REQUIRED TO CONSTRUCT THE PROJECT SHALL BE SUBSIDIARY TO THE PROJECT UNLESS OTHERWISE PAID FOR IN THE CONTRACT.
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12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
DEMOLITION PLAN
STA 19+00 TO 28+00

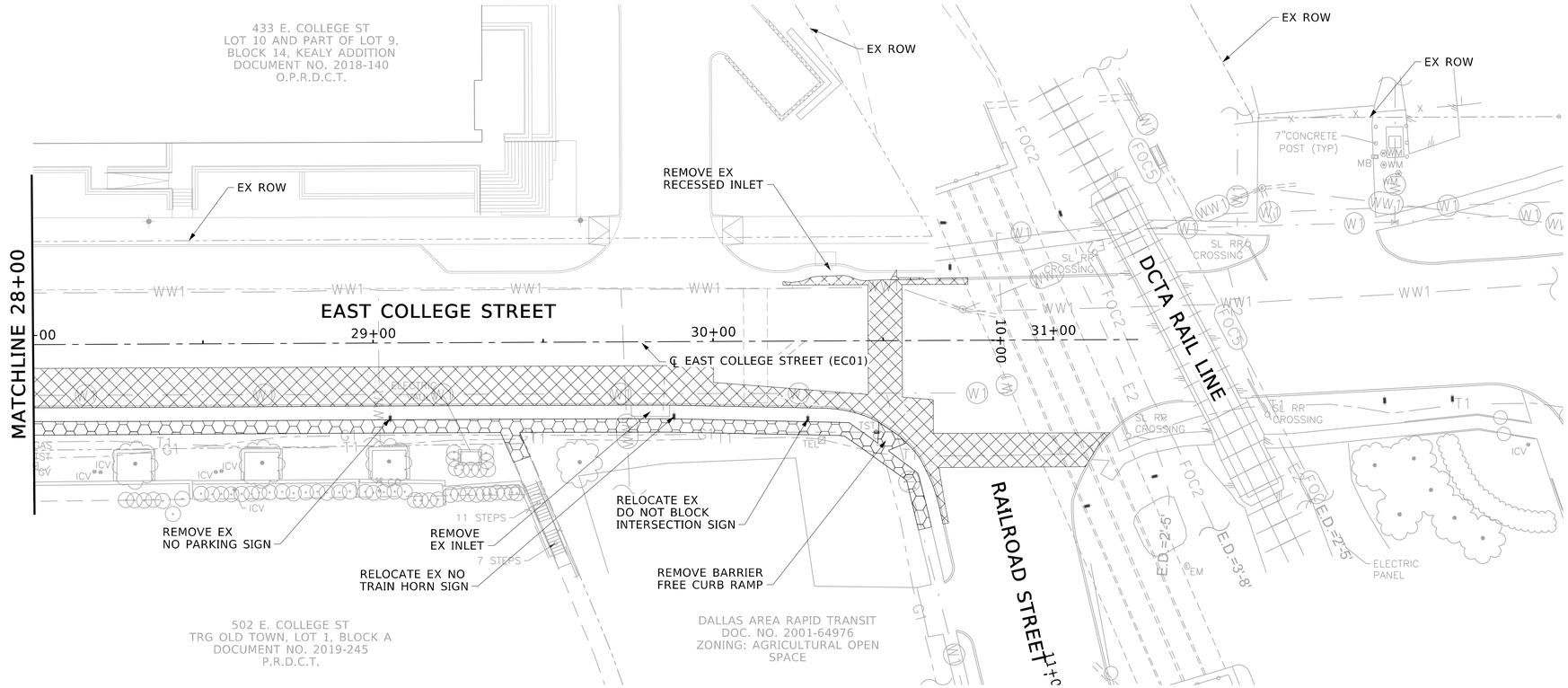
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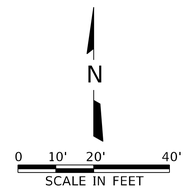
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DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH

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SHEET DM-02
SEQ. 36

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LEGEND

- CONCRETE PAVING AND CURB REMOVAL
- CONCRETE REMOVAL (DRIVEWAY, SIDEWALK OR RIPRAP)
- ASPHALT REMOVAL
- STONE WALL REMOVAL
- TREE PROTECTION
- TREE REMOVAL

NOTES:

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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
DEMOLITION PLAN
STA 28+00 TO END

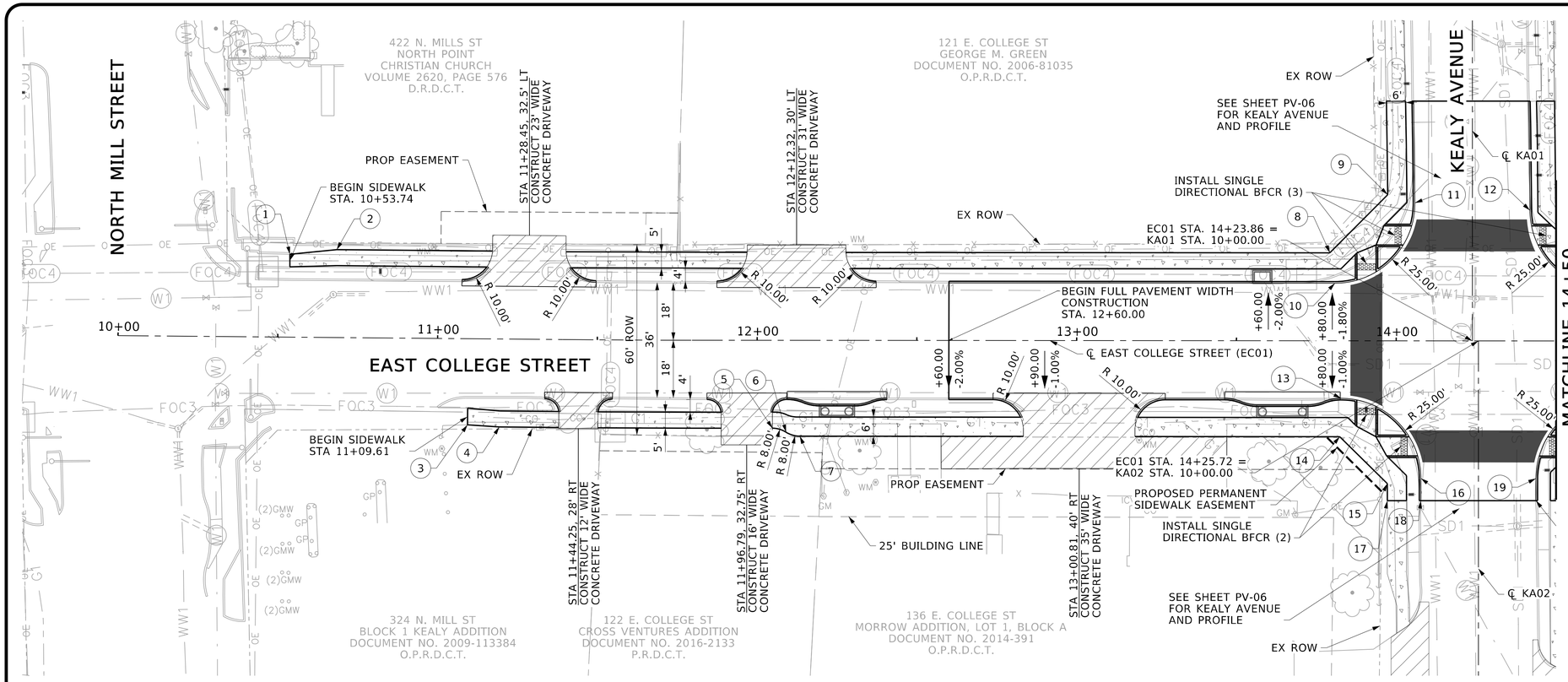
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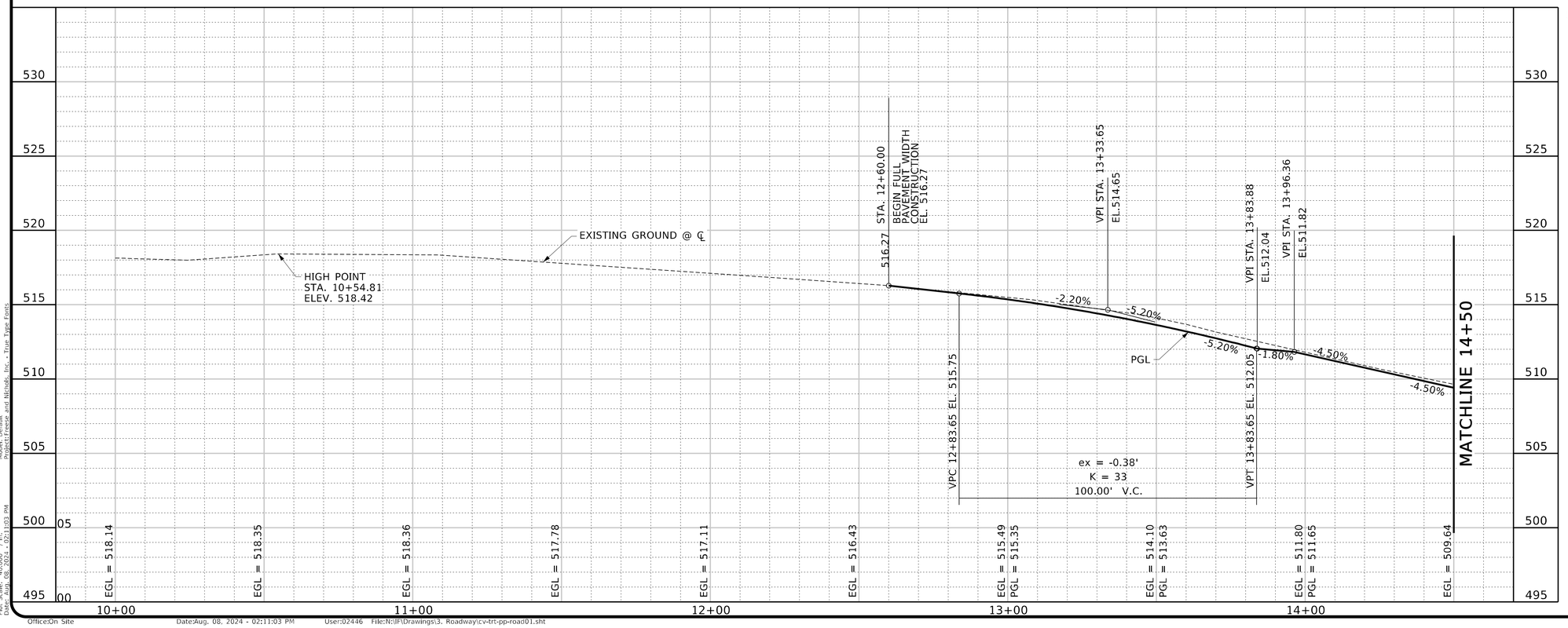
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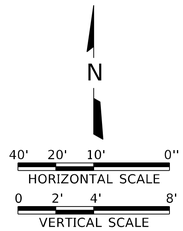
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SHEET
DM-03
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37

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Date:Aug. 08, 2024 - 02:10:54 PM







LEGEND

- 6" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (RESIDENTIAL)
- 8" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (COMMERCIAL)
- 5" CONCRETE SIDEWALK
- 8" INTEGRAL COLORED CONCRETE PAVEMENT (SEE PDT-05)
- 5" STAINED/STAMPED CONCRETE (SEE PDT-05)
- 6" HOT-MIX ASPHALT CONC:
  2" TYPE D HMAC
  4" TYPE B HMAC

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.
3. ALL DRIVEWAYS ARE 5' RADIUS UNLESS OTHERWISE NOTED.
4. FULL DEPTH SAW CUT AND MATCH EXISTING PAVEMENT AT ALL CONNECTIONS AT EXISTING PAVEMENT.
5. REFER TO SHEETS EU-01 THRU EU-03 FOR EXISTING UTILITIES AND PROPOSED MINOR UTILITY ADJUSTMENTS.

STATION AND OFFSET

POINT	STATION	OFFSET	ELEVATION
1	10+53.48	25.92' LT	519.11'
2	10+68.20	27.50' LT	518.82'
3	11+09.61	26.96' RT	519.62'
4	11+19.56	27.52' RT	519.38'
5	12+04.80	27.50' LT	517.59'
6	12+09.10	28.75' RT	517.61'
7	12+13.39	30.00' RT	517.50'
8	13+79.20	27.50' LT	512.98'
9	13+97.27	45.72' LT	511.78'
10	13+80.79	18.00' LT	512.07'
11	14+05.79	43.16' LT	511.20'
12	14+41.81	40.87' LT	509.75'
13	13+82.76	18.00' RT	512.12'
14	13+82.37	30.00' RT	512.84'
15	13+97.26	44.67' RT	512.38'
16	14+07.76	42.98' RT	512.20'
17	13+97.26	50.00' RT	512.51'
18	14+07.76	50.00' RT	511.74'
19	14+43.76	43.02' RT	510.61'

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
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Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
PAVING PLAN AND PROFILE
BEGIN TO STA 14+50

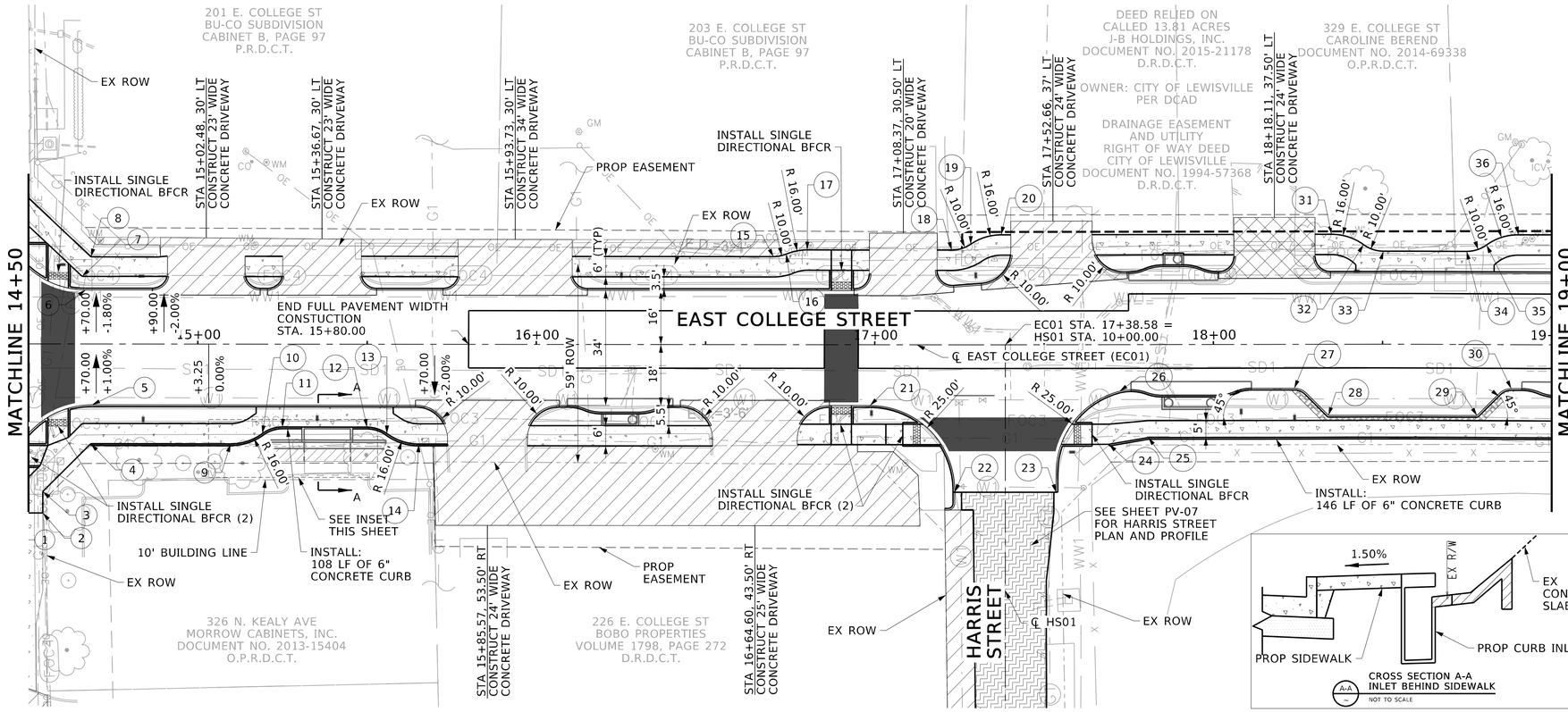
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DATE AUG 2022
DESIGNED STG
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NO. ISSUES | BY | DATE | REVISED

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0" 1"

SHEET
PV-01
SEQ.
38

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LEGEND

- 6" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (RESIDENTIAL)
- 8" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (COMMERCIAL)
- 5" CONCRETE SIDEWALK
- 8" INTEGRAL COLORED CONCRETE PAVEMENT (SEE PDT-05)
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- 6" HOT-MIX ASPHALT CONC:
  2" TYPE D HMAC
  4" TYPE B HMAC

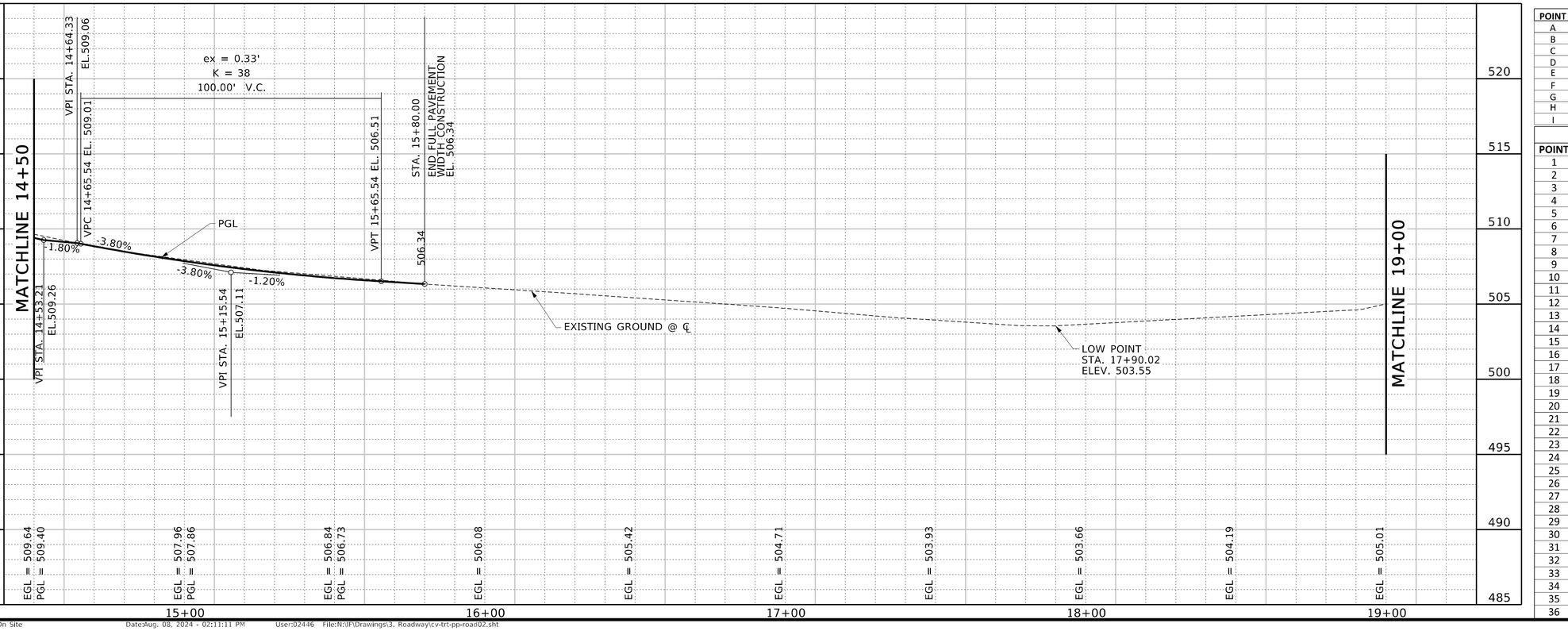
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0 10' 20' 40'
HORIZONTAL SCALE

0 2' 4' 8'
VERTICAL SCALE

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.
3. ALL DRIVEWAYS ARE 5' RADIUS UNLESS OTHERWISE NOTED.
4. FULL DEPTH SAW CUT AND MATCH EXISTING PAVEMENT AT ALL CONNECTIONS AT EXISTING PAVEMENT.
5. REFER TO SHEETS EU-01 THRU EU-03 FOR EXISTING UTILITIES AND PROPOSED MINOR UTILITY ADJUSTMENTS.



POINT	STATION	OFFSET	ELEVATION
A	15+20.76	34.65' RT	509.98'
B	15+38.40	34.64' RT	509.75'
C	15+55.59	34.64' RT	509.40'
D	15+20.75	29.00' RT	506.85'
E	15+30.75	29.00' RT	TOC 507.40'
F	15+30.75	24.50' RT	507.33'
G	15+45.75	24.50' RT	507.16'
H	15+45.75	29.00' RT	TOC 507.23'
I	15+55.59	29.00' RT	506.68'

STATION AND OFFSET

POINT	STATION	OFFSET	ELEVATION
1	14+43.76	49.98' RT	510.56'
2	14+54.26	49.97' RT	510.97'
3	14+54.26	43.63' RT	510.82'
4	14+68.40	29.50' RT	509.98'
5	14+68.76	18.00' RT	509.26'
6	14+66.81	16.00' LT	508.87'
7	14+65.79	20.00' LT	509.43'
8	14+68.41	25.77' LT	509.47'
9	15+09.67	29.50' RT	509.83'
10	15+19.10	26.42' RT	509.47'
11	15+25.00	24.50' RT	509.23'
12	15+50.00	24.50' RT	508.27'
13	15+55.90	26.42' RT	508.06'
14	15+65.33	29.50' RT	507.74'
15	16+70.00	26.00' LT	505.40'
16	16+73.85	26.77' LT	505.36'
17	16+80.00	28.00' LT	505.31'
18	17+22.67	28.00' LT	504.59'
19	17+28.34	29.74' LT	504.50'
20	17+37.36	32.50' LT	504.40'
21	16+98.62	18.00' RT	504.80'
22	17+23.61	43.58' RT	504.08'
23	17+53.51	43.62' RT	503.99'
24	17+69.15	29.50' RT	504.23'
25	17+80.73	27.50' RT	504.13'
26	17+72.29	13.79' RT	503.73'
27	18+23.93	13.00' RT	503.74'
28	18+34.00	21.00' RT	503.56'
29	18+78.00	21.00' RT	504.34'
30	18+88.07	13.00' RT	504.90'
31	18+35.00	32.50' LT	503.86'
32	18+44.41	29.42' LT	503.90'
33	18+50.26	27.50' LT	503.95'
34	18+74.67	27.50' LT	504.50'
35	18+80.57	29.42' LT	504.66'
36	18+90.00	32.50' LT	504.92'

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL

PAVING PLAN AND PROFILE
STA 14+50 TO STA 19+00

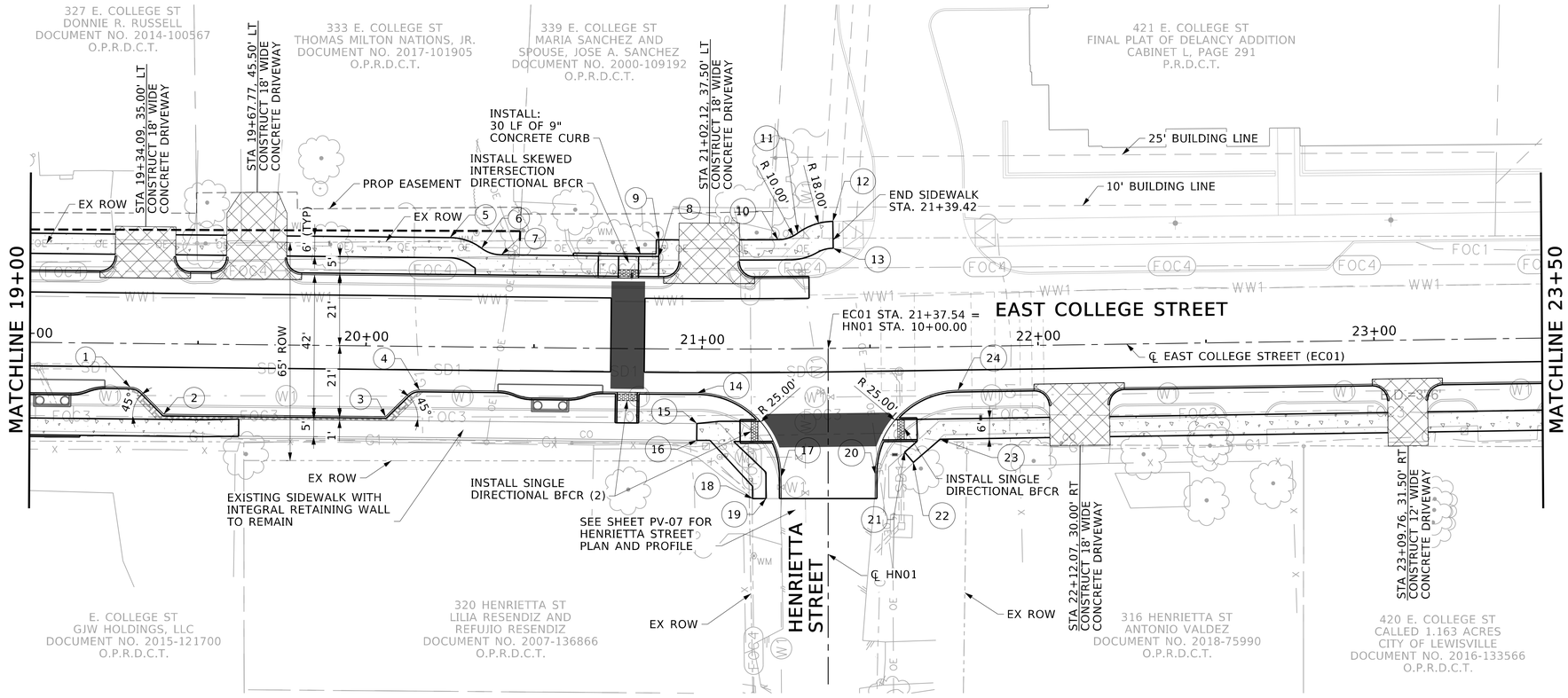
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
CHECKED ADH
FILE NAME cv-trt-pp-road02.sht

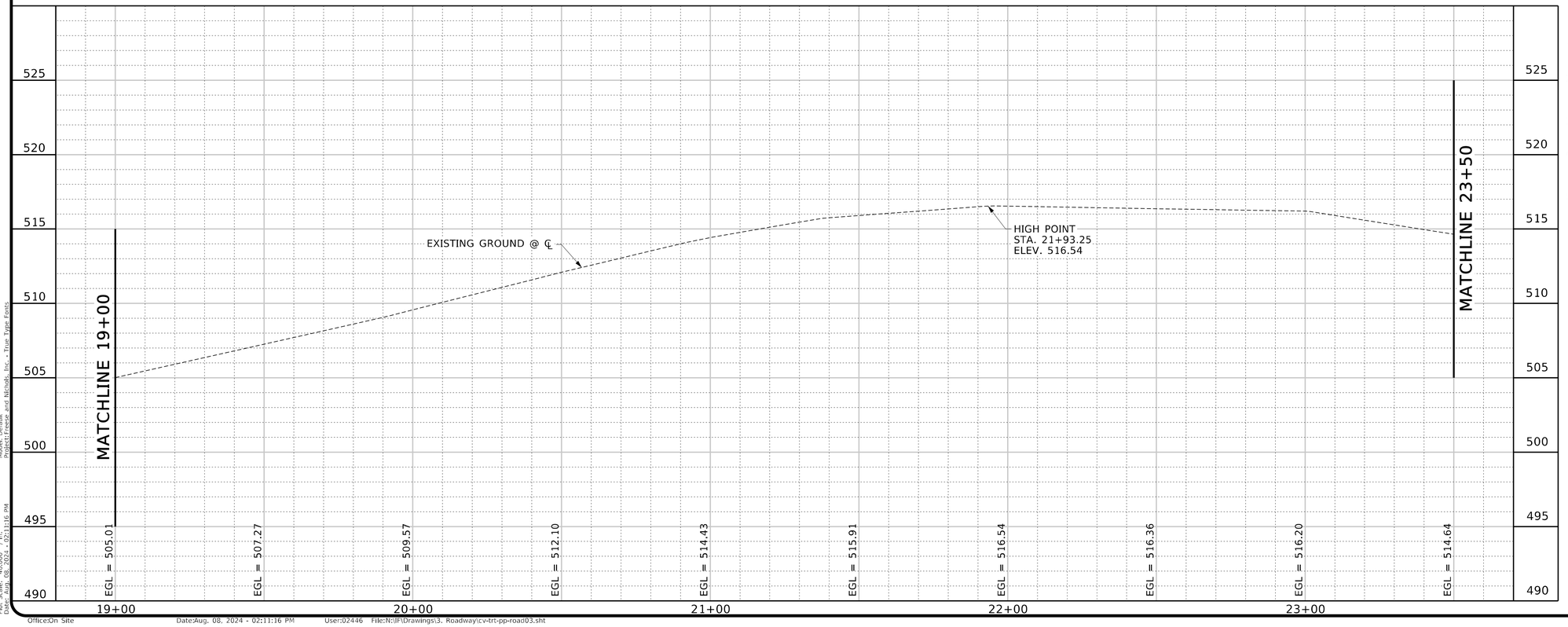
NO. ISSUES | BY | DATE | REVISED

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0" 1"

SHEET PV-02
SEQ. 39

MicroStation V8 User:02446 OfficeOn Site
Plotter: HP Designjet T1120 ePrinter (C5796) on Ne01.plt
Plot Scale: 40.000' / 1in.
Plot Date: Aug 08, 2024 - 02:11:11 PM
Model: Default
Project Freese and Nichols, Inc. - True Type Fonts
OfficeOn Site
Date:Aug. 08, 2024 - 02:11:11 PM
User:02446
File:N:\IF\Drawings\3. Roadway\cv-trt-pp-road02.sht





N

0 10' 20' 40'
HORIZONTAL SCALE

0 2' 4' 8'
VERTICAL SCALE

LEGEND

- 6" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (RESIDENTIAL)
- 8" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (COMMERCIAL)
- 5" CONCRETE SIDEWALK
- 8" INTEGRAL COLORED CONCRETE PAVEMENT (SEE PDT-05)
- 5" STAINED/STAMPED CONCRETE (SEE PDT-05)
- 6" HOT-MIX ASPHALT CONC: 2" TYPE D HMAC 4" TYPE B HMAC

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.
3. ALL DRIVEWAYS ARE 5' RADIUS UNLESS OTHERWISE NOTED.
4. FULL DEPTH SAW CUT AND MATCH EXISTING PAVEMENT AT ALL CONNECTIONS AT EXISTING PAVEMENT.
5. REFER TO SHEETS EU-01 THRU EU-03 FOR EXISTING UTILITIES AND PROPOSED MINOR UTILITY ADJUSTMENTS.

STATION AND OFFSET

POINT	STATION	OFFSET	ELEVATION
1	19+29.93	13.00 RT	506.56
2	19+40.00	21.00 RT	506.68
3	20+06.01	21.00 RT	509.76
4	20+16.08	13.00 RT	510.61
5	20+24.67	32.50 RT	511.09
6	20+34.10	29.42 LT	511.53
7	20+40.00	27.50 LT	511.81
8	20+86.91	27.50 LT	514.23
9	20+86.90	32.50 LT	514.61
10	21+22.80	32.50 LT	515.65
11	21+28.77	34.41 LT	516.1
12	21+39.42	37.81 LT	516.15
13	21+39.42	29.81 LT	516.05
14	20+98.67	13.00 RT	514.18
15	20+98.53	22.17 RT	514.84
16	20+98.53	27.16 RT	514.94
17	21+23.29	38.04 RT	515.54
18	21+14.91	44.54 RT	516.22
19	21+18.83	44.55 RT	516.12
20	21.51.00	37.64 RT	516.1
21	21+59.82	31.20 RT	516.67
22	21+62.38	34.27 RT	516.73
23	21+70.52	27.50 RT	516.84
24	21+76.00	13.00 RT	516.3

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL

PAVING PLAN AND PROFILE
STA 19+00 TO 23+50

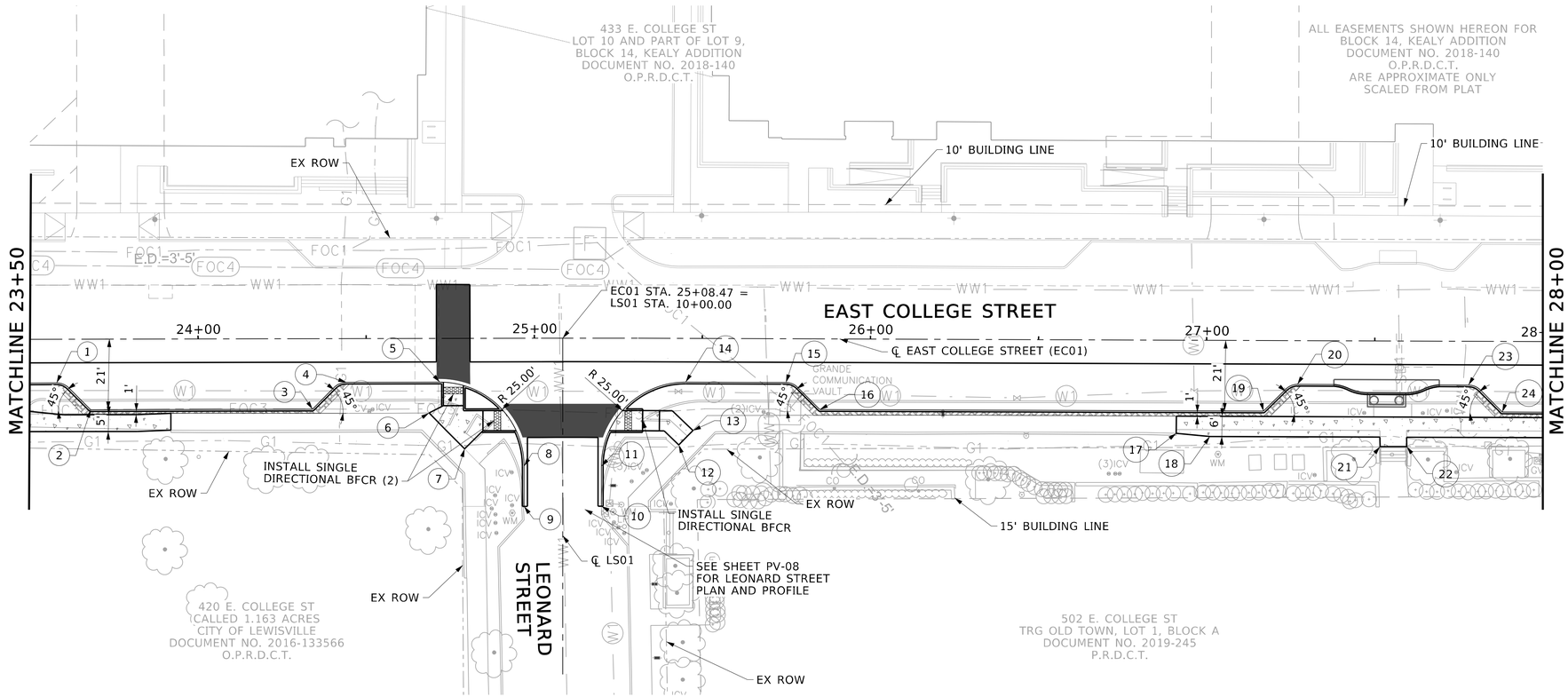
NO.	ISSUES	BY	DATE

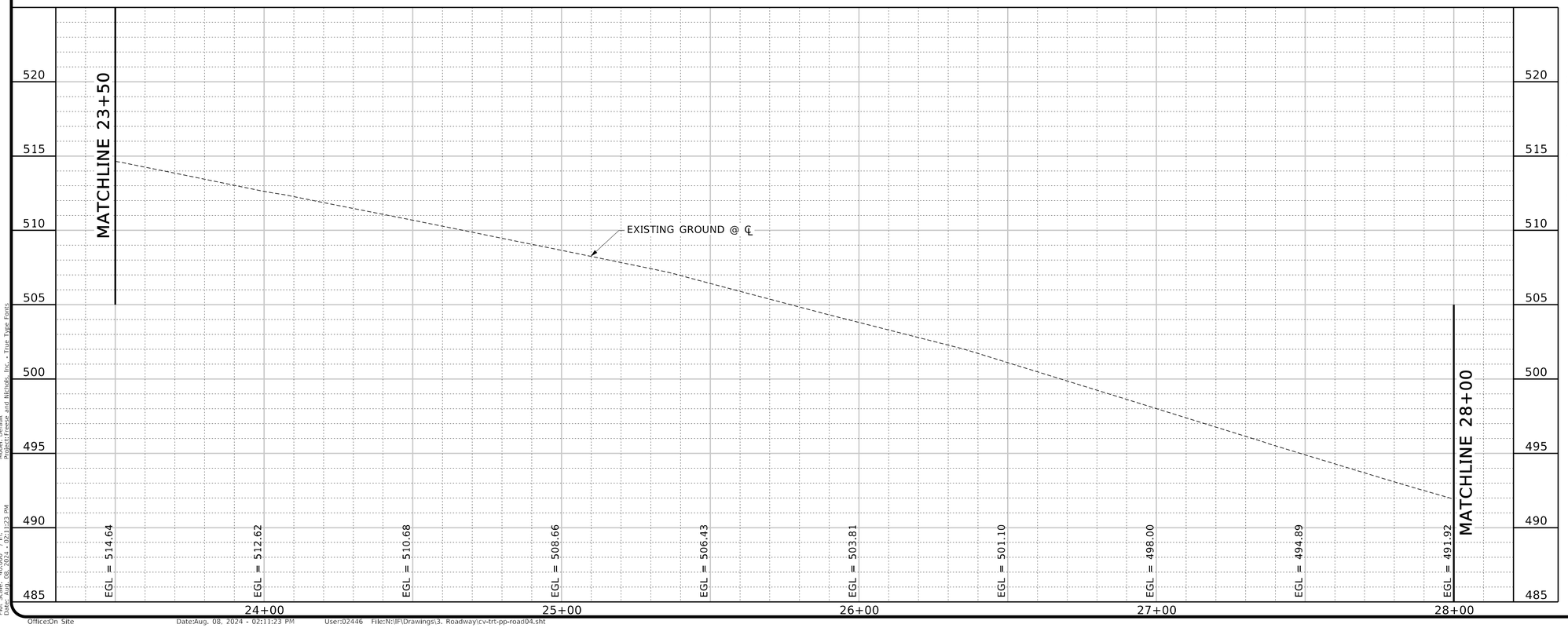
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pp-road03.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0" 1"

SHEET
PV-03
SEQ.
40

MicroStation V8 User:02446 OfficeOn Site
Plotter: HP Photosmart 8100 Series PCL3 GUI Plot Area: Layout
Plot Scale: 40.000 ' / in.
Plot Date: Aug 08, 2024 - 02:11:16 PM
Model: Default
Project: Freese and Nichols, Inc. - True Type Fonts





N

0 10' 20' 40'
HORIZONTAL SCALE

0 2' 4' 8'
VERTICAL SCALE

LEGEND

- 6" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (RESIDENTIAL)
- 8" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (COMMERCIAL)
- 5" CONCRETE SIDEWALK
- 8" INTEGRAL COLORED CONCRETE PAVEMENT (SEE PDT-05)
- 5" STAINED/STAMPED CONCRETE (SEE PDT-05)
- 6" HOT-MIX ASPHALT CONC: 2" TYPE D HMAC 4" TYPE B HMAC

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.
3. ALL DRIVEWAYS ARE 5' RADIUS UNLESS OTHERWISE NOTED.
4. FULL DEPTH SAW CUT AND MATCH EXISTING PAVEMENT AT ALL CONNECTIONS AT EXISTING PAVEMENT.
5. REFER TO SHEETS EU-01 THRU EU-03 FOR EXISTING UTILITIES AND PROPOSED MINOR UTILITY ADJUSTMENTS.

STATION AND OFFSET

POINT	STATION	OFFSET	ELEVATION
1	23+57.93	13.00 RT	514.08
2	23+68.00	21.00 RT	513.83
3	24+34.00	21.00 RT	511.43
4	24+44.07	13.00 RT	511.37
5	24+71.89	13.00 RT	510.26
6	24+68.69	22.19 RT	510.23
7	24+79.20	32.87 RT	509.95
8	24+96.89	38.05 RT	509.05
9	24+96.86	50.00 RT	509.09
10	25+20.04	50.00 RT	508.12
11	25+20.02	38.05 RT	507.88
12	25+43.11	31.68 RT	507.96
13	25+47.28	27.36 RT	506.91
14	25+45.11	13.00 RT	507.05
15	25+74.93	13.00 RT	505.47
16	25+85.00	21.00 RT	504.61
17	26+91.06	27.70 RT	498.83
18	27+01.06	28.59 RT	498.34
19	27+17.00	21.00 RT	496.84
20	27+27.07	13.00 RT	496.52
21	27+51.67	31.42 RT	495.01
22	27+59.65	31.36 RT	495.10
23	27+77.93	13.00 RT	493.21
24	27+88.00	21.00 RT	492.42

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
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137592
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PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL

PAVING PLAN AND PROFILE
STA 23+50 TO STA 28+00

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-pp-road04.sht

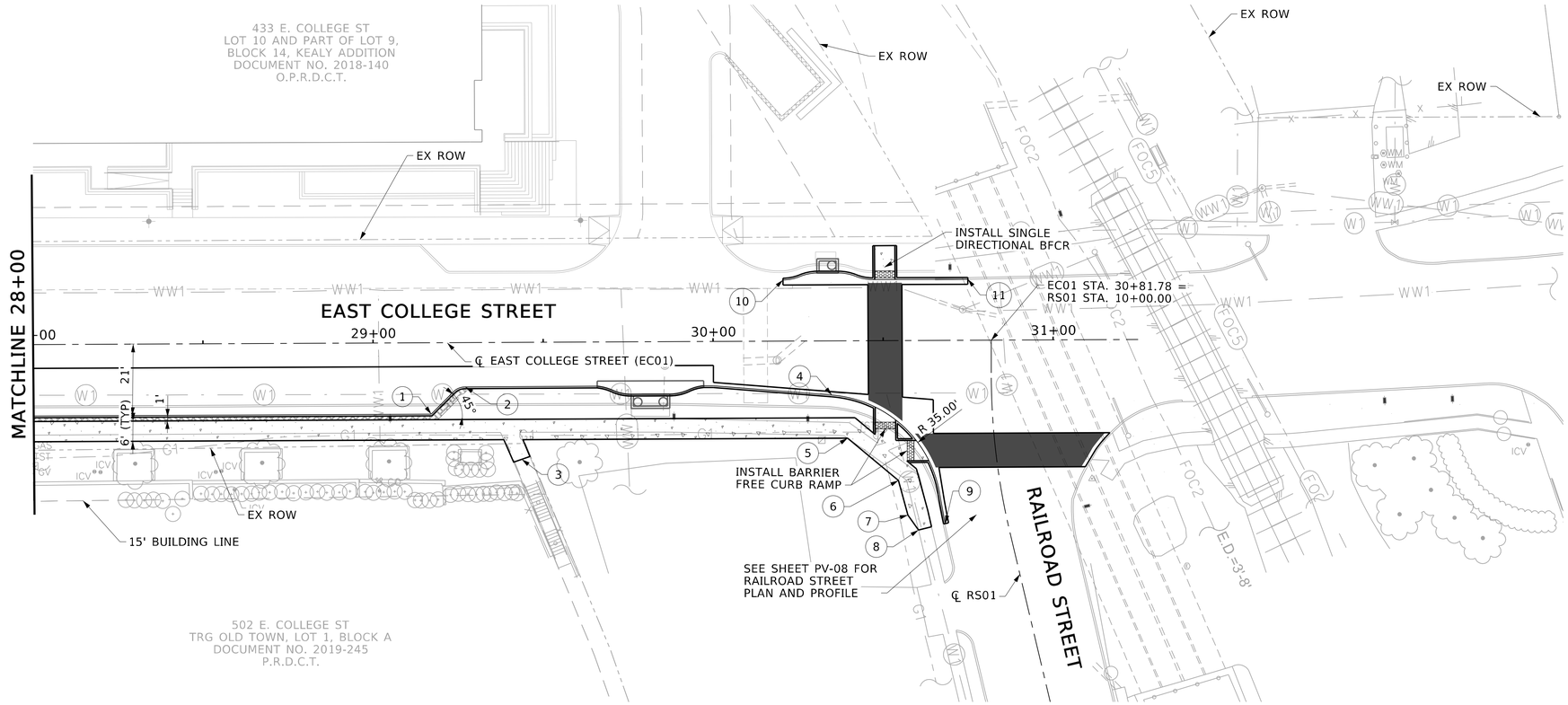
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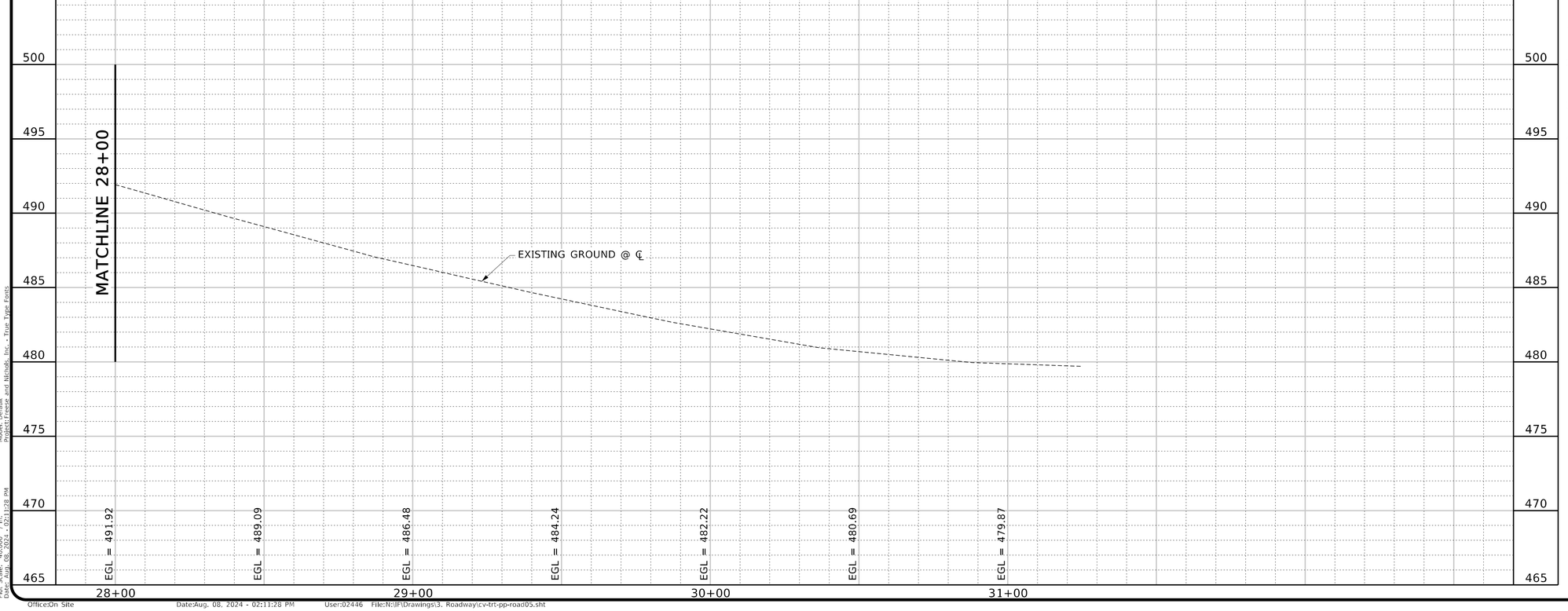
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
PV-04

SEQ.
41

MicroStation V8 User:02446 Office:On Site
Plotter: HP800PS2.PRT Roadways\cv-trt-pp-road04.sht
Plot Scale: 40.000 ' / In. Model: Default
Plot Date: 08, 2024 - 02:11:23 PM Project:Freese and Nichols, Inc. - True Type Fonts





N

0 10' 20' 40'
HORIZONTAL SCALE

0 2' 4' 8'
VERTICAL SCALE

LEGEND

- 6" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (RESIDENTIAL)
- 8" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (COMMERCIAL)
- 5" CONCRETE SIDEWALK
- 8" INTEGRAL COLORED CONCRETE PAVEMENT (SEE PDT-05)
- 5" STAINED/STAMPED CONCRETE (SEE PDT-05)
- 6" HOT-MIX ASPHALT CONC:
  2" TYPE D HMAC
  4" TYPE B HMAC

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.
3. ALL DRIVEWAYS ARE 5' RADIUS UNLESS OTHERWISE NOTED.
4. FULL DEPTH SAW CUT AND MATCH EXISTING PAVEMENT AT ALL CONNECTIONS AT EXISTING PAVEMENT.
5. REFER TO SHEETS EU-01 THRU EU-03 FOR EXISTING UTILITIES AND PROPOSED MINOR UTILITY ADJUSTMENTS.

STATION AND OFFSET

POINT	STATION	OFFSET	ELEVATION
1	29+17.00	21.00 RT	485.59
2	29+27.07	13.00 RT	485.47
3	29+43.57	34.38 RT	485.00
4	30+34.83	15.90 RT	480.21
5	30+39.43	28.59 RT	481.49
6	30+54.34	41.10 RT	481.29
7	30+57.07	51.28 RT	481.09
8	30+60.14	55.59 RT	MATCH EX
9	30+68.03	53.85 RT	MATCH EX
10	30+20.61	13.00 LT	480.21
11	30+75.00	13.00 LT	MATCH EX

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
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PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
PAVING PLAN AND PROFILE
STA 28+00 TO END

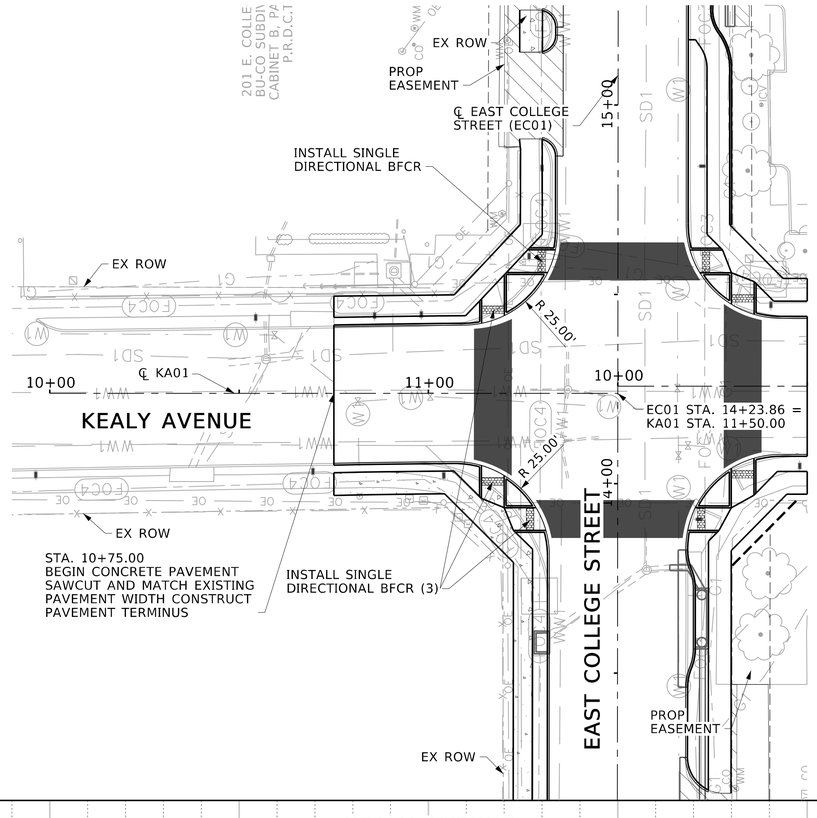
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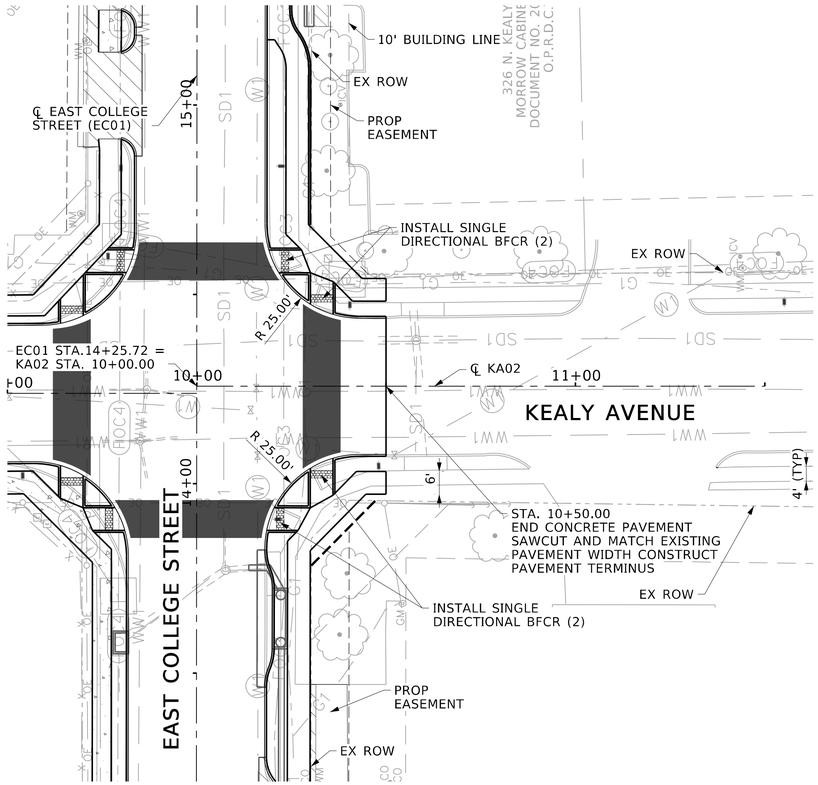
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pp-road05.sht

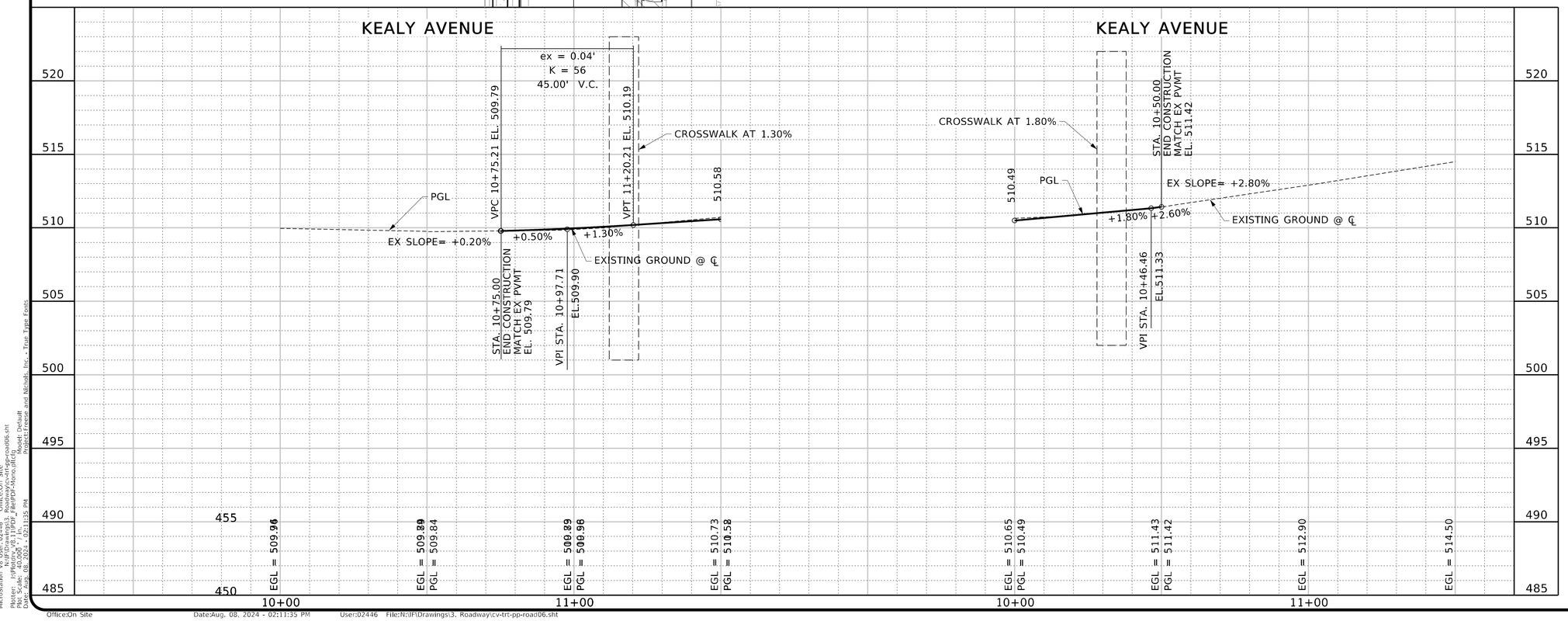
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
PV-05
SEQ.
42

MicroStation V8 User: 02446 Office:On Site
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Plotter: pltPlotter.pltDriver.pltPort
Plot Scale: 40.000 ' / in.
Date: Aug. 08, 2024 - 02:11:28 PM
Model: Default
Project:Freese and Nichols, Inc. - True Type Fonts







N

0 10' 20' 40'
HORIZONTAL SCALE

0 2' 4' 8'
VERTICAL SCALE

LEGEND

- 6" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (RESIDENTIAL)
- 8" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (COMMERCIAL)
- 5" CONCRETE SIDEWALK
- 8" INTEGRAL COLORED CONCRETE PAVEMENT (SEE PDT-05)
- 5" STAINED/STAMPED CONCRETE (SEE PDT-05)
- 6" HOT-MIX ASPHALT CONC:
  2" TYPE D HMAC
  4" TYPE B HMAC

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.
3. ALL DRIVEWAYS ARE 5' RADIUS UNLESS OTHERWISE NOTED.
4. FULL DEPTH SAW CUT AND MATCH EXISTING PAVEMENT AT ALL CONNECTIONS AT EXISTING PAVEMENT.
5. REFER TO SHEETS EU-01 THRU EU-03 FOR EXISTING UTILITIES AND PROPOSED MINOR UTILITY ADJUSTMENTS.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
PAVING PLAN AND PROFILE
INTERSECTION

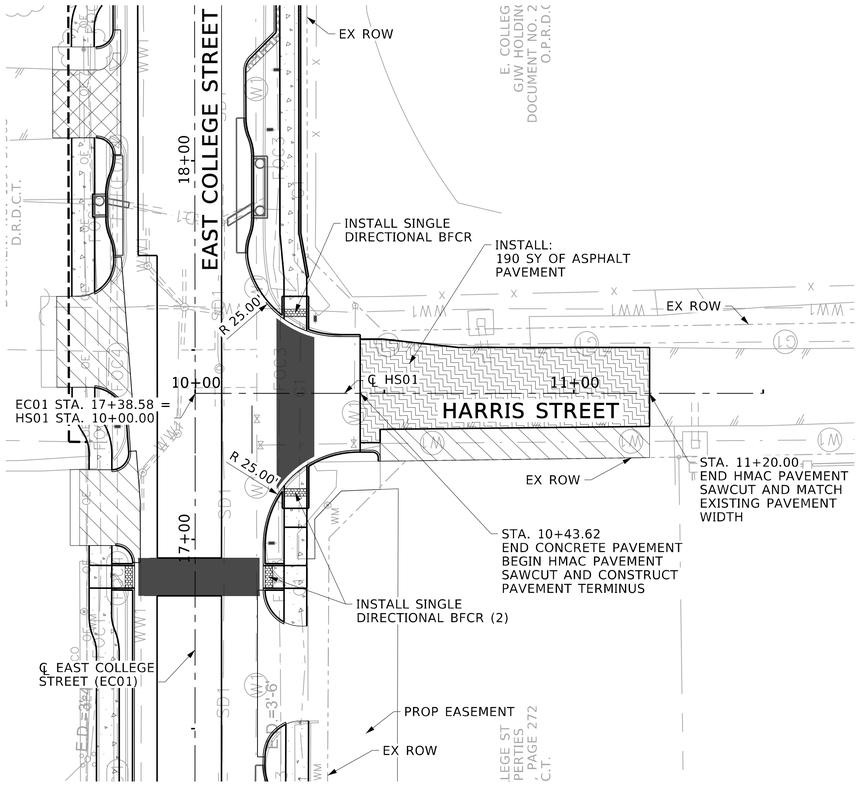
NO.	ISSUES	BY	DATE

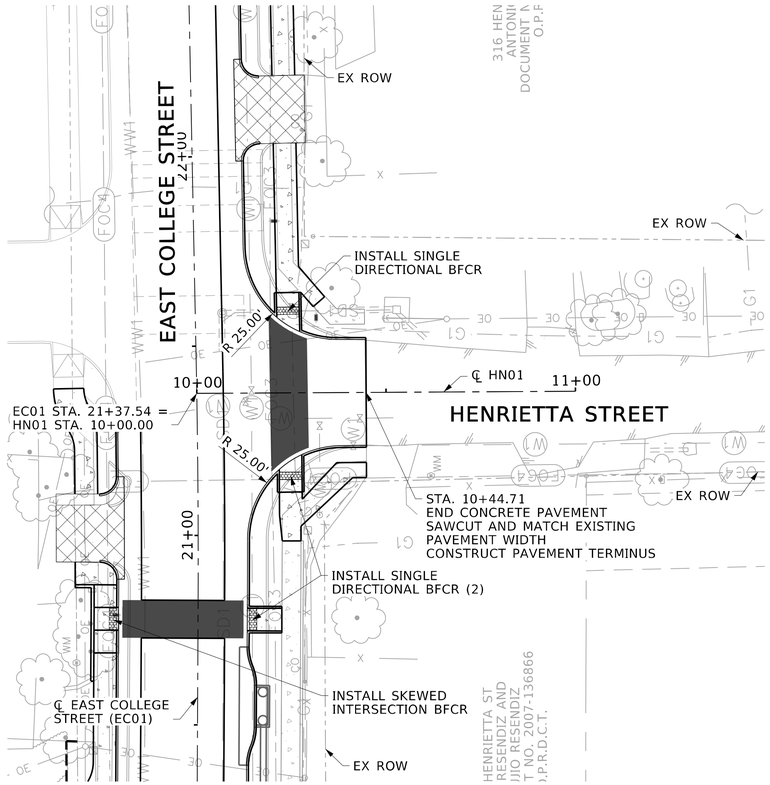
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pp-road06.sht

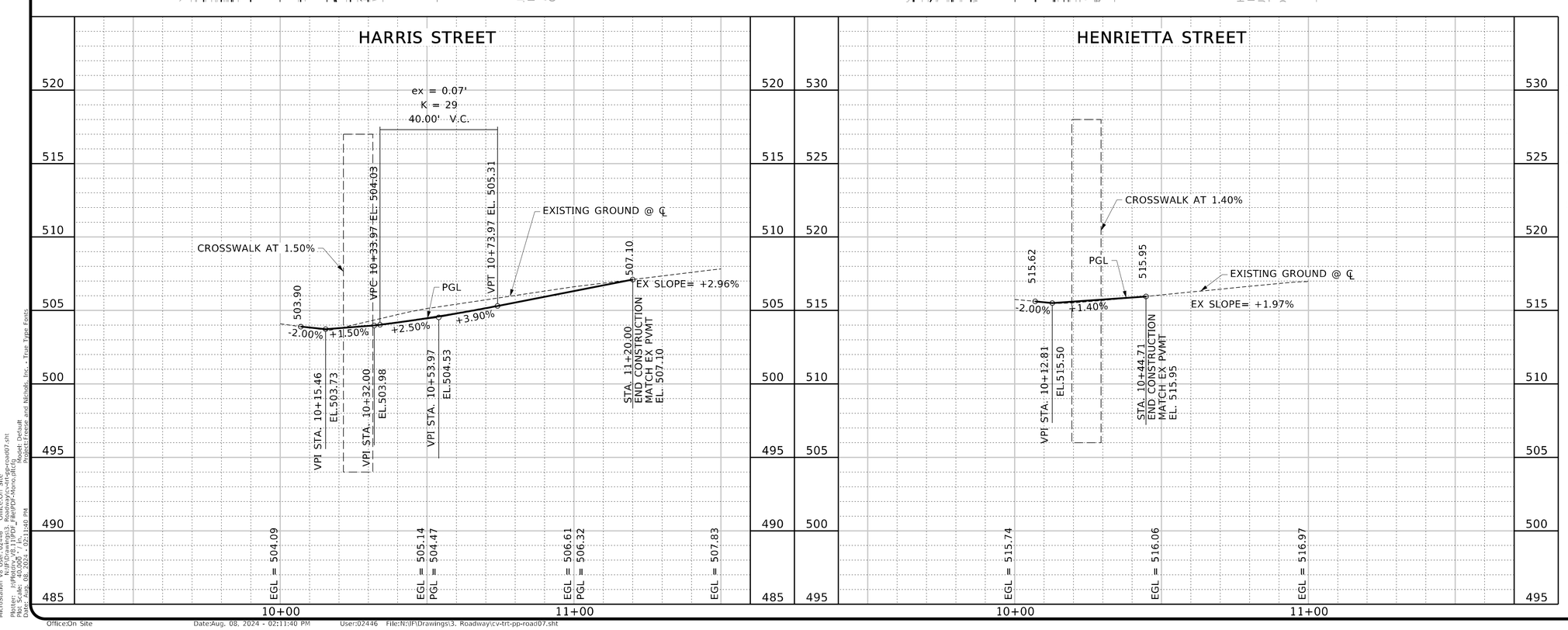
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PV-06
SEQ. 43

MicroStation V8 User: 02446 Office:On Site
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Plotter: pltPlotCenter.pltcfg HP DesignJet 4500ps
Plot Scale: 40.000 ' / in.
Date: Aug. 08, 2024 - 02:11:35 PM
Model: Default
Project:Freese and Nichols, Inc. - True Type Fonts
Office:On Site Date:Aug. 08, 2024 - 02:11:35 PM User:02446 File:N:\IF\Drawings\3. Roadway\cv-trt-pp-road06.sht







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08/08/2024

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12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

N

HORIZONTAL SCALE 40' 20' 10' 0''

VERTICAL SCALE 0 2' 4' 8'

LEGEND

- 6" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (RESIDENTIAL)
- 8" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (COMMERCIAL)
- 5" CONCRETE SIDEWALK
- 8" INTEGRAL COLORED CONCRETE PAVEMENT (SEE PDT-05)
- 5" STAINED/STAMPED CONCRETE (SEE PDT-05)
- 6" HOT-MIX ASPHALT CONC:
  2" TYPE D HMAC
  4" TYPE B HMAC

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.
3. ALL DRIVEWAYS ARE 5' RADIUS UNLESS OTHERWISE NOTED.
4. FULL DEPTH SAW CUT AND MATCH EXISTING PAVEMENT AT ALL CONNECTIONS AT EXISTING PAVEMENT.
5. REFER TO SHEETS EU-01 THRU EU-03 FOR EXISTING UTILITIES AND PROPOSED MINOR UTILITY ADJUSTMENTS.

CITY OF LEWISVILLE

EAST COLLEGE STREET IMPROVEMENTS

CIVIL

PAVING PLAN AND PROFILE INTERSECTION

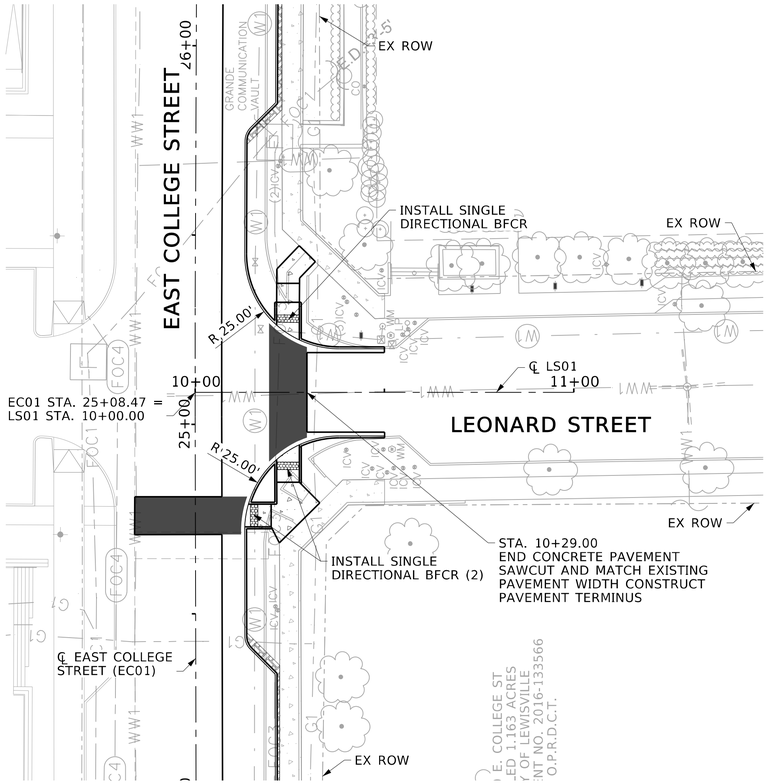
NO.	ISSUES	BY	DATE

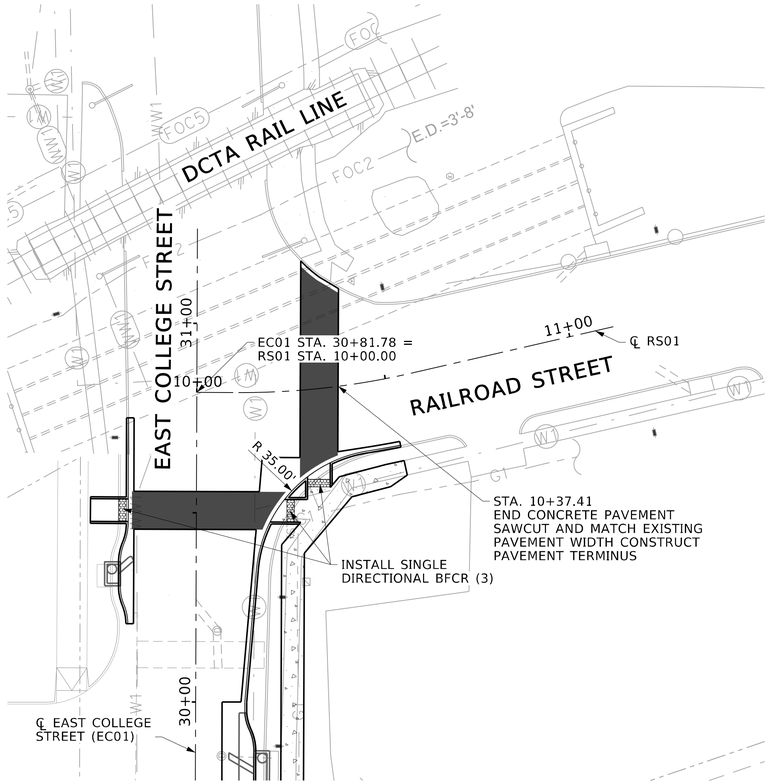
FAN JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pp-road07.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PV-07
SEQ. 44

MicroStation V8 User: 02446 Office:On Site
N:\IF\Drawings\3. Roadway\cv-trt-pp-road07.sht
Plotter: pltPlotCenter_HP_T1120_44.PLT Model: Default
Plot Scale: 40.000 ' / in. Project:Freese and Nichols, Inc. - True Type Fonts
Date: Aug. 08, 2024 - 02:11:40 PM





N

0 10' 20' 40'
HORIZONTAL SCALE

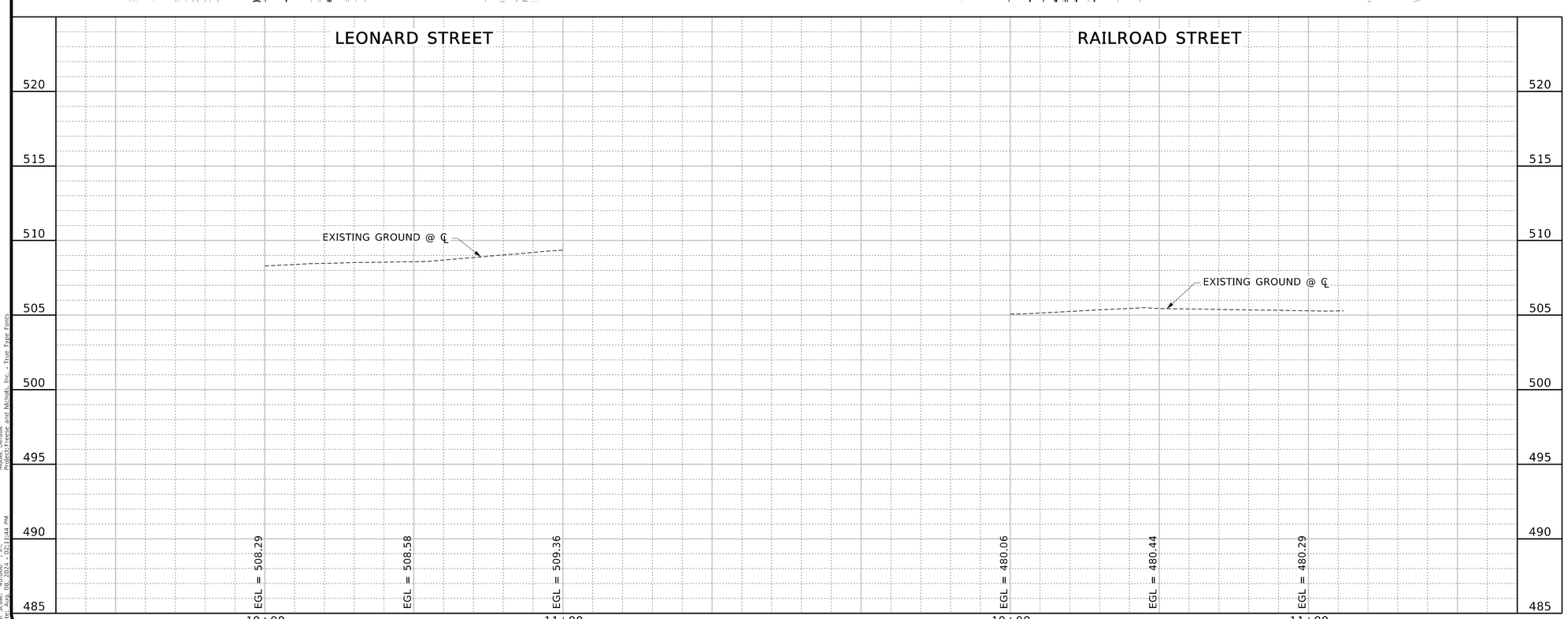
0 2' 4' 8'
VERTICAL SCALE

LEGEND

- 6" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (RESIDENTIAL)
- 8" HIGH EARLY STRENGTH CONCRETE DRIVEWAY (COMMERCIAL)
- 5" CONCRETE SIDEWALK
- 8" INTEGRAL COLORED CONCRETE PAVEMENT (SEE PDT-05)
- 5" STAINED/STAMPED CONCRETE (SEE PDT-05)
- 6" HOT-MIX ASPHALT CONC:
  2" TYPE D HMAC
  4" TYPE B HMAC

NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.
3. ALL DRIVEWAYS ARE 5' RADIUS UNLESS OTHERWISE NOTED.
4. FULL DEPTH SAW CUT AND MATCH EXISTING PAVEMENT AT ALL CONNECTIONS AT EXISTING PAVEMENT.
5. REFER TO SHEETS EU-01 THRU EU-03 FOR EXISTING UTILITIES AND PROPOSED MINOR UTILITY ADJUSTMENTS.



FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
PAVING PLAN AND PROFILE
INTERSECTION

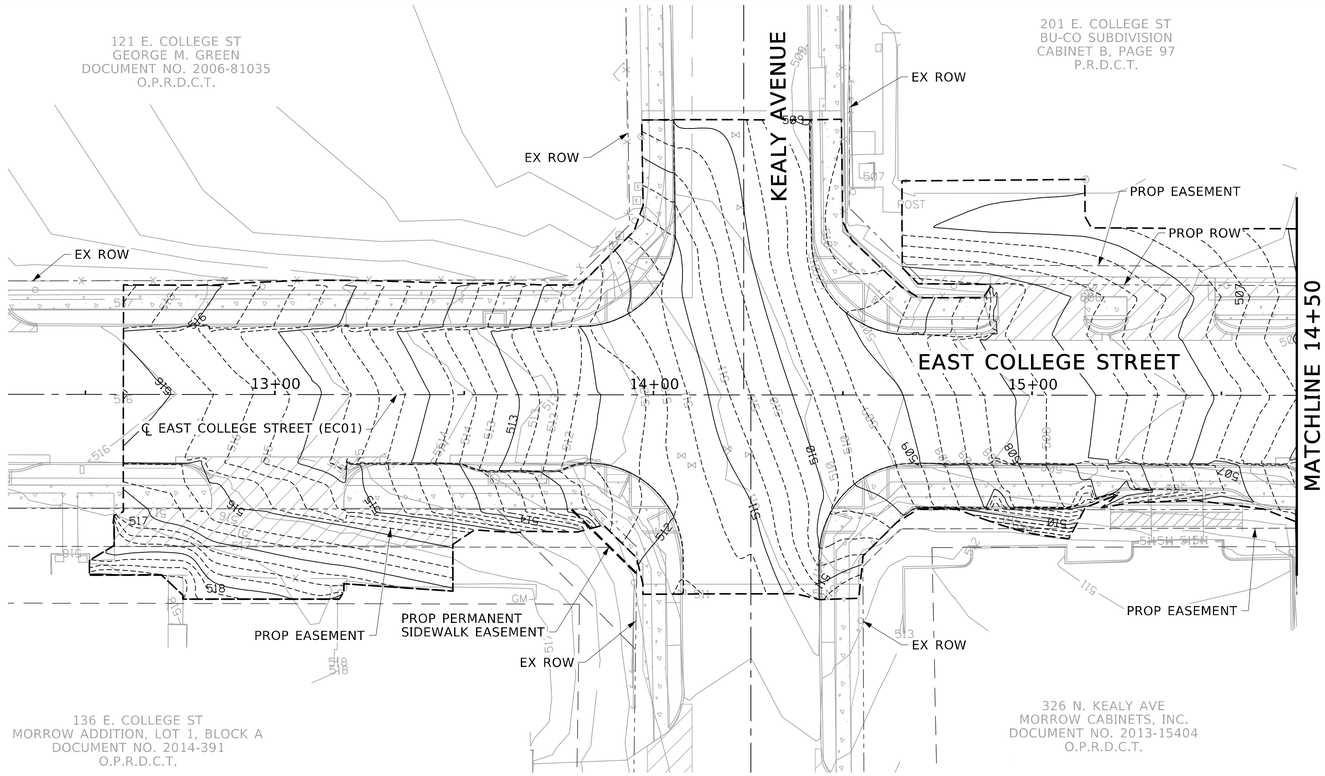
NO.	ISSUES	BY	DATE

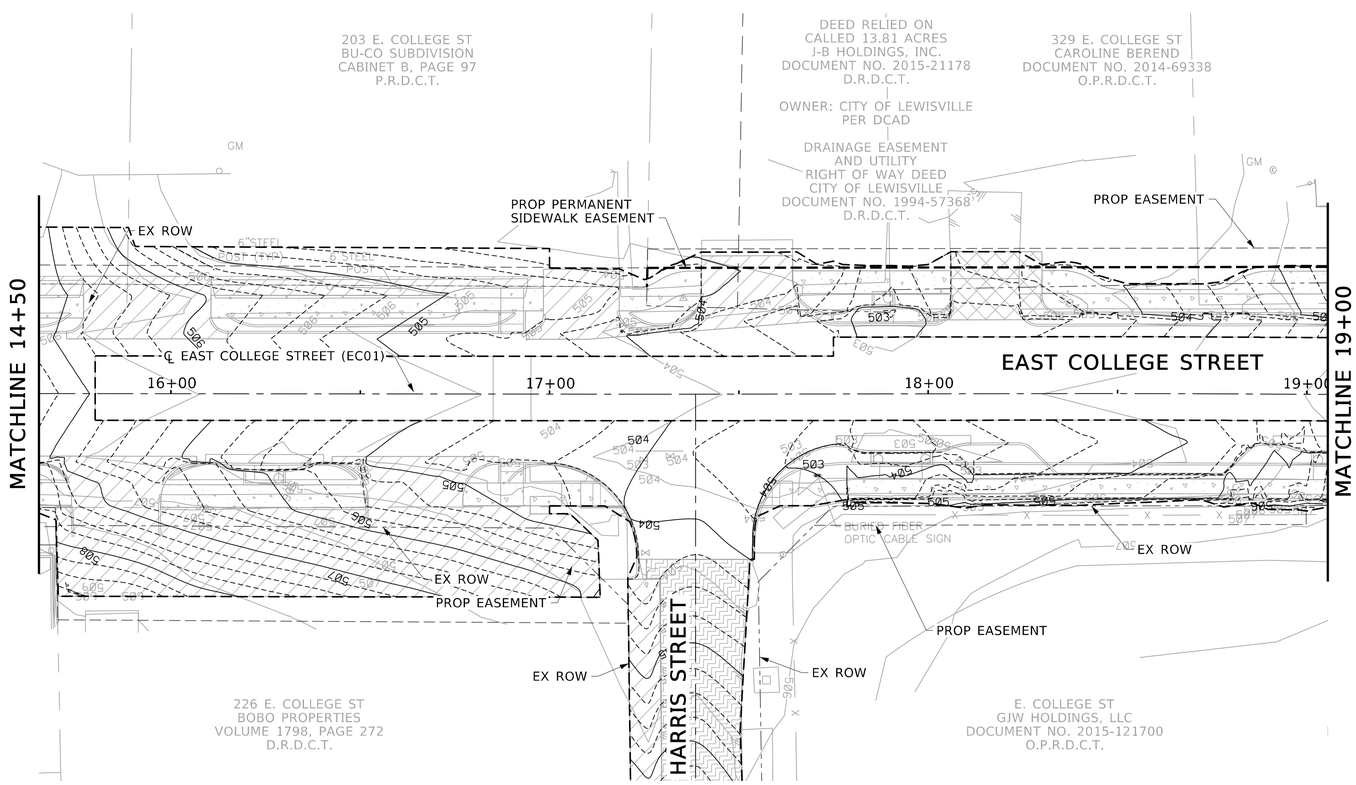
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pp-road08.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PV-08
SEQ. 45

MicroStation V8 User: 02446 Office:On Site
N:\IP\Drawings\3. Roadway\cv-rte-pp-road08.sht
Plotter: pltPlotCenter_HP4 Plotted:Aug. 08, 2024 - 02:11:44 PM
Plot Scale: 40.000 ' / in.
Date: Aug. 08, 2024 - 02:11:44 PM
Model: Default
Project:Freese and Nichols, Inc. - True Type Fonts
Office:On Site Date:Aug. 08, 2024 - 02:11:44 PM User:02446 File:N:\IP\Drawings\3. Roadway\cv-trt-pp-road08.sht





N

0 10' 20' 40'
SCALE IN FEET

LEGEND:

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- LIMITS OF CONSTRUCTION

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
GRADING PLAN
KEALY AVE AND HARRIS ST

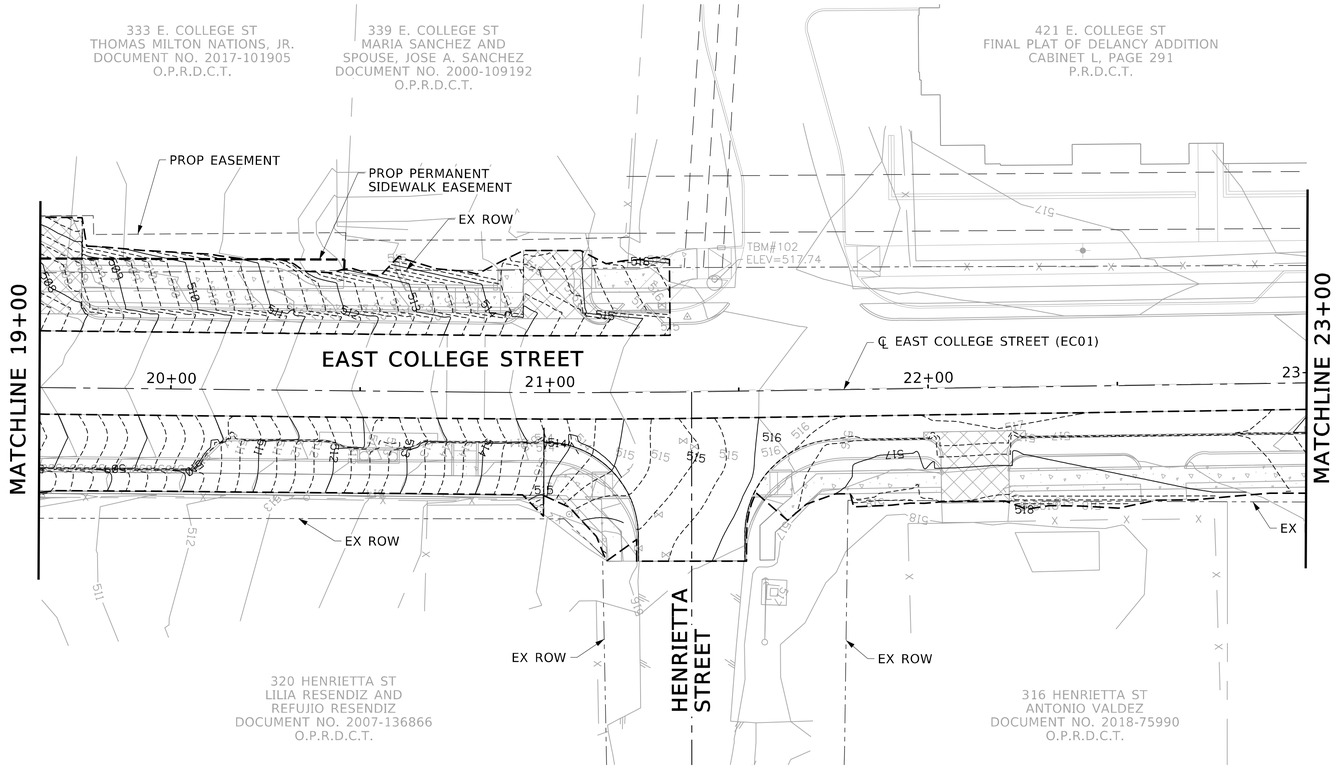
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-grade01.sht

VERIFY SCALE Bar is one inch on original drawing.
If not one inch on this sheet, adjust scale.
0" 1"

SHEET
GR-01
SEQ.
46

MicroStation V8 User:02446 Office:On Site
Plotter: HP Photo #1 1/16" = 1' Plotted:Aug. 08, 2024 - 02:11:48 PM
Plot Scale: 40.000 ' / in. Model: Default
Paper: Arch D Project:Freese and Nichols, Inc. - True Type Fonts



N

0 10' 20' 40'
SCALE IN FEET

LEGEND:

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- LIMITS OF CONSTRUCTION

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
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08/08/2024

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12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE

EAST COLLEGE STREET IMPROVEMENTS

CIVIL

GRADING PLAN
HENRIETTA ST AND LEONARD ST

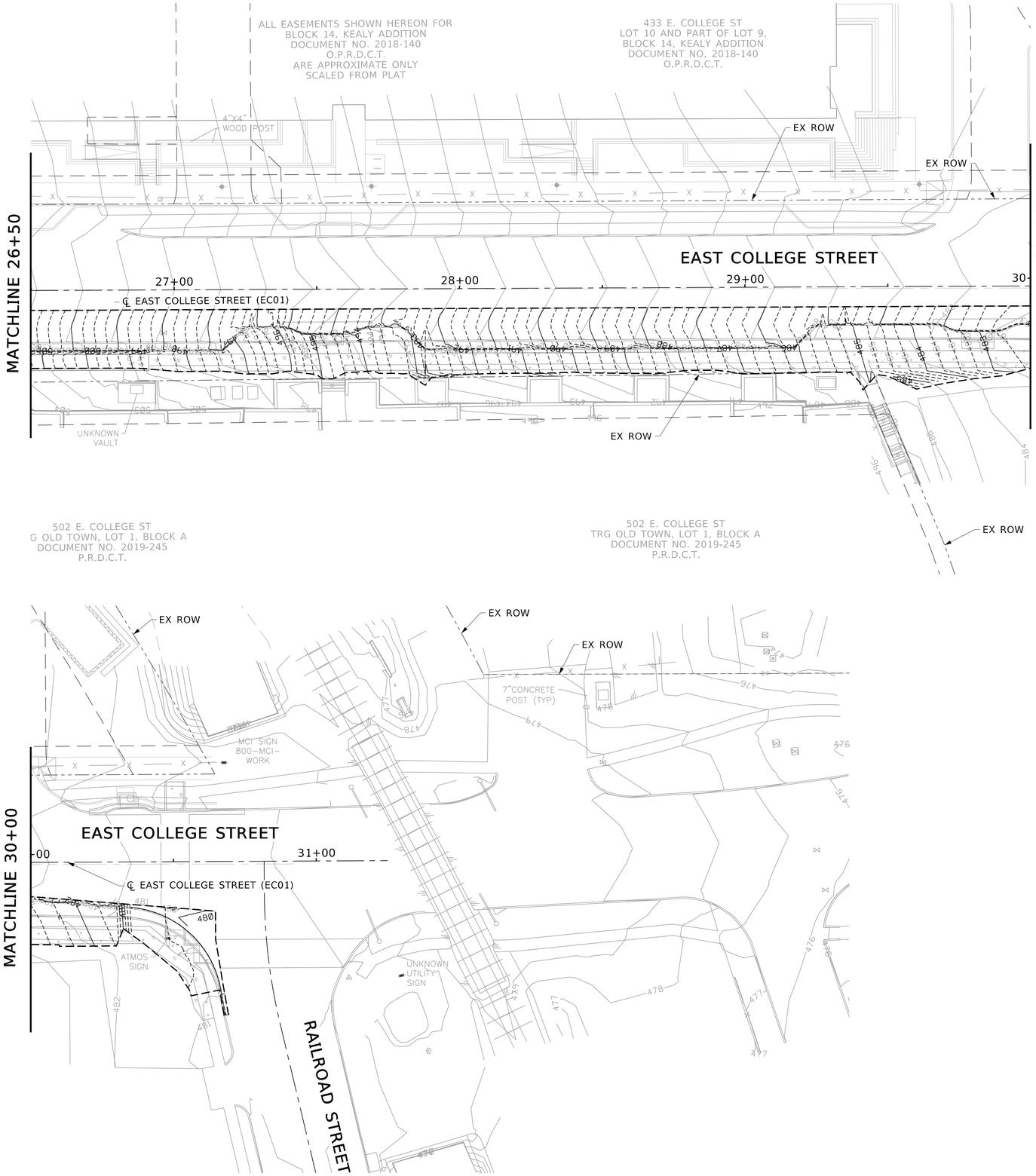
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-grade02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET GR-02
SEQ. 47

MicroStation V8 User:02446 Office:On Site
Plotter: Default Model: Default
Plot Scale: 40.000 ' / in. Project:Freese and Nichols, Inc. - True Type Fonts
Date: Aug. 08, 2024 - 02:11:52 PM



N

0 10' 20' 40'

SCALE IN FEET

LEGEND:

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- LIMITS OF CONSTRUCTION

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
GRADING PLAN
RAILROAD ST

NO.	ISSUES	BY	DATE

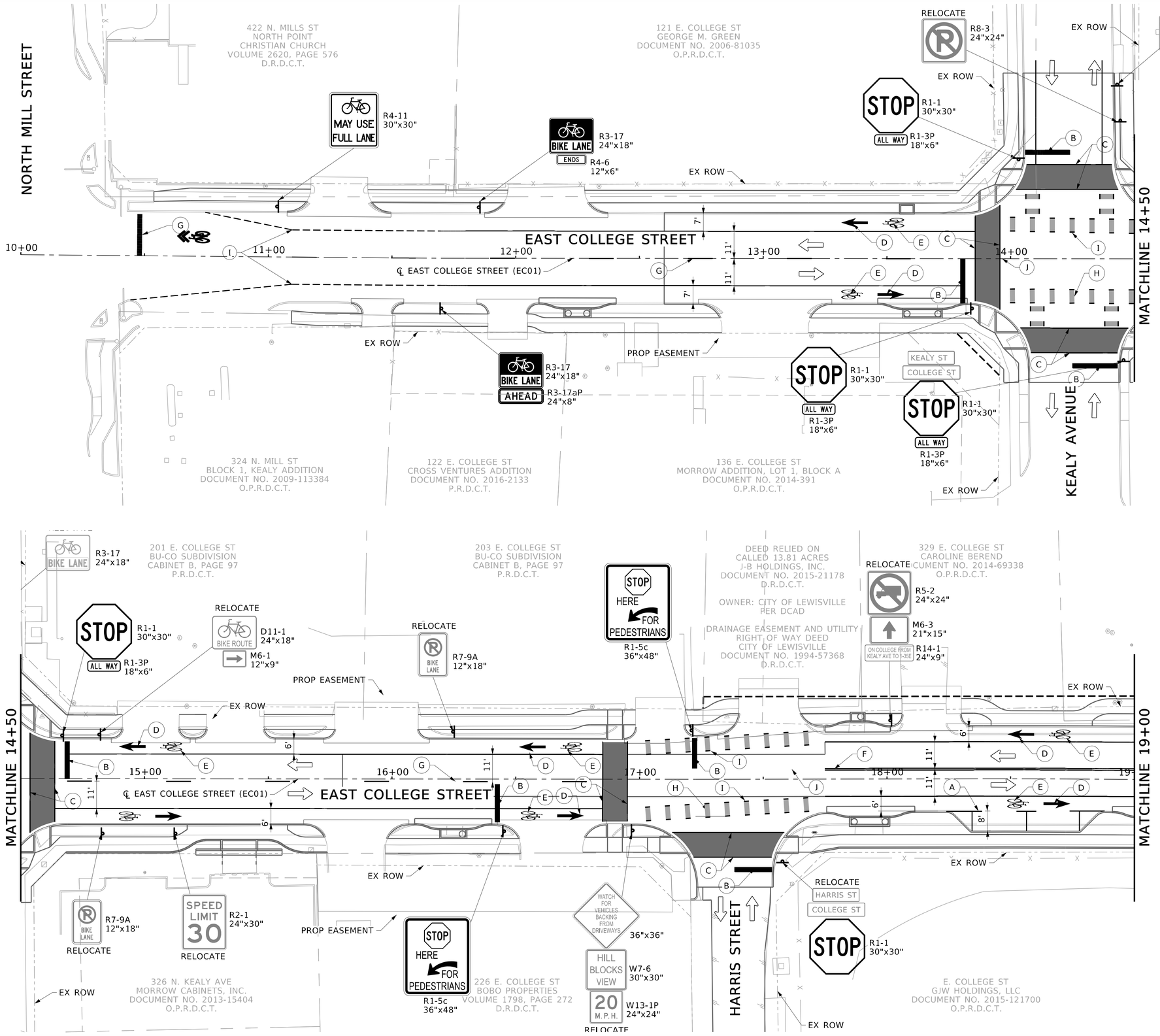
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-grade03.sht

VERIFY SCALE Bar is one inch on original drawing.
If not one inch on this sheet, adjust scale.
0" 1"

SHEET
GR-03

SEQ.
48

MicroStation V8 User:02446 OfficeOn Site
Plotter: LaserJet 4100 PCL
Plot Scale: 40.000 ' / in.
Date: Aug. 08, 2024 - 02:11:57 PM
Model: Default
Project: Freese and Nichols, Inc. - True Type Fonts



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CITY OF LEWISVILLE

EAST COLLEGE STREET IMPROVEMENTS

CIVIL

SIGNAGE AND PAVEMENT MARKING PLAN
BEGIN TO STA 19+00

NOTES:

1. ALL SIGNS SHALL BE INSTALLED USING THE WEDGE ANCHOR STEEL SYSTEM.
2. REFER TO SHEET PMDT-01 AND PMDT-02 FOR MORE PAVEMENT MARKING DETAILS.
3. RPM TYPE II-A-A SHALL BE PLACED ALONG DBL SLD YELLOW PAVEMENT MARKINGS IN ACCORDANCE WITH PM(2)-20 DETAIL "B".
4. RPM TYPE B-B SHALL BE PLACED ALONG CENTER STRIPING AT EACH FIRE HYDRANT LOCATION.
5. ALL RELOCATED SIGNS TO BE INSTALLED WITH A NEW POLE AND FOUNDATION.

NO.	ISSUES	BY	DATE

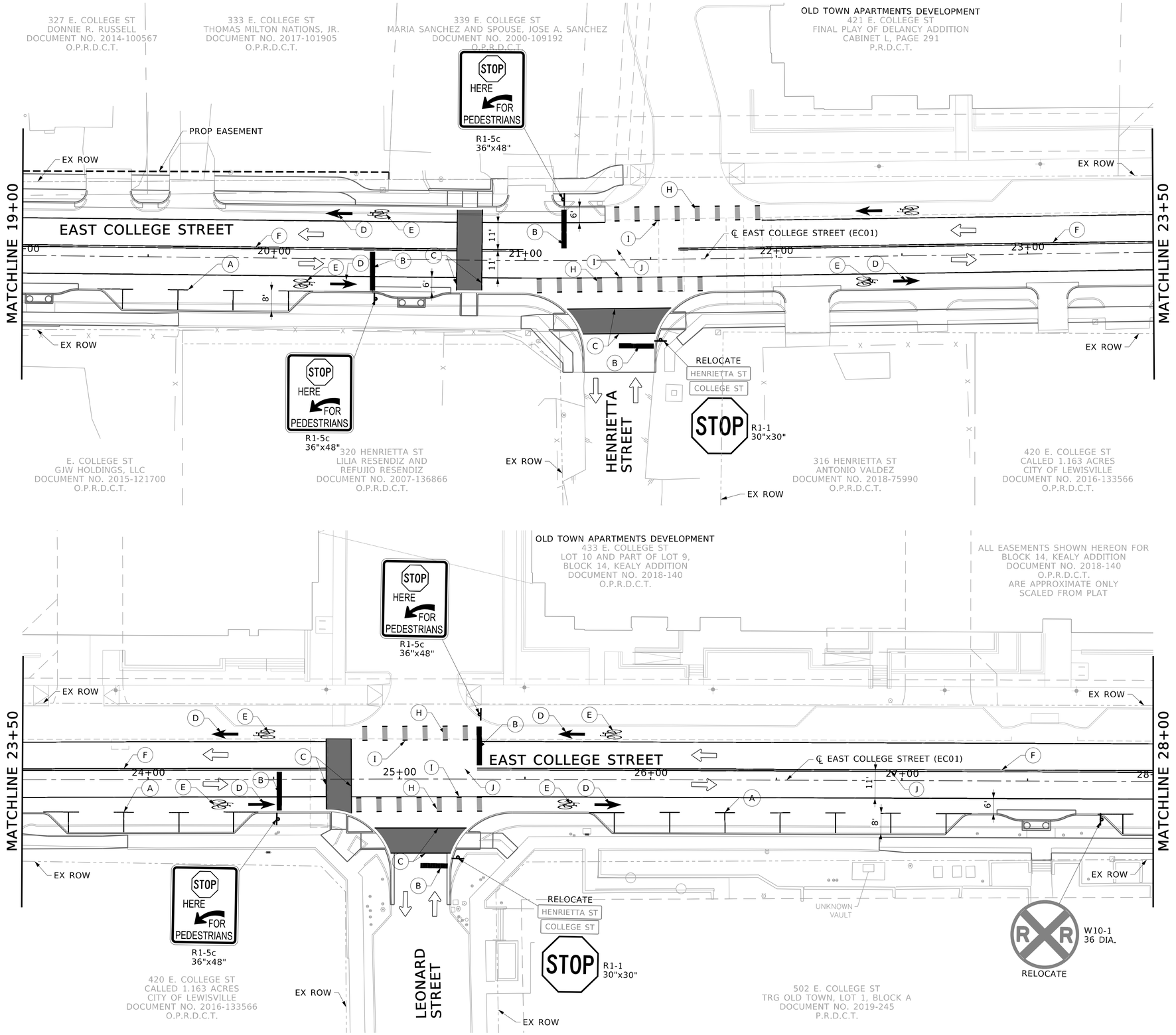
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-pvmk01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PM-01
SEQ. 49

MicroStation V8 User:02446 Office:On Site
N:\lf\Drawings\3. Roadway\cv-trt-pvmk01.sht
Plotter: HP DesignJet T1700dr PostScript
Plot Scale: 40.000 ' / In.
Date: Aug 08, 2024 - 02:12:03 PM
Model: Default
Project:Freese and Nichols, Inc. - True Type Fonts

Office:On Site Date:Aug. 08, 2024 - 02:12:03 PM User:02446 File:N:\lf\Drawings\3. Roadway\cv-trt-pl-pvmk01.sht



N

0 10' 20' 40'

SCALE IN FEET

LEGEND

- (A) REFL PAV MRK (TYPE I) (W)(4")(SLD)
- (B) REFL PAV MRK (TYPE I) (W)(24")(SLD)
- (C) REFL PAV MRK (TYPE I) (W)(6")(SLD)
- (D) REFL PAV MRK (TYPE I) (W)(ARROW)
- (E) REFL PAV MRK (TYPE I) (W)(BIKE SYMBOL)
- (F) REFL PAV MRK (TYPE I) (Y)(4")(SLD)(DBL) W/ TYPE II-A-A RPM @ 40' SPACING (SEE NOTE 3)
- (G) REFL PAV MRK (TYPE I) (Y)(4")(DASH)
- (H) REFL PAV MRK (TYPE I) (GREEN)(24")(SLD)
- (I) REFL PAV MRK (TYPE I) (W)(6")(DASHED)
- (J) RAISED PAVEMENT MARKING (B-B) (SEE NOTE 4)
- PROPOSED STREET SIGN
- TRAVEL DIRECTIONS

NOTES:

1. ALL SIGNS SHALL BE INSTALLED USING THE WEDGE ANCHOR STEEL SYSTEM.
2. REFER TO SHEET PMDT-01 AND PMDT-02 FOR MORE PAVEMENT MARKING DETAILS.
3. RPM TYPE II-A-A SHALL BE PLACED ALONG DBL SLD YELLOW PAVEMENT MARKINGS IN ACCORDANCE WITH PM(2)-20 DETAIL "B".
4. RPM TYPE B-B SHALL BE PLACED ALONG CENTER STRIPING AT EACH FIRE HYDRANT LOCATION.
5. ALL RELOCATED SIGNS TO BE INSTALLED WITH A NEW POLE AND FOUNDATION.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

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Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
SIGNAGE AND PAVEMENT MARKING PLAN
STA 19+00 TO 28+00

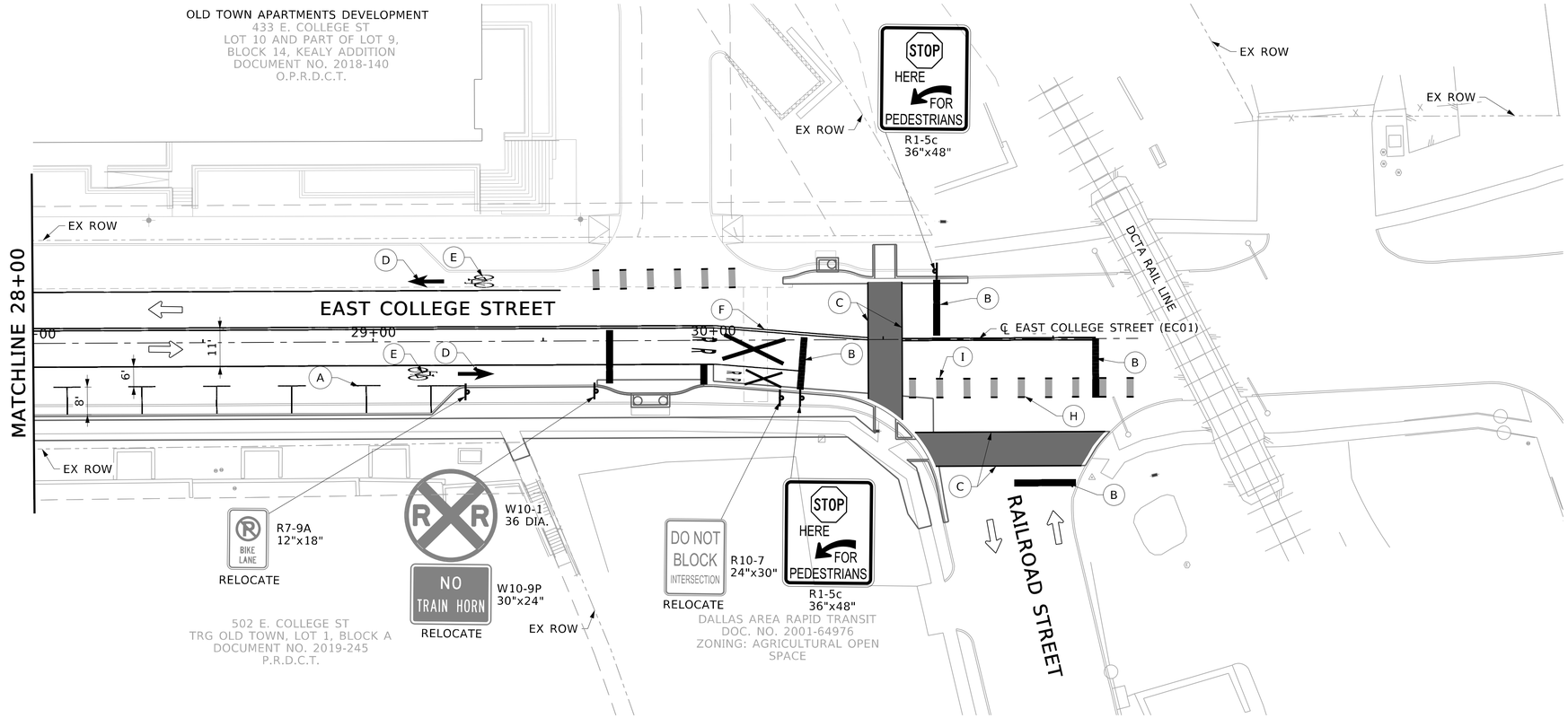
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
CHECKED ADH
REVISED
FILE NAME cv-trt-pl-pvmk02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
PM-02
SEQ.
50

MicroStation V8 User:02446 Office:On Site
Plotter: In\\IP\Drawings\3. Roadway\cv-trt-pl-pvmk02.sht
Plot Style Table: FNI_Color_Fill.tbl Plotter: Default
Plot Scale: 40.000 ' / in. Model: Default
Date: Aug 08, 2024 - 02:12:12 PM Project Freese and Nichols, Inc. - True Type Fonts



N

0 10' 20' 40'

SCALE IN FEET

LEGEND

A	REFL PAV MRK (TYPE I) (W)(4")(SLD)
B	REFL PAV MRK (TYPE I) (W)(24")(SLD)
C	REFL PAV MRK (TYPE I) (W)(6")(SLD)
D	REFL PAV MRK (TYPE I) (W)(ARROW)
E	REFL PAV MRK (TYPE I) (W)(BIKE SYMBOL)
F	REFL PAV MRK (TYPE I) (Y)(4")(SLD)(DBL) W/ TYPE II-A-A RPM @ 40' SPACING (SEE NOTE 3)
G	REFL PAV MRK (TYPE I) (Y)(4")(DASH)
H	REFL PAV MRK (TYPE I) (GREEN)(24")(SLD)
I	REFL PAV MRK (TYPE I) (W)(6")(DASHED)
J	RAISED PAVEMENT MARKING (B-B) (SEE NOTE 4)
	PROPOSED STREET SIGN
	TRAVEL DIRECTIONS

NOTES:

1. ALL SIGNS SHALL BE INSTALLED USING THE WEDGE ANCHOR STEEL SYSTEM.
2. REFER TO SHEET PMDT-01 AND PMDT-02 FOR MORE PAVEMENT MARKING DETAILS.
3. RPM TYPE II-A-A SHALL BE PLACED ALONG DBL SLD YELLOW PAVEMENT MARKINGS IN ACCORDANCE WITH PM(2)-20 DETAIL "B".
4. RPM TYPE B-B SHALL BE PLACED ALONG CENTER STRIPING AT EACH FIRE HYDRANT LOCATION.
5. ALL RELOCATED SIGNS TO BE INSTALLED WITH A NEW POLE AND FOUNDATION.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE

EAST COLLEGE STREET IMPROVEMENTS

CIVIL

SIGNAGE AND PAVEMENT MARKING PLAN STA 28+00 TO END

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-pvmk03.sht

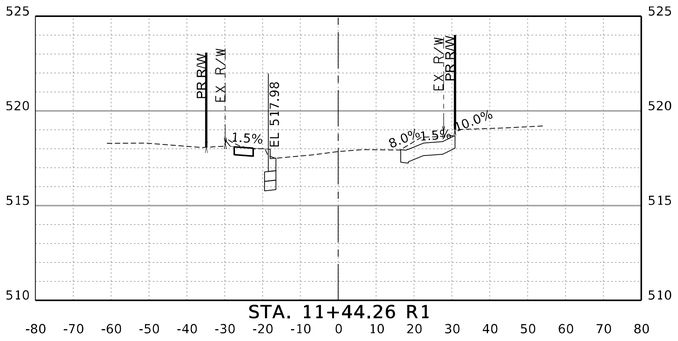
NO. ISSUES | BY | DATE

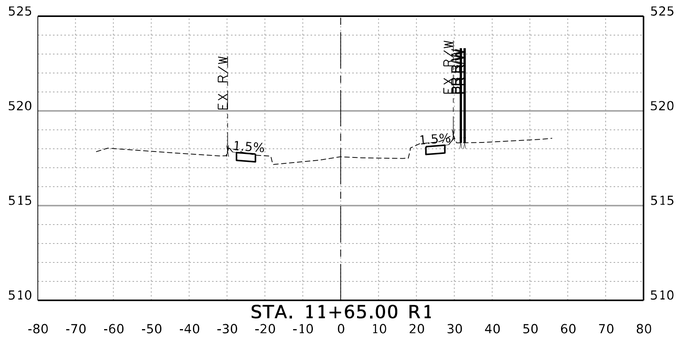
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0" 1"

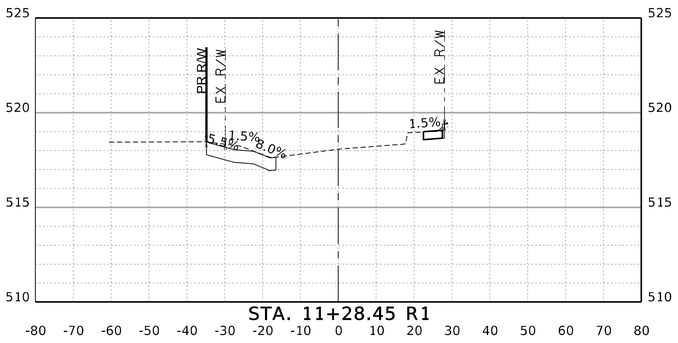
SHEET PM-03

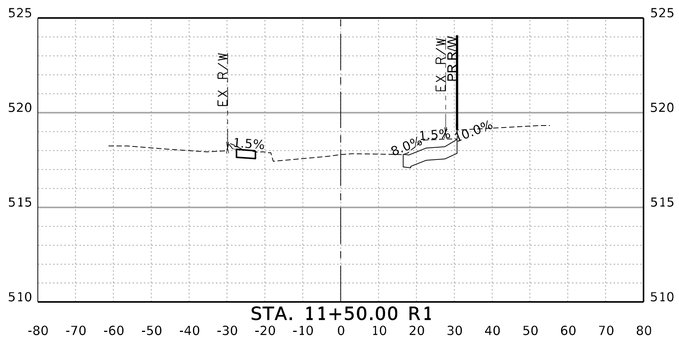
SEQ. 51

MicroStation V8 User:02446 Office:On Site
Plotter: HP Designjet T1300 ePostScript Printer Driver
Plot Scale: 40.000 ' / in. Plot Date/Time: Aug 08, 2024 - 02:12:19 PM
Plotted By: Brian Alvarez
Model: Default
Project: Freese and Nichols, Inc. - True Type Fonts









STA.11+28.45 R1 TO STA.11+65.00 R1

FREESE AND NICHOLS, INC.
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STATE OF TEXAS
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08/08/2024

FREESE NICHOLS
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Dallas, TX 75251
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Web - www.freese.com

CITY OF LEWISVILLE

EAST COLLEGE STREET IMPROVEMENTS

CIVIL

CROSS SECTIONS
STA.11+28.45 TO STA.11+65.00

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-xs-crosssections.dgn

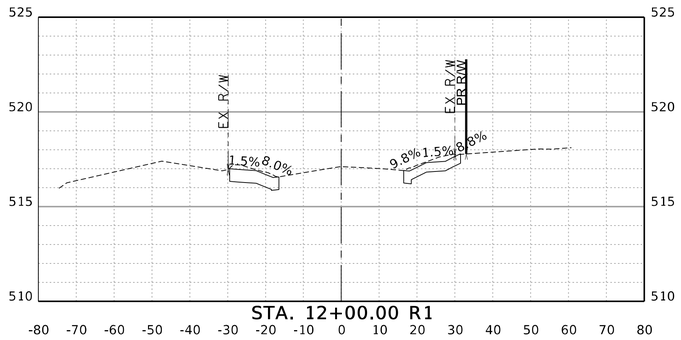
NO.	ISSUES	BY	DATE

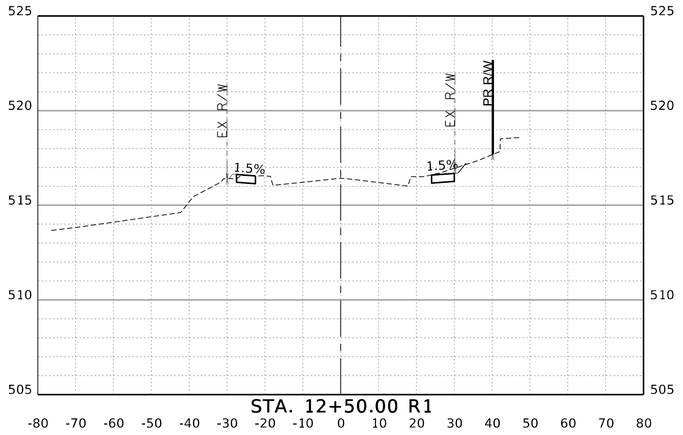
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

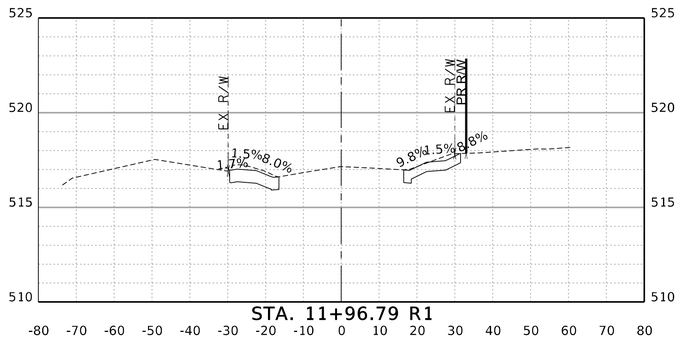
SHEET
XS-01

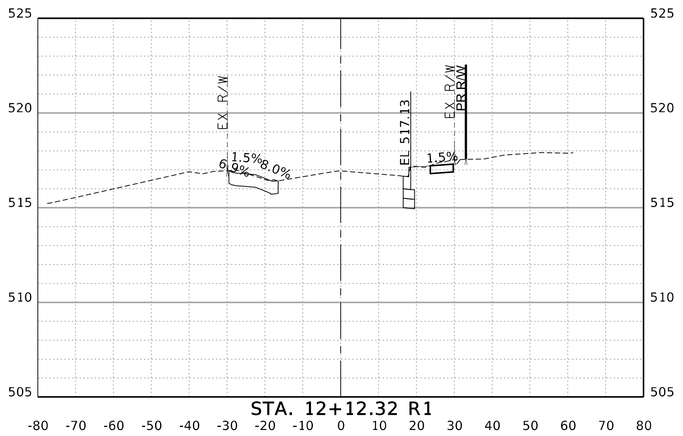
SEQ.
52

MicroStation V8 User: 02446 Office:On Site
N:\ENG\cv-trt-xs-crosssections.dgn
Plotter: pltPlotPro64 (LWE-KMBP-Xerox.pltcfg
Plot Scale: 40.000 " / 1'-
Date: Aug. 08, 2024 - 02:12:25 PM
Model: EC01_5_17_2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.11+96.79 R1 TO STA.12+50.00 R1

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TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
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Web - www.freese.com

CITY OF LEWISVILLE

EAST COLLEGE STREET IMPROVEMENTS

CIVIL

CROSS SECTIONS
STA.11+96.79 TO STA.12+50.00

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-xs-crosssections.dgn

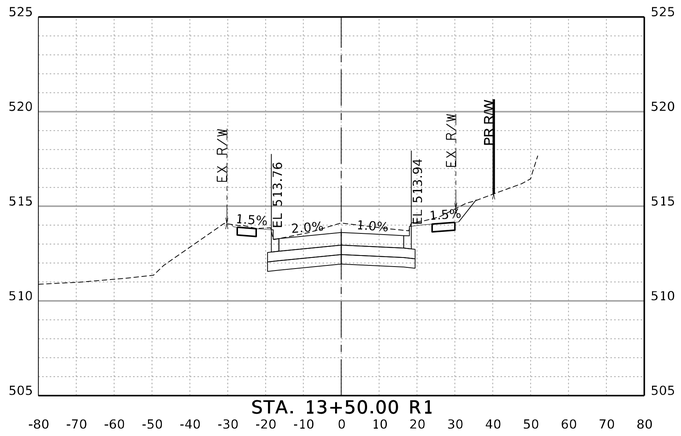
NO.	ISSUES	BY	DATE

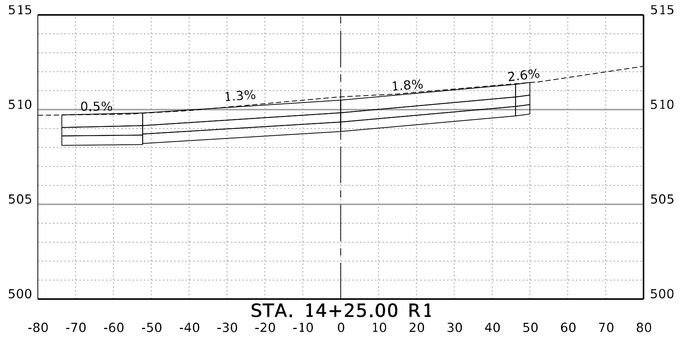
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

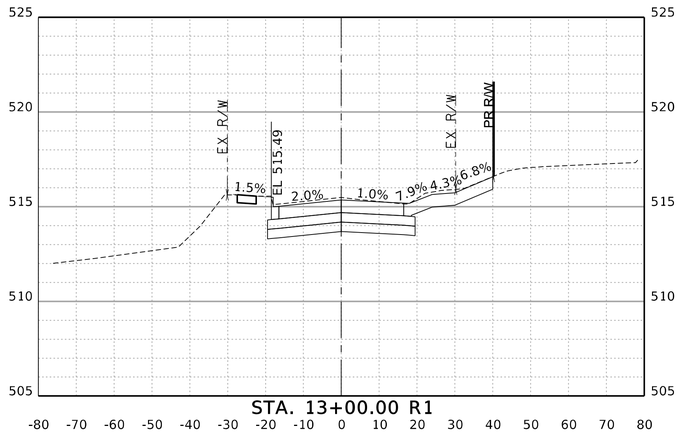
SHEET XS-02

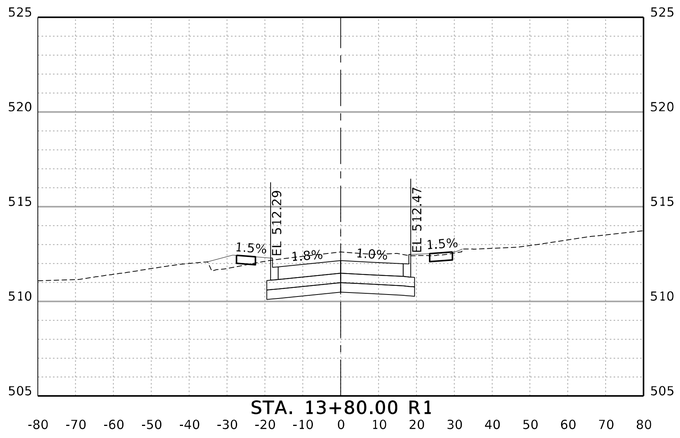
SEQ. 53

MicroStation V8 User:02446 Office:On Site
N:\ENG\cv-trt-xs-crosssections.dgn
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Plot Scale: 40.000 ' / In.
Date: Aug 08, 2024 - 02:12:26 PM
Model: ECD_5.17.2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.13+00.00 R1 TO STA.14+25.00 R1

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TEXAS REGISTERED ENGINEERING FIRM F-2144

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.13+00.00 TO STA.14+25.00

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH

NO.	ISSUES	BY	DATE

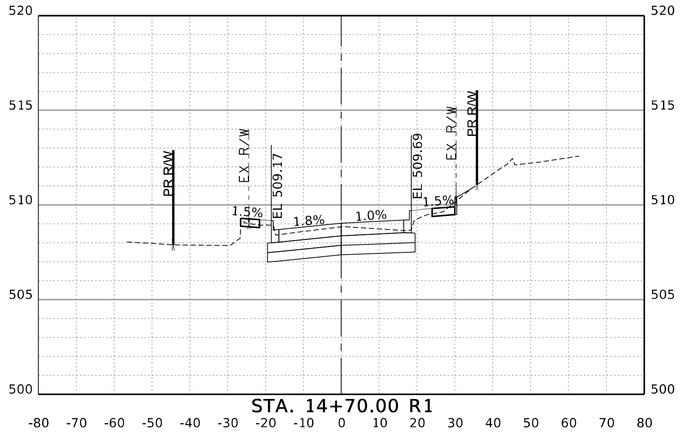
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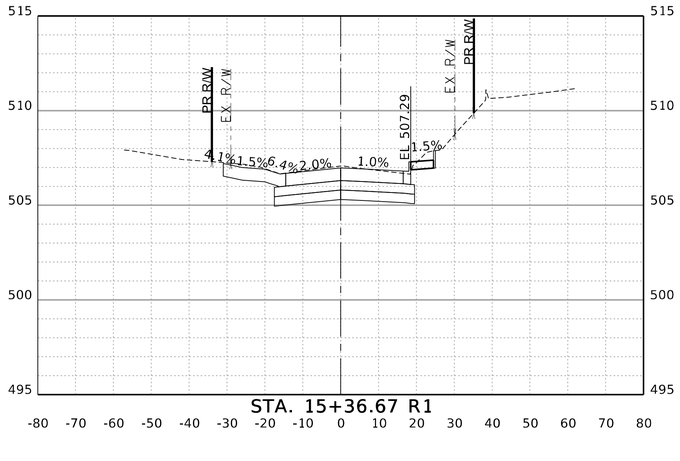
VERIFY SCALE Bar is one inch on original drawing.
If not one inch on this sheet, adjust scale.
0 1"

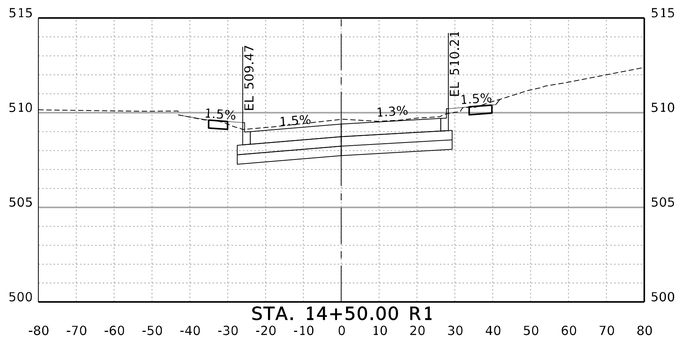
SHEET XS-03

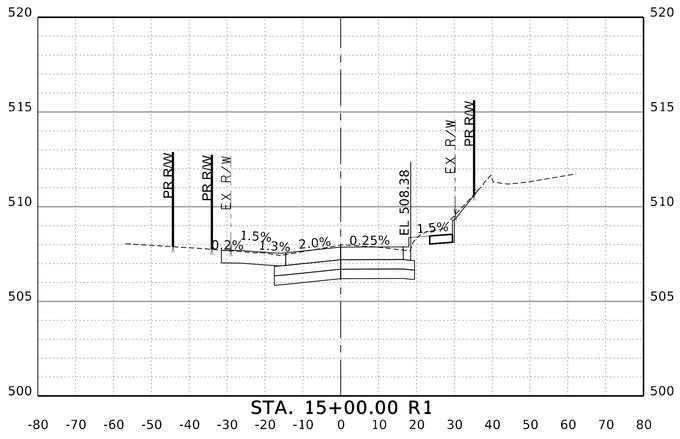
SEQ. 54

MicroStation V8 User: 02446 Office:On Site
N:\ENG\cv-trt-xs-crosssections.dgn
Plotter: pltPlotter_v8_Letter_Portrait.plt.cfg
Plot Scale: 40.000 " / 1in.
Date: Aug. 08, 2024 - 02:12:27 PM
Model: EC01_5.17.2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.14+50.00 R1 TO STA.15+36.67 R1

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
CROSS SECTIONS
STA.14+50.00 TO STA.15+36.67

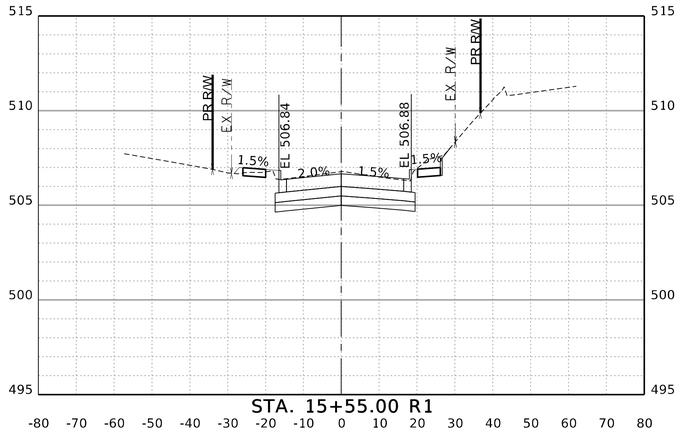
F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-xs-crosssections.dgn

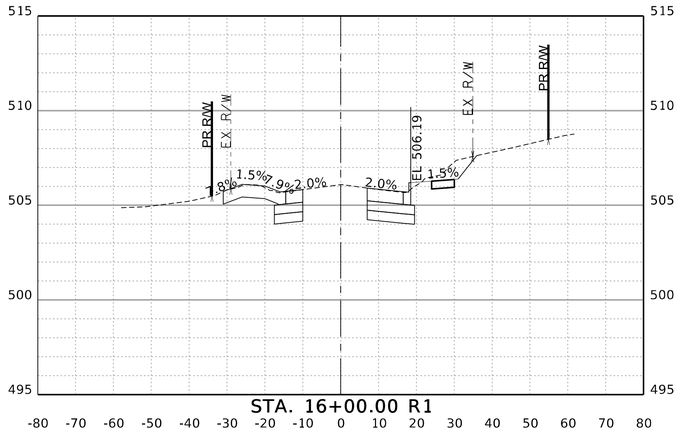
NO.	ISSUES	BY	DATE

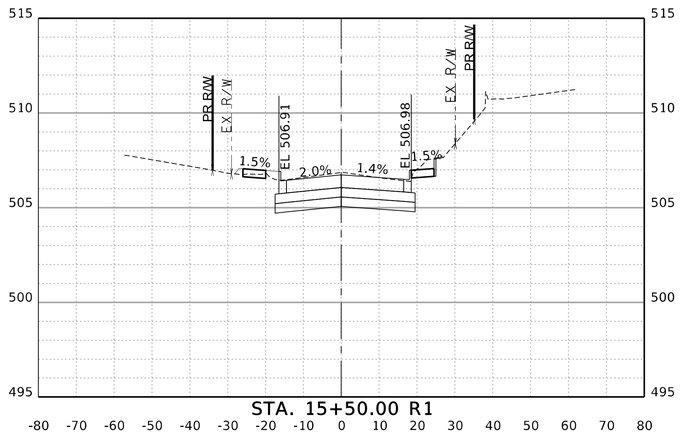
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

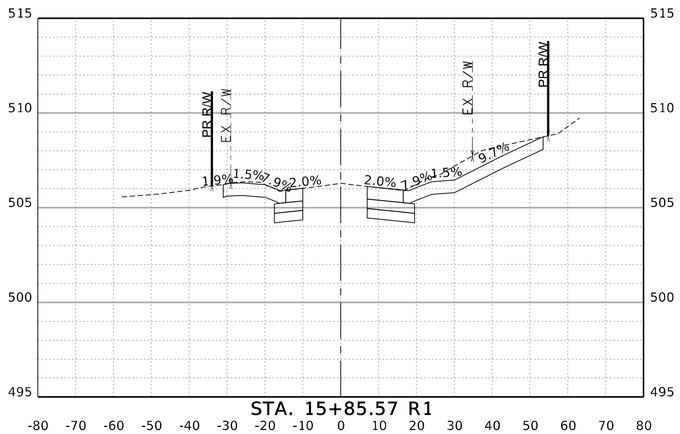
SHEET
XS-04
SEQ.
55

MicroStation V8 User: 02446 OfficeOn Site
N:\ENG\cad\cross-sections.dgn
Plotter: pltPlotter.plt Line Weights: Medium.plt.cfg
Plot Scale: 40.000 " / 1in.
Date: Aug. 08, 2024 - 02:12:28 PM
Model: EC01_5_17_2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.15+50.00 R1 TO STA.16+00.00 R1

FREESE AND NICHOLS, INC.
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PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
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Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.15+50.00 TO STA.16+00.00

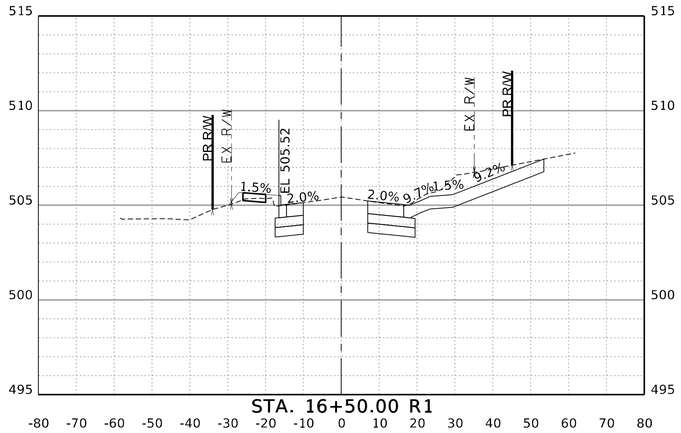
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-xs-crosssections.dgn

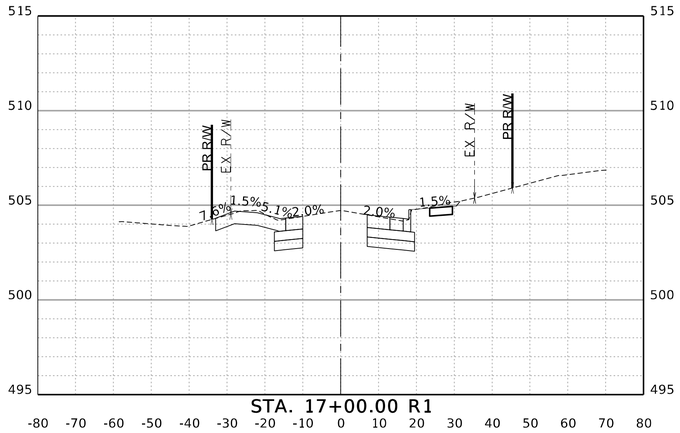
NO.	ISSUES	BY	DATE

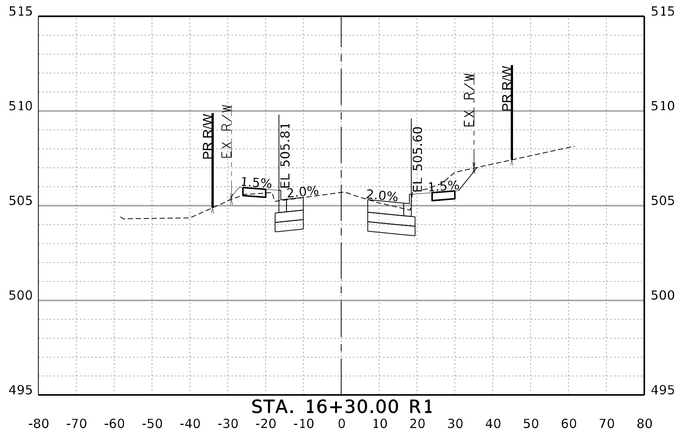
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

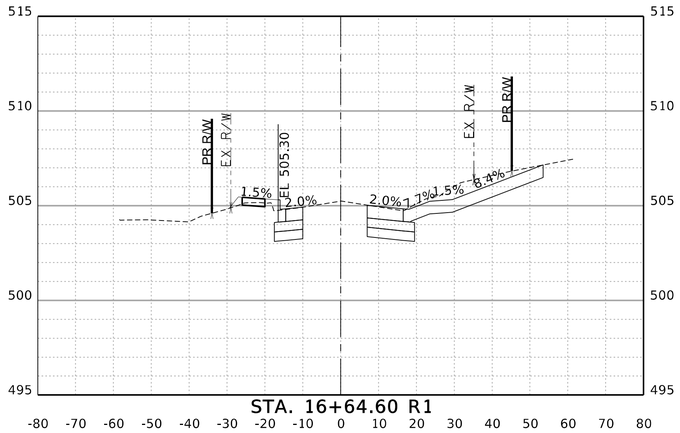
SHEET XS-05
SEQ. 56

MicroStation V8 User:02446 Office:On Site
File:N:\ENG\cv-trt-xs-crosssections.dgn
Plotter: HP Photosmart C4180 series PCL3 GUI
Plot Scale: 40.000 '/ in.
Plot Date/Time: Aug. 08, 2024 - 02:12:30 PM
Model: ECD_5.17.2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.16+30.00 R1 TO STA.17+00.00 R1

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TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
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PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.16+30.00 TO STA.17+00.00

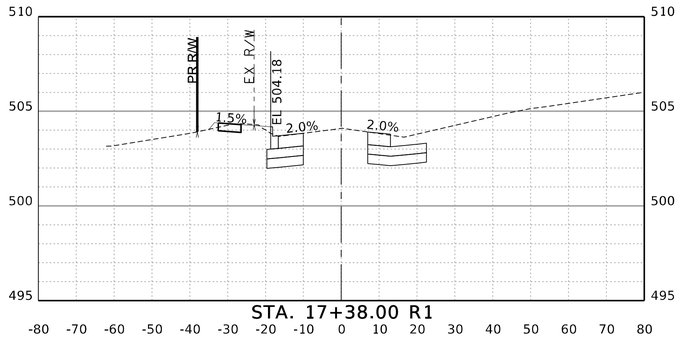
NO.	ISSUES	BY	DATE

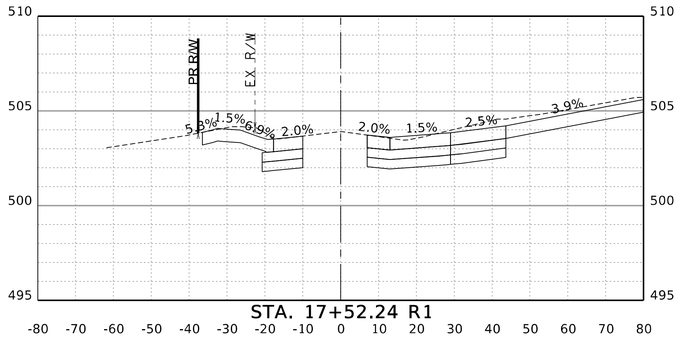
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-xs-crosssections.dgn

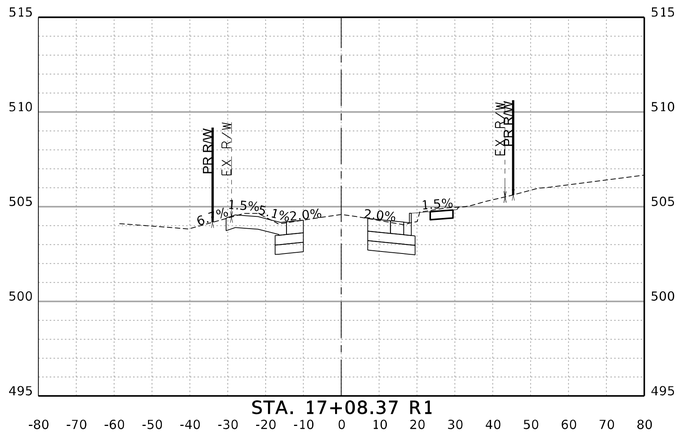
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

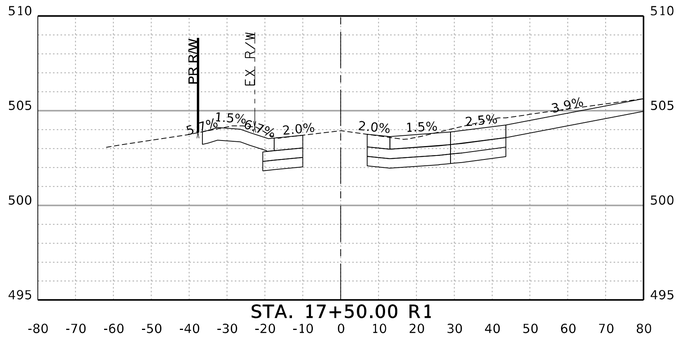
SHEET XS-06
SEQ. 57

MicroStation V8 User:02446 Office:On Site
File:N:\ENG\cv-trt-xs-crosssections.dgn
Plotter: HP Photosmart C7180 series PCL3 GUI
Plot Scale: 40.000 '/ in.
Plot Date: Aug. 08, 2024 - 02:12:31 PM
Model: ECD_S-17-2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.17+08.37 R1 TO STA.17+52.24 R1

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TEXAS REGISTERED ENGINEERING FIRM F-2144

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PROFESSIONAL ENGINEER
08/08/2024

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Dallas, TX 75251
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Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.17+08.37 TO STA.17+52.24

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-xs-crosssections.dgn

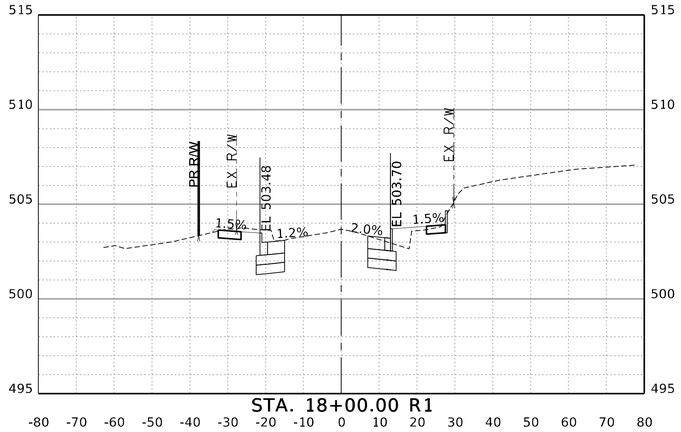
NO.	ISSUES	BY	DATE

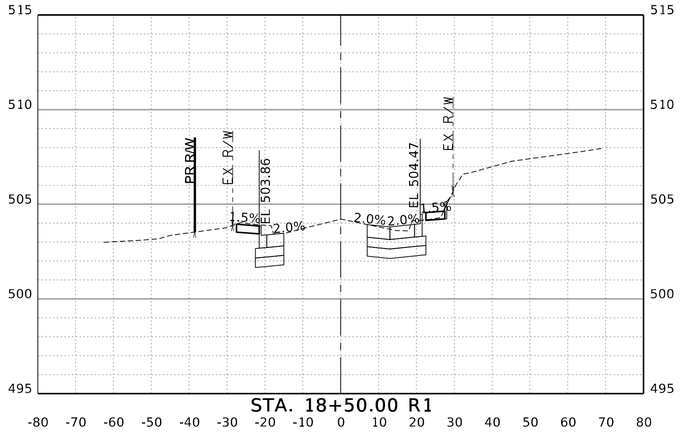
VERIFY SCALE Bar is one inch on original drawing.
If not one inch on this sheet, adjust scale.
0 1"

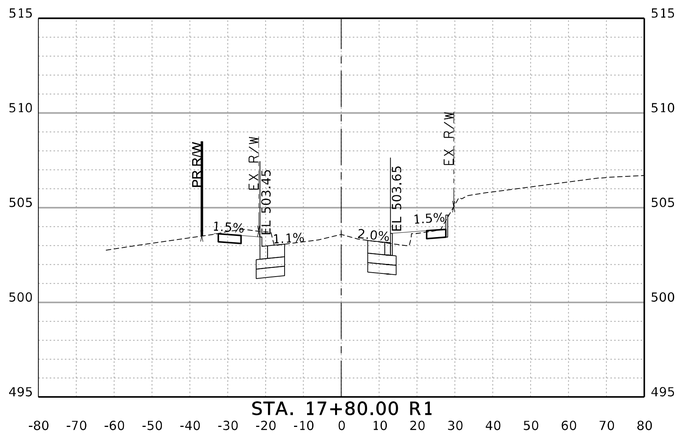
SHEET
XS-07

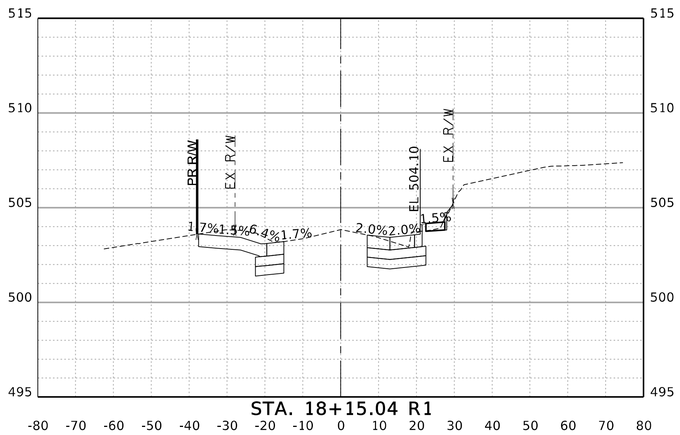
SEQ.
58

MicroStation V8 User: 02446 Office:On Site
N:\ENG\cad\cross-crosssections.dgn
Plotter: pltPlotter_1.tif Level: (Default)
Plot Scale: 40.000 " / 1'-0"
Date: Aug. 08, 2024 - 02:12:33 PM
Model: EC01_5.17.2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.17+80.00 R1 TO STA.18+50.00 R1

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.17+80.00 TO STA.18+50.00

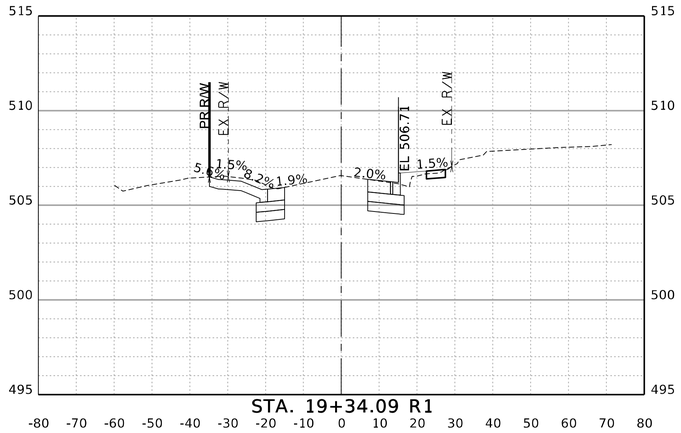
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-xs-crosssections.dgn

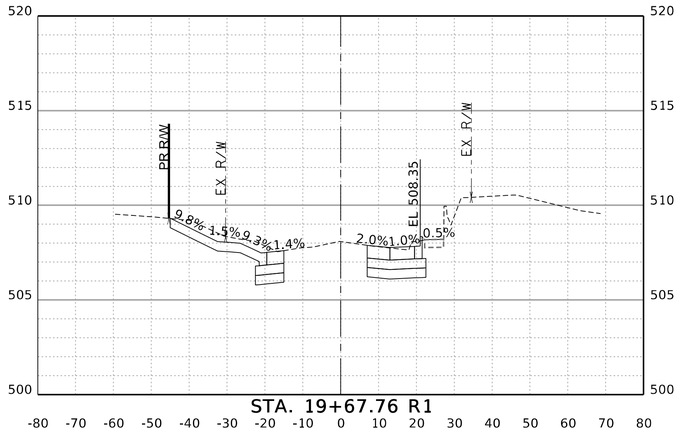
NO.	ISSUES	BY	DATE

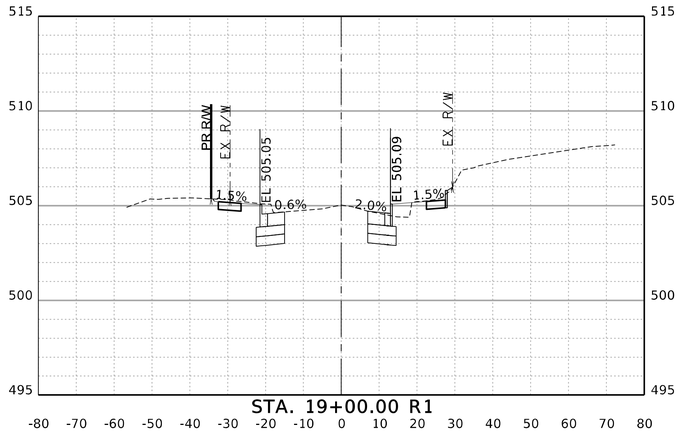
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

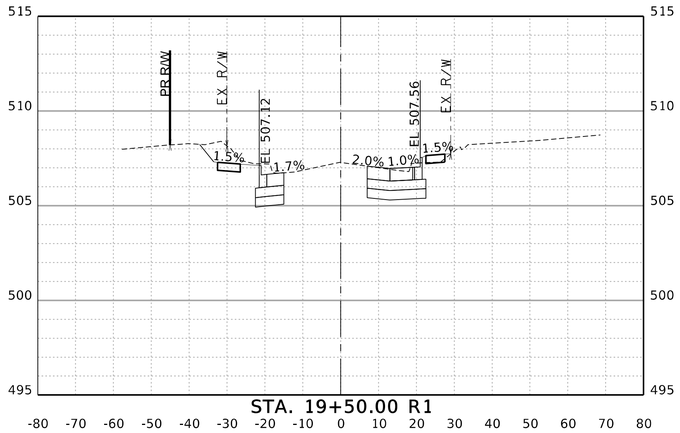
SHEET XS-08
SEQ. 59

MicroStation V8 User:02446 OfficeOn Site
N:\ENG\cv-trt-xs-crosssections.dgn
Plotter: HP Photo #1 (1.00" / in.)
Plot Scale: 40.000 ' / in.
Plot Date: Aug. 08, 2024 - 02:12:34 PM
Model: ECO1_5.17.2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.19+00.00 R1 TO STA.19+67.76 R1

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
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PROFESSIONAL ENGINEER

08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.19+00.00 TO STA.19+67.76

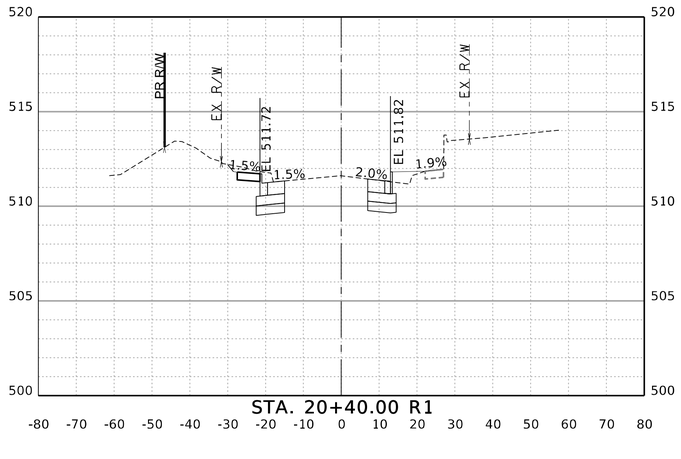
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH

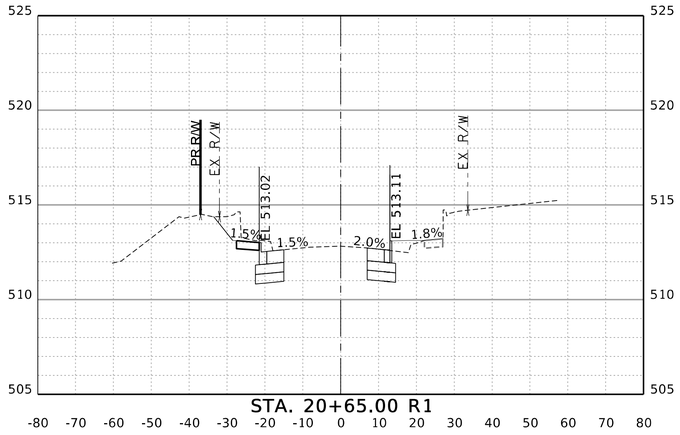
NO.	ISSUES	BY	DATE	FILE NAME
				cv-trt-xs-crosssections.dgn

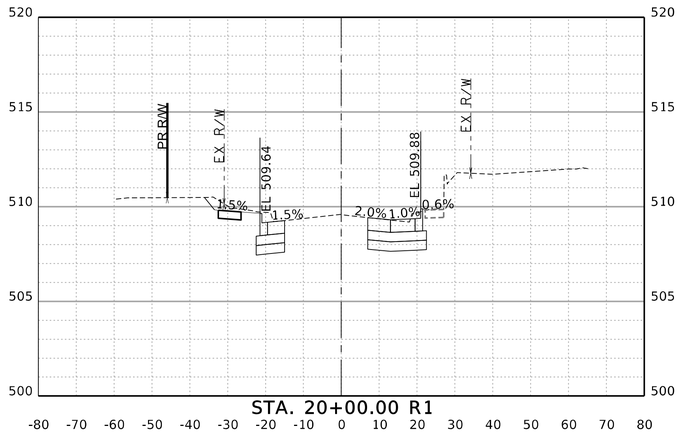
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

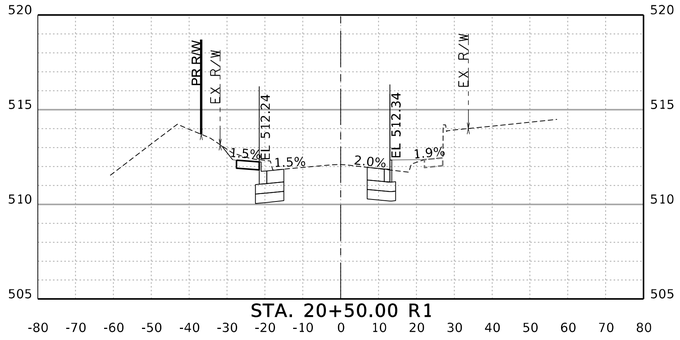
SHEET XS-09
SEQ. 60

MicroStation V8 User:02446 Office:On Site
File:N:\ENG\cv-trt-xs-crosssections.dgn
Plotter: InPlotter_v21.pltcfg HP DesignJet 500ps.plt
Plot Scale: 40.000 ' / in. Model: ECD_5.17.2022
Plotted: Aug. 08, 2024 - 02:12:35 PM Project: Freese and Nichols, Inc. - True Type Fonts









STA.20+00.00 R1 TO STA.20+65.00 R1

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

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FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.20+00.00 TO STA.20+65.00

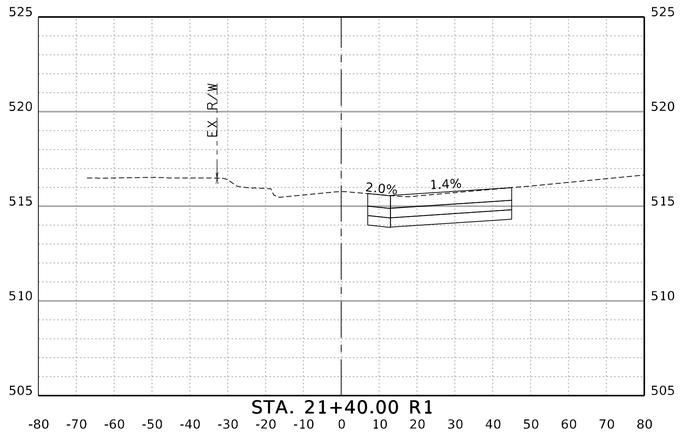
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-xs-crosssections.dgn

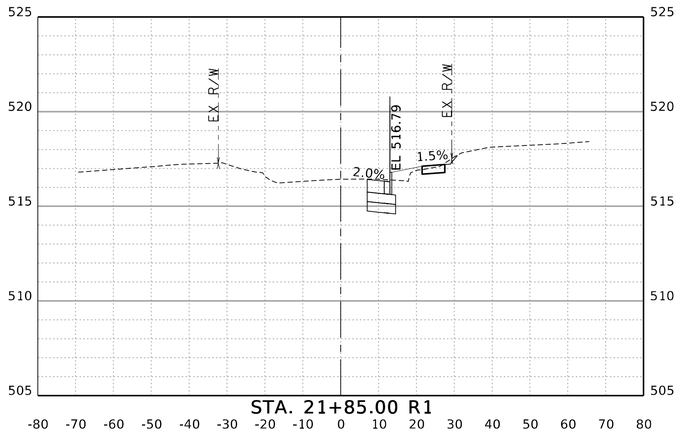
NO. ISSUES | BY | DATE

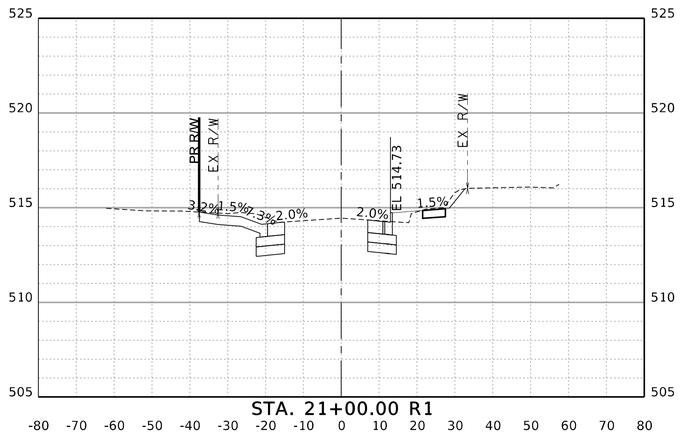
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

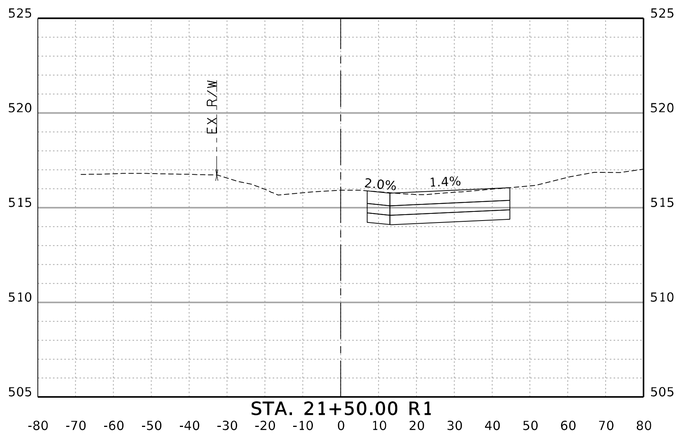
SHEET XS-10
SEQ. 61

MicroStation V8 User: 02446 Office:On Site
N:\ENG\cad\cross-sections.dgn
Plotter: pltPlotCenter.pltcfg Level: Default
Plot Scale: 40.000 " / 1in.
Date: Aug. 08, 2024 - 02:12:36 PM
Model: EC01_5.17.2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.21+00.00 R1 TO STA.21+85.00 R1

FREESE AND NICHOLS, INC.
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.21+00.00 TO STA.21+85.00

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-xs-crosssections.dgn

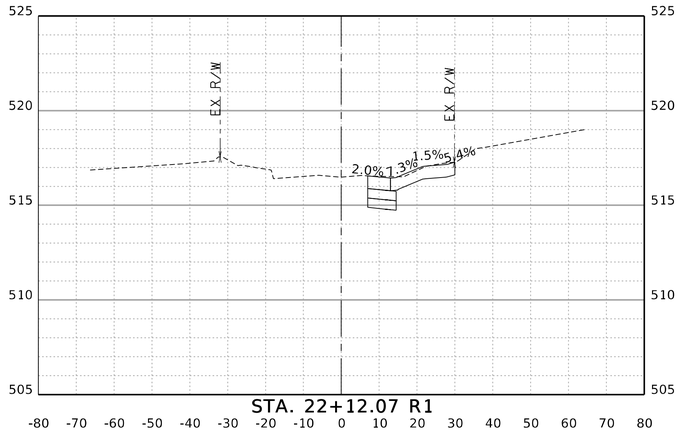
NO.	ISSUES	BY	DATE

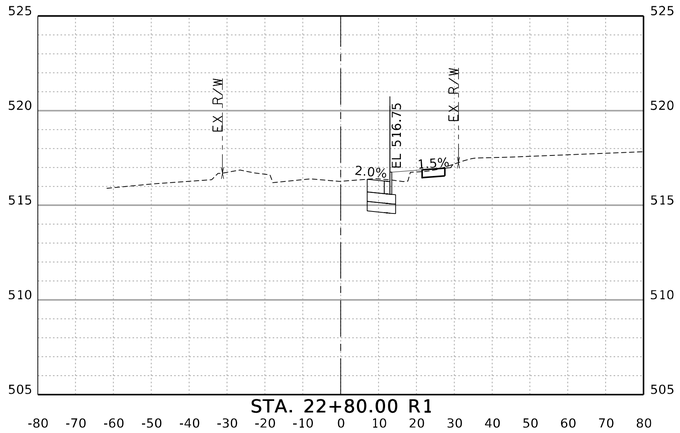
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

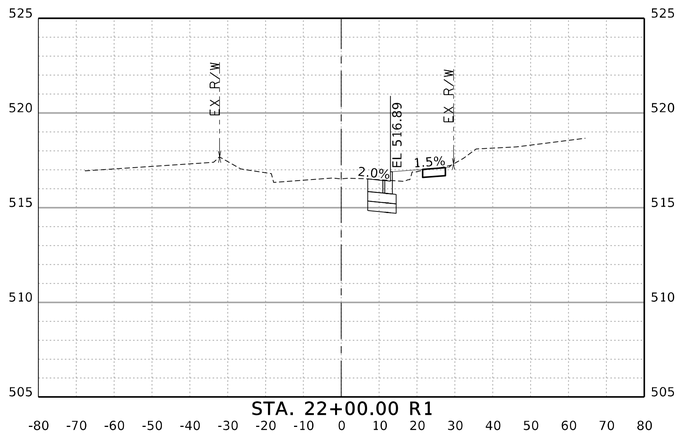
SHEET
XS-11

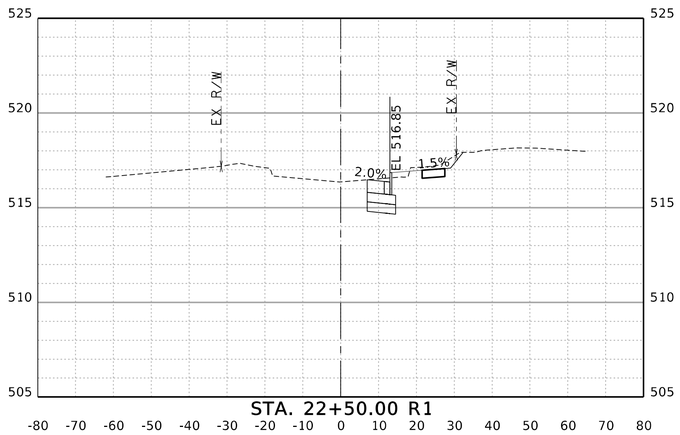
SEQ.
62

MicroStation V8 User:02446 Office:On Site
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Plot Date: Aug 08, 2024 - 02:12:37 PM
Model: ECD_5_17.2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.22+00.00 R1 TO STA.22+80.00 R1

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER

08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.22+00.00 TO STA.22+80.00

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
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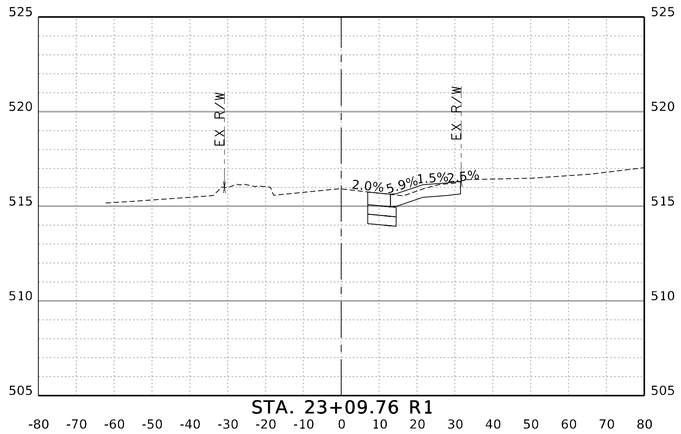
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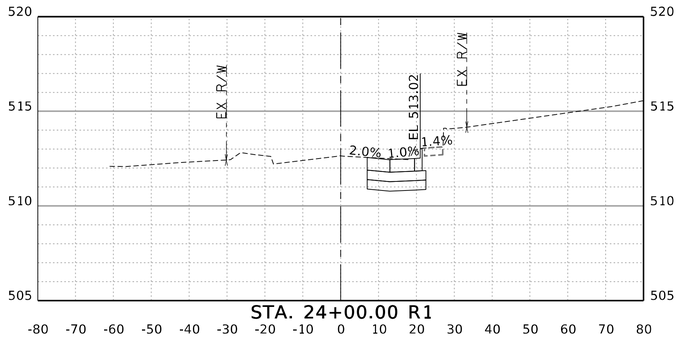
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If not one inch on this sheet, adjust scale.
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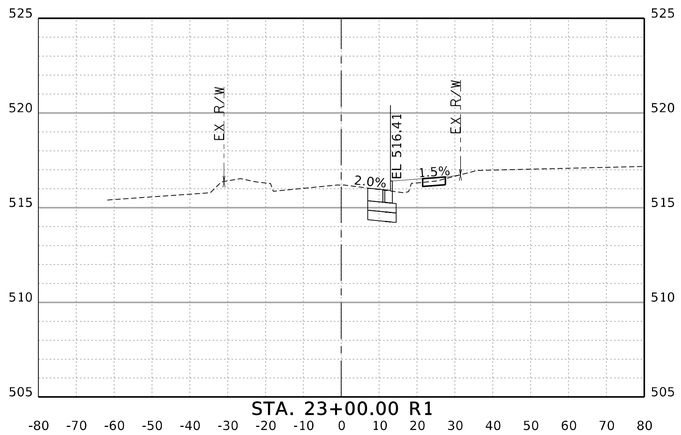
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XS-12

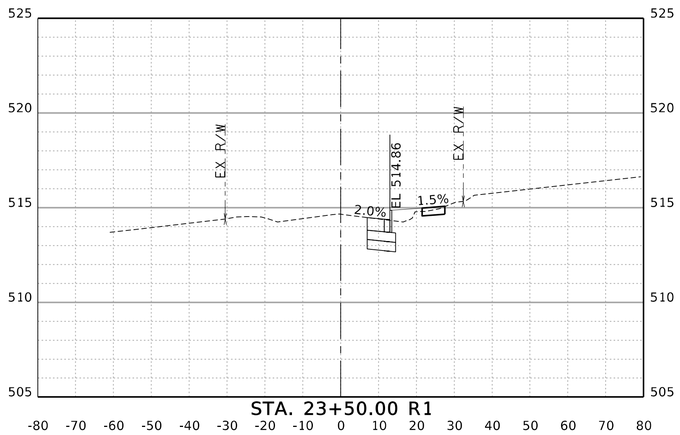
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63

MicroStation V8 User:02446 Office:On Site
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Plotted: Aug. 08, 2024 - 02:12:38 PM Project: Freese and Nichols, Inc. - True Type Fonts









STA.23+00.00 R1 TO STA.24+00.00 R1

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.23+00.00 TO STA.24+00.00

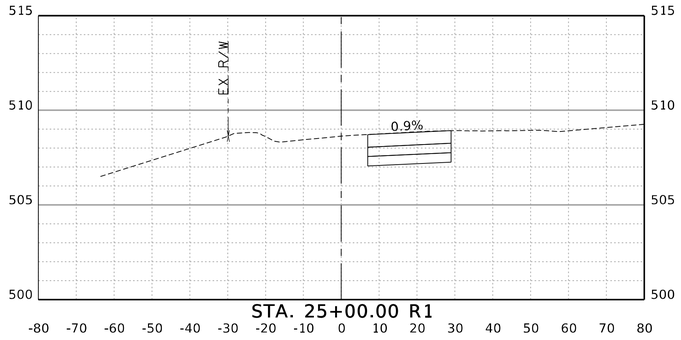
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
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FILE NAME cv-trt-xs-crosssections.dgn

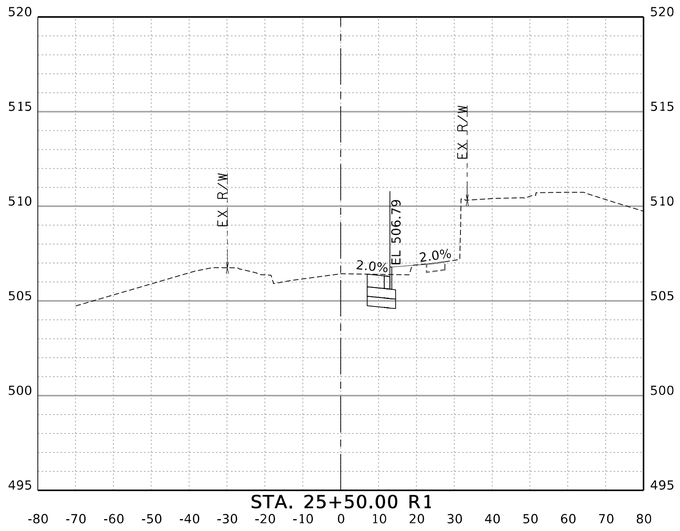
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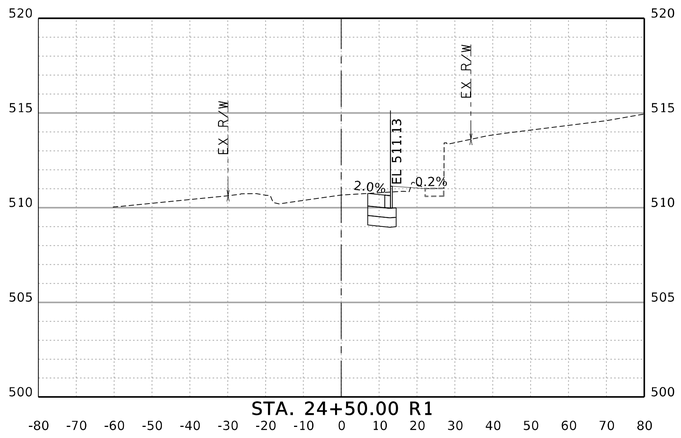
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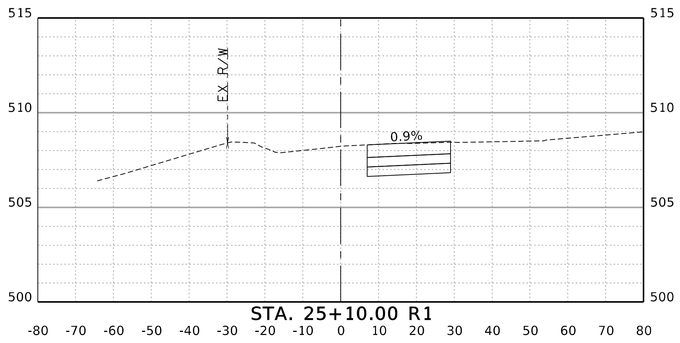
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MicroStation V8 User:02446 Office:On Site
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Model: ECD_5.17.2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.24+50.00 R1 TO STA.25+50.00 R1

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.24+50.00 TO STA.25+50.00

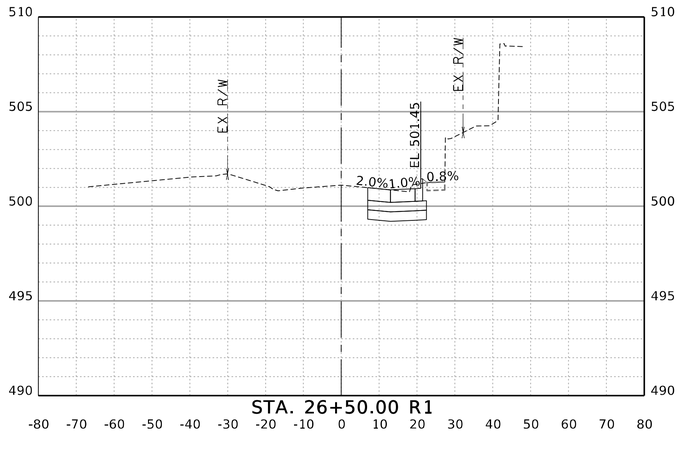
F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
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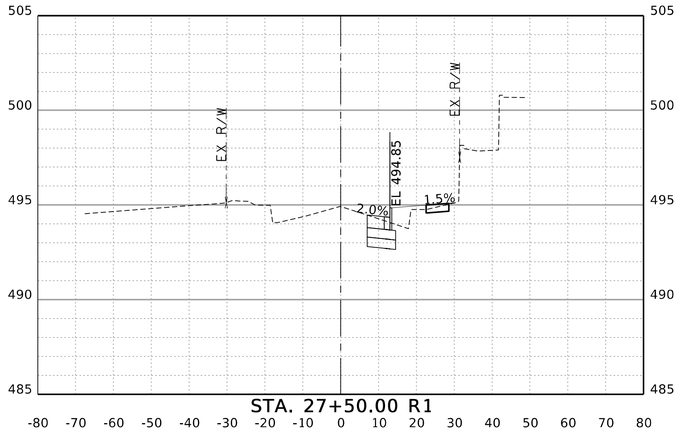
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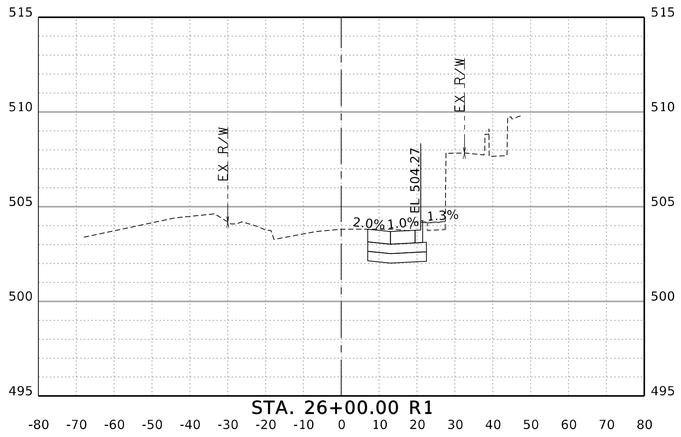
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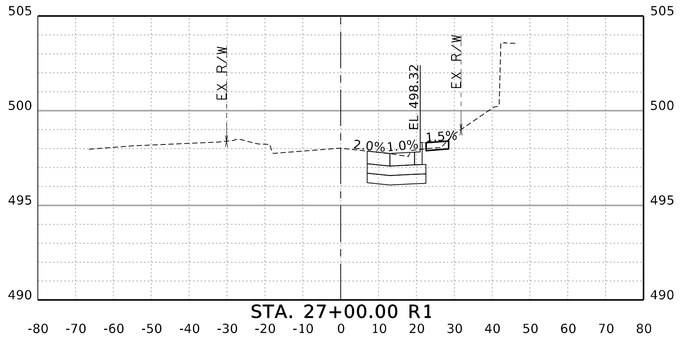
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MicroStation V8 User: 02446 OfficeOn Site
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Model: EC01_5.17.2022
Project: Freese and Nichols, Inc. - True Type Fonts









STA.26+00.00 R1 TO STA.27+50.00 R1

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TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
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137592
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Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.26+00.00 TO STA.27+50.00

NO.	ISSUES	BY	DATE

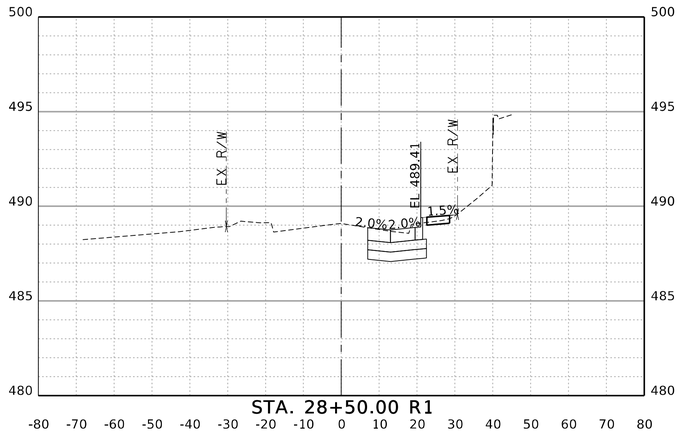
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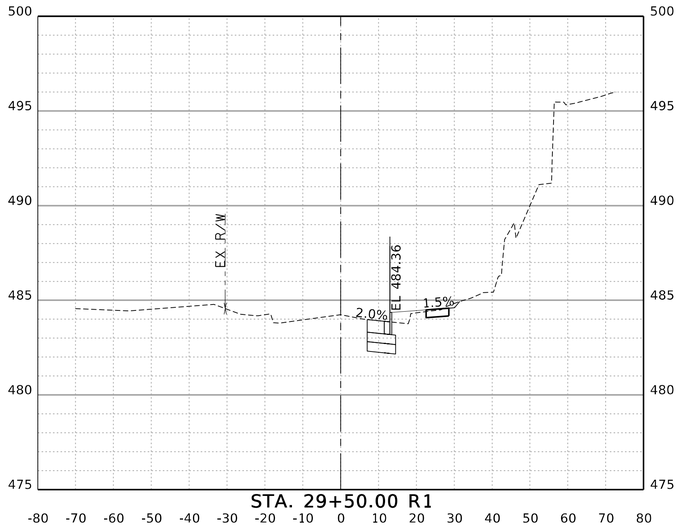
F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
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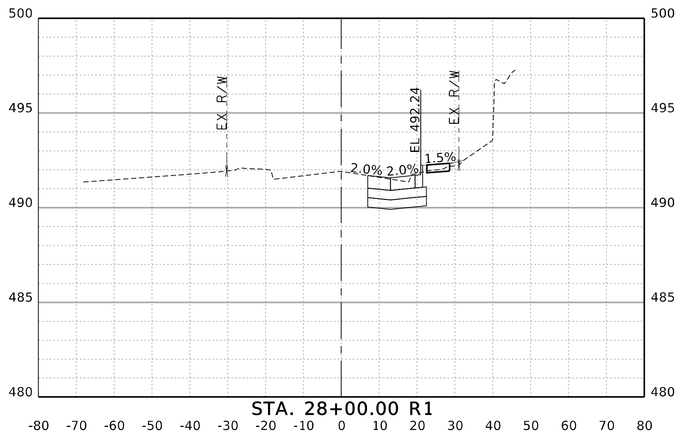
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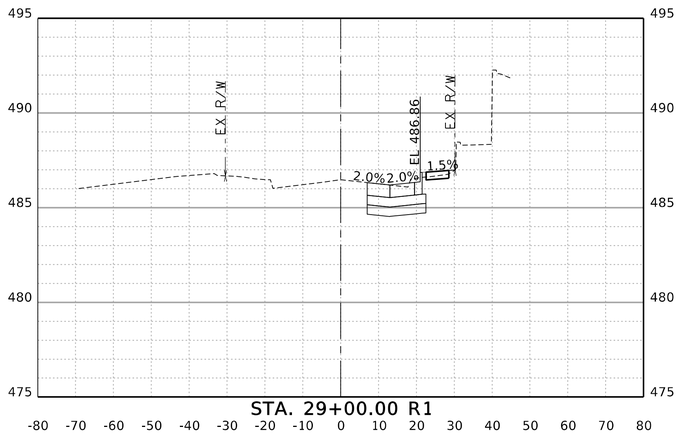
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MicroStation V8 User: 02446 Office:On Site
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Date: Aug. 08, 2024 - 02:12:41 PM









STA.28+00.00 R1 TO STA.29+50.00 R1

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137592
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08/08/2024

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12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.28+00.00 TO STA.29+50.00

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-xs-crosssections.dgn

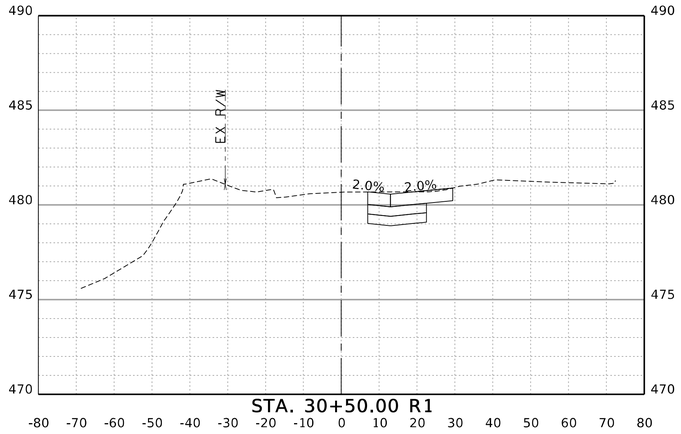
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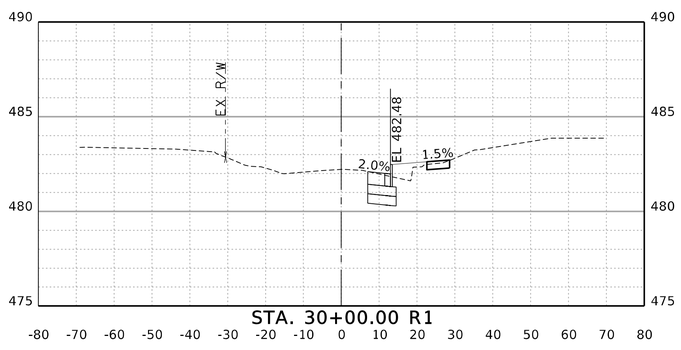
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SHEET XS-16
SEQ. 67

MicroStation V8 User:02446 Office:On Site
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Plot Scale: 40.000 '/ in.
Plotted: Aug. 08, 2024 - 02:12:43 PM
Model: ECD_5.17.2022
Project: Freese and Nichols, Inc. - True Type Fonts

Office:On Site Date:Aug. 08, 2024 - 02:12:43 PM User:02446 File:N:\ENG\cv-trt-xs-crosssections.dgn





STA.30+00.00 R1 TO STA.30+50.00 R1

FREESE AND NICHOLS, INC.
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STATE OF TEXAS
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Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CROSS SECTIONS
STA.30+00.00 TO STA.30+50.00

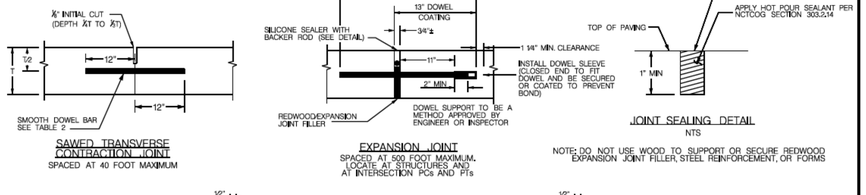
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
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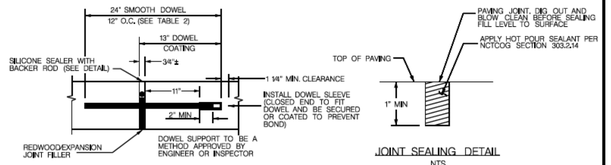
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If not one inch on this sheet, adjust scale.
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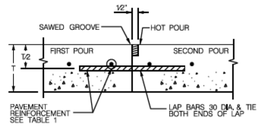
SAWED TRANSVERSE CONTRACTION JOINT
SPACED AT 40 FOOT MAXIMUM



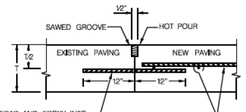
EXPANSION JOINT
SPACED AT 500 FOOT MAXIMUM.
LOCATE AT STRUCTURES AND AT INTERSECTION PCs AND PTs

JOINT SEALING DETAIL
NTS

NOTE: DO NOT USE WOOD TO SUPPORT OR SECURE REDWOOD EXPANSION JOINT FILLER, STEEL REINFORCEMENT, OR FORMS



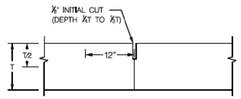
CONSTRUCTION JOINT – NEW CONSTRUCTION



CONSTRUCTION JOINT – PAVING REPAIR

TABLE 1 REBAR SIZING	
CONCRETE THICKNESS (T)	REBAR SIZE
6"–12"	#4

TABLE 2 DOWEL SIZING	
CONCRETE THICKNESS (T)	DOWEL SIZE
6"	#5
8"	#6
10" & 12"	#8



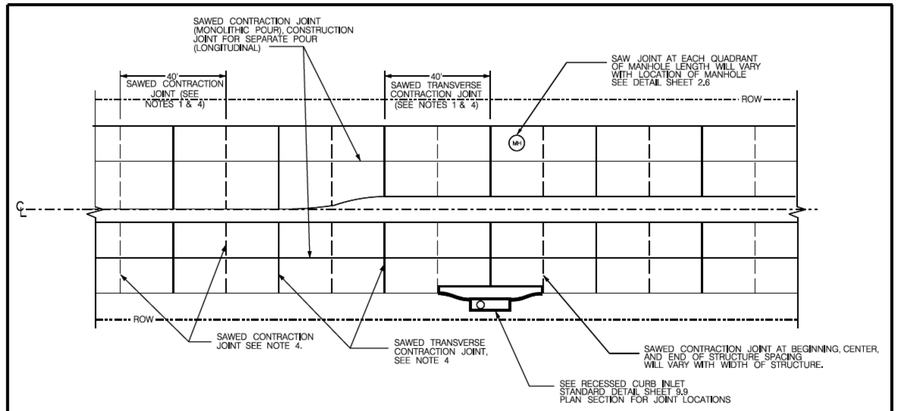
SAWED CONTRACTION JOINT
SPACED AT 40 FOOT MINIMUM

NOTES:

FOR JOINT SPACING, SEE STANDARD DRAWING 2.2

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE Deep Roots. Broad Wings. Bright Future.	Standard Details REINFORCED CONCRETE JOINTS CONTRACTION, EXPANSION & CONSTRUCTION
Revisions: No. / Description / Date	Engineering Department Office No. 972-219-3490 www.cityoflewisville.com
Dated: 7/13/2022 Dated: Sheet: 2.1	



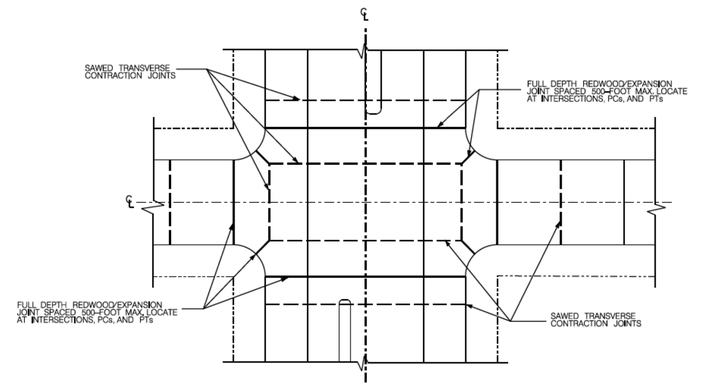
SPACING DIAGRAM FOR TRANSVERSE JOINTS
NTS

NOTES:

1. SPACE SAWED TRANSVERSE CONTRACTION JOINTS AND SAWED CONTRACTION JOINTS AT 20 FEET MAXIMUM INTERVALS.
2. REFER TO TYPICAL PAVEMENT SECTION FOR LONGITUDINAL JOINT SPACING (SEE STANDARD DRAWING 2.5).
3. USE APPROVED SEALANT FOR ALL JOINTS IN ACCORDANCE WITH NCTCOG SECTION 303.2.14.
4. FOR JOINT DETAILS, SEE STANDARD DRAWING 2.1.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE Deep Roots. Broad Wings. Bright Future.	Standard Details REINFORCED CONCRETE PAVEMENT TRANSVERSE JOINT SPACING
Revisions: No. / Description / Date	Engineering Department Office No. 972-219-3490 www.cityoflewisville.com
Dated: 7/13/2022 Dated: Sheet: 2.2	



SPACING DIAGRAM FOR TRANSVERSE JOINTS
NTS

NOTES:

1. SPACE SAWED TRANSVERSE CONTRACTION JOINTS AT 20 FEET MAXIMUM INTERVALS IN PAVEMENT.
2. REFER TO TYPICAL PAVEMENT SECTION FOR LONGITUDINAL JOINT SPACING (DETAIL DRAWINGS 2.5).
3. USE APPROVED SEALANT FOR ALL JOINTS IN ACCORDANCE WITH NCTCOG SECTION 303.2.14.
4. FOR JOINT DETAILS, SEE STANDARD DRAWING 2.1.
5. CONSTRUCTION JOINTS REQUIRED TO CONNECT TO EXISTING PAVEMENT.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE Deep Roots. Broad Wings. Bright Future.	Standard Details REINFORCED CONCRETE PAVEMENT INTERSECTION JOINT SPACING
Revisions: No. / Description / Date	Engineering Department Office No. 972-219-3490 www.cityoflewisville.com
Dated: 7/13/2022 Dated: Sheet: 2.3	

FREESE AND NICHOLS, INC.
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STATE OF TEXAS
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CITY OF LEWISVILLE PAVING DETAILS

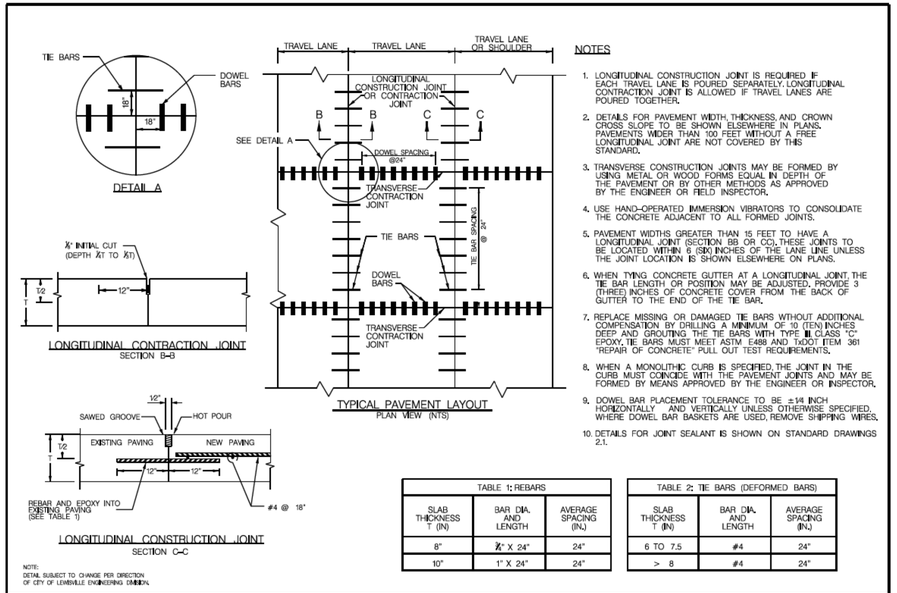
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-dt-pave01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PDT-01
SEQ. 69

MicroStation V8 User: 02446 Office:On Site
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Plot Scale: 2.000' / in. Project: Freese and Nichols, Inc. - True Type Fonts
Date: Aug. 08, 2024 - 02:12:49 PM



NOTES

1. LONGITUDINAL CONSTRUCTION JOINT IS REQUIRED IF EACH TRAVEL LANE IS POURED SEPARATELY. LONGITUDINAL CONTRACTION JOINT IS ALLOWED IF TRAVEL LANES ARE POURED TOGETHER.
2. DETAILS FOR PAVEMENT WIDTH, THICKNESS, AND CROWN CROSS SLOPE TO BE SHOWN ELSEWHERE IN PLANS. PAVEMENTS WIDER THAN 100 FEET WITHOUT A FREE LONGITUDINAL JOINT ARE NOT COVERED BY THIS STANDARD.
3. TRANSVERSE CONSTRUCTION JOINTS MAY BE FORMED BY USING METAL OR WOOD FORMS EQUAL IN DEPTH OF THE PAVEMENT OR BY OTHER METHODS AS APPROVED BY THE ENGINEER OR FIELD INSPECTOR.
4. USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL FORMED JOINTS.
5. PAVEMENT WIDTHS GREATER THAN 15 FEET TO HAVE A LONGITUDINAL JOINT (SECTION BB OR CC). THESE JOINTS TO BE LOCATED WITHIN 6 (SIX) INCHES OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON PLANS.
6. WHEN TYING CONCRETE GUTTER AT A LONGITUDINAL JOINT, THE TIE BAR LENGTH OR POSITION MAY BE ADJUSTED, PROVIDE 3 (THREE) INCHES OF CONCRETE COVER FROM THE BACK OF GUTTER TO THE END OF THE TIE BAR.
7. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING A MINIMUM OF 10 (TEN) INCHES DEEP AND GROUTING THE TIE BARS WITH TYPE III, CLASS "C" EPOXY. TIE BARS MUST MEET ASTM A488 AND TxDOT ITEM 361 "REPAIR OF CONCRETE" PULL OUT TEST REQUIREMENTS.
8. WHEN A MONOLITHIC CURB IS SPECIFIED, THE JOINT IN THE CURB MUST COINCIDE WITH THE PAVEMENT JOINTS AND MAY BE FORMED BY MEANS APPROVED BY THE ENGINEER OR INSPECTOR.
9. DOWEL BAR PLACEMENT TOLERANCE TO BE ±¼ INCH HORIZONTALLY AND VERTICALLY UNLESS OTHERWISE SPECIFIED. WHERE DOWEL BAR BASKETS ARE USED, REMOVE SHIPPING WIRES.
10. DETAILS FOR JOINT SEALANT IS SHOWN ON STANDARD DRAWINGS 2.1.

TABLE 1: REBARS

SLAB THICKNESS T (IN)	BAR DIA. AND LENGTH	AVERAGE SPACING (IN.)
8"	⅝" X 24"	24"
10"	1" X 24"	24"

TABLE 2: TIE BARS (DEFORMED BARS)

SLAB THICKNESS T (IN)	BAR DIA. AND LENGTH	AVERAGE SPACING (IN.)
6 TO 7.5	#4	24"
> 8	#4	24"

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

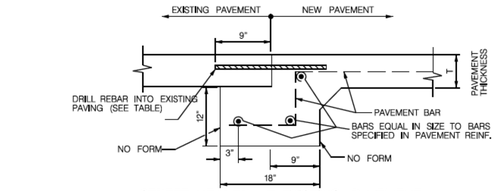
Standard Details
REINFORCED CONCRETE PAVEMENT JOINT DETAILS LAYOUT

Revisions:

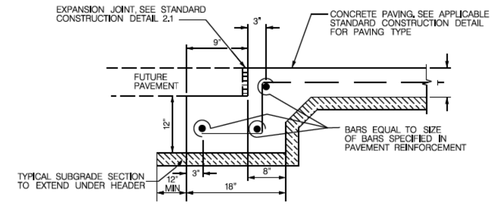
No.	Description	Date

Engineering Department
Office No. 972-219-3480
Fax No. 972-219-3487
www.cityoflewisville.com

Dated: 07/14/2022
Dated:
Sheet: 2.5



STREET HEADER AT EXISTING PAVEMENT
NTS



STREET HEADER FOR FUTURE PAVEMENT
NTS

DOWEL SIZING	
PAVEMENT THICKNESS	DOWEL SIZING
6"	#5
8"	#6
10" & 12"	#8

REBAR SIZING	
PAVEMENT THICKNESS	REBAR SIZING
6"–12"	#4

NOTES:
1. BEND PAVEMENT BARS DOWN INTO HEADER.
2. HEADER AND PAVEMENT TO BE MONOLITHIC.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

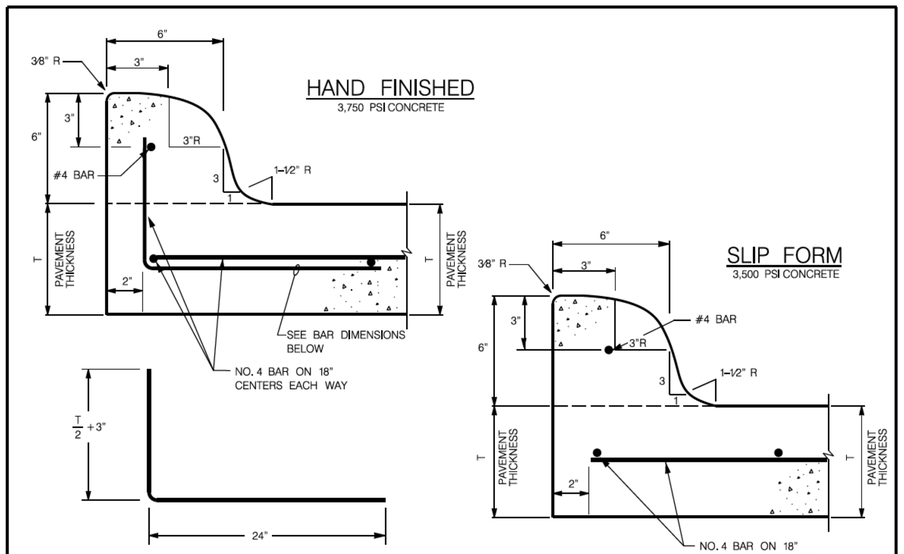
Standard Details
REINFORCED CONCRETE PAVEMENT STREET HEADERS

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3480
Fax No. 972-219-3487
www.cityoflewisville.com

Dated: 03-16-2022
Dated:
Sheet: 2.7



NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
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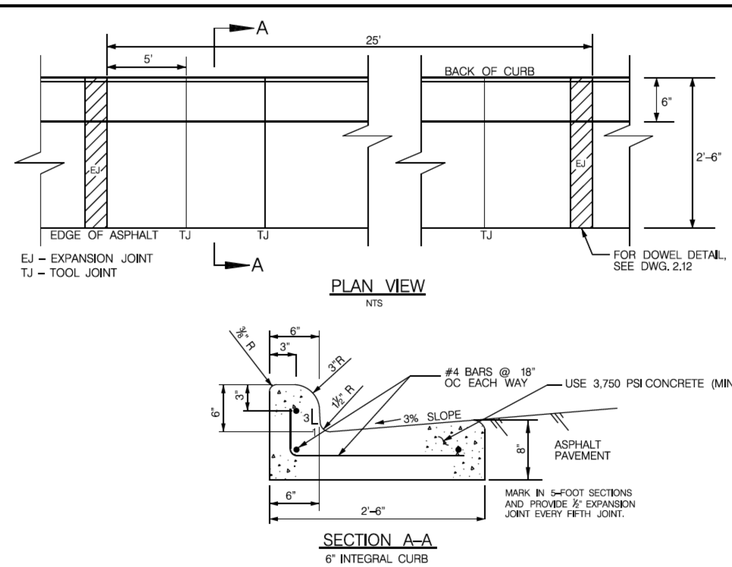
Standard Details
6" INTEGRAL CURB

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3480
www.cityoflewisville.com

Dated: 3-16-2022
Dated:
Sheet: 2.9



NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

Standard Details
INTEGRAL CURB & GUTTER (ASPHALT PAVEMENT)

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3480
www.cityoflewisville.com

Dated: 3-16-2022
Dated:
Sheet: 2.11

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
CITY OF LEWISVILLE PAVING DETAILS

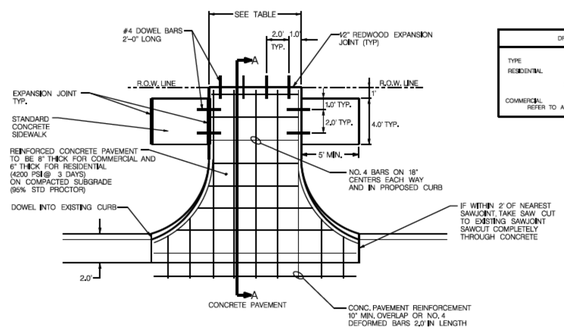
NO.	ISSUES	BY	DATE

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REVISED
CHECKED ADH
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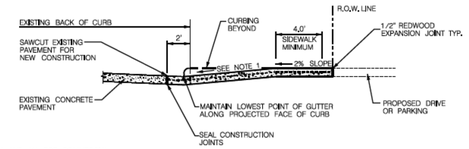
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DRIVEWAY WIDTHS		
TYPE	WIDTH	RADIUS
RESIDENTIAL	12' (MINIMUM)	5'
	24' (MAXIMUM)	5'
COMMERCIAL	REFER TO APPROVED ENGINEERING SITE PLAN	



NOTE:
1. MAXIMUM SLOPE IS 10% FOR RESIDENTIAL AND 8% FOR COMMERCIAL
2. DRIVEWAY TO BE CONSTRUCTED WITHIN 5 DAYS OF SAW CUTTING PAVEMENT

A–A SECTION
CONCRETE DRIVE APPROACH

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

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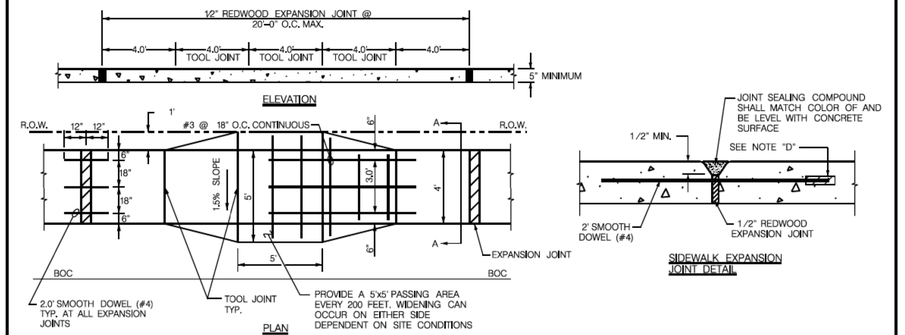
Standard Details
Driveway Paving Detail
(Concrete Drive with Concrete Pavement)

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 4-27-10
Dated: July 2019
Sheet: 3.4



SIDEWALK:
A. REQUIRED MIN. COMPRESSVE STRENGTH OF CONCRETE IS 3,000 PSI AT 28 DAYS.
B. CONCRETE SIDEWALK TO BE PLACED ON MIN. 2" SAND CUSHION ON SUBGRADE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
C. FORMS TO BE SET TRUE TO LINE AND GRADE AND BE A 2" x 6" FORM BOARD OR APPROVED EQUAL.
D. ASPHALT COAT OR DOWEL SLEEVE THROUGH SECOND POUR.
E. CONTRACTOR TO SAWCUT EXISTING SIDEWALK AT EXISTING TOOL JOINT
F. CONCRETE TO HAVE A LIGHT HORSEHAIR BROOM FINISH.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

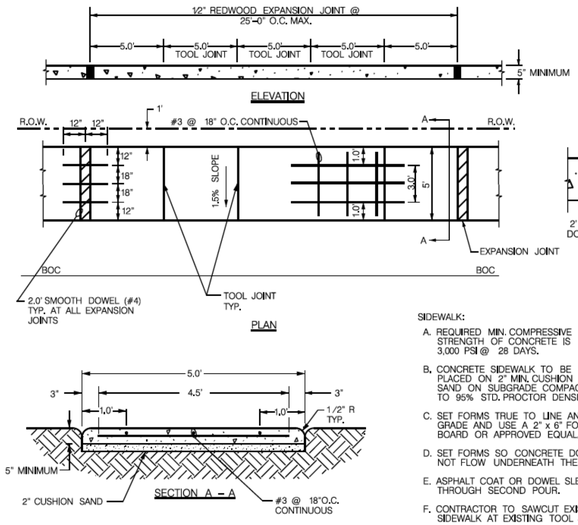
Standard Details
4.0' SIDEWALK DETAILS
(FOR RETROFIT)

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 8-30-2022
Dated:
Sheet: 4.1



SIDEWALK:
A. REQUIRED MIN. COMPRESSIVE STRENGTH OF CONCRETE IS 3,000 PSI@ 28 DAYS.
B. CONCRETE SIDEWALK TO BE PLACED ON .2" MIN. CUSHION SAND ON SUBGRADE COMPACTED TO 95% STD. PROCTOR DENSITY.
C. SET FORMS TRUE TO LINE AND GRADE AND USE A 2" x 6" FORM BOARD OR APPROVED EQUAL.
D. SET FORMS SO CONCRETE DOES NOT FLOW UNDERNEATH THEM.
E. ASPHALT COAT OR DOWEL SLEEVE THROUGH SECOND POUR.
F. CONTRACTOR TO SAWCUT EXISTING SIDEWALK AT EXISTING TOOL JOINT
G. CONCRETE TO HAVE A LIGHT HORSEHAIR BROOM FINISH.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

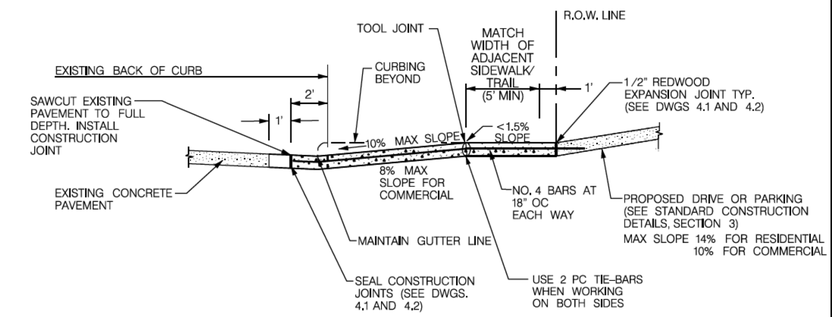
Standard Details
5.0' SIDEWALK DETAILS

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 8-16-2022
Dated:
Sheet: 4.2



NOTES:
1. REINFORCED CONCRETE PAVEMENT TO BE 8" THICK FOR COMMERCIAL APPLICATIONS AND 6" THICK FOR RESIDENTIAL APPLICATIONS.
2. DRIVEWAY TO BE CONSTRUCTED WITHIN 5 DAYS OF SAWCUTTING PAVEMENT.
3. USE HES CONCRETE, 4,200 PSI.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
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Standard Details
SECTION THROUGH DRIVE APPROACH

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 08-30-2022
Dated:
Sheet: 4.5

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
CITY OF LEWISVILLE PAVING DETAILS

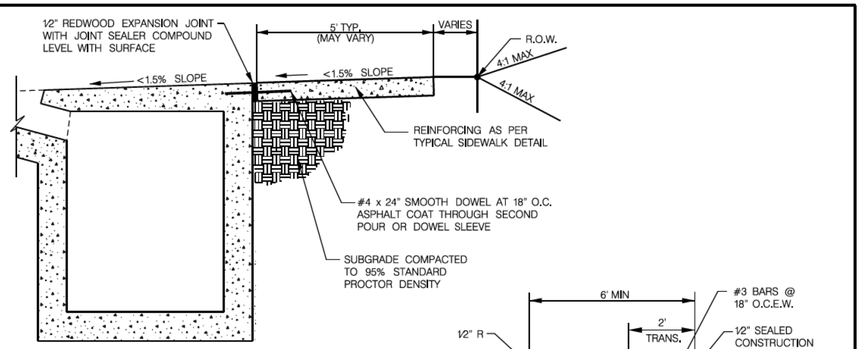
NO.	ISSUES	BY	DATE

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DATE AUG 2022
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CHECKED ADH
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Date: Aug. 08, 2024 - 02:12:56 PM



CONCRETE SIDEWALK ADJACENT TO CURB INLET

CONCRETE SIDEWALK ADJACENT TO CURB

DOWEL DETAIL

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

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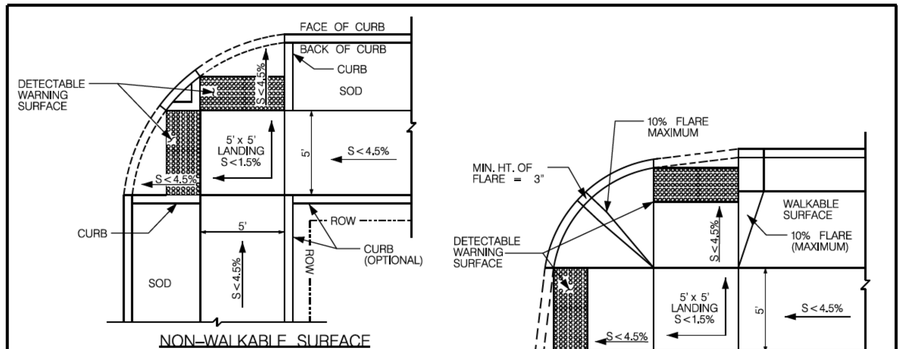
Standard Details
SIDEWALK ADJACENT TO AN INLET OR CURB

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3480
www.cityoflewisville.com

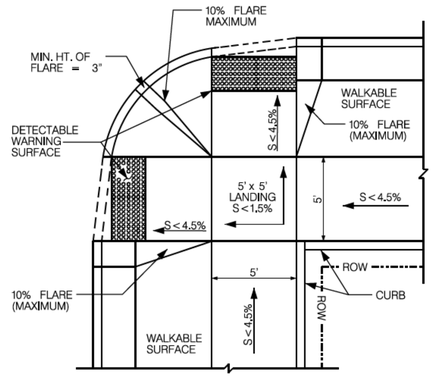
Dated: 06-07-2022
Dated:
Sheet: 4.7



NON-WALKABLE SURFACE

NOTES:

1. DETECTABLE WARNING SURFACE MUST BE SAME WIDTH AS RAMP.
2. PEDESTRIAN PATHWAY SHALL NOT EXCEED 1.5% CROSS SLOPE.
3. LANDINGS ARE NOT REQUIRED TO BE SQUARED IN SHAPE, BUT MUST HAVE A MINIMUM 4'X4' MANEUVERING SPACE.
4. GRADE BREAKS AT THE CONNECTION FROM LANDING TO ADJACENT SURFACE(S) SHALL BE PERPENDICULAR TO DIRECTION OF TRAVEL.
5. SEE DETAIL 4.14 AND 4.15 FOR DETECTABLE WARNING SURFACES.
6. FIELD CONDITIONS MAY VARY. CONSTRUCTION TO BE APPROVED BY CITY INSPECTOR PRIOR TO INSTALLATION IN CITY R.O.W.
7. ALL WORK MUST MEET CURRENT ADA PROWAG REQUIREMENTS.
8. CURB CANNOT SLUMP OVER DETECTABLE WARNING.



WALKABLE SURFACE
MUST BE APPROVED BY CITY ENGINEER

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

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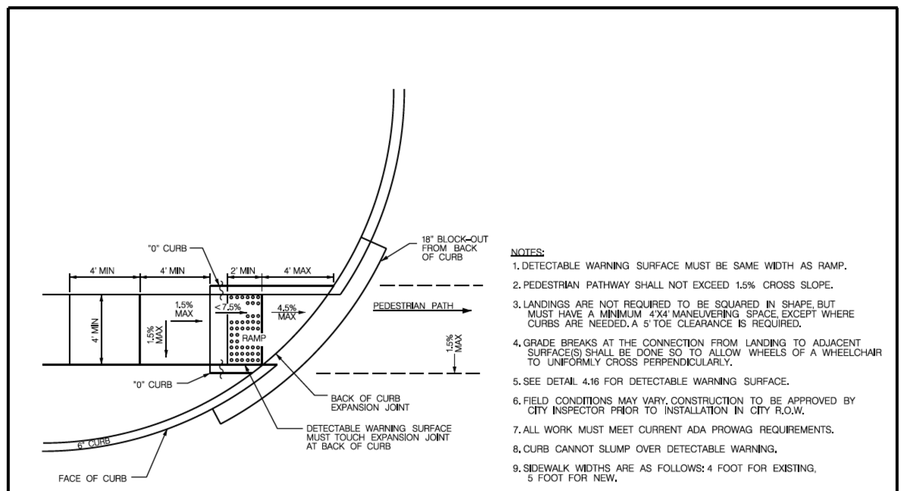
Standard Details
BARRIER FREE CURB RAMP

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3480
www.cityoflewisville.com

Dated: 06-15-2022
Dated:
Sheet: 4.9



NOTES:

1. DETECTABLE WARNING SURFACE MUST BE SAME WIDTH AS RAMP.
2. PEDESTRIAN PATHWAY SHALL NOT EXCEED 1.5% CROSS SLOPE.
3. LANDINGS ARE NOT REQUIRED TO BE SQUARED IN SHAPE, BUT MUST HAVE A MINIMUM 4'X4' MANEUVERING SPACE, EXCEPT WHERE CURBS ARE NEEDED. A 5' TOE CLEARANCE IS REQUIRED.
4. GRADE BREAKS AT THE CONNECTION FROM LANDING TO ADJACENT SURFACE(S) SHALL BE DONE SO TO ALLOW WHEELS OF A WHEELCHAIR TO UNIFORMLY CROSS PERPENDICULARLY.
5. SEE DETAIL 4.16 FOR DETECTABLE WARNING SURFACE.
6. FIELD CONDITIONS MAY VARY. CONSTRUCTION TO BE APPROVED BY CITY INSPECTOR PRIOR TO INSTALLATION IN CITY R.O.W.
7. ALL WORK MUST MEET CURRENT ADA PROWAG REQUIREMENTS.
8. CURB CANNOT SLUMP OVER DETECTABLE WARNING.
9. SIDEWALK WIDTHS ARE AS FOLLOWS: 4 FOOT FOR EXISTING, 5 FOOT FOR NEW.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
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Standard Details
SINGLE DIRECTIONAL BARRIER FREE CURB RAMP

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3480
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Dated: 06-15-2022
Dated:
Sheet: 4.10

NOTES:

1. REFER TO CITY OF LEWISVILLE CURB RAMP DETAILS UNLESS NOTED TO DO OTHERWISE.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL

CITY OF LEWISVILLE
PAVING DETAILS

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-dt-pave01.sht

NO. | ISSUES | BY | DATE

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PDT-04
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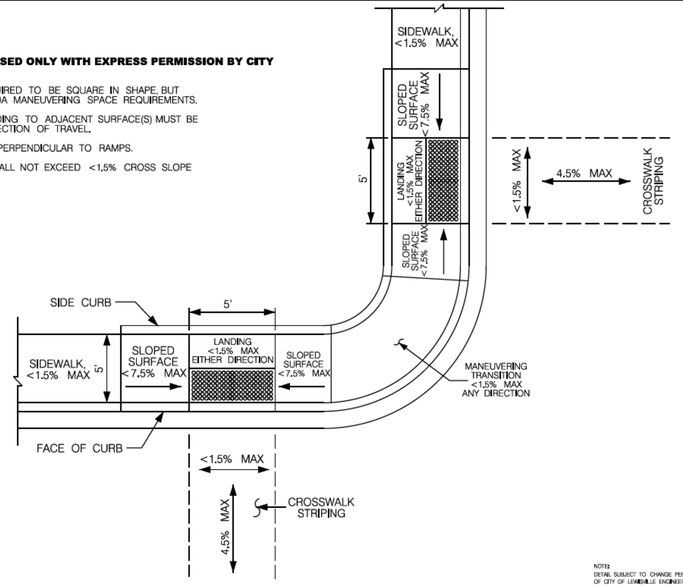
1. THIS DETAIL TO BE USED ONLY WITH EXPRESS PERMISSION BY CITY ENGINEER.

2. LANDINGS ARE NOT REQUIRED TO BE SQUARE IN SHAPE, BUT MUST MEET MINIMUM ADA MANEUVERING SPACE REQUIREMENTS.

3. CONNECTION FROM LANDING TO ADJACENT SURFACE(S) MUST BE PERPENDICULAR TO DIRECTION OF TRAVEL.

4. GRADE BREAK MUST BE PERPENDICULAR TO RAMPS.

5. PEDESTRIAN PATHWAY SHALL NOT EXCEED <1.5% CROSS SLOPE



NOTE: DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

Standard Details

DIRECTIONAL BARRIER FREE CURB RAMP SKEWED INTERSECTION

Revisions:		
No.	Description	Date

Engineering Department
Office No. 972-219-3480
www.cityoflewisville.com

Dated: 05-09-2020
Dated:
Sheet: 4.11

1. DURING ALL SURFACE INSTALLATION AND ALL SURFACE INSTALLATION PROCEDURES, ENSURE THAT ADEQUATE SAFETY GUIDELINES ARE IN PLACE AND THAT THEY ARE IN ACCORDANCE WITH THE APPLICABLE INDUSTRY AND GOVERNMENT STANDARDS.

2. THE APPLICATION OF ALL TILES, ADHESIVES, MECHANICAL FASTENERS, AND CAULKING TO BE IN ACCORDANCE WITH THE GUIDELINES SET BY THEIR RESPECTIVE MANUFACTURERS. DETECTABLE WARNING SURFACES NOT RECOMMENDED FOR ASPHALT APPLICATIONS.

3. COORDINATE WITH THE INSPECTOR OR ENGINEER TO ENSURE THAT THE SURFACES RECEIVING THE TILES ARE FABRICATED, PREPARED, AND CONSTRUCTED CORRECTLY AND ADEQUATELY FOR TILE INSTALLATION. REVIEW DESIGN DRAWINGS WITH THE INSPECTOR BEFORE CONSTRUCTION AND REFER ANY AND ALL DISCREPANCIES TO THE PROJECT ENGINEER.

4. SET TILE TRUE AND SQUARE TO THE CURB RAMP AREA AS DETAILED IN THE DESIGN DRAWINGS SO THAT THE LOCATION CAN BE MARKED ON THE CONCRETE SURFACE. A THIN PERMANENT MARKER WORKS WELL. REMOVE TILE WHEN DONE MARKING LOCATION.

5. MECHANICALLY CLEAN THE SURFACE RECEIVING THE TILE WITH A DIAMOND CUP GRINDER OR SHOT BLASTER TO REMOVE ANY DIRT OR FOREIGN MATERIAL. THIS CLEANING AND ROUGHENING OF THE CONCRETE SURFACE SHOULD INCLUDE AT LEAST 4 (FOUR) INCHES AROUND THE PERIMETER OF THE AREA TO RECEIVE THE TILE, AND ALSO ALONG THE CROSS PATTERN ESTABLISHED BY THE CORRESPONDING AREAS ON THE BACKSIDE OF THE TILE. THOSE SAME AREAS SHOULD THEN BE CLEANED WITH A RAG SOAKED IN ACETONE. USE PLANER ACROSS SURFACE BEFORE SETTING TILE.

6. IMMEDIATELY BEFORE INSTALLING THE DETECTABLE WARNING SURFACE, THE CONCRETE SURFACES MUST BE INSPECTED TO ENSURE THEY ARE CLEAN, DRY, FREE OF VOIDS, CURING COMPOUNDS, PROJECTIONS, LOOSE MATERIAL, DUST, OIL, GREASE, SEALERS, AND DETERMINED TO BE STRUCTURALLY SOUND AND CURED FOR A MINIMUM OF 30 (THIRTY) DAYS.

7. USING ACETONE, WIPE THE BACKSIDE OF THE TILE AROUND THE PERIMETER AND ALONG THE INTERNAL CROSS PATTERN TO REMOVE ANY DIRT OR DUST PARTICLES FROM THE AREA TO RECEIVE THE ADHESIVE.

8. APPLY TACTILE BOND & SEAL ADHESIVE TO THE BACKSIDE OF THE TILE, FOLLOWING THE PERIMETER AND INTERNAL CROSS PATTERN ESTABLISHED BY THE TILE MANUFACTURER. SUFFICIENT ADHESIVE MUST BE PLACED ON THE PRESCRIBED AREAS TO HAVE FULL COVERAGE ACROSS THE TWO-INCH WIDTH OF THE ADHESIVE LOCATOR AND SHOULD BE APPLIED TO WITHIN ¼-INCH CONTINUOUSLY AROUND THE PERIMETER EDGE OF THE TILE. THE ENTIRE TUBE OF ADHESIVE SHOULD BE APPLIED TO THE BACK OF EACH TILE, SIZES 24" x 36" AND GREATER.

9. SET THE TILE TRUE AND SQUARE TO THE CURB RAMP AREA AS DETAILED IN THE DESIGN DRAWINGS.

10. WORKING FROM THE CENTER OF THE TILE OUTWARDS, PROCEED TO DRILL AND INSTALL ALL FASTERNERS IN THE TILE'S MOLDED RECESSES.

11. STANDING WITH BOTH FEET APPLYING PRESSURE AROUND THE MOLDED RECESS PROVIDED IN THE TILE, DRILL A HOLE TRUE AND STRAIGHT TO A DEPTH OF 3½ INCHES USING A ¼-INCH DRILL BIT. DRILL THROUGH THE TILE WITHOUT HAMMER OPTION UNTIL THE TILE HAS BEEN SUCCESSFULLY PENETRATED, THEN WITH THE HAMMER OPTION, DRILL INTO THE CONCRETE, MAINTAINING FOOT PRESSURE ON BOTH SIDES OF THE HOLE WHILE DRILING PREVENTS CONCRETE DUST FROM ACCUMULATING BETWEENTHE TILE AND CONCRETE WHICH CAN AFFECT THE TILE BEING INSTALLED FLUSH AND MAY COMPROMISE INSTALLATION INTEGRITY.

12. IMMEDIATELY AFTER DRILLING EACH HOLE, BEFORE MOVING ON TO THE NEXT, AND WHILE STILL APPLYING FOOT PRESSURE, MECHANICALLY FASTEN TILES TO THE CONCRETE SUBSTRATE USING A LEATHER BOUND OR HARD PLASTIC MALLET TO SET THE FASTENERS, ENSURE THE FASTENER HAS BEEN PLACED TO FULL DEPTH IN THE DOME, STRAIGHT, AND FLUSH TO THE TOP OF THE DOME. DRIVE THE PIN OF THE FASTENER WITH THE MALLET, TAKING CARE TO AVOID ANY INADVERTENT BLOWS TO THE TRUNCATED DOMES OR TILE SURFACE.

13. FOLLOWING THE INSTALLATION OF THE FASTENERS, THE CONCRETE DUST SHOULD BE VACUUMED, BRUSHED, OR BLOWN AWAY FROM THE TILE'S SURFACE AND ADJACENT CONCRETE, USING ACETONE ON A RAG, WIPE THE CONCRETE AROUND THE TILE'S PERIMETER TO ENSURE A CLEAN, DRY SURFACE TO RECEIVE PERIMETER SEALANT.

14. TACTILE BOND & SEAL PERIMETER CAULKING SEALANT SHOULD BE APPLIED FOLLOWING THE SEALANT MANUFACTURER'S RECOMMENDATIONS, TAPE ALL PERIMETER EDGES OF THE TILE BACK 3/16" FROM THE TILE'S PERIMETER EDGE AND TAPE THE ADJACENT CONCRETE BACK ¼" FROM THE TILE'S PERIMETER EDGE. APPLY SEALANT AROUND THE TILE PERIMETER USING CARE TO WORK SEALANT INTO ANY VOID BETWEEN THE TILE AND CONCRETE INTERFACE. TOOL THE PERIMETER CAULKING WITH A PLASTIC APPLICATOR OR SPATULA TO CREATE A STRAIGHT EDGE IN A COVE PROFILE BETWEEN THE TILE AND ADJACENT CONRETE. REMOVE TAPE IMMEDIATELY AFTER TOOLING PERIMETER CAULKING SEALANT.

15. DO NOT ALLOW FOOT TRAFFIC ON INSTALLED TILES UNTIL THE PERIMETER CAULKING SEALANT HAS CURED SUFFICIENTLY TO AVOID TRACKING. ADHESIVE OR CAULKING ON THE SURFACE OF THE TILE WITH ACETONE.

16. IF INSTALLING ADJACENT TILES, NOTE THE ORIENTATION OF EACH TILE. CAREFUL ATTENTION WILL REVEAL THAT ONE OF THE LONG EDGES OF THE TILE IS DIFFERENT FROM THE OTHER IN REGARD TO THE TINY DOTTED TEXTURE. THERE IS ALSO A LARGER PERIMETER MARGIN BEFORE THE TINY DOTTED TEXTURE BEGINS. CONSISTENT ORIENTATION OF EACH TILE IS REQUIRED IN ORDER FOR THE TRUNCATED DOMES ON ADJACENT TILES TO LINE UP WITH EACH OTHER.

17. TO MAINTAIN PROPER SPACING BETWEEN TRUNCATED DOMES ON ADJACENT TILES, THE TAPERED EDGE SHOULD BE TRIMMED OFF USING A CONTINUOUS RIM DIAMOND BLADE IN A CIRCULAR SAW OR MINI-GRINDER. USING A STRAIGHT EDGE TO GUIDE THE CUT IS REQUIRED. ALL CUTS SHOULD BE MADE BEFORE INSTALLING THE TILES. IF INSTALLING ADJACENT TILES, TAKE CARE TO LEAVE A ¼-INCH GAP BETWEEN EACH TILE TO ALLOW FOR EXPANSION AND CONTRACTION.

18. IF TILES ARE CUSTOM CUT TO SIZE, IF PRE-MOLDED RECESSES (TO RECEIVE FASTENERS) ARE REMOVED BY THE CUT, OR TO MAINTAIN A TIGHT INSTALLATION TO THE SUBSTRATE, THEN ANY TRUNCATED DOME MAY BE CENTER-DRILLED WITH A ¼-INCH THROUGH HOLE, AND COUNTERSUNK WITH A SUITABLE BIT, TO RECEIVE MECHANICAL FASTENERS. DO NOT COUNTERSINK TOO WIDELY OR DEEPLY. FASTENERS SHOULD BE FLUSH WITH THE TOP OF THE TUNCATED DOME WHEN COUNTERSUNK PROPERLY.

NOTE: SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

Engineering Department
Office No. 972-219-3480
www.cityoflewisville.com

Dated: 07/19/2022
Dated:
Sheet: 4.16

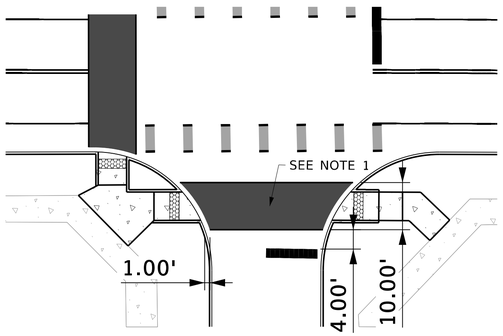
Revisions:

No.	Description	Date

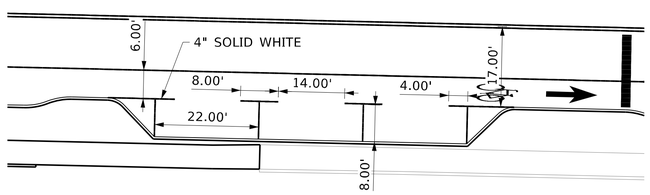
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BOLT-ON ADA REPLACEABLE TACTILE WARNING INSTALLATION

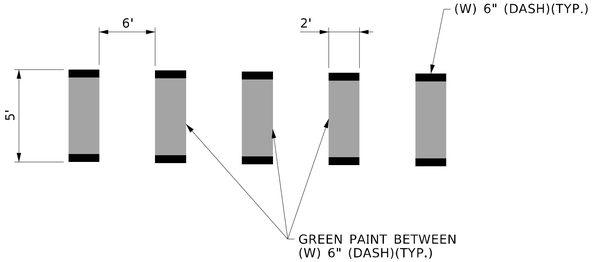
LEWISVILLE
Deep Roots. Broad Wings. Bright Future.



1 CROSSWALK DETAILS
NOT TO SCALE



2 PARALLEL PARKING DETAIL
NOT TO SCALE



3 BIKE LANE CROSSING DETAIL
NOT TO SCALE

NOTES:

1. THE CROSS WALK SHALL BE INTEGRAL STAINED CONCRETE. THE COLOR SHALL BE: BUTTERFIELD COLOR - U35 - BRICK RED COLOR (MATCH THE CROSSWALK COLOR USED ON MAIN ST AND MILL ST PROJECT)

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CITY OF LEWISVILLE
PAVING DETAILS

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
CHECKED	ADH

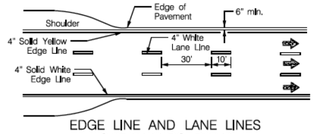
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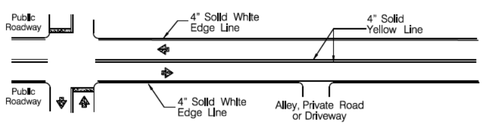
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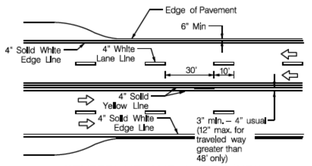
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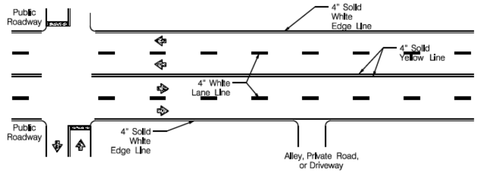
EDGE LINE AND LANE LINES
ONE–WAY ROADWAY
WITH OR WITHOUT SHOULDERS



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



CENTERLINE AND LANE LINES
FOUR LANE, TWO LANE ROADWAY
WITH OR WITHOUT SHOULDERS



TYPICAL MULTI–LANE, TWO WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS

MATERIAL SPECIFICATIONS	
REFLECTORIZED PAVEMENT MARKERS	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

NOTES

1. EDGELINE STRIPING AS SHOWN IN PLANS OR AS DIRECTED BY ENGINEER OR INSPECTOR. DO NOT PLACE EDGELINE LESS THAN 6–INCHES FROM THE EDGE OF PAVEMENT. THIS DISTANCE MAY VARY DUE TO PAVEMENT RAVELING OR OTHER CONDITIONS. EDGELINES ARE NOT REQUIRED IN CURB AND GUTTER SECTIONS OF ROADWAYS.
2. THE TRAVELED WAY INCLUDES ONLY THE PORTION OF THE ROADWAY USED FOR VEHICULAR TRAVEL. IT DOES NOT INCLUDES PARKING LANES, SIDEWALKS, BERMS, OR SHOULDERS. MEASURE TRAVELED WAYS FROM THE INSIDE EDGELINE TO THE INSIDE OF EDGELINE OF A TWO LANE ROADWAY.
3. PAVEMENT MARKING MATERIALS MUST MEET THE REQUIRED MATERIAL SPECIFICATIONS AS SPECIFIED BY PLANS.

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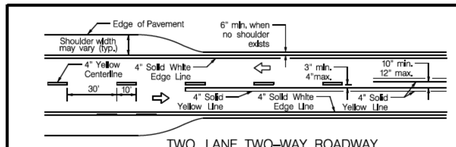
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TYPICAL STANDARD PAVEMENT MARKINGS
(1 OF 2)

Revisions:

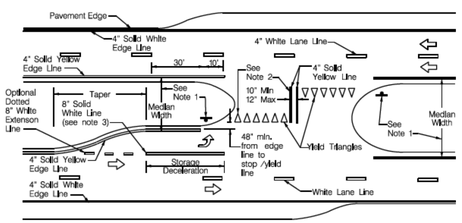
No.	Description	Date

Engineering Department
Office No. 972-219-3490
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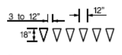
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Sheet: 5.8



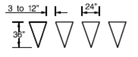
TWO LANE, TWO–WAY ROADWAY
WITH OR WITHOUT SHOULDERS



FOUR LANE DIVIDED ROADWAY CROSSOVERS

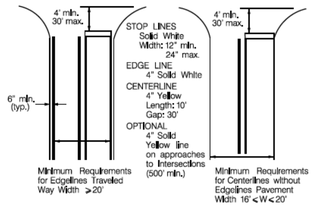


For posted speed on road being marked equal to or less than 40 MPH.



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

YIELD LINES



GUIDE FOR PLACEMENT OF STOP LINES
EDGE LINE AND CENTERLINE

BASED ON TRAVELED WAY AND PAVEMENT WIDTHS FOR UNDIVIDED HIGHWAYS

NOTES:

1. Where divided highways are separated by median widths of the median opening itself of 30 feet or more, sign median openings as two separate intersections. Each median opening has two separate width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs are optional as determined by the Engineer.
2. Install median striping (double yellow centerline and stop bars or yield triangles) with a 50 foot or greater median centerline can be placed. Only use stop bars with stop signs. Only use yield triangles with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths are as shown on the plans or as directed by Engineer.

LEWISVILLE
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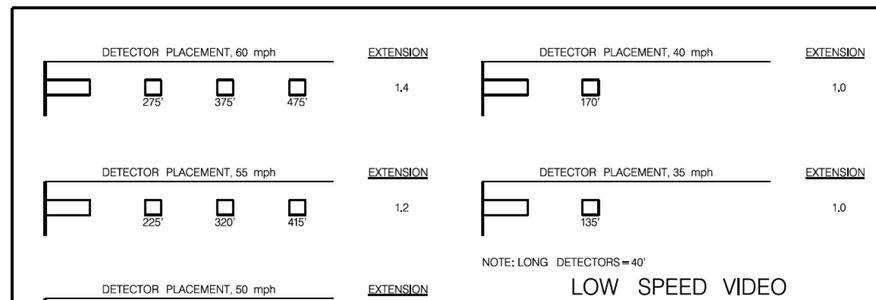
Standard Details
TYPICAL STANDARD PAVEMENT MARKINGS
(2 OF 2)

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 03-06-2023
Dated:
Sheet: 5.9



HIGH–SPEED VIDEO
DETECTOR PLAN

LOW SPEED VIDEO
DETECTOR PLAN

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Futures.

Standard Details
HIGH AND LOW SPEED VIDEO DETECTION PLAN

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 03-06-2023
Dated:
Sheet: 5.10

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED PROFESSIONAL ENGINEER
08/09/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CITY OF LEWISVILLE
PAVING DETAILS

NO.	ISSUES	BY	DATE

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DATE	AUG 2022
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DRAWN	BA
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CHECKED	ADH
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SEQ.
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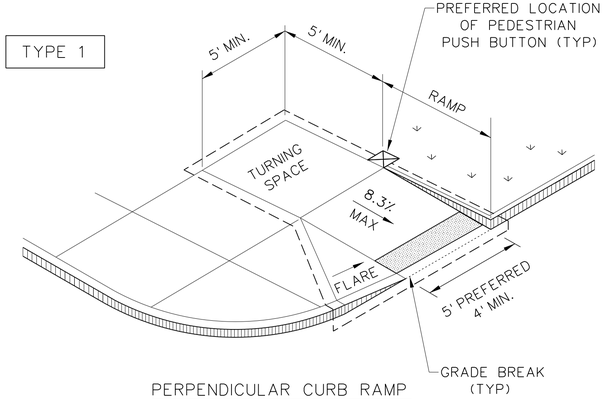
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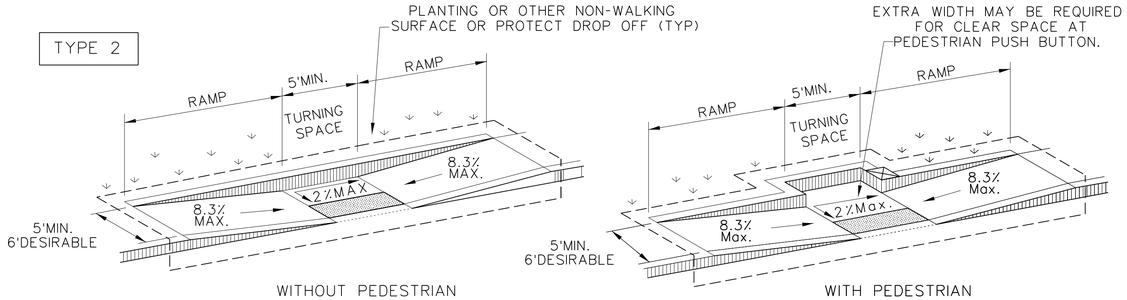
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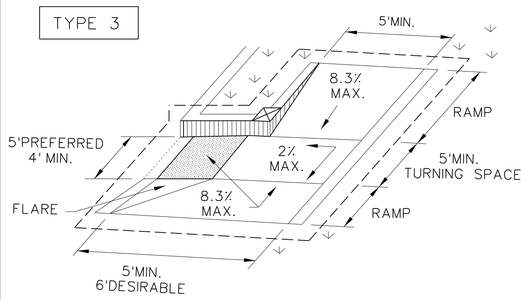
PERPENDICULAR CURB RAMP

TYPE 2

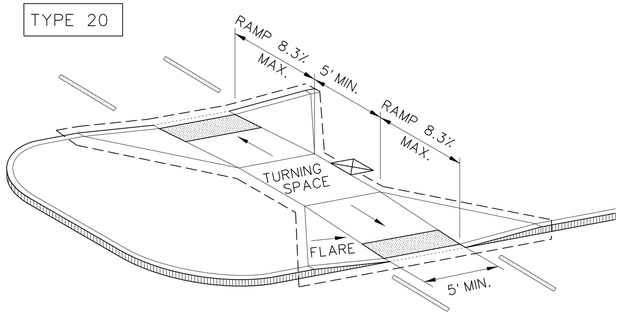


PARALLEL CURB RAMP

TYPE 3



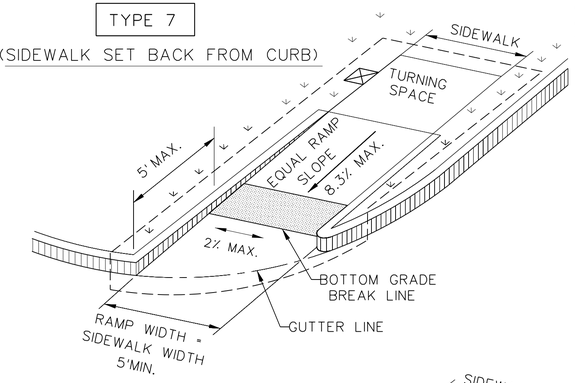
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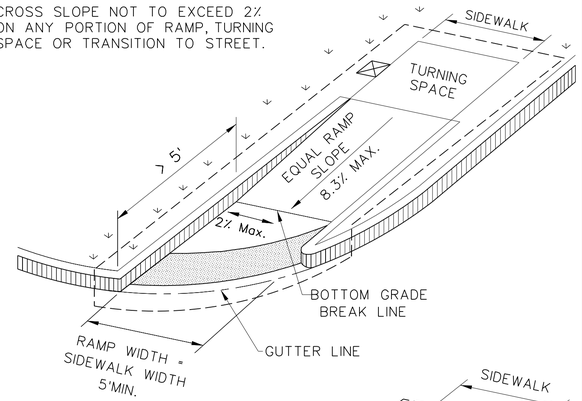
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

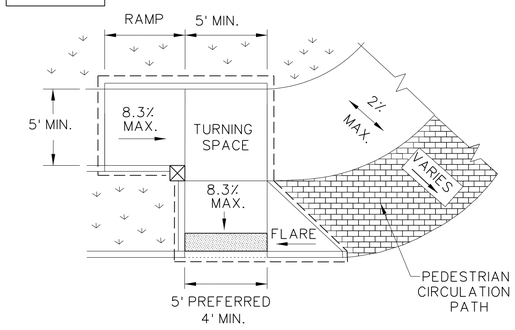
(SIDEWALK SET BACK FROM CURB)



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



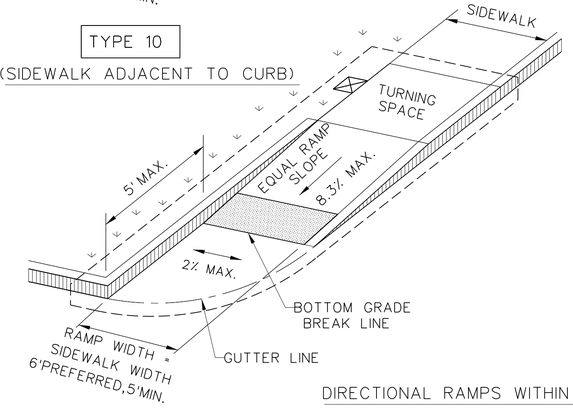
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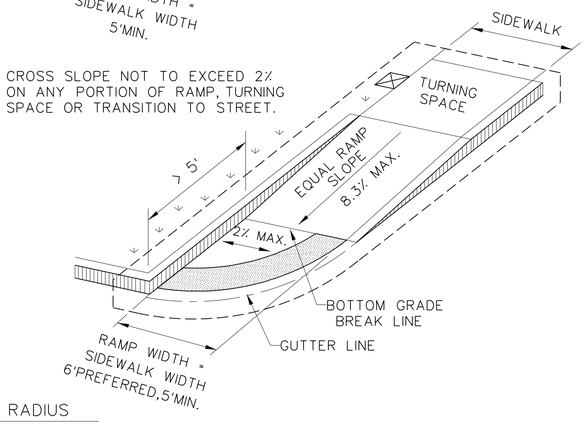
COMBINATION CURB RAMPS

TYPE 10

(SIDEWALK ADJACENT TO CURB)

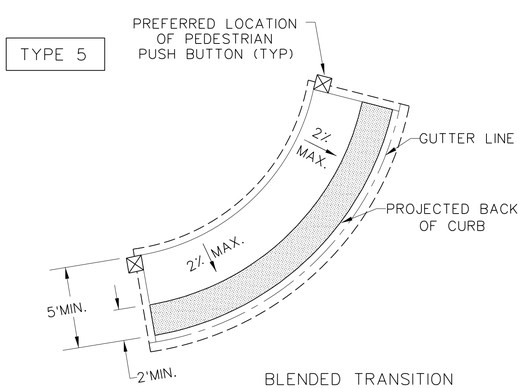


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

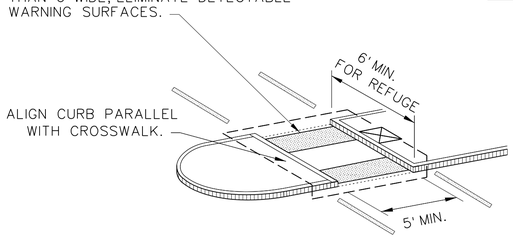
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

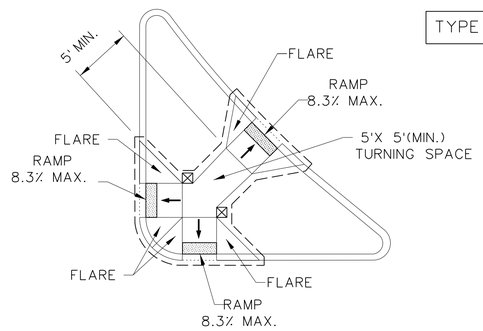
TYPE 21

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



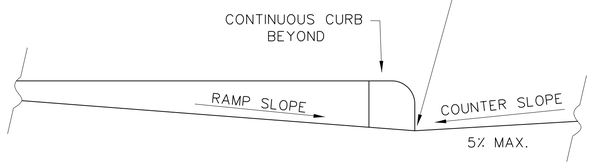
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

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



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012				75
REVISED 01,2018				

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.

2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.

3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.

4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.

5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.

6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.

7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.

8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).

9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.

10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.

11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.

12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.

13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".

14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.

15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.

16. Provide a smooth transition where the curb ramps connect to the street.

17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.

18. Existing features that comply with applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

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

20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.

21. Detectable warning surfaces must be firm, stable and slip resistant.

22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.

23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.

24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.

26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.

28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.

29. Street grades and cross slopes shall be as shown elsewhere in the plans.

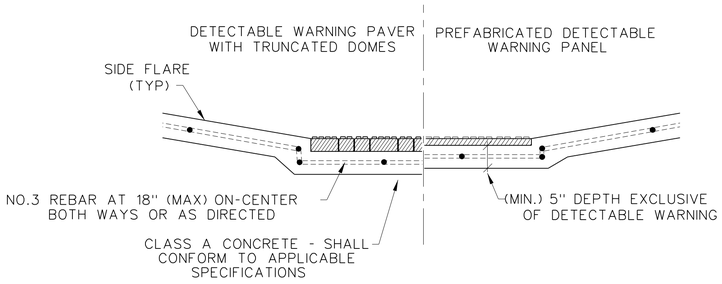
30. Changes in level greater than 1/4 inch are not permitted.

31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.

32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.

33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".

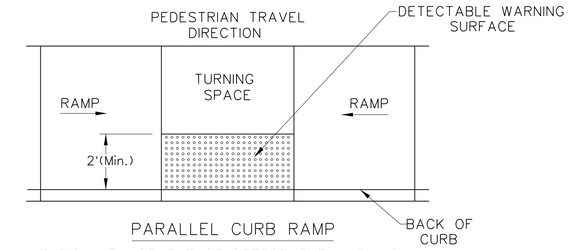
34. Sidewalk details are shown elsewhere in the plans.



SECTION VIEW DETAIL

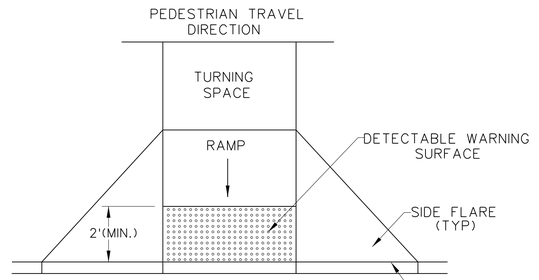
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



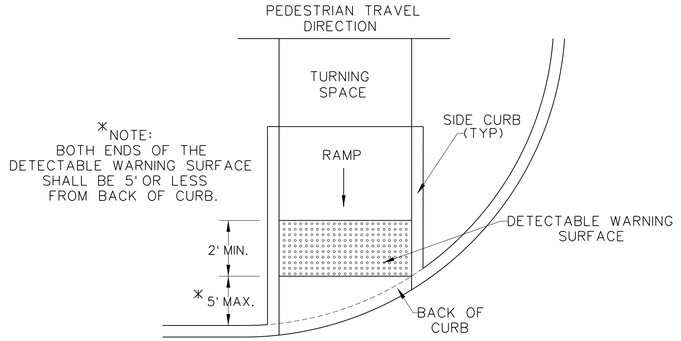
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
					76

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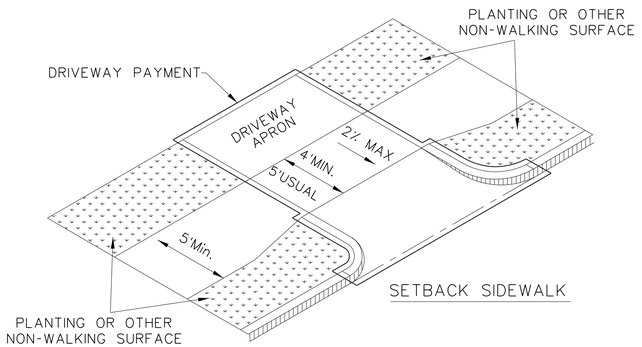
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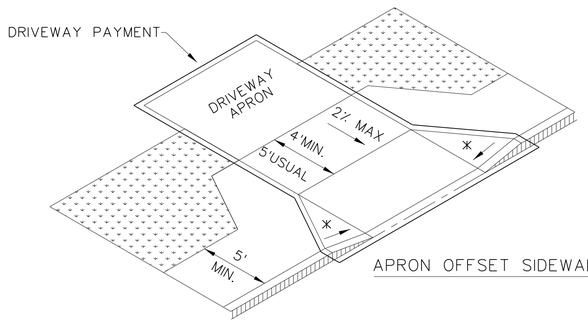
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DATE:
FILE:

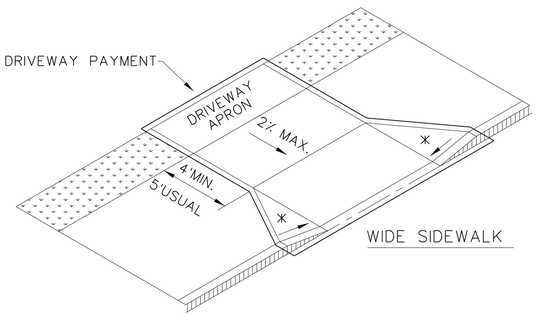
SIDEWALK TREATMENT AT DRIVEWAYS



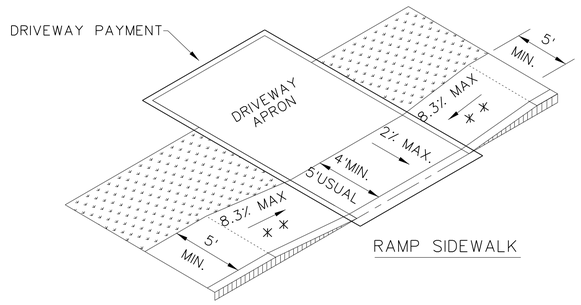
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

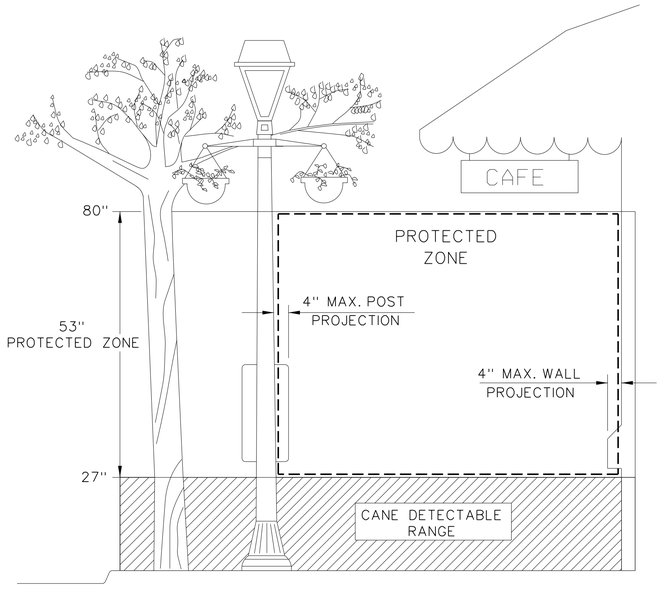


RAMP SIDEWALK

NOTES:

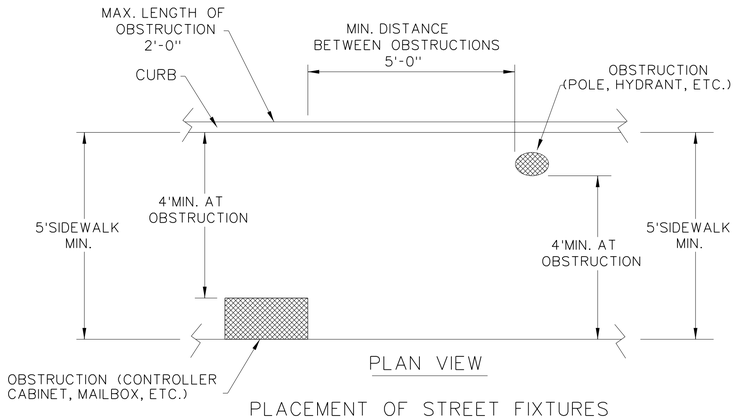
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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



PROTECTED ZONE

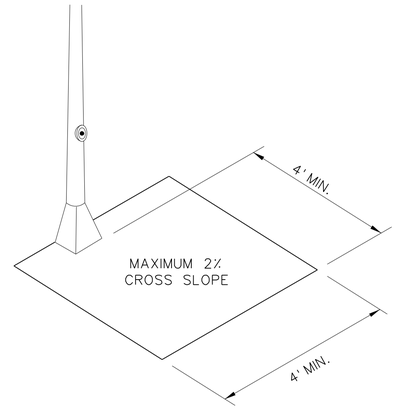
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



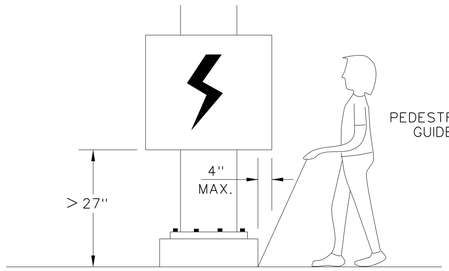
PLAN VIEW

PLACEMENT OF STREET FIXTURES

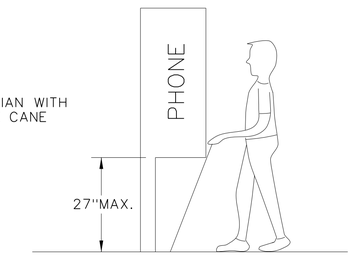
NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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



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

DETECTION BARRIER FOR VERTICAL CLEARANCE <80"

SHEET 3 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

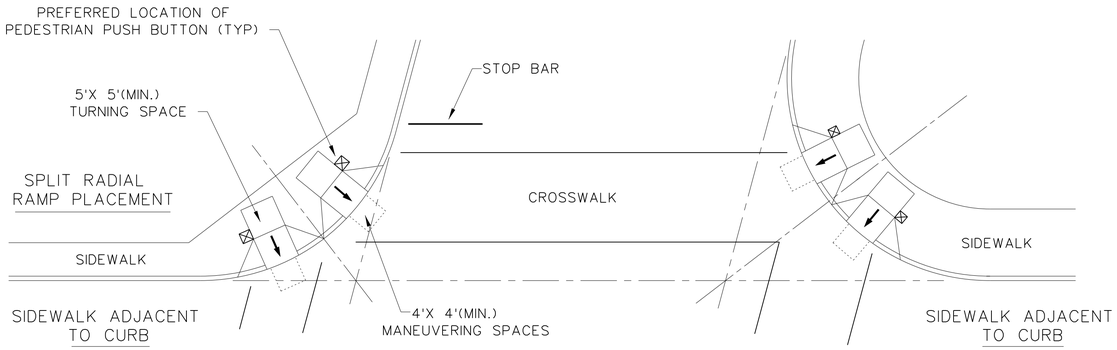
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
				77

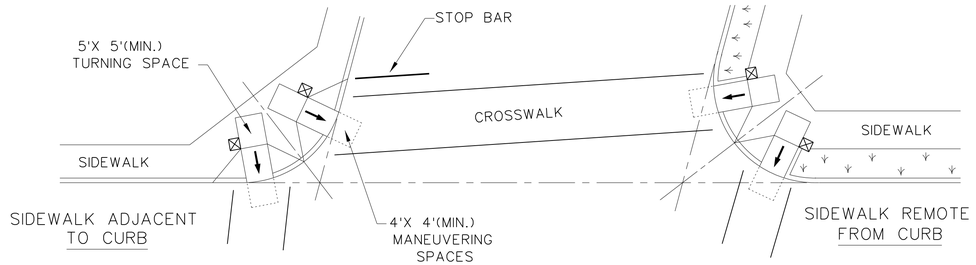
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TYPICAL CROSSING LAYOUTS

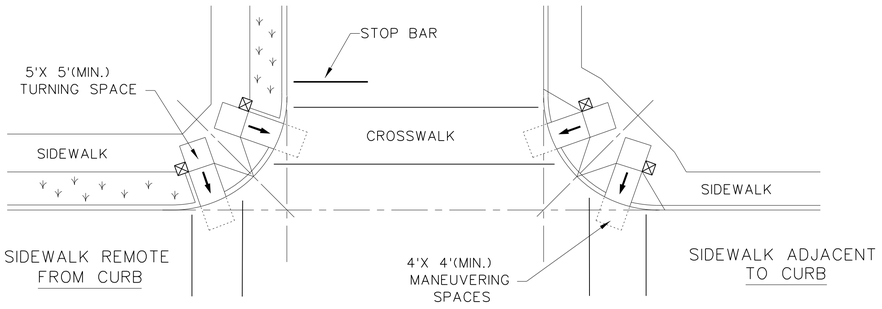
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



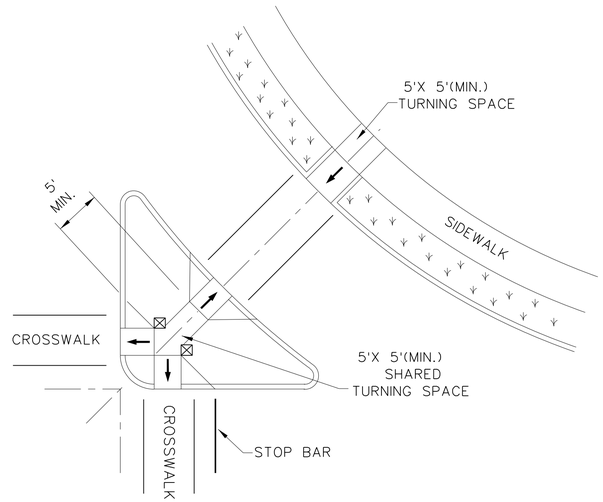
SKEWED INTERSECTION WITH "LARGE" RADIUS



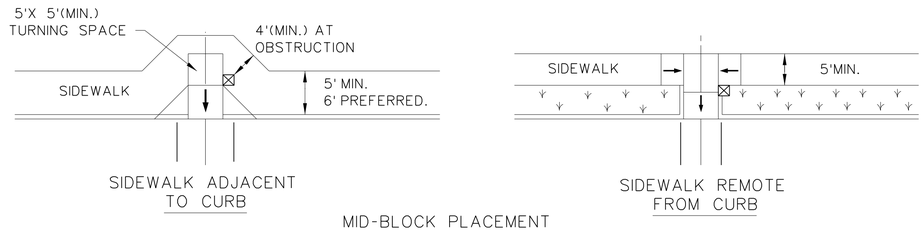
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

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DATE:
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SHEET 4 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012				78
REVISED 01,2018				

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

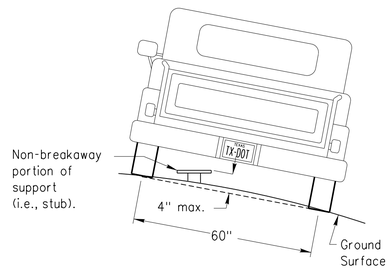
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

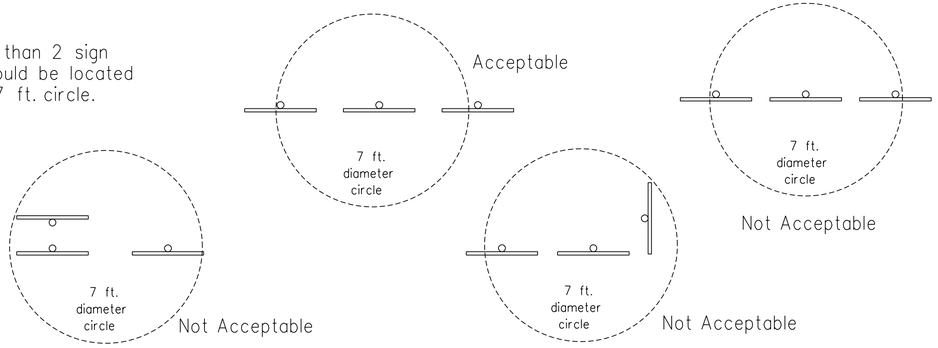
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



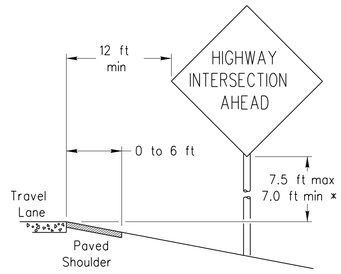
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

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



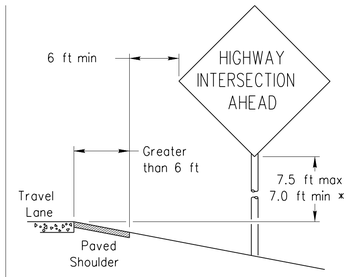
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

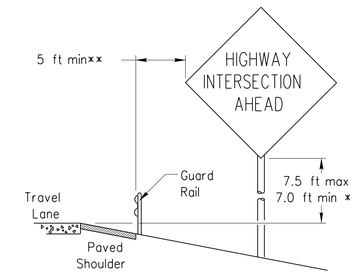
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



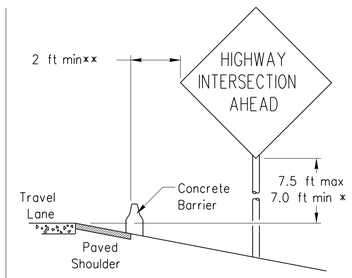
GREATER THAN 6 FT. WIDE

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

BEHIND BARRIER



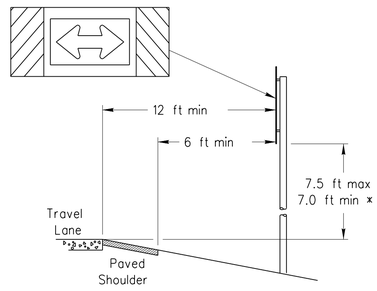
BEHIND GUARDRAIL



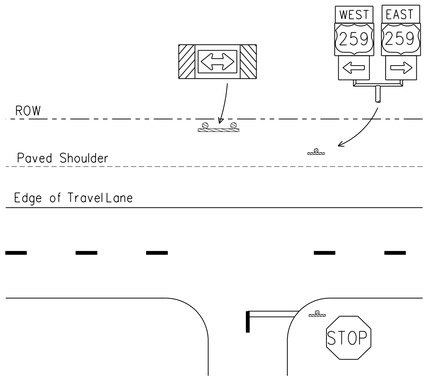
BEHIND CONCRETE BARRIER

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

T-INTERSECTION



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



x Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

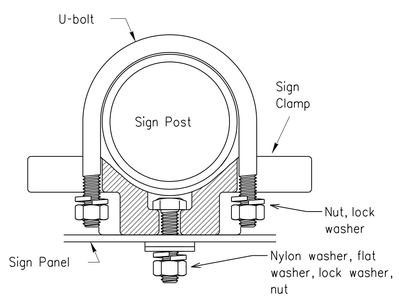
The maximum values may be increased when directed by the Engineer.

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

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

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

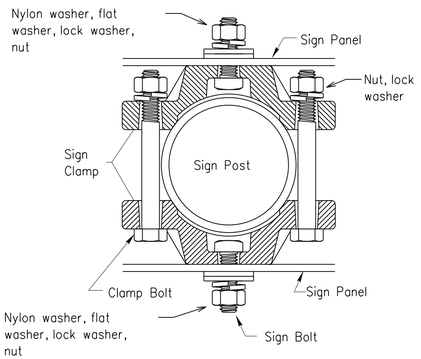


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

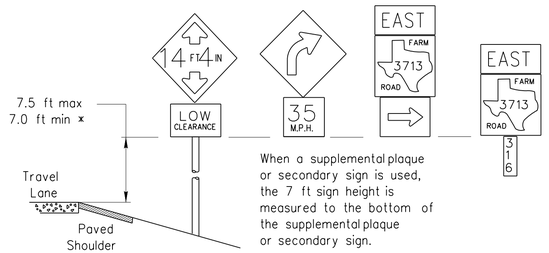
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



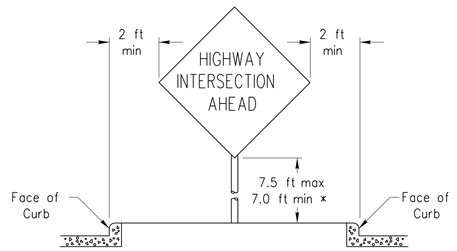
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



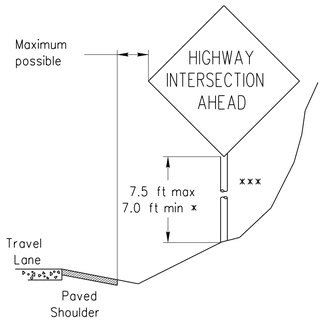
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

© TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08				
	DIST	COUNTY		SHEET NO.
				80

26A

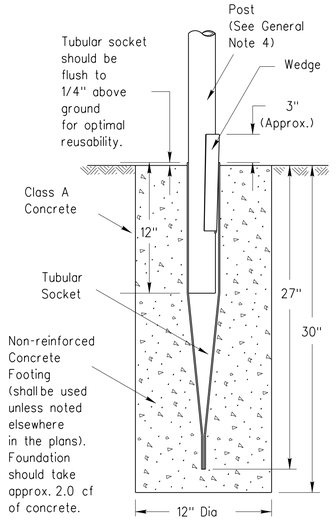
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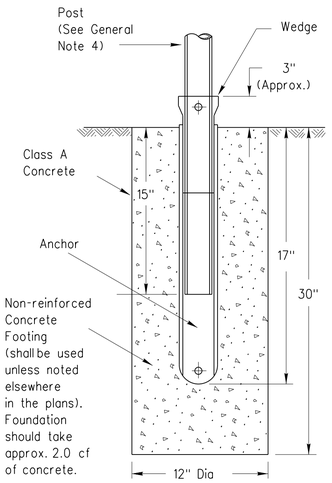
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Wedge Anchor Steel System



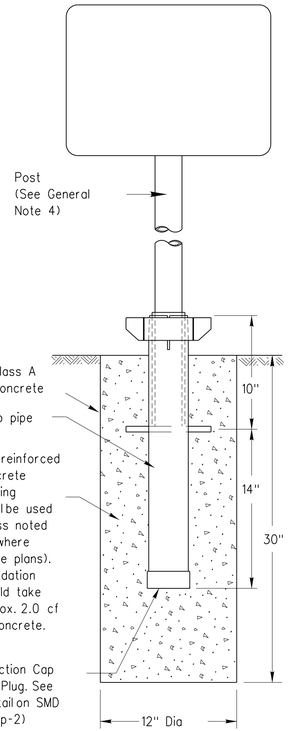
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

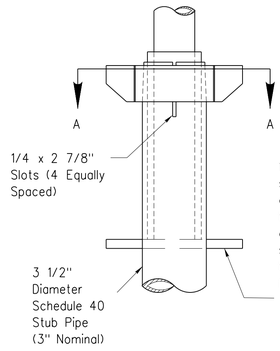


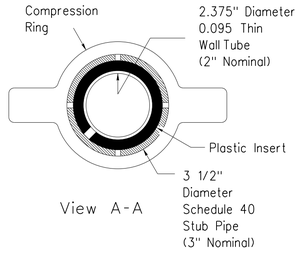
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Universal Anchor System with Thin-Walled Tubing Post



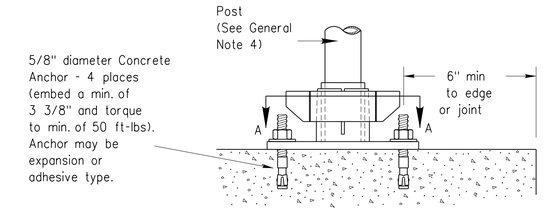
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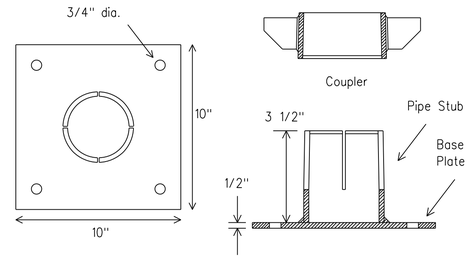


View A-A

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

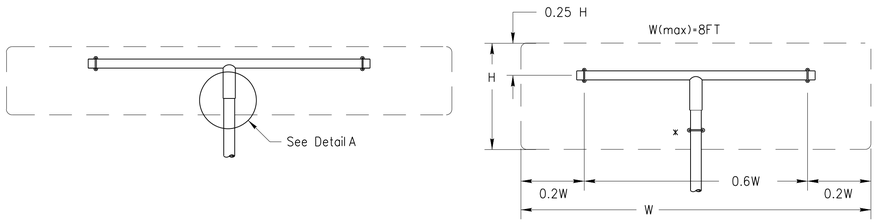


Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



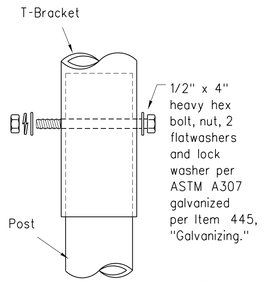
SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



SM RD SGN ASSM TY TWT(X)XX(T)

(x - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

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

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

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

CONT	SECT	JOB	HIGHWAY

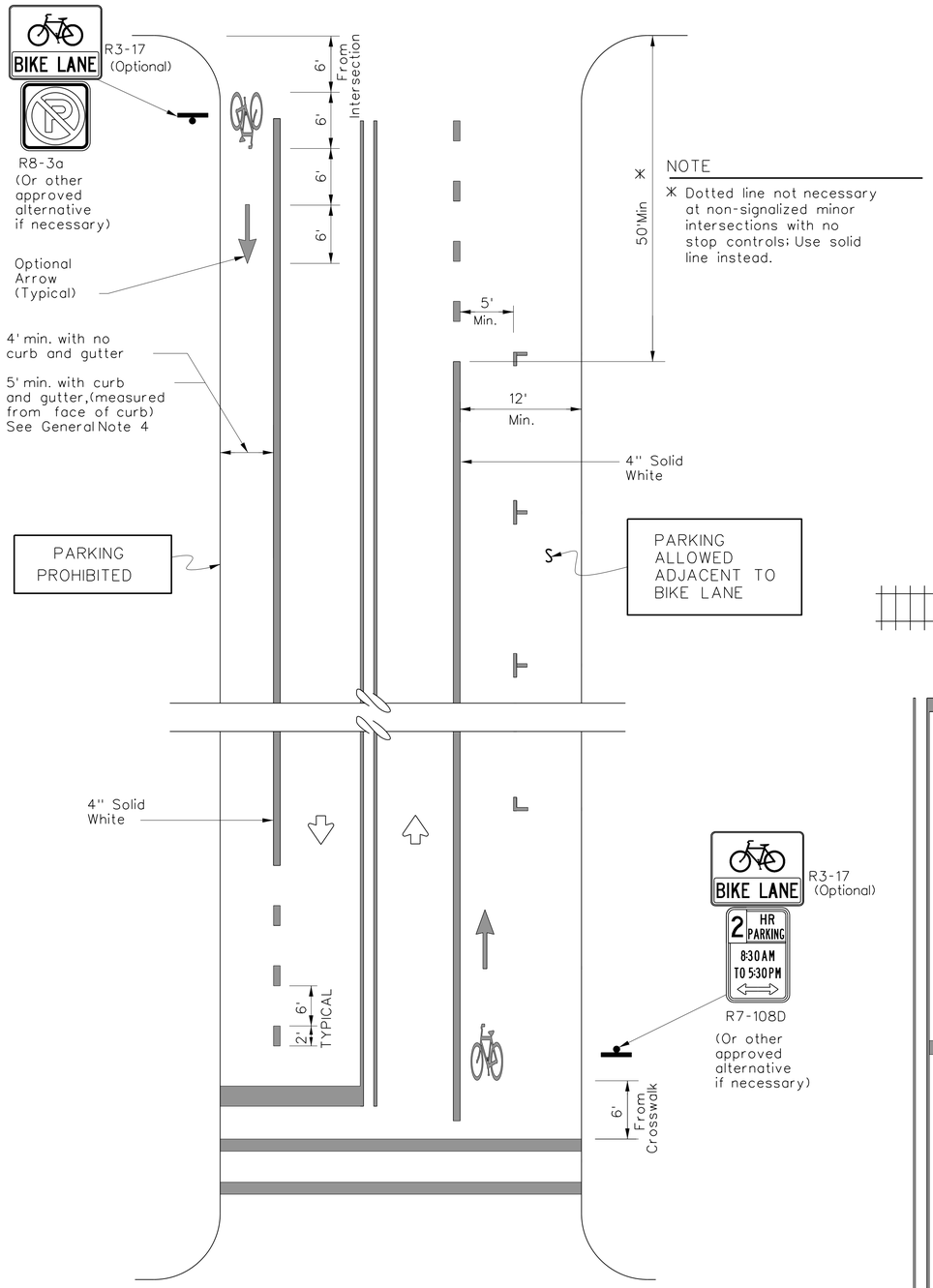
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9-08 REVISIONS

DATE:
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NOTE

* Dotted line not necessary at non-signalized minor intersections with no stop controls; Use solid line instead.

NOTES

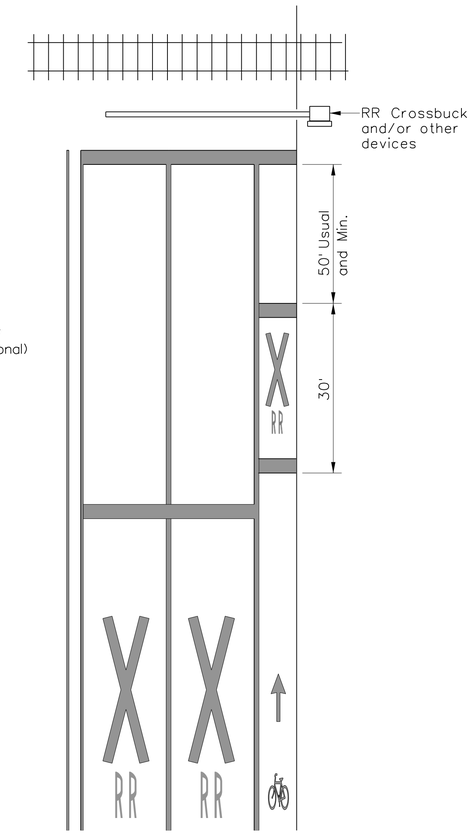
1. Bicycle lane pavement markings typically repeated after each intersection or signalized driveway.
2. On uninterrupted sections of roadway, bicycle lane pavement markings typically repeated as follows:

   -1200' for 45 MPH or less roads
   -2500' for 50 MPH and greater roads.

TWO-WAY STREET

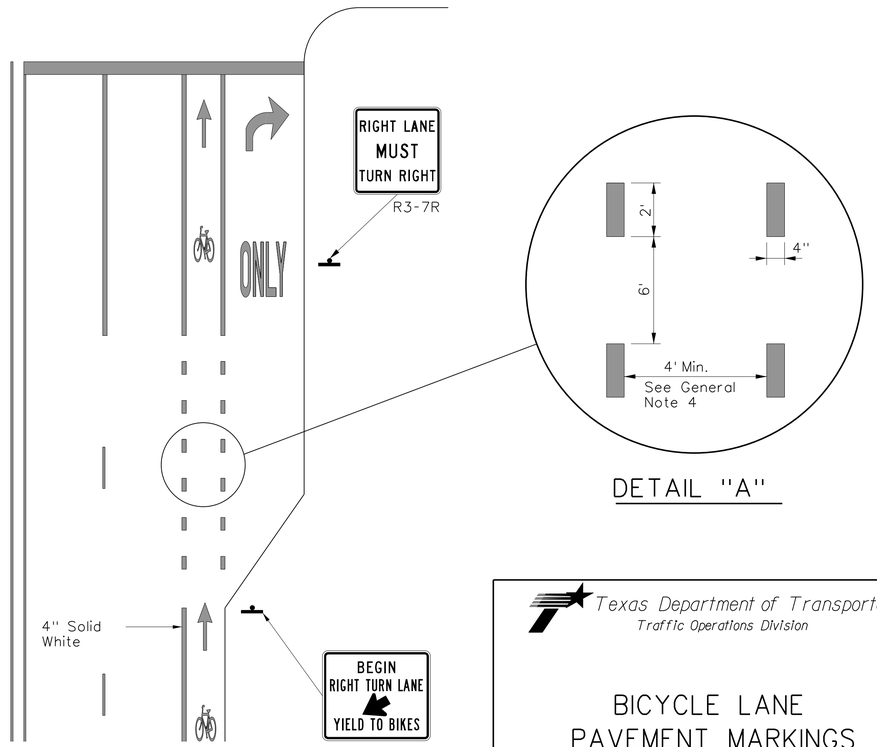
GENERAL NOTES

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.



(See RCPM Standard for travellane details)

RAILROAD CROSSING APPROACH



DETAIL "A"

RIGHT TURN ONLY 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

Texas Department of Transportation
Traffic Operations Division

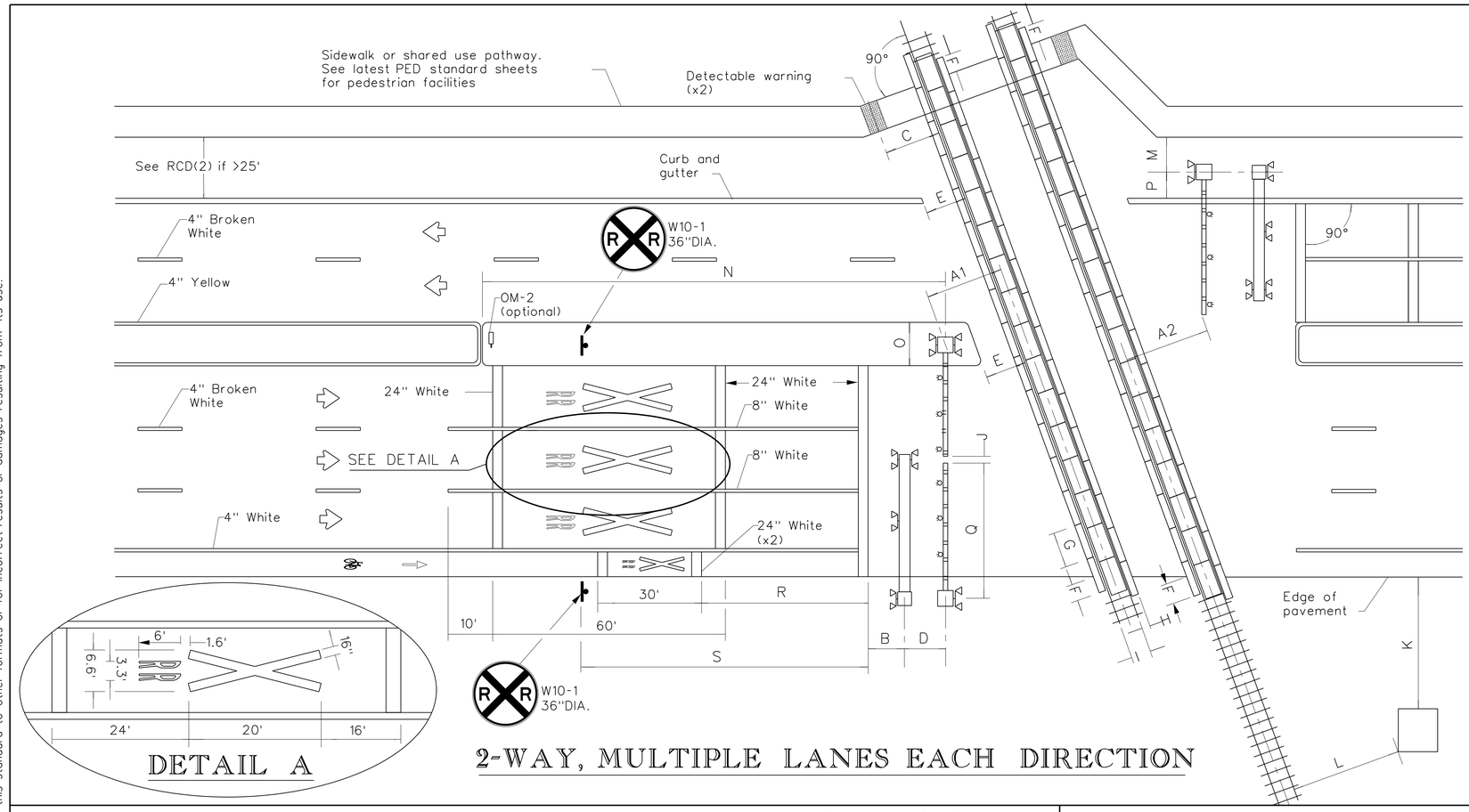
BICYCLE LANE PAVEMENT MARKINGS

BLPM-10

© TxDOT May 2010	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.
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2-WAY, MULTIPLE LANES EACH DIRECTION

DETAIL A

NOTES

A1: Center of RR mast to center of rail: 12' minimum, 15' typical.

A2: Tip of gate to center of rail: 12' minimum, 15' typical.

B: Center of mast (cantilever, gate, or mast flasher) of nearest active traffic control device to stop line: 8' (NOTE: Stop line may be moved as needed, but should be at least 8' back from gates, if present).

C: Center of detectable warning device to nearest rail: 6' minimum

D: Center of gate mast to center of cantilever mast: 6' typical. NOTE: Cantilever may be located in front or behind gates.

E: Edge of median or curb to nearest rail: 10' typical. NOTE: Design median edge to be parallel with rail.

F: Edge of planking panel from edge of pavement or sidewalk: 3' minimum. NOTE: Field panels need not be in line with gauge panels.

G: Length of panels along rail: 8' typical.

H: Width of field panel: 2' typical (check with railroad company).

I: Distance between rails: 4'-8.5".

J: Tip of gate to tip of gate: 2' maximum for Quiet Zone SSM or 90% of traveled way covered by gates for all other locations.

K: Nearest edge of RR cabin from edge of pavement: 30' typical. NOTE: Cabinet not required to be parallel to edge of pavement.

L: Nearest edge of RR cabin from nearest rail: 25' typical.

M: Center of RR mast to edge of sidewalk: 6' minimum.

N: Center of gate mast to leading edge of non-traversable median: 100' minimum to qualify as a Quiet Zone SSM. NOTE: 60' will suffice if there is a street intersection within the 100' and all street intersections within 60' are closed.

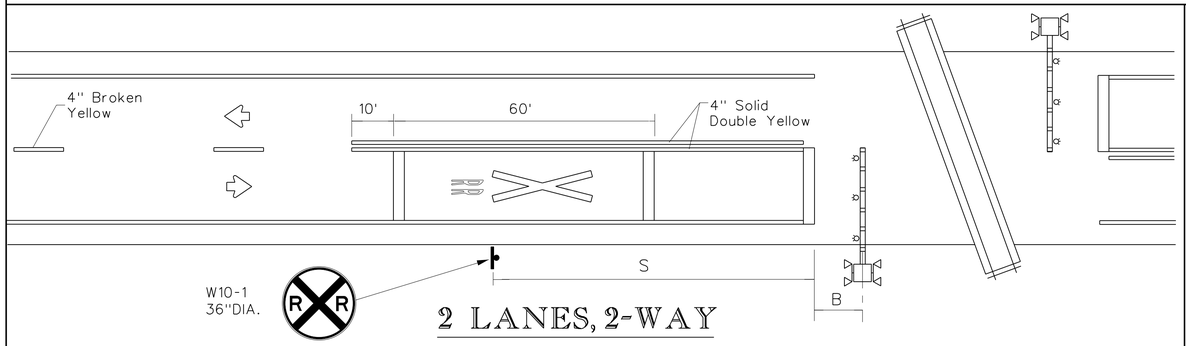
O: Width of median: 8'-6" minimum, 10' typical when using median gates. NOTE: Center of gate mast minimum 4'-3" from face of curb.

P: Center of RR mast to face of curb: 4'-3" minimum. Center of RR mast to edge of pavement (with shoulder): 6' minimum Center of RR mast to edge of pavement (no shoulder): 8'-3" minimum NOTE: BNSF prefers 5'-3", 7', and 9'-3" minimums, respectively.

Q: Gate length: 28' or less typical, but railroad company may allow up to 32' under special circumstances.

R: Stop line to first RR Crossing transverse line (bike lane): 50' typical.

S: Stop line to GRADE CROSSING ADVANCE WARNING (W10-1) sign and adjacent RR Crossing pavement markings. See Table 1. See RCD(2) for other signs.



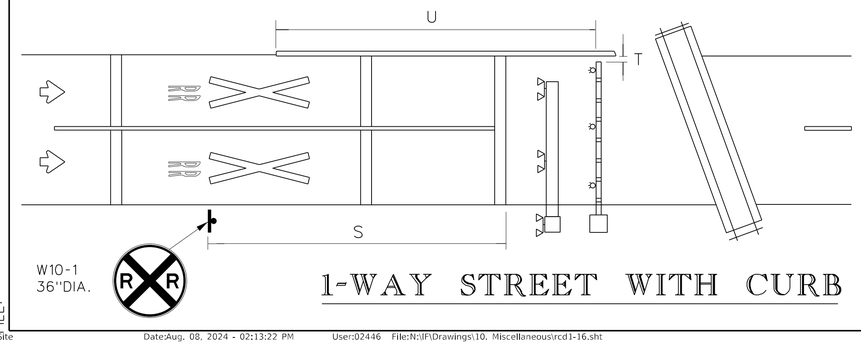
2 LANES, 2-WAY

TABLE 1	
Approach Speed(mph)	Desirable Placement (feet)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

LEGEND	
	Sign
	Object Marker
	Traffic Flow
	Cantilever
	Gate Assembly
	Mast Flasher Pair

GENERAL NOTES

1. Medians and curbs must be non-traversable to qualify as a Quiet Zone Supplementary Safety Measure (SSM). Non-traversable curbs in Quiet Zones are 6" tall minimum and used on roadways where speed does not exceed 40 mph.
2. Raised pavement markers may be used to supplement striping. See PM(2) and PM(3) standard sheets.
3. Medians preferred whenever possible to prevent vehicles from driving around gates.
4. Longitudinal edge striping may be continued thru crossing as needed. Illumination may also be considered for nighttime visibility.
5. See SMD standard sheets for sign mounting details.
6. See the Standard Highway Sign Design for Texas (SHSD) manual for sign and pavement marking details.

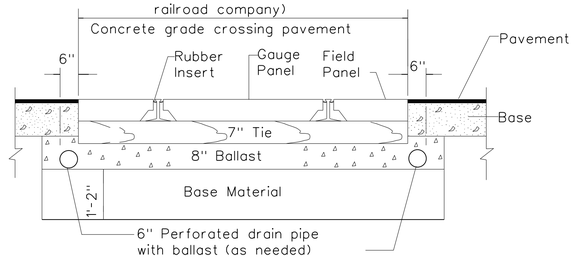


1-WAY STREET WITH CURB

NOTES

T: Tip of gate to edge of curb: 1' max for Quiet Zone SSM, 90% of traveled way covered by gates for all other locations

U: Non-traversable curb length from gate: 100' min. for a Quiet Zone SSM, 10' min for all other locations.



CROSSING SURFACE CROSS SECTION

Texas Department of Transportation

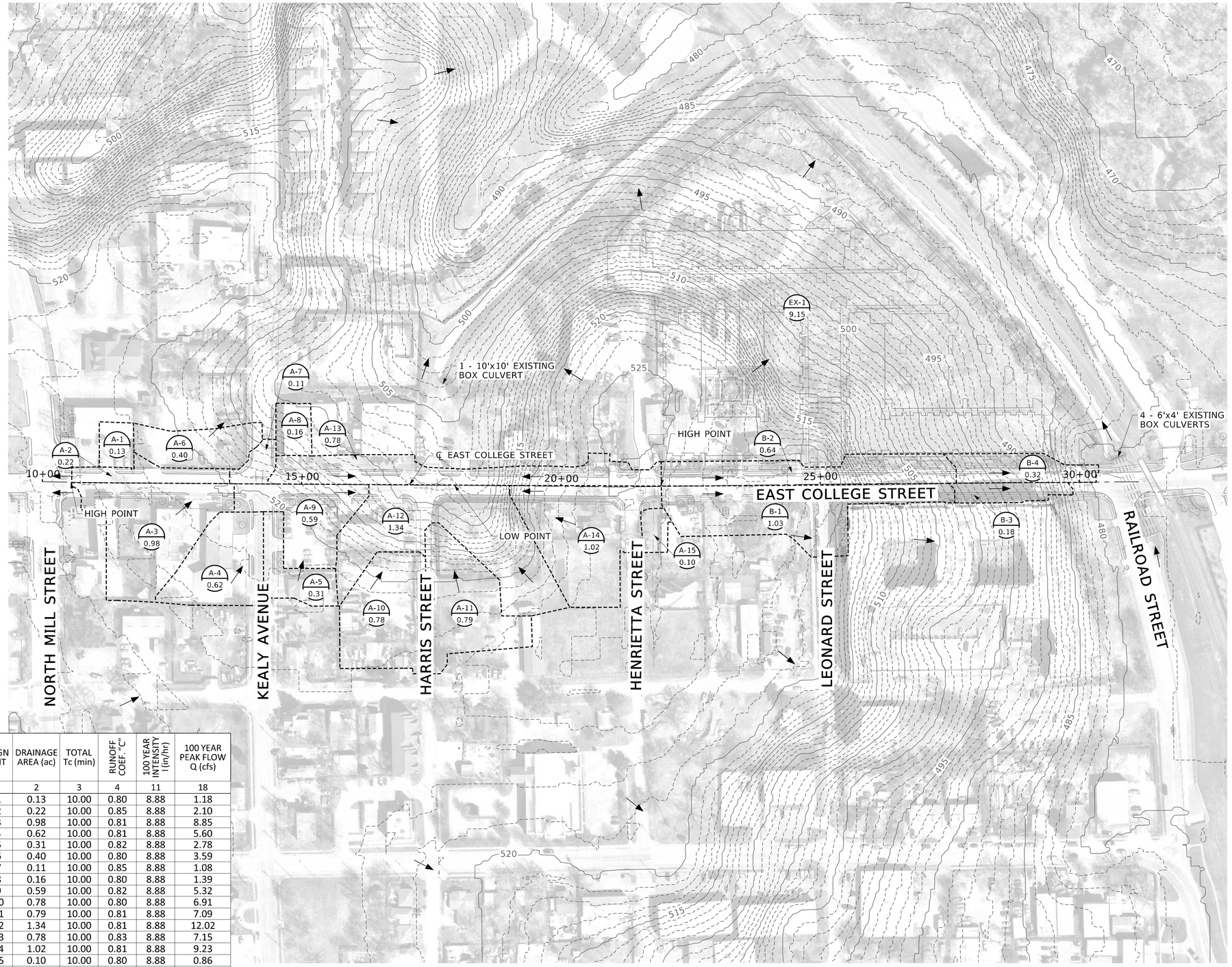
Traffic Operations Division Standard

RAILROAD CROSSING DETAILS SIGNING, STRIPING, AND DEVICE PLACEMENT

RCD(1)-16

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©TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
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DESIGN POINT	DRAINAGE AREA (ac)	TOTAL Tc (min)	RUNOFF COEF. "C"	100 YEAR INTENSITY I (in/hr)	100 YEAR PEAK FLOW Q (cfs)
1	2	3	4	11	18
A-1	0.13	10.00	0.80	8.88	1.18
A-2	0.22	10.00	0.85	8.88	2.10
A-3	0.98	10.00	0.81	8.88	8.85
A-4	0.62	10.00	0.81	8.88	5.60
A-5	0.31	10.00	0.82	8.88	2.78
A-6	0.40	10.00	0.80	8.88	3.59
A-7	0.11	10.00	0.85	8.88	1.08
A-8	0.16	10.00	0.80	8.88	1.39
A-9	0.59	10.00	0.82	8.88	5.32
A-10	0.78	10.00	0.80	8.88	6.91
A-11	0.79	10.00	0.81	8.88	7.09
A-12	1.34	10.00	0.81	8.88	12.02
A-13	0.78	10.00	0.83	8.88	7.15
A-14	1.02	10.00	0.81	8.88	9.23
A-15	0.10	10.00	0.80	8.88	0.86
B-1	1.03	10.00	0.82	8.88	9.40
B-2	0.64	10.00	0.81	8.88	5.76
B-3	0.18	10.00	0.84	8.88	1.68
B-4	0.32	10.00	0.85	8.88	2.97

N

0 50' 100' 200'

SCALE IN FEET

LEGEND

- XX-XX / X.XX — DRAINAGE AREA DESIGNATION / AREA (ACRES)
- DRAINAGE BOUNDARY
- FLOW DIRECTION

NOTES

1. AN ADJUSTMENT FACTOR OF 1.25 WAS USED TO DETERMINE PEAK FLOW FOR 100-YR STORM EVENT.
2. THE INTENSITY VALUE USED IS BASED OFF THE CITY OF LEWISVILLE DRAINAGE CRITERIA MANUAL.
3. RUNOFF COEFFICIENT "Cf" IS BASED ON CITY OF LEWISVILLE ZONING AND LAND USE ORDINANCE.
4. TIME OF CONCENTRATION IS BASED ON CITY OF LEWISVILLE DRAINAGE DESIGN CRITERIA MANUAL.
5. ONE FOOT CONTOURS ARE FROM THE TNRIS LIDAR DATASET FOR NORTH TEXAS FLOWN IN 2009.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

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Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
EXISTING DRAINAGE AREA MAP

NO.	ISSUES	BY	DATE

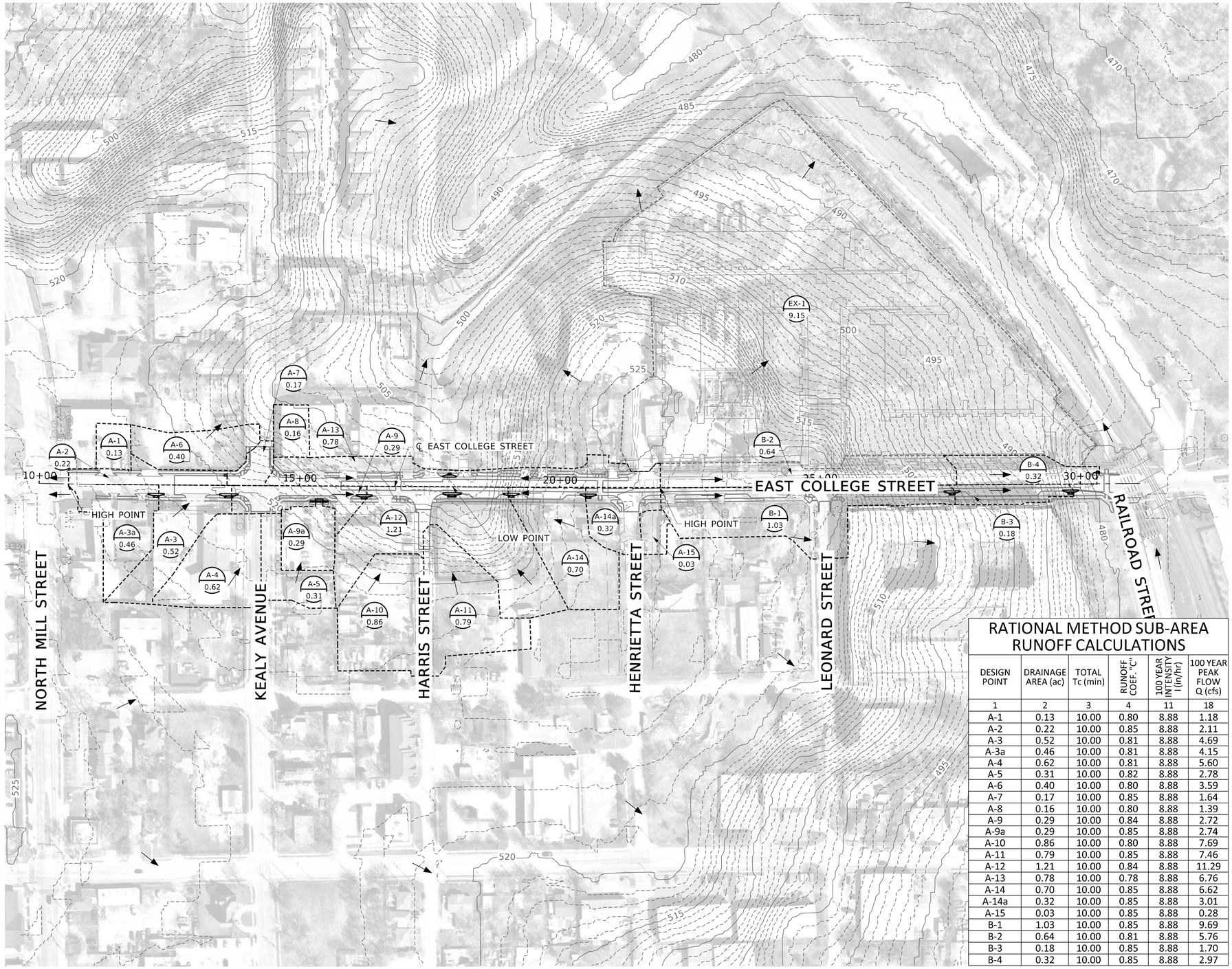
F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-exDMAP.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET DA-01
SEQ. 83

MicroStation V8 User:02446 Office:On Site
N:\IF\Drawings\5. Drainage\cv-trt-pl-exDMAP.sht
Plotter: ISYSTEMS 17 in. ePLOT Model.pltcfg Model: Default
Plot Scale: 200.000 ' / in. Project Freese and Nichols, Inc., True Type Fonts
Date: Aug. 08, 2024 - 02:13:31 PM

Office:On Site Date:Aug. 08, 2024 - 02:13:31 PM User:02446 File:N:\IF\Drawings\5. Drainage\cv-trt-pl-exDMAP.sht



RATIONAL METHOD SUB-AREA RUNOFF CALCULATIONS

DESIGN POINT	DRAINAGE AREA (ac)	TOTAL Tc (min)	RUNOFF COEF. "C"	100 YEAR INTENSITY I (in/hr)	100 YEAR PEAK FLOW Q (cfs)
1	2	3	4	11	18
A-1	0.13	10.00	0.80	8.88	1.18
A-2	0.22	10.00	0.85	8.88	2.11
A-3	0.52	10.00	0.81	8.88	4.69
A-3a	0.46	10.00	0.81	8.88	4.15
A-4	0.62	10.00	0.81	8.88	5.60
A-5	0.31	10.00	0.82	8.88	2.78
A-6	0.40	10.00	0.80	8.88	3.59
A-7	0.17	10.00	0.85	8.88	1.64
A-8	0.16	10.00	0.80	8.88	1.39
A-9	0.29	10.00	0.84	8.88	2.72
A-9a	0.29	10.00	0.85	8.88	2.74
A-10	0.86	10.00	0.80	8.88	7.69
A-11	0.79	10.00	0.85	8.88	7.46
A-12	1.21	10.00	0.84	8.88	11.29
A-13	0.78	10.00	0.78	8.88	6.76
A-14	0.70	10.00	0.85	8.88	6.62
A-14a	0.32	10.00	0.85	8.88	3.01
A-15	0.03	10.00	0.85	8.88	0.28
B-1	1.03	10.00	0.85	8.88	9.69
B-2	0.64	10.00	0.81	8.88	5.76
B-3	0.18	10.00	0.85	8.88	1.70
B-4	0.32	10.00	0.85	8.88	2.97

N

0 50' 100' 200'

SCALE IN FEET

LEGEND

- XX-XX / X.XX — DRAINAGE AREA DESIGNATION / AREA (ACRES)
- DRAINAGE BOUNDARY
- FLOW DIRECTION

NOTES

1. AN ADJUSTMENT FACTOR OF 1.25 WAS USED TO DETERMINE PEAK FLOW FOR 100-YR STORM EVENT.
2. THE INTENSITY VALUE USED IS BASED OFF THE CITY OF LEWISVILLE DRAINAGE CRITERIA MANUAL.
3. RUNOFF COEFFICIENT "Cf" IS BASED ON CITY OF LEWISVILLE ZONING AND LAND USE ORDINANCE.
4. TIME OF CONCENTRATION IS BASED ON CITY OF LEWISVILLE DRAINAGE DESIGN CRITERIA MANUAL.
5. ONE FOOT CONTOURS ARE FROM THE TNRIS LIDAR DATASET FOR NORTH TEXAS FLOWN IN 2009.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
PROPOSED
DRAINAGE AREA MAP

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

F&N JOB NO.	LEW21241
DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-pl-propDMAP.sht

SHEET
DA-02

SEQ.
84

MicroStation V8 User: 02446 Office:On Site
N:\IF\Drawings\5. Drainage\cv-trt-pl-propDMAP.sht
Plotter: HPWide-Xerox.plt Model: Default
Plot Scale: 200.000 ' / In. Project: Freese and Nichols, Inc., True Type Fonts
Date: Aug. 08, 2024 - 02:14:04 PM

CURB INLETS ON GRADE

INLET			DRAINAGE AREA NO.				Cross Slope of Pavement "S"	Long Slope "S"	Cross Slope of Gutter "S'w"	Depth of Flow "Y"	Spread of Flow "T"	Equivalent Cross Slope "S"	Street Section	Manning's coefficient pavement "n"	5-year Intensity	5-year Runoff	5-year Carryover Flow	5-year Total Gutter Q	100-year Intensity	100-year Runoff	100-year Carryover Flow	100-year Total Gutter Q	Right-of-Way Capacity	Design Storm	Length Required "L"	Actual Provided Length L	L/L	Efficiency "E"	Inlet Capacity	Bypass Target	5-year Bypass Flow "q"	100-year Bypass Flow "q"	COMMENTS
Design Point	Inlet No.	STATION	Area No.	Area (acres)	Runoff "C"	Conc. Time (min)	(ft/ft)	(ft/ft)	(ft/ft)	(ft)	(ft)	(ft/ft)	(type)		(in/hr)	(cfs)	Flow	(cfs)	(in/hr)	(cfs)	(cfs)	(cfs)	(cfs)		"L" (ft)	(ft)			(cfs)		(cfs)	(cfs)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
A-2	A-2	11+75.00	A-2	0.22	0.85	10.00	0.030	0.013	0.167	0.19	6.32	0.116	Straight	0.012	5.75	1.09	0.00	1.09	8.88	2.11	0.00	2.11	48.78	100-yr	11.54	10	0.87	0.97	2.05	A-7	0.00	0.06	Existing Inlet to Remain
A-3	A-3	13+65.00	A-3	0.52	0.81	10.00	0.020	0.042	0.167	0.19	9.62	0.081	Straight	0.012	5.75	2.43	0.20	2.63	8.88	4.69	1.16	5.86	87.16	100-yr	31.22	15	0.48	0.69	4.06	A-9	0.21	1.80	Replaced Inlet
A-3a	A-3a	12+25.00	A-3a	0.46	0.81	10.00	0.020	0.013	0.167	0.21	10.51	0.076	Straight	0.012	5.75	2.15	0.00	2.15	8.88	4.15	0.00	4.15	48.78	100-yr	19.74	10	0.51	0.72	2.99	A-3	0.20	1.16	Proposed Inlet
A-4	A-4	14+05.00	A-4	0.62	0.81	10.00	0.035	0.010	0.167	0.30	8.70	0.101	Straight	0.012	5.75	2.90	0.00	2.90	8.88	5.60	0.00	5.60	42.78	100-yr	17.46	10	0.57	0.78	4.39	A-9	0.13	1.21	Existing Inlet to Remain
A-5	A-5	13+65.00	A-5	0.31	0.82	10.00	0.040	0.010	0.167	0.25	6.15	0.128	Straight	0.012	5.75	1.44	0.00	1.44	8.88	2.78	0.00	2.78	42.78	100-yr	11.30	10	0.88	0.98	2.72	A-9	0.00	0.06	Existing Inlet to Remain
A-6	A-6	13+65.00	A-6	0.40	0.80	10.00	0.020	0.042	0.167	0.16	8.01	0.091	Straight	0.012	5.75	1.86	0.00	1.86	8.88	3.59	0.00	3.59	87.16	100-yr	23.67	10	0.42	0.63	2.26		0.34	1.34	Existing Inlet to Remain
A-7	A-7	13+65.00	A-7	0.17	0.85	10.00	0.020	0.042	0.167	0.12	6.04	0.109	Straight	0.012	5.75	0.85	0.00	0.85	8.88	1.64	0.06	1.69	87.16	100-yr	15.48	10	0.65	0.85	1.43		0.00	0.26	Existing Inlet to Remain
A-9	A-9	16+25.00	A-9	0.29	0.84	10.00	0.020	0.014	0.167	0.23	11.74	0.071	Straight	0.012	5.75	1.41	0.34	1.75	8.88	2.72	3.07	5.79	50.62	100-yr	24.23	10	0.41	0.62	3.57	A-12	0.09	2.22	Replaced Inlet
A-14	A-14	19+05.00	A-14	0.70	0.85	10.00	0.020	0.030	0.167	0.23	11.28	0.073	Straight	0.012	5.75	3.43	0.23	3.66	8.88	6.62	1.02	7.64	74.25	100-yr	33.72	10	0.30	0.47	3.58	A-12	1.25	4.05	Replaced Inlet
A-14a	A-14a	20+55.00	A-14a	0.32	0.85	10.00	0.020	0.048	0.167	0.15	7.31	0.096	Straight	0.012	5.75	1.56	0.00	1.56	8.88	3.01	0.00	3.01	93.24	100-yr	22.10	10	0.45	0.66	1.99	A-14	0.23	1.02	Proposed Inlet
B-1	B-1	25+50.00	B-1	1.03	0.85	10.00	0.020	0.050	0.167	0.22	11.20	0.073	Straight	0.012	5.75	5.02	0.00	5.02	8.88	9.69	0.00	9.69	95.94	100-yr	43.35	10	0.23	0.38	3.65	B-3	2.41	6.05	Replaced Inlet
B-2	B-2	27+50.00	B-2	0.64	0.81	10.00	0.020	0.059	0.167	0.18	8.95	0.085	Straight	0.012	5.75	2.98	0.00	2.98	8.88	5.76	0.00	5.76	103.92	100-yr	33.49	10	0.30	0.47	2.72	B-4	1.07	3.04	Existing Inlet to Remain
B-3	B-3	29+80.00	B-3	0.18	0.85	10.00	0.020	0.041	0.167	0.21	10.73	0.075	Straight	0.012	5.75	0.88	2.41	3.30	8.88	1.70	6.05	7.75	86.12	100-yr	36.38	10	0.27	0.44	3.41		1.14	4.35	Replaced Inlet
B-4	B-4	30+35.00	B-4	0.32	0.85	10.00	0.020	0.026	0.167	0.21	10.60	0.076	Straight	0.012	5.75	1.54	1.07	2.61	8.88	2.97	3.04	6.01	68.91	100-yr	28.46	5	0.18	0.29	1.76		1.44	4.24	Replaced Inlet

CURB INLETS AND DROP INLETS IN SUMPS

Inlet No.	Gutter Slope S (ft/ft)	Crown Slope of Pavement θ (ft/ft)	100-year Gutter Flow Q_o (cfs)	100-year Carryover Flow (cfs)	100-year Total Gutter Flow Q_o (cfs)	100-year Depth of Gutter Flow Y_o (ft)	Depth of Depression a (ft)	Depth of Flow at Opening Y (ft)	Capacity of Inlet per Foot of Length (Q/L) (cfs/ft)	Length of Inlet Opening L (ft)	Capacity of Inlet Q (cfs)	Bypass into Overflow (cfs)	Percent Q100 Captured By Inlet	NOTES
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A-1	0.013	0.25	1.18	0.00	1.18	0.34	0.25	0.59	0.15	2'x2'	10.81	0.00	100%	Ex inlet
A-8	0.063	0.25	1.39	0.00	1.39	0.27	0.25	0.52	0.17	2'x2'	8.95	0.00	100%	Ex inlet
A-9a	0.030	0.02	2.74	0.00	2.74	0.15	0.25	0.40	0.70	15	10.45	0.00	100%	Proposed Inlet
A-10	0.083	0.25	7.69	0.00	7.69	0.48	0.25	0.73	0.38	5'x5'	37.56	0.00	100%	Ex inlet
A-11	0.083	0.25	7.46	0.00	7.46	0.48	0.25	0.73	0.37	5'x5'	37.15	0.00	100%	Ex inlet
A-12	0.014	0.02	11.29	6.28	17.57	0.36	0.25	0.61	1.28	15	19.20	0.00	100%	Replaced Inlet
A-13	0.014	0.02	6.76	0.00	6.76	0.25	0.25	0.50	1.25	5	6.24	0.52	92%	Replaced Inlet
A-15	0.005	0.02	0.28	0.00	0.28	0.09	0.25	0.34	0.58	10	5.82	0.00	100%	Ex inlet

STORM DRAIN HYDRAULIC CALCULATIONS TABLE

FROM	TO	PIPE LENGTH	Drainage Area Incremental No.	Drainage Area Incremental Area	Drainage Area Total Area	Runoff "c"	Incr. cA	Total cA	Time of Concentration Inlet	Time of Concentration Travel	Time of Concentration Total	5-yr Intensity	100-yr Intensity	Q5 Runoff	Q100 Runoff	100-yr Inlet Bypass	Q pipe	Pipe Size	No. of Barrels	n	Sf	HGL D/S	HGL U/S	HEAD LOSS CALCULATIONS V1 (in)	V2 (out)	V1²/2G	V2²/2G	Kj	KjV1²/2G	Hk	Design U/S HGL	Invert Elev. FROM	Invert Elev. TO	T/C ELEV. Ft.	DESCRIPTION
		feet	No.	Area					min.	min.	min.	in/hr.	in/hr.	cfs	cfs	cfs	cfs	in.			ft/ft	Elev.	Elev.	ft/sec	ft/sec	ft.	ft.			ft.	Elev.	ft.	ft.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
LAT-A3																																			
01+17.06	01+10.21	6.85	A-3&A-3a	0.98	0.98	0.81	0.80	0.80	10.00	0.02	10.00	5.75	8.88	4.58	10.01	0.00	10.01	18	1	0.012	0.0077	504.61	504.67	5.66	5.66	0.498	0.498	0.50	0.25	0.25	504.92	508.50	506.92	513.50	MH on Trunk Line w/45º Branch Lat
01+10.21	01+07.22	2.99		0.00	0.98			0.80	0.00	0.01	10.02	5.75	8.88	4.58	8.85	0.00	8.85	18	1	0.012	0.0060	504.41	504.43	5.66	5.01	0.498	0.389	0.48	0.24	0.19	504.61	506.92	505.71	512.93	Bends where radius = diam, 60º Bend
LAT-A3a																																			
02+46.89	01+20.00	126.89	A-3a	0.46	0.46	0.81	0.37	0.37	10.00	1.25	10.00	5.75	8.88	2.15	4.15	1.16	2.99	18	1	0.012	0.0007	504.92	505.00	0.00	1.69	0.000	0.044	1.25	0.00	0.10	505.10	511.97	508.50	516.97	Inlet at Beg. of Line
LINE A9																																			
01+11.83	01+05.74	6.09	A-9&A-9a	0.58	0.58	0.84	0.49	0.49	10.00	0.03	10.00	5.75	8.88	2.83	8.70	0.00	8.70	21	1	0.012	0.0026	502.25	502.26	0.00	3.62	0.000	0.203	0.50	0.00	0.20	502.47	500.24	498.58	506.24	MH on Trunk Line w/45º Branch Lat
LAT-A9a																																			
01+81.38	01+04.37	77.01	A-9a	0.29	0.29	0.85	0.25	0.25	10.00	0.83	10.00	5.75	8.88	1.42	2.74	0.00	2.74	18	1	0.012	0.0006	502.10	502.15	1.55	1.55	0.037	0.037	1.25	0.05	0.10	502.25	502.48	500.78	507.70	Inlet at Beg. of Line
01+04.37	01+00.00	4.37		0.00	0.29			0.25	0.00	0.05	10.00	5.75	8.88	1.42	2.74	0.00	2.74	18	1	0.012	0.0006	502.00	502.00	1.55	1.55	0.037	0.037	0.35	0.01	0.10	502.10	500.78	500.24	506.24	Bends where radius = diam, 45º Bend
LAT-A12																																			
01+08.00	01+00.00	8.00	A-12	1.21	1.21	0.84	1.02	1.02	10.00	0.03	10.00	5.75	8.88	5.85	11.29	0.00	11.29	21	1	0.012	0.0043	499.32	499.35	0.00	4.70	0.000	0.342	1.25	0.00	0.43	499.78	498.52	497.57	503.69	Inlet at Beg. of Line
LAT-A13																																			
01+28.43	01+22.46	5.97	A-13	0.78	0.78	0.78	0.61	0.61	10.00	0.03	10.00	5.75	8.88	3.50	6.90	0.00	6.90	18	1	0.012	0.0037	499.20	499.22	0.00	3.90	0.000	0.237	1.25	0.00	0.30	499.52	498.69	498.08	503.69	Inlet at Beg. of Line
LAT-A14																																			
01+07.27	01+00.00	7.27	A-14&A-14a	1.02	1.02	0.85	0.87	0.87	10.00	0.02	10.00	5.75	8.88	4.99	10.65	0.00	10.65	18	1	0.012	0.0088	499.52	499.58	0.00	6.03	0.000	0.564	1.25	0.00	0.71	500.29	498.93	498.84	503.93	Inlet at Beg. of Line
LAT-A14a																																			
02+38.20	01+00.00	138.20	A-14a	0.32	0.32	0.85	0.27	0.27	10.00	2.04	10.00	5.75	8.88	1.56	3.01	1.02	1.99	18	1	0.012	0.0003	502.26	502.31	0.00	1.13	0.000	0.020	1.25	0.00	0.10	502.41	506.50	500.42	512.57	Inlet at Beg. of Line
LAT B-1																																			
01+06.62	01+00.00	6.62	B-1	1.03	1.03	0.85	0.87	0.87	10.00	0.05	10.00	5.75	8.88	5.02	9.69	6.05	3.65	18	1	0.012	0.0010	488.59	488.60	0.00	2.06	0.000	0.066	1.25	0.00	0.10	488.70	491.66	487.09	506.66	Inlet at Beg. of Line
LAT B-3																																			
01+07.64	01+00.00	7.64	B-3	0.18	0.18	0.85	0.15	0.15	10.00	0.07	10.00	5.75	8.88	0.88	7.75	4.35	3.41	18	1	0.012	0.0009	477.08	477.09	0.00	1.93	0.000	0.058	1.25	0.00	0.10	477.19	494.20	493.58	483.20	Inlet at Beg. of Line
LAT-B4																																			
01+12.70	01+08.47	4.23	B-4	0.32	0.32	0.85	0.27	0.27	10.00	0.07	10.00	5.75	8.88	1.54	6.01	4.24	1.76	18	1	0.012	0.0002	480.18	480.18	1.00	1.00	0.015	0.015	1.25	0.02	0.10	480.28	476.23	476.00	481.23	Inlet at Beg. of Line
01+08.47	01+07.87	0.60		0.00	0.32			0.27	0.00	0.01	10.00	5.75	8.88	1.54	6.01	0.00	1.76	18	1	0.012	0.0002	480.08	480.08	1.00	1.00	0.015	0.015	0.35	0.01	0.10	480.18	476.00	478.58	481.23	Bends where radius = diam, 45º Bend

NOTES:

1. CALCULATIONS PERFORMED USING CITY OF LEWISVILLE DRAINAGE CRITERIA MANUAL APRIL 1988 FOR HYDRAULIC GRADE EQUATIONS.
2. ON-GRADE INLETS AND LOW POINT INLETS ARE DESIGNED TO CAPTURE THE 100-YEARS STORM EVENT.
3. STREET RIGHT-OF-WAY CAPACITY IS DESIGNED FOR THE 100-YEAR STORM EVENT.
4. THE INTENSITY VALUE USED IS BASED ON THE CITY OF LEWISVILLE DRAINAGE CRITERIA MANUAL.
5. STREET DESIGN CAPACITY (100-YEAR) IS TO 11 FOOT SPREAD REQUIREMENT.
6. STORM DRAIN SYSTEM IS DESIGNED TO CONVEY THE 100-YEAR STORM EVENT.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
DRAINAGE CALCULATIONS

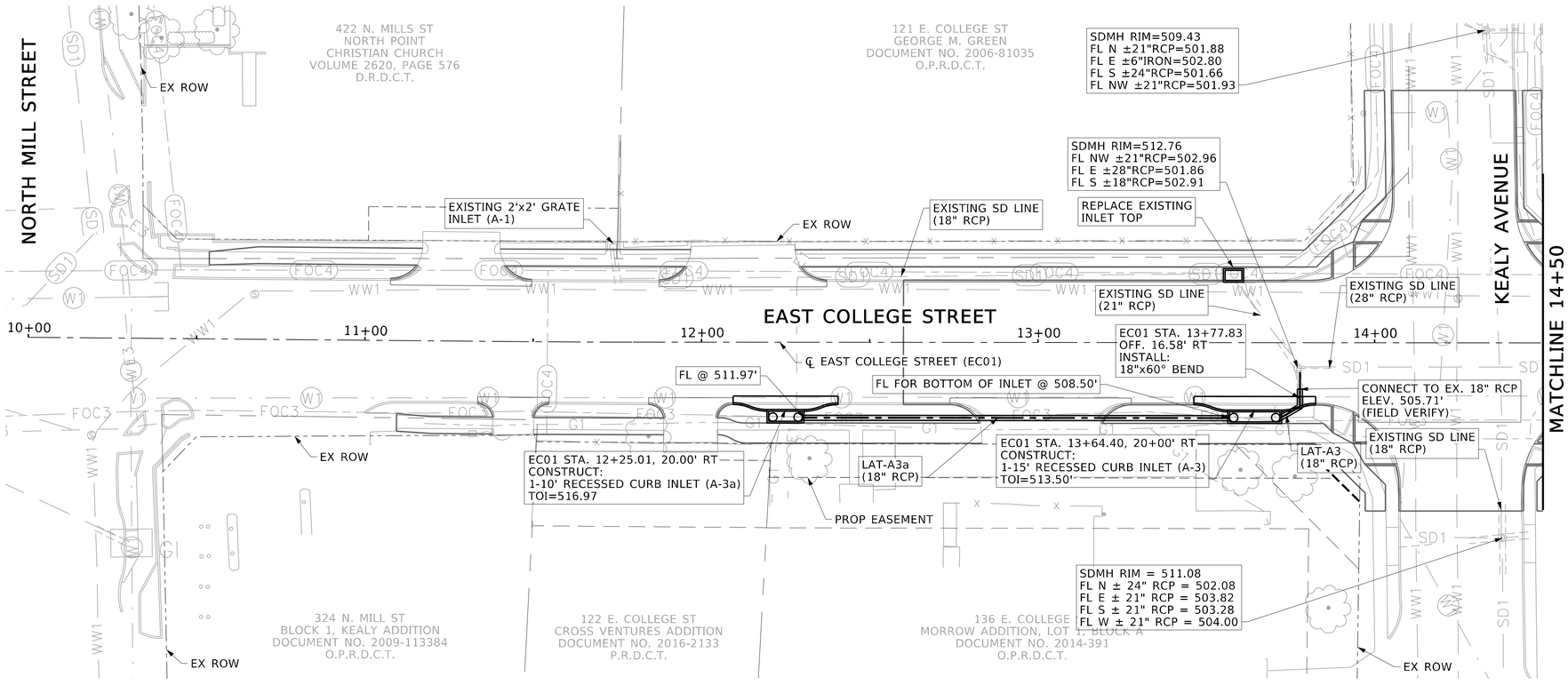
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED LAR
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-gn-dcalc01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0" 1"

SHEET DCALC-01
SEQ. 85

MicroStation V8 User:02446 Office:On Site
Plotter: In Plotter Area Plotted:Not Plotted
Plot Scale: 2.000 " / 1 in. Model: Default
Date: Aug. 08, 2024 - 02:14:20 PM Project:Freese and Nichols, Inc. - True Type Fonts



NOTES APPLICABLE TO ALL INLETS:

1. MINIMUM CONCRETE COMPRESSIVE STRENGTH IS 4,000 PSI AT 28 DAYS.
2. CHAMFER ALL EXPOSED EDGES 3/4" EXCEPT AS OTHERWISE NOTED.
3. USE GRADE 60 REINFORCING STEEL. ALL REINFORCING MUST HAVE AT LEAST 3 INCHES OF CLEARANCE TO CENTER OF BARS UNLESS OTHERWISE NOTED.
4. ALL BACKFILL AROUND INLETS MUST BE MECHANICALLY TAMPED TO 95% OF THE STANDARD PROCTOR DENSITY WITH MOISTURE CONTENT NOT LESS THAN 2% OR MORE THAN 4% OF OPTIMUM AND MUST COMPLY WITH STANDARD DRAWING 9.1.
5. USE FORMS FOR STRUCTURES, NOT THE OUTER WALL OF EXCAVATION. REMOVE ALL FORMS AFTER CONSTRUCTION.
6. PIPE MAY BE PLACED IN ANY WALL, BUT NOT ENTER ANY CORNER, BOTTOM, OR PILASTER.
7. THE 24-INCH GUTTER (MEASURED FROM FACE OF CURB) IN FRONT OF THE INLET IS CONSIDERED PART OF THE INLET AND MUST BE BUILT WITH THE INLET.
8. PLACE CONCRETE GROUT IN THE BOTTOM OF THE INLET AND CONTOUR TO SLOPE TOWARDS THE OUTLET. THE DEPTH OF THE GROUT AT THE PERIMETER OF THE INLET (EXCEPT AT THE OUTLET IS SIX INCHES).
9. PAVEMENT THICKNESSES MUST MEET CURRENT CITY OF LEWISVILLE STANDARD DETAILS.
10. PLACE INLET BOTTOMS ON ROCK OR STONE AS SHOWN IN STANDARD DRAWING 9.1.
11. LIGHT BROOM FINISH ALL SURFACES.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
STORM DRAIN PLAN
BEGIN TO STA 19+00

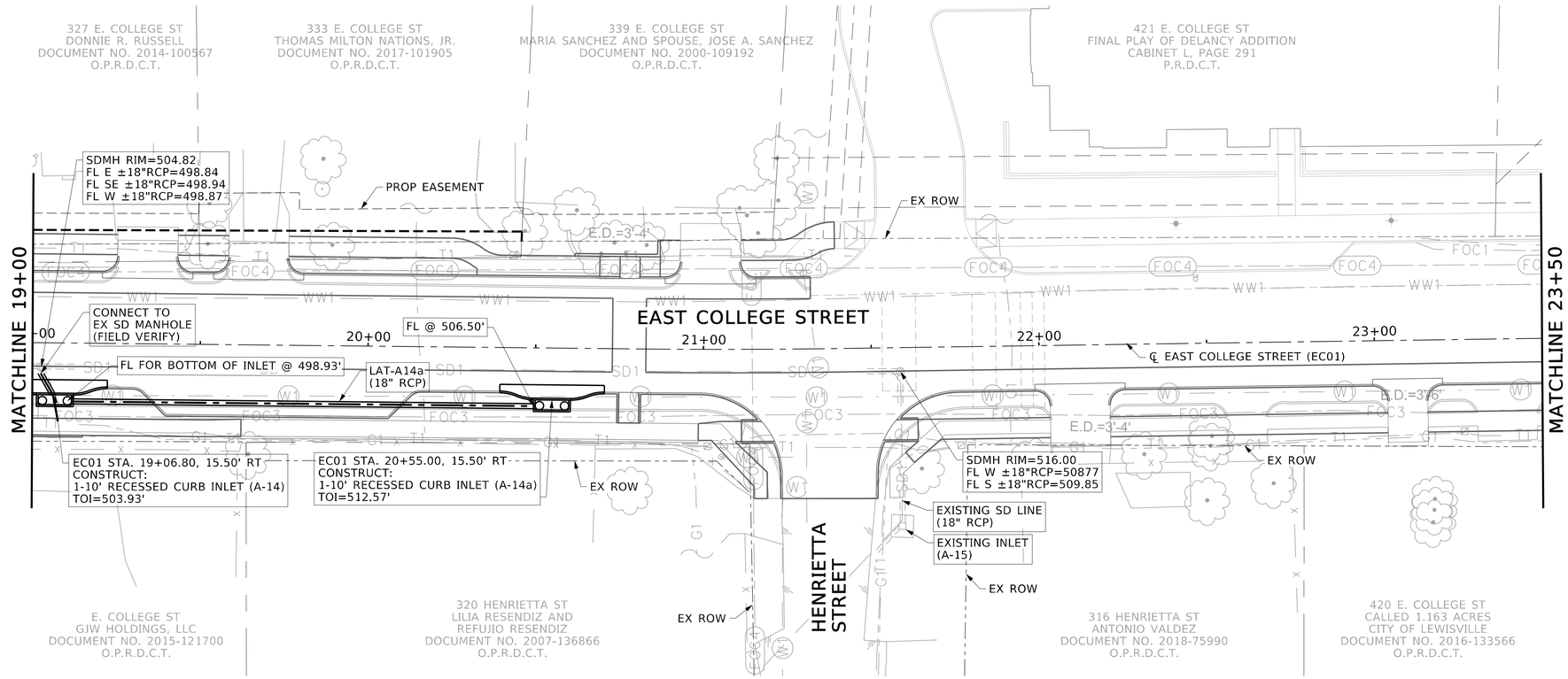
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-sd01.sht

VERIFY SCALE — Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
SD-01
SEQ.
86

MicroStation V8 User:02446 OfficeOn Site
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Model: Default
Project Freese and Nichols, Inc. - True Type Fonts
Plotter: IKON C7116_PS_3 Plotted On: Aug 08, 2024 - 02:14:29 PM
Plot Scale: 40.000 ' / in.
Date: Aug. 08, 2024 - 02:14:29 PM



NOTES APPLICABLE TO ALL INLETS:

1. MINIMUM CONCRETE COMPRESSIVE STRENGTH IS 4,000 PSI AT 28 DAYS.
2. CHAMFER ALL EXPOSED EDGES 3/4" EXCEPT AS OTHERWISE NOTED.
3. USE GRADE 60 REINFORCING STEEL. ALL REINFORCING MUST HAVE AT LEAST 3 INCHES OF CLEARANCE TO CENTER OF BARS UNLESS OTHERWISE NOTED.
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9. PAVEMENT THICKNESSES MUST MEET CURRENT CITY OF LEWISVILLE STANDARD DETAILS.
10. PLACE INLET BOTTOMS ON ROCK OR STONE AS SHOWN IN STANDARD DRAWING 9.1.
11. LIGHT BROOM FINISH ALL SURFACES.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
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137592
LICENSED
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08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
STORM DRAIN PLAN
STA 19+00 TO 28+00

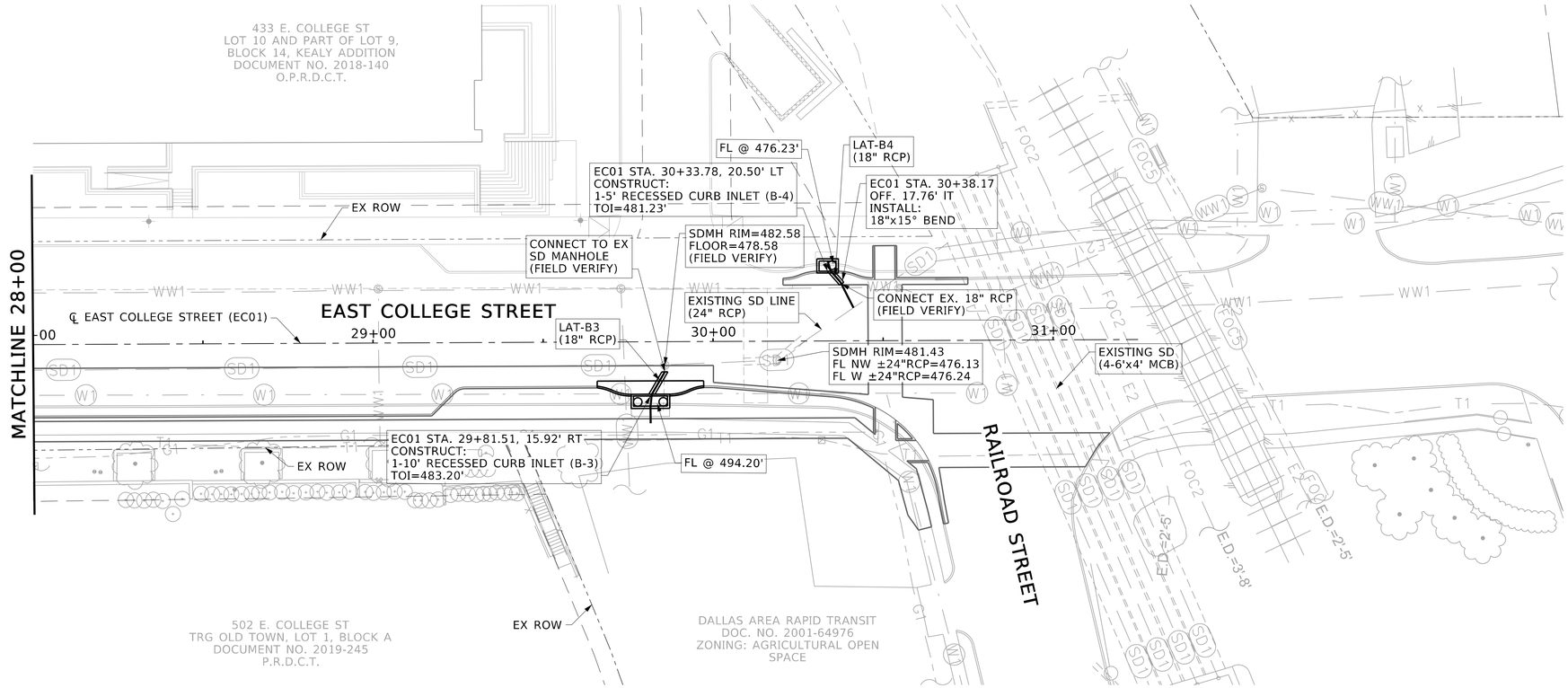
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DATE	AUG 2022
DESIGNED	STG
DRAWN	BA
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-pl-sd02.sht

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET
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87

MicroStation V8 User:02446 Office:On Site
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Plot Scale: 40.000 ' / in. Project:Freese and Nichols, Inc. - True Type Fonts
Date: Aug. 08, 2024 - 02:14:33 PM



NOTES APPLICABLE TO ALL INLETS:

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2. CHAMFER ALL EXPOSED EDGES 3/4" EXCEPT AS OTHERWISE NOTED.
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11. LIGHT BROOM FINISH ALL SURFACES.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
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08/08/2024
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Dallas, TX 75251
Phone - (214)217-2200
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
STORM DRAIN PLAN
STA 28+00 TO END

NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
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DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-sd03.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0" 1"

SHEET SD-03
SEQ. 88

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Plot Scale: 40.000 ' / in. Model: Default
Date: Aug. 08, 2024 - 02:14:36 PM Project:Freese and Nichols, Inc. - True Type Fonts

LAT-A3

EXISTING WL
ELEV. UNKNOWN

10 LF OF
18" RCP (CLASS III)
AT 23.13%

Q_{∞}=10.01 cfs
V =5.66 ft/s
S_o=0.0077 ft/ft
Q_c =9.22 cfs

Q_{∞}=8.85 cfs
V =5.01 ft/s
S_o=0.0060 ft/ft
Q_c =8.14 cfs

STA. 1+00.00
EXIST. SDMH
I_L=502.91±
FIELD VERIFY

STA. 1+07.22
CONNECT TO
EXISTING 18" RCP
I_L=505.71±
FIELD VERIFY

STA. 1+10.21
INSTALL:
18"x60° BEND
I_L=506.92

STA. 1+17.06
RECESSED CURB INLET
I_L=508.50
TOI=513.50'

EGL = 512.67
SD FL = 501.86

LAT-A3A

127 LF OF
18" RCP (CLASS III)
AT 2.73%

Q_{∞}=2.99 cfs
V =1.69 ft/s
S_o=0.0007 ft/ft
Q_c =2.78 cfs

STA. 1+20.00
RECESSED CURB INLET
I_L=508.50

STA. 2+46.89
RECESSED CURB INLET
I_L=511.97

EGL = 513.13
EGL = 514.97
SD FL = 509.32
EGL = 516.16
SD FL = 510.69
EGL = 516.90
SD FL = 511.97

1+00 1+00 2+00

LAT-A9

6 LF OF
21" RCP (CLASS III)
AT 27.30%

Q_{∞}=8.70 cfs
V =3.62 ft/s
S_o=0.0026 ft/ft
Q_c =8.08 cfs

STA. 1+00.00
EXIST. SDMH
I_L=497.25±
FIELD VERIFY

STA. 1+05.74
CONNECT TO
EXISTING 21" RCP
I_L=498.58±
FIELD VERIFY

STA. 1+11.83
RECESSED CURB INLET
I_L=500.24

EGL = 505.27
SD FL = 497.01

LAT-A9A

82 LF OF
18" RCP (CLASS III)
AT 2.24%

Q_{∞}=2.74 cfs
V =1.55 ft/s
S_o=0.0006 ft/ft
Q_c =2.74 cfs

Q_{∞}=2.74 cfs
V =1.55 ft/s
S_o=0.0006 ft/ft
Q_c =2.74 cfs

STA. 1+00.00
RECESSED CURB INLET
I_L=500.24

STA. 1+04.37
INSTALL:
18"x45° BEND
I_L=500.78

STA. 1+81.38
RECESSED CURB INLET
I_L=502.48

EGL = 505.98
PGL = 505.65
EGL = 506.91
PGL = 506.50

LAT-A12

8 LF OF
21" RCP (CLASS III)
AT 11.85%

Q_{∞}=11.29 cfs
V =4.70 ft/s
S_o=0.0043 ft/ft
Q_c =11.29 cfs

STA. 1+00.00
CONNECT TO
EXIST. SDMH
21"- I_L=497.57±
FIELD VERIFY

STA. 1+08.00
RECESSED CURB INLET
I_L=498.52

EGL = 503.10
SD FL = 494.76

LAT-A13

6 LF OF
18" RCP (CLASS III)
AT 14.77%

Q_{∞}=6.90 cfs
V =3.90 ft/s
S_o=0.0037 ft/ft
Q_c =6.90 cfs

STA. 1+00.00
EXIST. SDMH
I_L=494.76±
FIELD VERIFY

STA. 1+22.46
CONNECT TO
EXISTING 18" RCP
I_L=498.08±
FIELD VERIFY

STA. 1+28.43
RECESSED CURB INLET
I_L=498.69

EGL = 503.32
SD FL = 494.76

1+00 1+00 2+00 1+00 1+00

520 515 510 505 500 495 490 485 480 475

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
STORM DRAIN LATERAL PROFILES

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN ZG
CHECKED TCB
FILE NAME cv-trt-pr-lat01.sht

NO.	ISSUES	BY	DATE	REVISED

VERIFY SCALE
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SHEET
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MicroStation V8 User:02446 OfficeOn Site
Plotter: HP Photosmart 7510 C311a
Plot Scale: 40.0000 ' / In.
Date: Aug. 08, 2024 - 02:14:59 PM
Model: Default
Project:Freese and Nichols, Inc. - True Type Fonts

LAT A14

8 LF OF
18" RCP (CLASS III)
AT 1.24%

Q_{∞}=10.65 cfs
V =6.03 ft/s
S =0.0088 ft/ft
Q_t =9.85 cfs

STA. 1+00.00
CONNECT 18" RCP
TO EXISTING SDMH
f_L=498.84±
FIELD VERIFY

STA. 1+07.27
RECESSED CURB INLET
f_L=498.93

EGL = 504.72
SD FL = 498.84

LAT A14A

139 LF OF
18" RCP (CLASS III)
AT 6.25%

Q_{∞}=1.99 cfs
V =1.13 ft/s
S =0.0003 ft/ft
Q_t =1.82 cfs

STA. 1+00.00
RECESSED CURB INLET
f_L=500.42

STA. 2+38.20
RECESSED CURB INLET
f_L=506.50

EGL = 504.77
PGL = 505.82

EGL = 507.37
PGL = 507.59

EGL = 509.79
PGL = 509.98

1+00 1+00 2+00

LAT B1

7 LF
18" RCP (CLASS III)
AT 8.12%

Q_{∞}=3.65 cfs
V =2.06 ft/s
S =0.0010 ft/ft
Q_t =3.32 cfs

STA. 1+00.00
CONNECT 18" RCP
TO EXISTING SDMH
f_L=487.09±
FIELD VERIFY

STA. 1+06.62
RECESSED CURB INLET
f_L=491.66

EGL = 493.85
SD FL = 487.09

LAT B3

8 LF
18" RCP (CLASS III)
AT 8.12%

Q_{∞}=3.41 cfs
V =1.93 ft/s
S =0.0009 ft/ft
Q_t =3.15 cfs

STA. 1+00.00
CONNECT 18" RCP
TO EXISTING SDMH
f_L=493.58±
FIELD VERIFY

STA. 1+07.64
RECESSED CURB INLET
f_L=494.20

EGL = 482.36
SD FL = 478.58

LAT B4

5 LF
18" RCP (CLASS III)
AT 5.44%

Q_{∞}=1.76 cfs
V =1.00 ft/s
S =0.0002 ft/ft
Q_t =1.49 cfs

STA. 1+08.47
CONNECT TO
EXISTING 24" RCP
f_L=476.00±
FIELD VERIFY

STA. 1+12.70
RECESSED CURB INLET
f_L=476.23

EGL = 480.66
SD FL = 475.54

1+00 1+00 1+00

FREESE AND NICHOLS, INC.
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL

STORM DRAIN LATERAL PROFILES

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN ZG
CHECKED TCB
REVISED

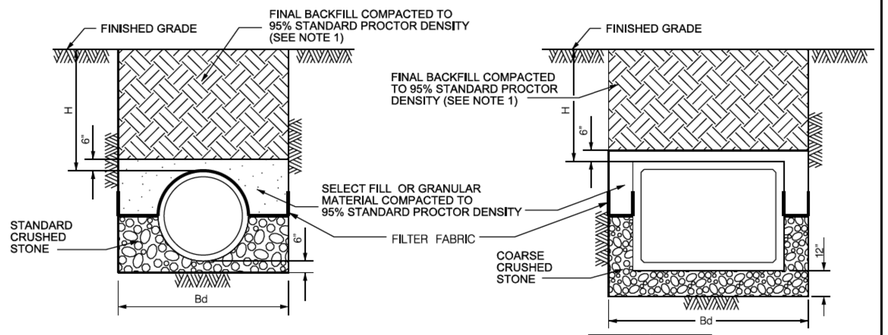
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LAT-02
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Plotter: HP Designjet T1700dr PS3 Model: Default
Plot Scale: 40.0000 ' / In. Project:Freese and Nichols, Inc. - True Type Fonts
Date: Aug. 08, 2024 - 02:15:01 PM



NOTES

1. SELECT BACKFILL SALVAGED FROM TRENCH EXCAVATION MUST BE CLEAN AND FREE OF LARGE ROCKS (LARGER THAN 4 INCHES IN ANY DIMENSION). BACKFILL MUST BE APPROVED BY INSPECTOR AND STOCKPILED FOR USE WHEN NEEDED.
2. FOR DEPTHS (H) GREATER THAN 10 FEET, CHECK DESIGN. UNLIMITED TRENCH WIDTH IS NOT PERMITTED FOR CLASS III PIPE (HIGHER TYPE PIPE EMBEDMENT MAY BE REQUIRED).
3. TRENCH WIDTHS SHOWN ARE MINIMUM FOR PROPER PLACEMENT AND COMPACTION OF EMBEDMENT AND BACKFILL.
4. TRENCH WIDTH (Bd) IS BASED ON 1.25(Bc+1.0) WHERE Bc IS THE OUTSIDE DIAMETER OF THE PIPE, IN FEET.

PIPE DIAMETER (INCHES)	TRENCH WIDTH (FEET)
18	3.5
21	3.8
24	4.1
27	4.5
33	5.2
36	5.6
42	6.3
48	7.0
54	7.8
60	8.5
66	9.2
72	10.0

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

Standard Details
STORM DRAIN EMBEDMENT

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dsinct 08-03-2021
Dsinct
Sheets 9.1

NOTES APPLICABLE TO ALL INLETS

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NOTE:
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LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

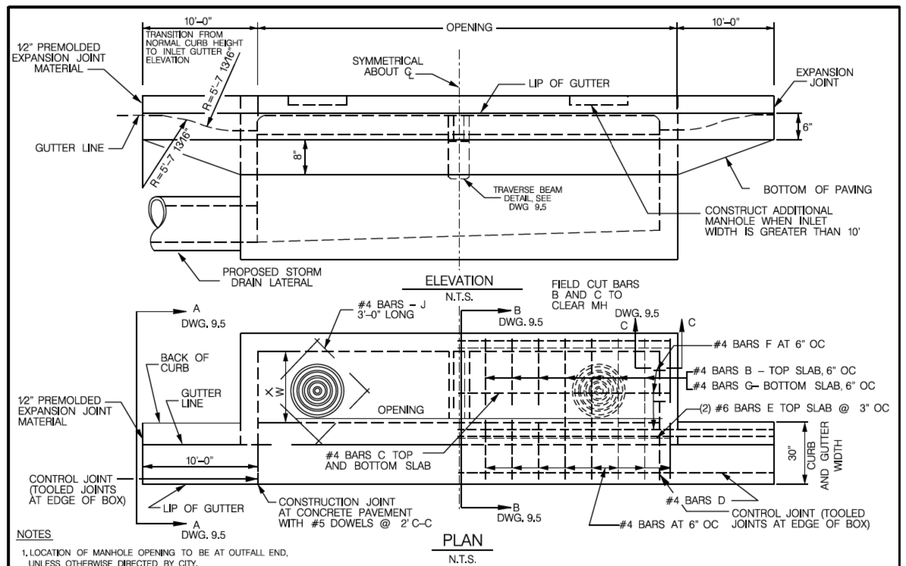
Standard Details
INLET NOTES (APPLICABLE TO ALL INLETS)

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
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Dsinct 8-31-2021
Dsinct
Sheets 9.3



NOTES

1. LOCATION OF MANHOLE OPENING TO BE AT OUTFALL END, UNLESS OTHERWISE DIRECTED BY CITY.
2. FOR REBAR DETAILS, SEE STANDARD DRAWING 9.6, FOR MANHOLE COVER, SEE STANDARD DRAWING 9.8a.
3. ALL CONCRETE TO BE 4,000 PSI

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
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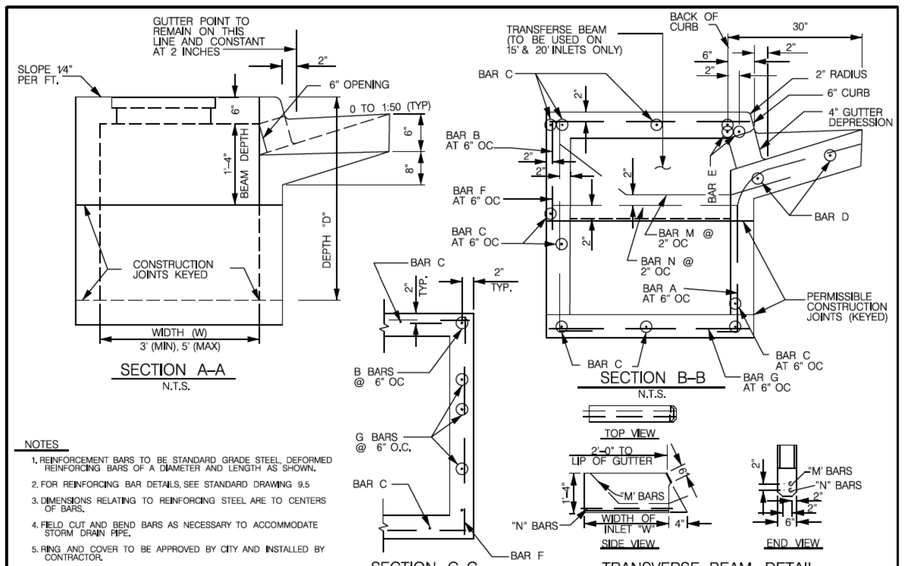
Standard Details
STORM DRAIN CURB INLET 5', 10', 15', OR 20' OPENING

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dsinct 8-31-2021
Dsinct
Sheets 9.4



NOTES

1. REINFORCEMENT BARS TO BE STANDARD GRADE STEEL, DEFORMED REINFORCING BARS OF A DIAMETER AND LENGTH AS SHOWN.
2. FOR REINFORCING BAR DETAILS, SEE STANDARD DRAWING 9.5
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
4. FIELD CUT AND BEND BARS AS NECESSARY TO ACCOMMODATE STORM DRAIN PIPE.
5. RING AND COVER TO BE APPROVED BY CITY AND INSTALLED BY CONTRACTOR.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

Standard Details
STORM DRAIN CURB INLET 5', 10', 15', OR 20' SECTIONS

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
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08/08/2024

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

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CITY OF LEWISVILLE
STORM DRAIN DETAILS

NO.	ISSUES	BY	DATE

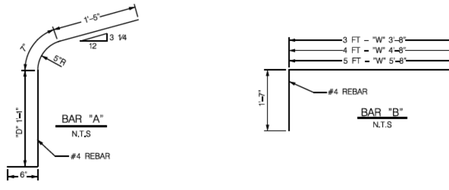
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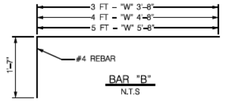
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0" 1"

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SEQ.
91

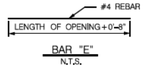
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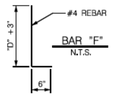
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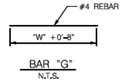




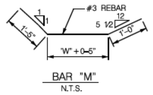


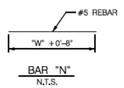












NOTE:

1. FOR CURB INLET OPENING, SEE STANDARD DRAWING 9.4
2. FOR CURB INLET CROSS SECTIONS, SEE STANDARD DRAWING 9.5.

NOTE;
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

Standard Details
STORM DRAIN CURB INLET REBAR SECTIONS

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 8-31-2021
Dated:
Sheet: 9.6

SUMMARY OF QUANTITIES FOR CURB INLETS

DEPTH "D"	5'-0" OPENING						10'-0" OPENING						15'-0" OPENING						20'-0" OPENING					
	3'-0" WIDTH		4'-0" WIDTH		5'-0" WIDTH		3'-0" WIDTH		4'-0" WIDTH		5'-0" WIDTH		3'-0" WIDTH		4'-0" WIDTH		5'-0" WIDTH		3'-0" WIDTH		4'-0" WIDTH		5'-0" WIDTH	
	CONC CY	STEEL LBS	CONC CY	STEEL LBS	CONC CY	STEEL LBS	CONC CY	STEEL LBS	CONC CY	STEEL LBS	CONC CY	STEEL LBS	CONC CY	STEEL LBS	CONC CY	STEEL LBS	CONC CY	STEEL LBS	CONC CY	STEEL LBS	CONC CY	STEEL LBS	CONC CY	STEEL LBS
3'-6"	2,62	306	2,95	332	3,28	373	4,12	479	4,64	521	5,20	564	5,69	667	6,40	721	5,20	775	7,20	846	8,11	909	9,03	976
3'-9"	2,70	309	3,04	341	3,39	373	4,25	494	4,78	536	5,34	579	5,87	687	6,58	741	7,30	796	7,42	874	8,34	937	9,27	1,010
4'-0"	2,78	328	3,14	364	3,49	399	4,38	518	4,92	565	5,49	610	6,05	718	6,77	776	7,49	835	7,64	909	8,58	976	9,51	1,046
4'-3"	2,87	334	3,23	370	3,59	406	4,51	526	5,06	573	5,64	619	6,22	729	6,95	787	7,69	847	7,87	922	8,81	990	9,75	1,061
4'-6"	2,95	356	3,32	394	3,69	431	4,64	558	5,20	607	5,79	656	6,40	770	7,14	830	7,88	891	8,09	973	9,04	1,043	9,99	1,115
4'-9"	3,03	361	3,41	410	3,79	438	4,77	566	5,34	616	5,94	665	6,57	780	7,32	841	8,07	903	8,31	986	9,27	1,056	10,23	1,129
5'-0"	3,12	367	3,51	416	3,90	445	4,90	574	5,47	624	6,09	674	6,75	791	7,51	853	8,27	915	8,53	999	9,50	1,070	10,47	1,144
5'-3"	3,20	383	3,60	424	4,00	465	5,03	600	5,61	652	6,23	704	6,93	827	7,69	890	8,46	955	8,76	1,044	9,73	1,118	10,71	1,194
5'-6"	3,28	389	3,69	430	4,10	472	5,16	608	5,75	661	6,38	713	7,11	837	7,88	901	8,66	967	8,98	1,057	9,97	1,131	10,95	1,208
5'-9"	3,37	405	3,78	451	4,20	495	5,29	635	5,89	690	6,53	744	7,28	874	8,07	940	8,85	1,007	9,20	1,102	10,20	1,178	11,19	1,258
6'-0"	3,45	415	3,88	460	4,30	504	5,42	646	6,03	702	6,68	757	7,45	888	8,25	954	9,05	1,022	9,42	1,119	10,43	1,196	11,43	1,276
6'-3"	3,53	425	3,97	470	4,41	515	5,55	661	6,17	718	6,83	773	7,63	908	8,44	975	9,24	1,044	9,64	1,147	10,66	1,223	11,67	1,305
6'-6"	3,62	437	4,06	486	4,51	532	5,68	681	6,31	739	6,97	797	7,81	935	8,62	1,005	9,43	1,057	9,87	1,178	10,89	1,258	11,92	1,340
6'-9"	3,70	441	4,15	490	4,61	537	5,81	688	6,45	747	7,12	806	7,98	945	8,81	1,015	9,63	1,066	10,09	1,191	11,12	1,272	12,15	1,355
7'-0"	3,78	460	4,25	510	4,71	560	5,94	716	6,59	777	7,27	837	8,16	981	8,99	1,053	9,82	1,126	10,31	1,237	11,35	1,319	12,40	1,404
7'-3"	3,86	465	4,34	516	4,81	567	6,07	724	6,72	785	7,42	846	8,33	992	9,18	1,065	10,02	1,138	10,53	1,249	11,59	1,333	12,64	1,418
7'-6"	3,95	477	4,43	529	4,91	570	6,20	742	6,86	804	7,57	866	8,51	1,016	9,36	1,089	10,21	1,163	10,75	1,290	11,82	1,365	12,88	1,451
7'-9"	4,03	491	4,53	544	5,02	597	6,33	762	7,00	826	7,71	890	8,67	1,040	9,55	1,116	10,41	1,193	10,98	1,313	12,05	1,399	13,12	1,498
8'-0"	4,12	496	4,62	550	5,12	604	6,46	770	7,14	834	7,86	899	8,86	1,051	9,73	1,129	10,60	1,205	11,20	1,325	12,28	1,412	13,36	1,510
8'-3"	4,20	504	4,71	559	5,22	613	6,59	784	7,28	849	8,01	915	9,04	1,069	9,92	1,149	10,80	1,228	11,42	1,353	12,51	1,440	13,60	1,529
8'-6"	4,28	519	4,80	576	5,32	632	6,71	804	7,42	871	8,16	938	9,21	1,107	10,10	1,176	10,99	1,257	11,64	1,385	12,74	1,474	13,84	1,565
8'-9"	4,37	528	4,90	586	5,42	643	6,84	819	7,56	886	8,31	954	9,39	1,119	10,29	1,199	11,18	1,280	11,87	1,410	12,97	1,500	14,08	1,592
9'-0"	4,45	545	4,99	605	5,53	664	6,97	842	7,70	912	8,46	982	9,56	1,148	10,47	1,231	11,38	1,313	12,09	1,447	13,21	1,539	14,32	1,631
9'-3"	4,53	554	5,08	614	5,63	674	7,10	858	7,84	929	8,60	999	9,74	1,169	10,66	1,252	11,57	1,335	12,31	1,474	13,44	1,563	14,56	1,660
9'-6"	4,62	568	5,17	630	5,73	692	7,23	878	7,97	950	8,75	1,022	9,92	1,195	10,84	1,280	11,77	1,365	12,53	1,505	13,67	1,600	14,80	1,696
10'-0"	4,78	582	5,36	645	5,93	708	7,49	900	8,11	974	9,05	1,048	10,27	1,227	11,21	1,312	12,16	1,399	12,98	1,546	14,13	1,642	15,29	1,739

NOTES

1. FOR CONVENIENCE, INLET DEPTHS ARE SHOWN IN INCREMENTS OF 3 INCHES.
2. ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEN DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE TABLE MAY BE FOUND THROUGH INTERPOLATION.
3. FOR CURB INLET PLAN AND ELEVATION, SEE STANDARD DRAWING 9.4.
4. FOR CURB INLET SECTION DETAILS, SEE STANDARD DRAWTING 9.5.
5. FOR REBAR DETAILS, SEE STANDARD DRAWING 9.6.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

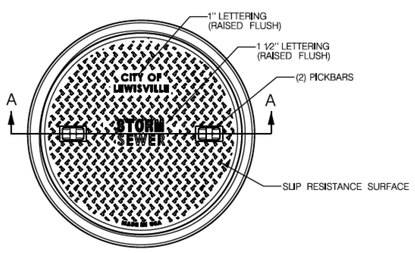
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STORM DRAIN CURB INLET SUMMARY OF QUANTITIES

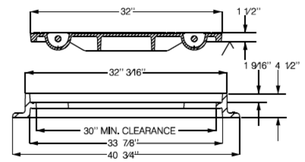
Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 8-31-2021
Dated:
Sheet: 9.7





SECTION A–A

NOTES:

1. COVER TO BE DUCTILE IRON ASTM A536. FRAME TO BE CAST IRON ASTM A48 CL35B.
2. MANHOLE COVER AND FRAME TO HAVE MINIMUM TOTAL WEIGHT OF 300 POUNDS.
3. MANHOLE FRAME TO HAVE MINIMUM CLEAR OPENING OF 30 INCHES.
4. MANHOLE COVER AND FRAME TO HAVE MACHINED SURFACES WHERE SHOWN.
5. WHERE PRIVATE STORM SYSTEMS USE MANHOLES, REMOVE "CITY OF LEWISVILLE."

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

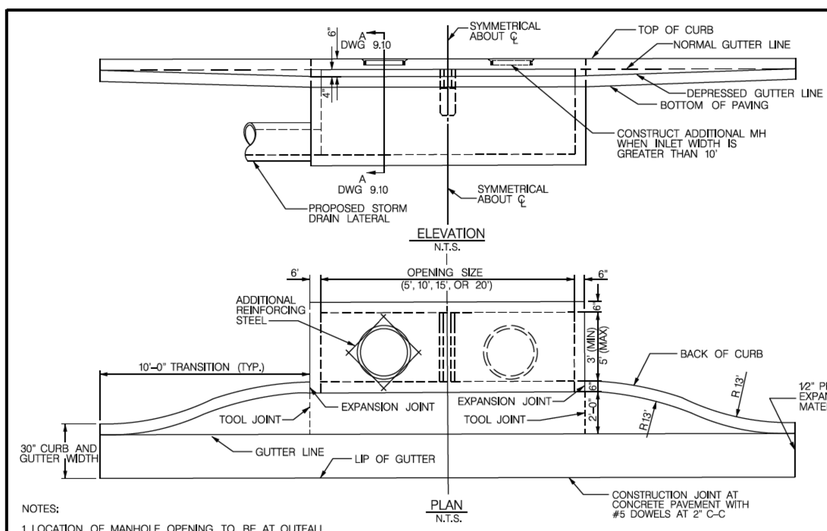
Standard Details
SQUARE STORM DRAIN MANHOLE FRAME AND COVER

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
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Dated: 8-31-2021
Dated:
Sheet: 9.8



NOTES:

1. LOCATION OF MANHOLE OPENING TO BE AT OUTFALL END UNLESS OTHERWISE DIRECTED.
2. INLETS OVER 10 FEET IN WIDTH TO HAVE A MANHOLE OPENING AT EACH END.
3. FOR TRAVERSE BEAM DETAIL SEE DRAWING 9.5, FOR REBAR, SEE DRAWING 9.6, FOR MANHOLE COVER, SEE DRAWING 9.8.
4. ALL CONCRETE TO BE 4,000 PSI.

NOTE;
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

Standard Details
RECESSED CURB INLET PLAN AND ELEVATION

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 08-31-2021
Dated:
Sheet: 9.9

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CITY OF LEWISVILLE
STORM DRAIN DETAILS

NO.	ISSUES	DATE
8½"		

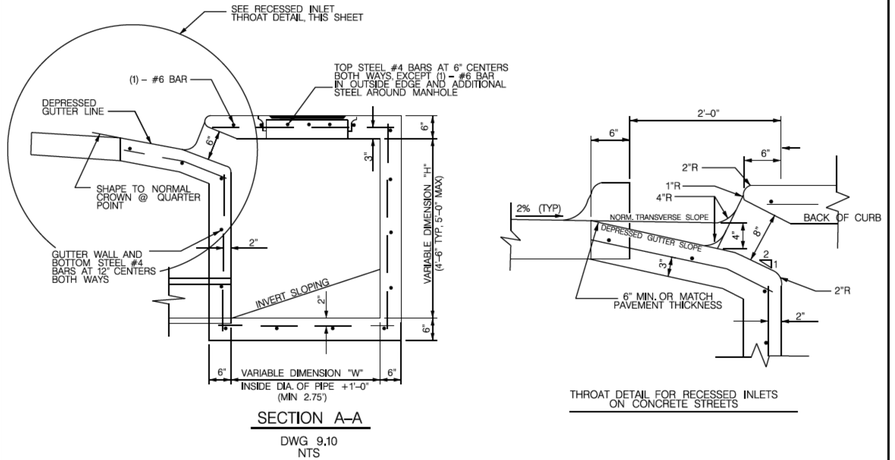
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REVISED
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NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

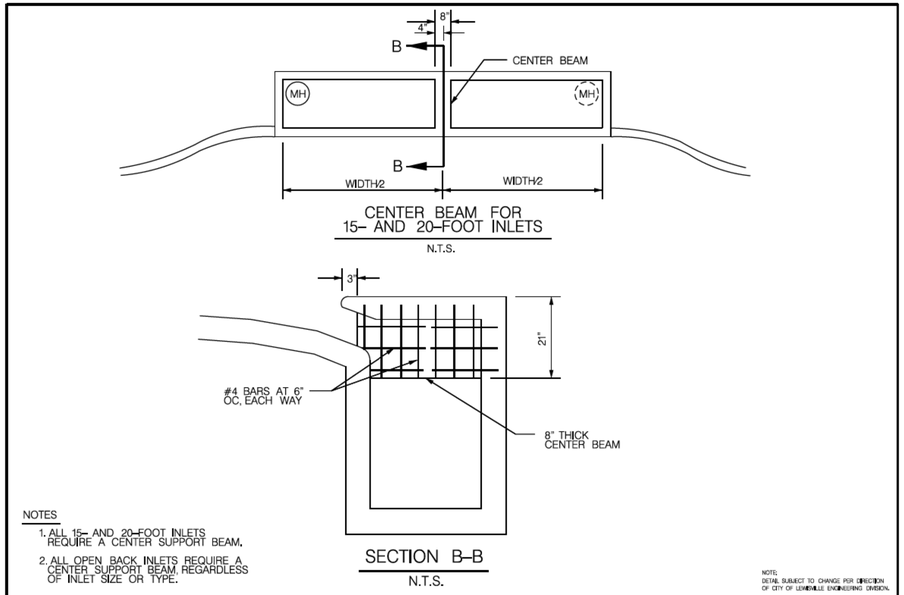
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RECESSED CURB INLET
SECT A–A AND THROAT DET

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 8-31-2021
Dated:
Sheets 9.10



NOTES
1. ALL 15– AND 20–FOOT INLETS REQUIRE A CENTER SUPPORT BEAM.
2. ALL OPEN BACK INLETS REQUIRE A CENTER SUPPORT BEAM REGARDLESS OF INLET SIZE OR TYPE.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

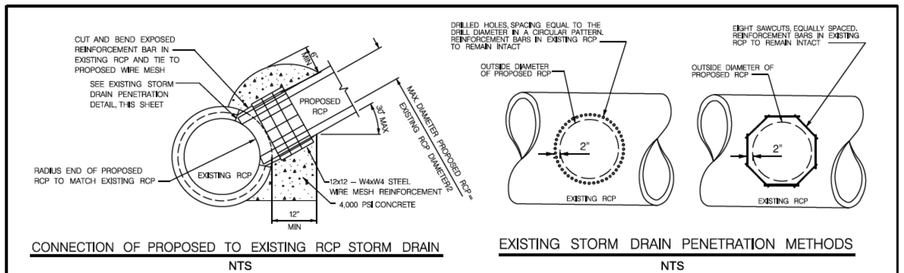
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RECESSED CURB INLET
SECT B–B AND BEAM

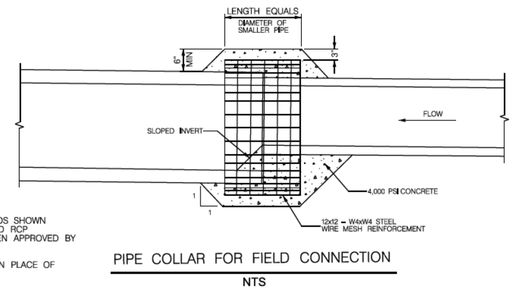
Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 8-31-2021
Dated:
Sheets 9.10a





NOTES:
1. ONLY EMPLOY THE CONNECTION METHODS SHOWN ON THIS DETAL WHEN A PREFABRICATED RCP CONNECTION IS NOT POSSIBLE AND WHEN APPROVED BY THE CITY OF LEWISVILLE.
2. NO. 3 REBARS AT 6" OC MAY BE USED IN PLACE OF WIRE MESH REINFORCEMENT.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

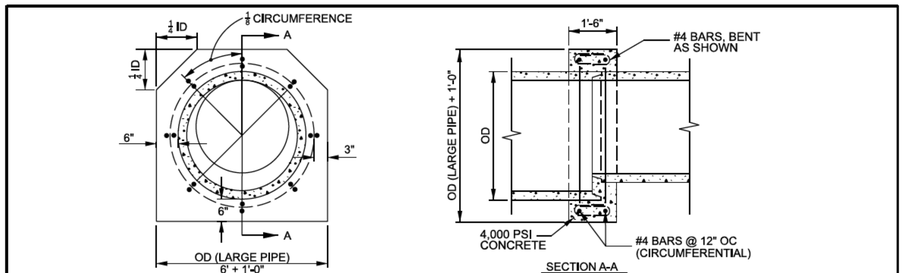
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FIELD CONNECTION

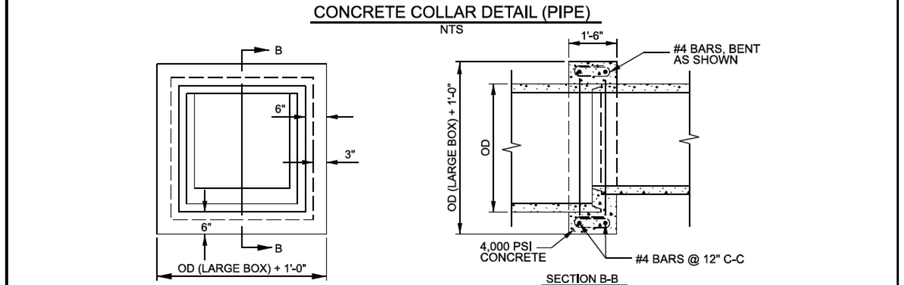
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No.	Description	Date

Engineering Department
Office No. 972-219-3490
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Dated: 08-25-2021
Dated:
Sheets 9.12





NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

Standard Details
CONCRETE COLLAR DETAILS

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 08-29-2021
Dated:
Sheets 9.13

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

CIVIL
CITY OF LEWISVILLE
STORM DRAIN DETAILS

NO.	ISSUES	BY	DATE

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DATE AUG 2022
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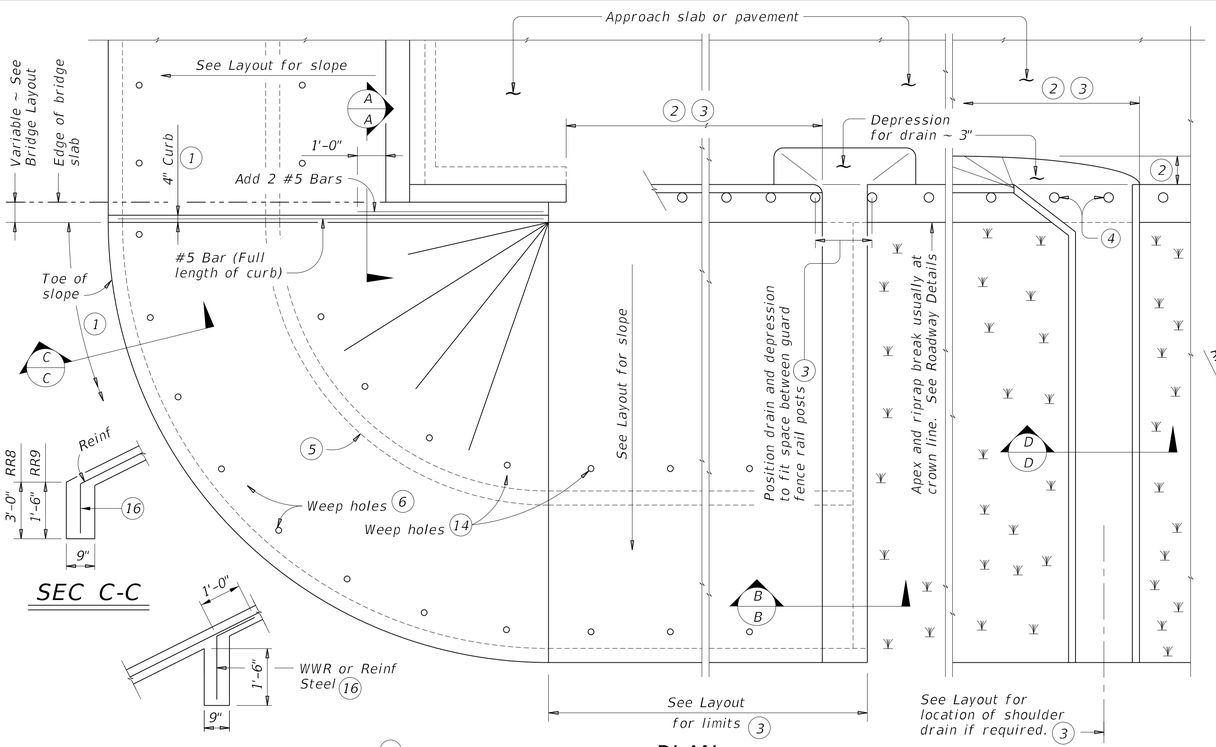
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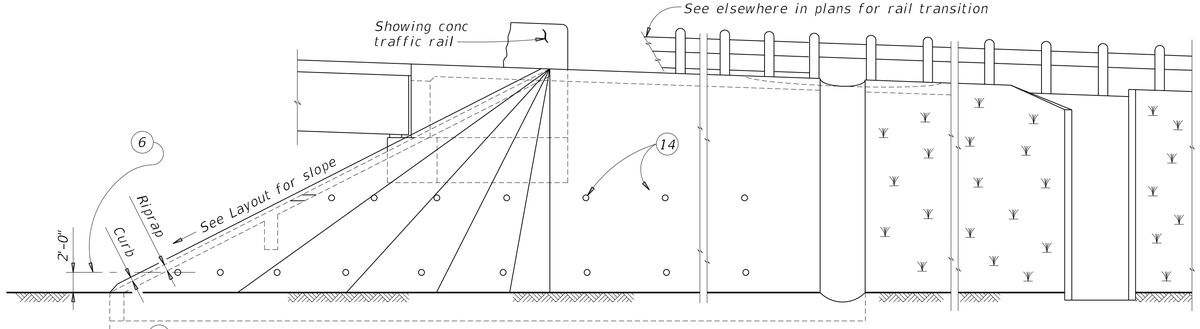
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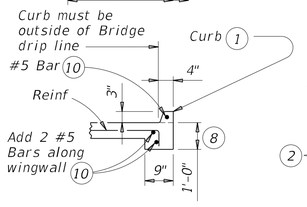
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SEC C-C

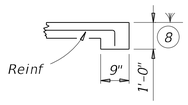
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ELEVATION

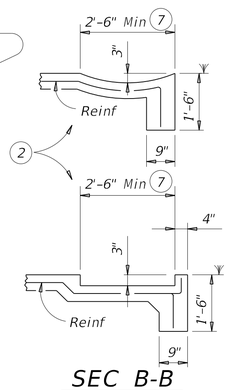


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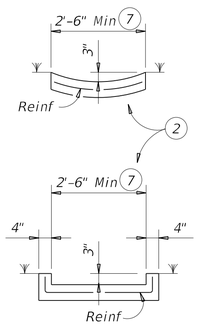
SEC B-B

(No drain)



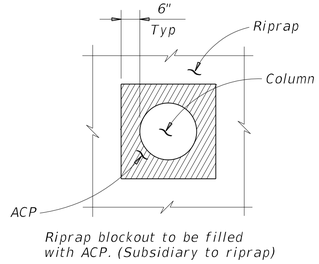
SEC B-B

(Shoulder drain integral with riprap)



SEC D-D

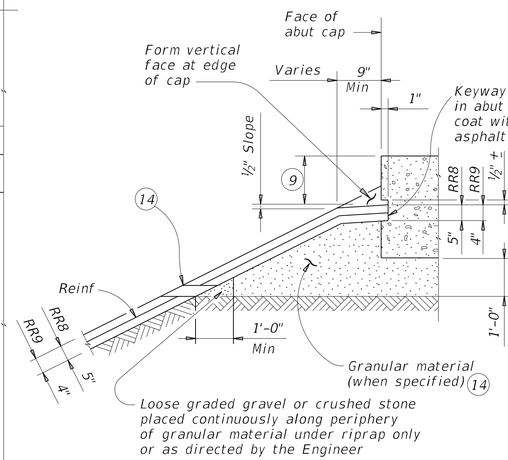
(Shoulder drain)



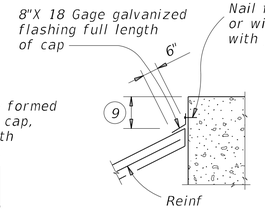
Riprap blockout to be filled with ACP. (Subsidiary to riprap)

RIPRAP DETAIL AT COLUMNS

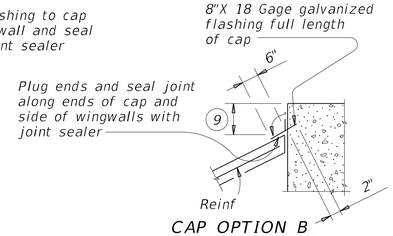
(As directed by the Engineer)



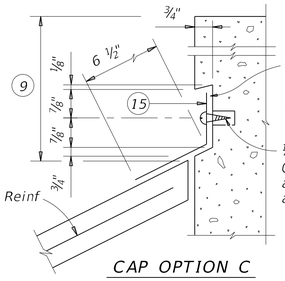
SHOWING KEYWAY OPTION



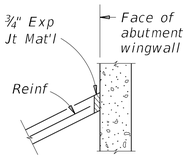
CAP OPTION A



CAP OPTION B

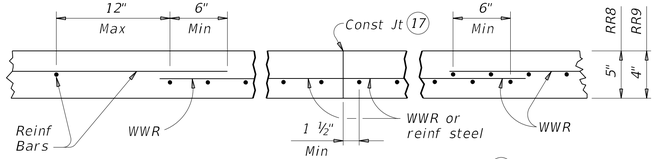


CAP OPTION C



SECT THRU RIPRAP AT WINGWALL (12)

SECTIONS THRU RIPRAP AT CAP (11)



REINFORCEMENT DETAILS (13)

See General Notes for optional synthetic fiber reinforcement.

1. When riprap is shown extended around header on layout, extend slab and toewall as shown and eliminate 4" curb.
2. Limits and configuration of drains and depressions are as shown elsewhere in plans or as directed by the Engineer.
3. Location of shoulder drain must consider limitations imposed by rail transition. Do not locate shoulder drains at expansion joints between approach slab and concrete pavement.
4. See details elsewhere in plans for installation of guard fence posts through concrete riprap.
5. Provide intermediate toewall only when designated elsewhere in the plans or included in the specifications.
6. Provide lower level of 2" Dia weep holes at 10' c-c backed by 1 CF packet of gravel and galvanized hardware cloth at all locations unless directed by the Engineer to eliminate.
7. Use wider or other drain configurations if shown elsewhere in plans or if directed by the Engineer.
8. Wall extension may be reduced or modified if approved by the Engineer. Increase wall extension to 1'-6" whenever the optional intermediate toewall is called for in the plans.
9. Top of cap to top of riprap dimension varies as directed by the Engineer. Should be 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.
10. #5 bars shown are required even when synthetic fiber reinforcing option is selected.
11. Provide sealing option for joint between the face of cap and riprap as designated by the Engineer or as shown elsewhere on plans.
12. Flashing (shown in Cap Option A) may be used at wingwall in addition to Exp Jt Mat'l if shown on plans or directed by the Engineer.
13. Provide #3 reinforcing bars at 18" Spa c-c. Provide Welded Wire Reinforcement (WWR) as 6x6-D2.9xD2.9 or D3xD3. Combinations of WWR and reinforcing bars may be used if both are permitted. Use lap splices of a minimum 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars.
14. If granular material is specified, provide upper level of 2" Dia weep holes at 10' c-c backed by galvanized hardware cloth.
15. 8" x 18 Gage Galv Sheet Metal
16. Provide WWR or #3 bars, with 1'-0" extension into slope.
17. WWR or reinforcing steel is continuous through riprap construction joints. Provide WWR or reinforcing steel that extends 1'-1" minimum into adjacent riprap on each side of construction joint even if synthetic reinforcing fiber is utilized.

FOR CONTRACTOR'S INFORMATION ONLY:
5" of RR8 = 0.015 CY/SF
4" of RR9 = 0.012 CY/SF
#3 Reinf at 18" c-c = 0.501 Lbs/SF
6x6-D3xD3 = 0.408 Lbs/SF

GENERAL NOTES:

Provide Class "B" concrete (f'c = 2,000 psi) unless noted elsewhere in plans.

Provide Grade 60 reinforcing steel.

Provide deformed welded wire reinforcement (WWR) meeting ASTM A1064, unless otherwise shown.

Provide reinforcing bars, deformed WWR, or any suitable combination of both types for riprap reinforcing, unless specified elsewhere in the plans.

Optionally synthetic fibers may be used if approved by the Engineer. Provide synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) in lieu of steel reinforcing in riprap concrete.

Install construction joints or grooved joints extending the full slant slope height at intervals of approximately 20 feet unless otherwise directed by the Engineer.

Hardware cloth, loose grade stone behind weep holes, flashing, or other sealing material are subsidiary to the bid item "Riprap".

See Layout for limits of riprap.

RR8 is to be used on stream crossings.

RR9 is to be used on other embankments.

Texas Department of Transportation

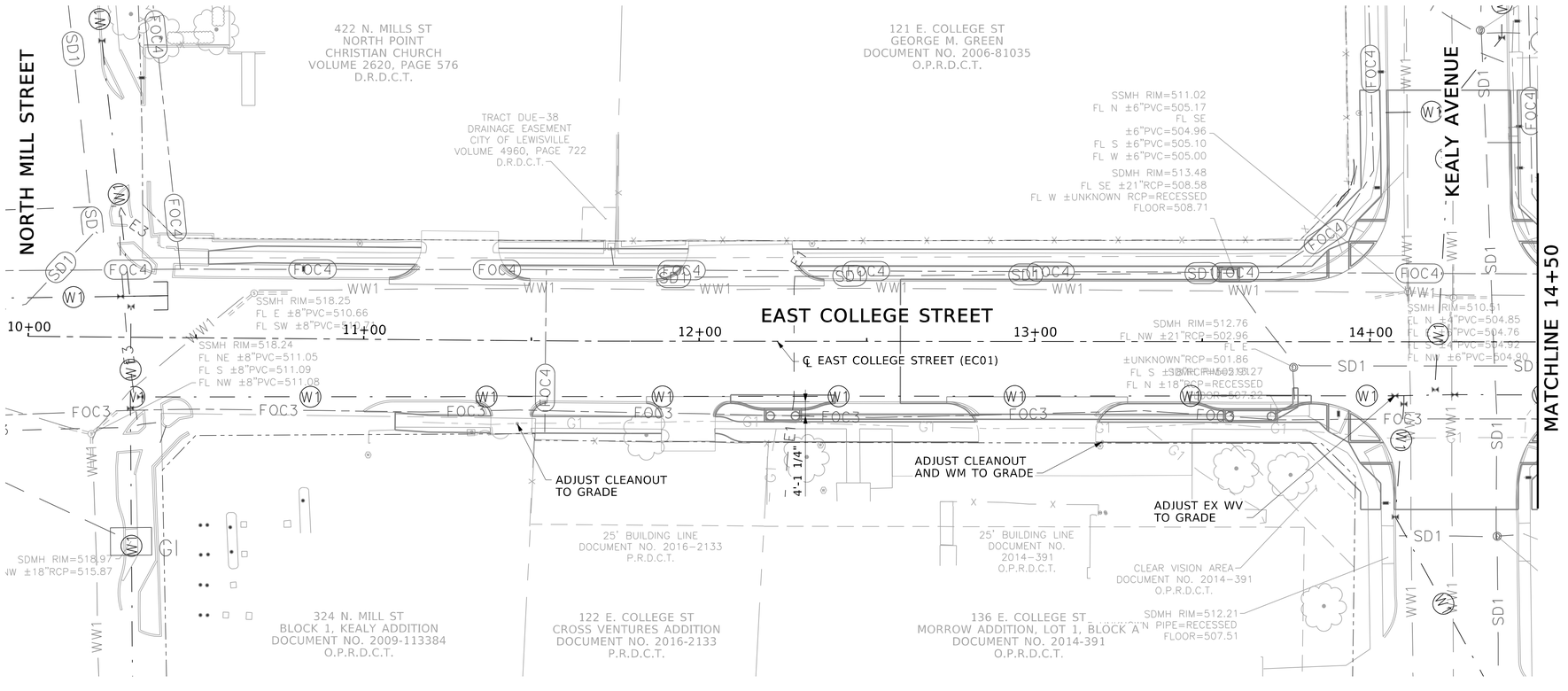
Bridge Division Standard

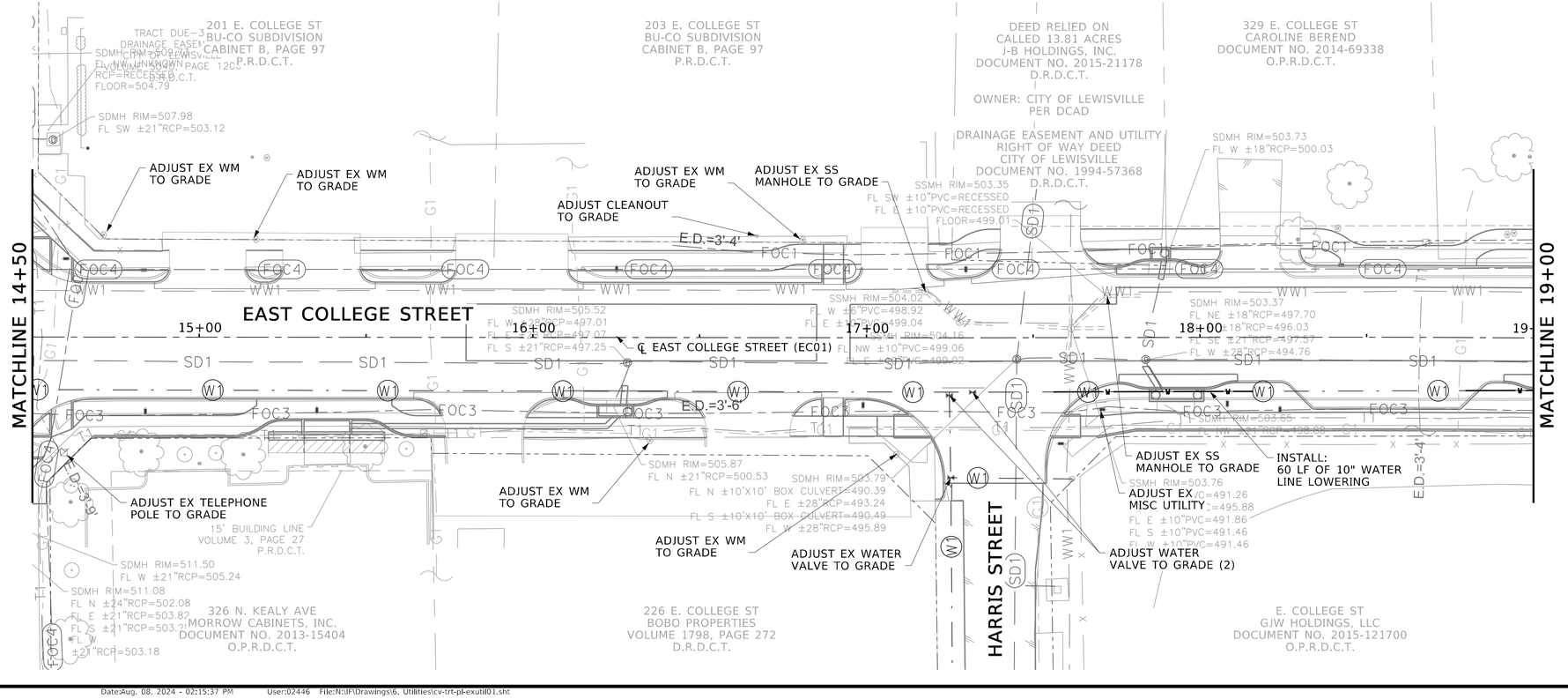
CONCRETE RIPRAP AND SHOULDER DRAINS
EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9)

CRR

FILE: crrstde1-19.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				94

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NOTES:

1. THE LOCATIONS SHOWN FOR EXISTING UTILITIES ARE APROXIMATE AND PROVIDED FOR THE CONTRACTOR'S INFORMATION ONLY.
2. CONTRACTOR SHALL CONFIRM LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

LEGEND OF UTILITY TYPES

Communications	QL "B"
FRONTIER	T1
SPECTRUM	C1
SPECTRUM	FOC1
DCTA / MCI / D.I.S.D.	FOC2
GRANDE	FOC3
	QL "C/D"
FRONTIER	FOC4
WCOM (MCI)	FOC5
Gas	QL "B"
ATMOS	G1
	QL "C/D"
ATMOS	G1
Sewers / Drains	QL "B"
CITY OF LEWISVILLE	WW1
CITY OF LEWISVILLE	SD1
	QL "C/D"
CITY OF LEWISVILLE	WW1
CITY OF LEWISVILLE	SD1
Water	QL "B"
CITY OF LEWISVILLE	W1
Electric / Power	QL "B"
TNMP	E1
DCTA	E2
CITY OF LEWISVILLE	E3

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214)217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
EXISTING UTILITIES AND
PROPOSED MINOR UTILITY ADJUSTMENTS

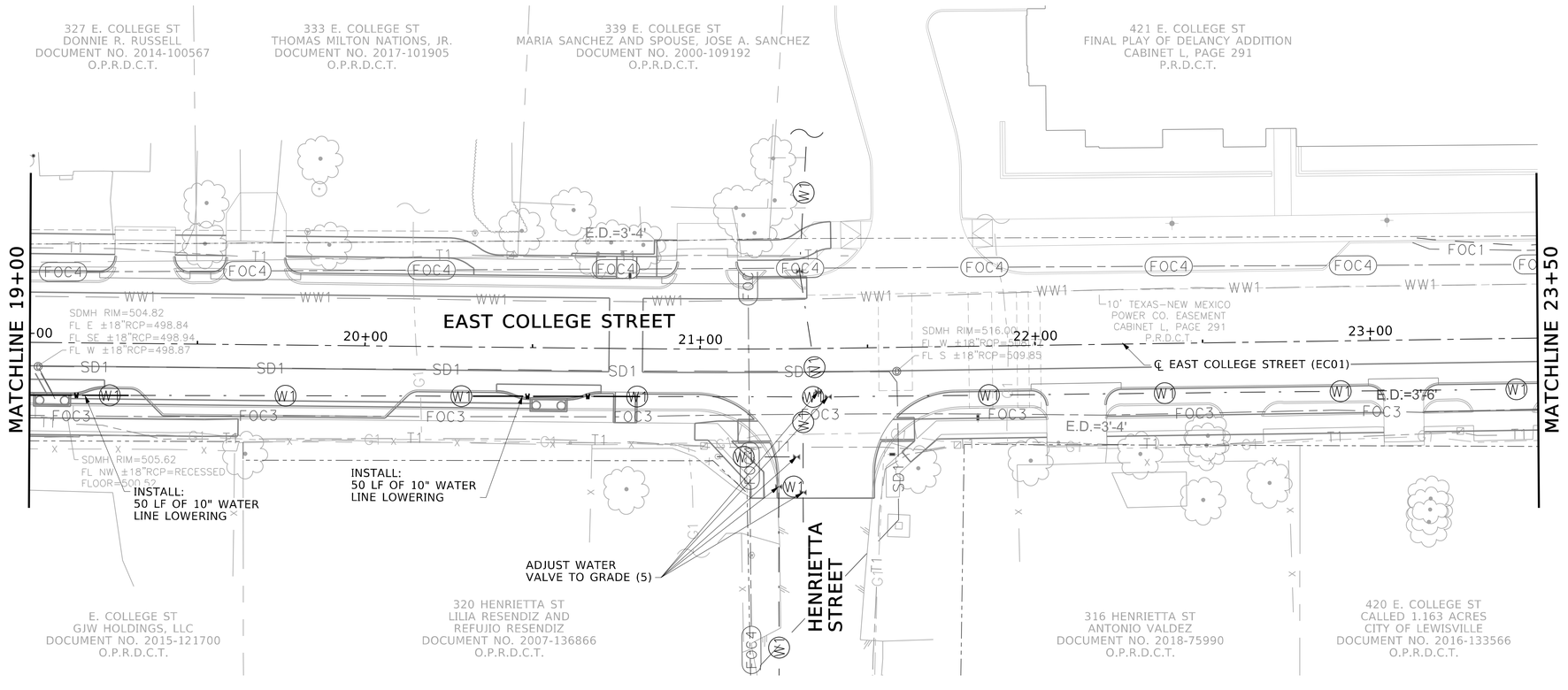
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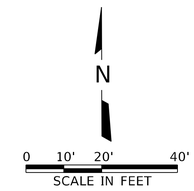
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NOTES:

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LEGEND OF UTILITY TYPES

Communications	QL "B"
FRONTIER	T1
SPECTRUM	C1
SPECTRUM	FOC1
DCTA / MCI / D.I.S.D.	FOC2
GRANDE	FOC3
	QL "C/D"
FRONTIER	FOC4
WCOM (MCI)	FOC5
Gas	QL "B"
ATMOS	G1
	QL "C/D"
ATMOS	G1
Sewers / Drains	QL "B"
CITY OF LEWISVILLE	WW1
CITY OF LEWISVILLE	SD1
	QL "C/D"
CITY OF LEWISVILLE	WW1
CITY OF LEWISVILLE	SD1
Water	QL "B"
CITY OF LEWISVILLE	W1
Electric / Power	QL "B"
TNMP	E1
DCTA	E2
CITY OF LEWISVILLE	E3

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
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08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
EXISTING UTILITIES AND
PROPOSED MINOR UTILITY ADJUSTMENTS

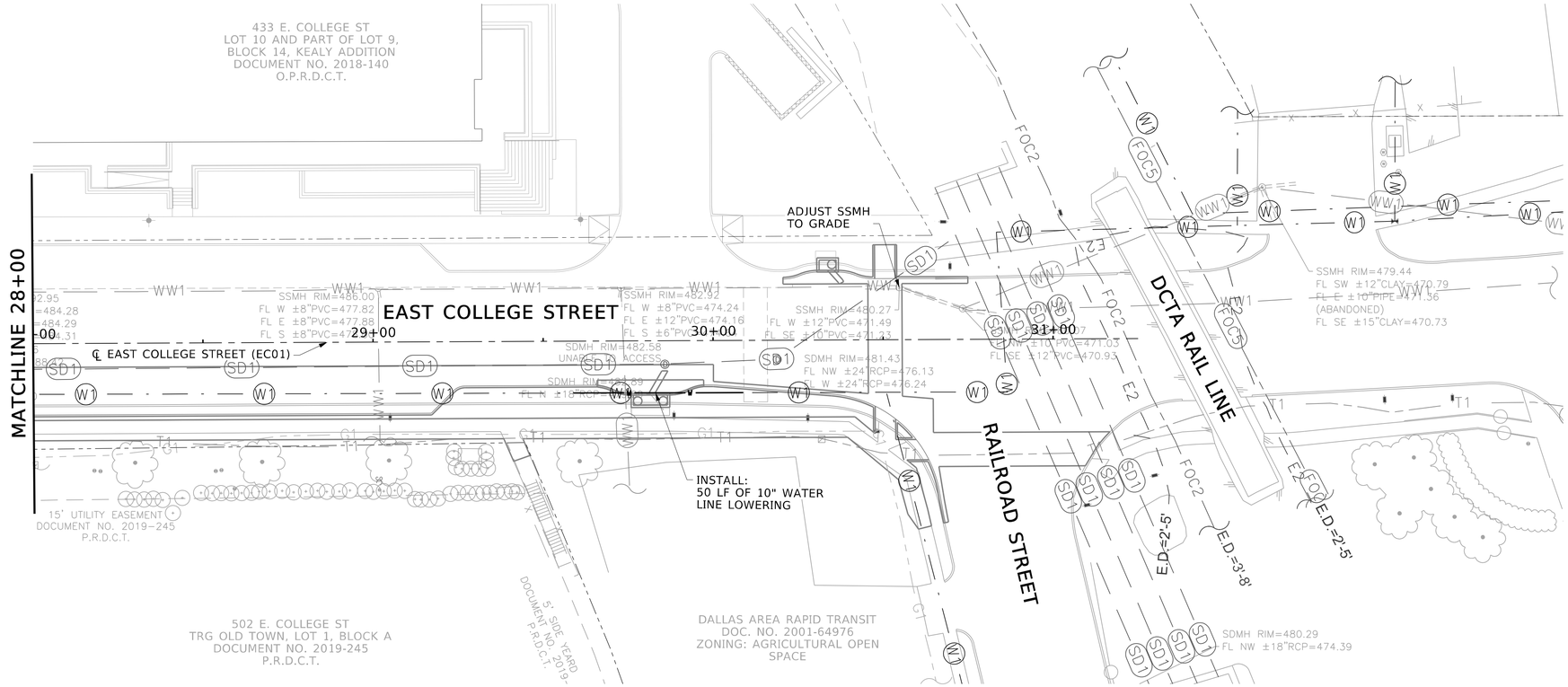
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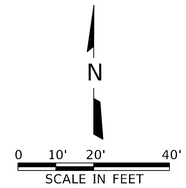
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NOTES:

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LEGEND OF UTILITY TYPES

Communications	QL "B"
FRONTIER	T1
SPECTRUM	C1
SPECTRUM	FOC1
DCTA / MCI / D.I.S.D.	FOC2
GRANDE	FOC3
	QL "C/D"
FRONTIER	FOC4
WCOM (MCI)	FOC5
Gas	QL "B"
ATMOS	G1
	QL "C/D"
ATMOS	G1
Sewers / Drains	QL "B"
CITY OF LEWISVILLE	WW1
CITY OF LEWISVILLE	SD1
	QL "C/D"
CITY OF LEWISVILLE	WW1
CITY OF LEWISVILLE	SD1
Water	QL "B"
CITY OF LEWISVILLE	W1
Electric / Power	QL "B"
TNMP	E1
DCTA	E2
CITY OF LEWISVILLE	E3

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024
FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
EXISTING UTILITIES AND PROPOSED MINOR UTILITY ADJUSTMENTS

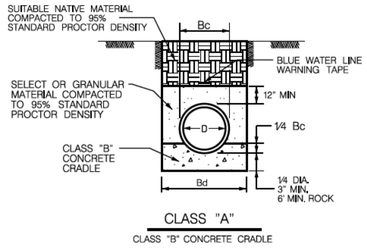
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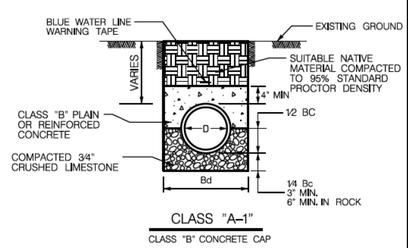
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CLASS "A"

CLASS "B" CONCRETE CRADLE

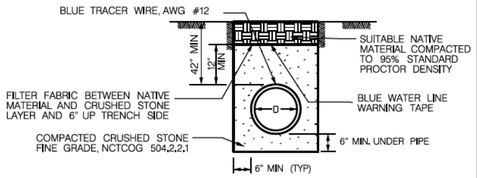


CLASS "A-1"

CLASS "B" CONCRETE CAP

NOTES:

1. Bc = OUTSIDE DIAMETER OF PIPE
2. Bd = TRENCH WIDTH
3. BLUE TRACER WIRE, AWG #12 SHALL BE PLACED OVER ALL WATER MAINS AND ROUTED THROUGH VALVE STACKS.
4. PLACE BLUE POTABLE WATER MARKING TAPE 24-INCHES ABOVE ALL CITY WATER MAINS.
5. ALL UTILITY CROSSINGS MUST MEET TCEQ REQUIREMENTS.
6. CLASS "A" AND "A-1" EMBEDMENT MAY BE USED WHEN APPROVED BY THE CITY FOR EMBEDMENT OF A WATER PIPE WHICH PASSES BENEATH A STORM DRAIN PIPE.



TYP. WATER LINE EMBEDMENT

(UNLESS MODIFIED BY APPROVED CONSTRUCTION PLANS)
N.T.S.

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

Standard Details

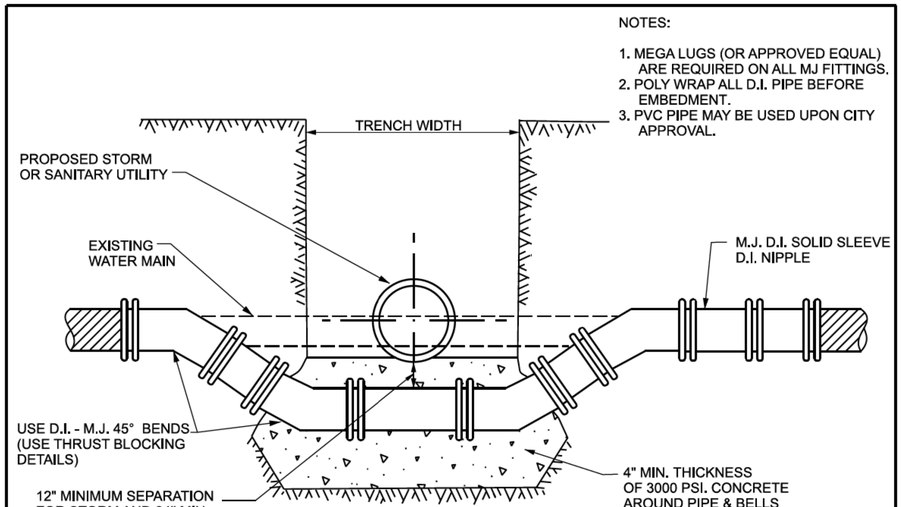
Water Main Embedment
Class A, A-1, and Typical

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 10-27-20
Sheet: 8.1



*FOR SANITARY SEWER, TCEQ REQUIREMENT TO RAISE WATERLINE OVER THE SEWER IF POSSIBLE (SEE DWG. 8.3)

NOTE:
DETAIL SUBJECT TO CHANGE PER DIRECTION OF CITY OF LEWISVILLE ENGINEERING DIVISION.

LEWISVILLE
Deep Roots. Broad Wings. Bright Future.

Standard Details

Water Main Lowering

Revisions:

No.	Description	Date

Engineering Department
Office No. 972-219-3490
www.cityoflewisville.com

Dated: 4-27-10
Dated: 09-10-2019
Sheet: 8.2

TEXAS REGISTERED ENGINEERING FIRM F-2144
FREESE AND NICHOLS, INC.

STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
CITY OF LEWISVILLE
WATER LINE DETAILS

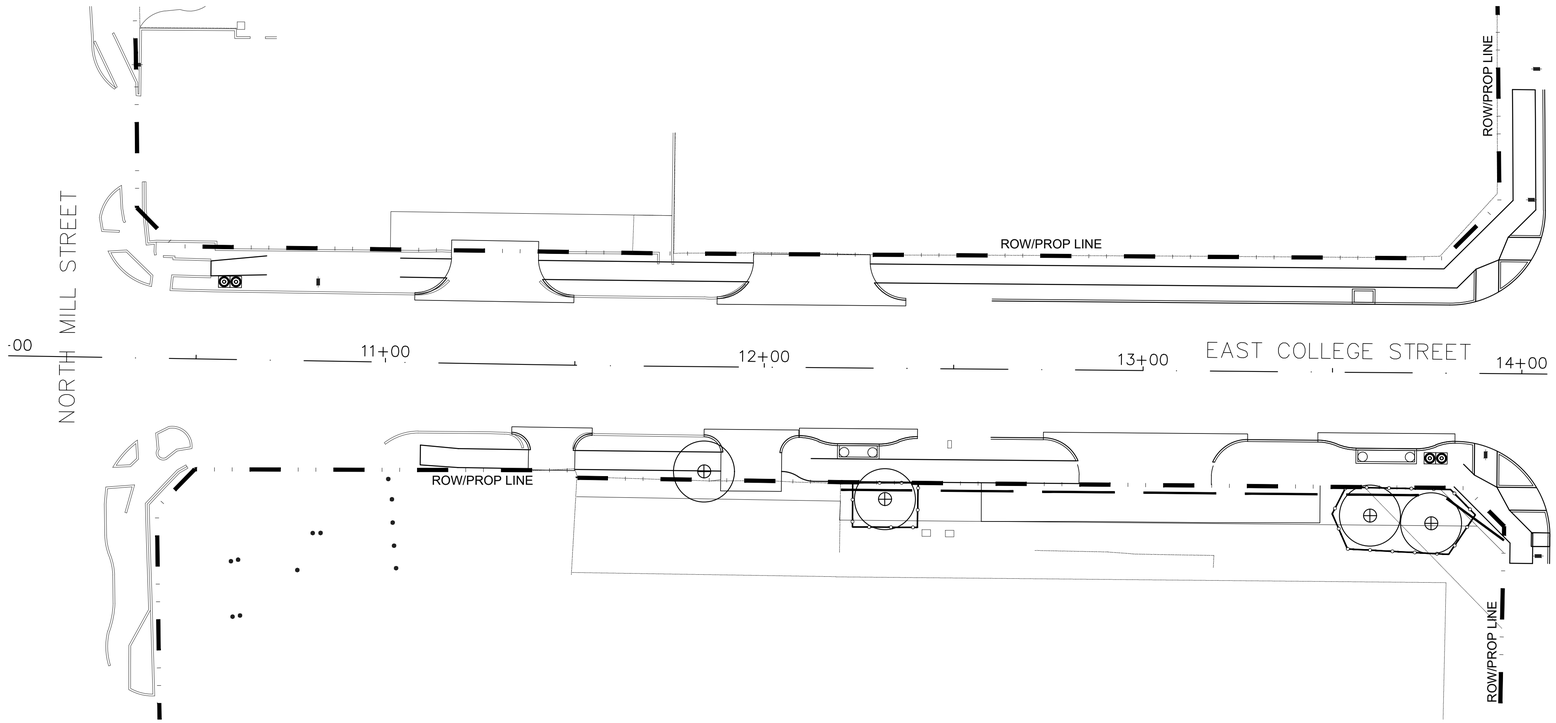
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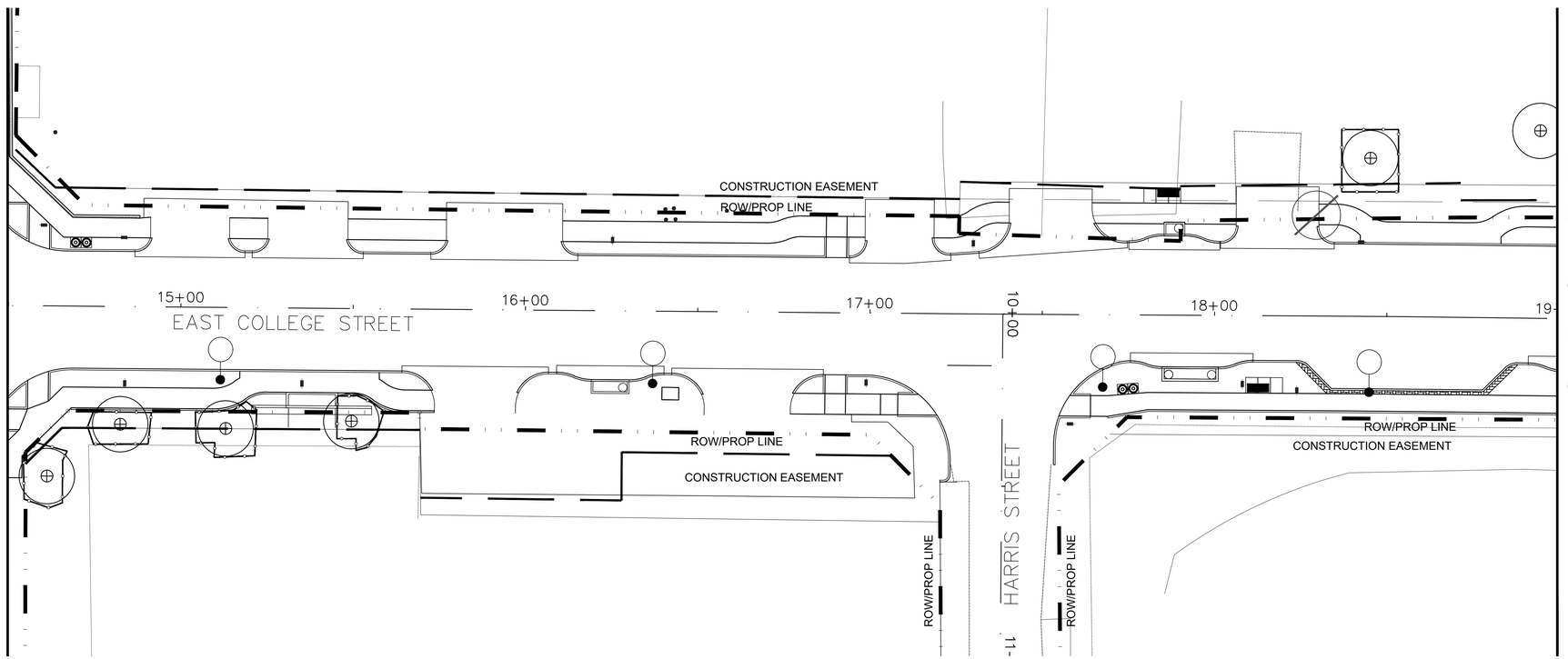
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NOTE:
PLAN SHEETS DO NOT SHOW EXISTING AND PROPOSED UTILITIES FOR CLARITY ONLY. CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO INSTALLATION. CONTRACTOR IS TO USE EXTREME CAUTION IN DIGGING AND TRENCHING TO AVOID EXISTING AND PROPOSED UTILITIES.

NOTES:

1. TREE PROTECTION FENCE SHALL BE ERECTED AROUND EACH PROTECTED TREE OR GROUP OF PROTECTED TREES AT LEAST TWO FEET BEYOND THE DRIP-LINE, UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
2. DURING CONSTRUCTION, NO ACCESS IS PERMITTED WITHIN THE PROTECTIVE FENCE FOR ANY PURPOSE, EXCEPT TRASH REMOVAL AND LANDSCAPE MAINTENANCE.
3. DURING CONSTRUCTION, AREA WITHIN THE TREE PROTECTIONS FENCE SHALL BE WATERED AT A RATE WHICH PROVIDES ONE INCH OF WATER PER WEEK, INCLUSIVE OF RAINFALL.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND AVOIDING UNDERGROUND UTILITIES OR OTHER IMPROVEMENTS PRIOR TO PLACEMENT OF TREE PROTECTION FENCING.

TREE PRESERVATION LEGEND

TREE TO BE REMOVED

TREE TO REMAIN

TREE PRESERVATION FENCING

GRAPHIC SCALE
0 20 40 FEET
Scale 1"=20' - 0"

AWR Designs, LLC
P.O. Box 1746
Aledo, Texas 76008
amanda@awr-designs.com
c. 512.517.5589

REGISTERED LANDSCAPE ARCHITECT
AMANDA W. RICHARDSON
2754
STATE OF TEXAS

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
LANDSCAPE
TREE PRESERVATION PLAN
BEGIN TO STA 19+00

NO.	ISSUES	BY	DATE

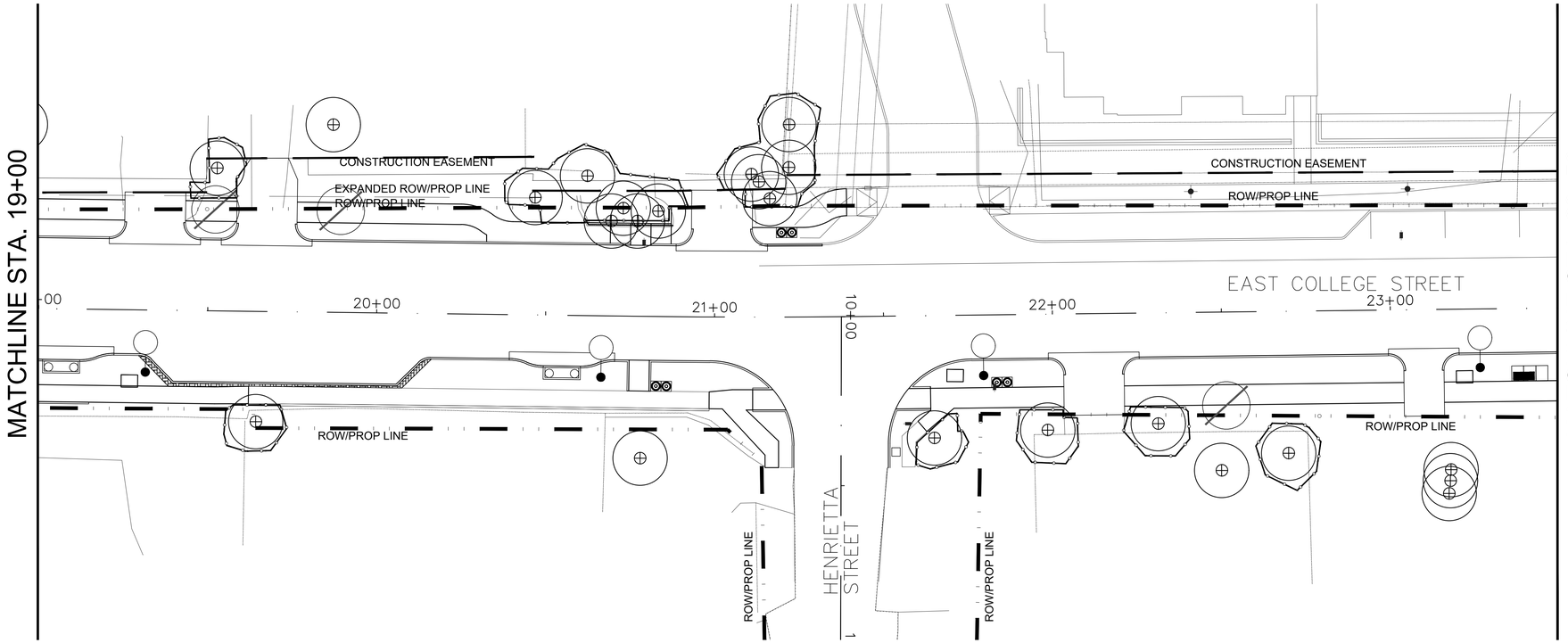
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REVISED AWR
CHECKED AWR
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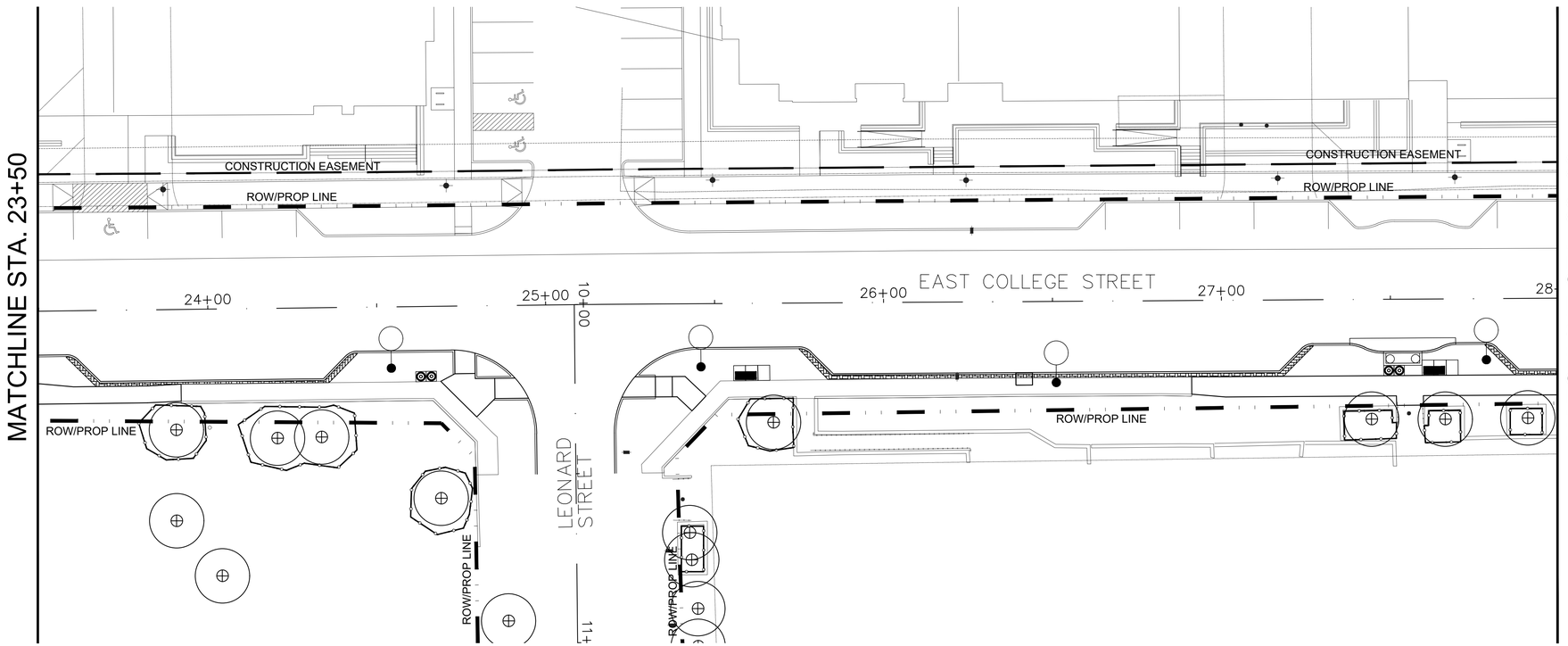
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Project: $PROJECT$

Office:$LOCATION$ $ACCOUNT$ Date:$DATE$ User:$USERNAME$ File:$FILEL$





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NOTES:

1. TREE PROTECTION FENCE SHALL BE ERECTED AROUND EACH PROTECTED TREE OR GROUP OF PROTECTED TREES AT LEAST TWO FEET BEYOND THE DRIP-LINE, UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
2. DURING CONSTRUCTION, NO ACCESS IS PERMITTED WITHIN THE PROTECTIVE FENCE FOR ANY PURPOSE, EXCEPT TRASH REMOVAL AND LANDSCAPE MAINTENANCE.
3. DURING CONSTRUCTION, AREA WITHIN THE TREE PROTECTIONS FENCE SHALL BE WATERED AT A RATE WHICH PROVIDES ONE INCH OF WATER PER WEEK, INCLUSIVE OF RAINFALL.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND AVOIDING UNDERGROUND UTILITIES OR OTHER IMPROVEMENTS PRIOR TO PLACEMENT OF TREE PROTECTION FENCING.

TREE PRESERVATION LEGEND

TREE TO BE REMOVED

TREE TO REMAIN

TREE PRESERVATION FENCING

GRAPHIC SCALE
0 20 40 FEET
Scale 1"=20' - 0"

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

LANDSCAPE
TREE PRESERVATION PLAN
STA 19+00 TO STA 28+00

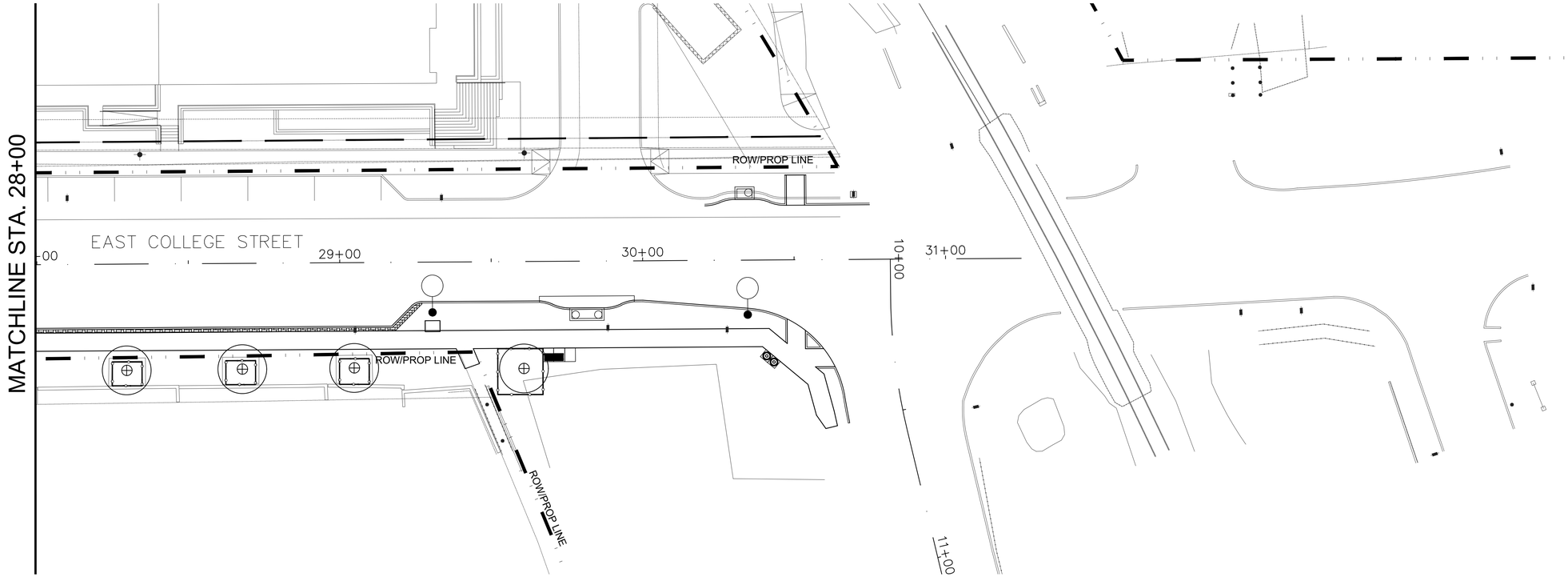
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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F&N JOB NO. LEW21241
DATE MAY 2024
DESIGNED AWR
DRAWN AWR
REVISED AWR
CHECKED AWR
FILE NAME $FILES$

SHEET LP-2
SEQ. 100

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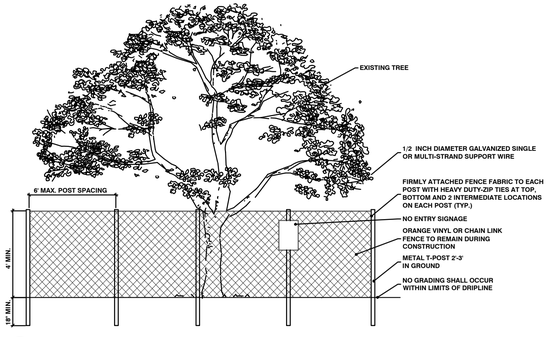


TREE PRESERVATION LEGEND

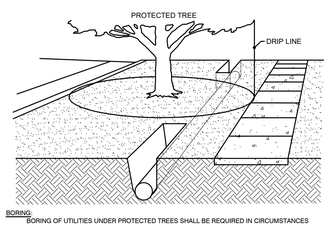
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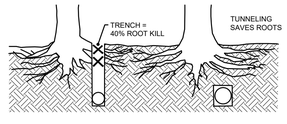
TREE PRESERVATION FENCING



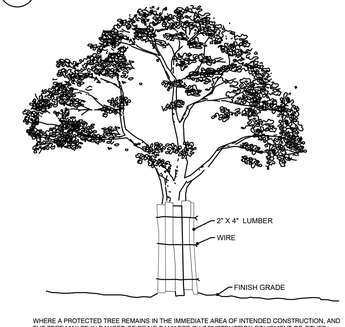
1 TREE PROTECTION FENCING
N.T.S.



BORING:
BORING OF UTILITIES UNDER PROTECTED TREES SHALL BE REQUIRED IN CIRCUMSTANCES WHERE IT IS NOT POSSIBLE TO TRENCH AROUND THE CRITICAL ROOT ZONE OF THE PROTECTED TREE. WHERE REQUIRED, THE LENGTH OF THE BORE SHALL BE THE WIDTH OF THE CRITICAL ROOT ZONE AT A MINIMUM AND SHALL BE A MINIMUM DEPTH OF FORTY EIGHT (48") INCHES.



2 BORING AND TUNNELING
N.T.S.



WHERE A PROTECTED TREE REMAINS IN THE IMMEDIATE AREA OF INTENDED CONSTRUCTION, AND THE TREE MAY BE IN DANGER OF BEING DAMAGED BY CONSTRUCTION EQUIPMENT OR OTHER ACTIVITY, THE CONTRACTOR OR SUBCONTRACTOR SHALL PROTECT THE TREE WITH 2" X 4" LUMBER ENCIRCLED WITH WIRE OR OTHER MEANS THAT DO NOT DAMAGE THE BARK OF THE TREE. THE INTENT IS TO PROTECT THE TRUNK OF THE TREE AGAINST INCIDENTAL CONTACT BY LARGE CONSTRUCTION EQUIPMENT.

3 BARK PROTECTION
N.T.S.

TREE PRESERVATION NOTES

CONSTRUCTION METHODS:

BORING: BORING OF UTILITIES UNDER PROTECTED TREES MAY BE REQUIRED. WHEN REQUIRED, THE MINIMUM LENGTH OF THE BORE SHALL BE THE WIDTH OF THE CRITICAL ROOT ZONE AND SHALL BE A MINIMUM DEPTH OF FORTY (48) INCHES.

TRENCHING: ALL TRENCHING SHALL BE DESIGNED TO AVOID TRENCHING ACROSS CRITICAL ROOT ZONES OF ANY PROTECTED TREE. THE PLACEMENT OF UNDERGROUND UTILITY LINES SUCH AS ELECTRIC, PHONE, GAS, ETC., IS ENCOURAGED TO BE LOCATED OUTSIDE THE CRITICAL ROOT ZONE. TRENCHING FOR IRRIGATION SYSTEMS SHALL BE PLACED OUTSIDE THE CRITICAL ROOT ZONE EXCEPT THE MINIMUM REQUIRED SINGLE HEAD SUPPLY LINE. THIS LINE IS ALLOWED TO EXTEND INTO THE CRITICAL ROOT ZONE PERPENDICULAR TO THE TREE TRUNK WITH THE LEAST POSSIBLE DISTURBANCE.

TREES TO BE REMOVED: ALL TREES TO BE REMOVED FROM THE SITE SHALL BE FLAGGED BY THE CONTRACTOR WITH BRIGHT RED VINYL TAPE WRAPPED AROUND THE MAIN TRUNK AT A HEIGHT OF FOUR (4') FEET ABOVE GRADE.

TREES TO REMAIN: ALL TREES TO REMAIN, AS NOTED ON DRAWINGS, SHALL HAVE PROTECTIVE FENCING LOCATED AT THE TREE'S DRIP LINE. THE PROTECTIVE FENCING SHALL BE LOCATED AS INDICATED ON THE TREE PROTECTION DETAIL.

EXISTING TREES NOTED TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION FROM DAMAGE AND COMPACTION OF SOIL UNDER AND AROUND DRIP LINE OF TREE.

UNDER NO CIRCUMSTANCE SHALL THE CONTRACTOR PRUNE ANY PORTION OF THE DAMAGED TREE WITHOUT THE PRIOR APPROVAL BY THE OWNER'S AUTHORIZED REPRESENTATIVE.

PROHIBITED ACTIVITIES IN CRITICAL ROOT ZONE:
THE FOLLOWING ACTIVITIES ARE PROHIBITED IN THE AREAS NOTED AS THE CRITICAL ROOT ZONE.

MATERIAL STORAGE: NO MATERIALS INTENDED FOR USE IN CONSTRUCTION, OR WASTE MATERIALS ACCUMULATED DUE TO EXCAVATION OR DEMOLITION, SHALL BE PLACED WITHIN THE LIMITS OF THE CRITICAL ROOT ZONE OF ANY PROTECTED TREE.

EQUIPMENT CLEANING/LIQUID DISPOSAL: NO EQUIPMENT SHALL BE CLEANED, OR OTHER LIQUIDS DEPOSITED OR ALLOWED WITHIN THE LIMITS OF THE CRITICAL ROOT ZONE OF A PROTECTED TREE. THIS INCLUDES, WITHOUT LIMITATION: PAINT, OIL, SOLVENTS, ASPHALT, CONCRETE, MORTAR OR SIMILAR MATERIALS.

TREE ATTACHMENTS: NO SIGNS, WIRES, OR OTHER ATTACHMENTS, OTHER THAN THOSE OF A PROTECTIVE NATURE, SHALL BE ATTACHED TO ANY PROTECTED TREE.

VEHICULAR TRAFFIC: NO VEHICULAR AND/OR CONSTRUCTION, EQUIPMENT, TRAFFIC, OR PARKING SHALL TAKE PLACE WITHIN THE LIMITS OF THE CRITICAL ROOT ZONE OF ANY PROTECTED TREE OTHER THAN ON EXISTING STREET PAVEMENT.

GRADE CHANGES: A MINIMUM OF 75% OF THE DRIP LINE AND ROOT ZONE SHALL BE PRESERVED AT NATURAL GRADE. ANY FINE GRADING DONE WITHIN THE CRITICAL ROOT ZONES OF THE PROTECTED TREES MUST BE DONE WITH LIGHT MACHINERY SUCH AS A BOBCAT OR LIGHT TRACTOR. NO EARTH MOVING EQUIPMENT WITH TRACKS IS ALLOWED WITHIN THE CRITICAL ROOT ZONE OF THE TREES.

PROCEDURES REQUIRED PRIOR TO CONSTRUCTION:
PROTECTIVE FENCING: PRIOR TO CONSTRUCTION, THE CONTRACTOR OR SUBCONTRACTOR SHALL CONSTRUCT AND MAINTAIN, FOR EACH PROTECTED TREE ON A CONSTRUCTION SITE, A PROTECTIVE FENCING WHICH ENCIRCLES THE OUTER LIMITS OF THE CRITICAL ROOT ZONE OF THE TREE TO PROTECT IT FROM CONSTRUCTION ACTIVITY. ALL PROTECTIVE FENCING SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF ANY SITE WORK, AND REMAIN IN PLACE UNTIL ALL EXTERIOR WORK HAS BEEN COMPLETED.

BARK PROTECTION: IN SITUATIONS WHERE A PROTECTED TREE REMAINS IN THE IMMEDIATE AREA OF INTENDED CONSTRUCTION, AND THE LANDSCAPE ARCHITECT OR OWNERS'S REPRESENTATIVE DETERMINES THE TREE BARK TO BE IN DANGER OF DAMAGE BY CONSTRUCTION EQUIPMENT OR OTHER ACTIVITY, THE CONTRACTOR OR SUBCONTRACTOR SHALL PROTECT THE TREE BY ENCLOSING THE ENTIRE CIRCUMFERENCE OF THE TREE WITH 2"X4" LUMBER ENCIRCLED WITH WIRE OR OTHER MEANS THAT DO NOT DAMAGE THE TREE. THE INTENT IS TO PROTECT THE BARK OF THE TREE AGAINST INCIDENTAL CONTACT BY LARGE CONSTRUCTION EQUIPMENT.

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GRAPHIC SCALE
0 20 40 FEET
Scale 1"=20' - 0"

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

LANDSCAPE
TREE PRESERVATION PLAN
STA 28+00 TO END

NO.	ISSUES	BY	DATE

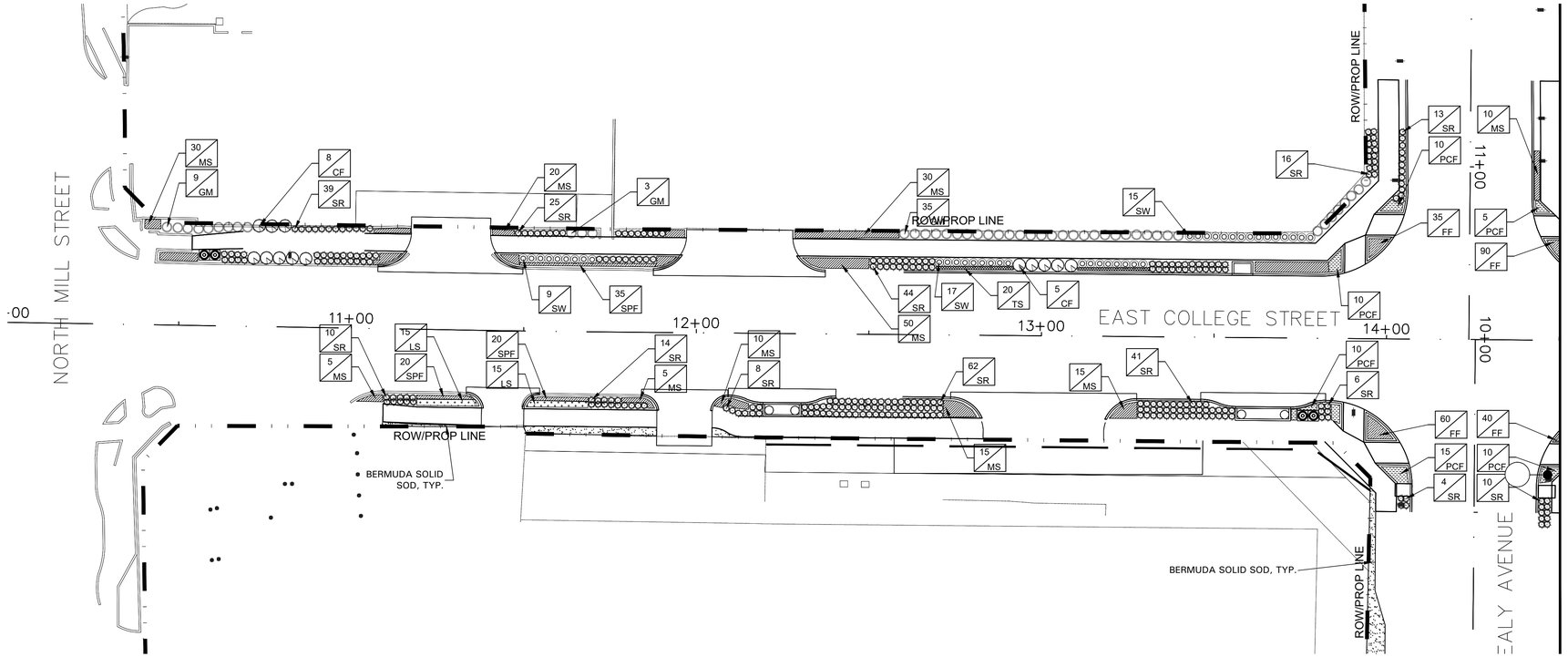
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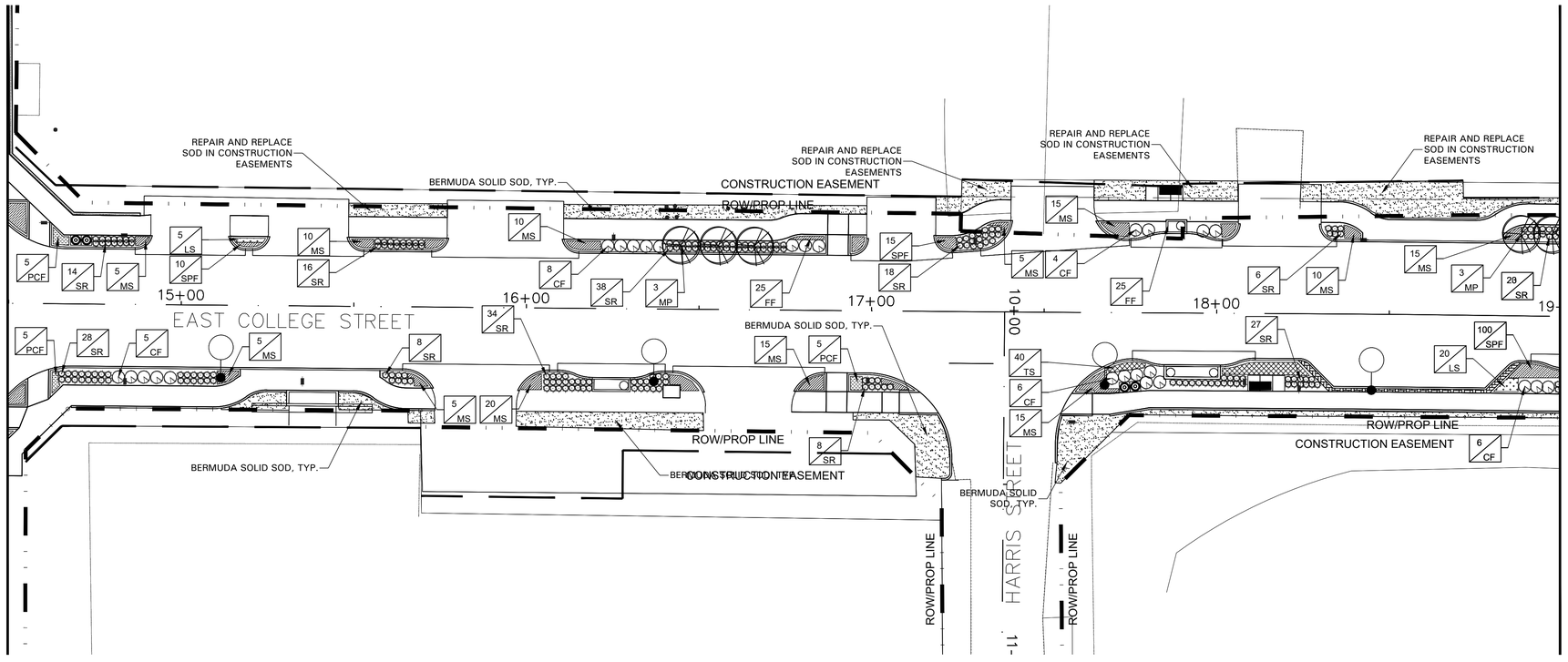
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SHEET LP-3
SEQ. 101

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PREMIXED BEDDING SOIL AS SUPPLIED BY VITAL EARTH RESOURCES, GLADEWATER, TEXAS; PROFESSIONAL BEDDING SOIL AS SUPPLIED BY LIVING EARTH TECHNOLOGY, DALLAS, TEXAS OR ACID GRO MUNICIPAL MIX AS SUPPLIED BY SOIL BUILDING SYSTEMS, DALLAS, TEXAS OR APPROVED EQUAL.

SOIL AMENDMENTS TO BE PROVIDED PER NOTES AND SPECIFICATIONS.

EXISTING SOIL SHALL BE REMOVED FROM ENTIRE PLANTING AREAS COMPLETELY. CONTRACTOR TO PROVIDE A SOIL MIX AND INCORPORATE SOIL MIXTURE INTO THE LANDSCAPE BED AREAS ACCORDING TO PLAN.

MULCH SHALL BE PROVIDED PER DETAIL TO ALL BEDS AND TREE WELLS.

PLANT SCHEDULE

LABEL	COMMON NAME
	SHADE TREES
CE	Cedar Elm
	ORNAMENTAL TREES
MP	Mexican Plum
RB	Texas Redbud
	SHRUBS
CF	Cardinal Flower
GM	Gulf Muhly
SR	Soft Rush
SW	Spiderwort
	GROUNDCOVER/VINES/GRASS
FF	Frogfruit
LS	New Gold Lantana/Black Eyed Susan Mix
MS	May Night Salvia
PC	Purple Coneflower
SP	Silver Ponyfoot
TS	Texas Sedge
	Bermuda Solid Sod

GRAPHIC SCALE
0 20 40 FEET
Scale 1"=20' - 0"

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
LANDSCAPE PLAN
LANDSCAPE PLAN
BEGIN TO STA 19+00

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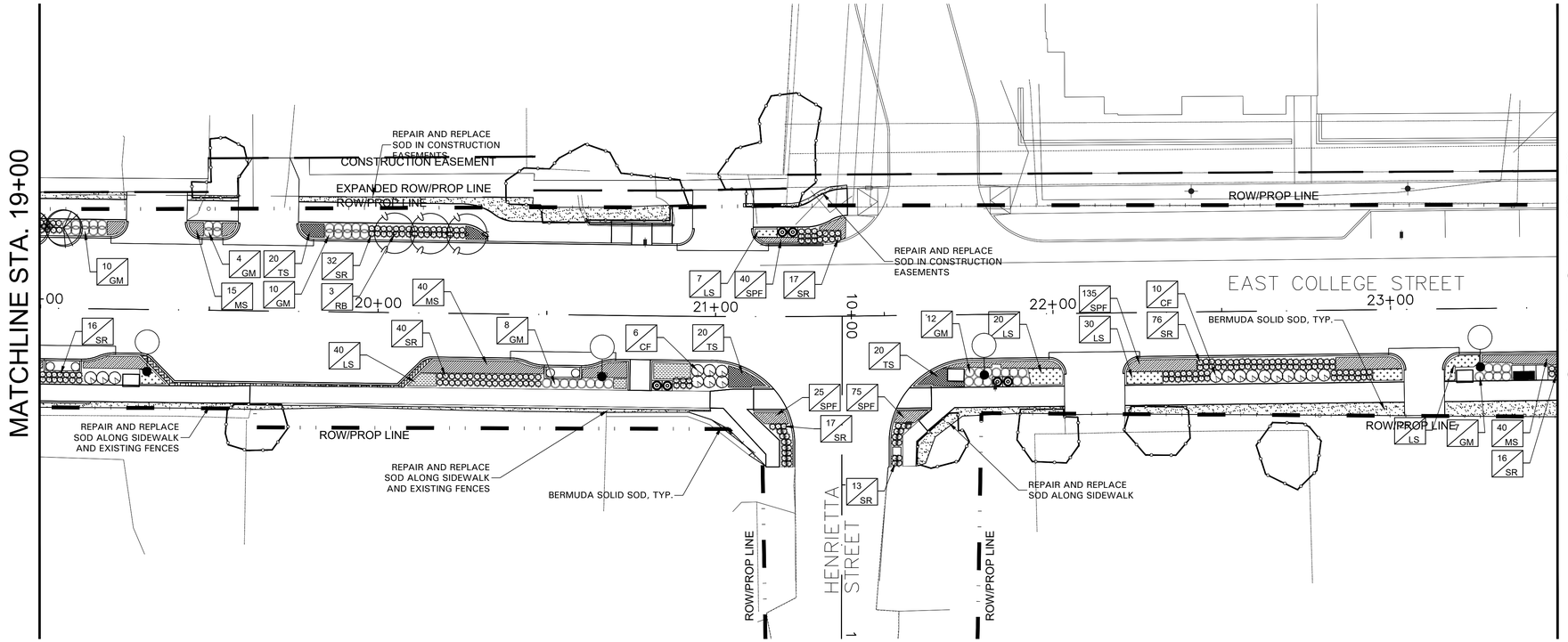
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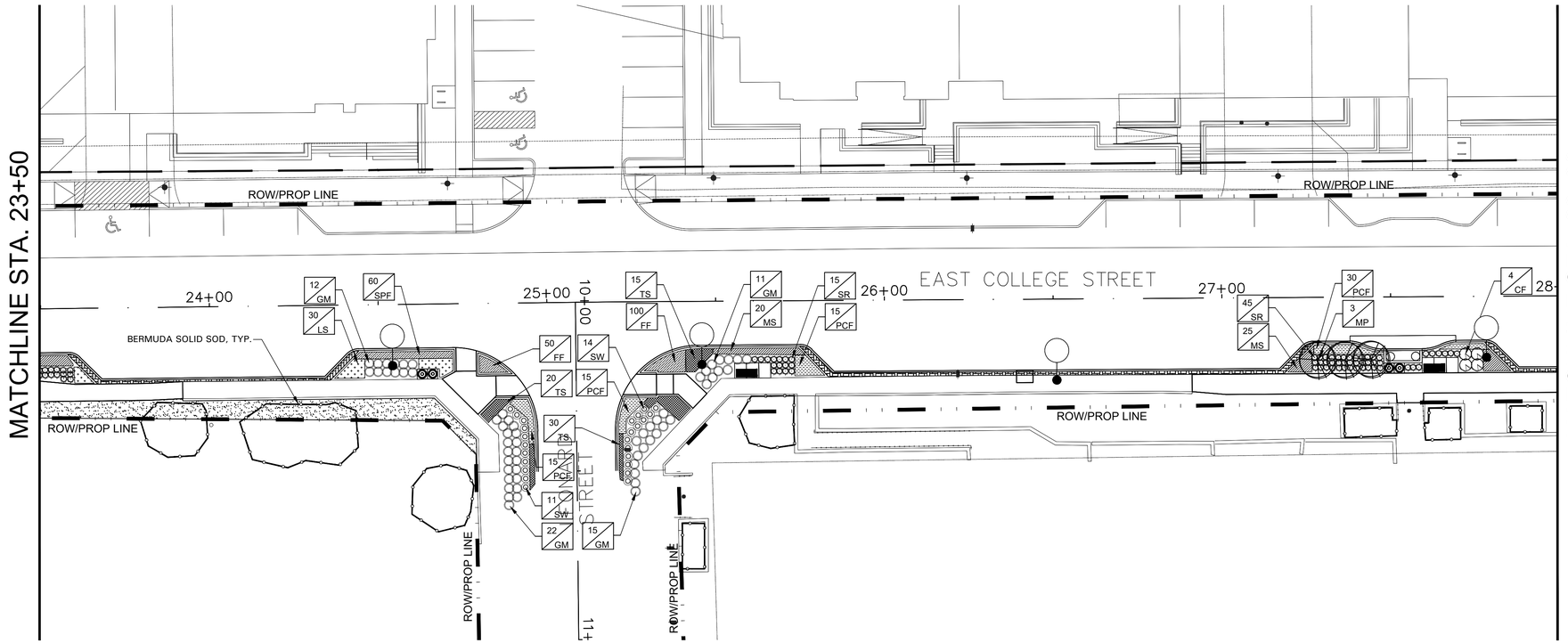
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SEQ. 102

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Office:$LOCATION$ $ACCOUNT$ Date:$DATE$ User:$USERNAME$ File:$FILEL$





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	SHRUBS
CF	Cardinal Flower
GM	Gulf Muhly
SR	Soft Rush
SW	Spiderwort
	GROUNDCOVER/VINES/GRASS
FF	Frogfruit
LS	New Gold Lantana/Black Eyed Susan Mix
MS	May Night Salvia
PC	Purple Coneflower
SP	Silver Ponyfoot
TS	Texas Sedge
	Bermuda Solid Sod

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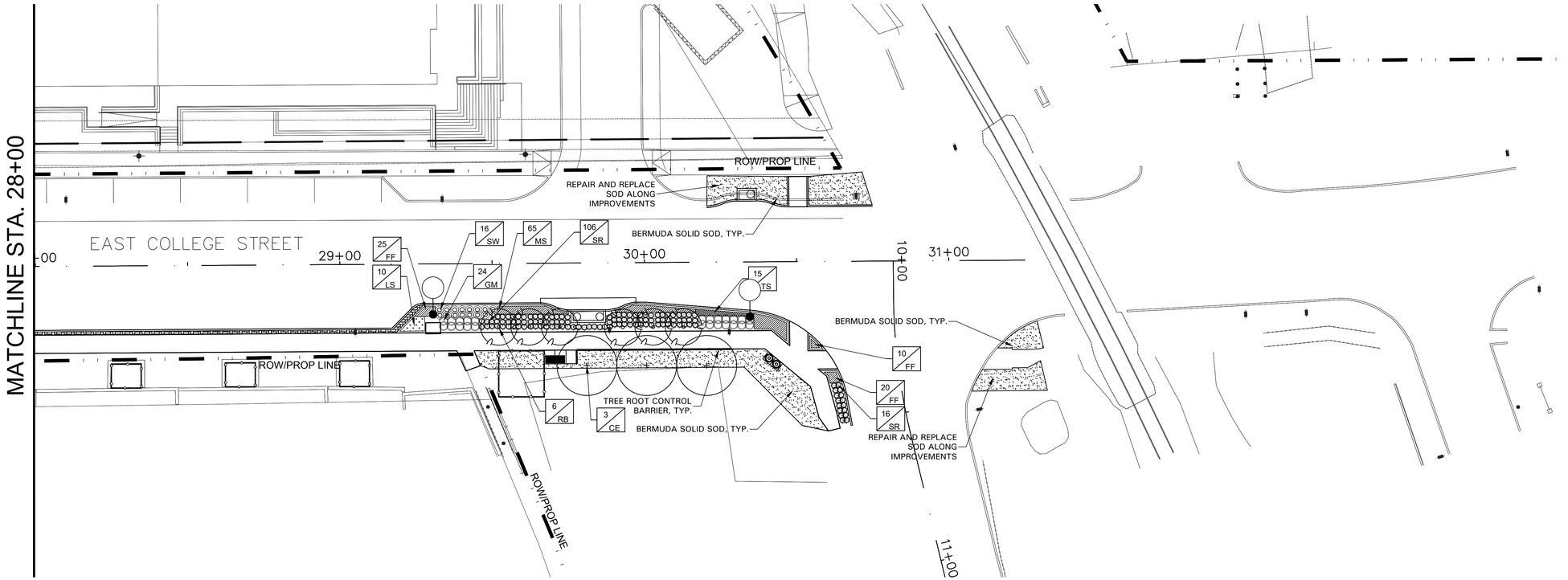
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DATE MAY 2024
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CHECKED AWR
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SHEET LP-5
SEQ. 103

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Date:$DATE$
Model:$MODEL$
Project:$PROJECT$

Office:$LOCATION$ $ACCOUNT$ Date:$DATE$ User:$USERNAME$ File:$FILEL$



GENERAL LAWN NOTES

1. CONTRACTOR SHALL COORDINATE OPERATIONS AND AVAILABILITY OF EXISTING TOPSOIL WITH ON-SITE CONSTRUCTION MANAGER
2. LAWN AREAS SHALL BE LEFT 1" BELOW FINAL FINISHED GRADE PRIOR TO TOPSOIL INSTALLATION.
3. CONTRACTOR TO FIND GRADE AREAS TO ACHIEVE FINAL CONTOURS AS SHOWN ON CIVIL DRAWINGS. POSITIVE DRAINAGE SHALL BE PROVIDED AWAY FROM ALL BUILDINGS. ROUNDING AT TOP AND BOTTOM OF SLOPES SHALL BE PROVIDED AND IN OTHER BREAKS IN GRADE. CORRECT AREAS WHERE STANDING WATER MAY OCCUR.
4. ALL LAWN AREAS SHALL BE FINE GRADED. IRRIGATION TRENCHES COMPLETELY SETTLED AND FINISH GRADE APPROVED BY THE OWNERS CONSTRUCTION MANAGER OR LANDSCAPE ARCHITECT PRIOR TO LAWN INSTALLATION.
5. CONTRACTOR SHALL REMOVE ALL ROCKS 3/4" IN DIAMETER AND LARGER. REMOVE ALL DIRT CLODS, STICKS, CONCRETE SPOILS, TRASH ETC PRIOR TO PLACING TOPSOIL AND GRASS INSTALLATION.
6. CONTRACTOR SHALL MAINTAIN ALL LAWN AREAS UNTIL FINAL ACCEPTANCE.
7. CONTRACTOR SHALL GUARANTEE ESTABLISHMENT OF ACCEPTABLE TURF AREA AND SHALL PROVIDE REPLACEMENT IF NECESSARY.

SOLID SOD:

1. SOLID SOD SHALL BE PLACED ALONG ALL IMPERVIOUS EDGES, AT A MINIMUM. THIS SHALL INCLUDE CURBS, WALKS, INLETS, MANHOLES AND PLANTING BED AREAS. SOD SHALL COVER OTHER AREAS COMPLETELY AS INDICATED BY PLAN.
2. SOD SHALL BE STRONGLY ROOTED DROUGHT RESISTANT SOD, NOT LESS THAN 2 YEARS OLD, FREE OF WEEDS AND UNDESIRABLE NATIVE GRASS AND MACHINE CUT TO PAD THICKNESS OF 3/4" (+ 1/4"), EXCLUDING TOP GROWTH AND THATCH.
3. LAY SOD BY HAND TO COVER INDICATED AREAS COMPLETELY, ENSURING EDGES ARE TOUCHING WITH TIGHTLY FITTING JOINTS, NO OVERLAPS WITH STAGGERED STRIPS TO OFFSET JOINTS.
4. TOP DRESS JOINTS IN SOD BY HAND WITH TOPSOIL TO FILL VOIDS IF NECESSARY
5. SOD SHALL BE ROLLED TO CREATE A SMOOTH EVEN SURFACE. SOD SHOULD BE WATERED THOROUGHLY DURING INSTALLATION PROCESS.
6. SHOULD INSTALLATION OCCUR BETWEEN OCTOBER 1ST AND MARCH 1ST, OVERSEED BERMUDAGRASS SOD WITH WINTER RYEGRASS AT A RATE OF 4 POUNDS PER 1000 S.F.

LANDSCAPE NOTES

1. CONTRACTOR TO VERIFY AND LOCATE ALL PROPOSED AND EXISTING ELEMENTS. NOTIFY LANDSCAPE ARCHITECT OR DESIGNATED REPRESENTATIVE FOR ANY LAYOUT DISCREPANCIES OR ANY CONDITION THAT WOULD PROHIBIT THE INSTALLATION AS SHOWN. SURVEY DATA OF EXISTING CONDITIONS WAS SUPPLIED BY OTHERS
2. CONTRACTOR SHALL CALL 811 TO VERIFY AND LOCATE ANY AND ALL UTILITIES ON SITE PRIOR TO COMMENCING WORK. LANDSCAPE ARCHITECT SHOULD BE NOTIFIED OF ANY CONFLICTS. CONTRACTOR TO EXERCISE EXTREME CAUTION WHEN WORKING NEAR UNDERGROUND UTILITIES.
3. A MINIMUM OF 2% SLOPE SHALL BE PROVIDED AWAY FROM ALL STRUCTURES.
4. CONTRACTOR SHALL FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS AS INDICATED. LEAVE AREAS TO RECEIVE TOPSOIL 3" BELOW FINAL FINISHED GRADE IN PLANTING AREAS AND 1" BELOW FINAL FINISHED GRADE IN LAWN AREAS.
5. LANDSCAPE ISLANDS SHALL BE CROWNED, AND UNIFORM THROUGHOUT THE SITE.
6. PLANTING AREAS AND SOD TO BE SEPARATED BY STEEL EDGING. NO STEEL EDGING SHALL BE INSTALLED ADJACENT TO BUILDINGS, WALKS OR CURBS. EDGING NOT TO BE MORE THAN 1/2" ABOVE FINISHED GRADE.
7. EDGING SHALL BE CUT AT 45 DEGREE ANGLE WHERE IT INTERSECTS WALKS AND/OR CURBS.
8. MULCH SHALL BE INSTALLED AT 1/2" BELOW THE TOPS OF SIDEWALKS AND CURBING.
9. QUANTITIES ON THESE PLANS ARE FOR REFERENCE ONLY. THE SPACING OF PLANTS SHOULD BE AS INDICATED ON PLANS OR OTHERWISE NOTED. ALL TREES AND SHRUBS SHALL BE PLANTED PER DETAILS.
10. CONTAINER GROWN PLANT MATERIAL SHALL BE USED, REFERENCE PLAN AND TABLES FOR PLANT MATERIAL LIST AND LOCATIONS.
11. TREES SHALL BE PLANTED AT A MINIMUM OF 5' FROM ANY UTILITY LINE, SIDEWALK OR CURB. TREES SHALL ALSO BE 10' CLEAR FROM FIRE HYDRANTS.
12. 3" OF SHREDDED HARDWOOD MULCH (3" SETTLED THICKNESS) SHALL BE PLACED IN PLANTING BEDS. MULCH SHALL BE SHREDDED HARDWOOD MULCH OR APPROVED EQUAL, PINE STRAW MULCH IS PROHIBITED.
13. INSTALL TREE ROOT BARRIER PER PLAN LOCATIONS AND PER MANUFACTURE'S RECOMMENDATIONS.
14. OWNER TO SELECT OR TAG ALL TREES FROM TREE FARM PRIOR TO INSTALLATION. CONTRACTOR TO COORDINATE WITH OWNER.
15. PER CITY REQUEST, DO NOT USE WEED BARRIER FABRIC.
16. PER CITY REQUEST, ALL PLANTING AREAS SHALL BE FREE OF WEEDS AND SPRAYED FOR WEEDS PRIOR TO PLANT INSTALLATION. REFERENCE WEED SPRAY FOR GUIDELINES PRIOR TO PLANTING. USE PER MANUFACTURE'S RECOMMENDATIONS.
17. CONTRACTOR TO PROVIDE UNIT PRICING OF LANDSCAPE MATERIALS AND BE RESPONSIBLE FOR OBTAINING ALL LANDSCAPE AND IRRIGATION PERMITS.

MAINTENANCE REQUIREMENTS:

1. VEGETATION SHOULD BE INSPECTED REGULARLY TO ENSURE THAT PLANT MATERIAL IS ESTABLISHING PROPERLY AND REMAINS IN A HEALTHY GROWING CONDITION APPROPRIATE FOR THE SEASON. IF DAMAGED OR REMOVED, PLANTS MUST BE REPLACED BY A SIMILAR VARIETY AND SIZE.
2. MOWING, TRIMMING, EDGING AND SUPERVISION OF WATER APPLICATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR UNTIL THE OWNER OR OWNER'S REPRESENTATIVE ACCEPTS AND ASSUMES REGULAR MAINTENANCE.
3. ALL LANDSCAPE AREAS SHOULD BE CLEANED AND KEPT FREE OF TRASH, DEBRIS, WEEDS AND OTHER MATERIAL.

MISCELLANEOUS MATERIALS:

1. STEEL EDGING SHALL BE 3/16" X 4 X 16' BLACK DURAEDGE STEEL LANDSCAPE EDGING UNLESS NOTED OTHERWISE ON PLANS/DETAILS.

PRUNING AND TRIMMING:

1. CONTRACTOR SHALL PRUNE ALL EXISTING TREES ON-SITE USING STANDARD GUIDELINES IN THE INDUSTRY.
2. ALL TREES SHALL BE TRIMMED SO THAT NATURAL SHAPES OF THE PLANTS ARE RETAINED.
3. DO NOT 'TOP' OR 'HEAD' TREES.
4. IF BALLING OR SHEARING OF TREES HAS OCCURRED IN THE PAST, DISCONTINUE THIS PRACTICE AND ALLOW PLANTS TO GROW INTO NATURAL SHAPE.
5. REMOVE SUCKERS, DEAD, DYING, DISEASED, BROKEN AND / OR WEAK BRANCHES FROM ALL TREES ALONG THE MAIN TRUNK STRUCTURE AND WITHIN THE BRANCHING AREA.
6. CONTRACTOR SHALL PRUNE EXISTING DECIDUOUS HARDWOOD BY REMOVING LOWER LIMBS TO RAISE THE CANOPY. THE BOTTOM OF THE CANOPY SHALL BE RAISED TO 12'-0" ABOVE GRADE FOR DECIDUOUS HARDWOOD TREES, WHEN POSSIBLE. THE INTEGRITY OF THE CANOPY AND STRUCTURE OF THE TREE SHALL BE MAINTAINED. DO NOT CUT OR PRUNE CENTRAL LEADERS.
7. CONTRACTOR SHALL THIN THE CANOPY BY ONE-FOURTH. PRUNE TREE TO EVENLY SPACE BRANCHES WITHIN THE CANOPY WHENEVER POSSIBLE. REMOVE THOSE LIMBS THAT CROSS OTHERS, DOUBLE LEADERS AND THOSE THAT EXCESSIVELY EXTEND BEYOND THE NATURAL CROWN OF THE TREE.
8. CONTRACTOR SHALL PROVIDE DEEP ROOT FEEDING AND INVIGORATION OF EXISTING TREES. THIS SHALL BE ORGANIC BASED NUTRIENTS BASED FOR ROOT GROWTH AND LEAF GROWTH STIMULATION.
9. CONTRACTOR SHALL BE REQUIRED TO CHIP ALL REMOVED BRANCHES, LEAFS, ETC.

NOTE:
PLAN SHEETS DO NOT SHOW EXISTING AND PROPOSED UTILITIES FOR CLARITY ONLY. CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO INSTALLATION. CONTRACTOR IS TO USE EXTREME CAUTION IN DIGGING AND TRENCHING TO AVOID EXISTING AND PROPOSED UTILITIES.

PREMIXED BEDDING SOIL AS SUPPLIED BY VITAL EARTH RESOURCES, GLADEWATER, TEXAS; PROFESSIONAL BEDDING SOIL AS SUPPLIED BY LIVING EARTH TECHNOLOGY, DALLAS, TEXAS OR ACID GRO MUNICIPAL MIX AS SUPPLIED BY SOIL BUILDING SYSTEMS, DALLAS, TEXAS OR APPROVED EQUAL.

SOIL AMENDMENTS TO BE PROVIDED PER NOTES AND SPECIFICATIONS.

EXISTING SOIL SHALL BE REMOVED FROM ENTIRE PLANTING AREAS COMPLETELY. CONTRACTOR TO PROVIDE A SOIL MIX AND INCORPORATE SOIL MIXTURE INTO THE LANDSCAPE BED AREAS ACCORDING TO PLAN.

MULCH SHALL BE PROVIDED PER DETAIL TO ALL BEDS AND TREE WELLS.

PLANT SCHEDULE

QTY	LABEL	COMMON NAME	SCIENTIFIC NAME	SIZE	NOTES
		SHADE TREES			
3	CE	Cedar Elm	*Ulmus crassifolia*	3" cal.	12' ht., 4' spread, matching
		ORNAMENTAL TREES			
9	MP	Mexican Plum	*Prunus mexicana*	30 gal.	8' ht., 4' spread min.
9	RB	Texas Redbud	*Cercis canadensis var. texana*	30 gal.	8' ht., 4' spread, 3 trunk min.
		SHRUBS			
61	CF	Cardinal Flower	*Lobelia cardinalis*	3 gal.	full, 42" o.c.
182	GM	Gulf Muhly	*Muhlenbergia capillaris*	3 gal.	full, 36" o.c.
921	SR	Soft Rush	*Juncus effusus*	1 gal.	full, 24" o.c.
82	SW	Spiderwort	*Tradescantle humilis*	3 gal.	full, 30" o.c.
		GROUNDCOVER/VINES/GRASS			
480	FF	Frogfruit	*Phyla nodiflora var. incisa*	4" pots	full, 6" o.c.
217	LS	New Gold Lantana/Black Eyed Susan Mix	*Lantana x hybrida'New Gold' / Rudbeckia hirta*	1 gal.	full, 18" o.c.
525	MS	May Night Salvia	*Salvia sylvestris 'May Night'*	1 gal.	full, 18" o.c.
150	PCF	Purple Coneflower	*Echinacea purpurea*	1 gal.	full, 18" o.c.
535	SPF	Silver Ponyfoot	*Dichondra argenta*	1 gal.	full, 12" o.c.
200	TS	Texas Sedge	*Carex texansis*	1 gal.	full, 18" o.c.
		Bermuda Solid Sod	*Cynodon dactylon*		

Plant list is an aid to bidders only. Contractor shall verify all quantities on plan. All heights and spreads are minimums. Trees shall have a strong central leader and be of matching specimens. All plant material shall meet or exceed remarks as indicated.

GRAPHIC SCALE
0 20 40 FEET
Scale 1"=20' - 0"

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

LANDSCAPE
LANDSCAPE PLAN
STA 28+00 TO END

F&N JOB NO. LEW21241
DATE MAY 2024
DESIGNED AWR
DRAWN AWR
REVISED AWR
CHECKED AWR
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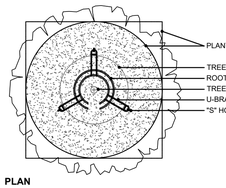
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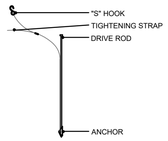
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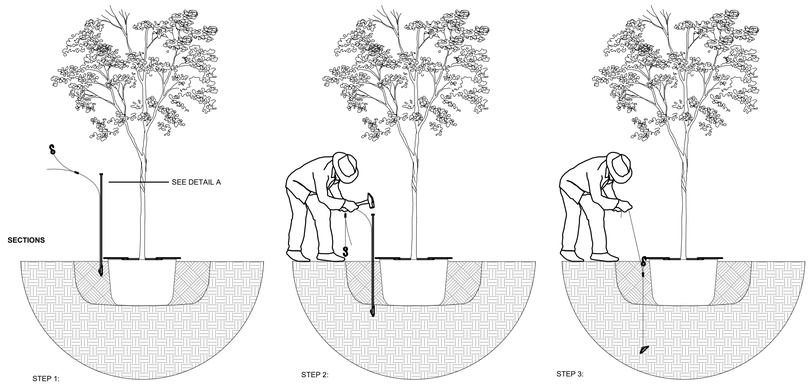


PLAN



DETAIL A

ROOT ANCHOR ITEM#	ROOT BALL & CONTAINER SIZE	ANCHOR INSTALLATION DEPTH	QUANTITY & ANCHOR SIZE
15-BG	10 / 15 Gallon or 17" root ball	12 - 18" Minimum Depth	3 - V68 Anchors
30-BG	20 / 30 Gallon or 22" root ball	18 - 24" Minimum Depth	3 - V68 Anchors
45/65-BG	45 / 65 Gallon or 27-30" root ball	24 - 30" Minimum Depth	3 - V68 Anchors
100-BG	95 / 100 Gallon or 36" root ball	30 - 36" Minimum Depth	3 - V68 Anchors
150-BG	150 Gallon or 42" root ball	48" Minimum Depth	3 - V68 Anchors
200-BG	200 Gallon or 48" root ball	48" Minimum Depth	3 - V68 Anchors
300-BG	300 Gallon or 58" root ball	48" Minimum Depth	3 - V68 Anchors
CUSTOM-BG	Root Balls larger than 60"	TBD	



STEP 1:

- SET TREE IN PLANTING PIT
- PLACE ANCHOR WITH RING SIDE DOWN AGAINST TOP OF ROOT BALL
- CENTER ROOT ANCHOR'S INNER RING(S) AROUND TRUNK OF TREE
- ALIGN DRIVE ROD AS CLOSE AS POSSIBLE TO OUTSIDE EDGE OF U-BRACKET

STEP 2:

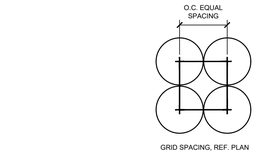
- DRIVE ANCHOR STRAIGHT DOWN INTO UNDISTURBED SUBBASE SOIL
- SEE CHART FOR RECOMMENDED DEPTHS PER TREE SIZE

STEP 3:

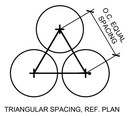
- REMOVE DRIVE ROD
- REPEAT STEPS 1 & 2 FOR ALL THREE (3) ANCHOR LOCATIONS
- PULL BACK ON STRAP APPROXIMATELY 3" FOR THE V-68 ANCHOR, OR 6" TO 7" FOR THE V-88 ANCHOR TO SET ANCHOR INTO A HORIZONTAL OR LOCKED POSITION. A FULCRUM MAY BE REQUIRED TO ASSIST IN SETTING THE ANCHOR.
- PLACE "S" HOOK OVER THE END OF THE U-BRACKET.
- PULL STRAP UP VERTICALLY UNTIL ROOT ANCHOR RINGS BITE INTO THE TOP OF THE ROOT BALL AND U-BRACKETS ARE SETTING FLUSH ON TOP OF THE ROOT BALL.
- TIE EXCESS STRAP OFF TO THE U-BRACKET ALLOWING ENOUGH REMAINING STRAP TO ADJUST TREE, IF NECESSARY

TREE STAKE SOLUTIONS, LLC.
9973 FM 521 Road
Rosharon, Texas 77583
www.treestakesolutions.com
Phone: 281-778-1400
Mobile: 903-676-6143
Fax: 281-778-1425

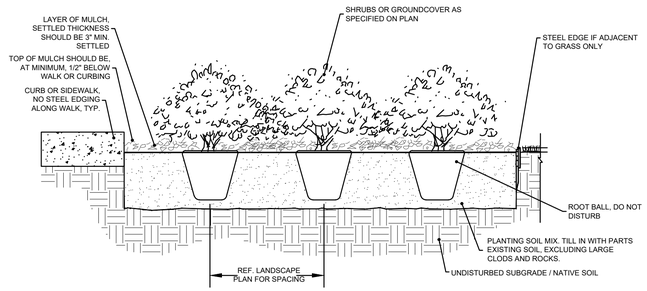
1 TREE STAKING
N.T.S.



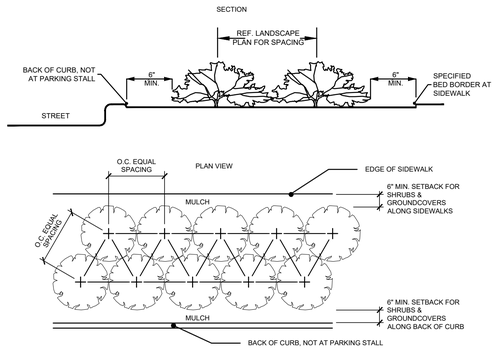
GRID SPACING, REF. PLAN



TRIANGULAR SPACING, REF. PLAN



2 SHRUB PLANTING
N.T.S.



3 SHRUB SPACING AND PLANTING AT BACK OF CURB
N.T.S.

UB 48-2 Specifications
48" DeepRoot® Tree Root Barrier

Specified tree root barrier is a mechanical barrier and root deflector used to prevent tree roots from damaging hardscapes and landscapes. Assembled in 24" (609 mm) long modules to create varying lengths for linear applications, or perimeter surround applications at minimum 8' (243cm) diameter.

A. Materials

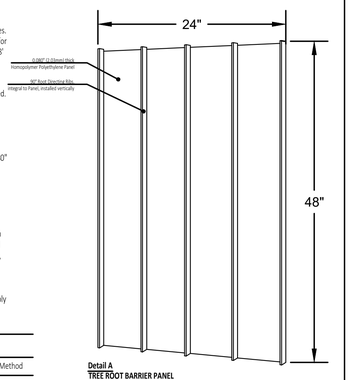
1. The contractor shall furnish and install tree root barrier as specified. The root barrier shall be either product #UB 36-2 or UB 48-2 as manufactured by DeepRoot® Green Infrastructure, LLC, 530 Washington Street, San Francisco, CA, www.deeproot.com (800.458.7668).

2. Root barrier shall be recyclable, black, extruded panels with 0.80" (2.03 mm) wall thickness in modules 24" (609 mm) long and either 36" (910 mm) or 48" (1220 mm) deep.

3. Root barrier shall be manufactured with 100% reprocessed homopolymer polyethylene with added ultraviolet inhibitors.

4. Root barrier shall be comprised of 24" (609 mm) modules. Each panel shall have no less than four (4) Molded Integral Vertical Root Directing Ribs of a minimum 0.080" (2.03 mm) thickness, protruding 1/2" (12.7 mm) at 90° from interior of the barrier panel, spaced 6" (152.4 mm) apart. (See Detail A)

5. Root barrier shall have an integrated Joining System for assembly by sliding one panel into another.



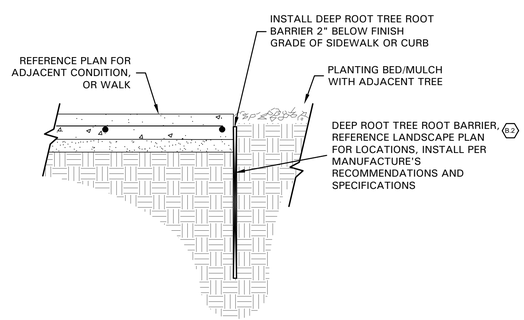
Detail A
TREE ROOT BARRIER PANEL

Material and Thickness	Homopolymer Polyethylene 0.080 inch Extruded	
Properties	Typical Value	ASTM Test Method
Tensile stress @ yield	3800 PSI	D638
Elongation @ break %	10%	D638
Tensile Modulus	155,000 PSI	D638
Notched Izod Impact	0.4 - 4.0	D256A
Flexual Modulus 73 ‡ PSI	145,000	D790
Hardness Shore	P66	D2240

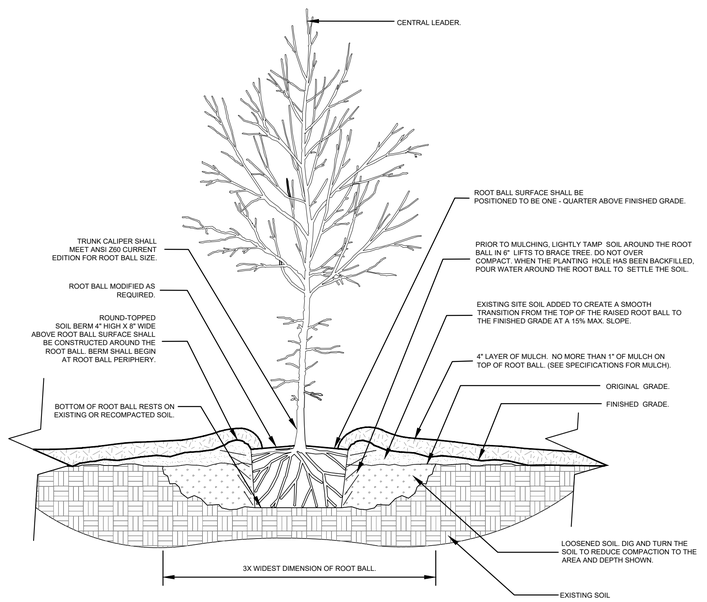
deeproot

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4 TREE ROOT CONTROL BARRIER
N.T.S.



5 TREE ROOT CONTROL BARRIER
N.T.S.



6 TREE PLANTING
N.T.S.

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Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
LANDSCAPE
LANDSCAPE DETAILS

FAN JOB NO. LEW21241
DATE MAY 2024
DESIGNED AWR
DRAWN AWR
REVISED AWR
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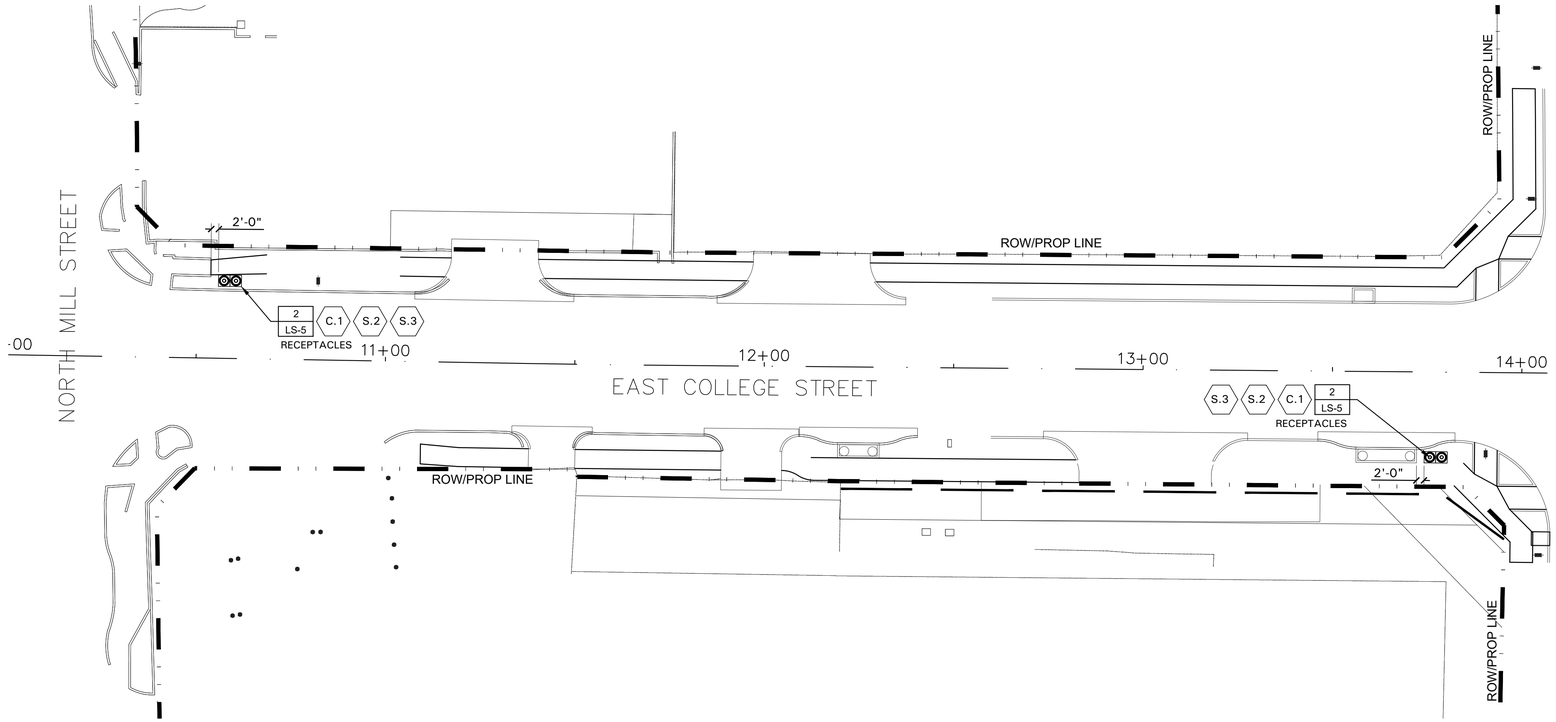
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SHEET LP-7
SEQ. 105

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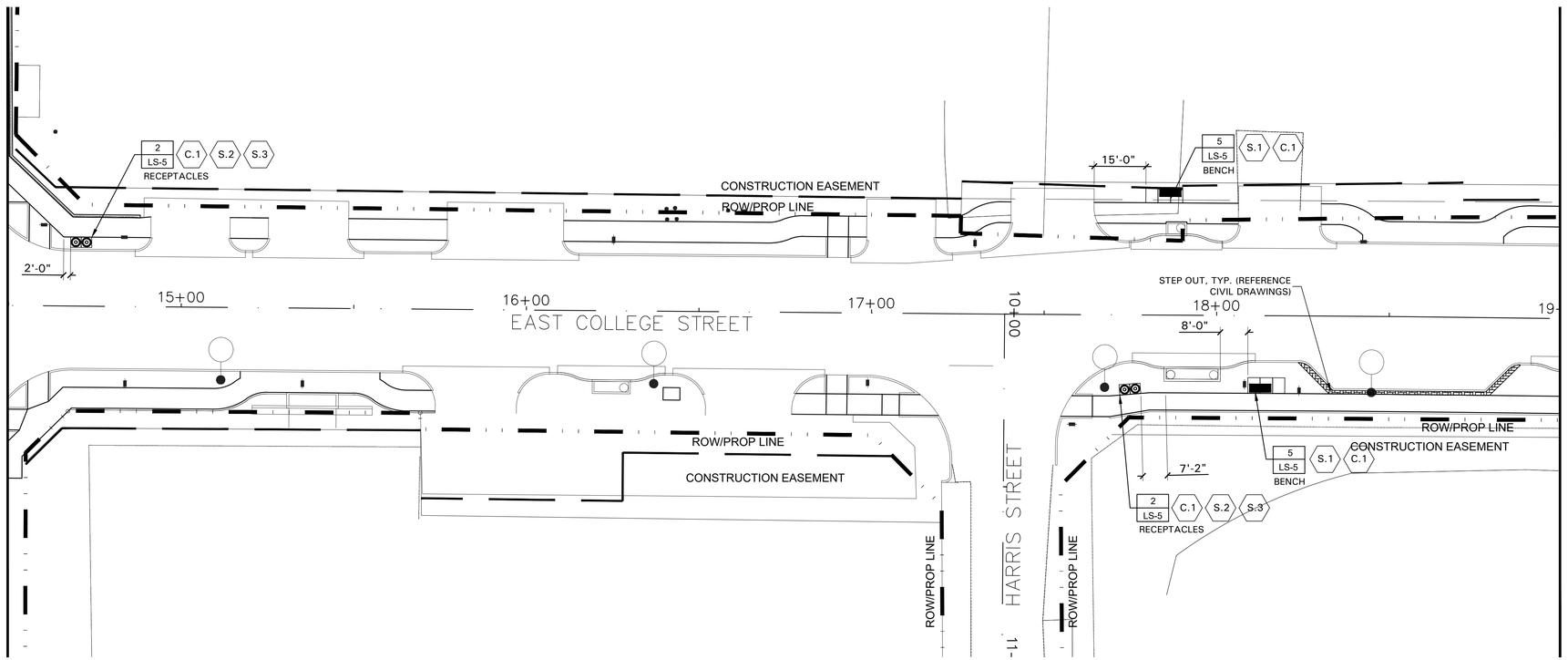


NOTE TO CONTRACTOR:

1. PLAN SHEETS DO NOT SHOW EXISTING AND PROPOSED UTILITIES FOR CLARITY ONLY. CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO INSTALLATION. CONTRACTOR IS TO USE EXTREME CAUTION IN DIGGING AND TRENCHING TO AVOID EXISTING AND PROPOSED UTILITIES.
2. CONTRACTOR SHALL FIELD STAKE THE SITE FURNISHING LOCATIONS PRIOR TO INSTALLATION. CONTRACTOR SHALL VERIFY PLACEMENT WITH OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

LEGEND: SITE FURNISHINGS

- RECEPTACLES ON CONCRETE PAD
- BENCH ON CONCRETE PAD WITH COMPANION SEAT
- INDICATES DETAIL NUMBER REFERENCE: 5
- INDICATES SHEET NUMBER REFERENCE: LS-4
- INDICATES MATERIAL SCHEDULE REFERENCE (SEE LS-3): S.1



GRAPHIC SCALE
0 20 40 FEET
Scale 1"=20' - 0"

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
LANDSCAPE
SITE FURNISHING PLAN
BEGIN TO STA 19+00

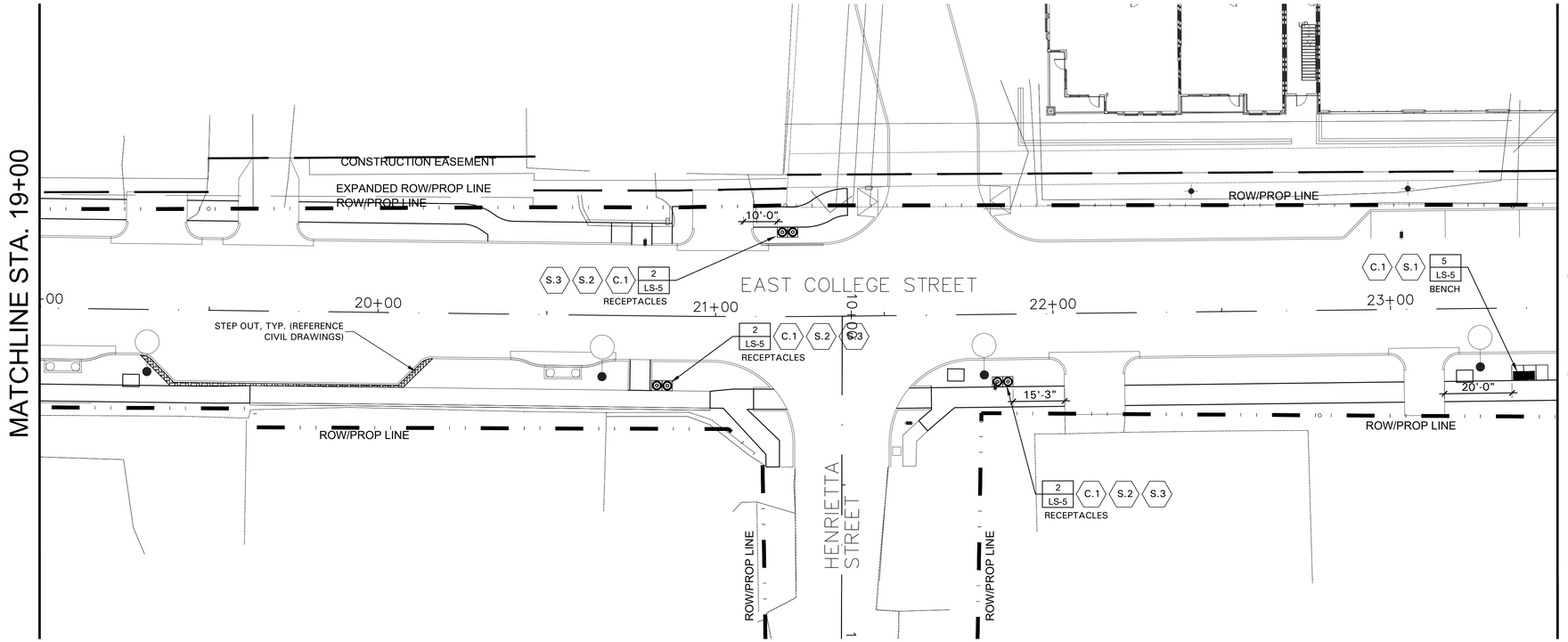
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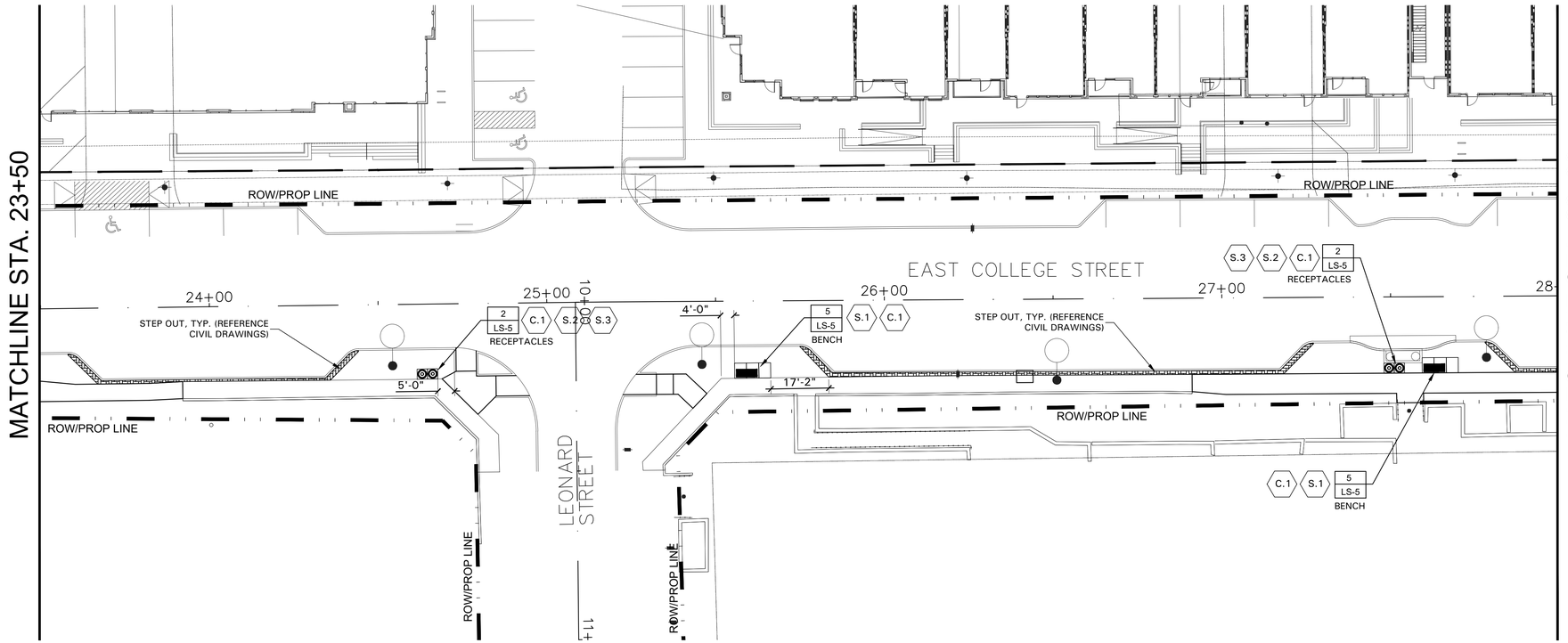
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DATE MAY 2024
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DRAWN AWR
REVISED AWR
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET LS-1
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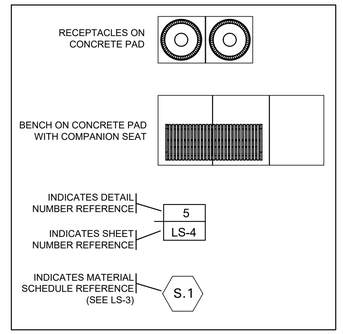




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2. CONTRACTOR SHALL FIELD STAKE THE SITE FURNISHING LOCATIONS PRIOR TO INSTALLATION. CONTRACTOR SHALL VERIFY PLACEMENT WITH OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

LEGEND: SITE FURNISHINGS



GRAPHIC SCALE
0 20 40 FEET
Scale 1"=20' - 0"

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

LANDSCAPE
SITE FURNISHING PLAN
STA 19+00 TO STA 28+00

NO.	ISSUES	BY	DATE

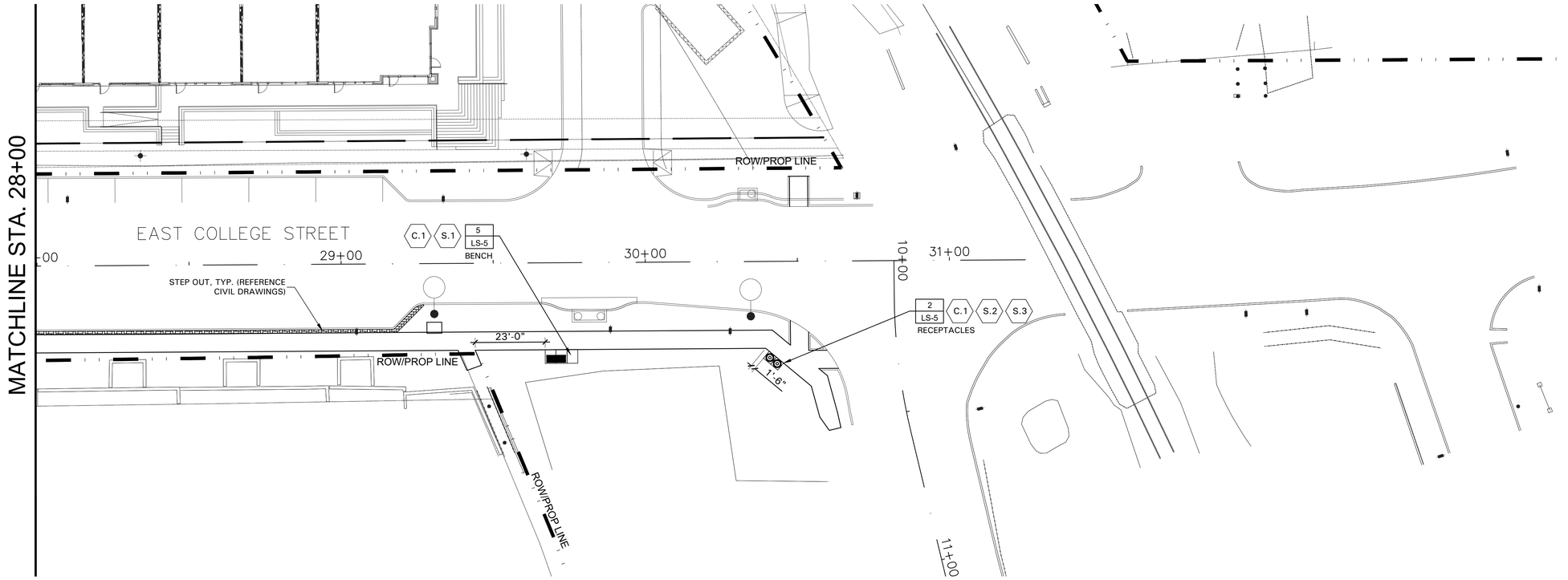
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Date: $DATE$

Office:$LOCATION$ $ACCOUNT$ Date:$DATE$ User:$USERNAME$ File:$FILEL$



GENERAL SITEWORK NOTES

1. CONTRACTOR SHALL BE FAMILIAR WITH EXISTING SITE CONDITIONS, UNDERGROUND UTILITIES, PIPES AND STRUCTURES. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY OF ANY COST INCURRED DUE TO BODILY INJURY AND OR DAMAGE OF OWNER'S PROPERTY OR SAID UTILITIES. CONTRACTOR RESPONSIBLE FOR CONTACTING UTILITY COMPANIES BEFORE EXCAVATION.
2. ANY CONFLICTING INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
3. DO NOT WILLFULLY PROCEED WITH CONSTRUCTION AS DESIGNED WITH UNKNOWN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY HAVE NOT BEEN KNOWN DURING DESIGN. SUCH CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE. CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION WITH HIS SUBCONTRACTORS TO ACCOMPLISH SCOPE OF WORK. CONTRACTOR SHALL COORDINATE CONSTRUCTION WITH OTHER TRADES WORKING ON THE SITE SIMULTANEOUSLY.
5. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING IRRIGATION AND LANDSCAPE ON SITE FROM ANY DAMAGE. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING CONDITIONS AND SHALL PERFORM FIELD MEASUREMENTS PRIOR TO FABRICATION AND OR PURCHASE OF ANY MATERIAL AND SHALL CONTACT THE LANDSCAPE ARCHITECT SHOULD EXISTING CONDITIONS BE DIFFERENT FROM THE DESIGN DRAWINGS FOR THIS PROJECT. CONFLICTS ARISING DUE TO LACK OF COORDINATION SHALL BE THE RESPONSIBILITY AND EXPENSE OF THE CONTRACTOR.
7. ANY REQUIRED CHANGES TO THE DRAWINGS RESULTING FROM THE ACCEPTANCE OF CONTRACTORS ALTERNATES OR SUBSTITUTIONS SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT OR THE OWNER FOR APPROVAL.
8. CONTRACTOR SHALL COORDINATE STORING OF MATERIALS, PARKING OF VEHICLES AND RESTRICTIONS OF WORK WITH THE OWNER. UNDER NO CIRCUMSTANCE SHALL AN Y CONTRACTOR STORE MATERIALS OR PARK VEHICLES UNDER THE CANOPY OF EXISTING TREES.
9. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE ORDINANCES AND LOCAL CODES. REQUIRED PERMITS SHALL BE OBTAINED BY THE CONTRACTOR.
10. ALL CONSTRUCTION COVERED BY THESE CONTRACT DOCUMENTS SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF ALL APPLICABLE CITY AND OSHA CODES AND STANDARDS INCLUDING, BUT NOT LIMITED TO, THE UNIFORM BUILDING CODE, ENACTED BY THE INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS, MOST RECENT EDITIONS, AND AMENDMENTS AS ADOPTED BY THE LOCAL GOVERNMENT.
11. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND SUPERVISION NECESSARY TO ACCOMPLISH THE WORK AS SHOWN AND NOTED ON THE DRAWINGS UNLESS OTHERWISE SPECIFIED.
12. CONTRACTORS AND SUBCONTRACTORS ARE RESPONSIBLE FOR REMOVAL OF TRASH AND REPAIR OF HAZARDOUS CONDITIONS ON A DAILY BASIS BY END OF WORK DAY. REMOVE ALL EXCESSIVE DIRT BUILD UP ON HAUL ROUTE AS REQUIRED AND BY NOON EVERY FRIDAY.
13. WEEKEND WORK PERMISSIBLE WITH DRY WEATHER CONDITIONS AND WITH PROVISION FOR STREET CLEANING AT THE END OF THE WORK DAY.
14. ALL TRANSPLANT TREES TO BE TRANSPLANTED BY ENVIRONMENTAL DESIGN, INC PRIOR TO CONSTRUCTION OF LANDSCAPE.
15. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO FINAL APPROVAL, CONTRACTOR SHALL THOROUGHLY CLEAN UP THE PROJECT SITE OF ALL TRASH, SCRAP, BRICK AND STONE PIECES, MORTAR AND LITTER ETC. REPAIR ALL DAMAGE TO FINISH GRADE INCLUDING TAILINGS FROM EXCAVATIONS, WHEEL RUTS ETC.

HARDSCAPE NOTES

1. THESE PLANS INDICATED APPROXIMATE LOCATIONS OF THE CONCRETE SIDEWALKS, REFERENCE CIVIL FOR OTHER FLATWORK AND HARDSCAPE.
2. ALL SITE FEATURES SHALL BE STAKED IN THE FIELD BY THE CONTRACTOR AND APPROVED BY THE OWNER AND/OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION AND CONSTRUCTION. SET ELEVATIONS TO PROVIDE POSITIVE DRAINAGE FROM PROPERTY LINE TO CURB.
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18. TIE ALL SIDEWALKS INTO EXISTING WALKS WITH A SMOOTH TRANSITION AND TO MATCH EXISTING WALKS IN COLOR AND FINISH.
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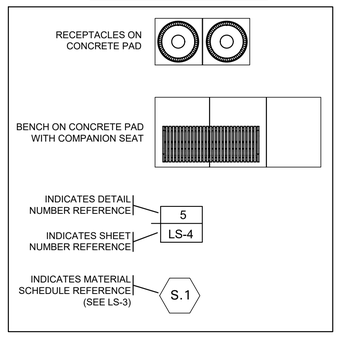
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2. ALL PROPOSED GRADES INDICATED ARE FINISHED GRADES. THE PROPOSED PAVING IS SHOWN TO FINISH GRADE AND THE CONTRACTOR IS RESPONSIBLE FOR EXCAVATIONS AND IMPROVEMENTS AS PART OF THE OVERALL MASS GRADING.
3. ALL LAND FORMS AND SWALES SHALL BE GRADED TO BE A SMOOTH, FLOWING, ROUNDED SURFACE PROVIDING POSITIVE DRAINAGE AND VISUAL LAND FORM CONTINUITY.
4. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL CLEARED BRUSH, DEBRIS, ETC FROM THE LIMITS OF CONSTRUCTION. DISPOSE OF MATERIALS OFF SITE AS DIRECTED BY OWNERS REPRESENTATIVE OR CONSTRUCTION PROJECT MANAGER.
5. EXISTING TREES WHICH ARE TO BE PRESERVED SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. CONSTRUCTION EQUIPMENT SHALL NOT OPERATE, PARK OR BE STOPPED UNDER THE CANOPIES OF EXISTING TREES.
6. WHEN CLEARING FOR GRADING, THE CONTRACTOR SHALL COORDINATE TREE PRESERVATION WITH THE LANDSCAPE ARCHITECT, CONSTRUCTION PROJECT MANAGER AND OWNERS REPRESENTATIVE.
7. GRADING FOR THE IMPROVEMENTS SHALL OCCUR AS DIRECTED BY LANDSCAPE ARCHITECT AND CIVIL ENGINEER WITH THE FOLLOWING GUIDELINES:
   a. ALL WALKS SHALL HAVE A MAXIMUM CROSS SLOPE OF 1.5% IN THE DIRECTION OF THE DOWNHILL SIDE.
   b. LONGITUDINAL SLOPE OF THE WALKS AND OR TRAILS SHALL BE NO GREATER THAN 4.5%, UNLESS OTHERWISE NOTED.
   c. ALL GRADES SHALL BE FINISHED TO A SMOOTH, FLOWING CONTOUR, MAINTAINING EXISTING FLOW PATTERNS UNLESS DIRECTED OTHERWISE WITH A MINIMUM SLOPE OF 1.5%.
8. REFER TO LAYOUT SHEETS FOR ALL LAYOUT INFORMATION.
9. REFER TO CIVIL ENGINEERING SETS FOR STORM DRAINAGE AND UTILITY INFORMATION.
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11. NOTIFY OWNER OF ANY MANHOLE OR UTILITY BOX ADJUSTMENTS REQUIRED PRIOR TO PLACING ANY FILL.
12. AT LOCATIONS WHERE LIME, CONCRETE, OR OTHER FOREIGN MATTER HAS PENETRATED OR BEEN MIXED WITH EARTH, REMOVE DAMAGED EARTH AND REPLACE WITH CLEAN MATERIAL. REMOVE EXCESS STOCKPILES MATERIALS, DEBRIS, WASTE AND OTHER MATERIAL FROM SITE AND LEAVE WORK IN CLEAN, FINISHED CONDITION FOR FINAL ACCEPTANCE. CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF DEBRIS AND EXCESS MATERIALS.

NOTE TO CONTRACTOR:

1. PLAN SHEETS DO NOT SHOW EXISTING AND PROPOSED UTILITIES FOR CLARITY ONLY. CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO INSTALLATION. CONTRACTOR IS TO USE EXTREME CAUTION IN DIGGING AND TRENCHING TO AVOID EXISTING AND PROPOSED UTILITIES.
2. CONTRACTOR SHALL FIELD STAKE THE SITE FURNISHING LOCATIONS PRIOR TO INSTALLATION. CONTRACTOR SHALL VERIFY PLACEMENT WITH OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

LEGEND: SITE FURNISHINGS





GRAPHIC SCALE

0 20 40 FEET

Scale 1"=20' - 0"

AWR Designs, LLC
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Aledo, Texas 76008
amanda@awr-designs.com
c. 512.517.5589

REGISTERED LANDSCAPE ARCHITECT
AMANDA W. RICHARDSON
2754
STATE OF TEXAS

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

LANDSCAPE
SITE FURNISHING PLAN
STA 28+00 TO END

NO.	ISSUES	BY	DATE

FAN JOB NO. LEW21241
DATE MAY 2024
DESIGNED AWR
DRAWN AWR
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET LS-3

SEQ. 108

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Project: $PROJECT$

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GENERAL SITEWORK NOTES

1. CONTRACTOR SHALL BE FAMILIAR WITH EXISTING SITE CONDITIONS, UNDERGROUND UTILITIES, PIPES AND STRUCTURES. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY OF ANY COST INCURRED DUE TO BODILY INJURY AND OR DAMAGE OF OWNER'S PROPERTY OR SAID UTILITIES. CONTRACTOR RESPONSIBLE FOR CONTACTING UTILITY COMPANIES BEFORE EXCAVATION.

2. ANY CONFLICTING INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.

3. DO NOT WILLFULLY PROCEED WITH CONSTRUCTION AS DESIGNED WITH UNKNOWN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY HAVE NOT BEEN KNOWN DURING DESIGN. SUCH CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE. CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.

4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION WITH HIS SUBCONTRACTORS TO ACCOMPLISH SCOPE OF WORK. CONTRACTOR SHALL COORDINATE CONSTRUCTION WITH OTHER TRADES WORKING ON THE SITE SIMULTANEOUSLY.

5. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING IRRIGATION AND LANDSCAPE ON SITE FROM ANY DAMAGE. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING CONDITIONS AND SHALL PERFORM FIELD MEASUREMENTS PRIOR TO FABRICATION AND OR PURCHASE OF ANY MATERIAL AND SHALL CONTACT THE LANDSCAPE ARCHITECT SHOULD EXISTING CONDITIONS BE DIFFERENT FROM THE DESIGN DRAWINGS FOR THIS PROJECT. CONFLICTS ARISING DUE TO LACK OF COORDINATION SHALL BE THE RESPONSIBILITY AND EXPENSE OF THE CONTRACTOR.

7. ANY REQUIRED CHANGES TO THE DRAWINGS RESULTING FROM THE ACCEPTANCE OF CONTRACTORS ALTERNATES OR SUBSTITUTIONS SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT OR THE OWNER FOR APPROVAL.

8. CONTRACTOR SHALL COORDINATE STORING OF MATERIALS, PARKING OF VEHICLES AND RESTRICTIONS OF WORK WITH THE OWNER. UNDER NO CIRCUMSTANCE SHALL AN Y CONTRACTOR STORE MATERIALS OR PARK VEHICLES UNDER THE CANOPY OF EXISTING TREES.

9. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE ORDINANCES AND LOCAL CODES. REQUIRED PERMITS SHALL BE OBTAINED BY THE CONTRACTOR.

10. ALL CONSTRUCTION COVERED BY THESE CONTRACT DOCUMENTS SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF ALL APPLICABLE CITY AND OSHA CODES AND STANDARDS INCLUDING, BUT NOT LIMITED TO, THE UNIFORM BUILDING CODE, ENACTED BY THE INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS, MOST RECENT EDITIONS, AND AMENDMENTS AS ADOPTED BY THE LOCAL GOVERNMENT.

11. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND SUPERVISION NECESSARY TO ACCOMPLISH THE WORK AS SHOWN AND NOTED ON THE DRAWINGS UNLESS OTHERWISE SPECIFIED.

12. CONTRACTORS AND SUBCONTRACTORS ARE RESPONSIBLE FOR REMOVAL OF TRASH AND REPAIR OF HAZARDOUS CONDITIONS ON A DAILY BASIS BY END OF WORK DAY. REMOVE ALL EXCESSIVE DIRT BUILD UP ON HAUL ROUTE AS REQUIRED AND BY NOON EVERY FRIDAY.

13. WEEKEND WORK PERMISSIBLE WITH DRY WEATHER CONDITIONS AND WITH PROVISION FOR STREET CLEANING AT THE END OF THE WORK DAY.

14. ALL TRANSPLANT TREES TO BE TRANSPLANTED BY ENVIRONMENTAL DESIGN, INC PRIOR TO CONSTRUCTION OF LANDSCAPE.

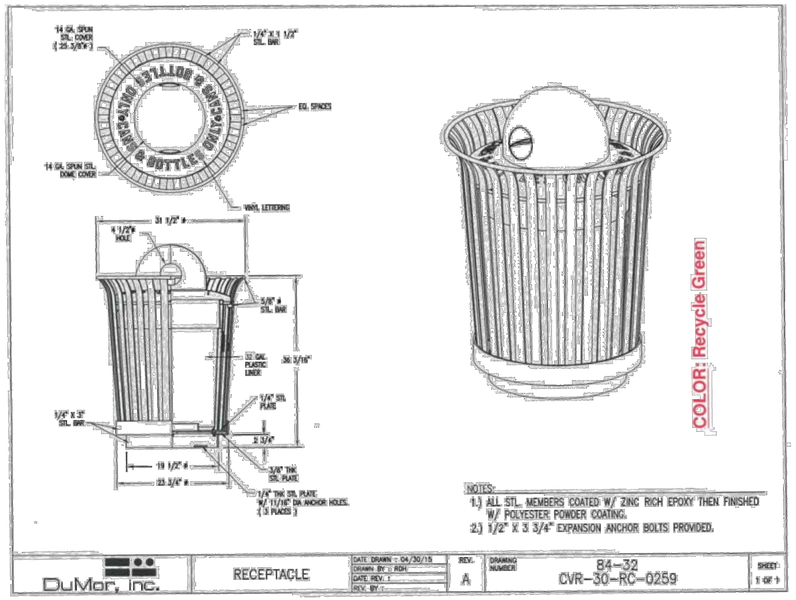
15. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO FINAL APPROVAL, CONTRACTOR SHALL THOROUGHLY CLEAN UP THE PROJECT SITE OF ALL TRASH, SCRAP, BRICK AND STONE PIECES, MORTAR AND LITTER ETC. REPAIR ALL DAMAGE TO FINISH GRADE INCLUDING TAILINGS FROM EXCAVATIONS, WHEEL RUTS ETC.

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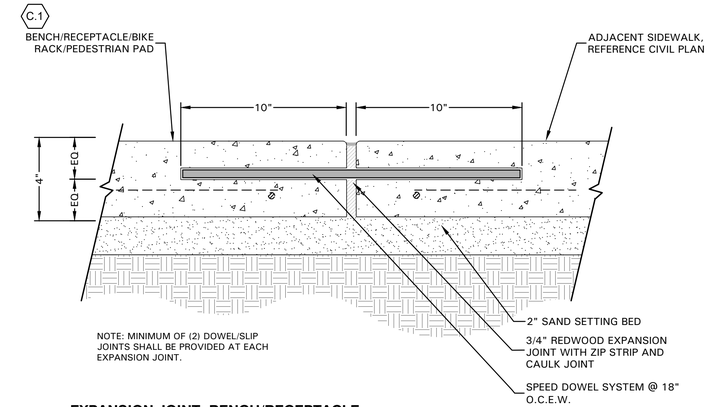


NOTES: CONTRACTOR TO PROVIDE TWO RECEPTACLES AT SPECIFIED LOCATIONS. ONE RECEPTACLE SHALL BE BLACK WITH STANDARD FLAT SPUN-STEEL COVER. THE SECOND SHALL BE RECYCLE GREEN WITH DM-DOME TOP COVER TO MATCH EXISTING RECYCLE BINS IN THE CITY OF LEWISVILLE.

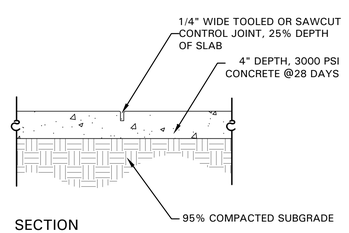
1 RECEPTACLE-RECYLE
3/4" = 1'-0"

Materials Schedule

Material	Description/Model	Color/Finish	Contact/Rep	Remarks
Concrete Finish				
C.1	CONCRETE PADS FOR SITE FURNISHINGS	MEDIUM BROOM		SAMPLES TO BE PROVIDED TO OWNER FOR SELECTION PRIOR TO INSTALLATION. CONTRACTOR TO MATCH EXISTING FINIS USED ON THE MAIN STREET AND MILL STREET PROJECT WITHIN THE CITY OF LEWISVILLE.
Edging and Barriers				
B.1	STEEL EDGE - 3/16" WIDTH, 4" HEIGHT, 8' LENGTH (LENGTH WILL VARIES PER PLAN)	BLACK		SAMPLES TO BE PROVIDED TO OWNER FOR SELECTION PRIOR TO INSTALLATION
B.2	DEEP ROOT TREE ROOT BARRIER- MODEL UB 48-2: 48" x 24"		DeepRoot Green Infrastructure, LLC 101 Montgomery Street, Suite 2850 San Francisco, CA 94104 info@deeproot.com Tel: 415 781 9700 Toll Free: 800 458 7668	
Soil and Mulch				
R.1	PREMIUM FINE HARDWOOD MULCH		LIVING EARTH 972-869-4332	SAMPLES TO BE PROVIDED TO OWNER FOR SELECTION PRIOR TO INSTALLATION
R.2	PLANTING/BED SOIL MIX- USE TREE AND SHRUB MIX OR LANDSCAPER'S MIX		LIVING EARTH 972-869-4332	SAMPLES TO BE PROVIDED TO OWNER FOR SELECTION PRIOR TO INSTALLATION
Site Furnishings				
S.1	DUMOR 6' CAST BENCH STEEL SEAT- MODEL 58 SERIES	BLACK	PAUL E. ALLEN COMPANY, INC. Toll Free: 888-877-4887 P.O. Box 271003 Flower Mound, TX 75027-1003 info@pauleallenco.com pauleallenco.com	CONTRACTOR TO MATCH EXISTING BENCHES USED ON THE MAIN STREET AND MILL STREET PROJECT WITHIN THE CITY OF LEWISVILLE.
S.2	DUMOR 32-GALLON STEEL RECEPTACLE- MODEL 84-32-FTO	BLACK	PAUL E. ALLEN COMPANY, INC. Toll Free: 888-877-4887 P.O. Box 271003 Flower Mound, TX 75027-1003 info@pauleallenco.com pauleallenco.com	CONTRACTOR TO MATCH EXISTING RECEPTACLES USED ON THE MAIN STREET AND MILL STREET PROJECT WITHIN THE CITY OF LEWISVILLE.
S.3	DUMOR 32-GALLON STEEL RECEPTACLE - MODEL 84-32- WITH DM DOME AND CVR-30-RC-0259	RECYCLE GREEN WITH DM DOME TOP COVER AND BOTTLES AND CAN ONLY COVER.	PAUL E. ALLEN COMPANY, INC. Toll Free: 888-877-4887 P.O. Box 271003 Flower Mound, TX 75027-1003 info@pauleallenco.com pauleallenco.com	CONTRACTOR TO MATCH EXISTING RECYCLE RECEPTACLES USED ON THE MAIN STREET AND MILL STREET PROJECT WITHIN THE CITY OF LEWISVILLE.



2 EXPANSION JOINT- BENCH/RECEPTACLE PAD AT CONCRETE WALK
3" = 1'-0"



3 CONTROL JOINT
1" = 1'-0"

AWR Designs, LLC
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Aledo, Texas 76008
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REGISTERED LANDSCAPE ARCHITECT
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2754
STATE OF TEXAS

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

LANDSCAPE
SITE FURNISHING DETAILS
BEGIN TO STA 19+00

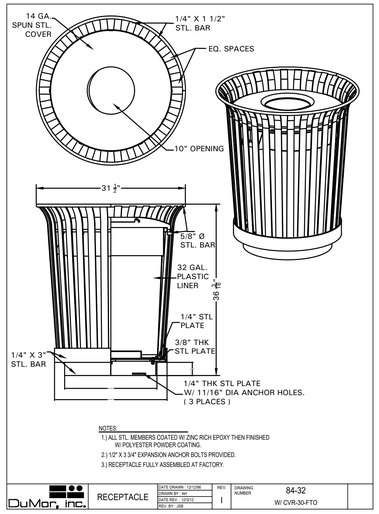
NO.	ISSUES	BY	DATE

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DATE MAY 2024
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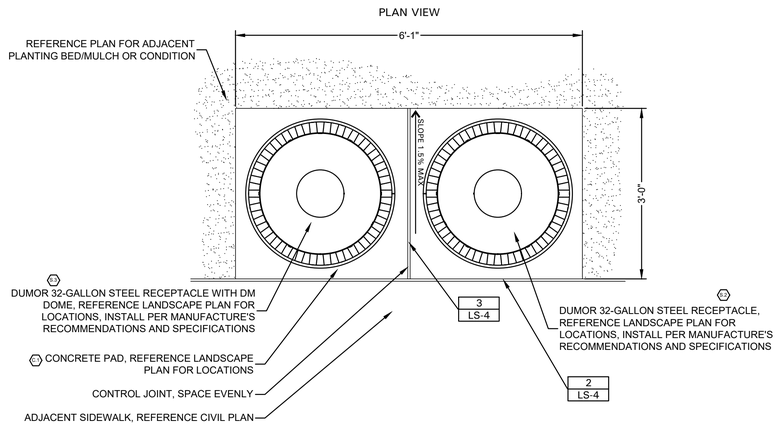
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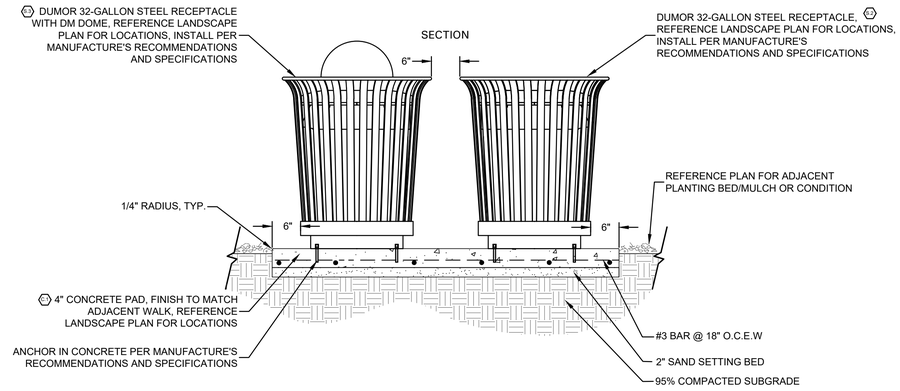


NOTES: CONTRACTOR TO PROVIDE TWO RECEPTACLES AT SPECIFIED LOCATIONS. ONE RECEPTACLE SHALL BE BLACK WITH STANDARD FLAT SPUN-STEEL COVER. THE SECOND SHALL BE RECYCLE GREEN WITH DM-DOME TOP COVER TO MATCH EXISTING RECYCLE BINS IN THE CITY OF LEWISVILLE.

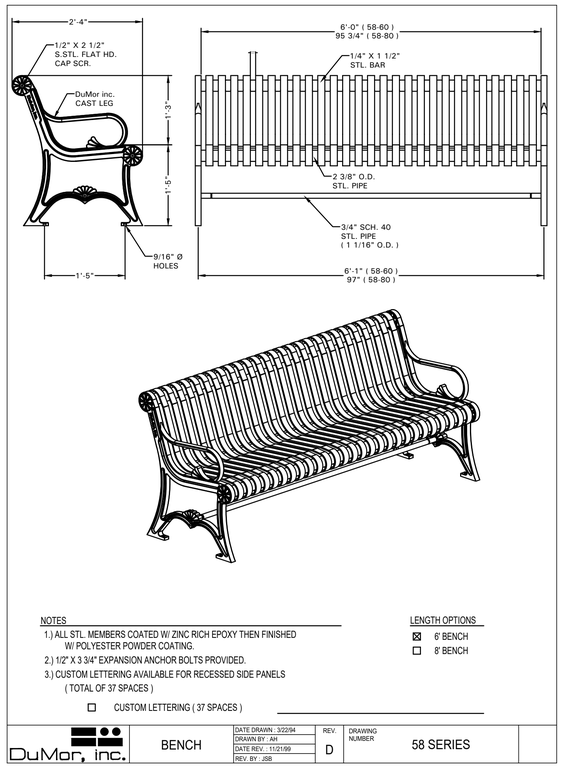
1 RECEPTACLE
3/4" = 1'-0"



2 RECEPTACLES ON CONCRETE PAD- PLAN VIEW
3/4" = 1'-0"



3 RECEPTACLES ON CONCRETE PAD- SECTION VIEW
3/4" = 1'-0"

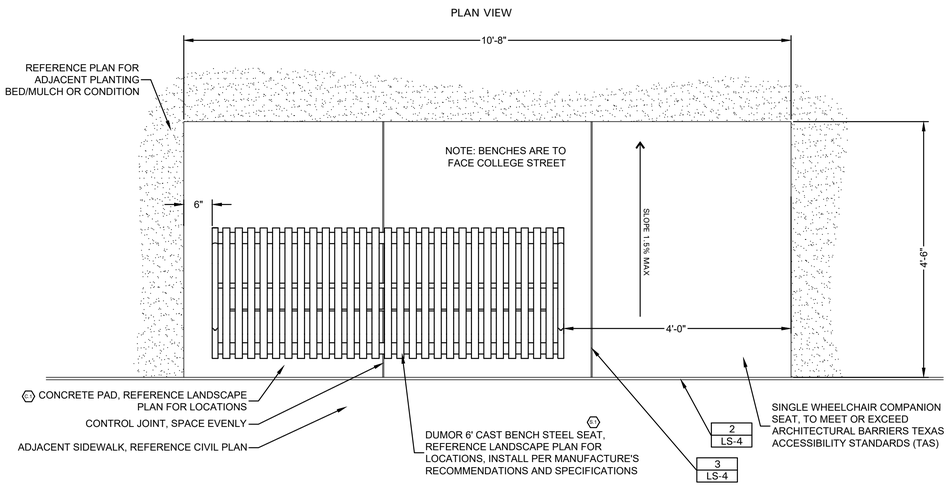


NOTES
1.) ALL STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
2.) 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED.
3.) CUSTOM LETTERING AVAILABLE FOR RECESSED SIDE PANELS (TOTAL OF 37 SPACES)
☐ CUSTOM LETTERING (37 SPACES)

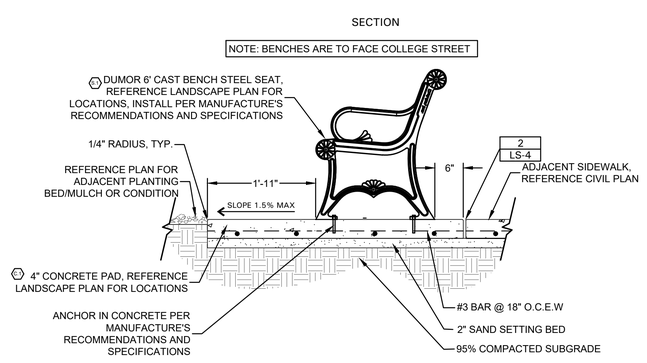
LENGTH OPTIONS
☒ 6' BENCH
☐ 8' BENCH

DuMor, inc. | BENCH | DATE DRAWN : 3/22/94 | DRAWN BY : AH | DATE REV. : 11/21/99 | REV. BY : JSB | REV. D | DRAWING NUMBER 58 SERIES

4 BENCH
3/4" = 1'-0"



5 BENCH ON CONCRETE PAD WITH COMPANION SEAT- PLAN VIEW
3/4" = 1'-0"



6 BENCH ON CONCRETE PAD WITH COMPANION SEAT- SECTION VIEW
3/4" = 1'-0"

AWR Designs, LLC
P.O. Box 1746
Aledo, Texas 76008
amanda@awr-designs.com
c. 512.517.5589

REGISTERED LANDSCAPE ARCHITECT
AMANDA W. RICHARDSON
2754
STATE OF TEXAS

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET

LANDSCAPE
SITE FURNISHING DETAILS
BEGIN TO STA

NO.	ISSUES	BY	DATE	FILE NAME

F&N JOB NO. LEW21241
DATE MAY 2024
DESIGNED AWR
DRAWN AWR
REVISED AWR
CHECKED AWR
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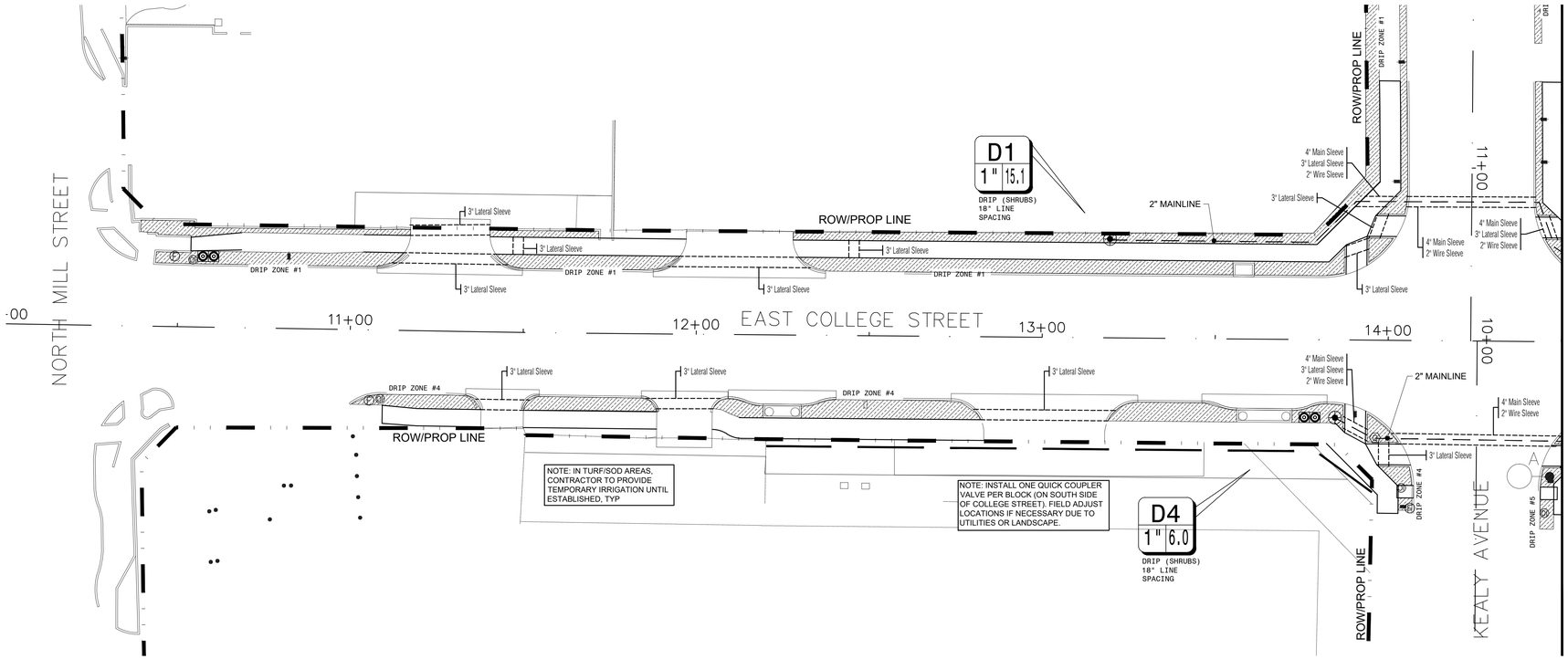
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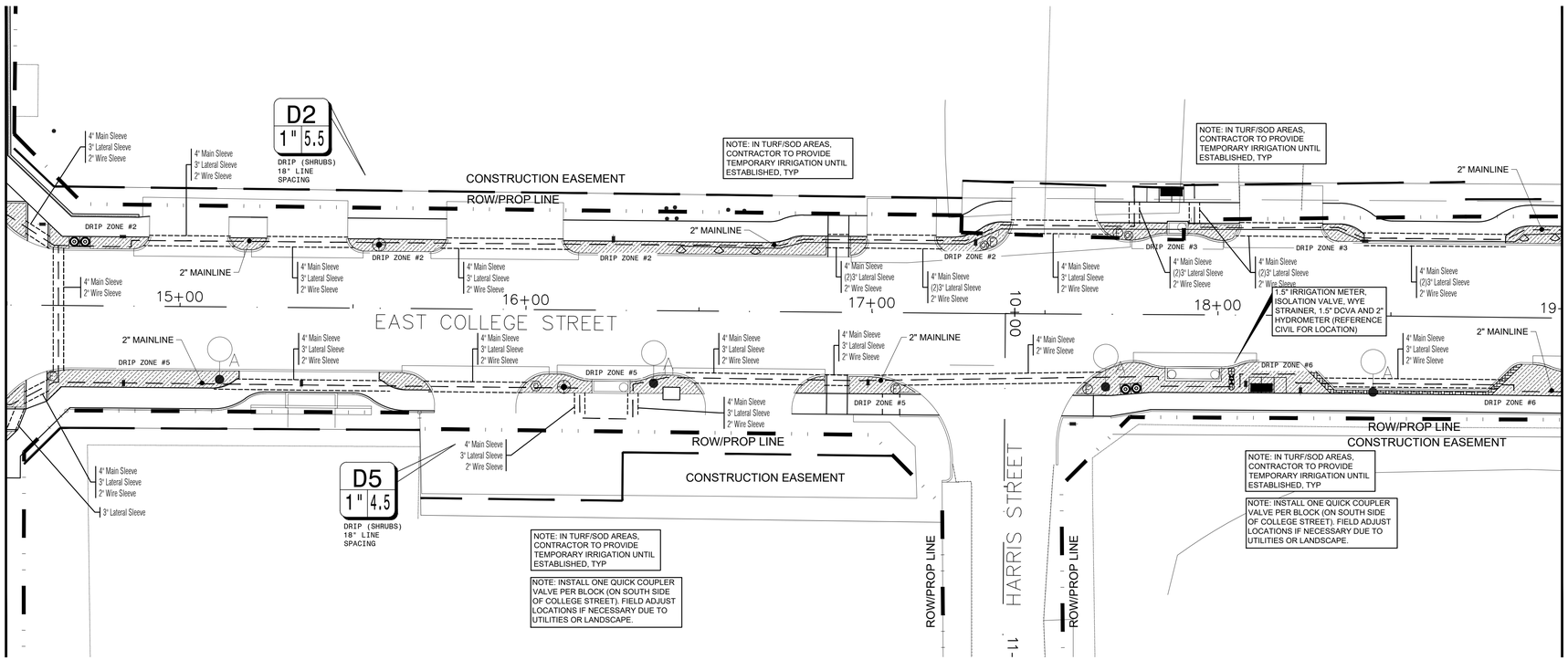
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SEQ. 110

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Project: $PROJECT$

Office:$LOCATION$ $ACCOUNT$ Date:$DATE$ User:$USERNAME$ File:$FILE$





NOTE TO CONTRACTOR:

1. PLAN SHEETS DO NOT SHOW EXISTING AND PROPOSED UTILITIES FOR CLARITY ONLY. CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO INSTALLATION. CONTRACTOR IS TO USE EXTREME CAUTION IN DIGGING AND TRENCHING TO AVOID EXISTING AND PROPOSED UTILITIES.
2. IRRIGATION CONTRACTOR IS TO COORDINATE LOCATION AND PLACEMENT OF ALL IRRIGATION ITEMS WITH THE GENERAL CONTRACTOR.
3. THIS DESIGN IS DIAGRAMMATIC, ALL PIPING, VALVES, AND OTHER EQUIPMENT SHOWN WITHIN PAVED AREAS OR OUT OF PROPERTY BOUNDARIES ARE FOR DESIGN CLARIFICATION ONLY, AND SHALL BE INSTALLED IN PLANTING AREAS WITHIN THE PROPERTY LINES OR LIMITS INDICATED ON PLAN. THE IRRIGATION CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL ABOVE GROUND IRRIGATION EQUIPMENT WITH THE OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION. OR IRRIGATION CONTRACTOR MAY BE REQUIRED TO MOVE SUCH ITEMS AT HIS OWN COST.
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ADDITIONAL WIRE NOTE:

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2. ALL IRRIGATION WIRE SHALL BE AT LEAST 14 GAUGE WIRE.

IRRIGATION LEGEND			
SYMBOL	DESCRIPTION	MANUFACTURER	MODEL NO.
	QUICK COUPLER VALVE	HUNTER	
	TREE ROOT BUBBLER SYSTEM	HUNTER	RZWS-18-25
	REMOTE CONTROL VALVE	HUNTER	ICV
H	2" HYDROMETER	ARAD	PART#IS-BM—20 Arad Meter AC 1=10
	1.5" DOUBLE CHECK ASSEMBLY	FEBCO	850 SERIES
	HDL DRIPLINE	HUNTER	HDL-06-12-CV
F	LINE FLUSHING VALVE	HUNTER	AFV-B
PI	PRESSURE OPERATOR INDICATOR	HUNTER	ECO-ID
	DRIP CONTROL VALVE	HUNTER	ICZ-101-LF-25

IRRIGATION LEGEND	
SYMBOL	DESCRIPTION
	1.5" IRRIGATION METER
A	IRRINET-M 48 STATION AC PEDESTAL CONTROLLER (PART #IS-R4A-RU-SS), W/RAIN-FREEZE SENSORS
	ISOLATION VALVE
	LATERAL PIPING REFER TO PLAN CLASS 200 PVC
	MAINLINE PIPING SCH. 40 PVC, SIZED AS SHOWN (INSTALL THRUST BLOCKS AS NECESSARY)
	IRRIGATION SLEEVE, SCH. 40 PVC, MIN. TWICE SIZE OF PIPE TO BE INSERTED, ONE SLEEVE PER PIPE
	CONTROL WIRING SLEEVE, 2" SCH. 40 PVC
D1 1"8.8	VALVE STATION # (WHERE D = DRIP TUBING, S = SPRAY, R = ROTOR, T = TREE DRIP) VALVE SIZE GPM

Know what's **below.** **Call** before you dig.

GRAPHIC SCALE
0 20 40 FEET
Scale 1"=20' - 0"

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23713
LICENSED IRRIGATOR

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Dallas, TX 75251
Phone - (214) 217-2200
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
IRRIGATION
IRRIGATION PLAN
BEGIN STA 19+00 TO STA

NO.	ISSUES	BY	DATE

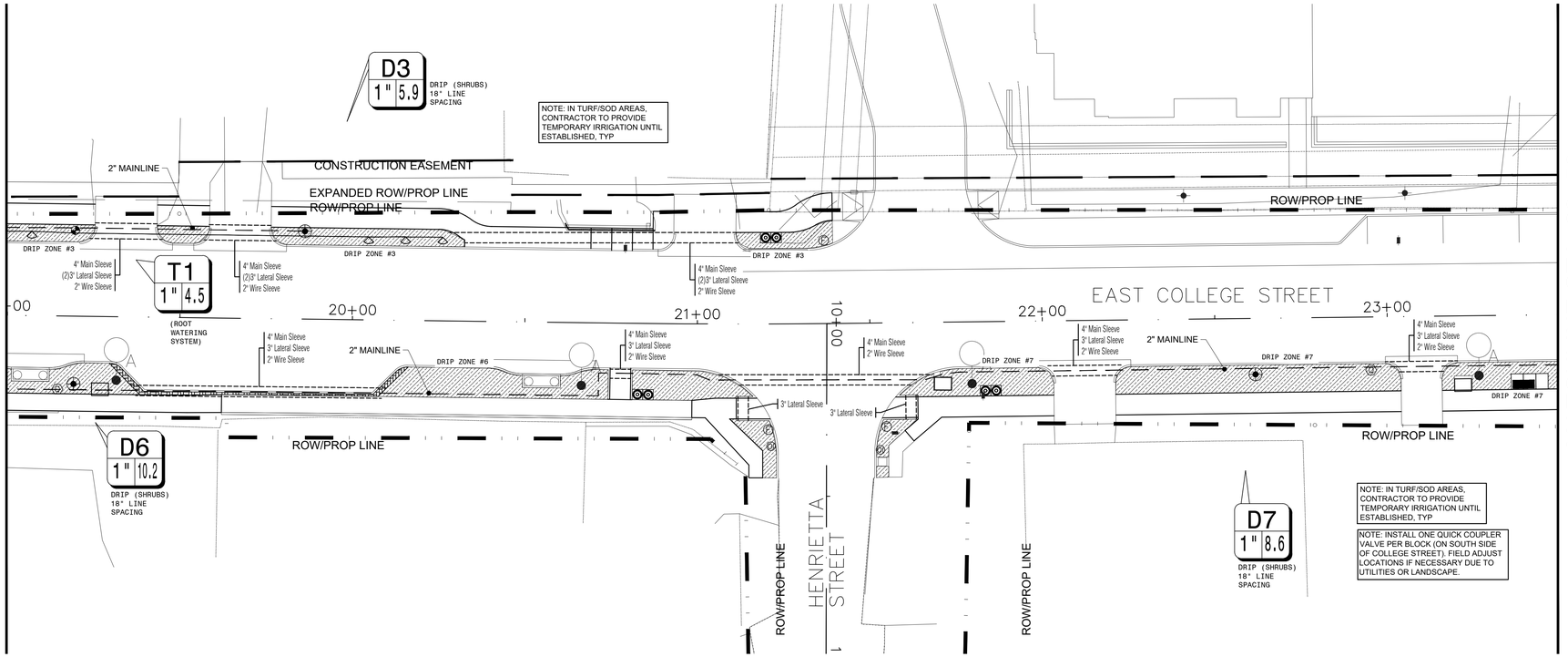
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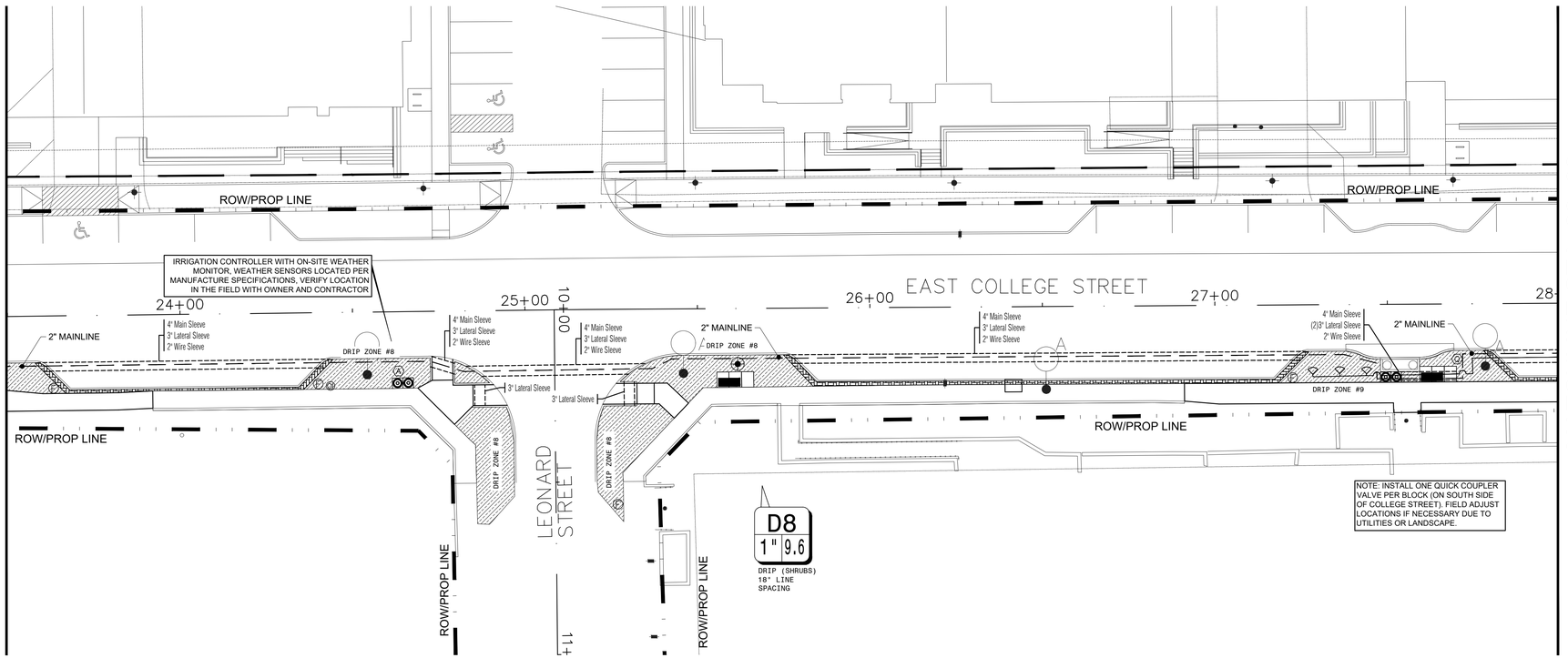
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET IR-1
SEQ. 111

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	1.5" DOUBLE CHECK ASSEMBLY	FEBCO	850 SERIES
	HDL DRIPLINE	HUNTER	HDL-06-12-CV
F	LINE FLUSHING VALVE	HUNTER	AFV-B
	PRESSURE OPERATOR INDICATOR	HUNTER	ECO-ID
	DRIP CONTROL VALVE	HUNTER	ICZ-101-LF-25

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	VALVE SIZE
	GPM

Know what's below. Call before you dig.

GRAPHIC SCALE
0 20 40 FEET
Scale 1"=20' - 0"

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STA 19+00 TO STA 28+00

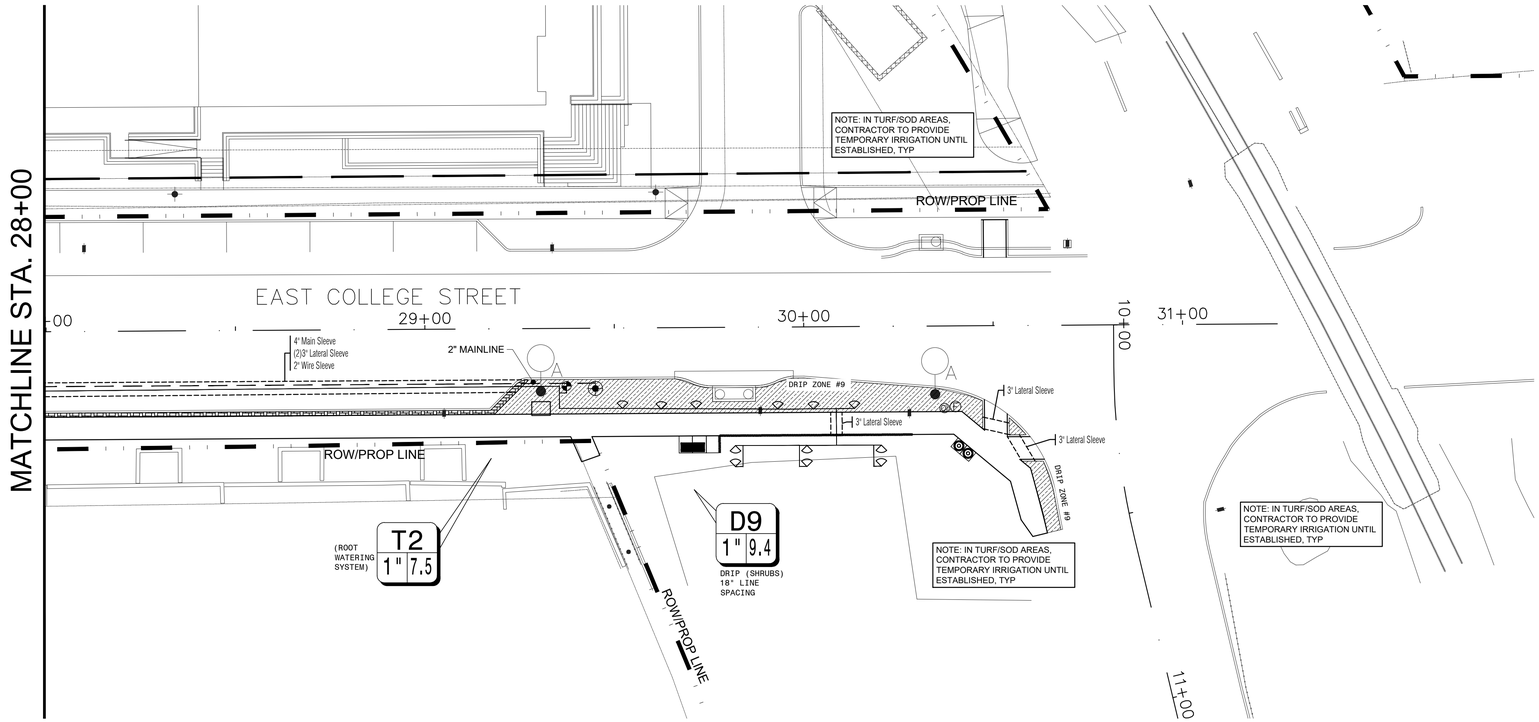
NO.	ISSUES	BY	DATE

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DATE MAY 2024
DESIGNED AWR
DRAWN AWR
REVISED AWR
CHECKED AWR
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SHEET IR-2
SEQ. 112

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	LATERAL PIPING — REFER TO PLAN — CLASS 200 PVC	
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D1 / 1" / 8.8	VALVE STATION # (WHERE D = DRIP TUBING, S = SPRAY, R = ROTOR, T = TREE DRIP) VALVE SIZE GPM	

SLEEVING NOTES

1. PIPING AND CONTROL WIRES SHALL BE INSTALLED IN SEPARATE SLEEVES UNDER PAVING. REFERENCE DRAWINGS FOR SLEEVE SIZE AND LOCATION.
2. SLEEVES SHALL BE FURNISHED AND INSTALLED BY GENERAL CONTRACTOR.
3. INSTALLATION OF SLEEVES SHALL BE TWENTY - FOUR (24") BELOW TOP OF PAVEMENT OR FINISHED GRADE.
4. SLEEVES SHALL EXTEND ONE (1') FOOT BEYOND EDGE OF ALL PAVEMENT AND STAKED FOR LOCATION.
5. ALL SLEEVES SHALL BE SCHEDULE 40 PVC PIPE, CAPPED ON BOTH ENDS AND SIZED AT LEAST TWO TIMES LARGER THAN THE DIAMETER OF THE PIPE INSIDE THE SLEEVE.
6. SLEEVE LOCATIONS SHALL BE MARKED ONTO THE CURB WITH A SAWCUT OF TWO PARALLEL LINES THAT ARE TWO (2") INCHES LONG AND ONE (1") APART.
7. CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF SLEEVES AND SHALL ALSO BE RESPONSIBLE FOR LOCATING ANY SLEEVE THAT CANNOT BE FOUND DURING THE INSTALLATION OF THE SYSTEM.
8. CONTRACTOR SHALL FURNISH OWNER AND IRRIGATION CONTRACTOR WITH AN 'AS-BUILT' DRAWING SHOWING ALL SLEEVE LOCATIONS.

IRRIGATION GENERAL NOTES

1. THE IRRIGATION CONTRACTOR SHALL COORDINATE INSTALLATION OF THE IRRIGATION SYSTEM WITH THE LANDSCAPE CONTRACTOR SO THAT ALL PLANT MATERIAL WILL BE WATERED IN ACCORDANCE WITH THE INTENT OF THE PLANS AND SPECIFICATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY THE IRRIGATION DESIGNER OF SITE CONDITIONS OR ASSUME FULL RESPONSIBILITY FOR ANY AND ALL ON SITE REVISIONS NECESSARY.
3. CONTRACTOR TO VERIFY DESIGN AND ITS INTENT TO PROVIDE FULL COVERAGE TO ALL PLANTING MATERIAL.
4. NOTIFY IRRIGATION DESIGNER OF ANY LAYOUT DISCREPANCIES PRIOR TO BIDDING.
5. LOCATE ALL UTILITIES AND SITE LIGHTING CONDUITS BEFORE IRRIGATION INSTALLATION BEGINS.
6. IRRIGATION CONTRACTOR TO PROCURE ALL PERMITS, LICENSES AND GIVE ALL NECESSARY NOTICES THROUGHOUT THE DURATION OF THE PROJECT.
7. THE CONTRACTOR SHALL BE A REGISTERED LICENSED IRRIGATOR IN GOOD STANDING WITH THE STATE OF TEXAS BOARDS AND REGULATORS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL PLANT MATERIAL UPON ACCEPTANCE AND THROUGH THE WARRANTY PERIOD FOR DAMAGE DUE TO IRRIGATION SYSTEM FAILURE.
9. ALL ASPECTS OF THE IRRIGATION INSTALLATION SHALL CONFORM WITH THE PROPERTY GOVERNING AUTHORITIES, CODES AND ORDINANCES.
10. SLEEVES SHALL BE FURNISHED AND INSTALLED BY GENERAL CONTRACTOR. SLEEVE MATERIAL SHALL BE SCHEDULE 40, SIZE AS INDICATED ON PLAN. REFER TO SLEEVING NOTES.
11. ALL MAIN LINE AND LATERAL LINE PIPING IN PLANTING AND LAWN AREAS SHALL HAVE A MINIMUM OF 12 INCHES OF COVER. ALL PIPING UNDER PAVING SHALL HAVE A MINIMUM OF 18 INCHES OF COVER. CONTRACTOR TO VERIFY LOCAL FREEZE DEPTHS AND ADJUST DEPTH OF COVER ACCORDINGLY.
12. ZONE VALVES SHALL NOT BE LOCATED WITHIN THREE (3') FEET OF ANY DRIVEWAY, TRAFFIC AISLE, ISLAND ETC. WHERE THEY WILL BE DAMAGED BY VEHICLES DRIVING OVER CURBS.
13. ALL NOZZLES IN PARKING LOT ISLANDS AND PLANTING BEDS SHALL BE LOW ANGLE NOZZLES TO MINIMIZE OVER SPRAY ON PAVEMENT SURFACES.
14. AUTOMATIC CONTROLLER SHALL BE INSTALLED AT LOCATION SHOWN. POWER (120V) SHALL BE LOCATED IN A JUNCTION BOX WITHIN FIVE (5') FEET OF CONTROLLER, LOCATION BY OTHER TRADES. RAIN AND FREEZE SENSORS SHALL BE INSTALLED WITH EACH CONTROLLER.
15. ELECTRICAL SPLICES SHOULD BE LOCATED AT EACH VALVE AND CONTROLLER ONLY.
16. PROVIDE A 3/4" BLOW DOWN DRAIN TEE TO ALLOW WATER TO BE BLOWN FROM THE IRRIGATION LINES/SYSTEM.
17. DISTURBED AREAS IN NEED OF TURF ESTABLISHMENT MAY EXIST BEYOND COVERAGE LIMITS OF THE PERMANENT IRRIGATION SYSTEM. IN THESE AREAS, CONTRACTOR TO DETERMINE A TEMPORARY MEANS TO ESTABLISH NECESSARY TURF. CONTRACTOR IS ENCOURAGED TO BEGIN TURF ESTABLISHMENT IMMEDIATELY UPON FINAL GRADE IN ACCORDANCE WITH AND TO SATISFY SWPPP.
18. PROVIDE WITH OWNER A COPY OF ALL INSTALLED EQUIPMENT AND LINES (AS BUILT PLANS.)
19. PLACE COPY OF ZONE MAP WITH ALL ZONE VALVE LOCATIONS SHOWN AND APPROVED IRRIGATION PLAN IN PROTECTIVE JACKET IN MAIN CONTROL PANEL.
20. IRRIGATION IN TEXAS IS REGULATED BY:
THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ)
MC-178 / PO BOX 13087
AUSTIN, TEXAS 78711-3087
WWW.TECQ.STATE.TX.US.

IRRIGATION PROJECT NOTES

1. THE LOCATION OF MAINLINE AND VALVES ON THIS PLAN MAY BE SHOWN IN PAVED AREAS FOR DESIGN CLARITY ONLY. IRRIGATION ELEMENTS HAVE BEEN SHOWN ON THIS PLAN AS ACCURATELY AS POSSIBLE WITHOUT THE FORFEIT OF DESIGN CLARITY AND INTENT. ALL PIPES AND VALVES SHALL BE INSTALLED WITHIN **PERVIOUS** AREAS. ALL PIPE AND WIRES THAT CROSS UNDER PAVING SHALL BE INSTALLED IN SEPARATE SLEEVES AS SPECIFIED.
2. ALL SPRINKLER EQUIPMENT NUMBERS REFERENCE THE HUNTER EQUIPMENT CATALOG UNLESS OTHERWISE INDICATED.
3. TEN DAYS PRIOR TO START OF CONSTRUCTION, IRRIGATION CONTRACTOR SHALL VERIFY STATIC WATER PRESSURE. THE IRRIGATION SYSTEM FOR THIS SITE IS DESIGNED TO OPERATE WITH A PRESSURE OF 66.96 POUNDS PER SQUARE INCH. SHOULD THE DESIGN PRESSURE FOR THE SYSTEM BE HIGHER THAN THE EXISTING PRESSURE, THE IRRIGATION CONTRACTOR SHALL NOTIFY THE IRRIGATION DESIGNER IMMEDIATELY.
4. IRRIGATION CONTRACTOR SHALL COORDINATE THE LOCATION OF THE CONTROLLER AND SENSORS WITH THE GENERAL CONTRACTOR AND OWNER. A 110 VOLT ELECTRICAL SERVICE TO POWER THE IRRIGATION CONTROLLER SHALL BE PROVIDED BY THE GENERAL CONTRACTOR AT THE LOCATION SHOWN ON THIS PLAN.
5. WATER SERVICE TAP, METER AND LEAD FOR THE IRRIGATION SYSTEM SHALL BE PROVIDED AND INSTALLED BY THE GENERAL CONTRACTOR. SERVICE LINE AND METER SHALL BE SIZED AS NOTED ON THIS PLAN.
6. TYPE AND INSTALLATION OF THE WATER METER AND BACK FLOW PREVENTION DEVICE SHALL BE DETERMINED BY THE GOVERNING AUTHORITY. AN ISOLATION VALVE SHALL BE PROVIDED BETWEEN THE WATER METER AND BACK FLOW DEVICE.
7. ALL CALCULATIONS FOR THIS IRRIGATION SYSTEM ARE BASED ON PRODUCTS AND EQUIPMENT INFORMATION PROVIDED BY HUNTER. INSTALLATION OF THESE PRODUCTS SHALL NOT EXCEED MANUFACTURERS RECOMMENDATIONS.
8. REFERENCE HUNTER, FEBCO, ARAD, AND IRRINET GUIDELINES AND SPECIFICATIONS PRIOR TO INSTALLATION. CONFIRM REQUIREMENTS FOR CONTROLLER, WATERPROOF CONNECTIONS, GROUNDING, SURGE PROTECTORS, VALUES, AND WIRING PRIOR TO INSTALLATION.
9. SPRAY HEADS LOCATED IN TURF AREAS SHALL BE HUNTER PROS-04-PRS30 SPRAY BODIES WITH PRO ADJUSTABLE NOZZLES, FIXED ARC NOZZLES, AND STRIP PATTERN NOZZLES RATE AND AS INDICATED ON THE PLAN.
10. IRRIGATION REMOTE CONTROL VALVES SHALL BE 1" AND/OR 1.5" HUNTER ICV AS INDICATED. PRIOR TO ALL REMOTE CONTROL VALVES, INSTALL A NOMINALLY SIZED BALL VALVE WITHIN THE SAME BOX.
11. SIZE OF VALVES ARE AS SHOWN ON PLAN. VALVES SHALL BE INSTALLED IN APPROVED BOXES WITH COVERS LARGE ENOUGH TO PERMIT MANUAL OPERATION, REMOVAL OF SOLENOID AND / OR VALVE COVER WITHOUT ANY EARTH EXCAVATION. OWNERS MAY ELECT LOCKING BOXES ON A PROJECT BY PROJECT BASIS.
12. QUICK COUPLING VALVES SHALL BE HUNTER INSTALLED PER DETAIL SHOWN. SWING JOINTS SHALL BE CONSTRUCTED USING ¾" SCHEDULE 80 ELBOWS. CONTRACTOR SHALL SUPPLY OWNER WITH THREE (3) CH75 COUPLERS AND THREE (3) #10HSL SWIVEL HOSE ELLS AS PART OF THIS CONTRACT.
13. IRRIGATION SYSTEM AUTOMATIC CONTROLLER SHALL BE IRRINET-M 48 STATION AC PEDESTAL CONTROLLER (PART #IS-R4A-RU-SS), WITH RAIN AND FREEZE SENSORS. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. CONFIRM CITY OF LEWISVILLE PROGRAMMING PRIOR TO INSTALLATION. CONFIRM WIRING, GROUNDING AND SURGE PROTECTION REQUIREMENTS BEFORE INSTALLING.1). FOR TECHNICAL ASSISTANCE, CONTACT JAY JOHNSON WITH INTERSPEC, EMAIL: JJOHNSON@INTER-SPEC.COM, PHONE: 214-837-7536.
14. FUTURE CONTROLLER EXPANSION- THE CONTROLLER HAS A 48-STATION CAPACITY. FOR EACH UNUSED OR BLANK STATION, INSTALL WIRING FROM TERMINAL THROUGH VALVE WIRE CONDUIT, TO A SINGLE LARGE VALVE BOX TO BE LOCATED NEAR THE SOUTHEAST CORNER OF ELM STREET AND CHARLES STREET. BUNDLE UNUSED WIRES IN TRENCH TOGETHER. DO NOT ATTACHED THE UNUSED OR BLANK WIRE TO CONTROLLER TERMINAL AT THIS TIME. CAP EACH UNUSED OR BLANK WIRE IN A SINGLE LARGE VALVE BOX. USE 12-INCH COIL FOR EACH UNUSED OR BLANK VALVE WIRE IN THE VALVE BOX.
15. 2" HYDROMETER SHALL BE ARAD (PART#IS-BM—20 ARAD METER AC 1=10). INSTALL PER MANUFACTURERS RECOMMENDATIONS.
16. DRIP IRRIGATION REMOTE CONTROL VALVES SHALL BE HUNTER ICZ-101-LF-25 AS INDICATED. DRIP TUBING SHALL BE HUNTER HDL-06-12-CV.
17. INSTALL DRIP TUBING/LINES PER MANUFACTURERS RECOMMENDATIONS. USE PLD-LOC FITTINGS PLD-LOC 075, PLD-LOC 050, PLD-LOC ELB, PLD-LOC CPL, PLD-LOC CAP, PLD-LOC TEE, PLD-LOC OR USE FHS BARB FITTINGS PLD-075, PLD-050, PLD-ELB, PLD-CPL, PLD-CAP, PLD-TEE, PLD-075-TBTEE, PLD-BV. USE ECO-INDICATOR ECO-ID. USE LINE FLUSHING VALVE HUNTER AFV-B.
18. DRIP TUBING SHALL BE SPACED 18" APART IN SHRUB AREAS. REFER TO MANUFACTURERS RECOMMENDATIONS.
19. ROOT BUBBLERS SHALL BE HUNTER RZWS-18-25.
20. ALL VALVE CONTROL WIRE SHALL BE SIZED PER MANUFACTURER GUIDELINES BY THE CONTRACTOR ACCORDING TO THE ACTUAL FIELD DISTANCE, ALL CONNECTIONS SHALL BE WATER-PROOF, KEPT TO A MINIMUM, AND LOCATED IN AN APPROVED BOX.

Drip	DESIRED HEAD PRESSURE (psi):				55	
ZONE#	D9					
Loss #/	Length	Flow	Diameter	Loss/100	Individual Loss	Cumulative Loss
Type						
Laterals	Varies	9.4	0.66			0.00
Valve		9.4	1		1.50	1.50
Main 1	1181	9.4	2	0.09	1.06	2.56
MasterValve		9.4	1.5		1.50	4.06
Backflow		9.4	1.5		7.50	11.56
Meter		9.4	1.5		0.40	11.96
			Grand Total Loss		11.96	11.96
			Assumed Starting psi:		70	
			Total Losses:		11.96	
			Actual Head Pressure:		58.04	
			Designed Pressure:		66.96	
			Difference of Start and Actual:		3.04	

CITY OF LEWISVILLE IRRIGATION SPECIFICATIONS FOR CITY PARKS, MEDIANS AND FACILITIES

1. ALL SYSTEMS MUST MEET T.C.E.Q. REQUIREMENTS.
2. ALL JOB SITES MUST HAVE LICENSED IRRIGATOR OR IRRIGATION TECHNICIAN ON SITE WHILE WORK IS BEING DONE. THE OWNER MAY DEMAND THAT WORK STOP UNTIL THE CONTRACTOR PROVIDES FOR A LICENSED IRRIGATOR OR LICENSED IRRIGATION TECHNICIAN TO BE PRESENT AT THE PROJECT SITE AND SUPERVISING ALL IRRIGATION WORK.
3. IF WORK REQUIRES LANE CLOSURES, THEY MUST FOLLOW TXDOT REQUIREMENTS.
4. ALL WORKERS WORKING IN OR AROUND TRAFFIC MUST WEAR SAFETY VESTS APPROVED BY TXDOT.
5. THE CONTRACTOR SHALL CONTINUOUSLY KEEP A NEAT AND ORDERLY AREA IN WHICH HE IS INSTALLING THE SYSTEM. DISPOSAL OF RUBBISH AND WASTE MATERIAL RESULTING FROM THE INSTALLATION SHALL BE CONTINUAL. UPON COMPLETION OF THE PROJECT THE CONTRACTOR SHALL REMOVE, FROM THE OWNER'S PROPERTY, ALL TEMPORARY STRUCTURES, RUBBISH, WASTE MATERIAL, TOOLS, AND EQUIPMENT RESULTING FROM OR USED IN THE INSTALLATION OF THE SYSTEM. IN NO SITUATIONS SHALL THE CONTRACTOR USE TRASH RECEPTACLES FURNISHED BY THE PARKS & LEISURE SERVICES DEPARTMENT FOR PUBLIC USE. CLEANING OF THE PROJECT SITE IS CONSIDERED INCIDENTAL TO THE IRRIGATION SYSTEM AND IS NOT A PAY ITEM.
6. A COPY OF THE SITE PLANS MUST BE ON SITE AT ALL TIMES.
7. MUST TURN IN A COPY OF "AS BUILT" PLANS AT FINAL WALK-THROUGH.
8. MUST FOLLOW ALL STATE AND LOCAL LAWS PERTAINING TO IRRIGATION INSTALLATION AND MAINTENANCE.
9. MUST HAVE ALL IRRIGATION PLANS APPROVED BY PARKS DEPARTMENT BEFORE ANY WORK BEGINS.
10. ALL SYSTEMS MUST HAVE A BALL VALVE, "Y" STRAINER, AND DOUBLE CHECK INSTALLED AFTER THE METER.
11. ALL VALVES, DOUBLE CHECKS, AND QUICK COUPLERS MUST HAVE A MINIMUM OF 12" OF PEA GRAVEL UNDER THEM.
12. ALL WIRE CONNECTIONS MUST HAVE DRYCONN WATERPROOF CONNECTORS ON EACH CONNECTION.
13. ALL VALVES MUST BE INSTALLED WITH A BALL VALVE, SCHEDULE 80 NIPPLES, AND UNIONS.
14. ALL SPRAY HEADS MUST BE PRESSURE REGULATED SPRAY HEADS THAT SPRAY OR THROW FROM HEAD TO HEAD.
15. NO OVER HEAD SPRAY ON ANY AREA THAT IS LESS THAN 48". MUST USE NETAFIM DRIP LINE BURIED 6" EVENLY THROUGHOUT.
16. MOTOROLA CENTRAL CONTROL MUST BE INSTALLED ON ALL NEW SITES.
17. ALL SITES MUST HAVE RAIN FREEZE SENSORS.
18. ALL SITES MUST HAVE STATIC WATER PRESSURE OF NO LESS THAN 60PSI.
19. PARTS MUST BE ON APPROVED SPEC LIST.
20. MUST HAVE SLEEVES UNDER ANY PAVEMENT.
21. TREES MUST HAVE A HUNTER ROOT ZONE WATERING SYSTEM.
22. NO HEAD SHOULD BE CLOSER THAN 2" TO BACK OF CURB LINE.
23. ALL HEADS & VALVE BOXES SHOULD BE LEVEL WITH THE TOP OF THE GROUND AND STANDING UP STRAIT.
24. ALL VALVE BOXES MUST BE WRAPPED WITH BLACK WEED BLOCK FABRIC COVERING ANY HOLES OR OPEN AREAS. INSURING THAT THE INSIDE OF THE VALVE BOX IS DIRT FREE.
25. ALL CONTROLLERS MUST HAVE A SITE PLAN LABELING VALVES, FLOW METERS, AND STATIONS LOCATION.
26. FLOW METERS MUST HAVE FOUR WIRES GREEN, BLUE, YELLOW, AND RED CONNECTED, AND WORKING.
27. MUST CONTACT PARKS DEPT. TO GET SITE PROGRAMMED ON OUR CENTRAL CONTROL BEFORE FINAL WALK @ 972-219-3697.
28. A COPY OF THE BACKFLOW REPORT SHOULD BE GIVEN AT FINAL WALK
29. ALL REPAIRS MUST FOLLOW ABOVE SPECIFICATIONS.
30. VALVES MUST BE DESIGNED FOR THE SAFE FLOW OF THE WATER METER AS FOLLOWED ON CHART BELOW

811 Know what's below. Call before you dig.

GRAPHIC SCALE
0 20 40 FEET
Scale 1"=20' - 0"

AWR Designs, LLC
P.O. Box 1746
Aledo, Texas 76008
amanda@awr-designs.com
c. 512.517.5589

STATE OF TEXAS
CODY S RICHARDSON
23713
LICENSED IRRIGATOR

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
IRRIGATION PLAN
STA 28+00 TO END

NO.	ISSUES	BY	DATE	FILE NAME

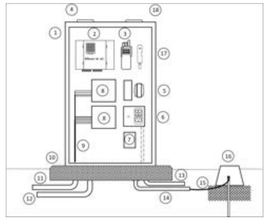
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DATE MAY 2024
DESIGNED AWR
DRAWN AWR
REVISED AWR
CHECKED AWR
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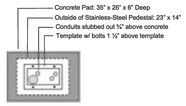
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SHEET IR-3
SEQ.
113

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IRRInet M-AC Stainless Pedestal
Model # AM-RXA-XN-SS





LEGEND:

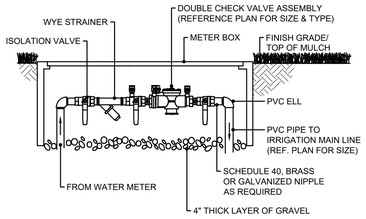
1. STAINLESS STEEL PEDESTAL ENCLOSURE
2. IRRInet M-AC-XX
3. MOTOROLA XPR RADIO
4. LOW PROFILE ANTENNA
5. 24 VAC TRANSFORMER / POWER SUPPLY
6. POWER BOX (INC. 120 VACS DISCONNECT, GFI, & SURGE PROTECTION)
7. BACK-UP BATTERY
8. 24 VAC SURGE PROTECTION CARDS
9. 24 VAC VALVE WIRES
10. POURED IN PLACE 6" MIN. CONCRETE PAD w/ TEMPLATE
11. 3" PVC SCH. 80 LONG SWEEP FOR VALVE WIRES
12. 3/4" SCH. 80 LONG SWEEP ELL / SENSOR WIRES
13. 1" MIN./ 120 VAC ELECTRICAL MIN. 36" COVER
14. 3/4" SCH. 80 LONG SWEEP / CONT. GROUNDING
15. #6 BARE COPPER GROUND WIRE CONNECTED TO GROUND ROD W/ CADWELD CONNECTOR
16. 5/8" X 10' COPPER GROUND ROD IN 10" VALVE BOX FILLED W/ 3/8" PEA GRAVEL
17. OPTIONAL PIU (WHEN SPECIFIED)
18. OPTIONAL PIU ANTENNA (WHEN SPECIFIED)

NOTES:

- 120 VAC POWER TO BE INSTALLED AS PER APPLICABLE ELECTRICAL CODES
- 120 VAC POWER TO BE ROUTED IN CONDUIT TO POWER BOX
- ALL CONDUITS TO EXTEND AT LEAST 12" BEYOND PAD
- 24 VAC FIELD WIRES TO BE CONNECTED TO SURGE CARDS
- SEAL BASE OF CABINET W/ CLEAR SILICONE @ SLAB
- COMPLETE CONTROLLER ASSEMBLY TO BE BUILT BY INTERSPEC, LLC AS PER CITY OF MESA SPECIFICATIONS
- STAINLESS STEEL BOLTS & TEMPLATE TO BE PROVIDED BY PARKS DEPARTMENT
- COMPLETE CONTROLLER ASSEMBLY (INC. CABINET) TO BE PROVIDED BY PARKS DEPARTMENT

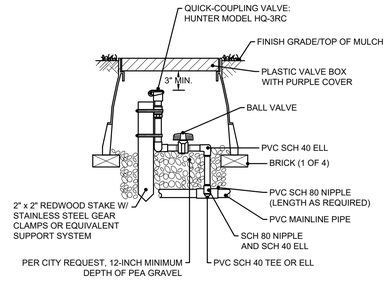
NOTE:
1. INSTALL PER MANUFACTURE'S RECOMMENDATIONS. CONFIRM COMMUNICATION, PROGRAMMING, POWER, WIRING, WATER PROOF CONNECTIONS, GROUNDING, AND SURGE PROTECTION REQUIREMENTS PRIOR TO INSTALLATION.
2. THE CONTROLLER HAS A 48-STATION CAPACITY. FOR FUTURE EXPANSION PURPOSES, FOR EACH UNUSED OR BLANK STATION, INSTALL WIRING FROM TERMINAL, THROUGH VALVE WIRE CONDUIT, TO A SINGLE LARGE VALVE BOX NEAR THE CONTROLLER PEDESTAL. DO NOT ATTACHED THE UNUSED OR BLANK WIRE TO CONTROLLER TERMINAL AT THIS TIME. CAP EACH UNUSED OR BLANK WIRE IN A SINGLE LARGE VALVE BOX. USE 12-INCH COIL FOR EACH UNUSED OR BLACK VALVE WIRE IN THE VALVE BOX.
3. FOR TECHNICAL ASSISTANCE, CONTACT JAY JOHNSON WITH INTERSPEC, EMAIL: JJOHNSON@INTER-SPEC.COM, PHONE: 214-837-7536

1 IRRINET-M 48 STATION AC PEDESTAL CONTROLLER
N.T.S.



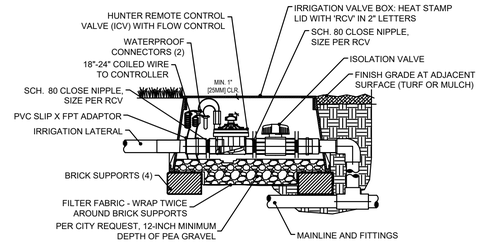
NOTE:
1. INSTALL BACKFLOW PREVENTER AS REQUIRED BY LOCAL CODES AND HEALTH DEPARTMENT. VERIFY LOCAL REQUIREMENTS PRIOR TO INSTALLATION. PRIOR TO BACKFLOW PREVENTER, INSTALL A NOMINALLY SIZED ISOLATION VALVE.

3 DOUBLE CHECK ASSEMBLY
N.T.S.



NOTE:
1. FURNISH NOMINALLY SIZED BALL VALVE WITHIN SAME BOX AND PRIOR TO MAINLINE TEE.
2. FURNISH FITTINGS AND PIPING NOMINALLY SIZED IDENTICAL TO NOMINAL QUICK COUPLING VALVE INLET SIZE.

4 QUICK COUPLING VALVE
N.T.S.



5 IN-LINE VALVE (ICV) WITH ISOLATION VALVE
N.T.S.

Installation Instructions
Arad Hydrometer

The Arad Hydrometer is a combination Flow Meter and Master Valve.

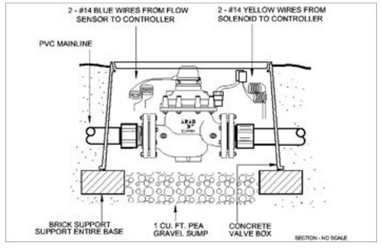
The 1.5" has male threads, the 2" female threads, the 3" and larger are all flanged fittings.

Installing Hydrometer

1. Flush line prior to installing the Hydrometer to make sure that all debris has been removed from the pipe.
2. The 3" valves and larger should be supported by a brick(s) to avoid stressing the pipe.
3. Install 4 wires from the controller to the Hydrometer. (Two Blue & Two Yellow)
4. The two Yellow wires will be connected to the solenoid. At the controller one of these wires is connected to the Common Wire Lug and the other to the last available station on the controller.

PLEASE NOTE: When installing an Arad Hydrometer with a DC Latching Solenoid it is critical to maintain the correct polarity of the wires. The "+" wire is attached to the last available station and the "-" to the Common Wire Lug.

5. Hydrometer to be protected by a valve box (See Specifications and Details)
6. Should there be any questions concerning the installation of this equipment please contact Interspec.



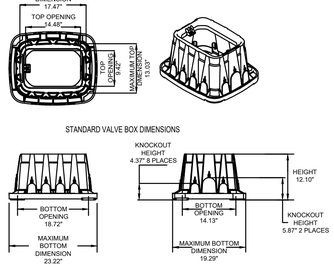
Interspec, LLC
940-440-9757

A Motorola Value Added Reseller
www.Inter-Spec.com
Specifications subject to change without notice.

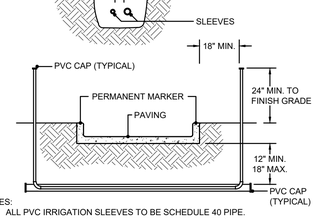
David Peters
214-325-1505

NOTE:
1. INSTALL PER MANUFACTURE'S RECOMMENDATIONS. CONFIRM COMMUNICATION, PROGRAMMING, POWER, WIRING, WATER PROOF CONNECTIONS, GROUNDING, AND SURGE PROTECTION REQUIREMENTS PRIOR TO INSTALLATION.
2. FOR TECHNICAL ASSISTANCE, CONTACT JAY JOHNSON WITH INTERSPEC, EMAIL: JJOHNSON@INTER-SPEC.COM, PHONE: 214-837-7536

2 HYDROMETER
N.T.S.

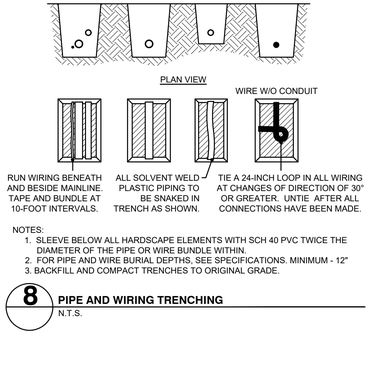


6 STANDARD VALVE BOXES
N.T.S.



NOTES:
1. ALL PVC IRRIGATION SLEEVES TO BE SCHEDULE 40 PIPE.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
3. WHERE THERE IS MORE THAN ONE SLEEVE, EXTEND THE SMALLER SLEEVE TO 24-INCHES MINIMUM ABOVE FINISH GRADE.
4. MECHANICALLY TAMP TO 95% PROCTOR.
5. SLEEVE LOCATIONS SHALL BE MARKED ONTO THE TOP OF CURB WITH A SAWCUT OF TWO PARALLEL LINES THAT ARE 2" LONG AND 1" APART.

7 IRRIGATION PVC SLEEVES
N.T.S.



NOTES:
1. SLEEVE BELOW ALL HARDSCAPE ELEMENTS WITH SCH 40 PVC TWICE THE DIAMETER OF THE PIPE OR WIRE BUNDLE WITHIN.
2. FOR PIPE AND WIRE BURIAL DEPTHS, SEE SPECIFICATIONS. MINIMUM - 12"
3. BACKFILL AND COMPACT TRENCHES TO ORIGINAL GRADE.

8 PIPE AND WIRING TRENCHING
N.T.S.

STATE OF TEXAS
CODY S RICHARDSON
23713
LICENSED IRRIGATOR

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
IRRIGATION
IRRIGATION DETAILS

NO.	ISSUES	BY	DATE	FILE NAME

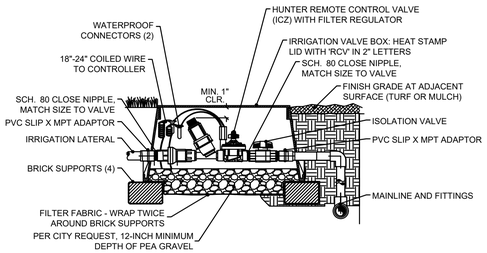
F&N JOB NO. LEW21241
DATE MAY 2024
DESIGNED AWR
DRAWN AWR
REVISED AWR
CHECKED AWR
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0 1"

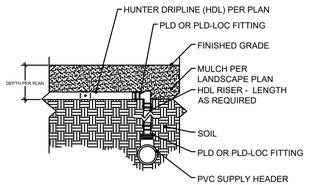
SHEET IR-4
SEQ. 114

AWR Designs, LLC
P.O. Box 1746
Aledo, Texas 76008
amanda@awr-designs.com
c. 512.517.5589

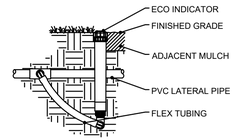
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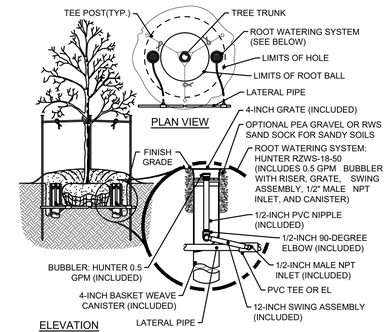
1 DRIP CONTROL ZONE KIT W/ ISOLATION VALVE
N.T.S.



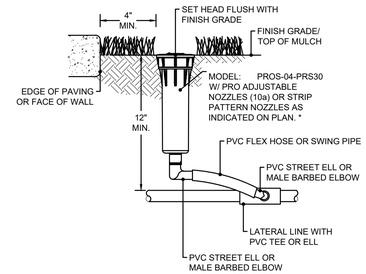
2 HUNTER DRIPLINE CONNECTION W/DRIPLINE AND ELBOW
N.T.S.



3 ECO INDICATOR- FLEX TUBING
N.T.S.

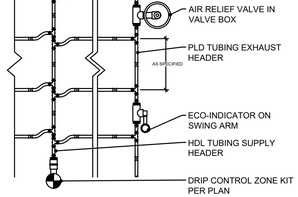


4 TREE ROOT WATERING SYSTEM
N.T.S.



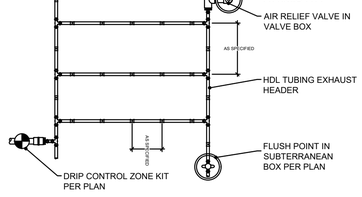
NOTE:
1. MAY NOT BE USED IN LANDSCAPE AREAS LESS THAN FORTY-EIGHT INCHES (48") IN LENGTH OR WIDTH.

5 POP-UP SPRAY BODY OR POP-UP ROTOR
N.T.S.



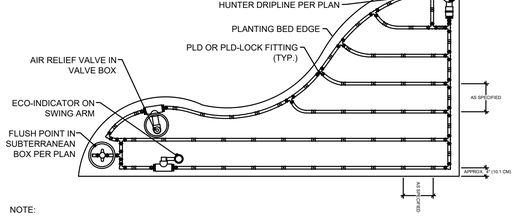
NOTE:
1. AIR RELIEF VALVE INSTALLED IN VALVE BOX AT OPTIMAL HIGHEST POINT FROM CONTROL ZONE KIT. MULTIPLE AIR RELIEF VALVES MAY BE NEEDED TO ACCOMMODATE DIFFERENCES IN GRADE.
2. ECO-INDICATOR TO BE INSTALLED AT OPTIMAL FURTHEST POINT FROM CONTROL ZONE KIT IN CLEAR VIEW WHEN POPPED UP.
3. FLUSH POINT TO BE INSTALLED AT OPTIMAL FURTHEST POINT FROM CONTROL ZONE KIT TO ALLOW FOR MAXIMUM DEBRIS FLUSH IN SYSTEM.

5 HUNTER DRIPLINE- PLANTING BED CENTER FEED
N.T.S.



NOTE:
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6 HUNTER DRIPLINE- PLANTING BED
N.T.S.



NOTE:
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2. ECO-INDICATOR TO BE INSTALLED AT OPTIMAL FURTHEST POINT FROM CONTROL ZONE KIT IN CLEAR VIEW WHEN POPPED UP.
3. FLUSH POINT TO BE INSTALLED AT OPTIMAL FURTHEST POINT FROM CONTROL ZONE KIT TO ALLOW FOR MAXIMUM DEBRIS FLUSH IN SYSTEM.

7 HUNTER DRIPLINE- IRREGULAR PLANTING AREA
N.T.S.

ADDITIONAL WIRE NOTE:
1. ALL IRRIGATION WIRE SHALL BE CONTINUOUSLY RUN FROM THE CONTROLLER TO VALVE WITH NO SPLICES.
2. ALL IRRIGATION WIRE SHALL BE AT LEAST 14 GAUGE WIRE.

AWR Designs, LLC
P.O. Box 1746
Aledo, Texas 76008
amanda@awr-designs.com
c. 512.517.5589

STATE OF TEXAS
CODY S RICHARDSON
23713
LICENSED IRRIGATOR

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, Texas 75251
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
IRRIGATION
IRRIGATION DETAILS

F&N JOB NO. LEW21241
DATE MAY 2024
DESIGNED AWR
DRAWN AWR
REVISED AWR
CHECKED AWR
$FILES$

NO.	ISSUES	BY	DATE	FILE NAME

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET IR-5
SEQ. 115

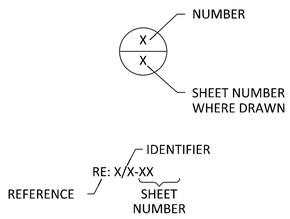
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ABBREVIATIONS	
AC	ALTERNATING CURRENT
AF	AMP FRAME
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR OR GRADE
AG	ABOVE GRADE
AGSB	ABOVE GROUND SPLICE BOX
AIC	AMPERES INTERRUPTING CAPACITY
AL OR ALUM	ALUMINUM
AMP OR A	AMPERE
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
C.	CONDUIT
CB	CIRCUIT BREAKER
C/C	CENTER TO CENTER
CHH	COMMUNICATION MANHOLE/HANDHOLE
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CONT.	CONTINUATION
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CONTROL SWITCH OR COMBINATION STARTER
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DOOR INTERLOCK
DIA	DIAMETER
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DWG	DRAWING
EC	EMPTY CONDUIT
EHH	ELECTRICAL MANHOLE
ELEC	ELECTRICAL
ELEV	ELEVATION
EM	EMERGENCY
EMH	ELECTRICAL MANHOLE/HANDHOLE
EO	ELECTRICALLY OPERATED
ETM	ELAPSED TIME METER
EUC	ELECTRIC UTILITY CO.
EXIST.	EXISTING
FBO	FURNISHED BY OTHERS
FO	FIBER OPTIC
FRP	FIBERGLASS REINFORCED POLYESTER
FT	FEET
FU	FUSE
G. OR GRND	GROUND
GA.	GAUGE
GCP	GENERATOR CONTROL PANEL
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GFS	GROUND FAULT SENSING
GO	GATE OPERATOR
GRS	GALVANIZED RIGID STEEL
HH	HANDHOLE
HP	HORSEPOWER
HT	HEIGHT
HTP	HEAT TRACE PANEL
HTR	HEATER
HZ	HERTZ
ID	INTERNAL DIAMETER
IMH	INSTRUMENT MANHOLE
INST	INSTRUMENT
IRP	INTERPOSING RELAY PANEL
JB	JUNCTION BOX
KAIC	KILO AMPERE INTERRUPTING CAPACITY
KVA	KILOVOLT-AMPERE
KW	KILOWATT
LA	LIGHTNING ARRESTER
LC	LIGHTNING CONTACTOR
LED	LIGHT EMITTING DIODE
LP	LIGHTING PANEL
LSI	LONG, SHORT, INSTANTANEOUS
LSIG	LONG, SHORT, INSTANTANEOUS, GROUND
LTG/LTNG	LIGHTS/LIGHTING
MBFV	MOTOR OPERATED BUTTERFLY VALVE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MFR'S	MANUFACTURER'S
MH	MANHOLE
ML	MULTILIN
MLO	MAIN LUGS ONLY
MOV	MOTOR OPERATED VALVE
MPR	MOTOR PROTECTION RELAY
MR	MULTIRATIO
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH

ABBREVIATIONS	
NC or N.C.	NORMALLY CLOSED
NF	NON-FUSED
NO or N.O.	NORMALLY OPEN OR NUMBER
NO.	NUMBER
OD	OUTSIDE DIAMETER
OHE	OVERHEAD ELECTRIC
OL	OVERLOAD
OLX	OVERLOAD CONTROL RELAY
P	POLE
PB	PULL BOX OR PUSH BUTTON
PC	PHOTOCELL
PCC	PUMP CONTROL CONSOLE
PFCC	POWER FACTOR CORRECTION CAPACITOR
PFR	PHASE FAILURE RELAY
PH	PHASE
PL.	PLATE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PoE	POWER OVER ETHERNET
PPR	PHASE PROTECTIVE RELAY
PQM	POWER QUALITY METER
PR.	PAIR OR PAIR CABLE
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST TYPE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RC	REMOTE CONTROL
RCP	RELAY CONTROL PANEL
REC.	CIRCUIT RECLOSURE
RECP	RECEPTACLES
REQD.	REQUIRED
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	REMOTE TERMINAL UNIT
SC	SURGE CAPACITOR
SCH	SCHEMATIC
SCTB	SHORT CIRCUIT TERMINAL BLOCK
SEC	SECONDS OR SECONDARY
SHLD. OR SH	SHIELD OR SHIELDED
SHT	SHEET
SN OR S/N	SOLID NEUTRAL
SPD	SURGE PROTECTION DEVICES
SSRVS	SOLID-STATE REDUCED VOLTAGE STARTER
SS	STAINLESS STEEL
ST	STARTER
STA.	STATION
STC	SIGNAL TERMINATION CABINET
SV	SOLENOID VALVE
SW	SWITCH
SWGR	SWITCHGEAR
Sz#	MOTOR STARTER WITH SIZE
TC	TERMINATION CABINET OR TRAY CABLE
TEL	TELEPHONE
TO	TIME DELAY ON OPENING
TR.	TRIAD
TS	TEMPERATURE SWITCH
TW	TWISTED
TYP	TYPICAL
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR CABLE
V	VOLTS
VAR.	VARIABLE
VFD	VARIABLE FREQUENCY DRIVE
VFI	VACUUM FAULT INTERUPTER
VO	VALVE OPERATOR
W	WITH, WIRE OR WATT
WP	WEATHERPROOF
WR	WEATHER RESISTANT
XFMR	TRANSFORMER
XMTR	TRANSMITTER
XP	EXPLOSION PROOF

NOTE:
THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THIS PROJECT.



PLAN SYMBOL	DESCRIPTION
b A	LIGHTING FIXTURE "A" - FIXTURE TYPE "b" - SWITCH NUMBER
A	EMERGENCY BATTERY PACK LIGHT FIXTURE "A" - FIXTURE TYPE
X	CEILING MOUNTED EXIT SIGN "X" - FIXTURE TYPE
X	WALL MOUNTED EXIT SIGN ARROW INDICATES DIRECTION OF EGRESS "X" - FIXTURE TYPE
FACP	FIRE ALARM CONTROL PANEL
F	MANUAL PULL STATION
	CEILING MOUNTED STROBE
	WALL MOUNTED STROBE
	SMOKE DETECTOR
	HEAT DETECTOR
	HORN
	COMBINATION STROBE/HORN
	CONDUIT, EXPOSED/SURFACE MOUNTED
	CONDUIT OR DUCT BANK, CONCEALED
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING UP
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING DOWN
	CONDUIT STUBBED OUT AND CAPPED
OHE	OVERHEAD ELECTRIC LINE
UGE	UNDERGROUND ELECTRIC LINE
OHP	OVERHEAD PRIMARY LINE
UGP	UNDERGROUND PRIMARY LINE
OHS	OVERHEAD SECONDARY LINE
UGS	UNDERGROUND SECONDARY LINE
OHC	OVERHEAD COMMUNICATION LINE
UGC	UNDERGROUND COMMUNICATION LINE
OHFO	OVERHEAD FIBER OPTIC LINE
	UNDERGROUND FIBER OPTIC LINE
	FLEXIBLE METAL CONDUIT
	HEAT TRACE
2 (3 #3/0, #2G., 3"C.)	DENOTES A QUANTITY OF TWO (2) 3" CONDUITS EACH CONTAINING THREE (3) NO. 3/0 AWG CONDUCTORS AND ONE (1) NO.2 AWG GROUND CONDUCTOR
2-2/C#16	DENOTES A QUANTITY OF TWO (2) INSTRUMENT CABLES. EACH CONSISTS OF TWO (2) NO.16 AWG CONDUCTORS
3-4"C.	THREE (3) 4" CONDUITS
MC1-XXX 4 #14, #14G., 3/4"C. (2 #14 SPARE)	CABLE TAG FOUR (4) #14 CONTROL OR POWER CONDUCTORS, ONE (1) #14 GROUND CONDUCTOR. ALL CONDUCTORS IN A 3/4" CONDUIT. TWO (2) OF THE FOUR (4) #14 CONTROL OR POWER CONDUCTORS ARE SPARE
LA-1,3	HOMERUN, CIRCUITS 1 AND 3 RUN TO PANEL LA 2 #12, #12G., 3/4"C. UNLESS NOTED OTHERWISE
$b	SINGLE POLE SWITCH "b" - INDICATES SWITCH LEG SHALL CONTROL LIGHT FIXTURES WITH "b" - DESIGNATION
$Xc	MULTI POLE SWITCH "x" - INDICATES NUMBER OF POLE "c" - INDICATES SWITCH SHALL CONTROL LIGHT FIXTURES WITH "c" DESIGNATION
$M	MANUAL MOTOR STARTER /DISCONNECT
$3	3 WAY SWITCH
$4	4 WAY SWITCH
$D D	DIMMER LIGHTING CONTROL SWITCH
$TM TM	TIME SWITCH
	DUPLEX RECEPTACLE, 20A, 120V, 2P, 3W ✳ "C" - MOUNTED ABOVE COUNTERTOP "GFI" OR "GF" - GROUND FAULT INTERRUPTER TYPE "WP" - WEATHERPROOF
F	FLOOR MOUNTED RECEPTACLE
	SIMPLEX RECEPTACLE, GROUNDED TYPE
	SPECIAL RECEPTACLE
	QUADPLEX RECEPTACLE

PLAN SYMBOL	DESCRIPTION
J J	JUNCTION BOX
PB	PULL BOX
TC	TERMINAL CABINET
OS	OCCUPANCY SENSOR
PC	PHOTOCELL
PW	PREWIRED
MH	MANHOLE
M	UTILITY METER
M	MOTORIZED LOUVER
DAMP	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 12 CONSTRUCTION UNLESS OTHERWISE NOTED
WET	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 4 CONSTRUCTION UNLESS OTHERWISE NOTED
CORROSIVE	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 4X CONSTRUCTION UNLESS OTHERWISE NOTED
CLASS I, DIV.1, GROUP D	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL CONFORM TO N.E.C REQUIREMENTS FOR THE HAZARDOUS AREA CLASSIFICATION SHOWN
A	POST-TOP LIGHT

ONE-LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
	OR	PANEL
5	M	MOTOR, NUMBER DESIGNATES HORSEPOWER
VM ✳	-	VOLTMETER (WITH SWITCH IF 3-PHASE)
AM ✳	-	AMMETER (WITH SWITCH IF 3-PHASE)
✳	-	METER ✳ WM - WATTMETER WHM - WATTHOUR METER WHDM - WATTHOUR DEMAND METER WHDR - WATTHOUR DEMAND RECORDER PF - POWER FACTOR METER ETM - ELAPSED TIME METER TRANSDUCER AX - CURRENT TRANSDUCER WX - WATT TRANSDUCER
#	-	RELAY, NO. AS INDICATED 25 - SYNCHRONISM CHECK RELAY 27 - UNDER VOLTAGE RELAY 38 - BEARING PROTECTIVE DEVICE 40 - LOSS OF EXCITATION RELAY 42 - RUNNING CONTACTOR/PILOT RELAY 46 - REVERSE PHASE/PHASE BALANCE/CURRENT RELAY 47 - PHASE SEQUENCE VOLTAGE RELAY 48 - MACHINE OR TRANSFORMER THERMAL RELAY 50 - INSTANTANEOUS OVERCURRENT RELAY 50G - INSTANTANEOUS GROUND 51 - TIME OVER CURRENT RELAY, GROUNDING RESISTOR TYPE 51N - TIME OVERCURRENT RELAY, RESIDUAL TYPE 51V - TIME OVERCURRENT RELAY WITH VOLTAGE RESTRAINT 59 - OVER VOLTAGE RELAY 60 - NEGATIVE SEQUENCE VOLTAGE RELAY 62 - TIME DELAY RELAY 63 - OVER PRESSURE RELAY 67 - AC DIRECTIONAL OVERCURRENT RELAY 83 - AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY 86 - LOCKING-OUT RELAY 87 - DIFFERENTIAL PROTECTIVE RELAY B - SUFFIX INDICATES "BUS" G - SUFFIX INDICATES "GENERATOR" GF - GROUND FAULT IR - INTERPOSING RELAY PFR - PHASE FAILURE, PHASE REVERSAL, UNDERVOLTAGE, OVERVOLTAGE RELAY ST - SHUNT TRIP T - SUFFIX INDICATES "TRANSFORMER" TRP CAP - CAPACITOR TRIP X - SUFFIX INDICATES "AUXILIARY"

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
08/09/2024
DANIEL W. KOSS
110037
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
ELECTRICAL

ELECTRICAL LEGEND

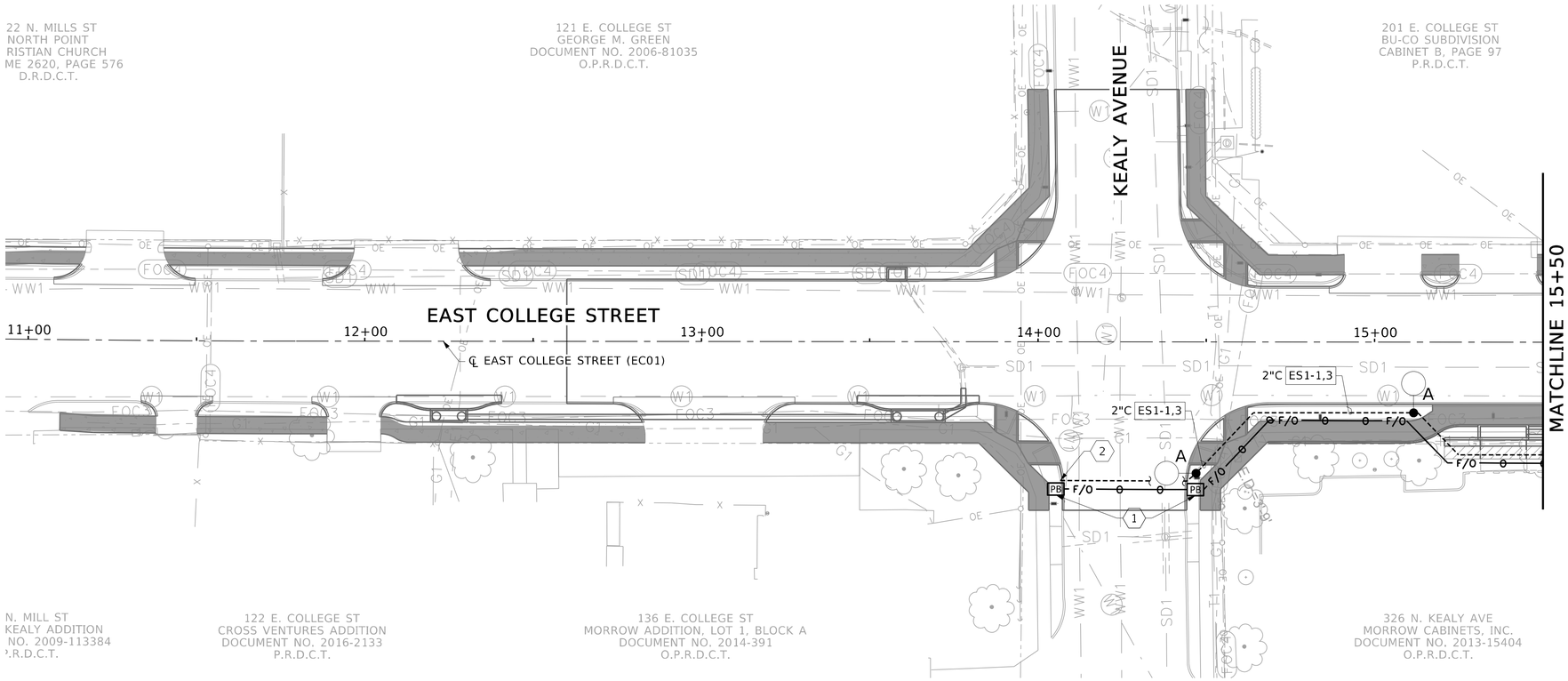
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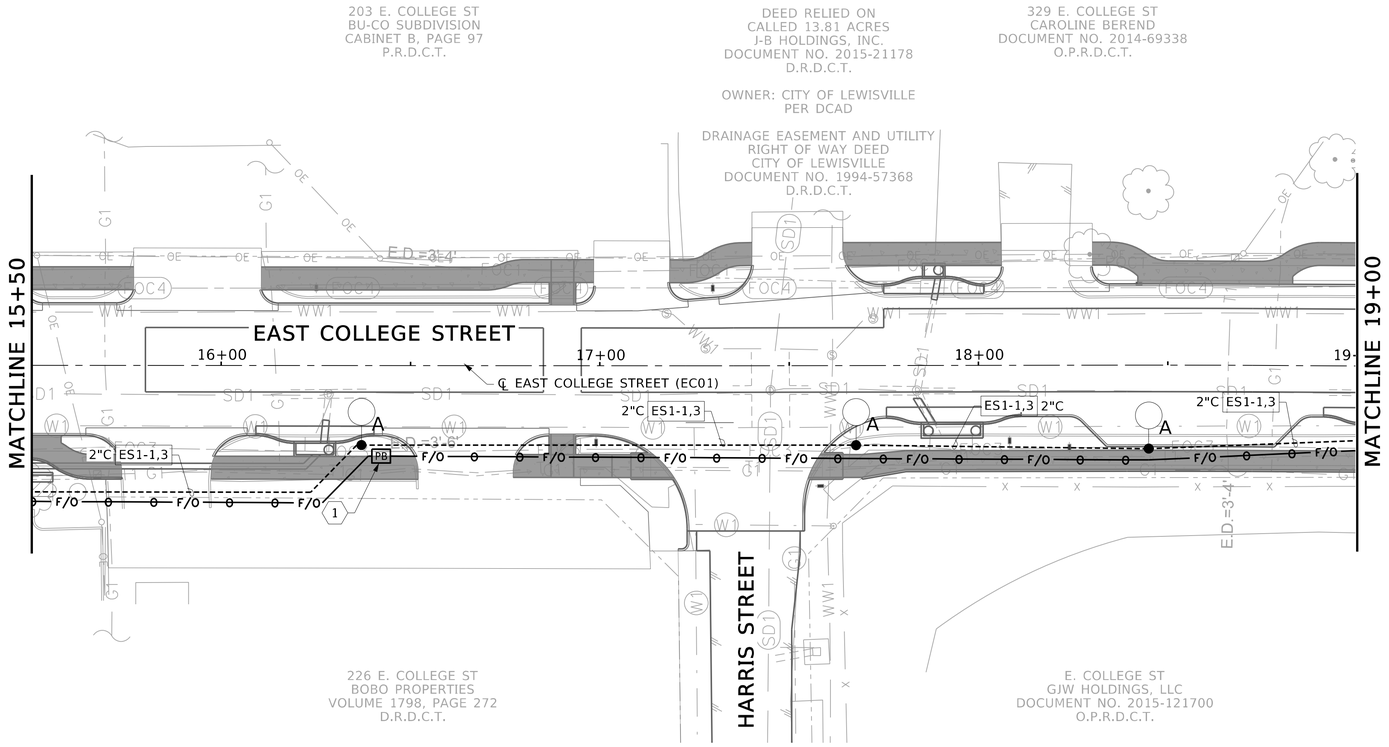
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DATE	MAR 2022
DESIGNED	DWK
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REVISED	
CHECKED	TWZ
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0" 1"

SHEET
EL-01
SEQ.
116

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CAUTION!!!
EXISTING GAS LINES AND OVERHEAD ELECTRIC LINES IN AREA CONTACT UTILITY 48 HOURS PRIOR TO CONSTRUCTION

N

0 10' 20' 40'
SCALE IN FEET

LEGEND

- A — PROPOSED LIGHTING
- PB — PULL BOX
- ELECTRICAL SERVICE BOX
- 2" CONDUIT
- F/O — 2" CONDUIT WITH PULL TAPE FOR FUTURE FIBER OPTIC CABLE
- PROPOSED SIDEWALK
- EXISTING SIDEWALK

N

GENERAL NOTES:

1. PULL BOXES AND CONDUIT TO BE PROVIDED AND INSTALLED FOR FUTURE ADDITION OF FIBER CABLE.
2. THE BANNER ARM ATTACHMENTS TO BE INSTALLED PERPENDICULAR TO ROADWAY.
3. ALL CIRCUITS TO BE 3 #10 CONDUCTORS [XHHW-2] AND #10 GROUND IN 2" SCHED 40 PVC CONDUIT UNLESS OTHERWISE NOTED.
4. CIRCUIT GFI RECEPTACLES INTEGRAL TO THE FIXTURE POLE TO CIRCUIT HOT AND NEUTRAL CONDUCTORS WITH 5A FUSES. RECEPTACLES SHALL USE A DIFFERENT HOT CONDUCTOR THAN THE PRECEDING RECEPTACLE IN THE CIRCUIT. CIRCUIT ES1-5 TO BE 2 #10 CONDUCTORS AND #10 GROUND.
5. LIGHT FIXTURES SHALL BE CIRCUITED TO 240V.
6. LIGHTING CIRCUITS CONDUIT AND FIBER CONDUIT SHALL BE SEPERATED BY A MINIMUM OF 6".

NOTE BY SYMBOL: "(X)"

1. PROVIDE TXDOT GROUND BOX TYPE "A" WITH 6" APRON (TYP). (SEE DETAIL ED(4)-14)
2. EXTEND SPARE CONDUIT FROM POLE ACROSS STREET AND TERMINATE IN AN ACCESSIBLE LOCATION IN THE SIDEWALK. PROVIDE 3M SURVEY LOCATOR AT SPARE CONDUIT TERMINATION.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
08/09/2024
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Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
ELECTRICAL
LIGHTING PLAN
BEGIN TO STA 19+00

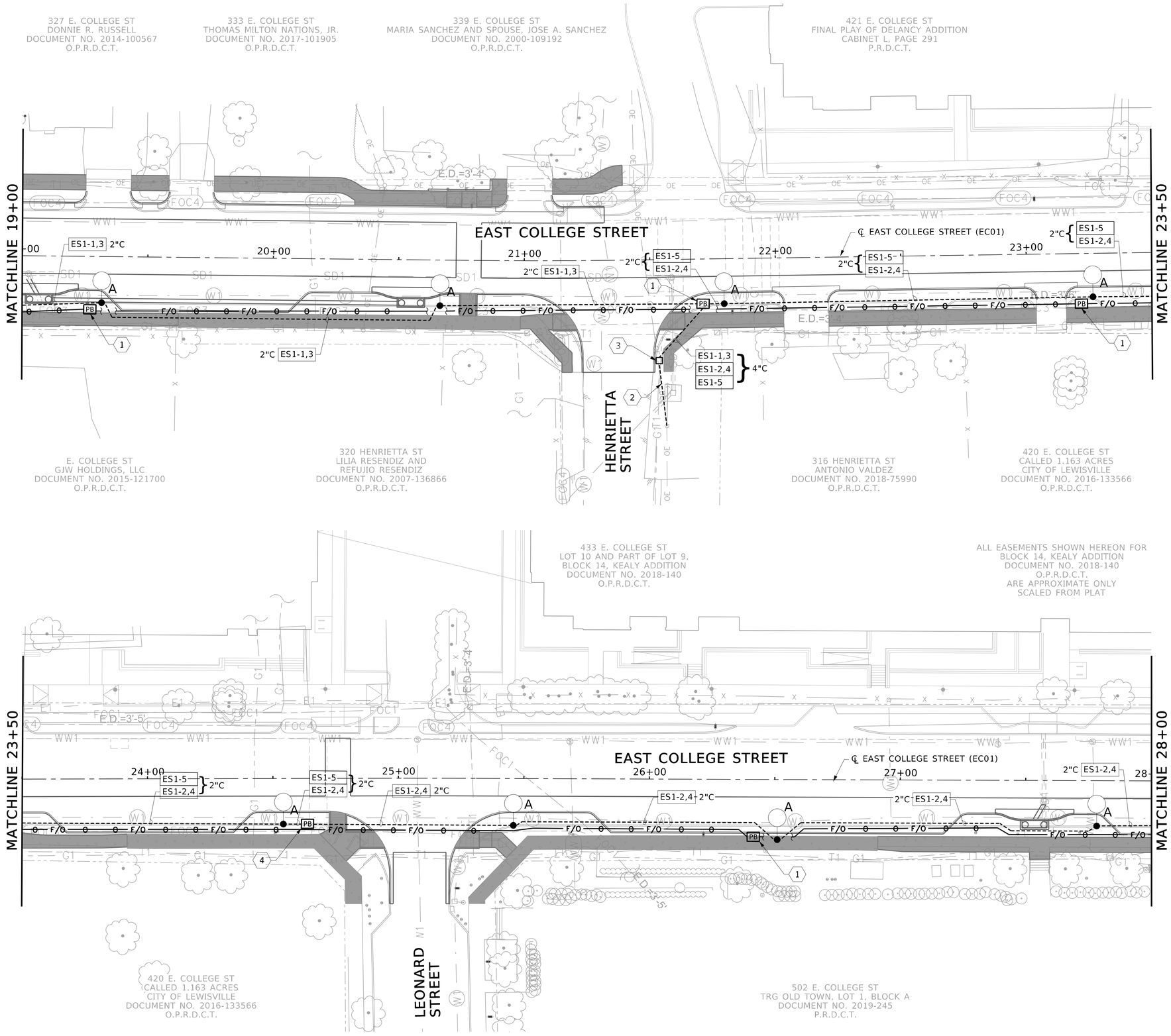
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE MAR 2022
DESIGNED DWK
DRAWN BA
REVISED
CHECKED TWZ
FILE NAME cv-trt-pl-ltng01.sht

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0 1"

SHEET EL-02
SEQ. 117

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Date: Aug. 08, 2024 - 02:16:07 PM
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Project: Freese and Nichols, Inc. - True Type Fonts



CAUTION!!!
EXISTING GAS LINES AND OVERHEAD ELECTRIC LINES IN AREA CONTACT UTILITY 48 HOURS PRIOR TO CONSTRUCTION

N

0 10' 20' 40'
SCALE IN FEET

LEGEND

- A — PROPOSED LIGHTING
- PB — PULL BOX
- ELECTRICAL SERVICE BOX
- 2" CONDUIT
- F/O — 2" CONDUIT WITH PULL TAPE FOR FUTURE FIBER OPTIC CABLE
- PROPOSED SIDEWALK
- EXISTING SIDEWALK

N

GENERAL NOTES:

1. PULL BOXES AND CONDUIT TO BE PROVIDED AND INSTALLED FOR FUTURE ADDITION OF FIBER CABLE.
2. THE BANNER ARM ATTACHMENTS TO BE INSTALLED PERPENDICULAR TO ROADWAY.
3. ALL CIRCUITS TO BE 3 #10 CONDUCTORS [XHHW-2] AND #10 GROUND IN 2" SCHED 40 PVC CONDUIT UNLESS OTHERWISE NOTED.
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5. LIGHT FIXTURES SHALL BE CIRCUITED TO 240V.
6. LIGHTING CIRCUITS CONDUIT AND FIBER CONDUIT SHALL BE SEPERATED BY A MINIMUM OF 6".

NOTE BY SYMBOL: "(X)"

1. PROVIDE TXDOT GROUND BOX TYPE "A" WITH 6" APRON (TYP). (SEE DETAIL ED(4)-14)
2. TO ELECTRICAL UTILITY SERVICE POLE. COORDINATE WITH CARLOS ESTRADA (940)435-5649 WITH TNMP.
3. ELECTRICAL SERVICE ENCLOSURE ES-1. REFER TO SHEET EL-05 FOR PRODUCT CODE AND DETAILS.
4. PROVIDE PULLBOX FOR POWER TO IRRIGATION CONTROLLER USING CIRCUIT ES1-5. REFER TO IRRIGATION FOR MORE INFORMATION.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
08/09/2024
DANIEL W. KOSS
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LICENSED PROFESSIONAL ENGINEER

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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

ELECTRICAL
LIGHTING PLAN
STA 19+00 TO 28+00

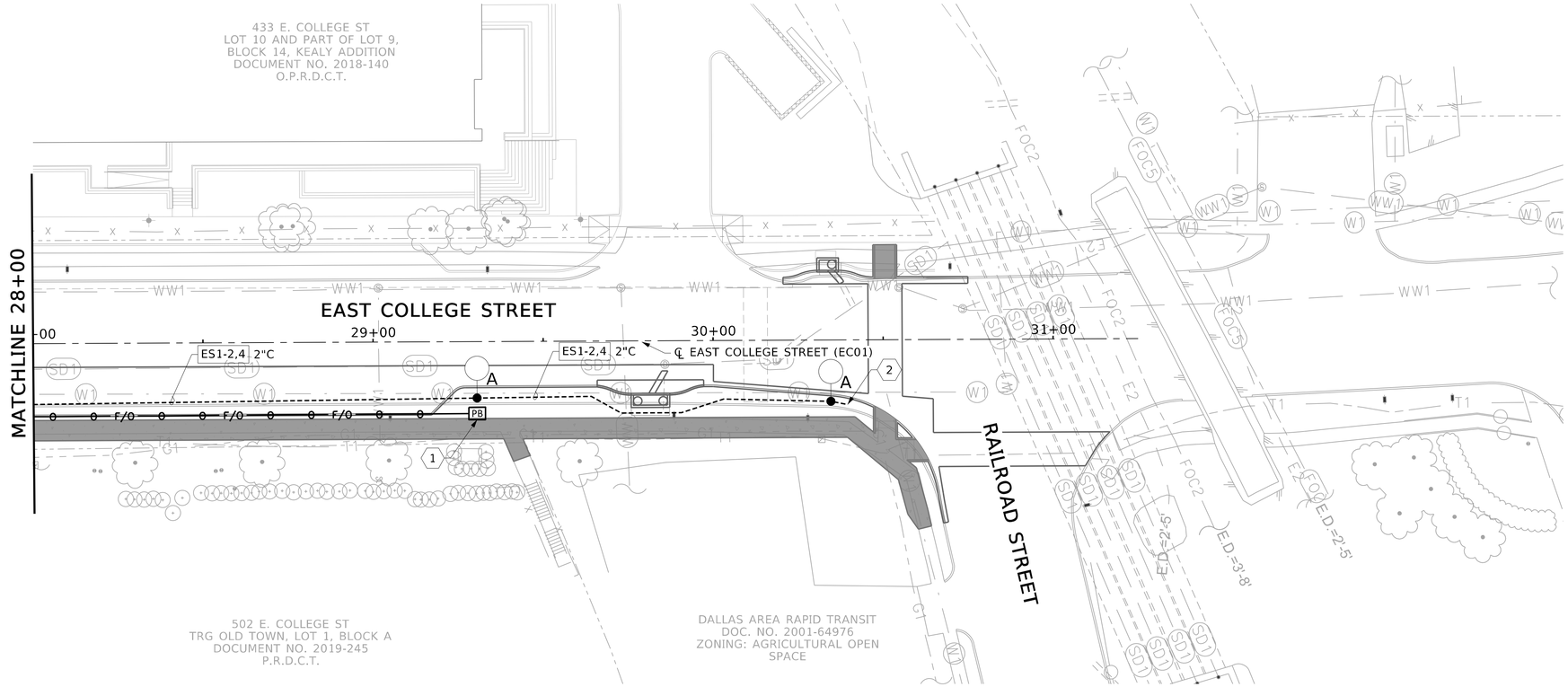
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DATE	MAR 2022
DESIGNED	DWK
DRAWN	BA
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CHECKED	TWZ

NO.	ISSUES	BY	DATE	FILE NAME
				cv-trt-pl-ltng02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0" 1"

SHEET
EL-03
SEQ.
118

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Date: Aug. 08, 2024 - 02:16:12 PM Project: Freese and Nichols, Inc. - True Type Fonts



CAUTION!!!
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N

0 10' 20' 40'
SCALE IN FEET

LEGEND

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- PB — PULL BOX
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GENERAL NOTES:

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NOTE BY SYMBOL: "(X)"

1. PROVIDE TXDOT GROUND BOX TYPE "A" WITH 6" APRON (TYP). (SEE DETAIL ED(4)-14)
2. EXTEND SPARE CONDUIT MINIMUM OF 5'-0" BEYOND POLE AND TERMINATE IN AN ACCESSIBLE LOCATION. PROVIDE 3M SURVEY LOCATOR AT SPARE CONDUIT TERMINATION.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
08/09/2024
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

ELECTRICAL
LIGHTING PLAN
STA 28+00 TO END

NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE MAR 2022
DESIGNED DWK
DRAWN BA
REVISED
CHECKED TWZ
FILE NAME cv-trt-pl-ltng03.sht

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SHEET EL-04
SEQ. 119

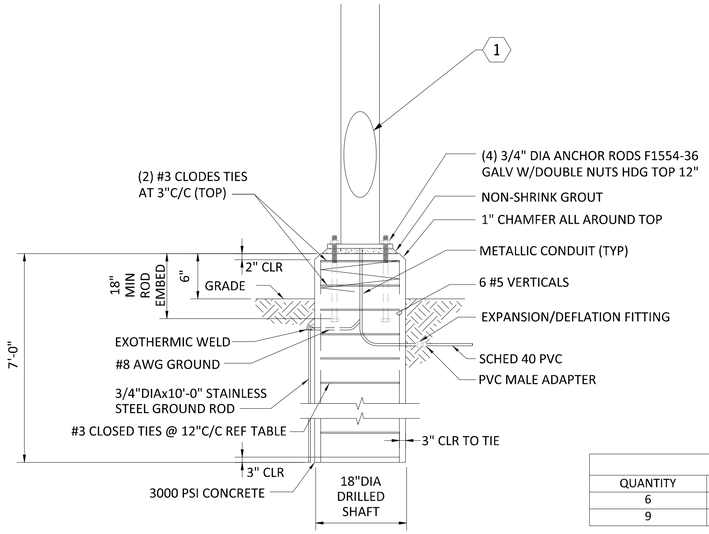
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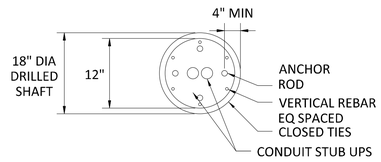
TYPE	MANUFACTURER	CATALOG NO.	VOLT.	DESCRIPTION	INPUT WATTS
A	**STERNBERG LIGHTING**	**PT-G74SRLED-5P4L40(00)T3-MDL06-G POLE: 7716FP5-0.188/GFI-LPIUC/2-DBA/BKT**	**240**	**GLASS ACORN FIXTURE FOR SIDEWALK LIGHTING WITH SOLID ROOF REFLECTOR, BANNER ARM, 18' ALUMINUM POLE, WITH TYPE 3 LIGHT DISTRIBUIITON.**	**98**

LIGHTING FIXTURE SCHEDULE NOTES:

1. LIGHT FIXTURES PROVIDED SHALL BE APPROVED EQUAL TO THE FIXTURE INDICATED IN THE SCHEDULE ABOVE.
2. FIXTURE MODEL NUMBERS ARE USED TO ESTABLISH MINIMUM QUALITY AND PERFORMANCE STANDARDS AND NOT TO ESTABLISH MOUNTING TYPE. MOUNTING REQUIREMENTS MAY VARY FOR THE SAME TYPE OF FIXTURE THROUGHOUT THE PROJECT. CONTRACTOR SHALL VERIFY INSTALLATION LOCATION AND PROVIDE APPROPRIATE MOUNTING HARDWARE FIXTURE TYPE DESIGN FOR EACH LOCATION.

ELEC. SERVICE NO.	ELECTRICAL SERVICE DESCRIPTION (SEE ED (4) & (5))	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CIRCUIT BREAKER POLE/AMP	TWO-POLE CONTACTOR AMPS	PANELBOARD LOAD CENTER AMP RATING	CIRCUIT NO.	BRANCH CIRCUIT BREAKER POLE/AMP	BRANCH CIRCUIT	VA LOAD
ES1	ELC SRV TY A 120/240 100 NS GS E PS U	4"	3/ #2	NA	2P/60A	30	100				
								1,3 PEDESTRIAN LIGHTING	2P/15A	2.9	686
								2,4 PEDESTRIAN LIGHTING	2P/15A	3.3	784
								5 IRRIGATION CONTROLLER	1P/15A	5	600





REINFORCING SCHEDULE			
QUANTITY	SIZE	LENGTH	SHAPE
6	#5	6'-7"	STRAIGHT
9	#3	4'-7"	CLOSED TIE

NO.1 GENERAL NOTES:

1. PROVIDE 3/4" DIAMETER ANCHOR RODS F1554-36 GALV, MATCH LIGHT POLE MANUFACTURERS BOLT PATTERNS.

1 LIGHT POLE BASE

NOT TO SCALE

NOTE BY SYMBOL: "⬡ X ⬡"

1. RAYCHEM GELCAP SL STUB CONNECTION KITS SHALL BE USED TO STUB OFF LIGHT FIXTURE AND RECEPTACLE CONDUCTORS. PROVIDE BUSSMAN DOUBLE POLE FUSE HOLDER FOR THE LIGHT FIXTURE WITH 3A FUSES AND BUSSMAN SINGLE POLE FUSE HOLDER FOR THE RECEPTACLE WITH 3A FUSE. BOND GROUNDS TO POLE GROUND.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
08/09/2024
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CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS

ELECTRICAL

SCHEDULES AND DETAILS

F&N JOB NO. LEW21241
DATE MAR 2022
DESIGNED DWK
DRAWN BA
CHECKED TWZ
FILE NAME cv-trt-dt-ltgn01.sht

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET EL-05

SEQ. 120

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Project: Freese and Nichols, Inc. - True Type Fonts

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GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

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

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

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

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

B. CONSTRUCTION METHODS

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

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

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

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

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

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

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

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

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

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

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

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

C. TEMPORARY WIRING

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

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

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

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

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

GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

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

B. CONSTRUCTION METHODS

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

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

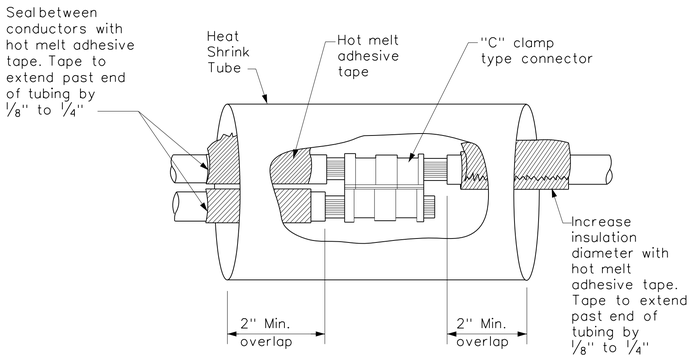
3. Install ground rods so the imprinted part number is at the upper end of the rod.

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

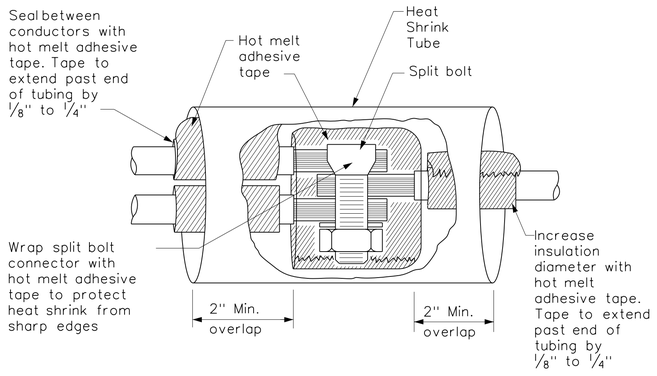
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

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

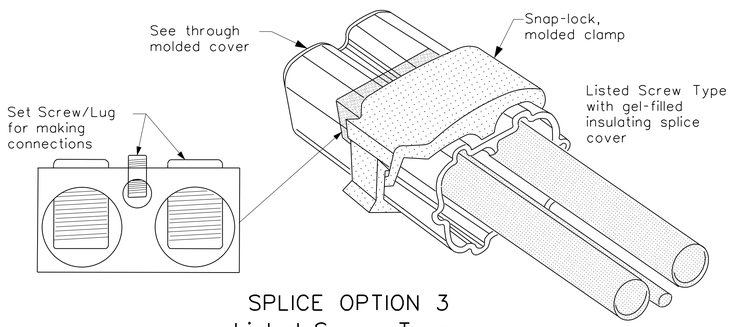
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

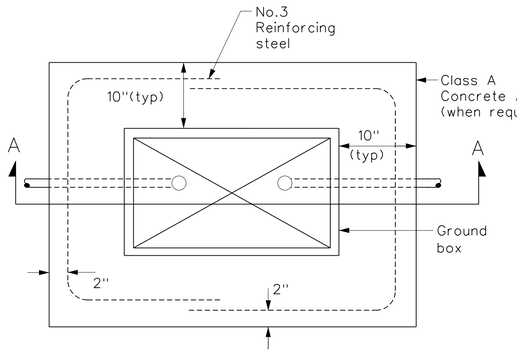
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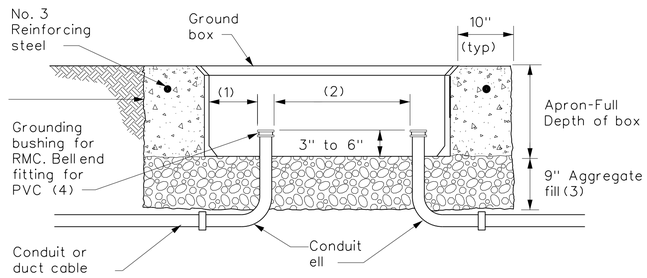
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PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

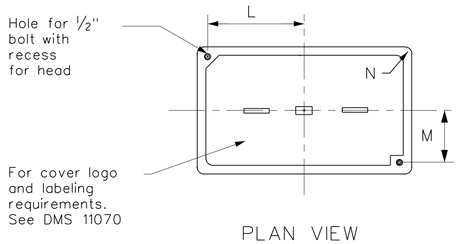
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

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

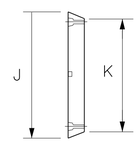
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

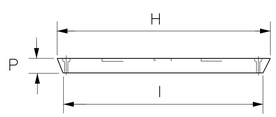
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS GROUND BOXES

ED(4)-14

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71D

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ELECTRICAL SERVICES NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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SERVICE ASSEMBLY ENCLOSURE

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

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

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

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

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

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

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

PHOTOELECTRIC CONTROL

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

* ELECTRICAL SERVICE DATA

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

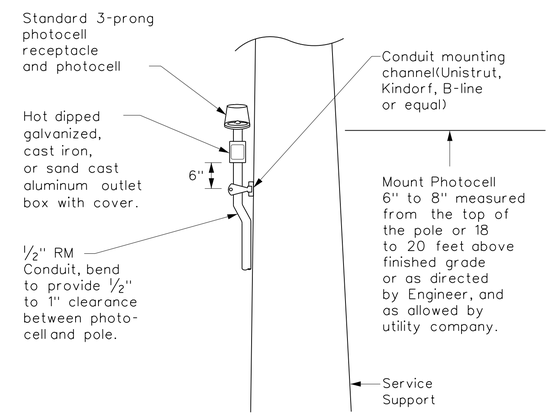
* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

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

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

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

- Schematic Type
- Service Voltage V / V
- Disconnect Amp Rating
  000 indicates main lug only/
  Typically Type T
- (SS)= Safety Switch Ahead of Meter-Check with Utility
- (NS)= No safety Switch Ahead of Meter-Check with Utility
- Enclosure Type
  - GS= Galvanized steel("off the shelf")
  - SS= Stainless steel(Custom Enclosure)See MPL
  - AL= Aluminum (Custom Enclosure)See MPL
- Photocell Mounting Location
  - (E)= Inside Service/Enclosure Mounted
  - (T)= Top of pole
  - (L)= Luminaire mounted
  - (N)= None/No Photocell or Lighting Contactor Required
- Service Support Type
  - GC= Granite concrete
  - OC= Other concrete
  - TP= Timber pole
  - SP= Steel pole
  - SF= Steel frame
  - OT= Pole by others or paid for separately
  - EX= Existing pole
  - TS= Service on traffic signal pole
  - PS= Pedestal Service
- O= Overhead Service Feed from Utility
- U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

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

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

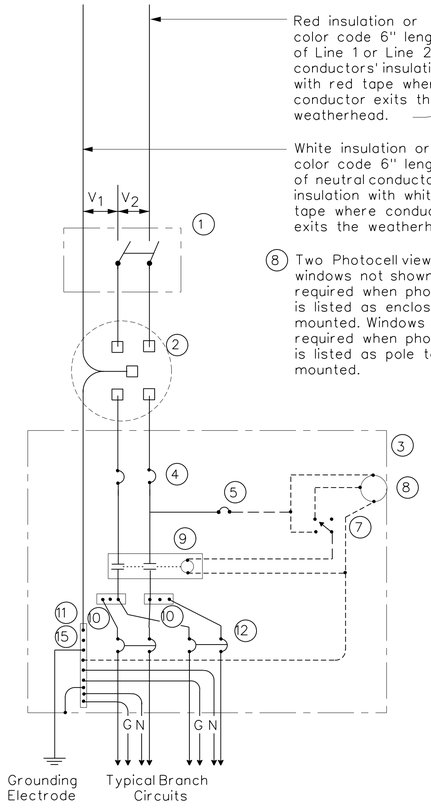
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71E

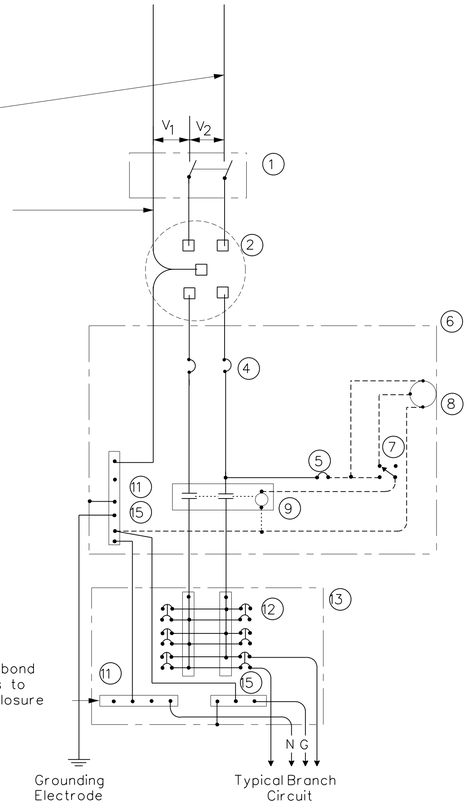
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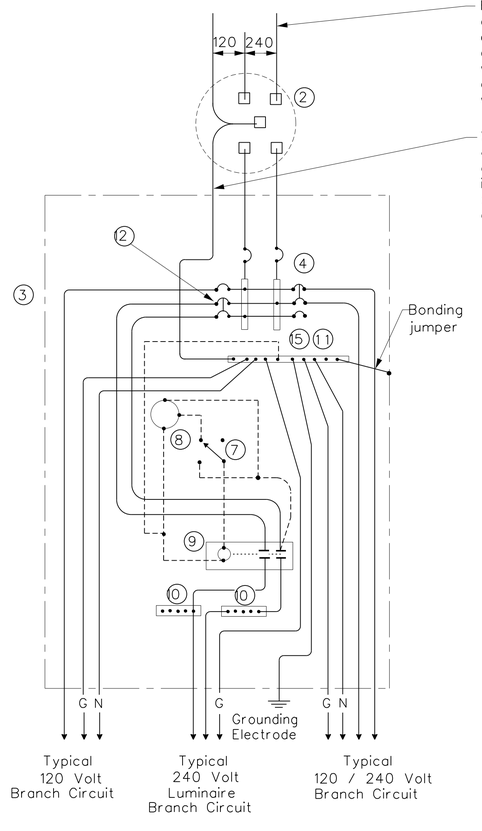
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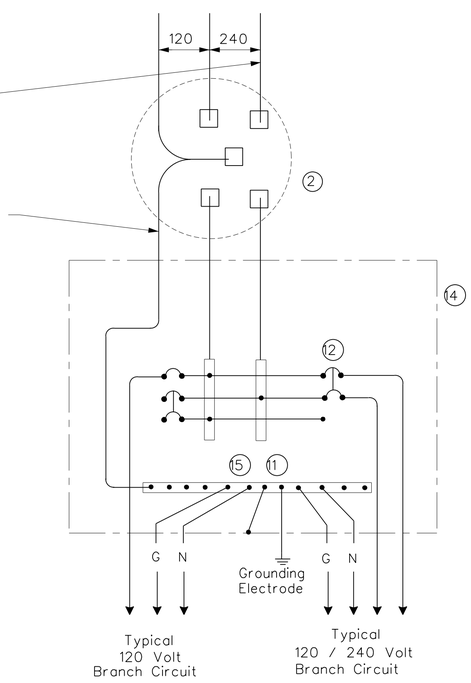
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
---------	Control Wiring
——N——	Neutral Conductor
——G——	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

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SUPPORT TYPE STEEL POLE (SP) AND STEEL FRAME (SF)

1. Provide steel pole and steel frame supports as per TxDOT Departmental Material Specification (DMS)11080 "Electrical Services." Mount all equipment and conduit on 12 gauge galvanized steel or stainless steel channel strut, 1 1/2 in. or 1 5/8 in. wide by 1 in. up to 3 3/4 in. deep Unistrut, Kindorf, B-line or equal. Bolt or weld all channel and hardware to vertical members as approved. Do not stack channel. File smooth and paint field cut ends of all channel with zinc-rich paint before installing.

2. Provide poles for overhead service with an eyebolt or similar fitting for attachment of the service drop to the pole in conformance with the electric utility provider's specifications.

3. Provide and install galvanized 3/4 in. x 18 in. x 4 in. (dia. x length x hook length) anchor bolts for underground service supports. Provide and install galvanized 3/4 in. x 56 in. x 4 in. anchor bolts for overhead service supports. Ensure anchor bolts have 3 in of thread, with 3 1/4 in. to 3 1/2 in. of the exposed anchor bolt projecting above finished foundation. Provide and install leveling nuts for all anchor bolts.

4. Bond one of the anchor bolts to the rebar cage with 6 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. See Inset B.

5. Furnish and install rigid metallic ells in all steel pole and steel frame foundations for all conduits entering the service from underground.

6. Use class C concrete for foundations. Ensure reinforcing steel is Grade 60 with 3" of unobstructed concrete cover.

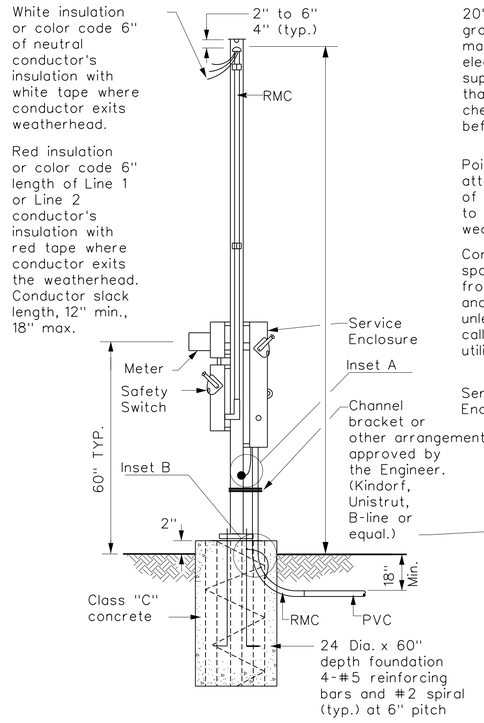
7. Drill and tap steel poles and frames for 1/2 in. X 13 UNC tank ground fitting. For steel pole service supports, provide and install tank ground fitting 4 in. to 6 in. below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. For steel frame service supports, provide and install tank ground fitting on steel frame post. Install service grounding electrode conductor in a non-metallic conduit or tubing from the enclosure to the steel frame post. Connect electrical service grounding electrode conductor to the tank ground fitting. See steel frame and steel pole details and Inset A for more information. Size service entrance conduit and branch circuit conduit as shown in the plans. For underground conduit runs from the electrical service, extend RMC from the service enclosure to an RMC elbow, and then connect the schedule type and size of conduit shown in the plans. Provide and install grounding bushings where RMC terminates in the enclosure. Grounding bushings are not required when RMC is fitted into a sealing hub or threaded boss.

8. If Steel pole or frame is painted, bond each separate painted piece with a bonding jumper attached to a tapped hole.

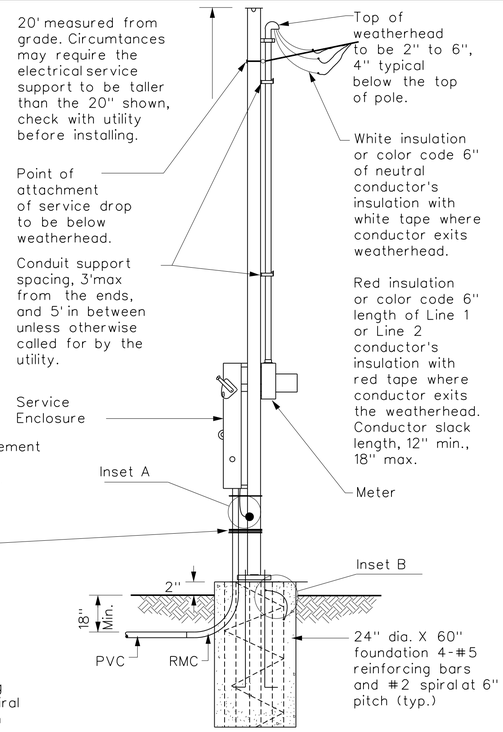
9. Provide 1/4" - 20 machine screws for bonding. Do not use sheet metal screws. Remove all non-conductive material at contact points. Terminate bonding jumpers with listed devices. Install minimum size 6 AWG stranded copper bonding jumpers. Make up all threaded bonding connections wrench tight.

10. Avoid contact of the service drop and service entrance conductors with the metal pole to prevent abrasion of the insulated conductors.

11. Shop drawings are not required for service support structure unless specifically stated elsewhere or directed by the Engineer.

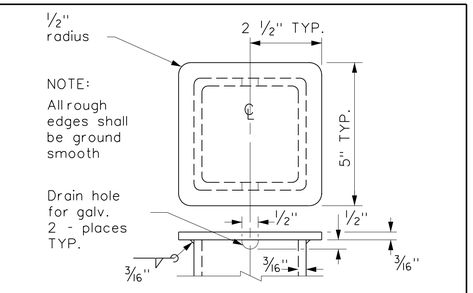


WITH SAFETY SWITCH

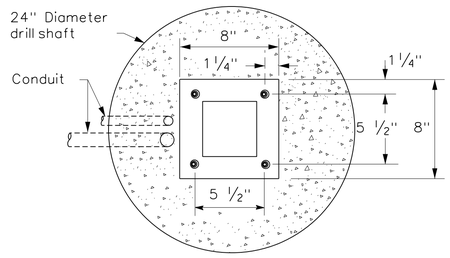


WITHOUT SAFETY SWITCH

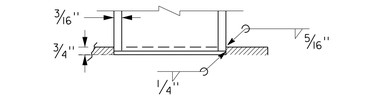
SERVICE SUPPORT TYPE SP (O) - OVERHEAD SERVICE



POLE TOP PLATE

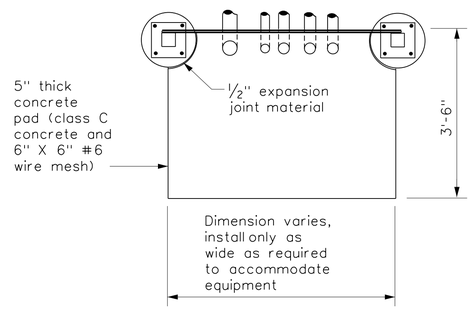


BASE PLATE DETAIL



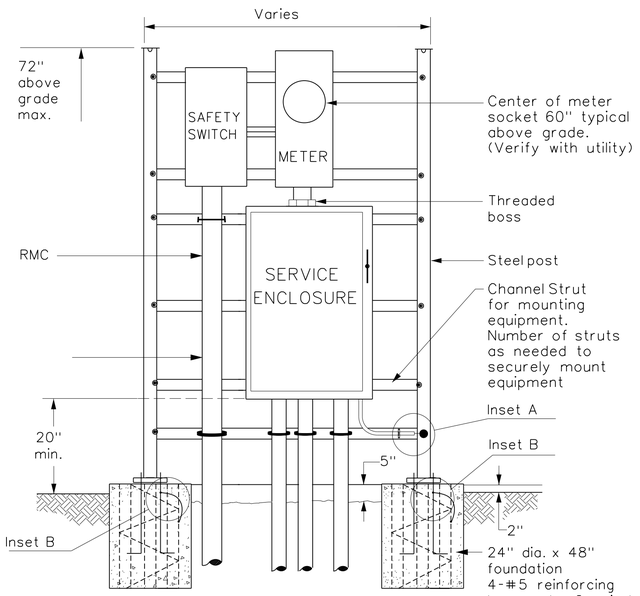
BOTTOM OF POLE

SERVICE SUPPORT TYPE SF & SP

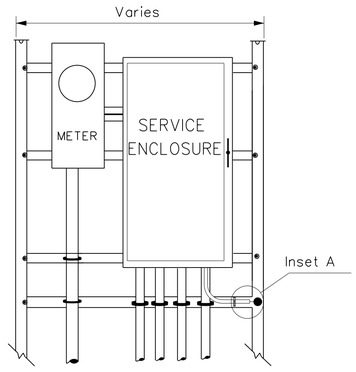


TOP VIEW

SERVICE SUPPORT TY SF (O) & SF (U)

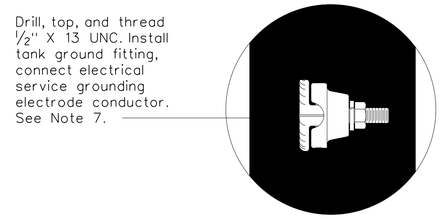


WITH SAFETY SWITCH
FRONT VIEW

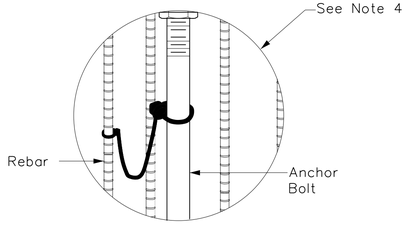


WITHOUT SAFETY SWITCH

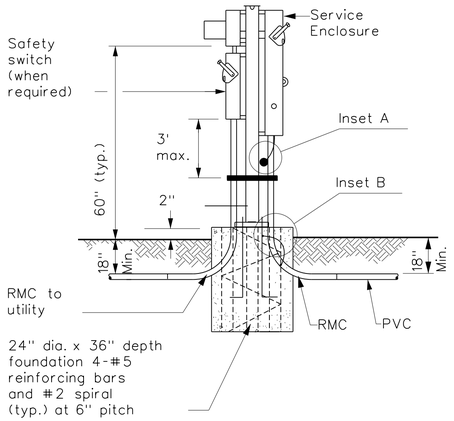
SERVICE SUPPORT TYPE SF(U) - UNDERGROUND SERVICE



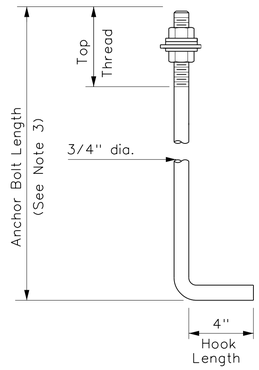
FRONT VIEW
INSET A



INSET B



WITH SAFETY SWITCH



HOOKED ANCHOR DETAIL

SERVICE SUPPORT TYPE SP(U) - UNDERGROUND SERVICE

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES SF & SP

ED(7)-14

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PEDESTAL SERVICE NOTES

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

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

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

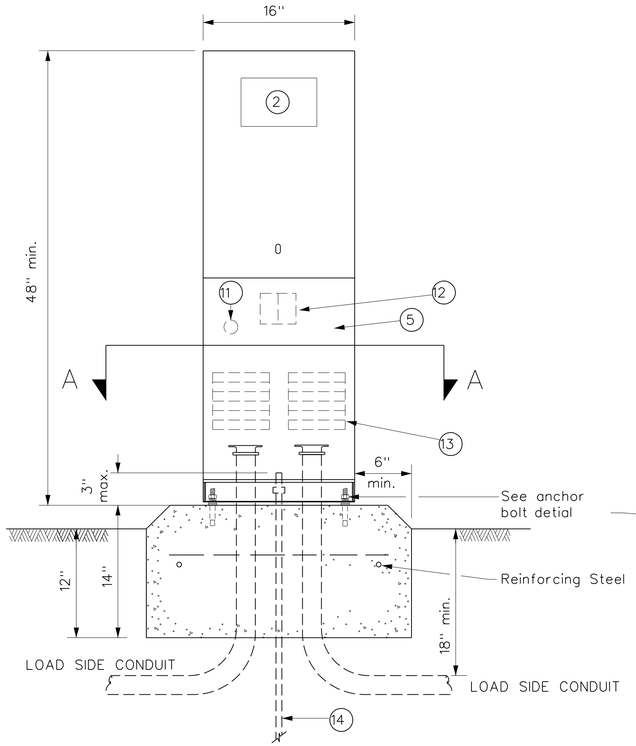
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

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

6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than $\frac{1}{8}$ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of $\frac{1}{8}$ in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within $\frac{1}{4}$ in. Repair rocking or movement of the service enclosure at no additional cost to the department.

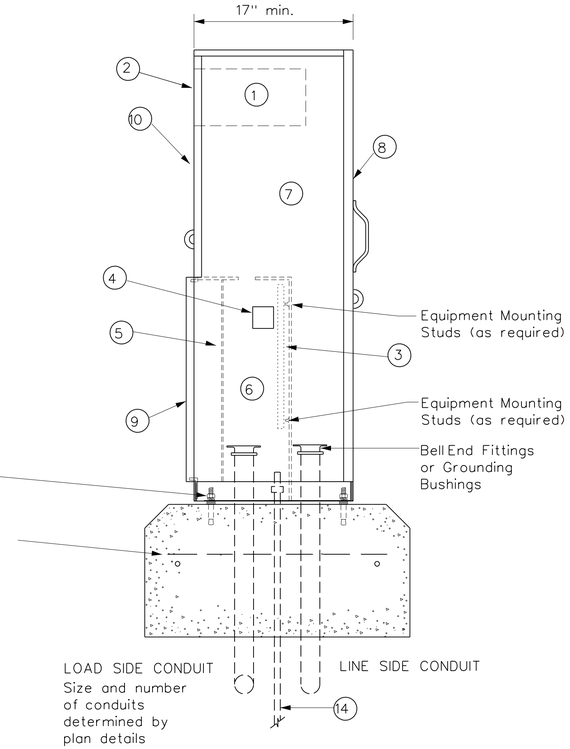
7. Do not use liquidtight flexible metal conduit (LFMC) on pedestal type services.

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

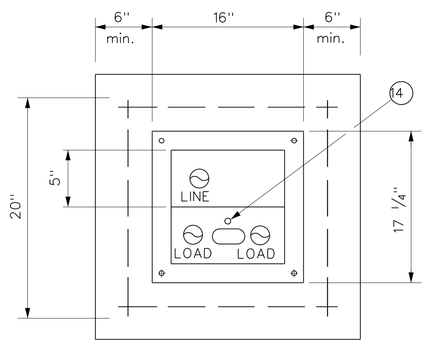


FRONT VIEW

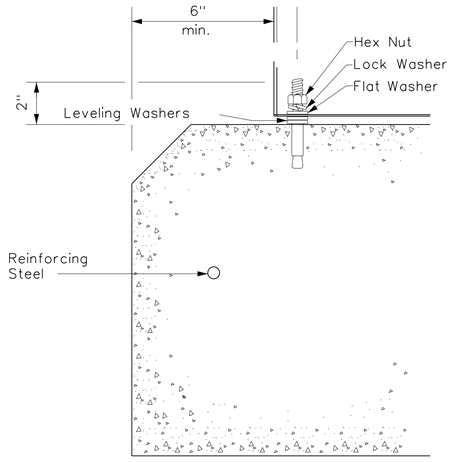
TYPE C shown, TYPE A similar except that TYPE A shall have individual circuit breakers (CB) mounted on an equipment mounting panel. CB Handles shall protrude through hinged deadfront trim.



SIDE VIEW



SECTION A-A



ANCHOR BOLT DETAIL

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

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS

ED(9)-14

FILE: ed9-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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	DIST	COUNTY		SHEET NO.
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Plot Scale: 2.000 '= 1 in. Project:Freese and Nichols, Inc. - True Type Fonts
Date: Aug. 08, 2024 - 02:16:32 PM

DUCT CABLE & HDPE CONDUIT NOTES

1. Provide duct cable in accordance with Departmental Material Specification (DMS) 11060 "Duct Cable" and Item 622 "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 622.

2. Provide High-Density Polyethylene (HDPE) conduit in accordance with DMS 11060 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.

3. Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.

4. Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel RMC elbows are called for in the plans and any portion of the RMC elbow is buried less than 18" from possible contact, ground the RMC elbow.

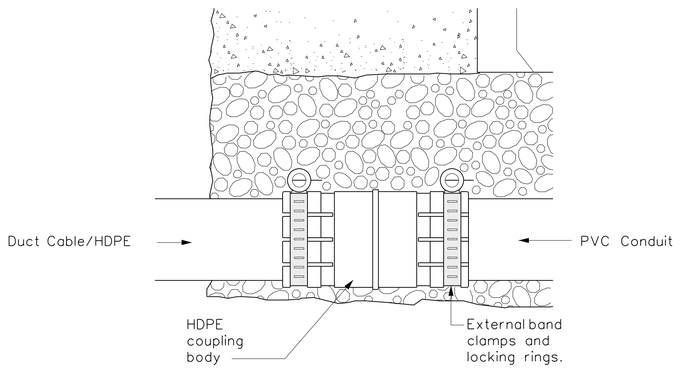
5. Furnish and install duct cable with factory installed conductors, sized as shown in the plans and as required by the National Electrical Code (NEC). The NEC contains specific requirements for duct cable in Article, "Nonmetallic Underground Conduit with Conductors: Type NUCC."

6. When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.

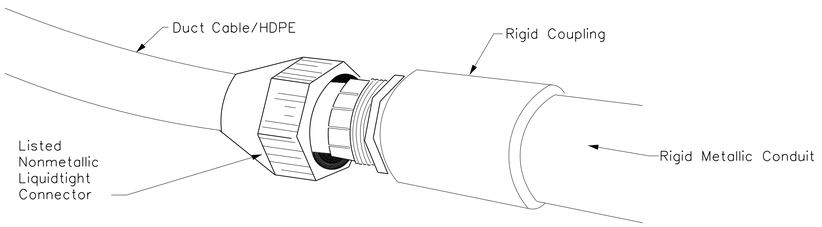
7. Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after completing the pull tests required by Item 622.

8. Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.

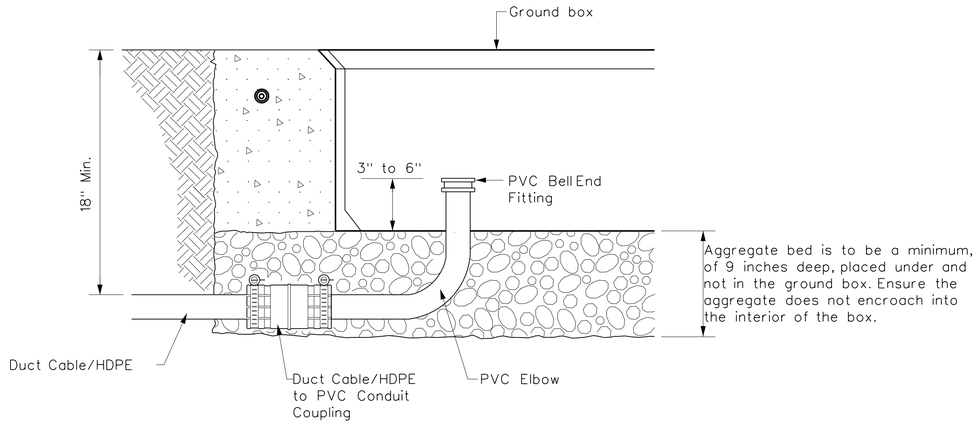
9. Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field-threaded and spliced with PVC or RMC threaded couplings; connected with listed tie-wrap fittings; connected using listed coupling made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors all installed in accordance with their manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.



DUCT CABLE/HDPE TO PVC

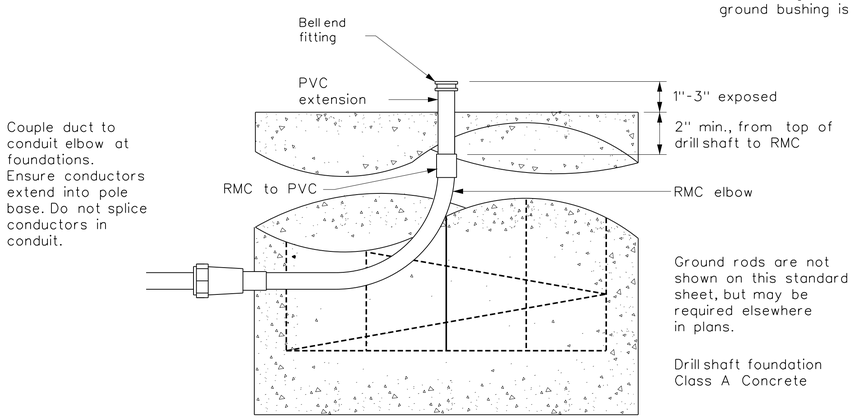


DUCT CABLE/HDPE TO RMC

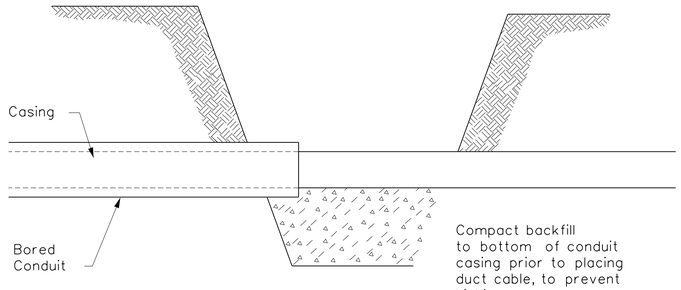


DUCT CABLE/HDPE AT GROUND BOX

When the upper end of an RMC Ell does not enter the ground box,it may be extended with a SCH-40 PVC conduit nipple and bell end, provided there is a minimum of 18" of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.



DUCT CABLE / HDPE AT FOUNDATION



BORE PIT DETAIL

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
DUCT CABLE/ HDPE CONDUIT

ED(11)-14

FILE: ed11-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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Plotter: HPPlotter.pltcfg Model: Default
Plot Scale: 2.000 '' / 1 '' Project: Freese and Nichols, Inc. - True Type Fonts
Date: Aug. 08, 2024 - 02:16:33 PM

BATTERY BOX GROUND BOXES NOTES

A. MATERIALS

1. Provide polymer concrete or fiberglass reinforced plastic (FRP) battery box ground box and cover in accordance with Departmental Material Specification (DMS) 11071 "Battery Box Ground Boxes." Battery box will accommodate up to 4 batteries, each measuring 8 in. x 13.5 in. x 10 in. (W x L x D). Label battery box ground box cover in accordance with DMS 11071.

2. Supply a marine grade batteries with covers. Secure the marine grade batteries with covers to the stainless steel rack in the bottom of the ground box with tie down straps.

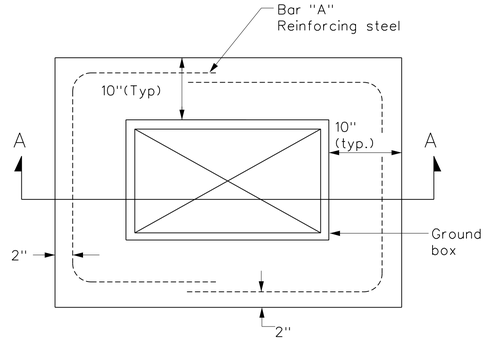
B. CONSTRUCTION METHODS

1. Ensure conduit entry will not interfere with placement of the batteries in the battery box ground box.

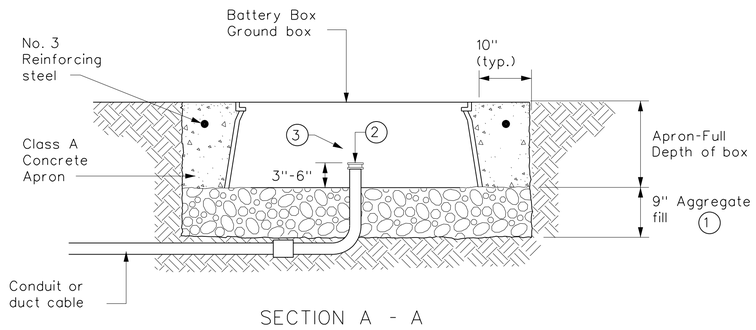
2. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting battery box ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure the aggregate bed is in place and is a minimum of 9 in. deep prior to setting the box. Install battery box ground box on top of aggregate.

3. Cast battery box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Battery box ground box aprons, including concrete and reinforcing steel, are subsidiary to battery box ground boxes when called for by descriptive code.

4. Bolt covers down when not working in battery box ground boxes. Keep bolt holes in the box clear of dirt.



PLAN VIEW



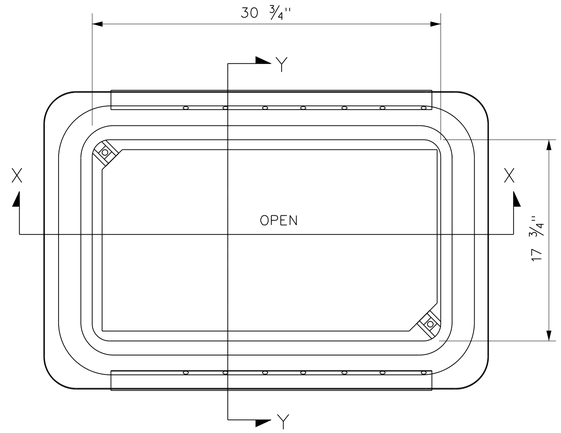
SECTION A - A

APRON FOR BATTERY BOX GROUND BOXES

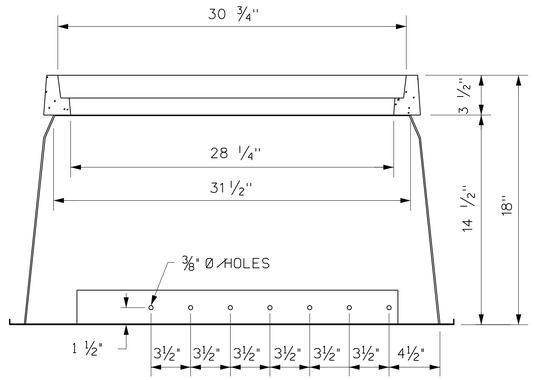
(1) Place aggregate under the box and not in the box. Aggregate should not encroach on the interior volume of the box.

(2) Install bushing or bell end fitting on the upper end of all ells.

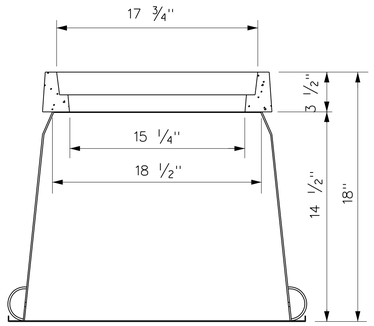
(3) Install all conduits in a neat and workmanlike manner.



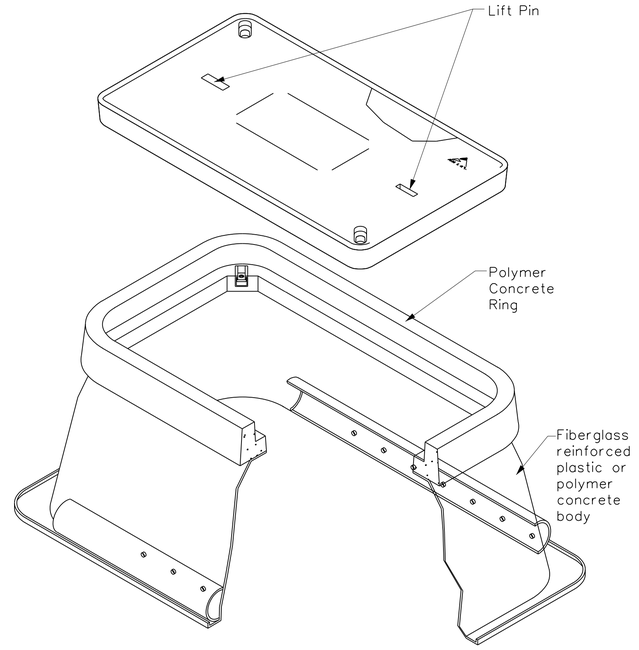
BATTERY BOX TOP VIEW



SECTION X-X



SECTION Y-Y



Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
BATTERY BOX
GROUND BOXES

ED(12)-14

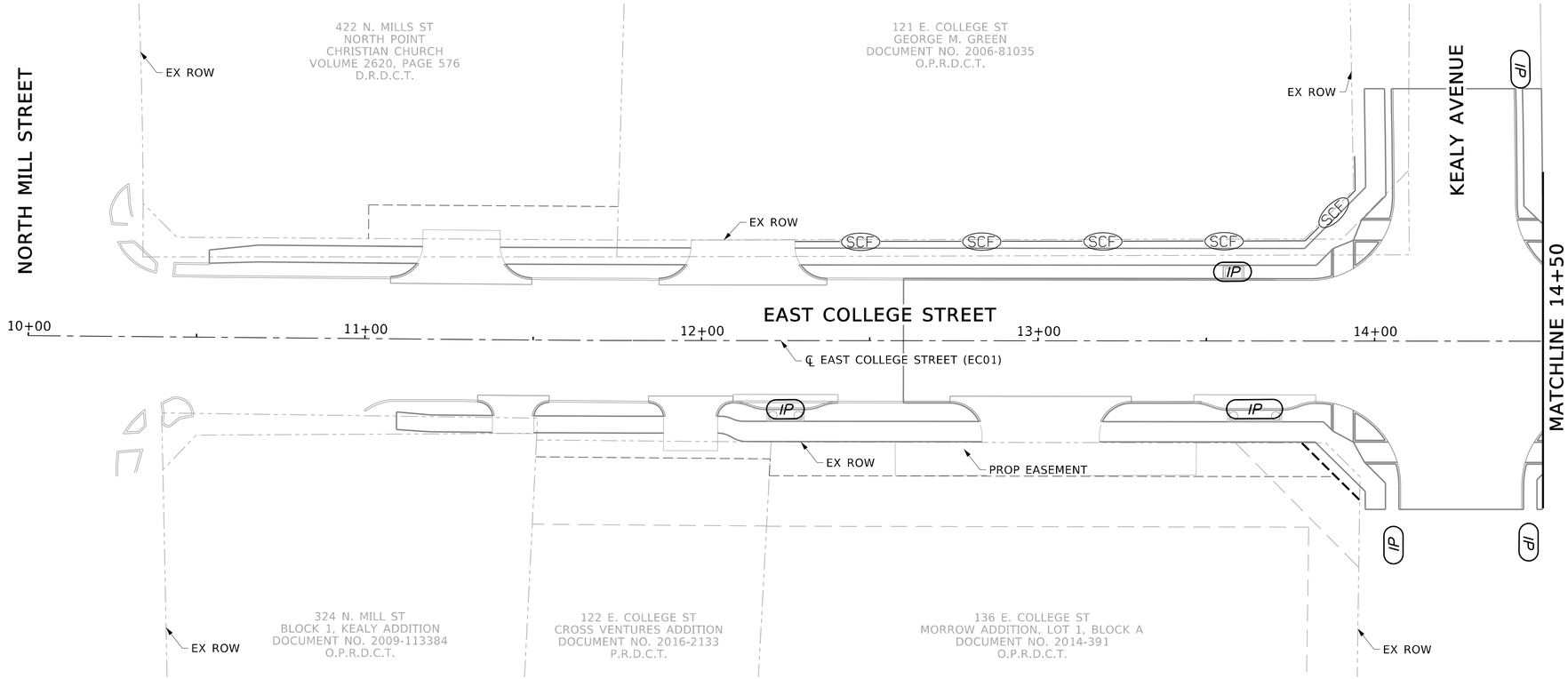
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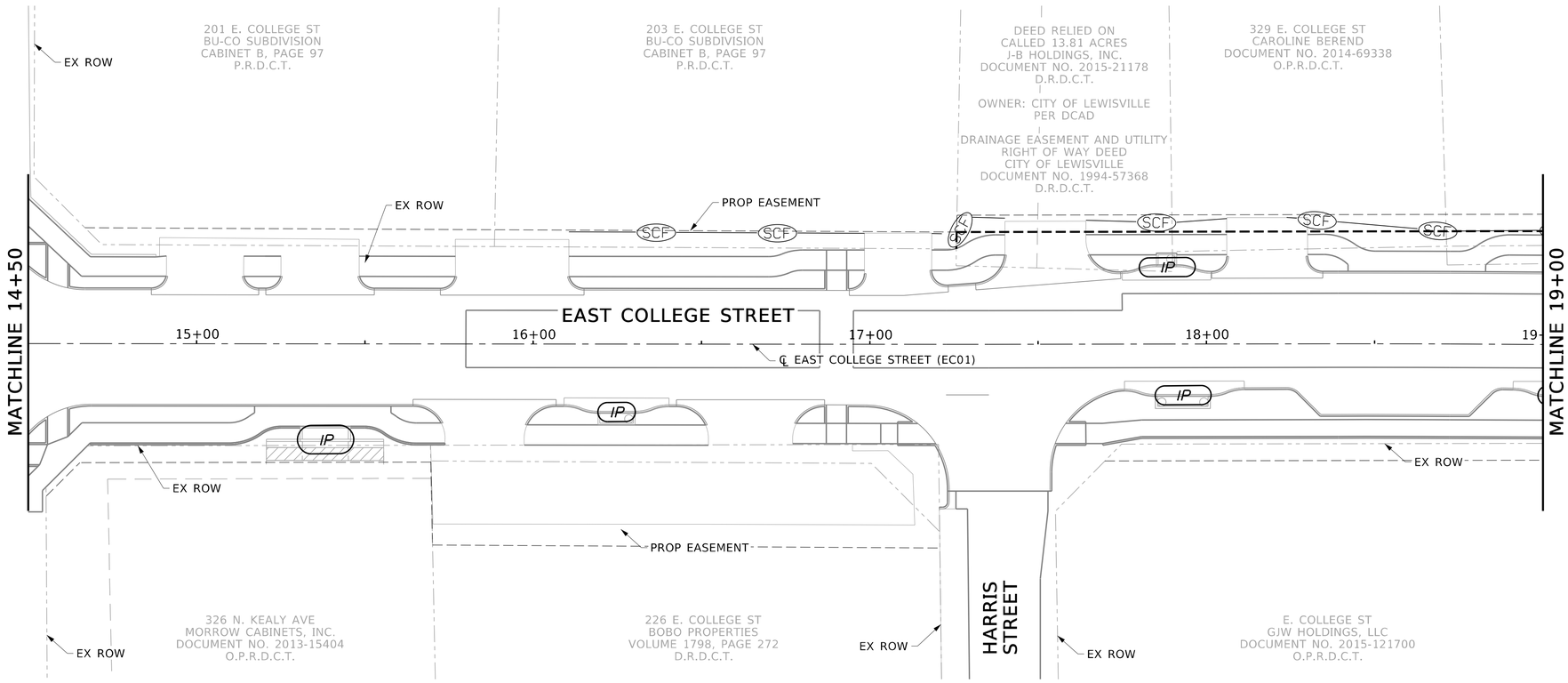
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Plot Scale: 2.000'' / 1'' Model: Default
Date: Aug. 08, 2024 - 02:16:33 PM Project:Freese and Nichols, Inc. - True Type Fonts





N

0 10' 20' 40'
SCALE IN FEET

LEGEND

- SCF — SILT FENCE
- IP — INLET PROTECTION

NOTES:

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH THE TCEQ'S TPDES REGULATIONS CONCERNING EROSION AND SEDIMENT CONTROL.
2. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE AND INSPECTED BY CITY OR ITS REPRESENTATIVE PRIOR TO ANY CONSTRUCTION ACTIVITIES. THEY SHALL REMAIN IN PLACE AND FUNCTIONAL UNTIL AFTER THE PROPOSED IMPROVEMENTS ARE IN PLACE.
3. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO THE PROJECT FREE OF MUD AND DEBRIS FROM CONSTRUCTION AT ALL TIMES.
4. SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS INDICATED ON THE PLANS PRIOR TO ANY EMBANKMENT OR EXCAVATION WORK BEING DONE. WHEN THE PROJECT IS COMPLETE AND THE ENTIRE PROJECT SITE IS COMPLETELY STABILIZED, THE SEDIMENT CONTROL DEVICES AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROPRIATE MANNER. THE CONTRACTOR HAS THE ULTIMATE RESPONSIBILITY FOR THE EFFECTIVE CONTROL OF EROSION AND SEDIMENTATION.
5. THE CONTRACTOR SHALL SEED OR SOD A COMPLETED EMBANKMENT AS SOON AS PRACTICABLE, BUT NO LATER THAN 14 DAYS AFTER SAID EMBANKMENT IS COMPLETE.
6. THE SITE SHALL BE REVIEWED WEEKLY AND AFTER ANY MAJOR STORM (1/4 INCH OR GREATER). ADJUSTMENTS/REPAIRS TO THE EROSION CONTROL DEVICES SHALL BE MADE AS NEEDED.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
SIDNEY T. GREEN JR.
137592
LICENSED
PROFESSIONAL ENGINEER
08/08/2024

FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
Phone - (214)217-2200
Web - www.freese.com

CITY OF LEWISVILLE
EAST COLLEGE STREET IMPROVEMENTS
CIVIL
EROSION CONTROL PLAN
BEGIN TO STA 19+00

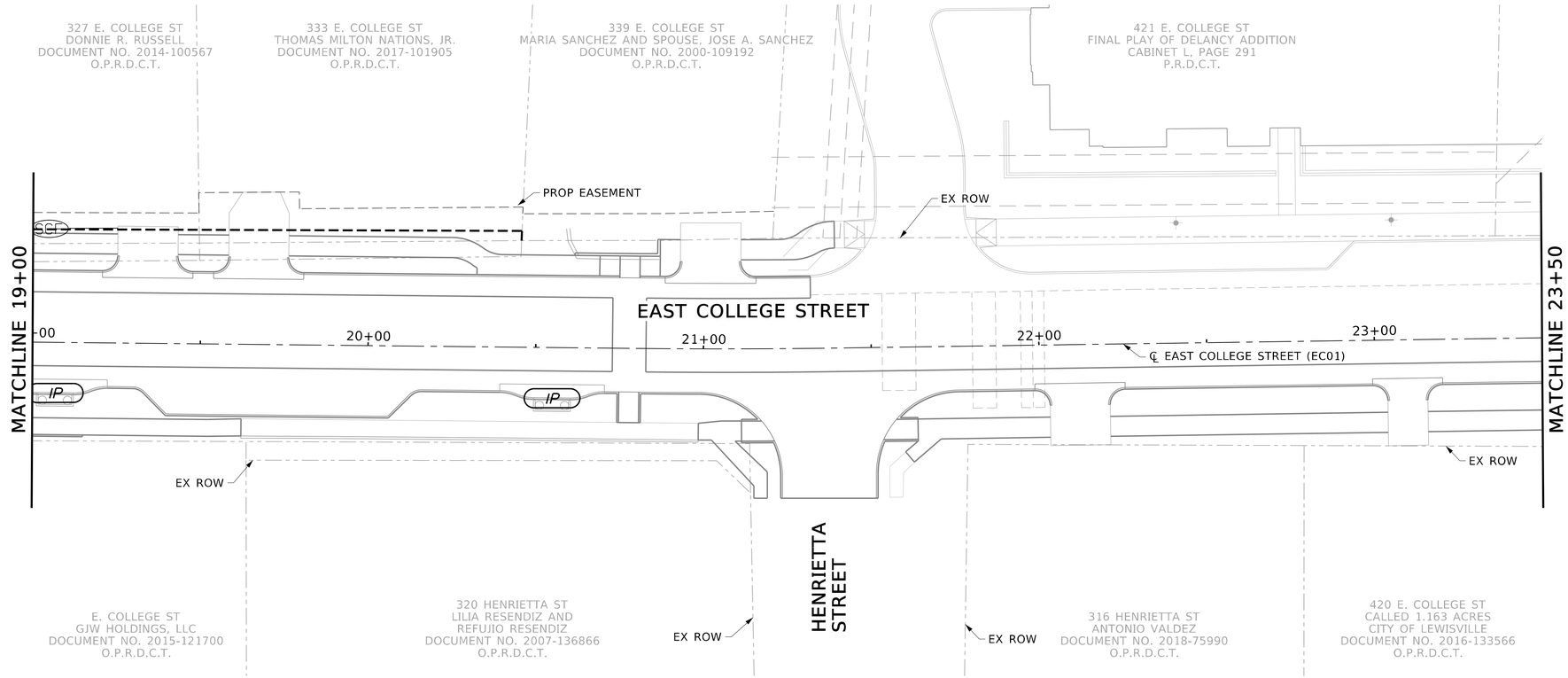
NO.	ISSUES	BY	DATE

F&N JOB NO. LEW21241
DATE AUG 2022
DESIGNED STG
DRAWN BA
REVISED
CHECKED ADH
FILE NAME cv-trt-pl-eros01.sht

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SHEET EC-01
SEQ. 130

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Date: Aug. 08, 2024 - 02:16:41 PM



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2. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE AND INSPECTED BY CITY OR ITS REPRESENTATIVE PRIOR TO ANY CONSTRUCTION ACTIVITIES. THEY SHALL REMAIN IN PLACE AND FUNCTIONAL UNTIL AFTER THE PROPOSED IMPROVEMENTS ARE IN PLACE.
3. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO THE PROJECT FREE OF MUD AND DEBRIS FROM CONSTRUCTION AT ALL TIMES.
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5. THE CONTRACTOR SHALL SEED OR SOD A COMPLETED EMBANKMENT AS SOON AS PRACTICABLE, BUT NO LATER THAN 14 DAYS AFTER SAID EMBANKMENT IS COMPLETE.
6. THE SITE SHALL BE REVIEWED WEEKLY AND AFTER ANY MAJOR STORM (1/4 INCH OR GREATER). ADJUSTMENTS/REPAIRS TO THE EROSION CONTROL DEVICES SHALL BE MADE AS NEEDED.

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FREESE NICHOLS
12770 Merit Drive, Suite 900
Dallas, TX 75251
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EROSION CONTROL PLAN
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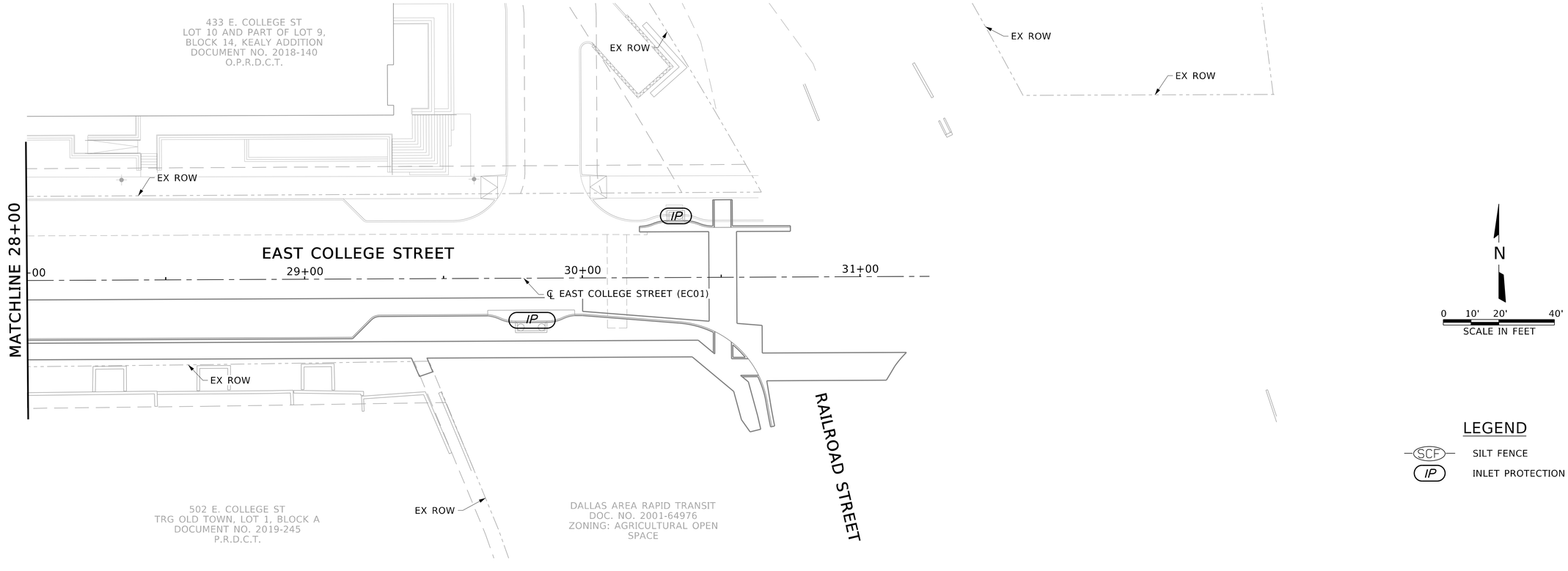
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SEQ. 131

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Date: Aug. 08, 2024 - 02:16:45 PM Project: Freese and Nichols, Inc. - True Type Fonts



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2. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE AND INSPECTED BY CITY OR ITS REPRESENTATIVE PRIOR TO ANY CONSTRUCTION ACTIVITIES. THEY SHALL REMAIN IN PLACE AND FUNCTIONAL UNTIL AFTER THE PROPOSED IMPROVEMENTS ARE IN PLACE.
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5. THE CONTRACTOR SHALL SEED OR SOD A COMPLETED EMBANKMENT AS SOON AS PRACTICABLE, BUT NO LATER THAN 14 DAYS AFTER SAID EMBANKMENT IS COMPLETE.
6. THE SITE SHALL BE REVIEWED WEEKLY AND AFTER ANY MAJOR STORM (1/4 INCH OR GREATER). ADJUSTMENTS/REPAIRS TO THE EROSION CONTROL DEVICES SHALL BE MADE AS NEEDED.

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NO.	ISSUES	BY	DATE

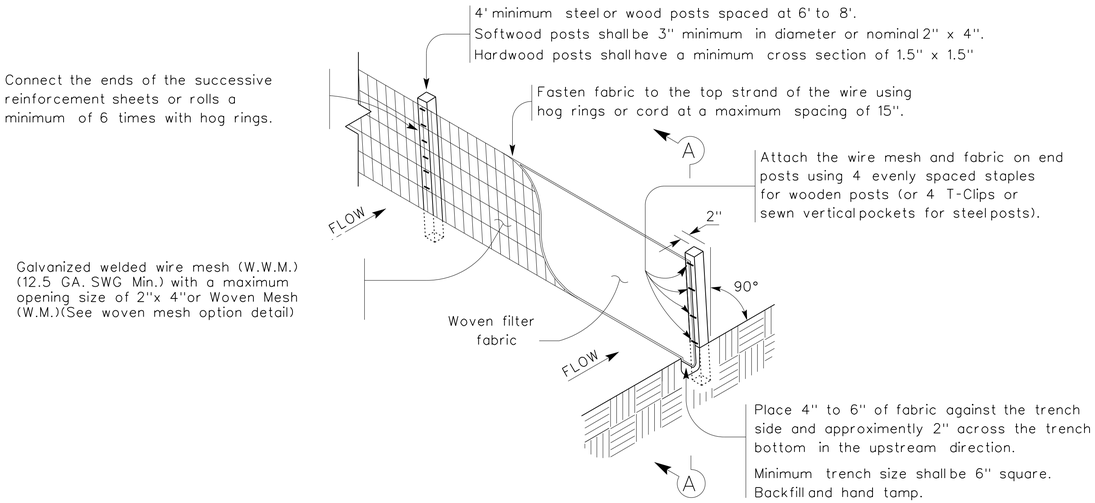
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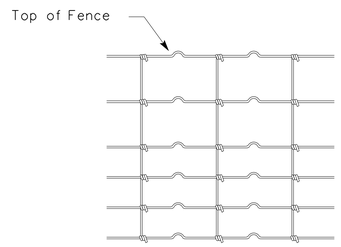
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Project Freese and Nichols, Inc. - True Type Fonts

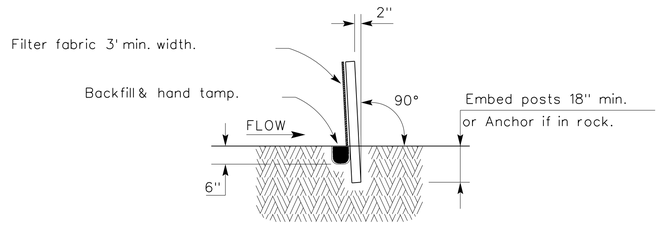
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TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT ^{2}. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

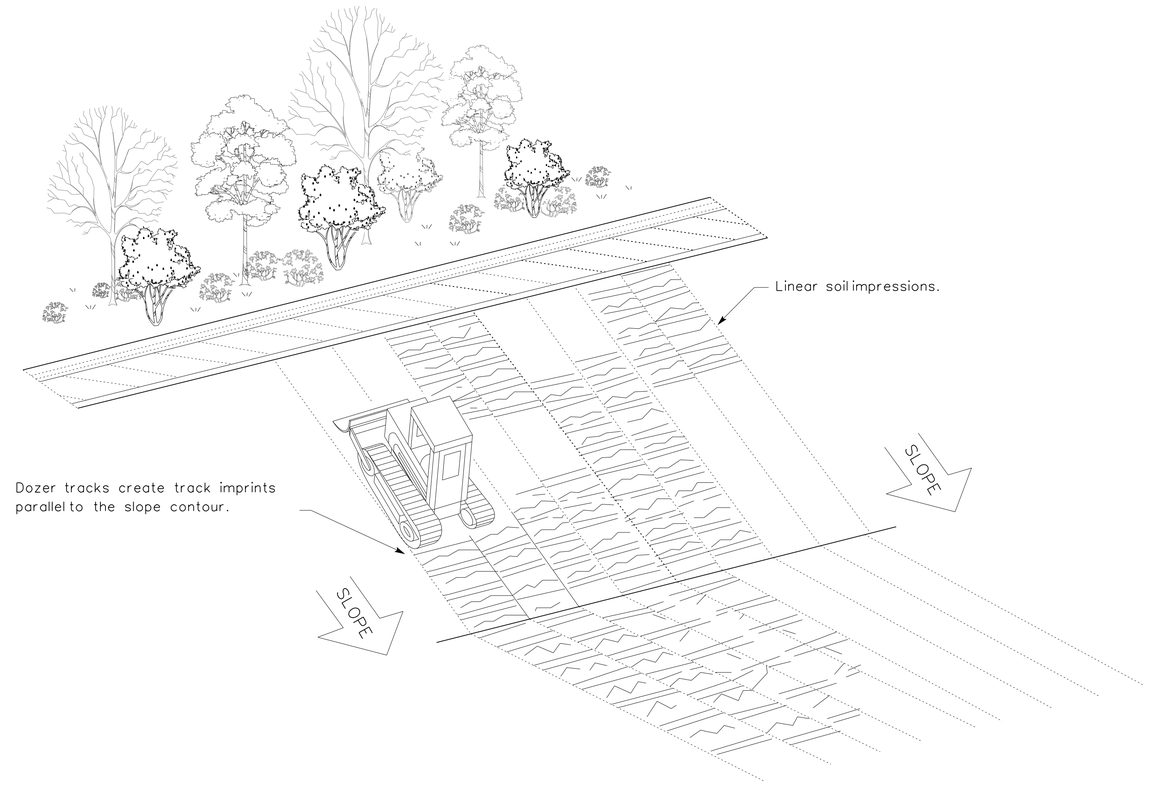
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

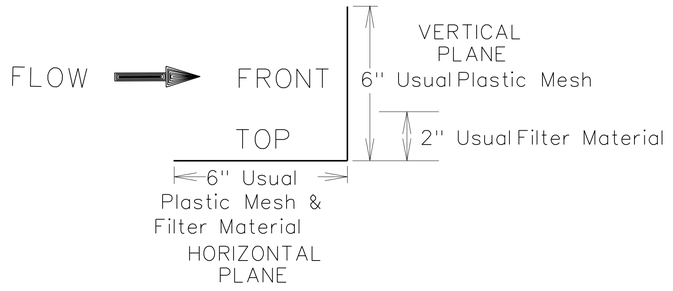
FENCE & VERTICAL TRACKING

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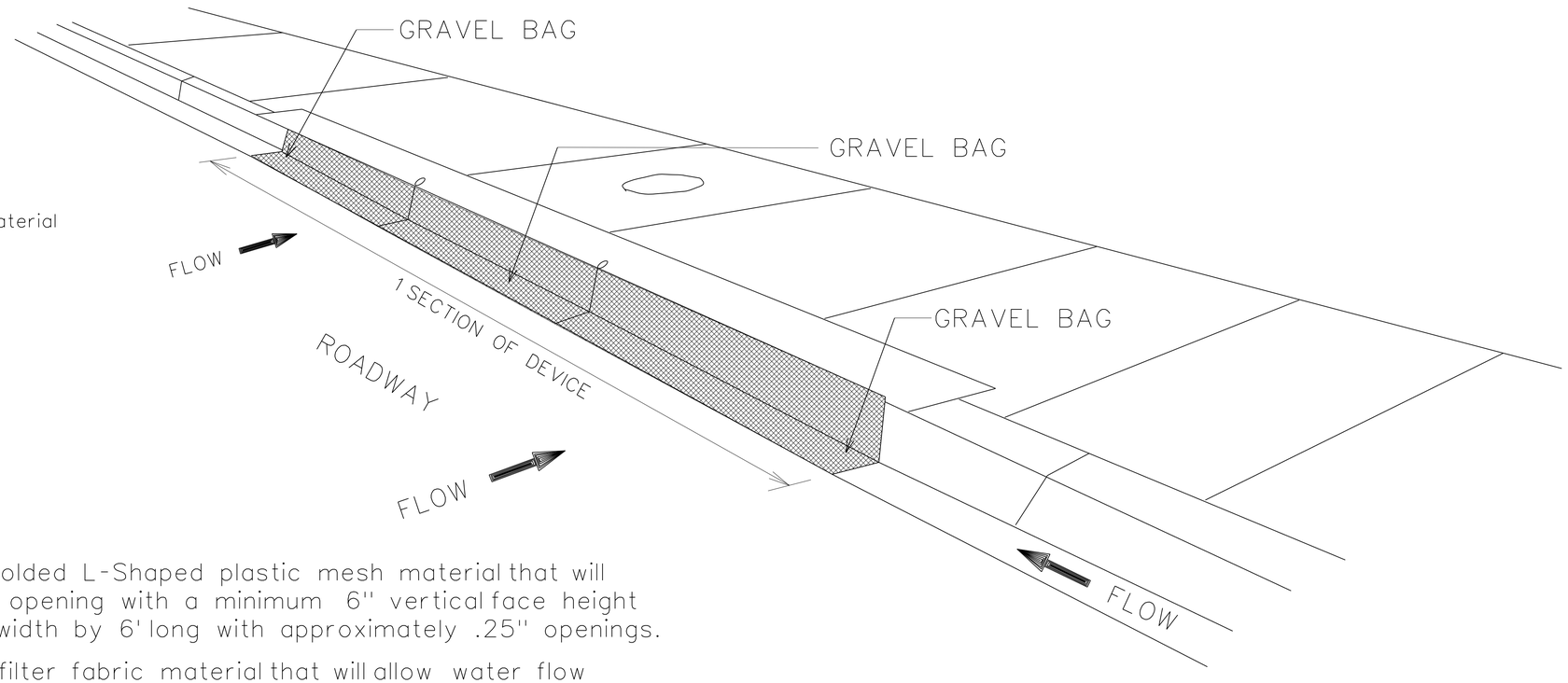
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REVISIONS				
	DIST	COUNTY		SHEET NO.
				133

DATE
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PLASTIC MESH L-SHAPE CROSS SECTION



NOTES:

1. The device shall be a molded L-Shaped plastic mesh material that will cover the entire curb opening with a minimum 6" vertical face height by 6" horizonal plane width by 6' long with approximately .25" openings.
2. The device must have filter fabric material that will allow water flow but stop sediment. It will extend from bottom up vertical plane a minimum of 2" and full width of horizontal bottom plane. The filter fabric shall be attached to the back of the plastic mesh. It shall not cover more than 1/3 of the height of the vertical plane opening to allow overflow in larger strom events to prevent flooding of travel lanes.

Filter Fabric Physical Requirements Table

Apparent Opening Size (AOS)	400 to 600 microns
Percent Open Area (POA)	>10%
Flow Rate	130 gallons per SF per minute with clean water or greater.

3. Place with horizontal plane pointing away from curb.
4. For high openings, the device or attachment should extend above opening.
5. For long curb openings, overlap the segments 6". Tie together with 4 zip ties in 4 places, 2 at the top and 2 at the bottom.
6. Install gravel, not sand, bags at each end, at overlaps and in the middle of each section. Use 1/3 full bags for low profile and best traffic avoidance.
7. Use bags that will have long-term resistance to UV exposure.
8. Sediment should be removed and device cleaned when sediment reaches 1" in depth.

REVISED ON 9/10/08

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DALLAS DISTRICT STANDARD

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CURB INLET SEDIMENT PROTECTION

FED. RD. DIV. NO.	PROJECT NUMBER		SHEET NUMBER
18			134
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	DALLAS	
CONTROL	SECTION	SECTION	HIGHWAY NUMBER
0000	00	000	IH/SH/FM

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