



# Exhibit B

# CITY OF LEWISVILLE, TEXAS

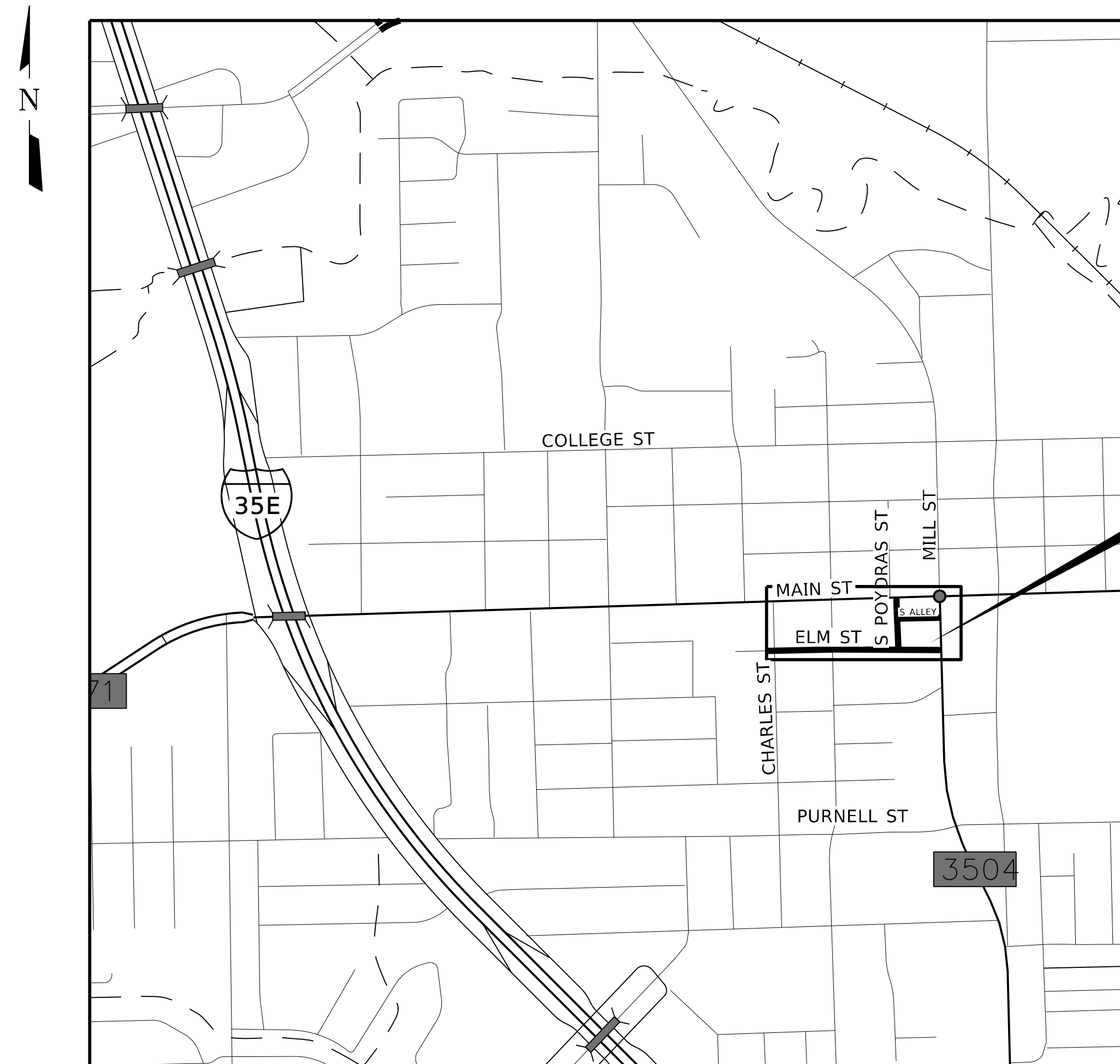
## CONSTRUCTION PLANS FOR

# ELM ST & POYDRAS ST IMPROVEMENTS

## CITY PROJECT NO. G1912

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VICINITY MAP  
0 1000' 2000'  
SCALE IN FEET

**PROJECT LOCATION**

**MAYOR**  
TJ GILMORE

**CITY MANAGER**  
CLAIRE POWELL

**CITY COUNCIL**  
WILLIAM J. MERIDITH-MAYOR PRO TEM  
PATRICK KELLY-DEPUTY MAYOR PRO TEM  
BRANDON JONES  
BOB TROYER  
RONNI CADE  
KRISTIN GREEN

*Alan D. Hendrix*, P.E. 8/7/2023

\* 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.

*Alan D. Hendrix*, P.E. 08/07/2023

# 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.

100% SUBMITTAL  
AUGUST 2023

**LENGTH OF PROJECT**  
ELM ST FROM CHARLES ST TO MILL ST = 720 LF  
DESIGN SPEED = 30 MPH  
POYDRAS ST FROM ELM ST TO S ALLEY = 203 LF  
DESIGN SPEED = 30 MPH

FREES AND NICHOLS, INC.  
TEXAS REGISTERED ENGINEERING FIRM F-2144  
**FREES NICHOLS**  
12770 Merit Drive, Suite 900  
Dallas, TX 75251  
Phone - (214) 217-2200  
Web - www.frees.com



MicroStation V8 User: 04331, Office: On Site  
 Plotter: HP DesignJet 2550, General: cv-trt-cover.SHT  
 Plot Scale: 2.0000 x 1.0000, In., Model: Default  
 Date: Aug 07 2023 - 11:18:43 AM, Project: Freese and Nichols, Inc. - True Type Fonts

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 \$45.00 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 THEMSELVES 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, DI 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 SEEDDED 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 SEEDDED SHALL BE CHECKED PERIODICALLY TO SEE THAT THE GRASS COVERAGE IS PROPERLY MAINTAINED. DISTURBED AREAS SHALL BE WATERED, FERTILIZED, AND RESEEDDED 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
- 8" -4,200 PSI (3 DAY) COMP. WITH 8 SACK MIN. FOR ANY HIGH EARLY STRENGTH FOR REPLACEMENT OF EXISTING DRIVEWAYS
-6" PAVEMENT -4,200 PSI (3 DAY)
-5" SIDEWALK -3,750PSI
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-1 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 MODIFIED 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 ¾ 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.
8. 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).
9. ALL CONSTRUCTION JOINTS TO BE IN ACCORDANCE WITH CITY DETAIL 2.2 SHEET PDT-1.

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. IF CONTRACTOR MODIFIES TRAFFIC CONTROL PLAN LAID OUT IN THE PLANS, THEN CONTRACTOR SHALL 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 MUTCD TO IMPLEMENT THIS CONSTRUCTION PHASING PLAN.
2. THE TRAFFIC CONTROL PLANS (TCP-1) AND TEMPORARY ASPHALT PAVEMENT SHOWN IN THESE PLANS ARE FOR BIDDING 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.



CITY OF LEWISVILLE
ELM ST & POYDRAS ST
IMPROVEMENTS

CIVIL

GENERAL NOTES

Table with columns: NO., ISSUES, BY, DATE, FEIN JOB NO., DATE, DESIGNED, DRAWN, REVISED, CHECKED, FILE NAME. Includes a 'VERIFY SCALE' bar and a vertical label 'cv-rtt-notes01.sht'.

SHEET GN-1
SEQ. 2

MicroStation Vg User: 04331 Office On Site
Project: N:\Drawings\1\_General\cv-rtt-notes01.sht
Plot Scale: 2.000" = 1'-0"
Date: Aug 07 2023 11:18:45 AM

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.

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



CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
IMPROVEMENTS**  
CIVIL

**GENERAL NOTES**

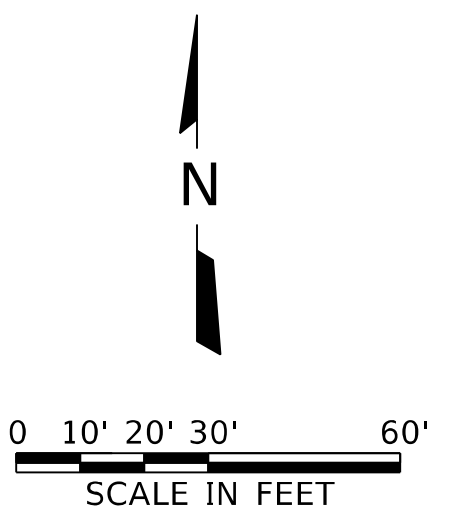
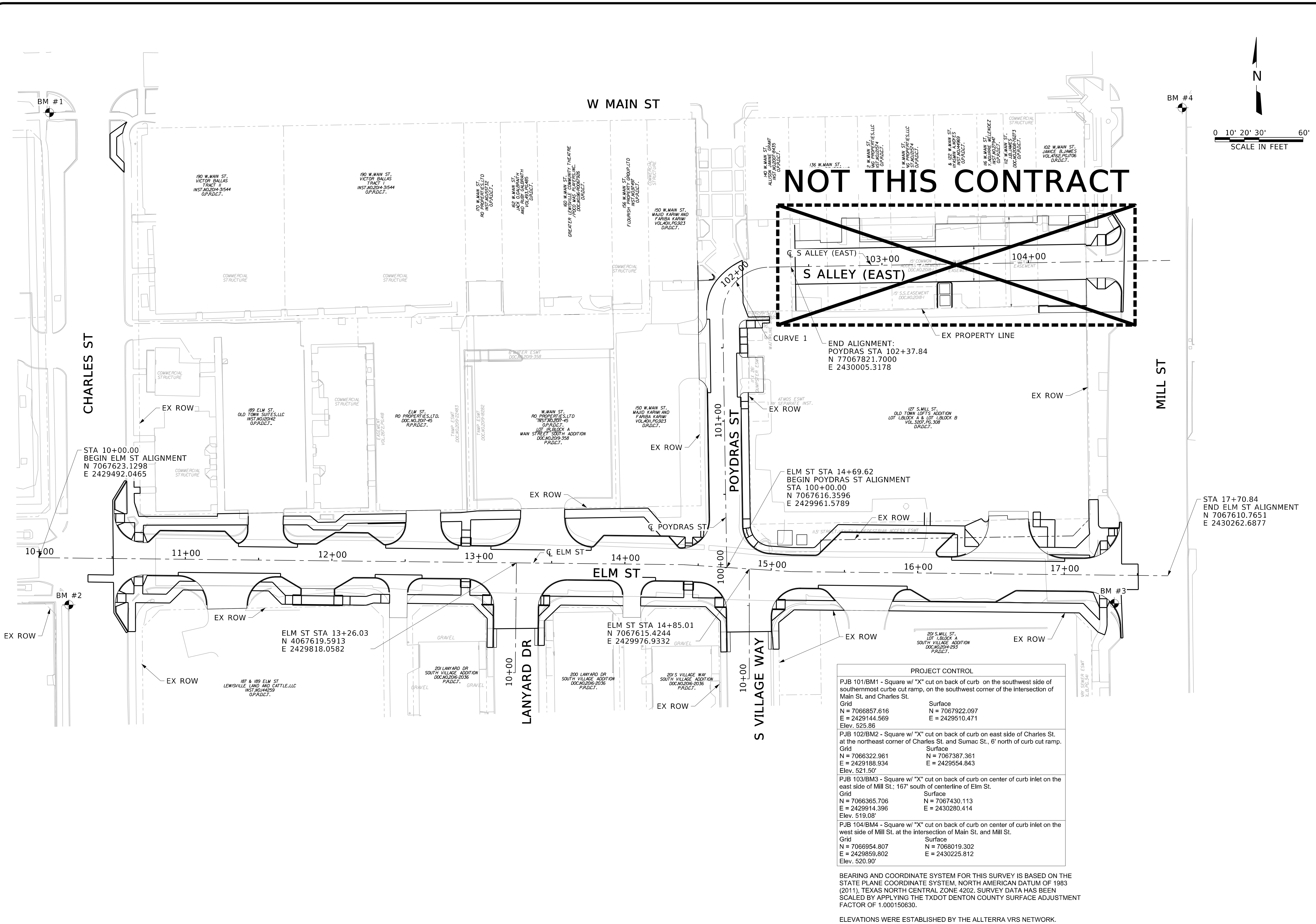
NO.	ISSUES	BY	DATE	F&N JOB NO.
				LEW20378
				DATE AUG 2023
				DESIGNED YT
				DRAWN KLH
				REVISED SEC
				CHECKED
				FILE NAME

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

cv-ert-notes02.sht

SHEET  
**GN-2**  
SEQ. 3

MicroStation V8 User: 04331 - Office On Site  
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Plot Scale: 2.000" = 1' - Plot: PLOT - AutoCAD  
Date: Aug 07 2023 - 11:18:47 AM - Project: Freese and Nichols, Inc. - True Type Font



**NOT THIS CONTRACT**

PROJECT CONTROL	
PJB 101/BM1 - Square w/ "X" cut on back of curb on the southwest side of southernmost curb cut ramp, on the southwest corner of the intersection of Main St. and Charles St.	Surface
Grid	N = 7066857.616 E = 2429144.569 Elev. 525.88
PJB 102/BM2 - Square w/ "X" cut on back of curb on east side of Charles St. at the northeast corner of Charles St. and Sumac St., 6' north of curb cut ramp.	Surface
Grid	N = 7066322.961 E = 2429188.934 Elev. 521.50'
PJB 103/BM3 - Square w/ "X" cut on back of curb on center of curb inlet on the east side of Mill St.; 167' south of centerline of Elm St.	Surface
Grid	N = 7066365.706 E = 2429914.396 Elev. 519.08'
PJB 104/BM4 - Square w/ "X" cut on back of curb on center of curb inlet on the west side of Mill St. at the intersection of Main St. and Mill St.	Surface
Grid	N = 7066954.807 E = 2429858.802 Elev. 520.90'

BEARING AND COORDINATE SYSTEM FOR THIS SURVEY IS BASED ON THE STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (2011), TEXAS NORTH CENTRAL ZONE 4202. SURVEY DATA HAS BEEN SCALED BY APPLYING THE TXDOT DENTON COUNTY SURFACE ADJUSTMENT FACTOR OF 1.000150630.

ELEVATIONS WERE ESTABLISHED BY THE ALLTERRA VRS NETWORK.

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

**FREESSE AND NICHOLS**  
12770 Maple Drive, Suite 300  
Dallas, TX 75251  
Phone - (214) 217-2200  
Web - www.freesse.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
CIVIL  
**HORIZONTAL CONTROL PLAN**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	YTD	DRAWN	KLH	REVISED	SEC	CHECKED	FILE NAME
				LEW20378	AUG 2023								cv-rt-horizctrl1st

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

SHEET **HC-1**

SEQ. 4

MicroStation V8 User: 04331 Office: On Site  
Project: LEWISVILLE - General/Horizontal/Control  
Plot Scale: 60.000' / 1" Model: Default  
Date: Aug 07 2023 - 11:18:53 AM Project: Freesse and Nichols, Inc. - True Type Fonts

### ELM STREET ALIGNMENT

Beginning chain ELM\_ST2 description

```

=====
Point 122      N  7,067,623.1298 E  2,429,492.0465 Sta  10+00.00
Course from 122 to 123 S 89° 22' 41.33" E Dist 437.7769
Point 123      N  7,067,618.3785 E  2,429,929.7976 Sta  14+37.78
Course from 123 to 124 S 86° 21' 54.40" E Dist 76.0989
Point 124      N  7,067,613.5540 E  2,430,005.7434 Sta  15+13.88
Course from 124 to 125 S 89° 22' 41.33" E Dist 256.9594
Point 125      N  7,067,610.7651 E  2,430,262.6877 Sta  17+70.84
=====
  
```

Ending chain ELM\_ST2 description

### POYDRAS STREET ALIGNMENT

Beginning chain POYDRAS description  
 Feature: Geom\_Centerline

```

=====
Point POYDRAS1 N  7,067,616.3596 E  2,429,961.5789 Sta  100+00.00
Course from POYDRAS1 to PC POYDRAS_3 N 0° 54' 01.00" W Dist 172.4772
  
```

Curve Data  
 \*-----\*

```

Curve POYDRAS_3
P.I. Station      102+04.58 N  7,067,820.9131 E  2,429,958.2283
Delta            =  90° 11' 09.48" (RT)
Degree           = 179° 02' 57.52"
Tangent          =  32.1040
Length           =  50.3693
Radius           =  32.0000
External         =  13.3285
Long Chord       =  45.3282
Mid. Ord.        =  9.4093
P.C. Station      101+72.48 N  7,067,788.8154 E  2,429,958.8689
P.T. Station      102+22.85 N  7,067,821.4495 E  2,429,990.3278
C.C.              N  7,067,789.4540 E  2,429,990.8625
Back             = N  1° 08' 36.20" W
Ahead            = N  89° 02' 33.28" E
Chord Bear       = N  43° 56' 58.54" E
  
```

Course from PT POYDRAS\_3 to POYDRAS5 N 89° 02' 33.28" E Dist 14.9920

```

Point POYDRAS5  N  7,067,821.7000 E  2,430,005.3178 Sta  102+37.84
=====
  
```

Ending chain POYDRAS description

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



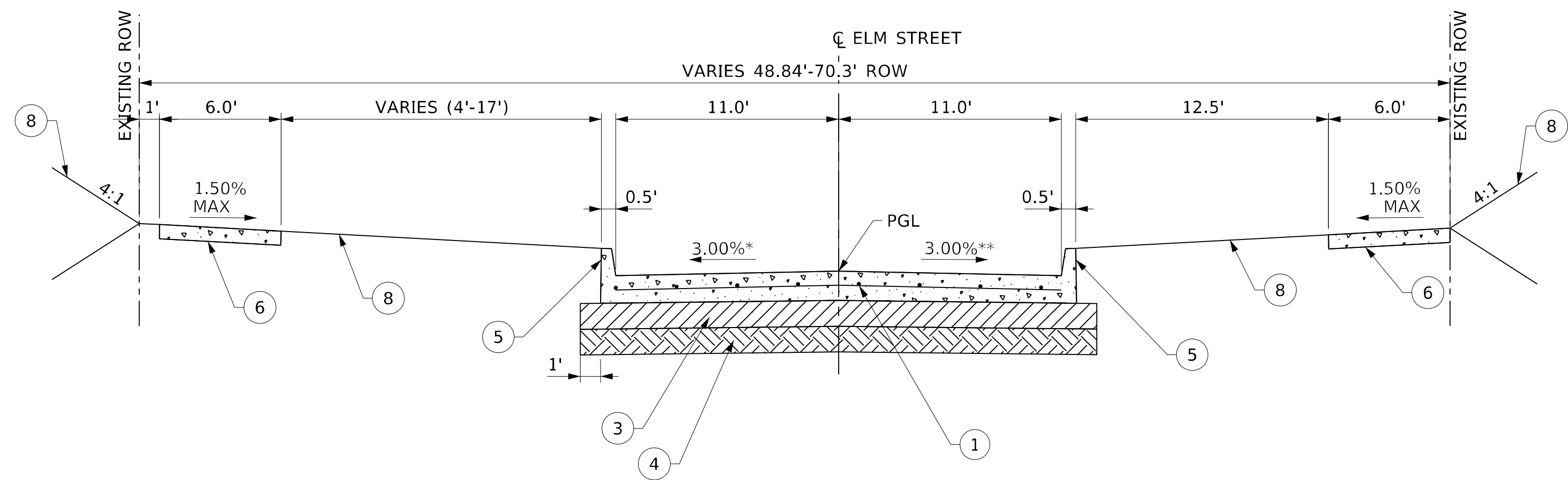
CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST**  
**IMPROVEMENTS**  
 CIVIL

**ALIGNMENT DATA**

NO. ISSUES	BY	DATE	F&N JOB NO.	LEW20378
DESIGNED	Y T	DATE	DATE	AUG 2023
DRAWN	KLH			
REVISED	SEC			
CHECKED				
VERIFY SCALE: Bar is one inch on original drawing. 1 if not one inch on this sheet, adjust scale.			FILE NAME	cv-trt-align.sht

**LEGEND**

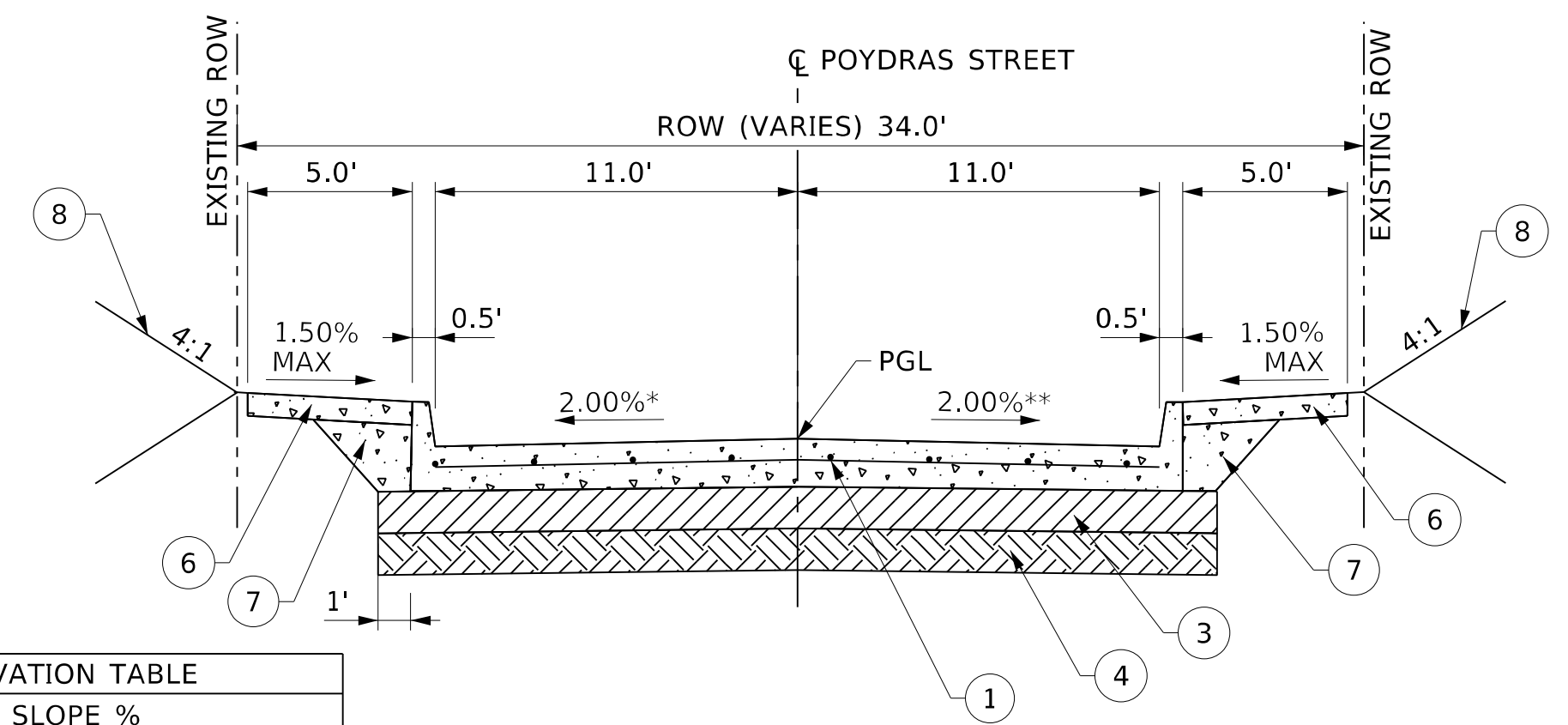
- ① 8" CONCRETE PAVEMENT W/ #4 BARS @ 18" O.C.E.W.
- ② 8" HIGH EARLY RELEASE STRENGTH CONCRETE W/ #4 BARS @ 18" O.C.E.W.
- ③ 6" TYP A FLEXBASE (GRADE 1-2) (SEE GN-1 FOR MORE INFORMATION)
- ④ 6" COMPACTED SUBGRADE (SEE GN-1 FOR MORE INFORMATION)
- ⑤ 6" INTEGRAL CONCRETE CURB
- ⑥ 5" CONCRETE SIDEWALK W/ #3 BARS @ 24" O.C.E.W.
- ⑦ SIDEWALK LUG (REFER TO DETAIL 4.6)
- ⑧ BLOCK SOD ALL DISTURBED AREAS
- ⑨ 2" TYPE D ASPHALT



① ELM STREET TYPICAL SECTION

N.T.S.  
STA 10+50.80 TO STA 10+73  
STA 12+36 TO STA 13+76  
STA 14+37 TO STA 15+31  
STA 16+62.29 TO STA 17+38.42

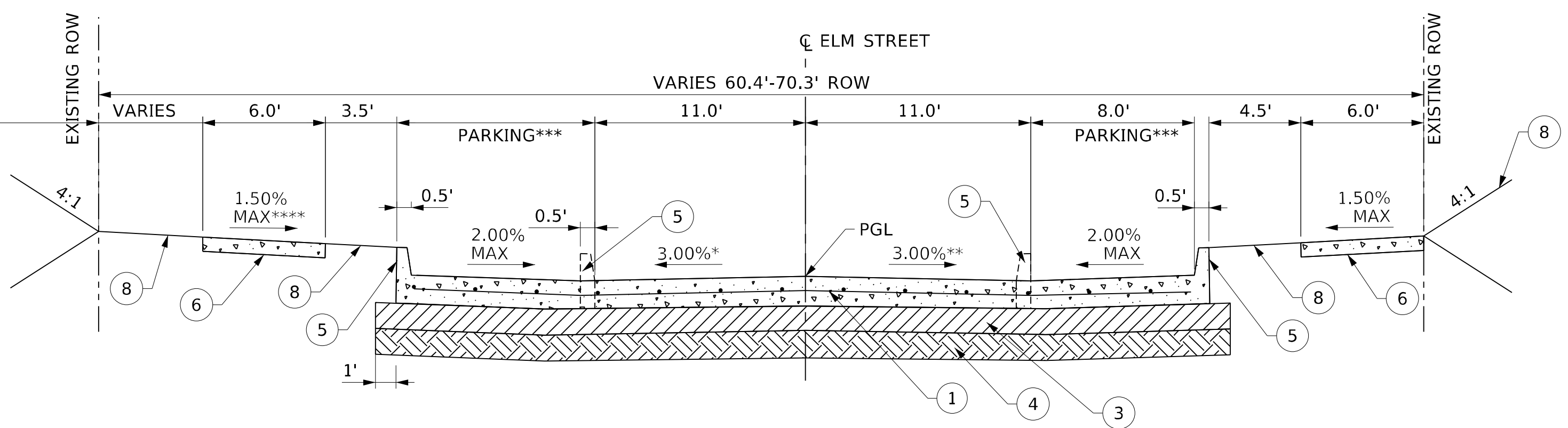
STATION	CROSS SLOPE %	
	WESTBOUND LANE*	EASTBOUND LANE**
10+71.28	-0.50%	-0.40%
10+96.23	-3.00%	-3.00%
16+70	-3.00%	-3.00%
17+10	+0.25%	-0.25%



③ POYDRAS STREET TYPICAL SECTION

STATION	CROSS SLOPE %	
	SOUTHBOUND LANE*	NORTHBOUND LANE**
100+33	+0.80%	-0.40%
100+63	-2.00%	-2.00%

N.T.S.  
STA 100+35 TO STA 102+03.66

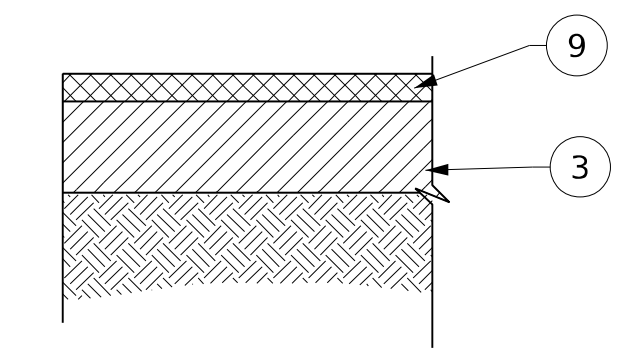


② ELM STREET TYPICAL SECTION

N.T.S.  
STA 10+73 TO STA 12+36  
STA 13+76 TO STA 14+37  
STA 15+31 TO STA 16+62.29

\*\*\*PARKING:  
-NORTH OF ELM:  
-STA 10+82 TO STA 11+26  
-STA 11+80 TO STA 12+24  
-STA 13+85 TO STA 14+29  
-STA 15+47 TO STA 16+24  
-SOUTH OF ELM:  
-STA 11+79 TO STA 12+01  
-STA 16+09 TO STA 16+53

\*\*\*\*THE PARKWAY SLOPE WILL BE .5% FROM STA 11+00.00 TO STA 12+00.00 OTHER LOCATIONS MAY VARY. PLEASE REFER TO CROSS SECTIONS FOR SLOPES.



④ SANITARY SEWER TEMPORARY PAVEMENT  
N.T.S.

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	YR	DRAWN	KLH	REVISED	SEC	FILE NAME
				LEW20378	AUG 2023							cv-trt-typp01.sht

# CONSTRUCTION NARRATIVE

## PHASE IA

1. CONTRACTOR TO SET UP CHANNELIZING DEVICES AND SIGNS, AND BARRICADES PER TCP(1-2)-18 AND BC (1-12)-21.
2. CONTRACTOR TO CONSTRUCT SANITARY SEWER WHILE KEEPING THE ROADWAY OPEN. THE CONTRACTOR MUST USE FLAGGERS WHEN NECESSARY.
3. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION. ANY DRIVEWAY OR STREET CLOSURE MUST GIVE OWNER 48 HOUR ADVANCE NOTICE.
4. UTILITY TRENCHES TO BE BACKFILLED AND PLACE STEEL PLATE OVER WORKING AREA AT THE END OF THE WORK DAY, ONCE THE SANITARY SEWER LINE IS TESTED, CONTRACTOR MUST INSTALL TEMPORARY PAVEMENT SHOWN ON TYP-1.
5. THE SANITARY SEWER DISCONNECTION AND CONNECTION AT THE BANK MUST BE COMPLETED DURING THE WEEKEND.

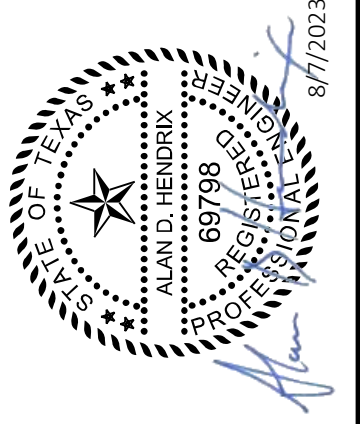
## PHASE IB (EASTBOUND LANE ON ELM ST AND NORTHBOUND LANE ON POYDRAS ST):

1. CONTRACTOR TO SET UP CHANNELIZING DEVICES AND SIGNS, AND BARRICADES PER TCP(1-2)-18 AND BC(1-12)-21 PER SHEET TCP-2 AND TCP-5.
3. CONTRACTOR TO LAYOUT LANE CLOSURES PER TCP DETAIL TCP(1-2)-18. MAINTAIN A MINIMUM WIDTH OF 9 FEET FOR THRU LANES.
4. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION. ANY DRIVEWAY OR STREET CLOSURE MUST GIVE OWNER 48 HOUR ADVANCE NOTICE.
5. ALL CROSS STREETS SHALL BE CONSTRUCTED ONE HALF AT A TIME. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS WHEN RECONSTRUCTING DRIVEWAYS.
6. ALL UTILITY TRENCHES TO BE BACKFILLED AND PLACE STEEL PLATE OVER WORKING AREA AT THE END OF THE WORK DAY.
7. CONTRACTOR TO STOP CONSTRUCTION 3FT AWAY FROM 140 W MAIN ST (STA 100+00.00 TO STA 102+03.66.)

## PHASE II (WESTBOUND LANE ON ELM ST):

1. CONTRACTOR TO SET UP CHANNELIZING DEVICES AND SIGNS, AND BARRICADES PER TCP(1-2)-18 AND BC(1-12)-21 PER SHEET TCP-4 AND TCP-5.
2. CONTRACTOR TO LAYOUT LANE CLOSURES PER TCP DETAIL TCP(1-2)-18. MAINTAIN A MINIMUM WIDTH OF 9 FEET FOR THRU LANES.
3. CONTRACTOR TO STOP CONSTRUCTION AT 140 W MAIN ST PROJECT LIMITS FROM STA 10+33.62 TO STA 17+50.48.
4. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION.
5. ALL CROSS STREETS AND DRIVEWAYS SHALL BE CONSTRUCTED ONE HALF AT A TIME. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS 48 HOURS IN ADVANCE OF RECONSTRUCTING DRIVEWAYS.

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



CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
IMPROVEMENTS**  
CIVIL

**CONSTRUCTION NARRATIVE**

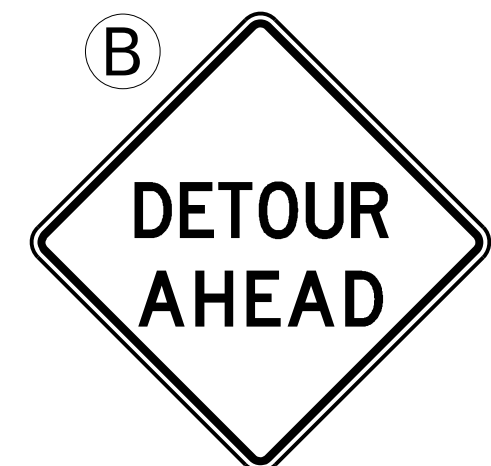
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				DESIGNED	YT
				DRAWN	KLH
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SEQ. 7

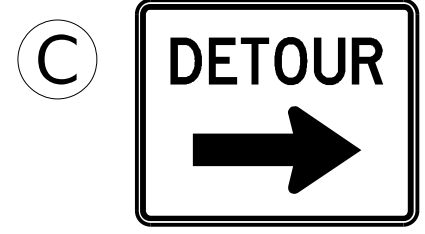
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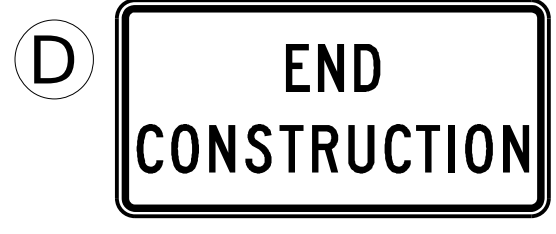
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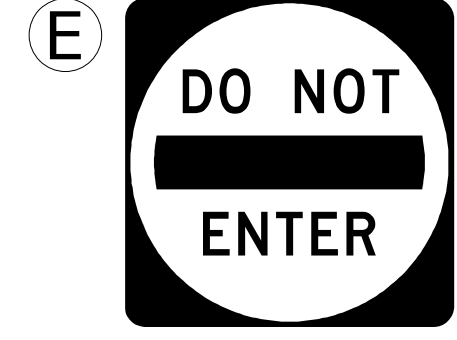
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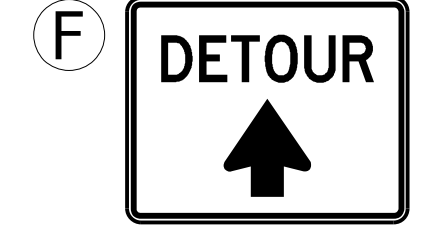
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G20-2  
36"X18"



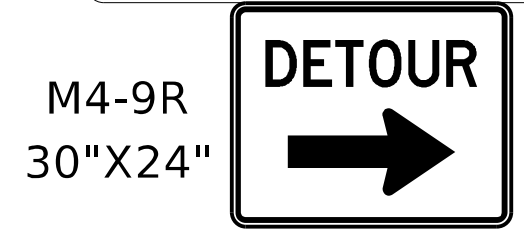
R5-1  
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M4-9S  
30"X24"

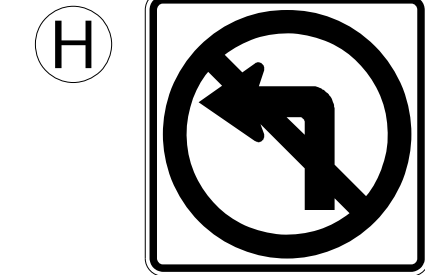


R11-4  
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M4-9R  
30"X24"

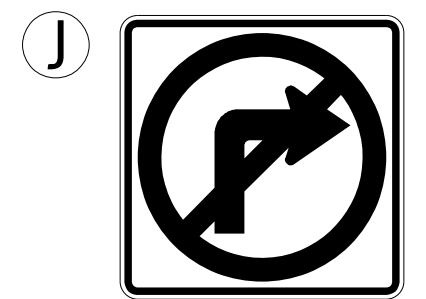
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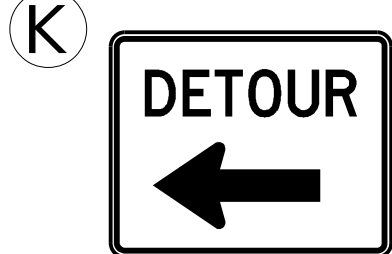
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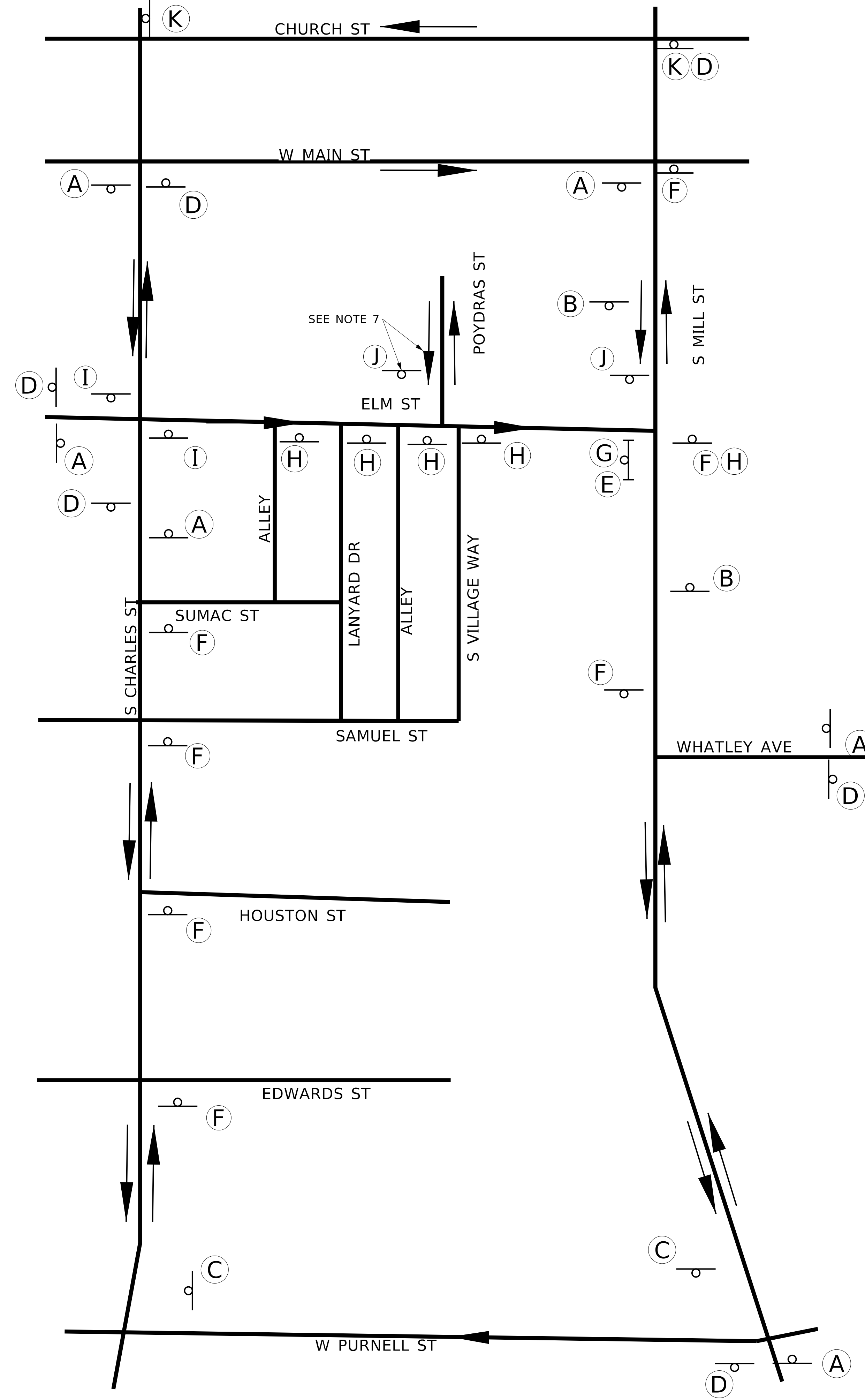
M4-8A  
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R3-1  
24"X24"



M4-9L  
30"X24"



**NOTES:**

- SIGNING SHOWN ON THIS SHEET IS DIAGRAMMATIC ONLY AND DOES NOT SERVE AS A TRAFFIC CONTROL PLAN.
- 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.
- DURING NON-WORK PERIOD HOURS, CONTRACTOR SHALL RESTORE ACCESS THROUGH INTERSECTION AND TO AFFECTED DRIVEWAYS.
- PROVIDE A MINIMUM 48 HOUR ADVANCE NOTIFICATION TO RESIDENTS OF ANY IMPACTS TO STREET/DRIVEWAY ACCESS.
- 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.
- 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.
- CONTRACTOR TO PROVIDE THIS SIGN WHEN POYDRAS IS DRIVABLE.

**LEGEND:**

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



**FREESSE & NICHOLS**  
 12770 Maple Drive, Suite 300  
 Dallas, TX 75251  
 Phone - (214) 217-2200  
 Web - www.freese.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST**  
 IMPROVEMENTS  
 CIVIL  
**PHASE I AND PHASE IB DETOUR PLAN**

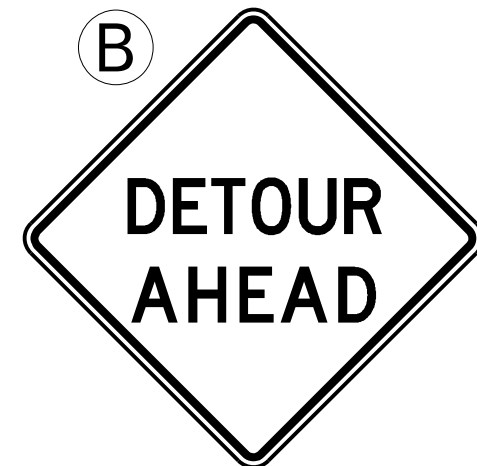
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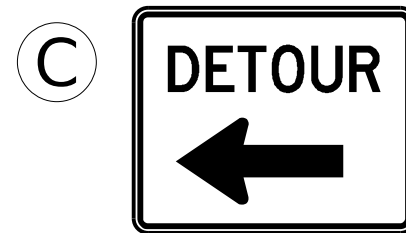




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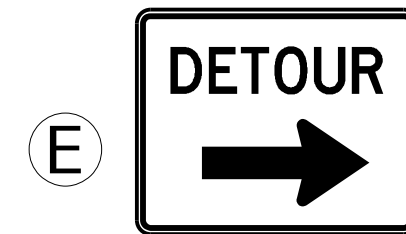
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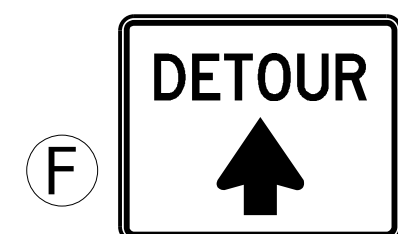
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30"X24"



G20-2  
36"X18"



M4-9R  
30"X24"



M4-9S  
30"X24"

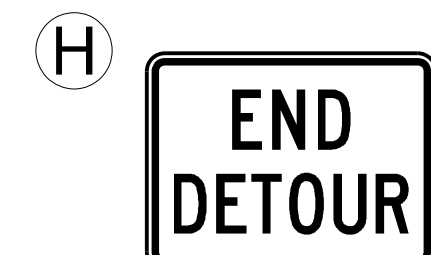


R11-4  
60"X30"



M4-9R  
30"X24"

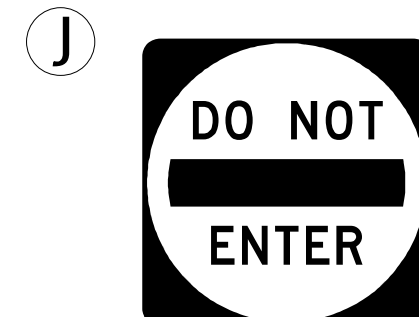
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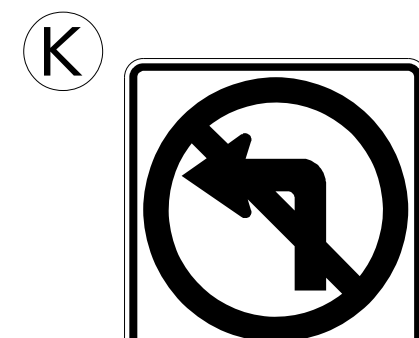
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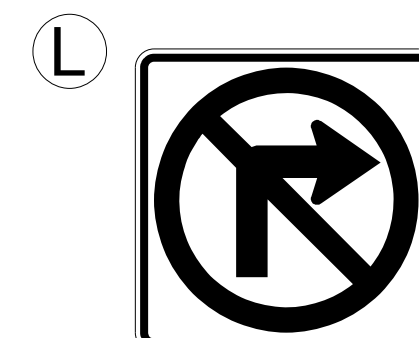
R6-1L  
36"X12"



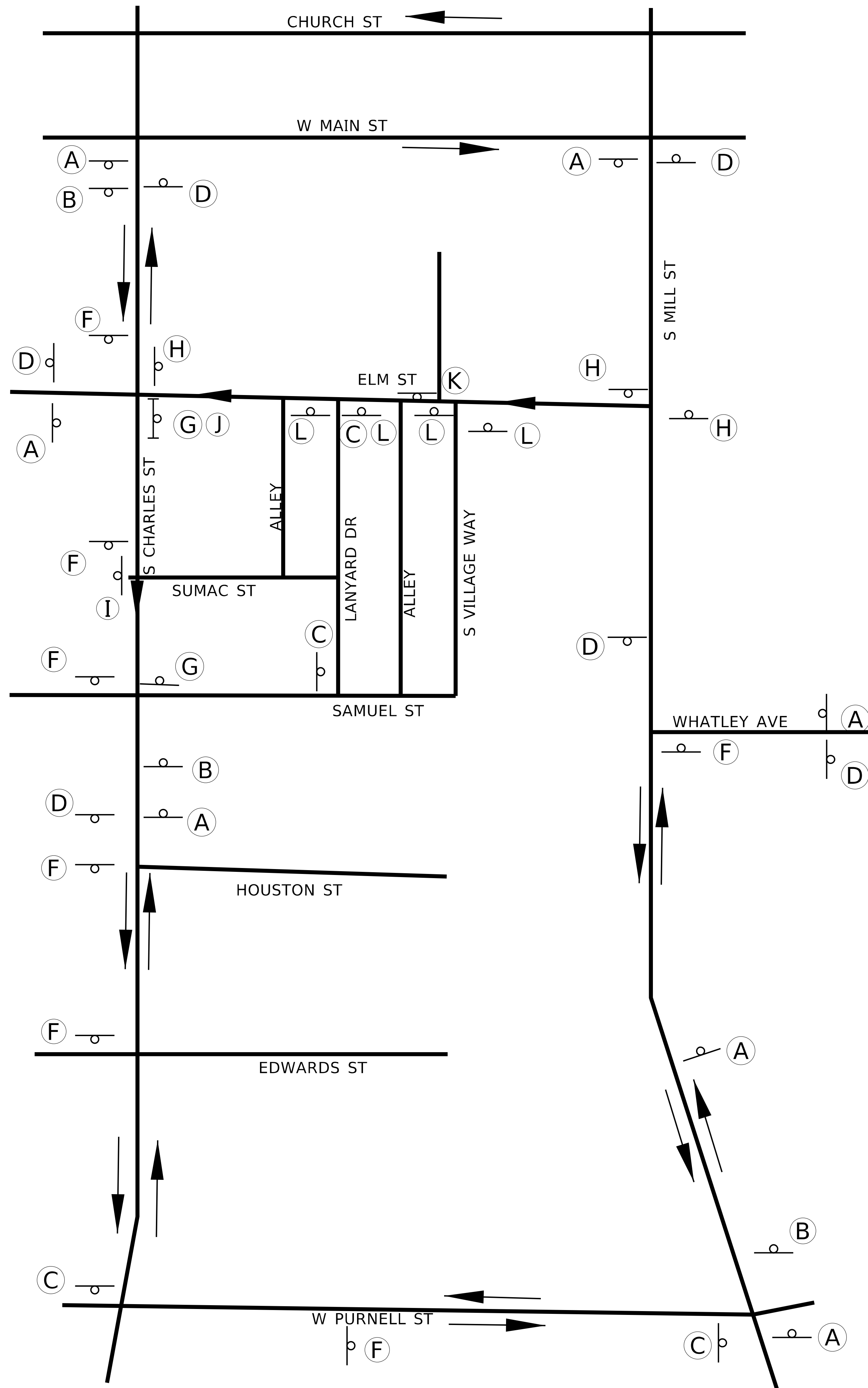
R5-1  
30"X30"



R3-2  
24"X24"



R3-1  
24"X24"



**NOTES:**

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- DURING NON-WORK PERIOD HOURS, CONTRACTOR SHALL RESTORE ACCESS THROUGH INTERSECTION AND TO AFFECTED DRIVEWAYS.
- PROVIDE A MINIMUM 48 HOUR ADVANCE NOTIFICATION TO RESIDENTS OF ANY IMPACTS TO STREET/DRIVEWAY ACCESS.
- 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.
- 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



**FREESSE & NICHOLS**  
 12770 Maple Drive, Suite 300  
 Dallas, TX 75251  
 Phone - (214) 217-2200  
 Web - www.freesse.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST**  
 IMPROVEMENTS  
 CIVIL  
**PHASE II DETOUR PLAN**

NO.	ISSUES	BY	DATE	FEN JOB NO.	DATE	DESIGNED	CHKM	DRAWN	KLH	REVISED	SEC	CHECKED	FILE NAME
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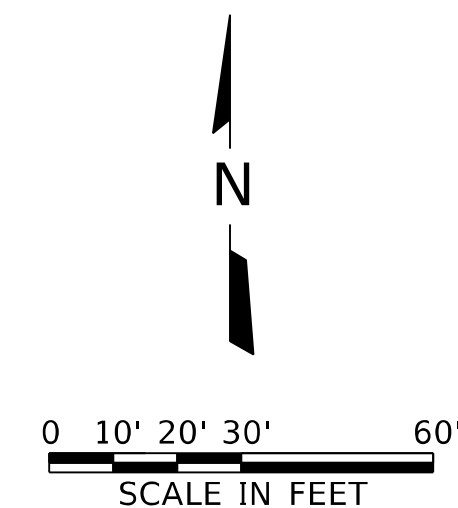
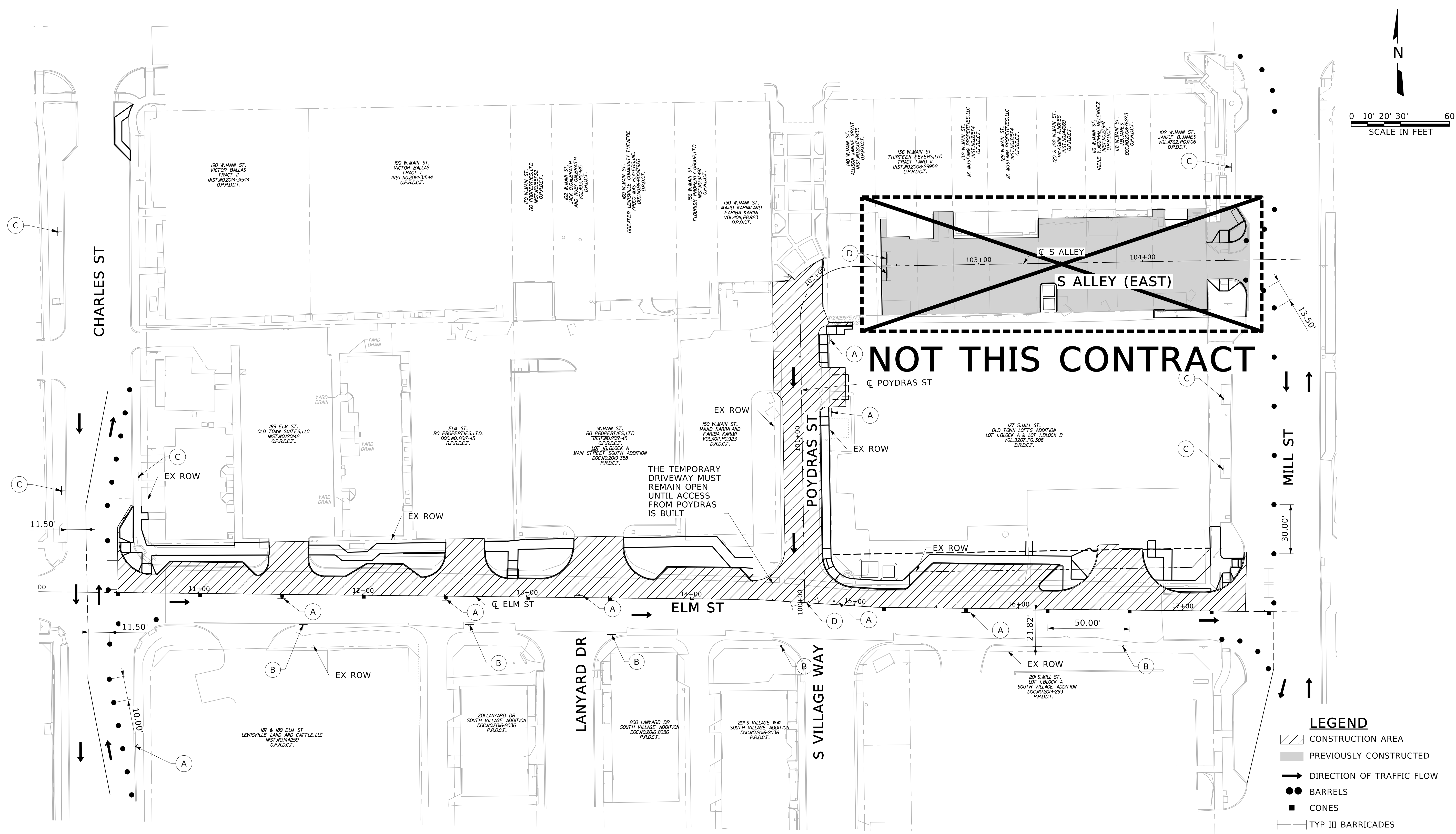
VERIFY SCALE: Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET **TCP-3**

SEQ. 9

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 CIVIL  
**TRAFFIC CONTROL PLAN**  
**PHASE IB**

NO.	ISSUES	DATE	BY	DESIGNED	YR	DRAWN	KLH	REVISED	SEC	FILE NAME
1		LEW20378		AUG 2023						cv-tr-tp1tcp01-1.sht
VERIFY SCALE: Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.										
SHEET										TCP-4
SEQ.										10



R6-1R  
36X12



R6-1L  
36X12



R8-3  
24X30



R11-2 (PLACED ON TYPE III BARRICADE)  
48X30

- LEGEND**
- CONSTRUCTION AREA
  - PREVIOUSLY CONSTRUCTED
  - DIRECTION OF TRAFFIC FLOW
  - BARRELS
  - CONES
  - TYP III BARRICADES
- NOTES:**
1. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION. PROPERTY OWNERS SHALL BE NOTIFIED 48 HOURS IN ADVANCE BEFORE BEGINNING CONSTRUCTION OF THE DRIVE.
  2. CONTRACTOR TO REFER TO DETOUR PLANS FOR OVERALL SIGNAGE.
  3. CONTRACTOR TO PROVIDE THIS SIGN WHEN POYDRAS IS DRIVABLE.



A

B

C

D

R6-1R  
36X12

R6-1L  
36X12

R8-3  
24X30

R11-2  
48X30

CHARLES ST

190 W. MAIN ST.  
VICTOR BALLAS  
TRACT II  
INST. NO. 2014-31544  
O.P.R.D.C.T.

190 W. MAIN ST.  
VICTOR BALLAS  
TRACT II  
INST. NO. 2014-31544  
O.P.R.D.C.T.

170 W. MAIN ST.  
RO PROPERTIES, LTD.  
INST. NO. 2012-12  
O.P.R.D.C.T.

162 W. MAIN ST.  
AND RUBY GUBERNITH  
VOL. 41, P. 323  
O.P.R.D.C.T.

160 W. MAIN ST.  
GREATER LEWISVILLE COMMUNITY THEATRE  
/ JAMES W. WILSON, INC.  
DOC. NO. 2009-106  
O.P.R.D.C.T.

155 W. MAIN ST.  
FLOORSHIP INVESTMENT GROUP, LTD.  
INST. NO. 2012-12  
O.P.R.D.C.T.

150 W. MAIN ST.  
MAUD KARIM AND  
FARIBA KARIM  
VOL. 40, P. 323  
O.P.R.D.C.T.

140 W. MAIN ST.  
ALISSA JAMES GRANT  
INST. NO. 2012-12  
O.P.R.D.C.T.

136 W. MAIN ST.  
THIRTEEN FEVERS, LLC  
TRACT I AND II  
INST. NO. 2008-29952  
O.P.R.D.C.T.

132 W. MAIN ST.  
JK MUSTANG PROPERTIES, LLC  
INST. NO. 2014-31544  
O.P.R.D.C.T.

128 W. MAIN ST.  
JK MUSTANG PROPERTIES, LLC  
INST. NO. 2014-31544  
O.P.R.D.C.T.

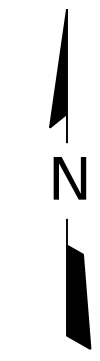
120 & 122 W. MAIN ST.  
HITASHIM, A. AND S.  
INST. NO. 2009-106  
O.P.R.D.C.T.

116 W. MAIN ST.  
RENEE  
INST. NO. 2012-12  
O.P.R.D.C.T.

112 W. MAIN ST.  
INST. NO. 2012-12  
O.P.R.D.C.T.

102 W. MAIN ST.  
JANICE B. JAMES  
VOL. 41, P. 323  
O.P.R.D.C.T.

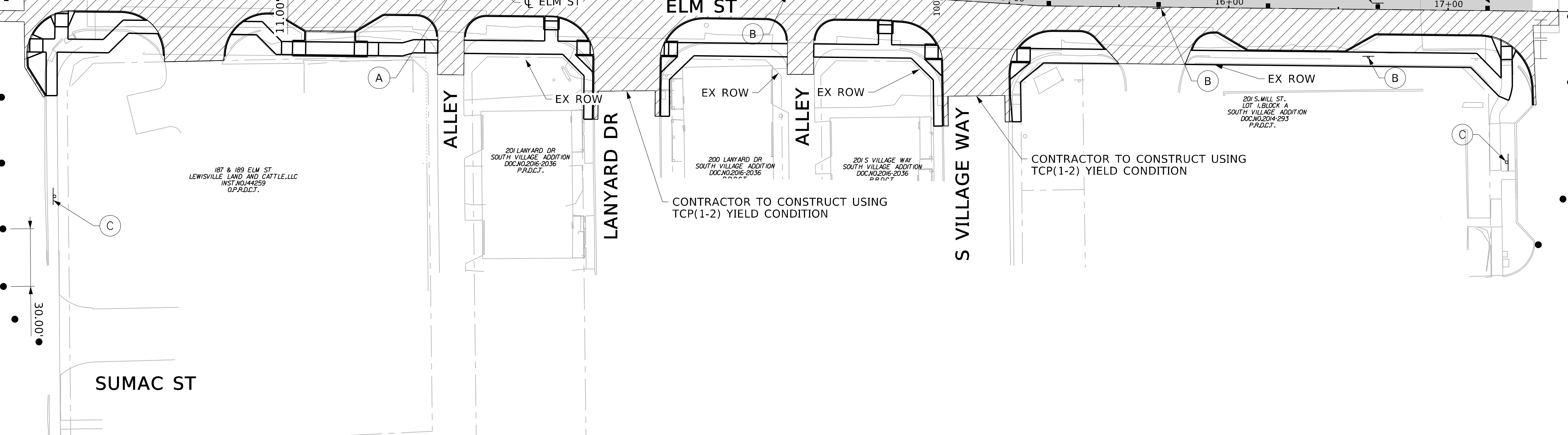
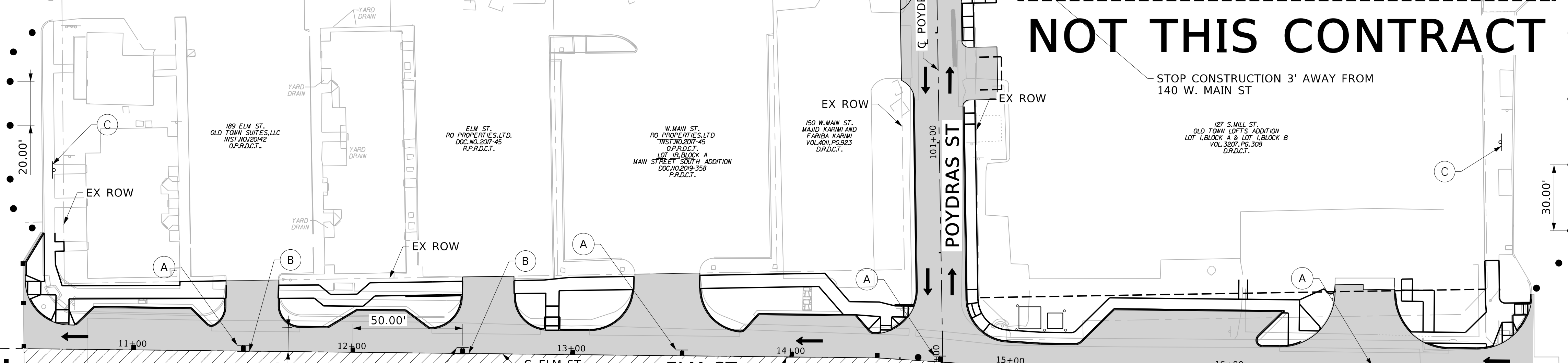
0 10' 20' 30' 60'  
SCALE IN FEET



NOT THIS CONTRACT

STOP CONSTRUCTION 3' AWAY FROM  
140 W. MAIN ST

G S ALLEY  
S ALLEY (EAST)



- LEGEND**
- CONSTRUCTION AREA
  - PREVIOUSLY CONSTRUCTED
  - DIRECTION OF TRAFFIC FLOW
  - BARRELS
  - CONES
  - TYP III BARRICADES
  - SIGN

- NOTES:**
- CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION. PROPERTY OWNERS SHALL BE NOTIFIED 48 HOURS IN ADVANCE BEFORE BEGINNING CONSTRUCTION OF THE DRIVE.
  - CONTRACTOR TO REFER TO DETOUR PLANS FOR OVERALL SIGNAGE.
  - CONTRACTOR TO PROVIDE THIS SIGN WHEN POYDRAS IS DRIVABLE.

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



**FREESSE AND NICHOLS**  
12770 Maple Drive, Suite 300  
Dallas, TX 75251  
Phone - (214) 217-2200  
Web - www.freese.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
IMPROVEMENTS**  
CIVIL  
**TRAFFIC CONTROL PLAN  
PHASE II**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	YR	DRAWN	YR	REVISED	YR	CHECKED	SEC	FILE NAME
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VERIFY SCALE: Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

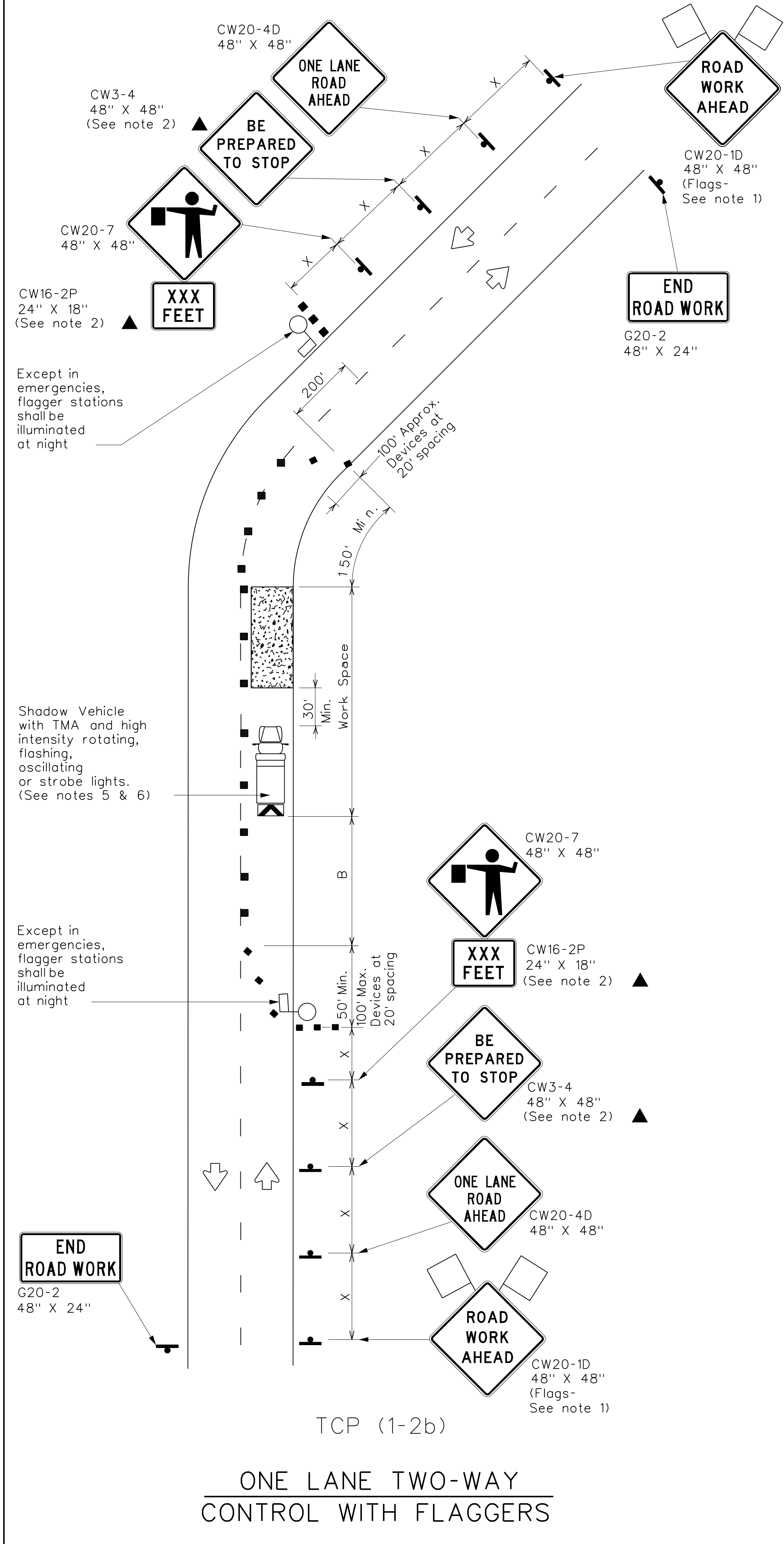
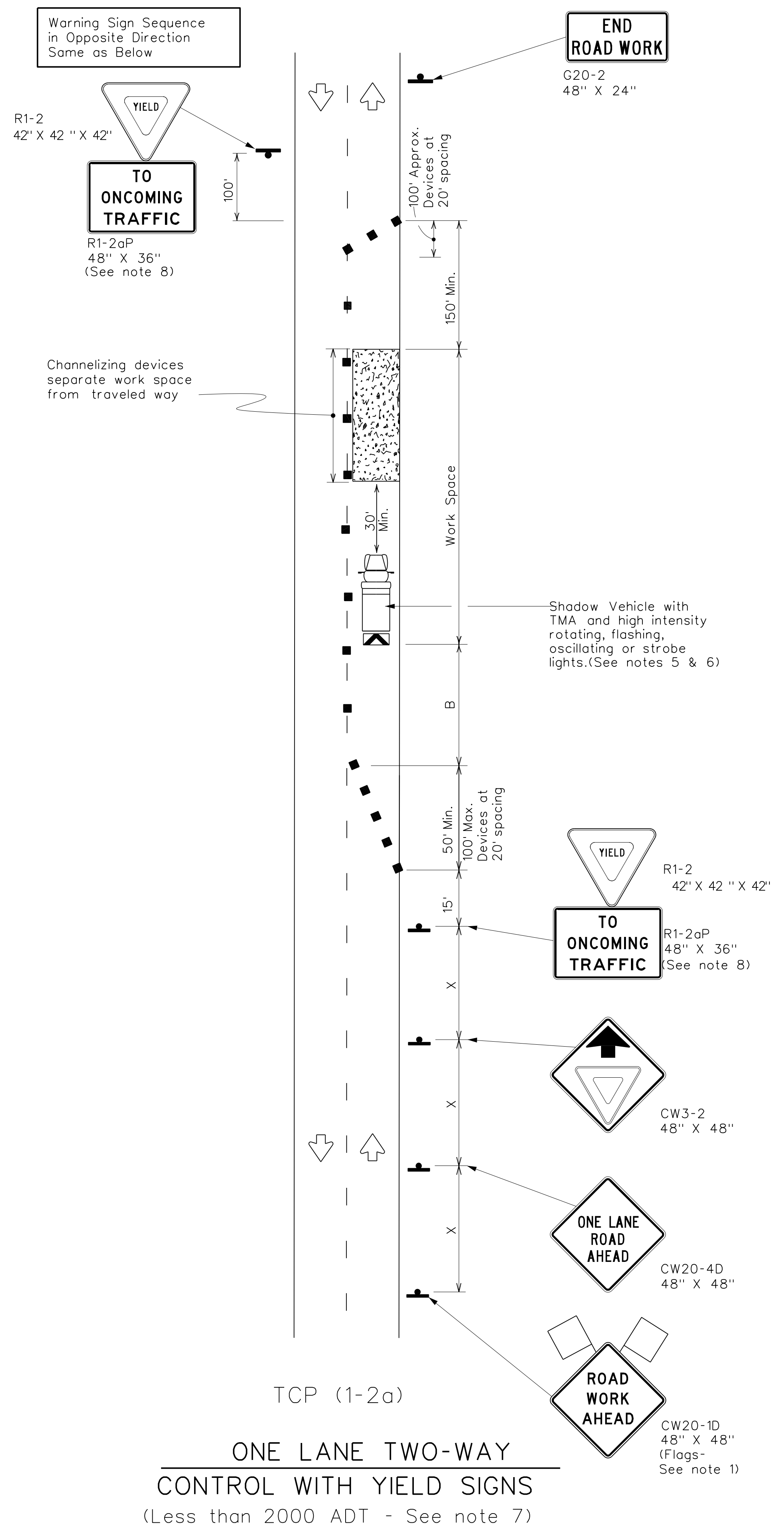
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SEQ. 11

MicroStation V8 User: 04331 Office: On Site  
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Plot Scale: 60,000 / 1" Model: Default  
Date: Aug 07 2023 - 11:19:04 AM Project: Freese and Nichols, Inc. - True Type Fonts

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**LEGEND**

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

Posted Speed X	Formula	Minimum Desirable Taper Lengths X X			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent			
30	L = WS <sup>2</sup> / 60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40	L = WS	265'	295'	320'	40'	80'	240'	155'	305'
45		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'	

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

**TYPICAL USAGE**

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

**GENERAL NOTES**

- Flags attached to signs where shown are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
  - Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
  - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
- TCP (1-2a)**
- R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
  - R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.
- TCP (1-2b)**
- Flaggers should use two-way radios or other methods of communication to control traffic.
  - Length of work space should be based on the ability of flaggers to communicate.
  - If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
  - Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
  - Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

**Texas Department of Transportation** Traffic Operations Division Standard

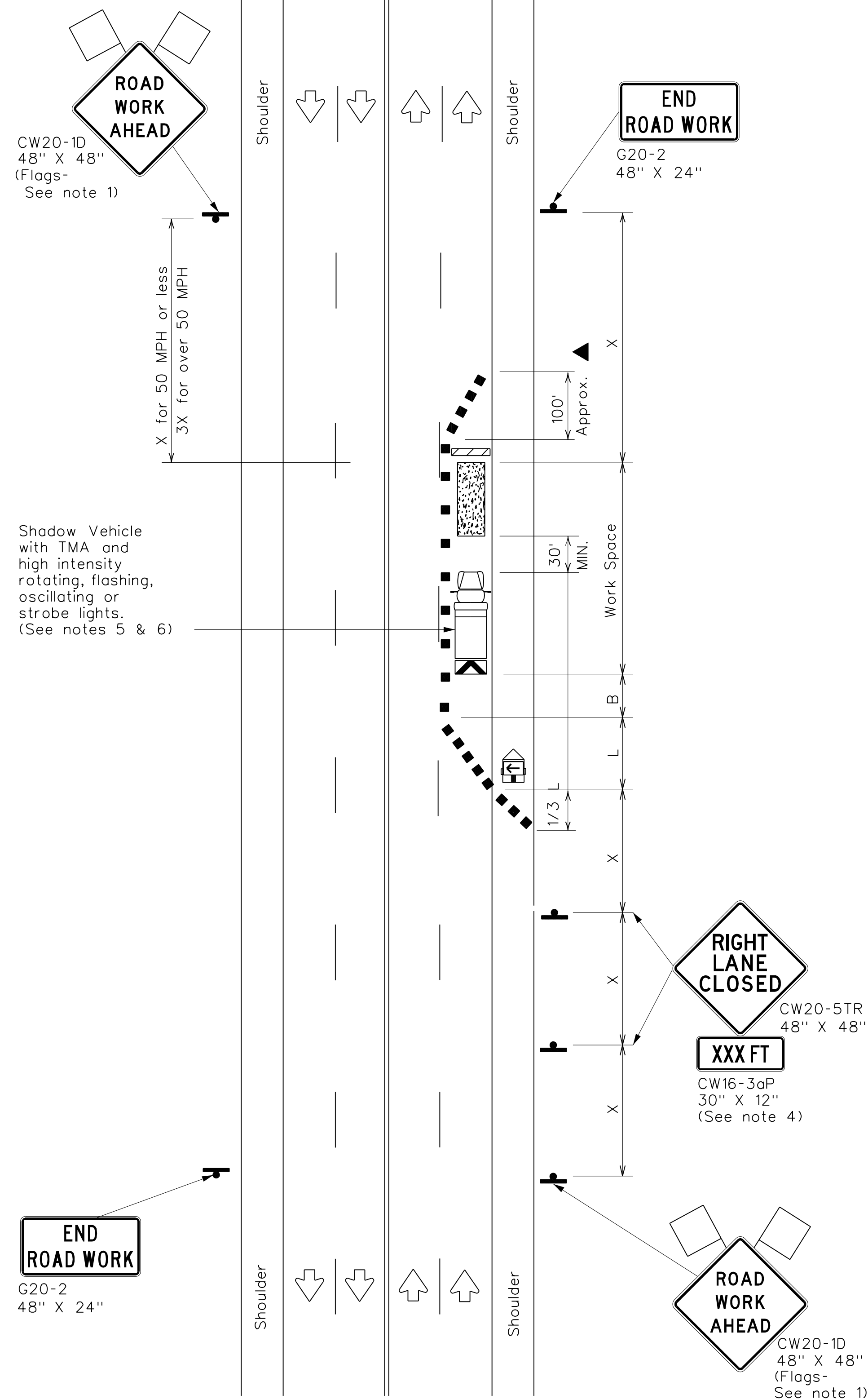
**TRAFFIC CONTROL PLAN**  
**ONE-LANE TWO-WAY**  
**TRAFFIC CONTROL**

**TCP(1-2)-18**

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© TxDOT December 1985	CONT:	SECT:	JOB:	HIGHWAY:
REVISIONS	DIST:	COUNTY:	SHEET NO.	
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2-94 2-12				
1-97 2-18				

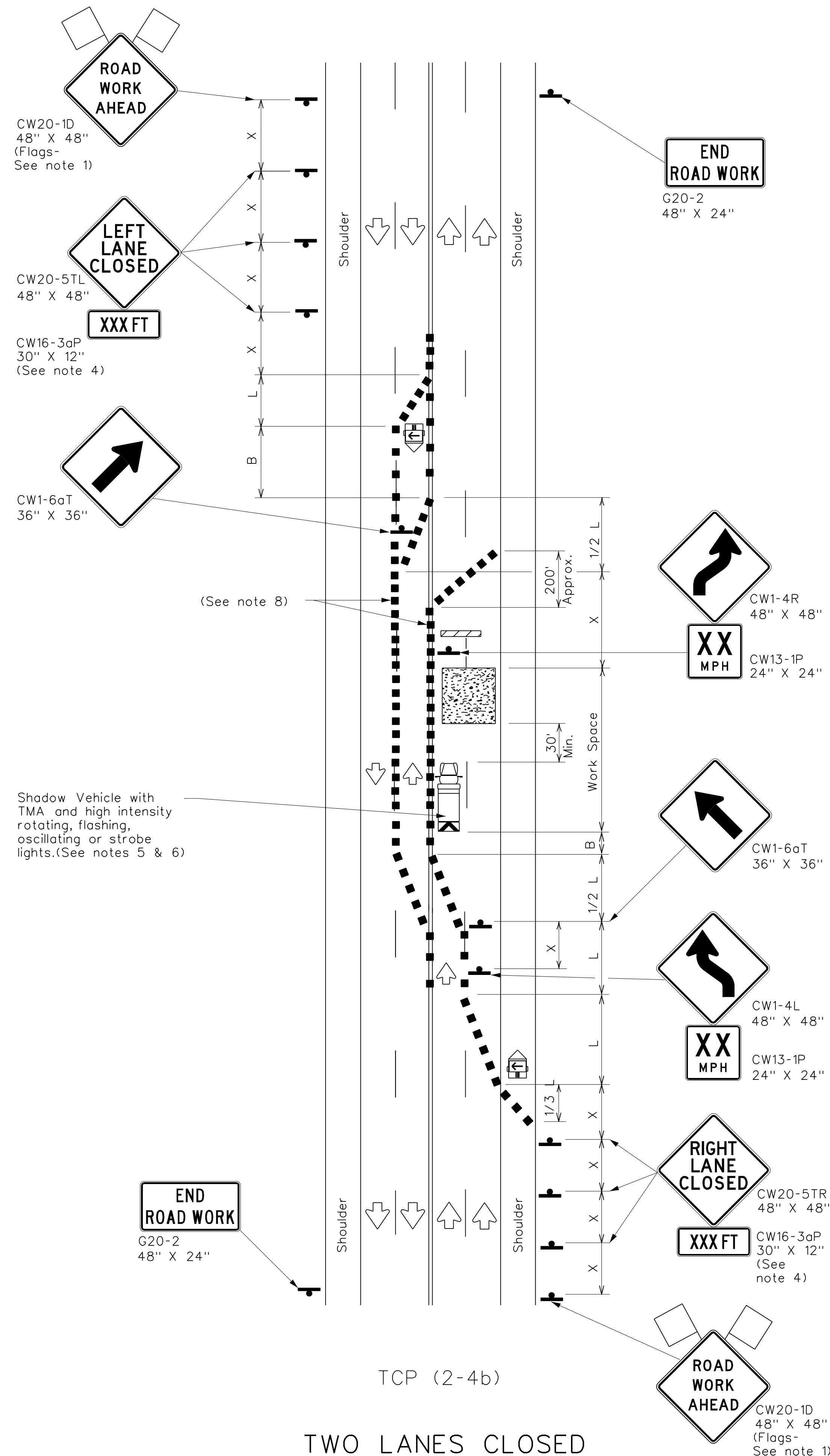
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DATE: FILE:



TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

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

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

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

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

GENERAL NOTES

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

TCP (2-4a)

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

TCP (2-4b)

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



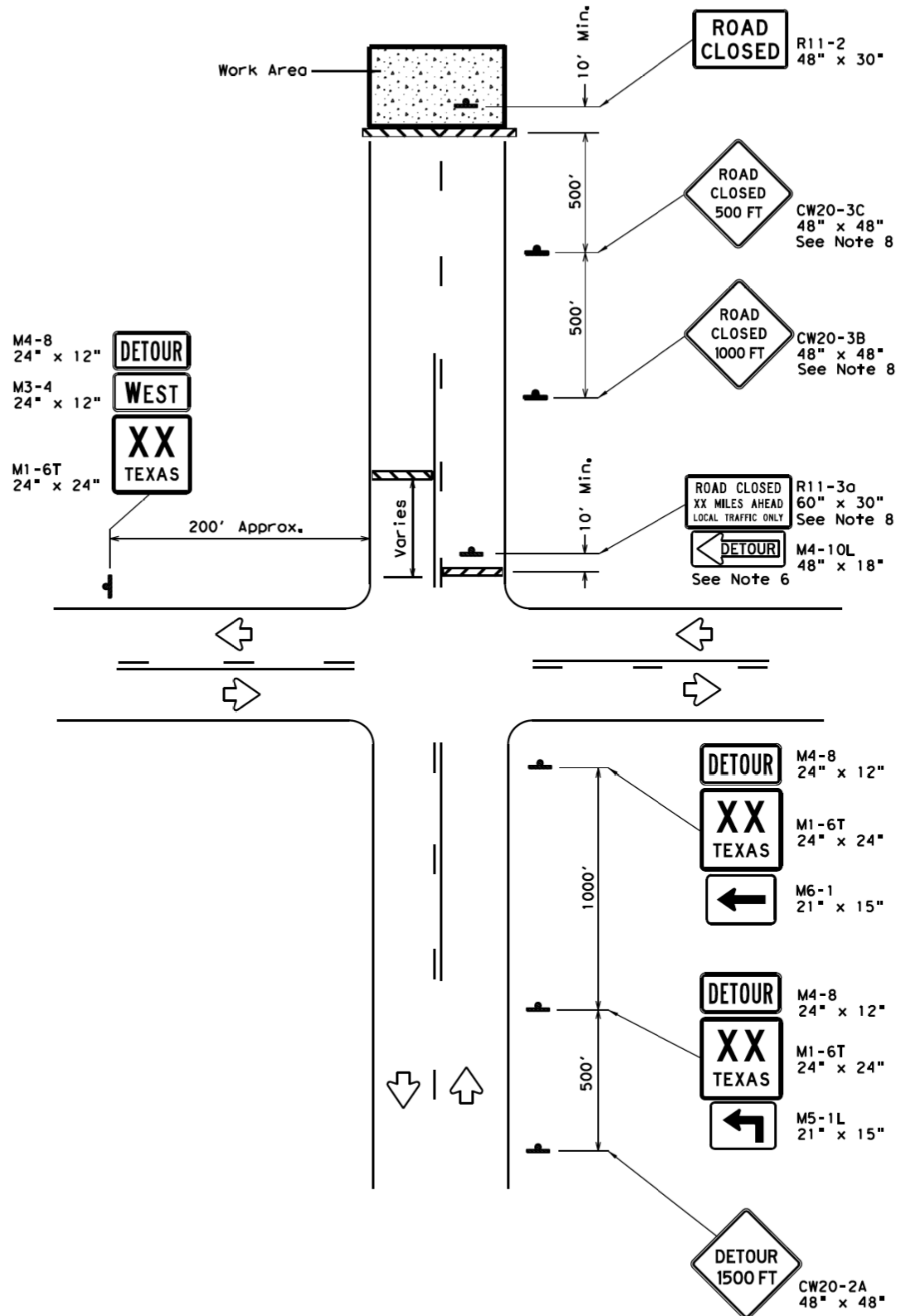
TRAFFIC CONTROL PLAN  
 LANE CLOSURES ON MULTILANE  
 CONVENTIONAL ROADS

TCP(2-4)-18

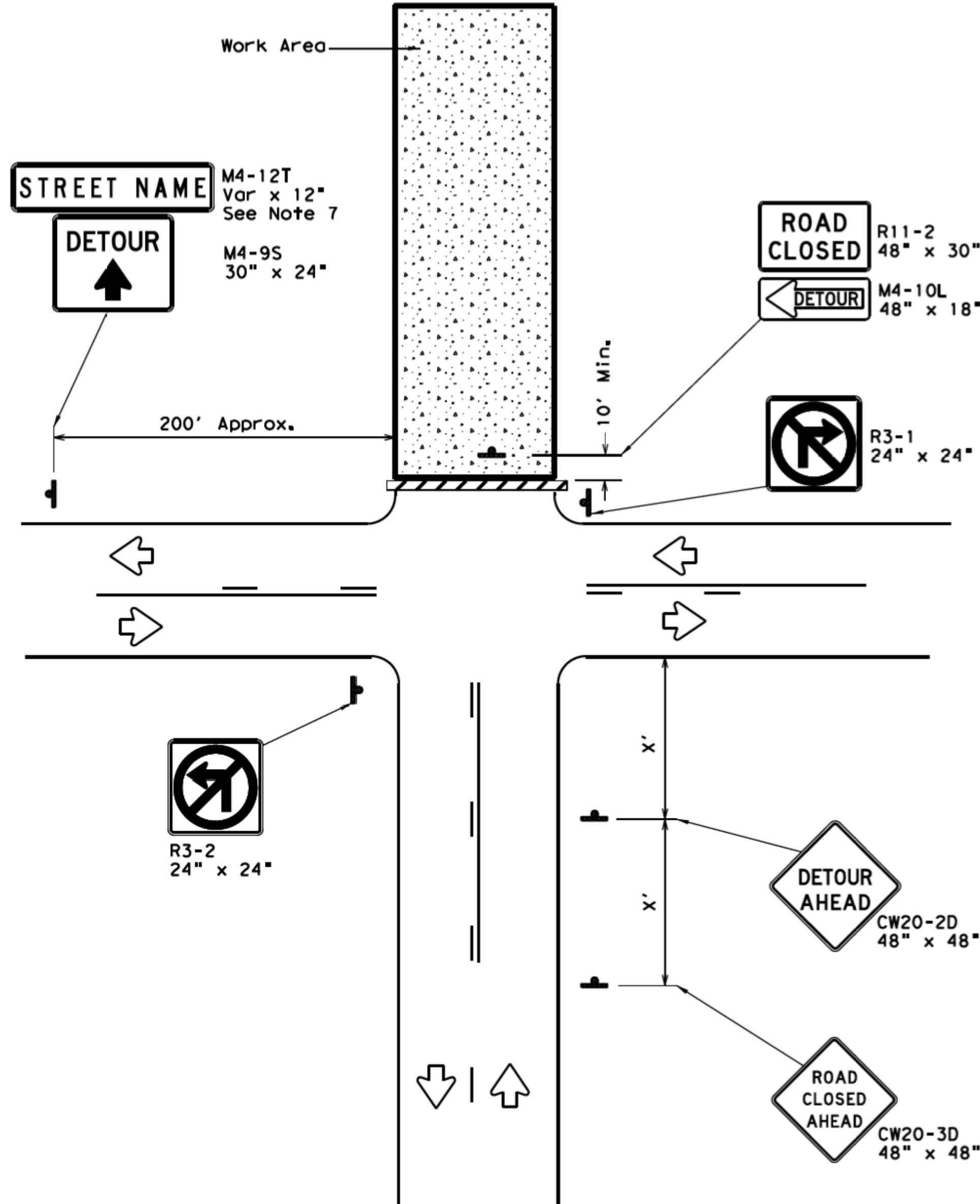
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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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8-95 3-03				
1-97 2-12				
4-98 2-18				
164	DIST	COUNTY	SHEET NO.	
			13	

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**ROAD CLOSURE BEYOND THE INTERSECTION**  
 Signing for a Numbered Route with an Off-Site Detour



**ROAD CLOSURE AT THE INTERSECTION**  
 Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

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

\* Conventional Roads Only

**GENERAL NOTES**

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be 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.

		Traffic Operations Division Standard	
<b>WORK ZONE ROAD CLOSURE DETAILS</b>			
<b>WZ (RCD) - 13</b>			
FILE: wzrcd-13.dgn	DWG: TxDOT	CHK: TxDOT	DWG: TxDOT
© TxDOT August 1995	CONT	SECT	JOB
REVISIONS			
1-97 4-98 7-13	DIST	COUNTY	SHEET NO.
2-98 3-03			14

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

WORKER SAFETY NOTES:

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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DATE:  
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SHEET 1 OF 12



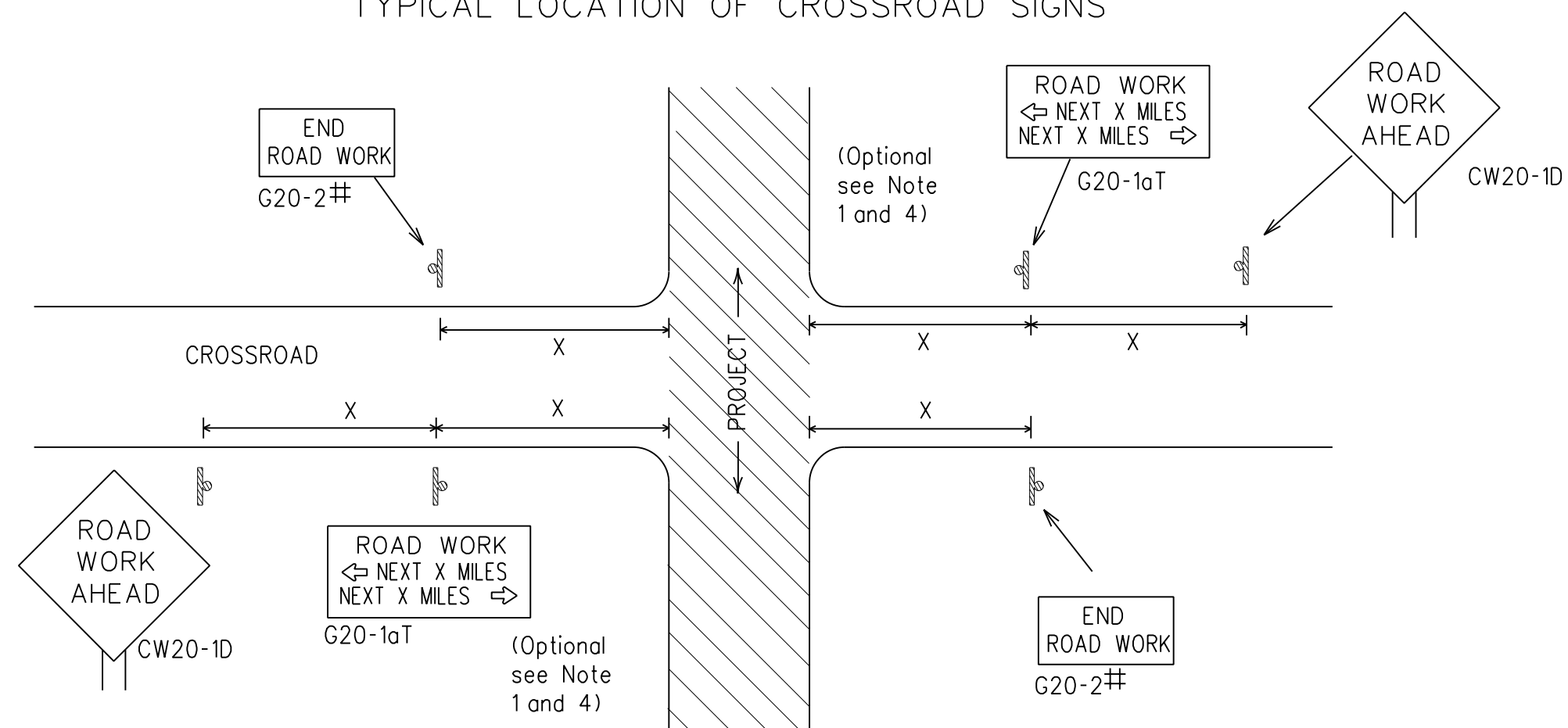
**BARRICADE AND CONSTRUCTION  
GENERAL NOTES  
AND REQUIREMENTS**

**BC(1)-21**

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
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9-07	8-14								
5-10	5-21								

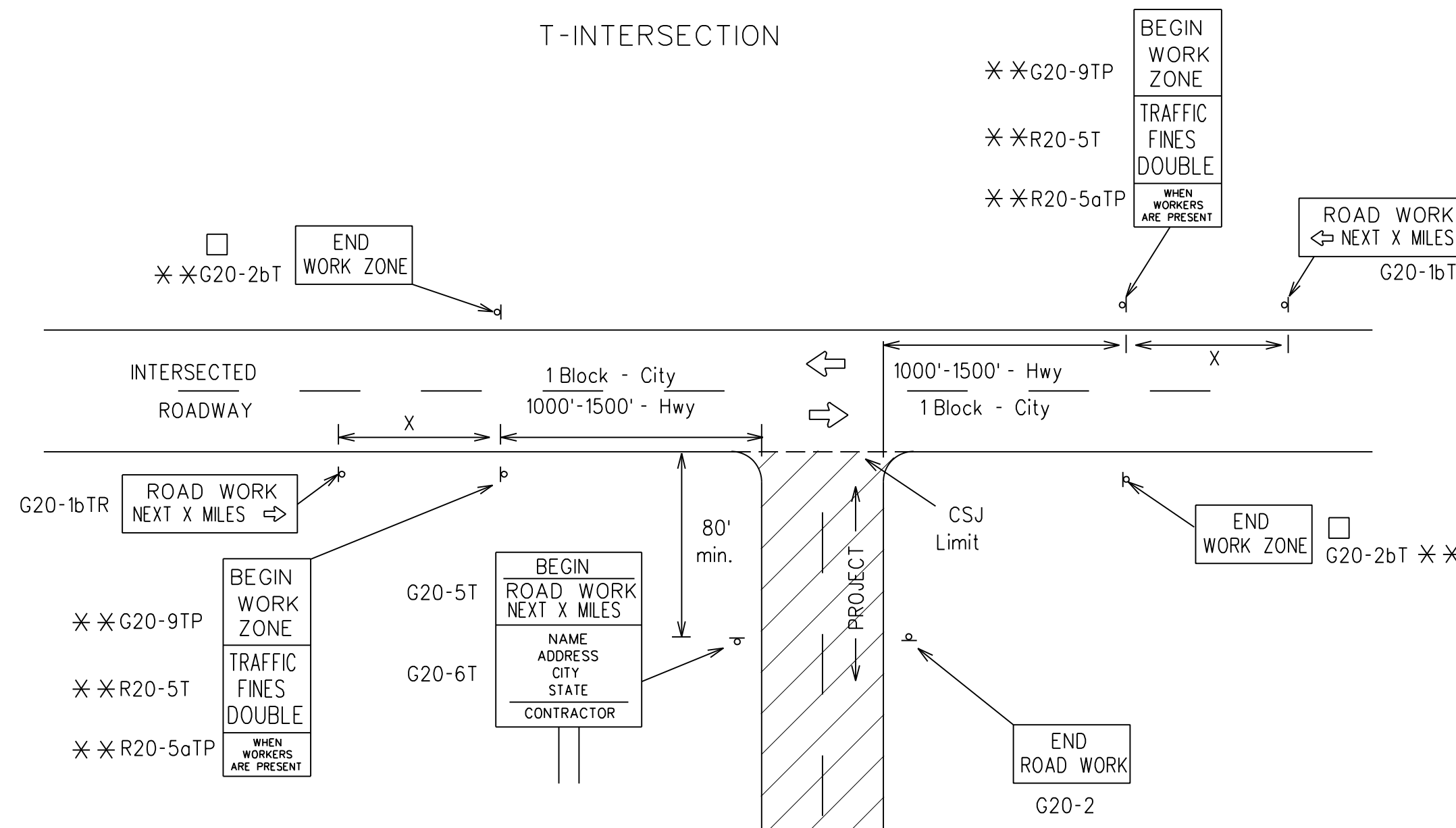
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TYPICAL LOCATION OF CROSSROAD SIGNS



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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

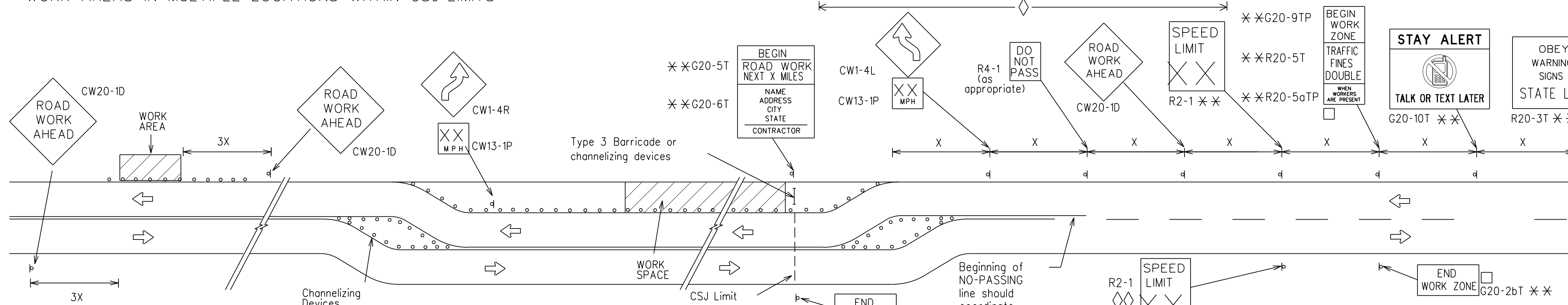
Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/ Freeway	Posted Speed	Sign * Spacing "X"
CW20 <sup>4</sup>	48" x 48"	48" x 48"	MPH	Feet (Apprx.)
CW21			30	120
CW22			35	160
CW23			40	240
CW25			45	320
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	50	400
			55	500 <sup>2</sup>
			60	600 <sup>2</sup>
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	65	700 <sup>2</sup>
			70	800 <sup>2</sup>
			75	900 <sup>2</sup>
			80	1000 <sup>2</sup>
			*	* <sup>3</sup>

- \* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.
- \* Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

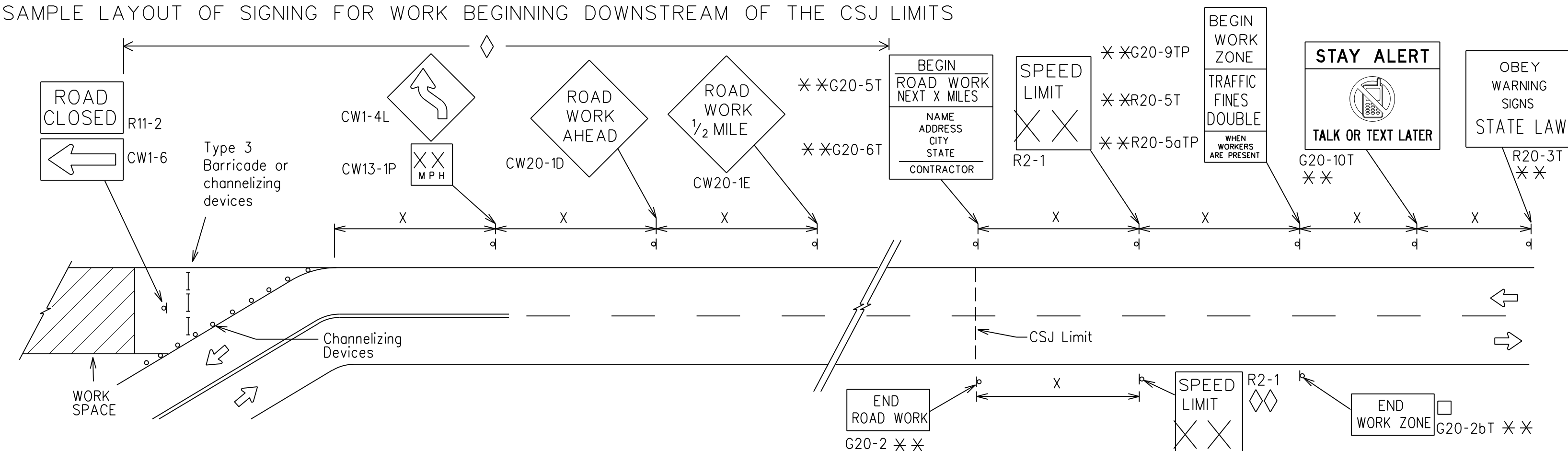
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

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



NOTES

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

LEGEND

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

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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	DIST	COUNTY		SHEET NO.
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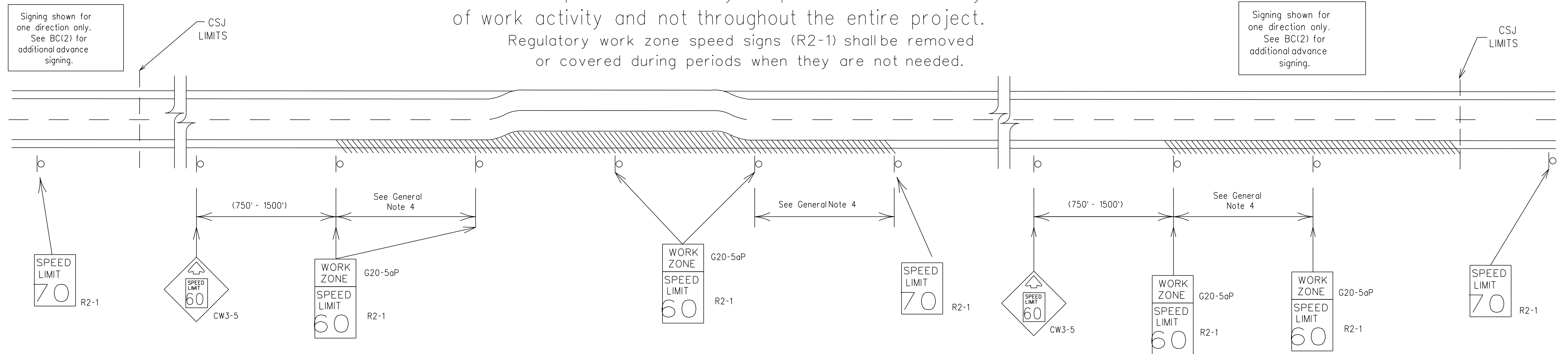
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# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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:

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

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

### SHORT TERM WORK ZONE SPEED LIMITS

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

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

## GENERAL NOTES

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

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SHEET 3 OF 12



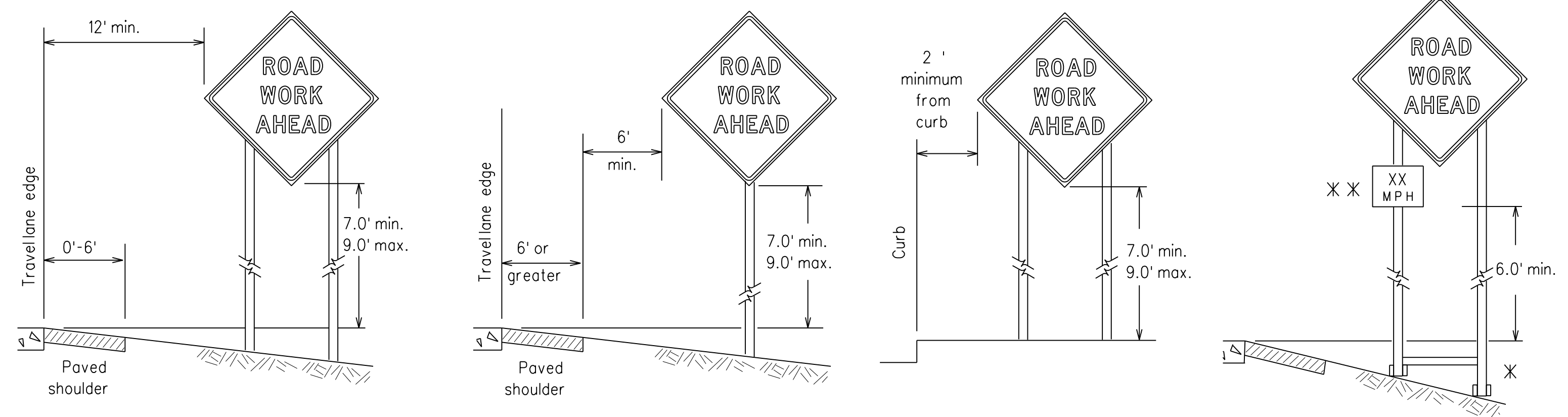
## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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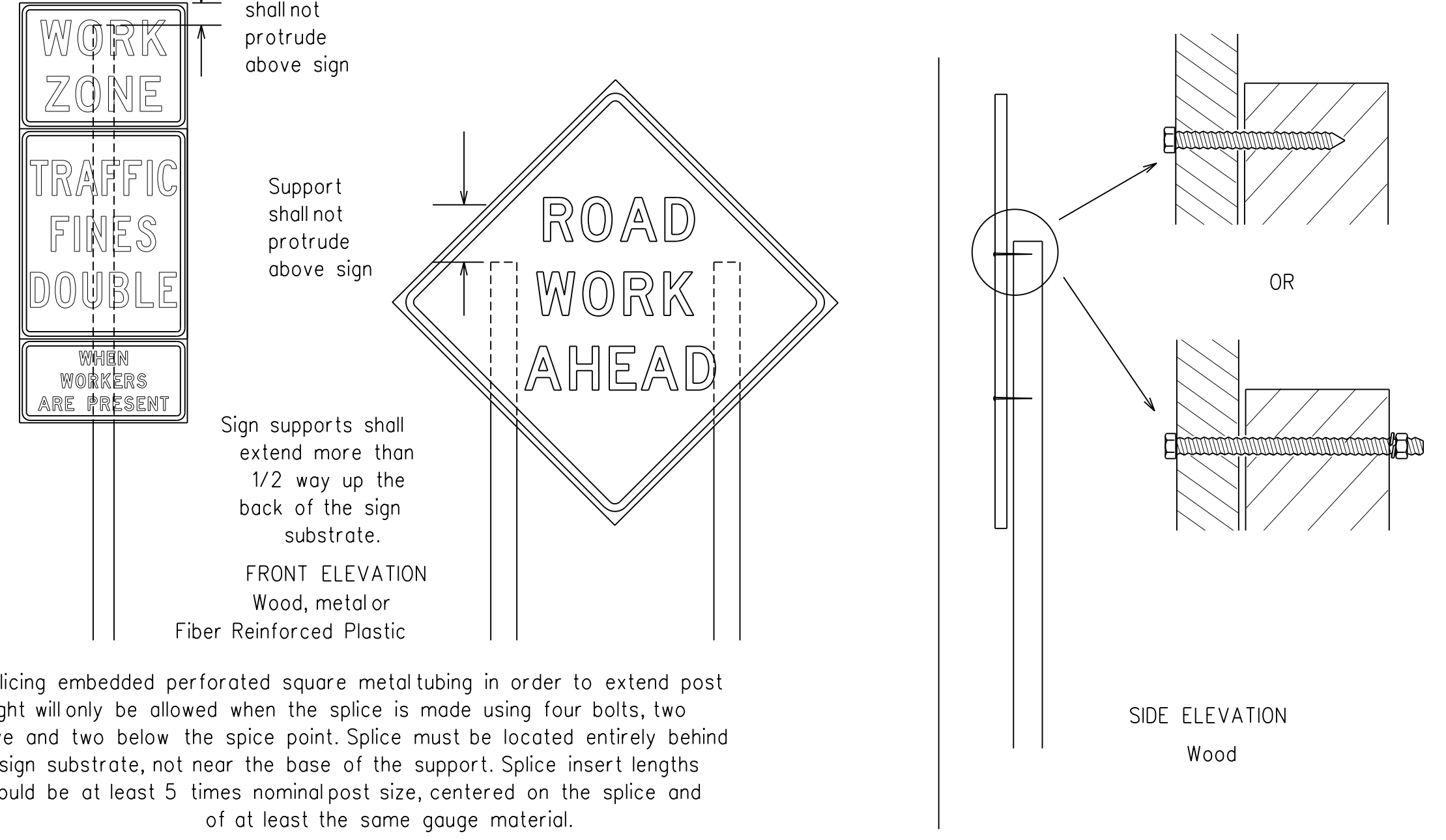
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



X 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.

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

ATTACHMENT FOR SIGN SUPPORTS



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

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

GENERAL NOTES FOR WORK ZONE SIGNS

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white.
- Barricades shall NOT be used as sign supports.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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)

- 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.
  - Long-term stationary - work that occupies a location more than 3 days.
  - 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.
  - Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
  - Short, duration - work that occupies a location up to 1 hour.
  - Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

- 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.
- 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.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- 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.
- 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

- 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

- 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.
- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
- 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

- 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).
- White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
- Orange sheeting, meeting the requirements of DMS-8300 Type B or Type C<sub>L</sub>, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

- 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

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

SIGN SUPPORT WEIGHTS

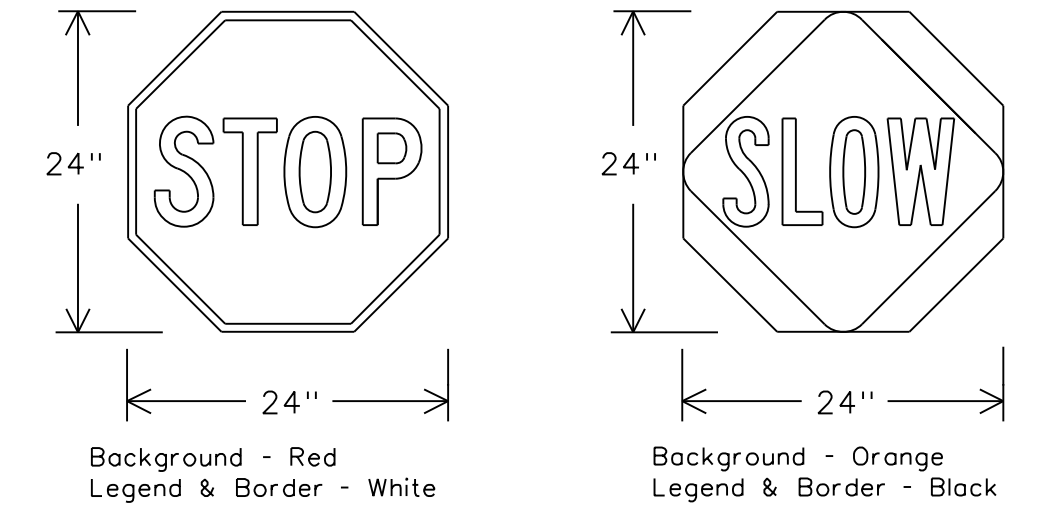
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
- 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.
- 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.
- 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.
- Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

- 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.

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

- 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.
- 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.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- 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.
- 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.
- 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.

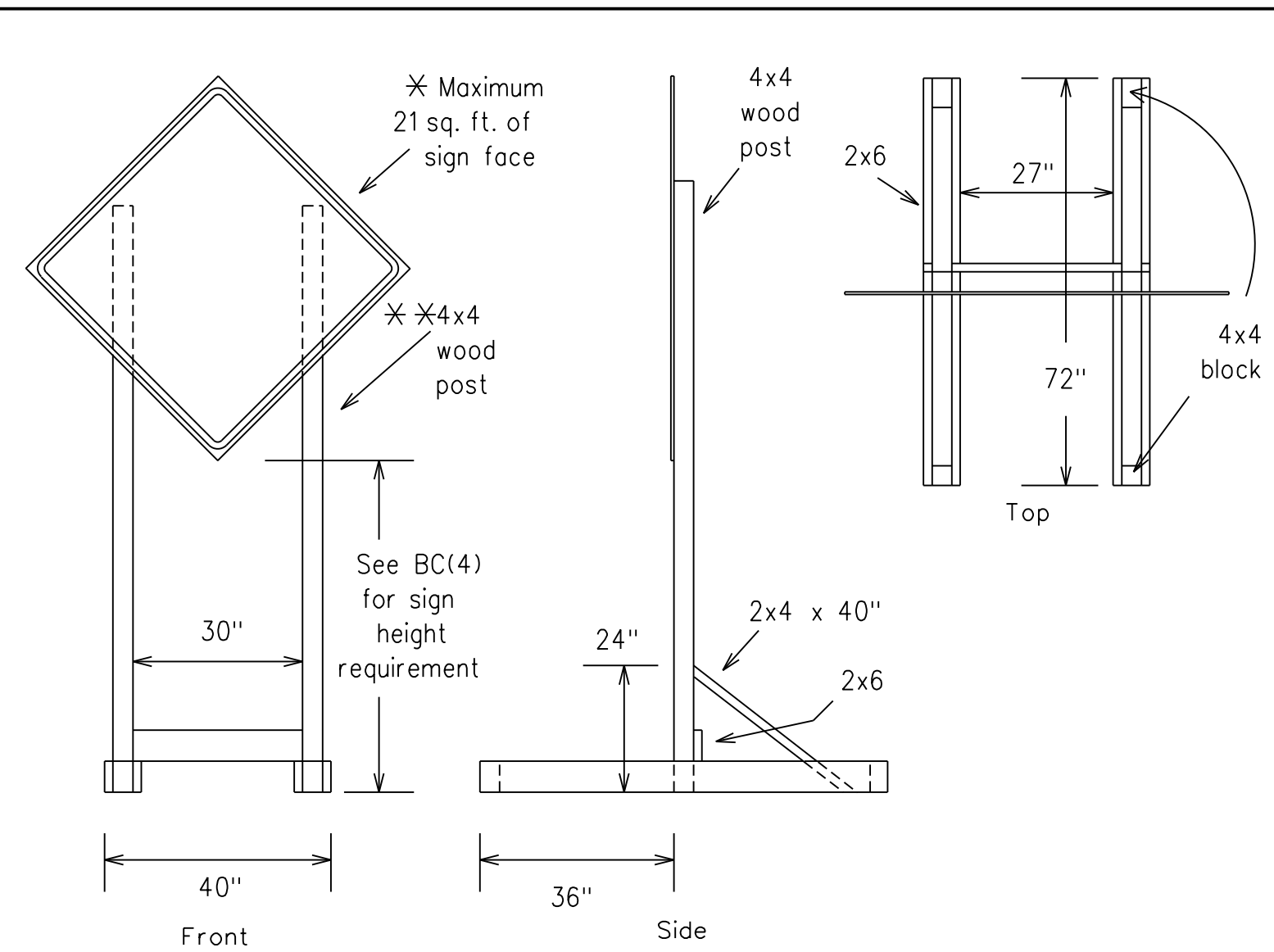


BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

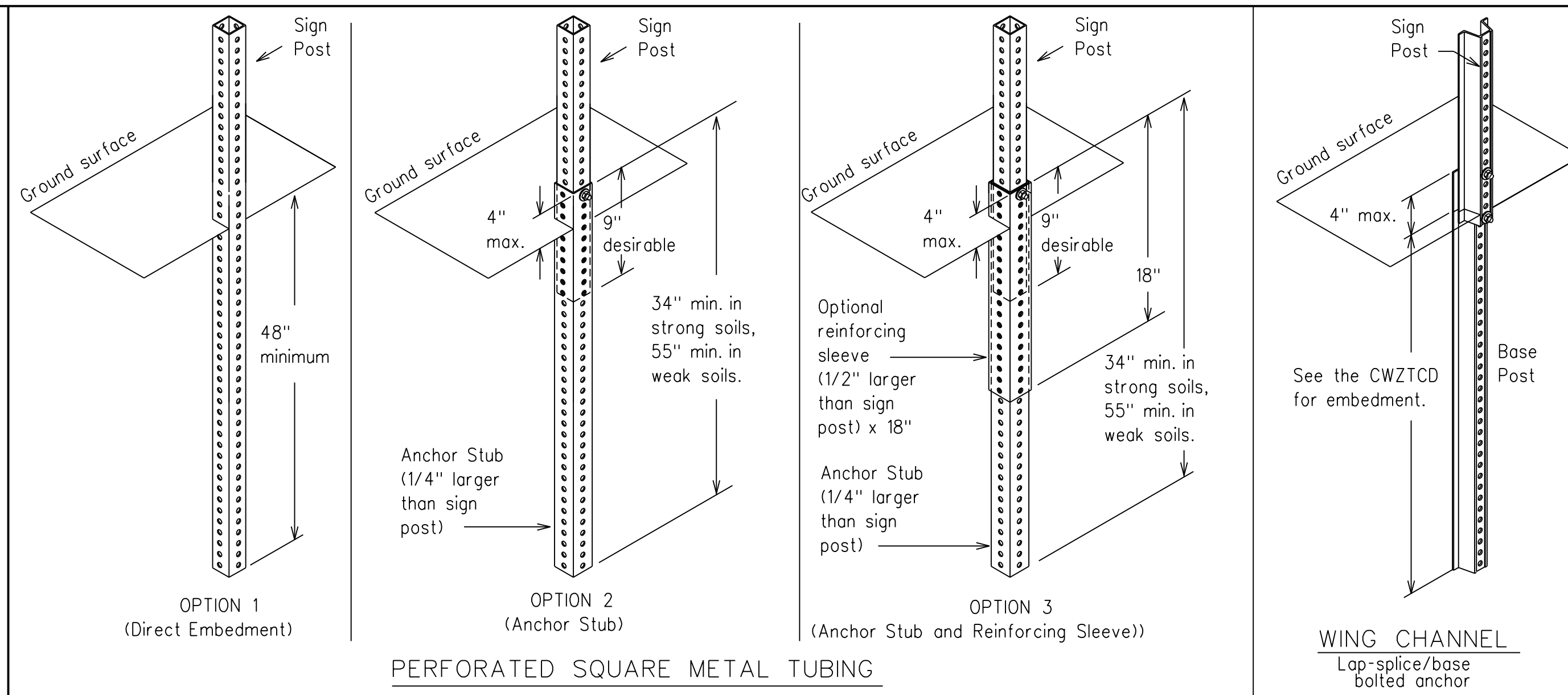
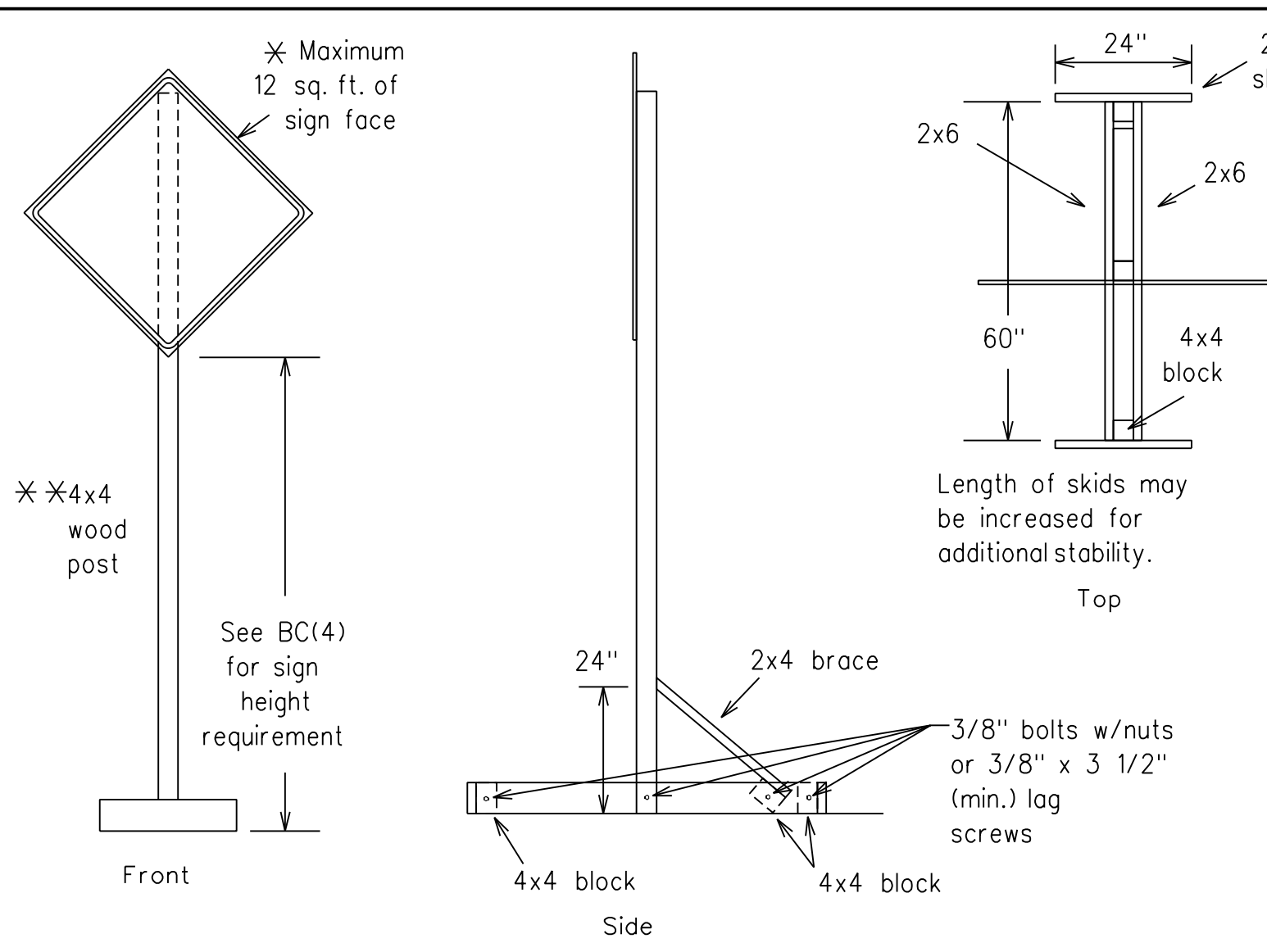
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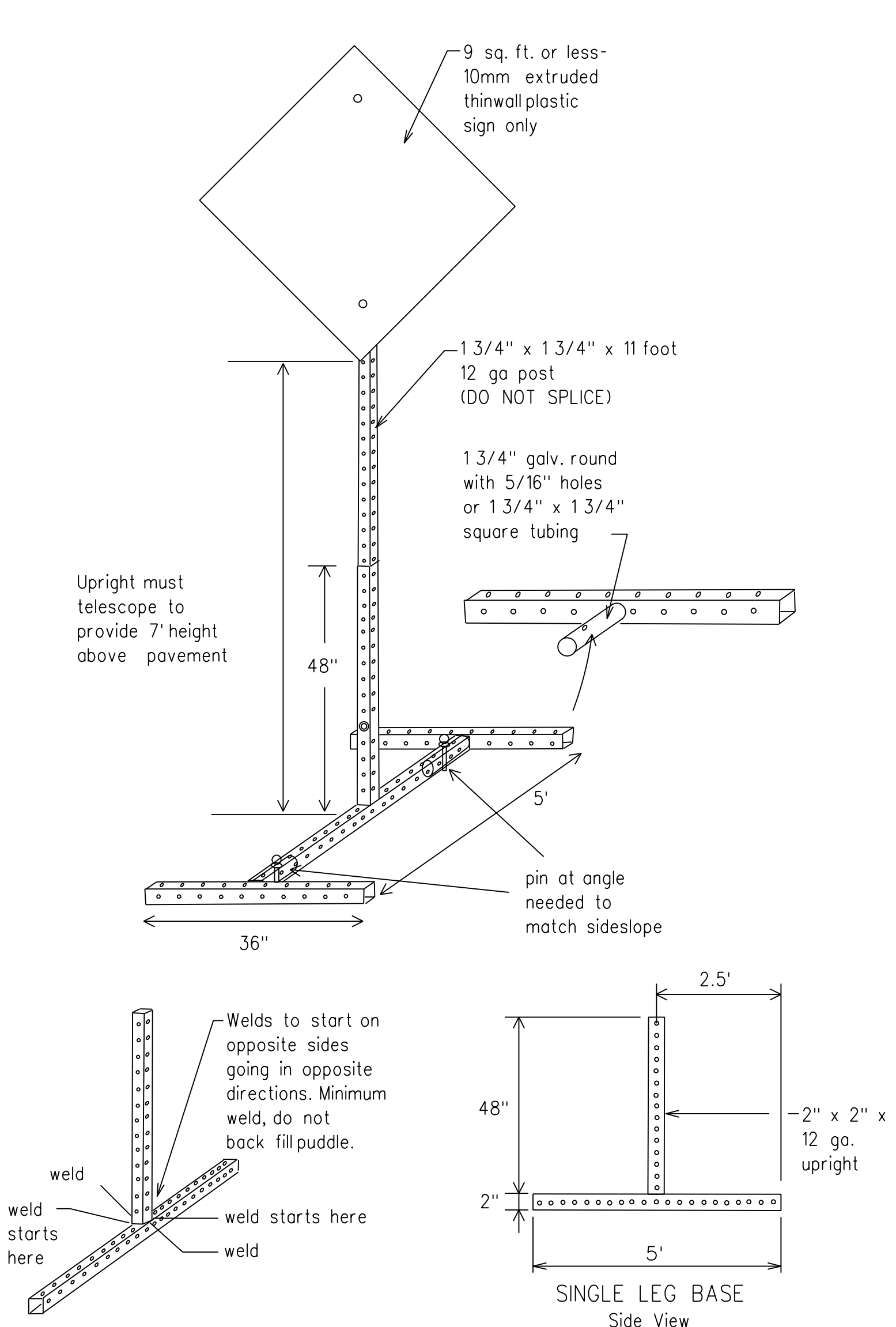
**SKID MOUNTED WOOD SIGN SUPPORTS**

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



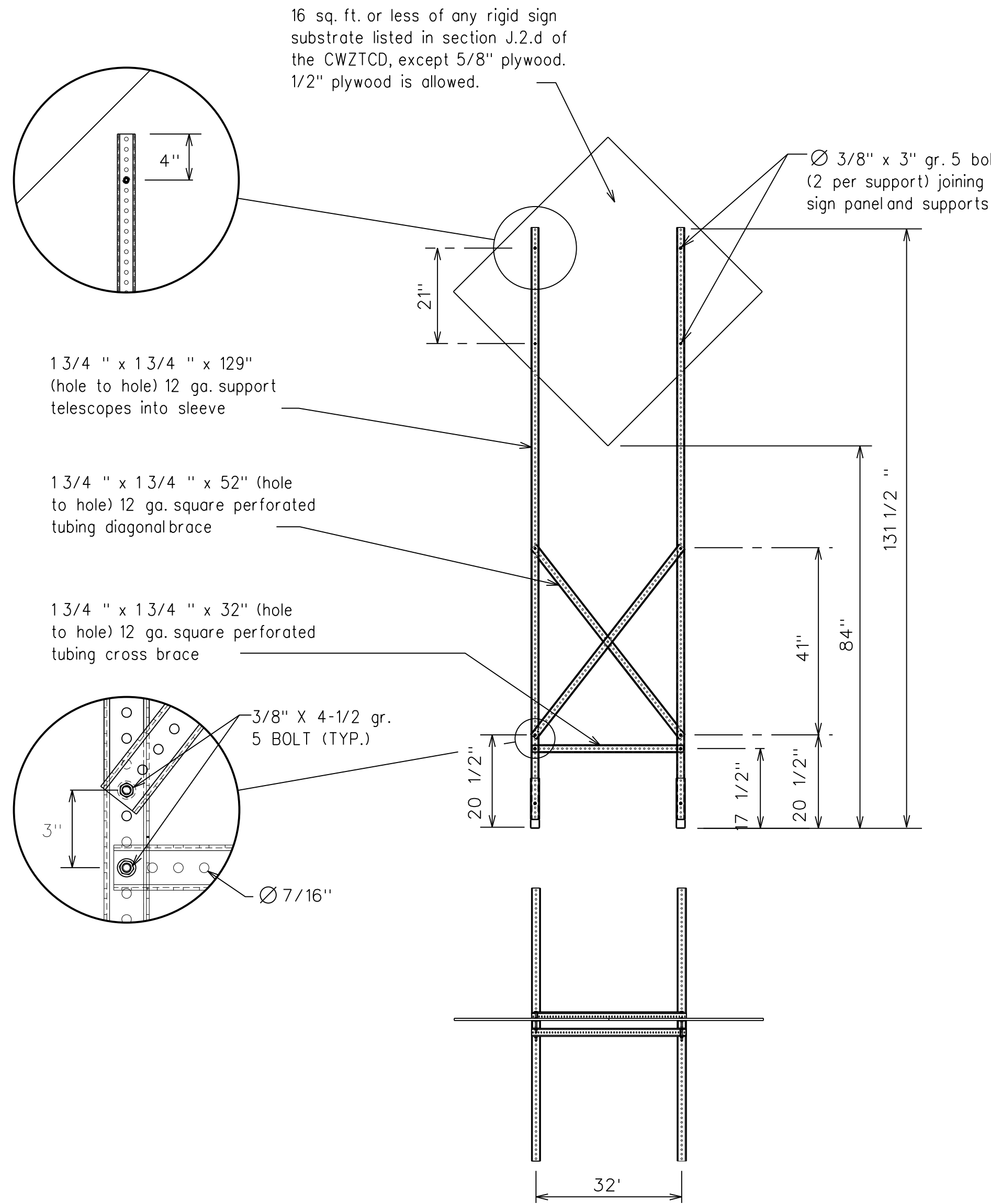
**GROUND MOUNTED SIGN SUPPORTS**

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



**SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS**

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



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

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

- GENERAL NOTES**
1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
  2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
  3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.
- \* See BC(4) for definition of "Work Duration."
  - \* \* Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be pointed white.
  - See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

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**BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT**

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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

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

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

Other Condition List

ROADWORK XXX FT
FLAGGER XXXX FT
RIGHT LN NARROWS XXXX FT
MERGING TRAFFIC XXXX FT
LOOSE GRAVEL XXXX FT
DETOUR X MILE
ROADWORK PAST SH XXXX
BUMP XXXX FT
TRAFFIC SIGNAL XXXX FT

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

\*\* Advance Notice List

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

\* \* See Application Guidelines Note 6.

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

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

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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



BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

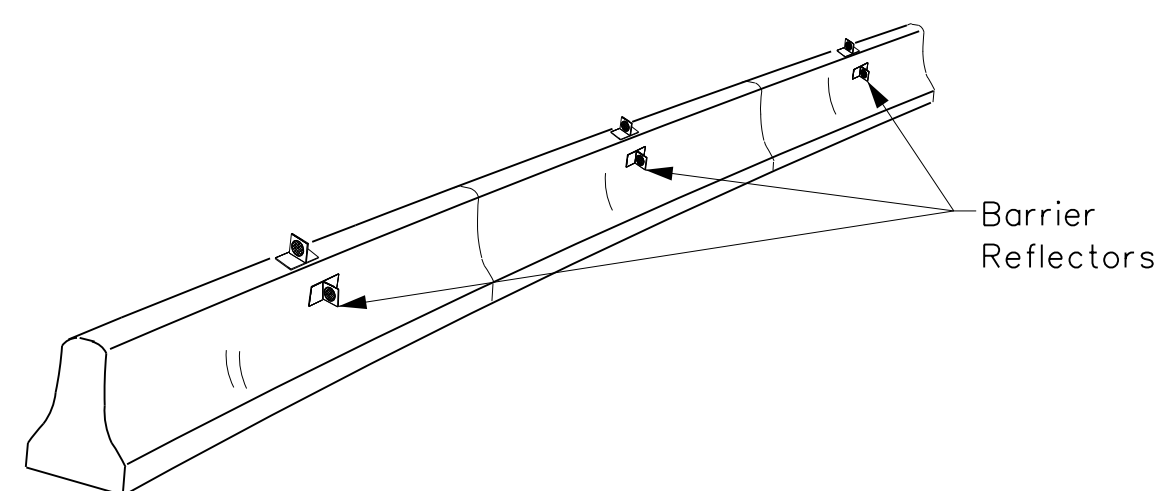
BC(6)-21

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REVISIONS				
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7-13	5-21	DIST	COUNTY	SHEET NO.
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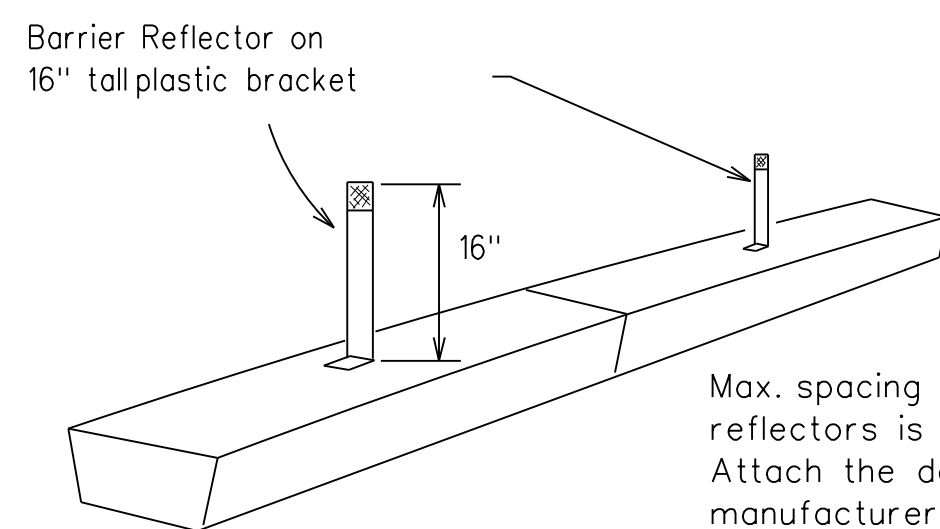
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

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



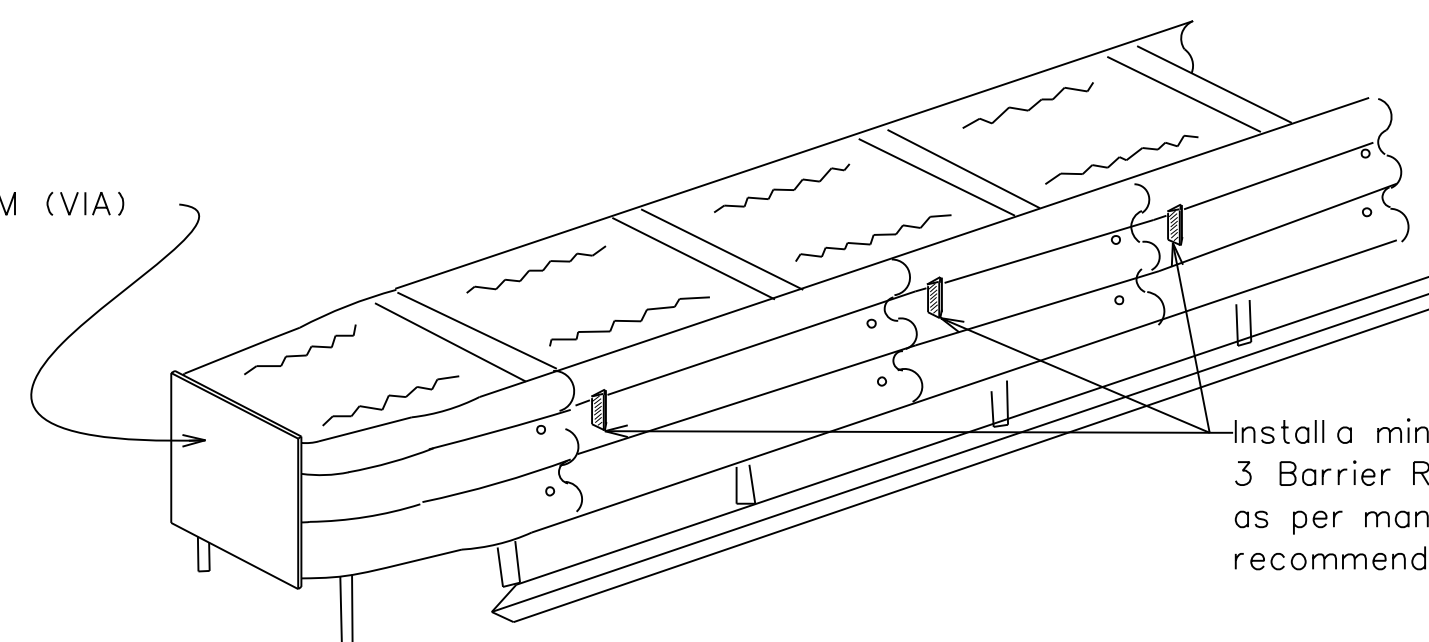
LOW PROFILE CONCRETE BARRIER (LPCB)

**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.

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

See D & OM (VIA)



DELINEATION OF END TREATMENTS

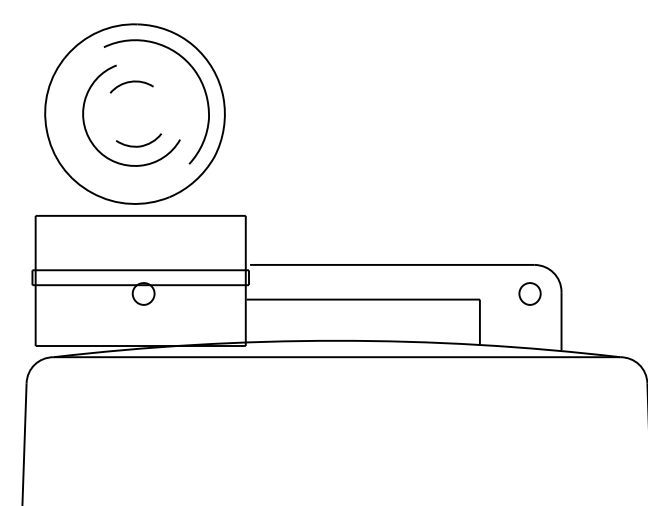
**END TREATMENTS FOR CTB'S USED IN WORK ZONES**

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

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

**WARNING LIGHTS**

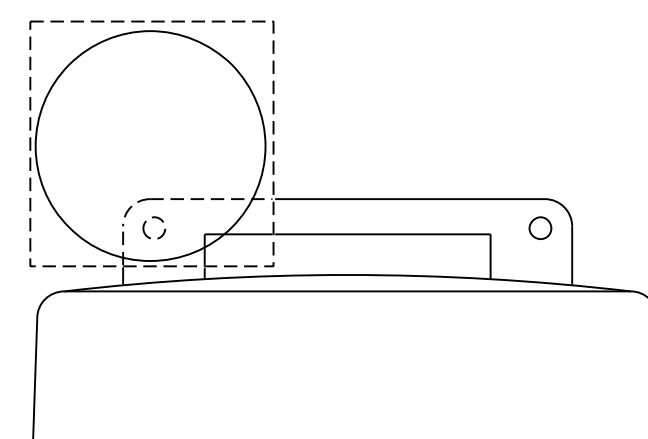
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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



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

**WARNING LIGHTS MOUNTED ON PLASTIC DRUMS**

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



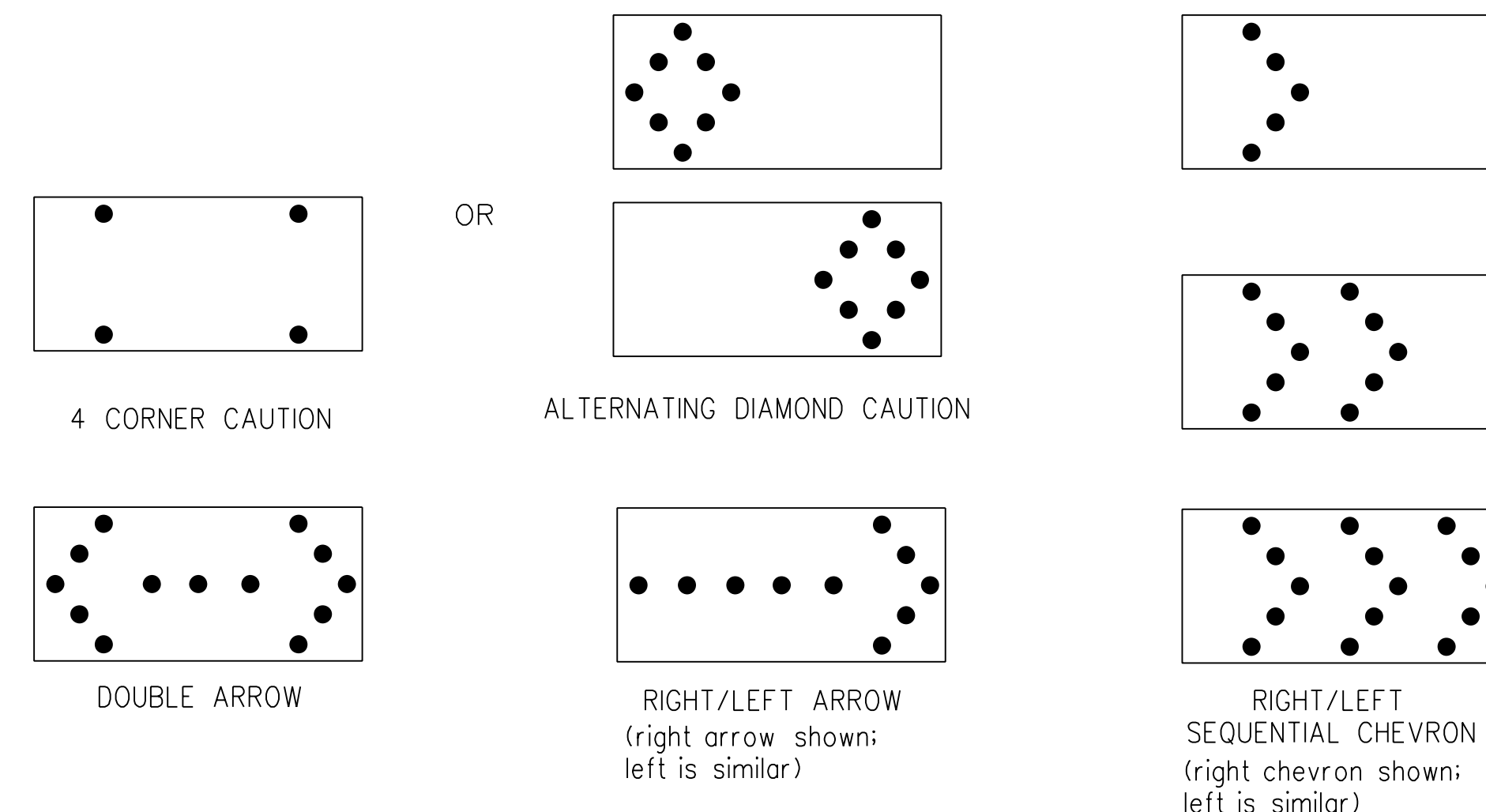
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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

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

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

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



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

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

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

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

**FLASHING ARROW BOARDS**

SHEET 7 OF 12

**TRUCK-MOUNTED ATTENUATORS**

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



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

BC(7)-21

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7-13	5-21			
	DIST	COUNTY		SHEET NO.
				21

DATE:  
FILE:

**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:

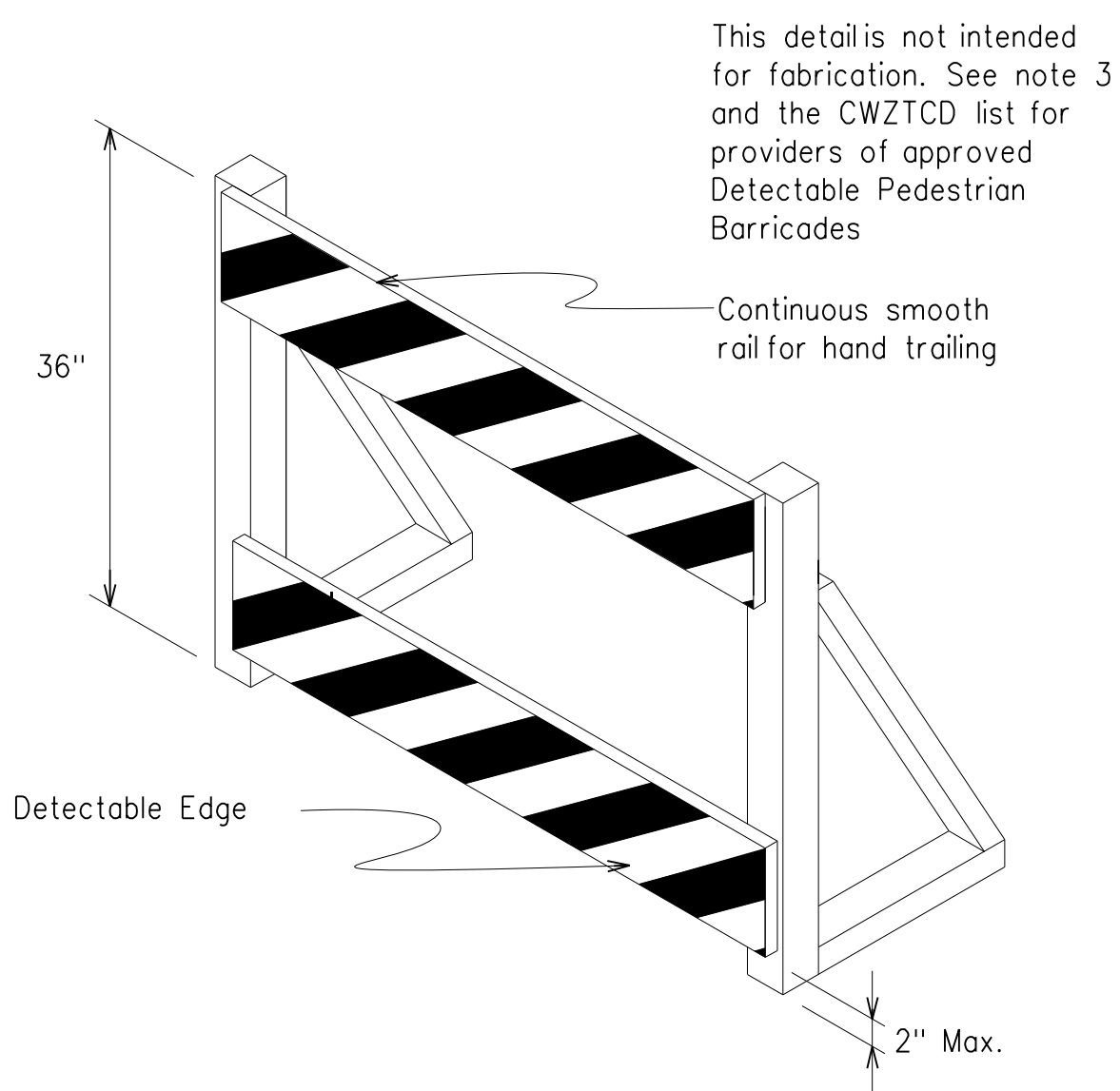
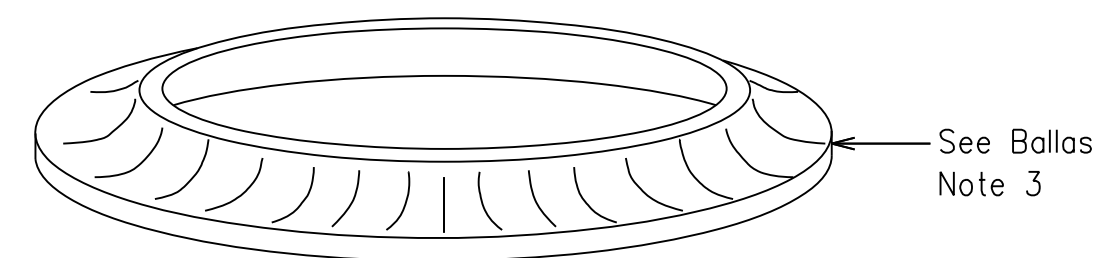
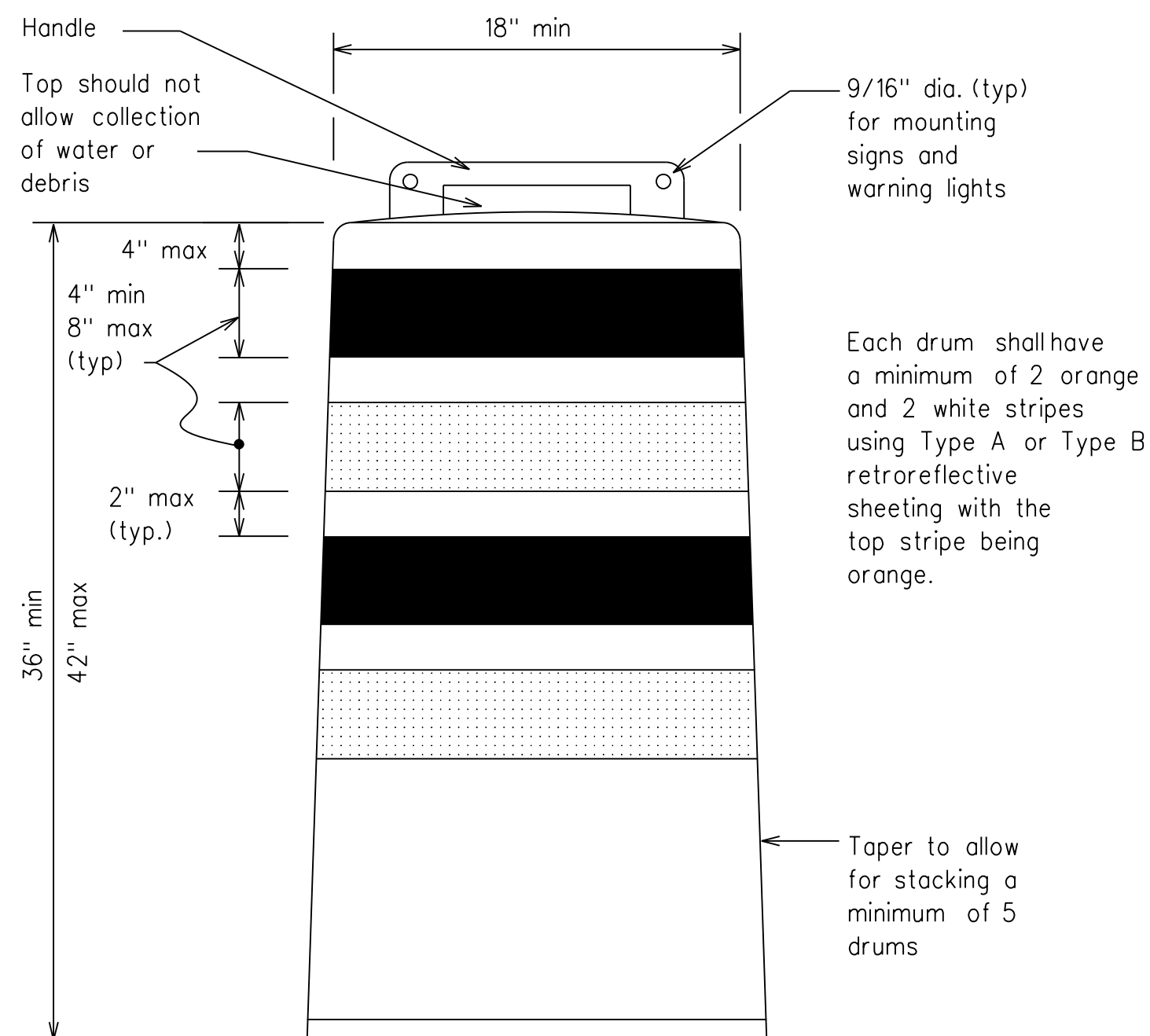
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

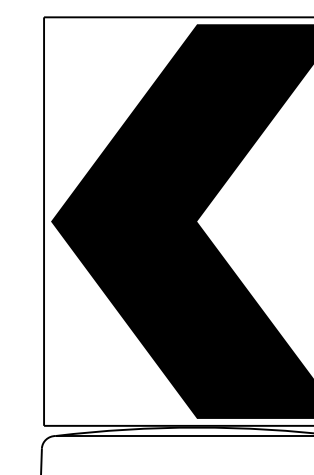
**BALLAST**

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.

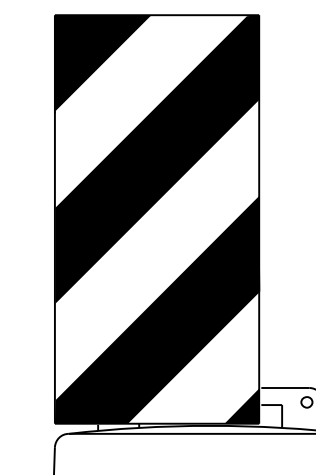


**DETECTABLE PEDESTRIAN BARRICADES**

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  
travelway

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 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.

SHEET 8 OF 12



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

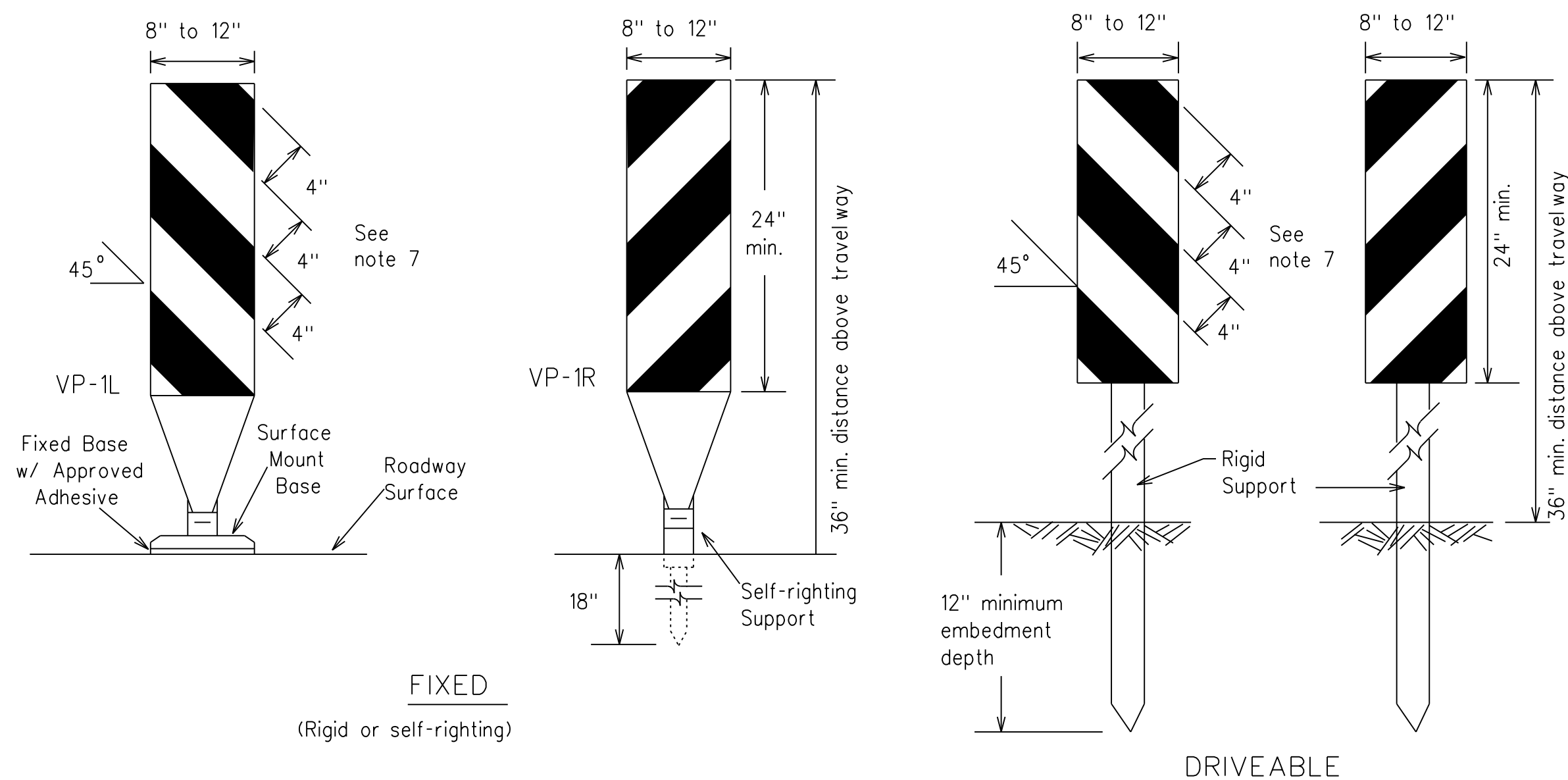
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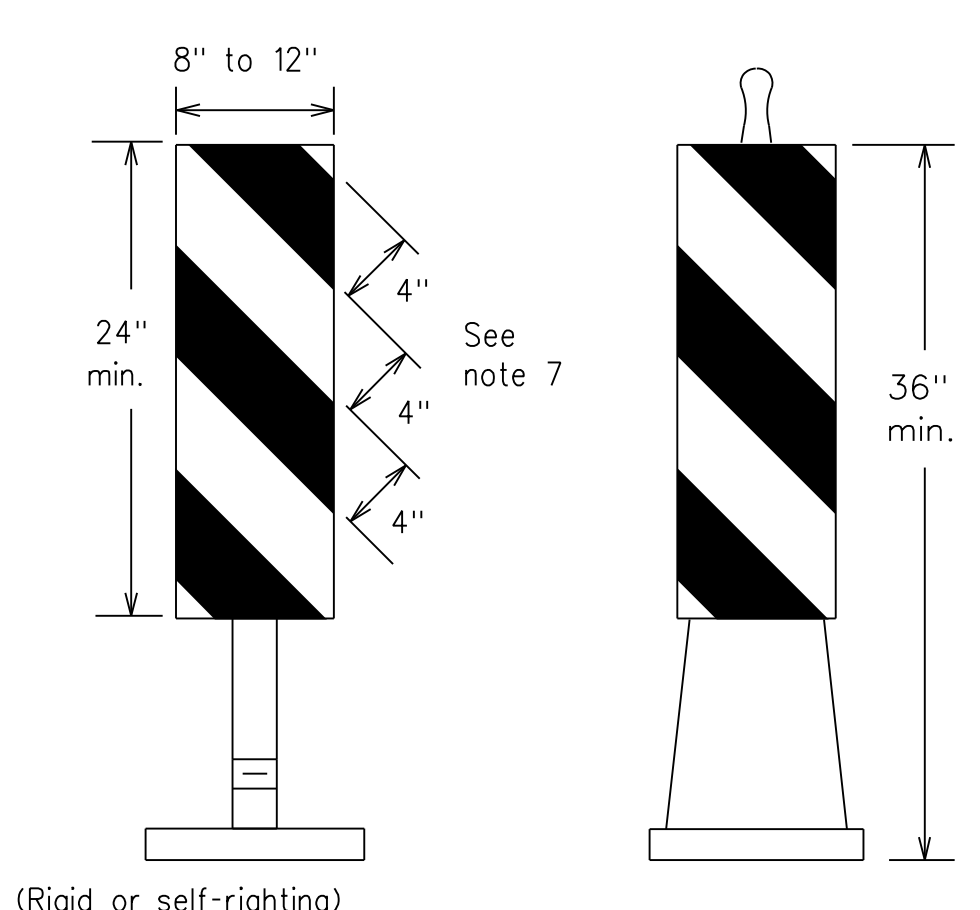
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**FIXED**  
(Rigid or self-righting)

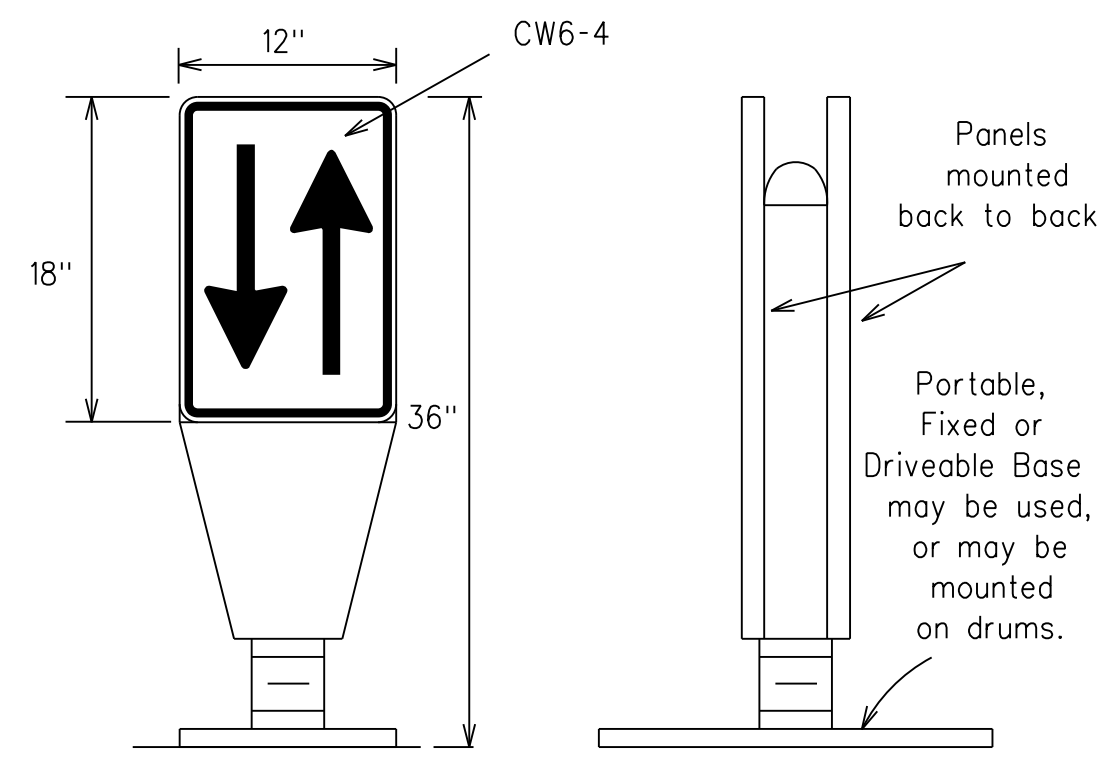
**DRIVEABLE**



**PORTABLE**

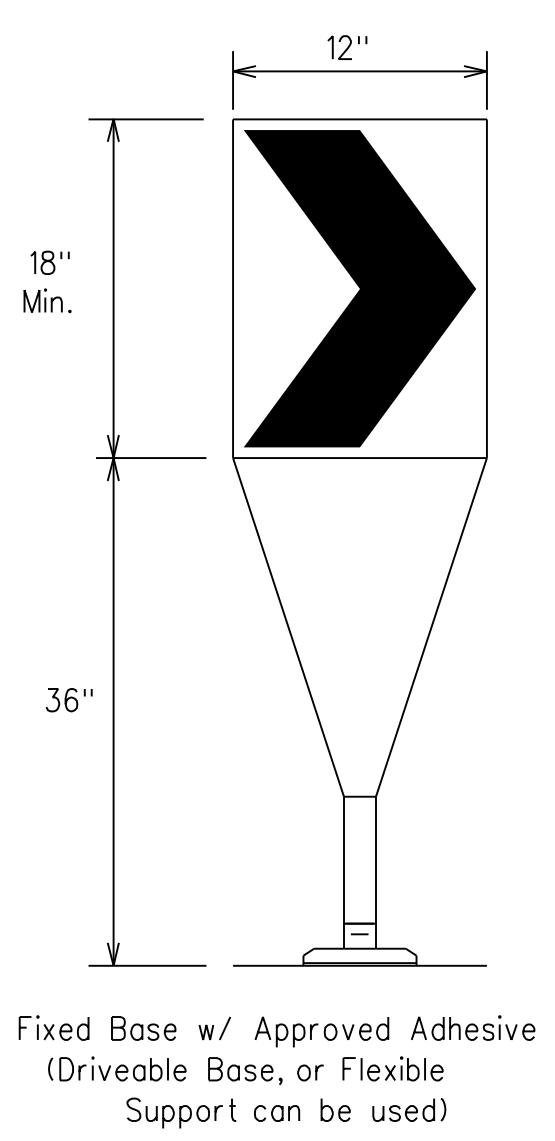
**VERTICAL PANELS (VPs)**

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



**OPPOSING TRAFFIC LANE DIVIDERS (OTLD)**

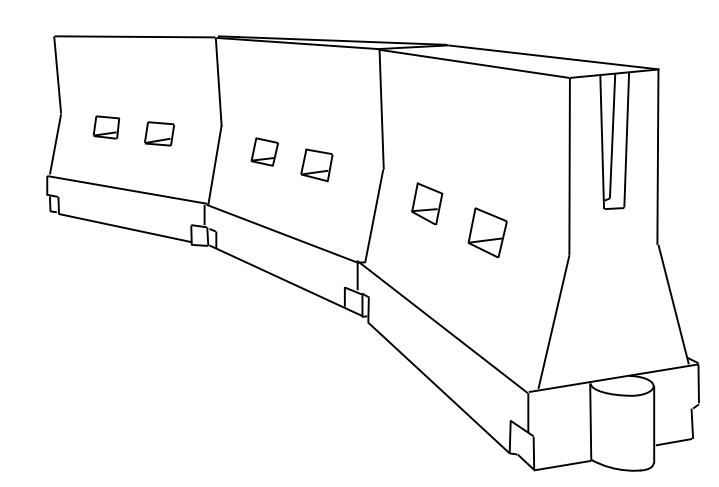
- Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base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



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

**CHEVRONS**

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



**LONGITUDINAL CHANNELIZING DEVICES (LCD)**

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

**WATER BALLASTED SYSTEMS USED AS BARRIERS**

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

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long 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**

**GENERAL NOTES**

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

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

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

**SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS**

SHEET 9 OF 12



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

BC(9)-21

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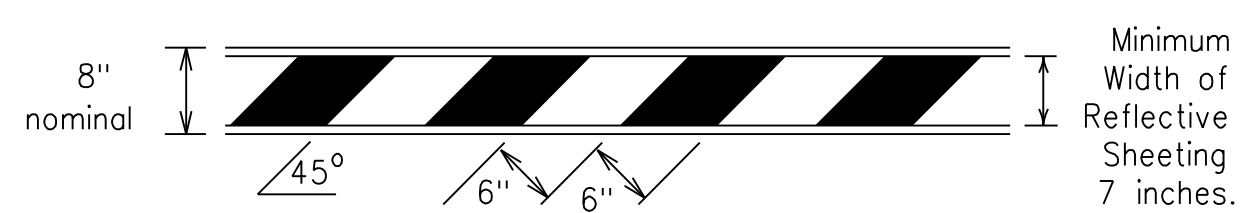
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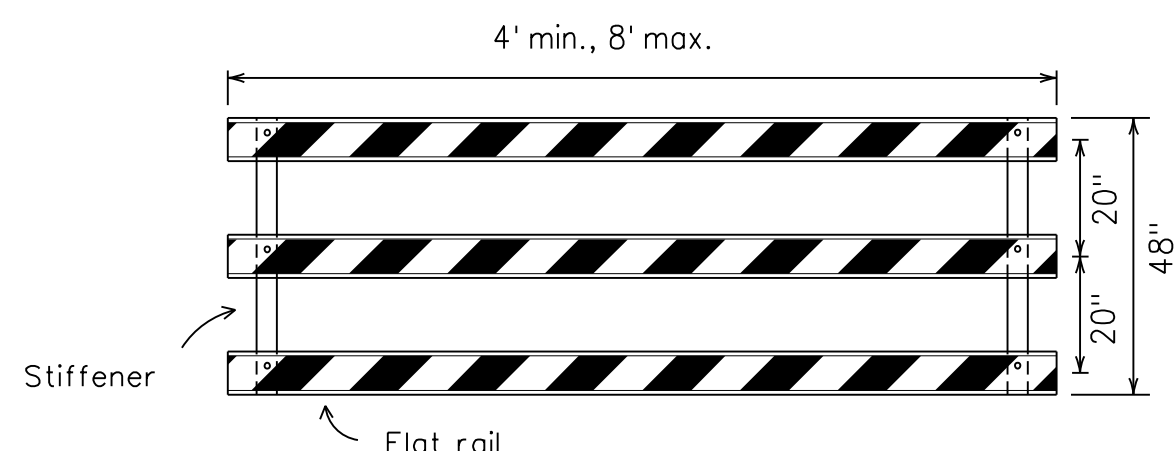
**TYPE 3 BARRICADES**

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.

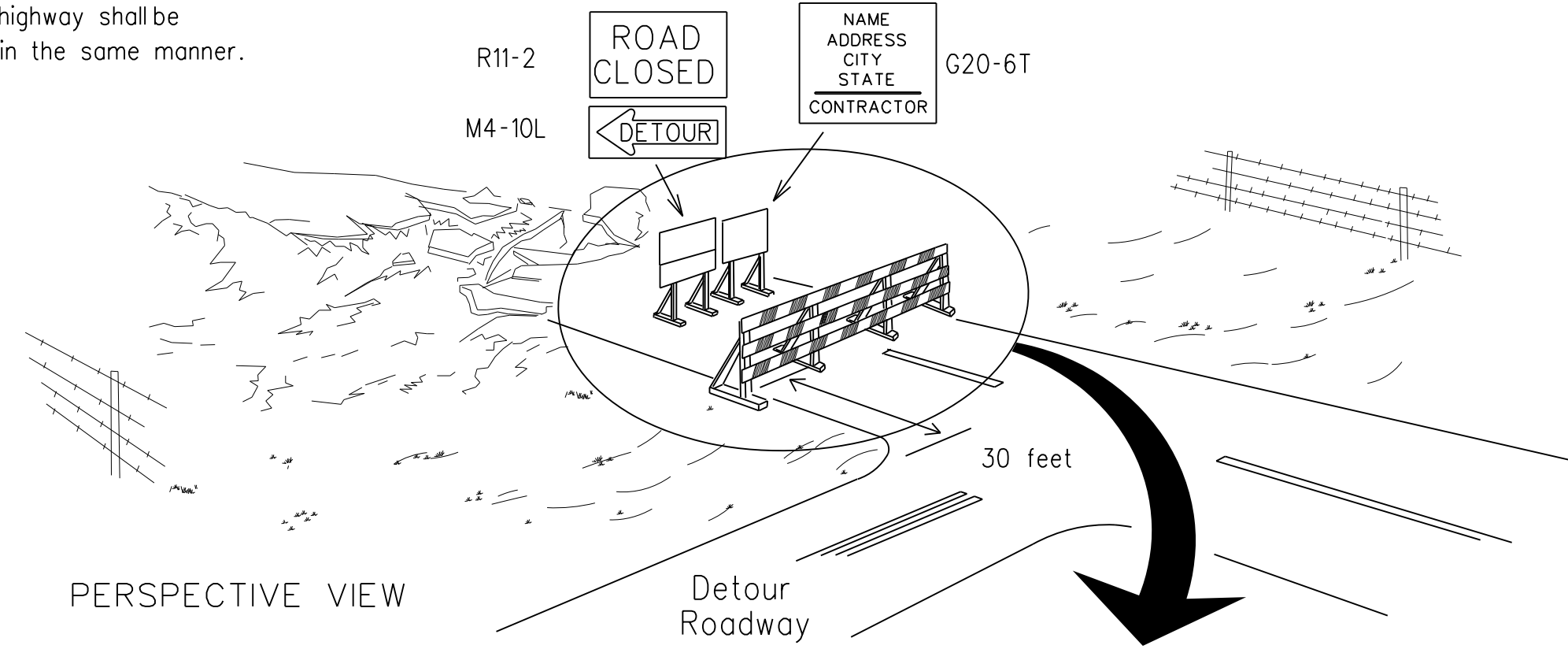


**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



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

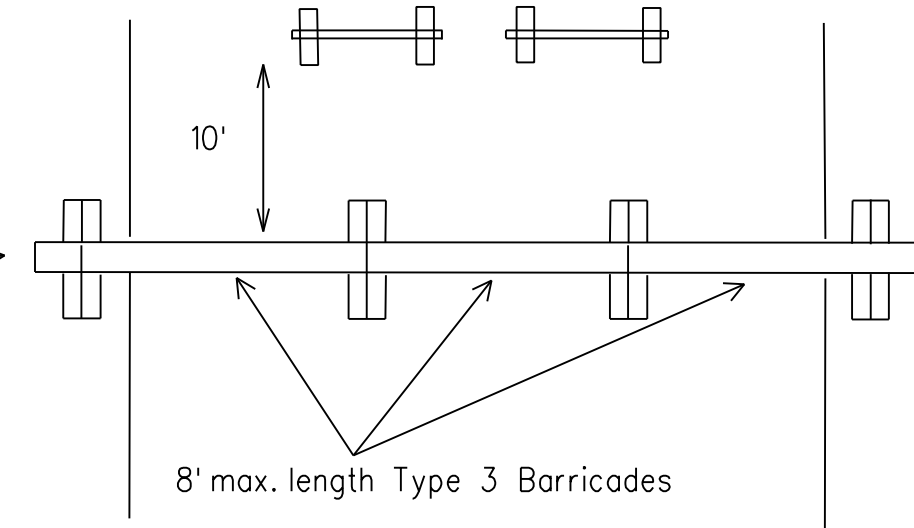
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

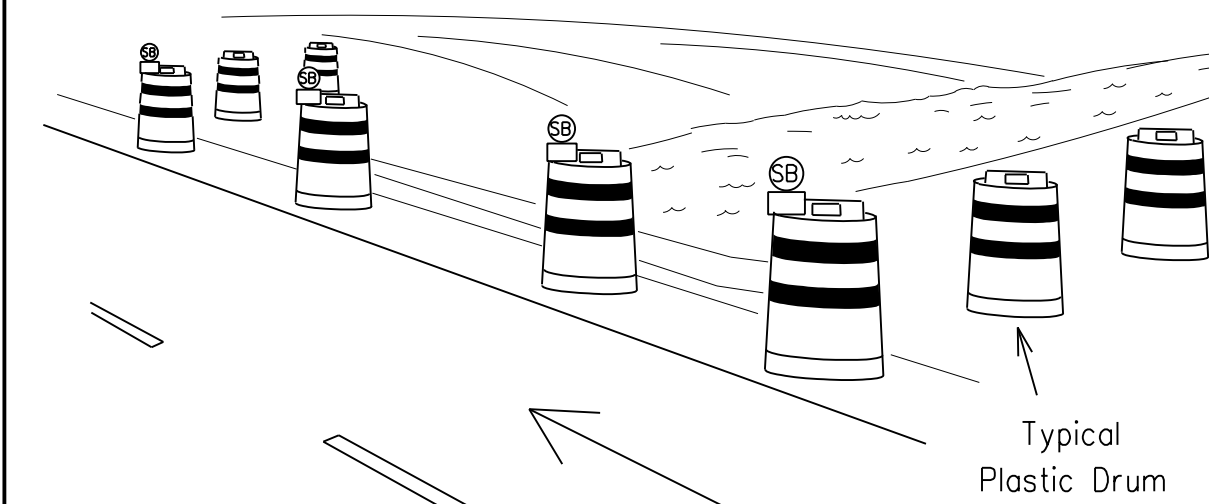
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.

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.

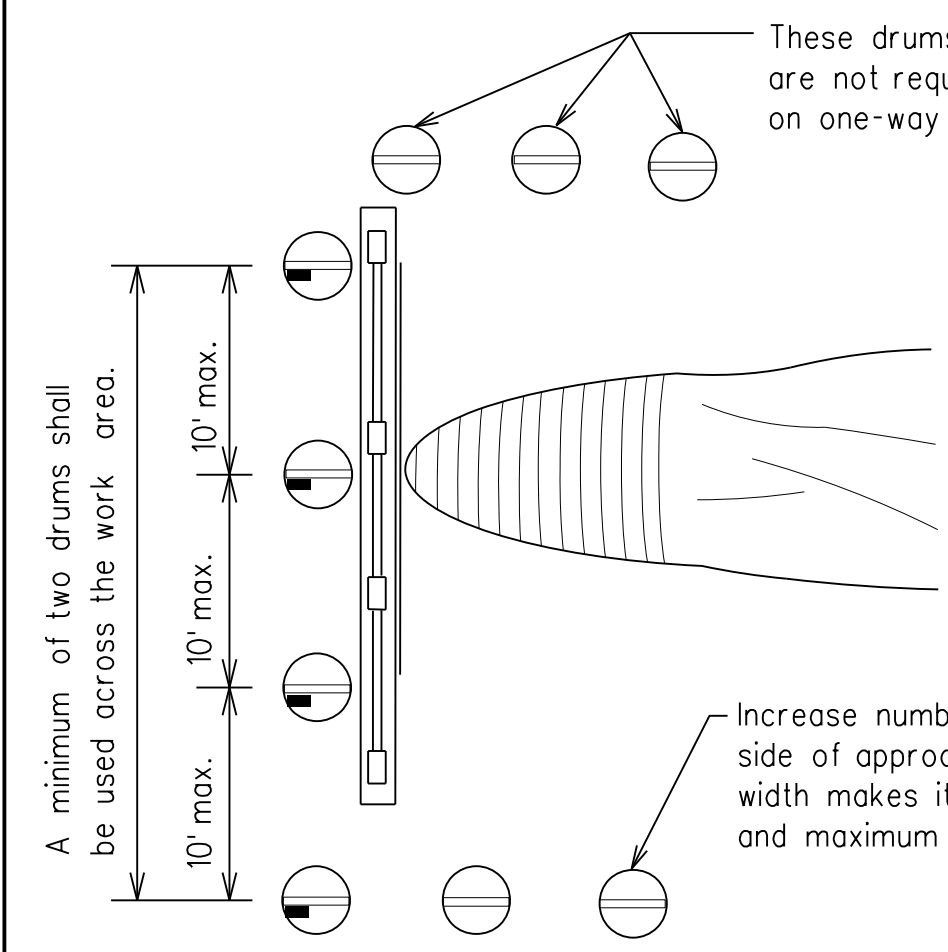


PLAN VIEW

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



PERSPECTIVE VIEW

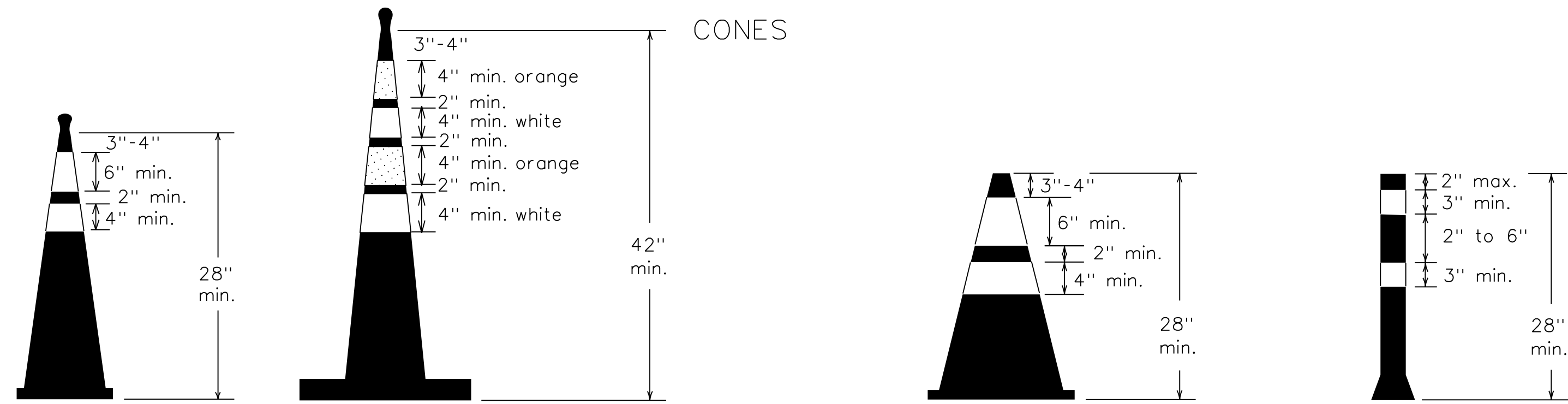


PLAN VIEW

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

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

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

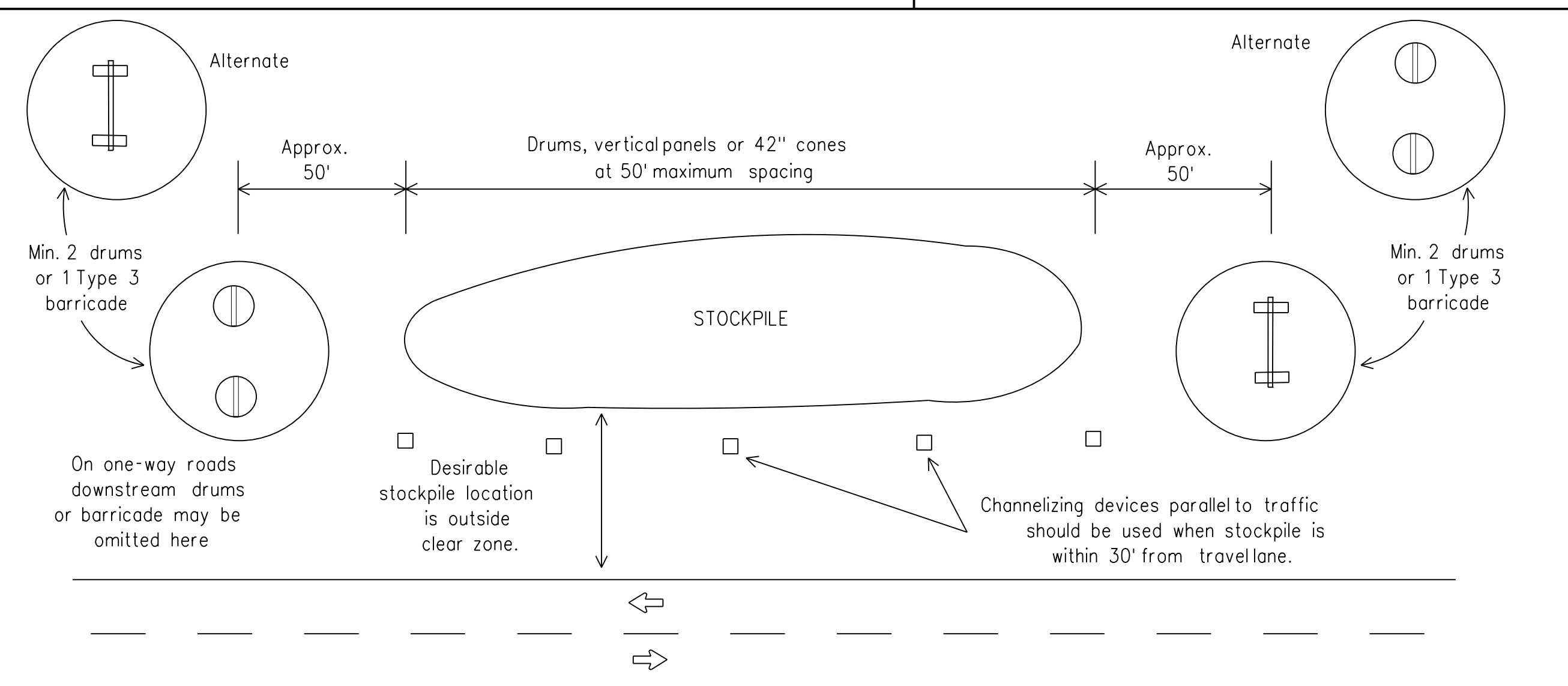


Two-Piece cones

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.



**TRAFFIC CONTROL FOR MATERIAL STOCKPILES**

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.



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC(10)-21**

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## WORK ZONE PAVEMENT MARKINGS

### GENERAL

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

### RAISED PAVEMENT MARKERS

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

### PREFABRICATED PAVEMENT MARKINGS

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

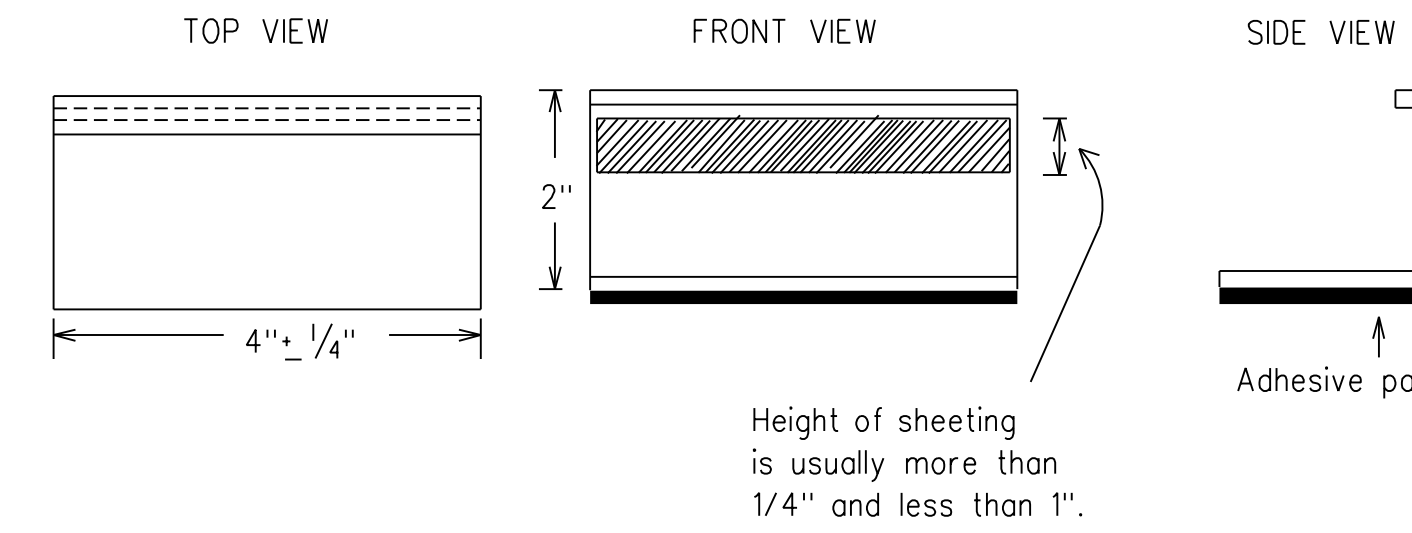
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

### REMOVAL OF PAVEMENT MARKINGS

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

## Temporary Flexible-Reflective Roadway Marker Tabs



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

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

### RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

SHEET 11 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

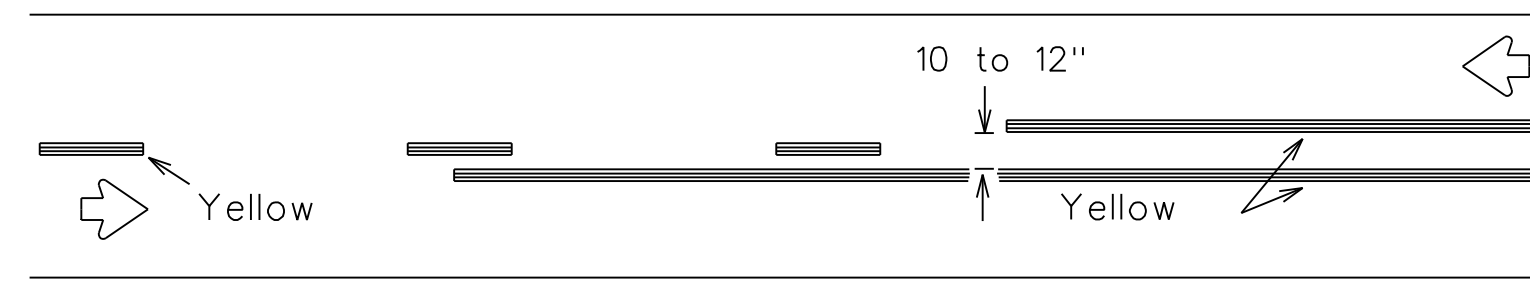
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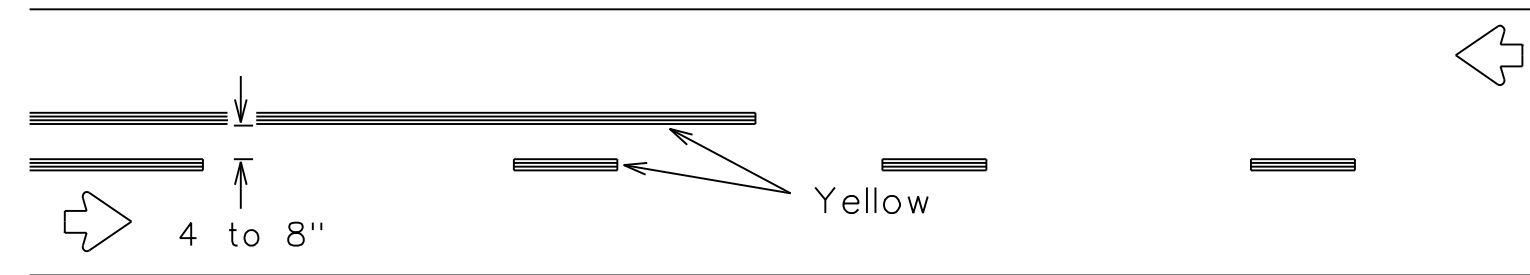
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# PAVEMENT MARKING PATTERNS

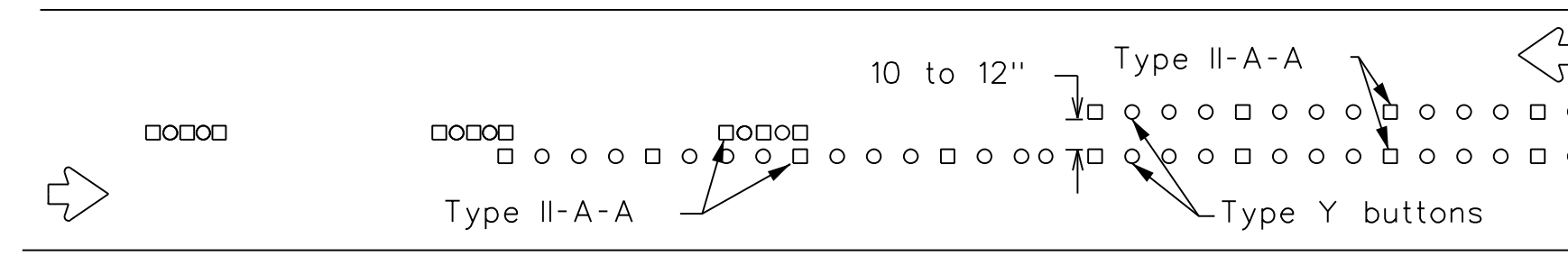


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

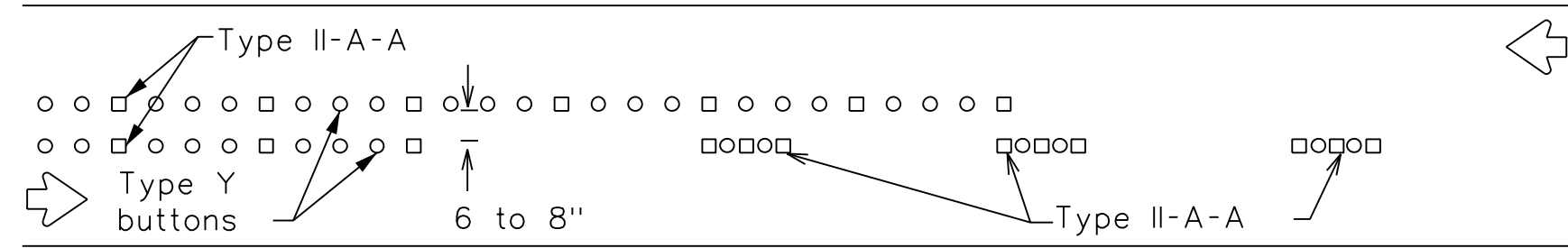


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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.

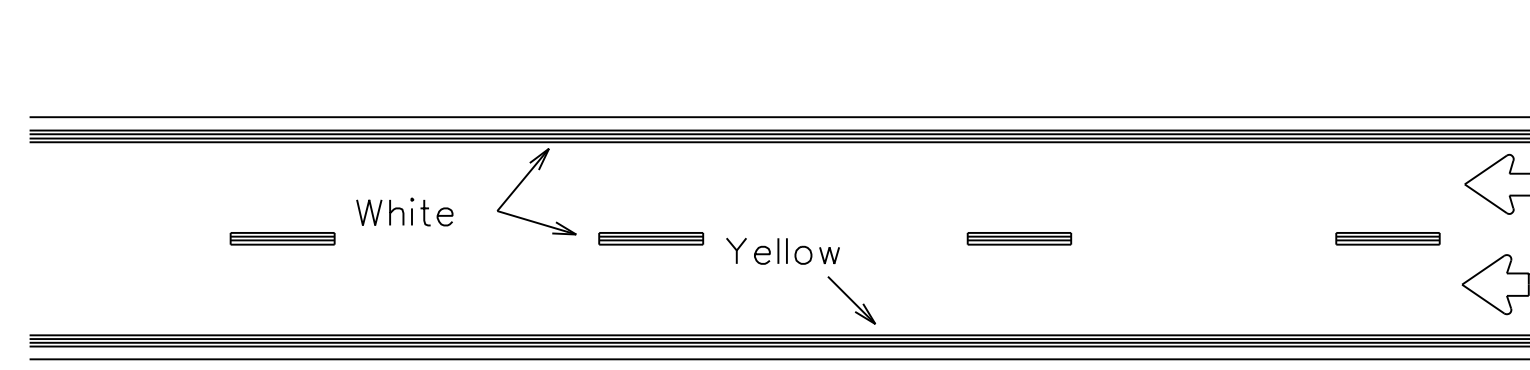


RAISED PAVEMENT MARKERS - PATTERN A



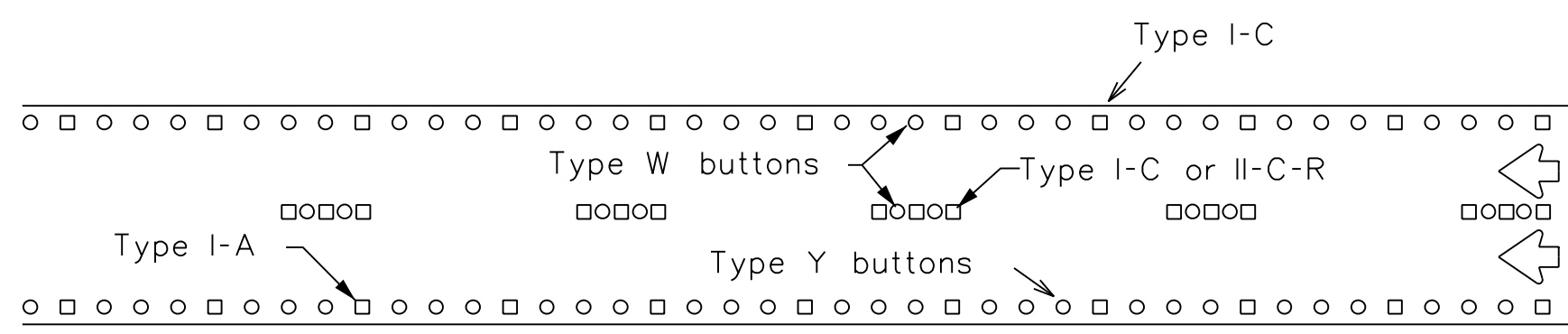
RAISED PAVEMENT MARKERS - PATTERN B

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



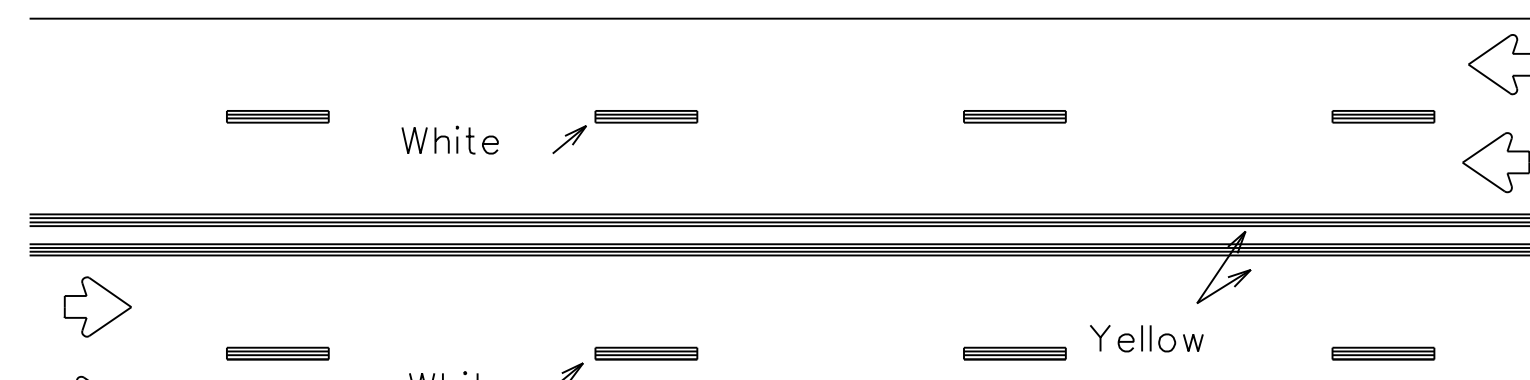
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



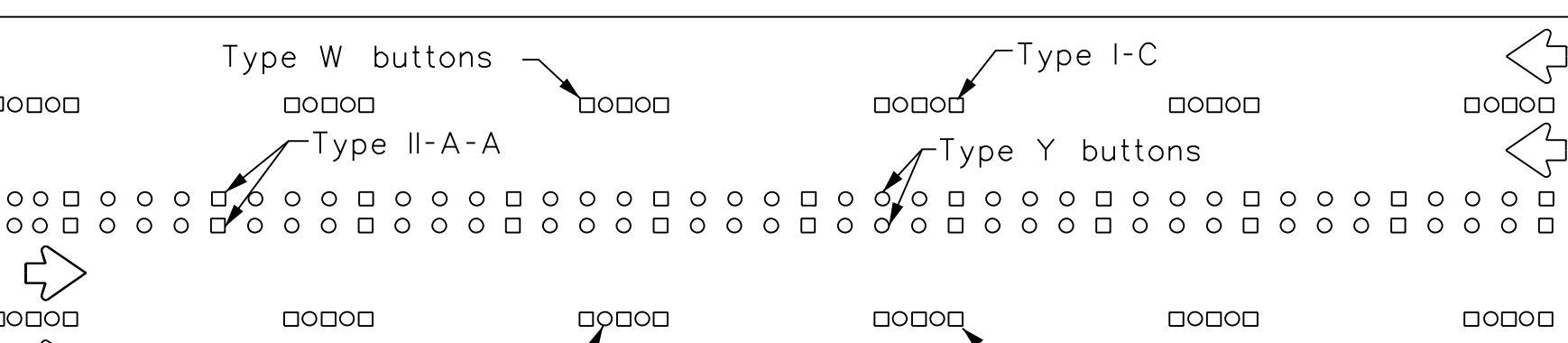
RAISED PAVEMENT MARKERS

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



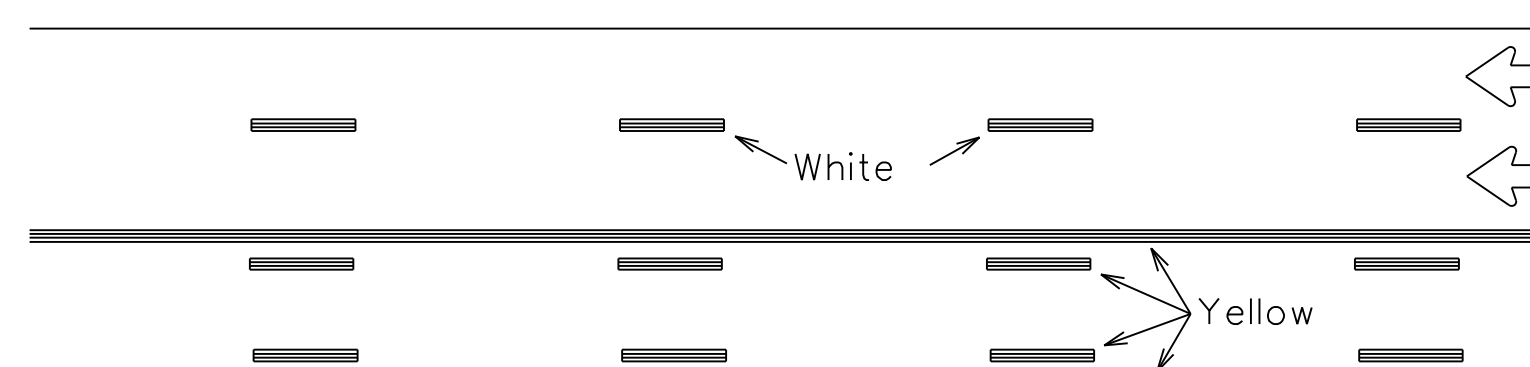
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



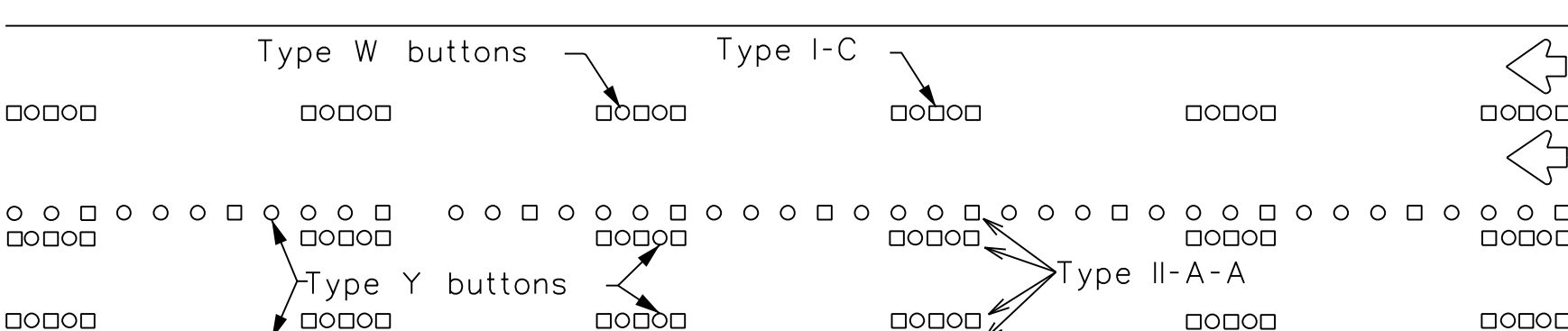
RAISED PAVEMENT MARKERS

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

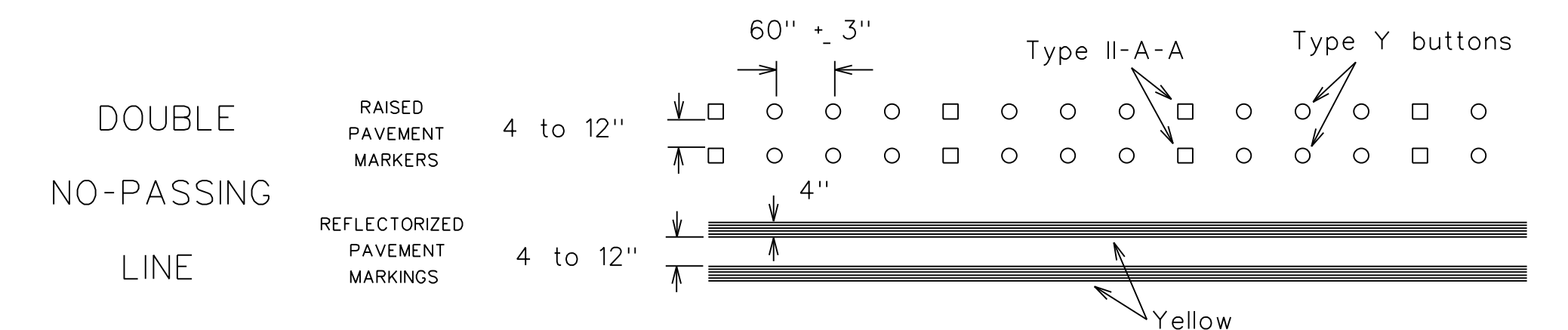
Prefabricated markings may be substituted for reflectORIZED pavement markings.



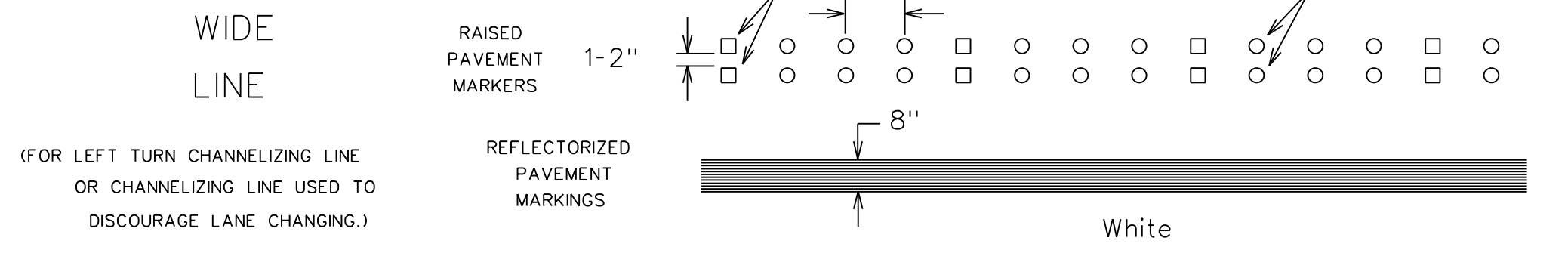
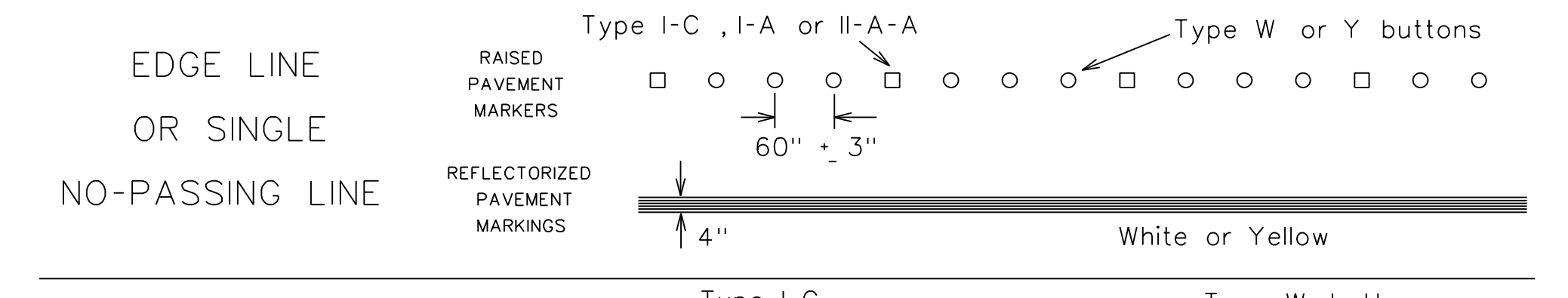
RAISED PAVEMENT MARKERS

## TWO-WAY LEFT TURN LANE

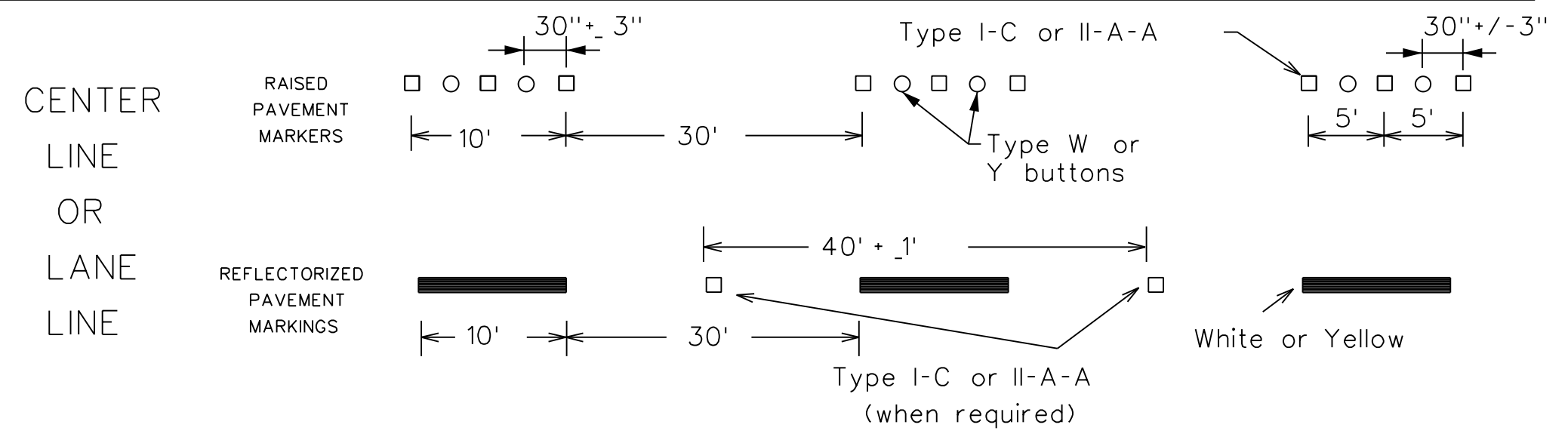
# STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



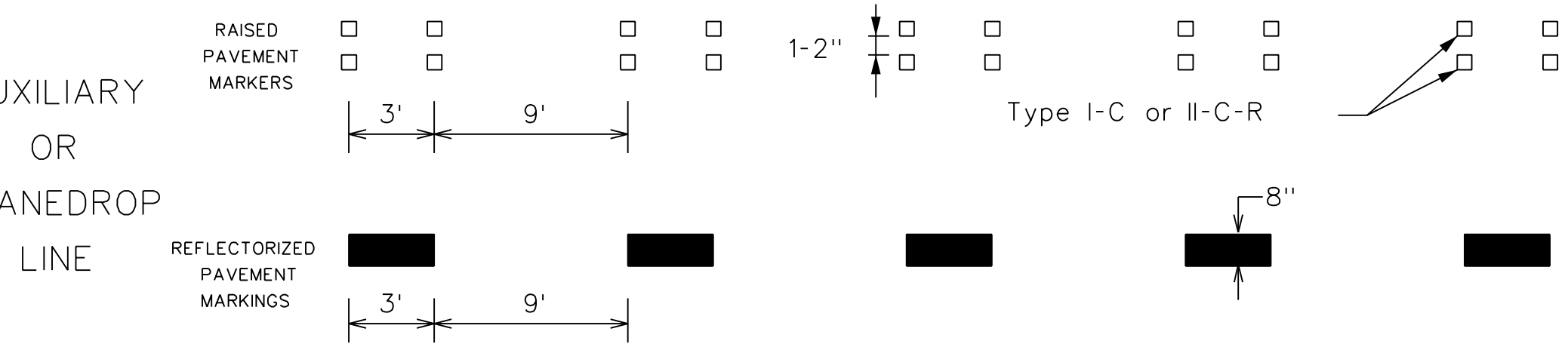
SOLID LINES



BROKEN LINES

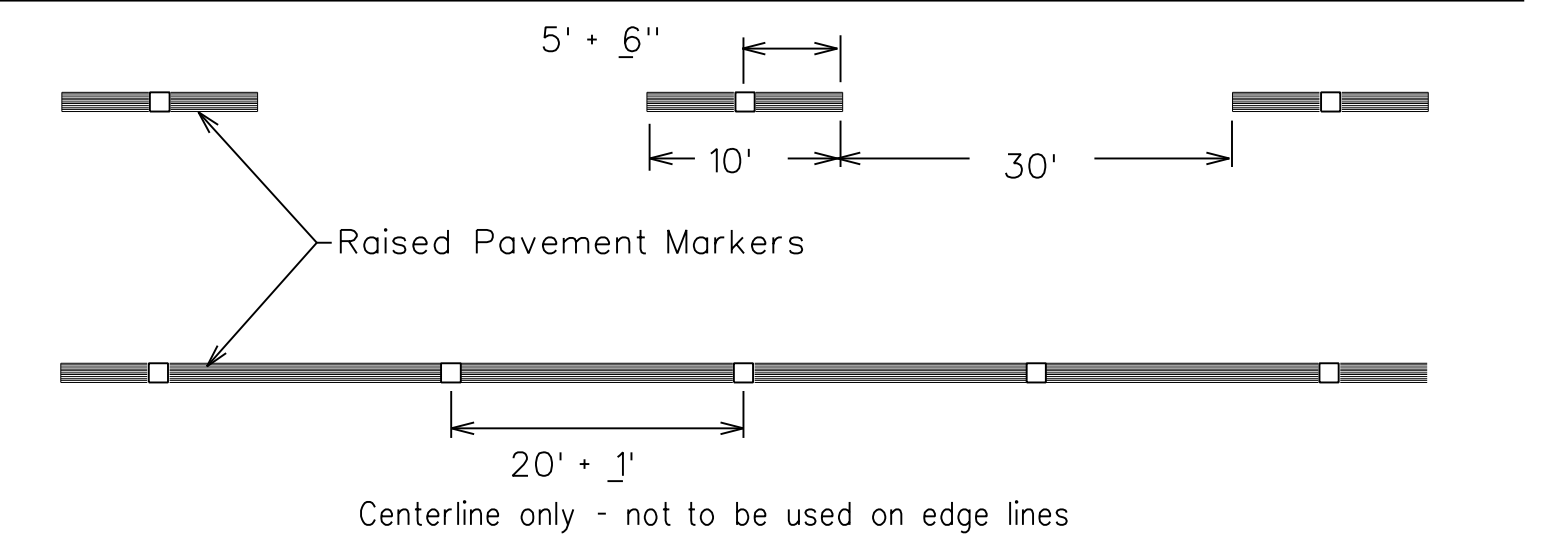


AUXILIARY OR LANEDROP LINE



## 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.



SHEET 12 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

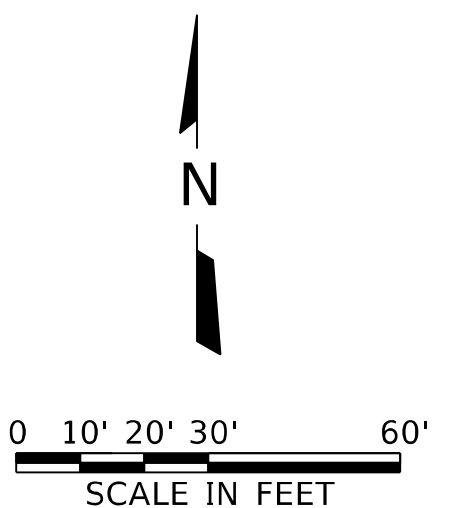
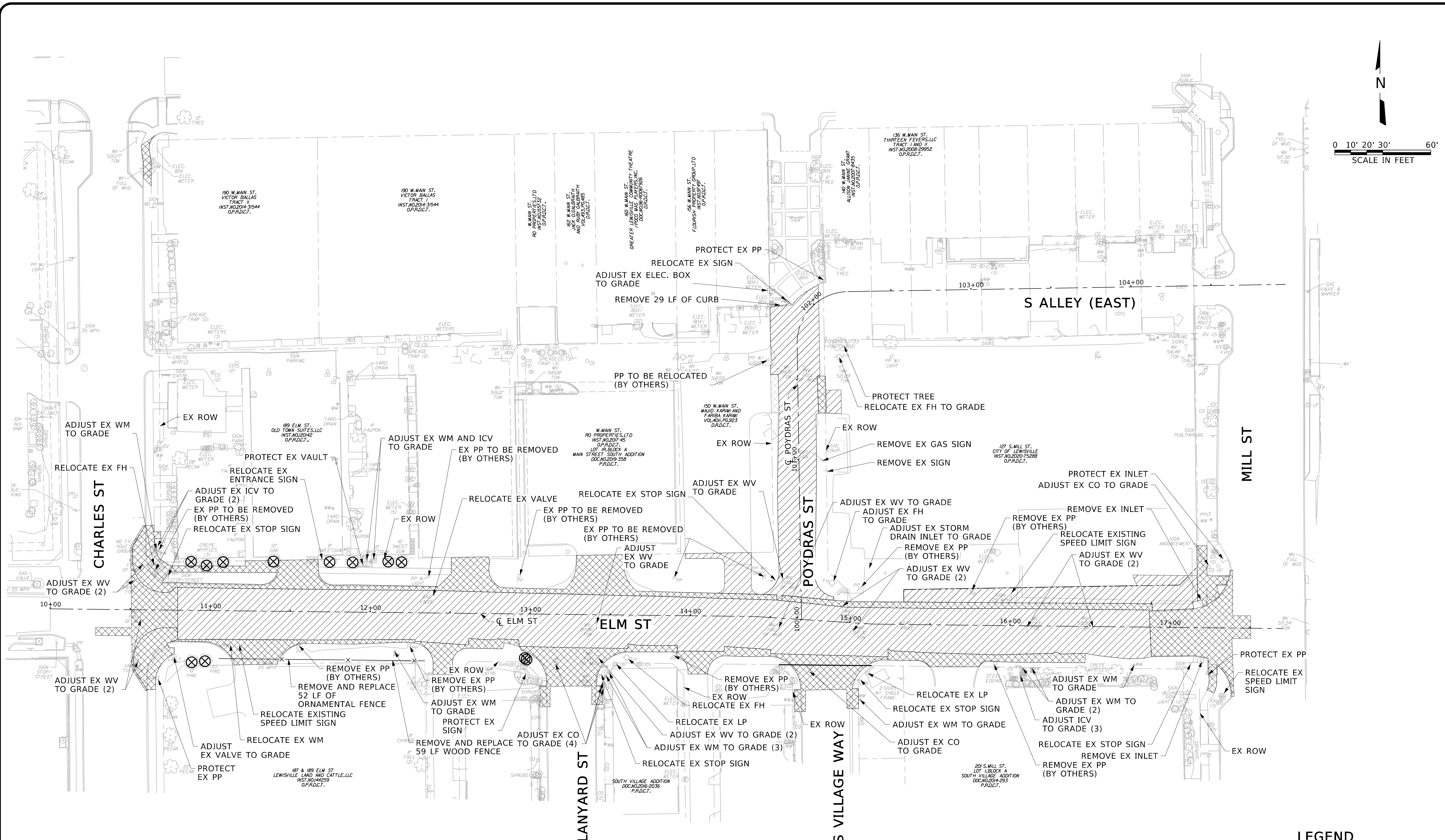
BC(12)-21

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."

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 Phone - (214) 217-2200  
 Web - www.freese.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 CIVIL  
**DEMOLITION PLAN**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	YR	DRAWN	KLH	REVISED	SEC	FILE NAME
				LEW20378	AUG 2023							CV-TRT-PL-DEM001.Sht

SHEET **DM-1**  
 SEQ. 27

**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. ALL SIGN RELOCATION LOCATION IS SHOWN ON THE PAVEMENT MARKING AND SIGNAGE PLAN.

- LEGEND**
- CONCRETE REMOVAL
  - ASPHALT REMOVAL
  - BRICK PAVEMENT REMOVAL
  - FENCE REMOVAL
  - TREE REMOVAL

MicroStation V8 User: 04331 Office: On Site  
 Plotter: N:\Drawings\3\_Roadway\cv-trt-pl-dem001.sht  
 Plot Scale: 60,000 / 1  
 Date: Aug 07 2023 - 11:19:23 AM  
 Project: Freese and Nichols, Inc. - True Type Fonts

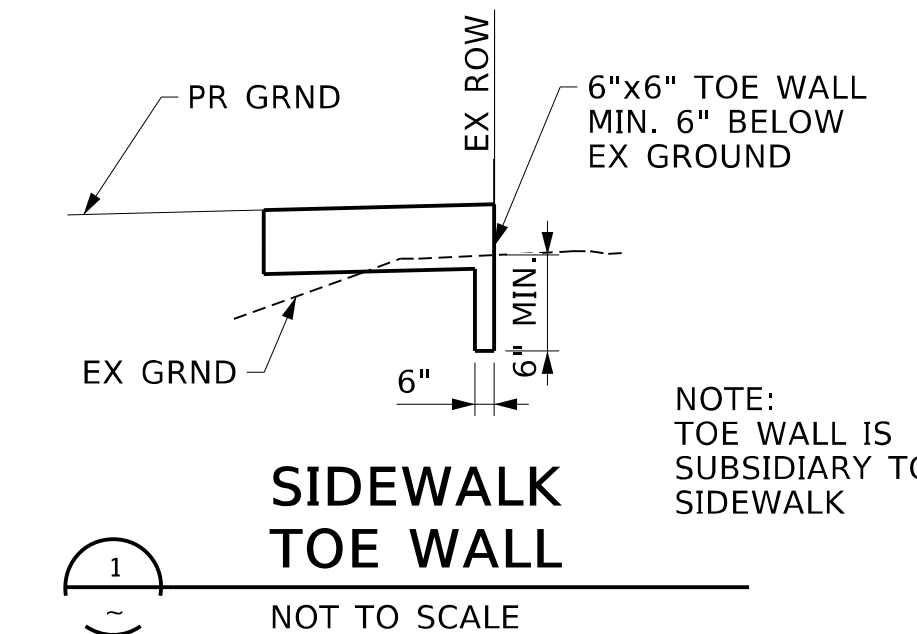
NUMBER	STATION	OFFSET	DESCRIPTION
1	10+61.52	49.81' RT	MATCH EXISTING
2	10+51.61	37.31' RT	MATCH EXISTING
3	10+33.68	16.23' RT	MATCH EXISTING
4	10+33.62	11.23' RT	MATCH EXISTING
5	10+49.94	39.75' LT	MATCH EXISTING
6	10+59.49	52.85' LT	MATCH EXISTING
7	10+73.41	11.00' LT	20' R PCC 3' R
8	10+72.48	11.00' RT	20' R PT
9	10+82.65	19.00' LT	PARKING PI

NUMBER	STATION	OFFSET	DESCRIPTION
10	11+26.65	19.00' LT	PARKING PI
11	10+96.14	11.00' RT	20' R PC
12	11+36.11	11.00' LT	3' R PCC 10' R
13	11+21.54	31.29' LT	SIDEWALK PI
14	11+42.48	31.87' LT	DRIVEWAY PI
15	11+66.49	32.52' LT	DRIVEWAY PI
16	11+66.59	11.00' LT	10' R PCC 3' R
17	11+65.12	11.00' RT	20' R PC
18	11+79.54	19.00' RT	PARKING PI

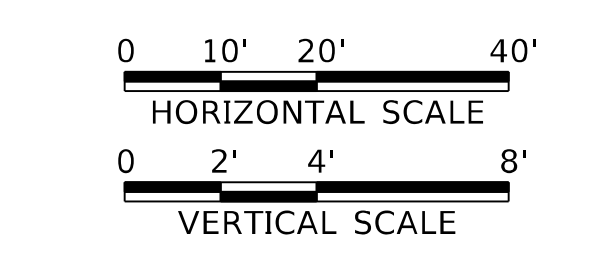
NUMBER	STATION	OFFSET	DESCRIPTION
19	12+01.68	19.00' RT	PARKING PI
20	11+80.44	19.00' LT	PARKING PI
21	11+66.48	30.18' LT	DRIVEWAY PI
22	11+84.95	30.42' LT	DRIVEWAY PI
23	11+90.32	26.16' LT	SIDEWALK PI
24	12+02.34	26.50' LT	SIDEWALK PI
25	12+09.32	32.68' LT	SIDEWALK PI
26	12+32.37	34.98' LT	DRIVEWAY PI
27	12+24.44	19.00' LT	PARKING PI

NUMBER	STATION	OFFSET	DESCRIPTION
28	12+36.60	11.00' LT	3' R PCC 20' R
29	12+15.53	11.00' RT	3' R PT
30	12+29.68	11.00' RT	10' R PC
31	12+50.37	34.82' LT	DRIVEWAY PI
32	12+73.75	35.44' LT	DRIVEWAY PI
33	12+61.68	11.00' RT	10' R PT
34	12+85.77	11.00' LT	15' R PT
35	12+91.61	35.94' LT	DRIVEWAY PI
36	13+08.47	11.00' LT	20' R PC

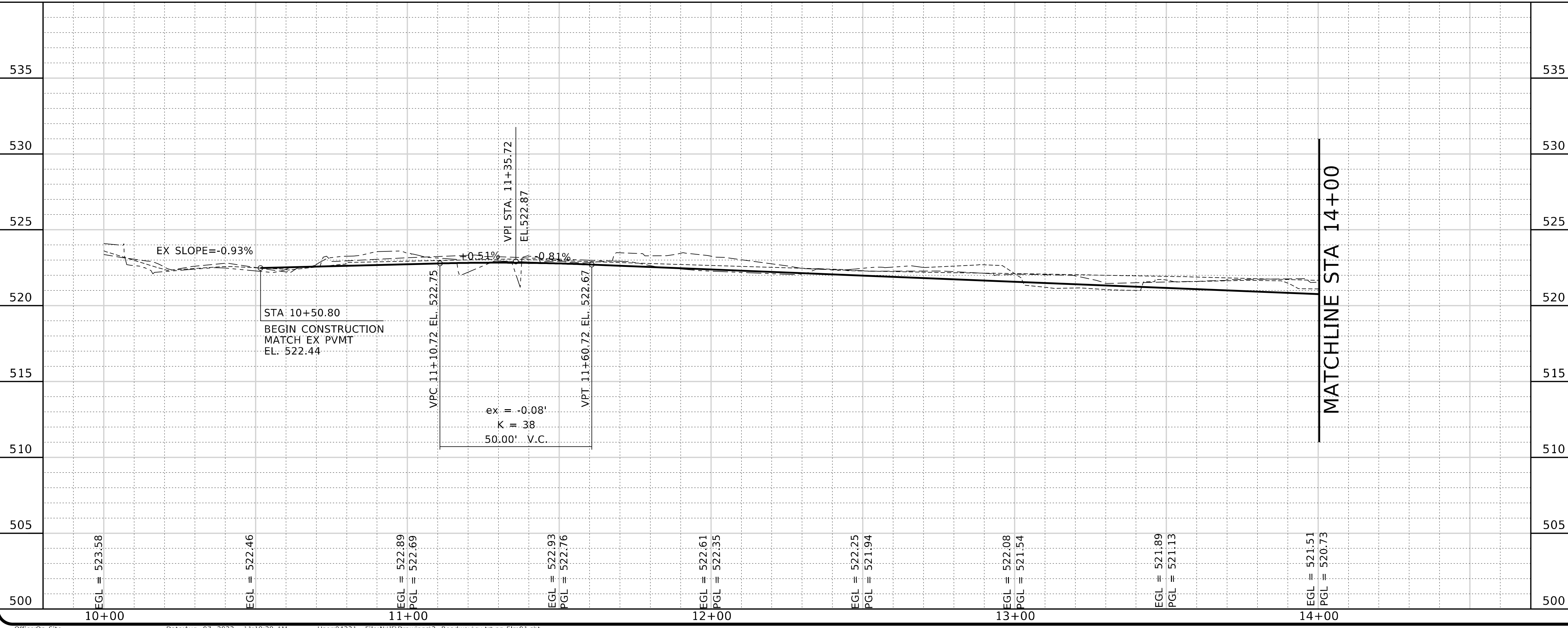
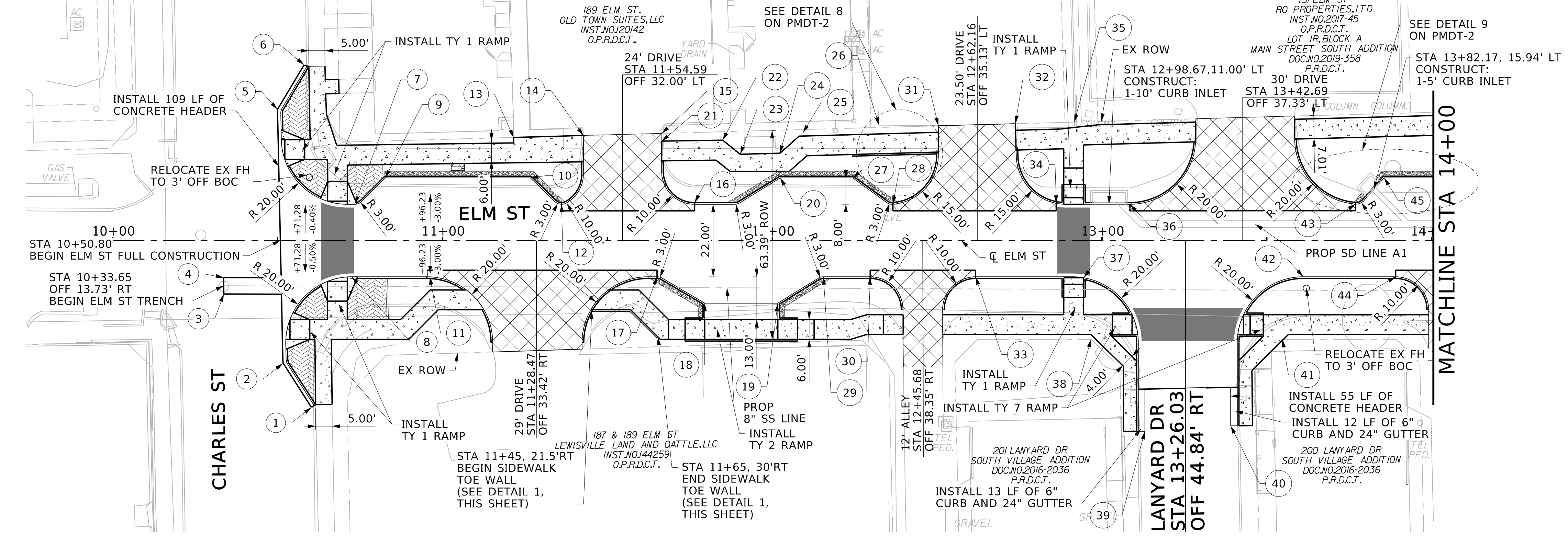
NUMBER	STATION	OFFSET	DESCRIPTION
37	12+94.53	11.00' RT	20' R PC
38	12+96.65	30.00' RT	SIDEWALK PI
39	13+13.03	57.85' RT	MATCH EXISTING
40	13+39.03	56.25' RT	MATCH EXISTING
41	13+54.72	30.00' RT	SIDEWALK PI
42	13+61.03	11.00' RT	20' R PT
43	13.76.91	11.00' LT	20' R PCC 3' R
44	13+89.06	11.00' RT	10' R PC
45	13+85.57	19.00' LT	SIDEWALK PI



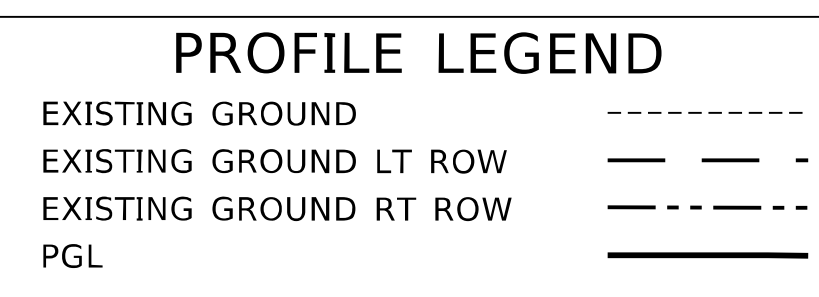
**SIDEWALK TOE WALL**  
NOT TO SCALE



- LEGEND**
- 8" CONCRETE DRIVEWAY/ALLEY
  - 5" CONCRETE SIDEWALK
  - 8" CONCRETE SIDEWALK
  - BRICK PAVERS
  - 8" INTEGRAL COLORED CONCRETE (SEE PDT-6)
  - 6" MULCH (1.5 FT WIDE)
  - CONCRETE PAD (SEE LS-5)



- NOTES:**
- ALL DIMENSIONS AND POINT CONTROLS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
  - WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.



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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
CIVIL  
**ELM ST PLAN & PROFILE BEGIN TO STA 14+50**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DESIGNED	YTD	DRAWN	KLH	REVISED	SEC	CHECKED	FILE NAME
				LEW20378	DATE	AUG 2023						cv-trr-pp-elm01.sht

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

SHEET **PV-1**

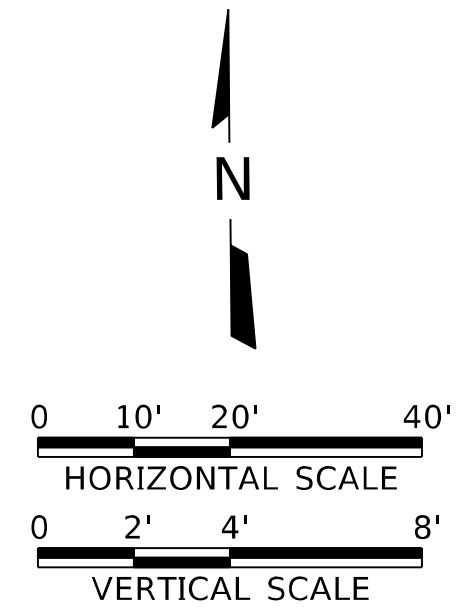
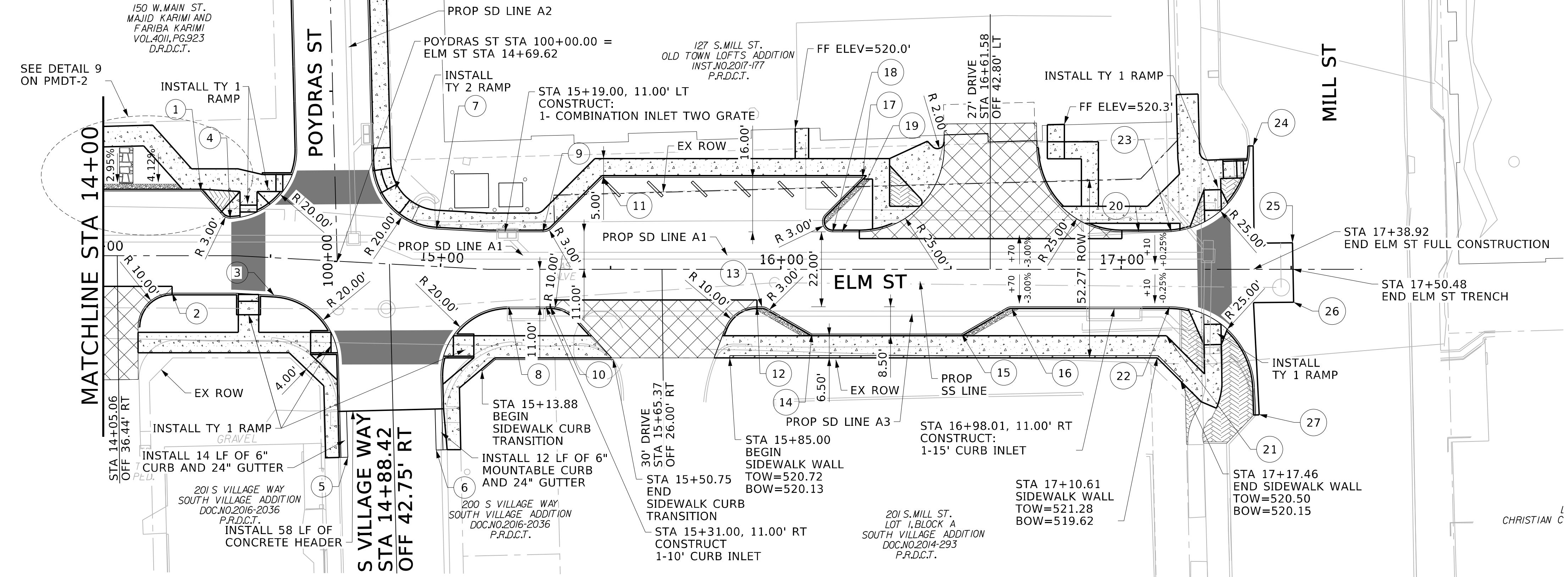
SEQ. 28

MicroStation V8 User: 04331 Office: On Site  
 Project: N:\Drawings\3\_Roadway\cv-trr-pp-elm01.sht  
 Plot Scale: 40.000' = 1" File: N:\Drawings\3\_Roadway\cv-trr-pp-elm01.sht  
 Date: Aug 07 2023 - 11:19:29 AM Project: Freese and Nichols, Inc. - True Type Font

NUMBER	STATION	OFFSET	DESCRIPTION
1	14+29.57	19.00' LT	PARKING PI
2	14+21.06	11.00' RT	10' R PT
3	14+51.61	11.00' RT	20' R PC
4	14+37.78	11.00' LT	3' R PCC 20' R
5	14+75.76	57.29' RT	MATCH EXISTING
6	15+01.56	53.80' RT	MATCH EXISTING
7	14+98.23	11.00' LT	20' R PT
8	15+20.16	11.00' RT	20' R PT
9	15+31.65	11.00' LT	3' R PC

NUMBER	STATION	OFFSET	DESCRIPTION
10	15+32.29	11.00' RT	10' R PC
11	15+47.79	27.00' LT	PARKING PI
12	15+93.00	11.00' RT	10' R PT
13	15+94.49	11.00' RT	3' R PC
14	16+09.15	19.00' RT	PARKING PI
15	16+53.15	19.00' RT	PARKING PI
16	16+67.81	11.00' RT	3' R PT
17	16+24.01	27.00' LT	PARKING PI
18	16+15.26	11.00' LT	3' R PCC 30' R

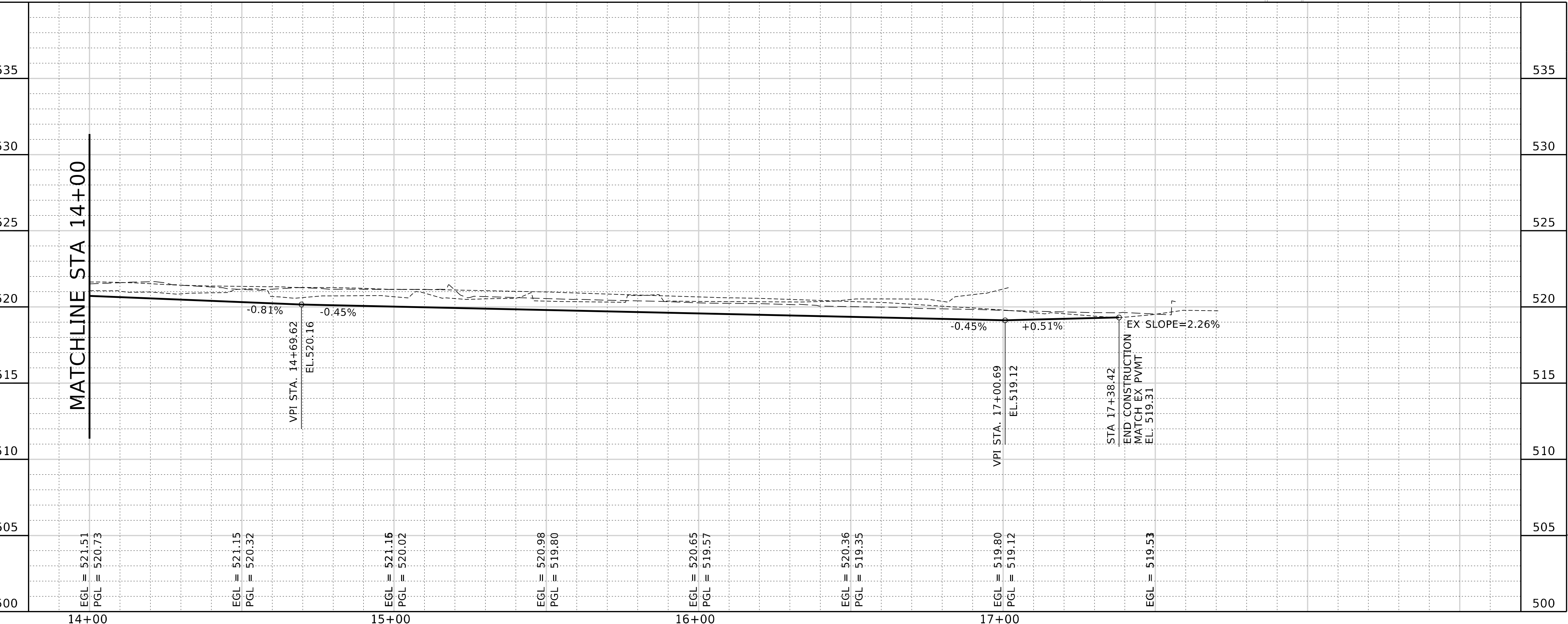
NUMBER	STATION	OFFSET	DESCRIPTION
19	16+18.01	11.00' LT	30' R PC
20	17+05.18	11.00' LT	30' R PT
21	17+13.31	19.50' RT	SIDEWALK PI
22	17+13.72	11.00' RT	25' R PC
23	17+14.75	11.00' LT	25' R PC
24	17+38.79	36.21' LT	MATCH EXISTING
25	17+50.39	7.79' LT	MATCH EXISTING
26	17+50.72	9.66' RT	MATCH EXISTING
27	17+40.61	42.74' RT	MATCH EXISTING



**LEGEND**

	8" CONCRETE DRIVEWAY/ALLEY
	5" CONCRETE SIDEWALK
	8" CONCRETE SIDEWALK
	BRICK PAVERS
	8" INTEGRAL COLORED CONCRETE (SEE PDT-6)
	6" MULCH (1.5 FT WIDE)
	CONCRETE PAD (SEE LS-5)

- NOTES:**
- ALL DIMENSIONS AND POINT CONTROLS ARE TO FACE OF CURB UNLESS NOTED
  - WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.
  - BOLLARD MATERIAL (6" NOMINAL SIZE) SHALL BE SCH 40 ASTM A-53 CARBON STEEL.
  - CARBON STEEL BOLLARD FINISH SHALL BE POWDERCOAT YELLOW.
  - BOLLARD CAP STYLE SHALL BE DOME.
  - SEE SHEET PV-03 FOR BOLLARD LOCATIONS.
  - BOLLARDS SHALL BE CAL PIPE SECURITY BOLLARDS STANDARD 6" FIXED IBF06040 SCH 40, OR APPROVED EQUAL.



**PROFILE LEGEND**

---	EXISTING GROUND
---	EXISTING GROUND LT ROW
---	EXISTING GROUND RT ROW
---	PGL



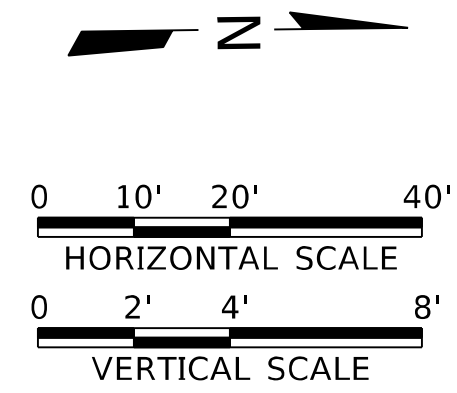
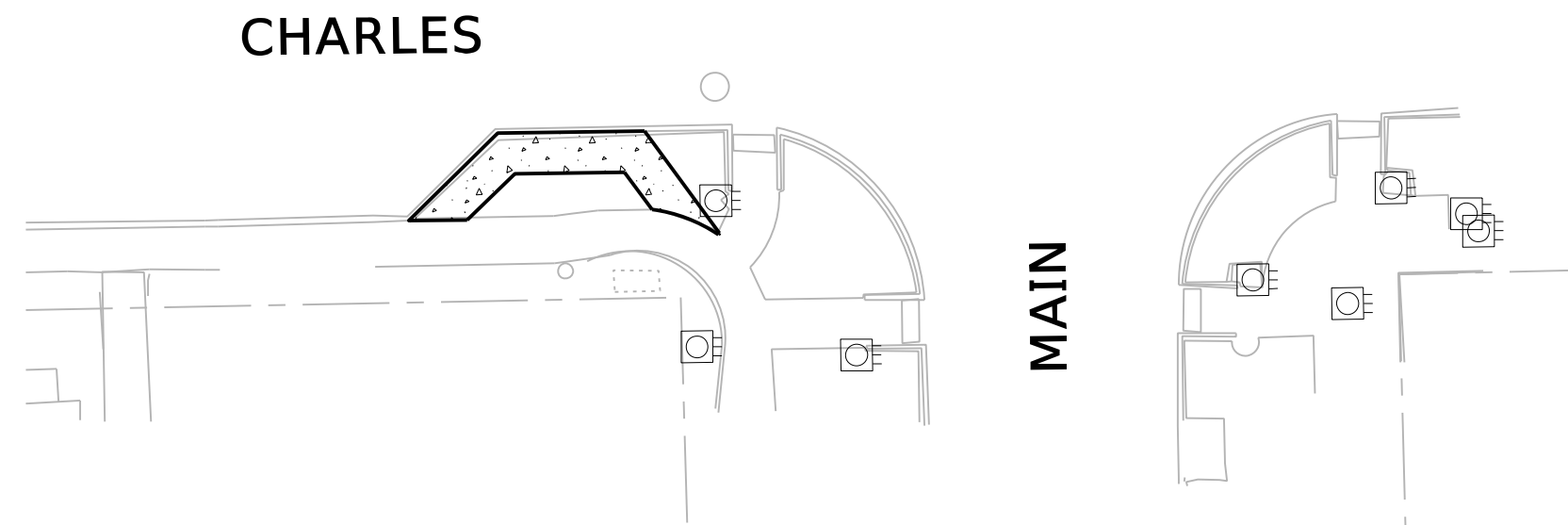
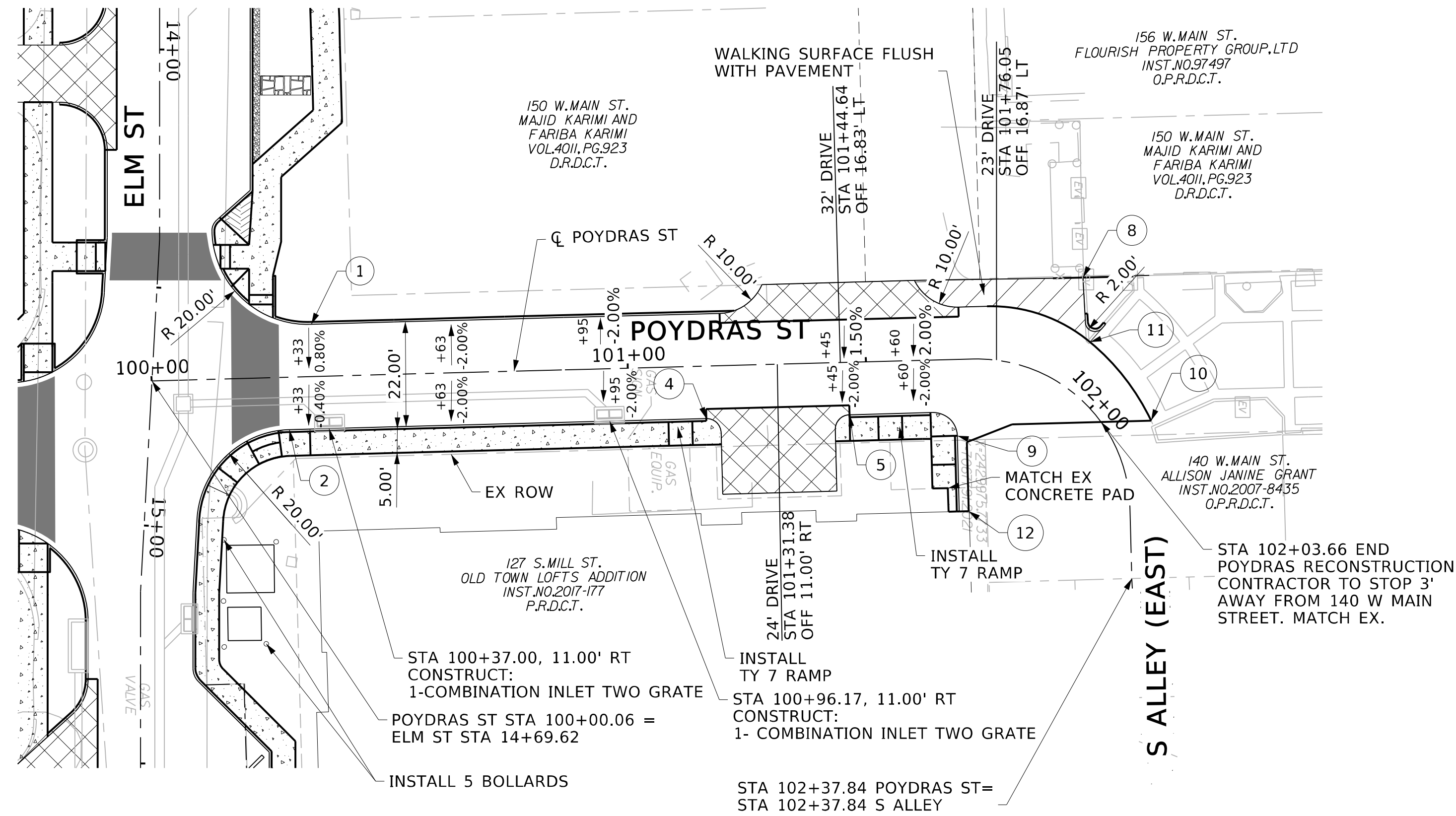
**FREESSE & NICHOLS**  
 13270 Maple Drive, Suite 300  
 Dallas, TX 75251  
 Phone - (214) 217-2200  
 Web - www.freesse.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 CIVIL  
**ELM ST PLAN & PROFILE STA 14+50 TO END**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	LEW20378	DATE	AUG 2023	DESIGNED	Y.T.	DRAWN	K.L.H.	REVISED	SEC	CHECKED	FILE NAME
0	VERIFY SCALE														cv-trr-pp-Elm02.sht

SHEET **PV-2**

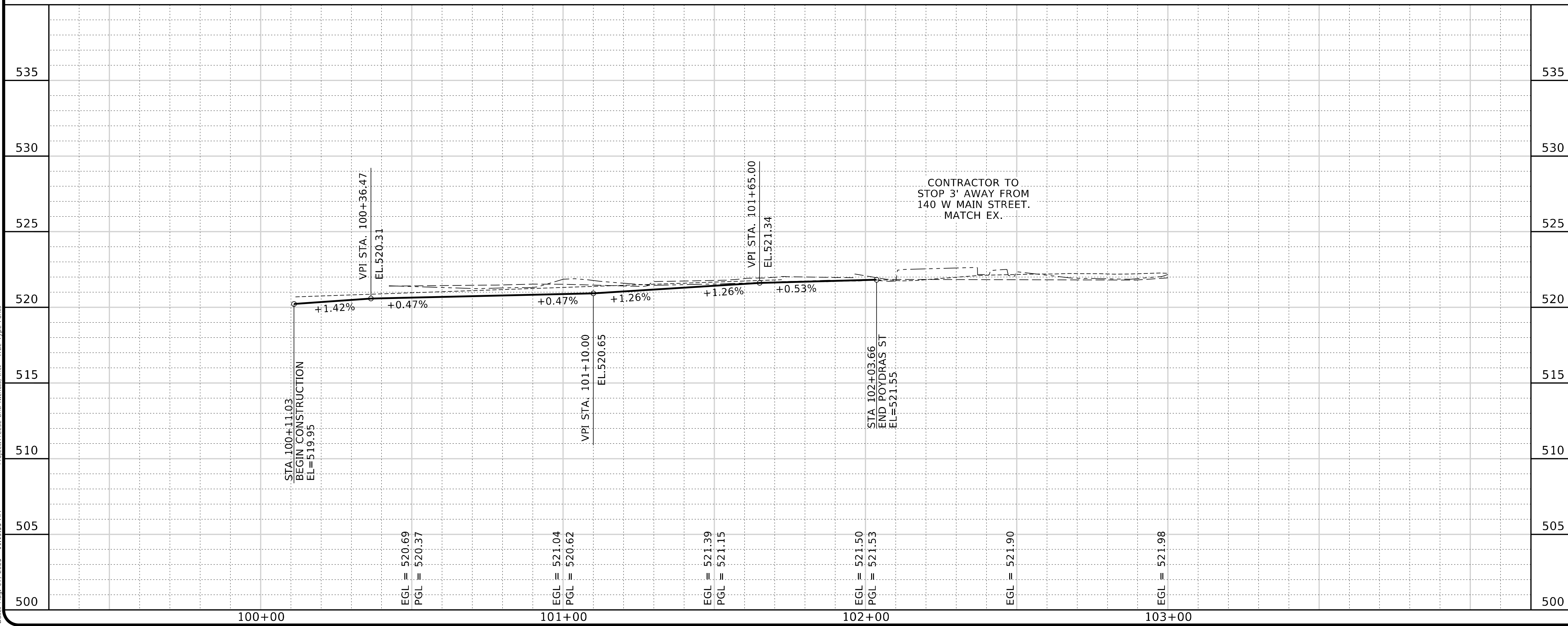
SEQ. 29



**LEGEND**

- 8" CONCRETE DRIVEWAY/ALLEY
- 5" CONCRETE SIDEWALK
- 8" CONCRETE SIDEWALK
- BRICK PAVERS
- 8" INTEGRAL COLORED CONCRETE (SEE PDT-6)
- 6" MULCH (1.5 FT WIDE)
- CONCRETE PAD (SEE LS-5)

POINT CONTROL TABLE			
NUMBER	STATION	OFFSET	DESCRIPTION
1	100+33.83	11.00' LT	20' R PT
2	100+28.66	11.00' RT	20' R PT
3	100+99.84	11.00' LT	10' R PC
4	101+16.22	11.00' RT	DRIVEWAY PI
5	101+46.23	11.00' RT	3'R PT
6	101+43.84	11.00' LT	10' R PT
7	101+67.05	16.82' LT	PARKING PI
8	101+87.01	21.86' LT	PARKING PI
9	101+68.76	16.00' RT	MATCH EXISTING
10	102+08.29	9.10' LT	MATCH EXISTING
11	101+92.22	10.71' LT	SIDEWALK PI
12	101+70.76	31.89' RT	MATCH EXISTING



**NOTES:**

1. ALL DIMENSIONS AND POINT CONTROLS ARE TO FACE OF CURB UNLESS NOTED OTHERWISE.
2. SEE ELM ST P&P SHEETS FOR RAMP CALLOUTS.
3. WIDTH DIMENSION AT DRIVEWAY IS TAKEN AT THE END OF DRIVEWAY CURB RETURN AT FACE OF CURB.

**PROFILE LEGEND**

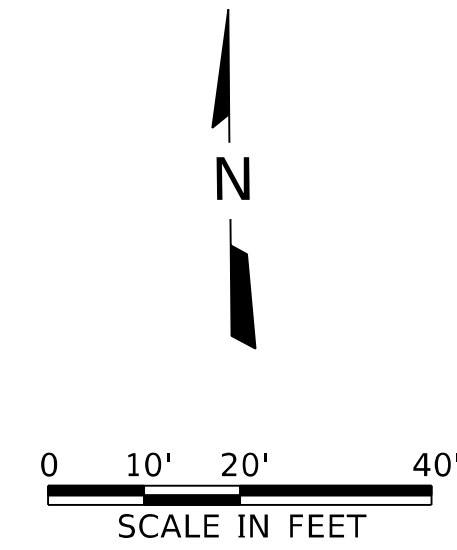
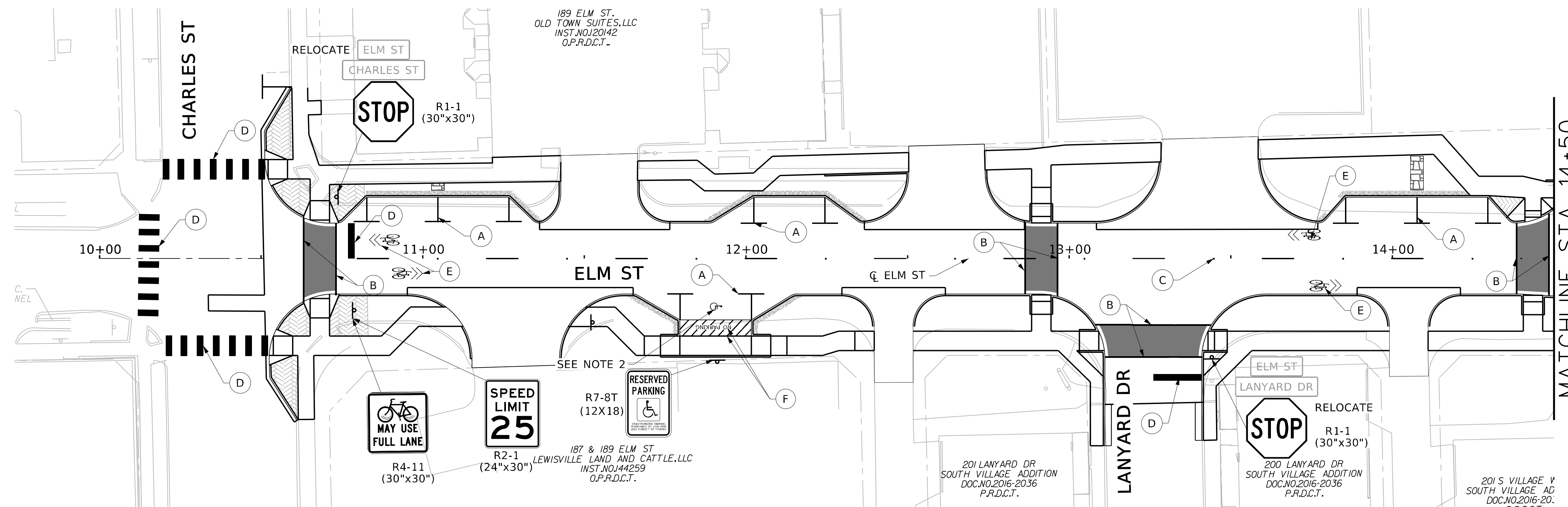
EXISTING GROUND	---
EXISTING GROUND LT ROW	---
EXISTING GROUND RT ROW	---
PGL	---



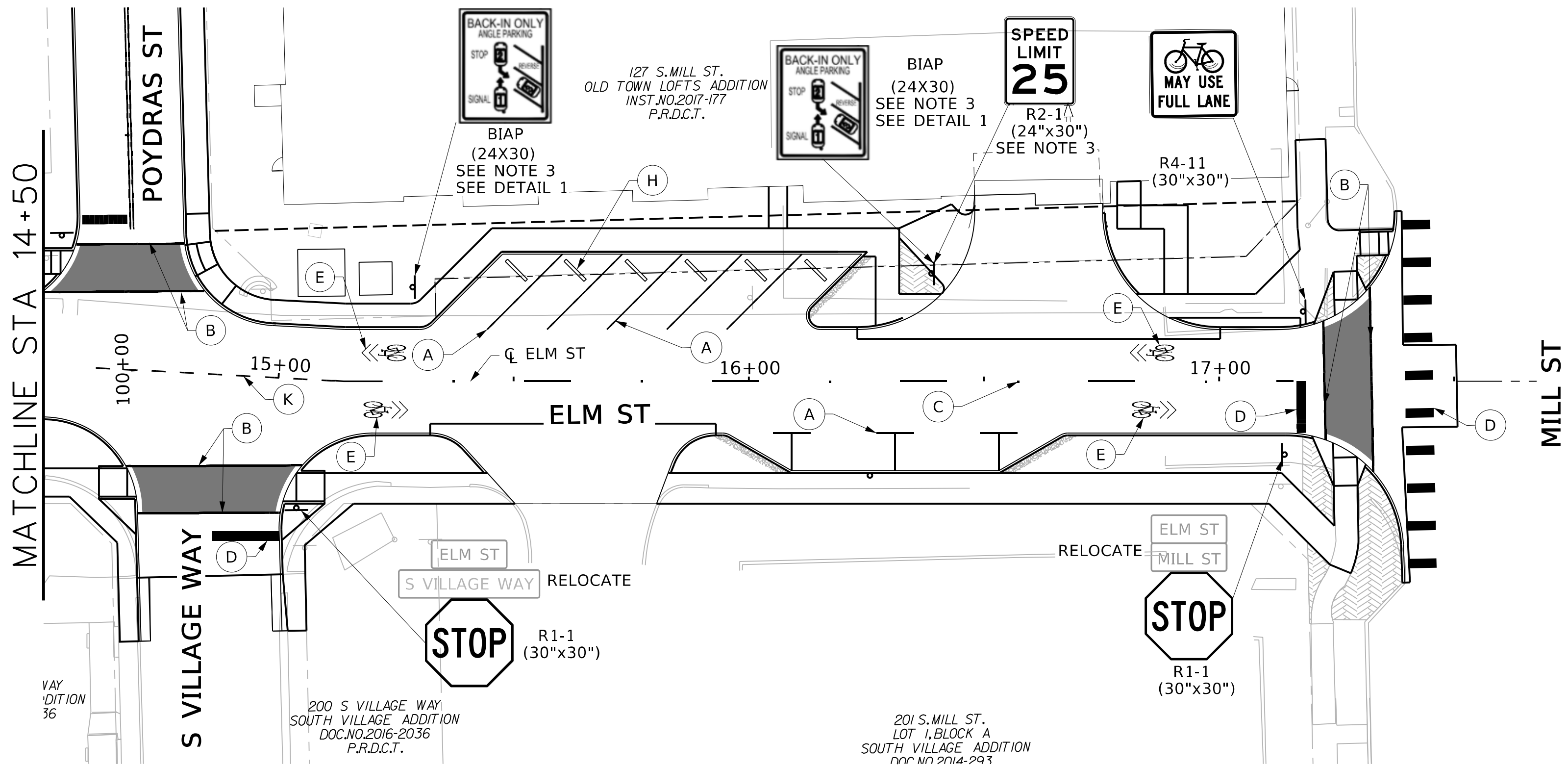
**FREESSE & NICHOLS**  
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 13270 Mistle Drive, Suite 300  
 Dallas, TX 75251  
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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 CIVIL  
**POYDRAS ST PLAN & PROFILE BEGIN TO STA 102+50**

NO. ISSUES	BY	DATE	FEIN JOB NO.	LEW20378
			DATE	AUG 2023
			DESIGNED	YT
			DRAWN	KLH
			REVISED	SEC
			CHECKED	
			FILE NAME	cv-trr-pp-poy01.rvt
VERIFY SCALE: Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.				
SHEET	PV-3			
SEQ.	30			

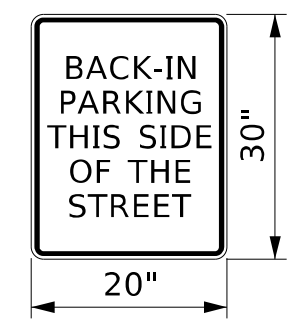


**NOTE:**  
 1. ALL SIGNS SHALL BE INSTALLED USING THE WEDGE ANCHOR STEEL SYSTEM  
 2. REFER TO SHEET PMDT-1 AND PMDT-2 FOR MORE PAVEMENT MARKING DETAILS  
 3. CONTRACTOR TO MOUNT SIGN ONTO PROPOSED LIGHT POLE.



**LEGEND**

- (A) - REFL PAV MRK (TYPE I)(W)(4")(SLD)
- (B) - REFL PAV MRK (TYPE I)(W)(6")(SLD)
- (C) - REFL PAV MRK (TYPE I)(Y)(4")(SLD)(DBL) W/TYPE II A-A RPM @ 40' SPACING (10' YELLOW SKIP LINE WITH 30" GAPS)
- (D) - REFL PAV MRK (TYPE I)(W)(24")(SLD)
- (E) - REL PAV MRK (W) (SHARROW) (SEE PMDT-1)
- (F) - SYMBOL/WORD (SEE PMDT-1)
- (G) - RAISED PAVEMENT MARKER (B-B)
- (H) - WHEEL STOP
- (P) - PROPOSED STREET SIGN



**NOTES:**  
 1. PLACE ON BACK OF BACK-IN ONLY PARKING SIGN (BIAP)

**1 BACK-IN PARKING SIGN DETAIL**  
 NOT TO SCALE

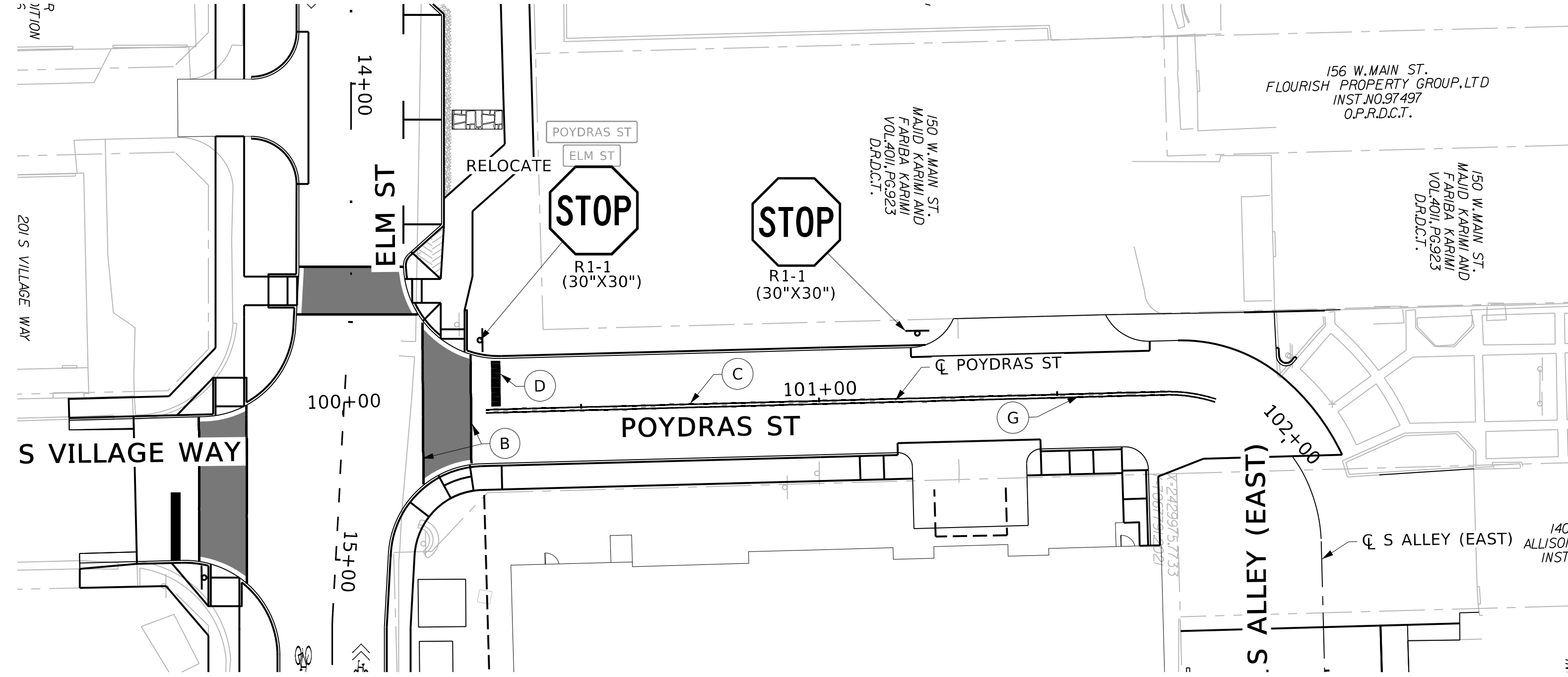


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 Web - www.freeze.com

**CITY OF LEWISVILLE  
 ELM ST & POYDRAS ST  
 IMPROVEMENTS  
 CIVIL  
 ELM ST  
 SIGNAGE AND PAVEMENT MARKINGS PLAN**

NO.	ISSUES	BY	DATE	FEN JOB NO.	DATE	DESIGNED	YR	DRAWN	KLH	REVISED	SEC	CHECKED	FILE NAME
				LEW20378	AUG 2023								cv-trt-pl-elmvmrk01.sht

MicroStation V8 User: 04331 Office: On Site  
 Plotter: HP DesignJet 3000 Plotter  
 Plot Scale: 1/8" = 1'-0"  
 Date: Aug 07 2023 11:19:35 AM  
 Project: FreeSe and Nichols, Inc. - True Type Fonts



**LEGEND**

- (A) - REFL PAV MRK (TYPE I)(W)(4")(SLD)
- (B) - REFL PAV MRK (TYPE I)(W)(6")(SLD)
- (C) - REFL PAV MRK (TYPE I)(Y)(4")(SLD)(DBL) W/TYPE II A-A RPM @ 40' SPACING (10' YELLOW SKIP LINE WITH 30' GAPS)
- (D) - REFL PAV MRK (TYPE I)(W)(24")(SLD)
- (E) - REL PAV MRK (W) (SHARROW) (SEE PMDT-1)
- (F) - SYMBOL/WORD (SEE PMDT-1)
- (G) - RAISED PAVEMENT MARKER (B-B)
- (H) - WHEEL STOP
- (I) - PROPOSED STREET SIGN

**NOTES:**

1. ALL SIGNS SHALL BE INSTALLED USING THE WEDGE ANCHOR STEEL SYSTEM
2. REFER TO SHEET PMDT-1 AND PMDT-2 FOR MORE PAVEMENT MARKING DETAILS
3. CONTRACTOR TO MOUNT SIGN ONTO PROPOSED LIGHT SIGN.

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

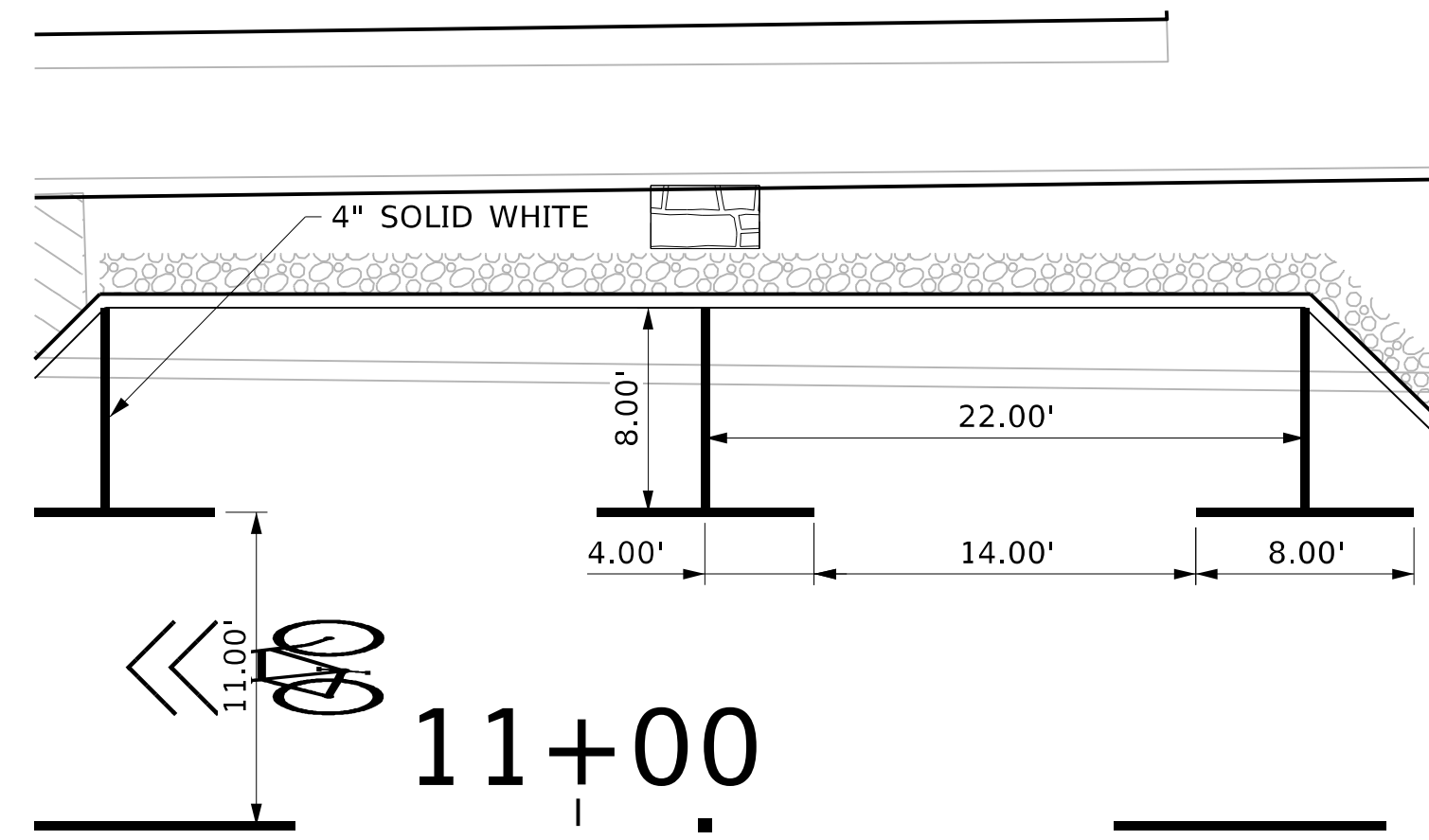


CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
 IMPROVEMENTS**

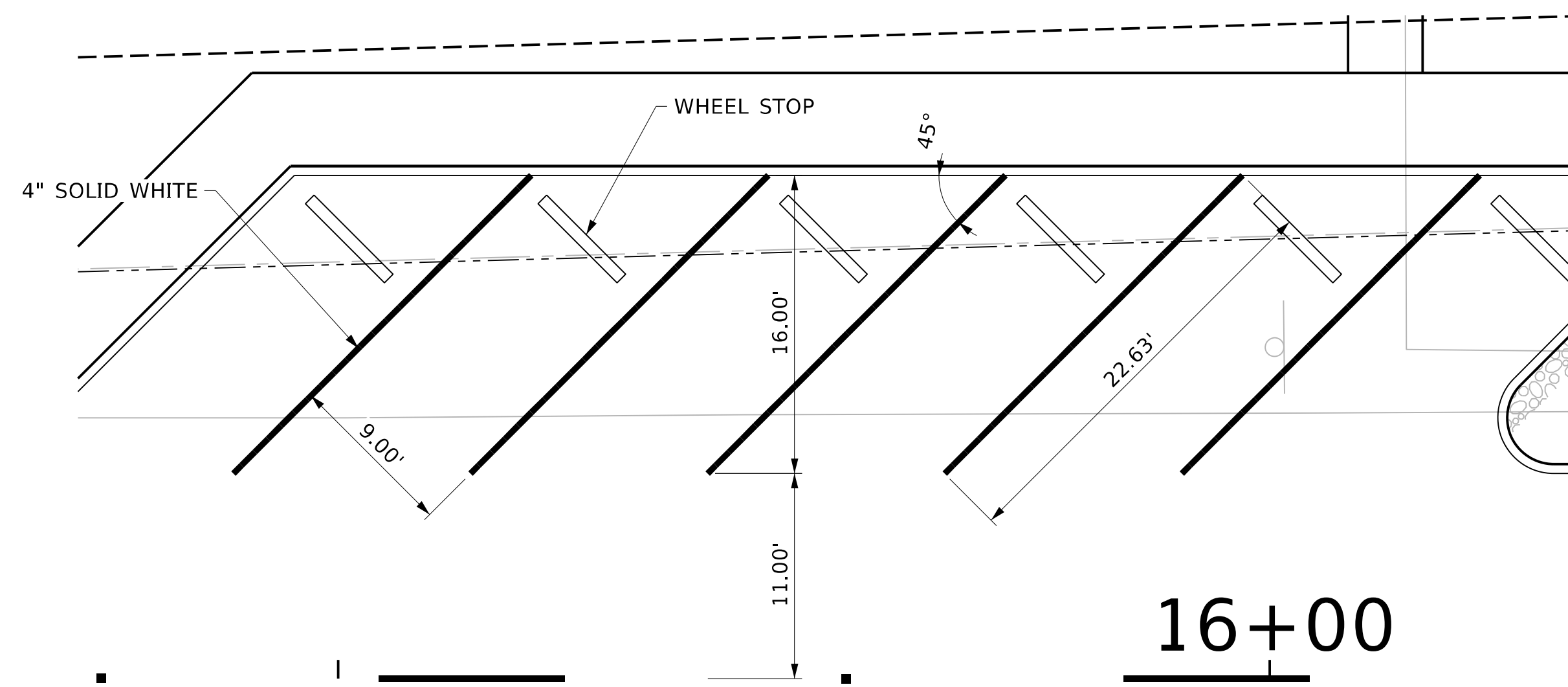
CIVIL  
**POYDRAS ST  
 AND PAVEMENT MARKINGS PLAN**

NO.	ISSUES	BY	DATE	F&N JOB NO.
				LEW20378
				DATE AUG 2023
				DESIGNED YT
				DRAWN KLH
				REVISED SEC
				CHECKED
				FILE NAME
				cv-trt-pl-poydpvmrk01.sht

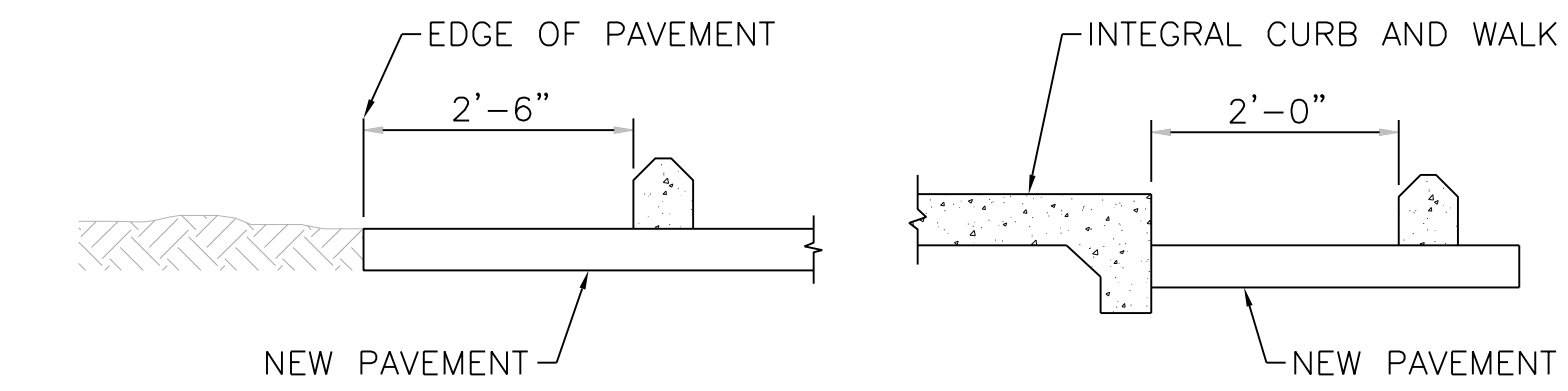




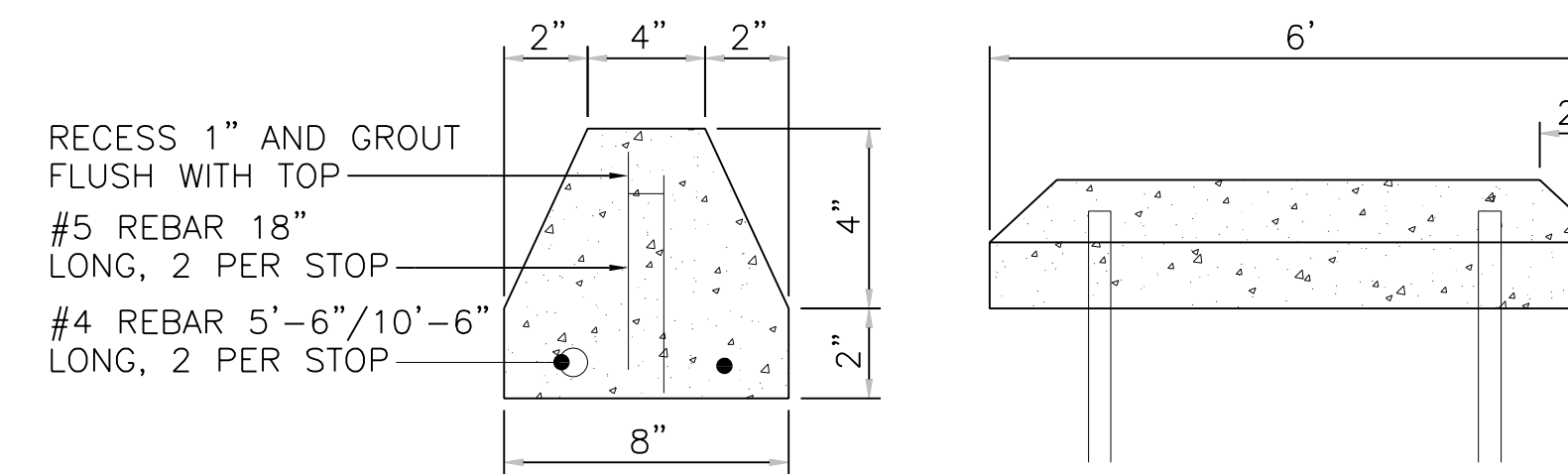
**1 PARALLEL PARKING DETAIL**  
NOT TO SCALE



**4 CONCRETE WHEEL STOP DETAIL**  
NOT TO SCALE



**SECTIONS**

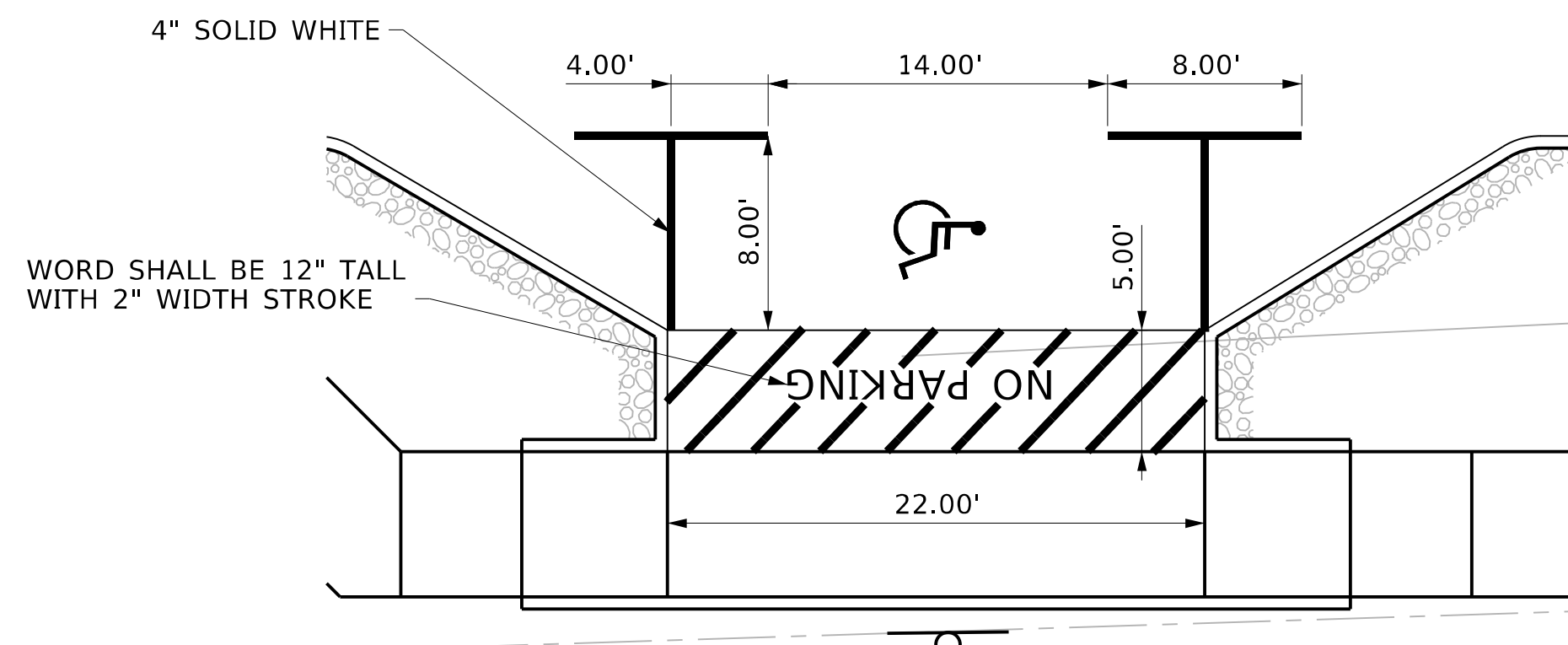


RECESS 1" AND GROUT FLUSH WITH TOP  
#5 REBAR 18" LONG, 2 PER STOP  
#4 REBAR 5'-6"/10'-6" LONG, 2 PER STOP

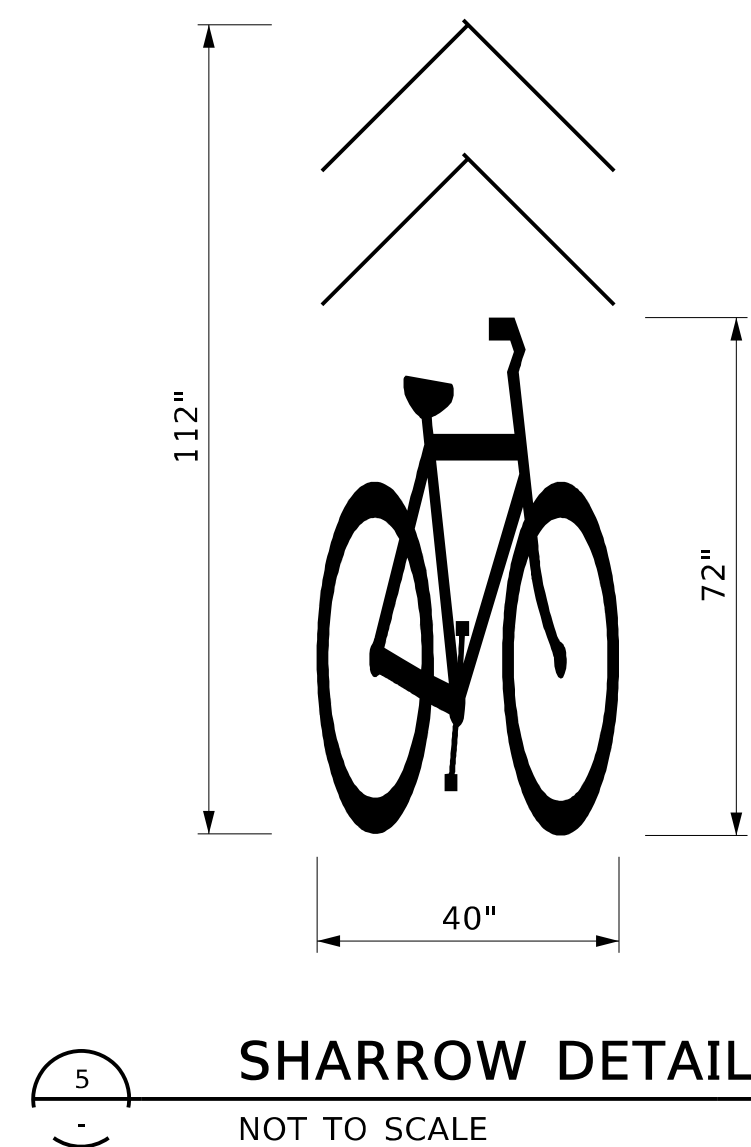
**NOTES:**

1. "BACK-IN PARKING" SHALL BE STENCILED ON ALL WHEEL STOPS THAT ARE PLACED IN BACK-IN SPACES

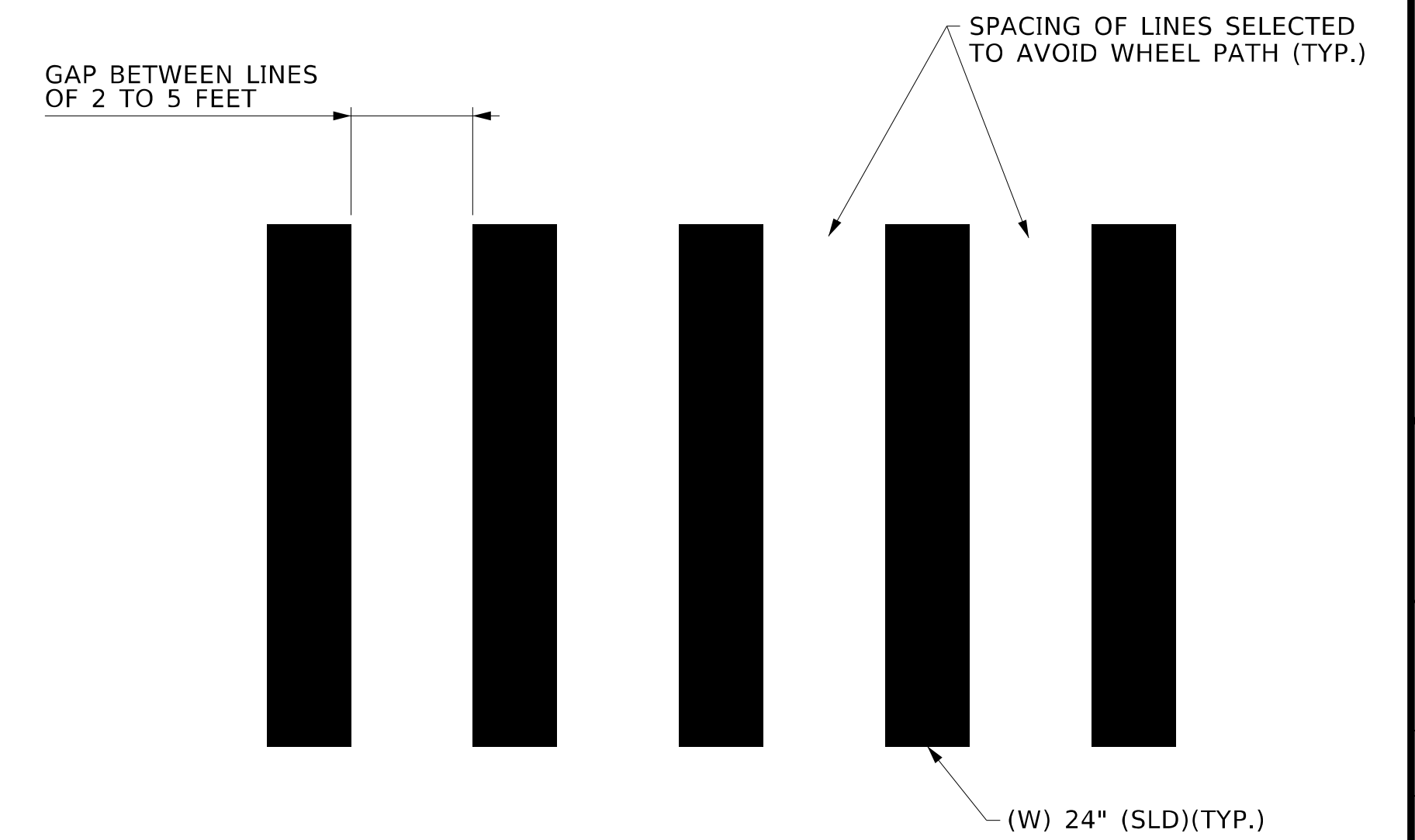
**2 BACK-IN PARKING DETAIL**  
NOT TO SCALE



**3 HANDICAP PARKING DETAIL**  
NOT TO SCALE



**5 SHARROW DETAIL**  
NOT TO SCALE



**NOTES:**  
1. CENTER MARKINGS ON THE CENTER LINE, AND ON THE CENTER OF THE LANE TO AVOID WHEEL PATH OF VEHICLES.

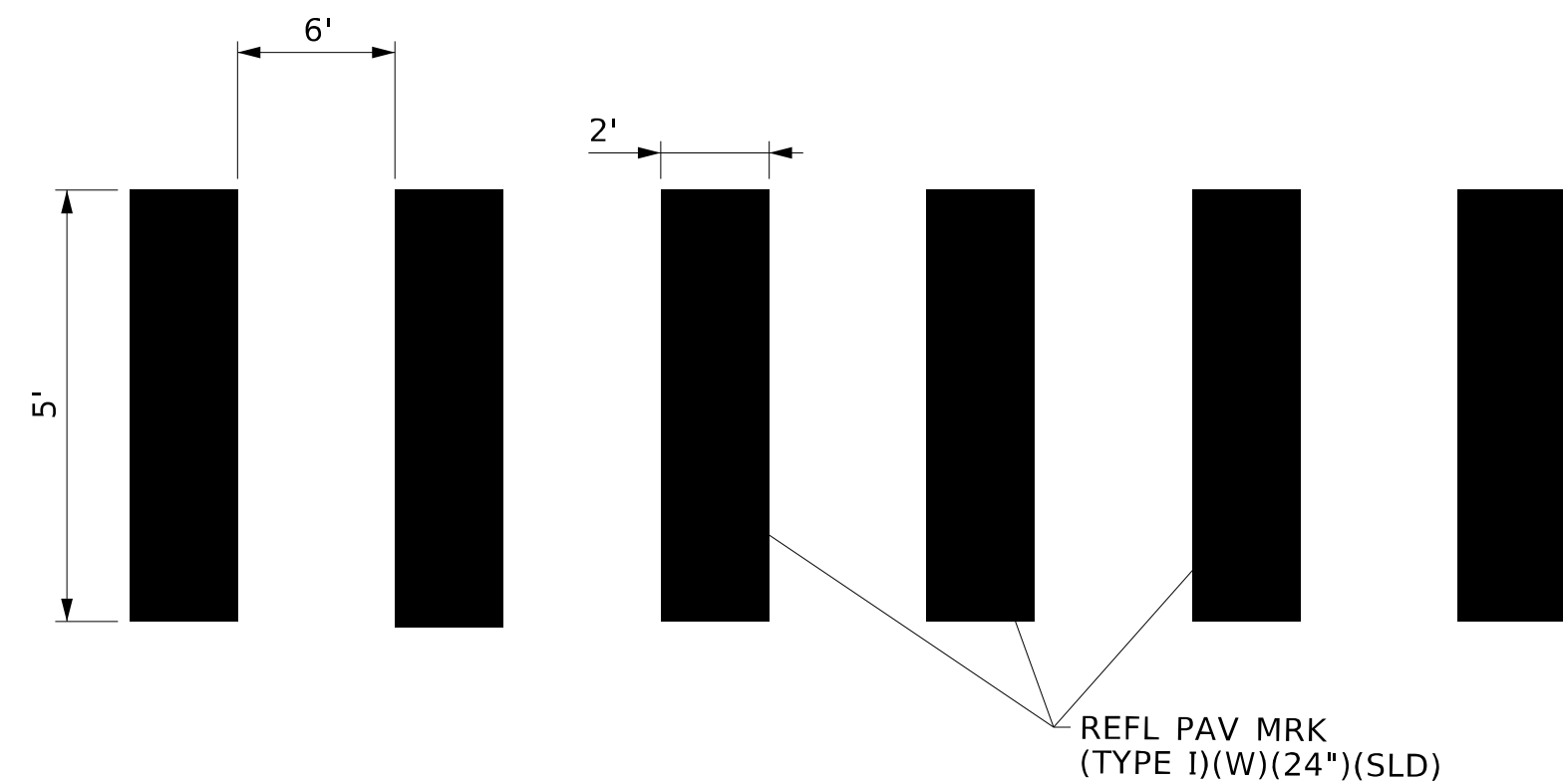
**6 CROSS WALK MARKINGS DETAIL**  
NOT TO SCALE



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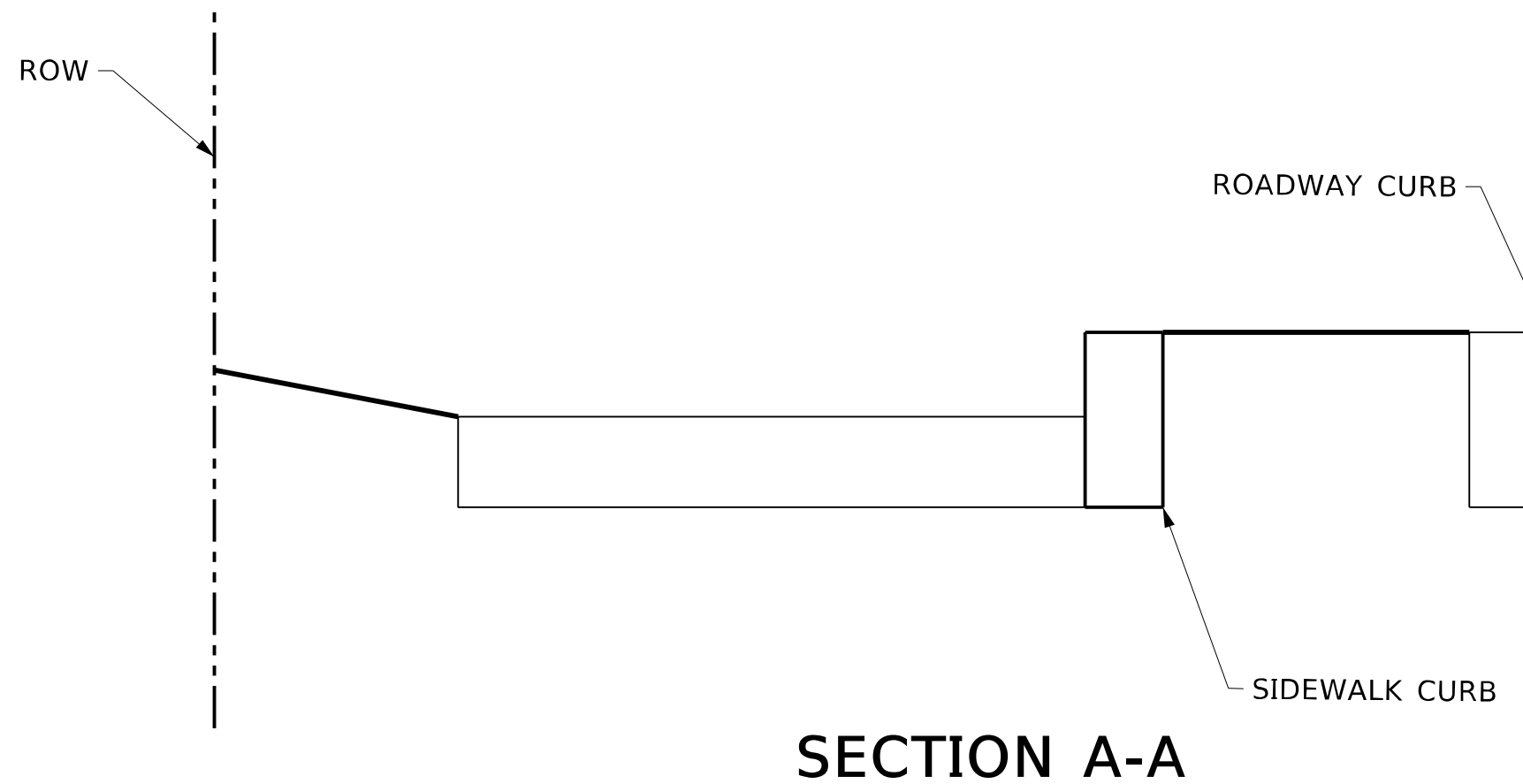
CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
CIVIL  
CITY OF LEWISVILLE  
**PAVEMENT DETAILS**

NO.	ISSUES	BY	DATE	F&N JOB NO.	LEW20378
0	VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.			DATE	AUG 2023
				DESIGNED	CM
				DRAWN	BA
				REVISED	SEC
				CHECKED	
				FILE NAME	cv-trt-dt-pvmmk01.sht



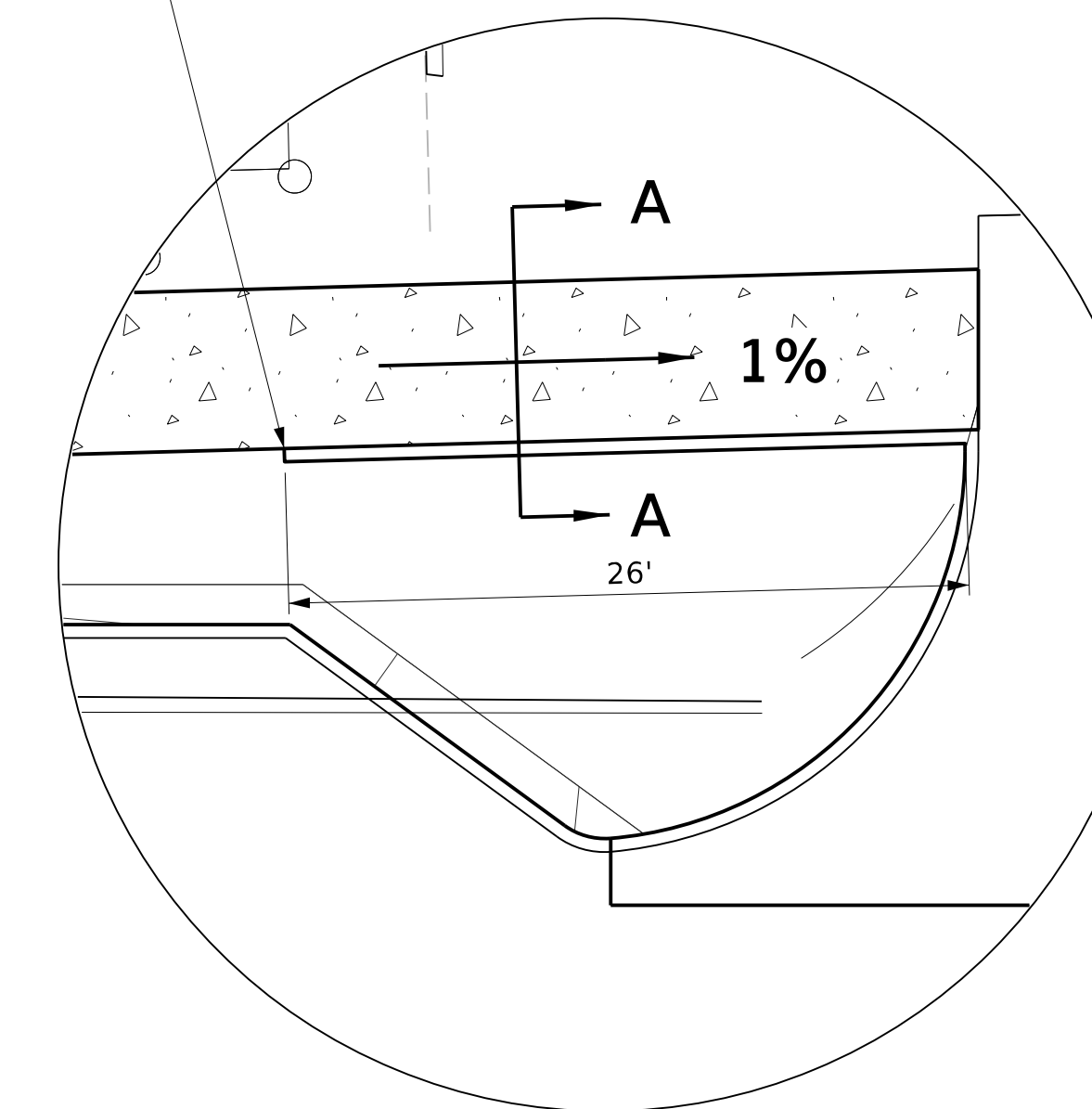
7 BIKE LANE CROSSING DETAIL  
NOT TO SCALE

NOTES:  
1. BEGIN RUNNING SLOPE OF SIDEWALK AT 1% 26 LF FROM DRIVEWAY AS SHOWN IN DETAIL.

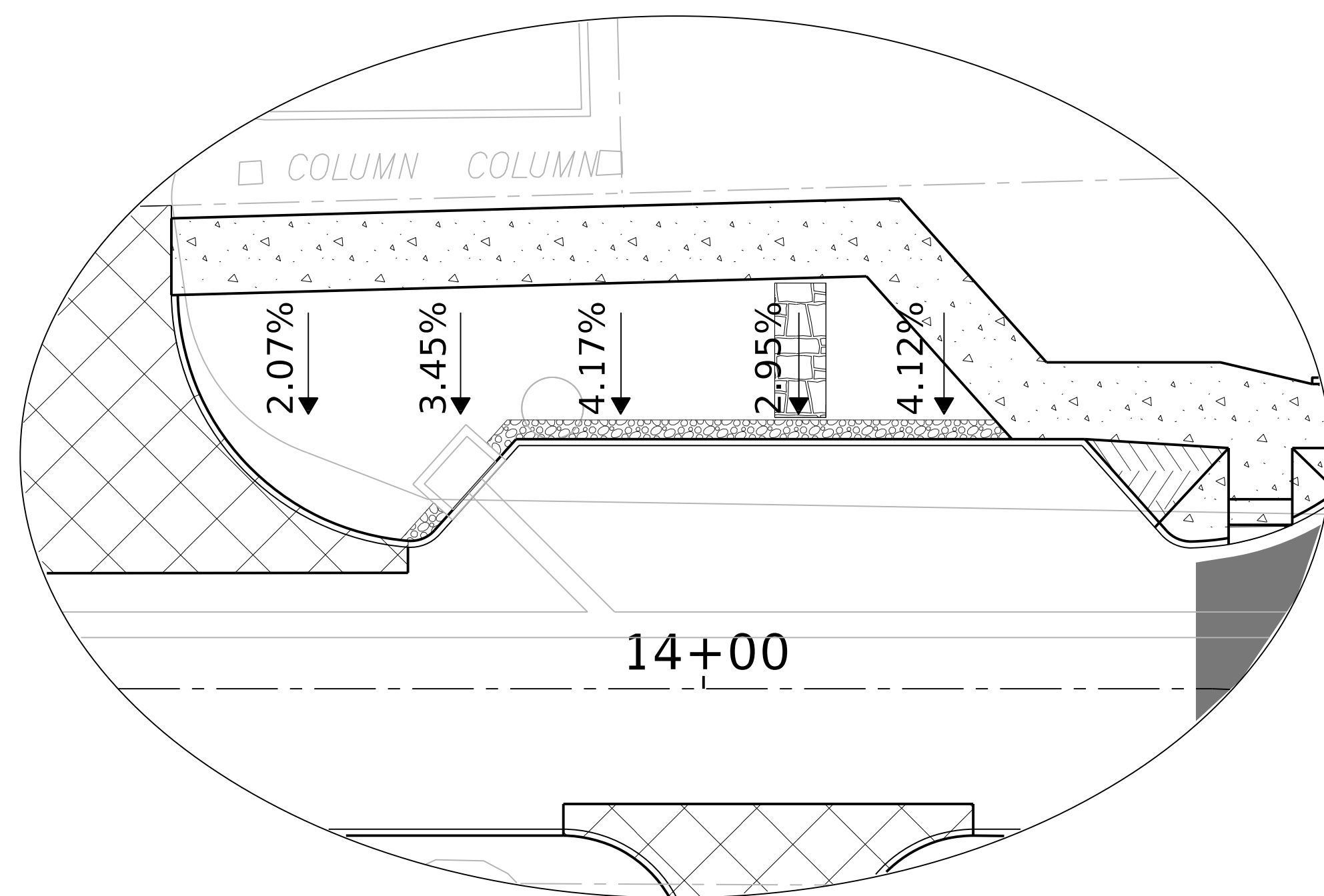


SECTION A-A

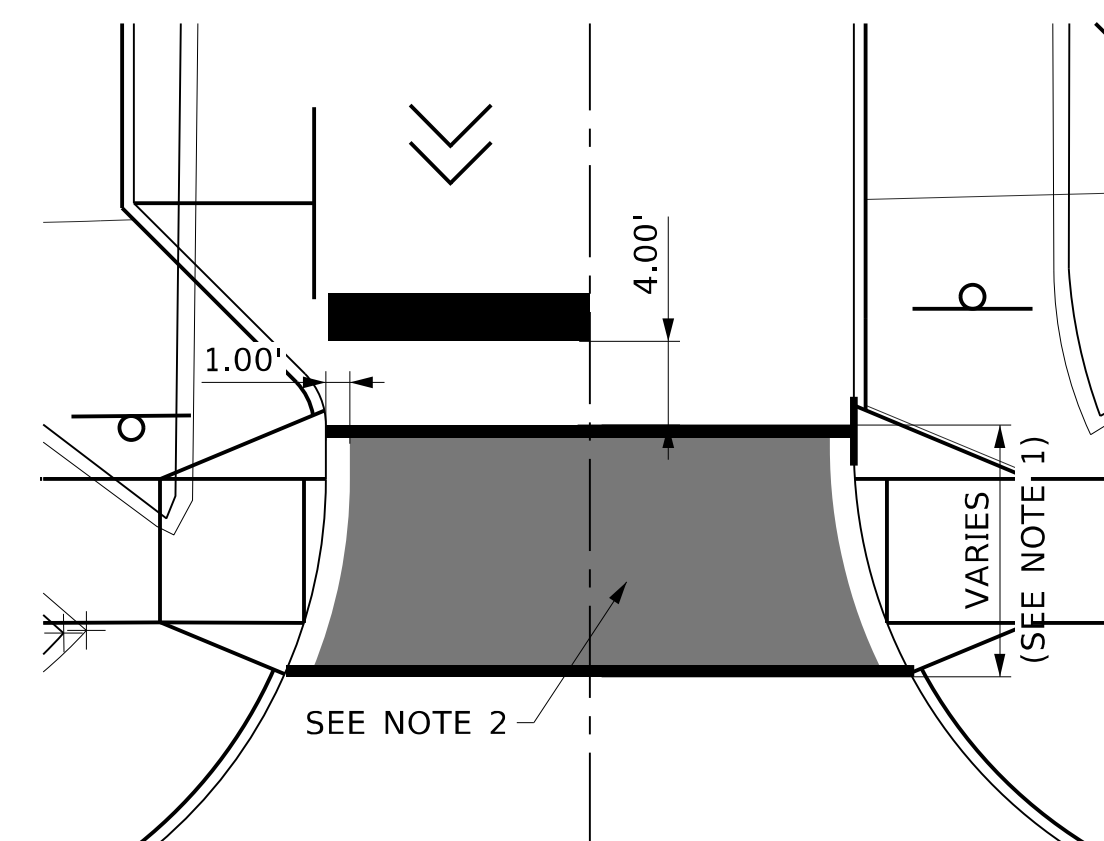
STA 12+24.39  
BEGIN:  
SIDEWALK RUNNING SLOPE AT 1%  
26 LF TO DRIVEWAY  
INSTALL 26 LF SIDEWALK CURB



8 SIDEWALK DETAIL  
NOT TO SCALE



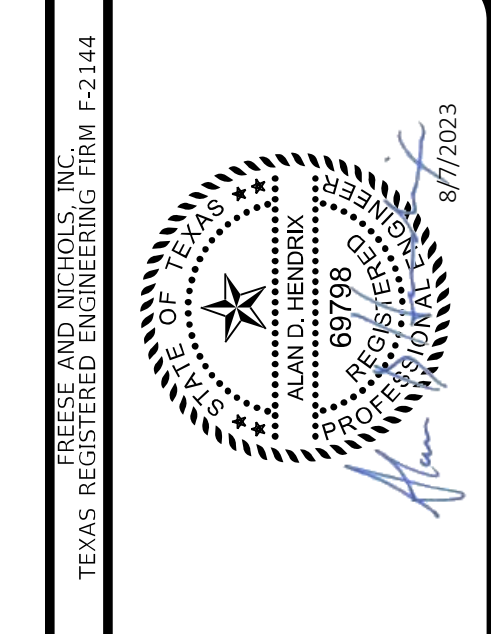
9 GRADING DETAIL  
NOT TO SCALE



10 CROSS WALK DETAIL  
NOT TO SCALE

NOTES:

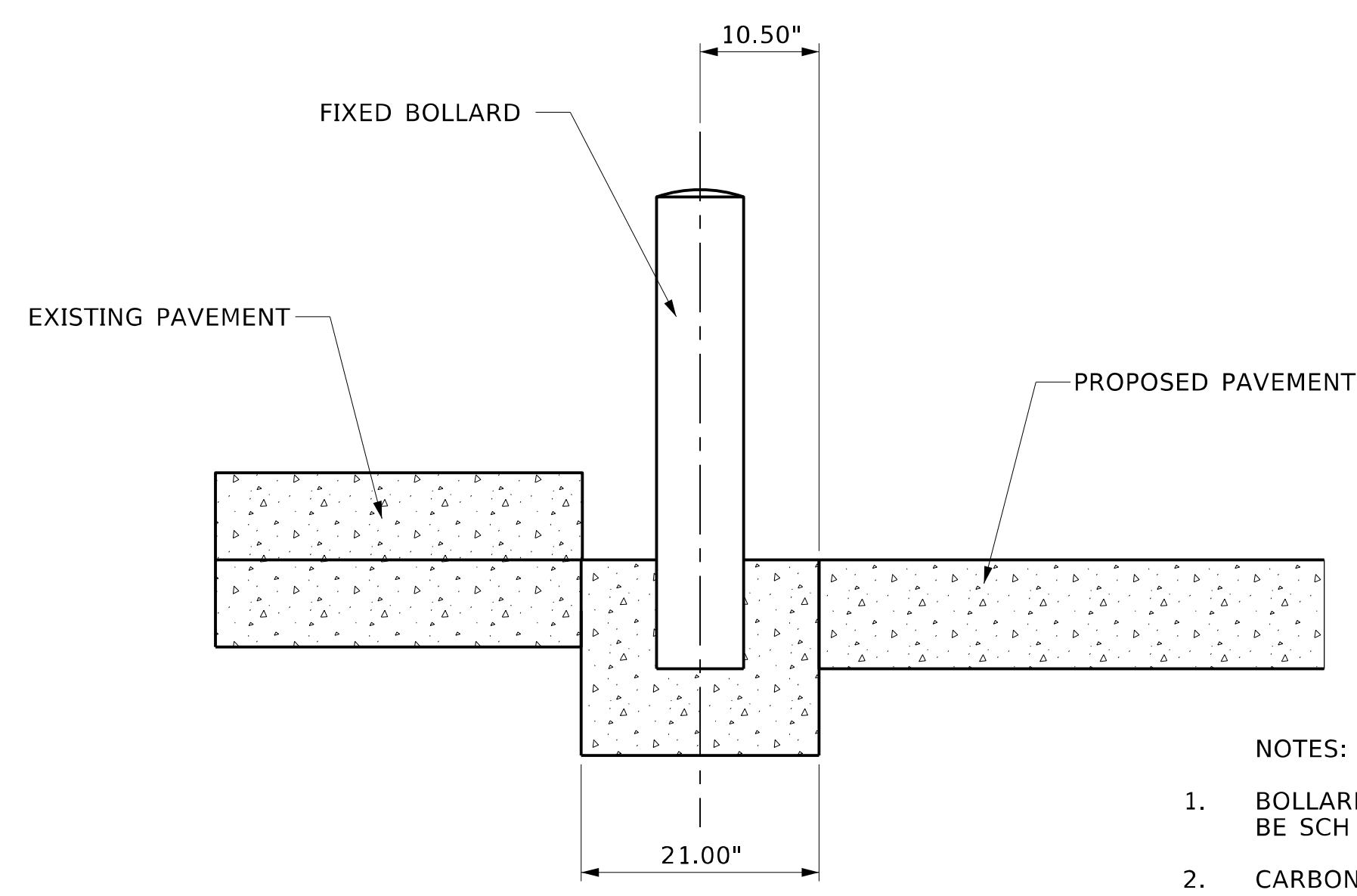
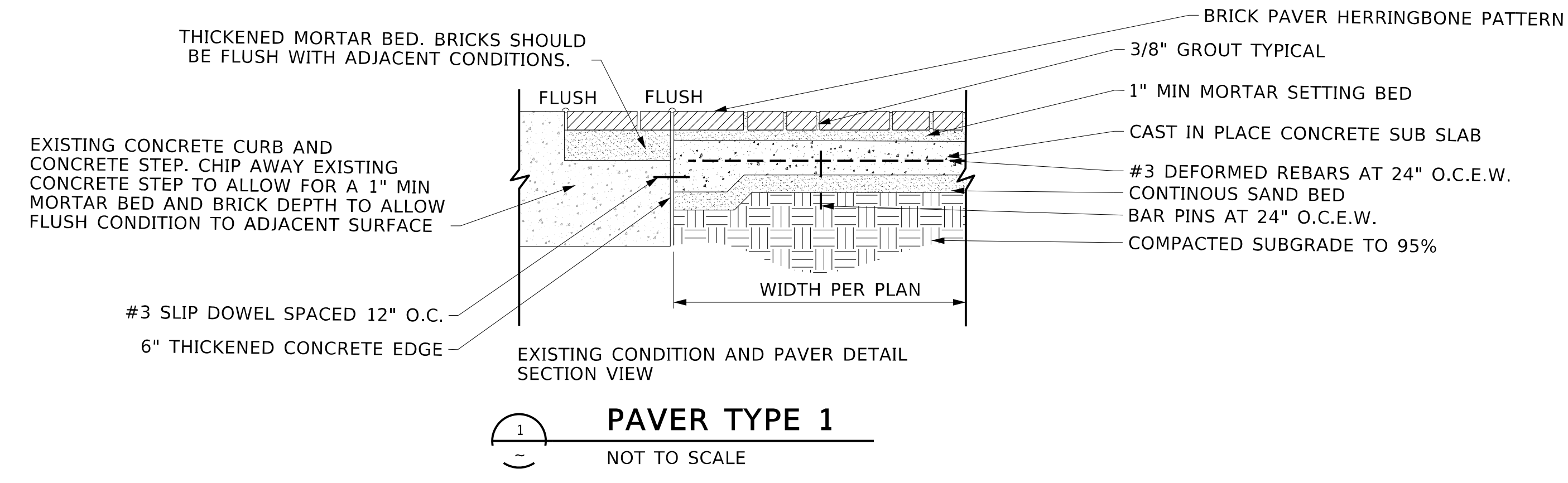
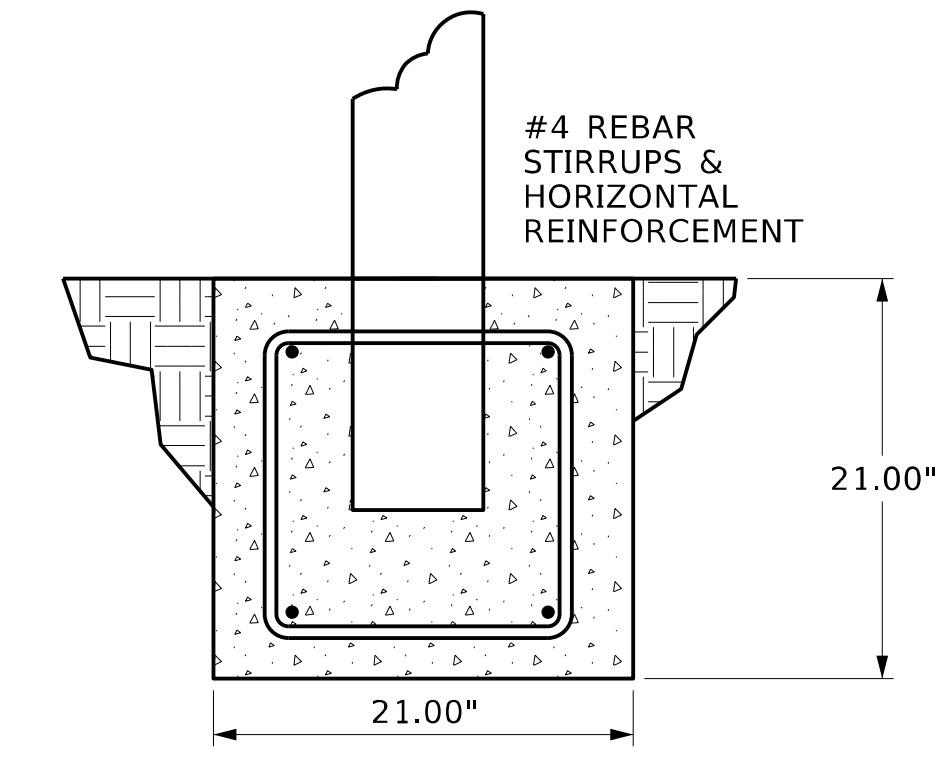
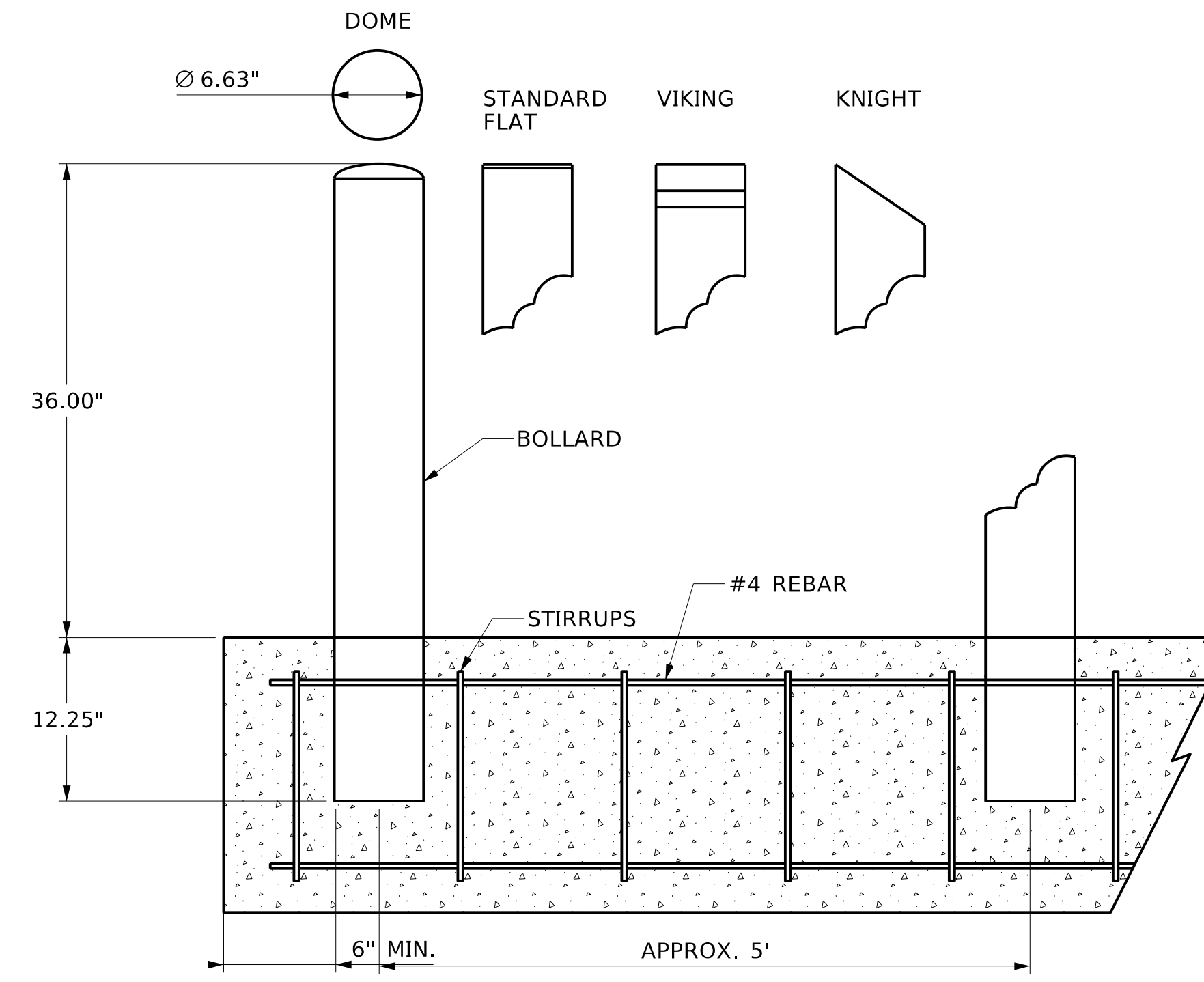
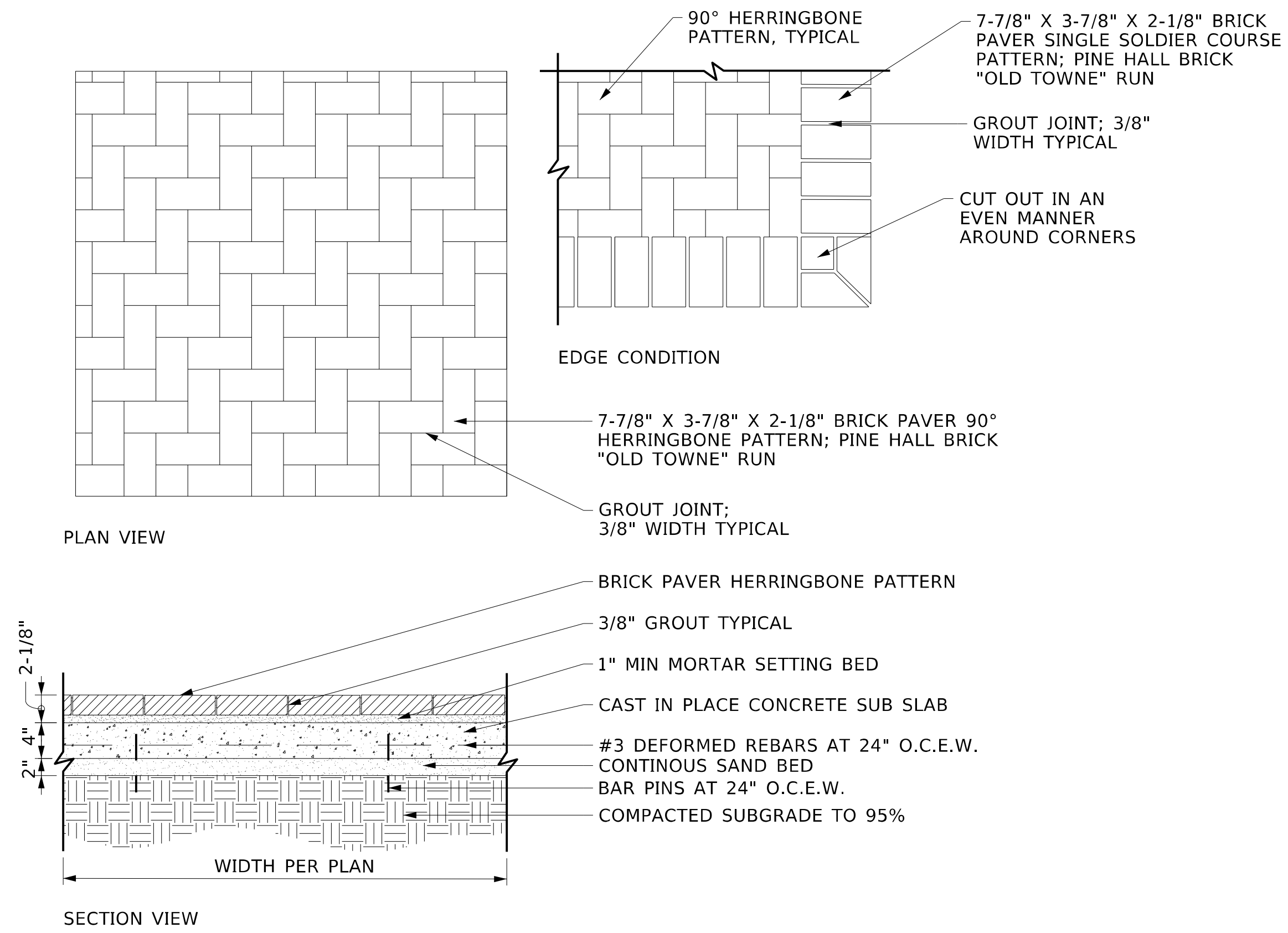
1. STAINED CONCRETE WIDTH VARIES:  
- ELM ST AND SIDE STREET CONNECTING SHALL BE 10 FT WIDE.  
- POYDRAS ST AND ALLEY ACCESS SHALL BE 8 FT WIDE.
2. THE CROSS WALK SHALL BE INTEGRAL STAINED CONCRETE. THE COLOR SHALL BE: BUTTERFIELD COLOR - U34 - BRICK RED COLOR (MATCH THE CROSSWALK COLOR USED ON MAIN ST, AND MILL ST PROJECT)



CITY OF LEWISVILLE  
ELM ST & POYDRAS ST  
IMPROVEMENTS  
CIVIL  
CITY OF LEWISVILLE  
PAVEMENT DETAILS

NO.	ISSUES	BY	DATE	FEN JOB NO.	DATE	DESIGNED	CM	DRAWN	REVISED	SEC	FILE NAME
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 Date: Aug 07 2023 11:19:41 AM, User: 04331, File: N:\FDDrawings\10\_Miscellaneous\cv-trt-dt-pvnmrk02.sht



- NOTES:**
- BOLLARD MATERIAL (6" NOMINAL SIZE) SHALL BE SCH 40 ASTM A-53 CARBON STEEL.
  - CARBON STEEL BOLLARD FINISH SHALL BE POWDERCOAT YELLOW.
  - BOLLARD CAP STYLE SHALL BE DOME.
  - SEE SHEET PV-03 FOR BOLLARD LOCATIONS.
  - BOLLARDS SHALL BE CAL PIPE SECURITY BOLLARDS STANDARD 6" FIXED IBF06040 SCH 40, OR APPROVED EQUAL.

**3**  
FIXED STEEL BOLLARD  
NOT TO SCALE



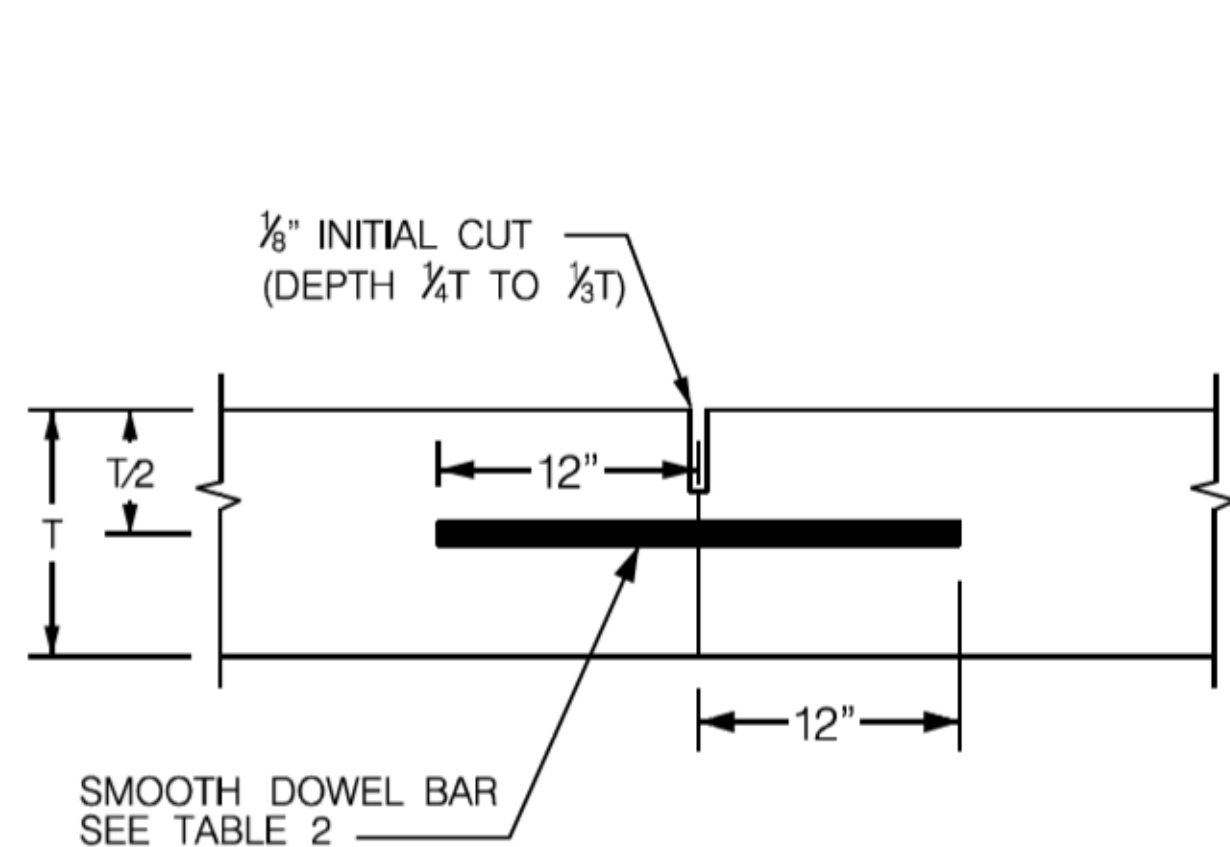
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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST**  
IMPROVEMENTS  
CIVIL  
CITY OF LEWISVILLE  
PAVEMENT DETAILS

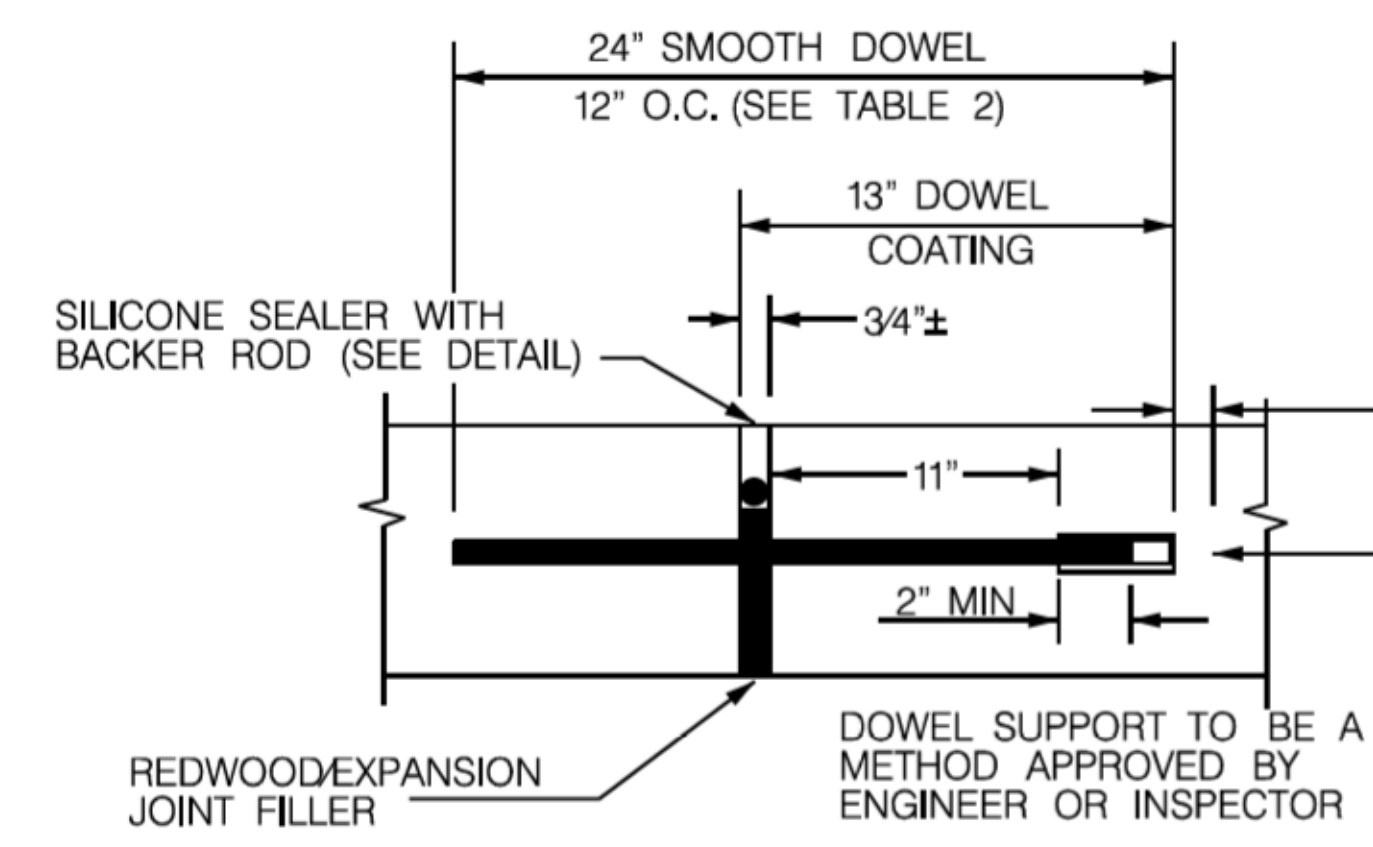
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REVISION	SEC	REVISION	SEC	REVISION	SEC
CHECKED		CHECKED		CHECKED	
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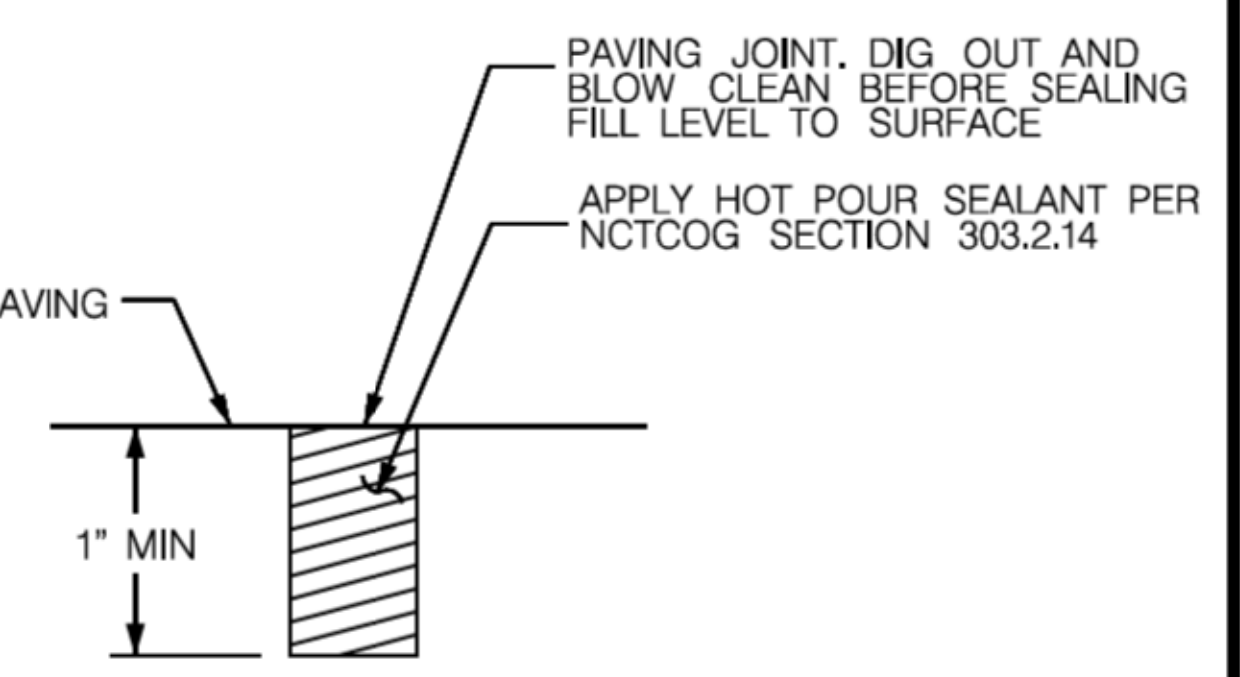
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0				DATE	AUG 2023
				DESIGNED	CM
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				REVISED	SEC
				CHECKED	
				FILE NAME	cv-rt-dt-pave01.rvt



**SAWED TRANSVERSE CONTRACTION JOINT**  
SPACED AT 40 FOOT MAXIMUM

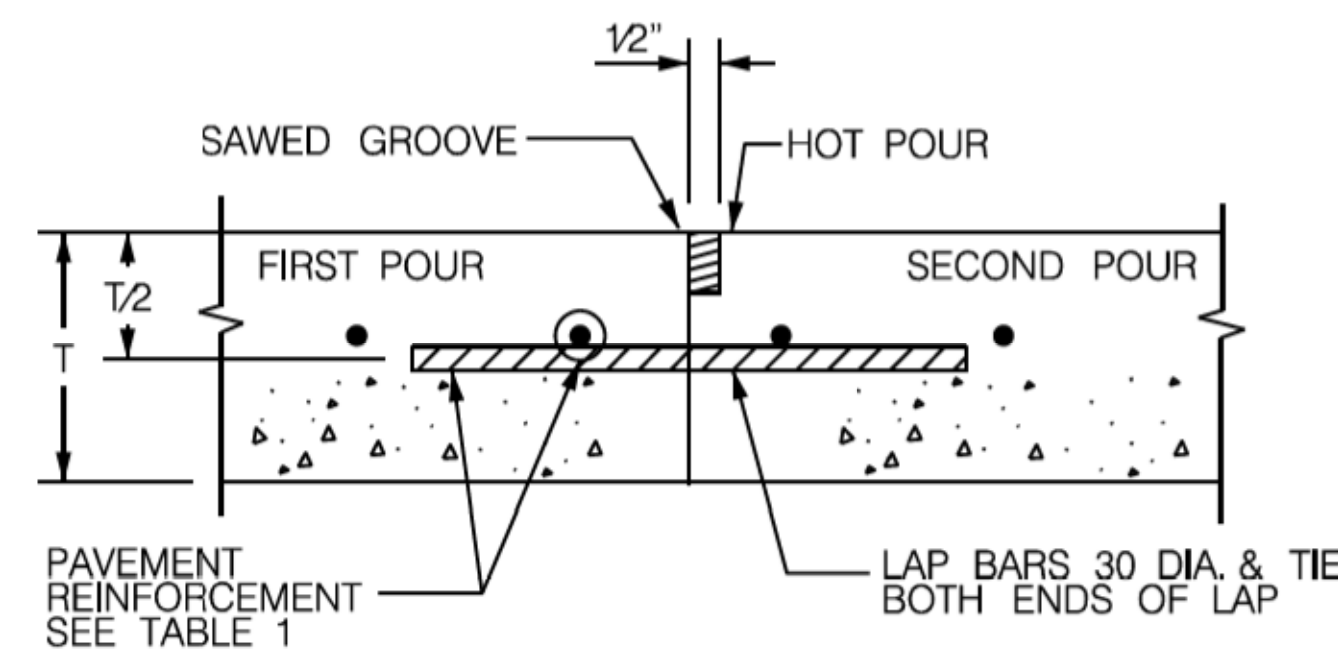


**EXPANSION JOINT**  
SPACED AT 500 FOOT MAXIMUM.  
LOCATE AT STRUCTURES AND AT INTERSECTION PCs AND PTs

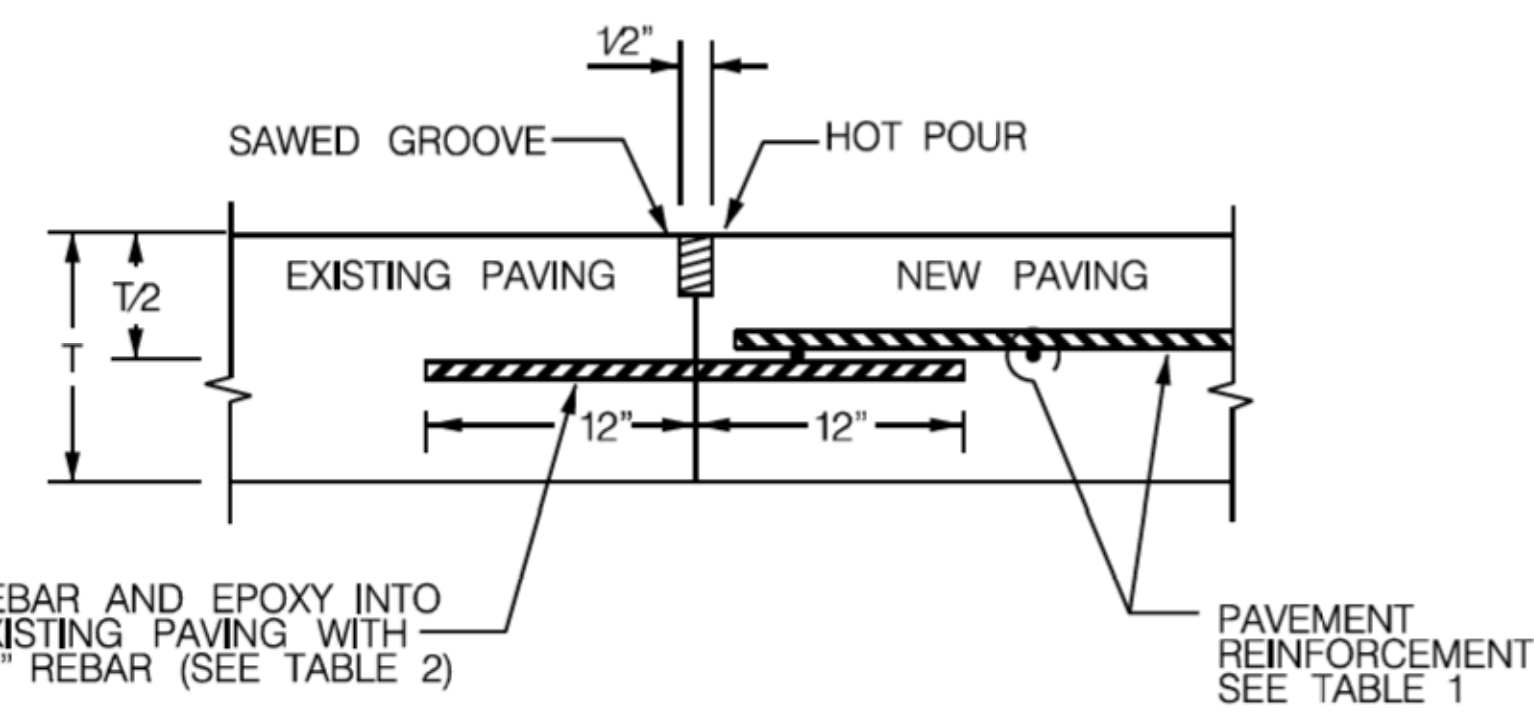


**JOINT SEALING DETAIL**  
NTS

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



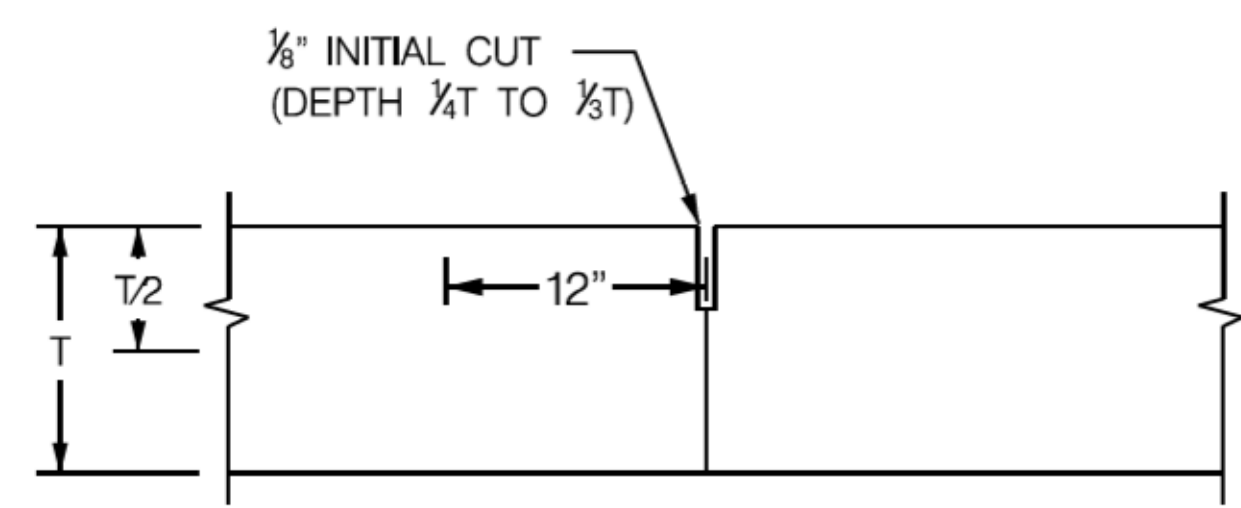
**CONSTRUCTION JOINT - NEW CONSTRUCTION**



**CONSTRUCTION JOINT - PAVING REPAIR**

CONCRETE THICKNESS (T)	REBAR SIZE
6"-12"	#4

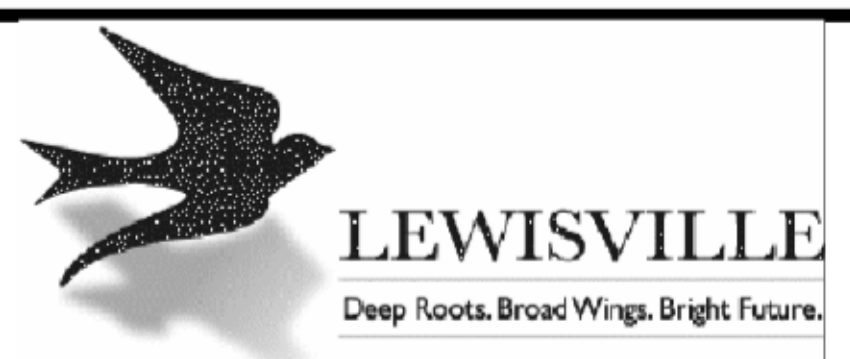
CONCRETE THICKNESS (T)	DOWEL SIZE
6"	#5
8"	#6
10" & 12"	#8



**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.

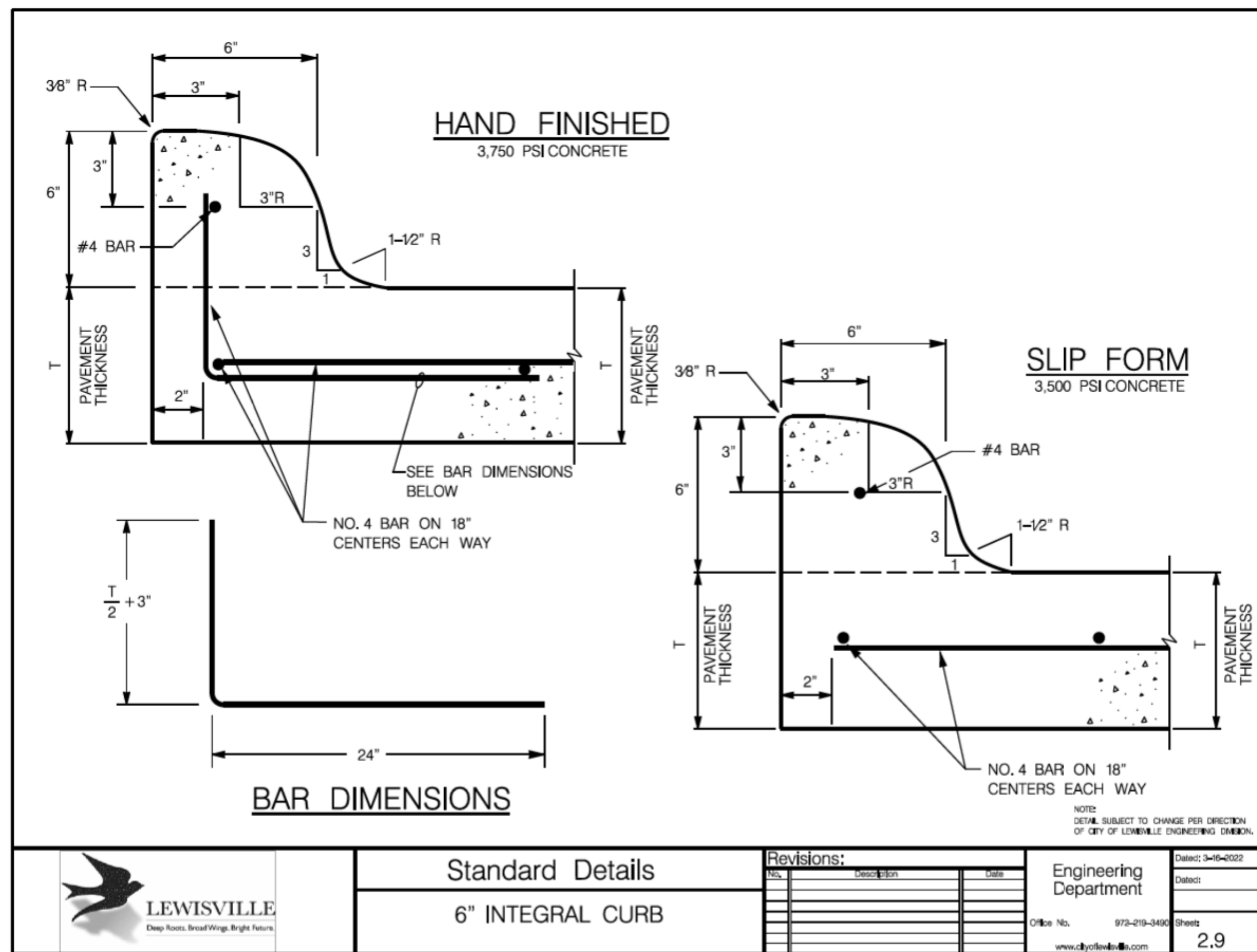
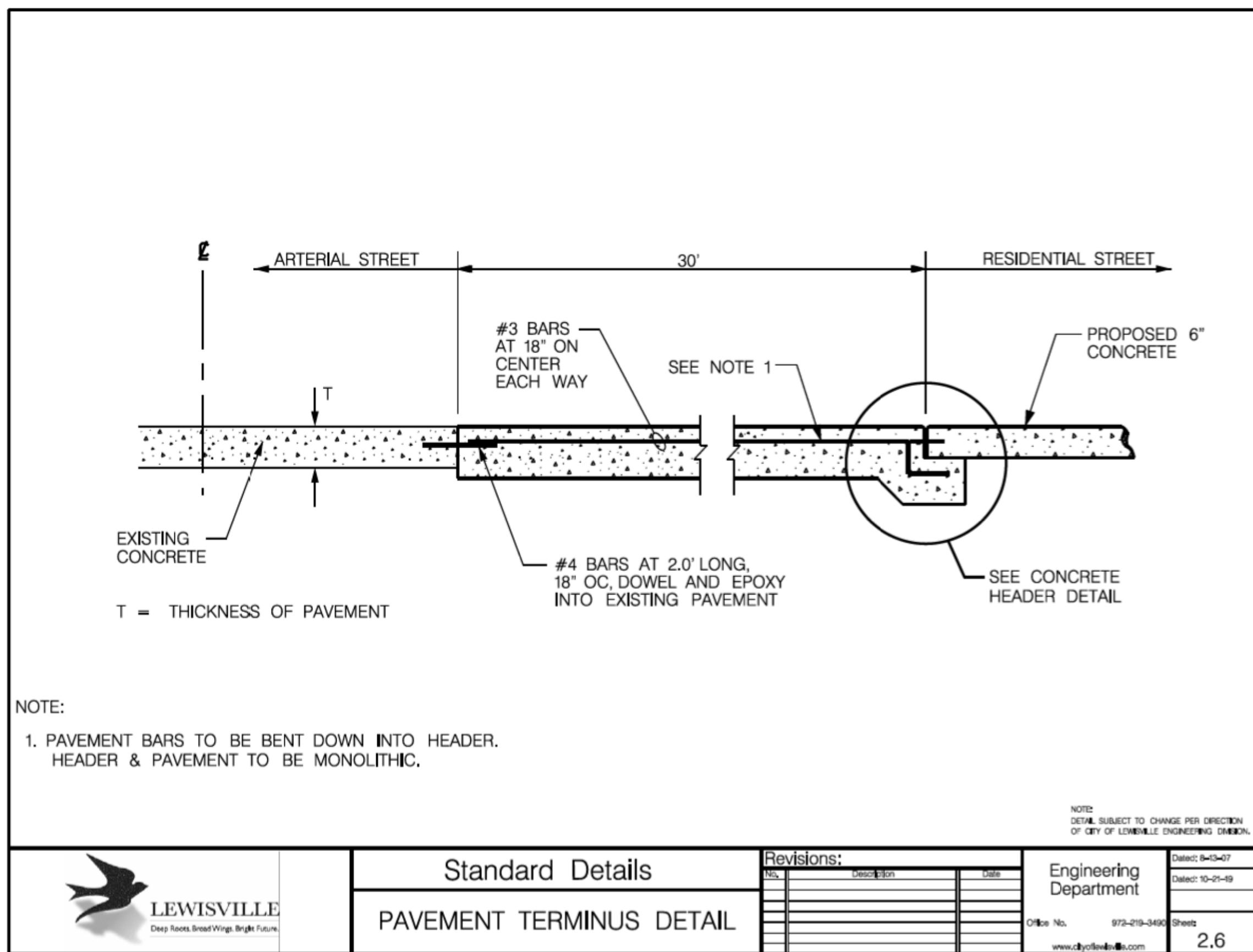
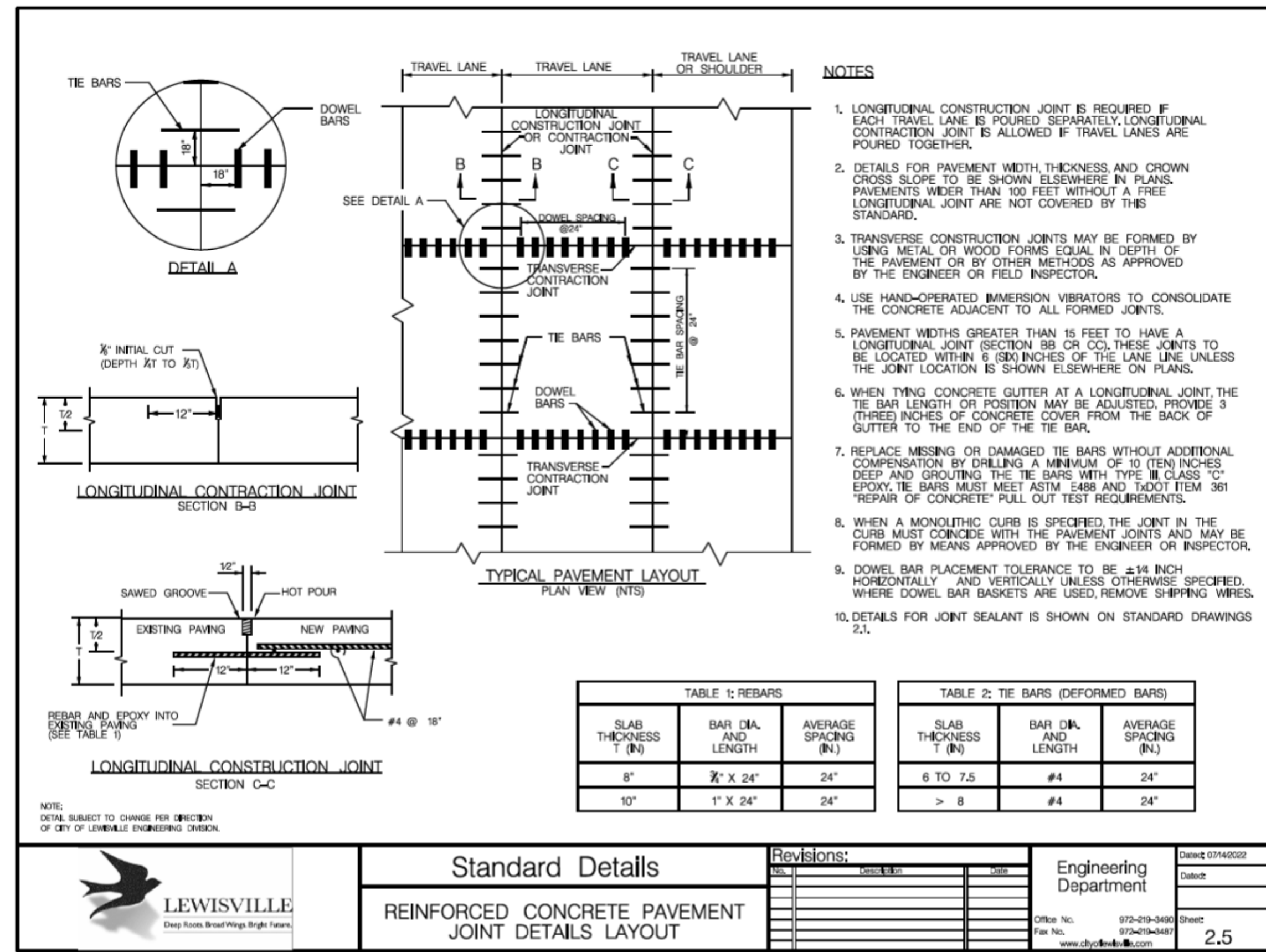
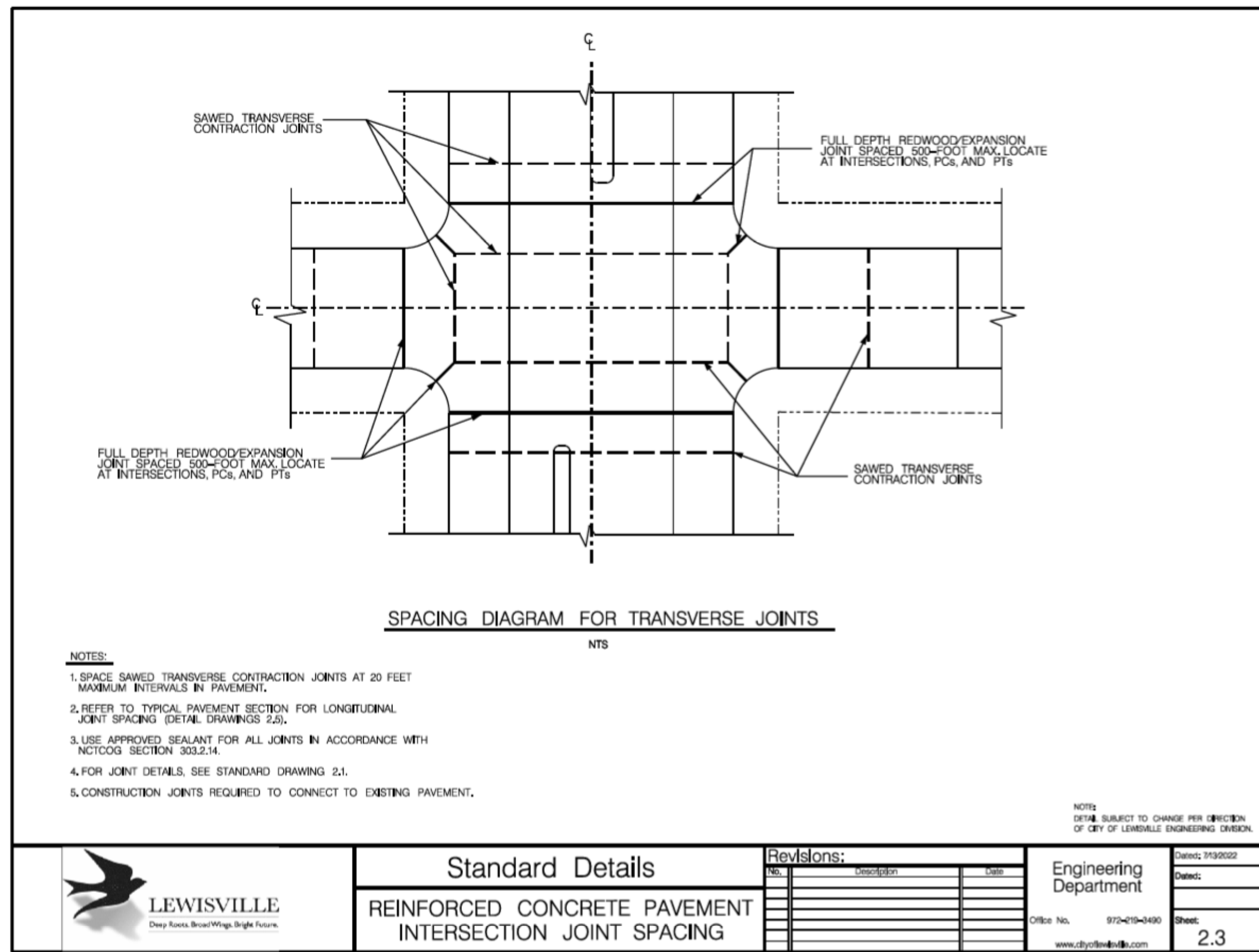


**Standard Details**  
REINFORCED CONCRETE JOINTS  
CONTRACTION, EXPANSION & CONSTRUCTION

No.	Description	Date

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

Dated: 07/13/2022  
Dated: \_\_\_\_\_  
Sheet: 2.1

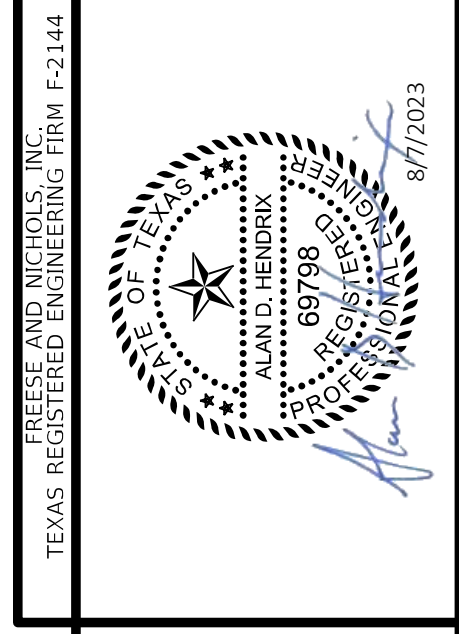
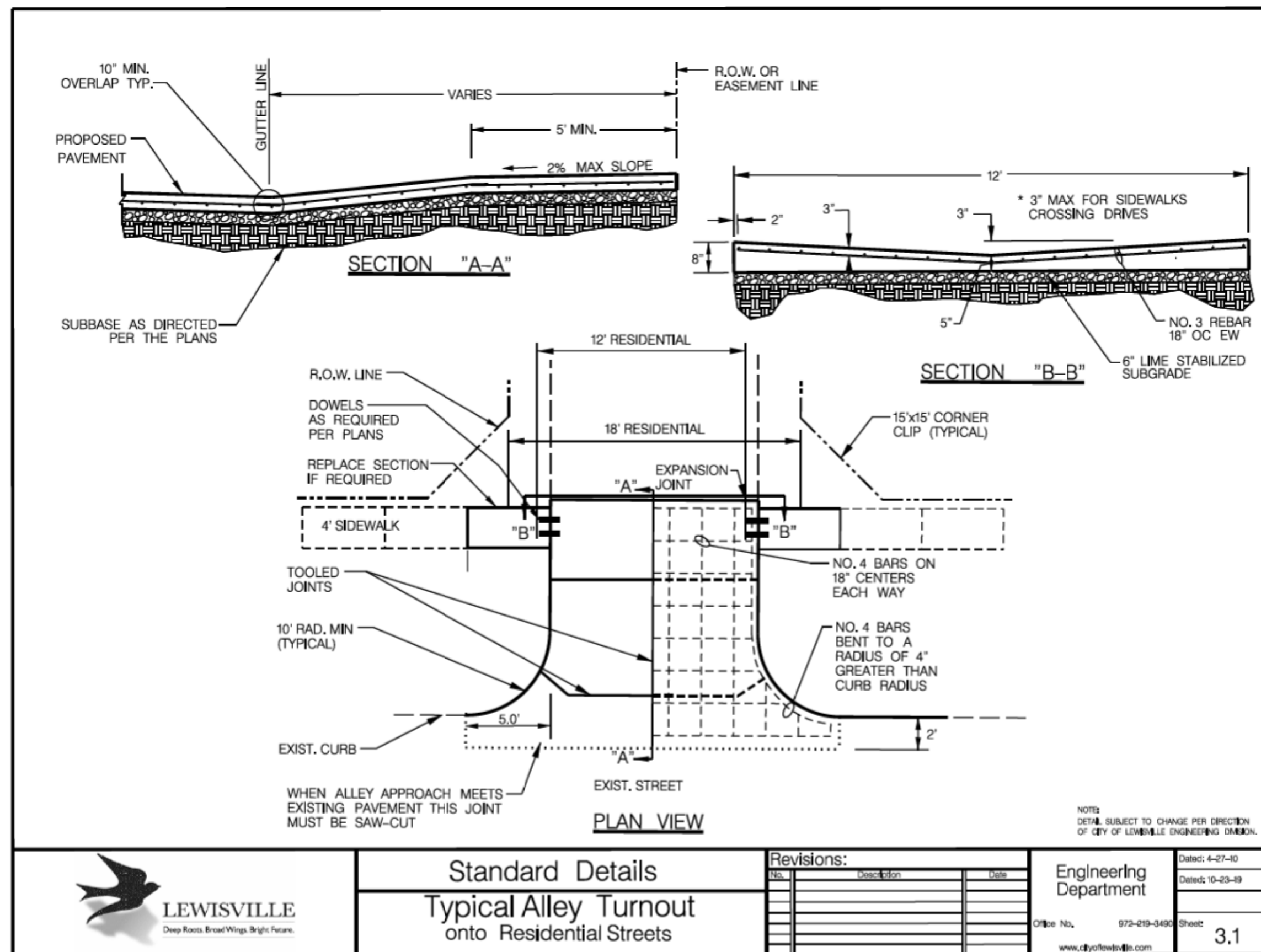
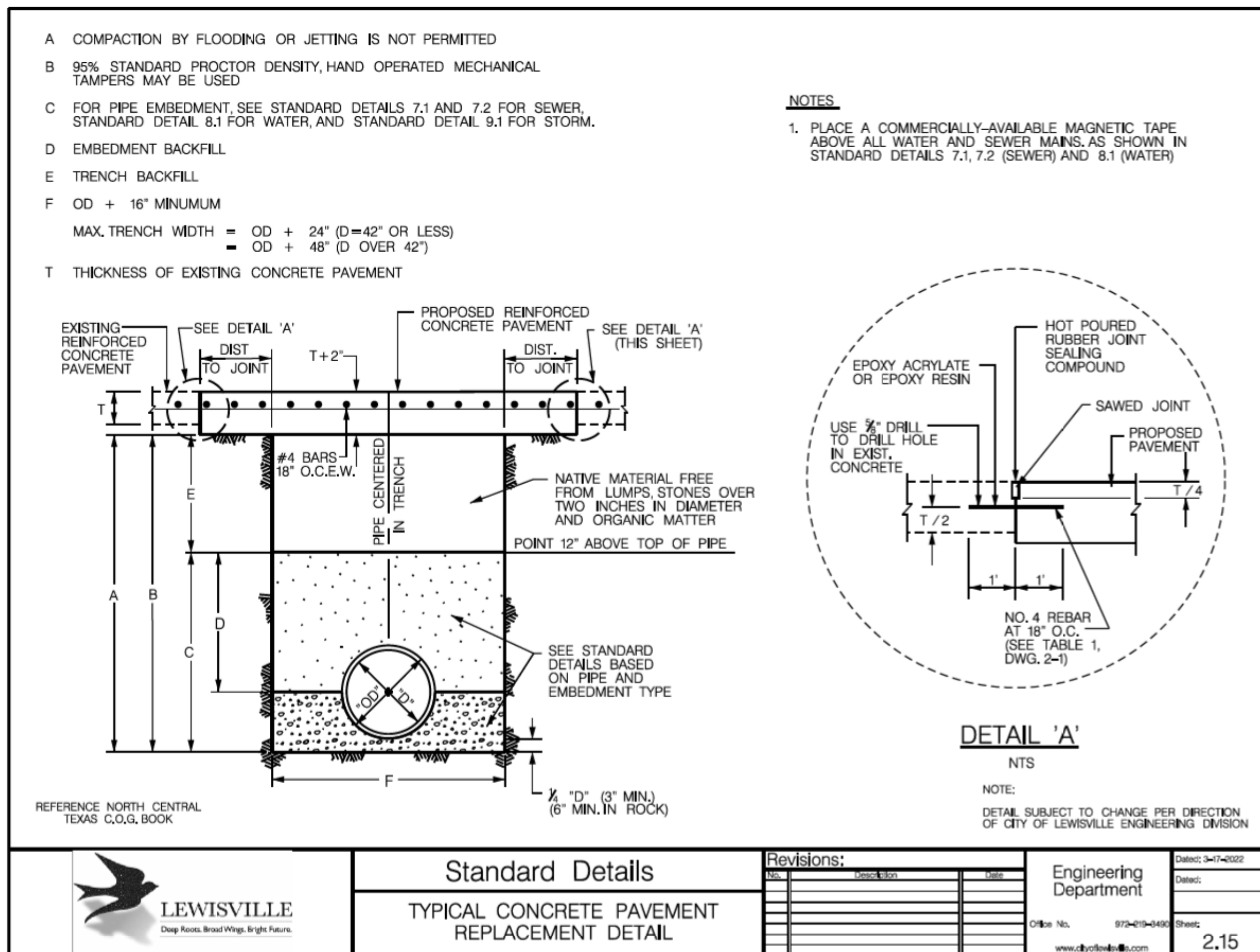
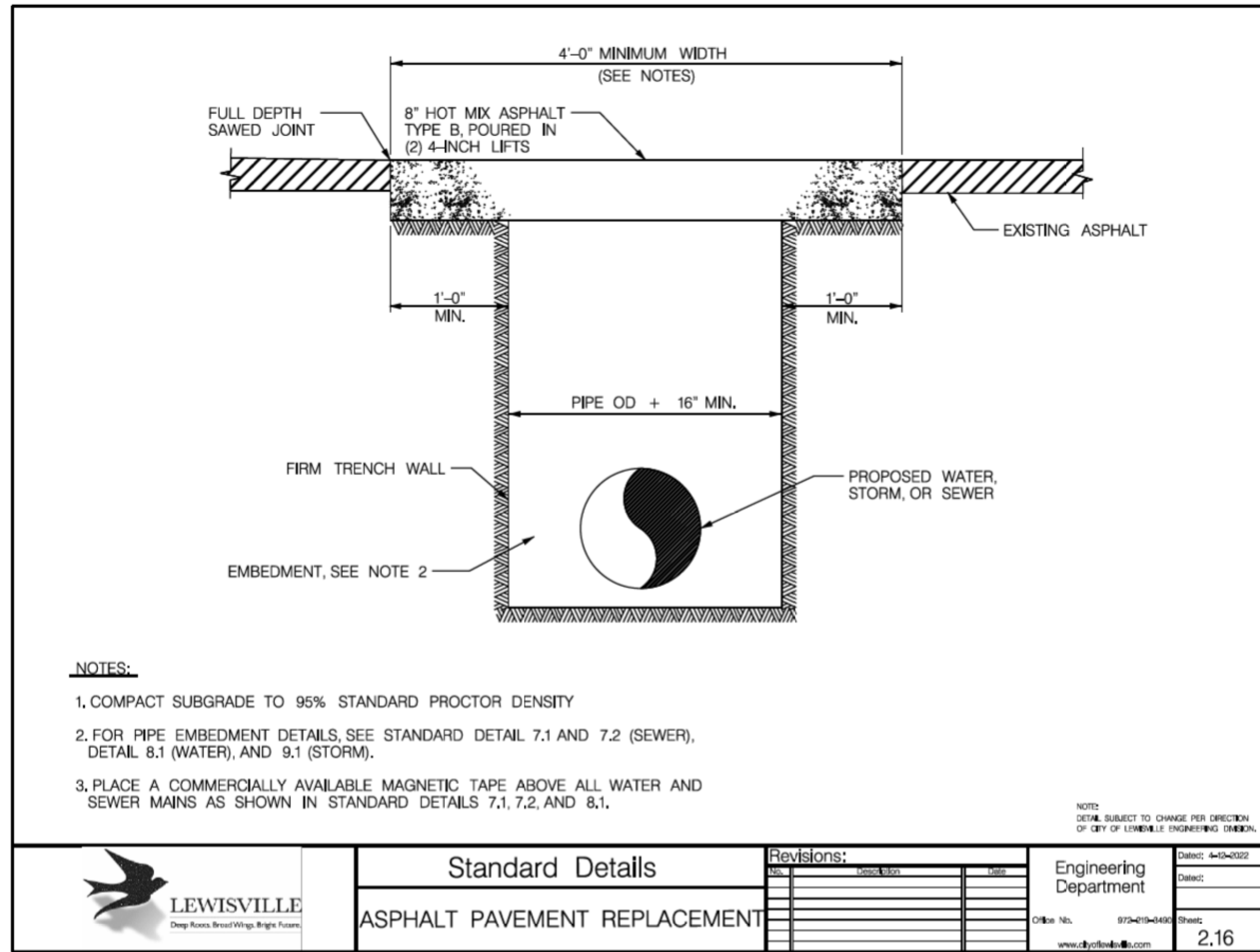
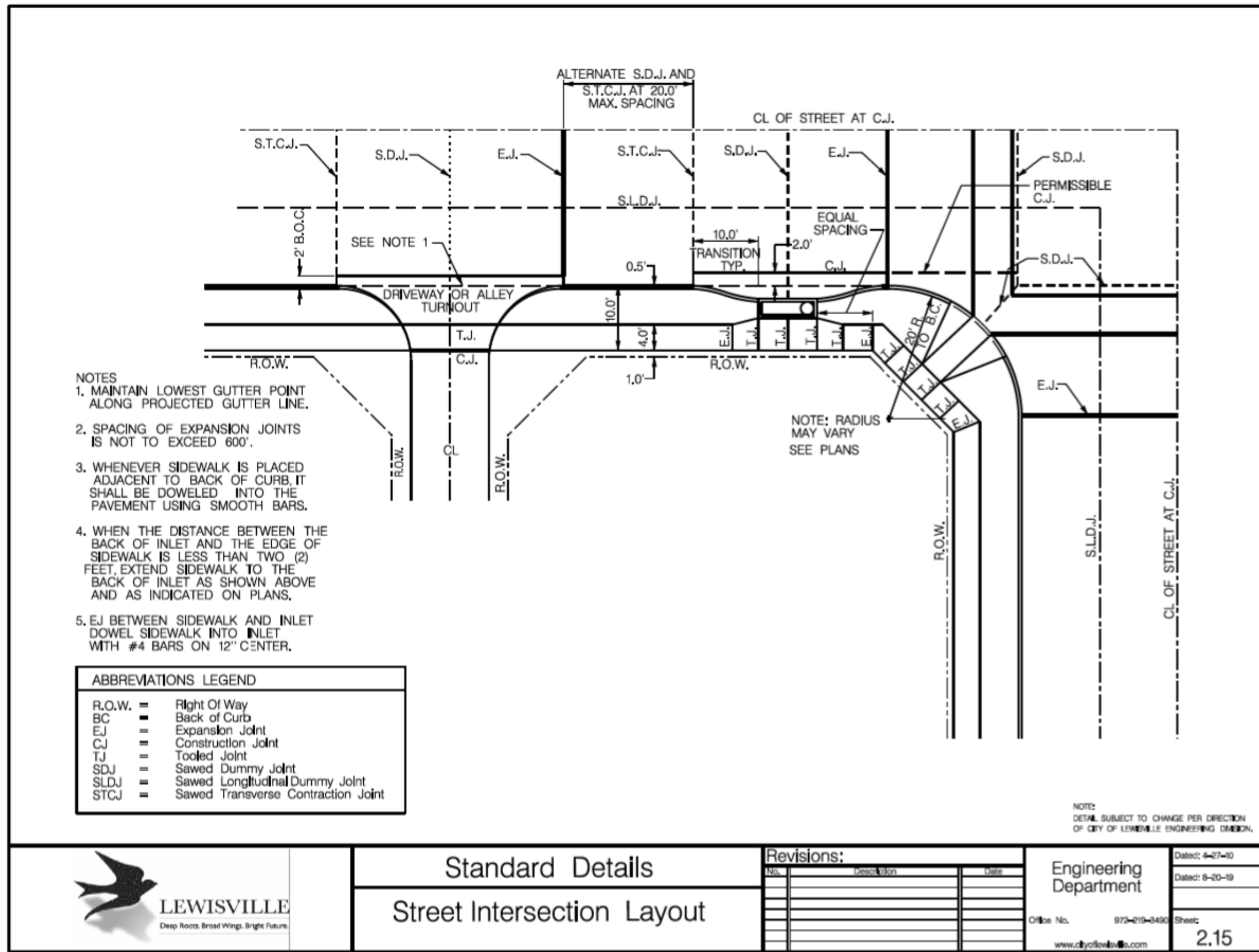


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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 CIVIL  
**CITY OF LEWISVILLE PAVING DETAILS**

NO. ISSUES	BY	DATE	FEIN JOB NO.	LEW20378
			DATE	AUG 2023
			DESIGNED	CM
			DRAWN	KLH
			REVISED	SEC
			CHECKED	
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 Project: Freese and Nichols, Inc. - True Type Fonts

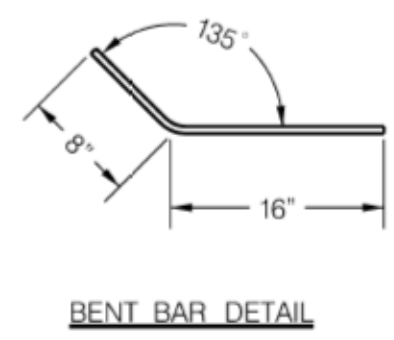
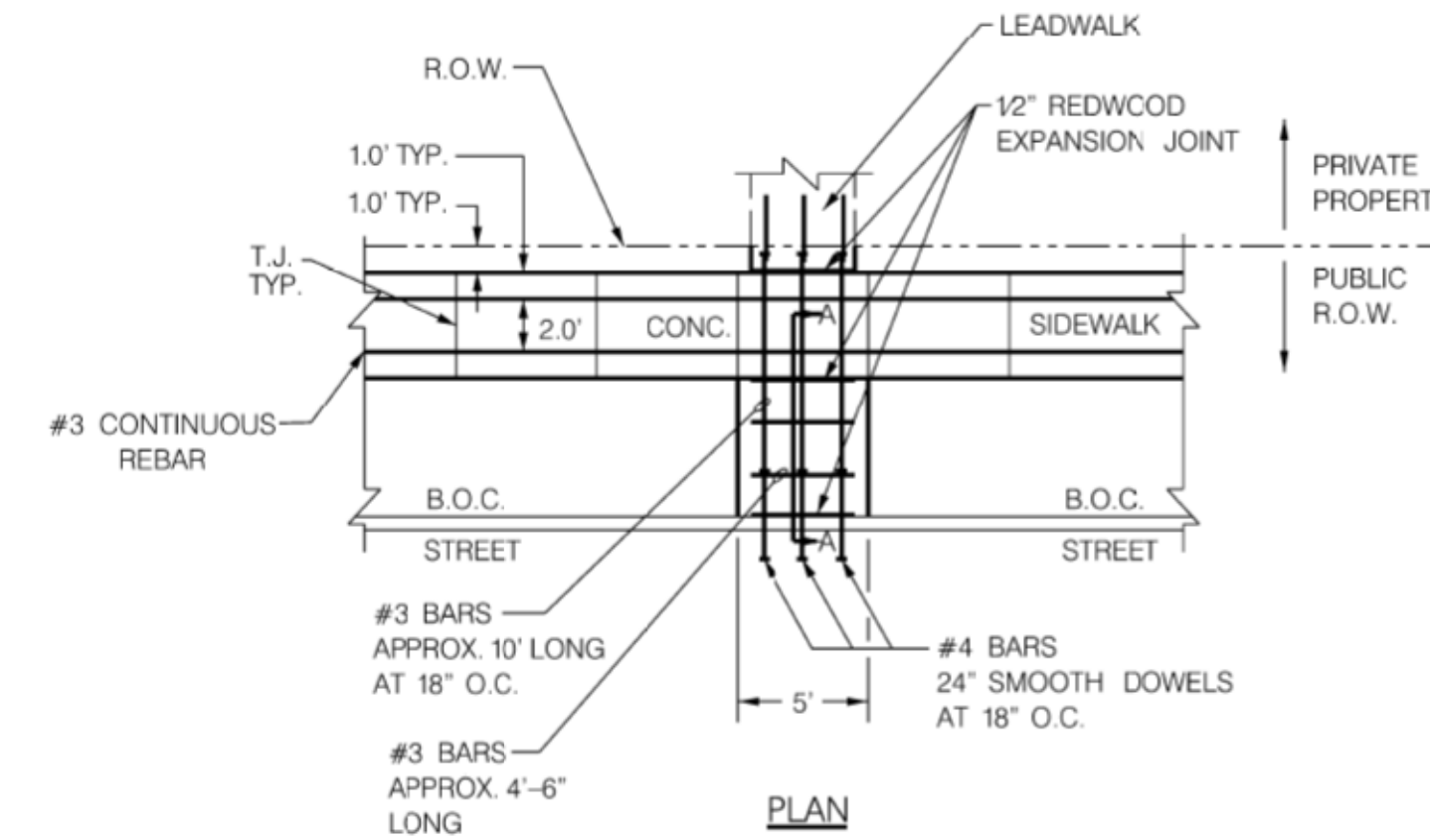
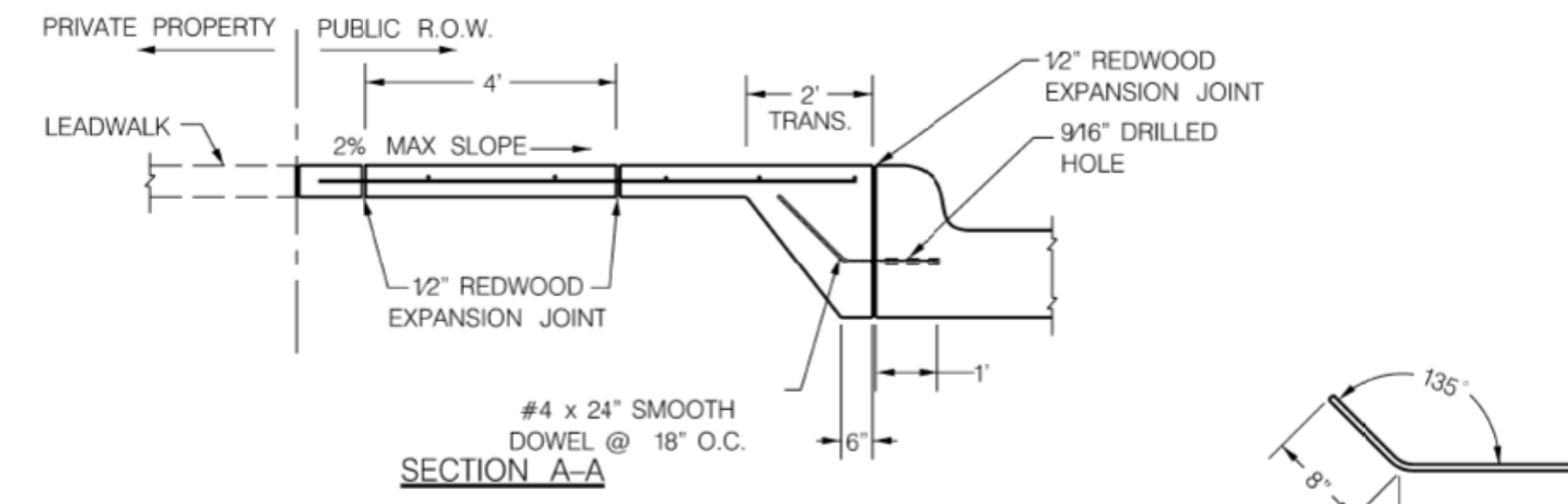
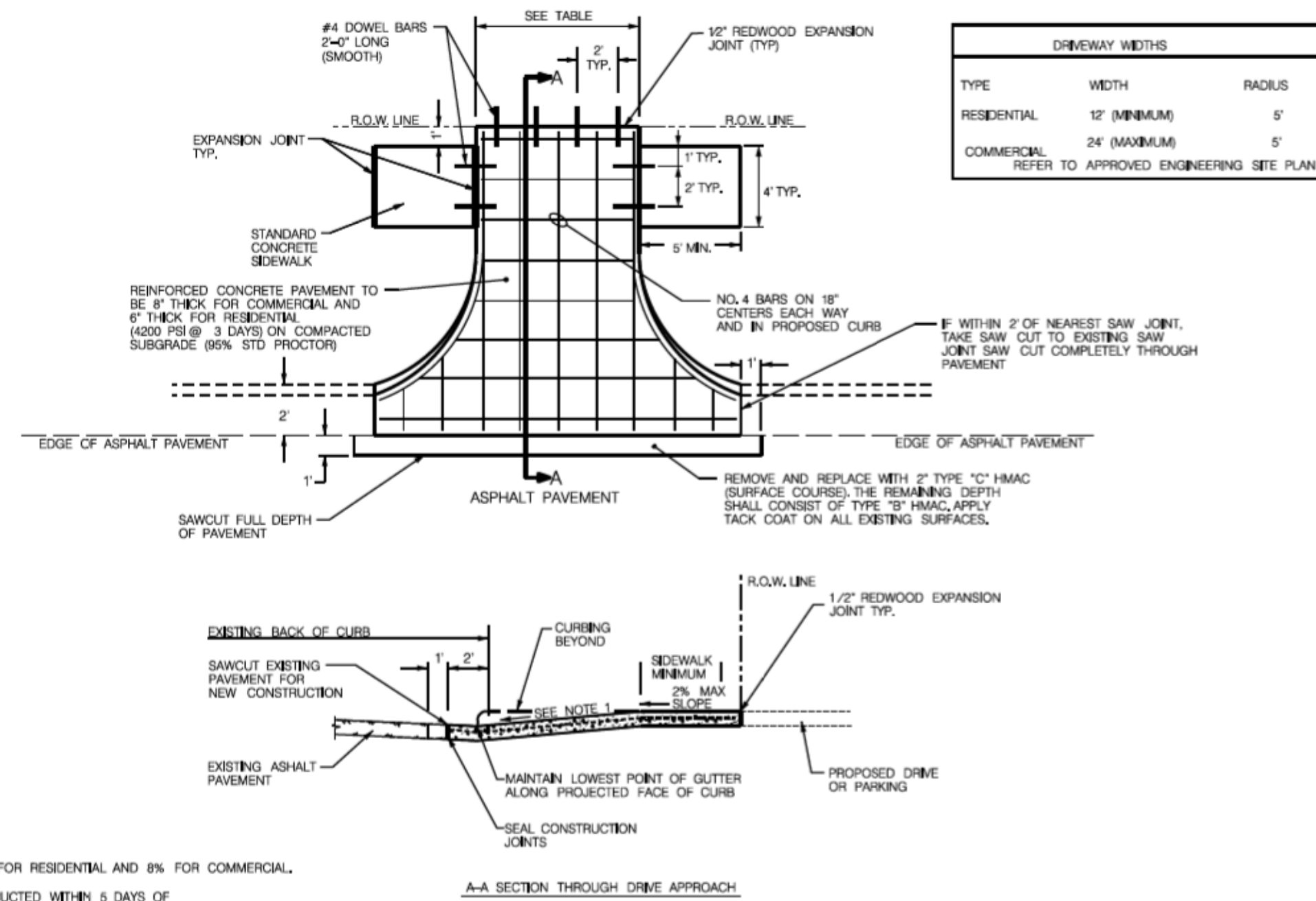


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**ELM ST & POYDRAS ST**  
 IMPROVEMENTS  
 CIVIL  
**CITY OF LEWISVILLE**  
 PAVING DETAILS

NO. ISSUES	DATE	BY	DESIGNED	DRAWN	REVISED	CHECKED	SEC	FILE NAME
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Standard Details  
 Driveway Paving Detail  
 (Concrete Drive with Asphalt Pavement)

NO.	DESCRIPTION	DATE

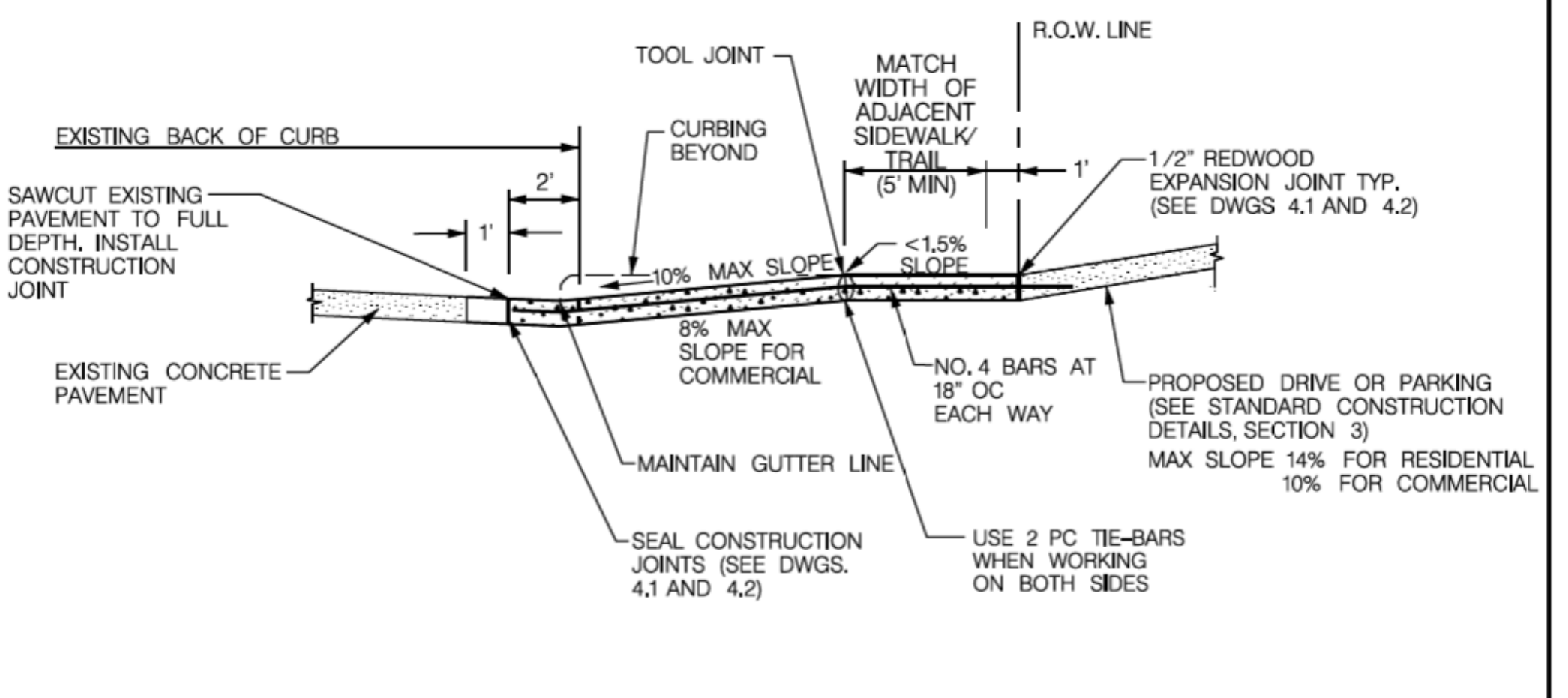
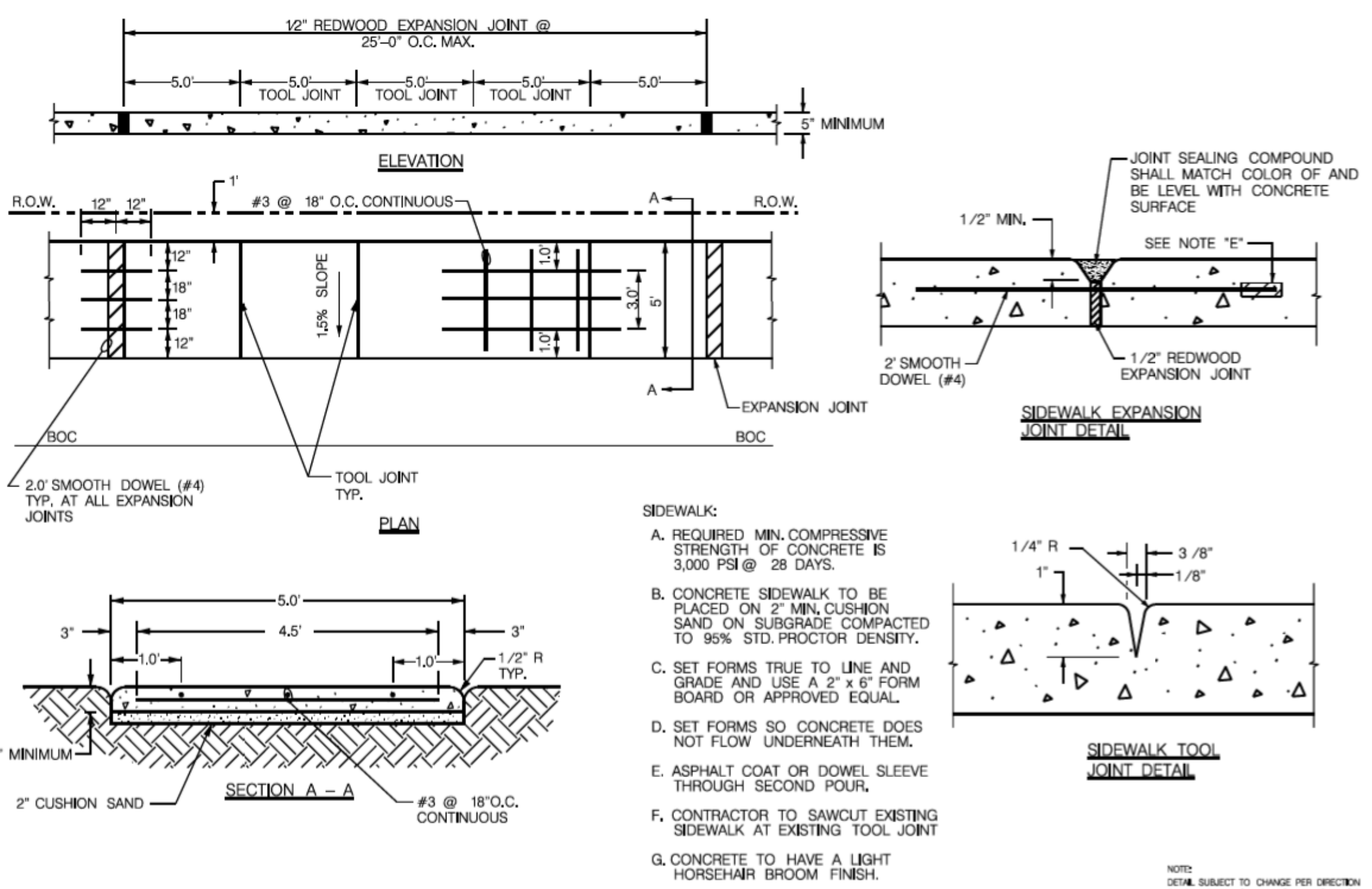
Engineering Department  
 Date: July 2019  
 Sheet: 3.3



Standard Details  
 LEADWALK DETAIL  
 (RESIDENTIAL AREAS ONLY)

NO.	DESCRIPTION	DATE

Engineering Department  
 Date: 6-21-2019  
 Sheet: 4.2



Standard Details  
 5.0' SIDEWALK DETAILS

NO.	DESCRIPTION	DATE

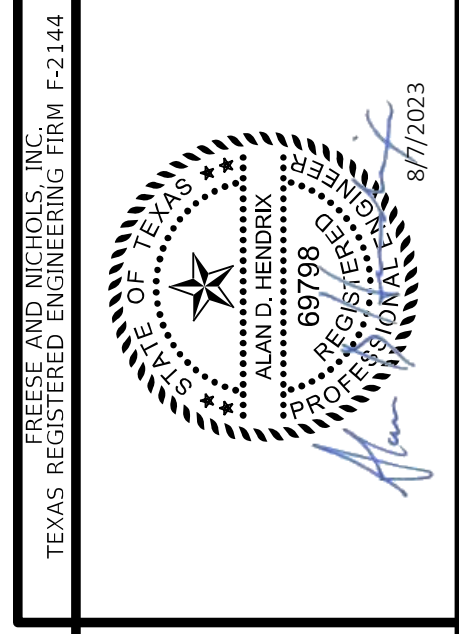
Engineering Department  
 Date: 08-04-2022  
 Sheet: 4.2



Standard Details  
 SECTION THROUGH DRIVE APPROACH

NO.	DESCRIPTION	DATE

Engineering Department  
 Date: 08-04-2022  
 Sheet: 4.5



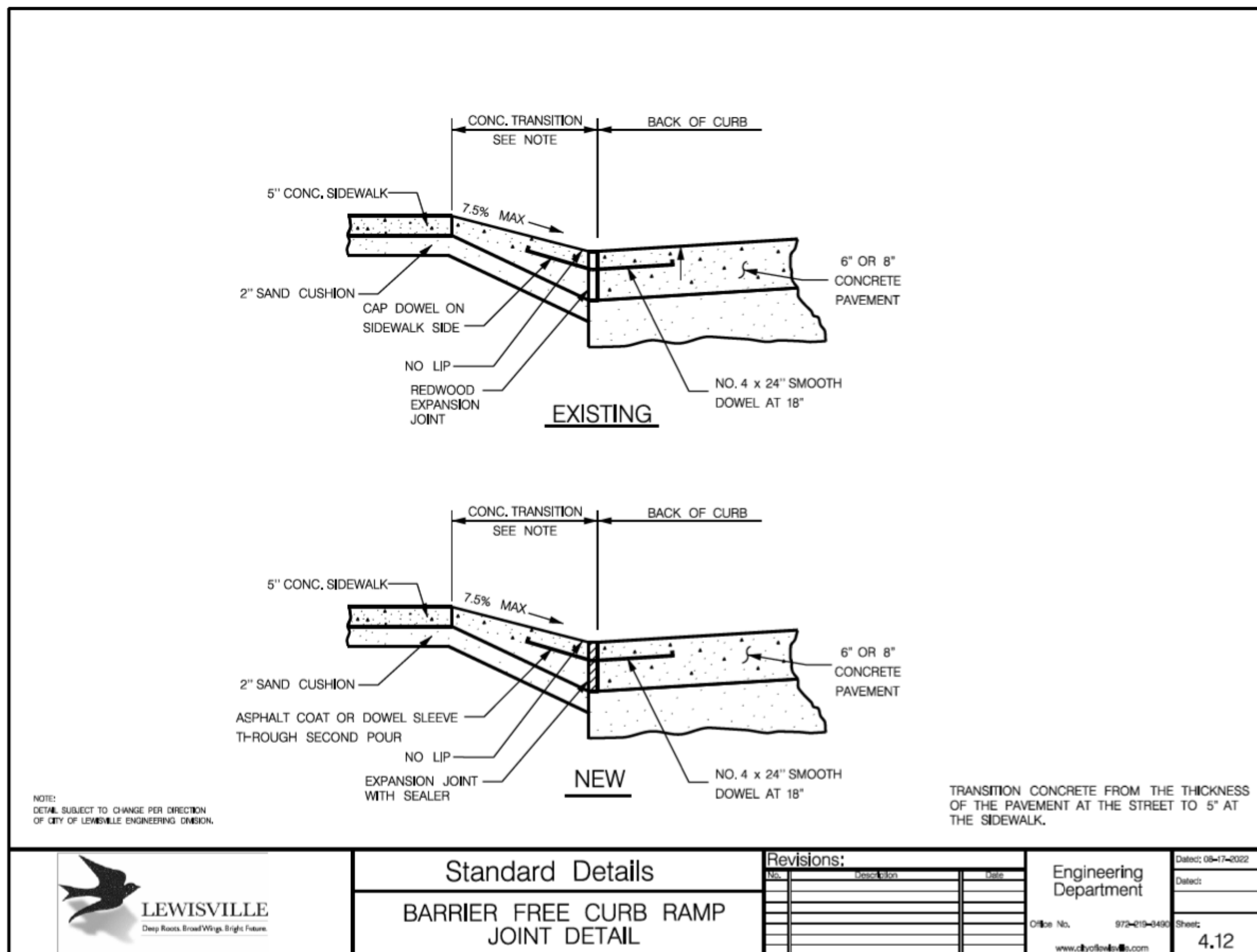
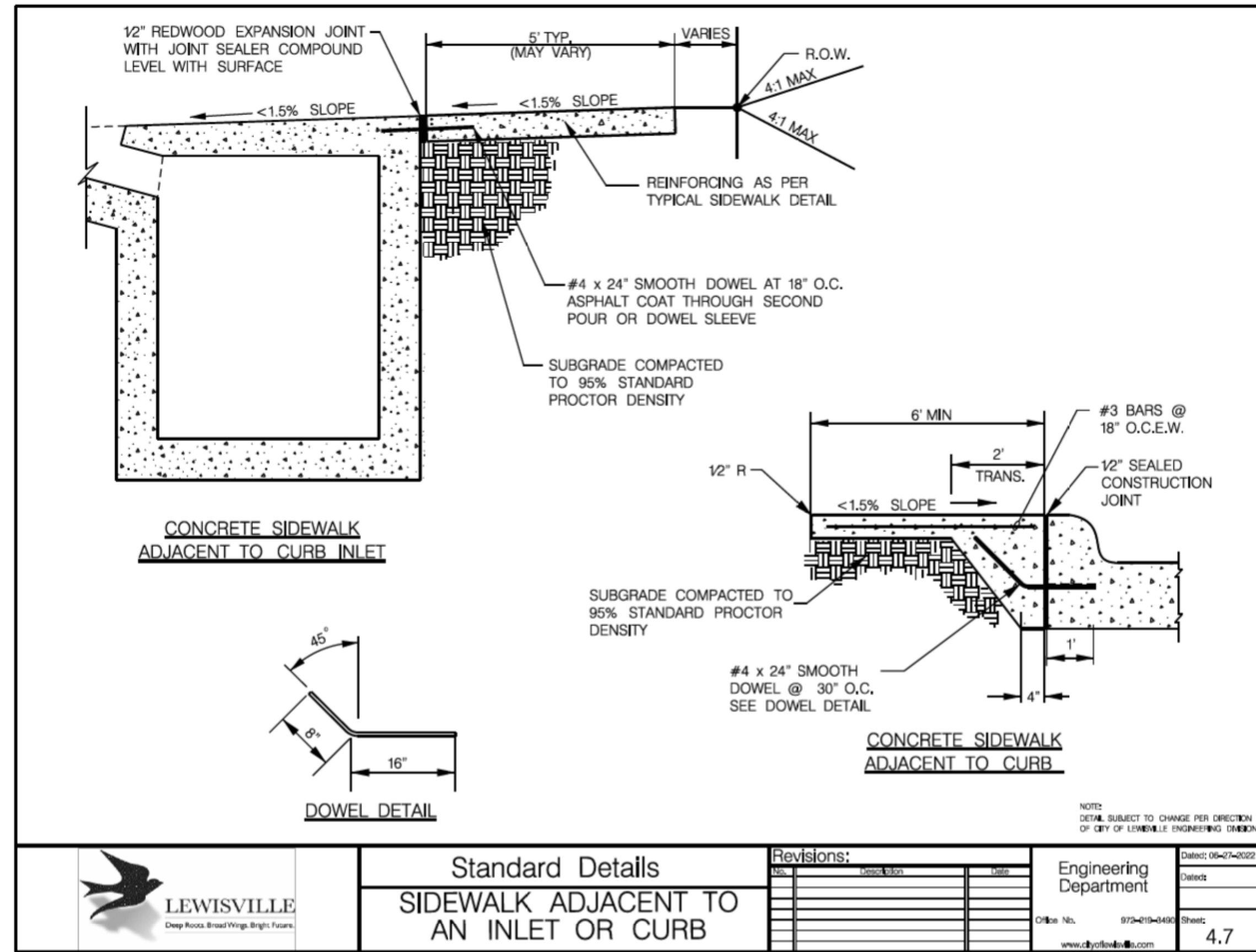
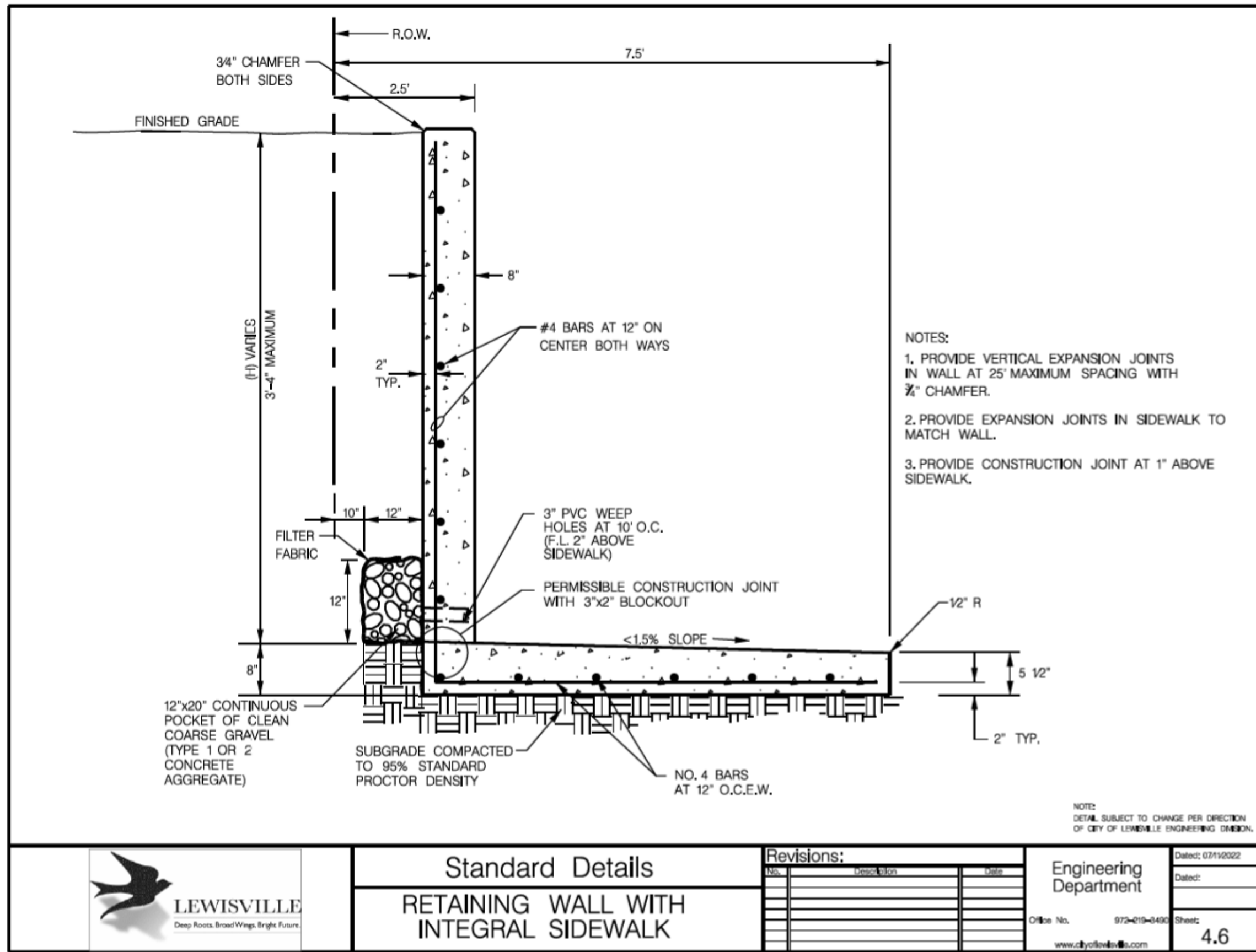
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 ELM ST & POYDRAS ST  
 IMPROVEMENTS  
 CITY OF LEWISVILLE  
 PAVING DETAILS

NO.	ISSUES	DATE	BY	FILE NAME

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

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 Project: LEWISVILLE - R:\Drawings\10 - Miscellaneous\cv-trt-dt-pave04.sht  
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 Date: Aug 07 2023 - 11:20:00 AM  
 Project: Freese and Nichols, Inc. - True Type Fonts



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**CITY OF LEWISVILLE PAVING DETAILS**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	CM	DRAWN	KLH	REVISED	SEC	CHECKED	FILE NAME
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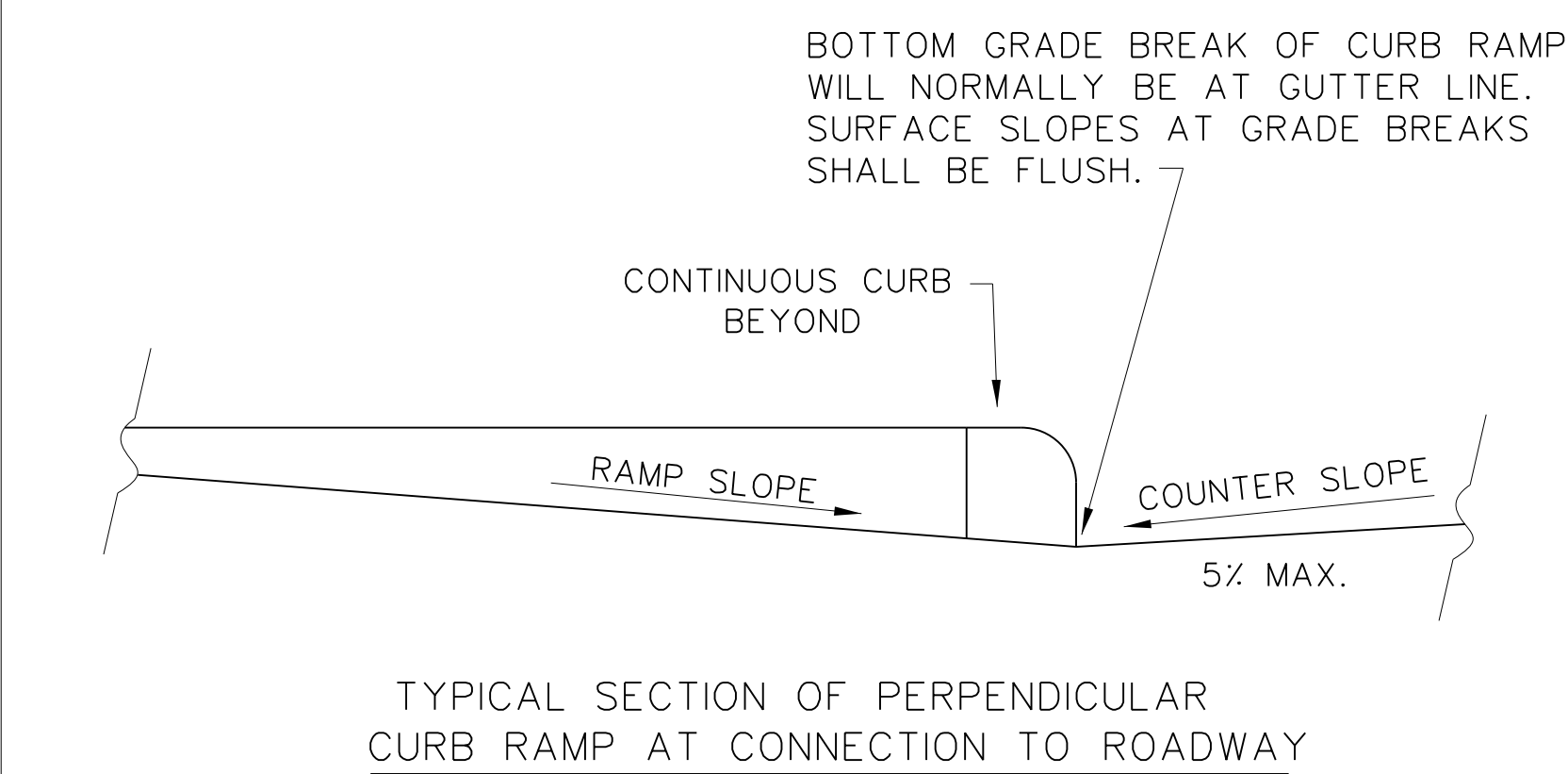
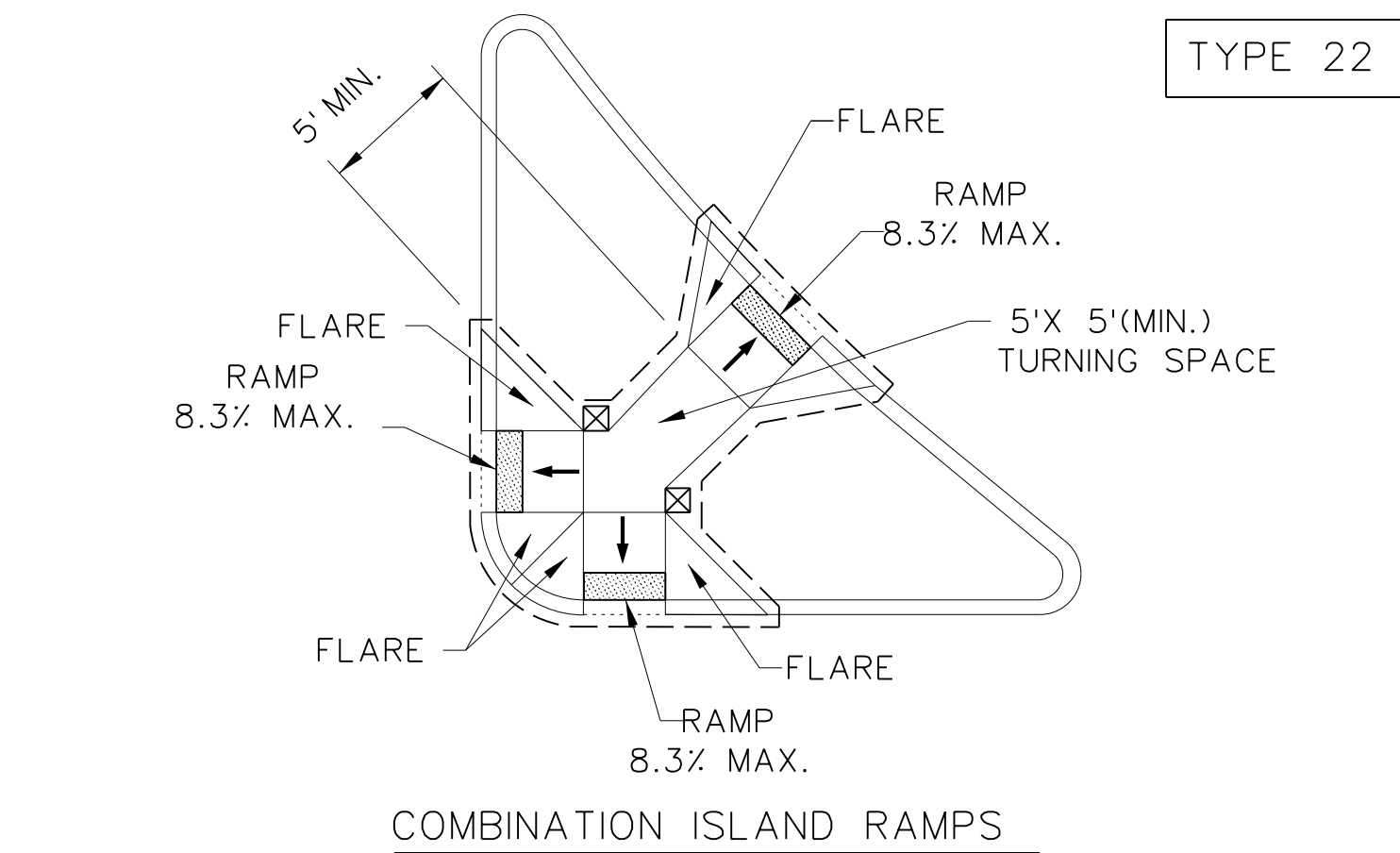
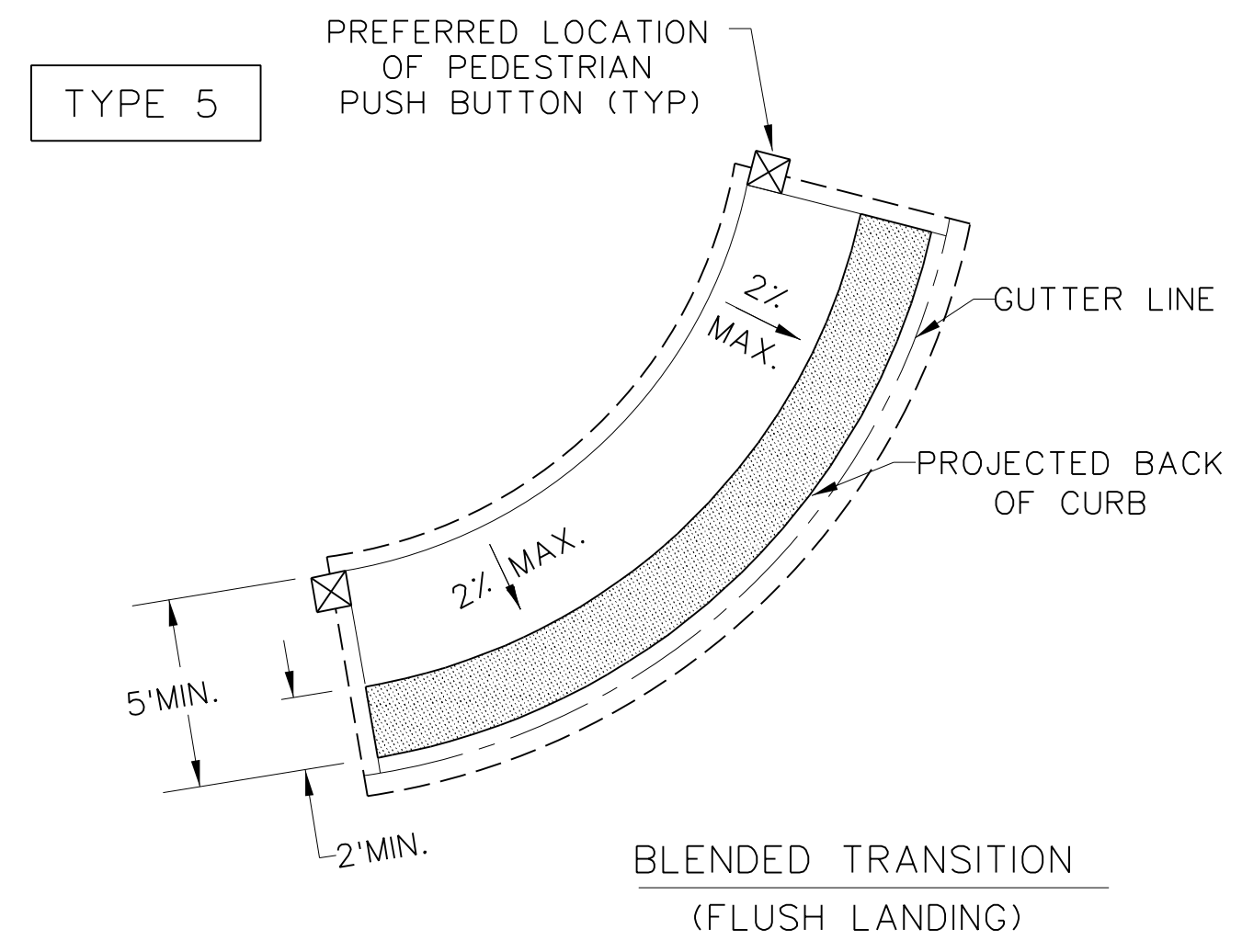
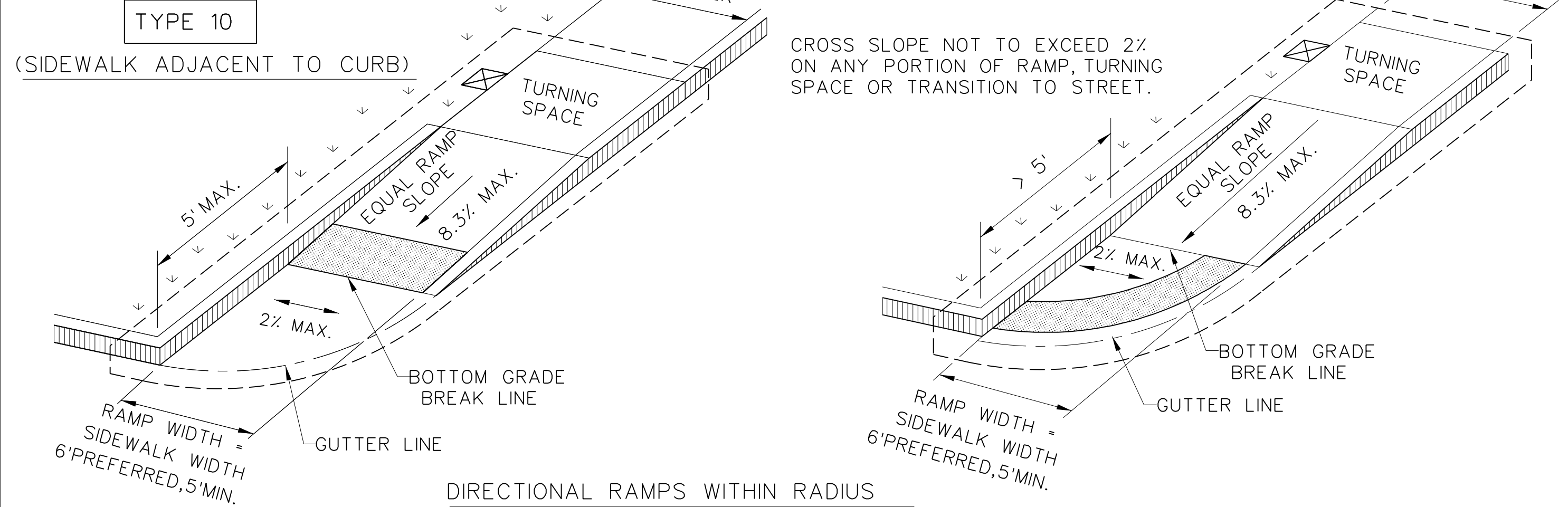
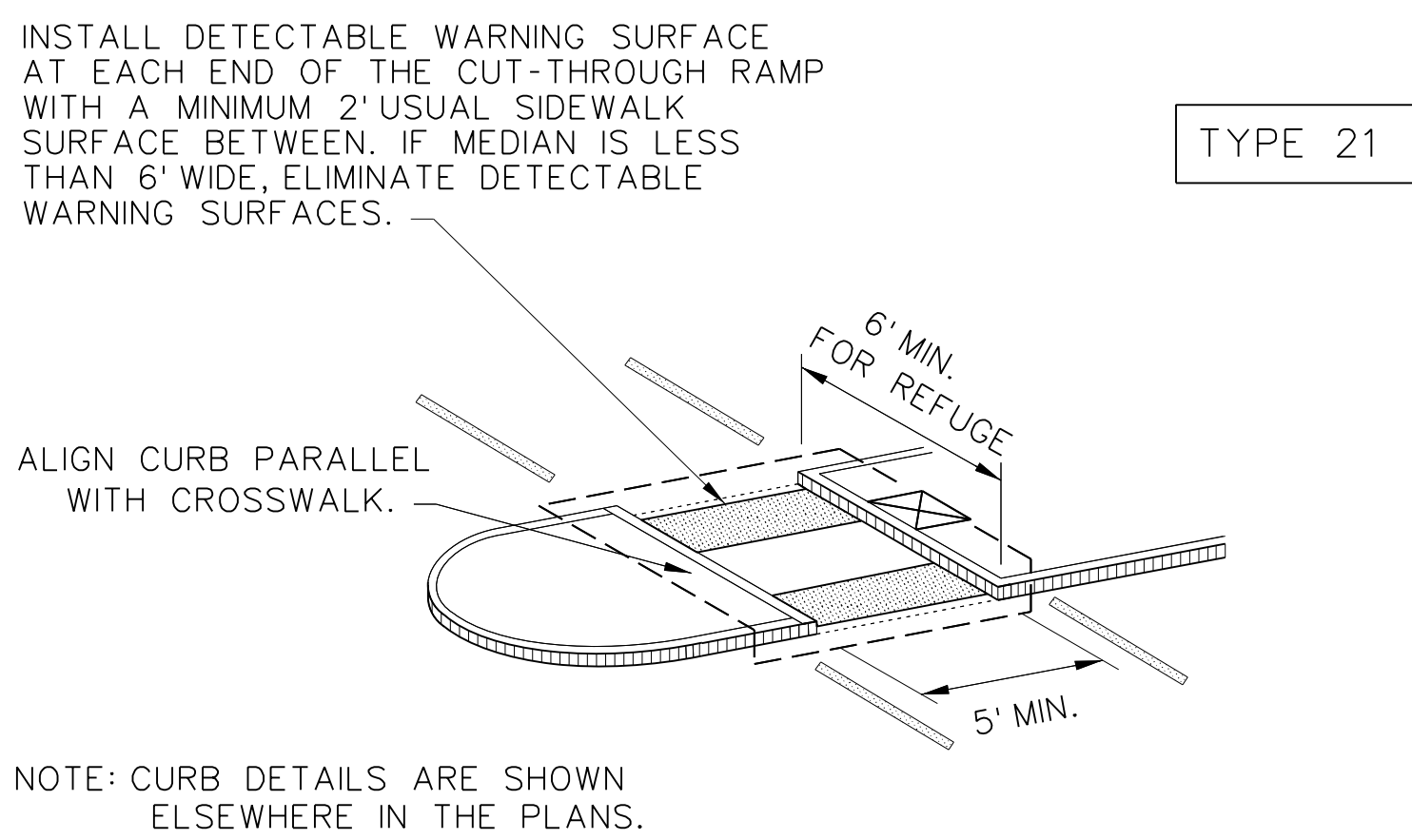
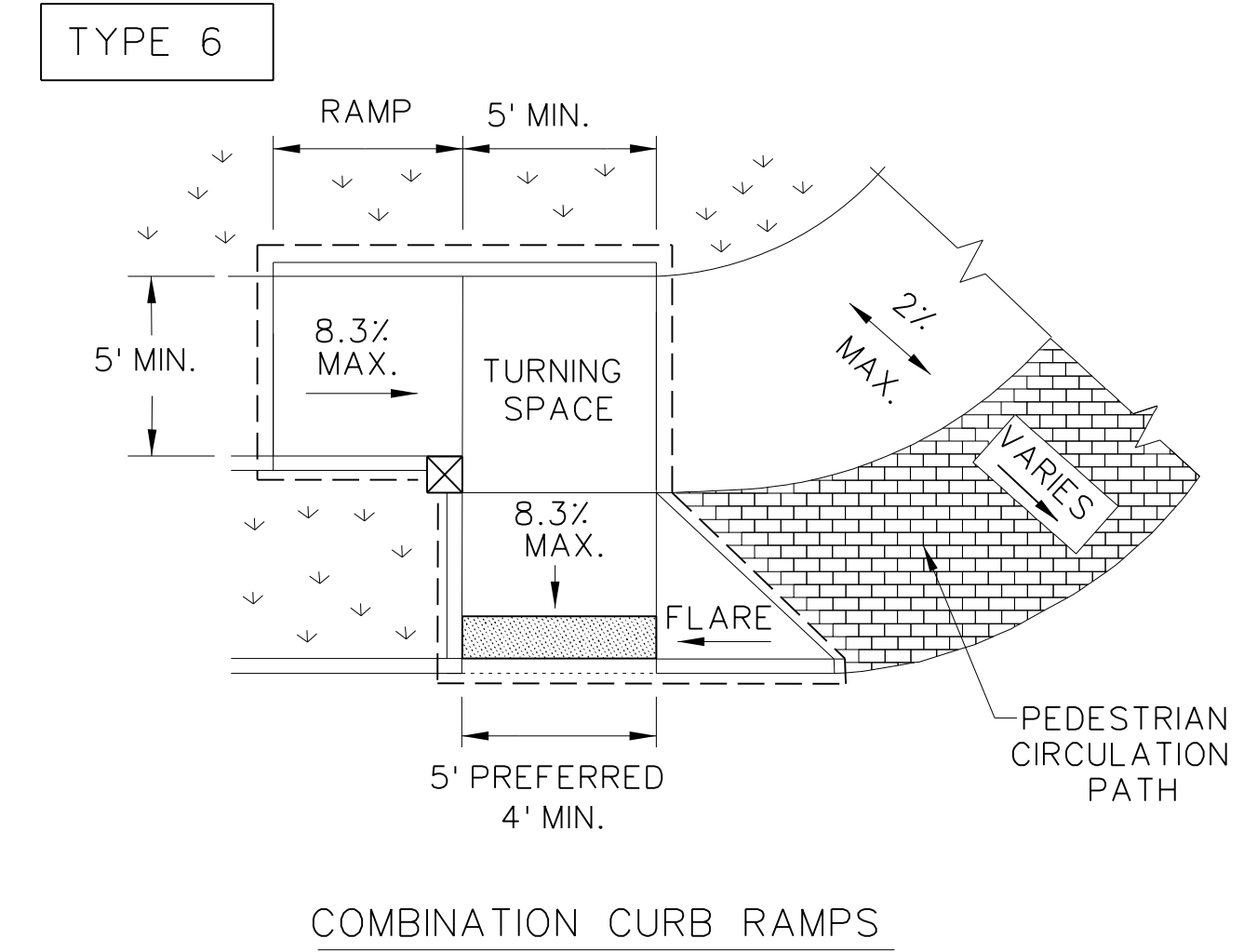
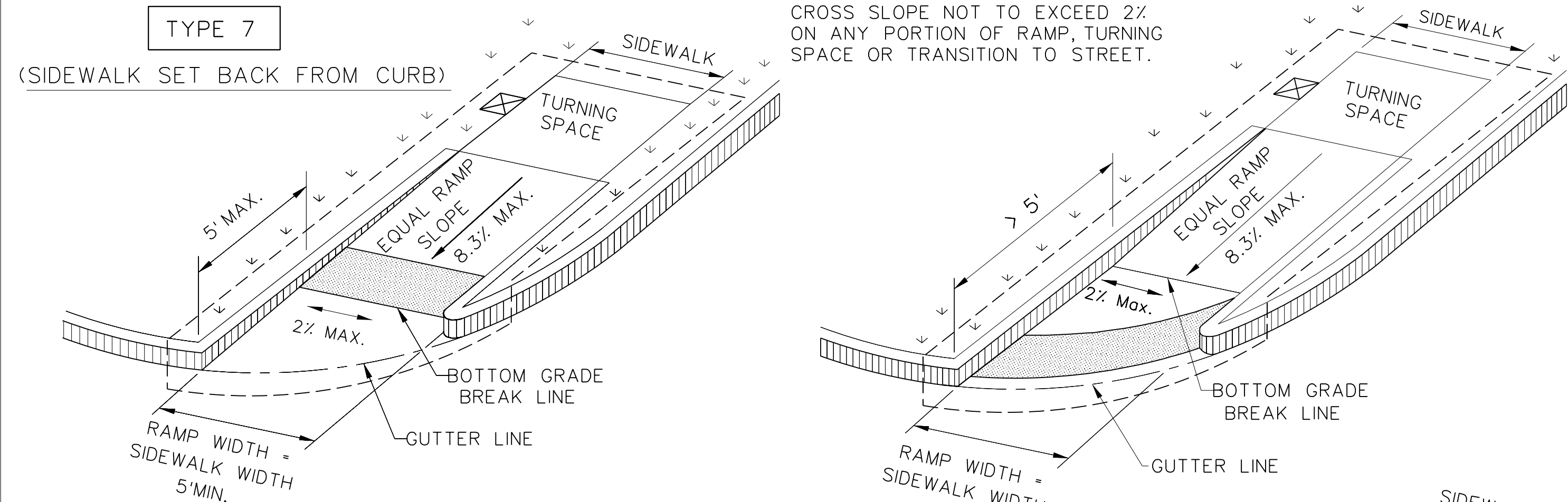
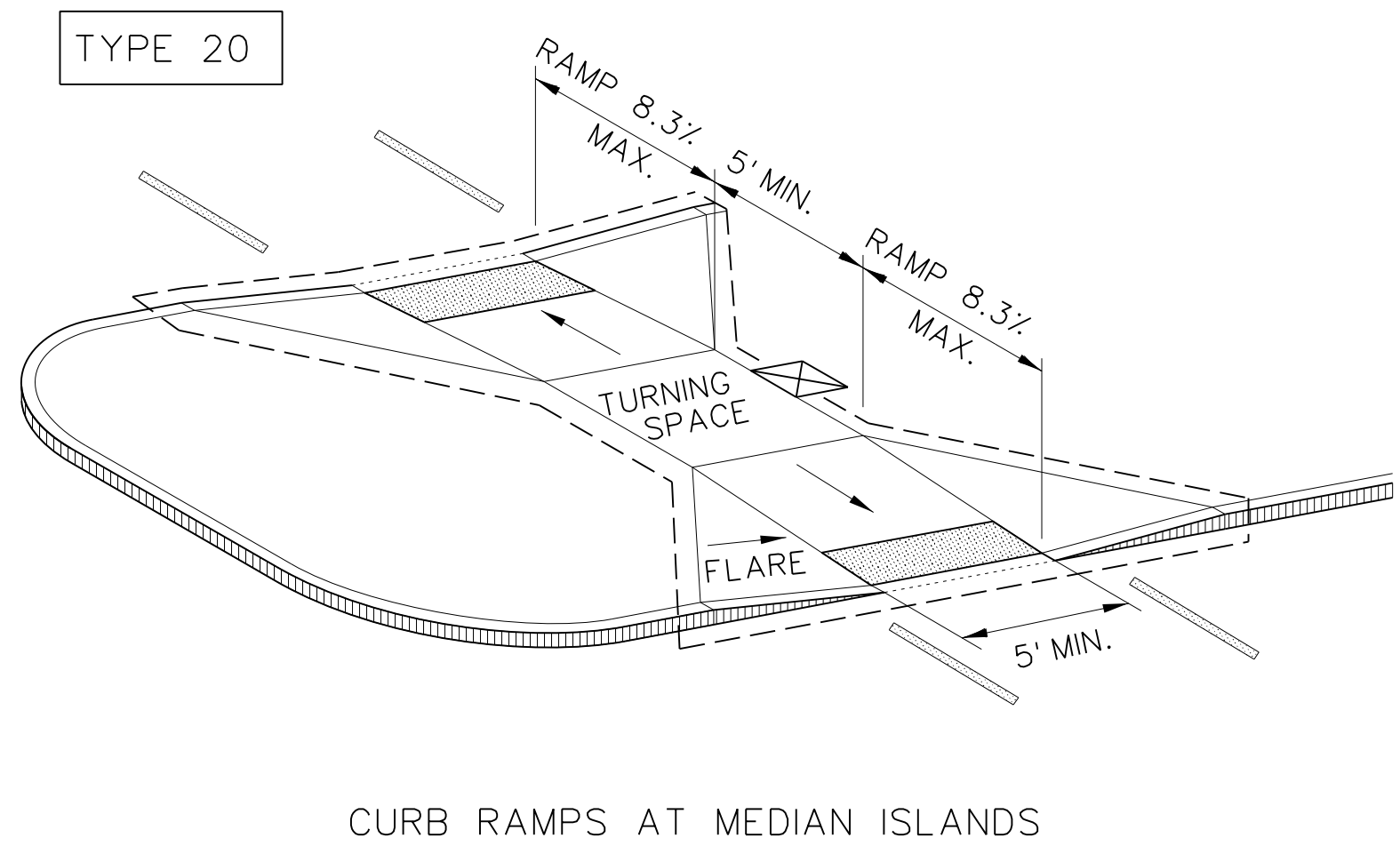
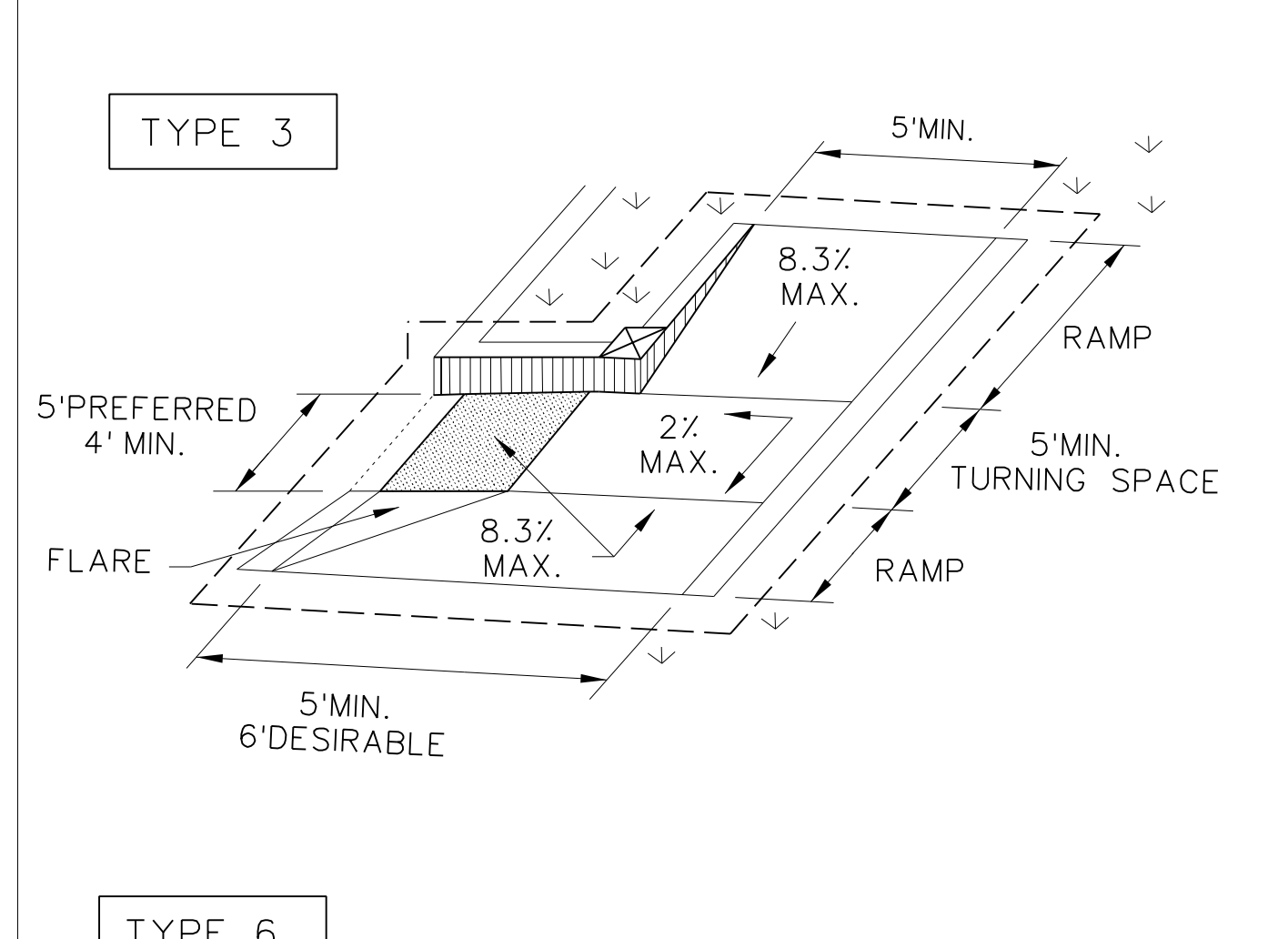
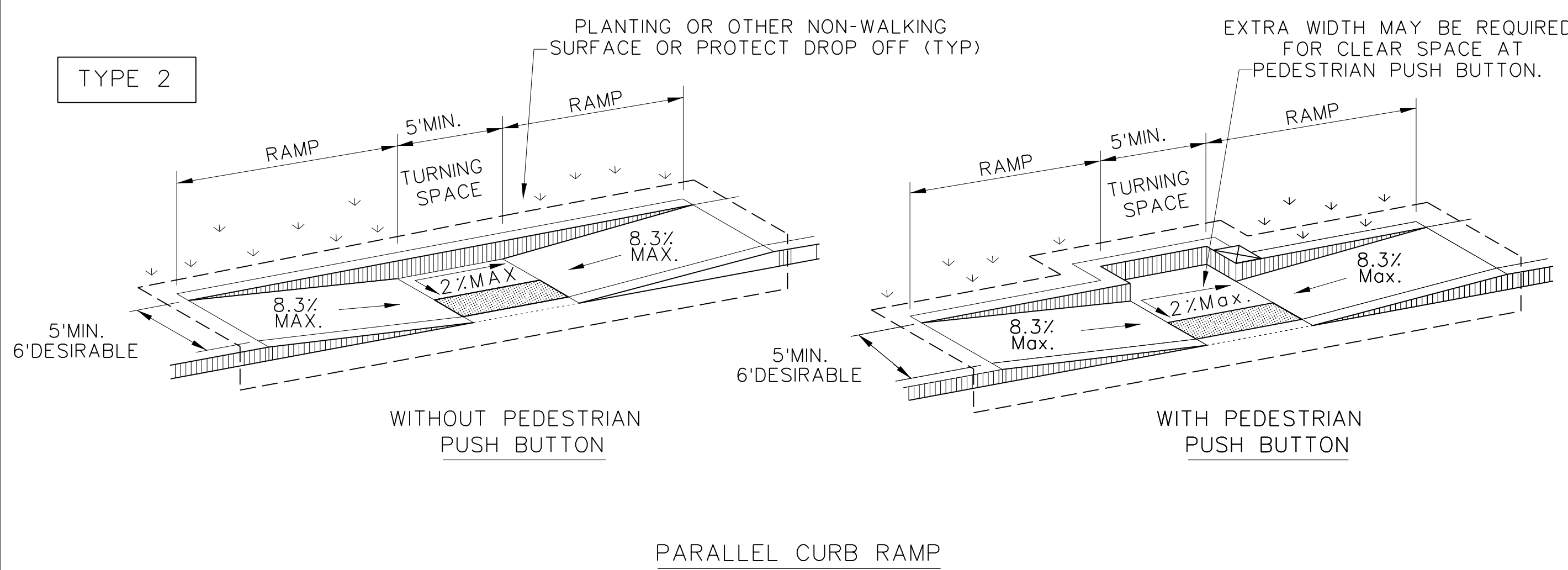
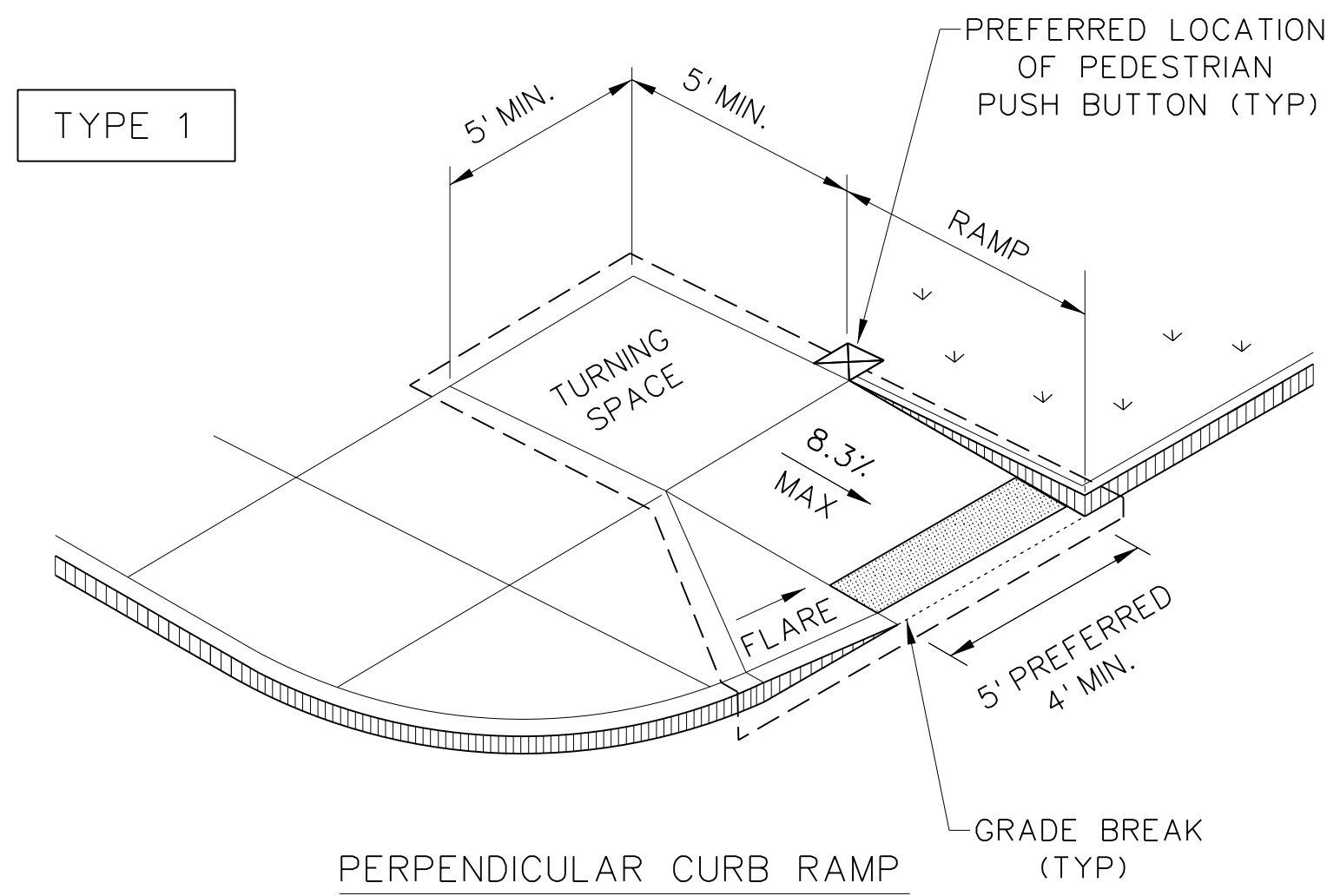
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DATE: FILE:



**NOTES / LEGEND:**

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

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

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

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

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

Detectable Warning Surface

Gutter Line

Grade Break

Ramp Limits of Payment

SHEET 1 OF 4

**Texas Department of Transportation**

**Design Division Standard**

**PEDESTRIAN FACILITIES**

**CURB RAMPS**

**PED-18**

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISED 08, 2005	REVISIONS			
REVISED 06, 2012				
REVISED 01, 2018				
DIST	COUNTY		SHEET NO.	
41				

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5' x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5' x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4' x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5' x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

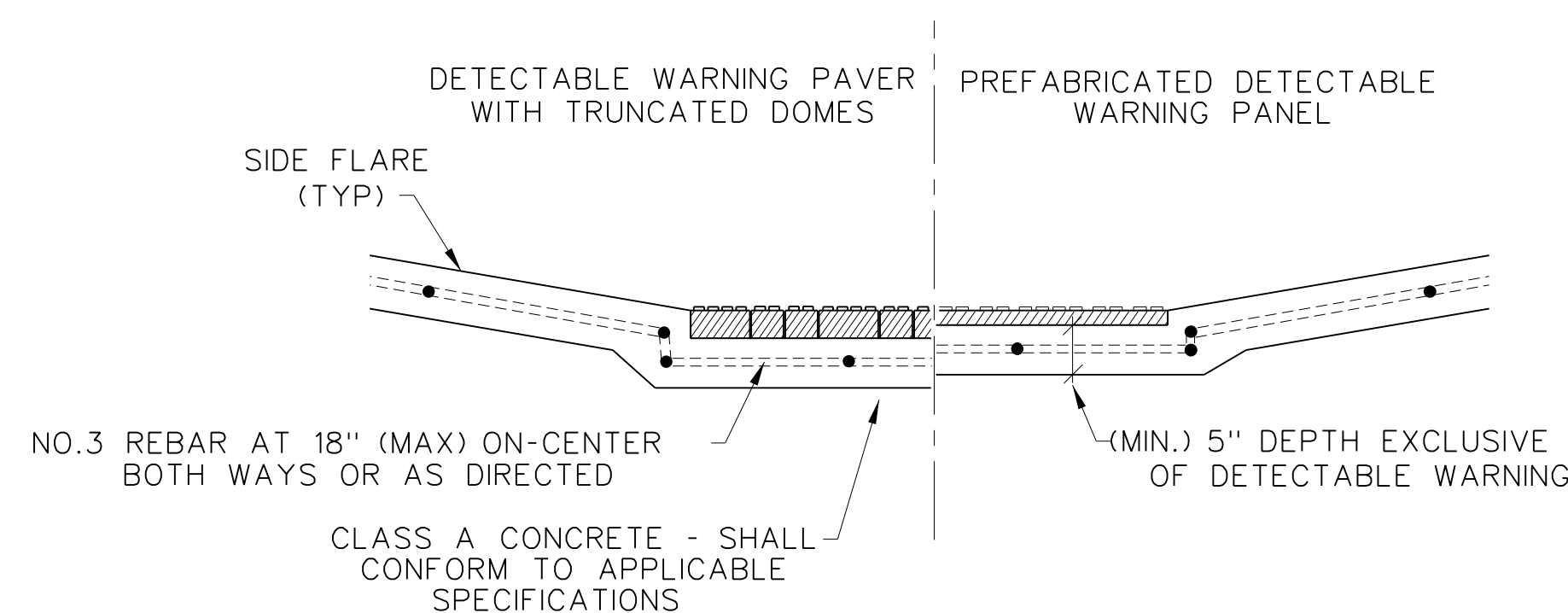
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

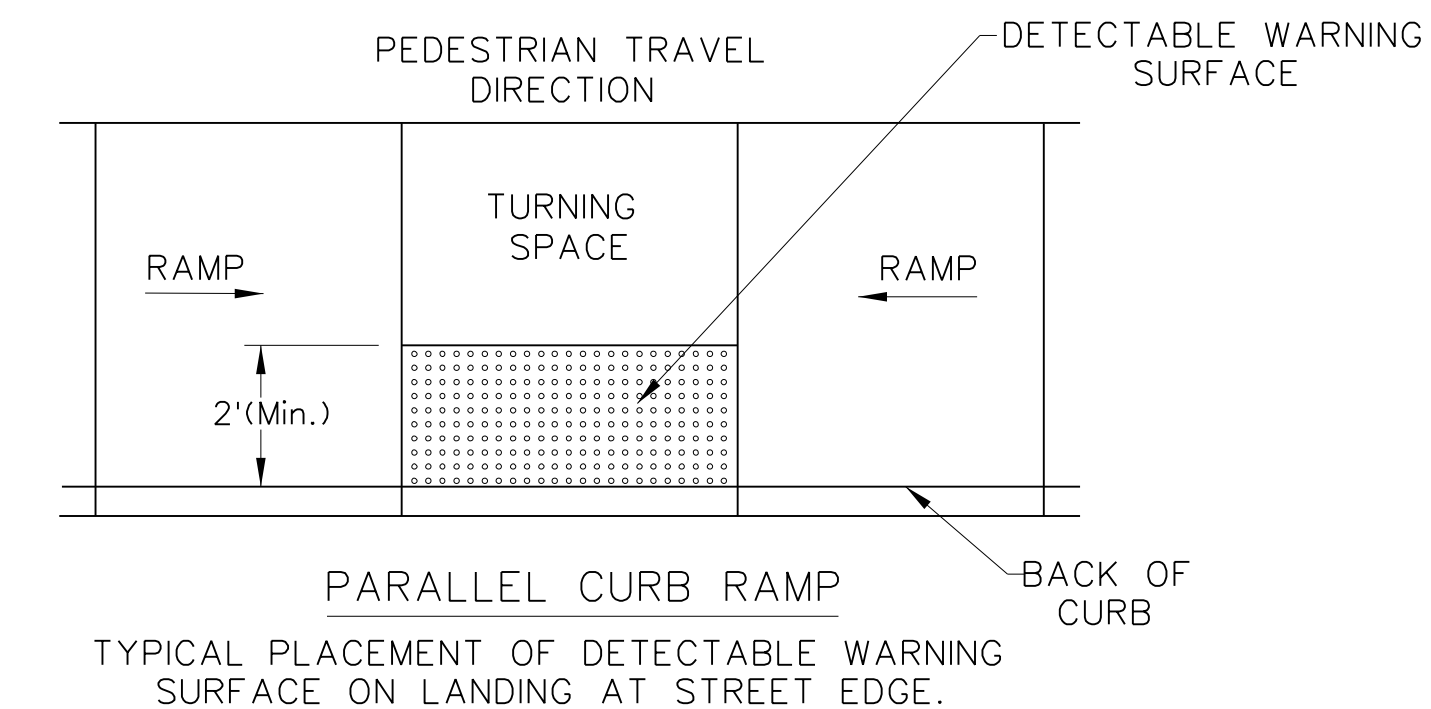
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

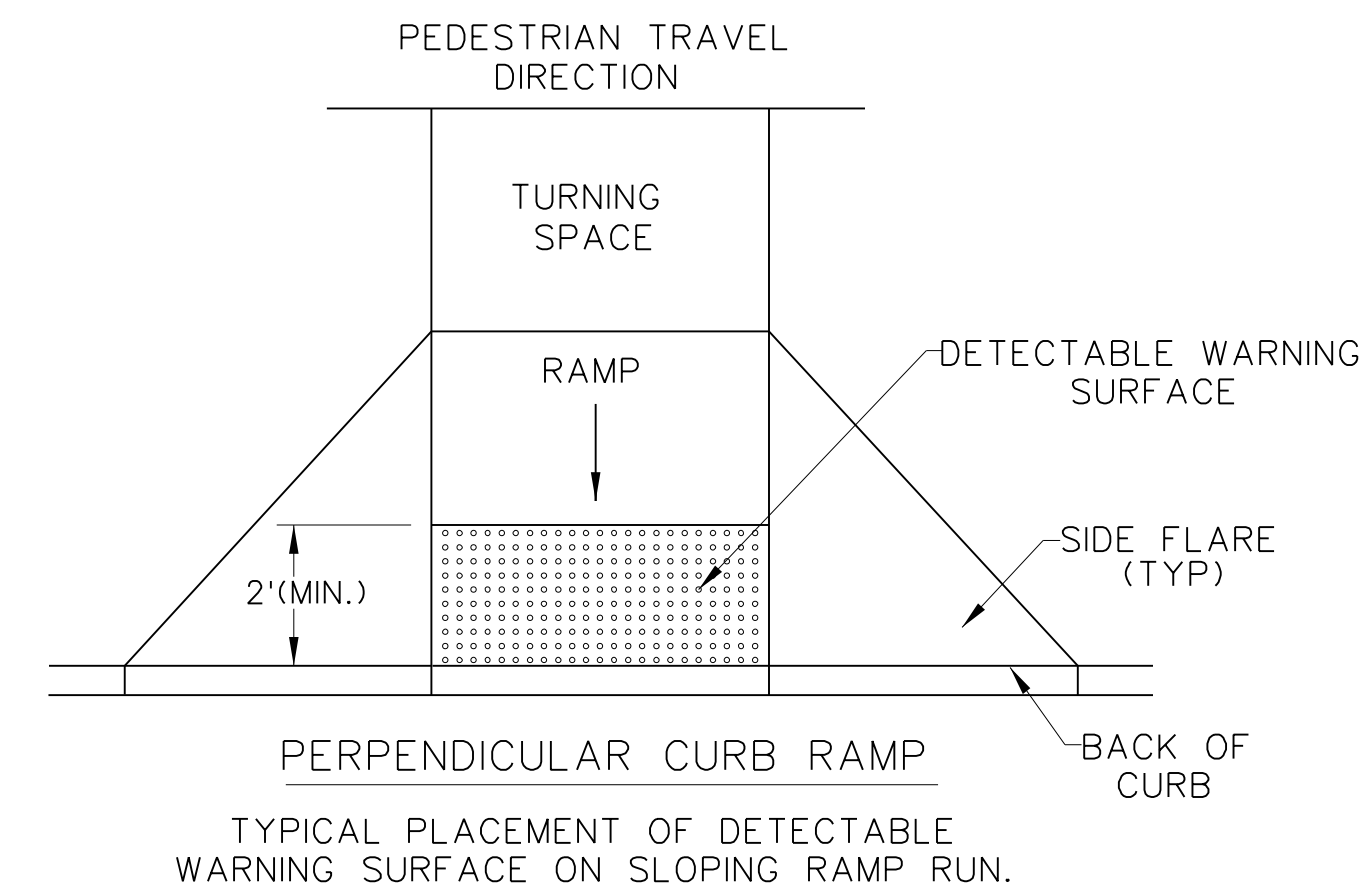


SECTION VIEW DETAIL  
CURB RAMP AT DETECTIBLE WARNINGS

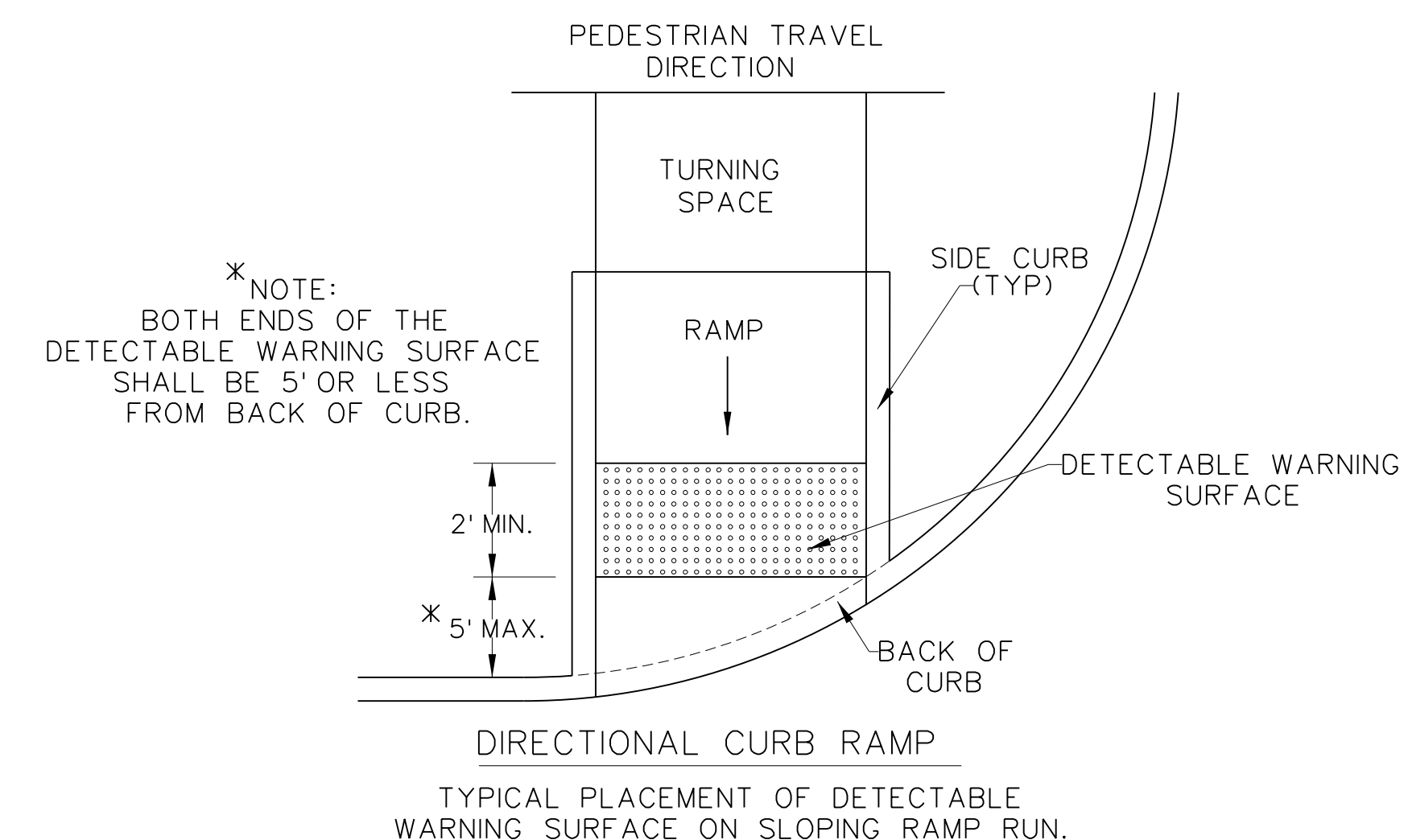
DETECTABLE WARNING SURFACE DETAILS



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



TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

SHEET 2 OF 4



PEDESTRIAN FACILITIES  
CURB RAMPS

PED-18

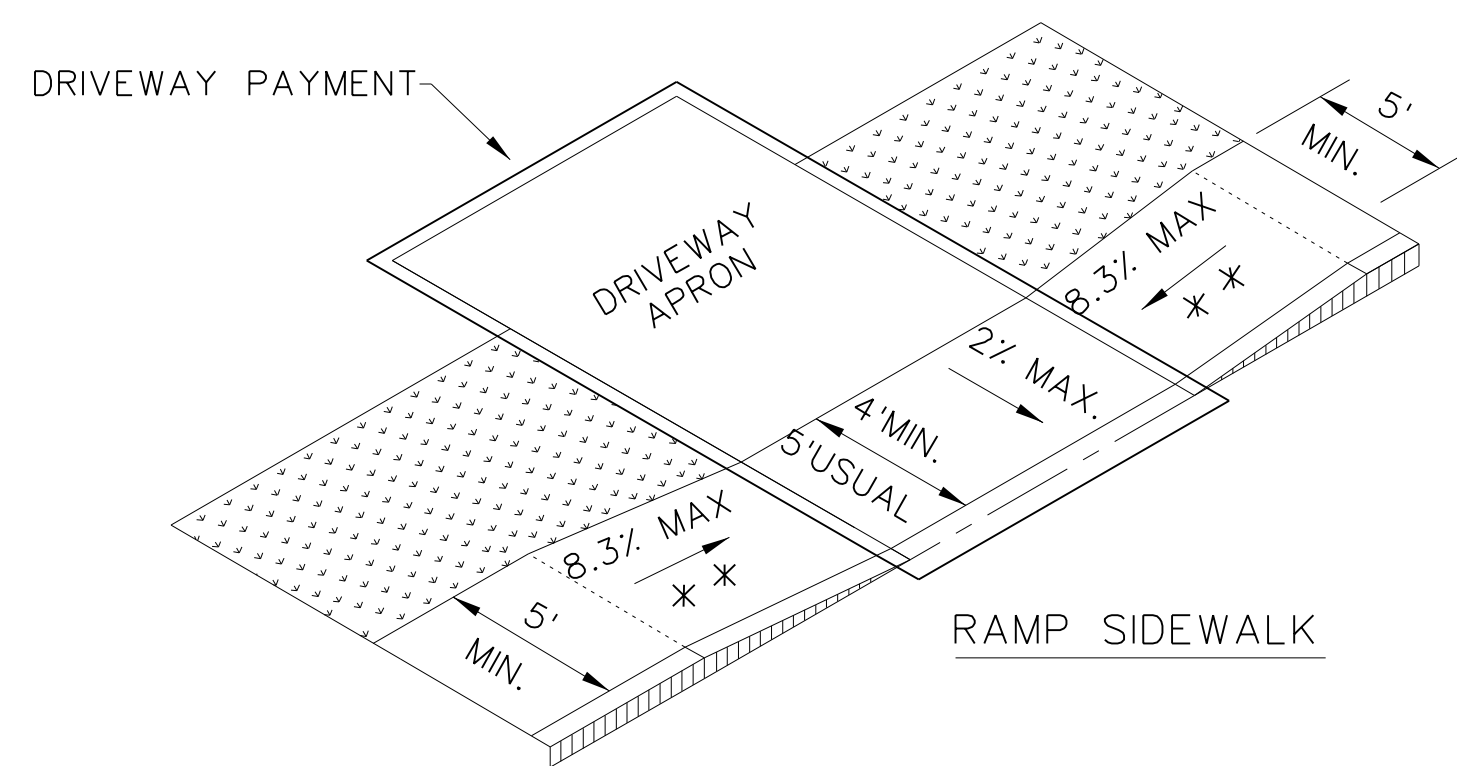
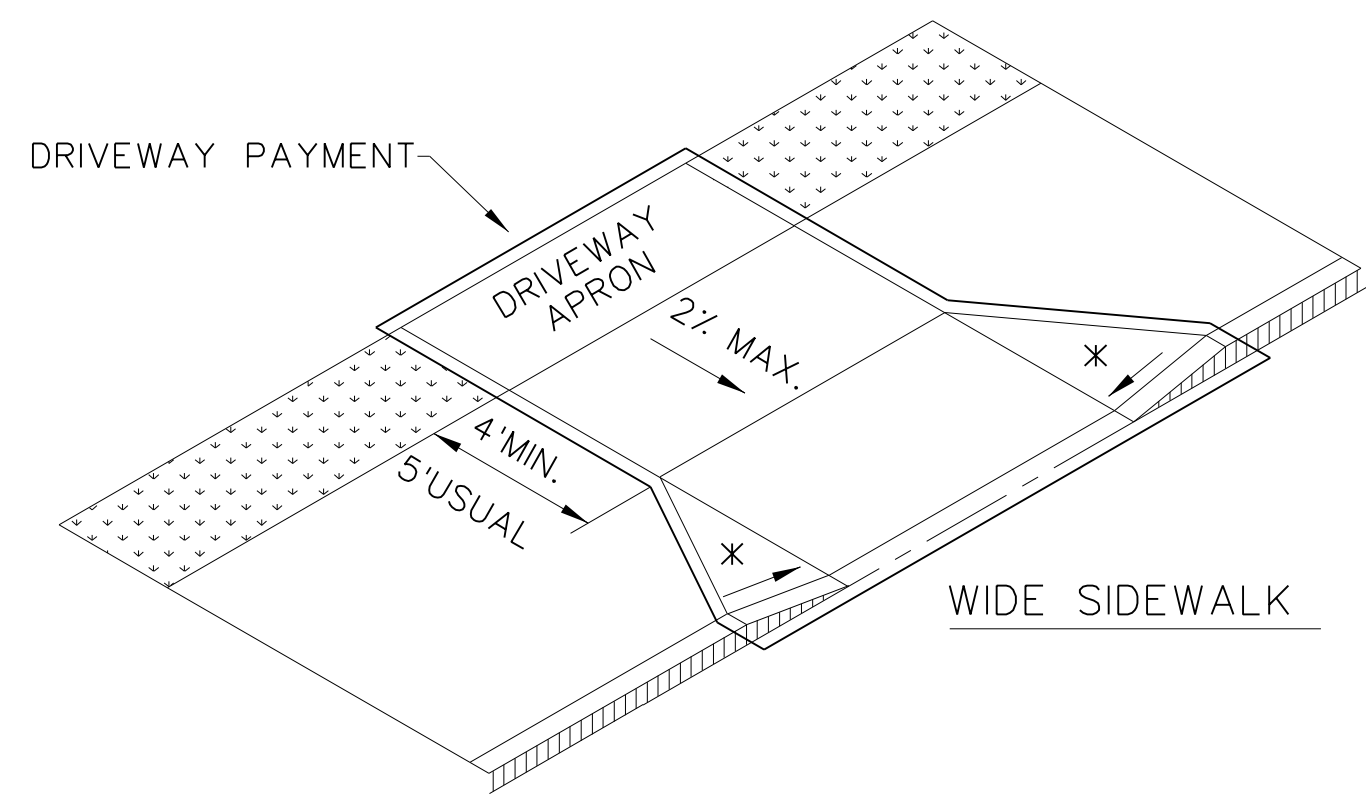
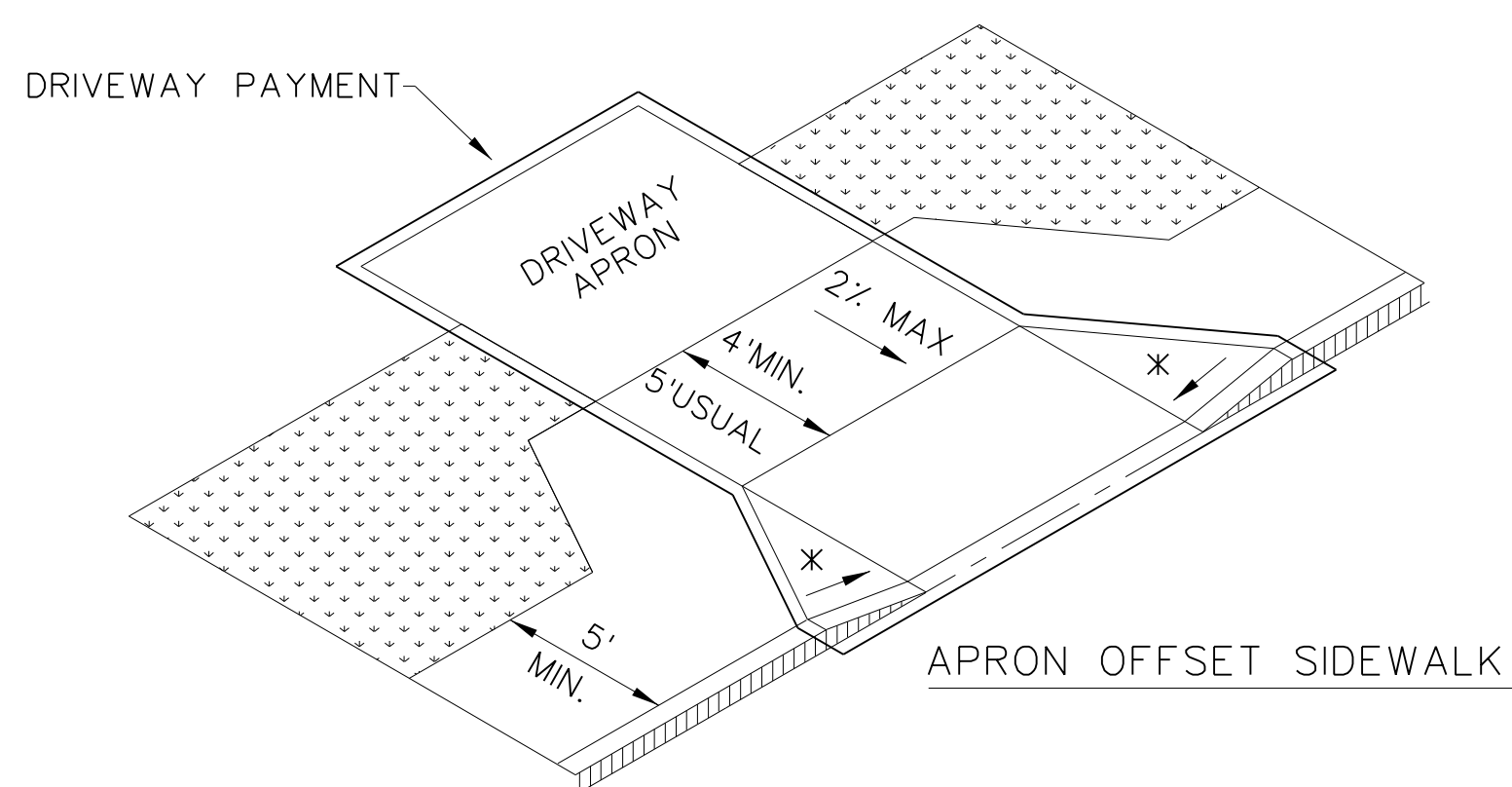
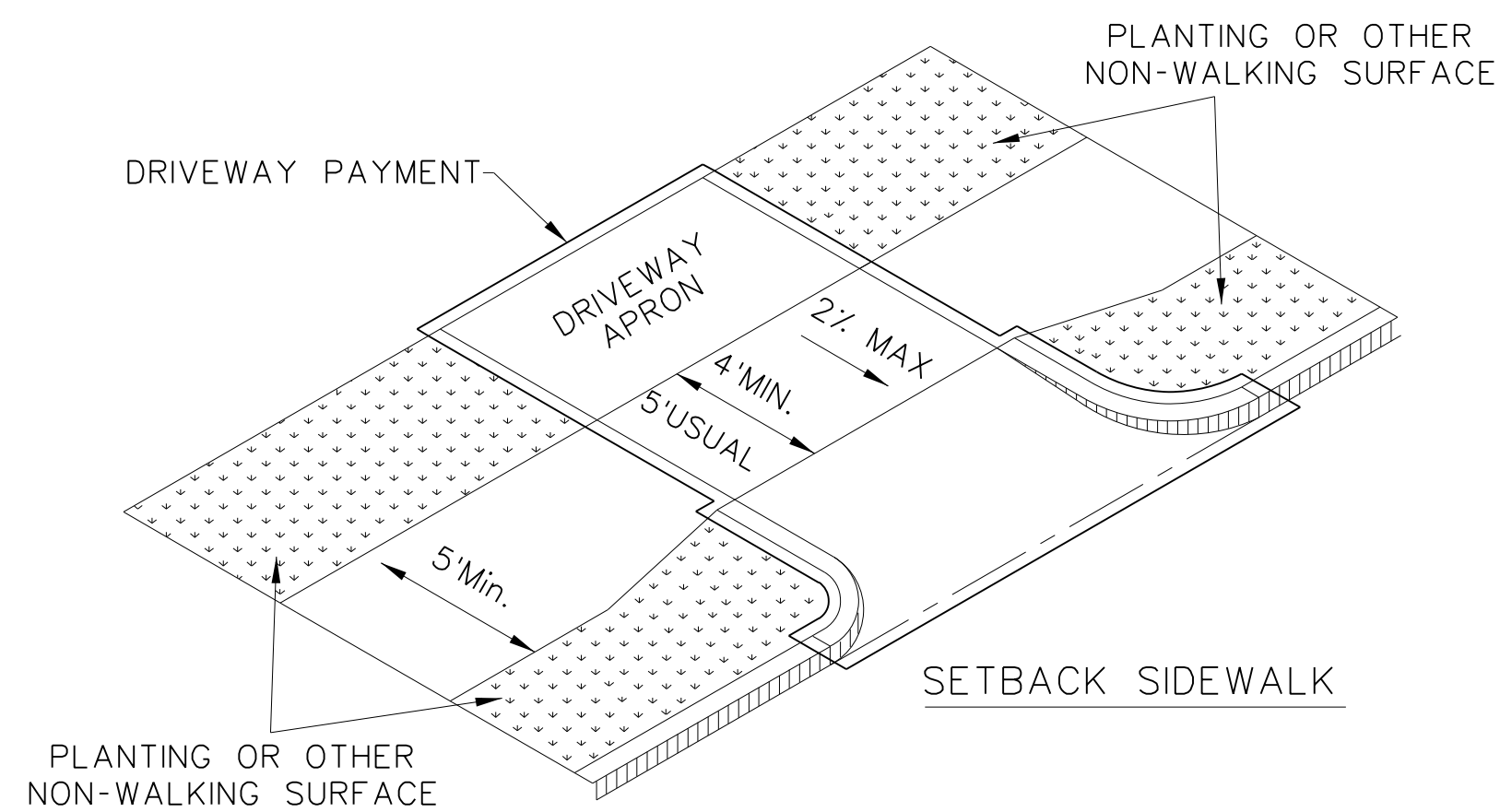
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY	SHEET NO.	
REVISD 08, 2005			42	
REVISD 06, 2012				
REVISD 01, 2018				

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DATE:  
FILE:

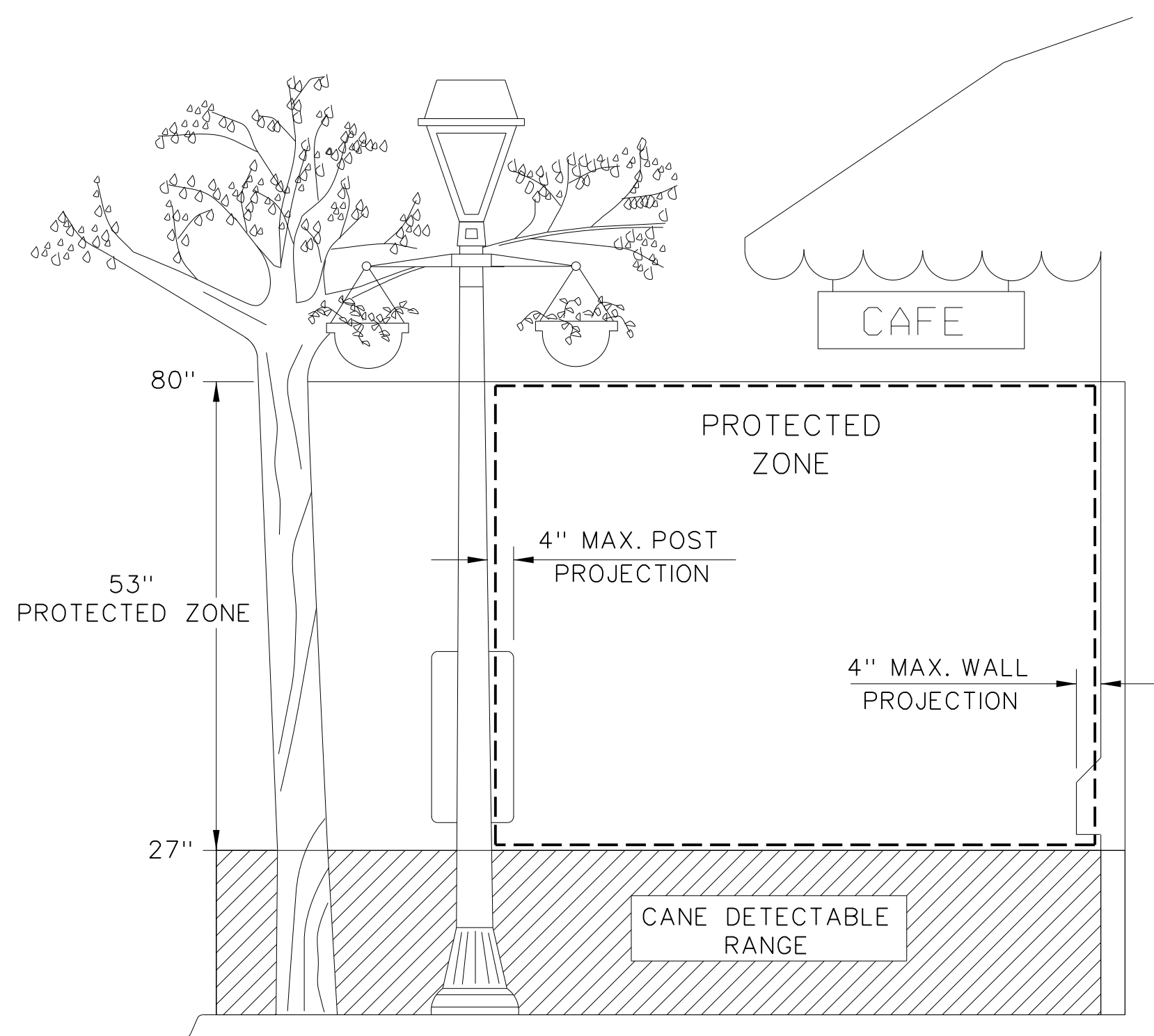
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

**SIDEWALK TREATMENT AT DRIVEWAYS**



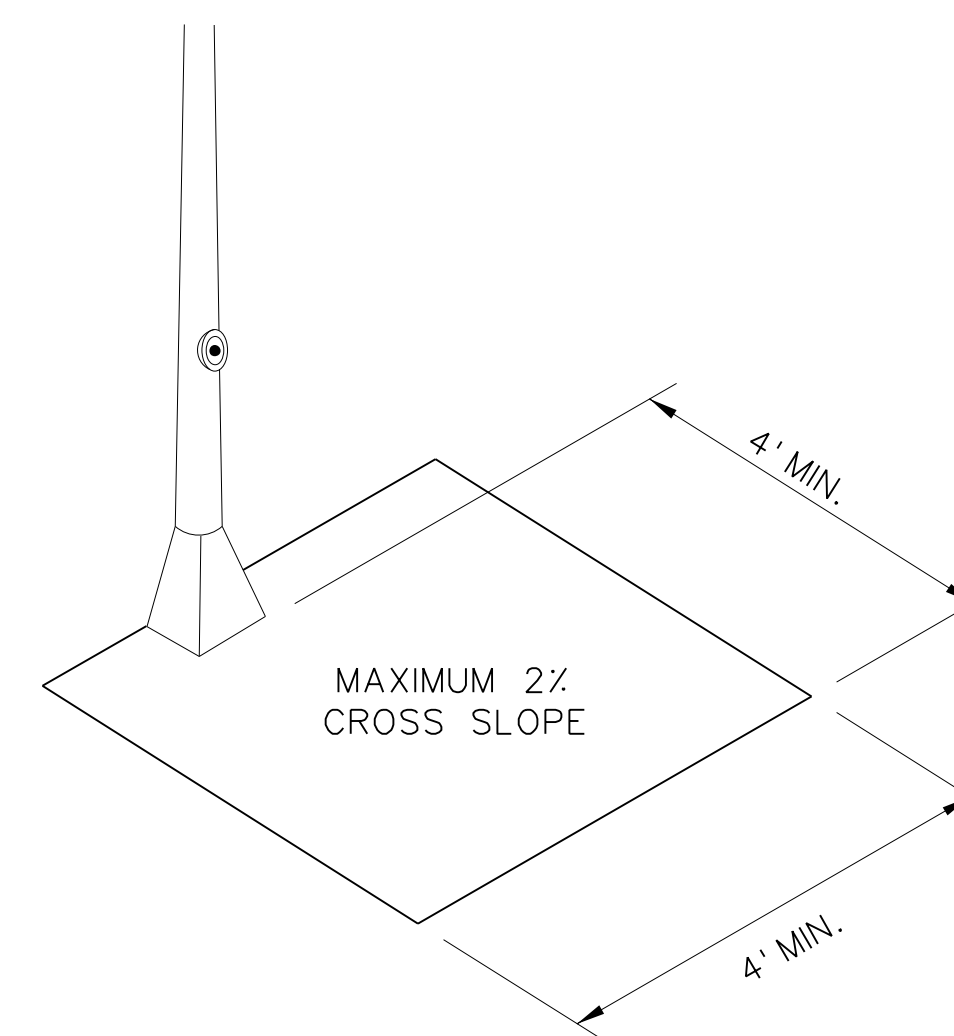
**NOTES:**

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

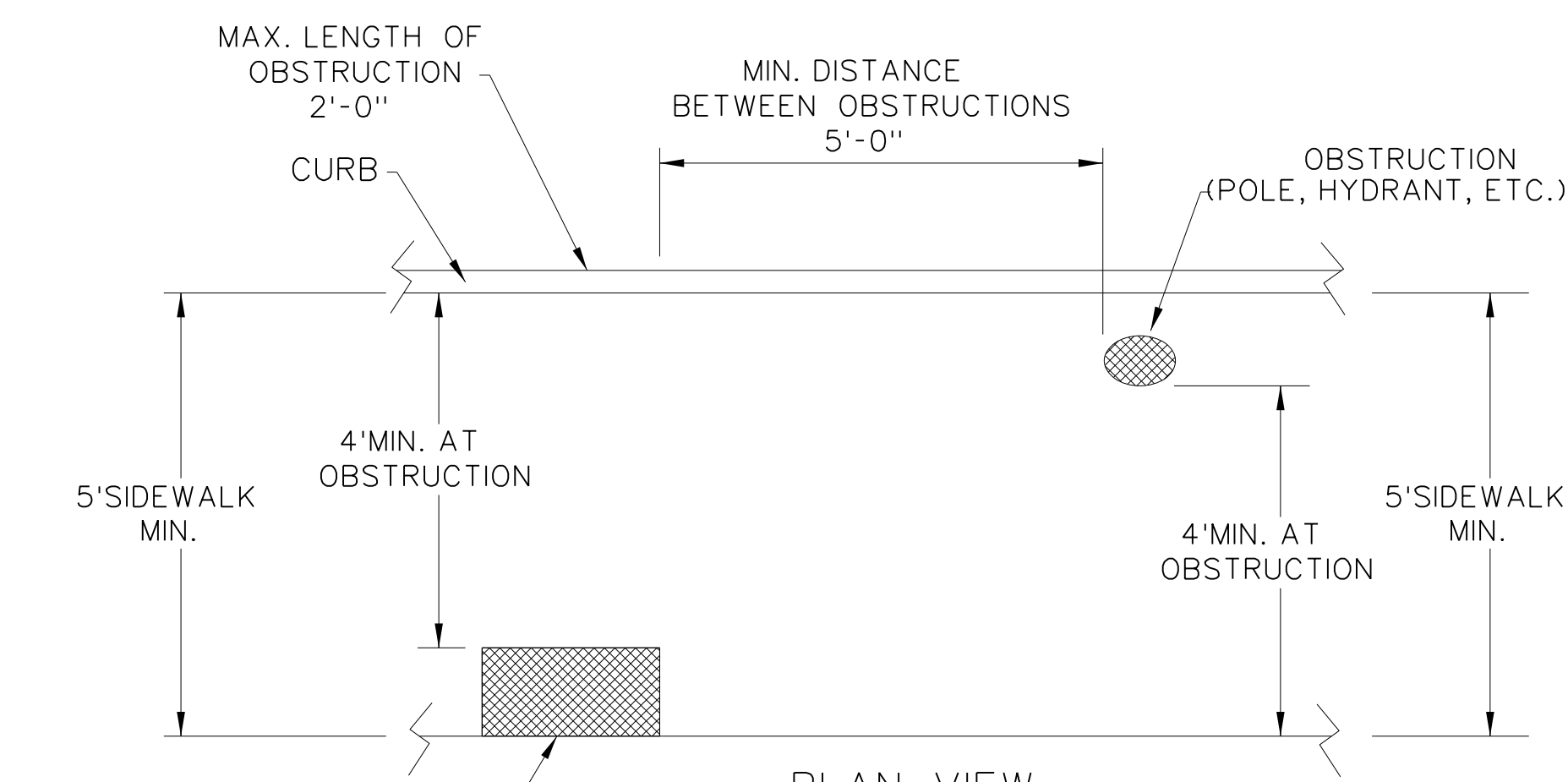


**PROTECTED ZONE**

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



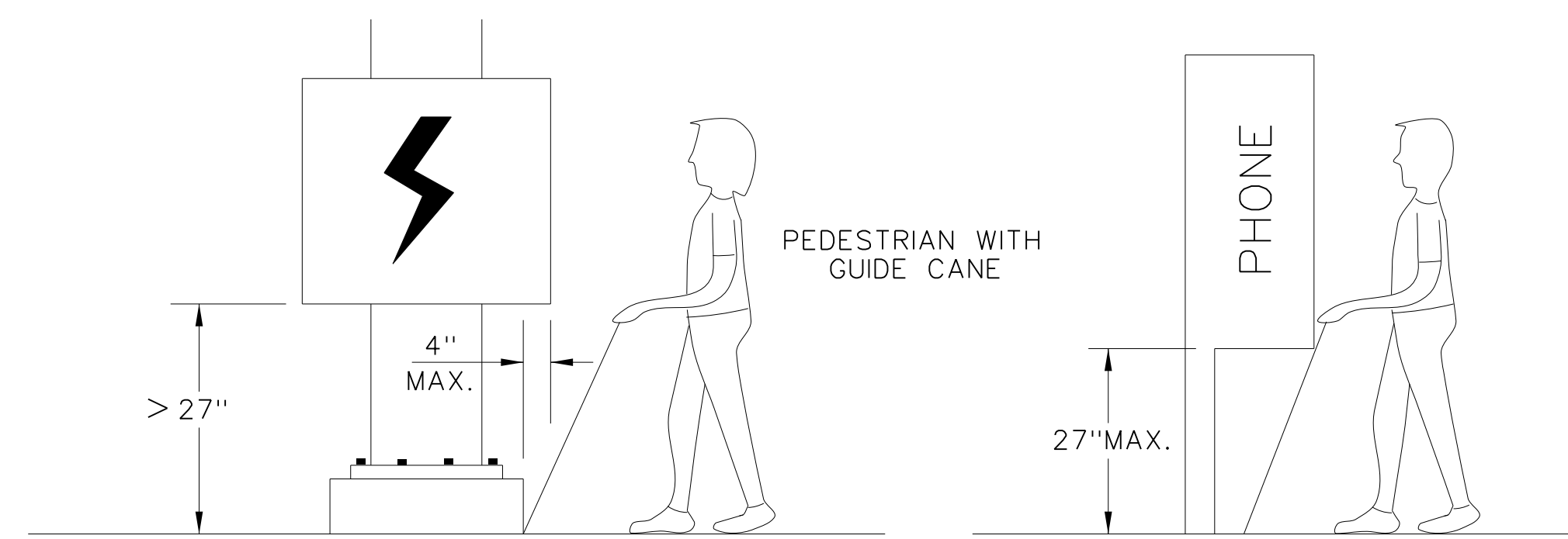
**CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON**



**PLAN VIEW**

**PLACEMENT OF STREET FIXTURES**

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



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

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

**DETECTION BARRIER FOR VERTICAL CLEARANCE <80"**

SHEET 3 OF 4



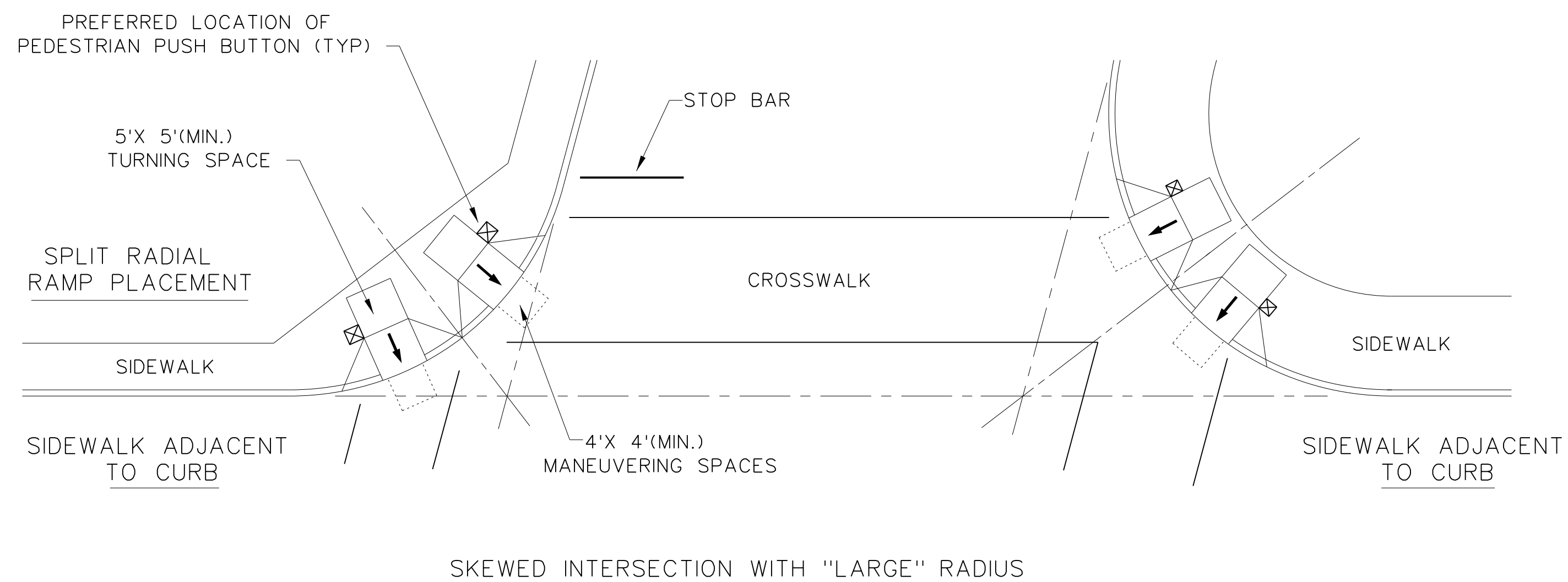
**PEDESTRIAN FACILITIES  
CURB RAMPS**

**PED-18**

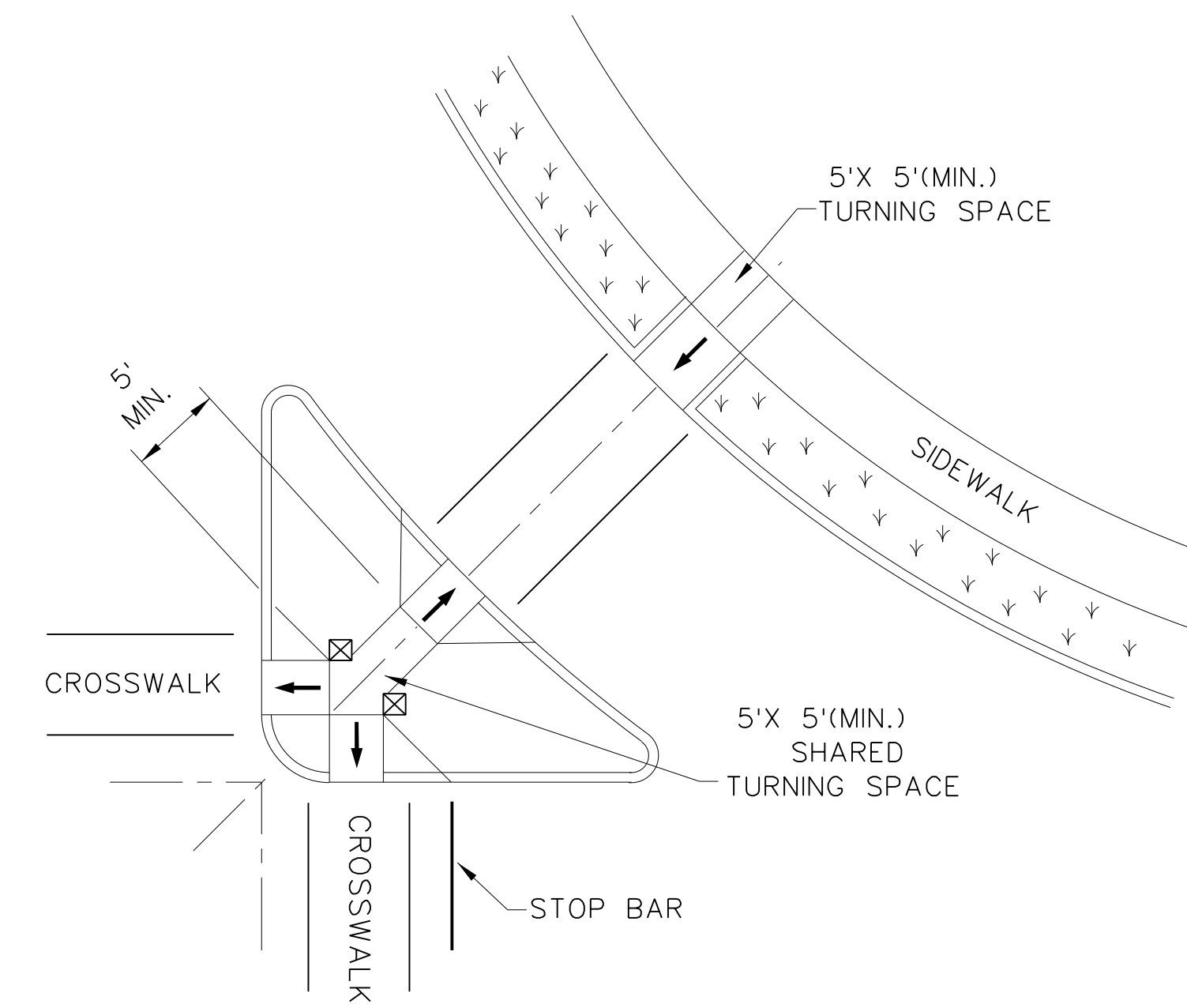
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08.2005	DIST	COUNTY	SHEET NO.	
REVISED 06.2012			43	
REVISED 01.2018				

DATE:  
FILE:

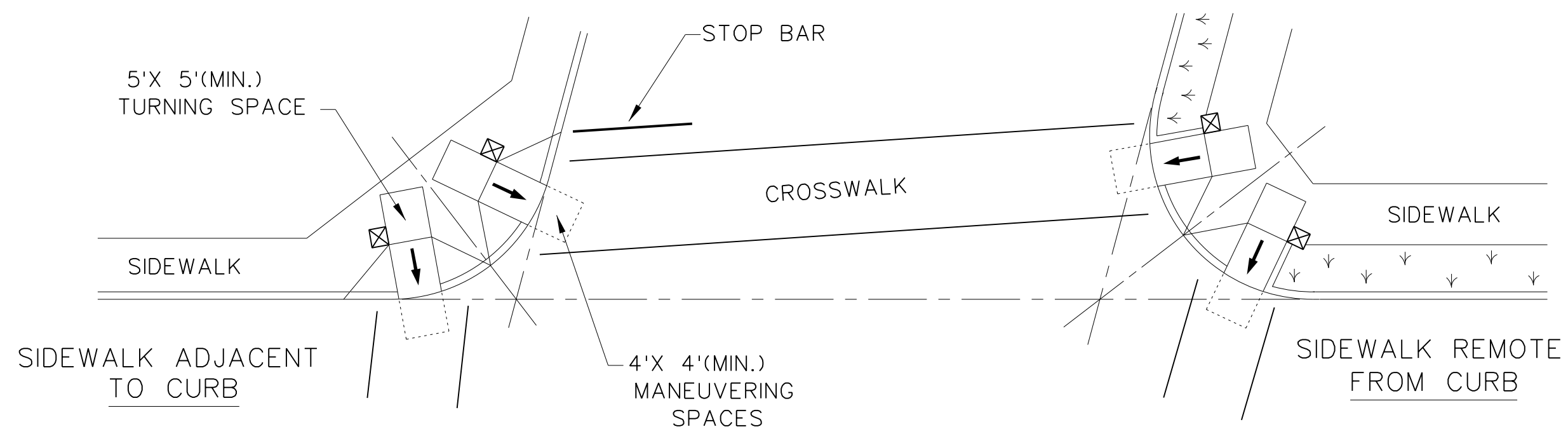
TYPICAL CROSSING LAYOUTS  
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



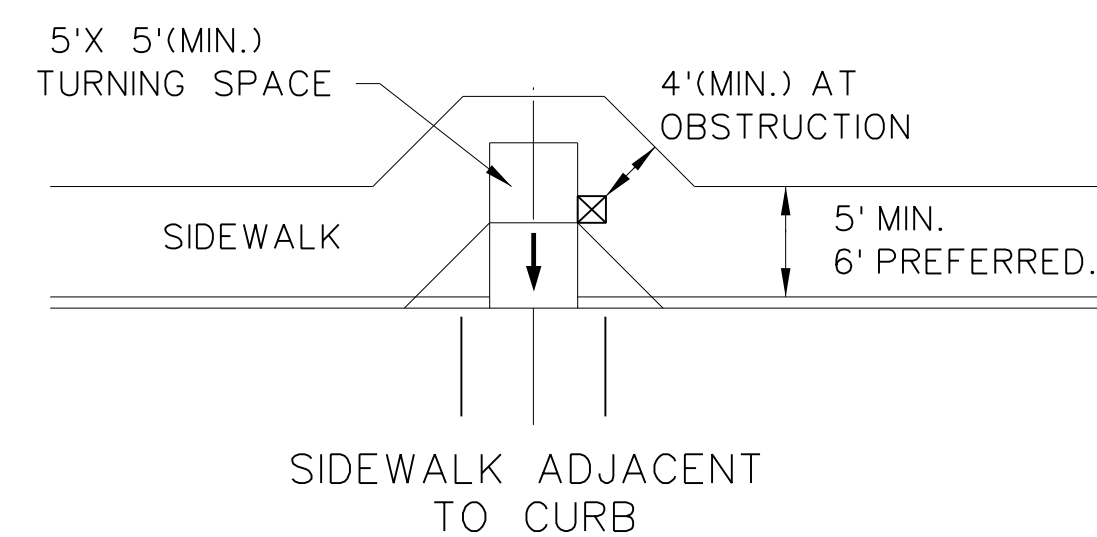
SKewed INTERSECTION WITH "LARGE" RADIUS



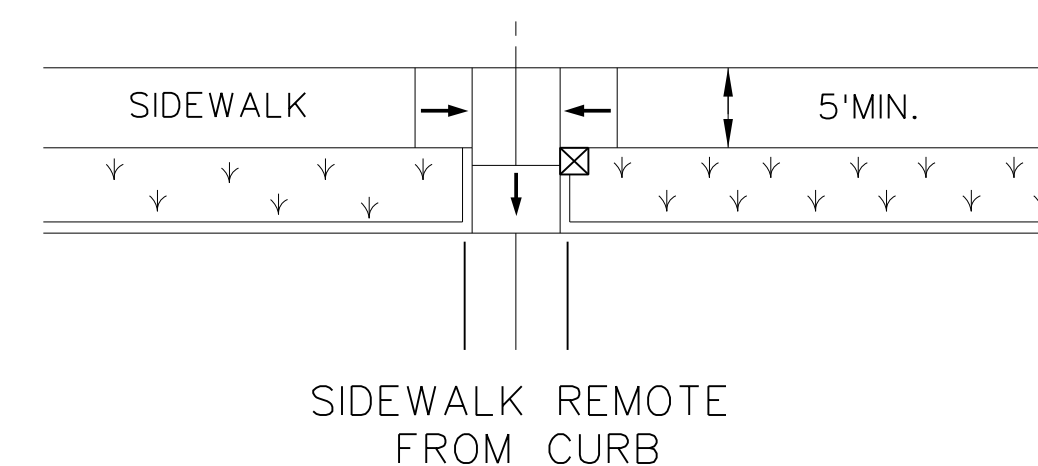
AT INTERSECTION  
W/FREE RIGHT TURN & ISLAND



SKewed INTERSECTION WITH "SMALL" RADIUS

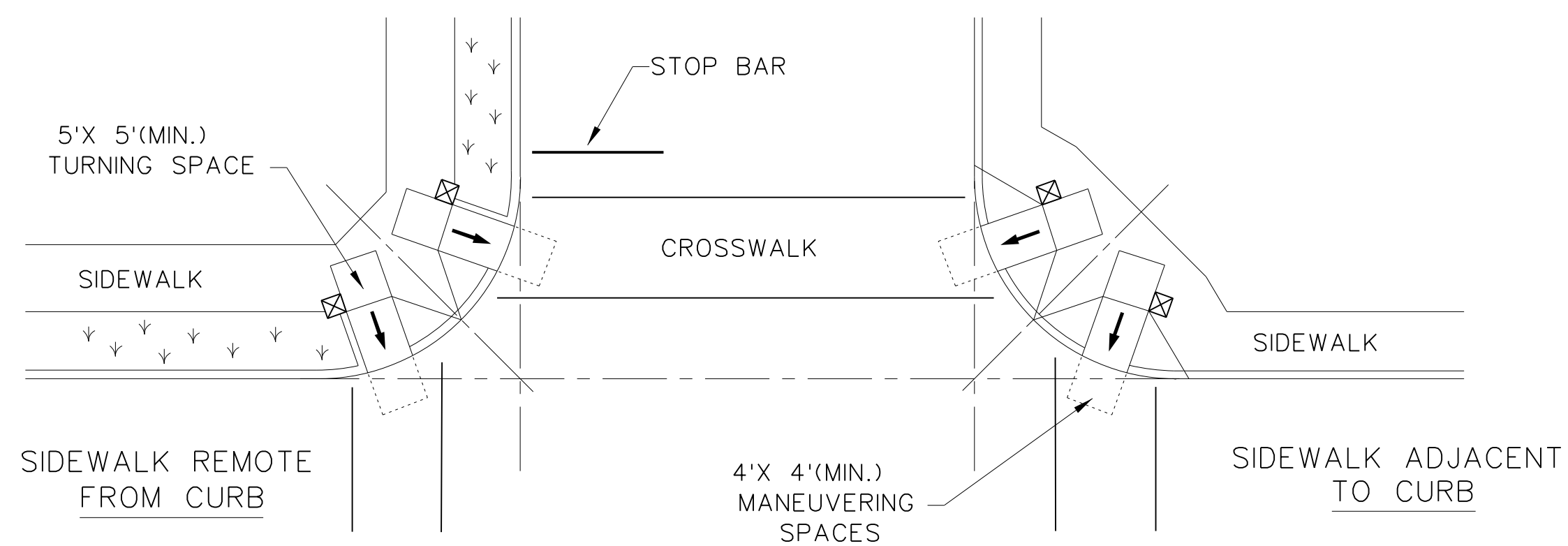


SIDEWALK ADJACENT TO CURB



SIDEWALK REMOTE FROM CURB

MID-BLOCK PLACEMENT  
PERPENDICULAR RAMPs



NORMAL INTERSECTION WITH "SMALL" RADIUS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

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DATE:  
FILE:

SHEET 4 OF 4



PEDESTRIAN FACILITIES  
CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
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REVISIONS				
REVISED 08, 2005				
REVISED 06, 2012				
REVISED 01, 2018	DIST	COUNTY	SHEET NO.	
			44	

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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)

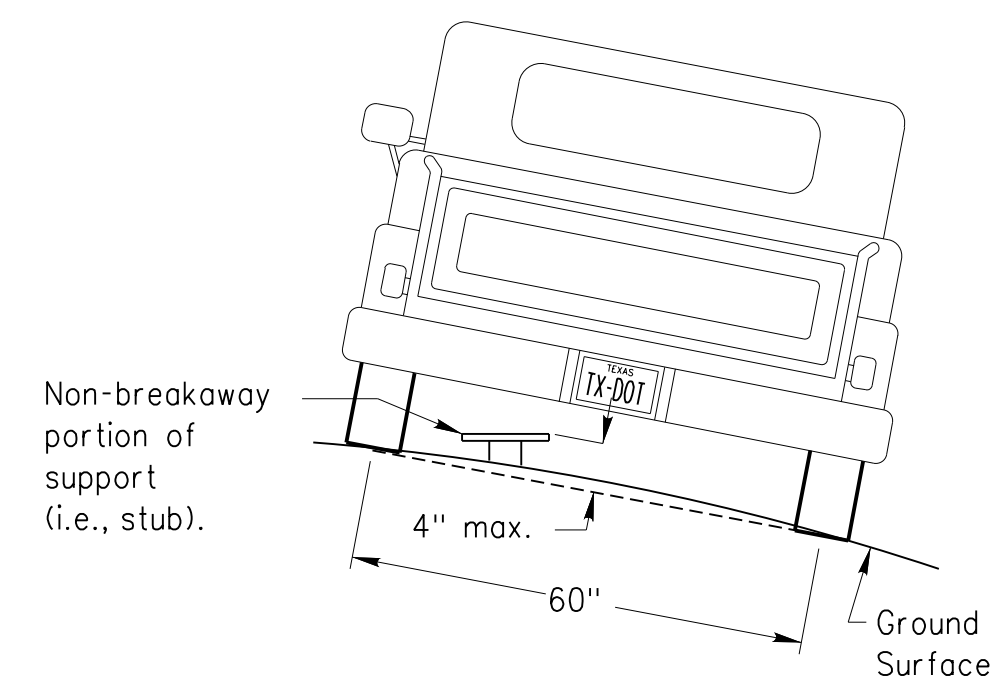
Anchor Type

- 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))

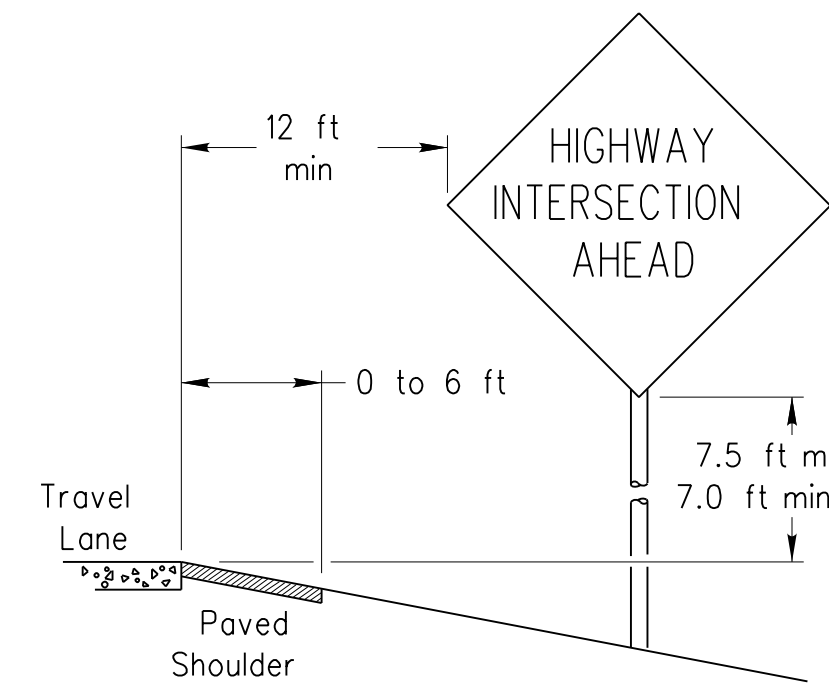
## REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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 wheelpaths).

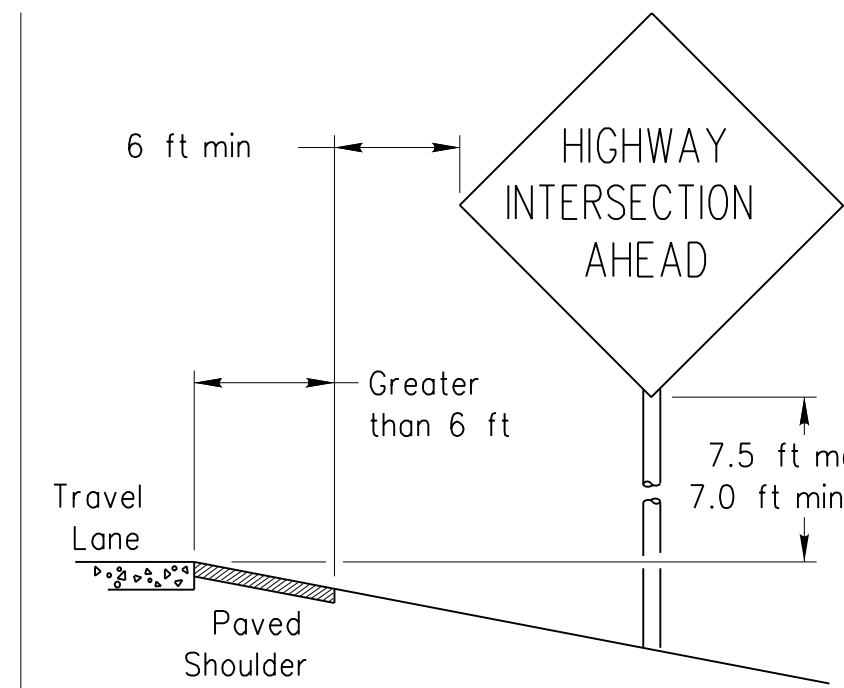
## SIGN LOCATION

### PAVED SHOULDERS



### LESS THAN 6 FT. WIDE

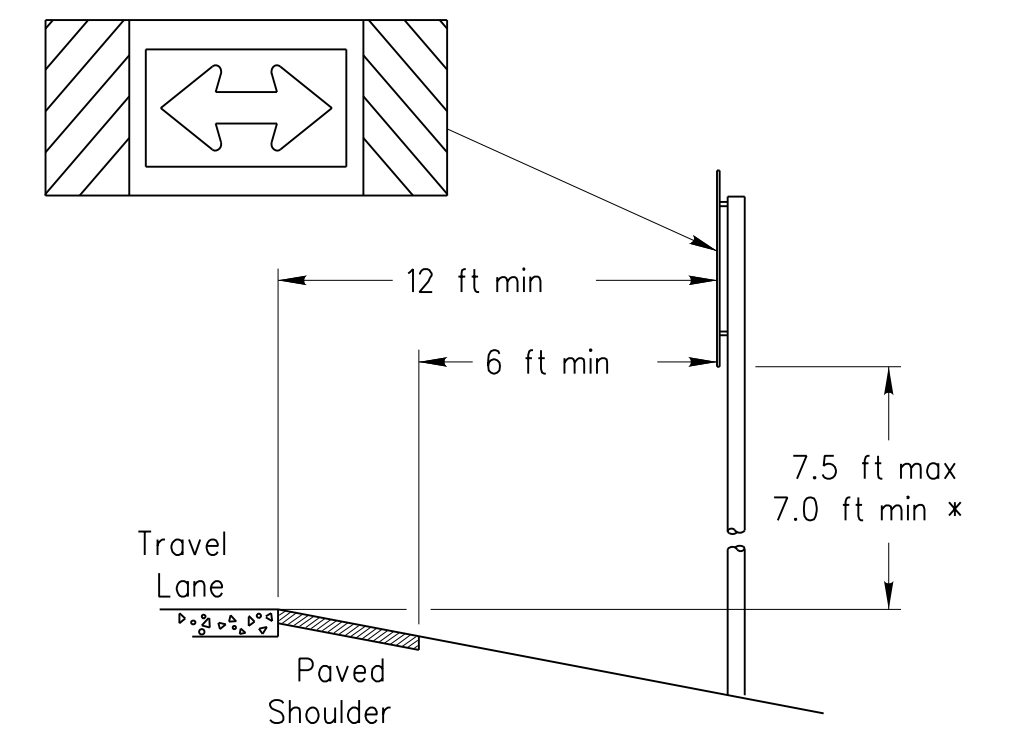
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



### GREATER THAN 6 FT. WIDE

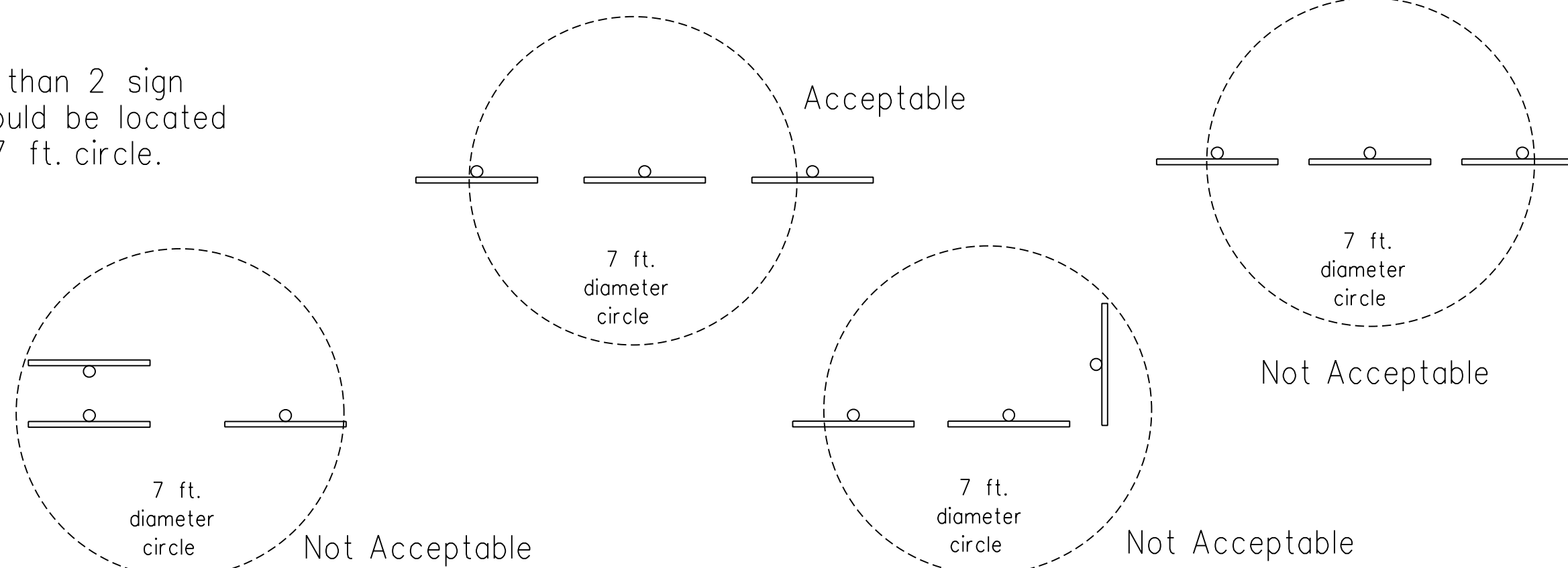
When the shoulder is greater than 6 ft. in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

### T-INTERSECTION

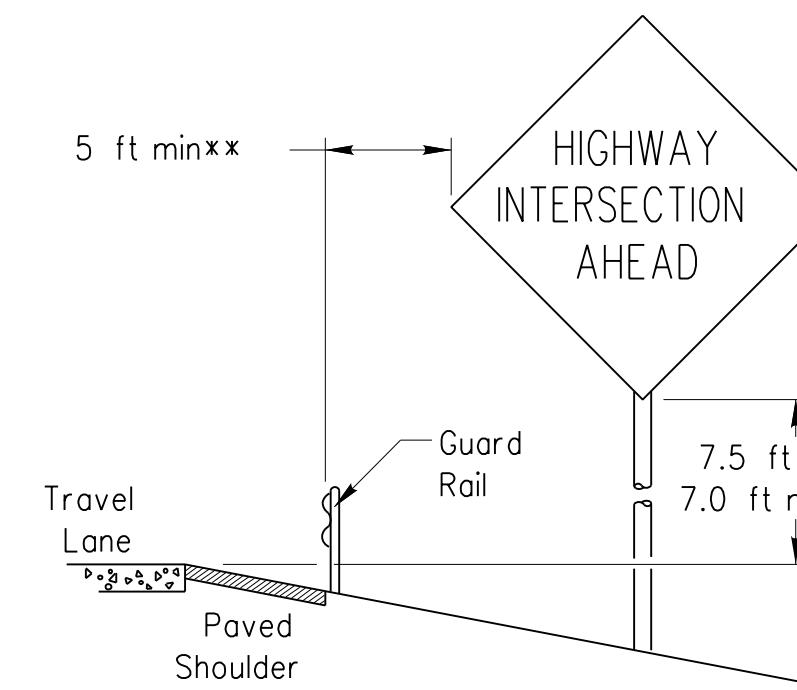


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

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

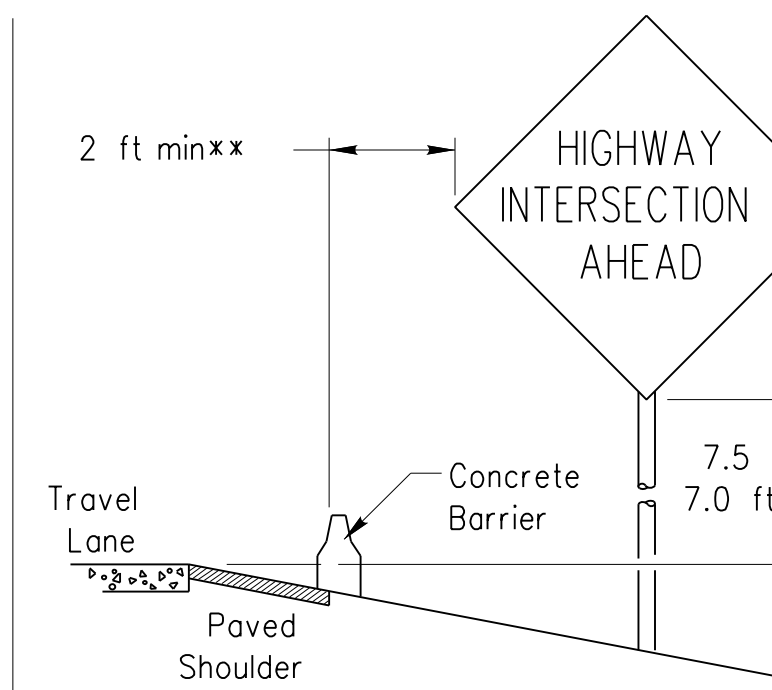


### BEHIND BARRIER

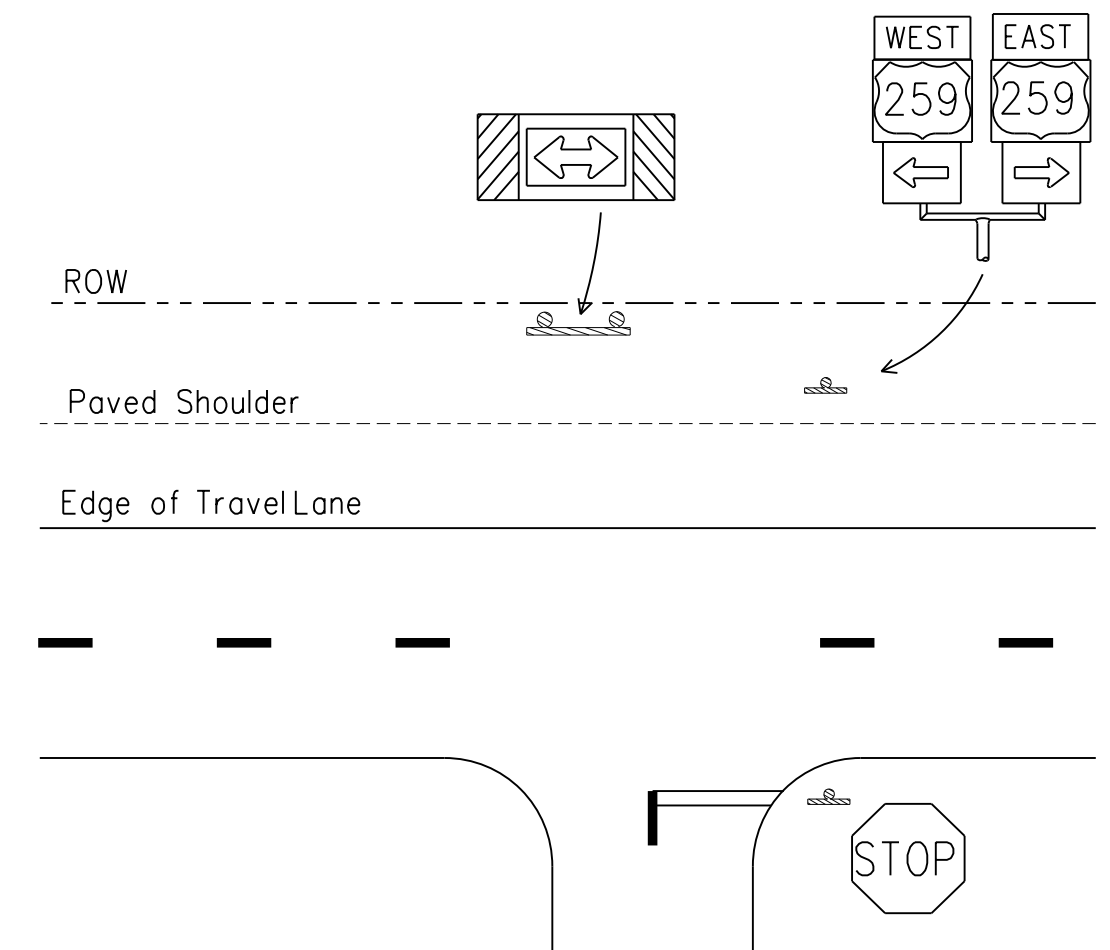


### BEHIND GUARDRAIL

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



### BEHIND CONCRETE BARRIER



\* Signs shall be mounted using the following condition that results in the greatest sign elevation:

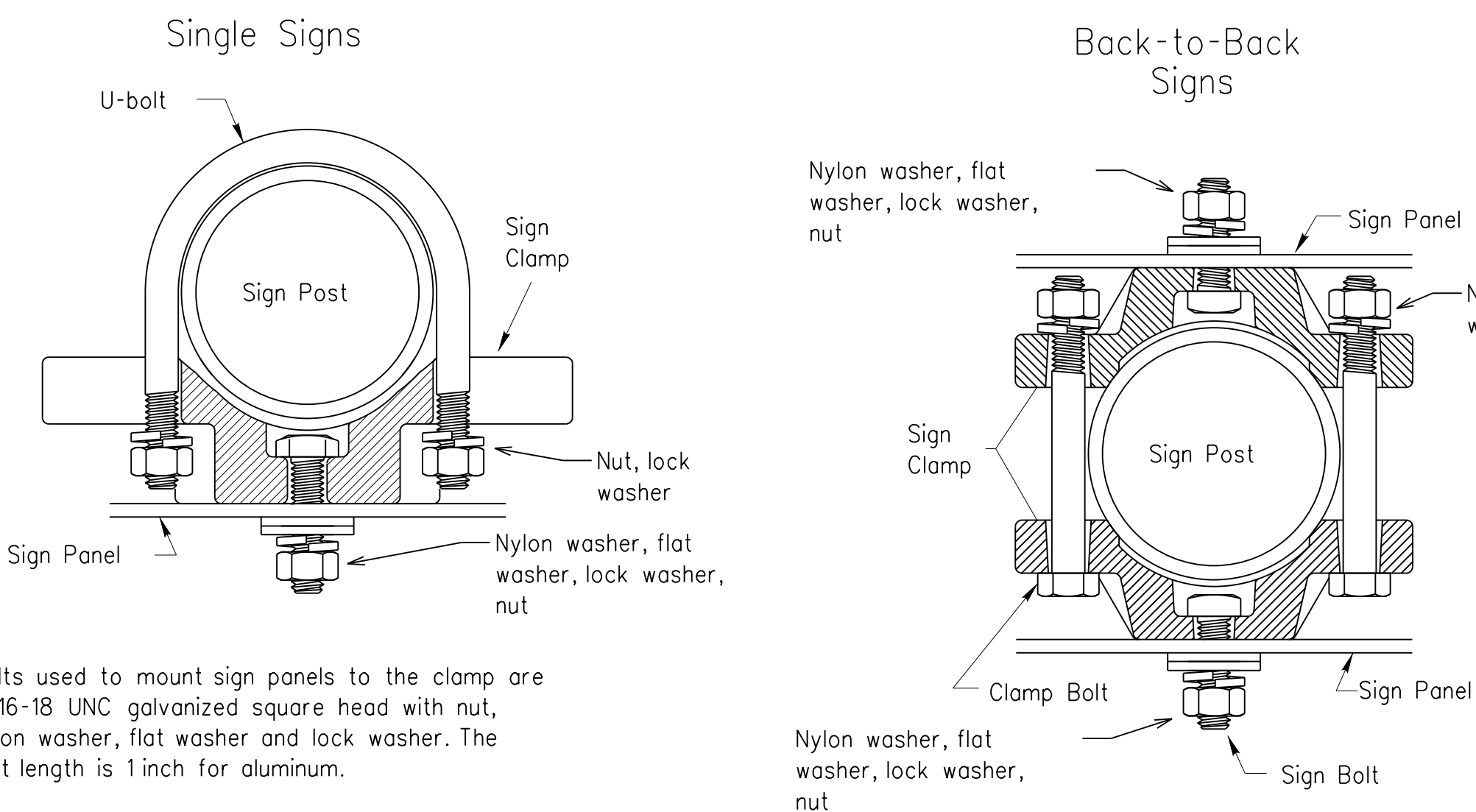
- (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
- (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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



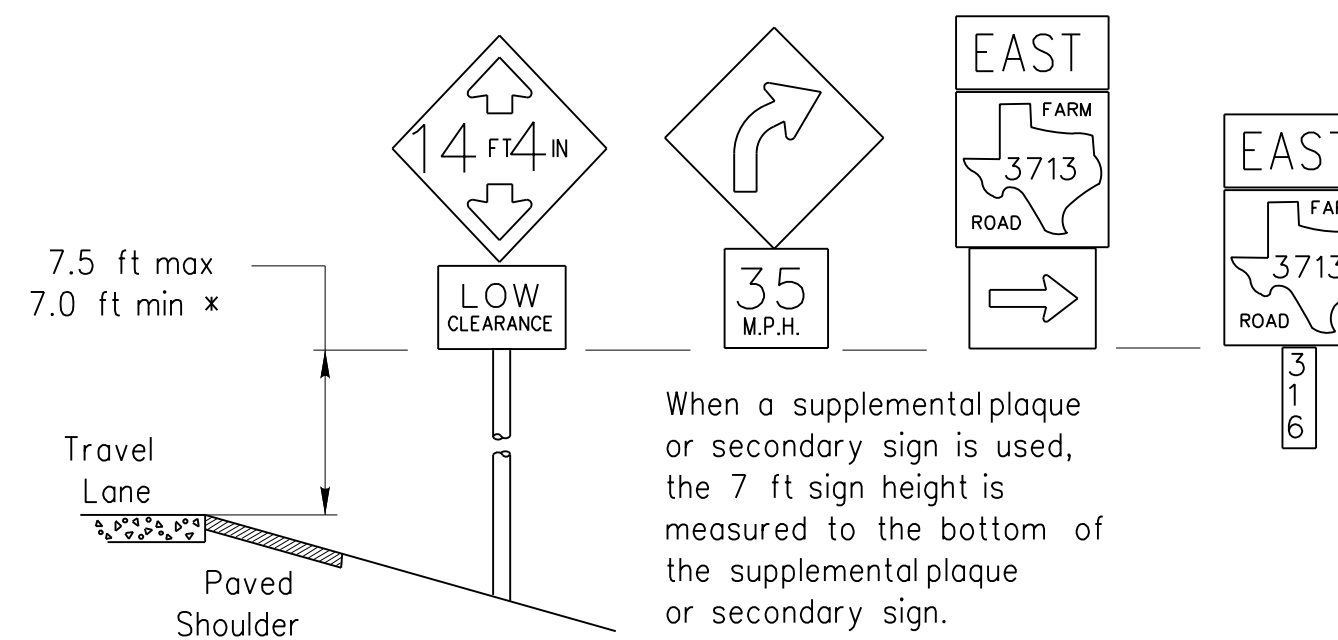
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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

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

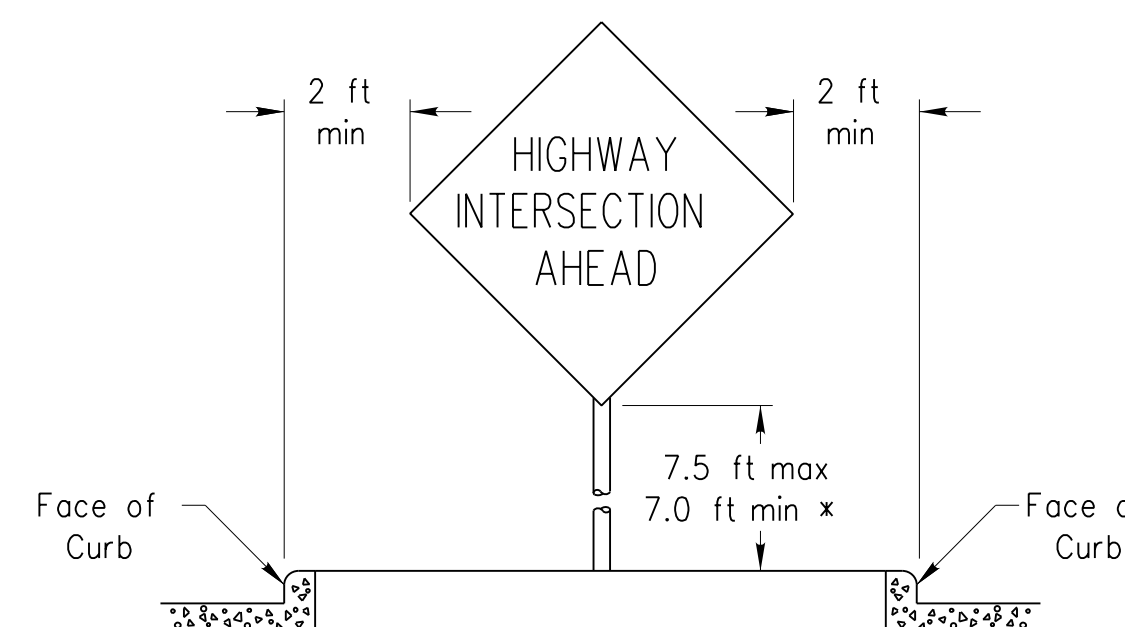
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

### SIGNS WITH PLAQUES



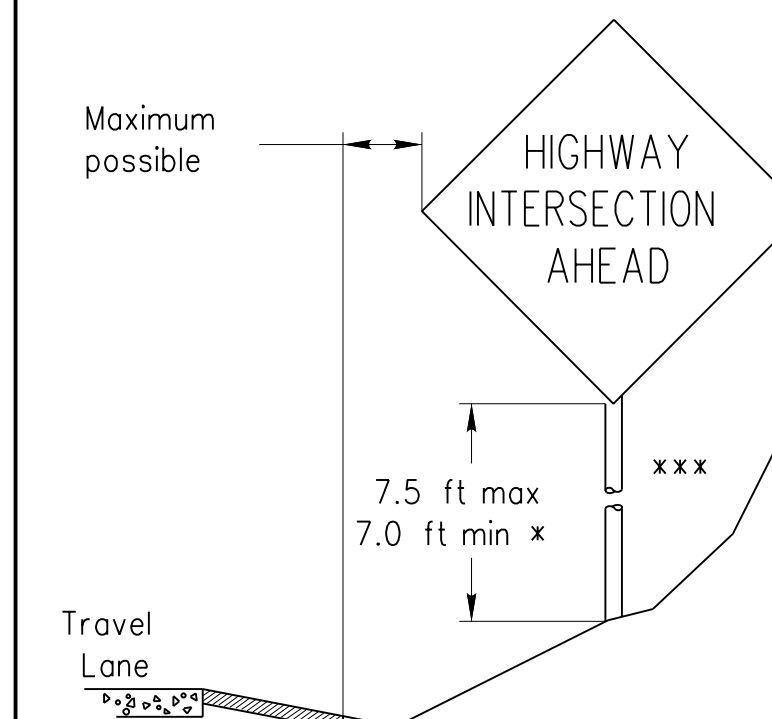
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

### CURB & GUTTER OR RAISED ISLAND



### RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



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

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

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



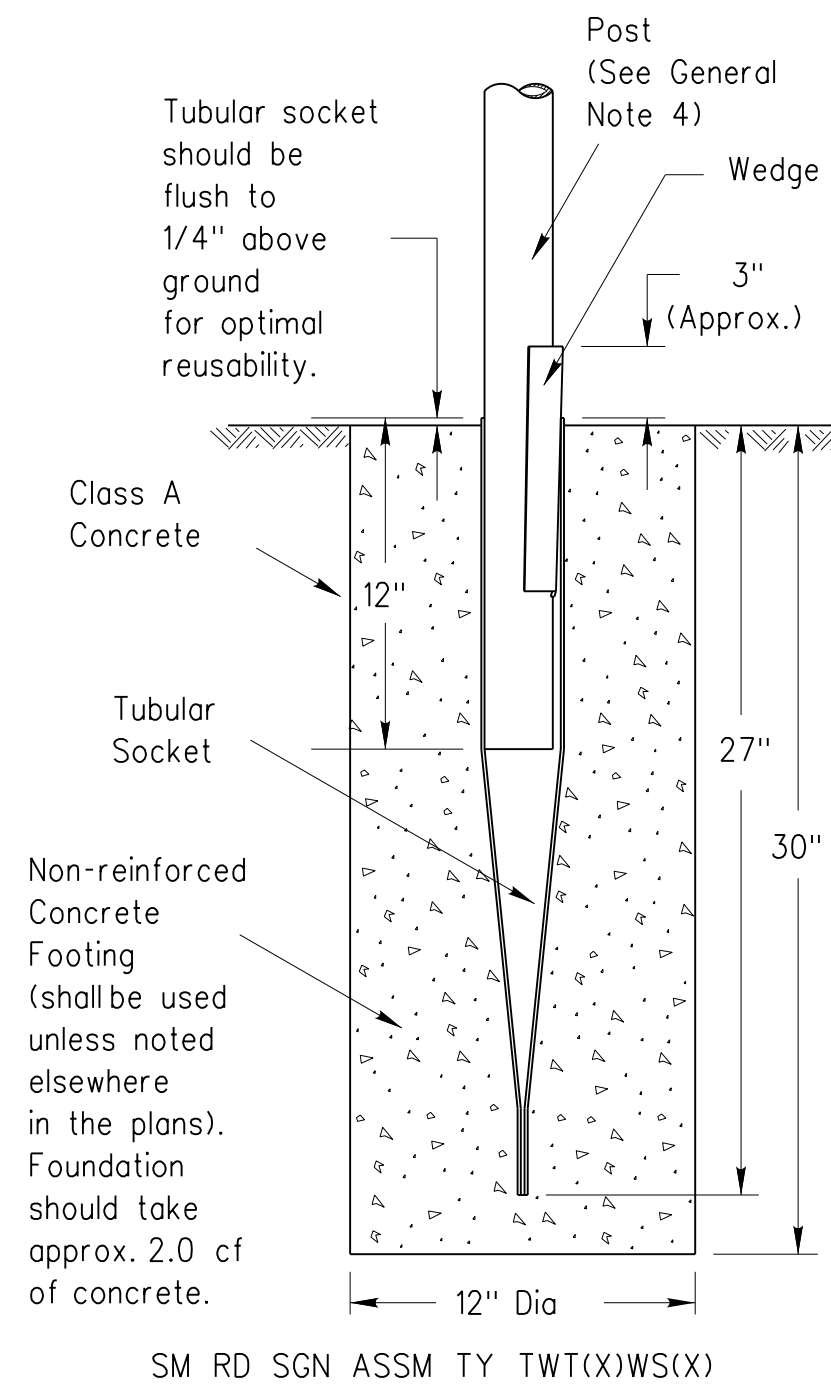
## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

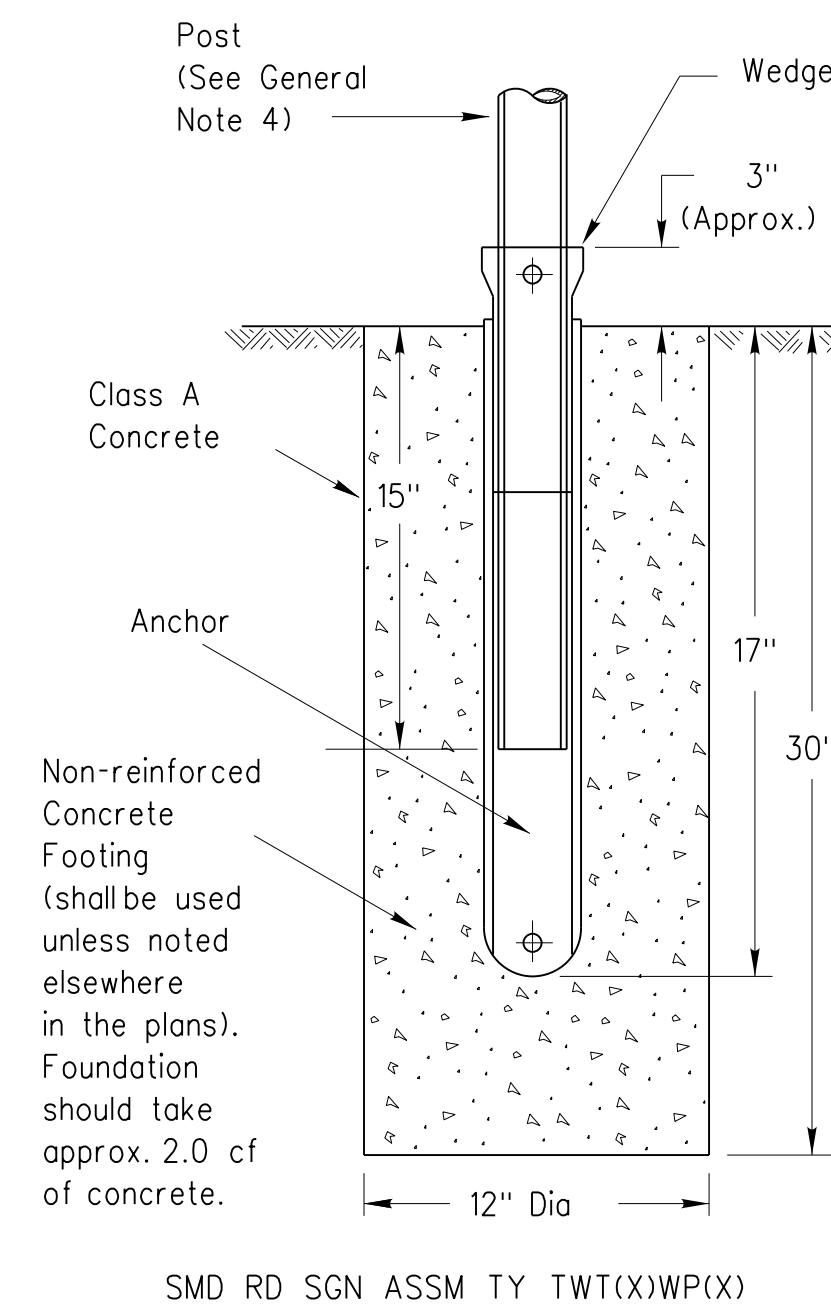
© TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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				HIGHWAY
		DIST	COUNTY	SHEET NO.
				45

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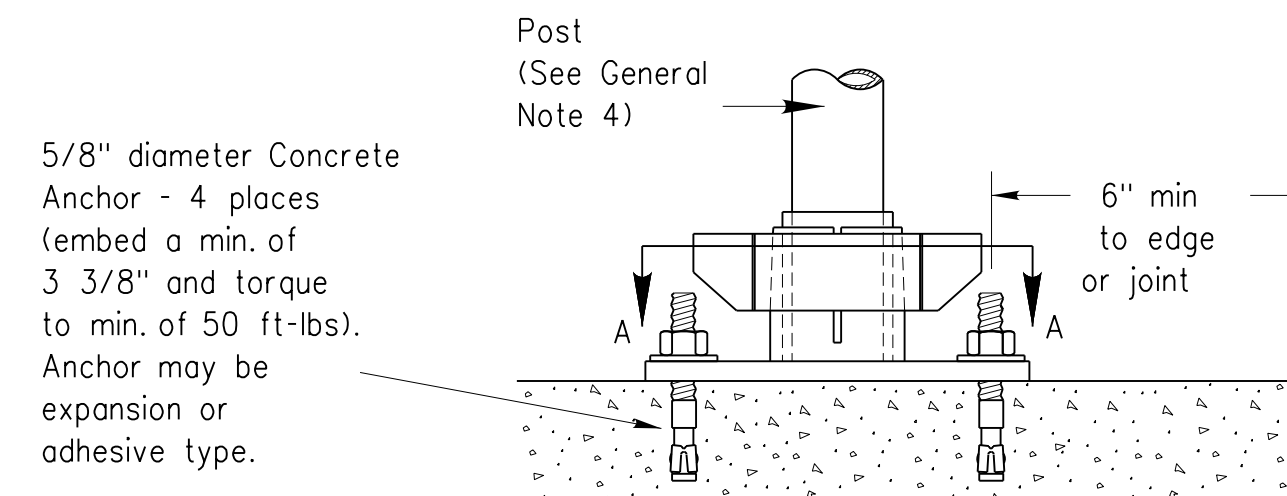
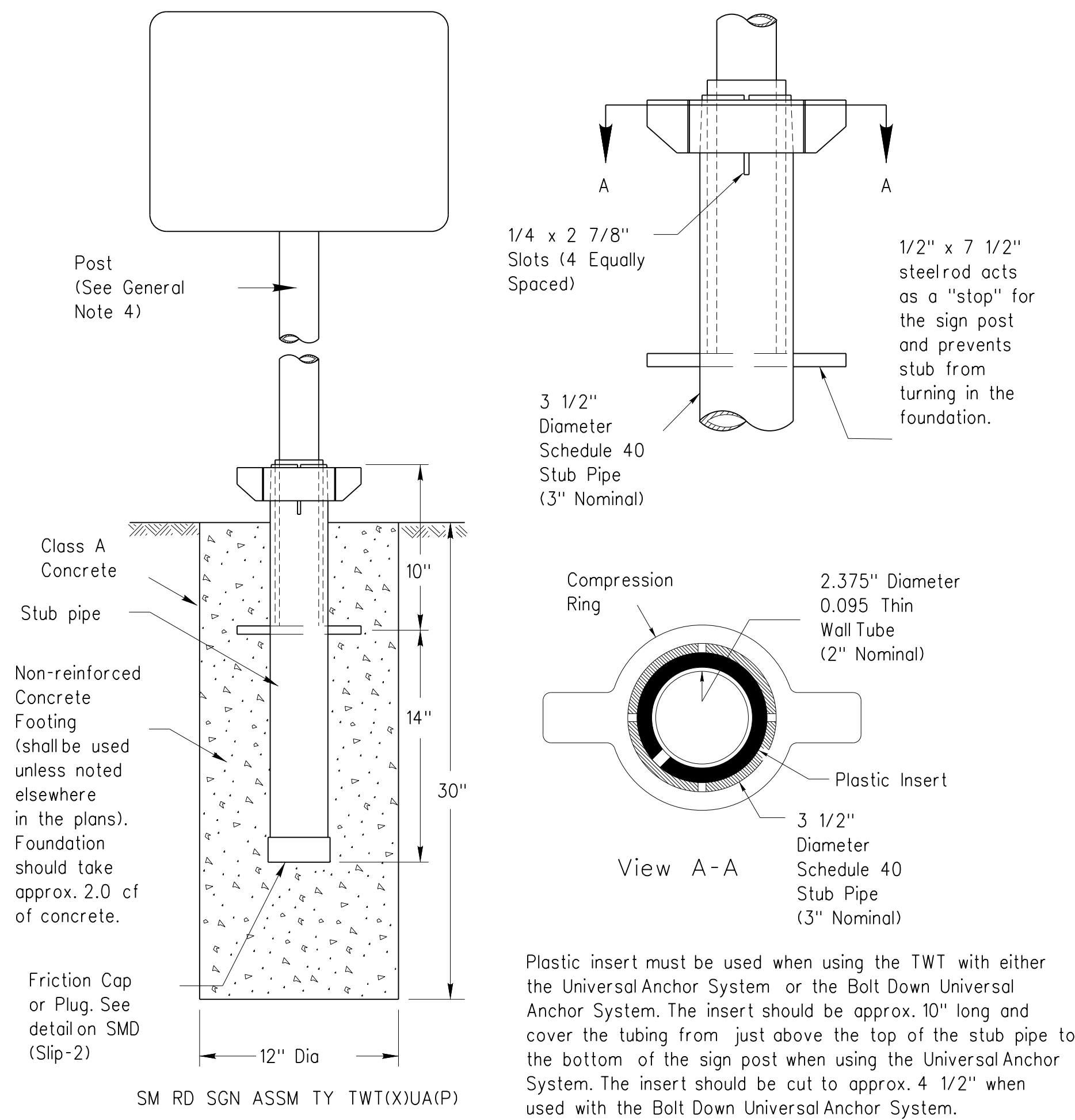
### Wedge Anchor Steel System



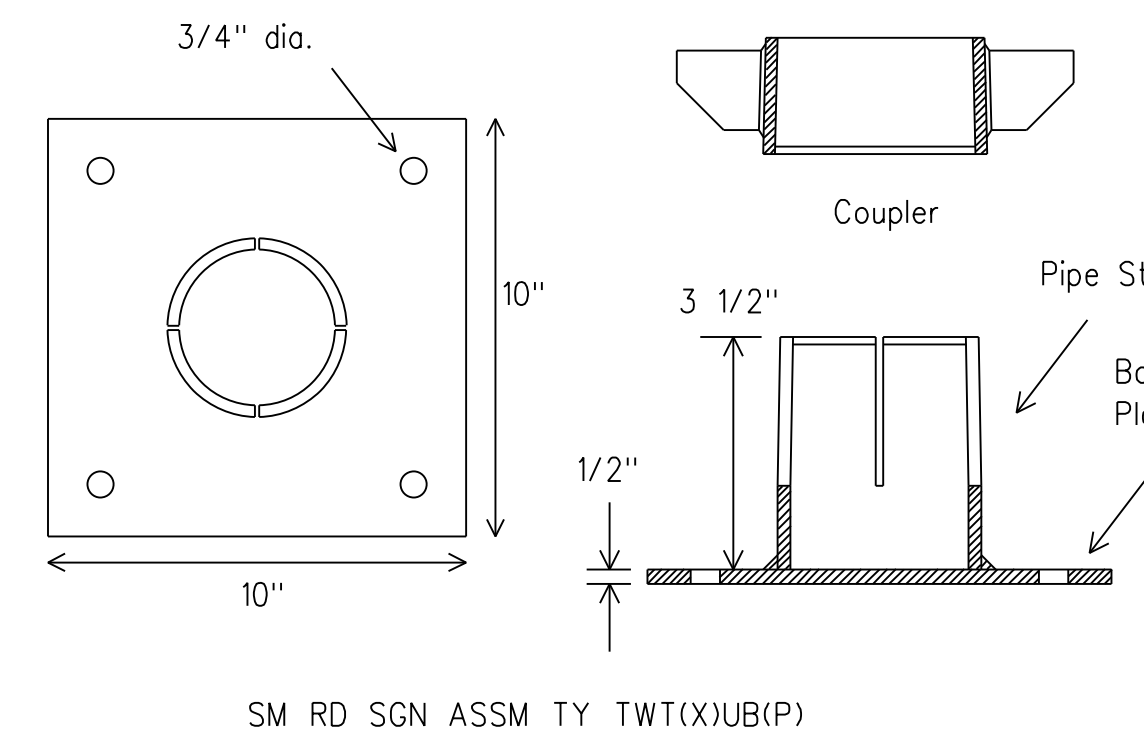
### Wedge Anchor High Density Polyethylene (HDPE) System



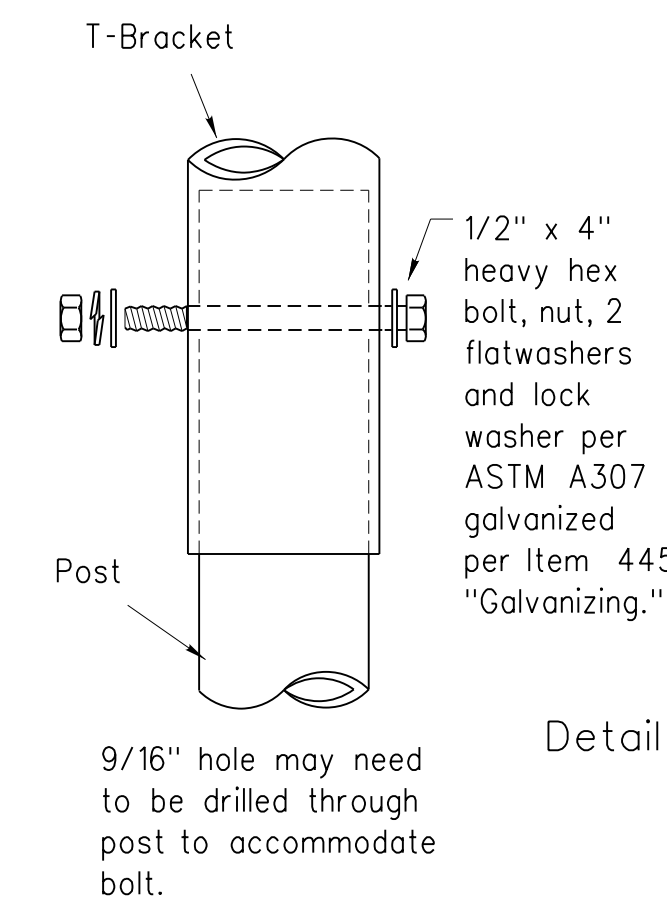
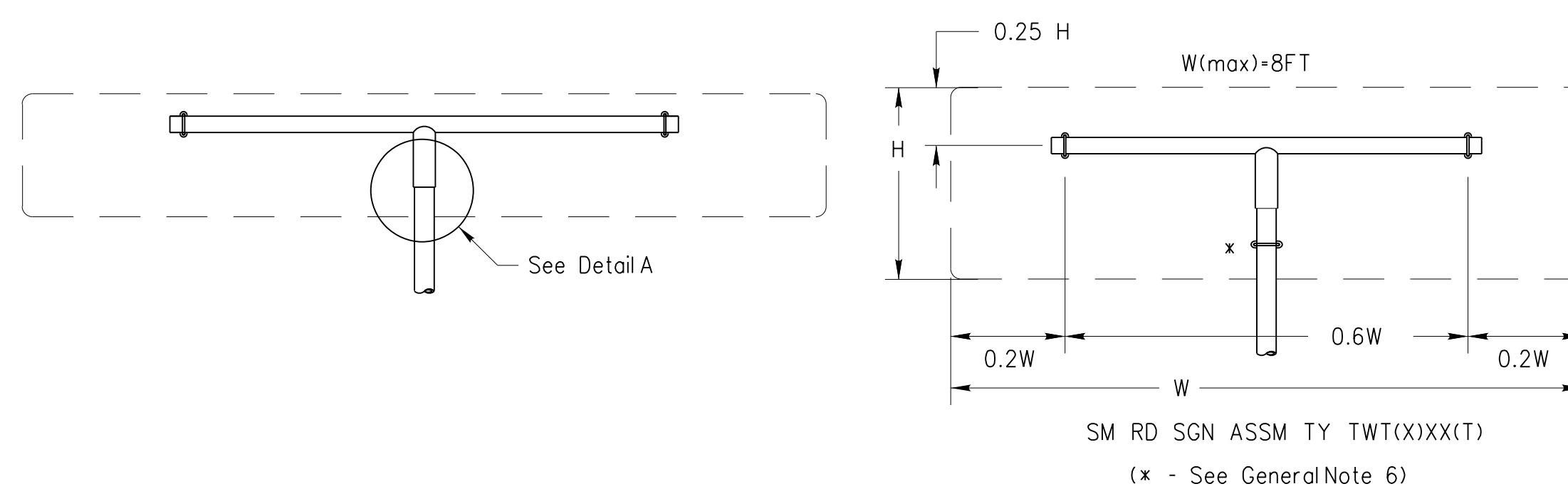
### Universal Anchor System with Thin-Walled Tubing Post



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, "Epoxy and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



### Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



#### NOTE

The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

#### GENERAL NOTES:

- 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.
- 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.
- 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](http://www.txdot.gov/business/producer_list.htm)
- 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 pre-coated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
  - Sign blanks shall be the sizes and shapes shown on the plans.
  - Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
  - Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
  - 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

- 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.
- 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.
- Insert tubular socket into concrete until top of socket is approximately 1/4" above the concrete footing.
- Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer.
- Attach the sign to the sign post.
- Insert the sign post into socket and align sign face with roadway.
- Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

#### UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

- 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.
- Insert base post in hole to depths shown and backfill hole with concrete.
- 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.
- Attach the sign to the sign post.
- Install plastic insert around bottom of post.
- Insert sign post into base post. Lower until the post comes to rest on steel rod.
- Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
- Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

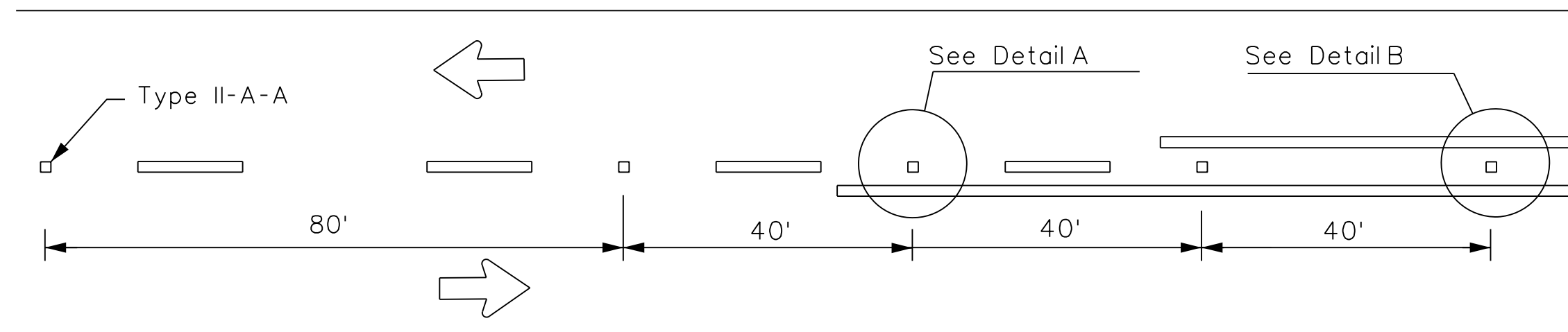


## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST SMD(TWT)-08

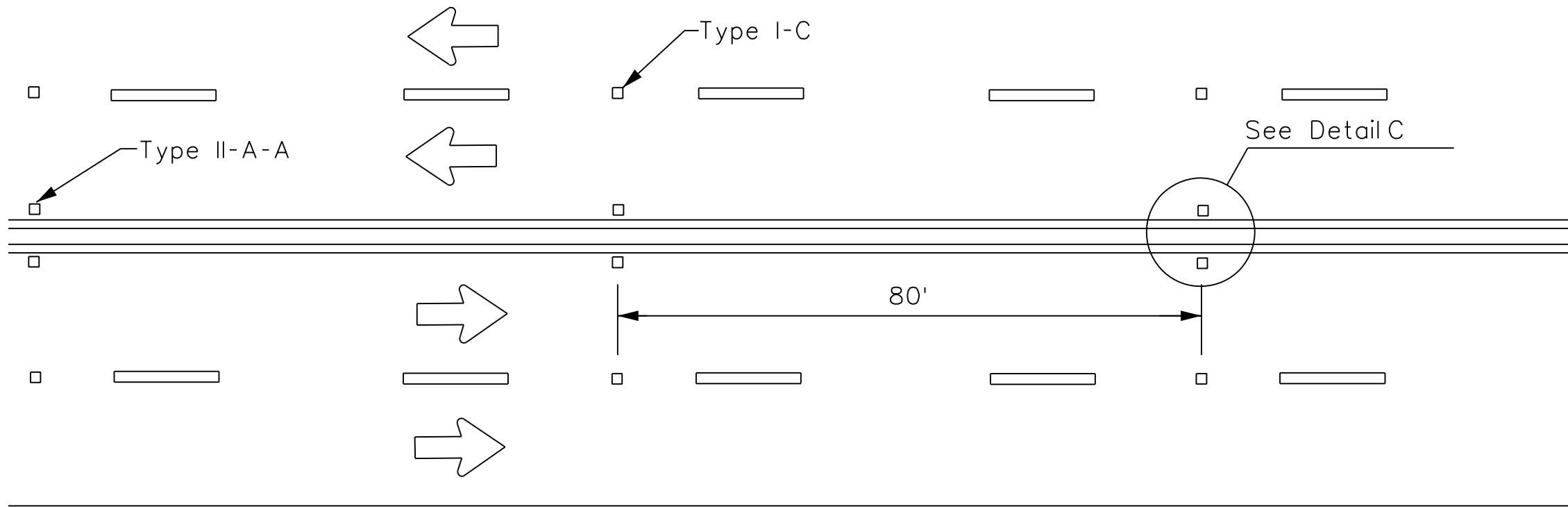
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		DISTRICT	COUNTY	SHEET NO.
				46

# REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

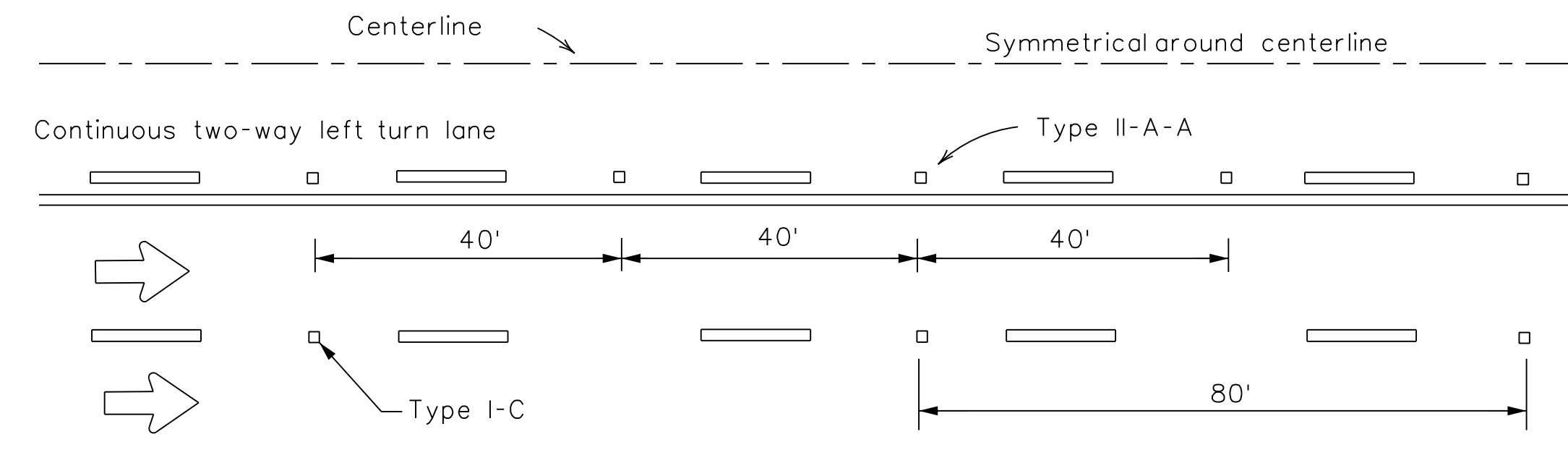
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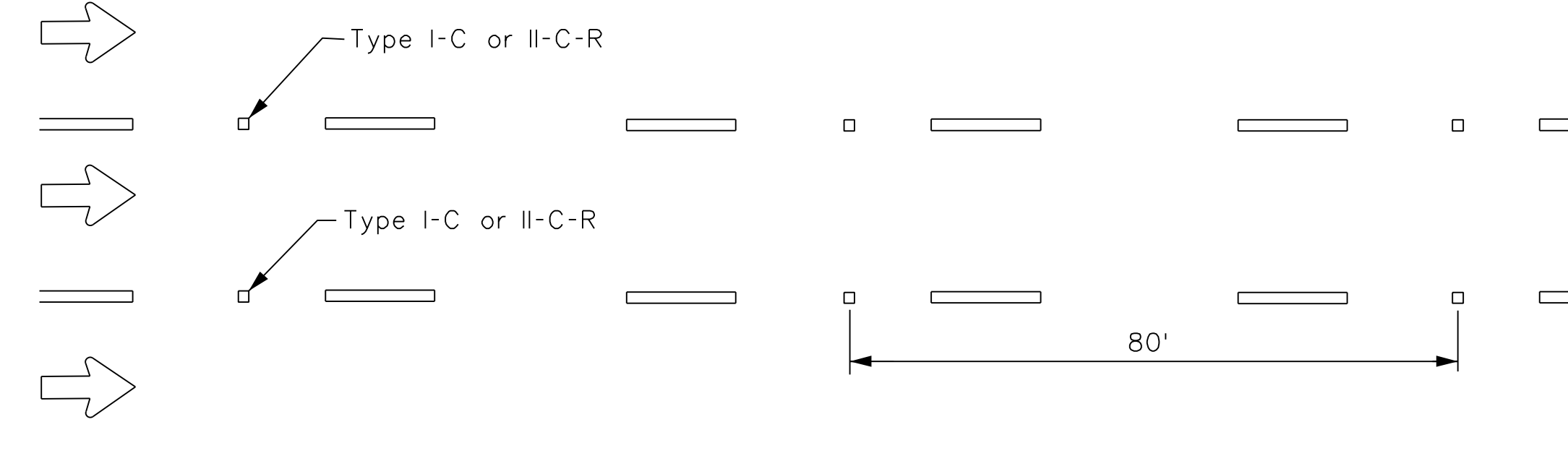
CENTERLINE FOR ALL TWO LANE ROADWAYS



CENTERLINE & LANE LINES  
FOR FOUR LANE TWO-WAY HIGHWAYS

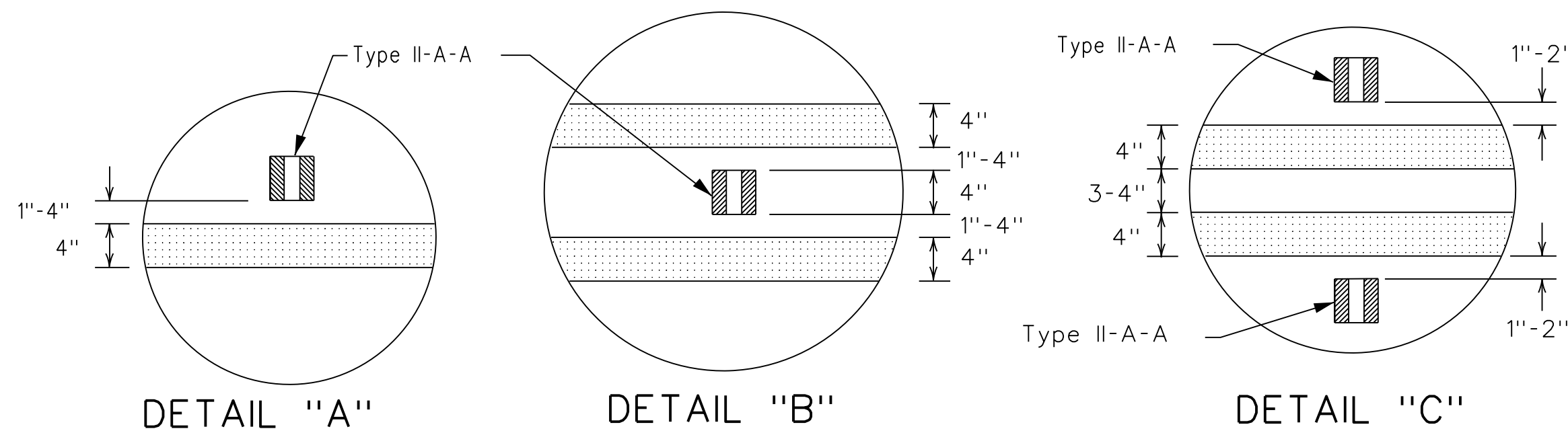


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

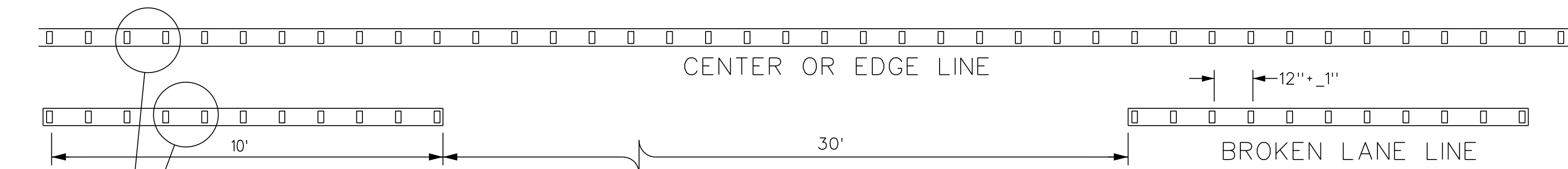
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.



DETAIL "A"

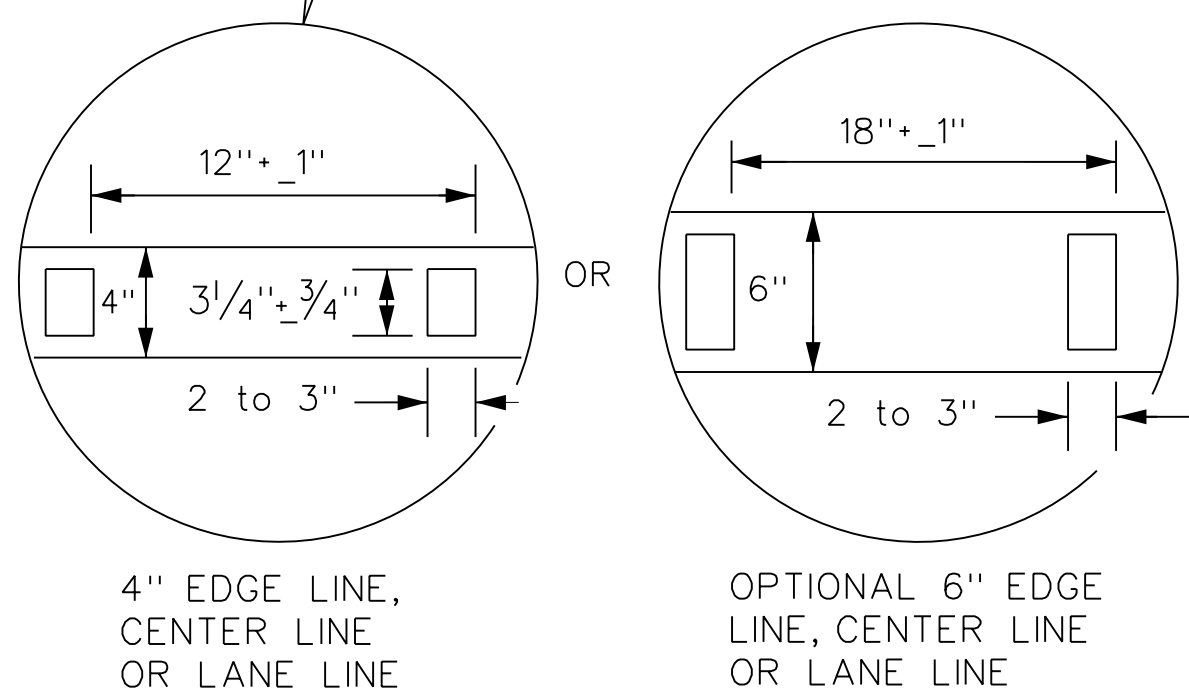
DETAIL "B"

DETAIL "C"



REFLECTORIZED PROFILE  
PATTERN DETAIL

USING REFLECTORIZED PROFILE PAVEMENT MARKINGS



4" EDGE LINE,  
CENTER LINE  
OR LANE LINE

OPTIONAL 6" EDGE  
LINE, CENTER LINE  
OR LANE LINE

**NOTE**

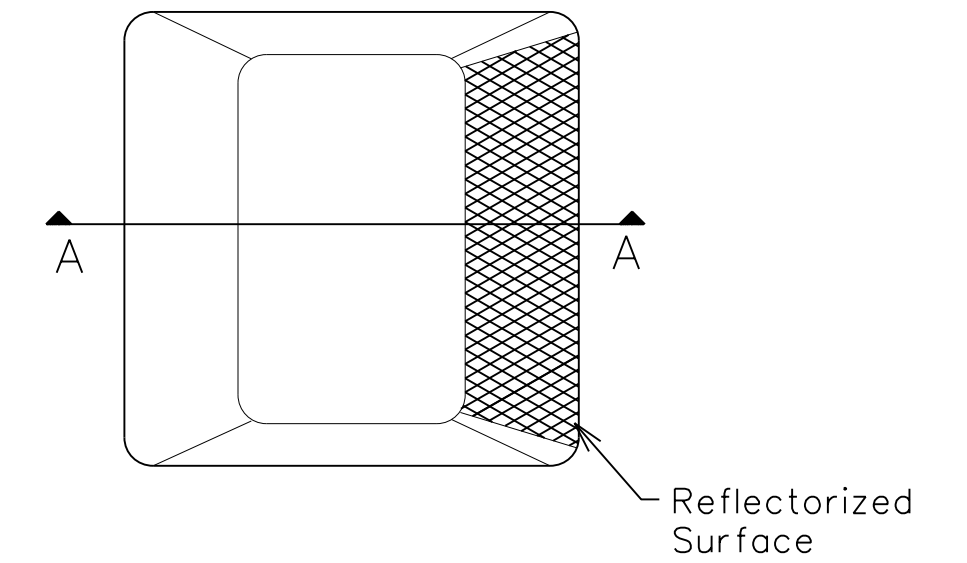
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

**GENERAL NOTES**

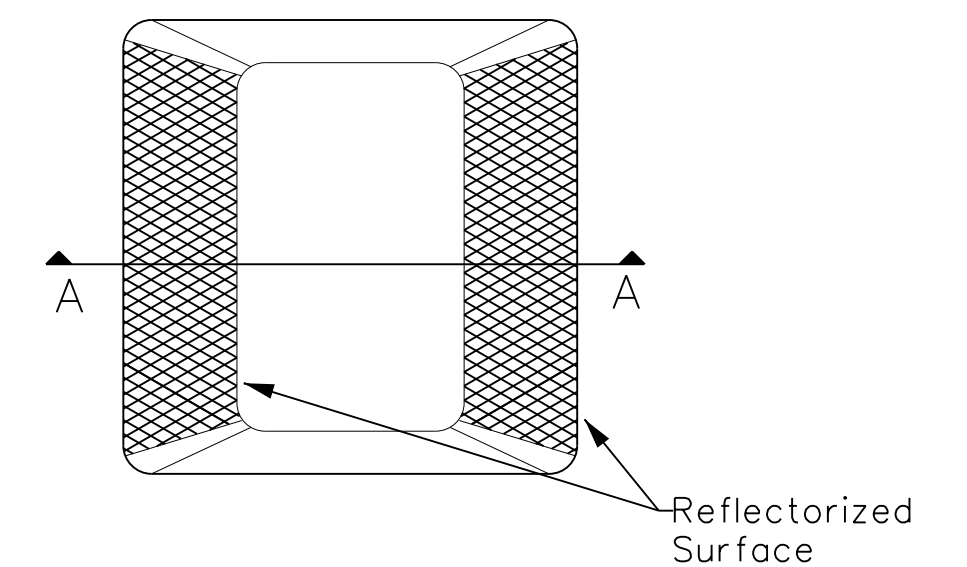
- All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
- On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

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

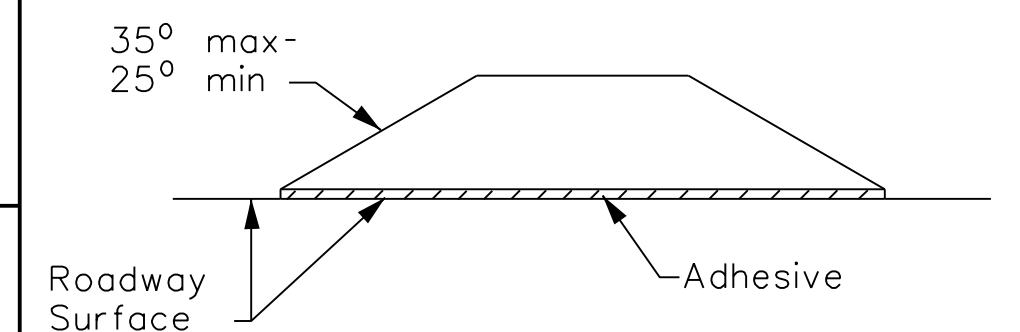
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

**RAISED PAVEMENT MARKERS**



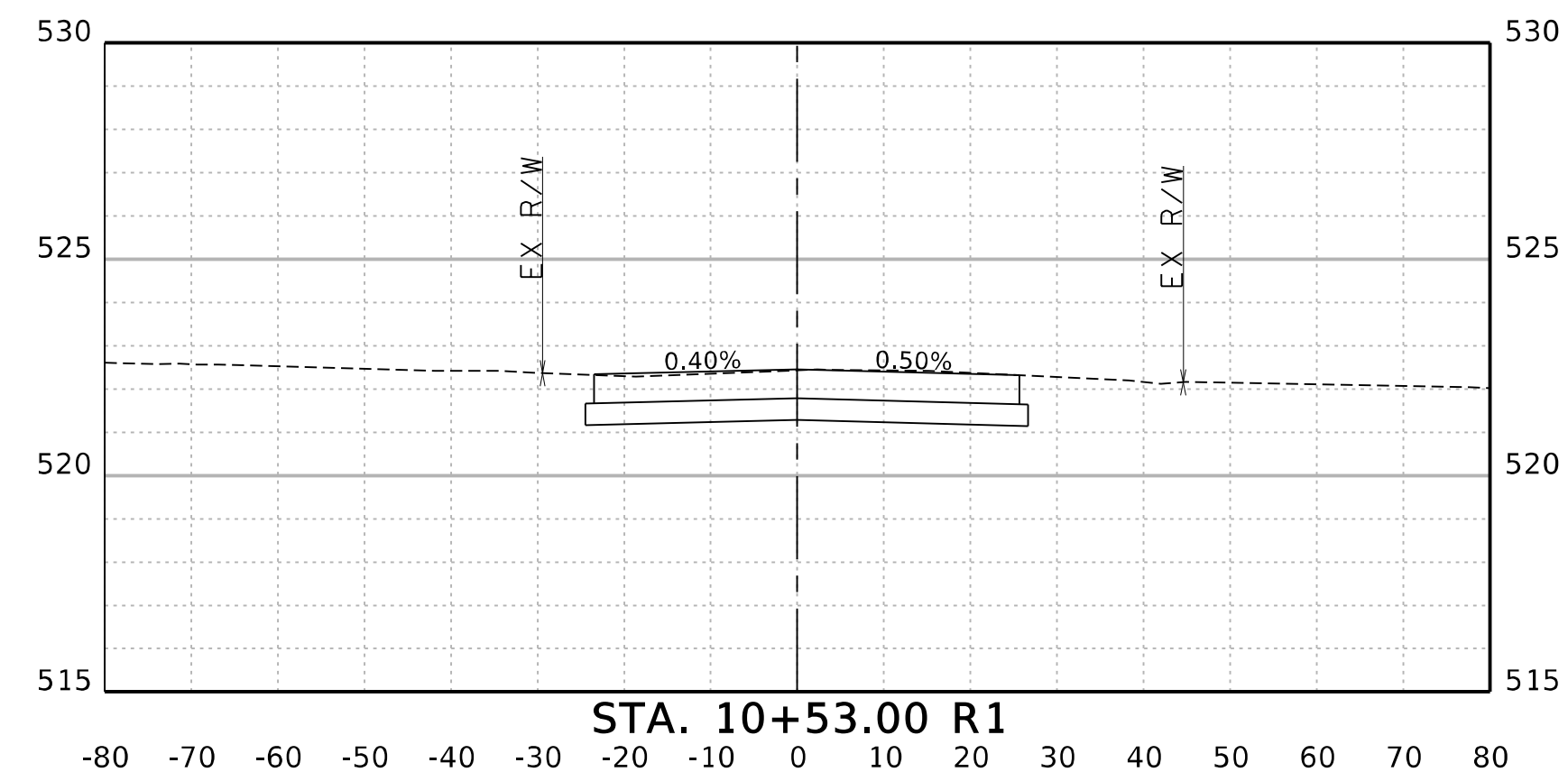
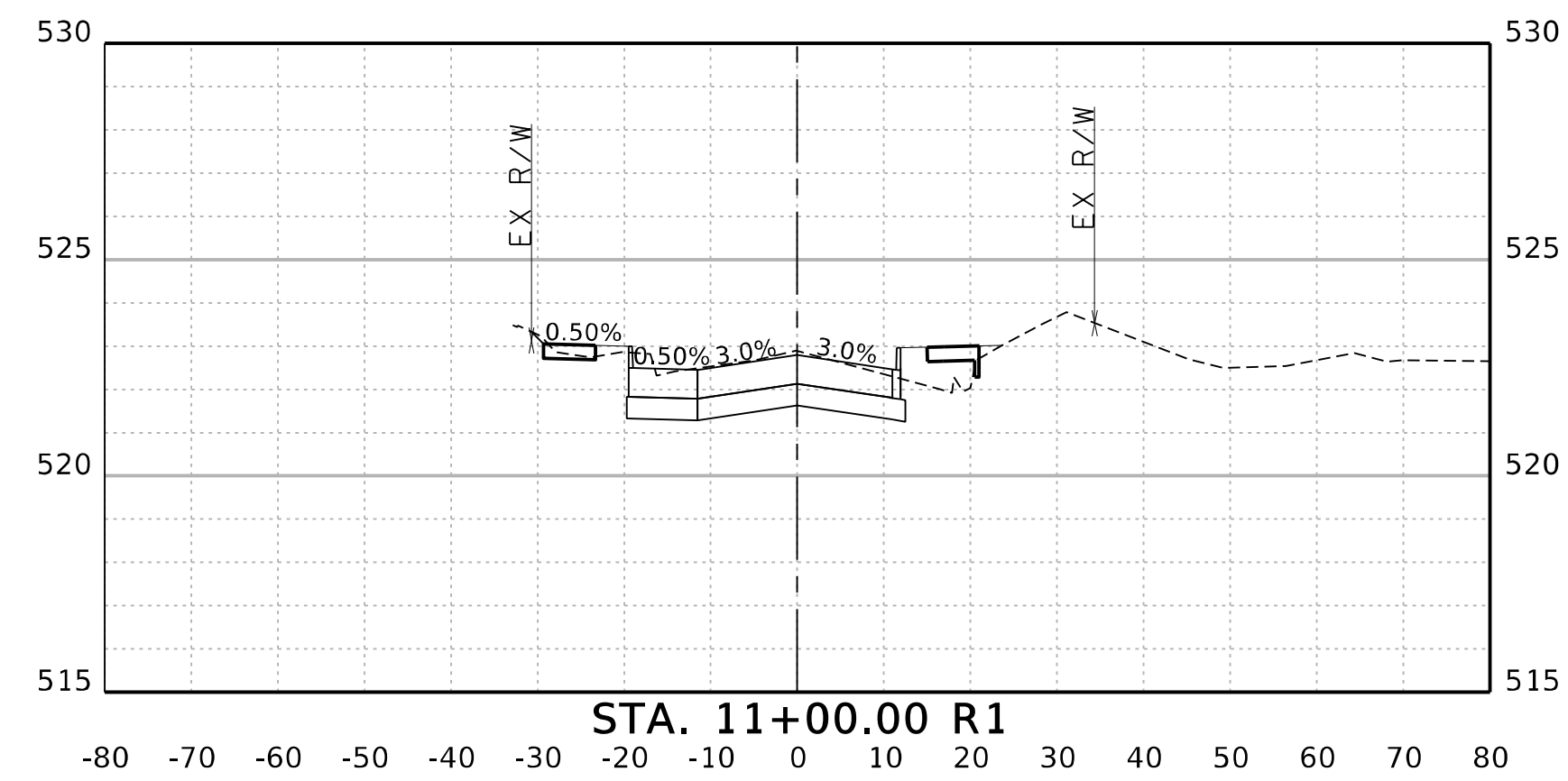
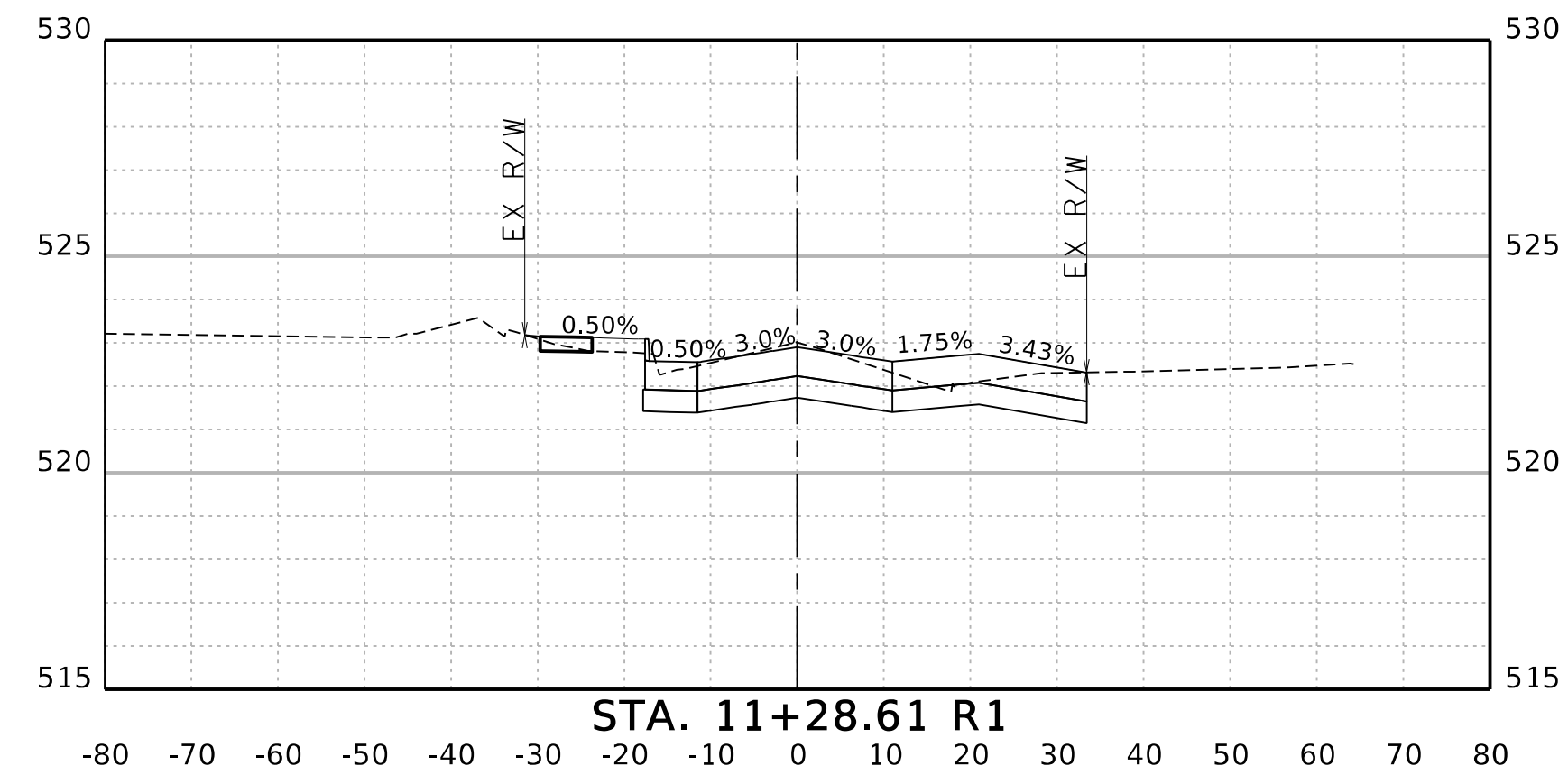
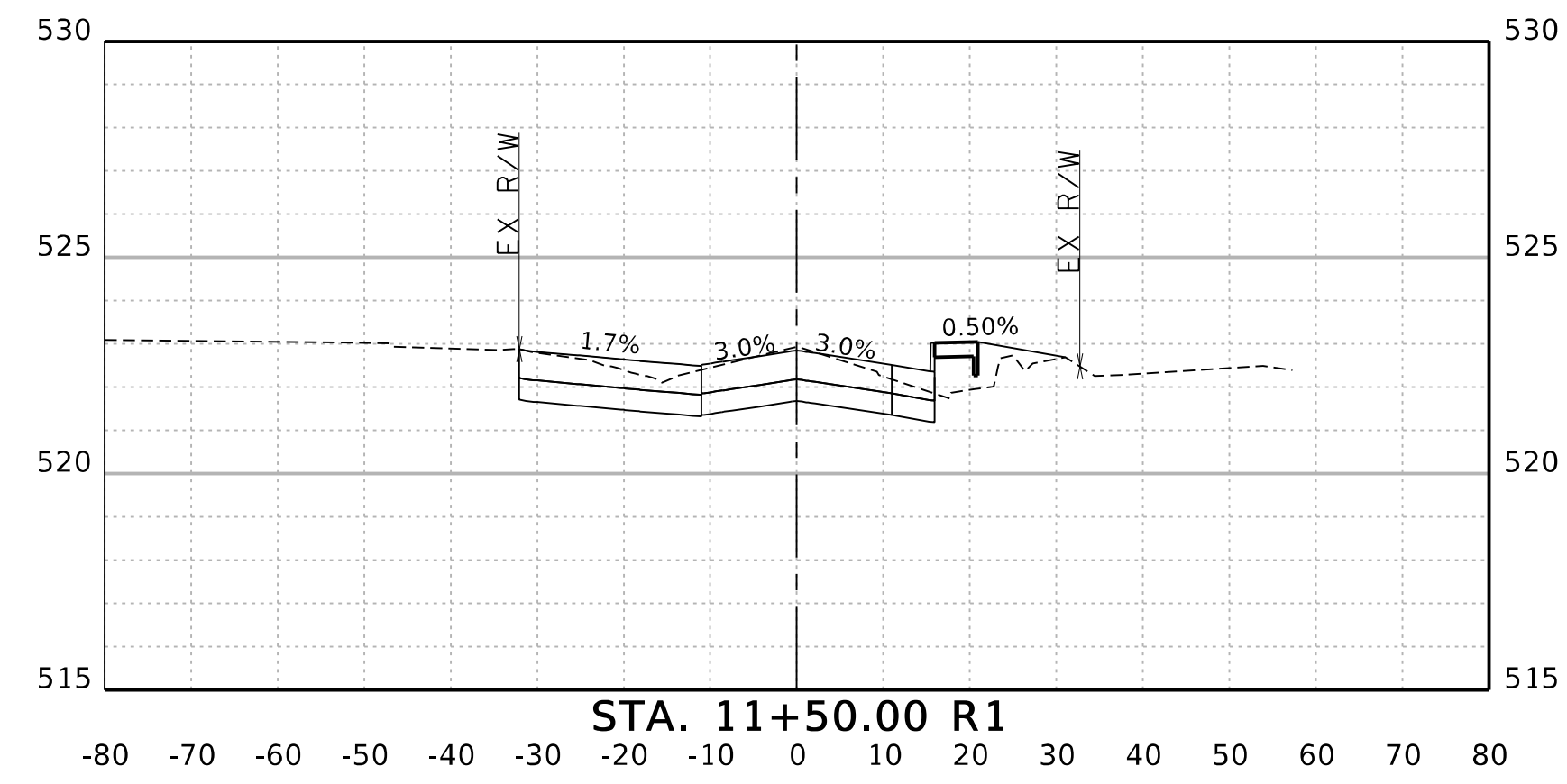
**POSITION GUIDANCE USING  
RAISED MARKERS  
REFLECTORIZED PROFILE  
MARKINGS  
PM(2)-20**

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
4-92 2-10 REVISIONS	DIST		COUNTY	SHEET NO.
5-00 2-12				<b>47</b>
8-00 6-20				

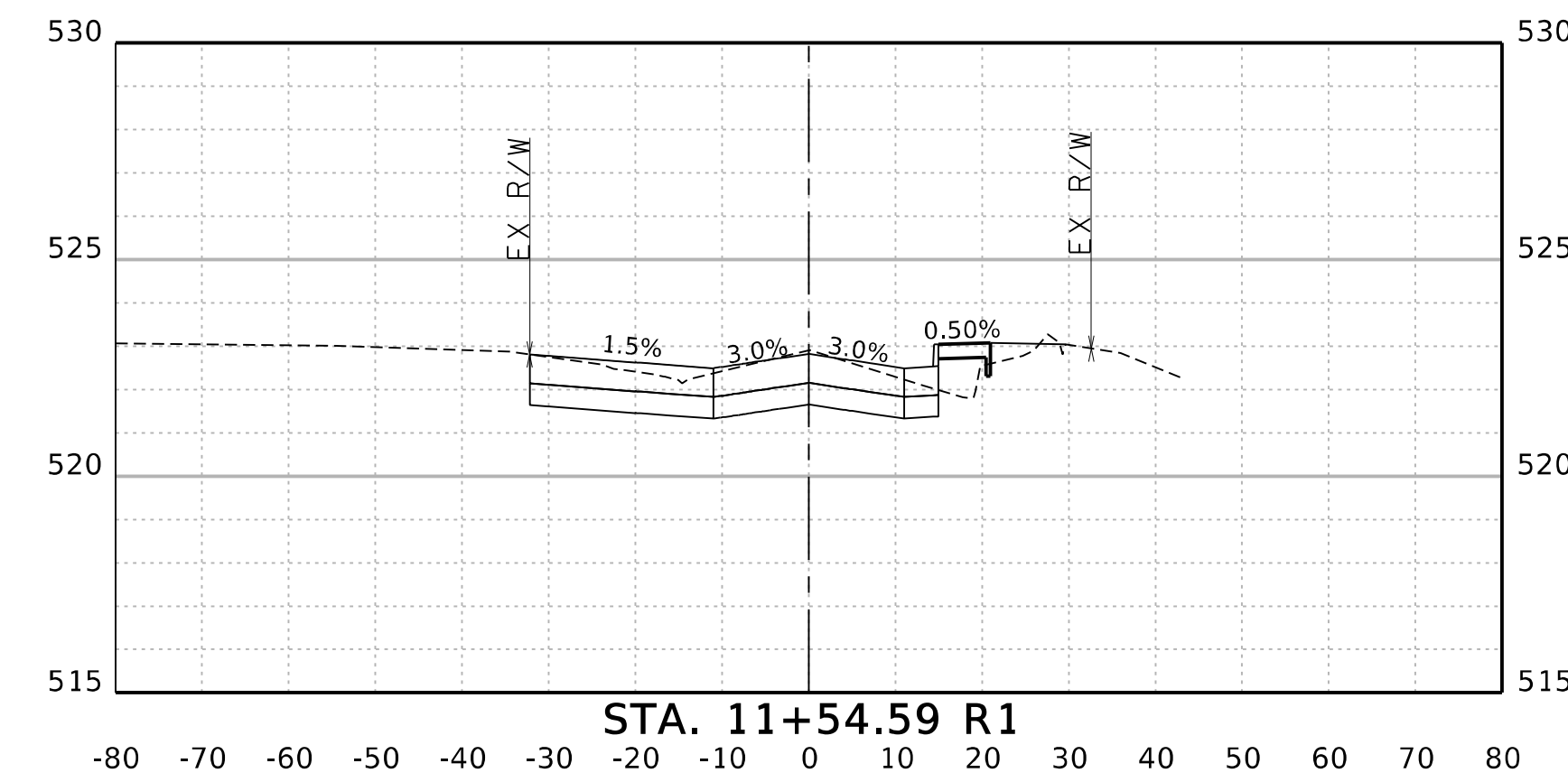
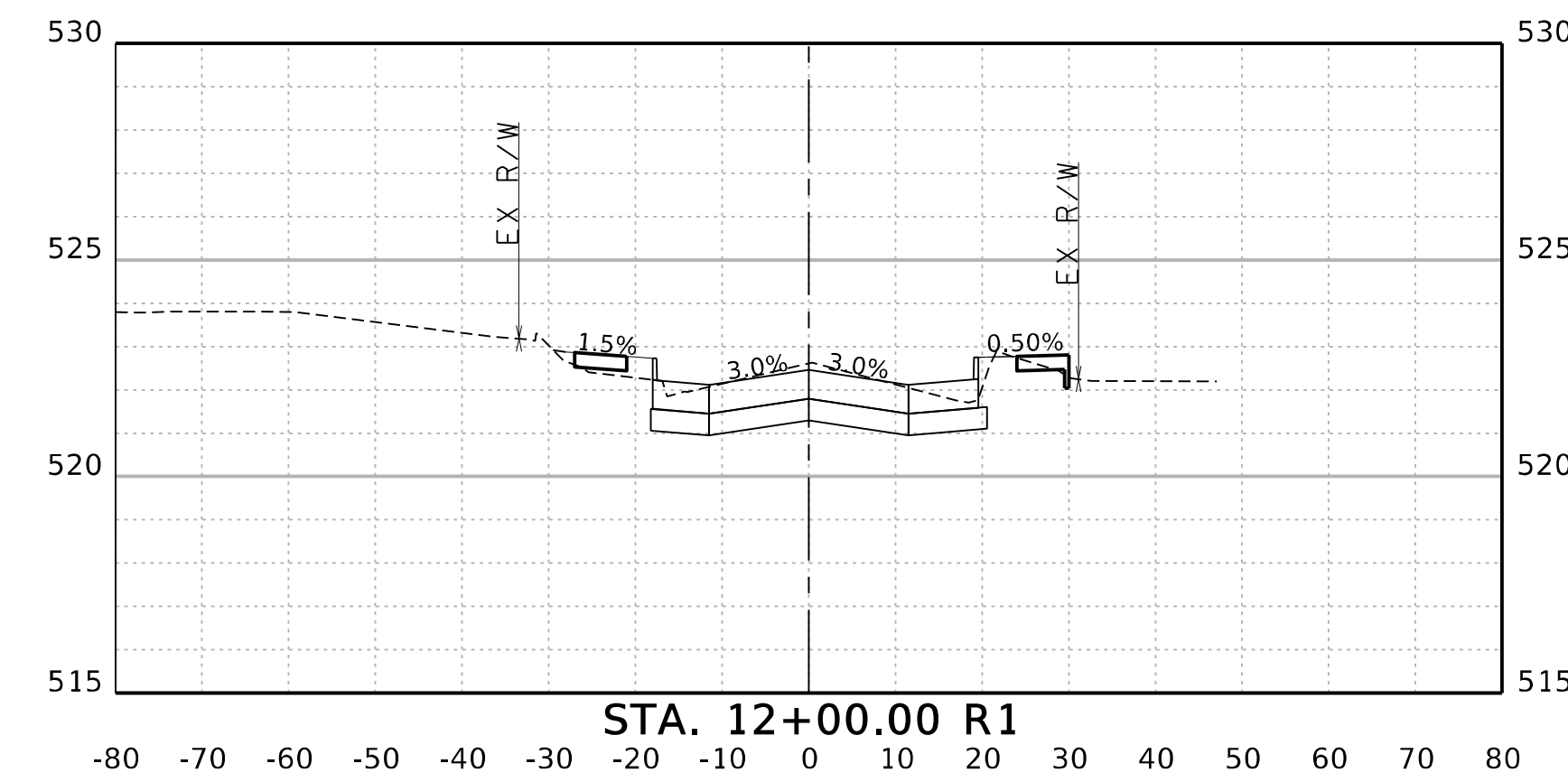
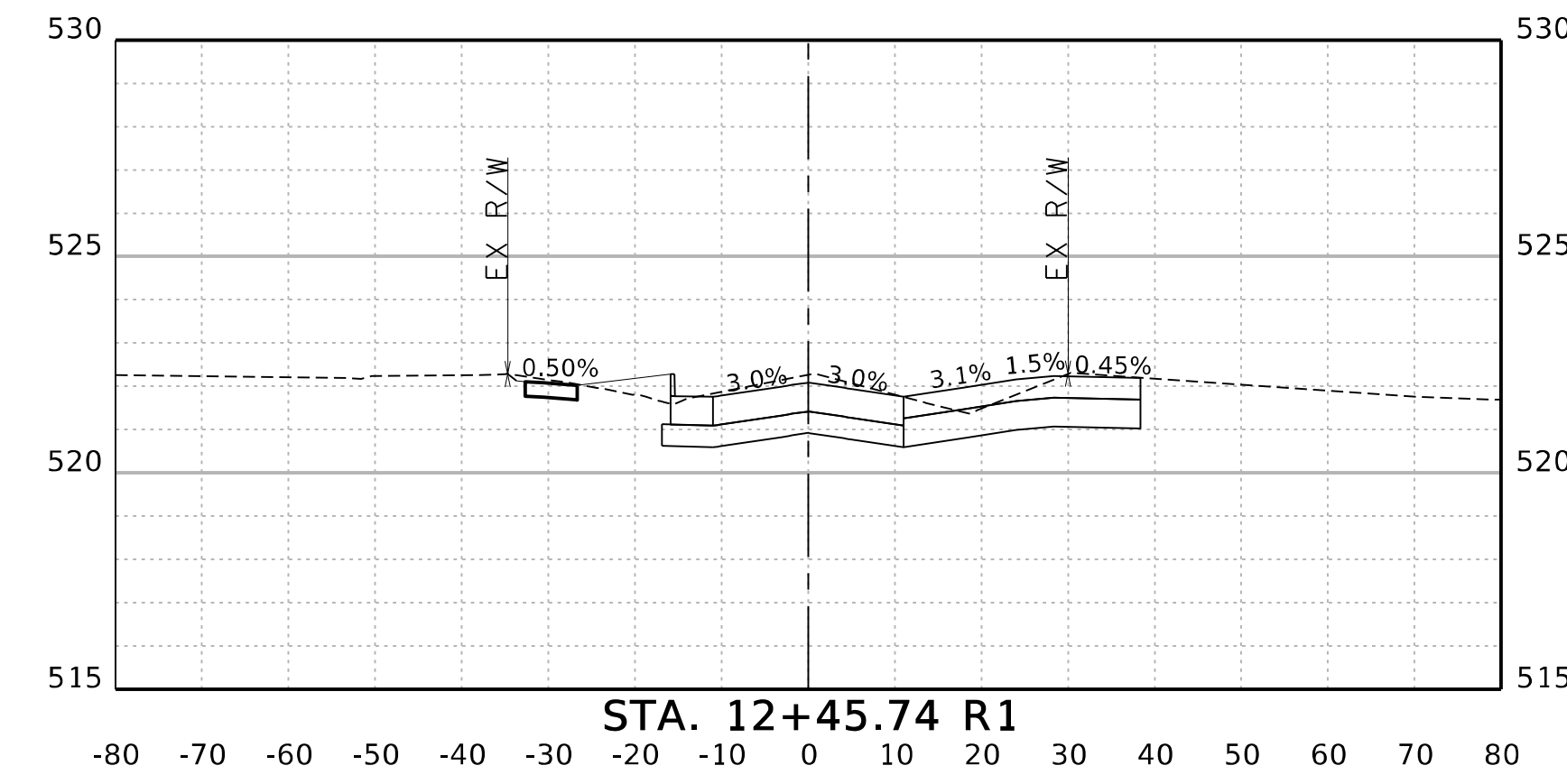
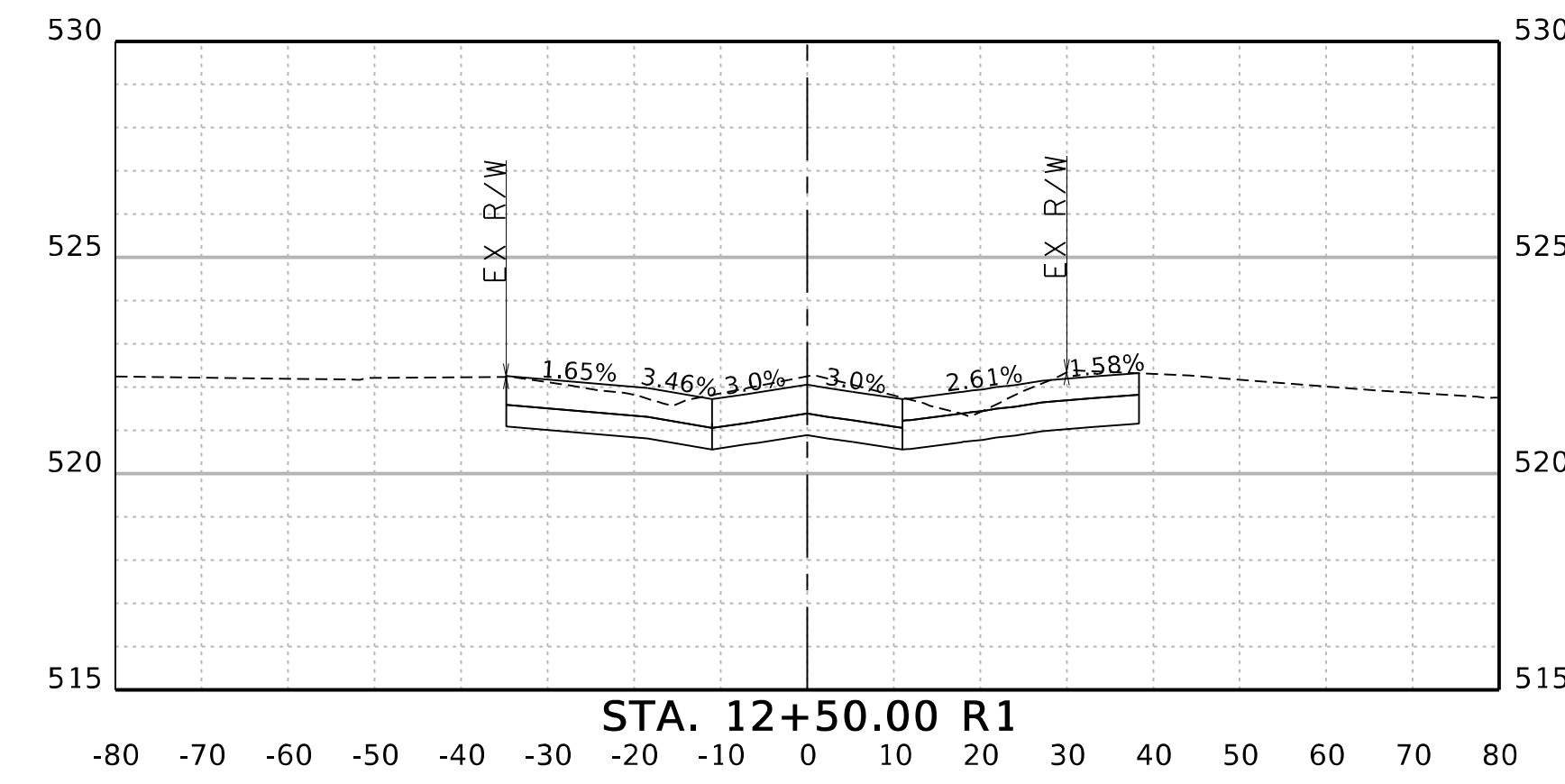
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FILE:

MicroStation V8 User: 04331 Office: On Site  
 Plotter: LUPK N:\ENGC\cv-trt-xs-elmxs.dgn  
 Plot Scale: 40.000' / in.  
 Date: Aug. 07, 2023 - 11:20:15 AM  
 Project: Freese and Nichols, Inc. - True Type Font

Office: On Site Date: Aug. 07, 2023 - 11:20:15 AM User: 04331 File: N:\ENGC\cv-trt-xs-elmxs.dgn



STA. 10+53.00 R1 TO STA. 12+50.00 R1



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 TEXAS REGISTERED ENGINEERING FIRM F-2144



**FREESE AND NICHOLS**  
 12770 Mesquite Drive, Suite 300  
 Dallas, TX 75251  
 Phone - (214) 217-2200  
 Web - www.freese.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 CIVIL  
**ELM ST CROSS SECTIONS BEGIN TO STA 12+50.00**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	SEC	DRAWN	CHW	REVISED	SEC	CHECKED	SEC	FILE NAME
				LEW20378	AUG 2023									cv-trt-xs-elmxs.dgn

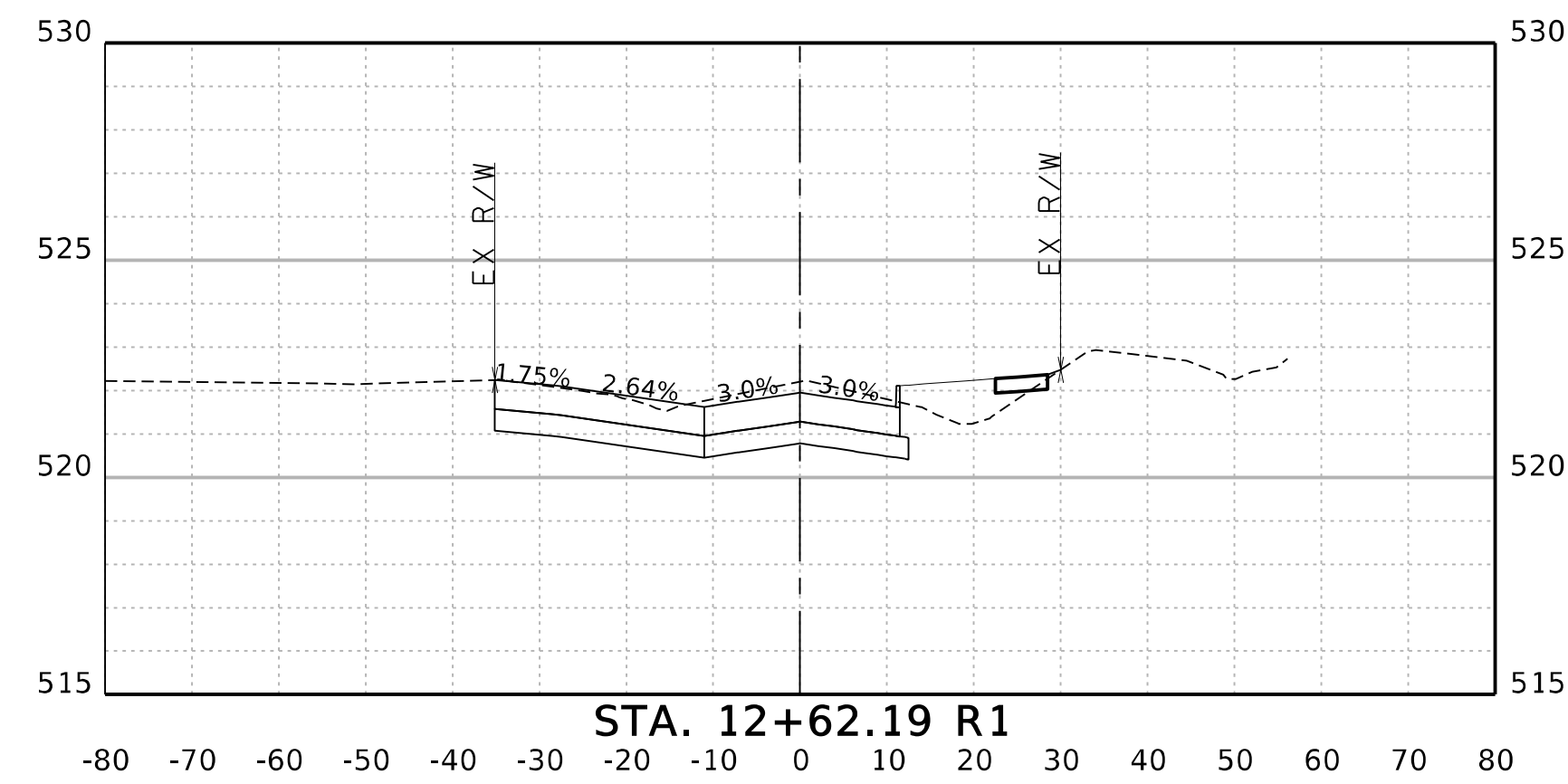
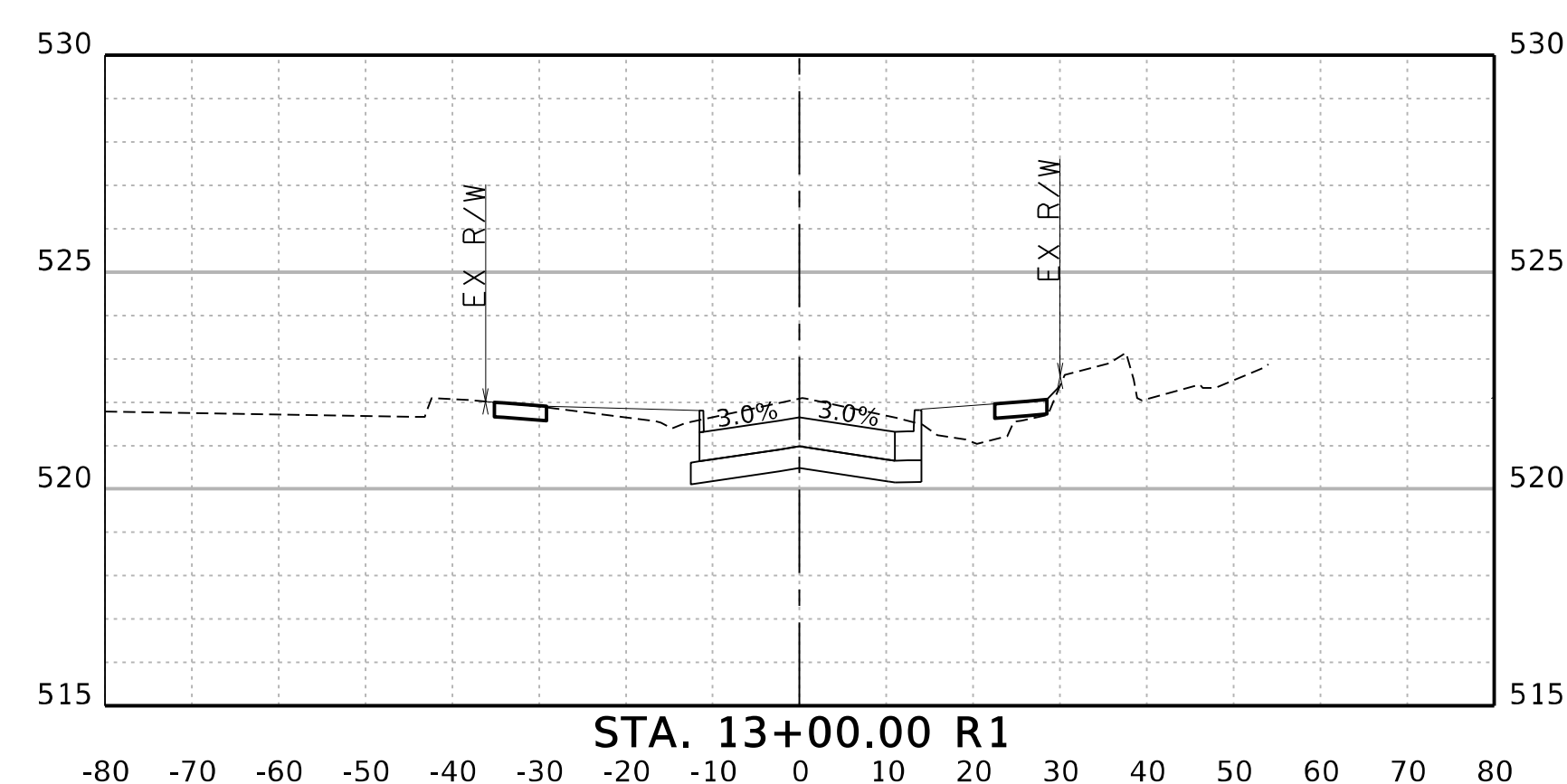
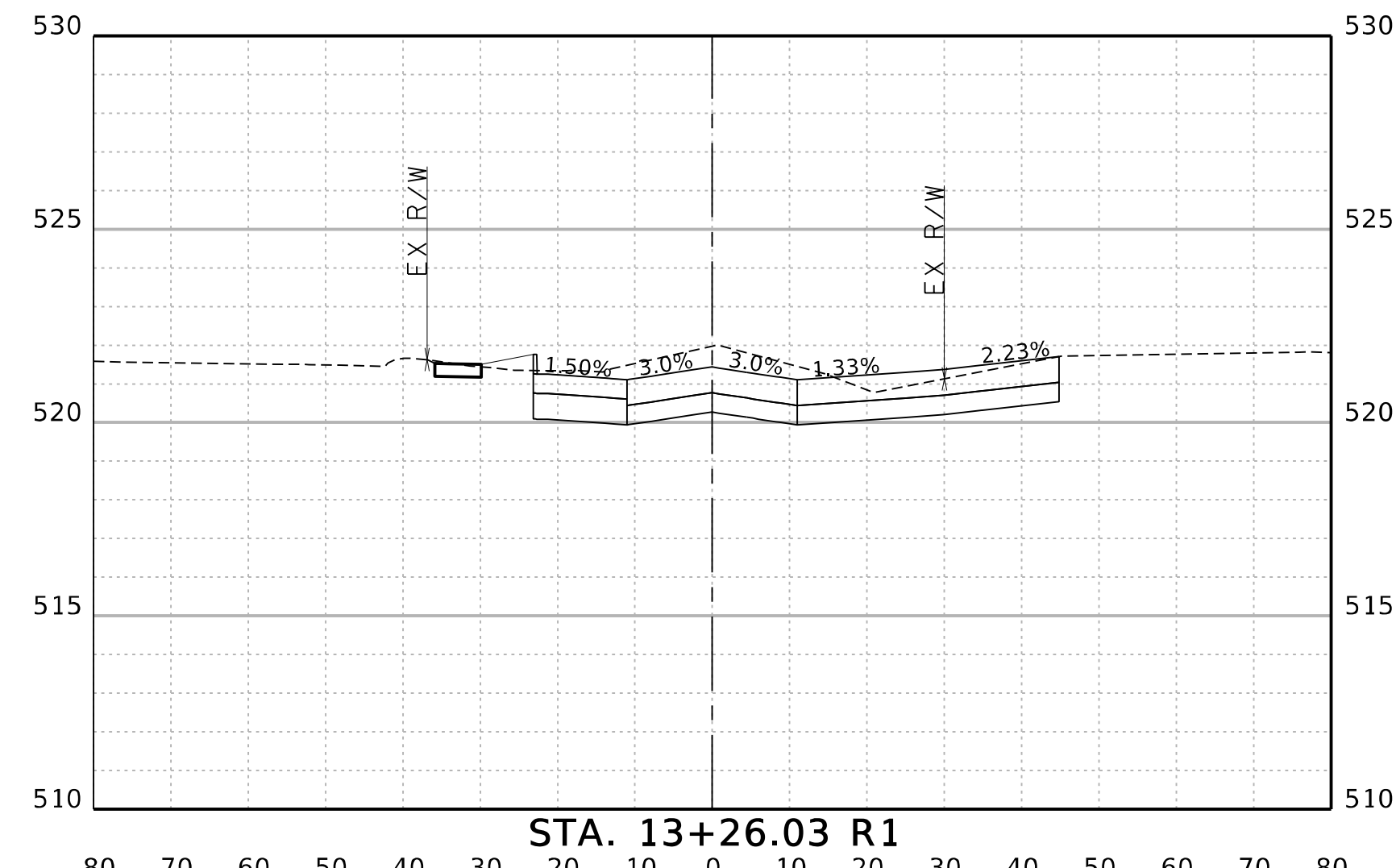
SHEET **XS-1**  
 SEQ. 48

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

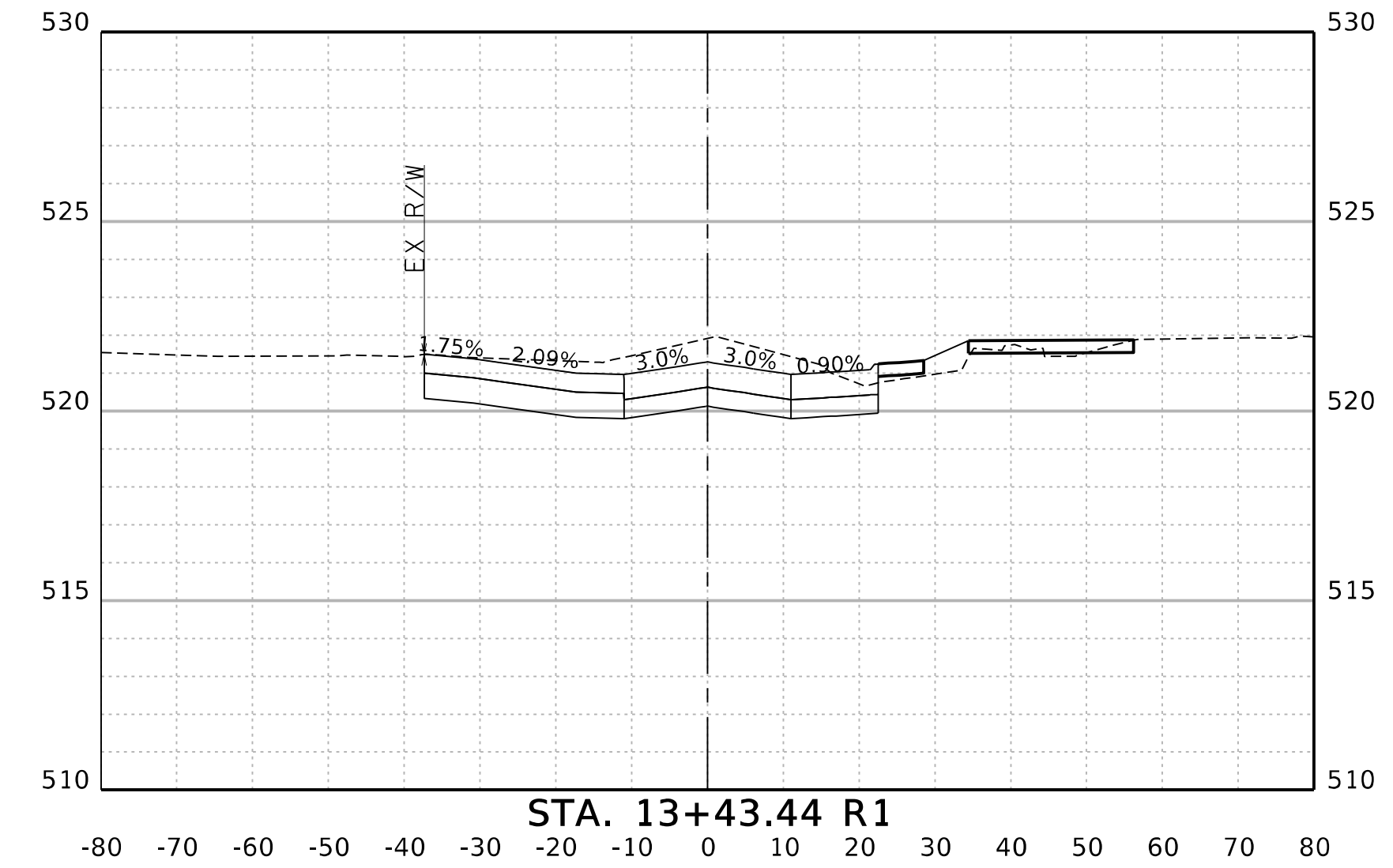
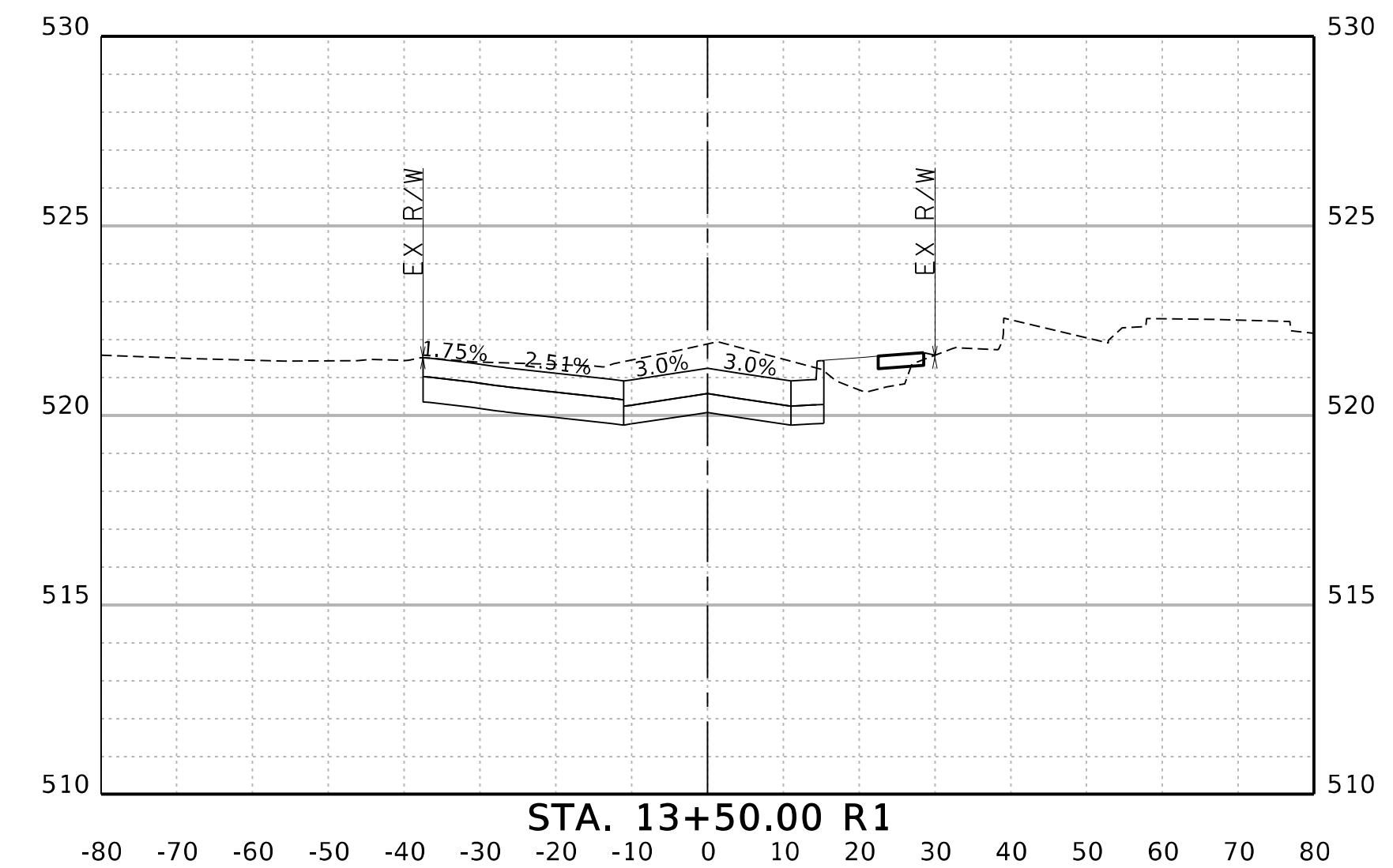
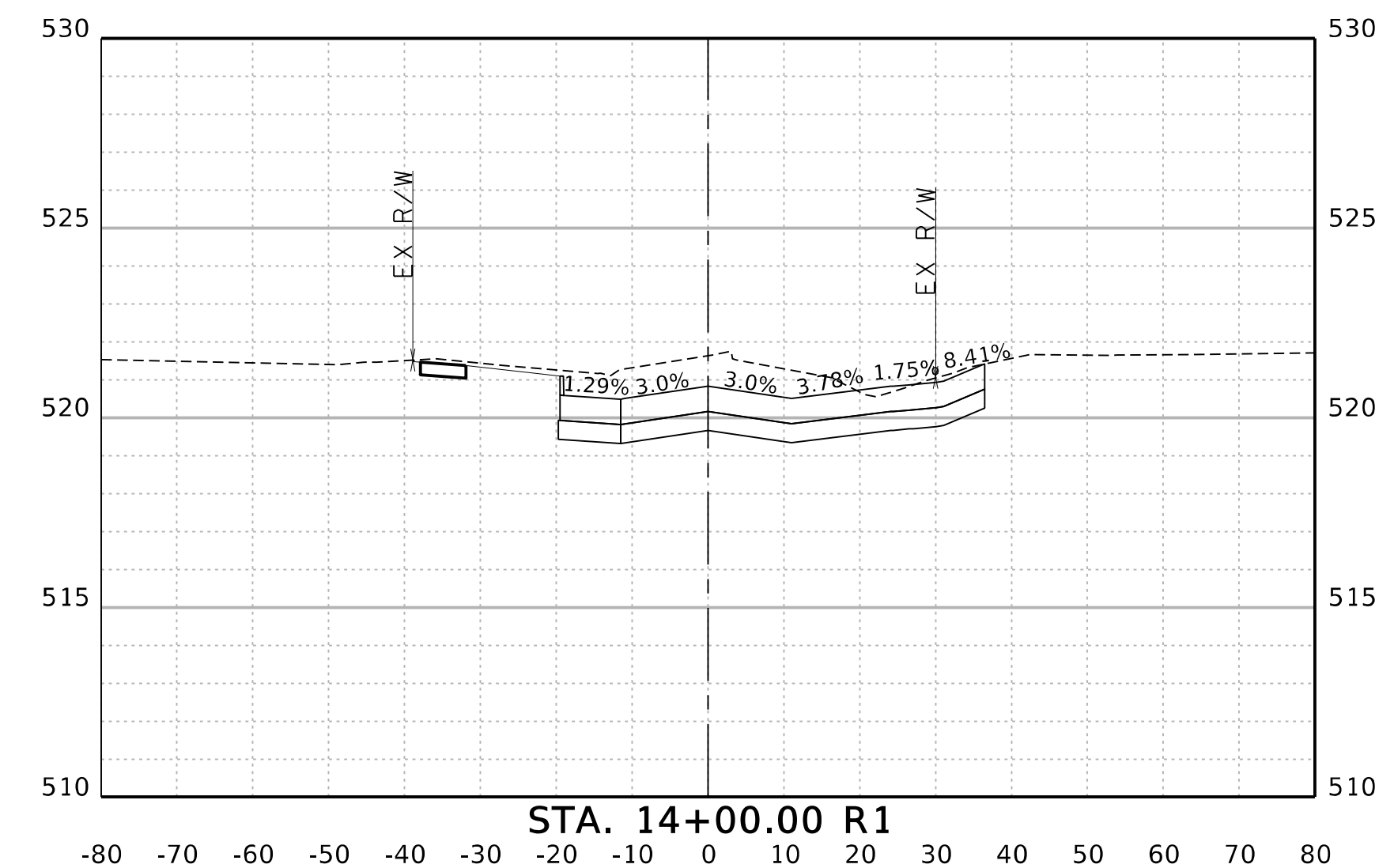


MicroStation V8 User: 04331 - Office On Site  
 Plotter: LUP: N:\ENGC\cv-trt-x-elms.dgn  
 Plot Scale: 40.000' / in.  
 Date: Aug 07 2023 - 11:20:16 AM  
 Project: Freese and Nichols, Inc. - True Type Font

Office: On Site Date: Aug. 07, 2023 - 11:20:16 AM User: 04331 File: N:\ENGC\cv-trt-x-elms.dgn



STA. 12+62.19 R1 TO STA. 14+00.00 R1



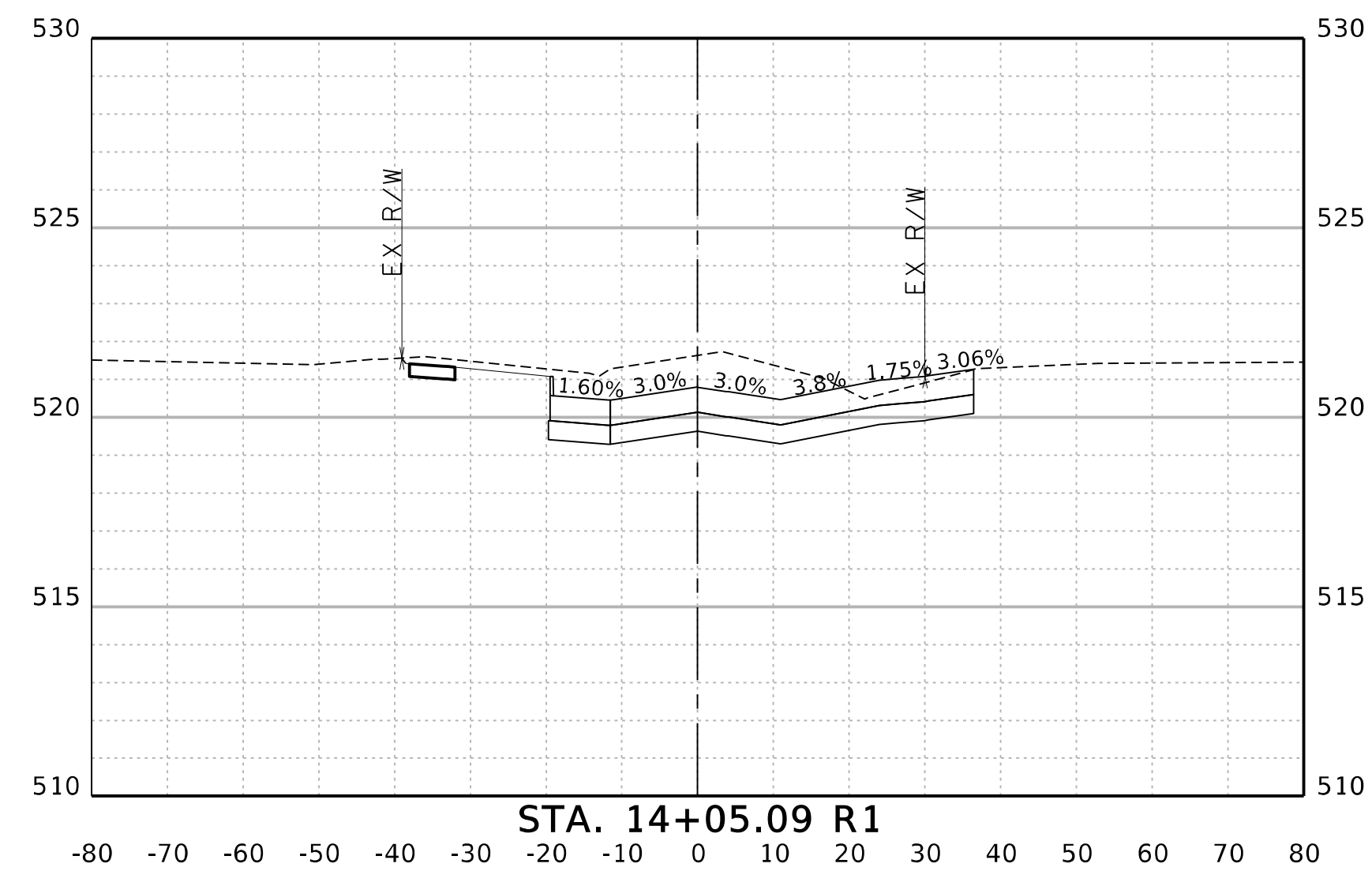
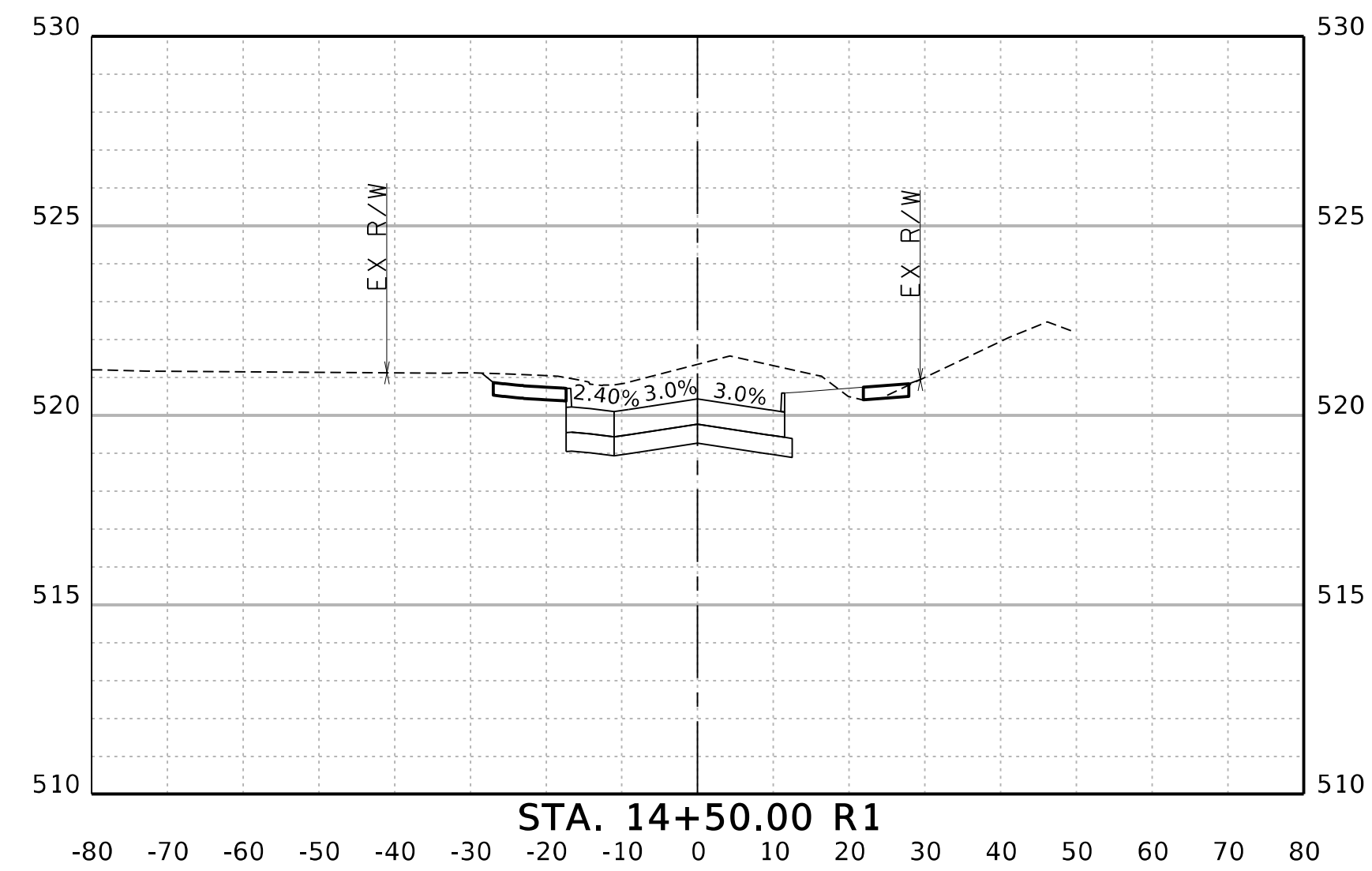
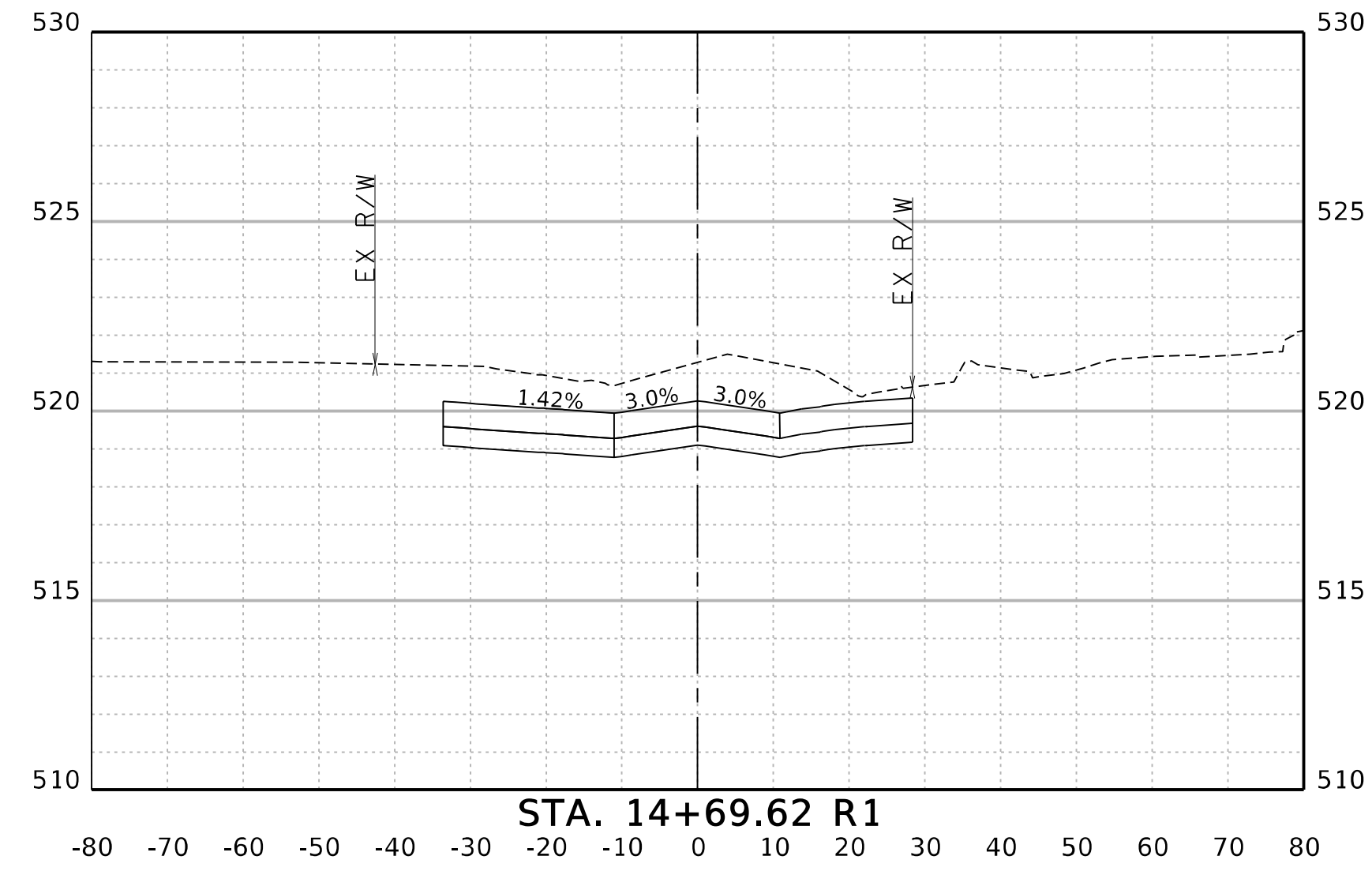
**FREES & NICHOLS**  
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 Dallas, TX 75251  
 Phone - (214) 217-2200  
 Web - www.freese.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
 IMPROVEMENTS**  
 CIVIL  
**ELM ST CROSS SECTIONS  
 STA 12+62.19 TO STA 14+00.00**

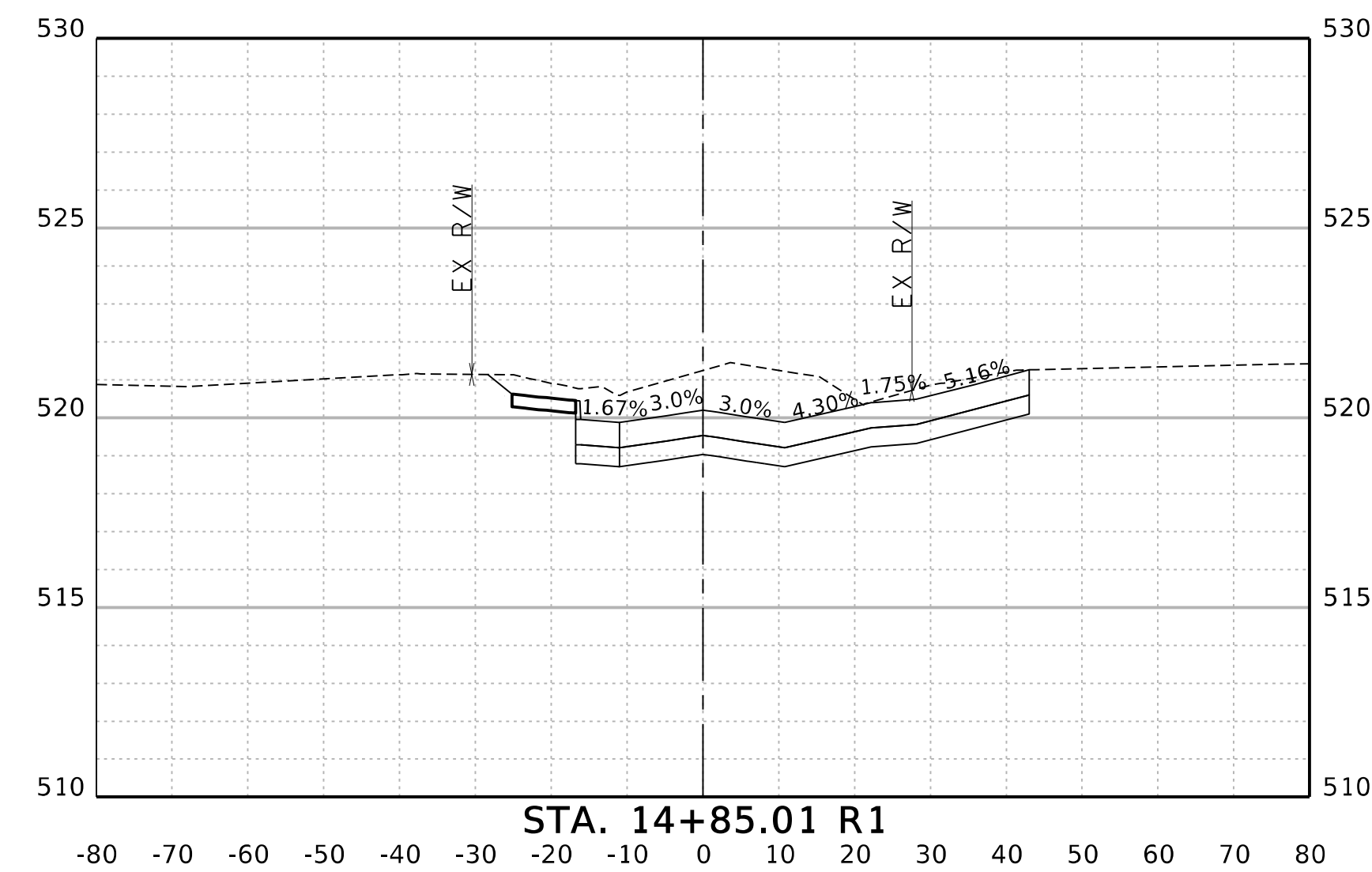
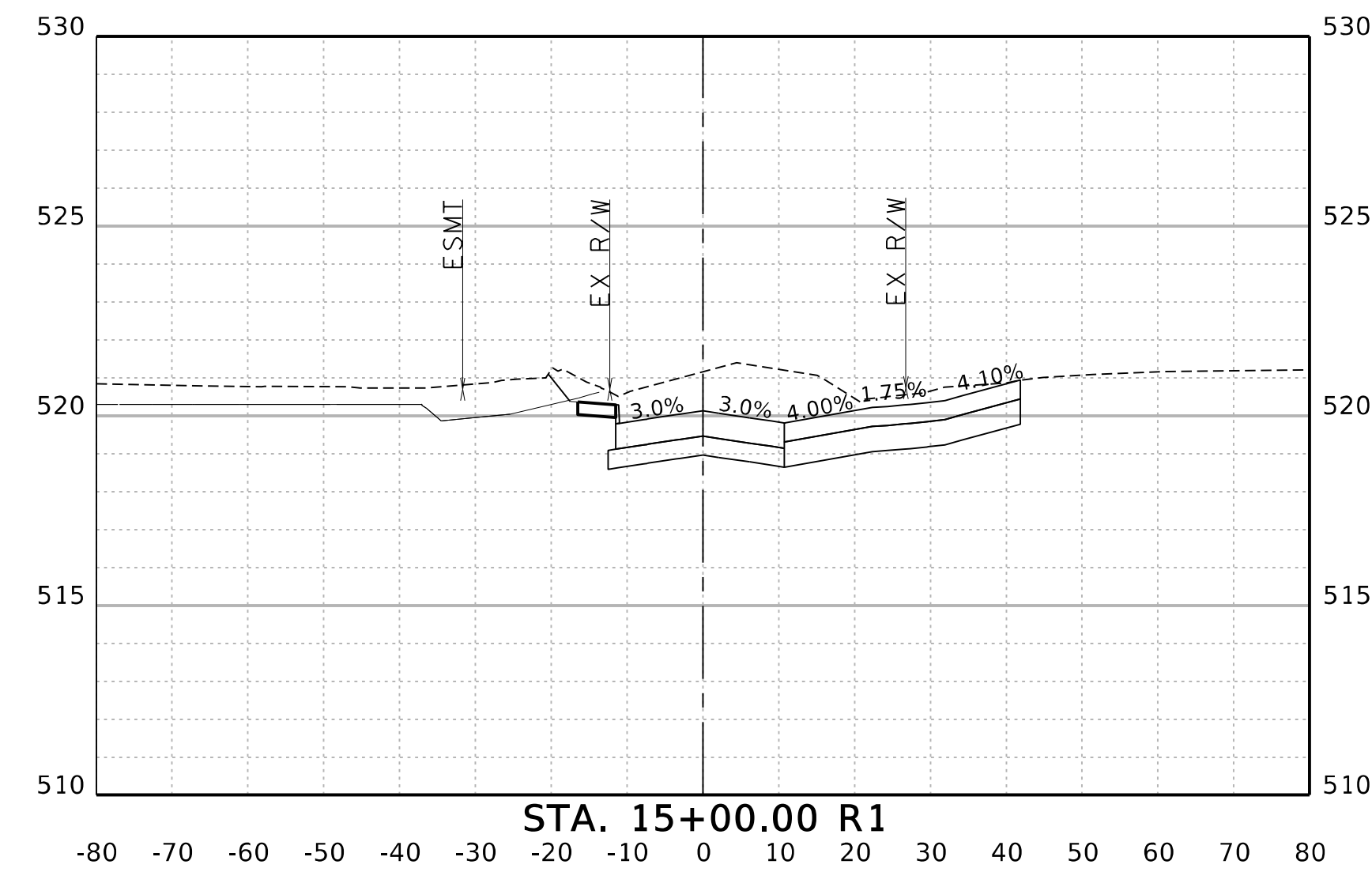
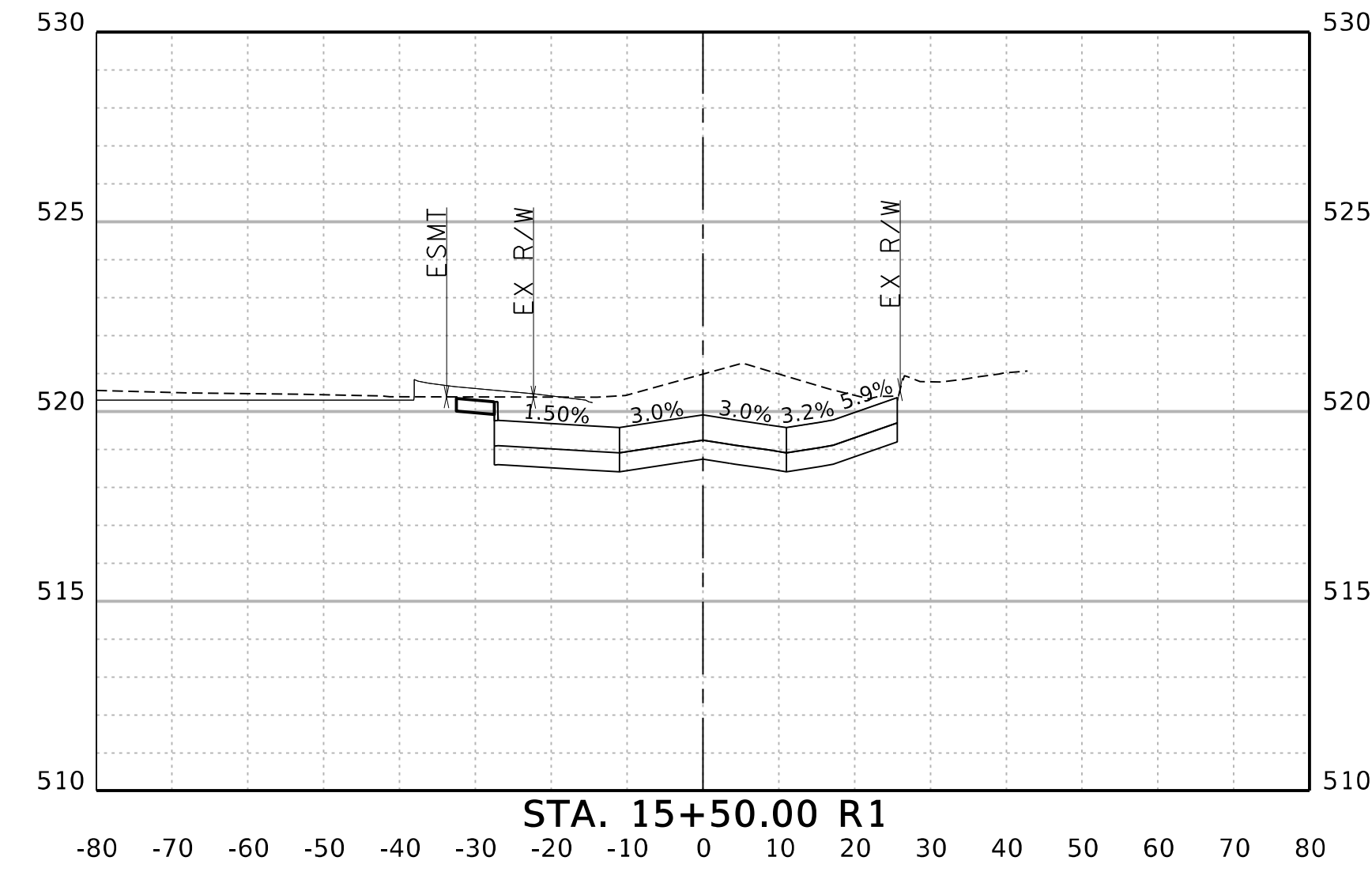
NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	SEC	CHW	SEC	FILE NAME
0	VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.			LEW20378	AUG 2023					cv-trt-x-elms.dgn

MicroStation V8 User: 04331 Office: On Site  
 Plotter: LUP: N:\ENGC\cv-trt-xe-elmxs.dgn Model: ELM\_ST\_10.4.22  
 Plot Scale: 40.000' / 1" File: N:\ENGC\cv-trt-xe-elmxs.dgn  
 Date: Aug. 07, 2023 - 11:20:16 AM Project: Freese and Nichols, Inc. - True Type Font

Office: On Site Date: Aug. 07, 2023 - 11:20:16 AM User: 04331 File: N:\ENGC\cv-trt-xe-elmxs.dgn



STA. 14+05.09 R1 TO STA. 15+50.00 R1



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TEXAS REGISTERED ENGINEERING FIRM F-2144

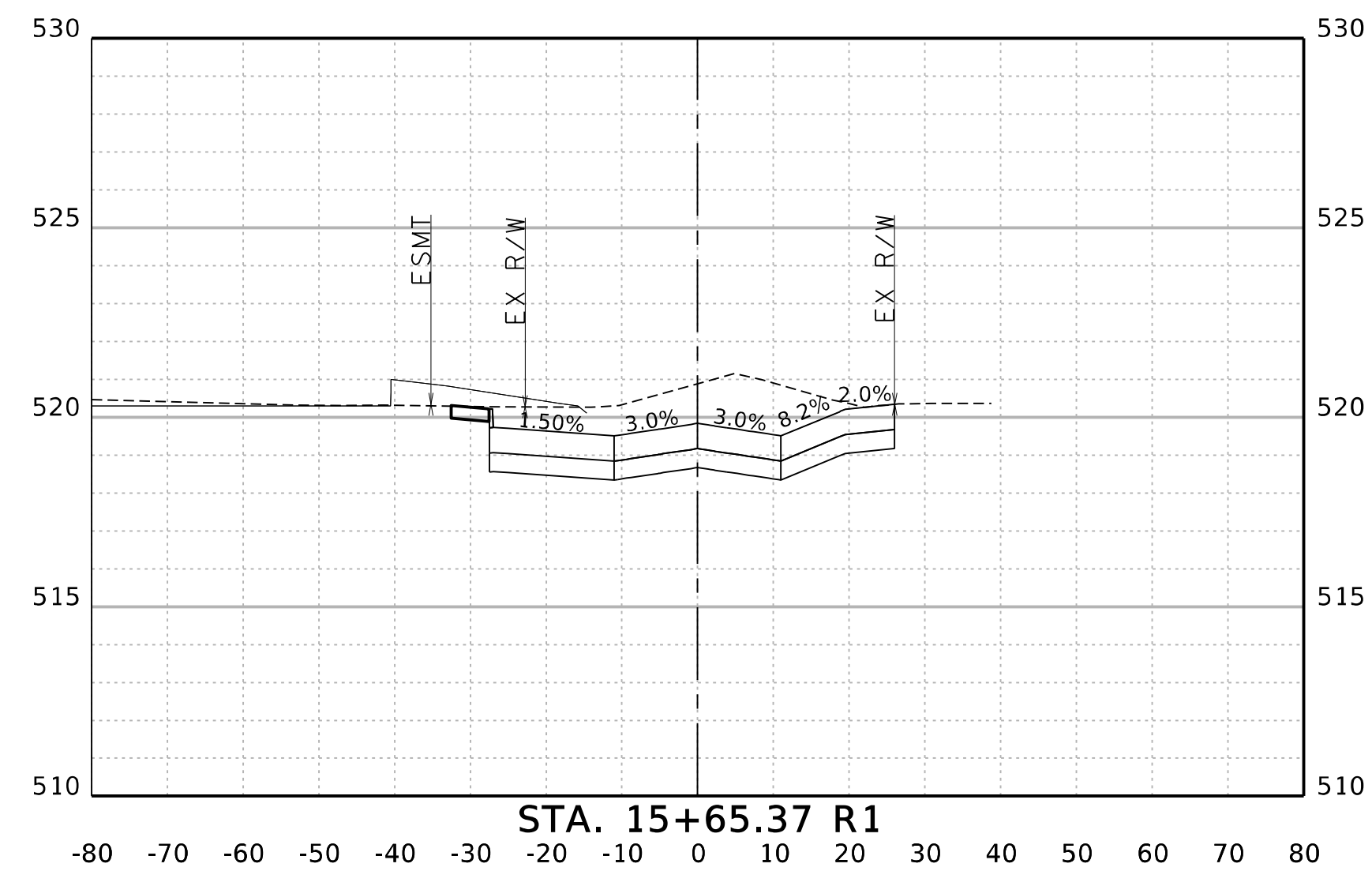
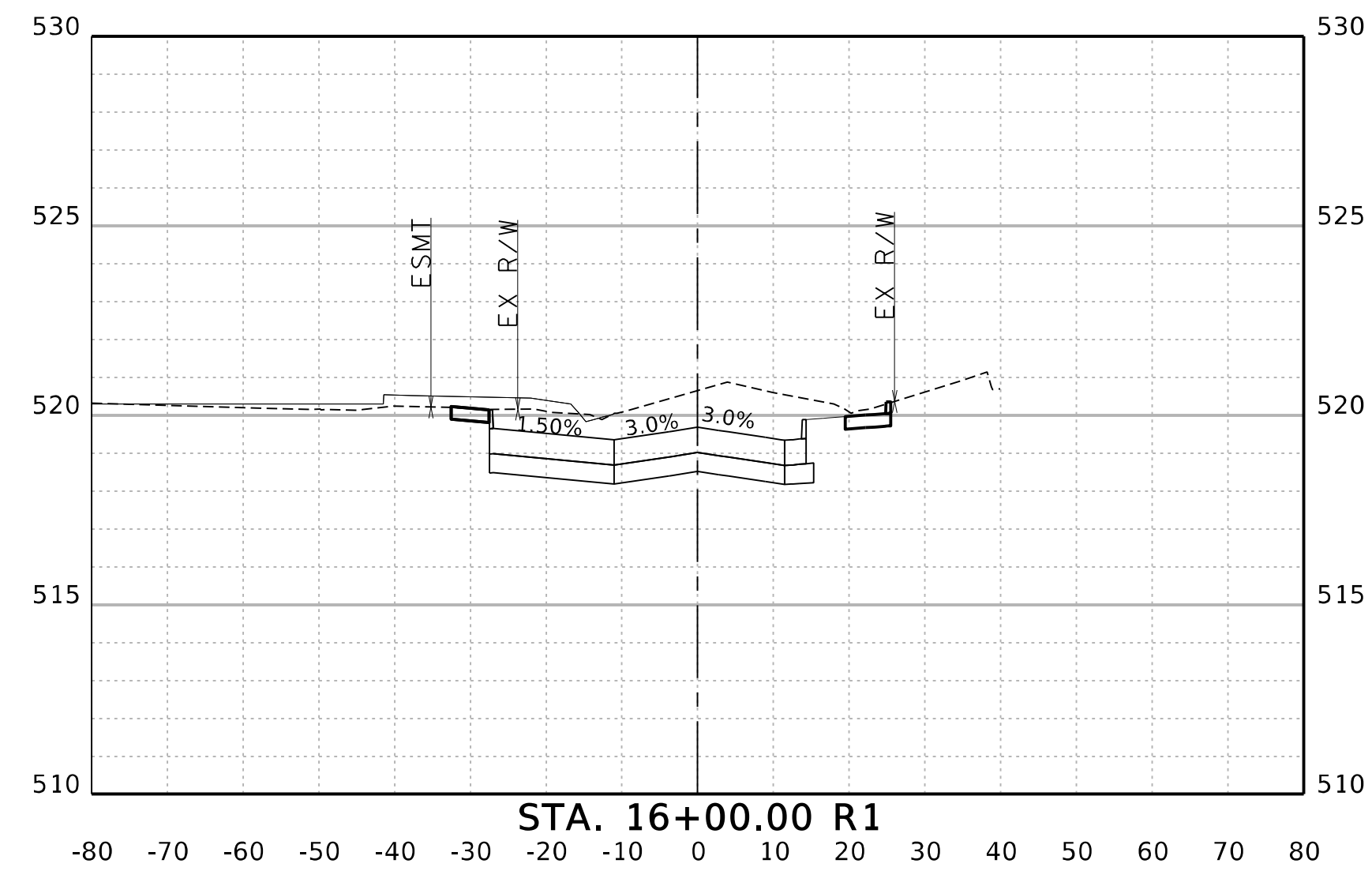
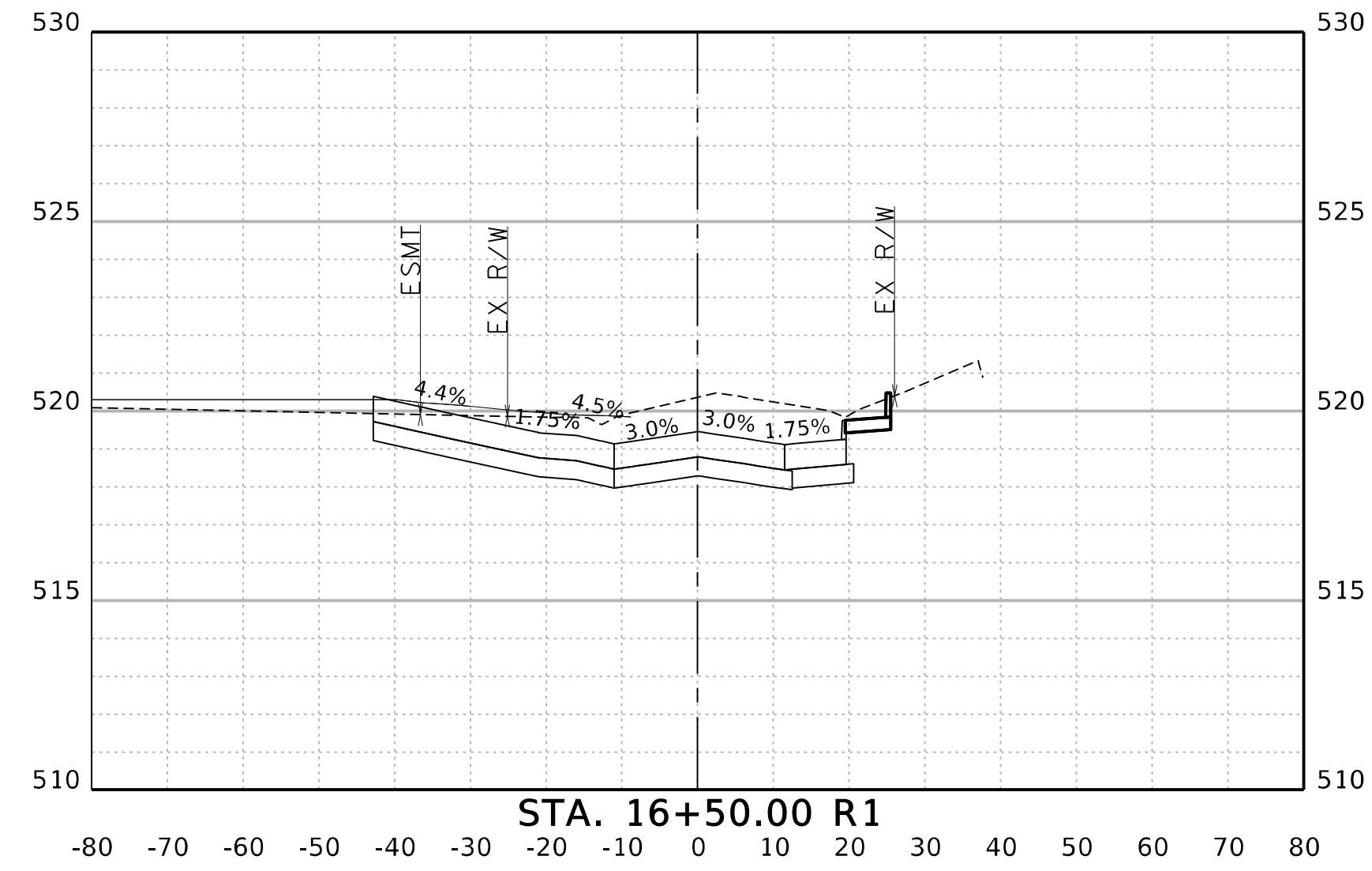


CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
 IMPROVEMENTS**  
 CIVIL  
**ELM ST CROSS SECTIONS  
 STA 14+05.09 TO STA 15+50.00**

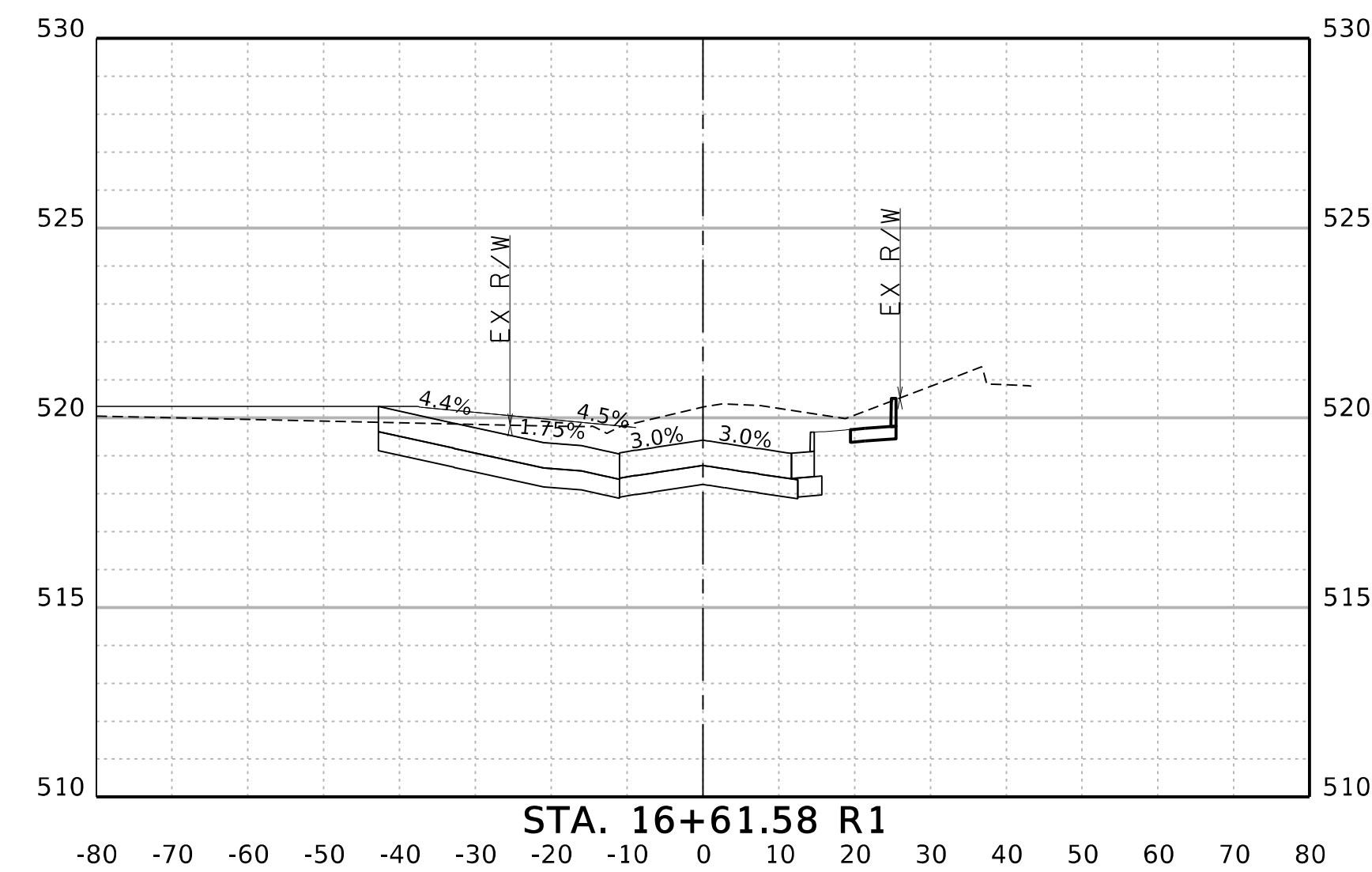
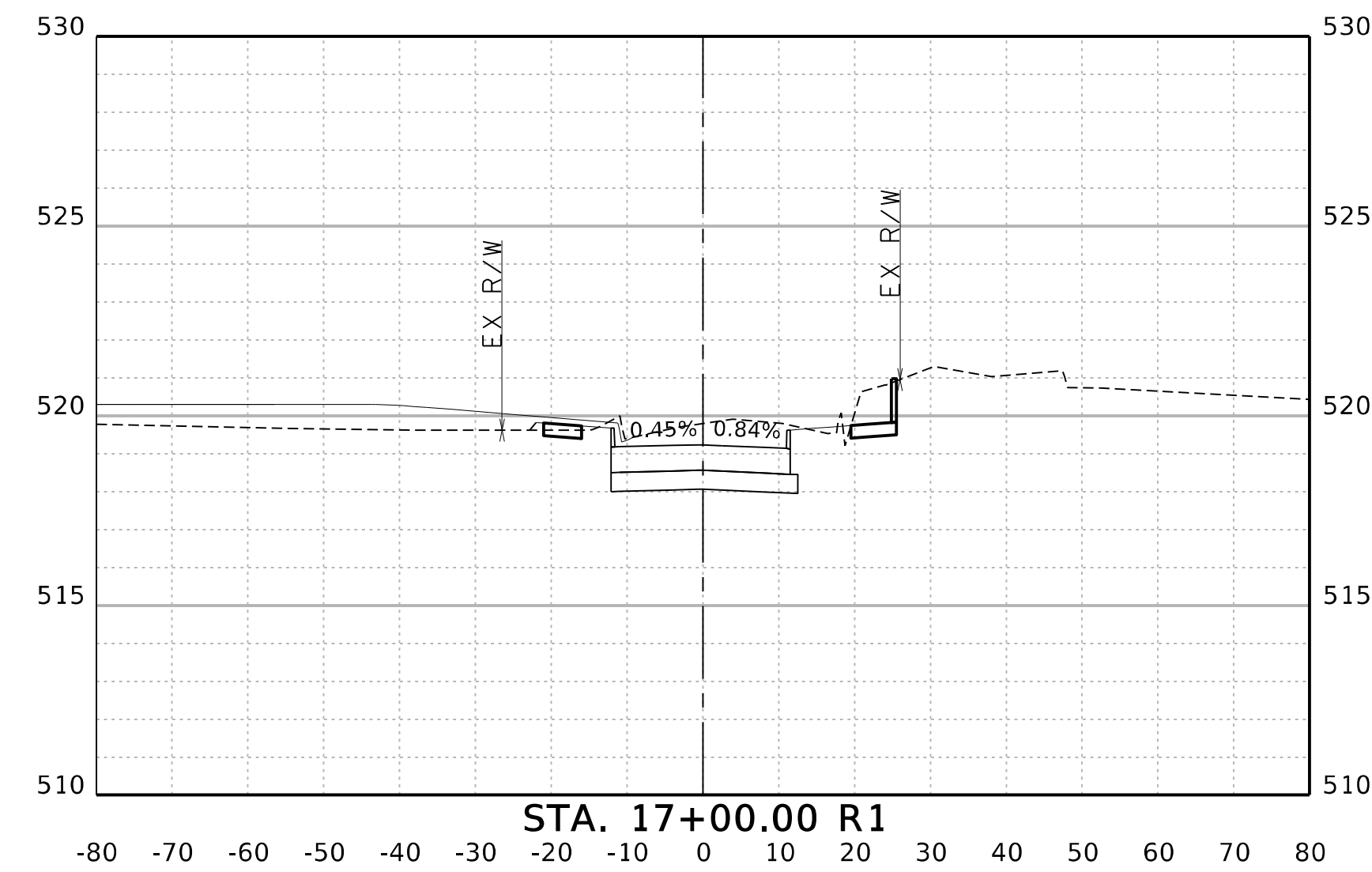
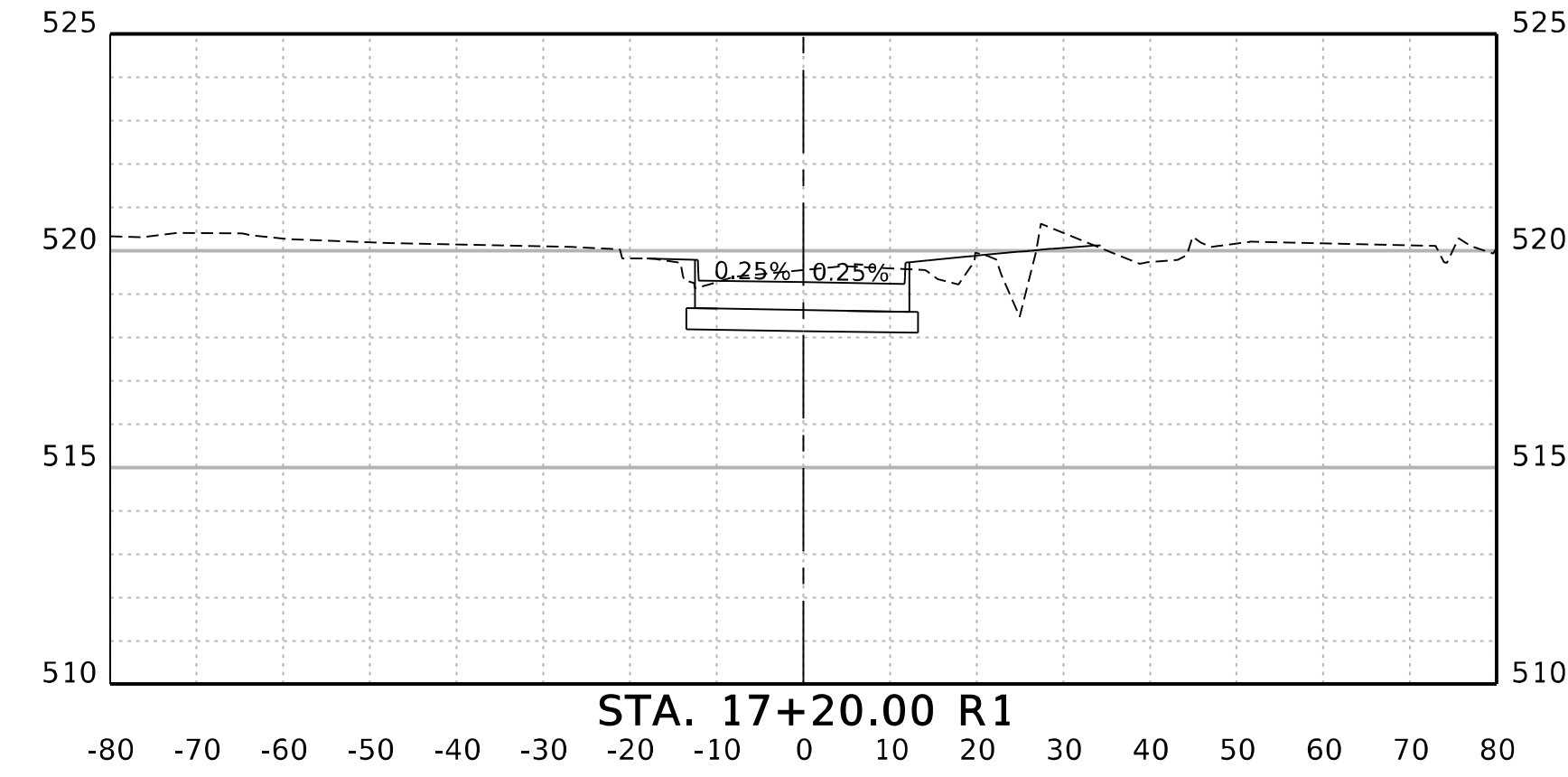
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MicroStation V8 User: 04331 Office: On Site  
 Plotter: LUP: N:\ENGC\cv-trt-xs-elmxs.dgn  
 Plot Scale: 40,000 / 1" = 100'-0" / 1" = 100'-0"  
 Date: Aug. 07, 2023 - 11:20:17 AM Project: Elm and Nichols, Inc. - True Type Font

Office: On Site Date: Aug. 07, 2023 - 11:20:17 AM User: 04331 File: N:\ENGC\cv-trt-xs-elmxs.dgn



STA. 15+65.37 R1 TO STA. 17+20.00 R1



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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
 IMPROVEMENTS**  
 CIVIL  
**ELM ST CROSS SECTIONS  
 STA 15+65.37 TO END**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	SEC	DRAWN	CHW	REVISED	SEC	CHECKED	FILE NAME
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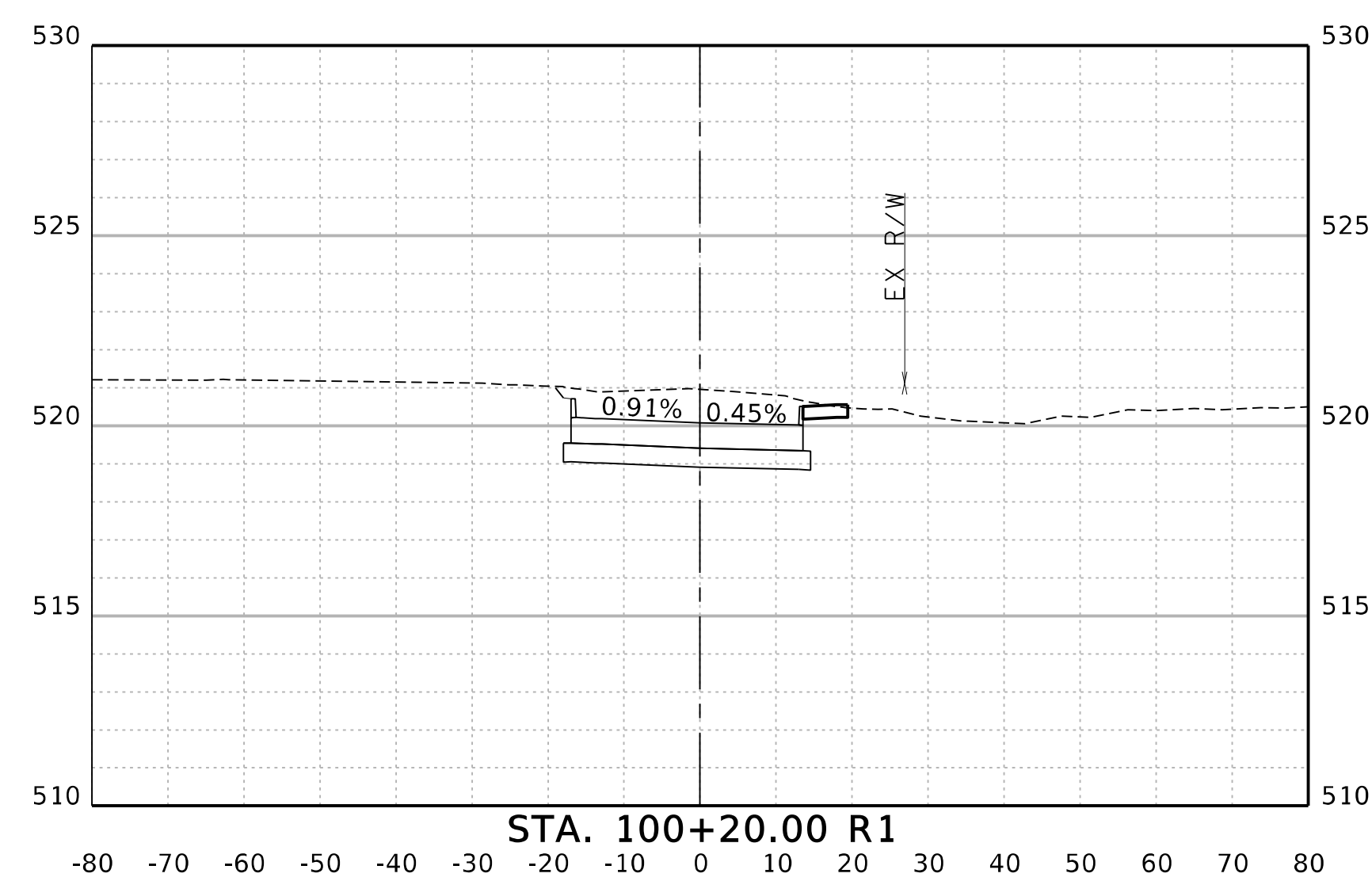
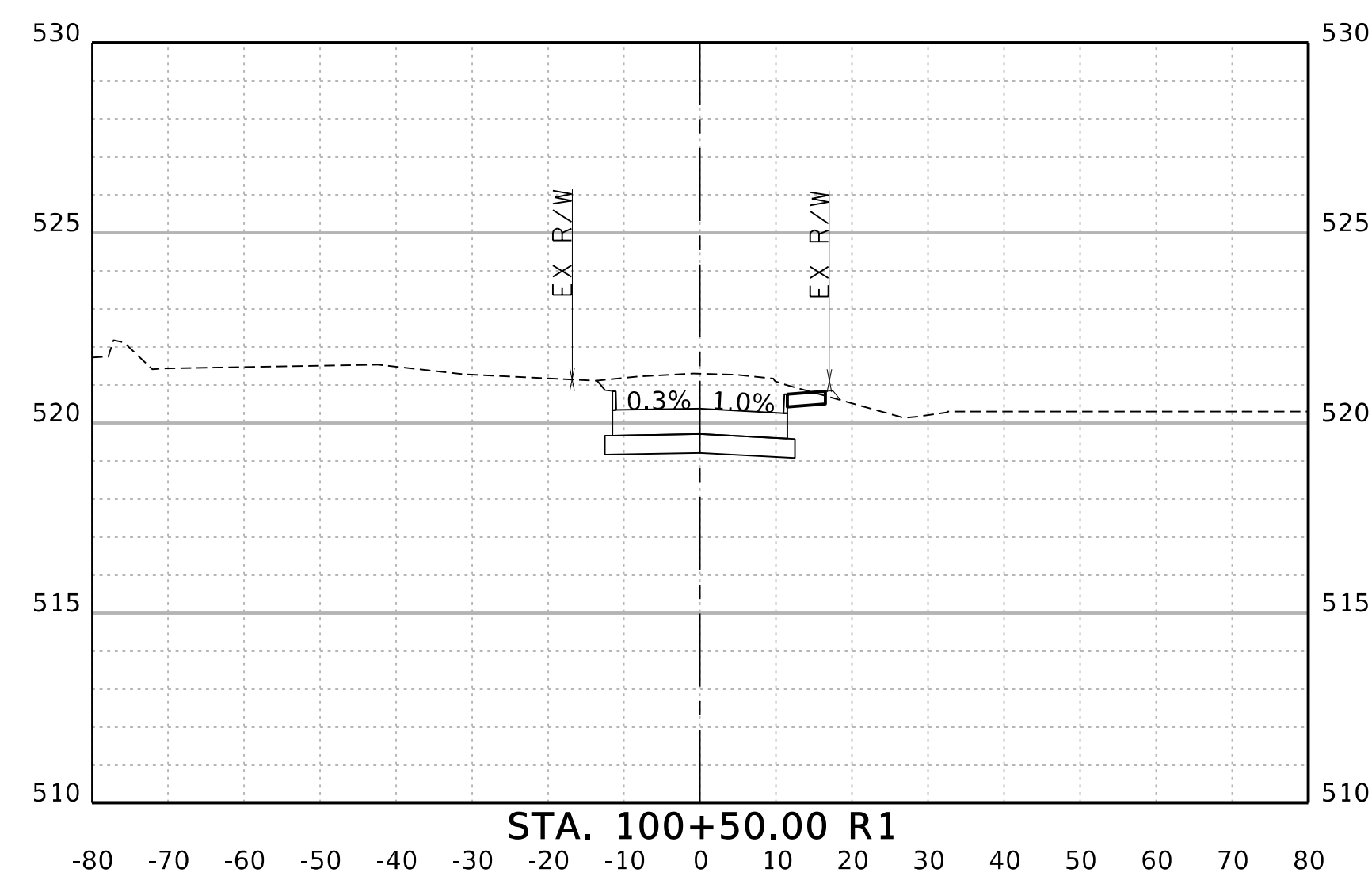
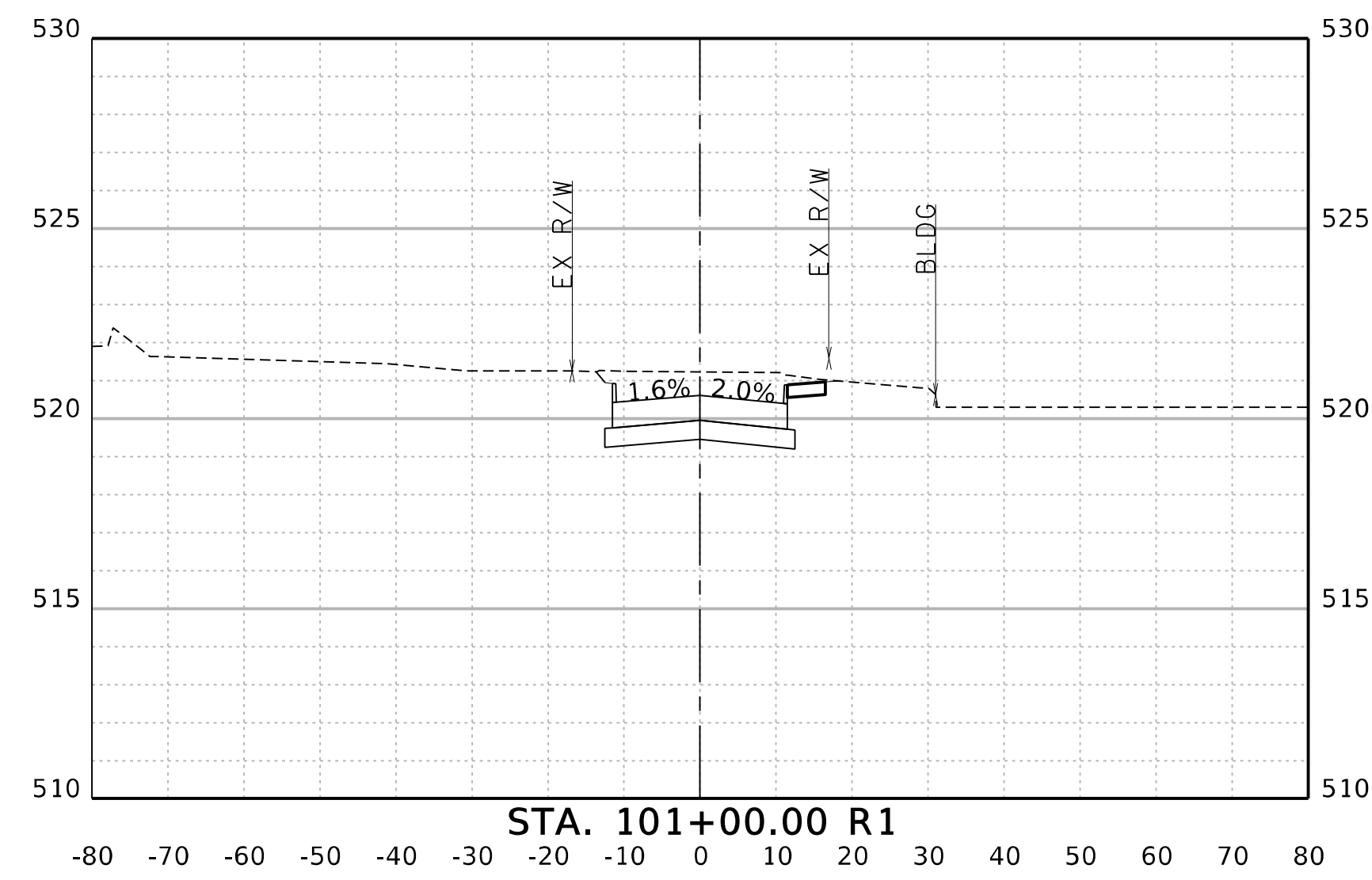
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CHM  
SEC

XS-5

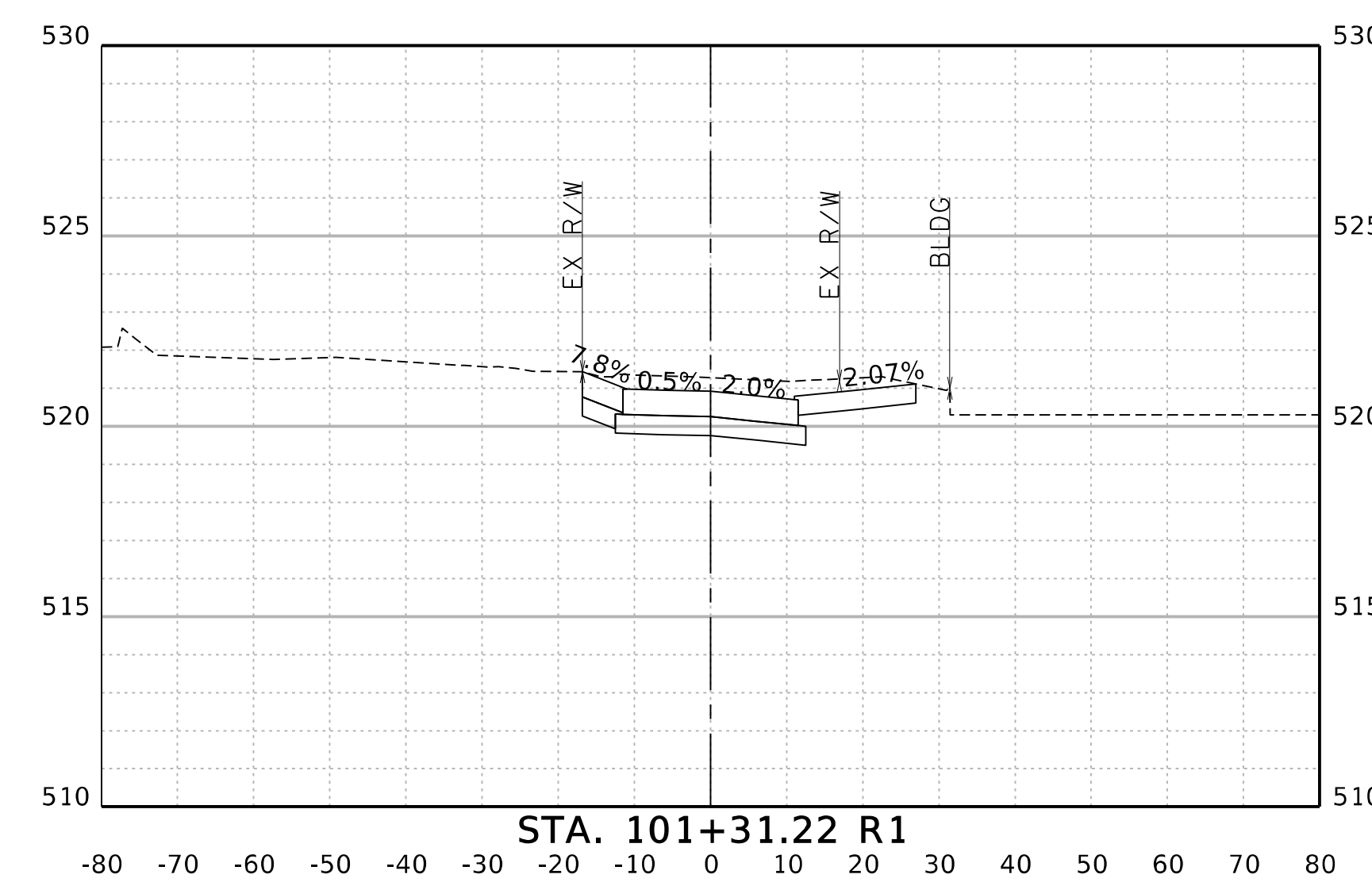
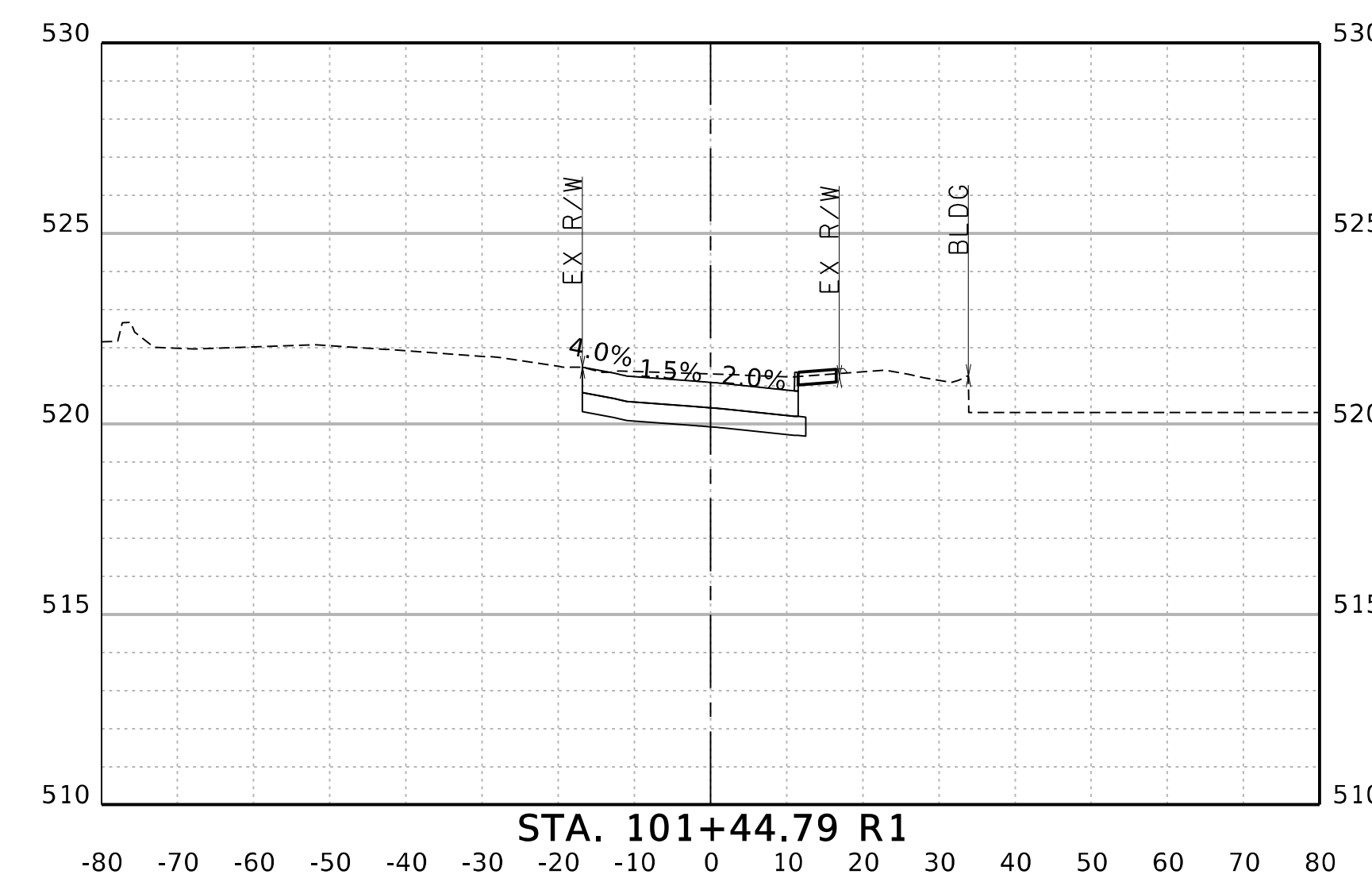
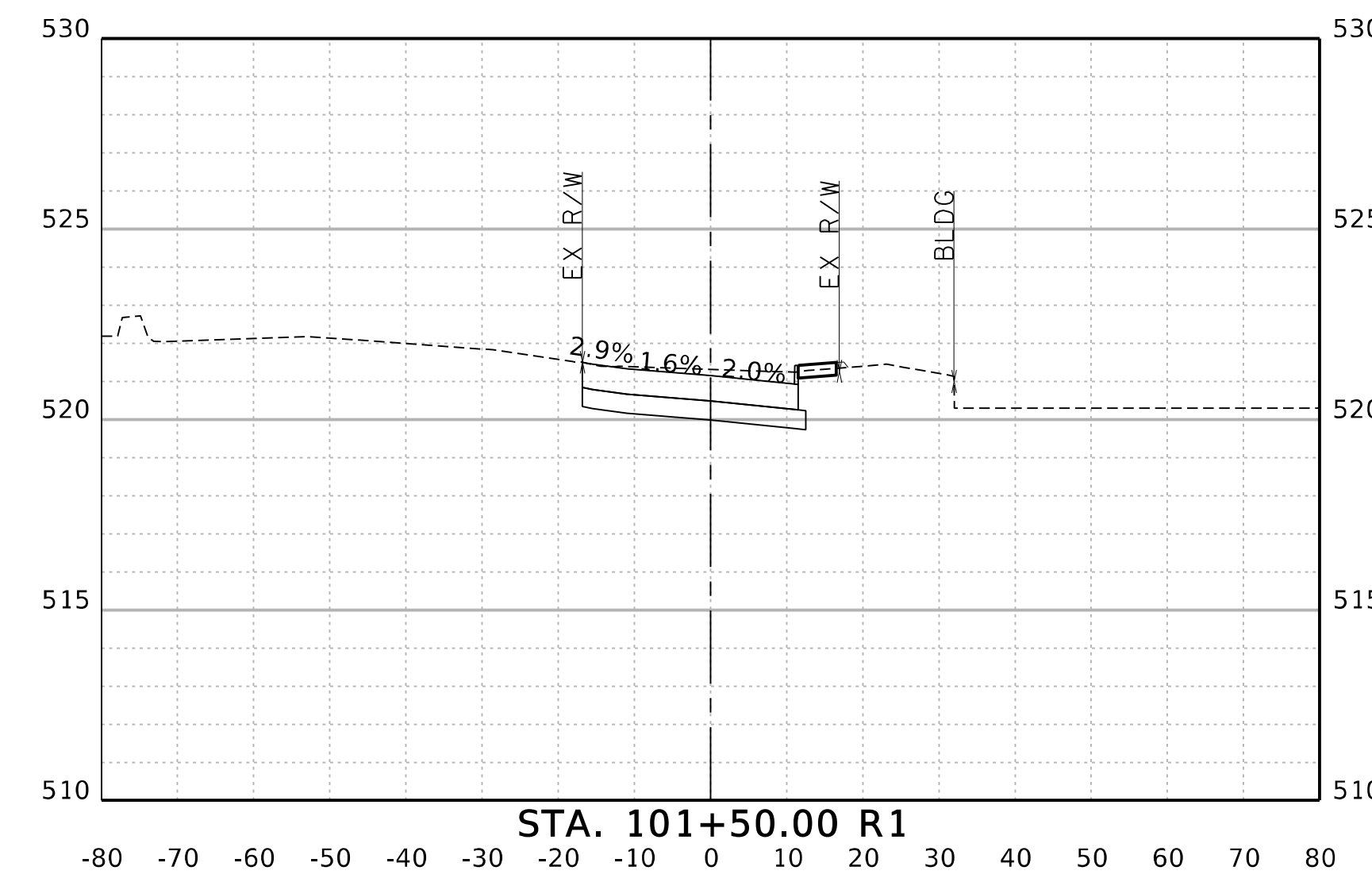
59

CIVIL  
POYDRAS ST CROSS SECTIONS  
BEGIN TO END

MicroStation User: 04331 Office: On Site  
Project: N:\ENGCV\trt-xs-poydras.dgn  
Plot Scale: 1/4" = 10'-0" / 1" = 40'-0"  
Date: Aug 07 2023 11:20:18 AM  
Project: Freese and Nichols, Inc. - True Type Font



STA.100+20.00 R1 TO STA.101+50.00 R1



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

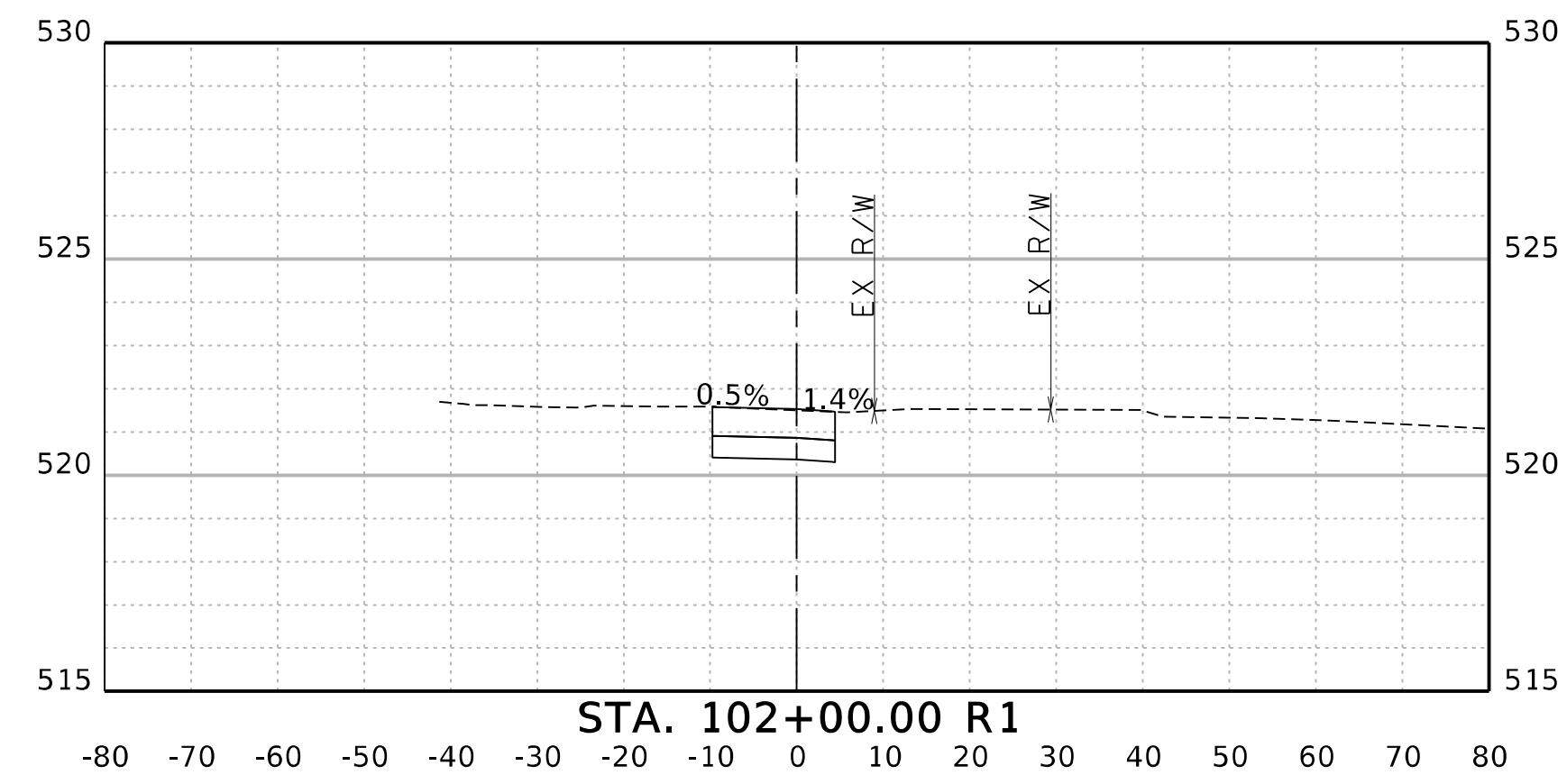
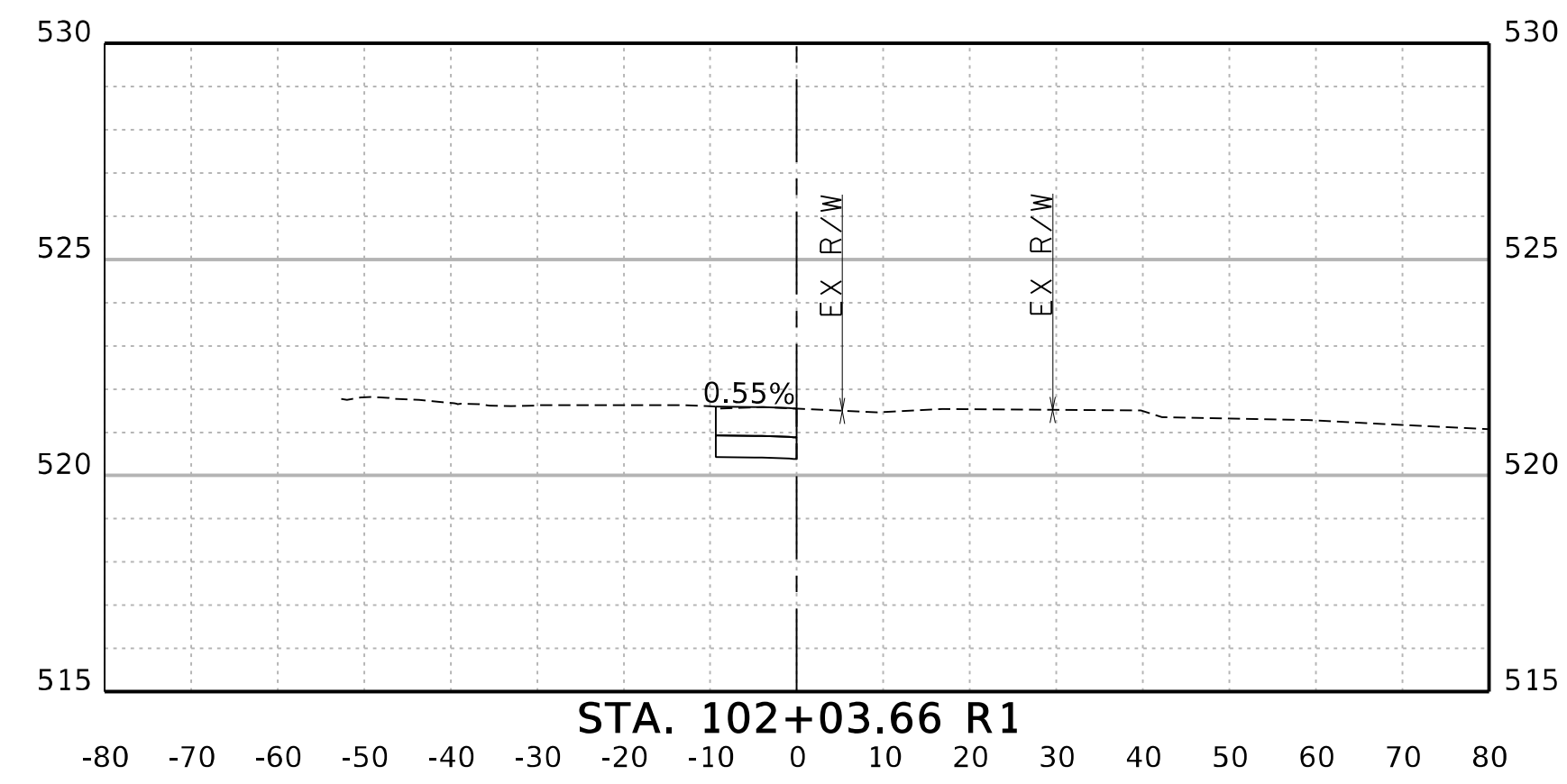


CITY OF LEWISVILLE  
ELM ST & POYDRAS ST  
IMPROVEMENTS  
CIVIL  
POYDRAS ST CROSS SECTIONS  
BEGIN TO STA 101+50.00

NO.	ISSUES	BY	DATE	FEN JOB NO.
				LEW20378
			DATE	DESIGNED
			AUG 2023	SEC
			DRAWN	CHM
			REVISED	SEC
			CHECKED	
			FILE NAME	CV-TRT-XS-POYDRASXS.dgn

SHEET XS-5  
SEQ. 52

MicroStation V8 User: 04331 - Office On Site  
 Plotter: LUPLOT - N:\ENGC\tr-tr-x-poydrasxs.dgn  
 Plot Scale: 40,000 / 1 in.  
 Date: Aug. 07, 2023 - 11:20:18 AM  
 Project: Freese and Nichols, Inc. - True Type Font



STA.102+00.00 R1 TO STA.102+03.66 R1

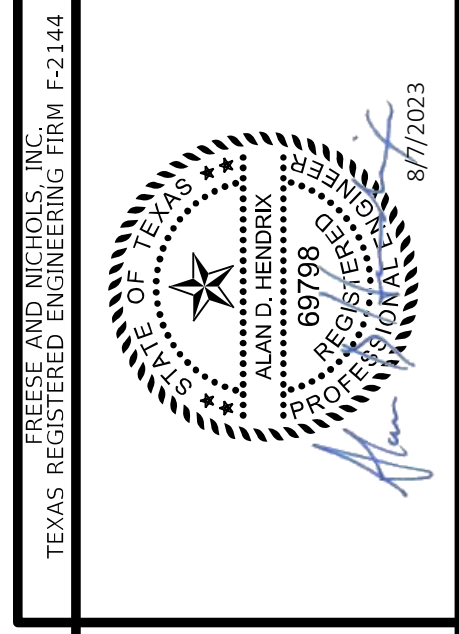
FREESE AND NICHOLS, INC.  
 TEXAS REGISTERED ENGINEERING FIRM F-2144



CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
 IMPROVEMENTS**  
 CIVIL  
**POYDRAS ST CROSS SECTIONS  
 STA 102+00.00 TO END**

NO.	ISSUES	BY	DATE	F&N JOB NO.	DATE	DESIGNED	SEC	DRAWN	CHW	REVISED	SEC	CHECKED	SEC	FILE NAME
				LEW20378	AUG 2023									CV-TR-XS-POYDRASXS.DGN

VERIFY SCALE: Bar is one inch on original drawing.  
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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 CIVIL  
**EXISTING DRAINAGE AREA MAP**

FEIN JOB NO.	LEW20378
DATE	AUG 2023
DESIGNED	CM
DRAWN	KLH
REVISED	SEC
CHECKED	

NO.	ISSUES	DATE	BY	FILE NAME
				cv-rt-pl-exdmap.sht

SHEET **DA-1**  
 SEQ. 54

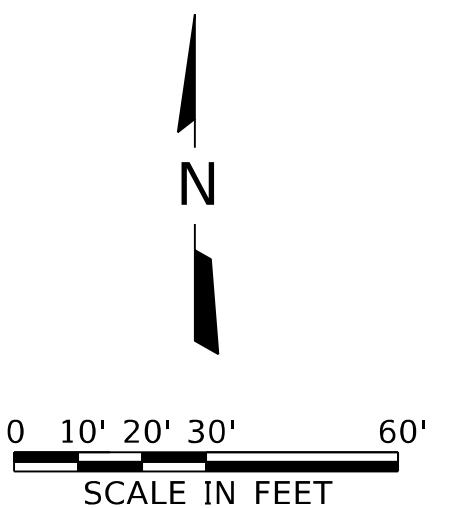
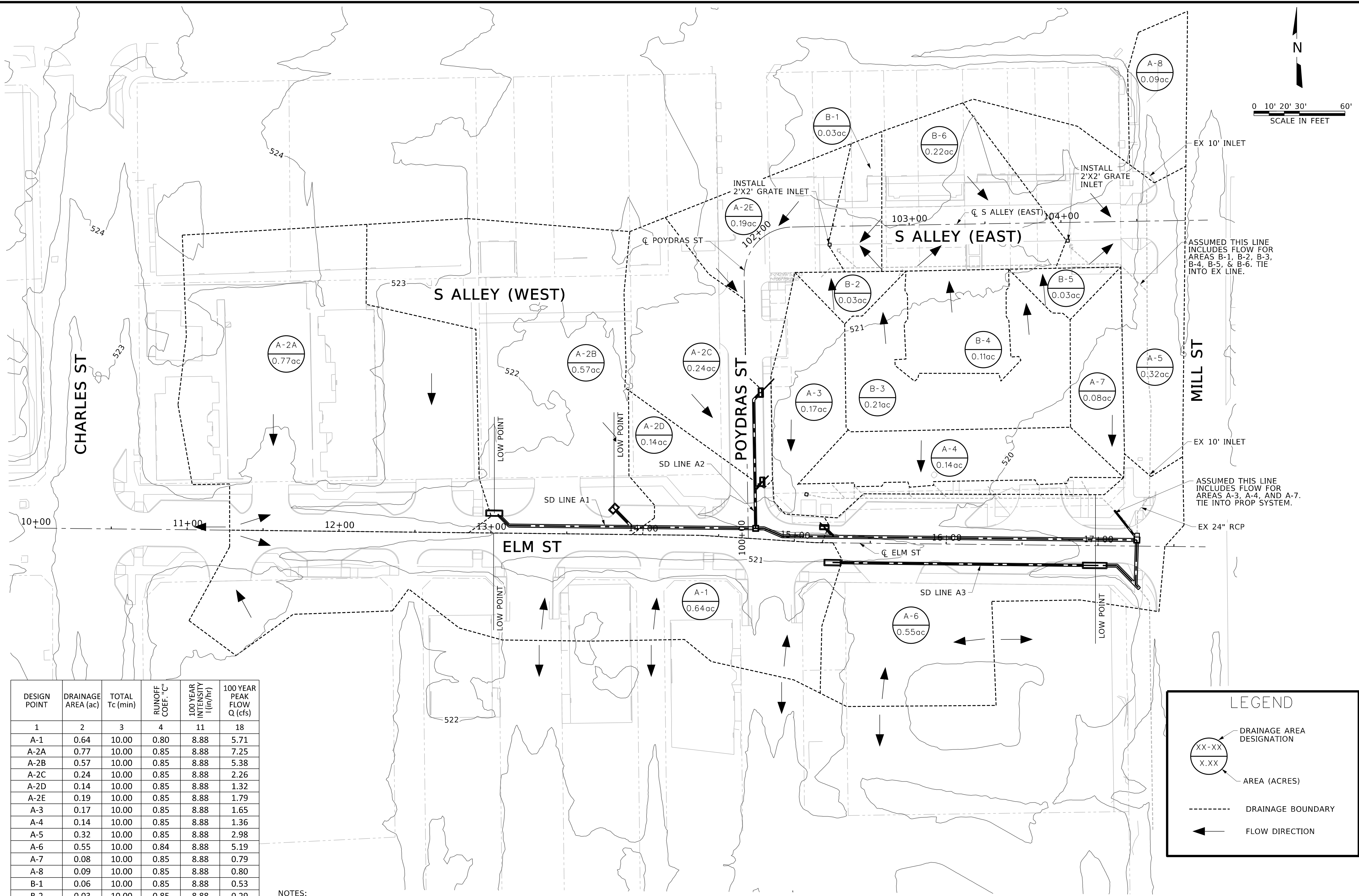
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1	2	3	4	11	18
A-1	0.98	10.00	0.81	8.88	8.74
A-2	1.93	10.00	0.85	8.88	17.17
A-3	0.27	10.00	0.85	8.88	2.39
A-4	0.14	10.00	0.85	8.88	1.28
A-5	0.08	10.00	0.85	8.88	0.70
A-6	0.28	10.00	0.85	8.88	2.52
A-7	0.08	11.00	0.85	8.88	0.74
A-8	0.09	10.00	0.85	8.88	0.76
B-1	0.15	10.00	0.85	8.88	1.34
B-2	0.03	10.00	0.85	8.88	0.27
B-3	0.21	10.00	0.85	8.88	1.89
B-4	0.11	10.00	0.85	8.88	0.96
B-5	0.03	10.00	0.85	8.88	0.27
B-6	0.22	10.00	0.85	8.88	2.00

\*THESE AREAS ARE ASSUMED TO ENTER THE EXISTING 12" SCH 40 PVC SYSTEM

**LEGEND**

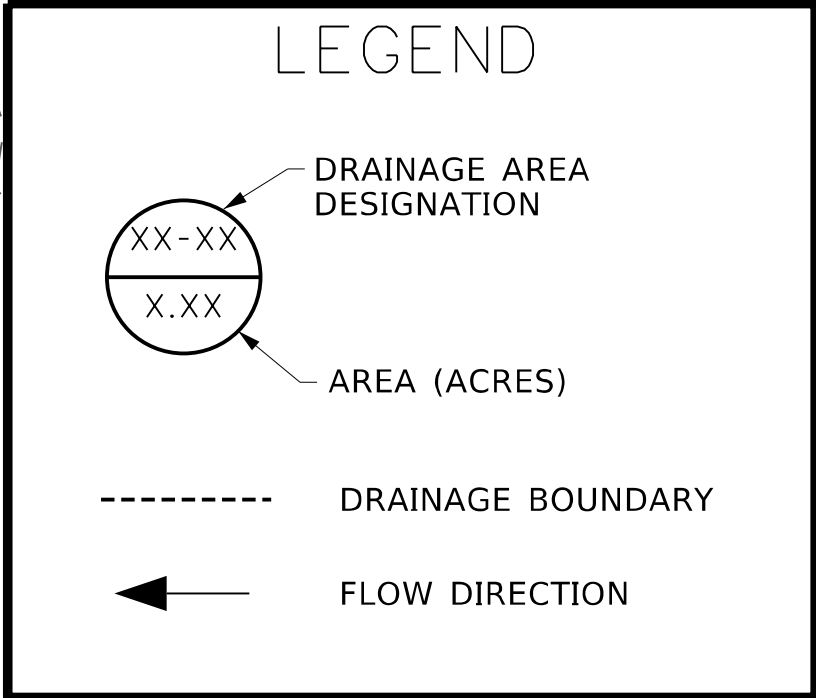
- XX-XX DRAINAGE AREA DESIGNATION
- X.XX AREA (ACRES)
- DRAINAGE BOUNDARY
- ← FLOW DIRECTION

MicroStation V8 User: 04331 Office: On Site  
 Project: LEWISVILLE Drainage/Map/DA-1  
 Plot Scale: 60,000 / 1" = 1000' / 1" = 1000'  
 Date: Aug 07 2023 11:20:20 AM  
 Project: Freese and Nichols, Inc. - True Type Fonts



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	0.64	10.00	0.80	8.88	5.71
A-2A	0.77	10.00	0.85	8.88	7.25
A-2B	0.57	10.00	0.85	8.88	5.38
A-2C	0.24	10.00	0.85	8.88	2.26
A-2D	0.14	10.00	0.85	8.88	1.32
A-2E	0.19	10.00	0.85	8.88	1.79
A-3	0.17	10.00	0.85	8.88	1.65
A-4	0.14	10.00	0.85	8.88	1.36
A-5	0.32	10.00	0.85	8.88	2.98
A-6	0.55	10.00	0.84	8.88	5.19
A-7	0.08	10.00	0.85	8.88	0.79
A-8	0.09	10.00	0.85	8.88	0.80
B-1	0.06	10.00	0.85	8.88	0.53
B-2	0.03	10.00	0.85	8.88	0.29
B-3	0.21	10.00	0.85	8.88	2.01
B-4	0.11	10.00	0.85	8.88	1.03
B-5	0.03	10.00	0.85	8.88	0.29
B-6	0.22	10.00	0.85	8.88	2.10

NOTES:  
 1. AN ADJUSTMENT FACTOR OF 1.25 WAS USED TO DETERMINE PEAK FLOW.  
 2. THE INTENSITY VALUE USED IS BASED OFF THE CITY OF LEWISVILLE DRAINAGE CRITERIA MANUAL.



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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 CIVIL  
**PROPOSED DRAINAGE AREA MAP**

NO. ISSUES	BY	DATE	FEIN JOB NO.	LEW20378
			DATE	AUG 2023
			DESIGNED	CM
			DRAWN	KLH
			REVISED	SEC
			CHECKED	
			FILE NAME	cv-trt-pl-propDMAP.sht
			VERIFY SCALE	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
SHEET	<b>DA-2</b>			
SEQ.	55			

MicroStation V8 User: 04331 Office: On Site  
 Plotted: 11/21/2023 11:20:22 AM  
 Plot Scale: 60.000 x 1 in.  
 Date: Aug 07 2023 11:20:22 AM  
 Project: Freese and Nichols, Inc. - True Type Fonts

**ON GRADE INLETS**

INLET			DRAINAGE AREA NO.				Cross Slope of Pavement "S" (ft/ft)	Long Slope "S" (ft/ft)	Cross Slope of Gutter "S'w" (ft/ft)	Depth of Flow "Y" (ft)	Spread of Flow "T" (ft)	Equivalent Cross Slope "S" (ft/ft)	Street Section (type)	Manning's coefficient pavement "n"	100-year Intensity (in/hr)	100-year Runoff (cfs)	100-year Carryover Flow (cfs)	100-year Total Gutter Q (cfs)	Right-of-Way Capacity (cfs)	Design Storm	Length Required "L" (ft)	Actual Provided Length L (ft)	L/L	Efficiency "E"	Inlet Capacity (cfs)	Bypass Target	100-year Bypass Flow "q" (cfs)	COMMENTS
Design Point	Inlet No.	STATION	Area No.	Area (acres)	Runoff "C"	Conc. Time (min)																						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	21	22	23	24	25	26	27	28	29	30	31	33	34
A-1	A-1	ELM 15+31.02	A-1	0.64	0.80	10.00	0.030	0.0040	0.167	0.34	11.46	0.082	Straight	0.012	8.88	5.71	0.00	5.71	23.98	100-yr	15.15	10	0.66	0.86	4.89	A-6	0.82	
A-2A	A-2A	ELM 13+02.15	A-2A	0.77	0.85	10.00	0.030	0.0081	0.167	0.33	10.98	0.084	Straight	0.012	8.88	7.25	0.00	7.25	34.16	100-yr	20.41	10	0.49	0.70	5.09	A-2B	2.16	
A-2C	A-2C	POY 100+37.13	A-2C	0.24	0.85	10.00	0.020	0.0055	0.167	0.21	10.56	0.076	Straight	0.012	8.88	2.26	0.47	2.74	28.12	100-yr	12.83	5	0.39	0.59	1.61	A-2D	1.13	Combination inlet two grate. See Note 4.
A-2D	A-2D	ELM 15+19.66	A-2D	0.14	0.85	10.00	0.030	0.0045	0.167	0.24	8.16	0.100	Straight	0.012	8.88	1.32	1.13	2.45	25.44	100-yr	9.78	5	0.51	0.72	1.77	A-6	0.67	Combination inlet two grate. See Note 4.
A-2E	A-2E	POY 100+95.88	A-2E	0.19	0.85	10.00	0.030	0.0042	0.167	0.23	7.82	0.102	Straight	0.012	8.88	1.79	0.32	2.11	24.57	100-yr	8.86	5	0.56	0.78	1.63	A-2C	0.47	Combination inlet two grate. See Note 4.
B-1	B-1	POY 102+47.45	B-1	0.06	0.85	10.00	0.005	0.0044	0.005	0.07	14.17	0.048	Straight	0.012	8.88	0.53	0.00	0.53	25.15	100-yr	7.93	2	0.25	0.41	0.22	A-2E	0.32	EX 2'x2' Grate Inlet
B-6	B-6	POY 104+04.27	B-6	0.22	0.85	10.00	0.005	0.0172	0.005	0.09	18.38	0.039	Straight	0.012	8.88	2.10	0.00	2.10	49.73	100-yr	24.16	2	0.08	0.14	0.30	A-5	1.80	EX 2'x2' Grate Inlet

**SUMP INLETS**

Inlet No.	Gutter Slope S <sub>v</sub> (ft/ft)	Crown Slope of Pavement θ (ft/ft)	100-year Gutter Flow Q (cfs)	100-year Carryover Flow (cfs)	100-year Total Gutter Flow Q (cfs)	100-year Depth of Gutter Flow Y (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-2B	0.008	0.03	5.38	2.16	7.53	0.34	0.25	0.59	1.59	5	7.93	1.00	100%	
A-3	0.010	0.25	1.65	0.00	1.65	0.40	0.50	0.90	0.21	2'x2'	20.57	0.00	100%	Ex Inlet
A-5	0.003	0.02	2.98	1.80	4.78	0.29	0.25	0.54	1.16	10	11.64	1.00	100%	Ex Inlet
A-6	0.004	0.03	5.19	1.49	6.69	0.36	0.25	0.61	1.31	15	19.63	0.00	100%	
A-8	0.003	0.03	0.80	0.00	0.80	0.17	0.25	0.42	0.75	15	11.24	0.00	100%	

- NOTES:
1. INLET CAPACITY WAS EVALUATED FOR 100-YR DESIGN STORMS FOR CURRENT DEVELOPED LAND USE CONDITIONS.
  2. STORM DRAIN INLETS WERE SIZED USING THE RATIONAL METHOD.
  3. THE HYDROLOGY IS ACCORDANCE WITH CITY OF LEWISVILLE DRAINAGE CRITERIA MANUAL.
  4. ALL COMBINATION INLETS WERE ASSUMED GRATE CAPACITY WAS 100% CLOGGED.
  5. THE INLETS WERE SPACED TO MEET SPREAD CLOSE TO 11 FT WIDE.
  6. AN ADJUSTMENT FACTOR OF 1.25 WAS USED TO DETERMINE PEAK FLOW.
  7. THE INTENSITY VALUE USED IS BASED OFF THE CITY OF LEWISVILLE DRAINAGE CRITERIA MANUAL.



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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST**  
**IMPROVEMENTS**  
 CIVIL  
**INLET CALCULATIONS**

NO. ISSUES	BY	DATE	FEN JOB NO.	DATE	DESIGNED	YR	DRAWN	KLH	REVISED	SEC	CHECKED	FILE NAME
			LEW20378	AUG 2023								cv-trt-dcalc01.sht

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

SHEET **IC-1**

SEQ. **56**

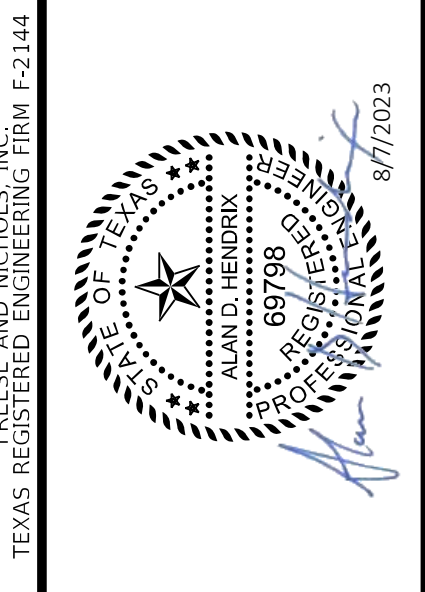


# HYDRAULIC CALCS

STORM DRAIN HYDRAULIC CALCULATIONS TABLE

FROM	TO	PIPE LENGTH feet	Drainage Area			Runoff "c"	Incr. cA	Total cA	Time of Concentration			100-yr Intensity in/hr.	Q100 Runoff cfs	100-yr Inlet cfs	Q pipe cfs	Pipe Size in.	No. of Barrels	n	Sf ft/ft	HEAD LOSS CALCULATIONS										Design U/S HGL Elev.	Invert Elev.		T/C ELEV. Ft.	DESCRIPTION	NOTES		
			No.	Area	Total Area				Inlet min.	Travel min.	Total min.									D/S Elev.	U/S Elev.	V1 (in) ft/sec	V2 (out) ft/sec	V1/2G ft.	V2/2G ft.	Kj	KjV1/2G ft.	Hk ft.	FROM ft.		TO ft.						
1	2	3	4	5	6	7	8	9	10	11	12	14	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37			
<b>LINE A1</b>																																					
10+12.79	10+21.33	8.54	A-2A	0.77	0.77	0.85	0.65	0.65	10.00	0.10	10.00	8.88	6.82	2.16	4.66	24	1	0.012	0.0004	519.74	519.74	1.48	1.48	0.034	0.034	1.25	0.04	0.10	519.84	516.89	516.84	521.80	Inlet at Beg. of Line				
10+21.33	11+02.37	81.04		0.00	0.77				0.65	0.00	0.62	10.10	8.88	6.82	0.00	6.82	24	1	0.012	0.0008	519.57	519.64	1.48	2.17	0.034	0.073	0.35	0.01	0.10	519.74	516.84	517.84	521.75	Bends where radius = diam, 45° Bend			
11+02.37	11+83.77	81.40	A-2B	0.57	1.34	0.85	0.48	1.14	10.00	0.36	10.72	8.88	11.88	0.00	11.88	24	1	0.012	0.0024	519.22	519.41	2.17	3.78	0.073	0.222	0.75	0.05	0.17	519.57	517.84	516.09	521.11	45° Wye connection				
11+83.77	11+89.28	5.51	Line A2	0.24	1.58	0.85	0.20	1.34	10.00	0.02	11.08	8.88	14.01	0.00	14.01	24	1	0.012	0.0033	518.94	518.96	3.78	4.46	0.222	0.309	0.25	0.06	0.25	519.22	516.09	516.07	520.54	MH on Trunk Line w/90° Branch Lat				
11+89.28	12+02.34	13.06		0.00	1.58				1.34	0.00	0.05	11.10	8.88	14.01	0.00	14.01	24	1	0.012	0.0033	518.80	518.84	4.46	4.46	0.309	0.309	0.20	0.06	0.10	518.94	516.07	516.01	520.54	Bends where radius = diam, 22.5° Bend			
12+02.34	12+36.20	33.86		0.00	1.58				1.34	0.00	0.13	11.15	8.88	14.01	0.00	14.01	24	1	0.012	0.0033	518.59	518.70	4.46	4.46	0.309	0.309	0.20	0.06	0.10	518.80	516.01	515.87	520.30	Bends where radius = diam, 22.5° Bend			
12+36.20	14+35.84	199.64	A-2D	0.14	1.72	0.85	0.12	1.46	10.00	0.72	11.27	8.88	15.26	0.67	14.58	24	1	0.012	0.0035	517.78	518.49	4.46	4.64	0.309	0.335	0.75	0.23	0.10	518.59	515.87	514.98	520.20	45° Wye connection				
14+35.84	14+65.40	29.56	Building B, A-5, &	0.80	2.52	0.85	0.68	2.14	10.00	0.07	11.99	8.88	22.39	0.00	22.39	24	1	0.012	0.0083	516.83	517.08	4.64	7.13	0.335	0.789	0.25	0.08	0.70	517.78	514.98	514.83	519.30	MH on Trunk Line w/90° Branch Lat	Existing system from building B and line from Mill St. See Note 2.			
<b>LINE A2</b>																																					
10+88.94	10+84.70	4.24	A-2E	0.19	0.19	0.85	0.16	0.16	10.00	0.10	10.00	8.88	1.69	0.47	1.21	18	1	0.012	0.0001	519.44	519.44	0.00	0.69	0.000	0.007	1.25	0.00	0.10	519.54	516.49	516.47	520.85	Inlet at Beg. of Line				
10+84.70	10+25.61	59.09		0.00	0.19				0.16	0.00	1.03	10.10	8.88	1.69	0.00	1.69	18	1	0.012	0.0002	519.33	519.34	0.69	0.95	0.007	0.014	0.35	0.00	0.10	519.44	516.47	516.20	520.82	Bends where radius = diam, 45° Bend			
10+25.61	10+00.00	25.61	A-2C	0.24	0.43	0.85	0.20	0.37	10.00	0.28	11.13	8.88	3.82	1.13	2.69	18	1	0.012	0.0006	519.22	519.23	0.95	1.52	0.014	0.036	0.75	0.01	0.10	519.33	516.20	516.09	520.54	45° Wye connection				
<b>LINE A3</b>																																					
10+01.05	11+68.90	167.85	A-1	0.64	0.64	0.80	0.51	0.51	10.00	1.01	10.00	8.88	5.71	0.82	4.89	18	1	0.012	0.0018	518.52	518.83	2.77	2.77	0.119	0.119	1.25	0.15	0.15	518.98	516.56	515.77	520.33	Inlet at Beg. of Line				
11+68.90	11+83.31	14.41	A-6	0.55	1.20	0.84	0.47	0.98	10.00	0.07	11.01	8.88	10.63	0.00	10.63	24	1	0.012	0.0019	518.36	518.39	3.38	3.38	0.178	0.178	0.25	0.04	0.13	518.52	515.77	515.54	519.69	MH on Trunk Line w/90° Branch Lat				
11+83.31	12+00.98	17.67		0.00	1.20				0.98	0.00	0.09	11.08	8.88	10.63	0.00	10.63	24	1	0.012	0.0019	518.23	518.26	3.38	3.38	0.178	0.178	0.35	0.06	0.10	518.36	515.54	514.93	519.69	Bends where radius = diam, 45° Bend			
12+00.98	12+04.51	3.53	Line A1	2.52	3.72	0.85	2.14	3.13	10.00	0.01	11.17	8.88	33.02	0.00	33.02	24	1	0.012	0.0182	516.58	516.64	3.38	10.51	0.178	1.716	0.75	0.13	1.58	518.23	514.93	514.83	519.35	45° Wye connection	See Note 2			
<b>LAT A-2B</b>																																					
10+18.39	10+03.00	15.39	A-2B	0.57	0.57	0.85	0.48	0.48	10.00	0.09	10.00	8.88	5.06	0.00	5.06	18	1	0.012	0.0020	519.57	519.61	0.00	2.86	0.000	0.127	1.25	0.00	0.16	519.76	518.15	517.84	521.15	Inlet at Beg. of Line				
<b>LAT A-2C</b>																																					
10+04.37	10+00.00	4.37	A-2C	0.24	0.24	0.85	0.20	0.20	10.00	0.12	10.00	9.24	2.22	1.13	1.09	18	1	0.012	0.0001	519.44	519.44	0.00	0.62	0.000	0.006	1.25	0.00	0.10	519.54	516.23	516.20	521.04	Inlet at Beg. of Line				

- NOTES:  
 1. SYSTEM CAPACITY IS SIZED FOR THE 100-YR DISCHARGE TO BE CONTAINED WITHIN THE DRAINAGE SYSTEM.  
 2. THE STARTING HGL OF LINE A1 AND LINE A3 IS ASSUMED TO BE TOP OF PIPE.  
 3. THE HYDRAULICS IS IN ACCORDANCE WITH CITY OF LEWISVILLE DRAINAGE CRITERIA MANUAL.  
 4. AN ADJUSTMENT FACTOR OF 1.25 WAS USED TO DETERMINE PEAK FLOW.  
 5. THE INTENSITY VALUE USED IS BASED OFF THE CITY OF LEWISVILLE DRAINAGE CRITERIA MANUAL.

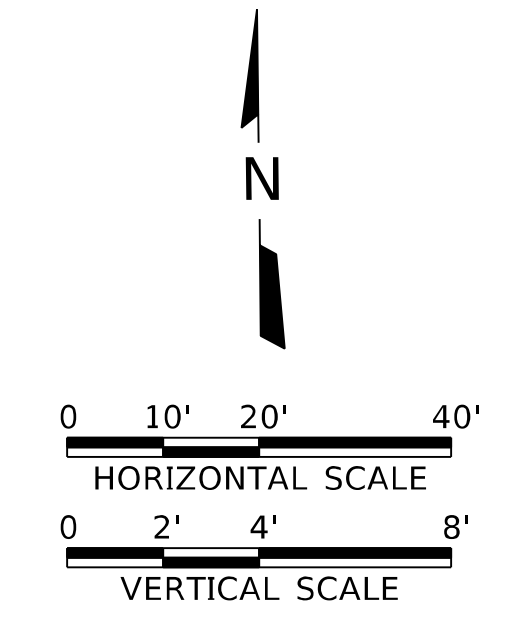
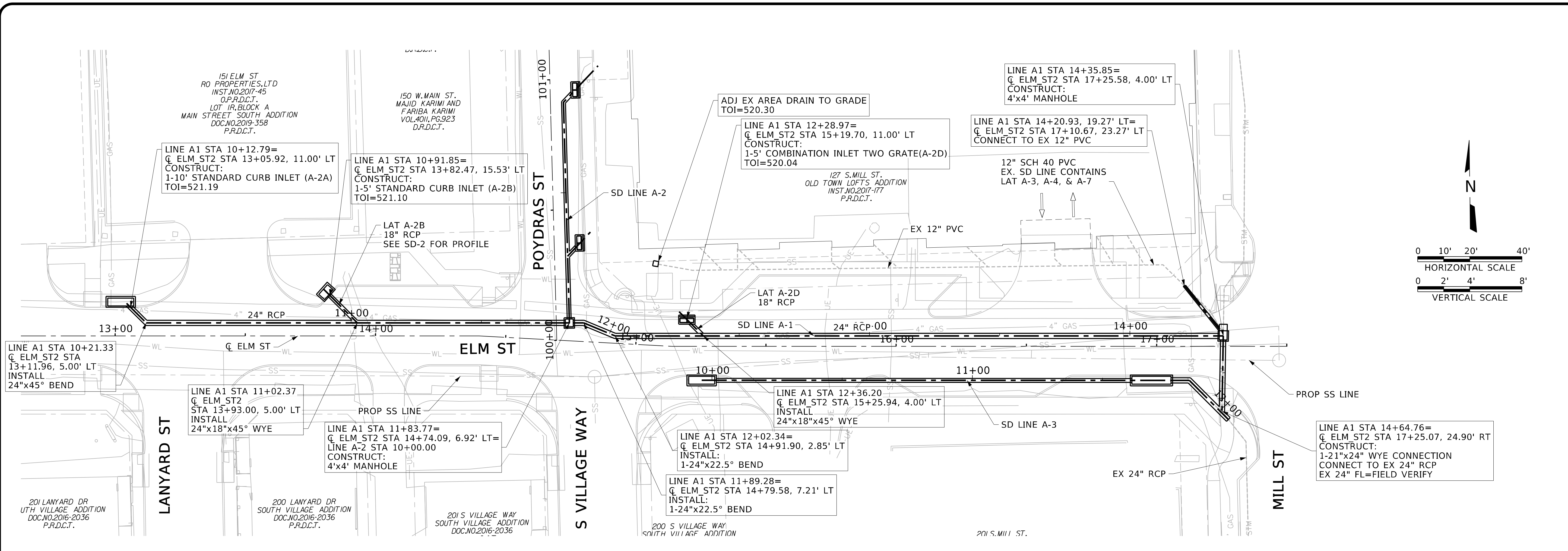


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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
 IMPROVEMENTS**  
 CIVIL  
**HYDRAULIC CALCULATIONS**

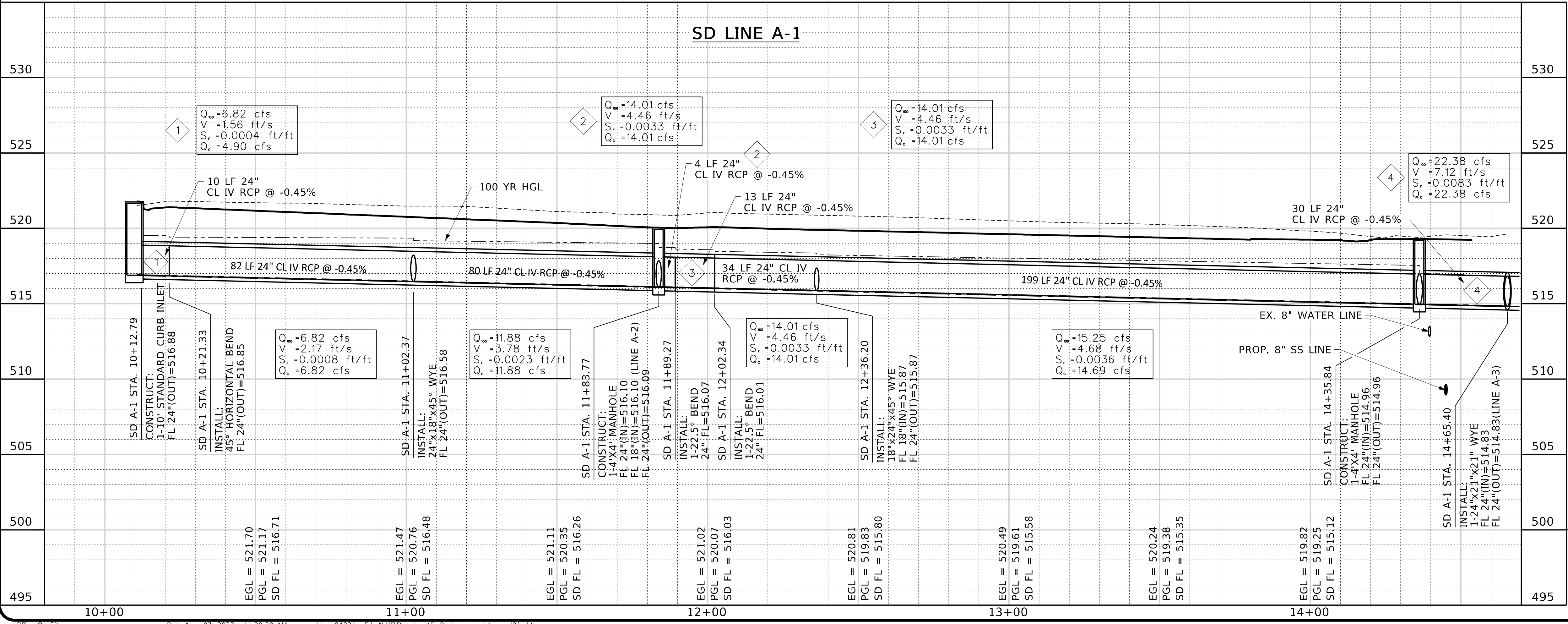
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			DATE	AUG 2023
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			DRAWN	KLH
			REVISED	SEC
			CHECKED	
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CITY OF LEWISVILLE  
**ELM ST & POYNARD ST IMPROVEMENTS**  
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**STORM DRAIN PLAN AND PROFILE**  
**BEGIN TO END**



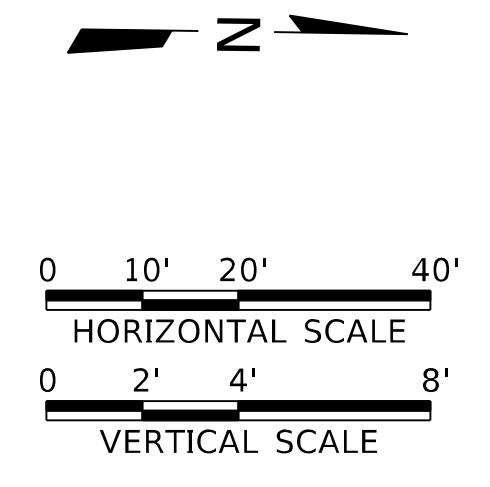
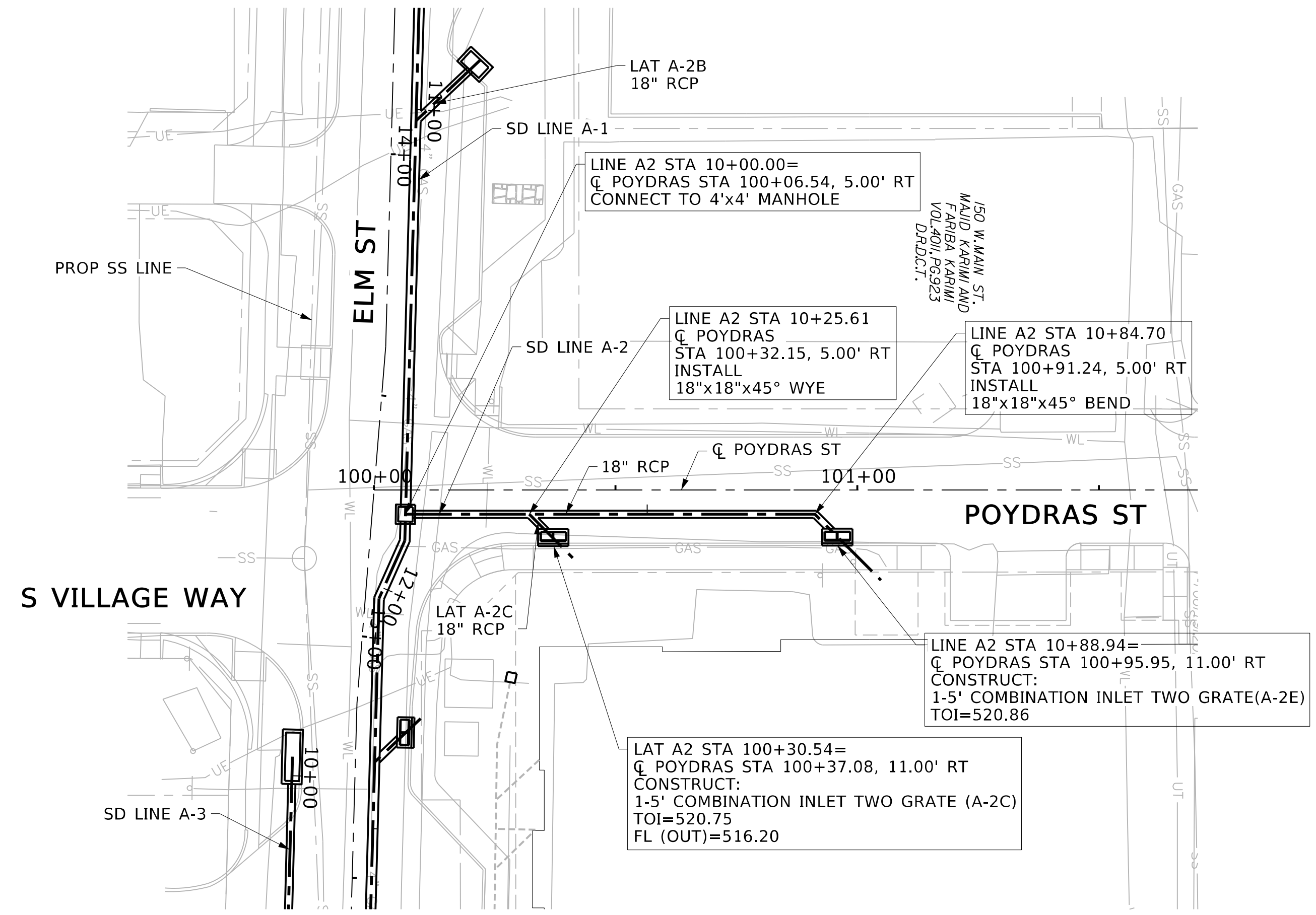
NOTES:  
 1. ALL STORM DRAIN BENDS AND WYE CONNECTIONS SHALL BE MADE WITH PRECAST SECTIONS, UNLESS THE ENGINEER APPROVED FIELD CONNECTIONS. ANY BEND WITH A GAP LARGER THAN 1" SHALL UNCLUDE CONCRETE COLLAR. ALL PIPE SIZE CHANGES SHALL BE MADE WITH PRECAST ENLARGERS/REDUCERS. UNLESS THE ENGINEER APPROVES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

**SD PROFILE LEGEND**

EXISTING GROUND @ $\phi$	-----
PROPOSED GROUND @ $\phi$	-----
100 YR HGL	-----

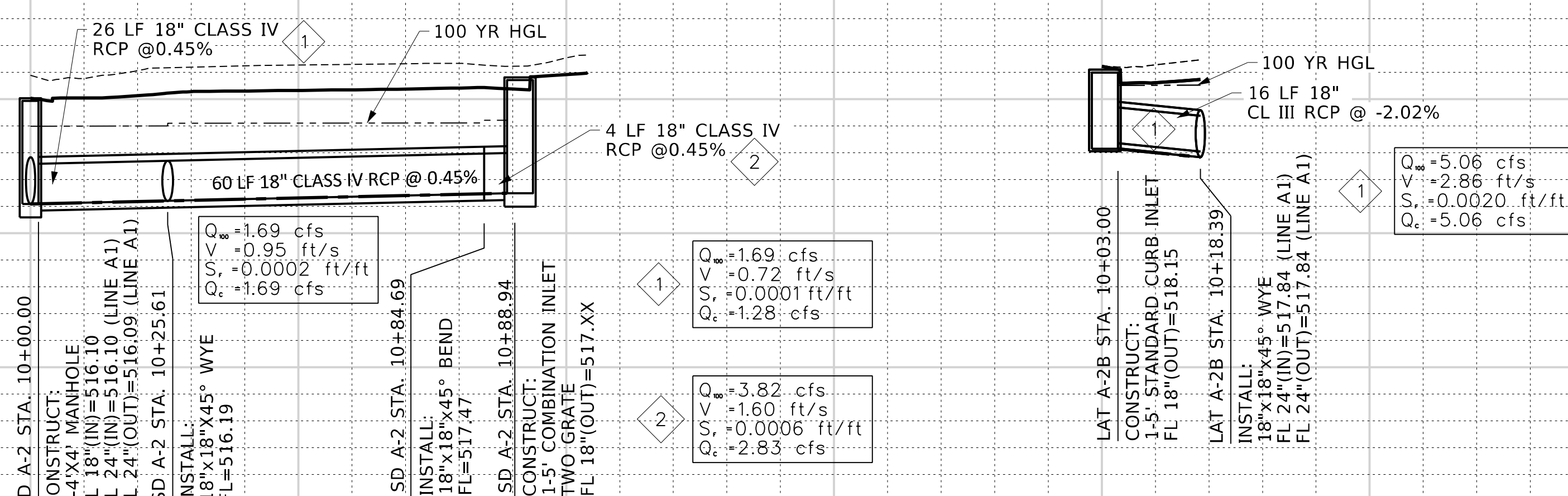
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DATE	LEW20378		
AUG 2023			
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SEQ.			

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**SD LINE A-2**

**LAT A-2B**



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

**SD PROFILE LEGEND**

EXISTING GROUND @  $\phi$  -----  
PROPOSED GROUND @  $\phi$  - - - - -  
100 YR HGL - - - - -

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Project: N:\IT\Drawings\5\_Drainage\cv-trt-pp-sd02.sht  
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ALAN D. HENDRIX  
PROJ. NO. 2301000001  
8/7/2023

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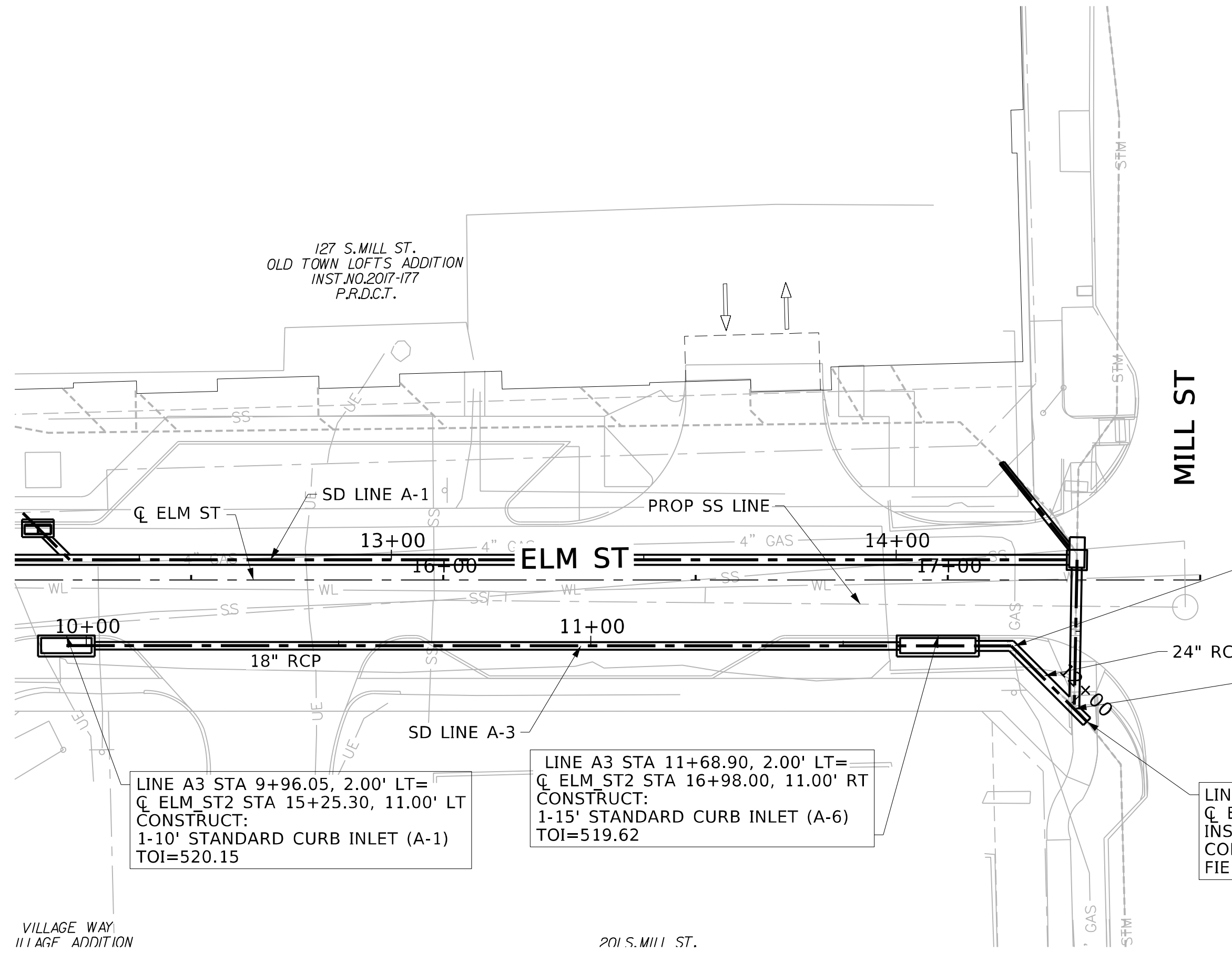
CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
CIVIL  
**STORM DRAIN LINE A-2 PLAN & PROFILE BEGIN TO END**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	DRAWN	REVISED	CHECKED	FILE NAME
				LEW20378	AUG 2023	CM	CM	SEC		cv-trt-pp-sd02.sht

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

SHEET **SD-2**

SEQ. 59



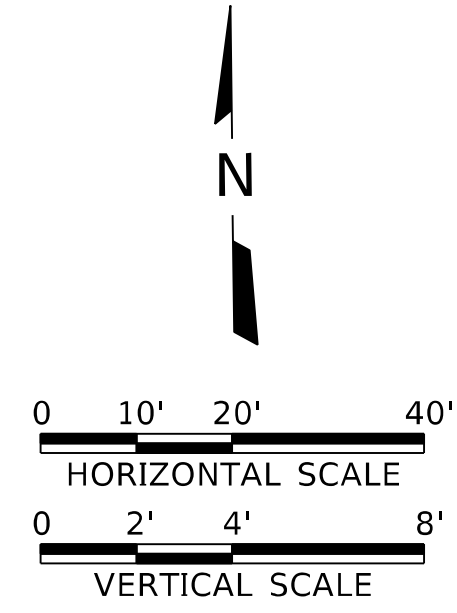
LINE A3 STA 9+96.05, 2.00' LT=  
 CL ELM ST2 STA 15+25.30, 11.00' RT  
 CONSTRUCT:  
 1-10' STANDARD CURB INLET (A-1)  
 TOI=520.15

LINE A3 STA 11+68.90, 2.00' LT=  
 CL ELM ST2 STA 16+98.00, 11.00' RT  
 CONSTRUCT:  
 1-15' STANDARD CURB INLET (A-6)  
 TOI=519.62

LINE A3 STA 11+83.96=  
 CL ELM ST2 STA 17+13.22, 13.05' RT  
 INSTALL:  
 1-24"x45° BEND

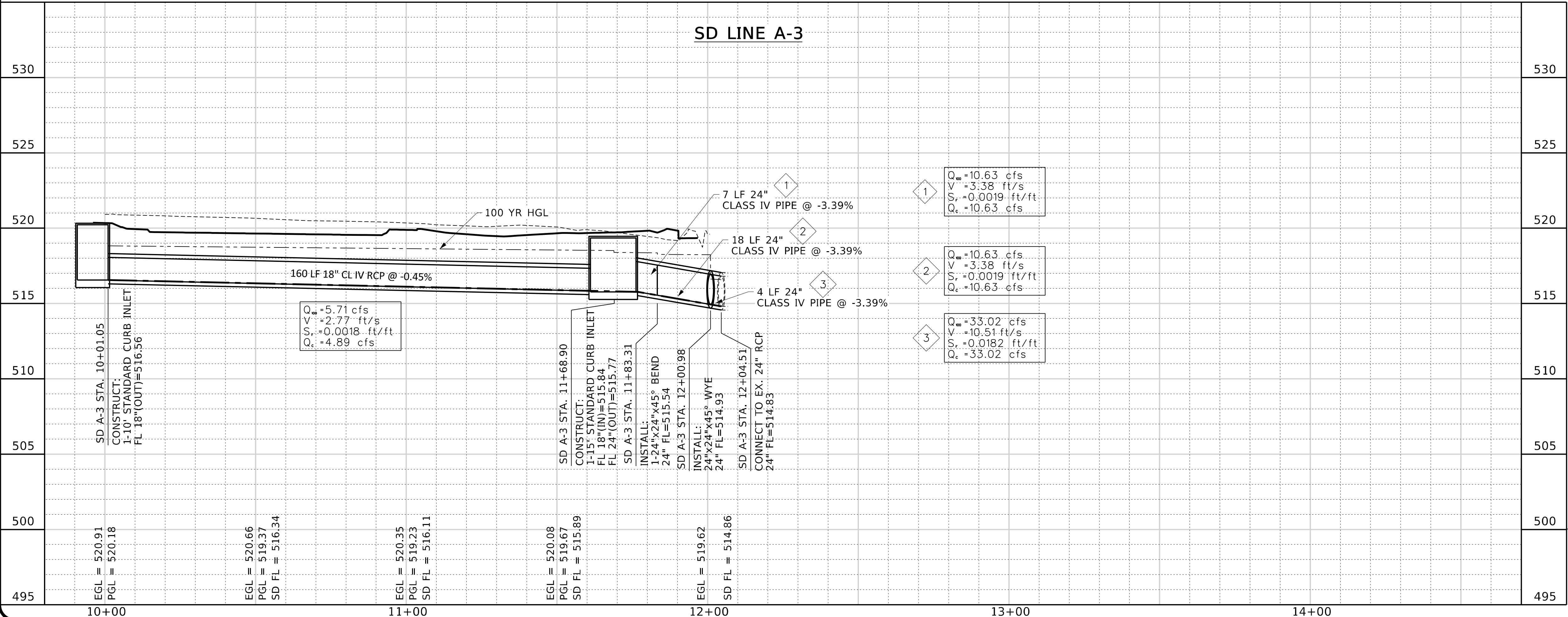
LINE A3 STA 12+00.73  
 CL ELM ST2 STA 17+25.07, 24.90' RT  
 INSTALL:  
 1-24"x24"x45° WYE

LINE A3 STA 12+04.51  
 CL ELM ST2 STA 17+27.55, 28.04' RT  
 INSTALL:  
 CONNECT TO EX 24" PIPE  
 FIELD VERIFY ELEVATION



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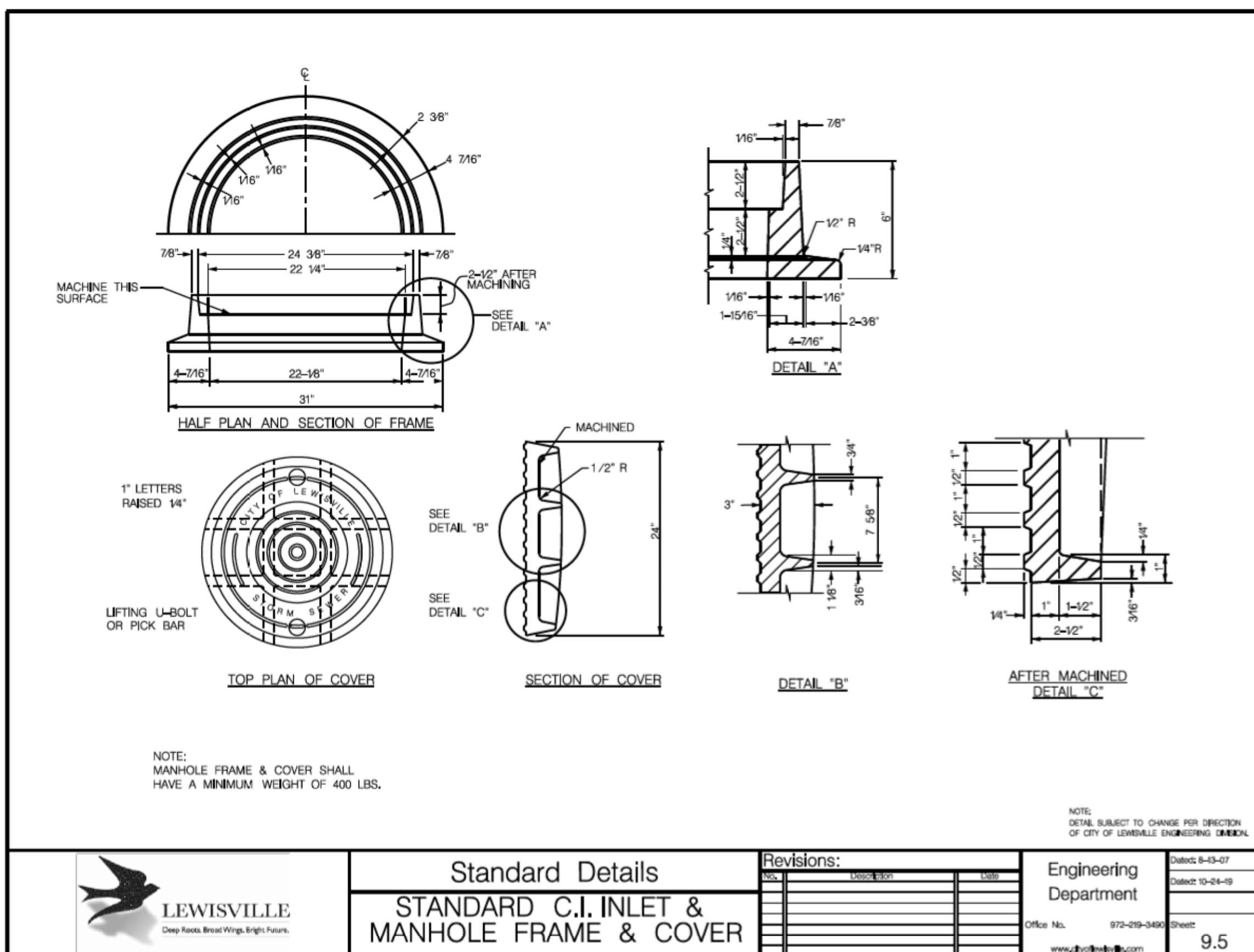
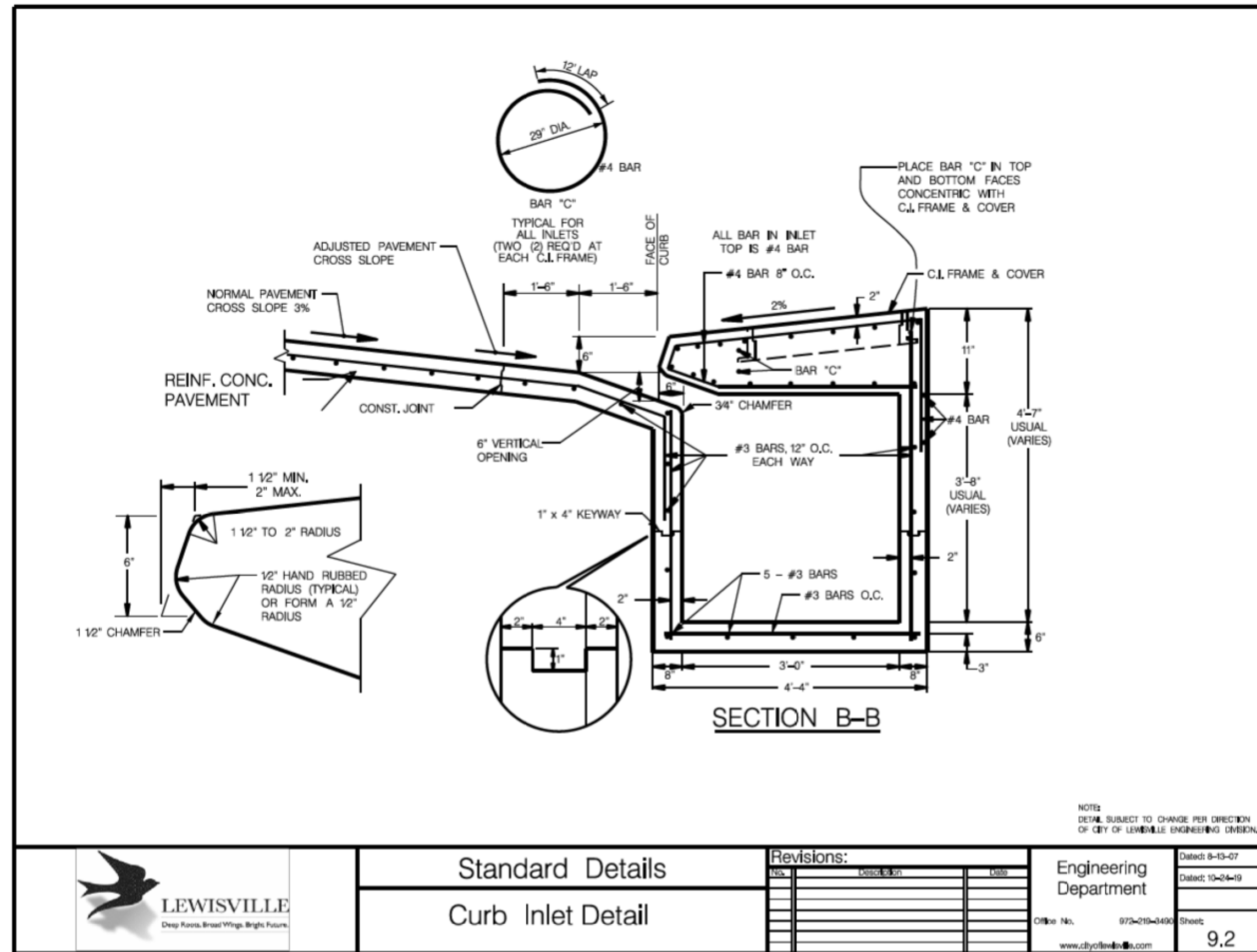
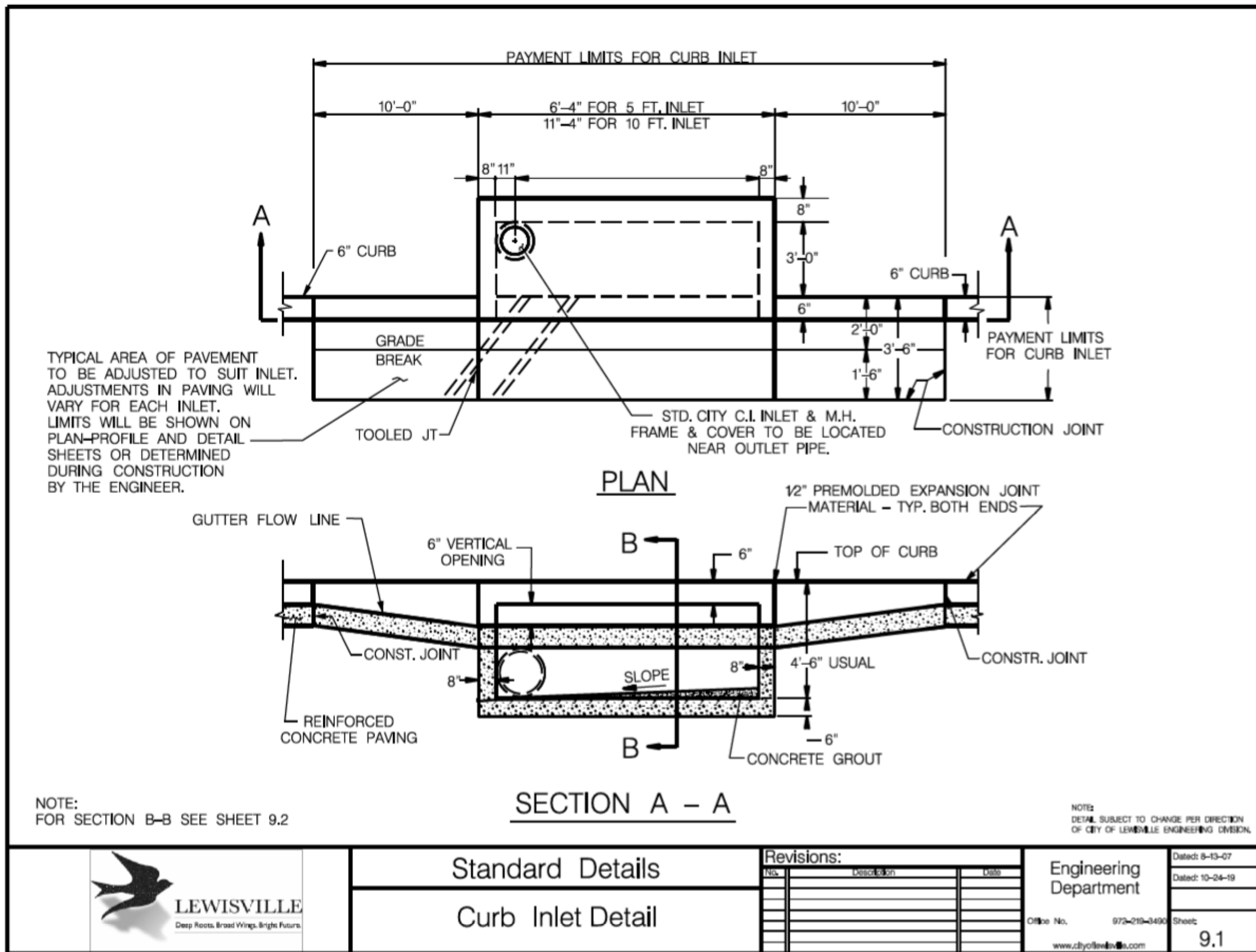
CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
 IMPROVEMENTS**  
 CIVIL  
**STORM DRAIN LINE A-3 PLAN & PROFILE  
 BEGIN TO END**



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

**SD PROFILE LEGEND**  
 EXISTING GROUND @ CL -----  
 PROPOSED GROUND @ CL -----  
 100 YR HGL -----

NO. ISSUES	BY	DATE	FEIN JOB NO.	LEW20378
			DATE	AUG 2023
			DESIGNED	CM
			DRAWN	CM
			REVISED	SEC
			CHECKED	
			FILE NAME	cv-trt-pp-sd03.sht
			VERIFY SCALE	Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
SHEET	<b>SD-3</b>			
SEQ.	60			



- NOTES APPLICABLE TO ALL INLETS
- "Public Works Construction Standards" NCTCOG,2004 is adopted as the standard specifications for this project.
  - Concrete shall have a minimum compressive strength of 3,000 p.s.i at 28 days.
  - All exposed corners shall be chamfered 3/4", except as otherwise noted.
  - Reinforcing steel shall be grade 60.
  - All backfill around inlets shall be mechanically tamped to 95% of the standard proctor density, method ASTM D698, with moisture content on the wet side of optimum.
  - Outside forms are required on inlets. All forming shall be removed.
  - Lateral pipe may enter at any location.
  - The 18-inch gutter (measured from face of curb) in front of the inlet is a part of the inlet and shall be built with inlet.
  - Concrete grout shall be placed in the bottom of the inlet and contoured to slope towards the outlet. Depth of grout at the perimeter of the inlet, except at the outlet, shall be six (6) inches.
  - Eight (8) inch thick pavement is indicated above. For other pavement thickness, the slab thickness and reinforcement shall be adjusted as required to match pavement.
  - Inlet bottoms shall be placed on moist compacted sand (minimum 4" depth) or undisturbed earth or rock.



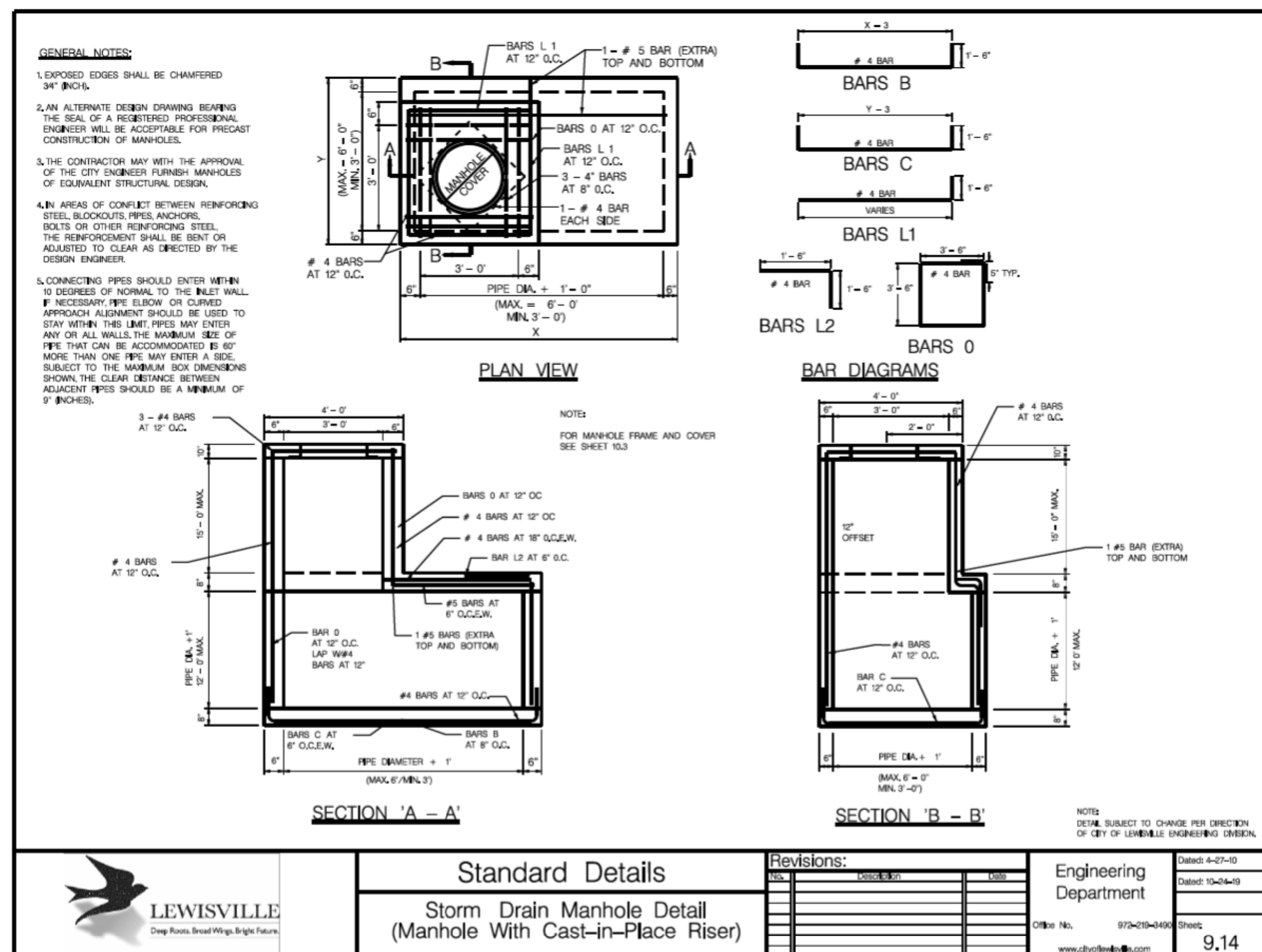
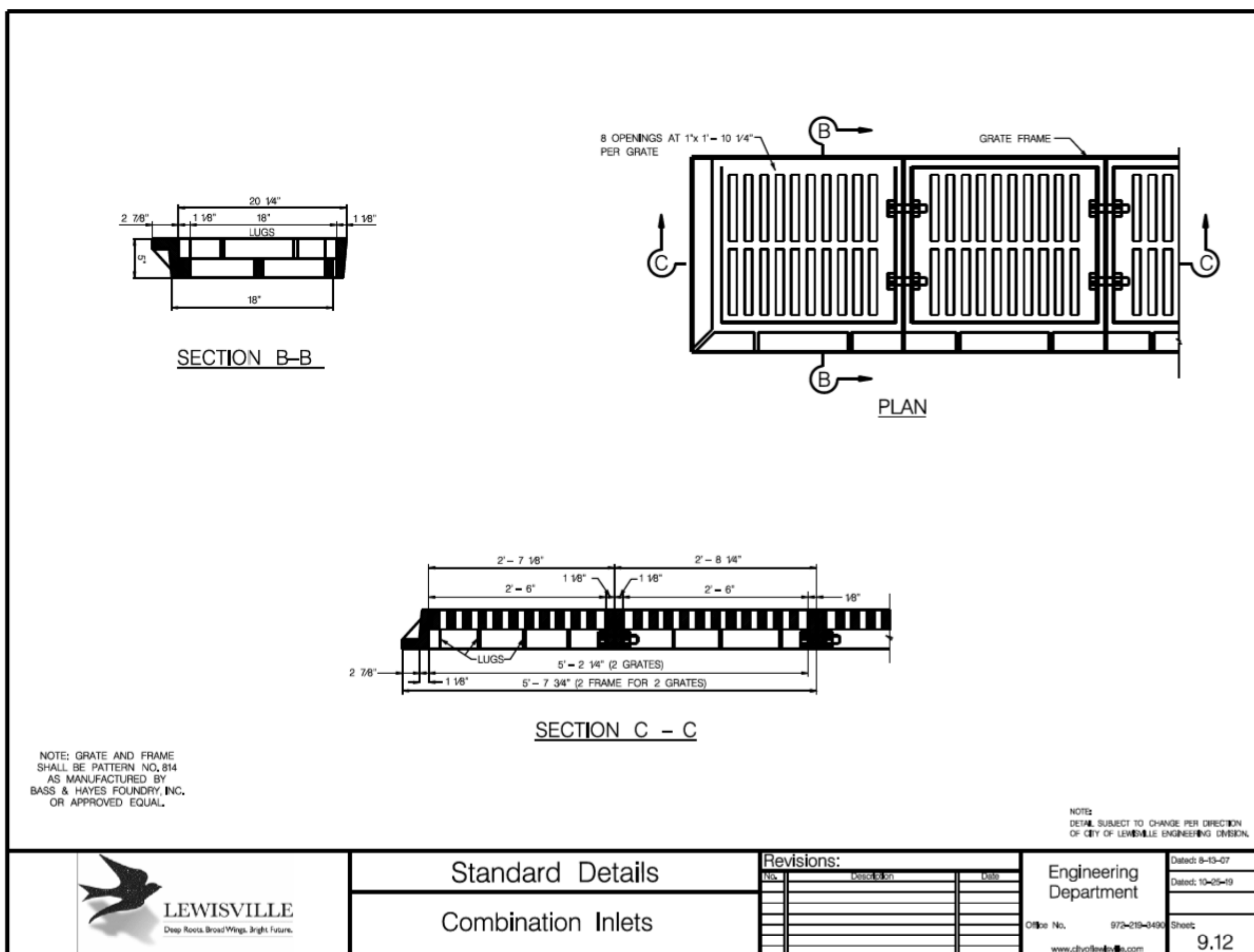
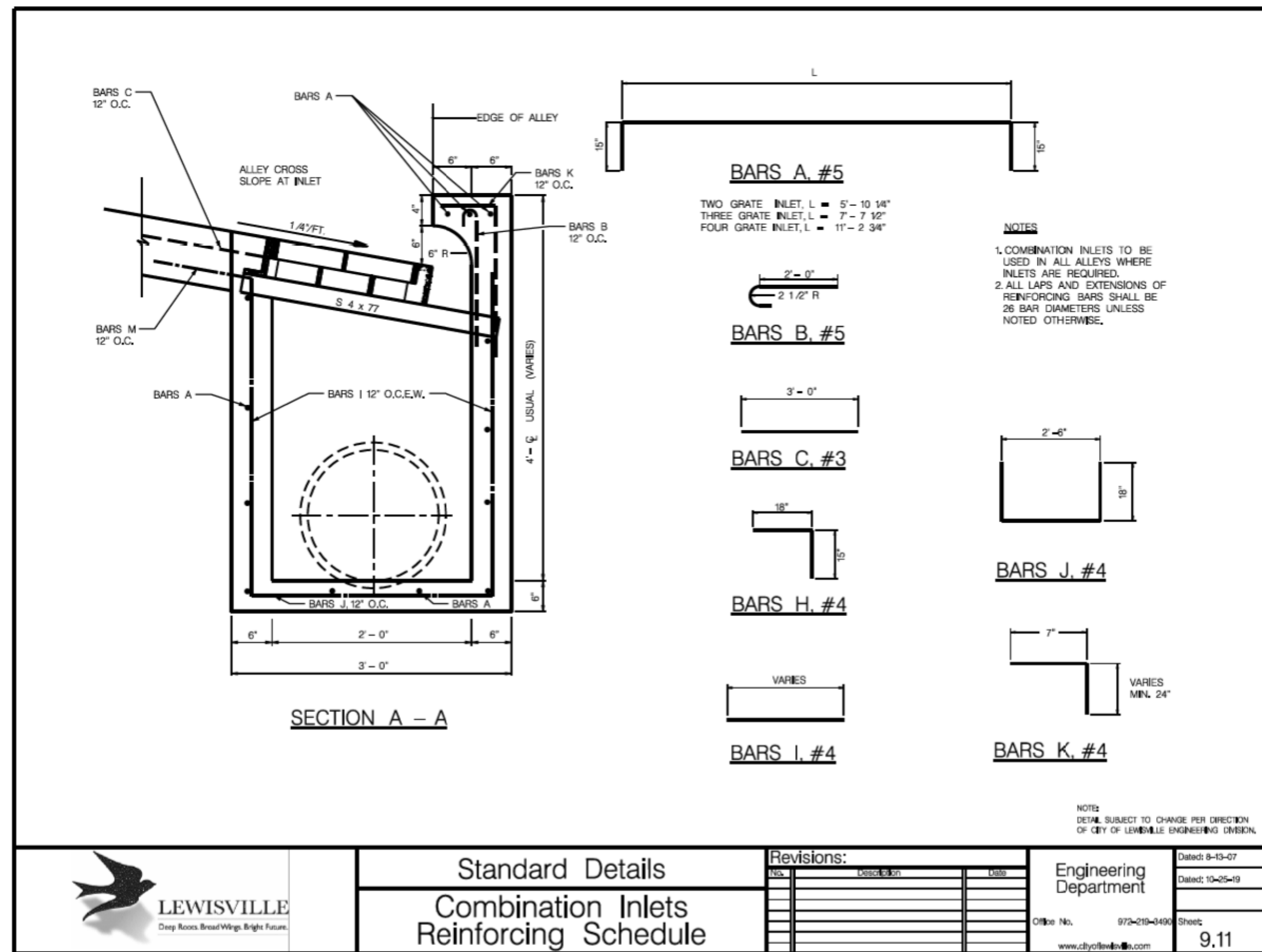
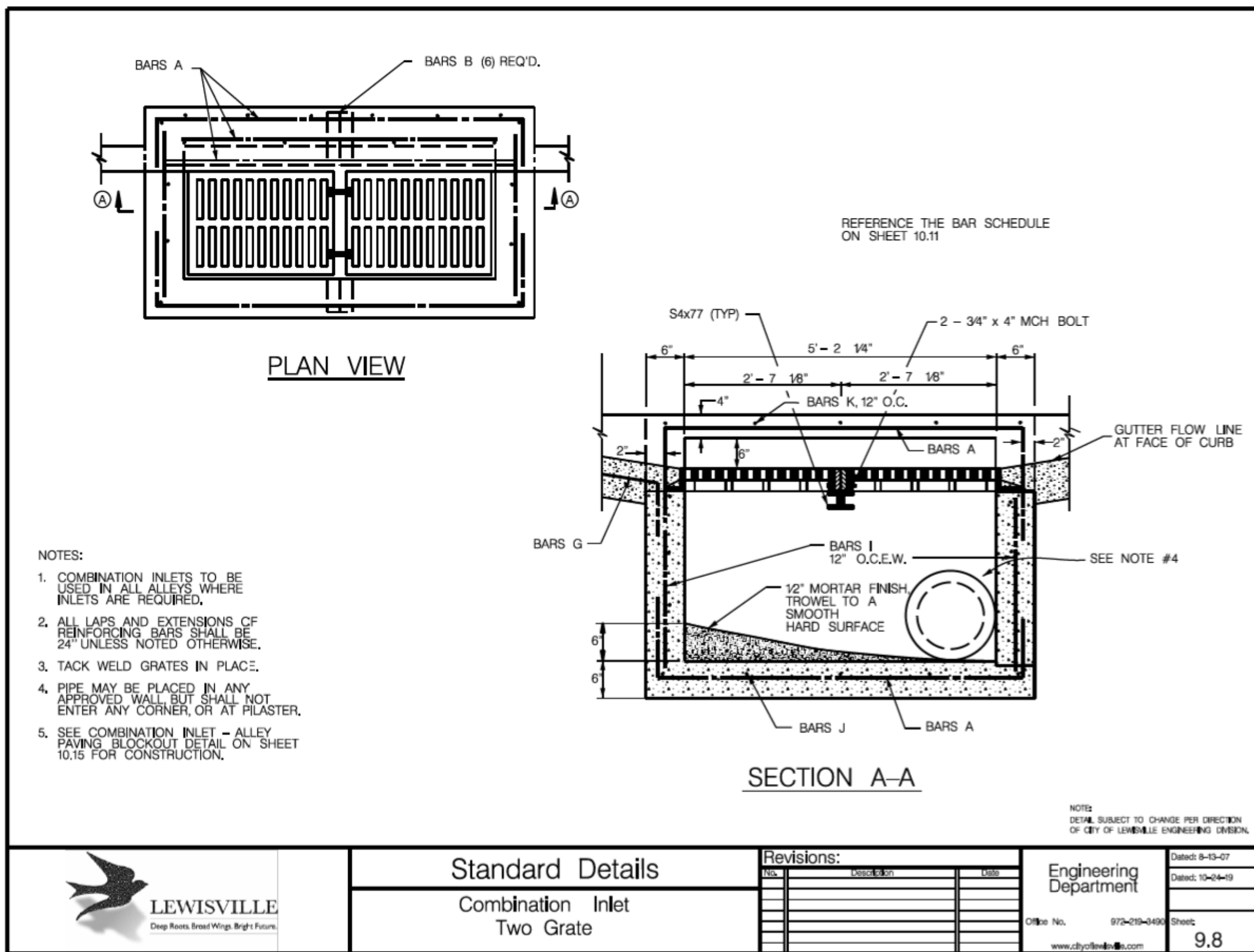
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13270 Market Drive, Suite 300  
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Web - www.freesse.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
CIVIL  
**STORM DRAIN DETAILS**

NO.	ISSUES	DATE	BY	FILE NAME

FEIN JOB NO.	DATE	DESIGNED	DRAWN	REVISED	CHECKED	SEC
LEW20378	AUG 2023	CM	KLH			

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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
CIVIL  
**STORM DRAIN DETAILS**

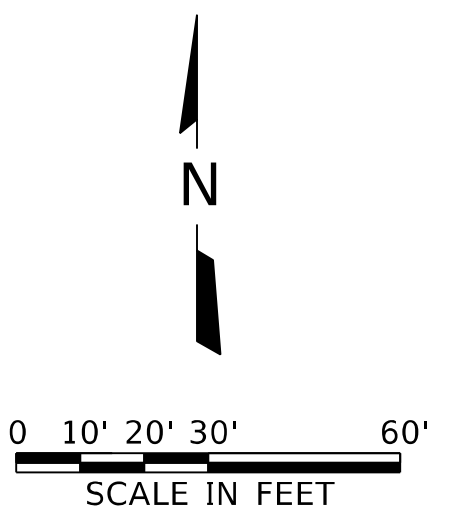
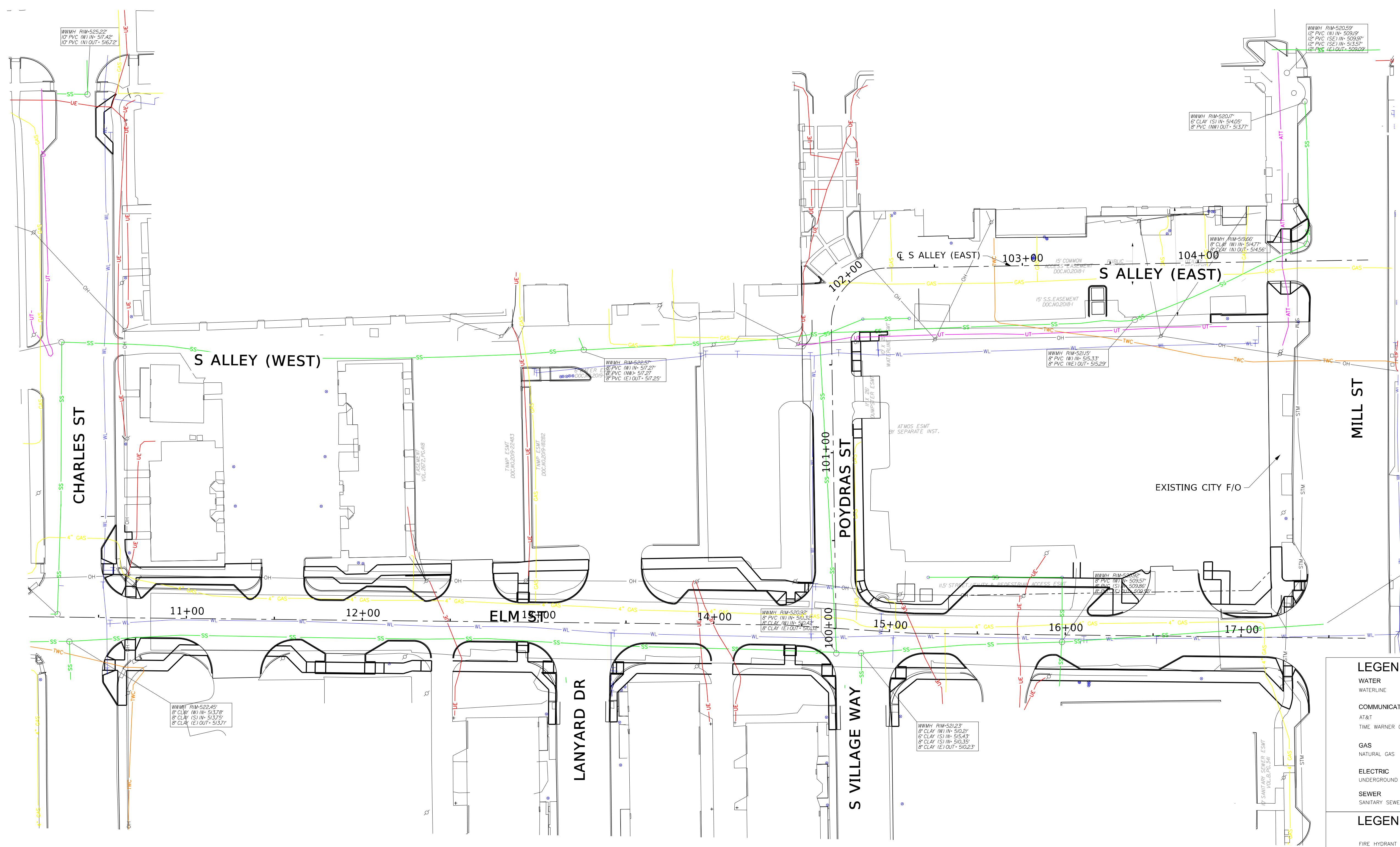
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FEIN JOB NO.	DATE	DESIGNED	DRAWN	REVISED	CHECKED	SEC
LEW20378	AUG 2023	CM	KLH	SEC		

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MicroStation V8 User: 04331 Office: On Site  
 Project: Utility Drawings/6 Utilities/cv-trt-exutil1st  
 Plot Scale: 60.000' / 1" Model: Default  
 Date: Aug. 07. 2023 - 11:20:46 AM Project: Freese and Nichols, Inc. - True Type Fonts



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 TEXAS REGISTERED ENGINEERING FIRM F-2144



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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
 IMPROVEMENTS**  
 CIVIL  
**EXISTING UTILITY MAP**

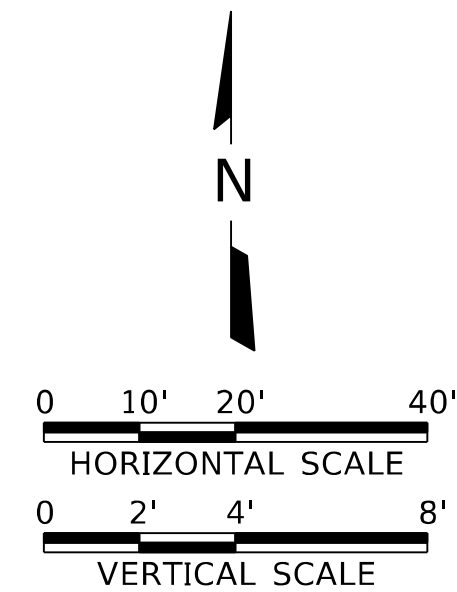
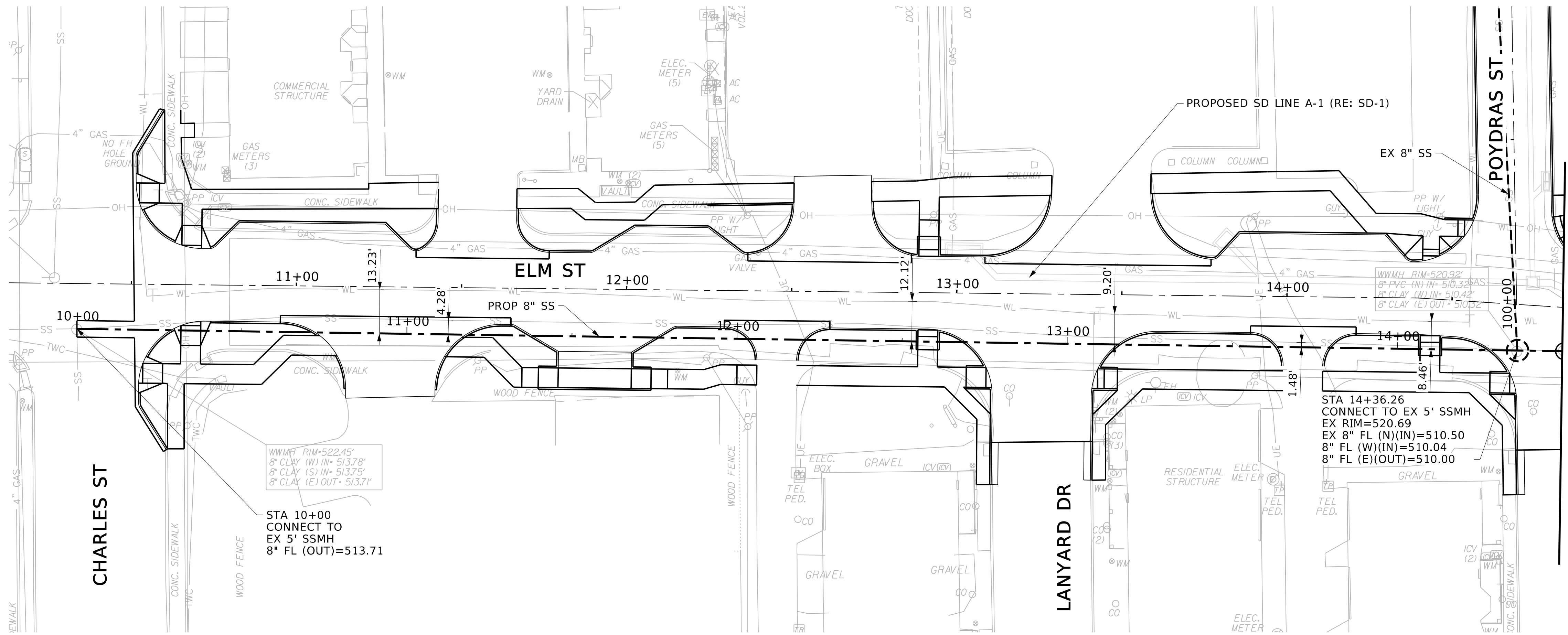
**LEGEND OF UTILITY TYPES**

<b>WATER</b>	LEVEL "B"
WATERLINE	WL
<b>COMMUNICATIONS</b>	LEVEL "B"
AT&T	ATT
TIME WARNER CABLE	TWC
<b>GAS</b>	LEVEL "B"
NATURAL GAS	GAS
<b>ELECTRIC</b>	LEVEL "B"
UNDERGROUND ELECTRIC	UE
<b>SEWER</b>	LEVEL "B"
SANITARY SEWER	SS

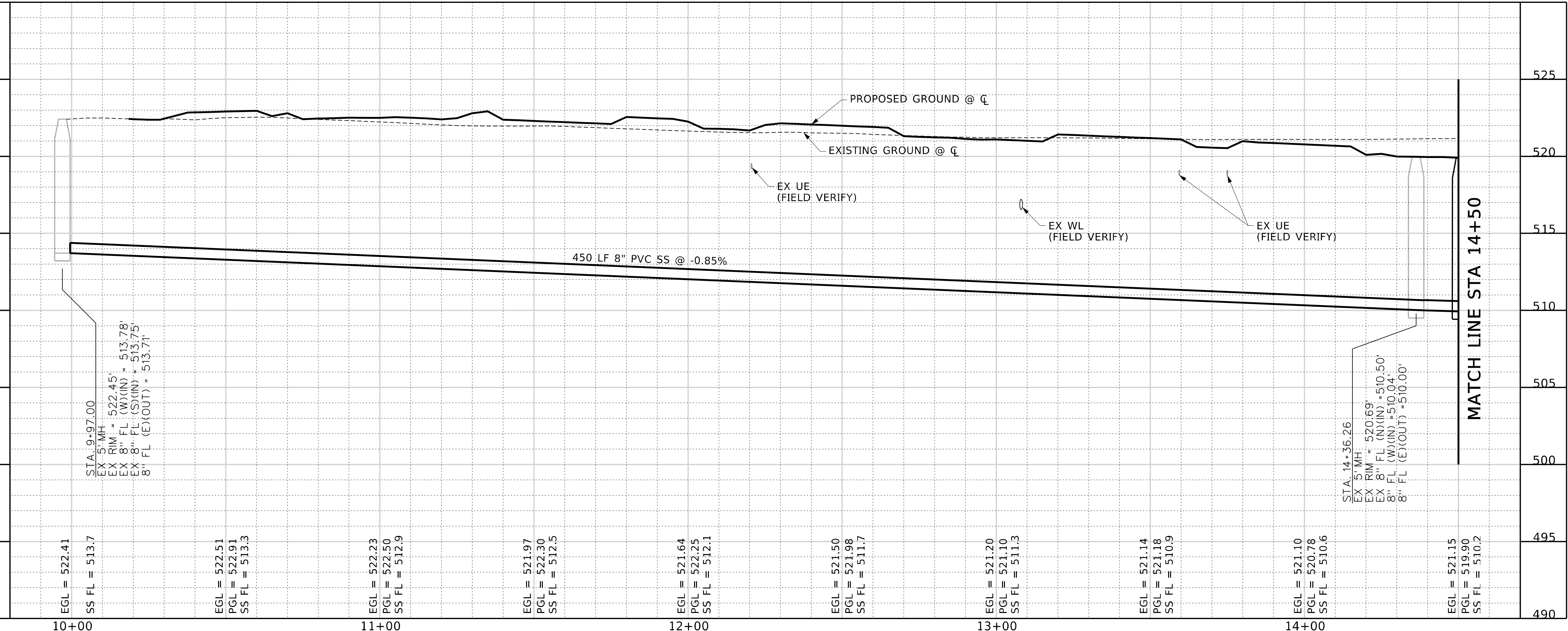
**LEGEND OF UTILITY SYMBOLS**

FIRE HYDRANT	⊕
WATER METER	⊕
WATER VALVE	T
IRRIGATION CONTROL VALVE	⊕
TELEPHONE BOX	⊕
TELEPHONE PEDESTAL	⊕
GAS METER	⊕
GAS VALVE	⊕
ELECTRIC BOX	⊕
POWER POLE	⊕
GUY ANCHOR	⊕
ELECTRIC METER	⊕
LIGHT POLE	⊕
AIR COND. UNIT	⊕
TRAFFIC CONTROL BOX	⊕
TRAFFIC POLE	⊕
SAN. SEW MANHOLE	⊕
SAN. SEW CLEANOUT	⊕
GREASE TRAP	⊕
STORM SEWER MANHOLE	⊕

NO. ISSUES	BY	DATE	FEN JOB NO.	LEW20378
			DATE	AUG 2023
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			REVISED	SEC
			CHECKED	
			FILE NAME	cv-trt-exutil1st
VERIFY SCALE: Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.				
SHEET	<b>EU-1</b>			
SEQ.	63			



- NOTES:**
1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES. UTILITIES ARE SHOWN TO THE BEST OF THE CITY AND DESIGN ENGINEER'S KNOWLEDGE.
  2. CONTRACTOR TO COORDINATE WITH CITY AND LANDOWNERS FOR ANY SERVICE TIE-OVERS.
  3. NO SS SERVICE INTERRUPTION IS ALLOWED.
  4. CONTRACTOR SHALL HAVE A HIGH-LEVEL ALARM NOTIFICATION SYSTEM OR PERSONNEL ON SITE 24/7 DURING BYPASS PUMPING. SUFFICIENT FUEL STORAGE FOR 24-HOUR OPERATION AND A BACKUP PUMP OF EQUAL CAPACITY TO THE PRIMARY PUMP SHALL BE ONSITE DURING BYPASS PUMPING.
  5. ABANDON EX SS LINE AND REMOVE AS NECESSARY FOR CONSTRUCTION OF NEW LINE.
  6. ABANDONED SS NEEDS TO BE GROUTED IN PLACE.



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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST**  
**IMPROVEMENTS**  
 CIVIL  
**8" SANITARY SEWER LINE PLAN & PROFILE**  
**BEGIN TO STA 14+50**

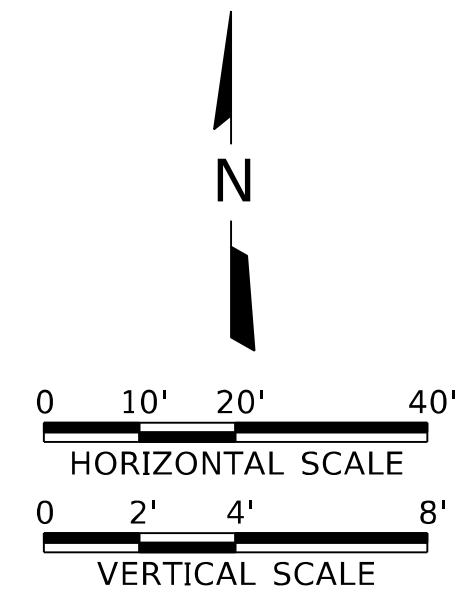
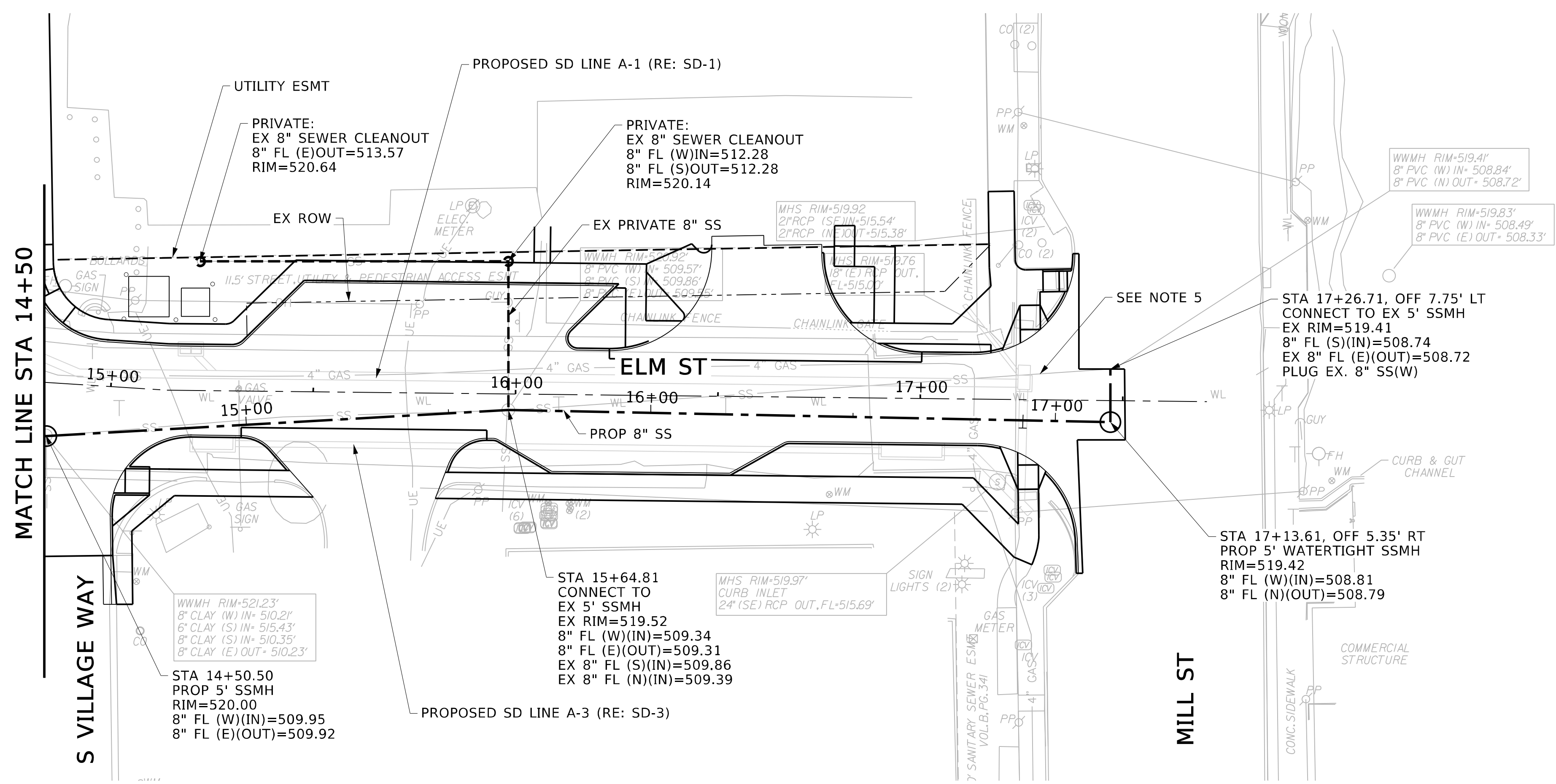
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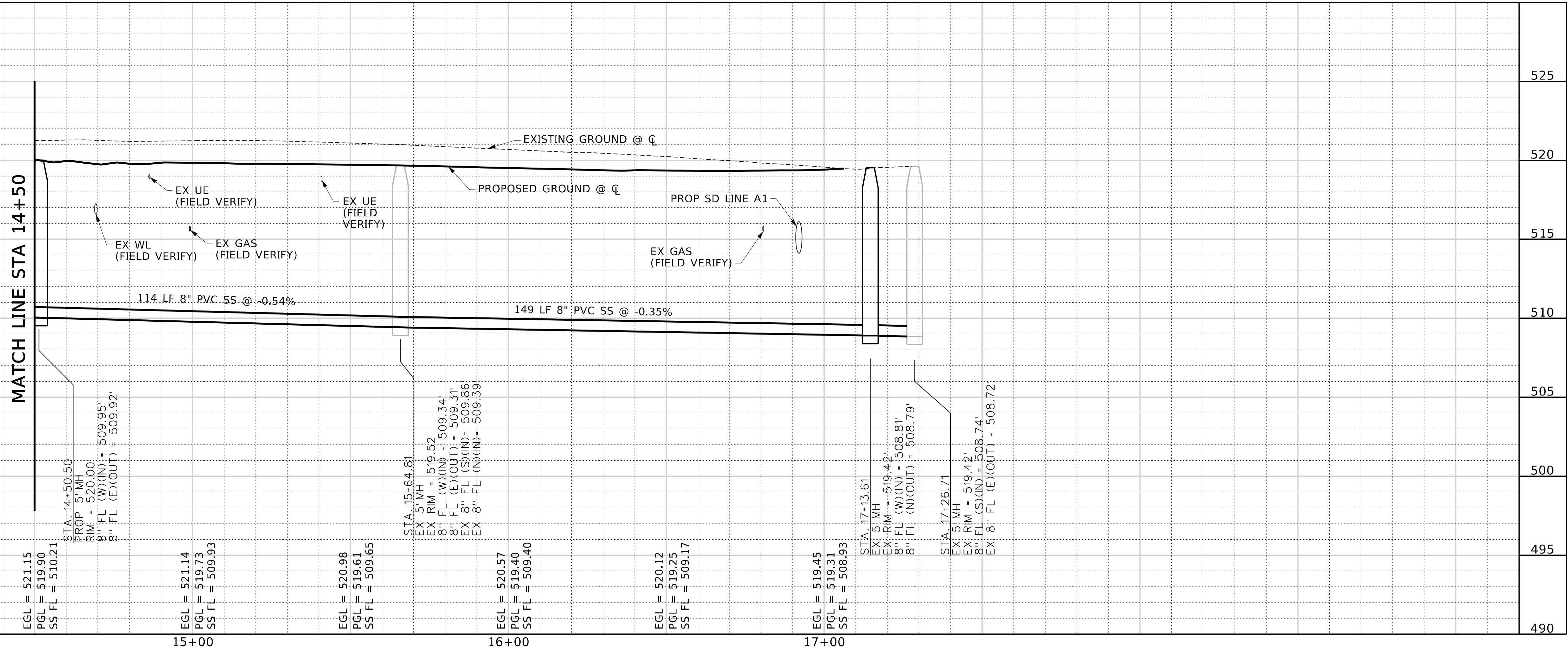
SHEET **SS-1**

SEQ. 64





- NOTES:**
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES. UTILITIES ARE SHOWN TO THE BEST OF THE CITY AND DESIGN ENGINEER'S KNOWLEDGE.
  - CONTRACTOR TO COORDINATE WITH CITY AND LANDOWNERS FOR ANY SERVICE TIE-OVERS.
  - NO SS SERVICE INTERRUPTION IS ALLOWED.
  - CONTRACTOR SHALL HAVE A HIGH-LEVEL ALARM NOTIFICATION SYSTEM OR PERSONNEL ON SITE 24/7 DURING BYPASS PUMPING. SUFFICIENT FUEL STORAGE FOR 24-HOUR OPERATION AND A BACKUP PUMP OF EQUAL CAPACITY TO THE PRIMARY PUMP SHALL BE ONSITE DURING BYPASS PUMPING.
  - ABANDON EX SS LINE AND REMOVE AS NECESSARY FOR CONSTRUCTION OF NEW LINE.
  - ABANDONED SS NEEDS TO BE GROUTED IN PLACE.



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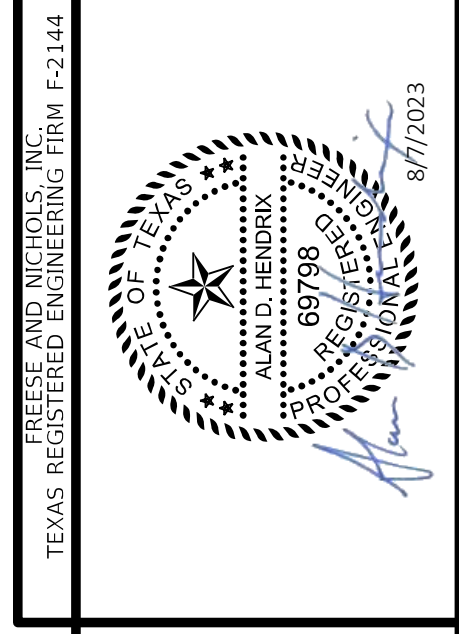
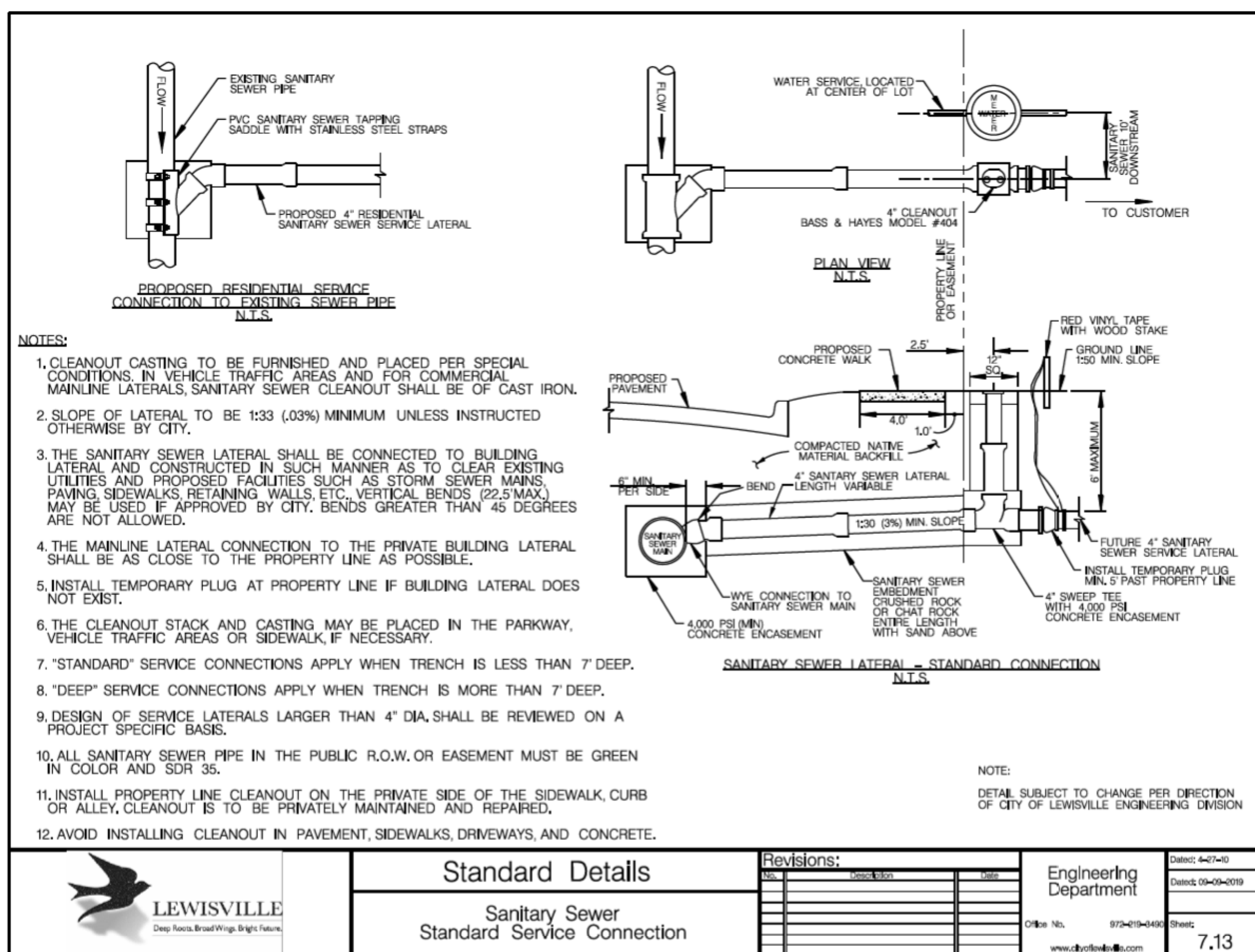
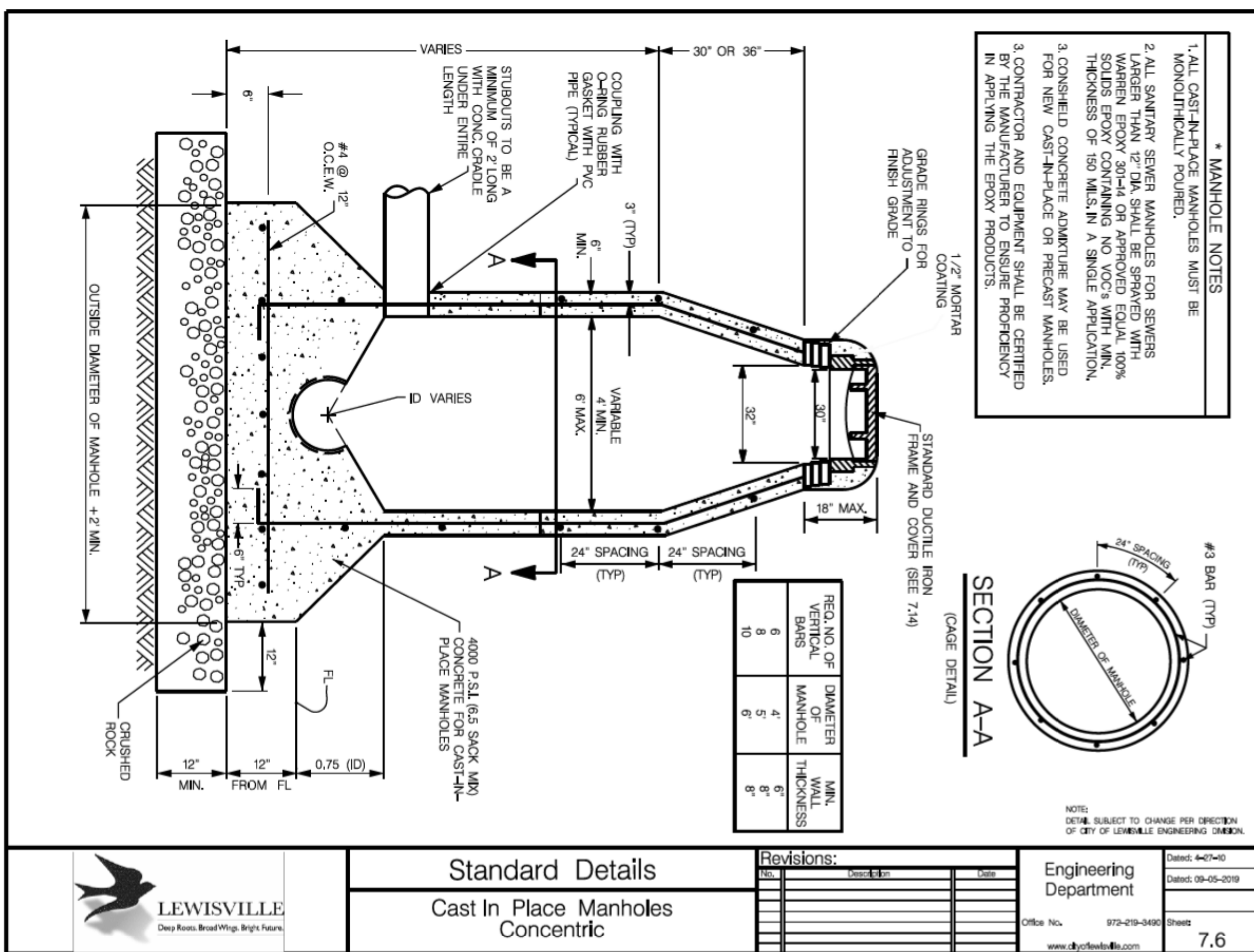
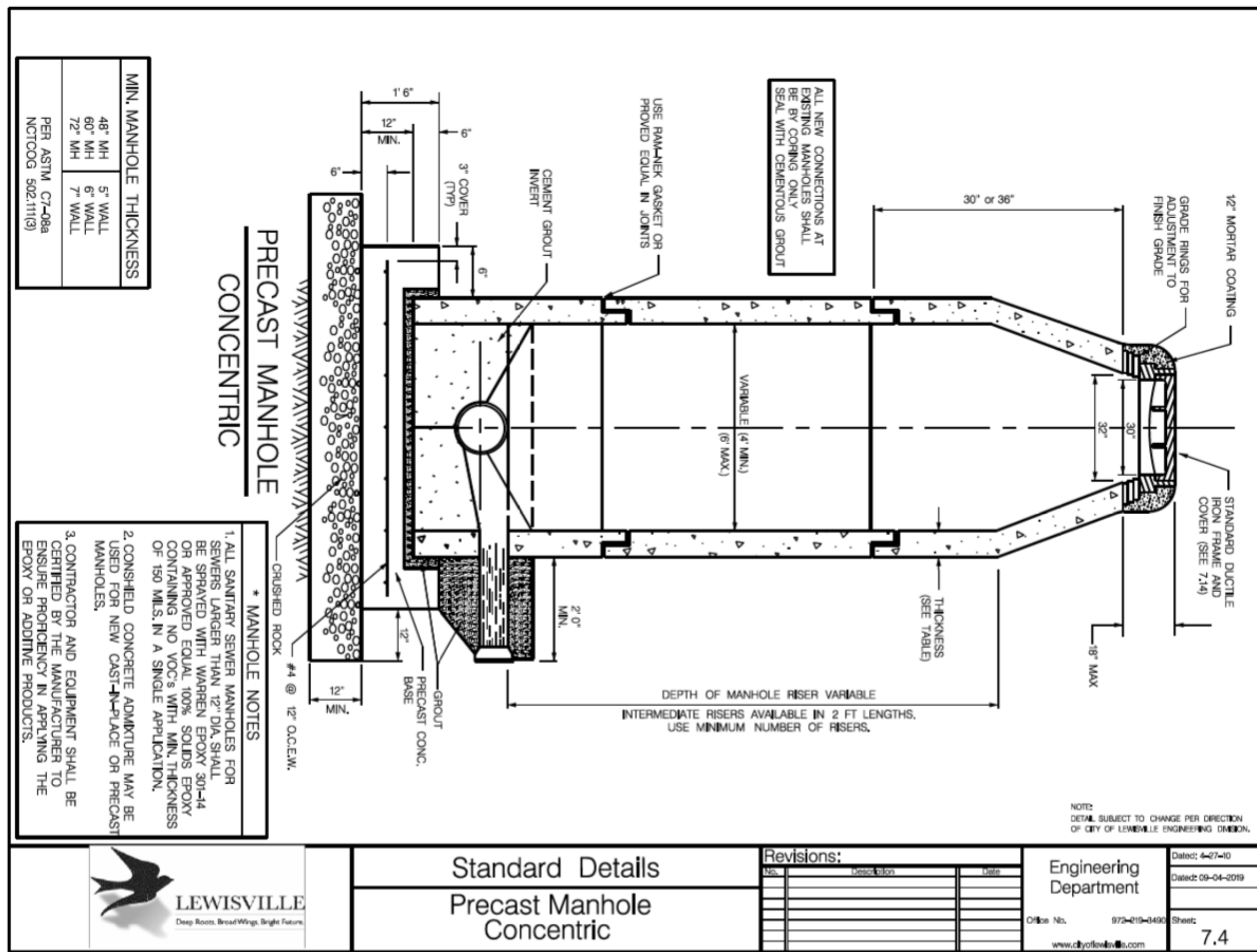
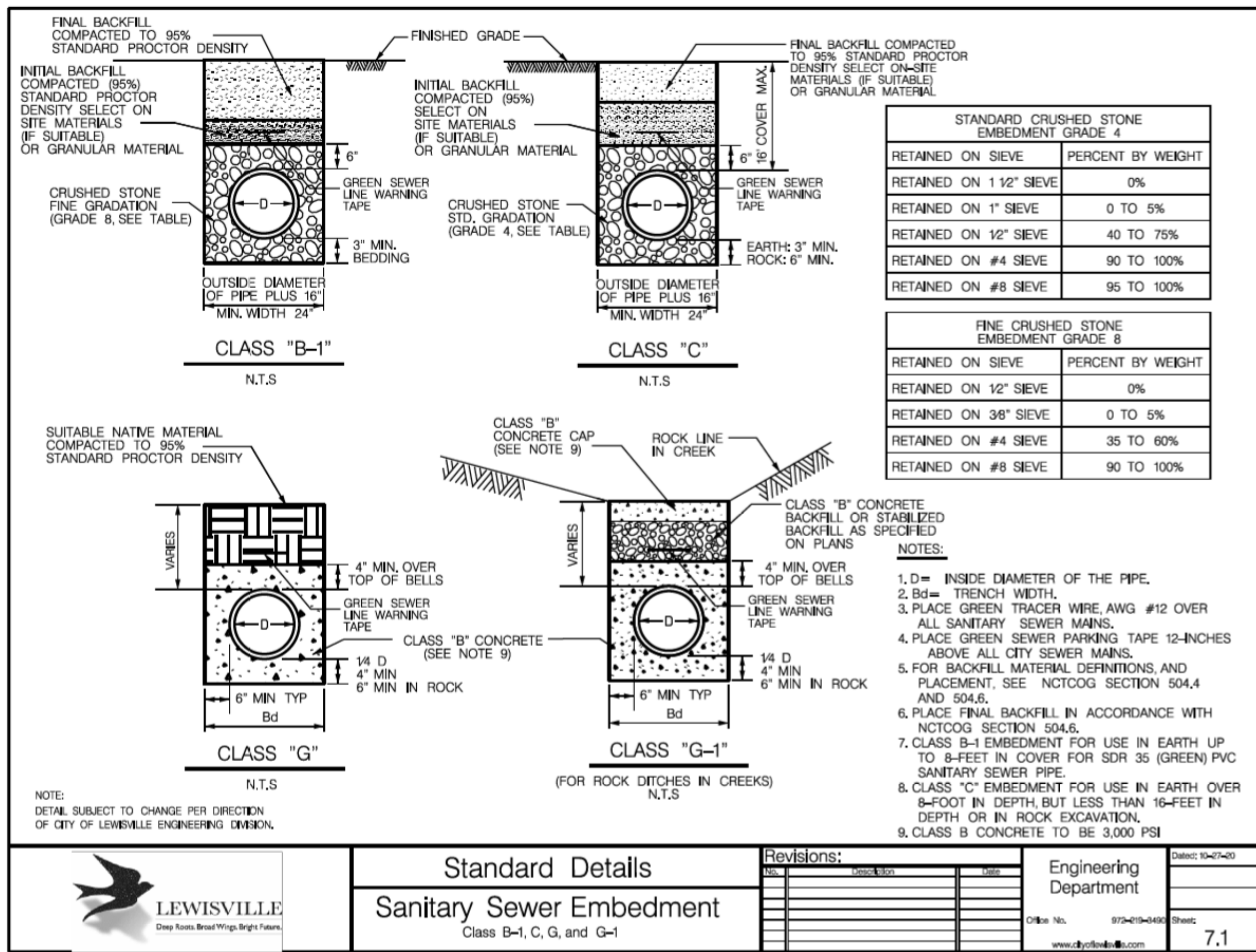
CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 CIVIL  
**8" SANITARY SEWER LINE PLAN & PROFILE**  
**STA 14+50 TO END**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	LEW20378
				DATE	AUG 2023
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				DRAWN	CM
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SHEET **SS-2**

SEQ. 65



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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST**  
**IMPROVEMENTS**  
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NO.	ISSUES	DATE	BY	FILE NAME

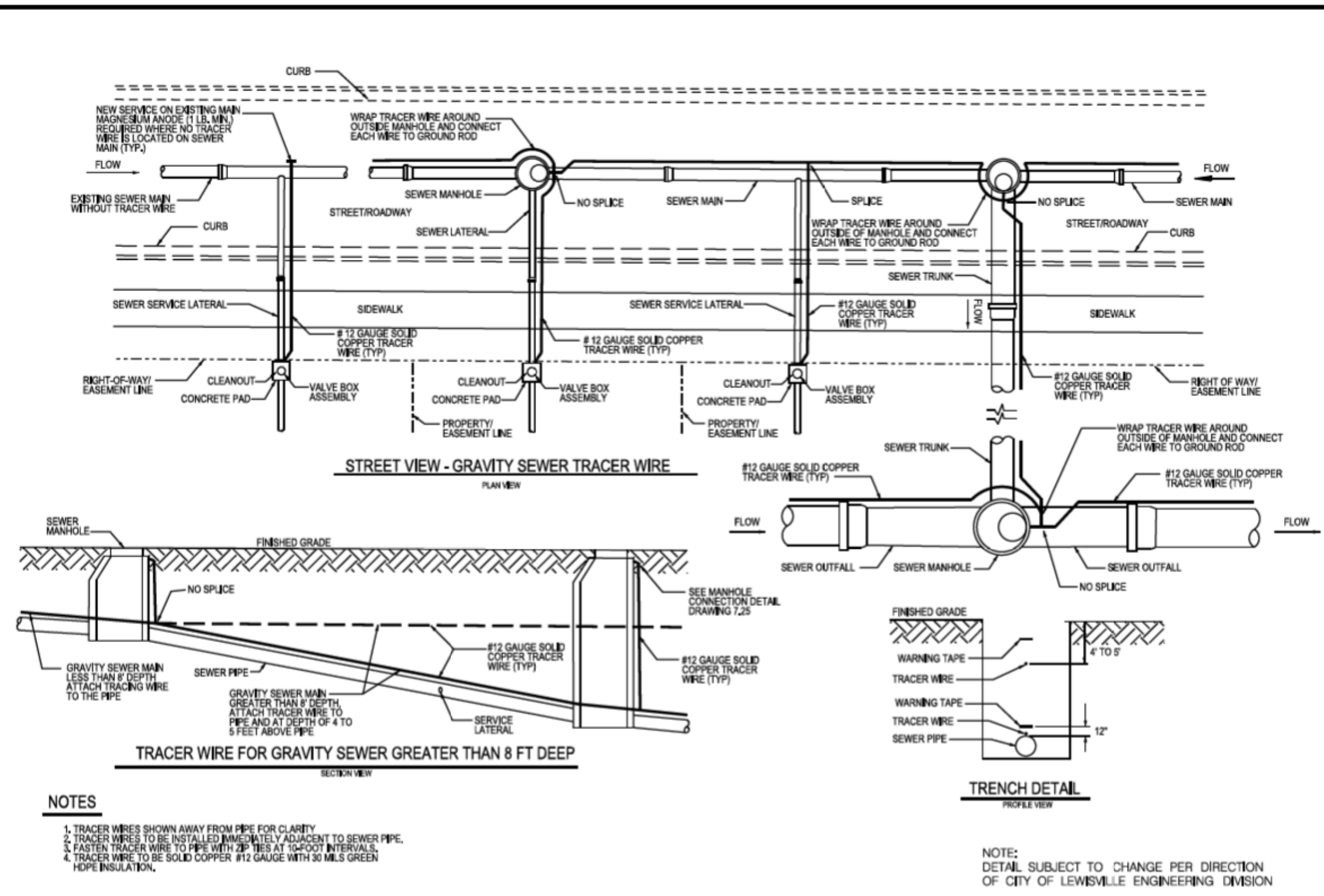
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## SANITARY SEWER GENERAL NOTES AND TESTING

1. SANITARY SEWER LINE MINIMUM DIAMETER IS 8-INCHES IN DIAMETER. SERVICE LATERALS HAVE A MINIMUM DIAMETER OF 4-INCHES.
2. SANITARY SEWER LINE INSTALLATIONS MAY BE SUBJECT TO INFILTRATION TESTING, EXFILTRATION TESTING, MANDREL TESTING, AND LOW PRESSURE AIR TESTING IN ACCORDANCE WITH THE TEXAS ADMINISTRATIVE CODE RULE 317.2.
3. ALL SANITARY SEWER LINE INSTALLATIONS MUST HAVE A TV PERFORMED. A COPY OF THE TV WILL BE PROVIDED TO THE CITY FOR REVIEW BEFORE ACCEPTANCE OF THE SANITARY SEWER.
4. MANHOLES WILL BE VACUUM TESTED IN ACCORDANCE WITH NCTCOG CONSTRUCTION METHOD 502.1.5.2.
5. SANITARY SEWER LINE INSTALLATIONS THAT CROSS OR CLOSELY PARALLEL A WATER LINE MUST BE DESIGNED IN ACCORDANCE WITH THE TEXAS ADMINISTRATIVE CODE RULE 217.53.
6. SANITARY SEWER LINE EMBEDMENT MUST BE IN ACCORDANCE WITH THE CITY OF LEWISVILLE STANDARD CONSTRUCTION DETAILS.
7. DO NOT PLACE SEWER PIPE WHERE IT IS LIKELY TO BE DAMAGED.
8. MECHANICAL COMPACTION IS REQUIRED FOR TRENCH BACKFILL. DO NOT USE THE EXCAVATOR BUCKET FOR COMPACTION.

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



### NOTES

1. TRACER WIRES SHOWN AWAY FROM PIPE FOR CLARITY.
2. TRACER WIRES TO BE INSTALLED IMMEDIATELY ADJACENT TO SEWER PIPE.
3. EASTERN TRACER WIRE TO BE WITH ZIP TIES AT 500 FT INTERVALS.
4. TRACER WIRE TO BE SOLID COPPER #12 GAUGE WITH 30 MILS GREEN INSULATION.

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



Standard Details  
Sanitary Sewer  
General Notes and Testing

NO.	DATE	DESCRIPTION

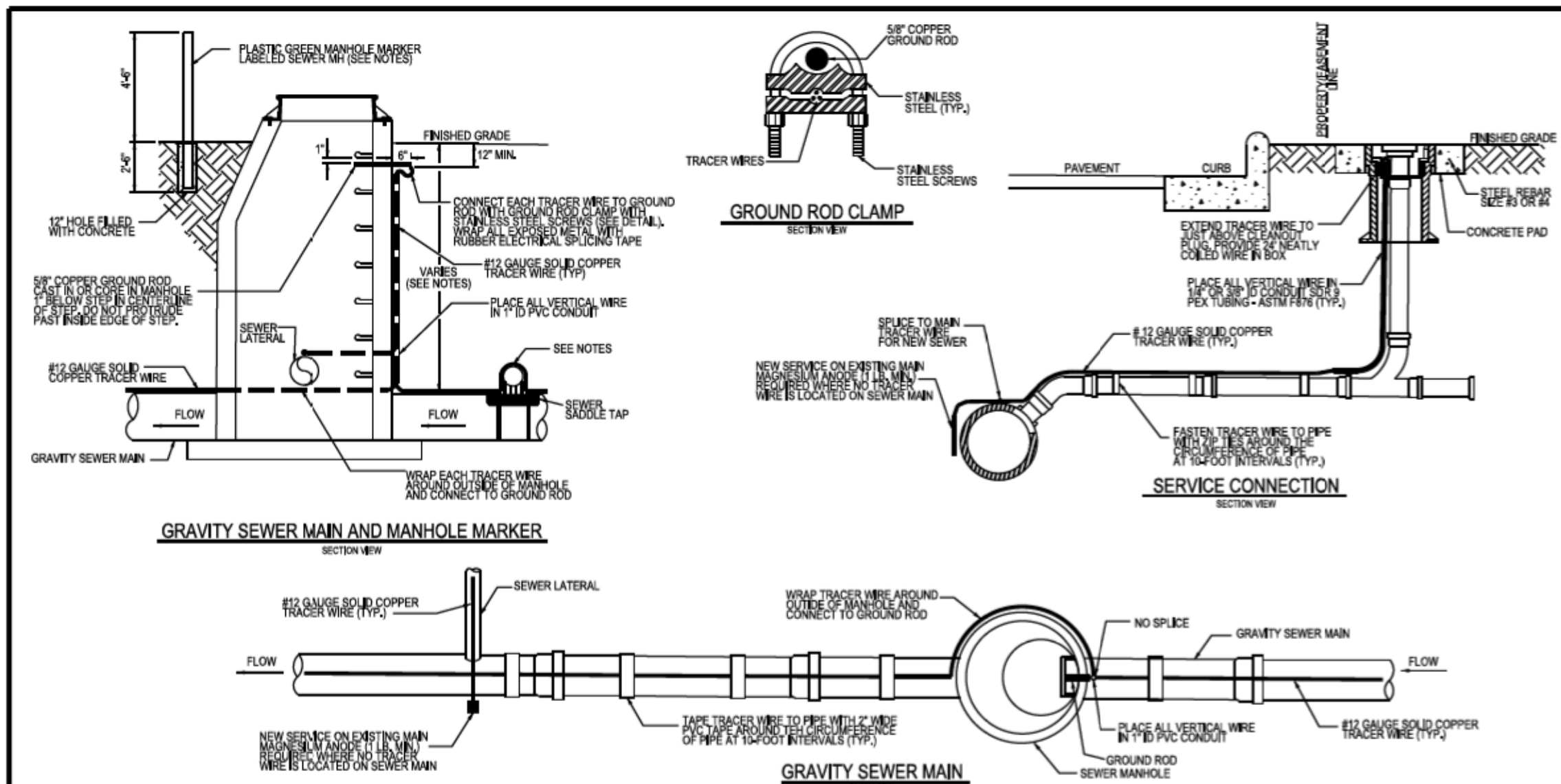
Engineering Department  
Date: 04-17-2021  
Sheet: 7.25



Standard Details  
Gravity Sewer Tracer Wire

NO.	DATE	DESCRIPTION

Engineering Department  
Date: 10-24-18  
Sheet: 7.26



### NOTES

1. TRACER WIRE TO BE AWG #12 GAUGE SOLID COPPER WITH 30 MILS GREEN HOPE INSULATION.
2. FOR GRAVITY MAIN AND LATERAL INSTALLATIONS LESS THAN 8 FEET DEEP, ATTACH TRACER WIRE TO THE PIPE.
3. LAY TRACER WIRE FLAT AND SECURELY AFFIX TO THE PIPE AT 10-FOOT INTERVALS USING ZIP TIES. FOR LATERAL AND GRAVITY LINES GREATER THAN 8 FOOT DEPTH, ATTACH THE TRACER WIRE TO THE PIPE AND AT A DEPTH 4 TO 5 FEET DIRECTLY ABOVE THE SEWER PIPE.
4. PROTECT THE WIRE FROM DAMAGE DURING EXECUTION OF WORK. NO BRANCHES OR CUTS IN THE TRACER WIRE WILL BE PERMITTED.
5. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, DO NOT PLACE THE TRACER WIRE BETWEEN THE SADDLE AND THE MAIN.
6. SPICES IN THE PRIMARY TRACER WIRE ALONG THE SEWER MAIN INCLUDE 3 FEET OF SLACK WIRE ON EACH SIDE OF EACH SPICE.
7. WHEN INSTALLING A NEW LATERAL ON AN EXISTING MAIN WITH TRACER WIRE, ONLY SPICE TO EXISTING WIRE WITH 3 FEET OF SLACK ON NEW LATERAL.
8. PLACE MANHOLE MARKERS ADJACENT TO MANHOLES AT THE DISCRETION OF THE ENGINEER OR THE ENGINEER'S REPRESENTATIVE.
9. TRACER WIRE TO BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. WHERE SPICES ARE REQUIRED, SECURELY BOND SPICES TOGETHER WITH AN APPROVED INDUSTRIAL CONNECTOR TO PROVIDE ELECTRICAL CONTINUITY.
10. USE COPPER CONNECTORS AND REPAIR INSULATION TO SEAL OUT MOISTURE AND CORROSION.
11. INSTALL INSULATION TO PREVENT ANY UNINSULATED WIRE EXPOSURE. SEE DETAIL DWG 7.27.
12. THE CLEANOUT AT THE RIGHT-OF-WAY OR EASEMENT WILL SERVE AS THE TEST POINT.
13. SPICED CONNECTIONS ARE ALLOWED BETWEEN THE MAIN LINE TRACER WIRE AND THE LATERAL TRACER WIRE.
14. FOR NEW SEWER TAPS ON EXISTING MAINS, PROVIDE A 1/8" MAGNESIUM ANODE FOR THE TRACER WIRE TERMINATION AT THE POINT OF THE NEW TAP ON THE EXISTING SEWER. PLACE THE ANODE AT THE BOTTOM EDGE OF THE TRENCH AWAY FROM THE MAIN AND THE LATERAL.
15. BEFORE ACCEPTANCE (POST PUNCH LIST) EACH WIRE SEGMENT MUST PASS A CONDUCTIVITY TEST WITNESSED BY THE ENGINEER OR THE ENGINEER'S REPRESENTATIVE.

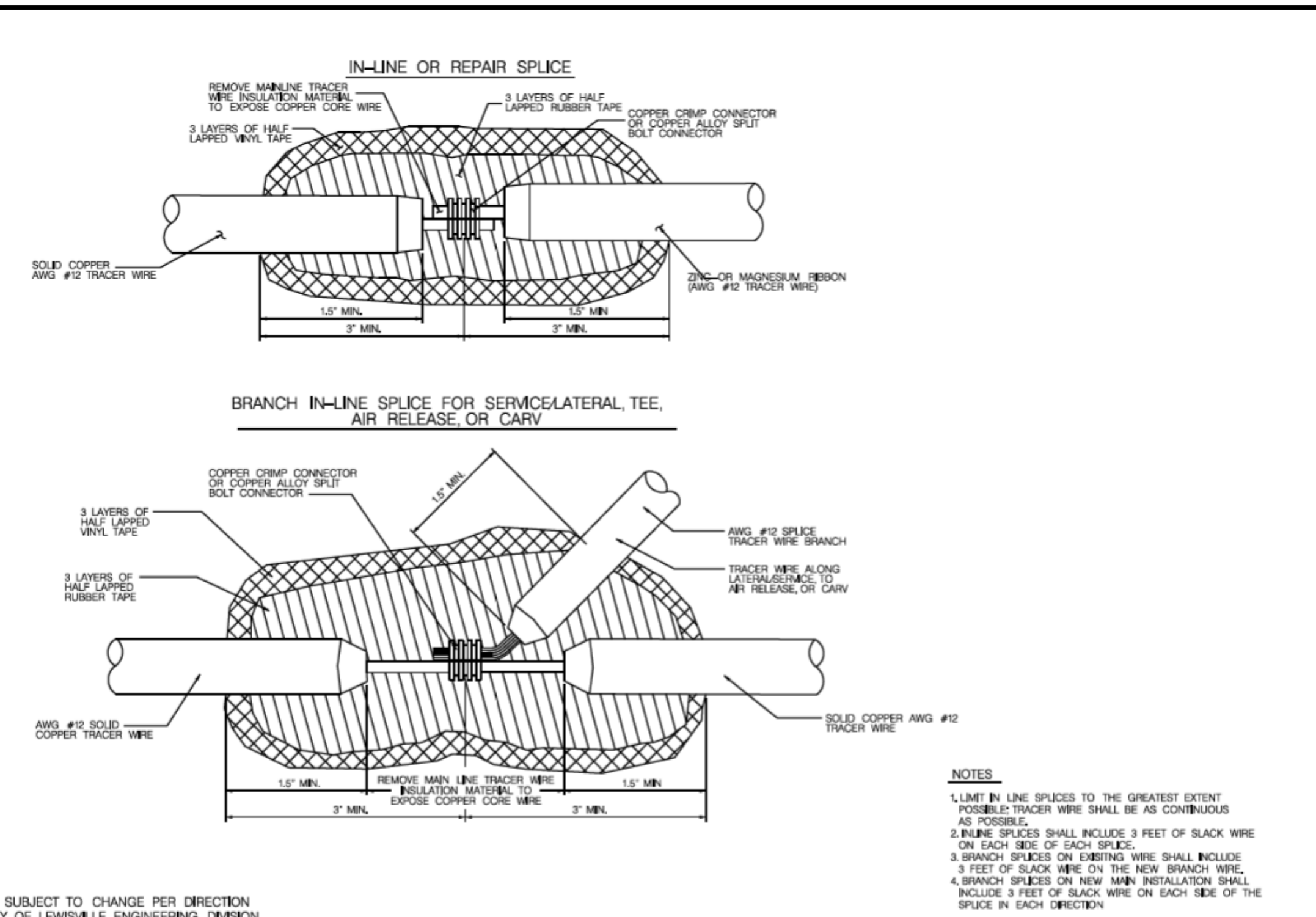
NOTE:  
DETAIL SUBJECT TO CHANGE PER DIRECTION  
OF CITY OF LEWISVILLE ENGINEERING DIVISION



Standard Details  
Tracer Wire  
Gravity Sewer Details

NO.	DATE	DESCRIPTION

Engineering Department  
Date: 3-17-2021  
Sheet: 7.27



### NOTES

1. LIMIT IN LINE SPICES TO THE GREATEST EXTENT POSSIBLE. TRACER WIRE SHALL BE AS CONTINUOUS AS POSSIBLE.
2. INLINE SPICES SHALL INCLUDE 3 FEET OF SLACK WIRE ON EACH SIDE OF EACH SPICE.
3. BRANCH SPICES ON EXISTING WIRE SHALL INCLUDE 3 FEET OF SLACK WIRE ON THE NEW BRANCH WIRE.
4. BRANCH SPICES ON NEW MAIN INSTALLATION SHALL INCLUDE 3 FEET OF SLACK WIRE ON EACH SIDE OF THE SPICE IN EACH DIRECTION.

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



Standard Details  
Sewer Main Tracer Wire  
Splice Detail

NO.	DATE	DESCRIPTION

Engineering Department  
Date: 3-17-2021  
Sheet: 7.29



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12770 MARKET DRIVE, SUITE 300  
DALLAS, TX 75251  
PHONE - (214) 217-2200  
WEB - WWW.FREESSE.COM

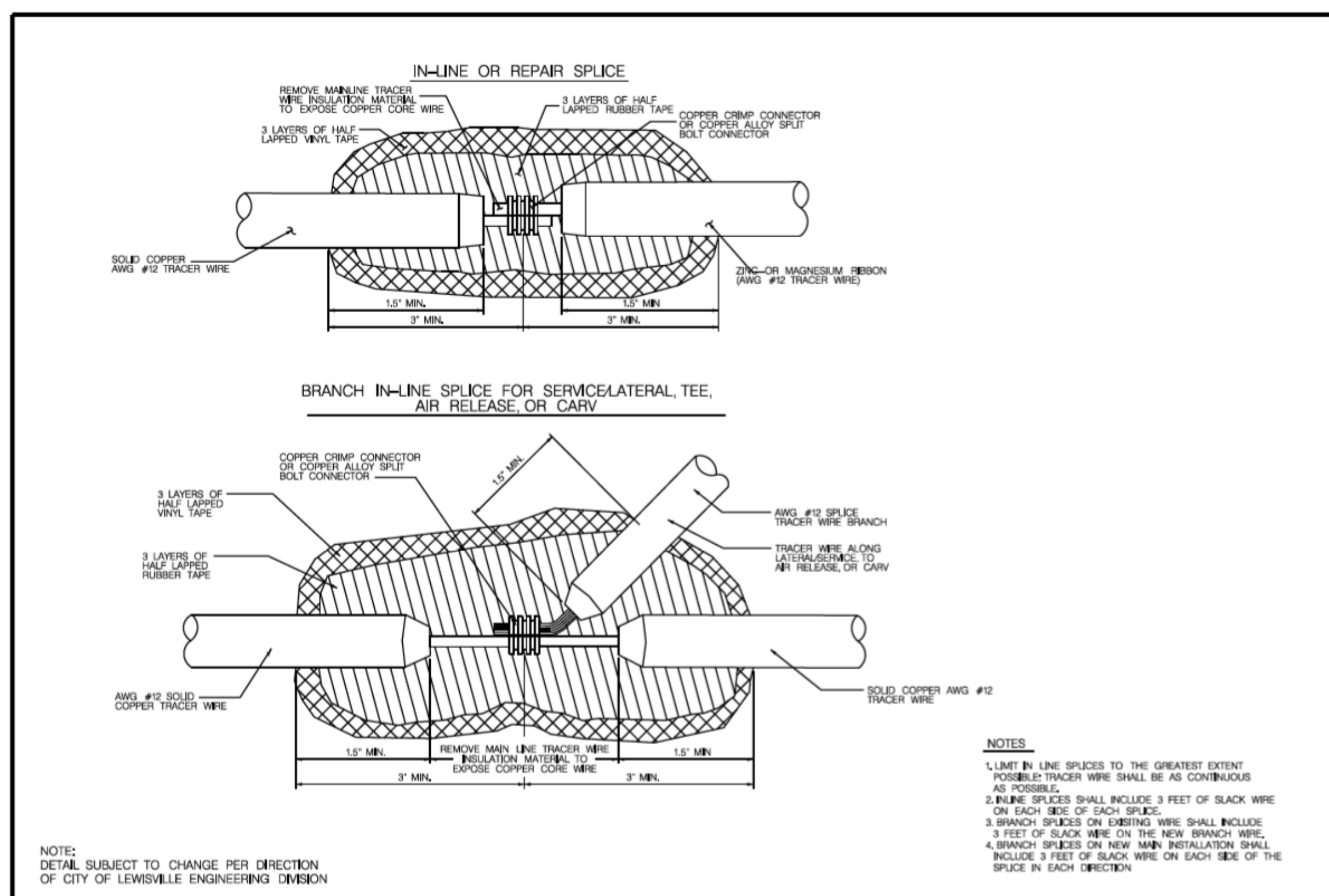
CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST  
IMPROVEMENTS**  
CIVIL  
**SANITARY SEWER DETAILS**

NO.	ISSUES	DATE	BY	FILE NAME

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**SSDT-2**  
SEQ. 67

MicroStation V8 User: 04331 - Office On Site  
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NOTE:  
 DETAIL SUBJECT TO CHANGE PER DIRECTION  
 OF CITY OF LEWISVILLE ENGINEERING DIVISION

- NOTES**
1. LIMIT IN LINE SPICES TO THE GREATEST EXTENT POSSIBLE. TRACER WIRE SHALL BE AS CONTINUOUS AS POSSIBLE.
  2. IN LINE SPICES SHALL INCLUDE 3 FEET OF SLACK WIRE ON EACH SIDE OF EACH SPICE.
  3. BRANCH SPICES ON EXISTING WIRE SHALL INCLUDE 3 FEET OF SLACK WIRE ON THE NEW BRANCH WIRE.
  4. BRANCH SPICES ON NEW MAIN INSTALLATION SHALL INCLUDE 3 FEET OF SLACK WIRE ON EACH SIDE OF THE SPICE IN EACH DIRECTION.



Standard Details  
 Sewer Main Tracer Wire  
 Splice Detail

Revisions:

NO.	DESCRIPTION	DATE

Engineering Department  
 Office No. 972-219-0469  
 www.dynalife.com

Sheet 7.29

TEXAS REGISTERED ENGINEERING FIRM F-2144



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CITY OF LEWISVILLE  
 ELM ST & POYDRAS ST  
 IMPROVEMENTS  
 CIVIL

SANITARY SEWER DETAILS

NO.	ISSUES	BY	DATE	F&N JOB NO.
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				DATE AUG 2023
				DESIGNED CM
				DRAWN KLH
				REVISED SEC
				CHECKED
				FILE NAME

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cv-trt-dt-ss03.sht

SHEET  
**SSDT-3**  
 SEQ. 68



**FREESIE NICHOLS**  
 2711 North Haskell Avenue, Suite 3500  
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 Phone - (214) 217-2200  
 Web - www.freesie.com

CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY  
 IMPROVEMENTS**  
 LANDSCAPE

**TREE PRESERVATION PLAN  
 BEGIN TO STA 14+00**

**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.

**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 OWNERS 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.

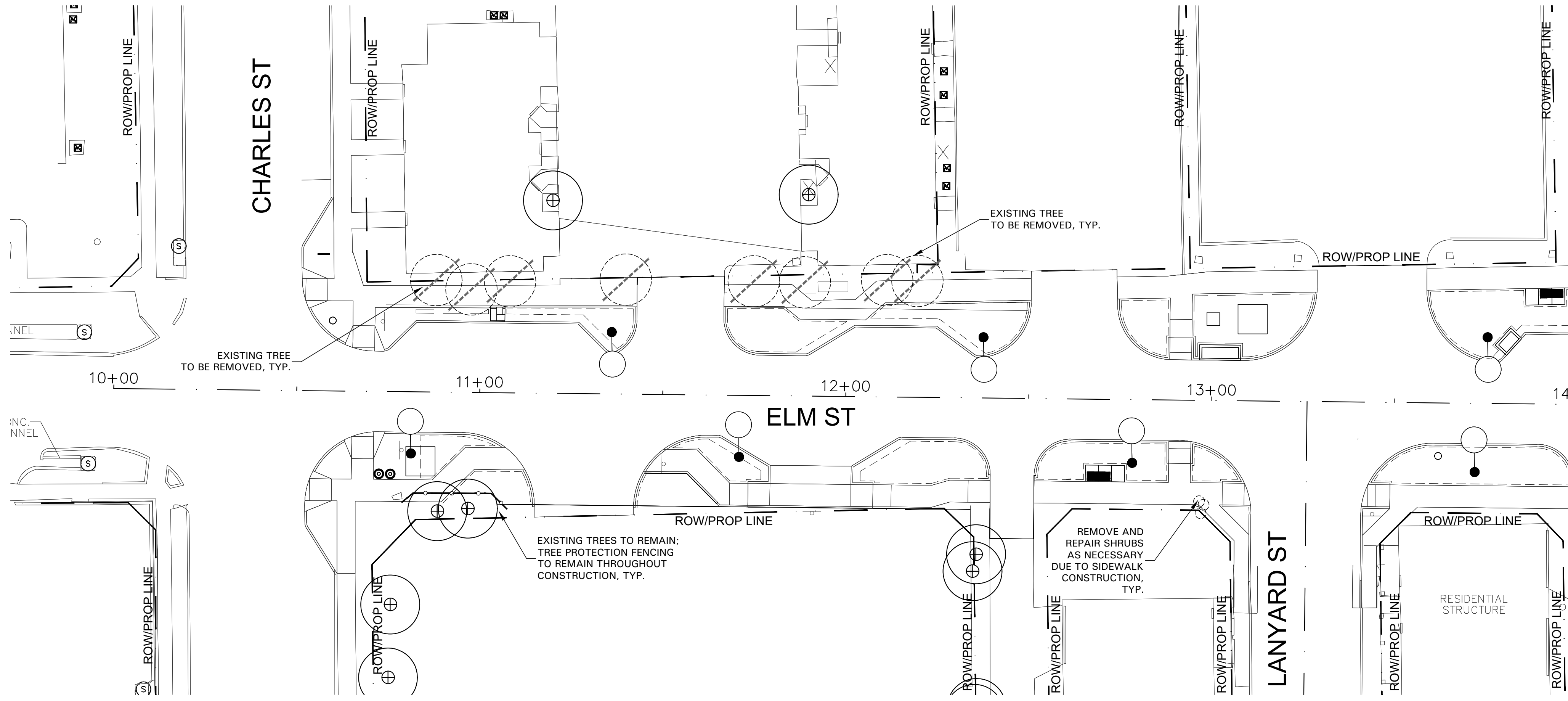
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**GRADE CHANGES:** A MINIMUM OF 75% OF THE DRIP LINE AND ROOT ZONE SHALL BE PRESERVED AT NATURAL GRADE. ANY FINE GRADING DONE WITHIN THE CRITICAL ROOT ZONES OF THE PROTECTED TREES MUST BE DONE WITH LIGHT MACHINERY SUCH AS A BOBCAT OR LIGHT TRACTOR. 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.

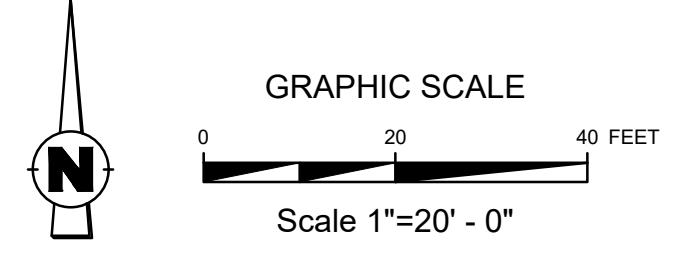
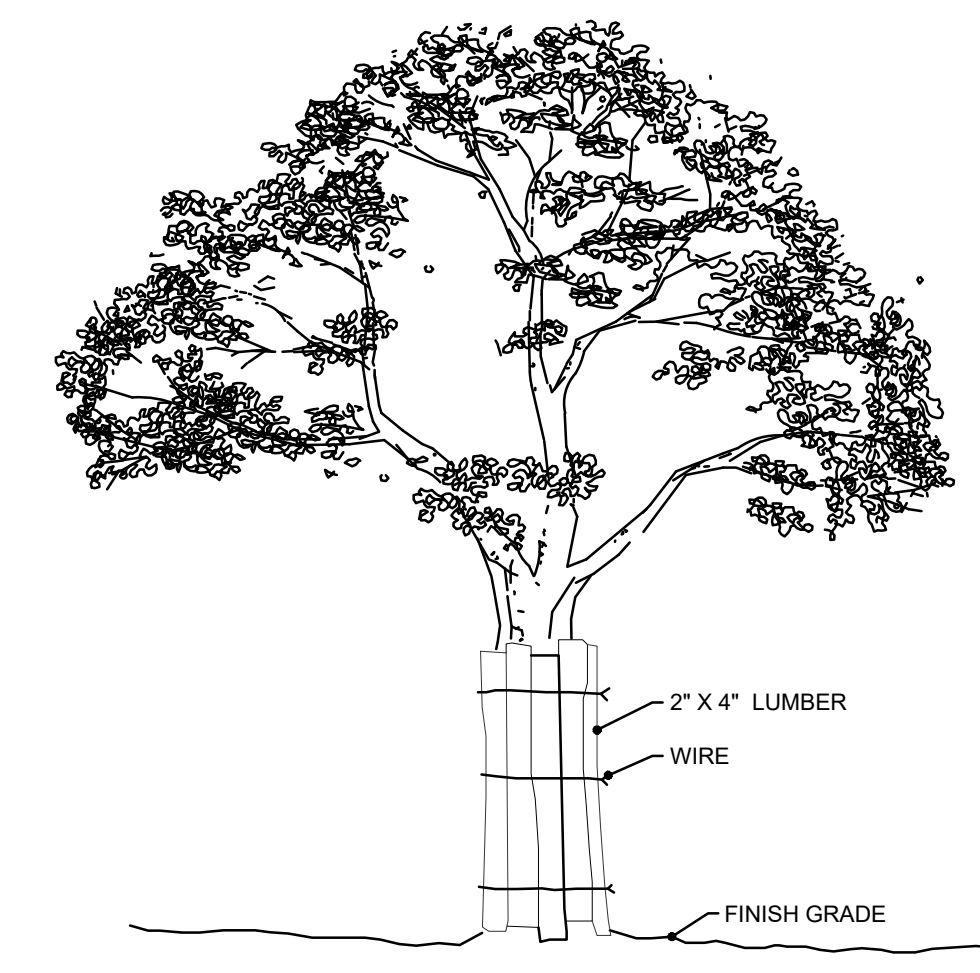
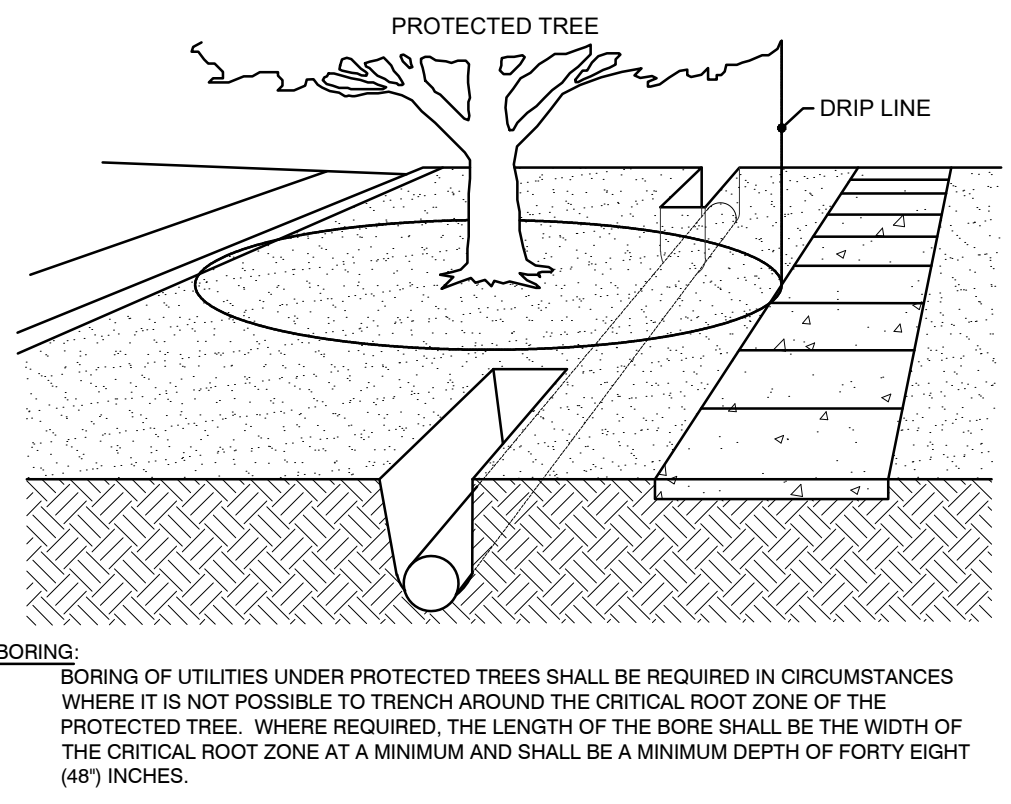
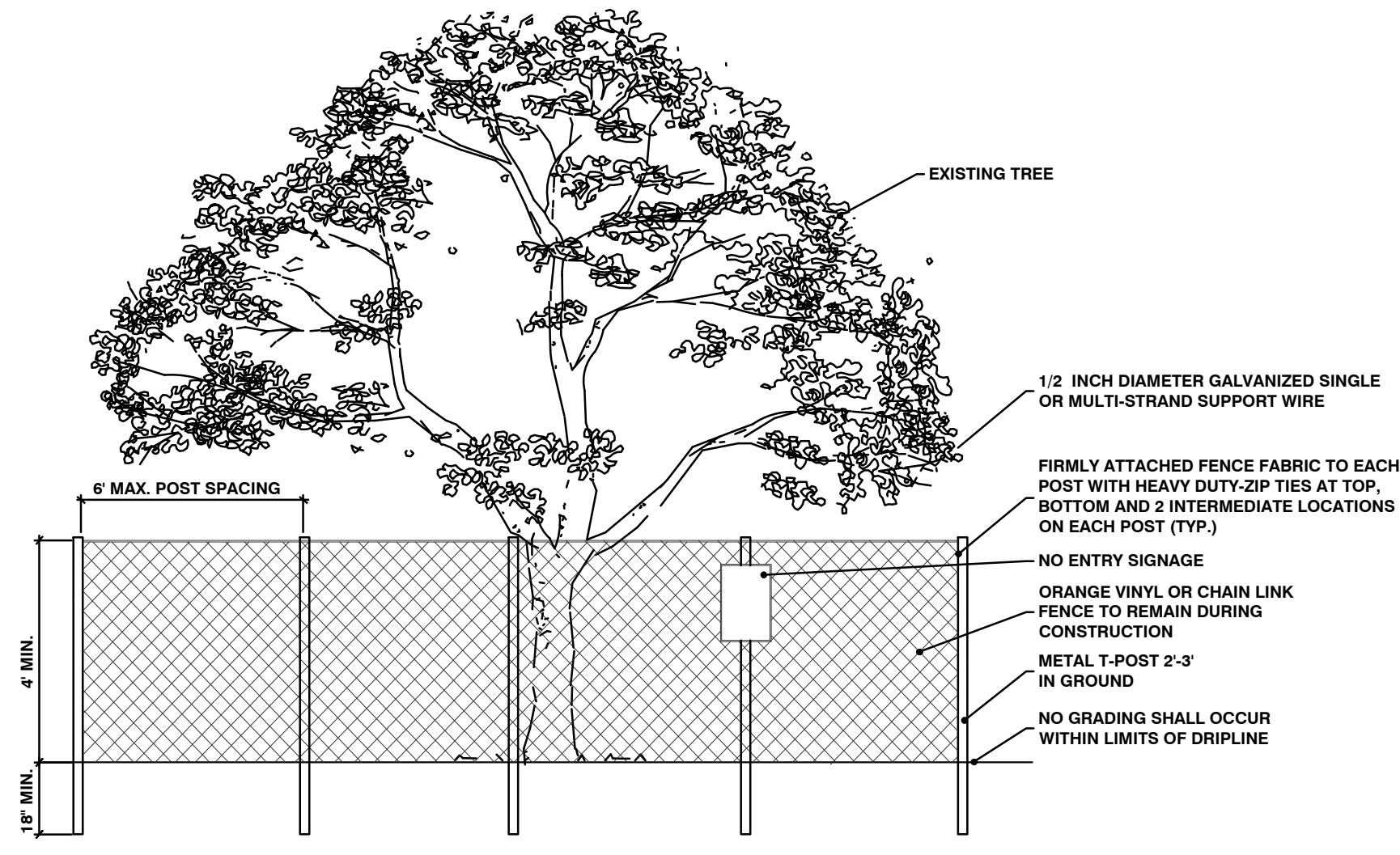
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  - DURING CONSTRUCTION, AREA WITHIN THE TREE PROTECTIONS FENCE SHALL BE WATERED AT A RATE WHICH PROVIDES ONE INCH OF WATER PER WEEK, INCLUSIVE OF RAINFALL.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND AVOIDING UNDERGROUND UTILITIES OR OTHER IMPROVEMENTS PRIOR TO PLACEMENT OF TREE PROTECTION FENCING.



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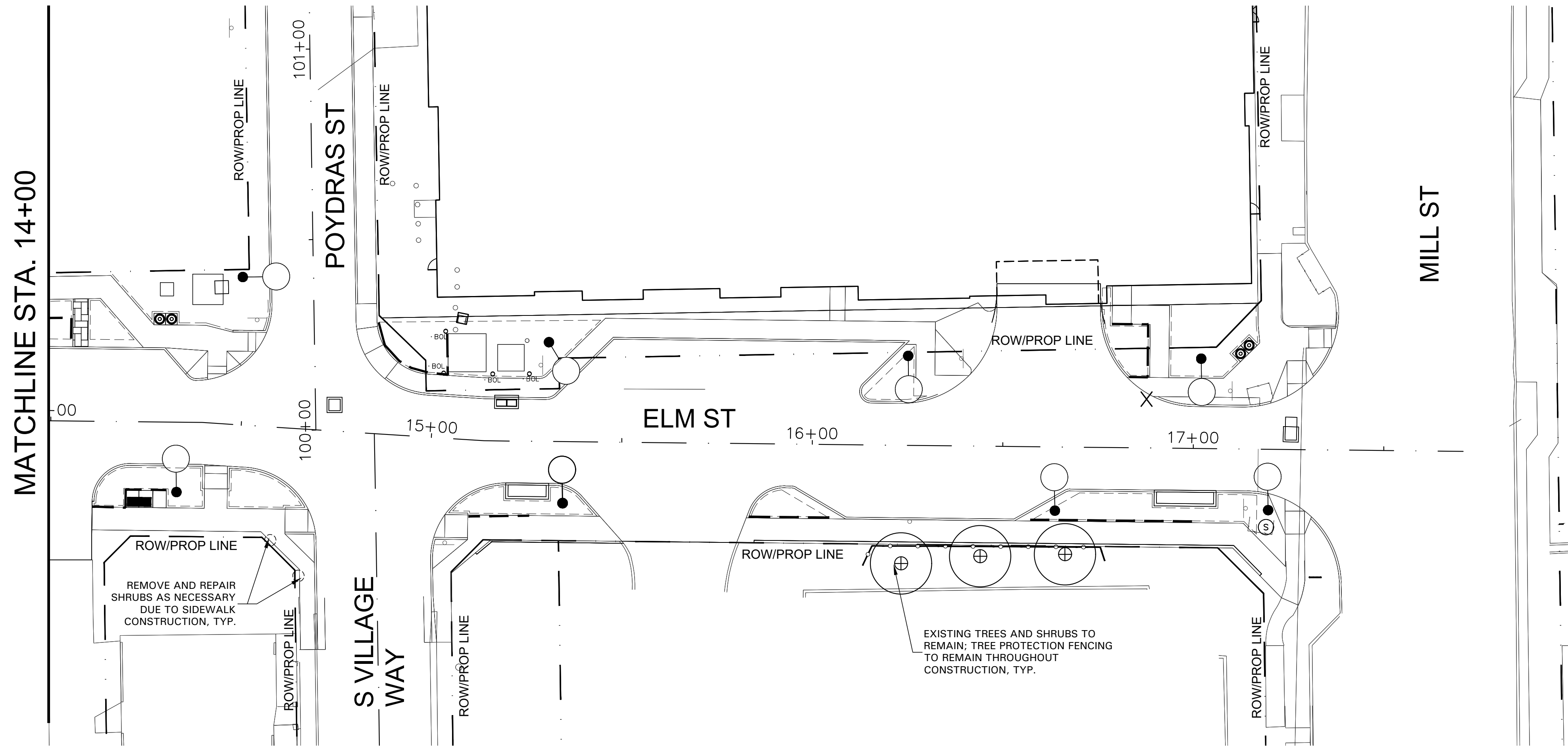
**TREE PRESERVATION LEGEND**

- TREE TO BE REMOVED
- TREE TO REMAIN (SEE DETAILS LP-1.1 AND LP-1.1.2, AND LP-1.1.3)
- TREE PRESERVATION FENCING



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**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 (40) 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 OWNERS 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.

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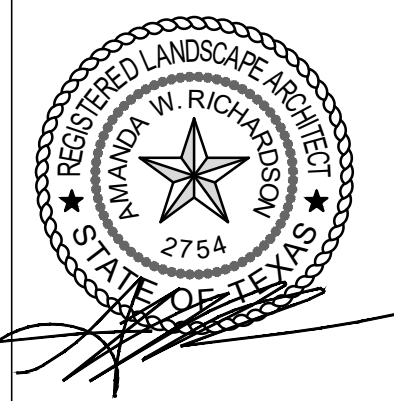
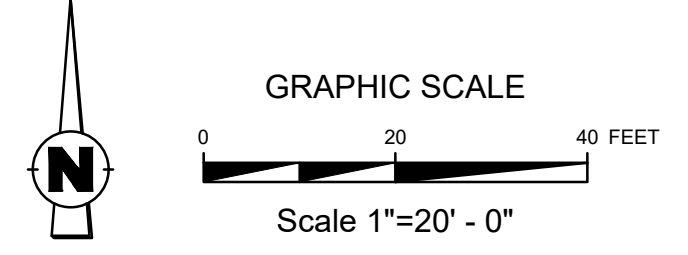
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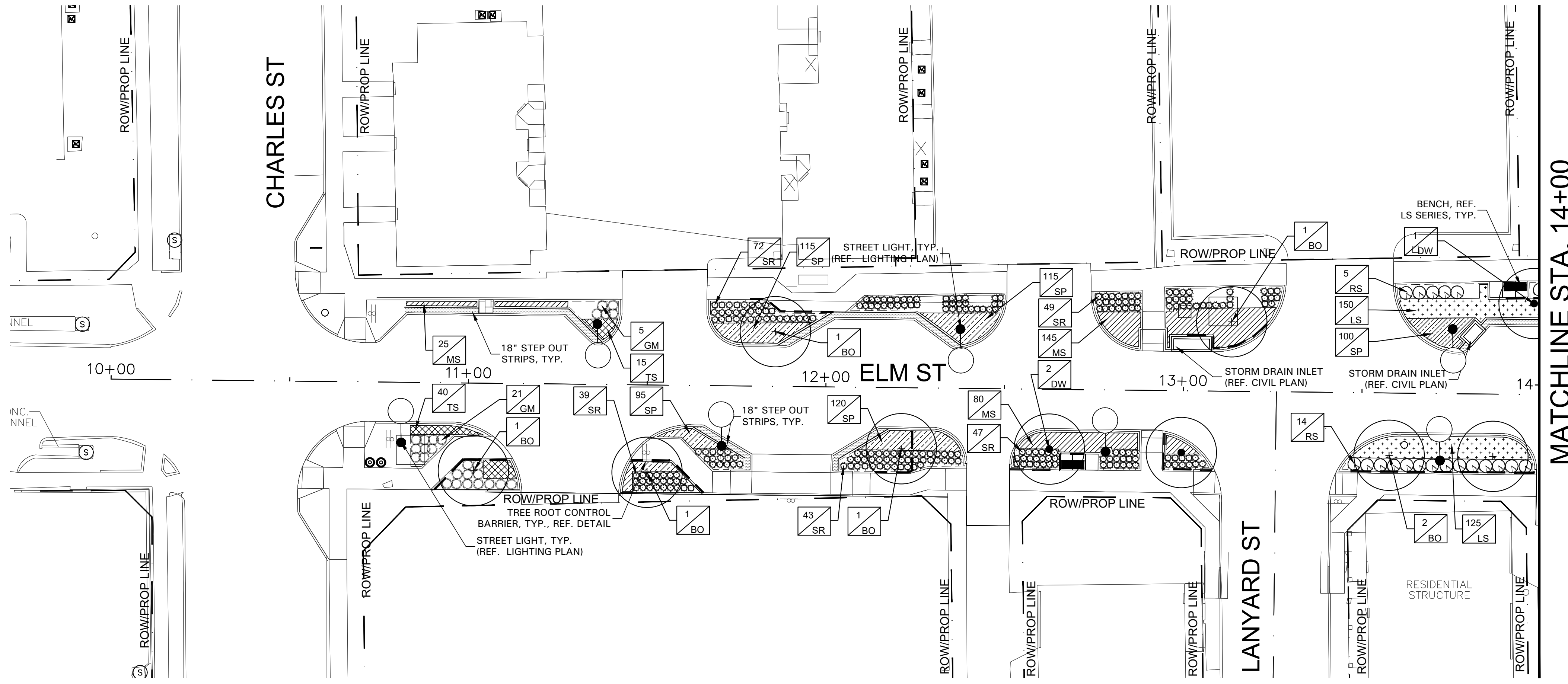


CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY IMPROVEMENTS**  
 LANDSCAPE  
**TREE PRESERVATION PLAN**  
 STA 14+00 TO END

FAN JOB NO.	LEW20378
DATE	JUN 2023
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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.

**GENERAL LAWN NOTES**

- CONTRACTOR SHALL COORDINATE OPERATIONS AND AVAILABILITY OF EXISTING TOPSOIL WITH ON-SITE CONSTRUCTION MANAGER
- LAWN AREAS SHALL BE LEFT 1" BELOW FINAL FINISHED GRADE PRIOR TO TOPSOIL INSTALLATION
- 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.
- ALL LAWN AREAS SHALL BE FINE GRADED, IRRIGATION TRENCHES COMPLETELY SETTLED AND FINISH GRADE APPROVED BY THE OWNER'S CONSTRUCTION MANAGER OR LANDSCAPE ARCHITECT PRIOR TO LAWN INSTALLATION.
- 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.
- CONTRACTOR SHALL MAINTAIN ALL LAWN AREAS UNTIL FINAL ACCEPTANCE.
- CONTRACTOR SHALL GUARANTEE ESTABLISHMENT OF ACCEPTABLE TURF AREA AND SHALL PROVIDE REPLACEMENT IF NECESSARY.

**SOLID SOD:**

- 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.
- 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.
- 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.
- TOP DRESS JOINTS IN SOD BY HAND WITH TOPSOIL TO FILL VOIDS IF NECESSARY
- SOD SHALL BE ROLLED TO CREATE A SMOOTH EVEN SURFACE. SOD SHOULD BE WATERED THOROUGHLY DURING INSTALLATION PROCESS.
- 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**

- 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
- 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.
- A MINIMUM OF 2% SLOPE SHALL BE PROVIDED AWAY FROM ALL STRUCTURES.
- 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.
- LANDSCAPE ISLANDS SHALL BE CROWNED, AND UNIFORM THROUGHOUT THE SITE.
- 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.
- EDGING SHALL BE CUT AT 45 DEGREE ANGLE WHERE IT INTERSECTS WALKS AND/OR CURBS.
- MULCH SHALL BE INSTALLED AT 1/2" BELOW THE TOPS OF SIDEWALKS AND CURBING.
- 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.
- CONTAINER GROWN PLANT MATERIAL SHALL BE USED, REFERENCE PLAN AND TABLES FOR PLANT MATERIAL LIST AND LOCATIONS.
- 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.

- 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.
- INSTALL TREE ROOT BARRIER PER PLAN LOCATIONS AND PER MANUFACTURER'S RECOMMENDATIONS.
- OWNER TO SELECT OR TAG ALL TREES FROM TREE FARM PRIOR TO INSTALLATION. CONTRACTOR TO COORDINATE WITH OWNER.
- PER CITY REQUEST, DO NOT USE WEED BARRIER FABRIC.
- 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 MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR TO PROVIDE UNIT PRICING OF LANDSCAPE MATERIALS AND BE RESPONSIBLE FOR OBTAINING ALL LANDSCAPE AND IRRIGATION PERMITS.

**MAINTENANCE REQUIREMENTS:**

- 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.
- 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.
- ALL LANDSCAPE AREAS SHOULD BE CLEANED AND KEPT FREE OF TRASH, DEBRIS, WEEDS AND OTHER MATERIAL.

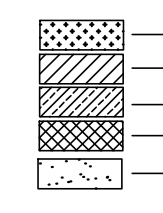
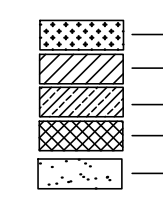
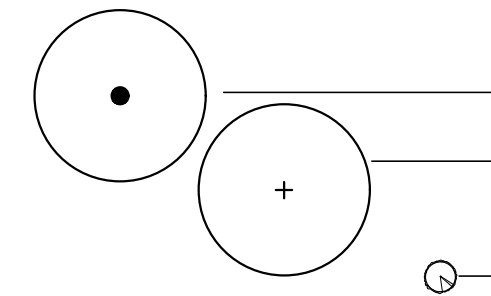
**MISCELLANEOUS MATERIALS:**

- STEEL EDGING SHALL BE 3/16" X 4 X 16" BLACK DURAEDGE STEEL LANDSCAPE EDGING UNLESS NOTED OTHERWISE ON PLANS/DETAILS.

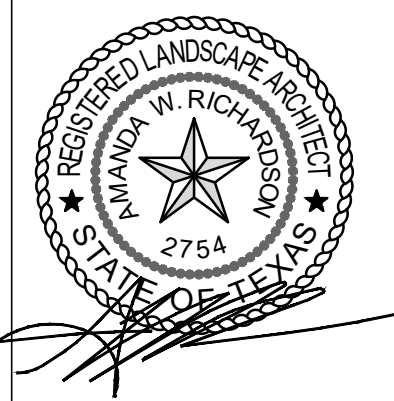
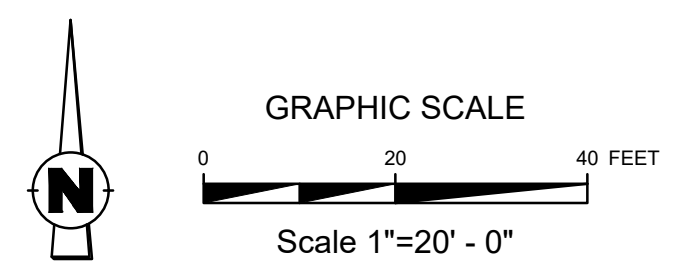
**PRUNING AND TRIMMING:**

- CONTRACTOR SHALL PRUNE ALL EXISTING TREES ON-SITE USING STANDARD GUIDELINES IN THE INDUSTRY.
- ALL TREES SHALL BE TRIMMED SO THAT NATURAL SHAPES OF THE PLANTS ARE RETAINED.
- DO NOT "TOP" OR "HEAD" TREES.
- IF BALLING OR SHEARING OF TREES HAS OCCURRED IN THE PAST, DISCONTINUE THIS PRACTICE AND ALLOW PLANTS TO GROW INTO NATURAL SHAPE.
- REMOVE SUCKERS, DEAD, DYING, DISEASED, BROKEN AND / OR WEAK BRANCHES FROM ALL TREES ALONG THE MAIN TRUNK STRUCTURE AND WITHIN THE BRANCHING AREA.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL BE REQUIRED TO CHIP ALL REMOVED BRANCHES, LEAFS, ETC.

PLANT SCHEDULE					
QTY	LABEL	COMMON NAME	SCIENTIFIC NAME	SIZE	NOTES
<b>SHADE TREES</b>					
7	DW	Desert Willow	<i>Chilopsis linearis</i>	30 gal.	8' ht., 4' spread, multi trunk, 3 cane min.
9	BO	Blackjack Oak	<i>Quercus marilandica</i>	3" cal.	12' ht., 4' spread, matching
<b>SHRUBS</b>					
48	RS	Red Salvia	<i>Salvia greggii 'Fuman's Red'</i>	3 gal.	full, 42" o.c.
73	GM	Gulf Muhly	<i>Muhlenbergia capillaris</i>	3 gal.	full, 36" o.c.
395	SR	Soft Rush	<i>Juncus effusus</i>	1 gal.	full, 24" o.c.
30	SW	Spiderwort	<i>Tradescantia humilis</i>	3 gal.	full, 30" o.c.
<b>GROUND COVER/VINES/GRASS</b>					
435	LS	New Gold Lantana/Black Eyed Susan Mix	<i>Lantana x hybrida 'New Gold' / Rudbeckia hirta</i>	1 gal.	full, 18" o.c.
415	MS	May Night Salvia	<i>Salvia sylvestris 'May Night'</i>	1 gal.	full, 18" o.c.
545	SP	Silver Ponyfoot	<i>Dichondra argenta</i>	1 gal.	full, 12" o.c.
75	TS	Texas Sedge	<i>Carex texensis</i>	1 gal.	full, 18" o.c.
2705	s.f.	Solid Buffalograss Sod	<i>Buchloe dactyloides</i>		



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.

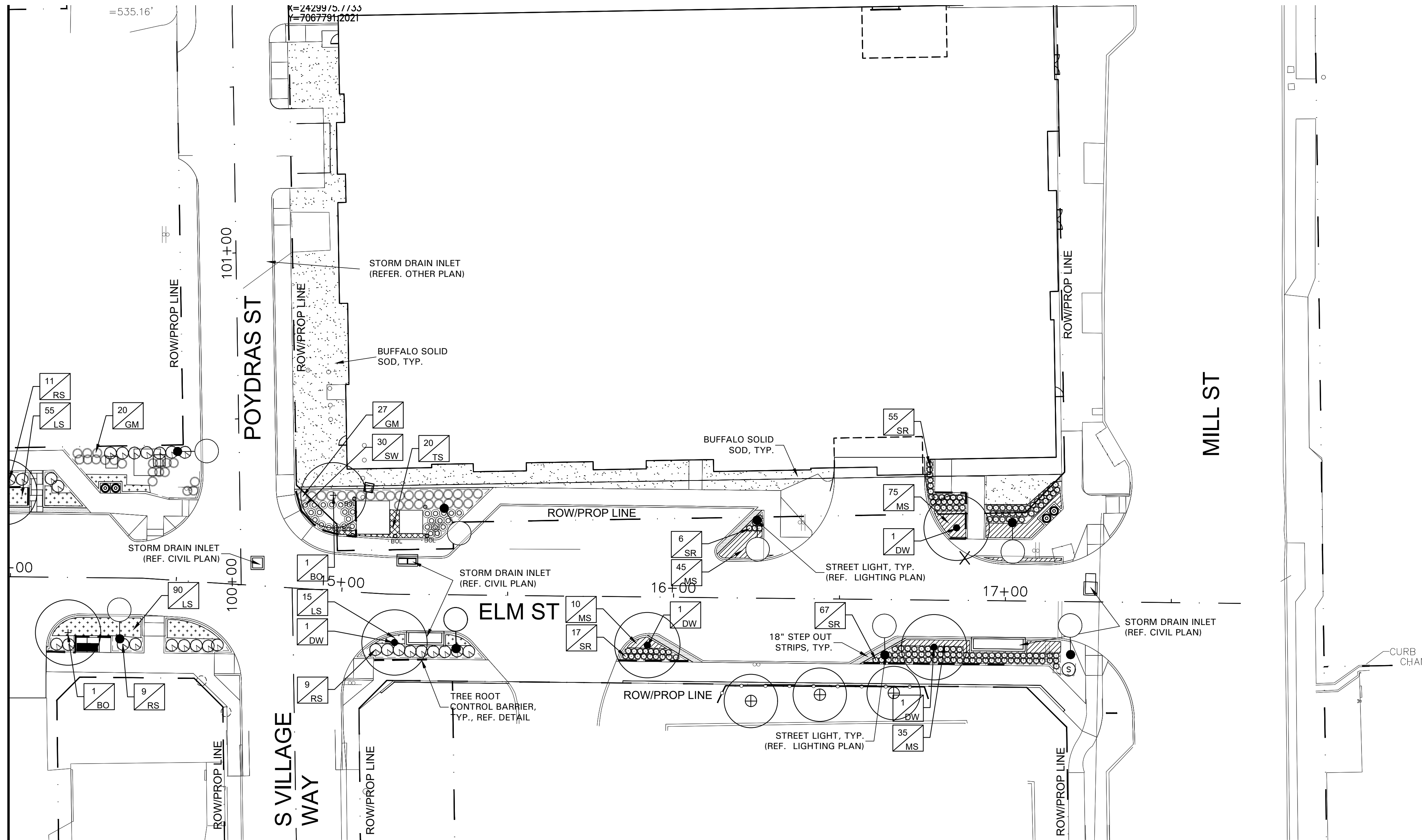


**FREESIE NICHOLS**  
 2711 North Haskell Avenue, Suite 3500  
 Dallas, TX 75204  
 Phone - (214) 217-2200  
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CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY IMPROVEMENTS**  
 LANDSCAPE PLAN  
 BEGIN TO STA 14+00

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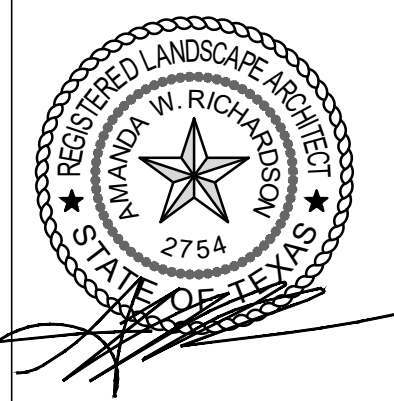
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PREMIEX BEDDING SOIL AS SUPPLIED BY VITAL EARTH RESOURCES, GLADEWATER, TEXAS; PROFESSIONAL BEDDING SOIL AS SUPPLIED BY LIVING EARTH TECHNOLOGY, DALLAS, TEXAS OR ACID GRO MUNICIPAL MIX AS SUPPLIED BY SOIL BUILDING SYSTEMS, DALLAS, TEXAS OR APPROVED 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.



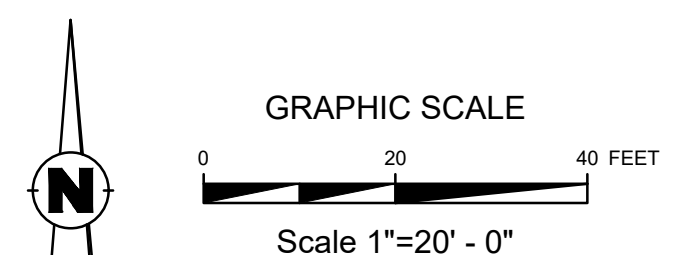
**FREESSE & NICHOLS**  
 2711 North Haskell Avenue, Suite 300  
 Dallas, TX 75204  
 Phone - (214) 217-2200  
 Web - www.freesse.com

CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY IMPROVEMENTS**  
 LANDSCAPE PLAN  
 STA 14+00 TO END

**PLANT SCHEDULE**

QTY	LABEL	COMMON NAME	SCIENTIFIC NAME	SIZE	NOTES
<b>SHADE TREES</b>					
7	DW	Desert Willow	<i>Chilopsis linearis</i>	30 gal.	8' ht., 4' spread, multi trunk, 3 cane min.
9	BO	Blackjack Oak	<i>Quercus marilandica</i>	3" cal.	12' ht., 4' spread, matching
<b>SHRUBS</b>					
48	RS	Red Salvia	<i>Salvia greggii 'Furman's Red'</i>	3 gal.	full, 42" o.c.
73	GM	Gulf Muhly	<i>Muhlenbergia capillaris</i>	3 gal.	full, 36" o.c.
395	SR	Soft Rush	<i>Juncus effusus</i>	1 gal.	full, 24" o.c.
30	SW	Spiderwort	<i>Tradescantia humilis</i>	3 gal.	full, 30" o.c.
<b>GROUND COVER/VINES/GRASS</b>					
435	LS	New Gold Lantana/Black Eyed Susan Mix	<i>Lantana x hybrida 'New Gold' / Rudbeckia hirta</i>	1 gal.	full, 18" o.c.
415	MS	May Night Salvia	<i>Salvia sylvestris 'May Night'</i>	1 gal.	full, 18" o.c.
545	SP	Silver Ponyfoot	<i>Dichondra argenta</i>	1 gal.	full, 12" o.c.
75	TS	Texas Sedge	<i>Carex texensis</i>	1 gal.	full, 18" o.c.
2705	s.f.	Solid Buffalograss Sod	<i>Buchloe dactyloides</i>		

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.

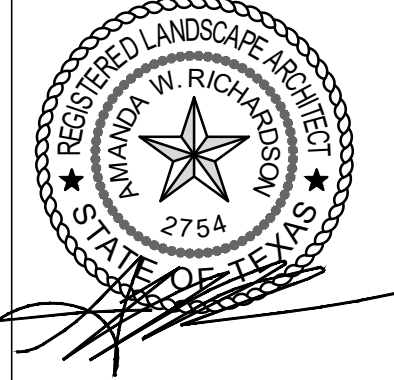


**AWR**  
 AWR Designs, LLC  
 P.O. Box 1746  
 Alledo, Texas 76008  
 amanda@awr-designs.com  
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SEQ.															

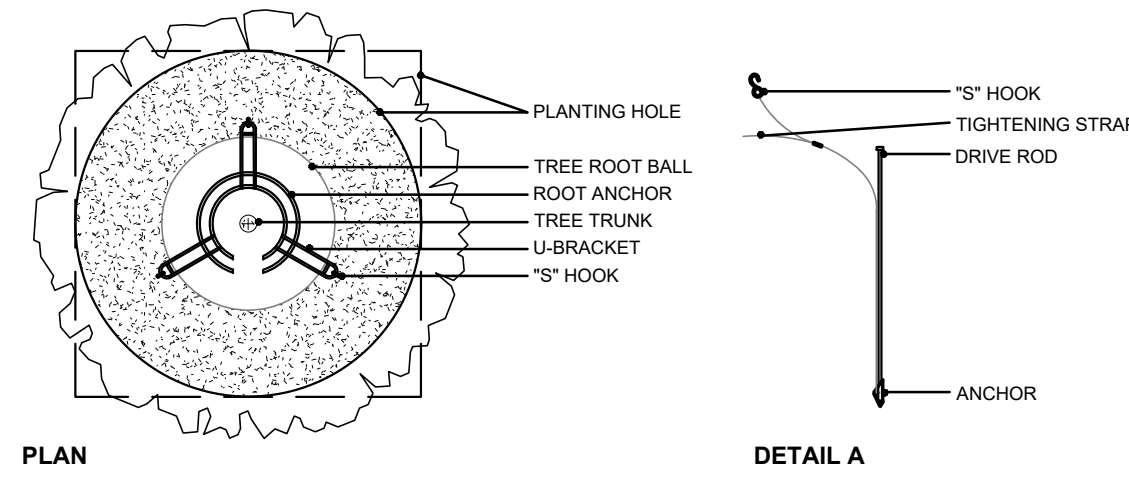




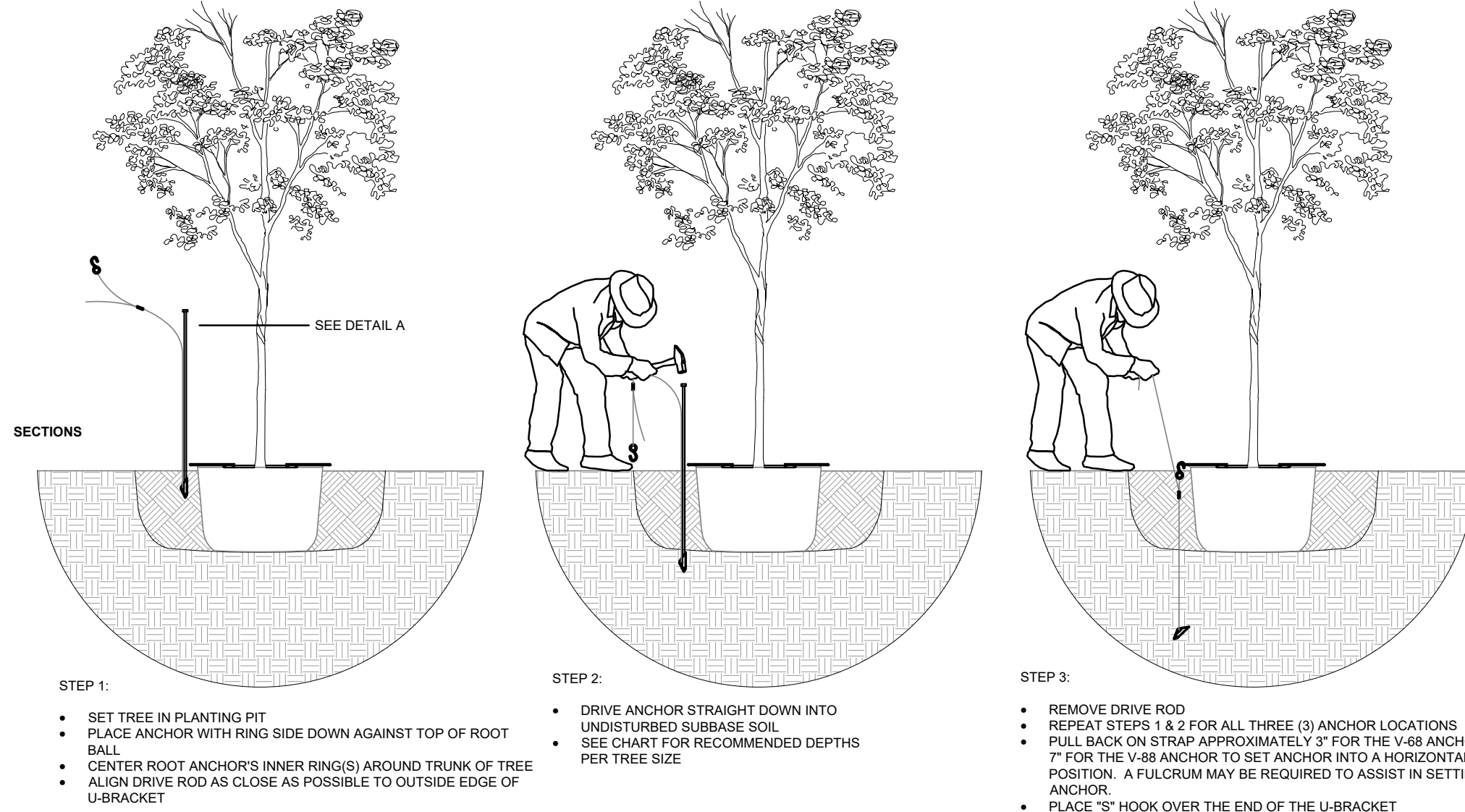
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CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY  
 IMPROVEMENTS**  
 LANDSCAPE  
 LANDSCAPE DETAILS

FAN JOB NO.	LEW20378	DATE	JUN 2023	DESIGNED	AWR	DRAWN	AWR	REVISED	AWR	CHECKED	AWR	FILE NAME	\$FILES
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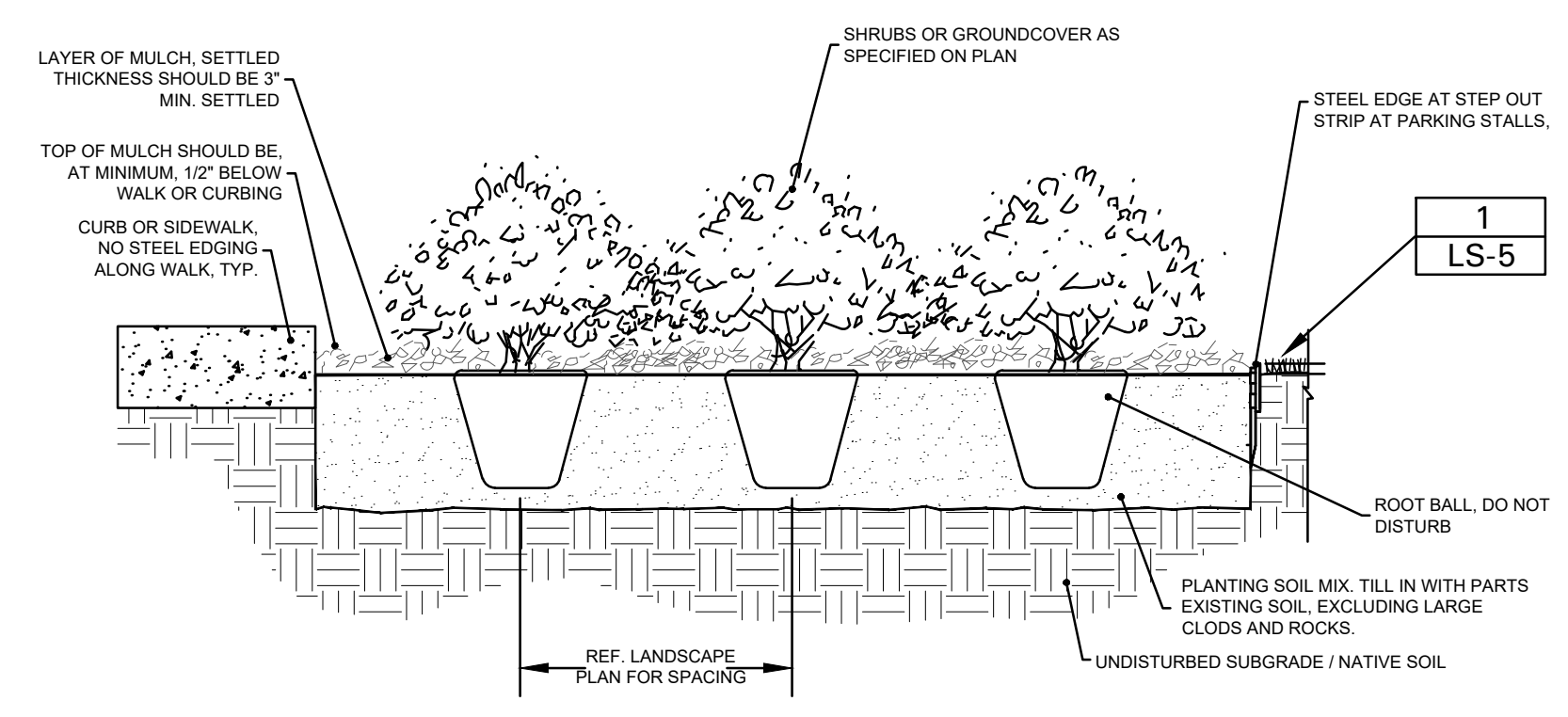
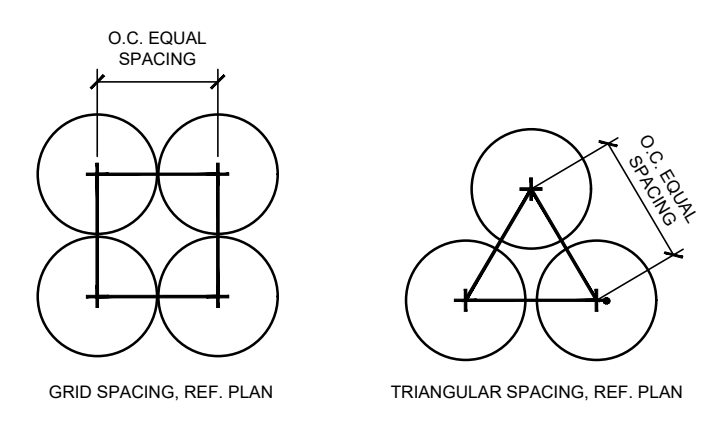


ROOT ANCHOR ITEM#	ROOT BALL & CONTAINER SIZE	ANCHOR INSTALLATION DEPTH	QUANTITY & ANCHOR SIZE
15-BG	10 / 15 Gallon or 17" root ball	12 - 15" Minimum Depth	3 - V88 Anchors
30-BG	20 / 39 Gallon or 22" root ball	18 - 24" Minimum Depth	3 - V88 Anchors
45/65-BG	45 / 65 Gallon or 27-30" root ball	24 - 30" Minimum Depth	3 - V88 Anchors
100-BG	95 / 100 Gallon or 36" root ball	30 - 36" Minimum Depth	3 - V88 Anchors
150-BG	150 Gallon or 42" root ball	48" Minimum Depth	3 - V88 Anchors
200-BG	200 Gallon or 48" root ball	48" Minimum Depth	3 - V88 Anchors
300-BG	300 Gallon or 58" root ball	48" Minimum Depth	3 - V88 Anchors
CUSTOM-BG	Root Balls larger than 60"	TBD	

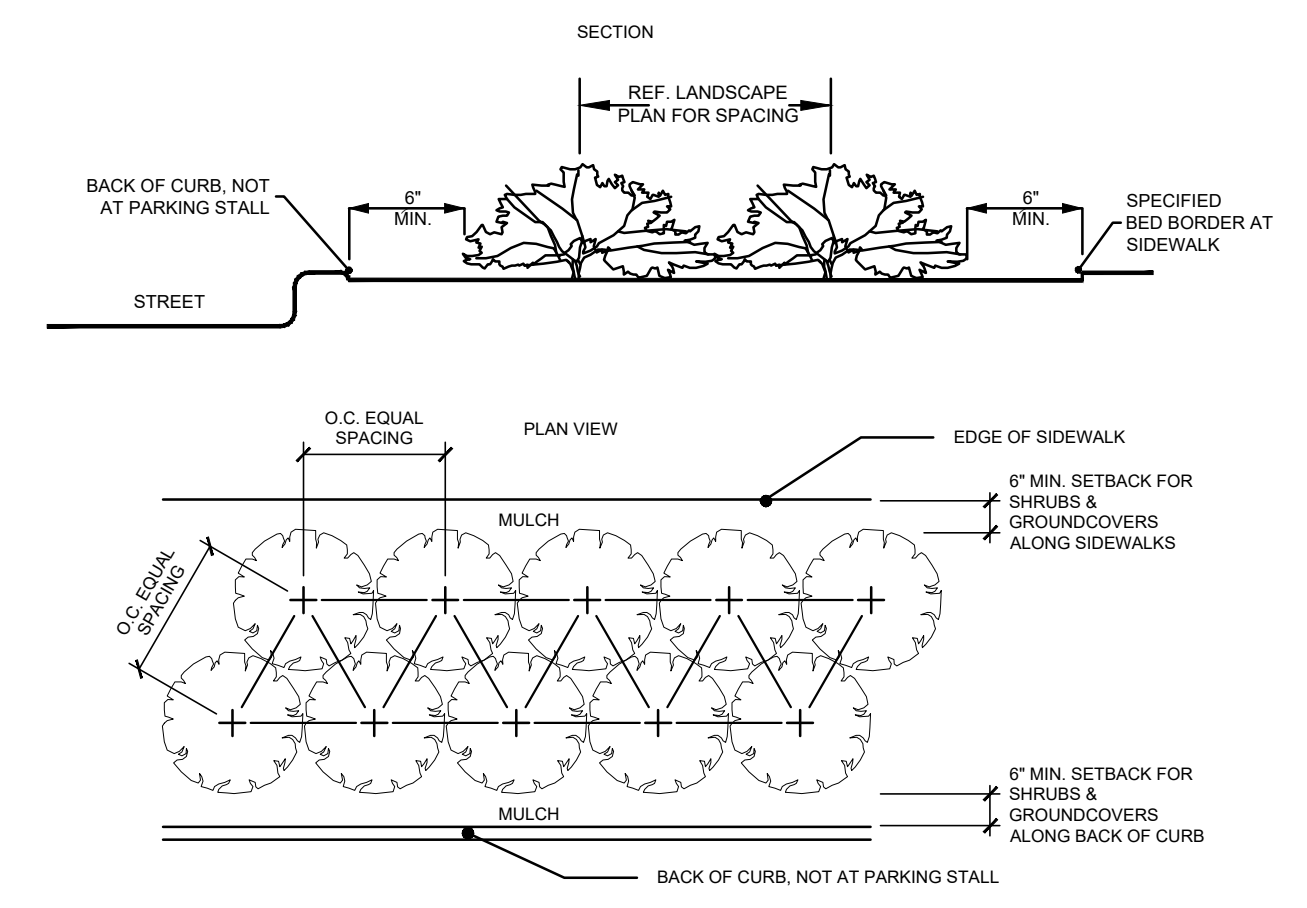


**1 TREE STAKING**  
 N.T.S.

**Tree Stake Solutions, LLC.**  
 9973 FM 521 Road  
 Richardson, Texas 75083  
 www.treestakesolutions.com  
 Phone: 281-778-1400  
 Mobile: 903-876-6143  
 Fax: 281-778-1425



**2 SHRUB PLANTING**  
 N.T.S.



**3 SHRUB SPACING AND PLANTING AT BACK OF CURB**  
 N.T.S.

**4 TREE ROOT CONTROL BARRIER**  
 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" (243mm) diameter.

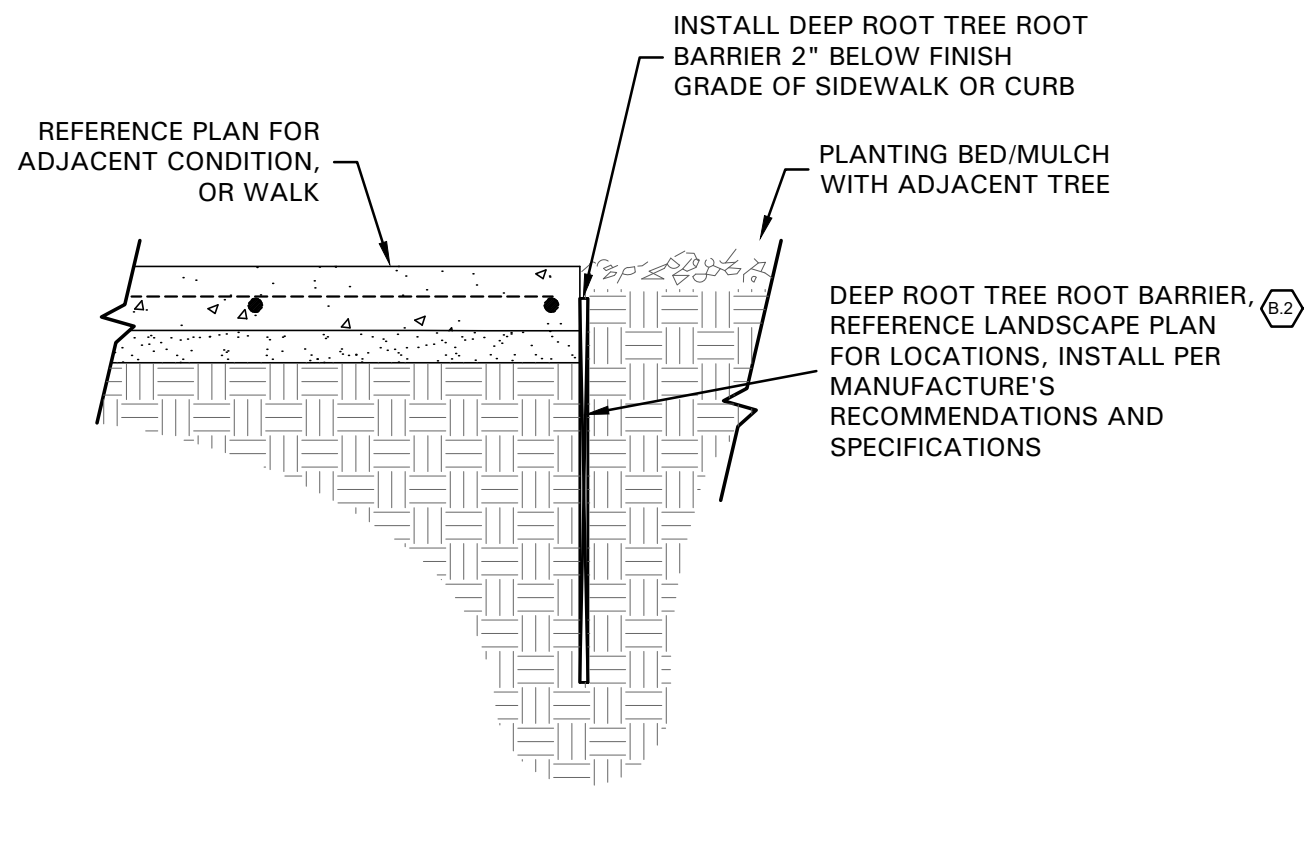
**A. Materials**

- 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).
- 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.
- Root barrier shall be manufactured with 100% reprocessed homopolymer polyethylene with added ultraviolet inhibitors.
- 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)
- Root barrier shall have an integrated Joining System for assembly by sliding one panel into another.

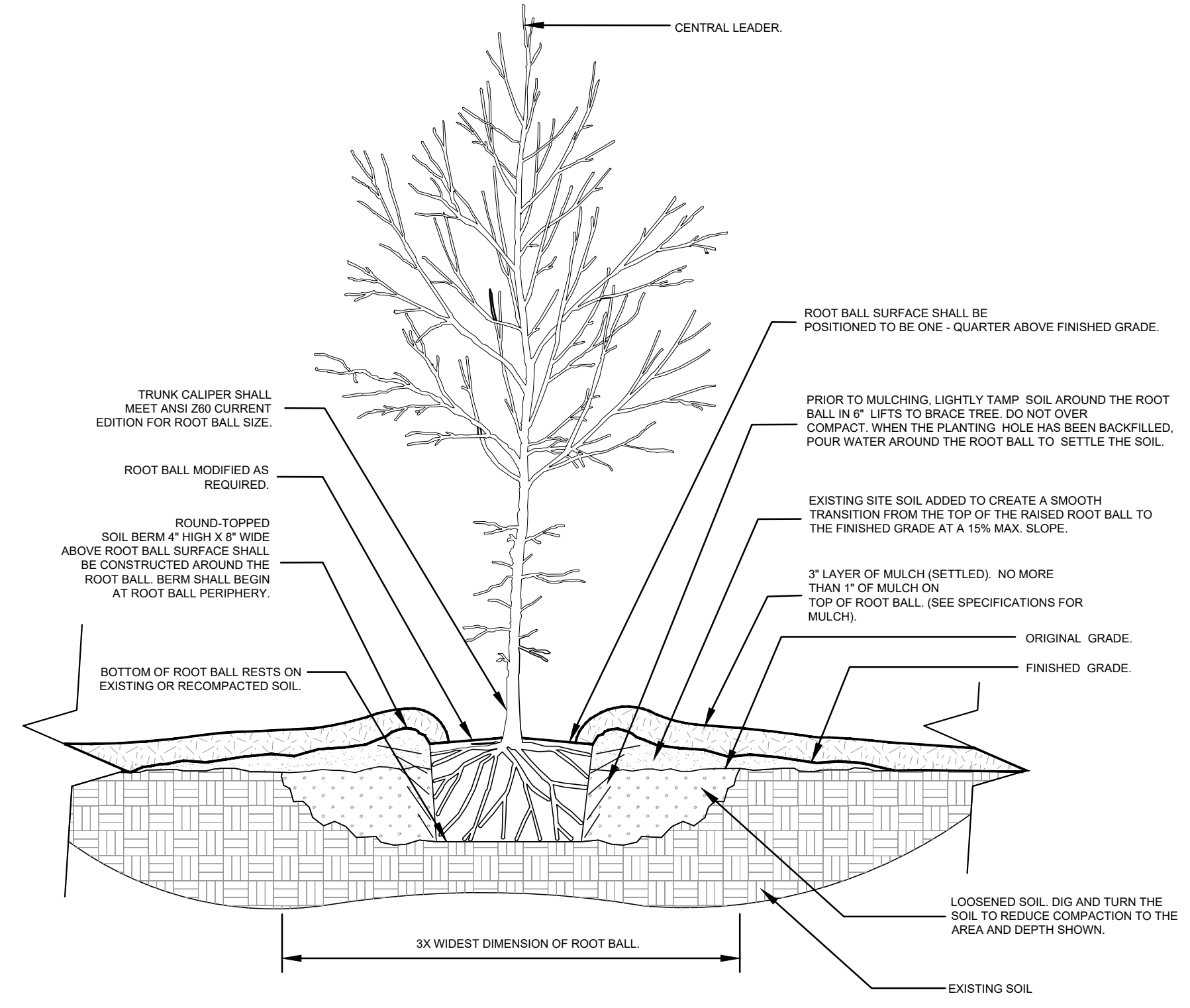
Material and Thickness	Homopolymer Polyethylene 0.080 inch Extruded	
Properties	Typical Value	ASTM Test Method
Tensile stress @ yield	3800 PSI	D638
Elongation @ break %	10%	D638
Tensile Modulus	155,000 PSI	D638
Notched Izod Impact	0.4 - 4.0	D256A
Flexural Modulus 73 ± PSI	145,000	D790
Hardness Shore	P66	D2240

**deeproot**

**4 TREE ROOT CONTROL BARRIER**  
 N.T.S.



**5 TREE ROOT CONTROL BARRIER**  
 N.T.S.



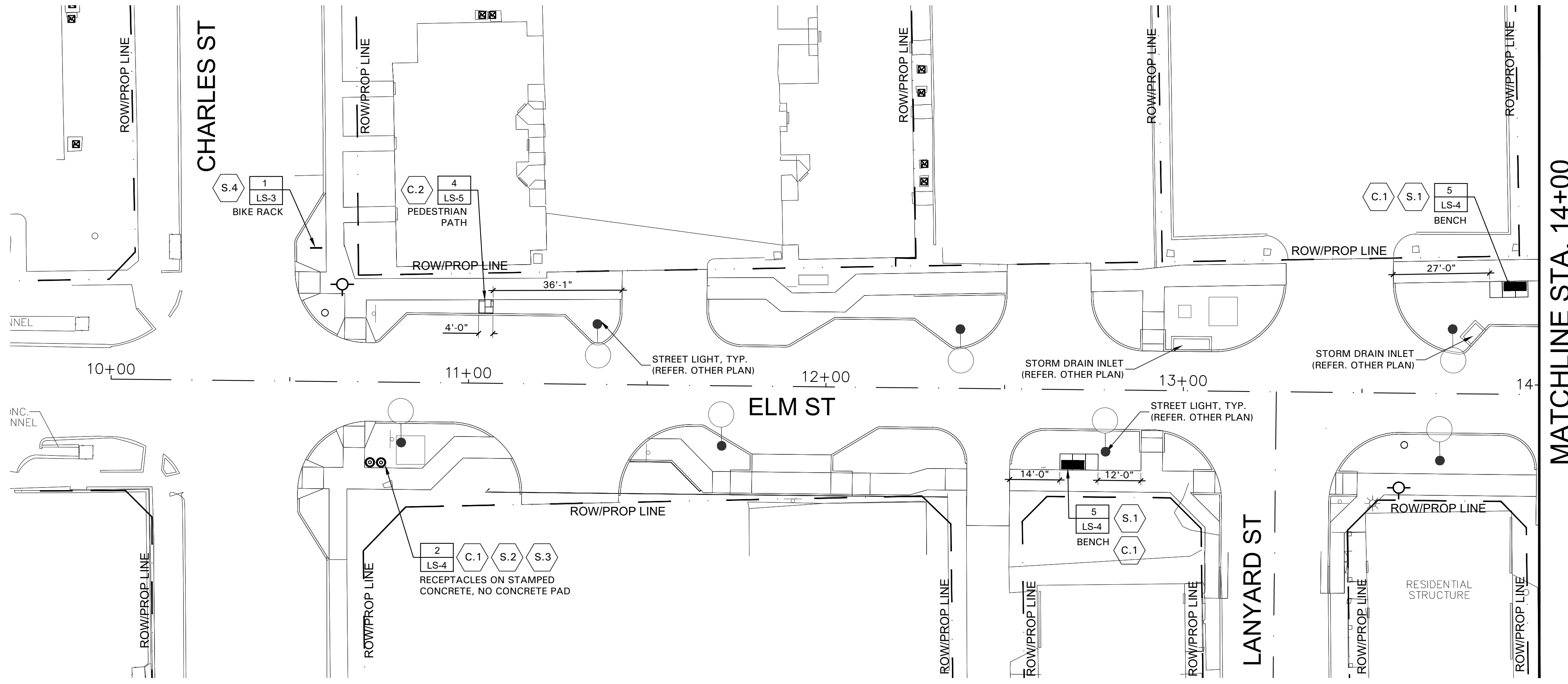
**6 TREE PLANTING**  
 N.T.S.

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 Date: DATE\$

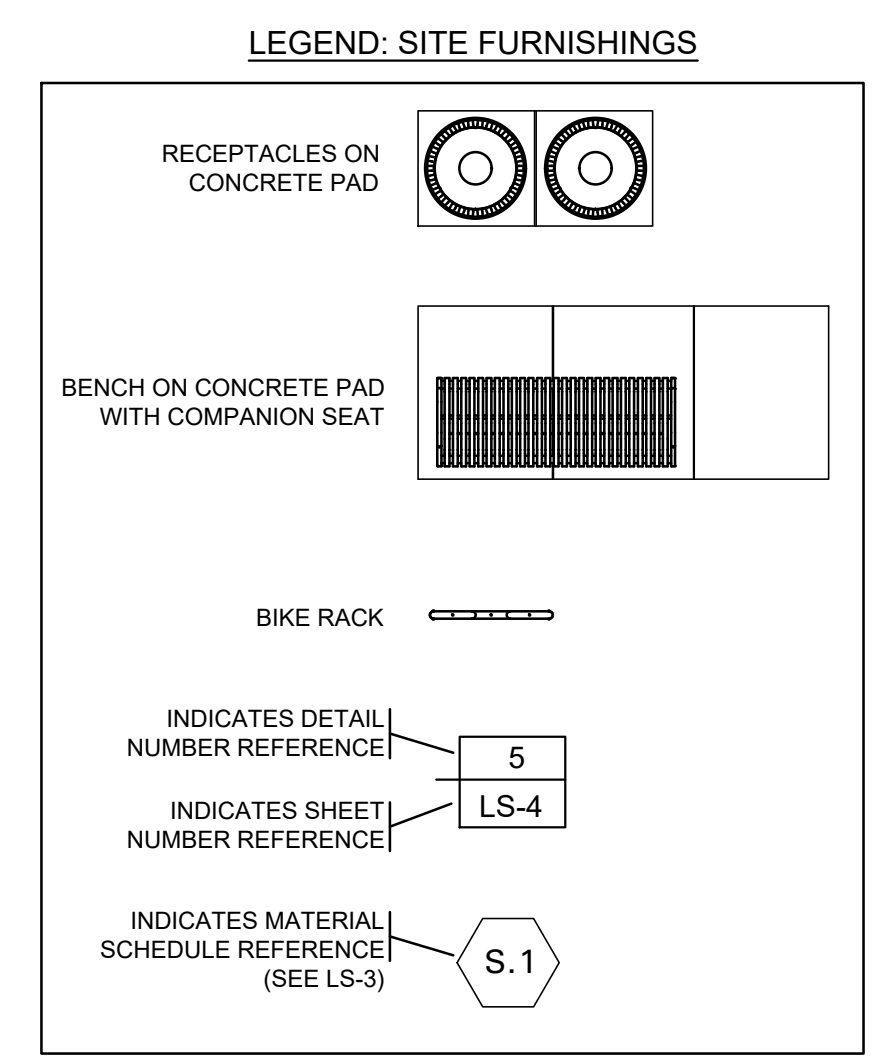
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 Project: PROJECT\$







**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.



**GENERAL SITEWORK NOTES**

- 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.
- ANY CONFLICTING INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE.
- 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 OWNERS REPRESENTATIVE. CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.
- 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.
- CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING IRRIGATION AND LANDSCAPE ON SITE FROM ANY DAMAGE. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS.
- 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.
- 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.
- CONTRACTOR SHALL COORDINATE STORING OF MATERIALS, PARKING OF VEHICLES AND RESTRICTIONS OF WORK WITH THE OWNER. UNDER NO CIRCUMSTANCE SHALL ANY CONTRACTOR STORE MATERIALS OR PARK VEHICLES UNDER THE CANOPY OF EXISTING TREES.
- CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE ORDINANCES AND LOCAL CODES. REQUIRED PERMITS SHALL BE OBTAINED BY THE CONTRACTOR.
- 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.**

- CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND SUPERVISION NECESSARY TO ACCOMPLISH THE WORK AS SHOWN AND NOTED ON THE DRAWINGS UNLESS OTHERWISE SPECIFIED.
- 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.
- WEEKEND WORK PERMISSIBLE WITH DRY WEATHER CONDITIONS AND WITH PROVISION FOR STREET CLEANING AT THE END OF THE WORK DAY.
- ALL TRANSPLANT TREES TO BE TRANSPLANTED BY ENVIRONMENTAL DESIGN, INC PRIOR TO CONSTRUCTION OF LANDSCAPE.
- 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**

- THESE PLANS INDICATED APPROXIMATE LOCATIONS OF THE CONCRETE SIDEWALKS. REFERENCE CIVIL FOR OTHER FLATWORK AND HARDSCAPE.
- 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.
- FINE GRADING SHALL BE PERFORMED IN ALL DISTURBED AREAS. FINE GRADING SHALL INCLUDE THE REMOVAL OF DEBRIS, ROCKS, ETC FROM THE SITE. ENSURE POSITIVE DRAINAGE IN ALL AREAS TO BE SEEDED AND/OR SODDED.
- THE CONTRACTOR SHALL VERIFY ALL BUILDING SETBACK LINES, EASEMENT LINES, AND VISIBILITY LINES IN THE FIELD PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UTILITIES SHOWN ON THIS PLAN, AS WELL AS, ANY OTHERS IN THE FIELD PRIOR TO COMMENCEMENT OF WORK. REFERENCE ENGINEERING CONSTRUCTION DOCUMENTS AND FINAL PLAT PLAN.
- WRITTEN DIMENSIONS SHALL GOVERN OVER SCALED DIMENSIONS.
- PROVIDE POSITIVE DRAINAGE AWAY FROM ALL SITE FEATURES.
- PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES HAVING JURISDICTION.
- CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS FOR ACCURACY

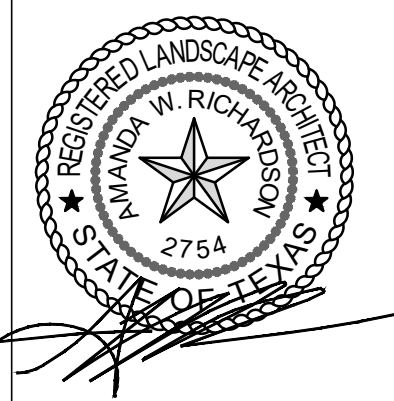
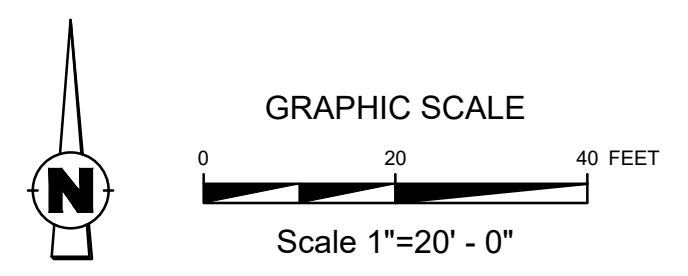
**AND CONFIRMING THAT THE WORK IS BUILDABLE, AS SHOWN, BEFORE PROCEEDING WITH CONSTRUCTION. IF THERE ARE ANY QUESTIONS, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING CLARIFICATIONS FROM THE OWNER AND/OR LANDSCAPE ARCHITECT BEFORE PROCEEDING WITH THE WORK IN QUESTION OR OTHER RELATED WORK.**

- PROPRIETARY MATERIALS, PRODUCTS OR SYSTEMS REQUIRED BY THESE DOCUMENTS ESTABLISH THE MINIMUM QUALITY AND STANDARD OF PERFORMANCE FOR THE WORK AND ARE INTENDED TO BE NONDISCRIMINATORY WITH REGARD TO UNNAMED MANUFACTURERS OR SUPPLIERS UNLESS SPECIFICALLY NOTED. REQUESTS FOR SUBSTITUTIONS ARE TO BE SUBMITTED IN WRITING TO THE OWNER, ACCOMPANIED BY THE APPROPRIATE DATA INDICATING COSTS, SCHEDULES, PERFORMANCE ADVANTAGE AND ANY VARIATIONS FROM SPECIFIED REQUIREMENTS.
- DRAWINGS ARE LIMITED TO ELEMENTS WITHIN THE LANDSCAPE ARCHITECT'S SCOPE OF SERVICES.
- 'TYPICAL' AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION OF WORK OR THE DIMENSIONS IS THE SAME OR REPRESENTATIVE FOR SIMILAR CONDITIONS THROUGHOUT, UNLESS OTHERWISE NOTED.
- CONTRACTOR IS TO COORDINATE ALL STAGING AREAS WITH THE OWNER AND ALL OTHER CONTRACTORS PRIOR TO COMMENCEMENT.
- CONTRACTOR IS TO COORDINATE WITH THE OWNER AND/OR LIGHTING MANUFACTURER FOR VERIFICATION OF CORRECT AND SUFFICIENT LIGHTING FEATURES PRIOR TO INSTALLATION.
- ALL ANGLES ON THE LAYOUT SHEETS ARE 90 DEGREES UNLESS OTHERWISE NOTED ON THE PLANS.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 3000 PSI. CONCRETE REINFORCING SHALL MEET ALL OTHER APPLICABLE CRITERIA IN THE CONCRETE AND REINFORCEMENT NOTES BELOW.
- SIDEWALK REINFORCEMENT SHOULD BE CONTINUOUS THROUGH THE CONTROL JOINT AND EXPANSION JOINTS.
- TIE ALL SIDEWALKS INTO EXISTING WALKS WITH A SMOOTH TRANSITION AND TO MATCH EXISTING WALKS IN COLOR AND FINISH.
- COORDINATE SIDEWALK CONSTRUCTION WITH OTHER CONTRACTORS WORKING SIMULTANEOUSLY.
- CONTRACTOR IS RESPONSIBLE FOR PROTECTING HIS WORK FROM VANDALISM OR GRAFFITI PRIOR TO CURING. REPLACE AS NECESSARY ANY SECTIONS OF DAMAGED WALK AT NO ADDITIONAL COST TO THE OWNER.

**GRADING NOTES**

- PROVIDE FINISH GRADING TO THE ELEVATIONS REQUIRED BY THE DRAWINGS AND FOR PROPER DRAINAGE. AT INTERMEDIATE POINTS FOR WHICH FINISH GRADES ARE NOT INDICATED, THE FINISH GRADE SHALL BE OF UNIFORM SLOPE BETWEEN POINTS OF WHICH ELEVATIONS ARE GIVEN. ROUND ANY ABRUPT CHANGES IN ELEVATION. BLEND SLOPES INTO LEVEL AREAS.
- 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.
- ALL LAND FORMS AND SWALES SHALL BE GRADED TO BE A SMOOTH, FLOWING, ROUNDED SURFACE PROVIDING POSITIVE DRAINAGE AND VISUAL LAND FORM CONTINUITY.

- 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.
- 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.
- WHEN CLEARING FOR GRADING, THE CONTRACTOR SHALL COORDINATE TREE PRESERVATION WITH THE LANDSCAPE ARCHITECT, CONSTRUCTION PROJECT MANAGER AND OWNERS REPRESENTATIVE.
- GRADING FOR THE IMPROVEMENTS SHALL OCCUR AS DIRECTED BY LANDSCAPE ARCHITECT AND CIVIL ENGINEER WITH THE FOLLOWING GUIDELINES:
  - ALL WALKS SHALL HAVE A MAXIMUM CROSS SLOPE OF 1.5% IN THE DIRECTION OF THE DOWNHILL SIDE.
  - LONGITUDINAL SLOPE OF THE WALKS AND OR TRAILS SHALL BE NO GREATER THAN 4.5%, UNLESS OTHERWISE NOTED.
  - ALL GRADES SHALL BE FINISHED TO A SMOOTH, FLOWING CONTOUR, MAINTAINING EXISTING FLOW PATTERNS UNLESS DIRECTED OTHERWISE WITH A MINIMUM SLOPE OF 1.5%.
- REFER TO LAYOUT SHEETS FOR ALL LAYOUT INFORMATION.
- REFER TO CIVIL ENGINEERING SETS FOR STORM DRAINAGE AND UTILITY INFORMATION.
- CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND MARKING OF ALL EXISTING UNDERGROUND OR ABOVE GROUND UTILITIES WITHIN THE PROJECT AREA.
- NOTIFY OWNER OF ANY MANHOLE OR UTILITY BOX ADJUSTMENTS REQUIRED PRIOR TO PLACING ANY FILL.
- 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.



**FREESSE & NICHOLS**  
 2711 North Haskell Avenue, Suite 3500  
 Dallas, TX 75204  
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CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY IMPROVEMENTS**  
 LANDSCAPE  
**SITE FURNISHING PLAN**  
**BEGIN TO STA 14+00**

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SHEET				DATE	JUN 2023										
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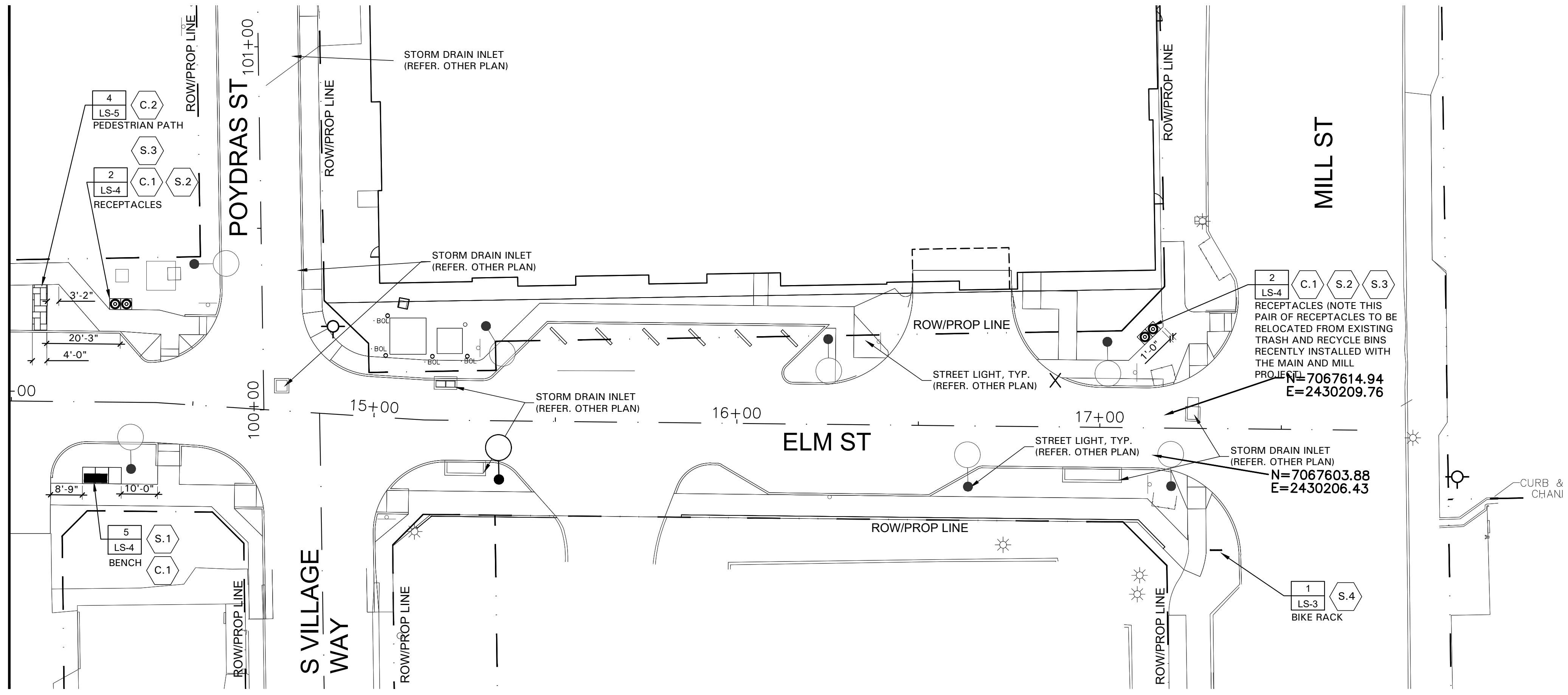
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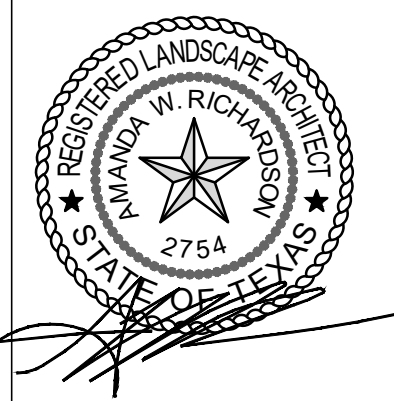
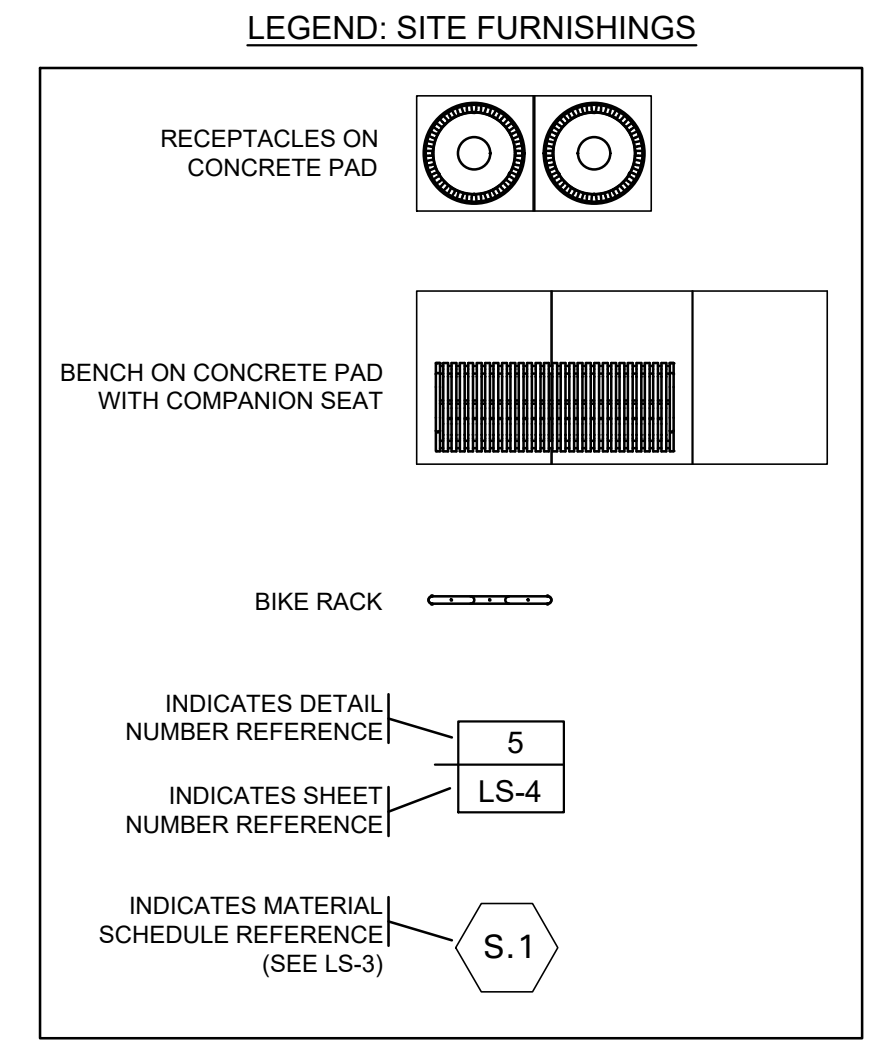
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MATCHLINE STA. 14+00



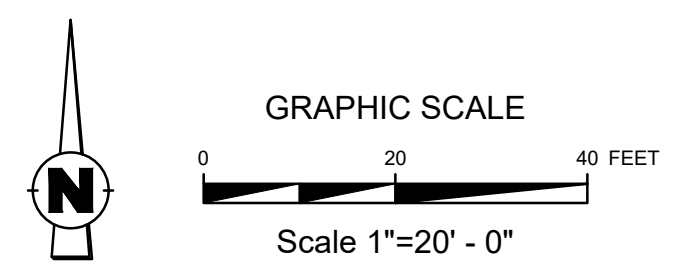
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 LANDSCAPE  
**SITE FURNISHING PLAN**  
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**AWR**  
 AWR Designs, LLC  
 P.O. Box 1746  
 Alledo, Texas 76008  
 amanda@awr-designs.com  
 e. 512.517.5589

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**GENERAL SITEWORK NOTES**

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- ANY CONFLICTING INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE.
- 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 OWNERS REPRESENTATIVE. CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.
- 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.
- CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING IRRIGATION AND LANDSCAPE ON SITE FROM ANY DAMAGE. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS.
- 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.
- 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.
- CONTRACTOR SHALL COORDINATE STORING OF MATERIALS, PARKING OF VEHICLES AND RESTRICTIONS OF WORK WITH THE OWNER. UNDER NO CIRCUMSTANCE SHALL ANY CONTRACTOR STORE MATERIALS OR PARK VEHICLES UNDER THE CANOPY OF EXISTING TREES.
- CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE ORDINANCES AND LOCAL CODES. REQUIRED PERMITS SHALL BE OBTAINED BY THE CONTRACTOR.

- 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.
- THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND SUPERVISION NECESSARY TO ACCOMPLISH THE WORK AS SHOWN AND NOTED ON THE DRAWINGS UNLESS OTHERWISE SPECIFIED.
- 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.
- WEEKEND WORK PERMISSIBLE WITH DRY WEATHER CONDITIONS AND WITH PROVISION FOR STREET CLEANING AT THE END OF THE WORK DAY.
- ALL TRANSPLANT TREES TO BE TRANSPLANTED BY ENVIRONMENTAL DESIGN, INC PRIOR TO CONSTRUCTION OF LANDSCAPE.
- 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**

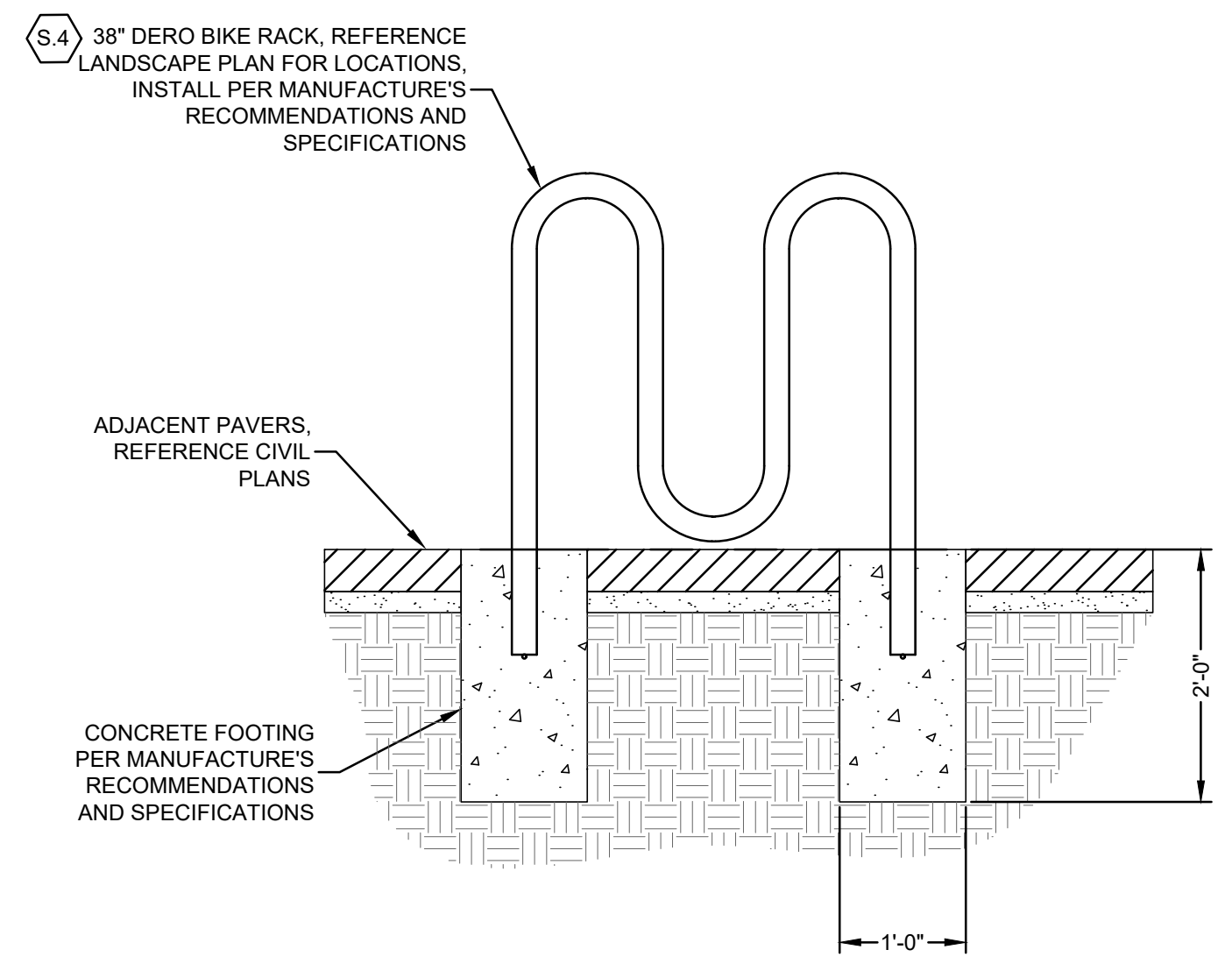
- THESE PLANS INDICATED APPROXIMATE LOCATIONS OF THE CONCRETE SIDEWALKS, REFERENCE CIVIL FOR OTHER FLATWORK AND HARDSCAPE.
- ALL SITE FEATURES SHALL BE STAKED IN THE FIELD BY THE CONTRACTOR AND APPROVED BY THE OWNER AND/OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION AND CONSTRUCTION. SET ELEVATIONS TO PROVIDE POSITIVE DRAINAGE FROM PROPERTY LINE TO CURB.
- FINE GRADING SHALL BE PERFORMED IN ALL DISTURBED AREAS. FINE GRADING SHALL INCLUDE THE REMOVAL OF DEBRIS, ROCKS, ETC FROM THE SITE. ENSURE POSITIVE DRAINAGE IN ALL AREAS TO BE SEEDED AND/OR SODDED.
- THE CONTRACTOR SHALL VERIFY ALL BUILDING SETBACK LINES, EASEMENT LINES, AND VISIBILITY LINES IN THE FIELD PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UTILITIES SHOWN ON THIS PLAN, AS WELL AS, ANY OTHERS IN THE FIELD PRIOR TO COMMENCEMENT OF WORK. REFERENCE

**ENGINEERING CONSTRUCTION DOCUMENTS AND FINAL PLAT PLAN.**

- WRITTEN DIMENSIONS SHALL GOVERN OVER SCALED DIMENSIONS.
- PROVIDE POSITIVE DRAINAGE AWAY FROM ALL SITE FEATURES.
- PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES HAVING JURISDICTION.
- CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS FOR ACCURACY AND CONFIRMING THAT THE WORK IS BUILDABLE, AS SHOWN, BEFORE PROCEEDING WITH CONSTRUCTION. IF THERE ARE ANY QUESTIONS, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING CLARIFICATIONS FROM THE OWNER AND/OR LANDSCAPE ARCHITECT BEFORE PROCEEDING WITH THE WORK IN QUESTION OR OTHER RELATED WORK.
- PROPRIETARY MATERIALS, PRODUCTS OR SYSTEMS REQUIRED BY THESE DOCUMENTS ESTABLISH THE MINIMUM QUALITY AND STANDARD OF PERFORMANCE FOR THE WORK AND ARE INTENDED TO BE NONDISCRIMINATORY WITH REGARD TO UNNAMED MANUFACTURERS OR SUPPLIERS UNLESS SPECIFICALLY NOTED. REQUESTS FOR SUBSTITUTIONS ARE TO BE SUBMITTED IN WRITING TO THE OWNER, ACCOMPANIED BY THE APPROPRIATE DATA INDICATING COSTS, SCHEDULES, PERFORMANCE ADVANTAGE AND ANY VARIATIONS FROM SPECIFIED REQUIREMENTS.
- DRAWINGS ARE LIMITED TO ELEMENTS WITHIN THE LANDSCAPE ARCHITECT'S SCOPE OF SERVICES.
- TYPICAL AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION OF WORK OR THE DIMENSIONS IS THE SAME OR REPRESENTATIVE FOR SIMILAR CONDITIONS THROUGHOUT, UNLESS OTHERWISE NOTED.
- CONTRACTOR IS TO COORDINATE ALL STAGING AREAS WITH THE OWNER AND ALL OTHER CONTRACTORS PRIOR TO COMMENCEMENT.
- CONTRACTOR IS TO COORDINATE WITH THE OWNER AND/OR LIGHTING MANUFACTURER FOR VERIFICATION OF CORRECT AND SUFFICIENT LIGHTING FEATURES PRIOR TO INSTALLATION.
- ALL ANGLES ON THE LAYOUT SHEETS ARE 90 DEGREES UNLESS OTHERWISE NOTED ON THE PLANS.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 3000 PSI. CONCRETE REINFORCING SHALL MEET ALL OTHER APPLICABLE CRITERIA IN THE CONCRETE AND REINFORCEMENT NOTES BELOW.
- SIDEWALK REINFORCEMENT SHOULD BE CONTINUOUS THROUGH THE CONTROL JOINT AND EXPANSION JOINTS.
- TIE ALL SIDEWALKS INTO EXISTING WALKS WITH A SMOOTH TRANSITION AND TO MATCH EXISTING WALKS IN COLOR AND FINISH.
- COORDINATE SIDEWALK CONSTRUCTION WITH OTHER CONTRACTORS WORKING SIMULTANEOUSLY.
- CONTRACTOR IS RESPONSIBLE FOR PROTECTING HIS WORK FROM VANDALISM OR GRAFFITI PRIOR TO CURING. REPLACE AS NECESSARY ANY SECTIONS OF DAMAGED WALK AT NO ADDITIONAL COST TO THE OWNER.

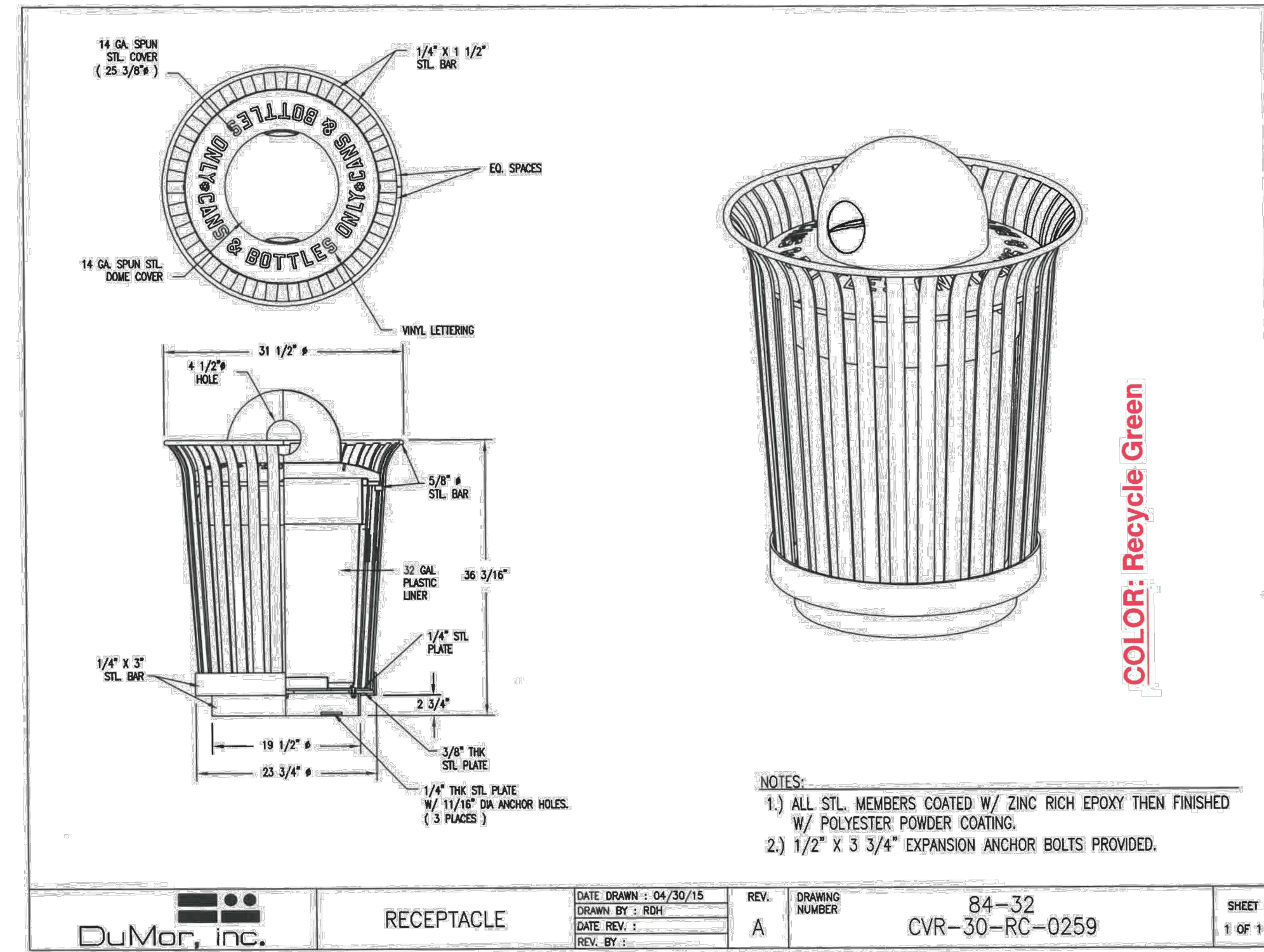
**GRADING NOTES**

- PROVIDE FINISH GRADING TO THE ELEVATIONS REQUIRED BY THE DRAWINGS AND FOR PROPER DRAINAGE. AT INTERMEDIATE POINTS FOR WHICH FINISH GRADES ARE NOT INDICATED, THE FINISH GRADE SHALL BE OF UNIFORM SLOPE BETWEEN POINTS OF WHICH ELEVATIONS ARE GIVEN. ROUND ANY ABRUPT CHANGES IN ELEVATION, BLEND SLOPES INTO LEVEL AREAS.
- 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.
- ALL LAND FORMS AND SWALES SHALL BE GRADED TO BE A SMOOTH, FLOWING, ROUNDED SURFACE PROVIDING POSITIVE DRAINAGE AND VISUAL LAND FORM CONTINUITY.
- 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.
- EXISTING TREES WHICH ARE TO BE PRESERVED SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. CONSTRUCTION EQUIPMENT SHALL NOT OPERATE, PARK OR BE STORED UNDER THE CANOPIES OF EXISTING TREES.
- WHEN CLEARING FOR GRADING, THE CONTRACTOR SHALL COORDINATE TREE PRESERVATION WITH THE LANDSCAPE ARCHITECT, CONSTRUCTION PROJECT MANAGER AND OWNERS REPRESENTATIVE.
- GRADING FOR THE IMPROVEMENTS SHALL OCCUR AS DIRECTED BY LANDSCAPE ARCHITECT AND CIVIL ENGINEER WITH THE FOLLOWING GUIDELINES:
  - ALL WALKS SHALL HAVE A MAXIMUM CROSS SLOPE OF 1.5% IN THE DIRECTION OF THE DOWNHILL SIDE.
  - LONGITUDINAL SLOPE OF THE WALKS AND OR TRAILS SHALL BE NO GREATER THAN 4.5%, UNLESS OTHERWISE NOTED.
  - ALL GRADES SHALL BE FINISHED TO A SMOOTH, FLOWING CONTOUR, MAINTAINING EXISTING FLOW PATTERNS UNLESS DIRECTED OTHERWISE WITH A MINIMUM SLOPE OF 1.5%.
- REFER TO LAYOUT SHEETS FOR ALL LAYOUT INFORMATION.
- REFER TO CIVIL ENGINEERING SETS FOR STORM DRAINAGE AND UTILITY INFORMATION.
- CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND MARKING OF ALL EXISTING UNDERGROUND OR ABOVE GROUND UTILITIES WITHIN THE PROJECT AREA.
- NOTIFY OWNER OF ANY MANHOLE OR UTILITY BOX ADJUSTMENTS REQUIRED PRIOR TO PLACING ANY FILL.
- 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.

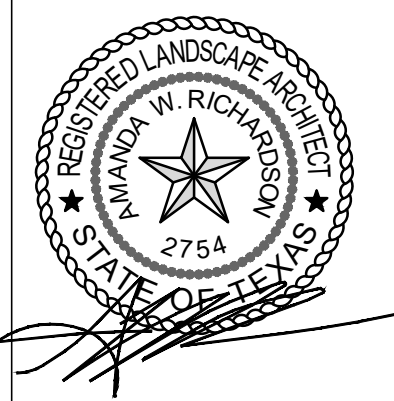


**1 BIKE RACK ANCHOR**  
3/4" = 1'-0"

Materials Schedule				
Material	Description/Model	Color/Finish	Contact/Rep	Remarks
<b>Concrete Finish</b>				
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.
C.2	PEDESTRIAN PATHS FROM PARKING TO SIDEWALKS	<b>STAMP</b> - AMERICAN ASHLAR SLATE FM-3160 <b>COLOR</b> - UNI-MIX U35 SHADOW SLATE <b>RELEASE</b> - PERMA-CAST R28 SLATE GRAY <b>SEAL</b> - BUTTERFIELD COLOR COLOR-GUARD CURE AND SEAL <b>COMPANY</b> - BUTTERFIELD COLOR	Butterfield Color® 625 West Illinois Avenue Aurora, Illinois 60506 Telephone: 1-800-282-3388 www.butterfieldcolor.com	SAMPLES TO BE PROVIDED TO OWNER FOR SELECTION PRIOR TO INSTALLATION. CONTRACTOR TO MATCH EXISTING FINISH USED ON THE MAIN STREET AND MILL STREET PROJECT WITHIN THE CITY OF LEWISVILLE.
<b>Edging and Barriers</b>				
B.1	STEEL EDGE - 3/16" WIDTH, 4" HEIGHT, 8' LENGTH (LENGTH WILL VARY 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	
<b>Soil and Mulch</b>				
R.1	PREMIUM FINE HARDWOOD MULCH		VITAL EARTH RESOURCES, GLADEWATER, TEXAS; LIVING EARTH TECHNOLOGY, DALLAS, TEXAS OR SOIL BUILDING SYSTEMS, DALLAS, TEXAS.	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		VITAL EARTH RESOURCES, GLADEWATER, TEXAS; LIVING EARTH TECHNOLOGY, DALLAS, TEXAS OR SOIL BUILDING SYSTEMS, DALLAS, TEXAS.	SAMPLES TO BE PROVIDED TO OWNER FOR SELECTION PRIOR TO INSTALLATION
<b>Site Furnishings</b>				
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 TRASH 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.
S.4	38" DERO BIKE RACK- MODEL RR3H	COLOR CODE: RAL 6018	Dero HQ (888) 337-6729 : Toll Free (612) 359-0689 : Local 5522 Lakeland Ave. N. Minneapolis, MN 55429 sales@dero.com	CONTRACTOR TO MATCH EXISTING BIKE RACKS USED ON THE MAIN STREET AND MILL STREET PROJECT WITHIN THE CITY OF LEWISVILLE.



**2 RECEPTACLE-RECYCLE**  
3/4" = 1'-0"



**FREESIE & NICHOLS**  
2711 North Haskell Avenue, Suite 3500  
Dallas, TX 75204  
Phone - (214) 217-2200  
Web - www.freesie.com

CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY IMPROVEMENTS**  
LANDSCAPE  
**SITE FURNISHING DETAILS**

NO.	ISSUES	DATE	BY	FILE NAME	VERIFY SCALE	1 inch on original drawing 1 inch on this sheet, adjust scale.

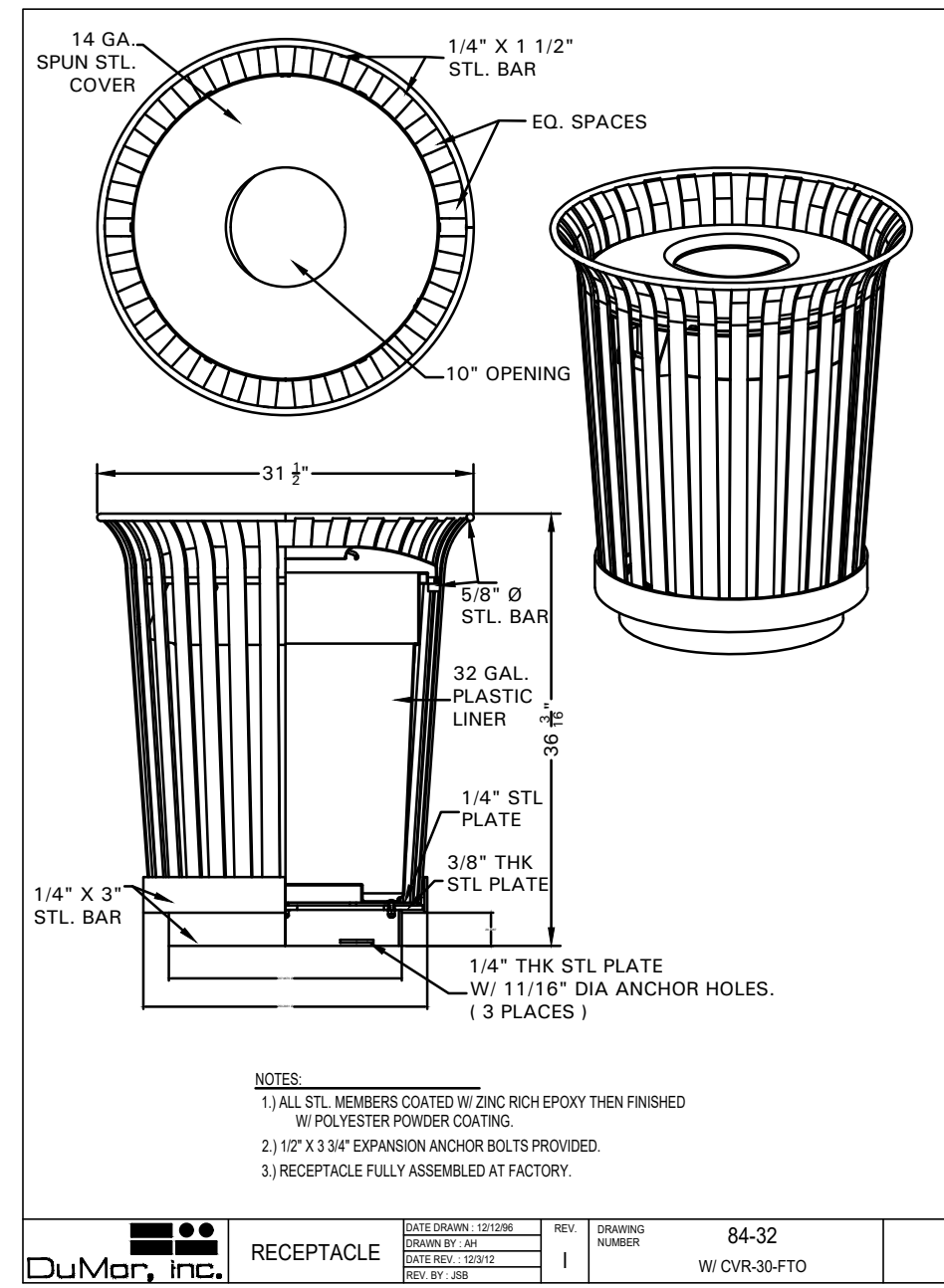
FAN JOB NO.	LEW20378	DATE	JUN 2023	DESIGNED	AW/R	DRAWN	AW/R	REVISED	AW/R	CHECKED	AW/R	\$FILES
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SHEET **LS-3**

SEQ. **77**

MicroStation V8 User: USERNAME: \$LOCATION\$  
ACCOUNT: \$FILE\$  
Plot Scale: \$SCALE\$  
Date: \$DATE\$

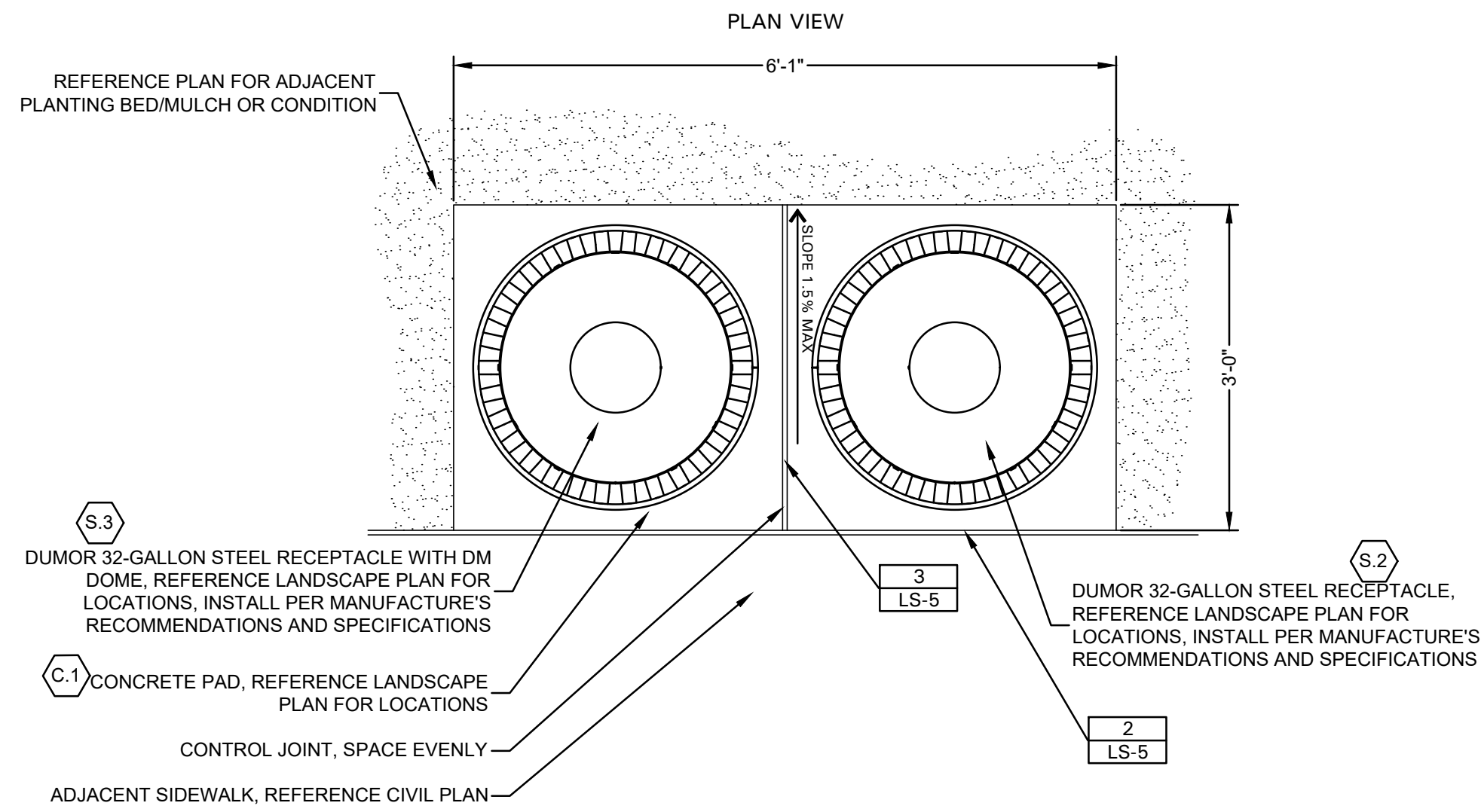
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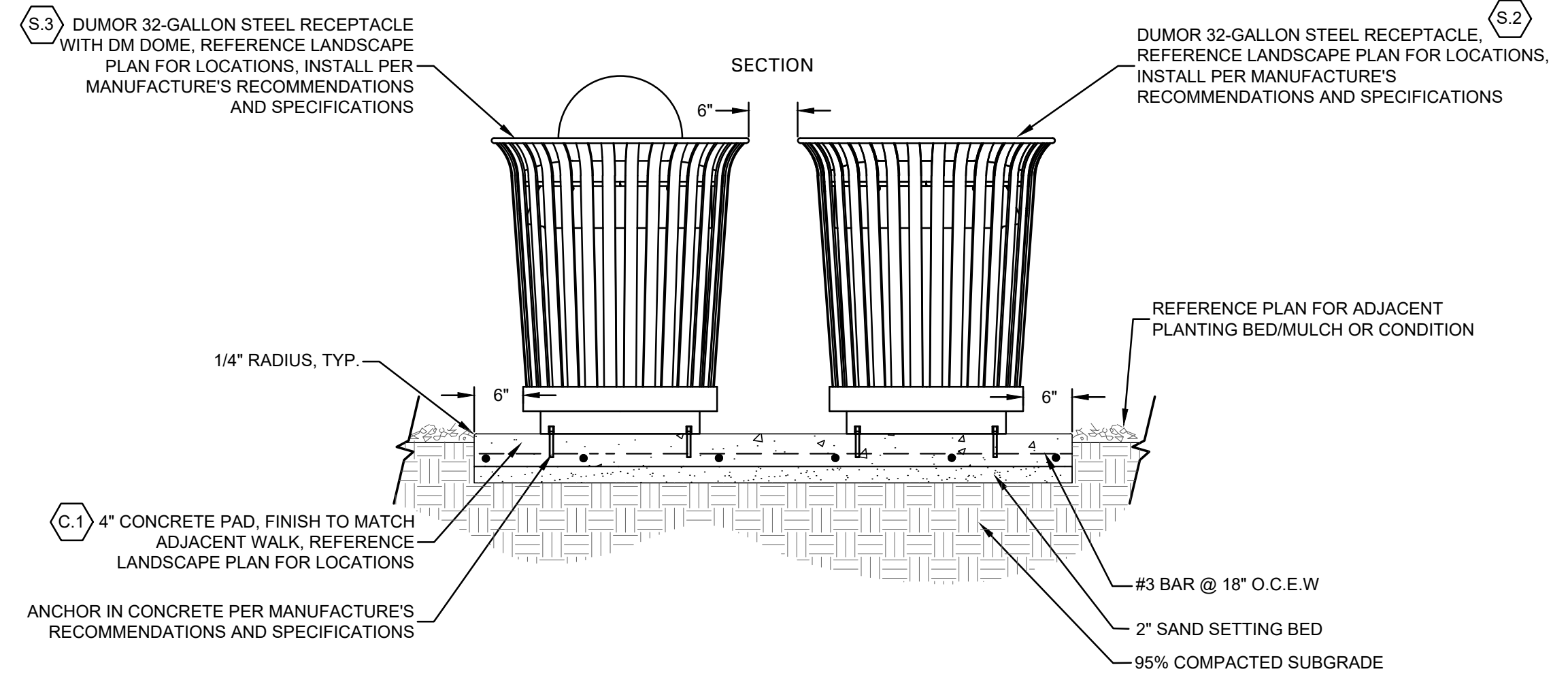
NOTES:  
 1) ALL STL MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.  
 2) 1 1/2" X 3/4" EXPANSION ANCHOR BOLTS PROVIDED.  
 3) RECEPTACLE FULLY ASSEMBLED AT FACTORY.

DuMor, inc.	RECEPTACLE	DATE DRAWN: 12/20/24	REV: 1	DRAWING NUMBER: 84-32
		DRAWN BY: AH		WF CVR-35-FTO
		DATE REV: 11/21/25		
		REV BY: JSB		

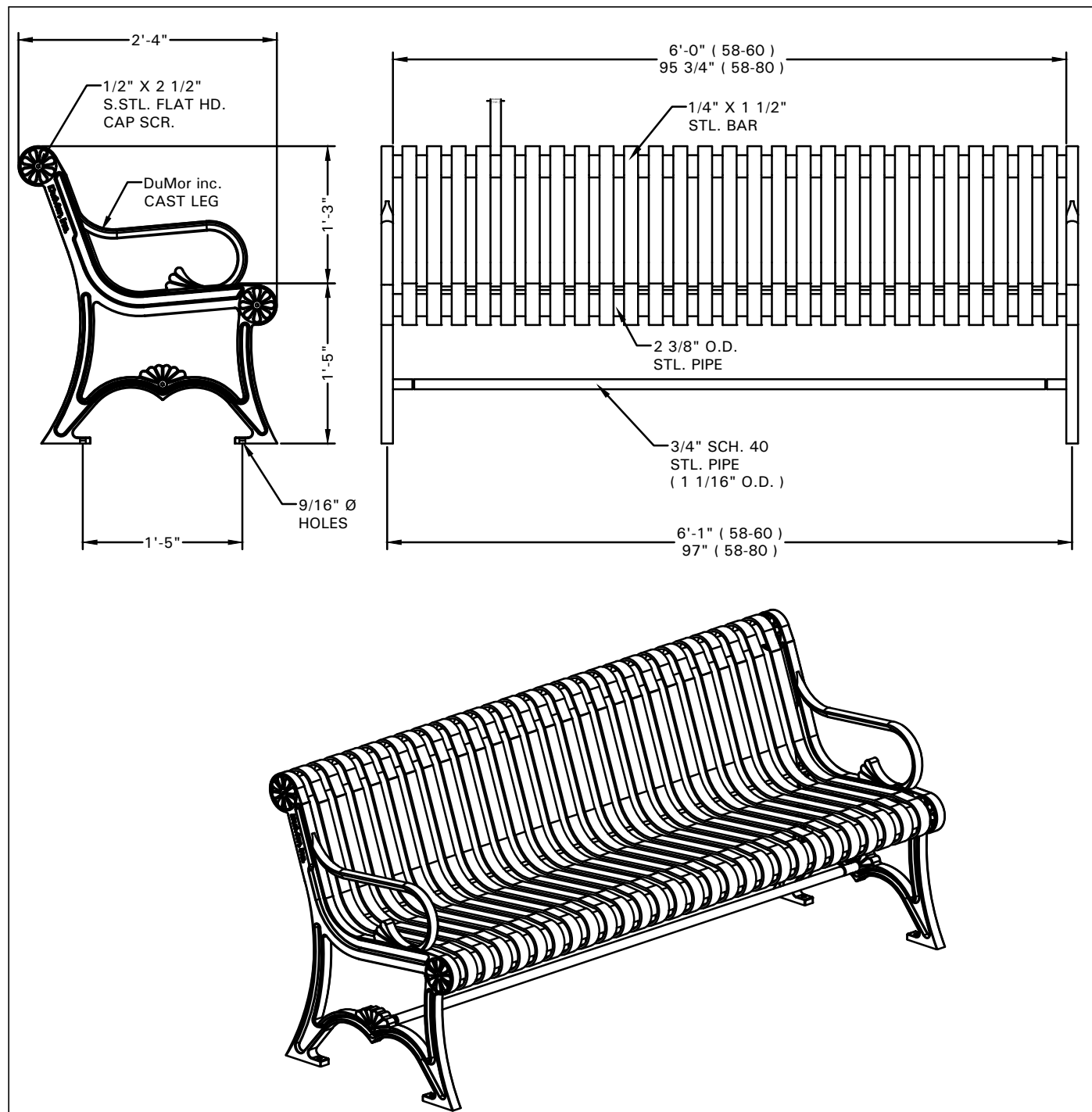
**1 RECEPTACLE**  
3/4" = 1'-0"



**2 RECEPTACLES ON CONCRETE PAD- PLAN VIEW**  
3/4" = 1'-0"



**3 RECEPTACLES ON CONCRETE PAD- SECTION VIEW**  
3/4" = 1'-0"

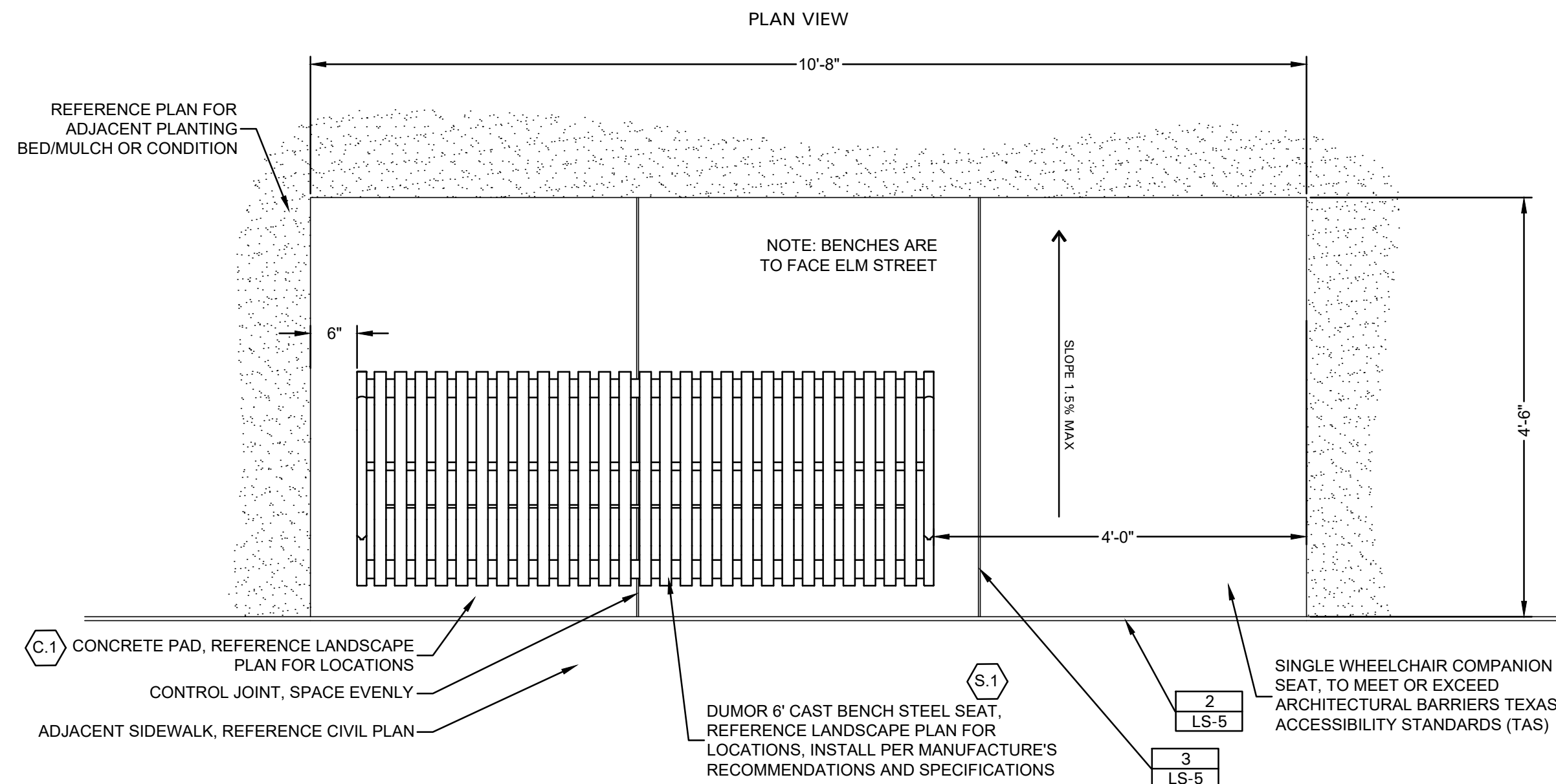


NOTES:  
 1) ALL STL MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.  
 2) 1 1/2" X 3/4" EXPANSION ANCHOR BOLTS PROVIDED.  
 3) CUSTOM LETTERING AVAILABLE FOR RECESSED SIDE PANELS (TOTAL OF 37 SPACES)  
 CUSTOM LETTERING ( 37 SPACES )

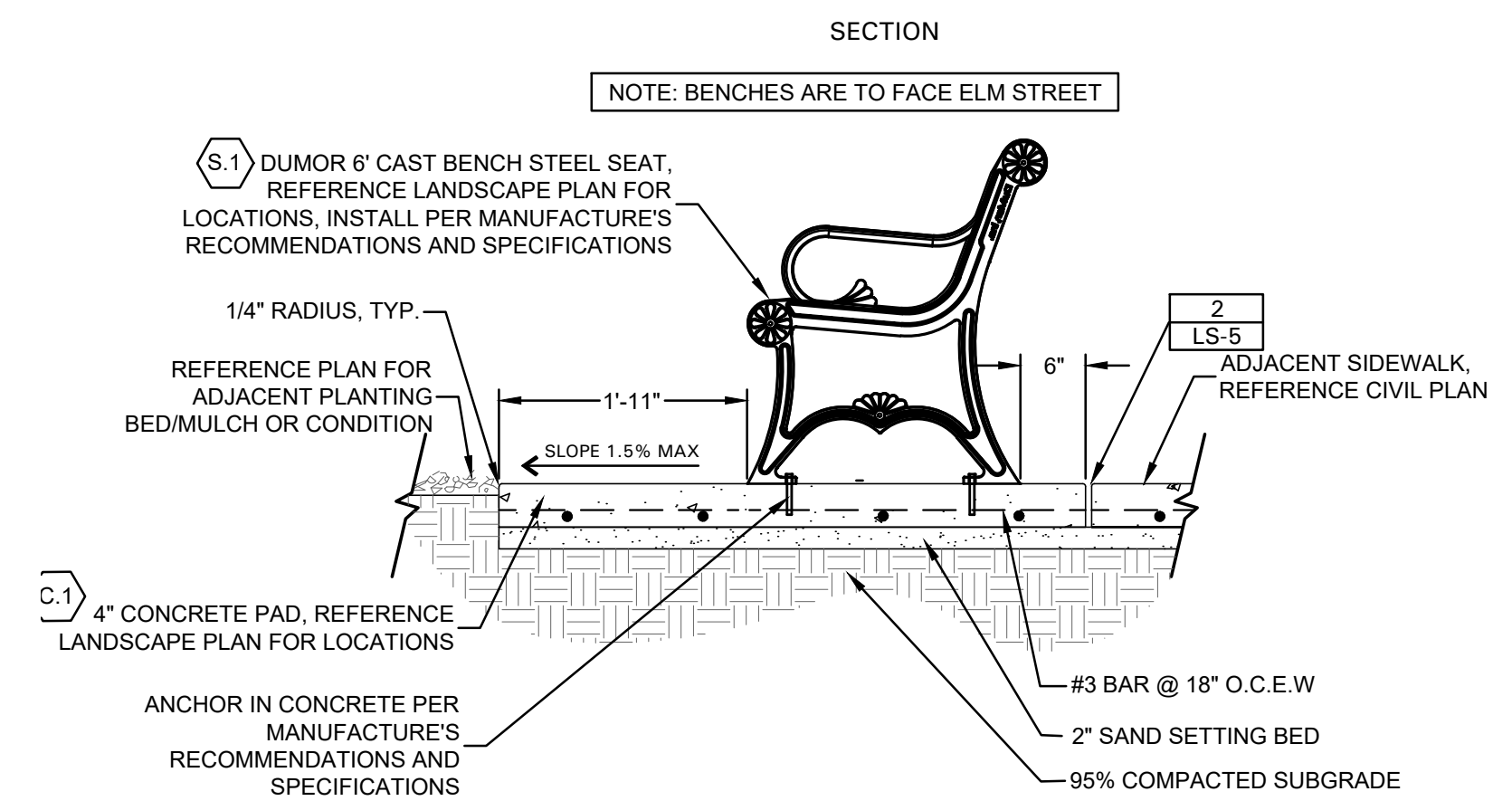
LENGTH OPTIONS:  
 6' BENCH  
 8' BENCH

DuMor, inc.	BENCH	DATE DRAWN: 3/22/24	REV: D	DRAWING NUMBER: 58 SERIES
		DRAWN BY: AH		
		DATE REV: 11/21/25		
		REV BY: JSB		

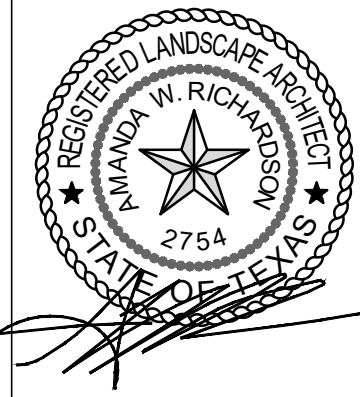
**4 BENCH**  
3/4" = 1'-0"



**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"



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CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY**  
**IMPROVEMENTS**  
 LANDSCAPE  
**SITE FURNISHING DETAILS**

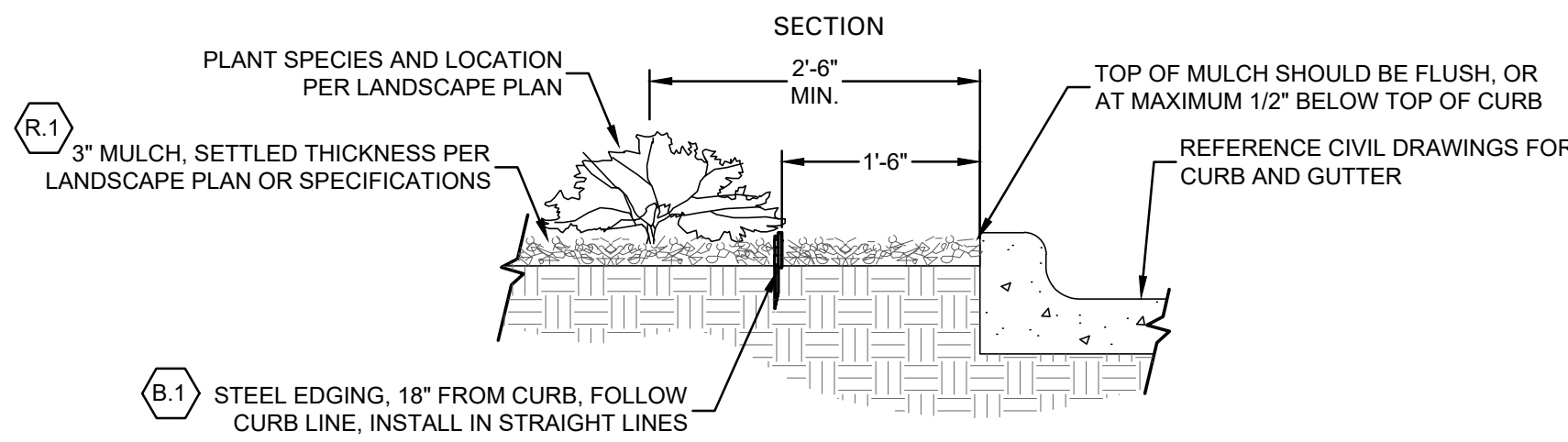
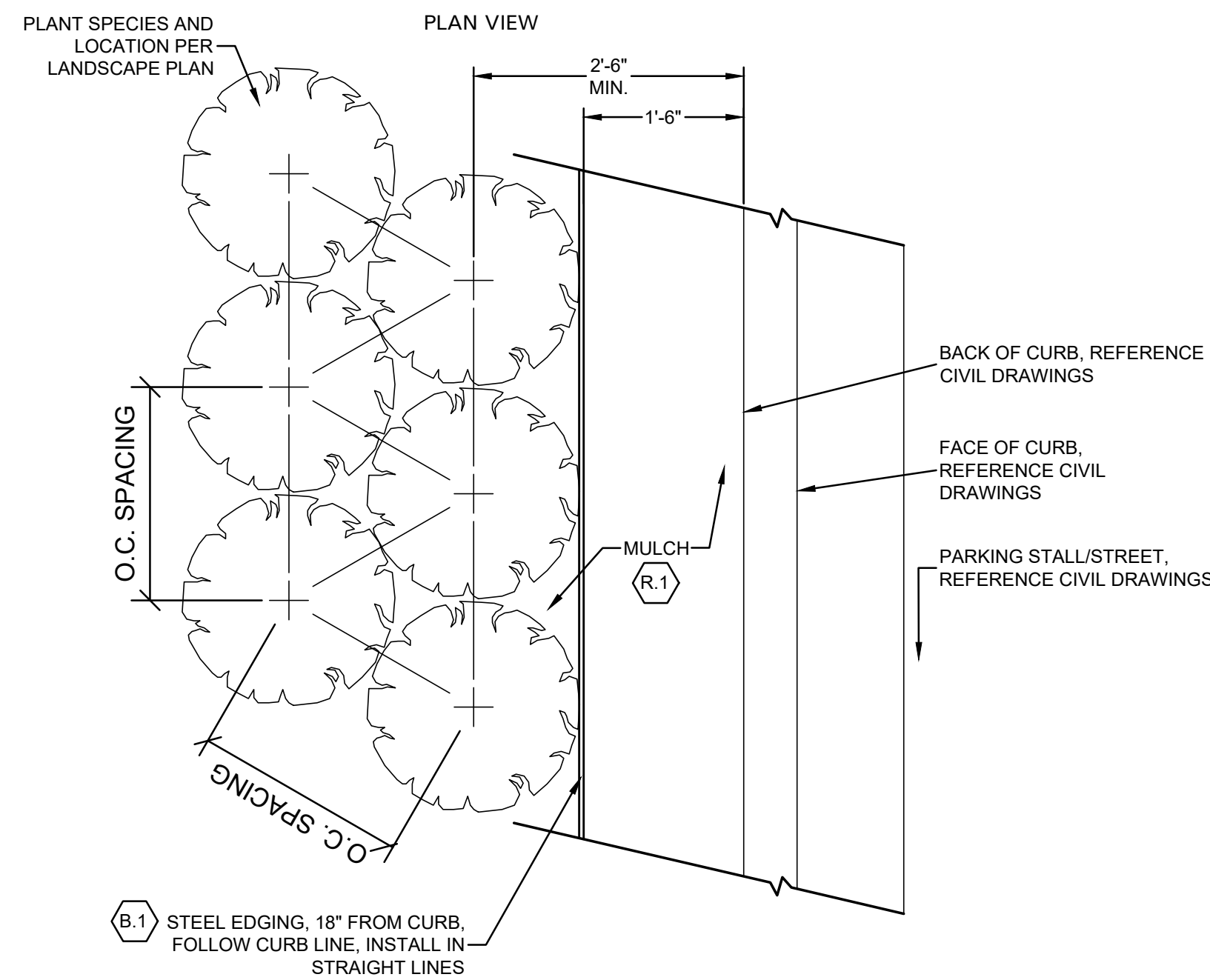
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NO.	ISSUES	DATE	BY	FILE NAME	FILE SIZE

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

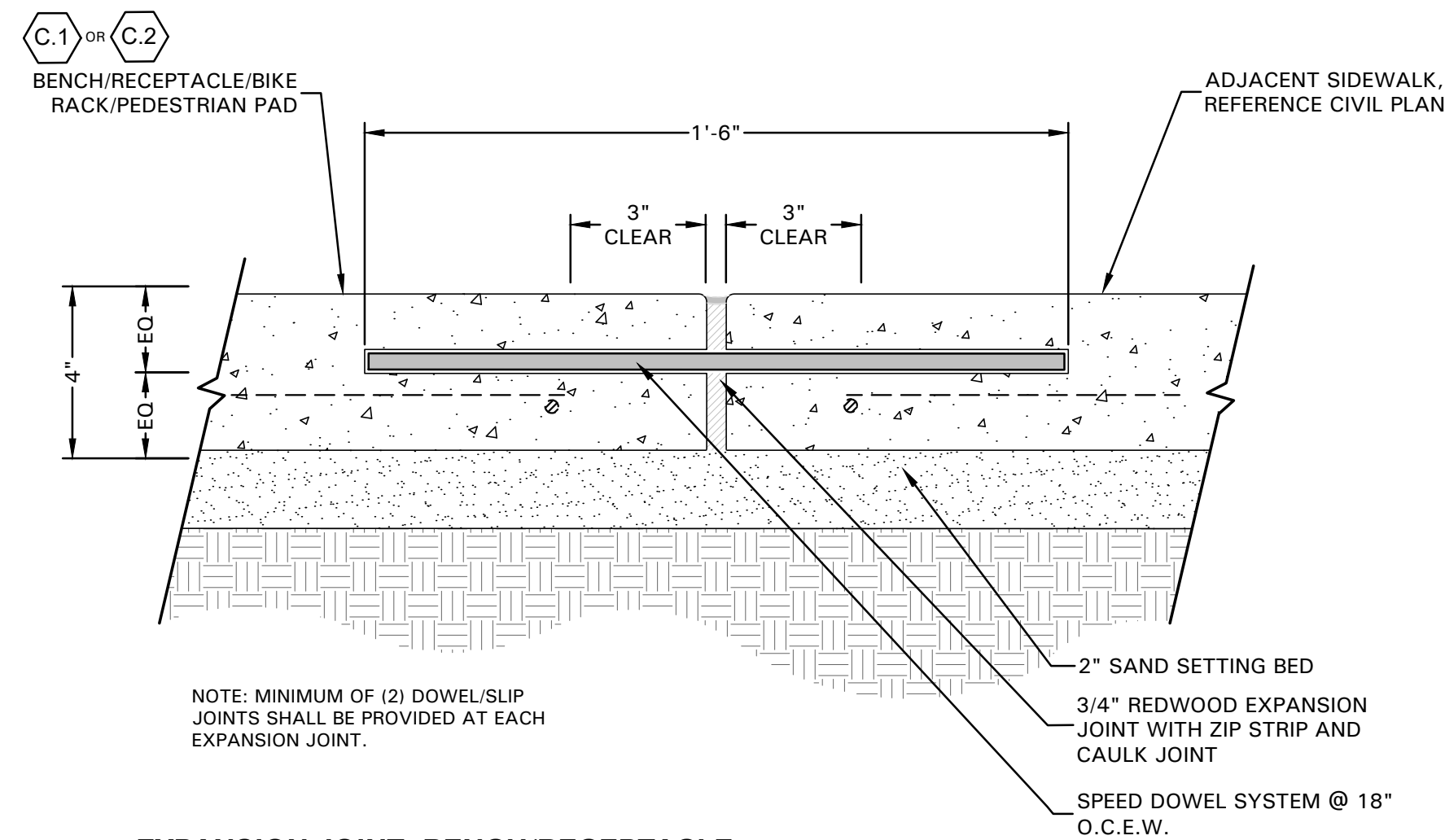
SHEET **LS-4**

SEQ. 78

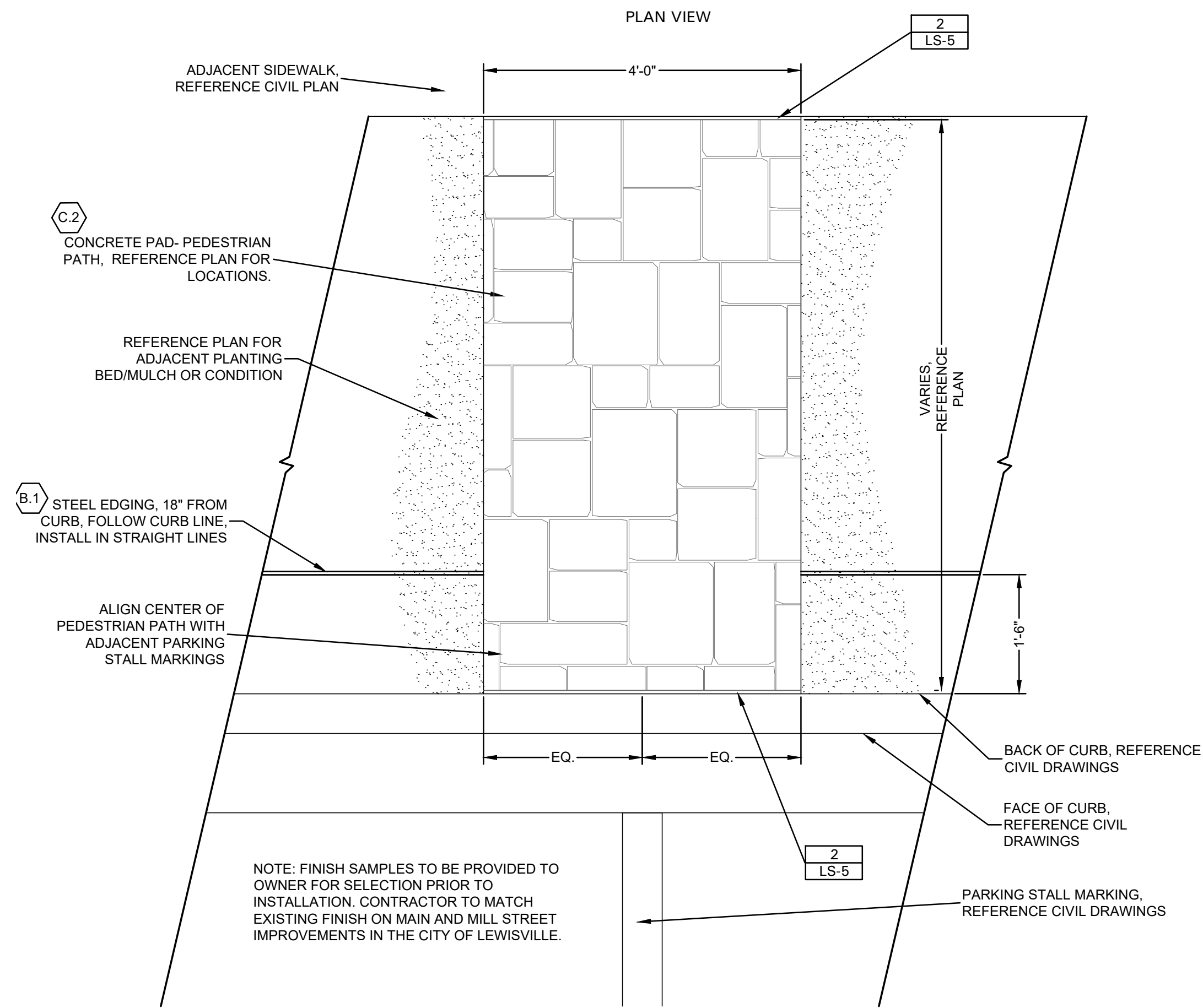
**AWR**  
 AWR Designs, LLC  
 P.O. Box 1746  
 Aledo, Texas 76008  
 amanda@awr-designs.com  
 e. 512.517.5589



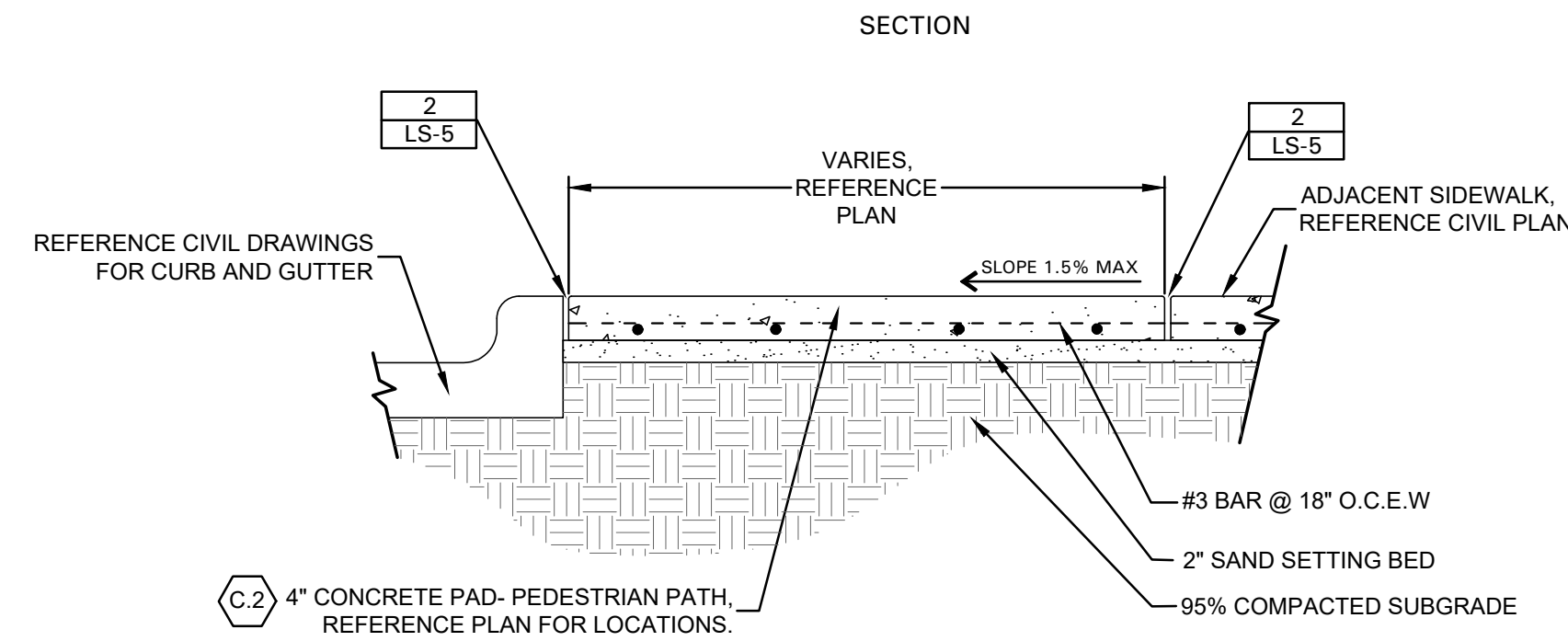
**1 STEP OUT STRIP AT CURB**  
3/4" = 1'-0"



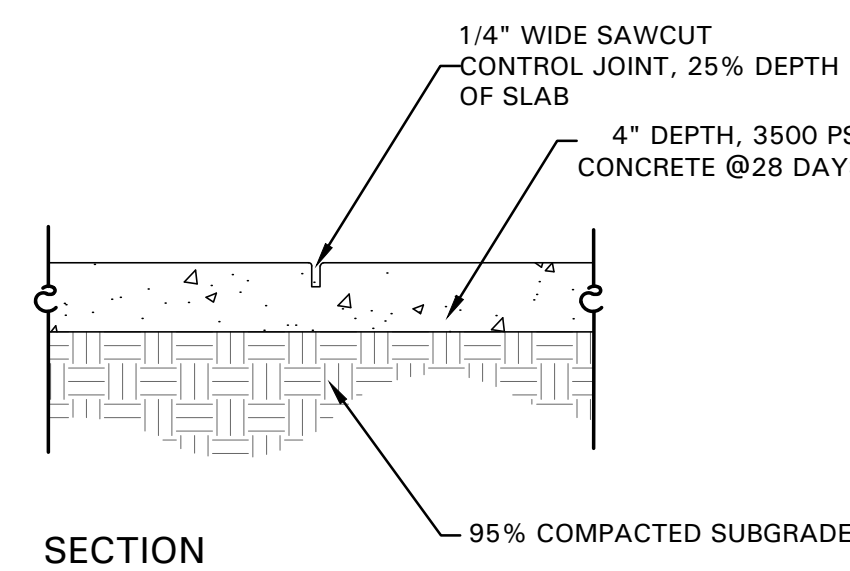
**2 EXPANSION JOINT- BENCH/RECEPTACLE PAD AT CONCRETE WALK**  
3" = 1'-0"



NOTE: FINISH SAMPLES TO BE PROVIDED TO OWNER FOR SELECTION PRIOR TO INSTALLATION. CONTRACTOR TO MATCH EXISTING FINISH ON MAIN AND MILL STREET IMPROVEMENTS IN THE CITY OF LEWISVILLE.



**4 PEDESTRIAN PATH**  
3/4" = 1'-0"



**3 CONTROL JOINT**  
1" = 1'-0"



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Web - www.freesse.com

CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY IMPROVEMENTS**  
LANDSCAPE  
**SITE FURNISHING DETAILS**

FAN JOB NO.	LEW20378	DESIGNED	AWR	DRAWN	AWR	REVISED	AWR	CHECKED	AWR	FILED	AWR	\$FILES
DATE	JUN 2023											

NO.	ISSUES	DATE	BY	FILE NAME
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.



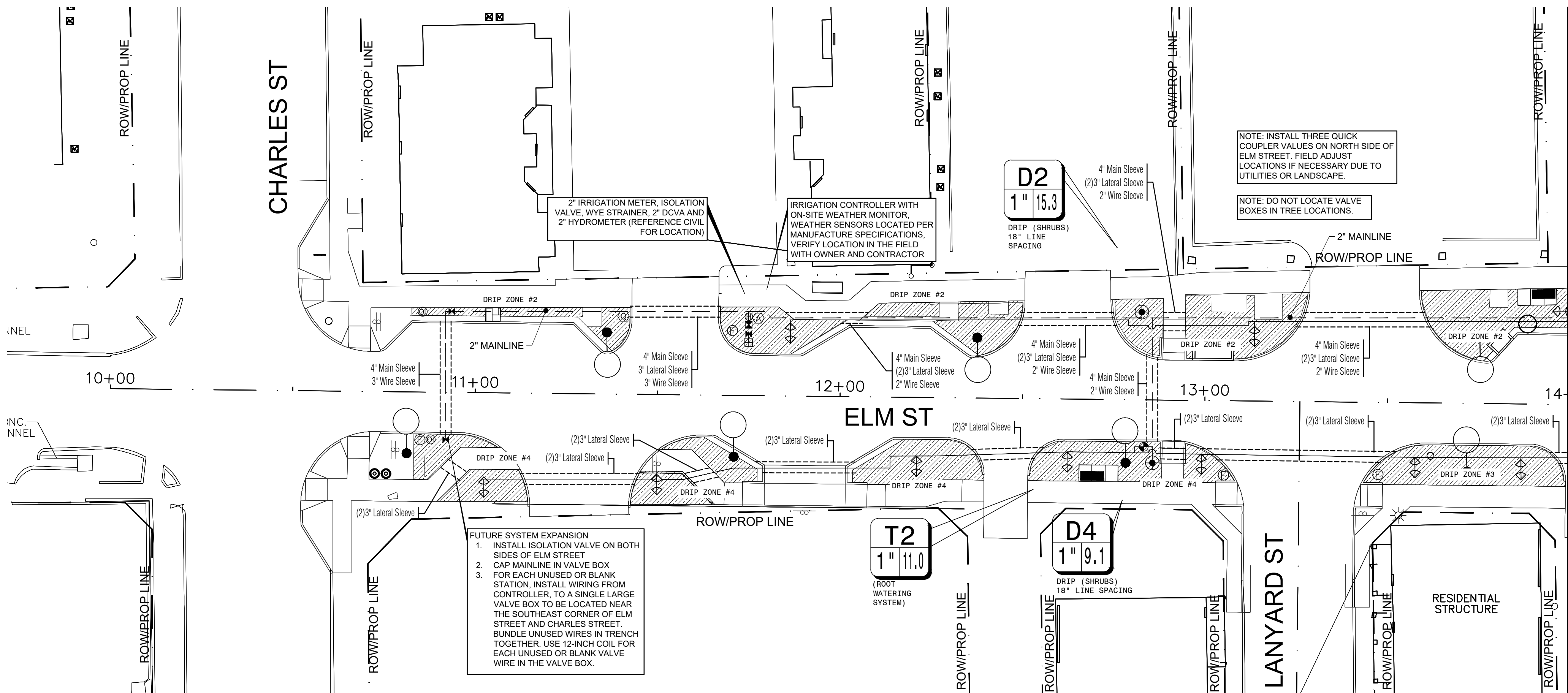
AWR Designs, LLC  
P.O. Box 1746  
Aledo, Texas 76008  
amanda@awr-designs.com  
e. 512.517.5589

SHEET  
**LS-5**

SEQ. 79

MicroStation V8 User: USERNAME\$ LOCATION\$  
ACCOUNT\$ FILE\$  
Plot Scale: SCALE\$  
Date: DATE\$  
User: USERNAME\$ FILE\$

Office: LOCATION\$ ACCOUNT\$ Date: DATE\$ User: USERNAME\$ FILE\$



MATCHLINE STA. 14+00

IRRIGATION LEGEND			
SYMBOL	DESCRIPTION	MANUFACTURER	MODEL NO.
10g	SPRAYS WITH PRO ADJ. NOZZLES	HUNTER	PROS-04-PRS30
◊	TREE ROOT BUBBLER SYSTEM	HUNTER	RZWS-18-25
⊖	REMOTE CONTROL VALVE	HUNTER	ICV
⊕	2" HYDROMETER	ARAD	PART#IS-BM-20 Arad Meter AC 1=10
⊗	2" DOUBLE CHECK ASSEMBLY	FEBCO	850 SERIES
⊕	1" TREE CONTROL ZONE KIT	HUNTER	
▨	HDL DRIPLINE	HUNTER	HDL-06-12-CV
⊕	LINE FLUSHING VALVE	HUNTER	AFV-B
⊕	PRESSURE OPERATOR INDICATOR	HUNTER	ECO-ID
⊕	DRIP CONTROL VALVE	HUNTER	ICZ-101-LF-25

IRRIGATION LEGEND			
SYMBOL	DESCRIPTION	REFER TO PLAN	CLASS
⊕	2" IRRIGATION METER		
⊕	IRRINET-M 48 STATION AC PEDESTAL CONTROLLER (PART #IS-R4A-RU-SS), WITH RAIN AND FREEZE SENSORS		
⊕	ISOLATION VALVE		
—	LATERAL PIPING	REFER TO PLAN	CLASS 200 PVC
—	MAINLINE PIPING	REFER TO PLAN	SCH. 40 PVC, SIZED AS SHOWN (INSTALL THRUST BLOCKS AS NECESSARY)
—	IRRIGATION SLEEVE, SCH. 40 PVC, MIN. THICKNESS OF PIPE TO BE INSERTED, ONE SLEEVE PER PIPE		
—	CONTROL WIRING SLEEVE, 2" SCH. 40 PVC		
⊕	VALVE STATION # (WHERE D = DRIP TUBING, S = SPRAY, R = ROTOR, T = TREE DRIP)		
⊕	VALVE SIZE		
⊕	GPM		

**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.
4. IRRIGATION SPRAY NOZZLES TO BE ADJUSTED TO AVOID PAVEMENT, BUILDING, WALLS, FENCES, UTILITIES, EQUIPMENT, SIGNAGE, AND CALL BOX.
5. REFERENCE LANDSCAPE PLAN FOR LOCATION OF GRAVEL, STEEL EDGING AND ALL PROPOSED PLANT MATERIAL.

**ADDITIONAL WIRE NOTE:**

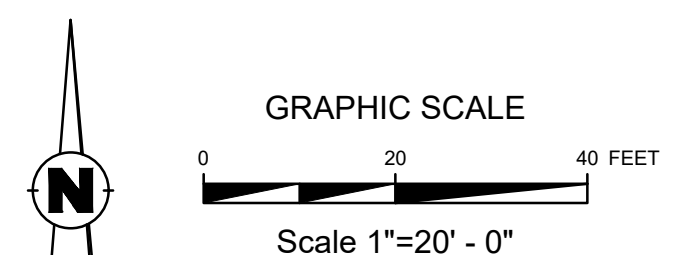
1. ALL IRRIGATION WIRE SHALL BE CONTINUOUSLY RUN FROM THE CONTROLLER TO VALVE WITH NO SPLICES.
2. ALL IRRIGATION WIRE SHALL BE AT LEAST 14 GAUGE WIRE.



Know what's below.  
Call before you dig.

**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 DRYCON 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



AWR Designs, LLC  
P.O. Box 1746  
Aledo, Texas 76008  
amand@awr-designs.com  
e. 512.517.5589

**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.

2. 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.
3. ALL NOZZLES IN PARKING LOT ISLANDS AND PLANTING BEDS SHALL BE LOW ANGLE NOZZLES TO MINIMIZE OVER SPRAY ON PAVEMENT SURFACES.
4. 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.
5. ELECTRICAL SPLICES SHOULD BE LOCATED AT EACH VALVE AND CONTROLLER ONLY.
6. PROVIDE A 3/4" BLOW DOWN DRAIN TEE TO ALLOW WATER TO BE BLOWN FROM THE IRRIGATION LINES/SYSTEM.
7. 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.
8. PROVIDE WITH OWNER A COPY OF ALL INSTALLED EQUIPMENT AND LINES (AS BUILT PLANS).
9. PLACE COPY OF ZONE MAP WITH ALL ZONE VALVE LOCATIONS SHOWN AND APPROVED IRRIGATION PLAN IN PROTECTIVE JACKET IN MAIN CONTROL PANEL.
10. IRRIGATION IN TEXAS IS REGULATED BY: THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) MC-178 / PO BOX 13087 AUSTIN, TEXAS 78711-3087 WWW.TCEQ.STATE.TX.US.

**IRRIGATION PROJECT NOTES**

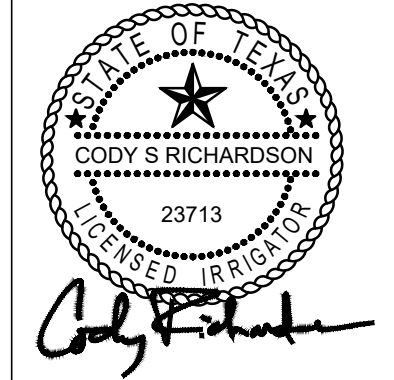
1. THE LOCATION OF MAINLINE AND VALVES ON THIS PLAN MAY BE SHOWN IN PAVED AREAS FOR DESIGN CLARITY ONLY. IRRIGATION ELEMENTS HAVE BEEN SHOWN ON THIS PLAN AS ACCURATELY AS POSSIBLE WITHOUT THE FORFEIT OF DESIGN CLARITY AND INTENT. ALL PIPES AND VALVES SHALL BE INSTALLED WITHIN PAVEMENT AREAS. ALL PIPE 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 SIXTY FIVE (65 PSI) 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 CONTROLLERS, WATERPROOF CONNECTIONS, GROUNDING, SURGE PROTECTORS, VALVES, 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 3/4" SCHEDULE 40 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: 214-837-7538.
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 MANUFACTURER'S 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-PV. 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.

MicroStation V8 User: USERNAME@LOCATION\$  
Account: FILE\$  
Plot Scale: SCALE\$  
Date: DATE\$

Model: MODEL\$  
Project: PROJECT\$

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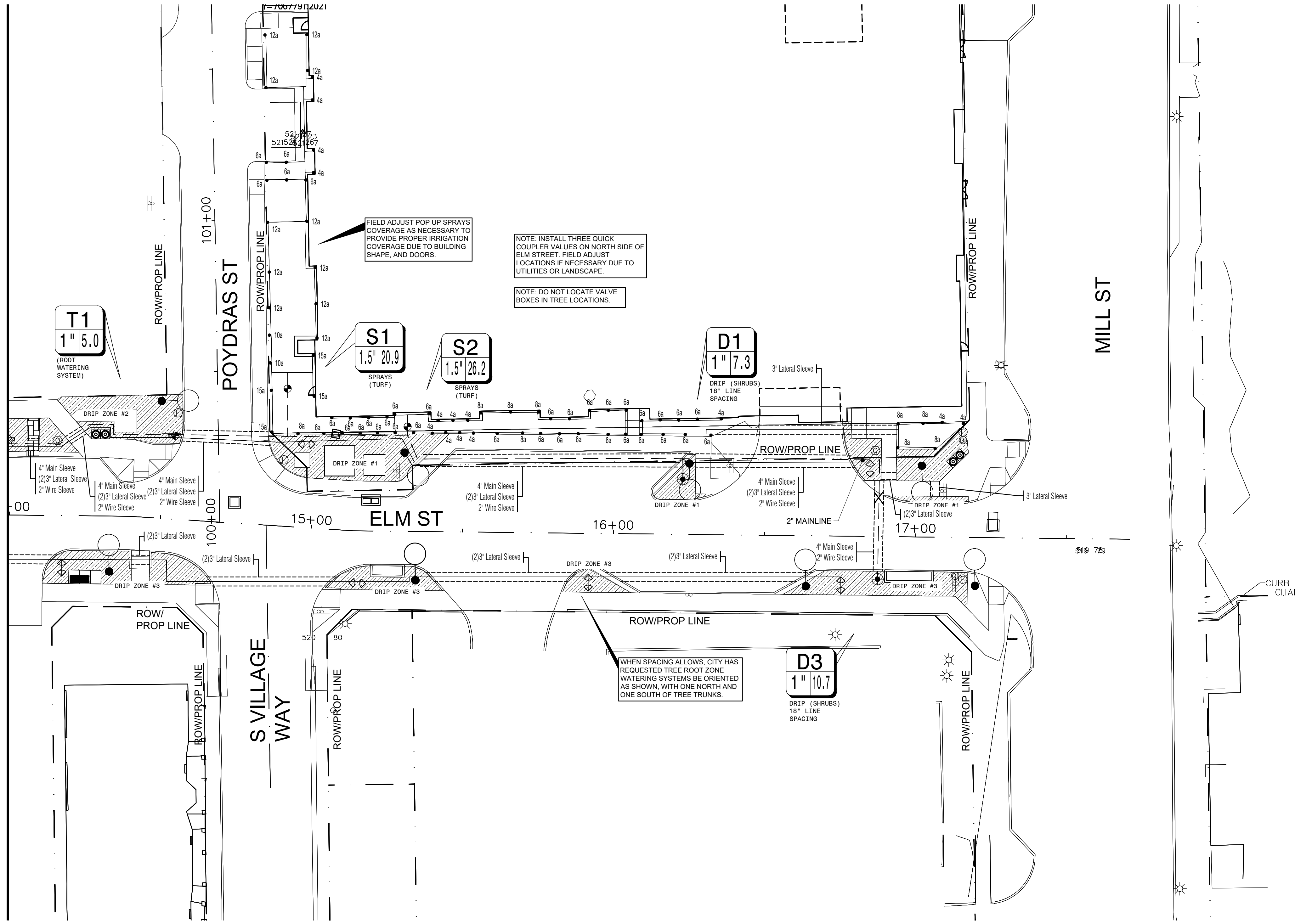
**FREESE & NICHOLS**  
2711 North Haskell Avenue, Suite 350  
Dallas, TX 75204  
Phone - (214) 217-2200  
Web - www.freese.com

CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY  
IMPROVEMENTS**  
IRRIGATION  
**IRRIGATION PLAN  
BEGIN TO STA 14+00**

NO.	ISSUES	BY	DATE	FAN JOB NO.	LEW20378	DATE	JUN 2023	DESIGNED	AVIR	DRAWN	AVIR	REVISED	AVIR	CHECKED	AVIR	FILE NAME	VERIFY SCALE	0	1	IF not one inch on this sheet, adjust scale.	\$FILES\$	
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MATCHLINE STA. 14+00



SYMBOL	DESCRIPTION	MANUFACTURER	MODEL NO.
10a	SPRAYS WITH PRO ADJ. NOZZLES	HUNTER	PROS-04-PRS30
◇	TREE ROOT BUBBLER SYSTEM	HUNTER	RZWS-18-25
⊖	REMOTE CONTROL VALVE	HUNTER	ICV
⊕	2" HYDROMETER	ARAD	PART#IS-8M-20 Arad Meter AC 1=10
⊕	2" DOUBLE CHECK ASSEMBLY	FEBCO	850 SERIES
⊕	1" TREE CONTROL ZONE KIT	HUNTER	
▨	HDL DRIPLINE	HUNTER	HDL-06-12-CV
⊕	LINE FLUSHING VALVE	HUNTER	AFV-B
⊕	PRESSURE OPERATOR INDICATOR	HUNTER	ECO-ID
⊕	DRIP CONTROL VALVE	HUNTER	ICZ-101-LF-25

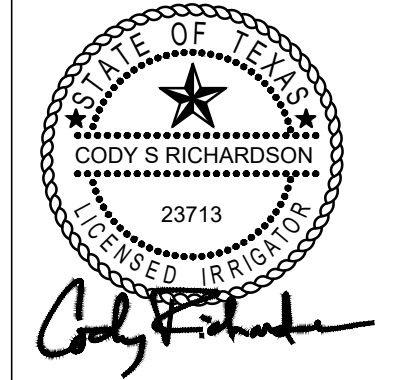
SYMBOL	DESCRIPTION
⊕	2" IRRIGATION METER
⊕	IRRINET-M 48 STATION AC PEDESTAL CONTROLLER (PART #IS-R4A-RU-SS), WITH RAIN AND FREEZE SENSORS
⊕	ISOLATION VALVE
→	LATERAL PIPING REFER TO PLAN CLASS 200 PVC
→	MAINLINE PIPING REFER TO PLAN SCH. 40 PVC, SIZED AS SHOWN (INSTALL THRUST BLOCKS AS NECESSARY)
=====	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	VALVE STATION # (WHERE D = DRIP TUBING, S = SPRAY, R = ROTOR, T = TREE DRIP)
1"	VALVE SIZE
8.8	GPM

**NOTE TO CONTRACTOR:**

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5. REFERENCE LANDSCAPE PLAN FOR LOCATION OF GRAVEL, STEEL EDGING AND ALL PROPOSED PLANT MATERIAL.

**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.



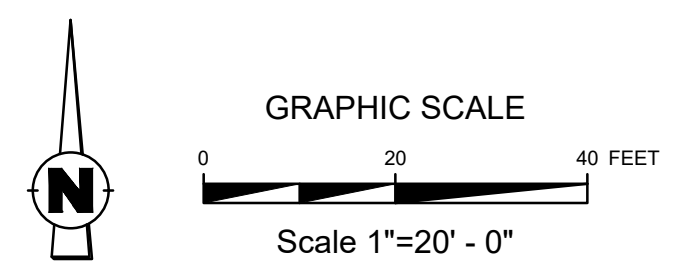
**FREESIE & NICHOLS**  
 2711 North Haskell Avenue, Suite 300  
 Dallas, TX 75204  
 Phone - (214) 217-2200  
 Web - www.freesie.com

CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY**  
 IMPROVEMENTS  
 IRRIGATION  
**IRRIGATION PLAN**  
 STA 14+00 TO END

NO.	ISSUES	BY	DATE	FAN JOB NO.	LEW20378	DESIGNED	AWR	DRAWN	AWR	REVISED	AWR	CHECKED	AWR	FILE NAME	\$FILES\$
SHEET				DATE	JUN 2023										
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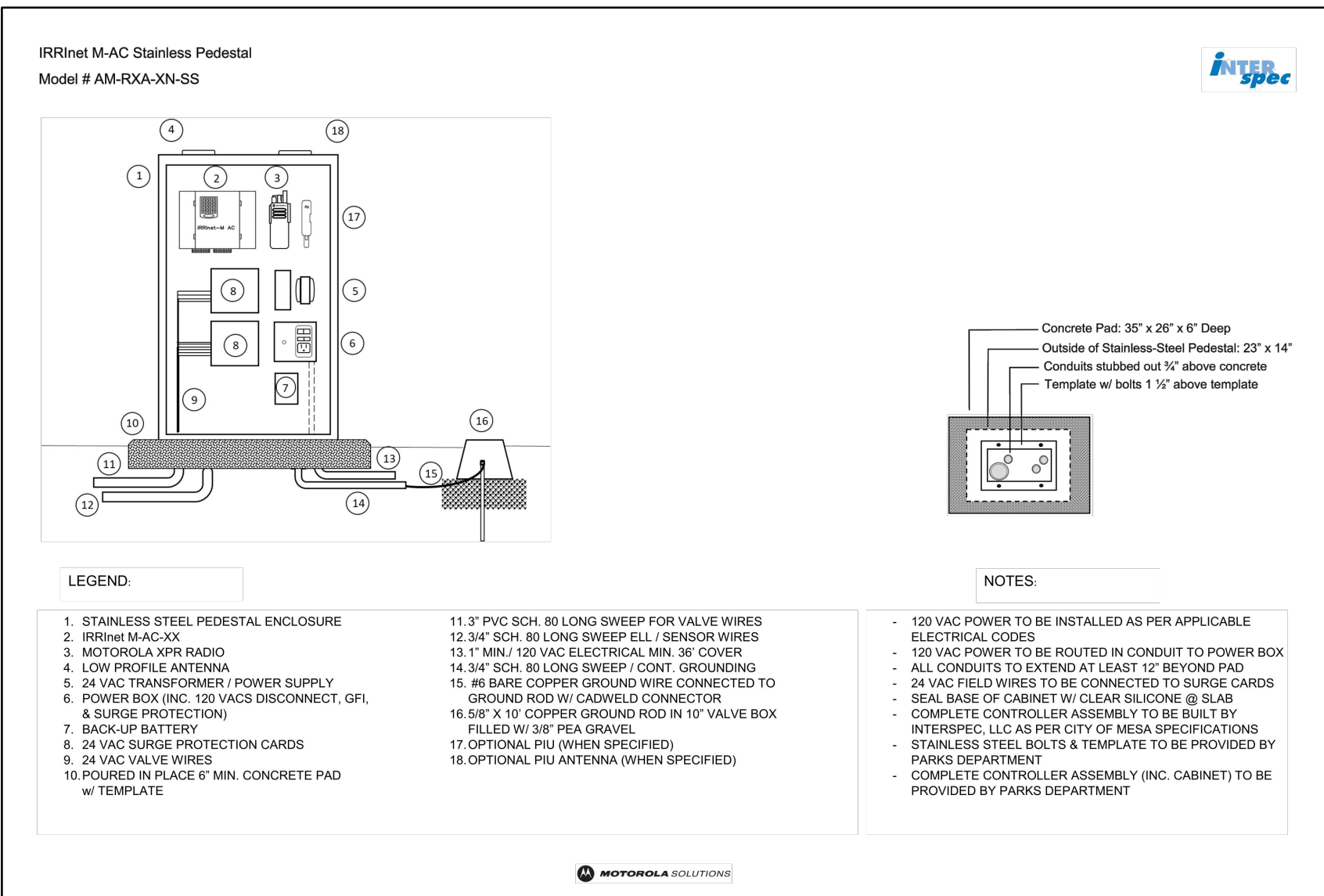
Know what's below.  
 Call before you dig.



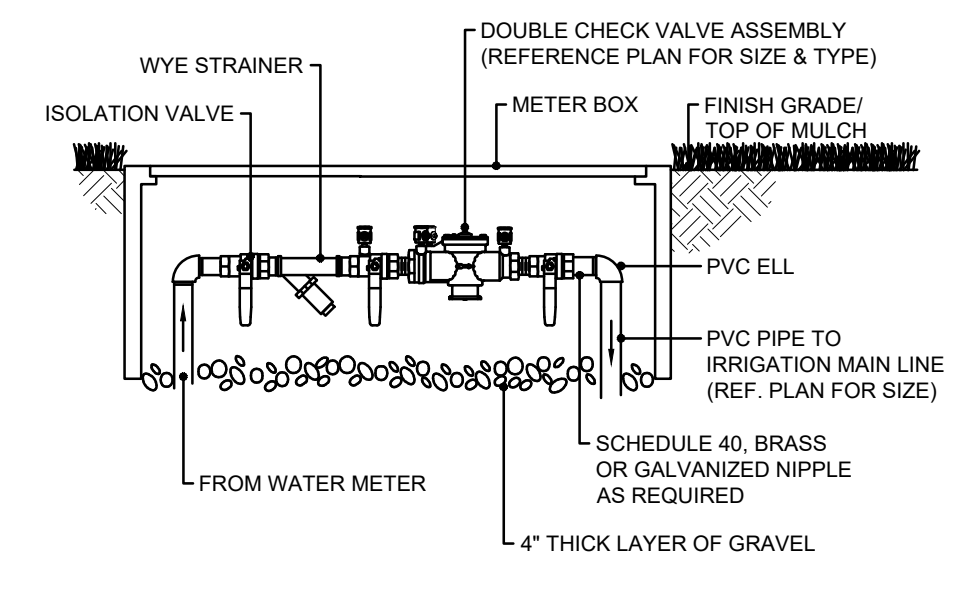
**AWR**  
 AWR Designs, LLC  
 P.O. Box 1746  
 Alledo, Texas 76008  
 amanda@awr-designs.com  
 e. 512.517.5589

MicroStation V8 User: USERNAME\$ LOCATION\$  
 ACCOUNT\$ FILE\$  
 Plot Scale: 1"=20'  
 Date: \$DATE\$

Office: LOCATION\$ ACCOUNT\$ Date: DATE\$ User: USERNAME\$ FILE\$



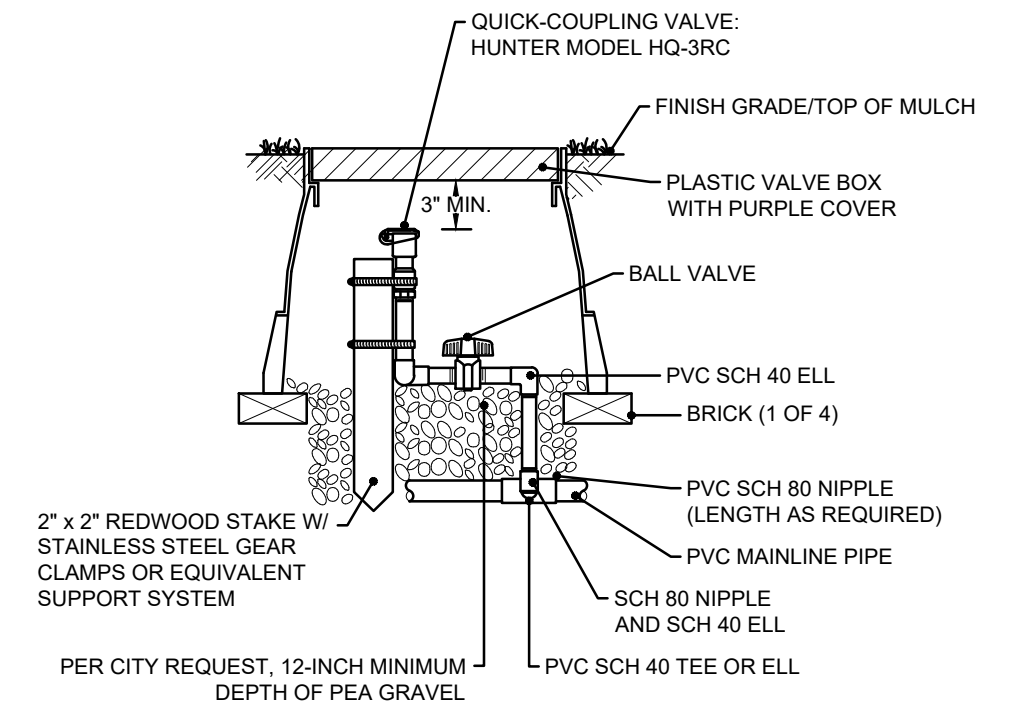
**1 IRRINET-M 48 STATION AC PEDESTAL CONTROLLER**  
N.T.S.



**3 DOUBLE CHECK ASSEMBLY**  
N.T.S.

**NOTE:**

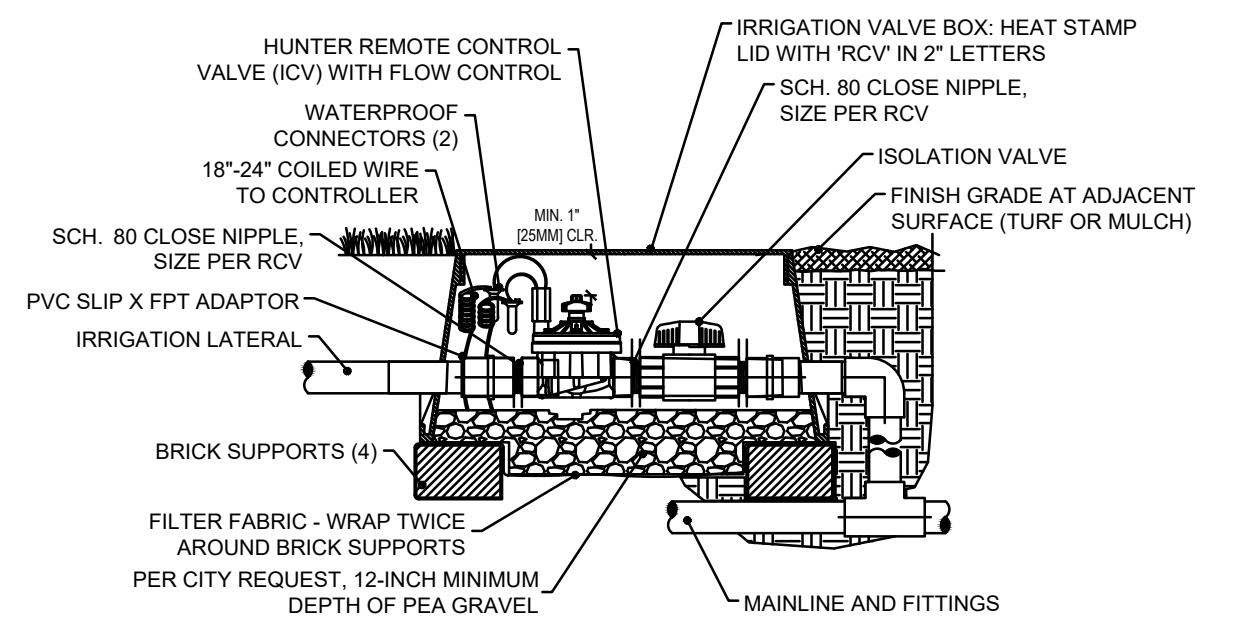
- INSTALL BACKFLOW PREVENTER AS REQUIRED BY LOCAL CODES AND HEALTH DEPARTMENT. VERIFY LOCAL REQUIREMENTS PRIOR TO INSTALLATION. PRIOR TO BACKFLOW PREVENTER, INSTALL A NOMINALLY SIZED ISOLATION VALVE.



**4 QUICK COUPLING VALVE**  
N.T.S.

**NOTE:**

- FURNISH NOMINALLY SIZED BALL VALVE WITHIN SAME BOX AND PRIOR TO MAINLINE TEE.
- FURNISH FITTINGS AND PIPING NOMINALLY SIZED IDENTICAL TO NOMINAL QUICK COUPLING VALVE INLET SIZE.



**5 IN-LINE VALVE (ICV) WITH ISOLATION VALVE**  
N.T.S.

**ADDITIONAL WIRE NOTE:**

- ALL IRRIGATION WIRE SHALL BE CONTINUOUSLY RUN FROM THE CONTROLLER TO VALVE WITH NO SPLICES.
- ALL IRRIGATION WIRE SHALL BE AT LEAST 14 GAUGE WIRE.

**Installation Instructions**  
Arad Hydrometer

The Arad Hydrometer is a combination Flow Meter and Master Valve.

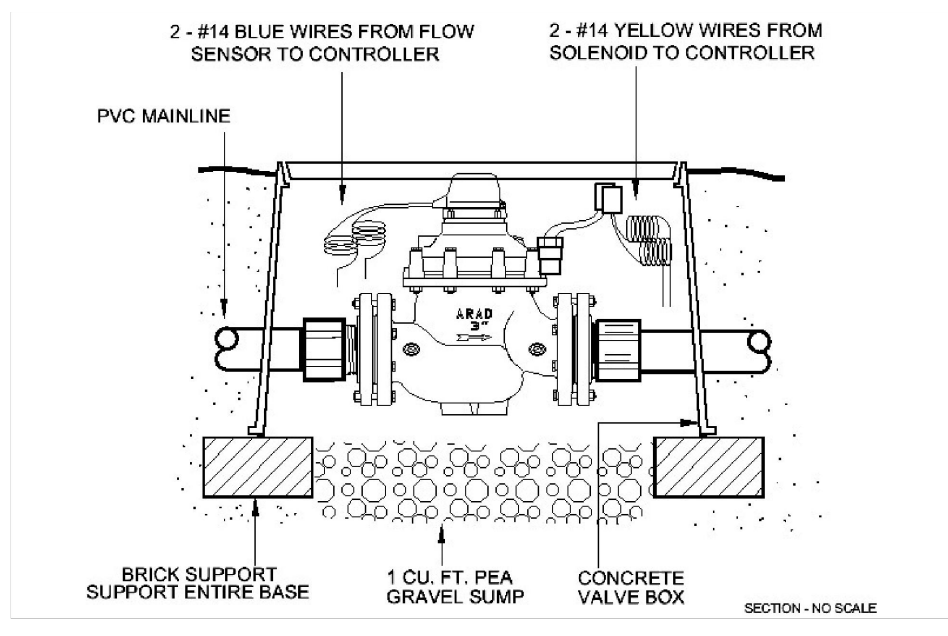
The 1.5" has male threads, the 2" female threads, the 3" and larger are all flanged fittings.

**Installing Hydrometer**

- Flush line prior to installing the Hydrometer to make sure that all debris has been removed from the pipe.
- The 3" valves and larger should be supported by a brick(s) to avoid stressing the pipe.
- Install 4 wires from the controller to the Hydrometer. (Two Blue & Two Yellow)
- 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.

- Hydrometer to be protected by a valve box (See Specifications and Details)
- Should there be any questions concerning the installation of this equipment please contact Interspec.



Interspec, LLC  
940-440-9757

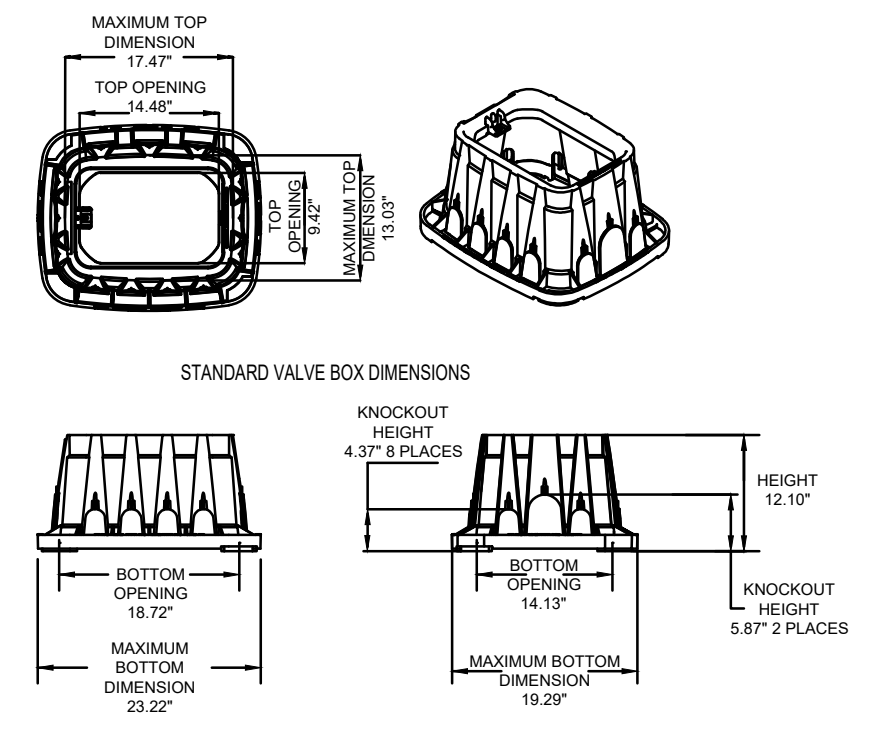
A Motorola Value Added Reseller  
[www.Interspec.com](http://www.Interspec.com)  
Specifications subject to change without notice.

David Peters  
214-325-1505

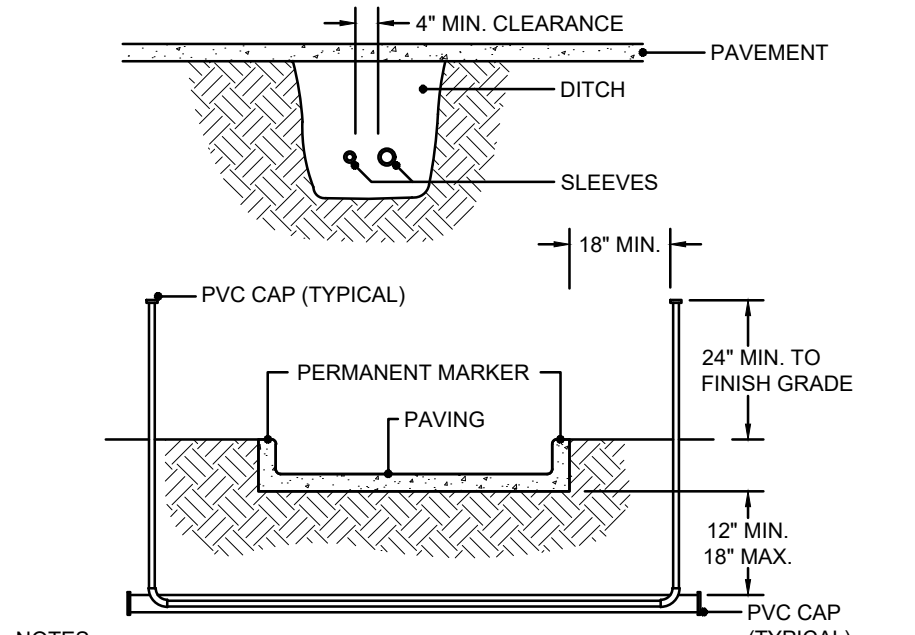
**2 HYDROMETER**  
N.T.S.

**NOTE:**

- INSTALL PER MANUFACTURE'S RECOMMENDATIONS. CONFIRM COMMUNICATION, PROGRAMMING, POWER, WIRING, WATER PROOF CONNECTIONS, GROUNDING, AND SURGE PROTECTION REQUIREMENTS PRIOR TO INSTALLATION.
- FOR TECHNICAL ASSISTANCE, CONTACT JAY JOHNSON WITH INTERSPEC, EMAIL: JJOHNSON@INTER-SPEC.COM, PHONE: 214-837-7536



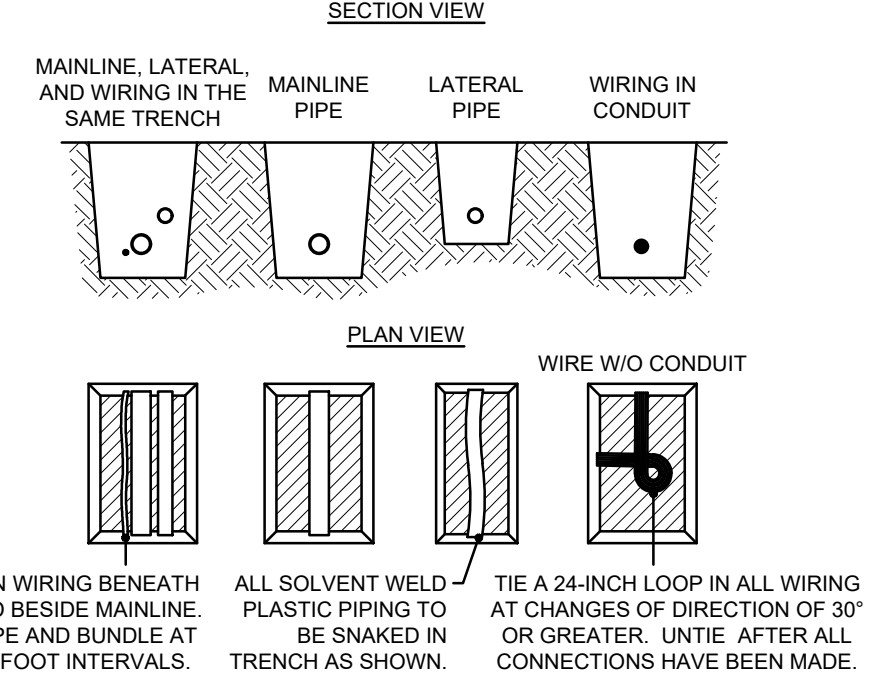
**6 STANDARD VALVE BOXES**  
N.T.S.



**7 IRRIGATION PVC SLEEVES**  
N.T.S.

**NOTES:**

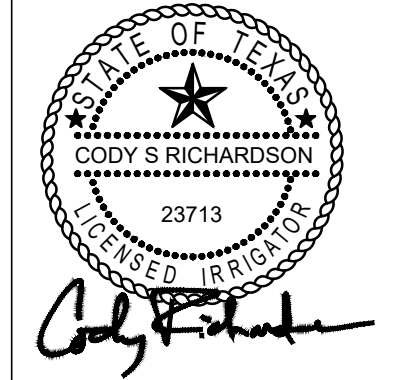
- ALL PVC IRRIGATION SLEEVES TO BE SCHEDULE 40 PIPE.
- ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
- WHERE THERE IS MORE THAN ONE SLEEVE, EXTEND THE SMALLER SLEEVE TO 24-INCHES MINIMUM ABOVE FINISH GRADE.
- MECHANICALLY TAMP TO 95% PROCTOR.
- SLEEVE LOCATIONS SHALL BE MARKED ONTO THE TOP OF CURB WITH A SAWCUT OF TWO PARALLEL LINES THAT ARE 2" LONG AND 1" APART.



**8 PIPE AND WIRING TRENCHING**  
N.T.S.

**NOTES:**

- SLEEVE BELOW ALL HARDSCAPE ELEMENTS WITH SCH 40 PVC TWICE THE DIAMETER OF THE PIPE OR WIRE BUNDLE WITHIN.
- FOR PIPE AND WIRE BURIAL DEPTHS, SEE SPECIFICATIONS. MINIMUM - 12"
- BACKFILL AND COMPACT TRENCHES TO ORIGINAL GRADE.



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Phone - (214) 217-2200  
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CITY OF LEWISVILLE  
**ELM ST, POYDRAS ST, AND SOUTH ALLEY IMPROVEMENTS**  
IRRIGATION  
**IRRIGATION DETAILS**

NO.	ISSUES	BY	DATE	FAN JOB NO.	LEW20378	DATE	JUN 2023	DESIGNED	AWR	DRAWN	AWR	REVISED	AWR	CHECKED	AWR	FILE NAME	\$FILES\$
SHEET																IR-3	
SEQ.																	82

**AWR**  
AWR Designs, LLC  
P.O. Box 1746  
Aledo, Texas 76008  
amanda@awr-designs.com  
e. 512.517.5589

MicroStation V8 User: USERNAME: \$LOCATION\$  
ACCOUNT: \$FILE\$  
Plot Scale: \$SCALE\$  
Date: \$DATE\$

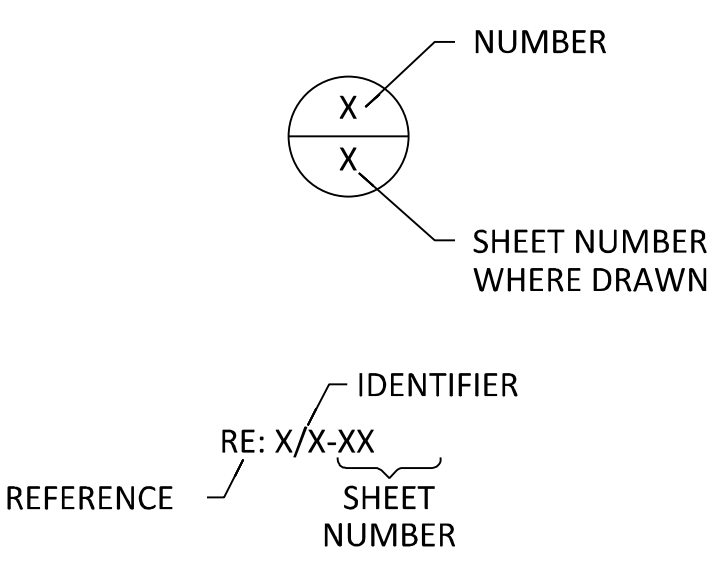
Office: \$LOCATION\$    \$ACCOUNT\$    Date: \$DATE\$    User: \$USERNAME\$    \$FILE\$



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 INTERRUPTER
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.

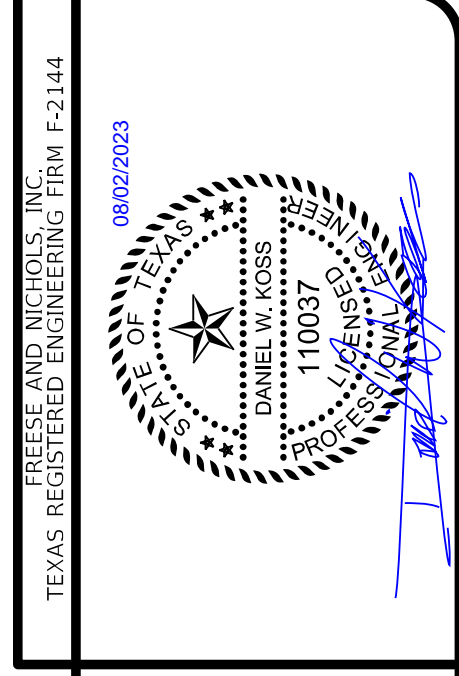


PLAN SYMBOL	DESCRIPTION
	LIGHTING FIXTURE "A" - FIXTURE TYPE "b" - SWITCH NUMBER
	EMERGENCY BATTERY PACK LIGHT FIXTURE "A" - FIXTURE TYPE
	CEILING MOUNTED EXIT SIGN "X" - FIXTURE TYPE
	WALL MOUNTED EXIT SIGN ARROW INDICATES DIRECTION OF EGRESS "X" - FIXTURE TYPE
	FIRE ALARM CONTROL PANEL
	MANUAL PULL 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
	OVERHEAD ELECTRIC LINE
	UNDERGROUND ELECTRIC LINE
	OVERHEAD PRIMARY LINE
	UNDERGROUND PRIMARY LINE
	OVERHEAD SECONDARY LINE
	UNDERGROUND SECONDARY LINE
	OVERHEAD COMMUNICATION LINE
	UNDERGROUND COMMUNICATION LINE
	OVERHEAD FIBER OPTIC LINE
	UNDERGROUND FIBER OPTIC LINE
	FLEXIBLE METAL CONDUIT
	HEAT TRACE
	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
	DENOTES A QUANTITY OF TWO (2) INSTRUMENT CABLES. EACH CONSISTS OF TWO (2) NO.16 AWG CONDUCTORS
	THREE (3) 4" CONDUITS
	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
	HOMERUN, CIRCUITS 1 AND 3 RUN TO PANEL LA 2 #12, #12G., 3/4"C. UNLESS NOTED OTHERWISE
	SINGLE POLE SWITCH "b" - INDICATES SWITCH LEG SHALL CONTROL LIGHT FIXTURES WITH "b" - DESIGNATION
	MULTI POLE SWITCH "x" - INDICATES NUMBER OF POLE "c" - INDICATES SWITCH SHALL CONTROL LIGHT FIXTURES WITH "c" DESIGNATION
	MANUAL MOTOR STARTER /DISCONNECT
	3 WAY SWITCH
	4 WAY SWITCH
	DIMMER LIGHTING CONTROL SWITCH
	TIME SWITCH
	DUPLEX RECEPTACLE, 20A, 120V, 2P, 3W * "C" - MOUNTED ABOVE COUNTERTOP "GF" OR "GF" - GROUND FAULT INTERRUPTER TYPE "WP" - WEATHERPROOF
	FLOOR MOUNTED RECEPTACLE
	SIMPLEX RECEPTACLE, GROUNDED TYPE
	SPECIAL RECEPTACLE
	QUADPLEX RECEPTACLE

PLAN SYMBOL	DESCRIPTION
	JUNCTION BOX
	PULL BOX
	TERMINAL CABINET
	OCCUPANCY SENSOR
	PHOTOCELL
	PREWIRED
	MANHOLE
	UTILITY METER
	MOTORIZED LOUVER
	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
	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
	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
	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
	POST-TOP LIGHT

ONE-LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
		PANEL
		MOTOR, NUMBER DESIGNATES HORSEPOWER
	-	VOLTMETER (WITH SWITCH IF 3-PHASE)
	-	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"
	-	



**FREESSE & NICHOLS**  
13270 Maple Drive, Suite 300  
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Web - www.freese.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST**  
IMPROVEMENTS  
ELECTRICAL  
**ELECTRICAL LEGEND**

NO.	ISSUES	BY	DATE	FEN JOB NO.	DATE	DESIGNED	DRAWN	REVISED	CHECKED	FILE NAME
				LEW20378	AUG 2023	AAA	MHC		DKK	EL-ALL-0A-LGND.dgn

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

**GENERAL NOTES:**

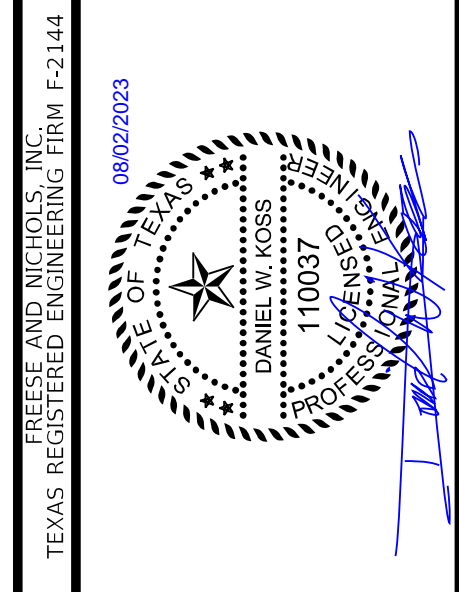
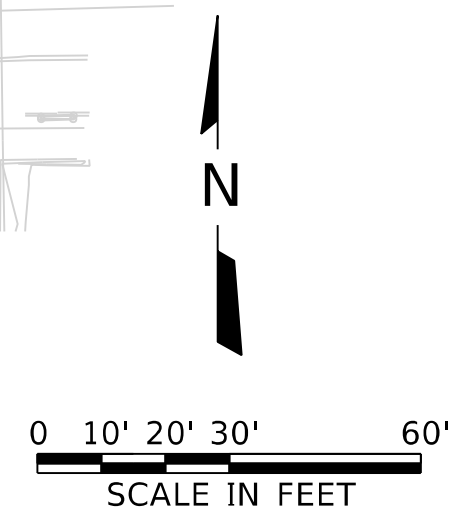
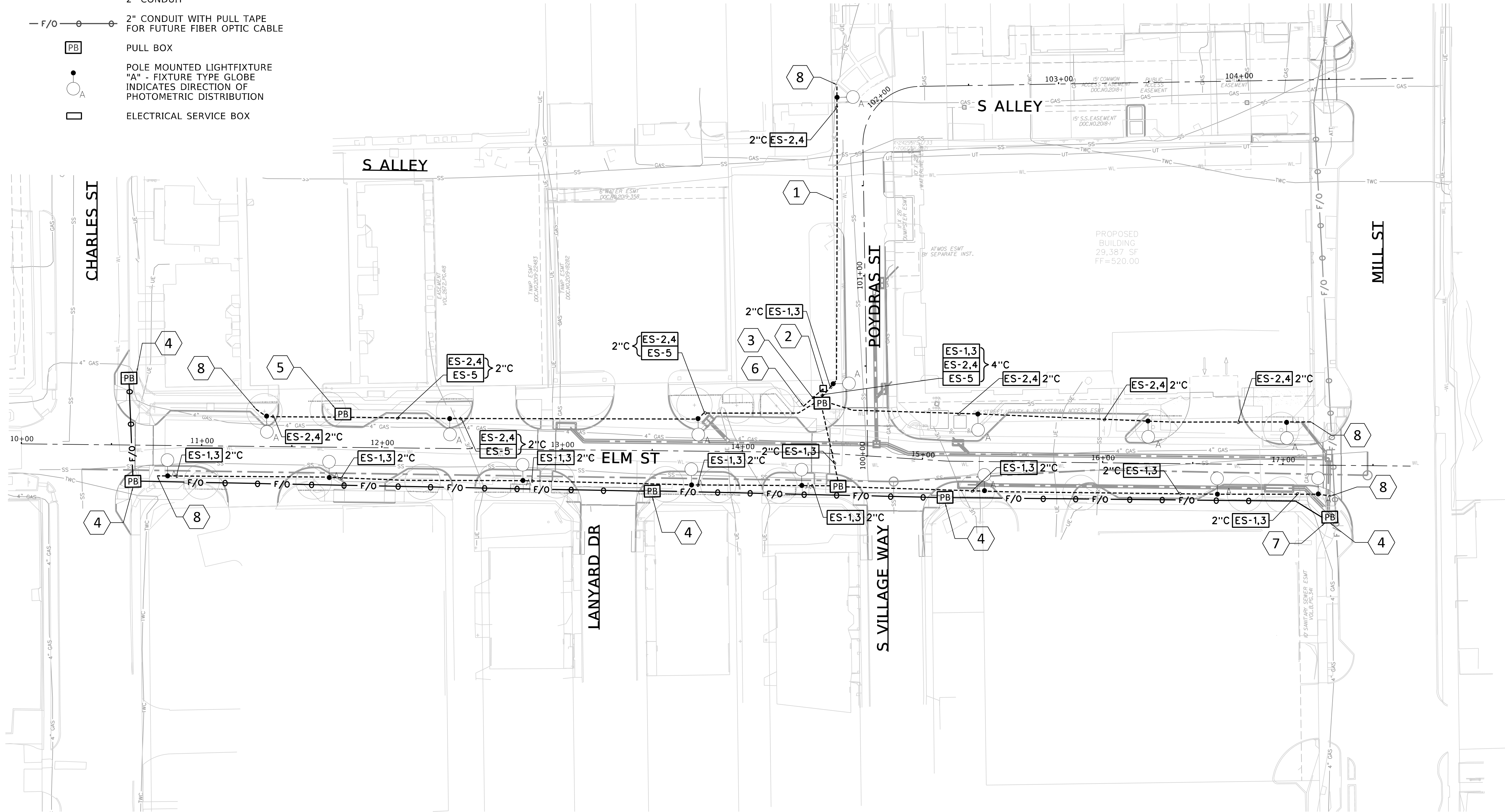
- PULL BOXES AND CONDUIT TO BE PROVIDED AND INSTALLED FOR FUTURE ADDITION OF FIBER CABLE.
- THE BANNER ARM ATTACHMENTS TO BE INSTALLED PERPENDICULAR TO ROADWAY.
- ALL CIRCUITS TO BE 3 #10 CONDUCTORS [XHHW-2] AND #10 GROUND IN 2" SCHED 40 PVC CONDUIT UNLESS OTHERWISE NOTED.
- CIRCUIT GFI RECEPTACLES INTEGRAL TO THE FIXTURE POLE TO CIRCUIT HOT AND NEUTRAL CONDUCTORS WITH 5A FUSES. UTILIZE ALTERNATING HOT CONDUCTORS BETWEEN FIXTURE LOCATIONS TO BALANCE CIRCUIT LOADING. RECEPTACLES SHALL USE A DIFFERENT HOT CONDUCTOR THAN THE PRECEDING RECEPTACLE IN THE CIRCUIT.
- LIGHT FIXTURES SHALL BE CIRCUITED TO 240V.
- LIGHTING CIRCUITS CONDUIT AND FIBER CONDUIT SHALL BE SEPARATED BY A MINIMUM OF 6".

**NOTE BY SYMBOL: "X"**

- EXISTING RIGHT OF WAY
- PROVIDE 120/240V SERVICE ENCLOSURE. REFER TO SHEET EL-3 FOR MORE INFORMATION.
- PROVIDE 4" CONDUIT TO UTILITY SERVICE POINT. COORDINATE WITH TNMP.
- PROVIDE TXDOT GROUND BOX TYPE "A" WITH 6" APRON (TYP). SEE DETAIL ED(4)-14)
- PROVIDE PULLBOX FOR POWER TO IRRIGATION CONTROLLER USING CIRCUIT ES-5. REFER TO IRRIGATION FOR MORE INFORMATION.
- COORDINATE WITH TEXAS NEW MEXICO POWER COORDINATOR CARLOS ESTRADA. (Carlos.Estrada@tnmp.com 940-435-5649)
- PULL BOX SHALL BE PLACED ADJACENT TO EXISTING CITY F/O LINE FOR FUTURE JUNCTION. CONTRACTOR SHALL COORDINATE WITH CITY REPRESENTATIVE FOR PLACEMENT REQUIREMENTS.
- EXTEND SPARE CONDUIT MINIMUM OF 5'-0" BEYOND POLE AND TERMINATE IN AN ACCESSIBLE LOCATION. PROVIDE 3M SURVEY LOCATOR AT SPARE CONDUIT TERMINATION.

**LEGEND:**

- 2" CONDUIT
- F/O - 2" CONDUIT WITH PULL TAPE FOR FUTURE FIBER OPTIC CABLE
- [PB] PULL BOX
- POLE MOUNTED LIGHTFIXTURE  
"A" - FIXTURE TYPE GLOBE  
INDICATES DIRECTION OF  
PHOTOMETRIC DISTRIBUTION
- [ ] ELECTRICAL SERVICE BOX



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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 ELECTRICAL  
**ELM ST, POYDRAS ST LIGHTING PLAN**

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	DRAWN	REVISED	CHECKED	FILE NAME
				LEW20378	AUG 2023	AAA	MHC		DKK	EL-ALL-PL-LTGN.dgn

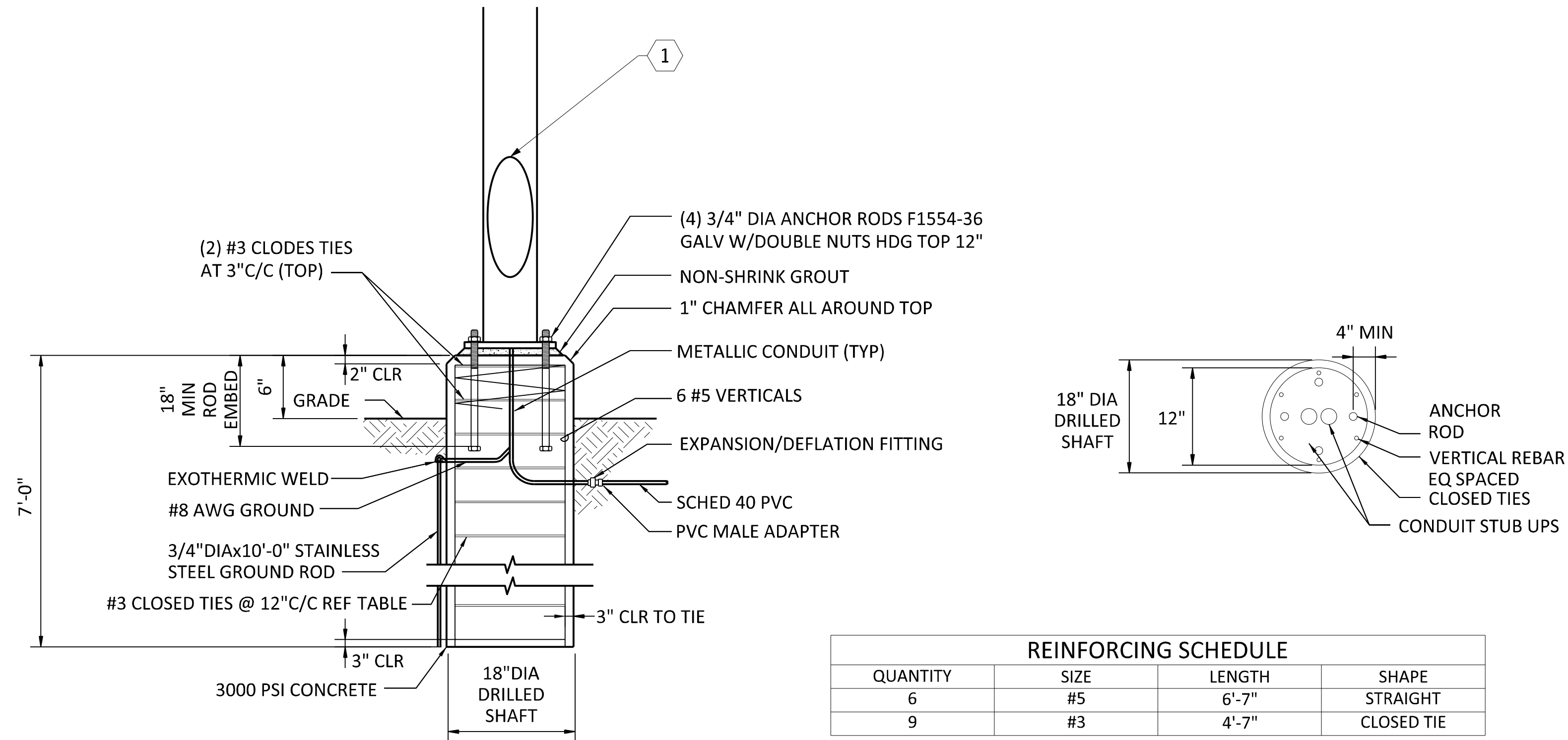
SHEET **EL-2**  
 SEQ. 85

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 DISTRIBUTION.	98

**LIGHTING FIXTURE SCHEDULE NOTES:**

- LIGHT FIXTURES PROVIDED SHALL BE APPROVED EQUAL TO THE FIXTURE INDICATED IN THE SCHEDULE ABOVE.
- 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 LOAD	VA LOAD
ES1	ELC SRV TY D 120/240 060 NS AL E PS U	4"	3/ #2	N/A	2P/60A	30	100	1,3 PEDESTRIAN LIGHTING	2P/15A	3.3	784
								2,4 IRRIGATION CONTROLLER	1P/15A	3.3	784
								5 IRRIGATION CONTROLLER	1P/15A	5	600



QUANTITY	SIZE	LENGTH	SHAPE
6	#5	6'-7"	STRAIGHT
9	#3	4'-7"	CLOSED TIE

**NO.1 GENERAL NOTES:**

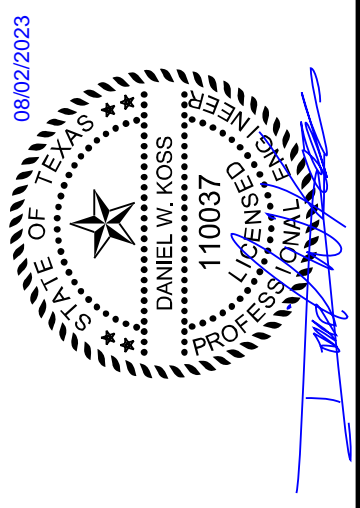
- PROVIDE 3/4" DIAMETER ANCHOR RODS F1554-36 GALV, MATCH LIGHT POLE MANUFACTURERS BOLT PATTERNS.

**NOTE BY SYMBOL: "X"**

- 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



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CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST**  
IMPROVEMENTS  
ELECTRICAL  
**LIGHTING SCHEDULE**

NO. ISSUES	BY	DATE	F&N JOB NO.	LEW20378
			DATE	AUG 2023
			DESIGNED	AAA
			DRAWN	MHC
			REVISED	
			CHECKED	DKK
			FILE NAME	EL-ALL-SH-MISC.dgn

MicroStation V8 User: 04331 - Office On Site  
Plotted: 10/4/2023 10:41:14 AM  
Plot Scale: 60,000 / 1" = 100'-0" / 1" = 100'-0"  
Date: Aug 02, 2023 - 10:41:14 AM  
Project: Freese and Nichols, Inc. - True Type Fonts

GENERAL NOTES FOR ALL ELECTRICAL WORK

- The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.
- 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.
- Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is 1/2 in. or less in diameter.
- 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.
- 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.
- 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

- 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.
- Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.
- 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"

- 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.
- 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.
- 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.
- Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.


- 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.
- 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.
- 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

- 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.
- 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.
- Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.
- 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.
- 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."
- Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.
- 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.
- 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.
- 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.
- 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.
- At all electrical services, install a 6 AWG solid copper grounding electrode conductor.
- 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).
- 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.
- 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.

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					<b>Traffic Operations Division Standard</b>	
<h1>ELECTRICAL DETAILS CONDUITS &amp; NOTES</h1>						
<h2>ED(1)-14</h2>						
FILE:	ed1-14.dgn	DN:	CK:	DW:	CK:	
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY	
REVISIONS		DIST	COUNTY		SHEET NO.	
					<b>87</b>	

# 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 in the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

## C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

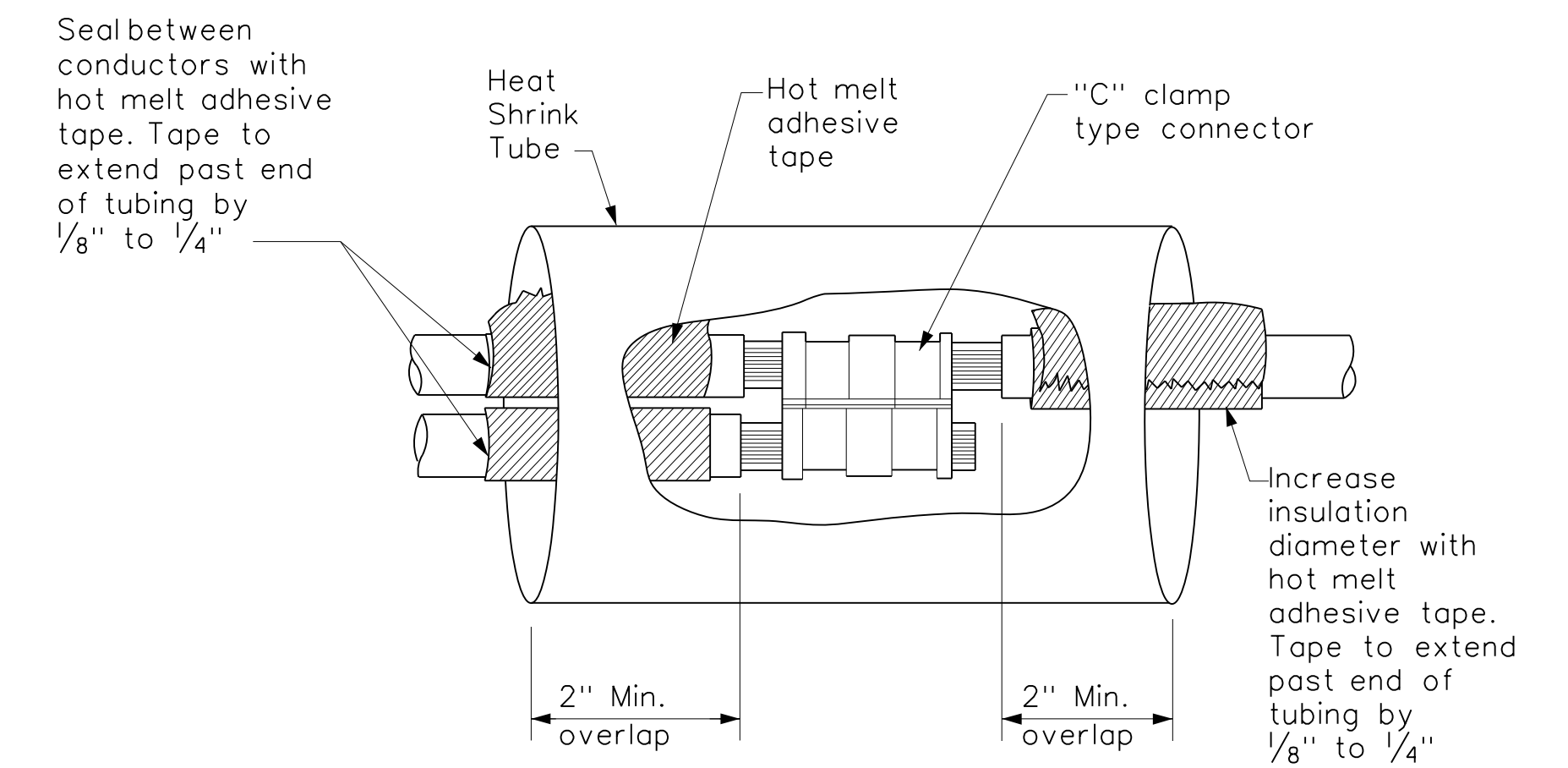
## GROUND RODS & GROUNDING ELECTRODES

### A. MATERIAL INFORMATION

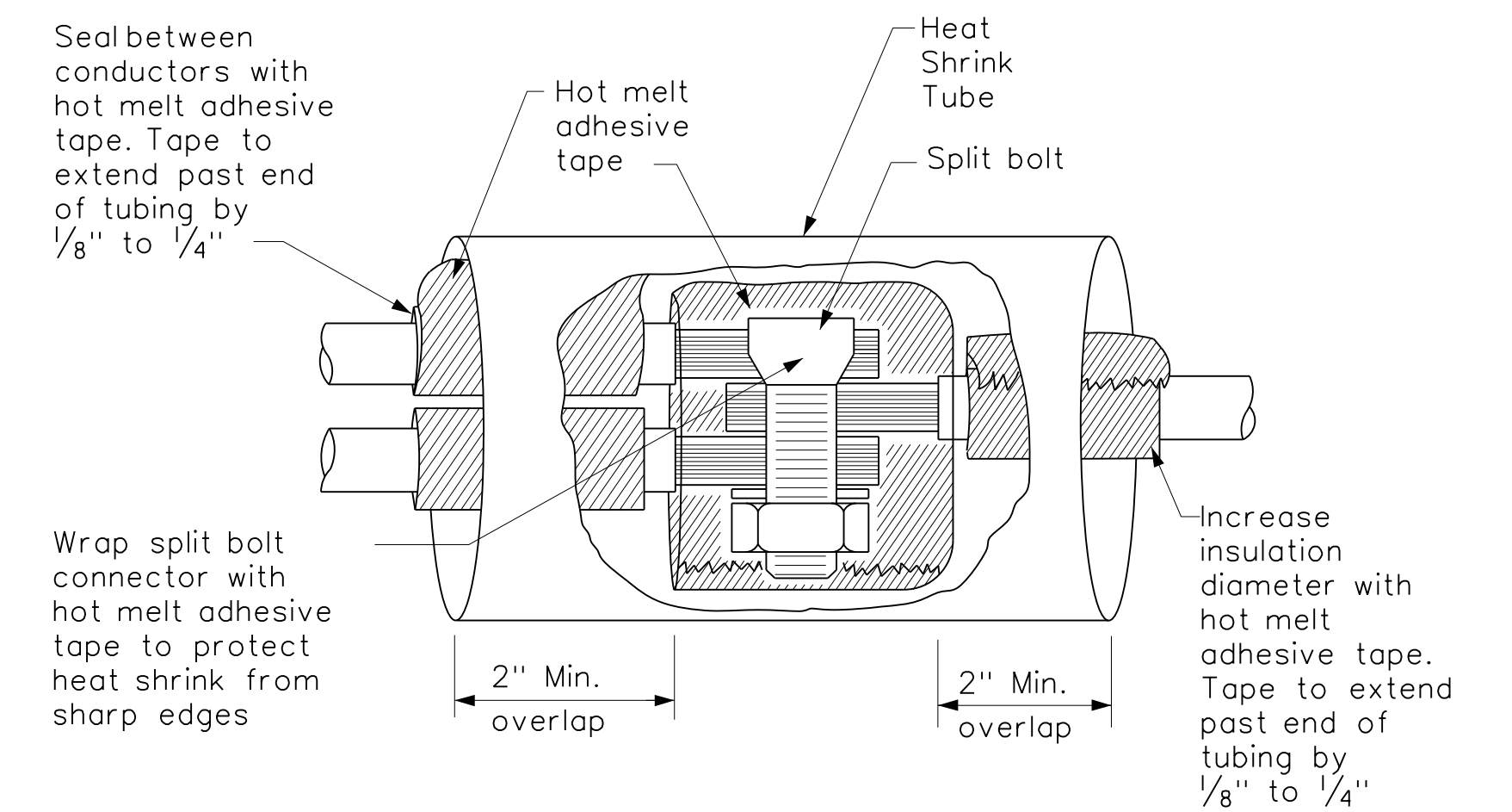
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

### B. CONSTRUCTION METHODS

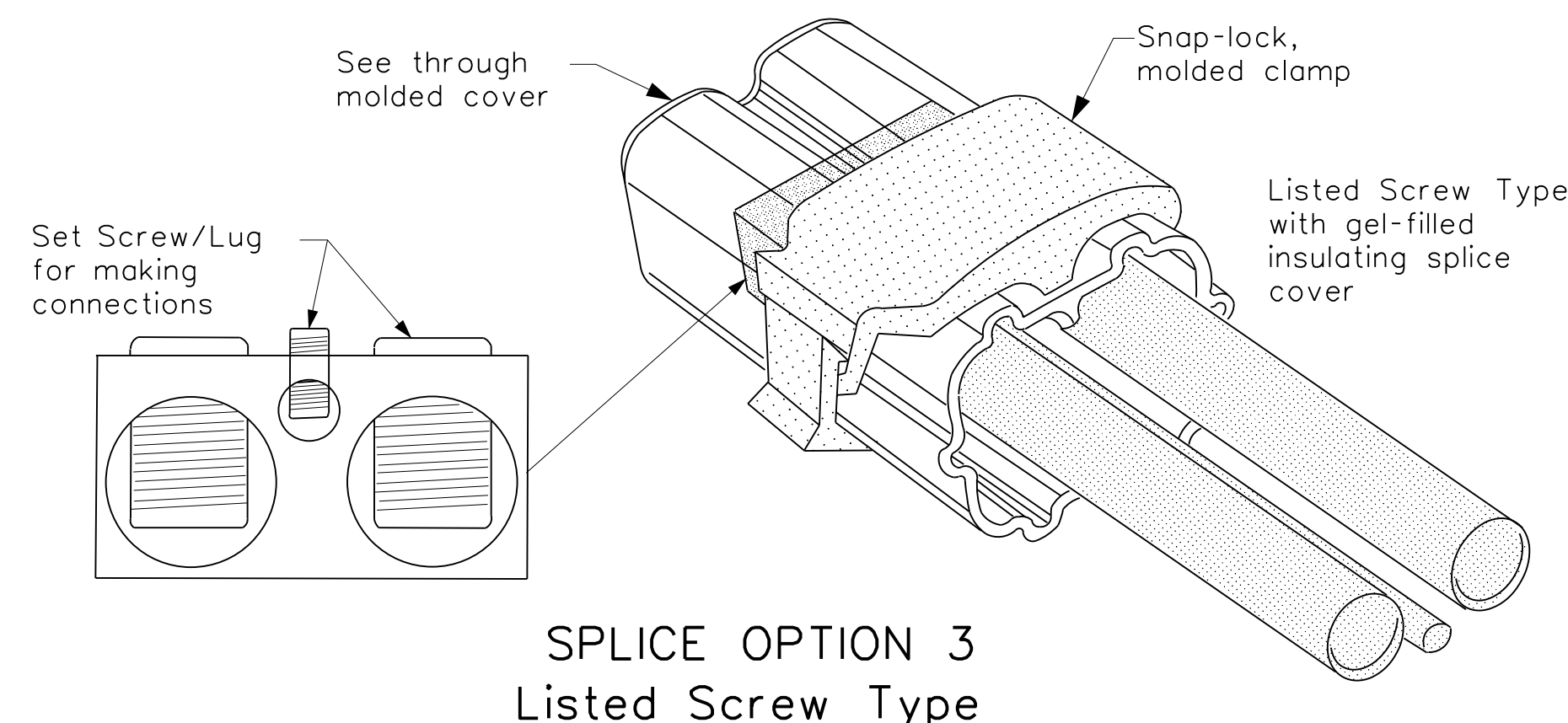
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



**SPLICE OPTION 1  
Compression Type**



**SPLICE OPTION 2  
Split Bolt Type**



**SPLICE OPTION 3  
Listed Screw Type**

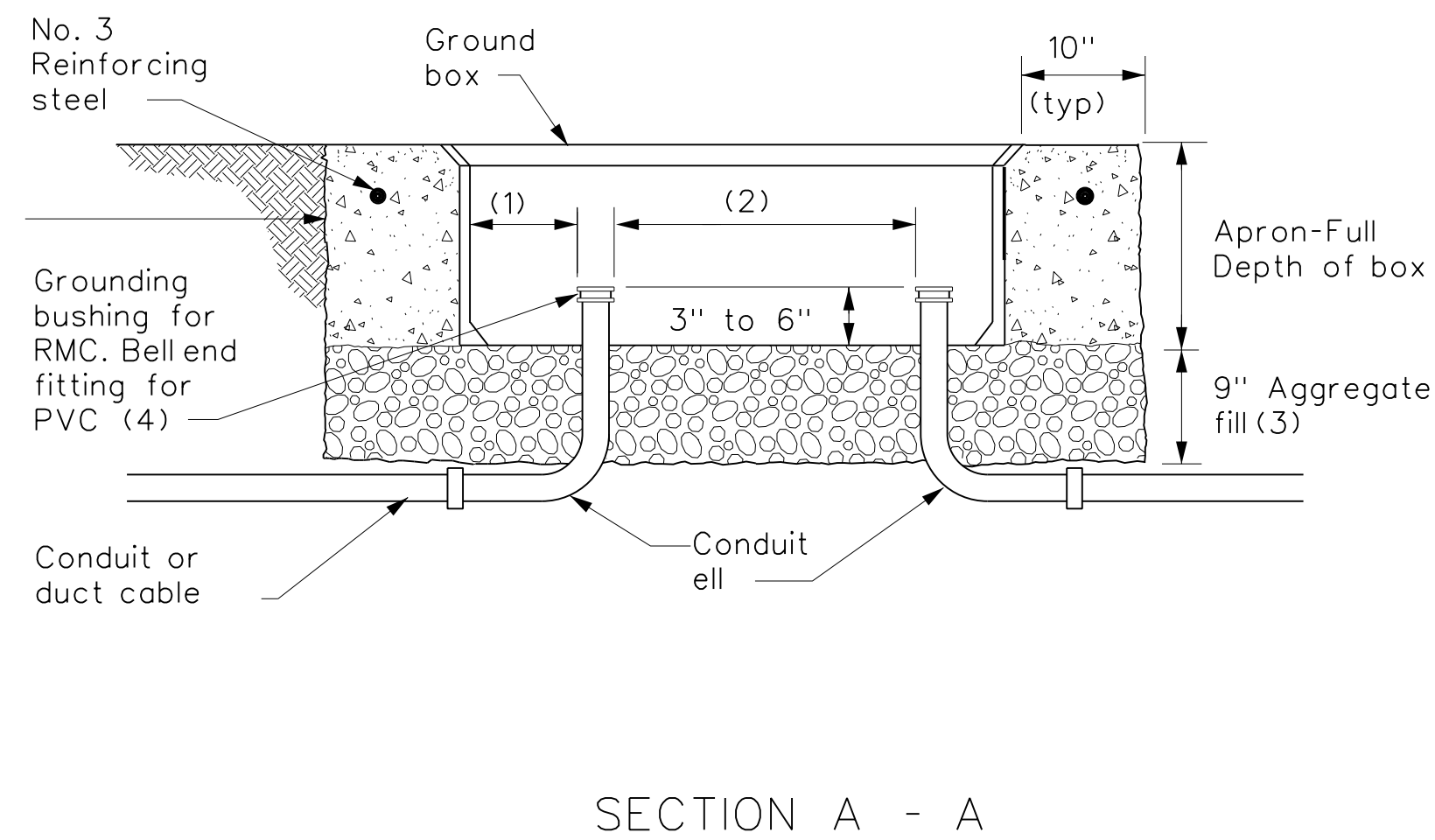
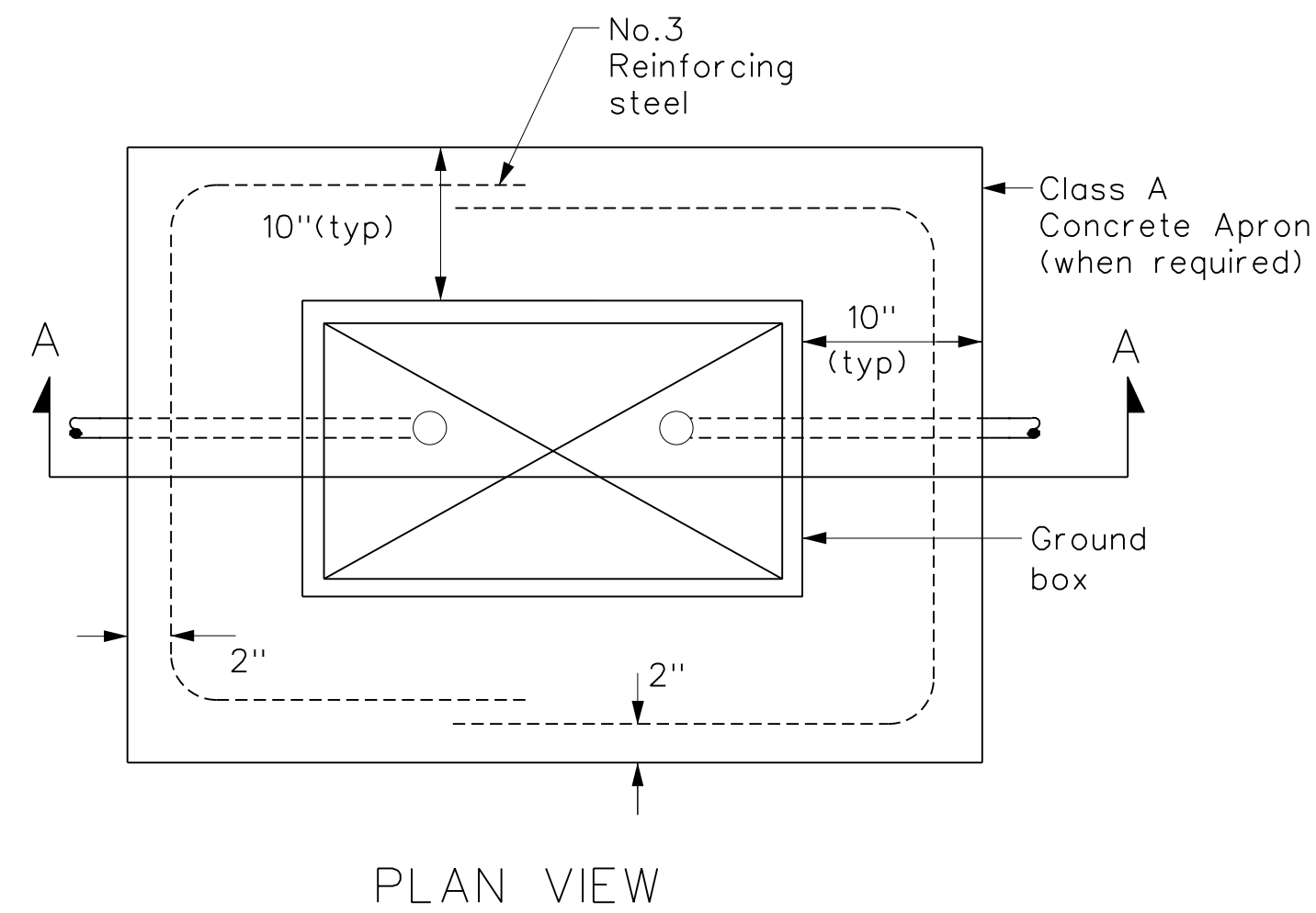
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		<b>Traffic Operations Division Standard</b>	
<h1>ELECTRICAL DETAILS CONDUCTORS</h1>			
<h2>ED(3)-14</h2>			
FILE: ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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REVISIONS			HIGHWAY
	DIST	COUNTY	SHEET NO.
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### APRON FOR GROUND BOX

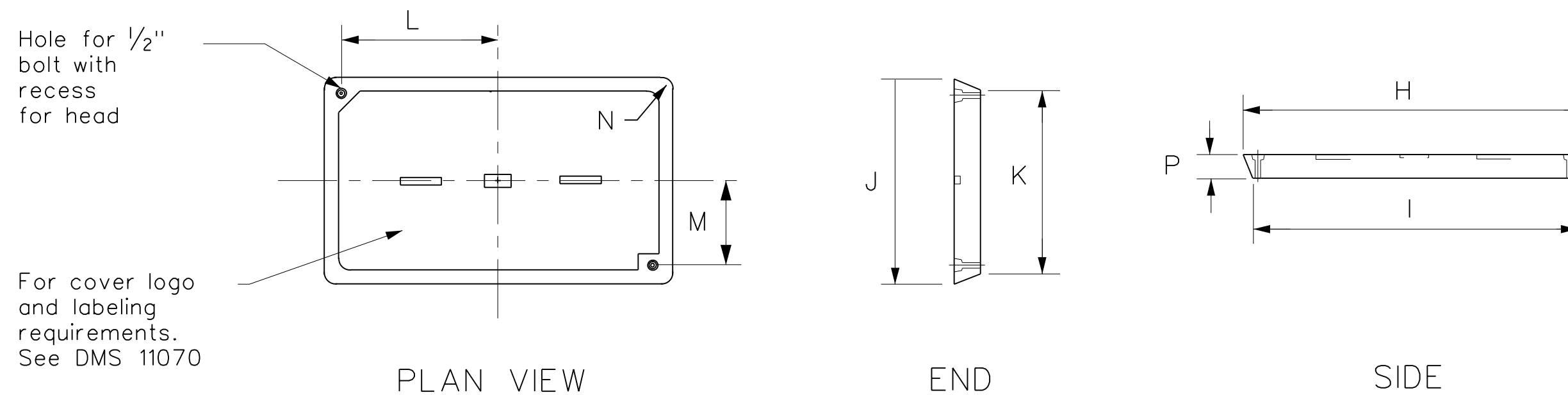
- (1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.
- (2) Maintain sufficient space between conduits to allow for proper installation of bushing.
- (3) Place 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



### 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.



## ELECTRICAL DETAILS GROUND BOXES

ED(4)-14

FILE: ed4-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	DIST	COUNTY	SHEET NO.	
			89	

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**ELECTRICAL SERVICES NOTES**

- 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 materials 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.
- 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.
- Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.
- 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.
- 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.
- 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.
- When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.
- 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.
- 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.
- Provide rigid metal conduit (RMC) for all conduits on service, except for the 1/2 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.
- 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.
- Ensure all mounting hardware and installation details of services conform to utility company specifications.
- 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 1/2 in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.
- 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 1/2 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.
- Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

**SERVICE ASSEMBLY ENCLOSURE**

- Provide threaded hub for all conduit entries into the top of enclosure.
- 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.
- 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.
- 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**

- Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.
- 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.

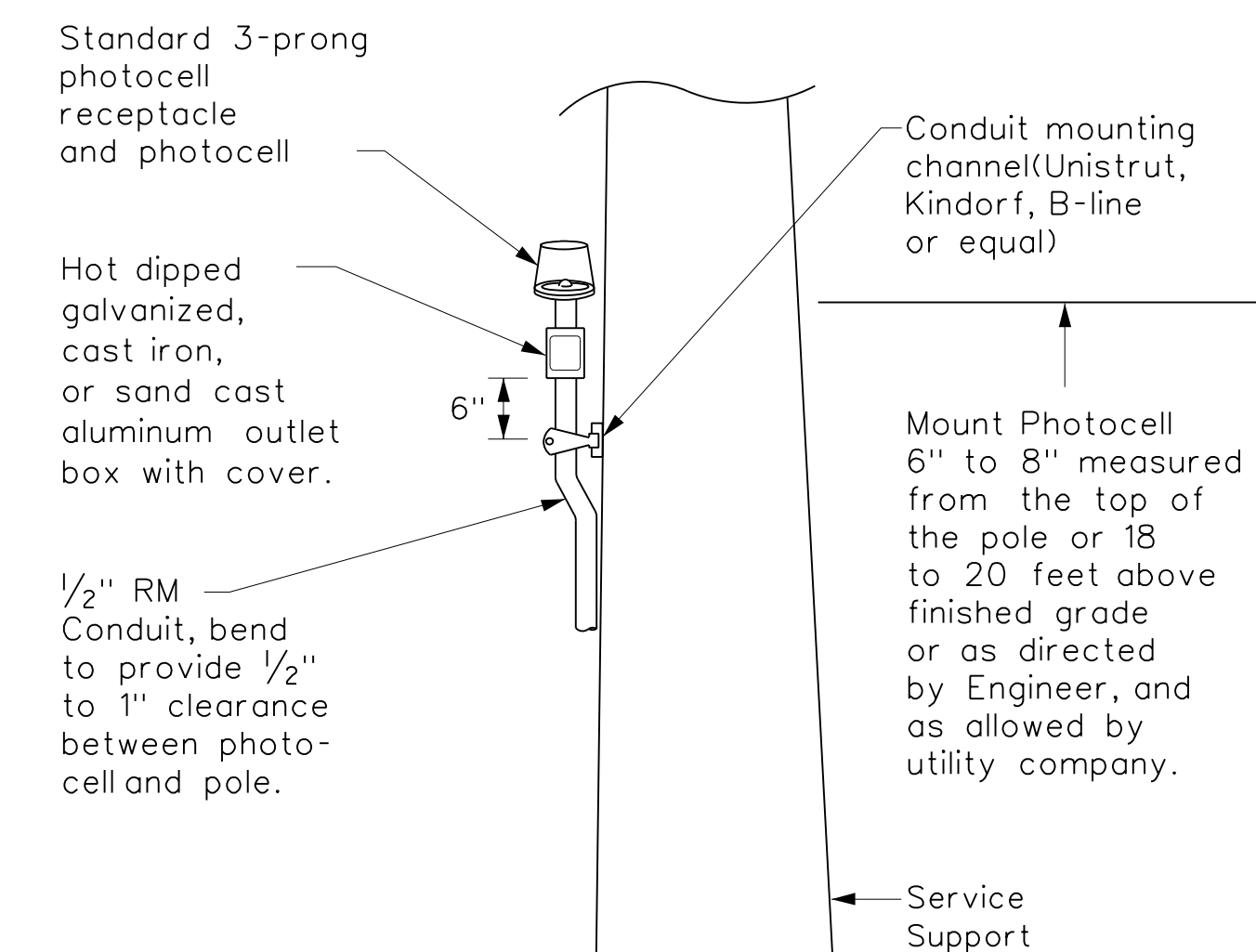
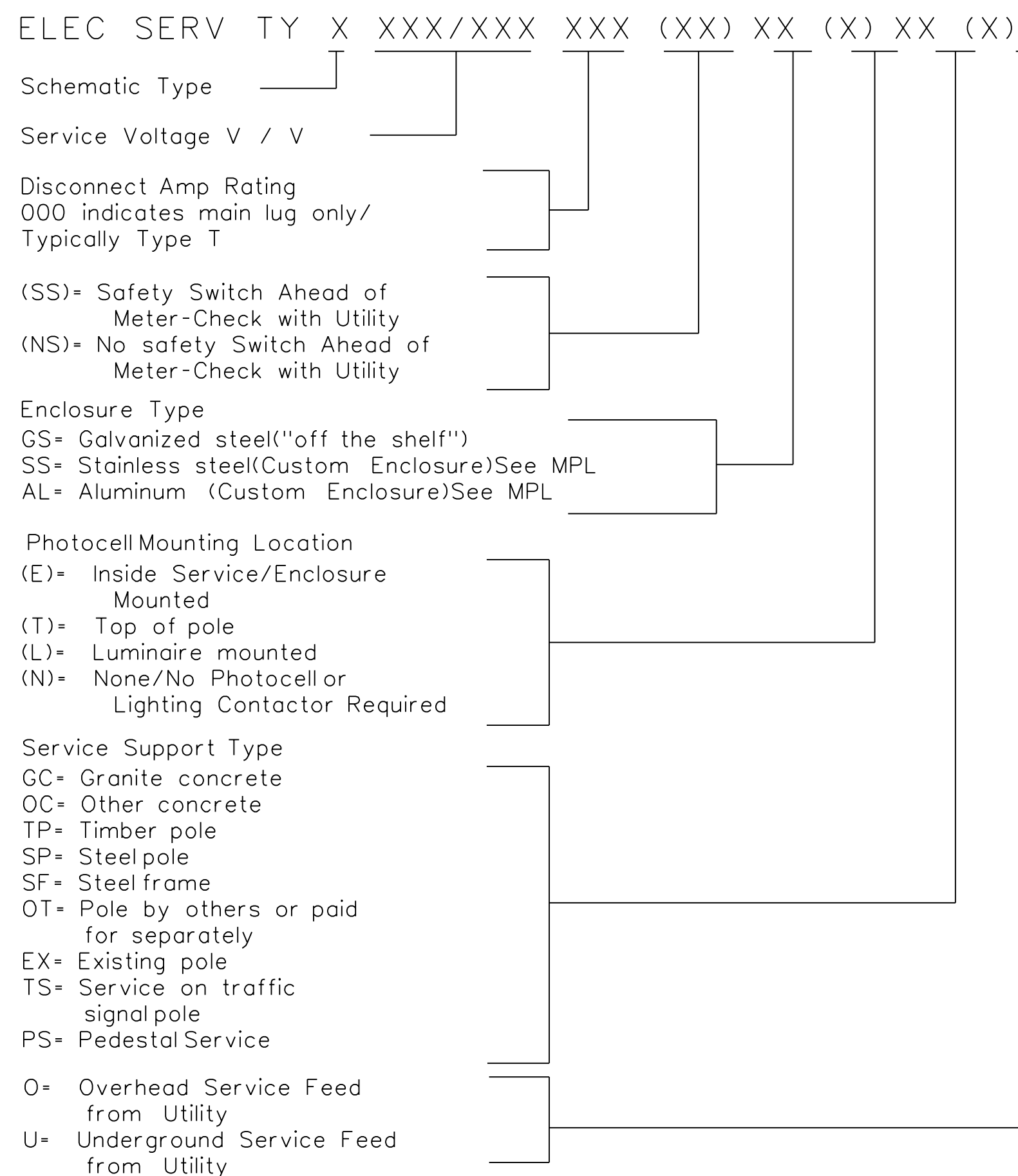
**PHOTOELECTRIC CONTROL**

- 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 1/4"	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 1/4"	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**



**TOP MOUNTED PHOTOCELL**

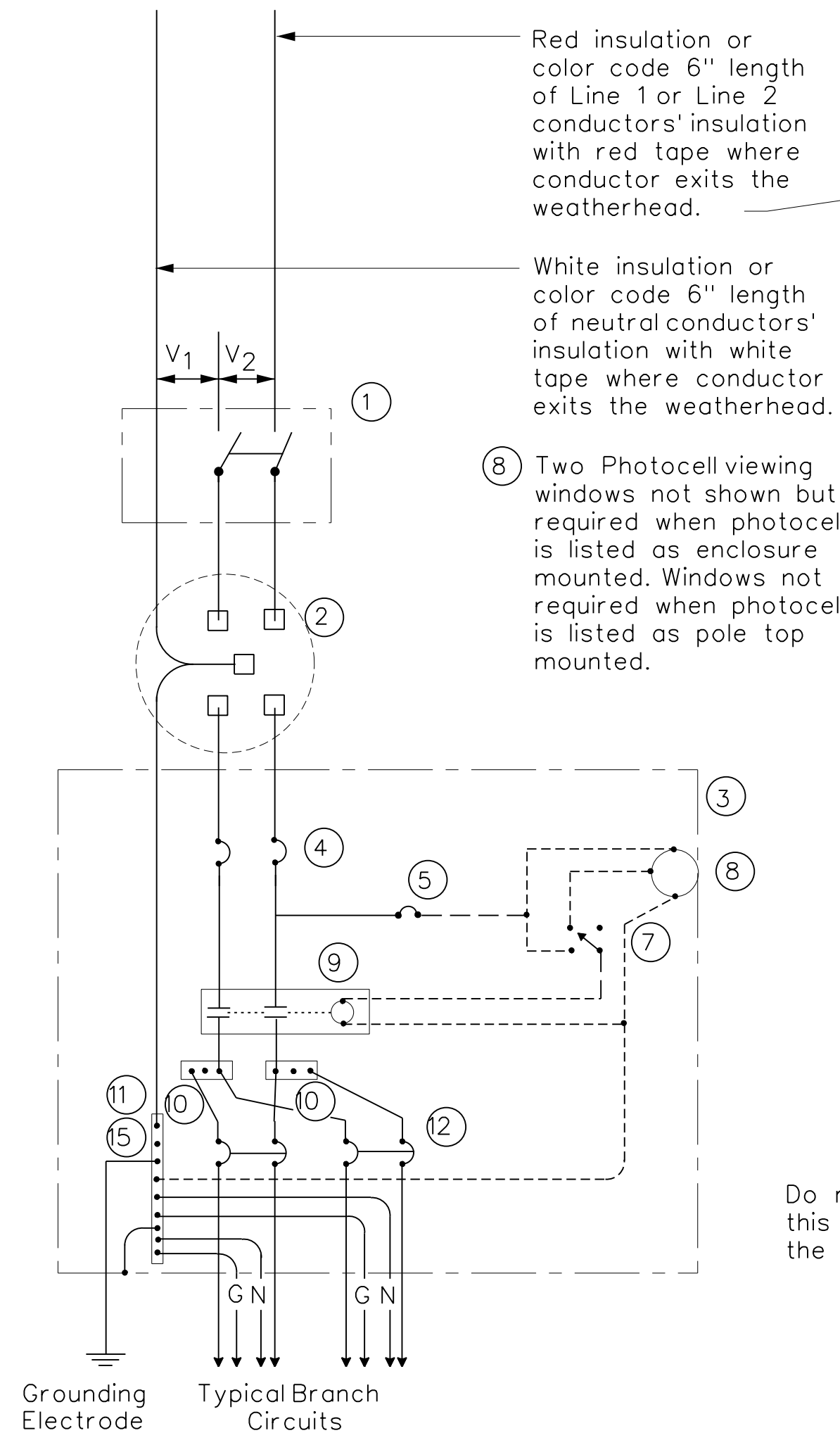
Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

<p><b>ELECTRICAL DETAILS SERVICE NOTES &amp; DATA</b></p> <p><b>ED(5)-14</b></p>			
FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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REVISIONS		HIGHWAY	
DIST	COUNTY		SHEET NO.
			<b>90</b>

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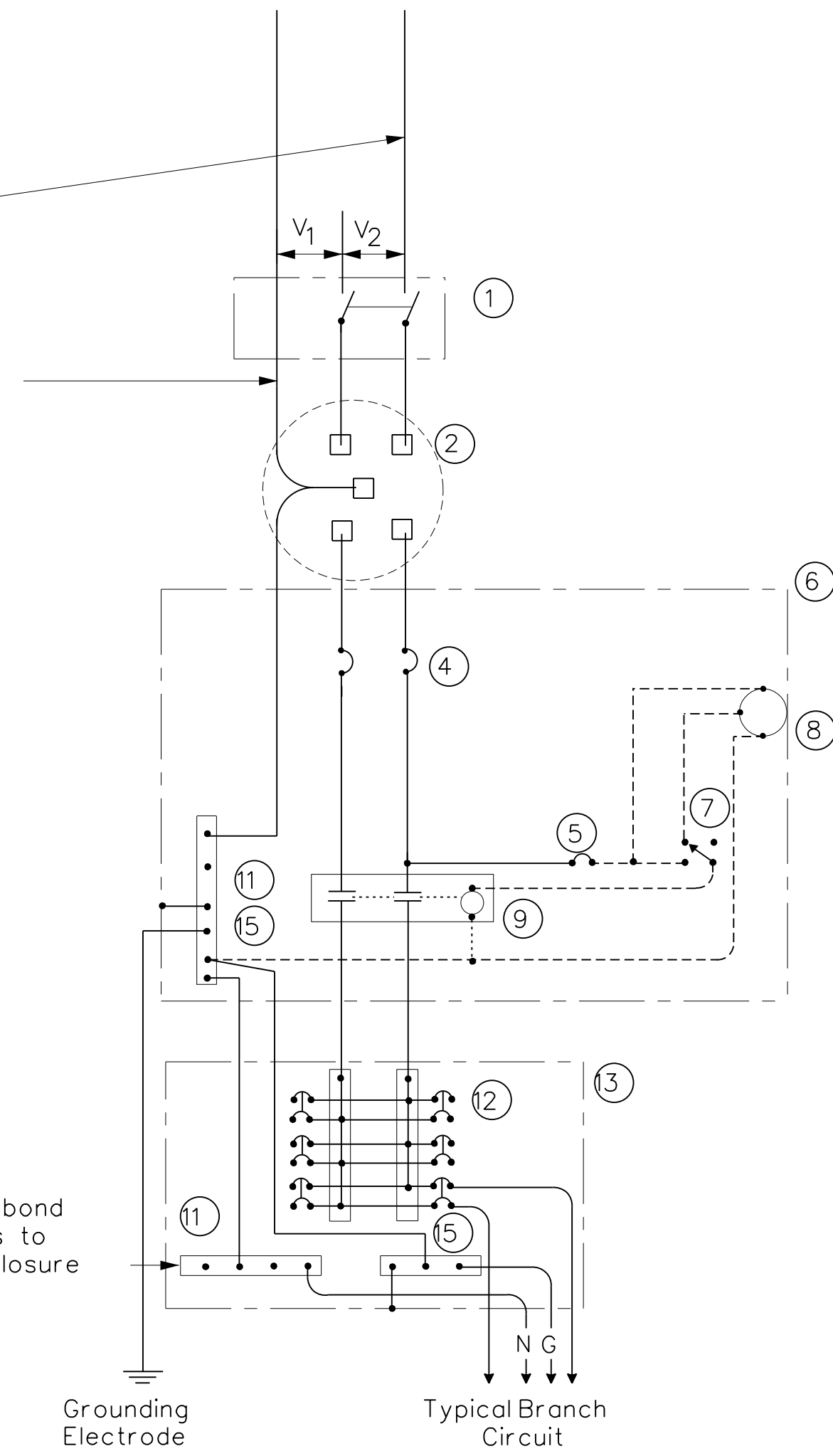
DATE: FILE:

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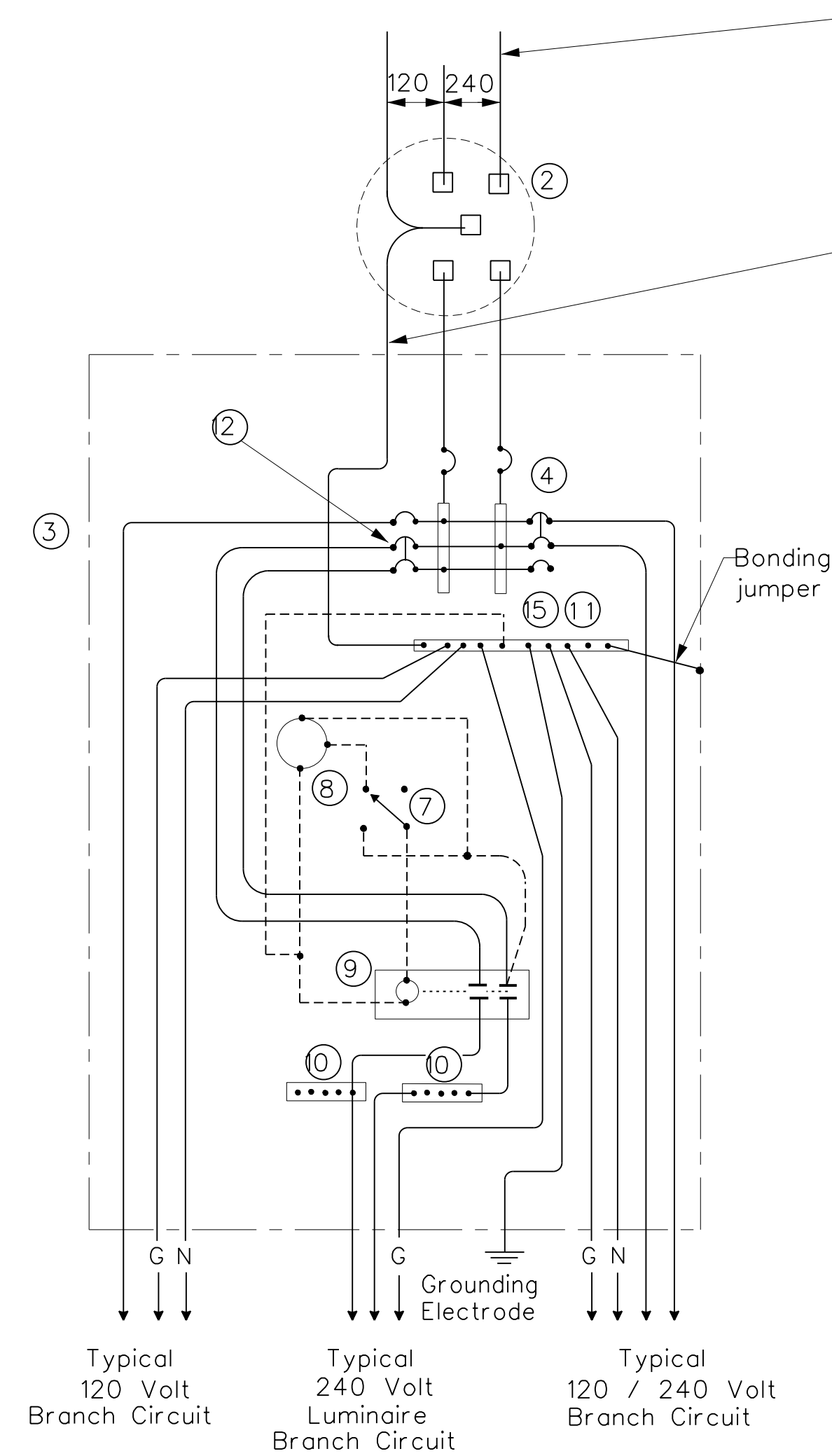


SCHEMATIC TYPE A  
THREE WIRE

WIRING LEGEND	
————	Power Wiring
-----	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required



SCHEMATIC TYPE C  
THREE WIRE

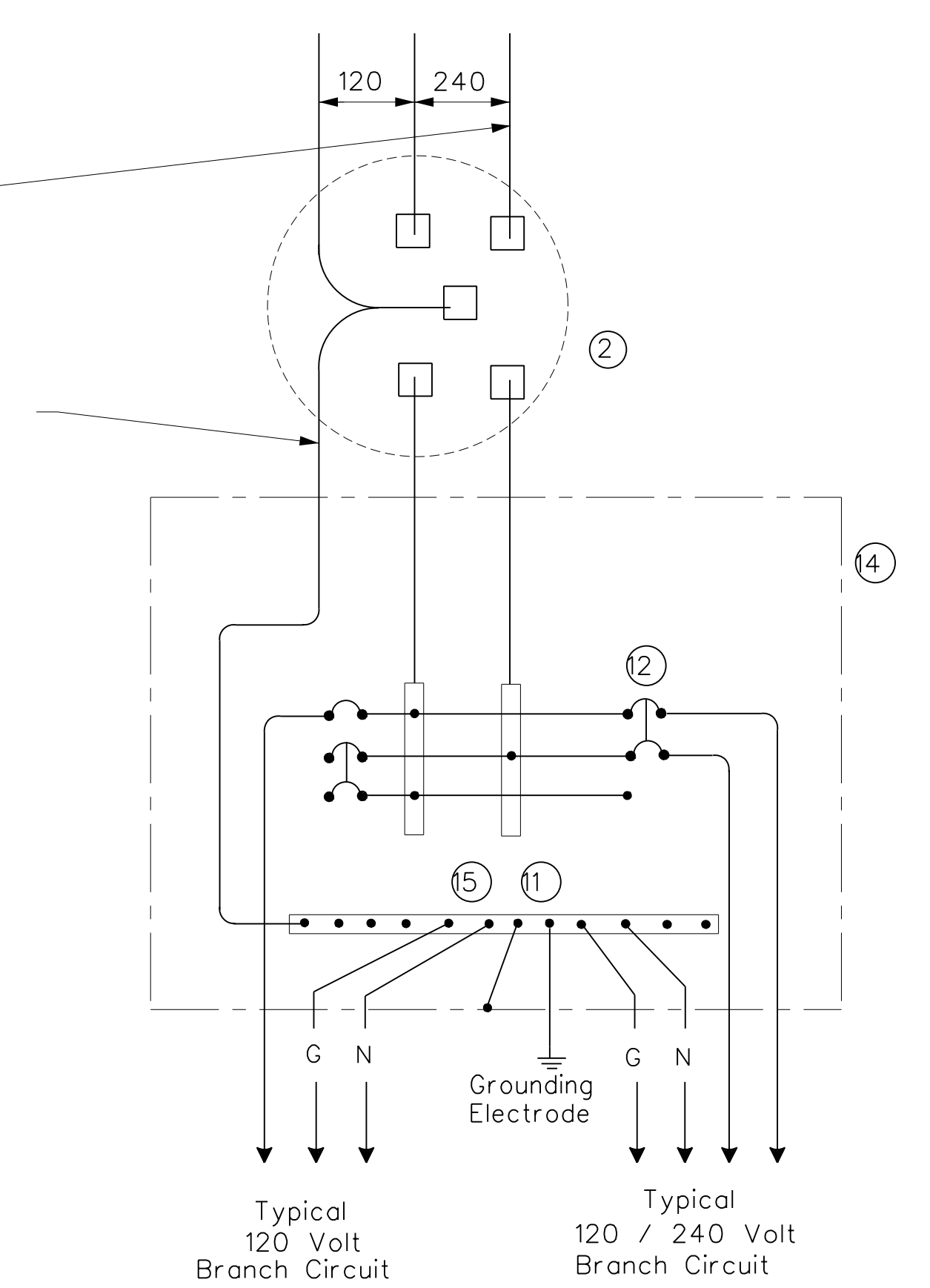


SCHEMATIC TYPE D - CUSTOM  
120/240 VOLTS - THREE WIRE

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

Red insulation or color code 6" length of Line 1 or Line 2 conductors' insulation with red tape where conductor exits the weatherhead.

White insulation or color code 6" length of neutral conductors' insulation with white tape where conductor exits the weatherhead.



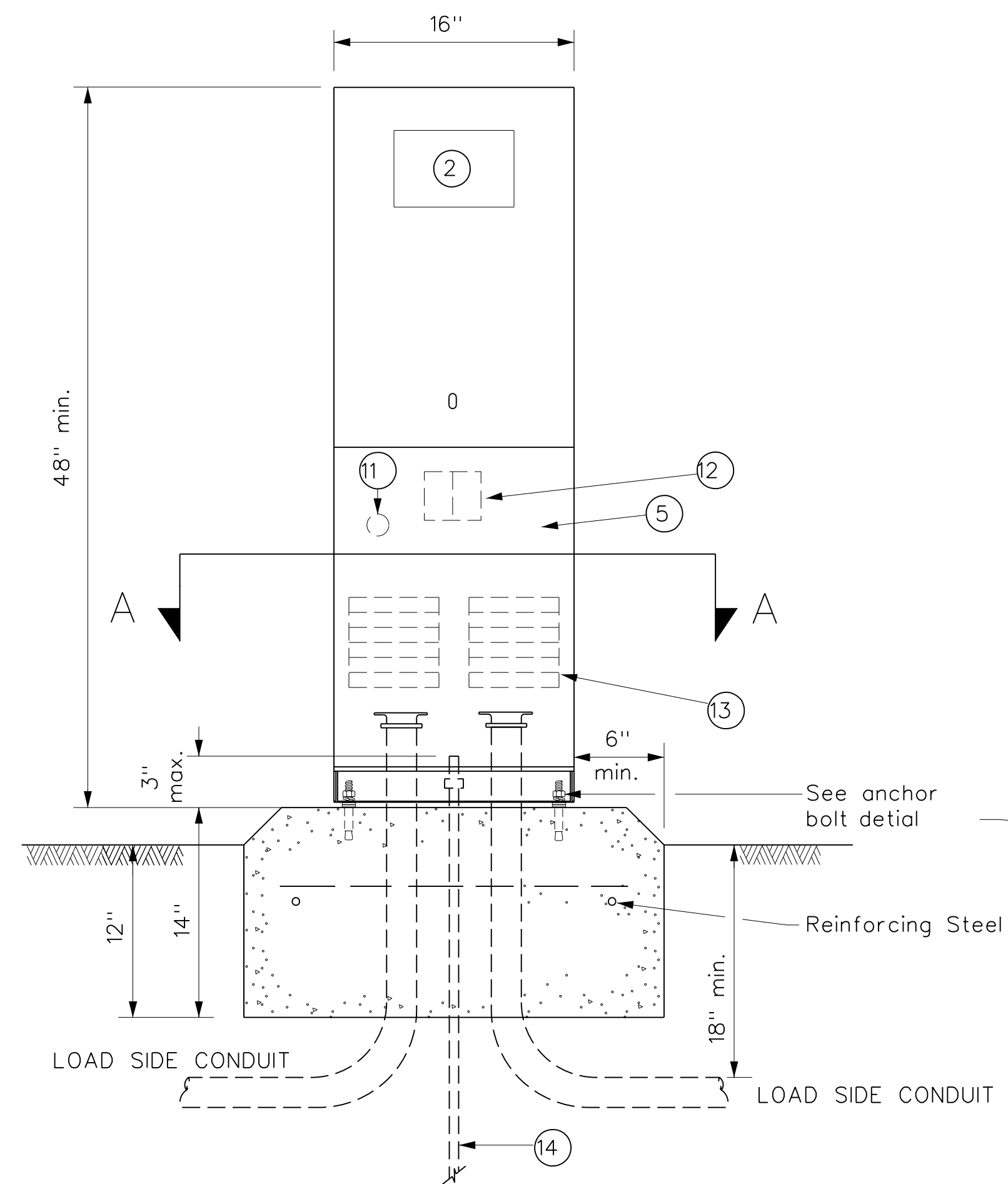
SCHEMATIC TYPE T  
120/240 VOLTS - THREE WIRE  
Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

		<b>Traffic Operations Division Standard</b>	
<h2>ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES</h2> <h3>ED(6)-14</h3>			
FILE: ed6-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT October 2014	CONT	SECT	JOB
REVISIONS	DIST	COUNTY	SHEET NO.
			<b>91</b>

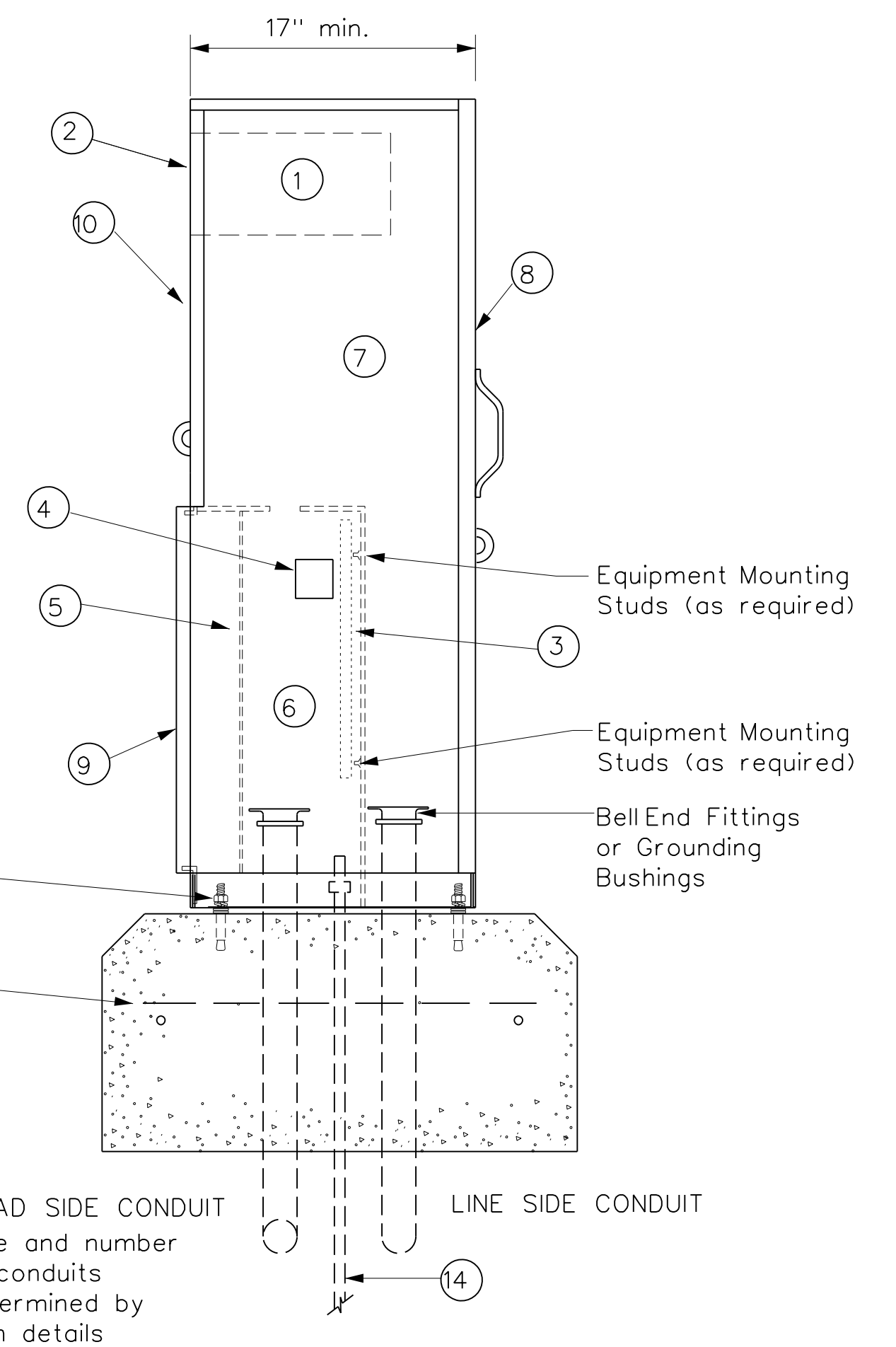
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**PEDESTAL SERVICE NOTES**

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 1/2 in. X 2 1/16 in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Anchor location to match mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a 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 1/8 in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of 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 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.

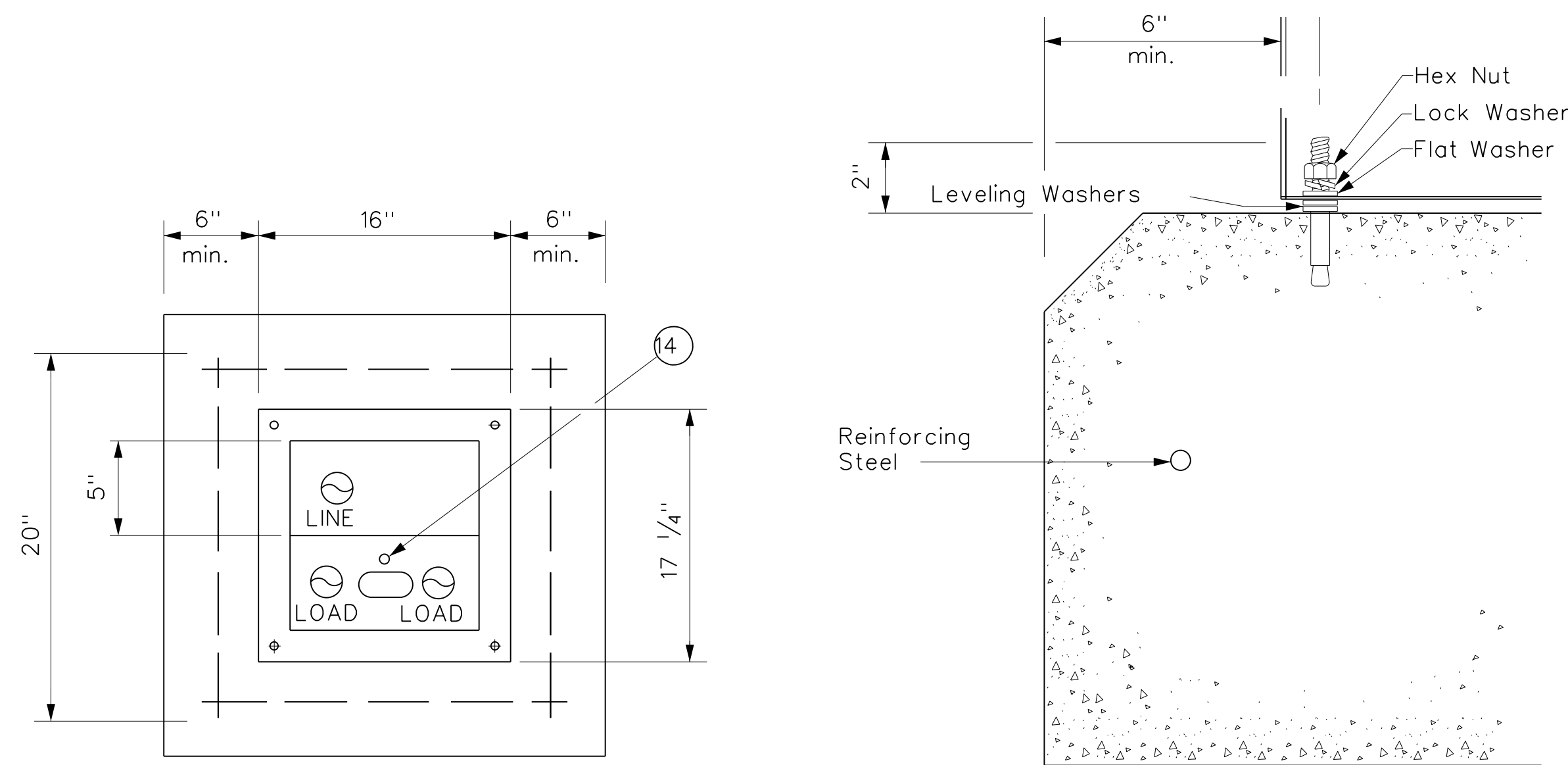


FRONT VIEW



SIDE VIEW

TYPE C shown, TYPE A similar except that TYPE A shall have individual circuit breakers (CB) mounted on an equipment mounting panel. CB Handles shall protrude through hinged deadfront trim.



SECTION A-A

ANCHOR BOLT DETAIL

LEGEND	
1	Meter Socket, (when required)
2	Meter Socket Window, (when required)
3	Equipment Mounting Panel
4	Photo Electric Control Window, (When required)
5	Hinged Deadfront Trim
6	Load Side Conduit Trim
7	Line Side Conduit Area
8	Utility Access Door, with handle
9	Pedestal Door
10	Hinged Meter Access
11	Control Station (H-O-A Switch)
12	Main Disconnect
13	Branch Circuit Breakers
14	Copper Clad Ground Rod - 5/8" X 10'

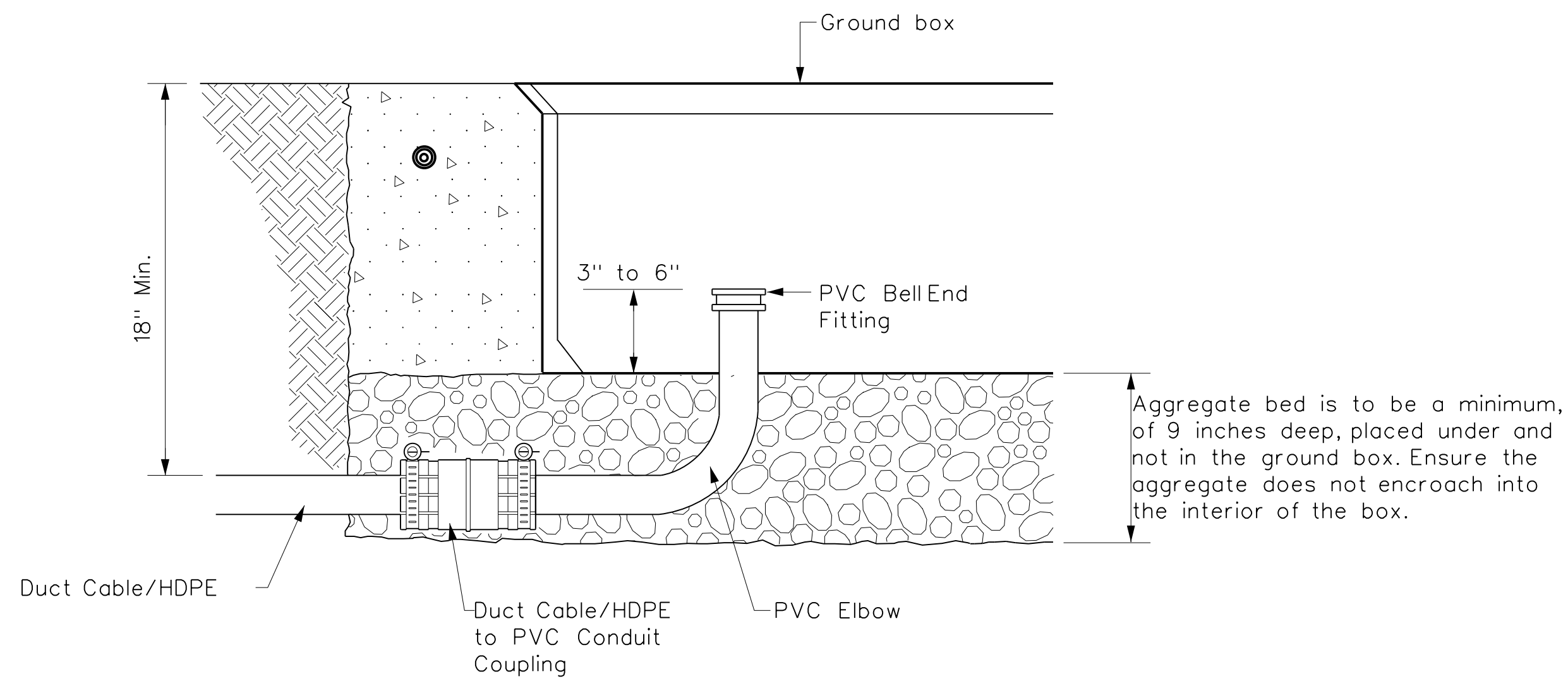
<b>ELECTRICAL DETAILS ELECTRICAL SERVICE SUPPORT PEDESTAL SERVICE TYPE PS</b>			
<b>ED(9)-14</b>			
FILE: ed9-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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REVISIONS	DIST	COUNTY	SHEET NO.
			<b>92</b>

DATE:  
FILE:

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.

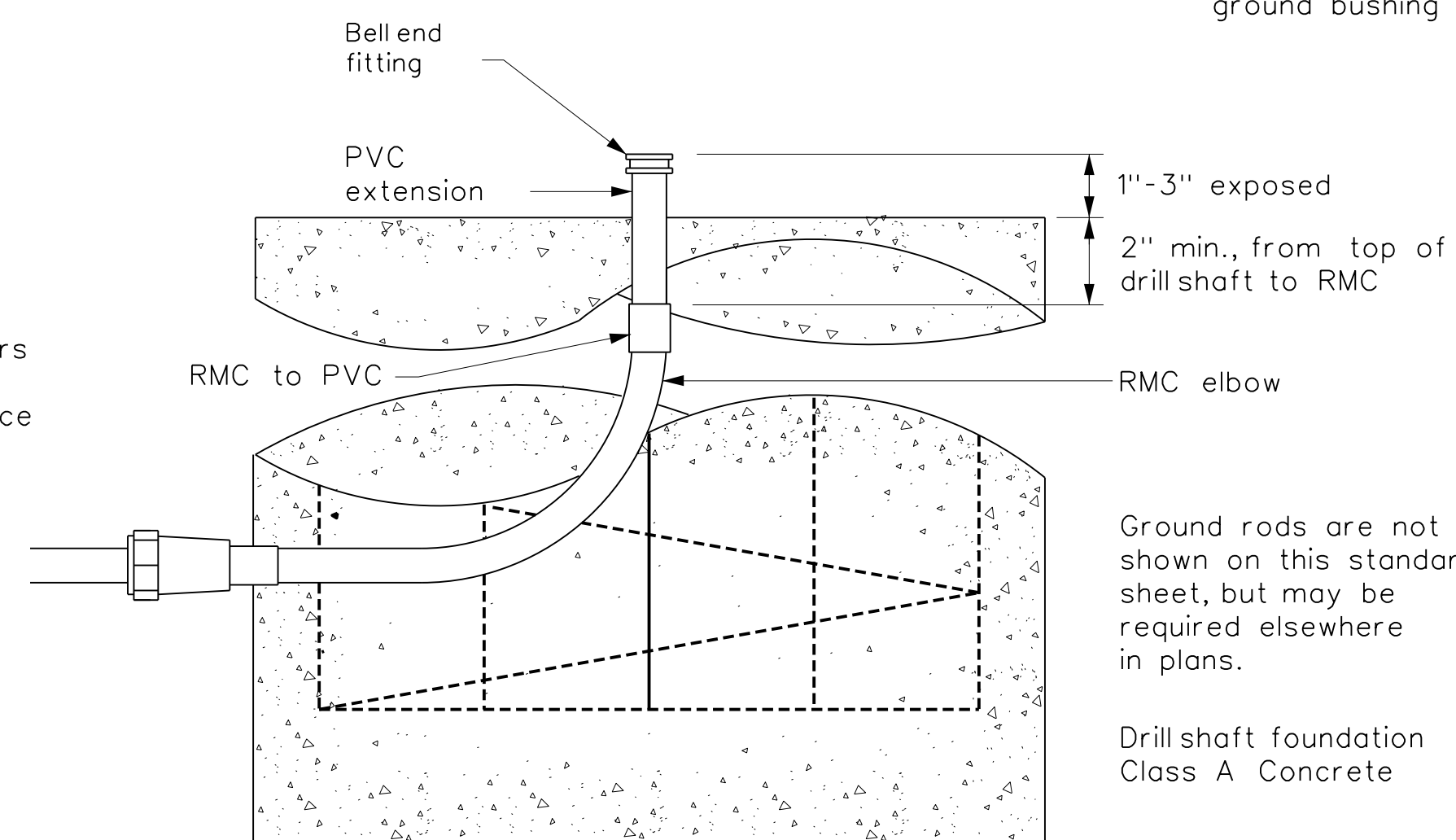
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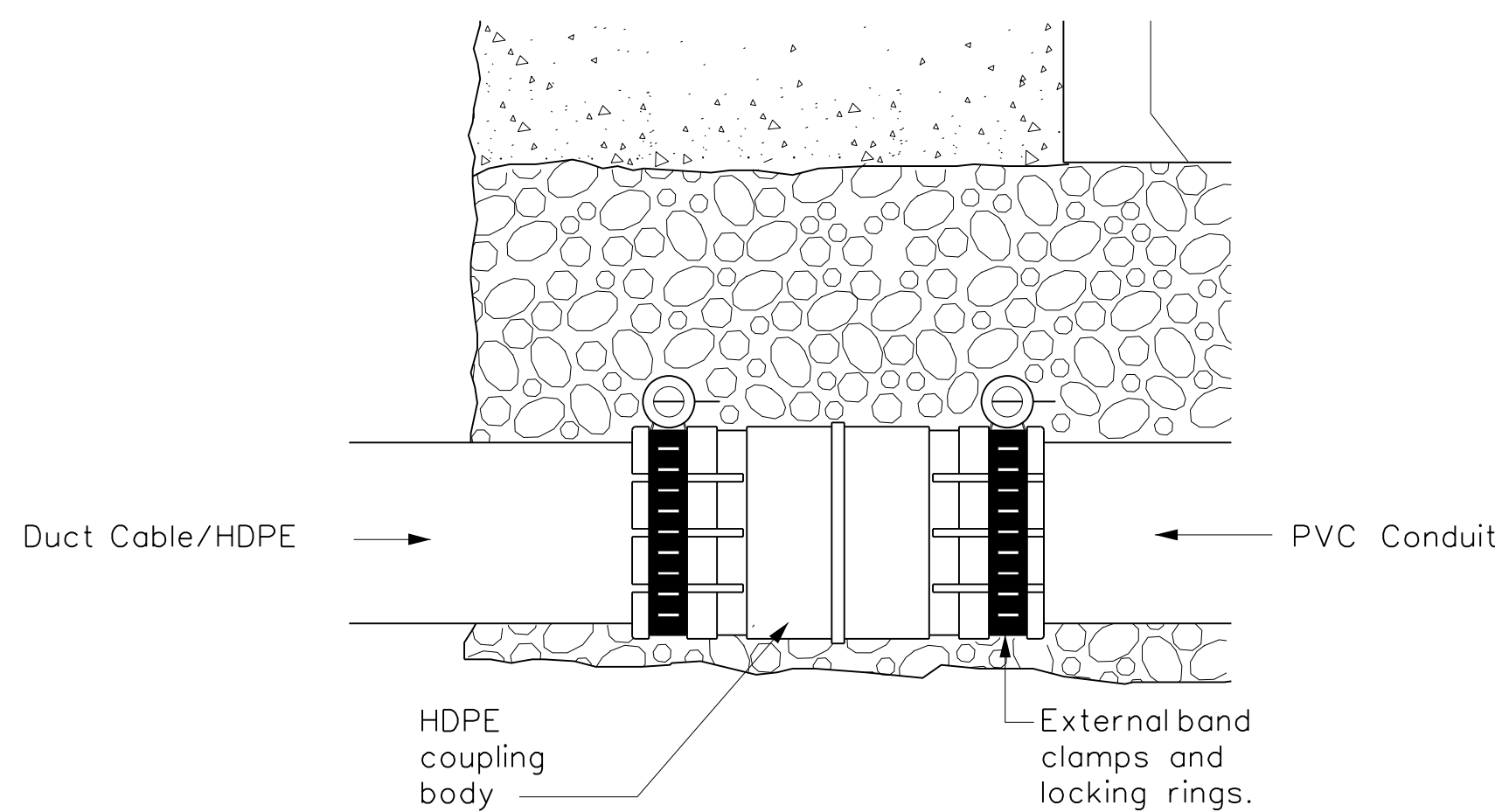
DUCT CABLE/HDPE AT GROUND BOX

When the upper end of an RMC Elldoes 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.

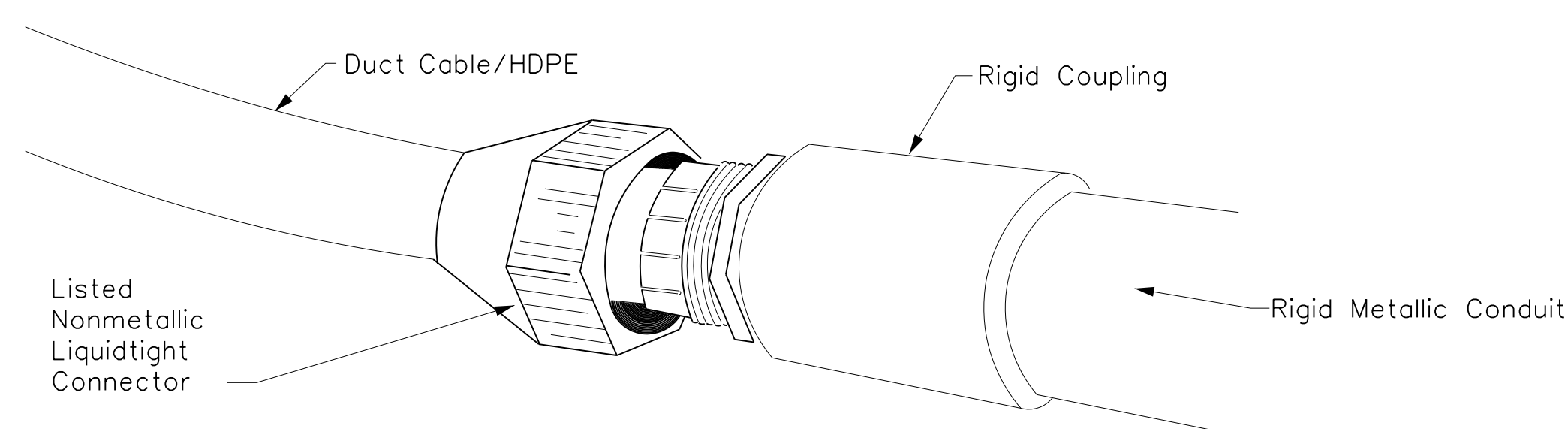
Couple duct to conduit elbow at foundations. Ensure conductors extend into pole base. Do not splice conductors in conduit.



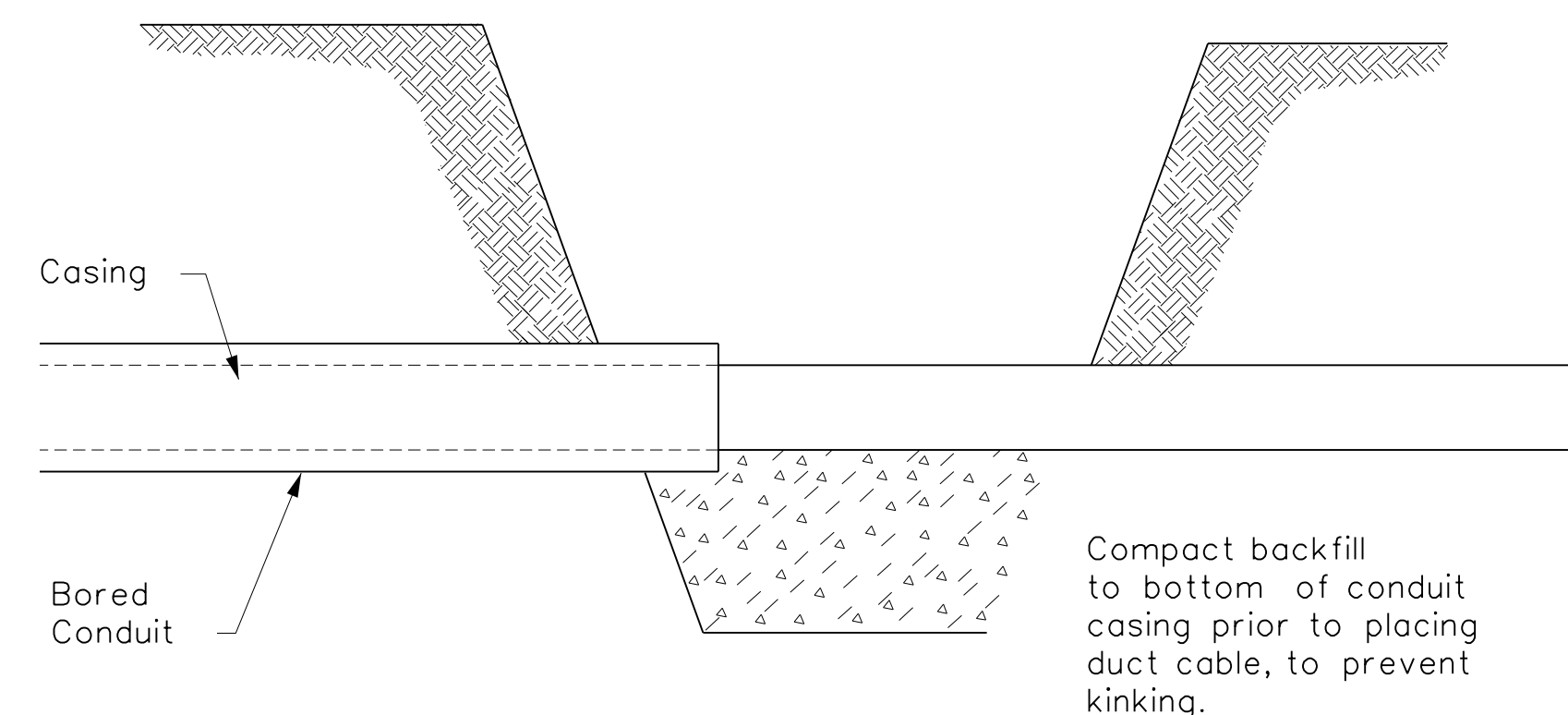
DUCT CABLE / HDPE AT FOUNDATION



DUCT CABLE/HDPE TO PVC



DUCT CABLE/HDPE TO RMC



BORE PIT DETAIL

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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			93	

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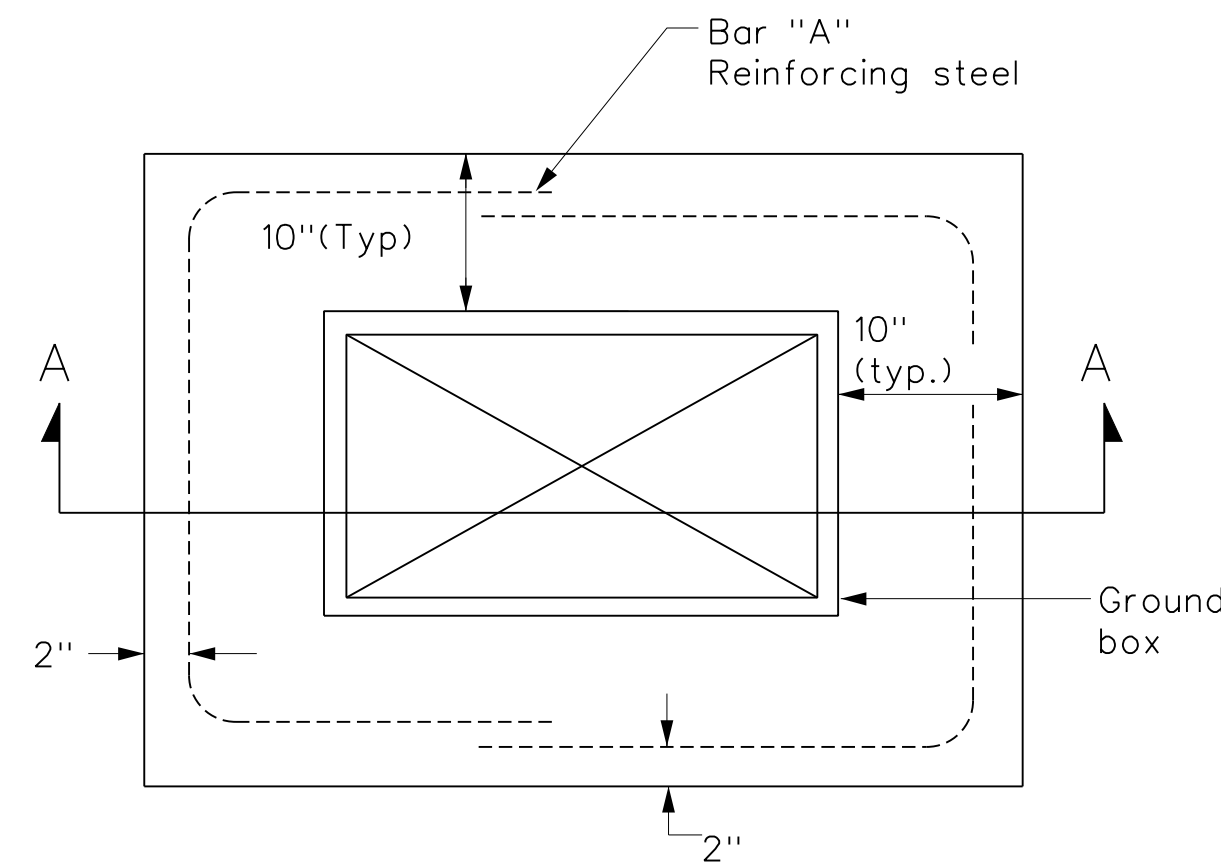
**BATTERY BOX GROUND BOXES NOTES**

**A. MATERIALS**

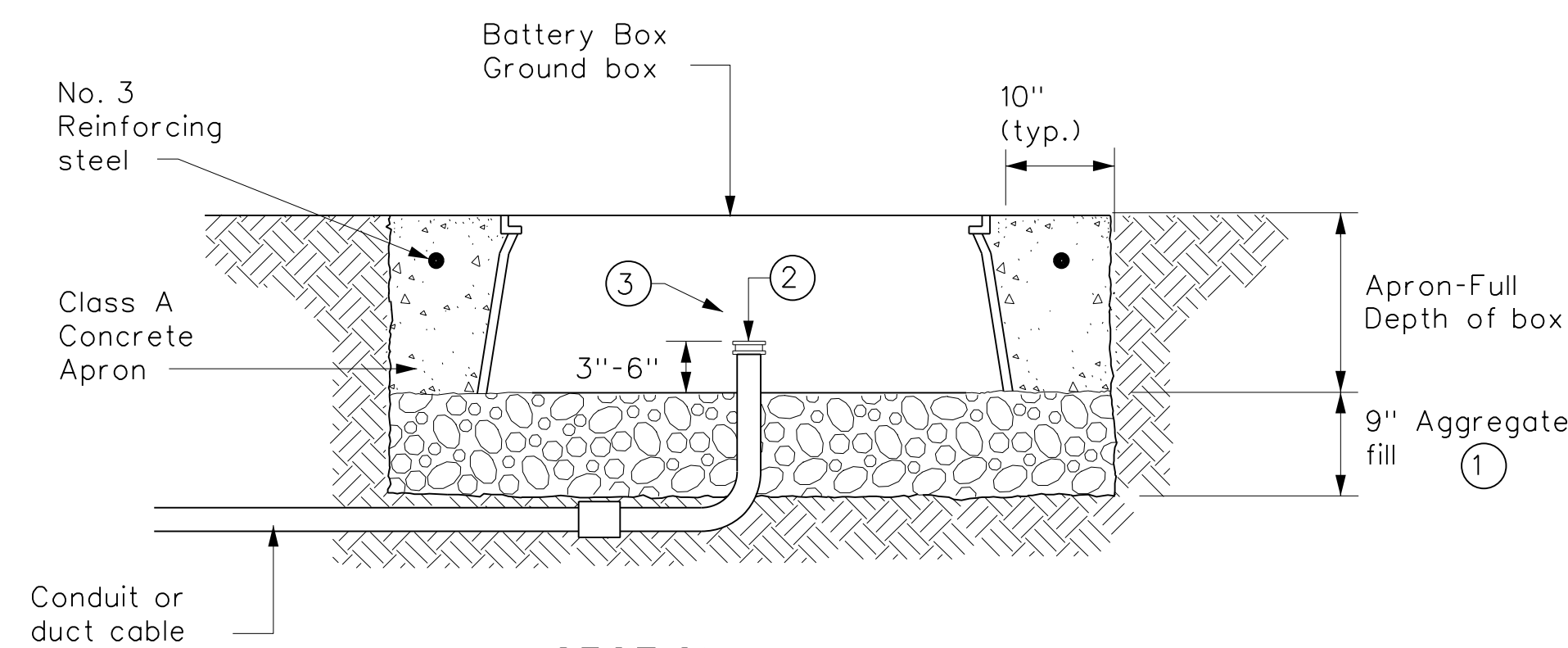
1. Provide polymer concrete or fiberglass reinforced plastic (FRP) battery box ground box and cover in accordance with Departmental Material Specification (DMS) 11071 "Battery Box Ground Boxes." Battery box will accommodate up to 4 batteries, each measuring 8 in. x 13.5 in. x 10 in. (W x L x D). Label 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.



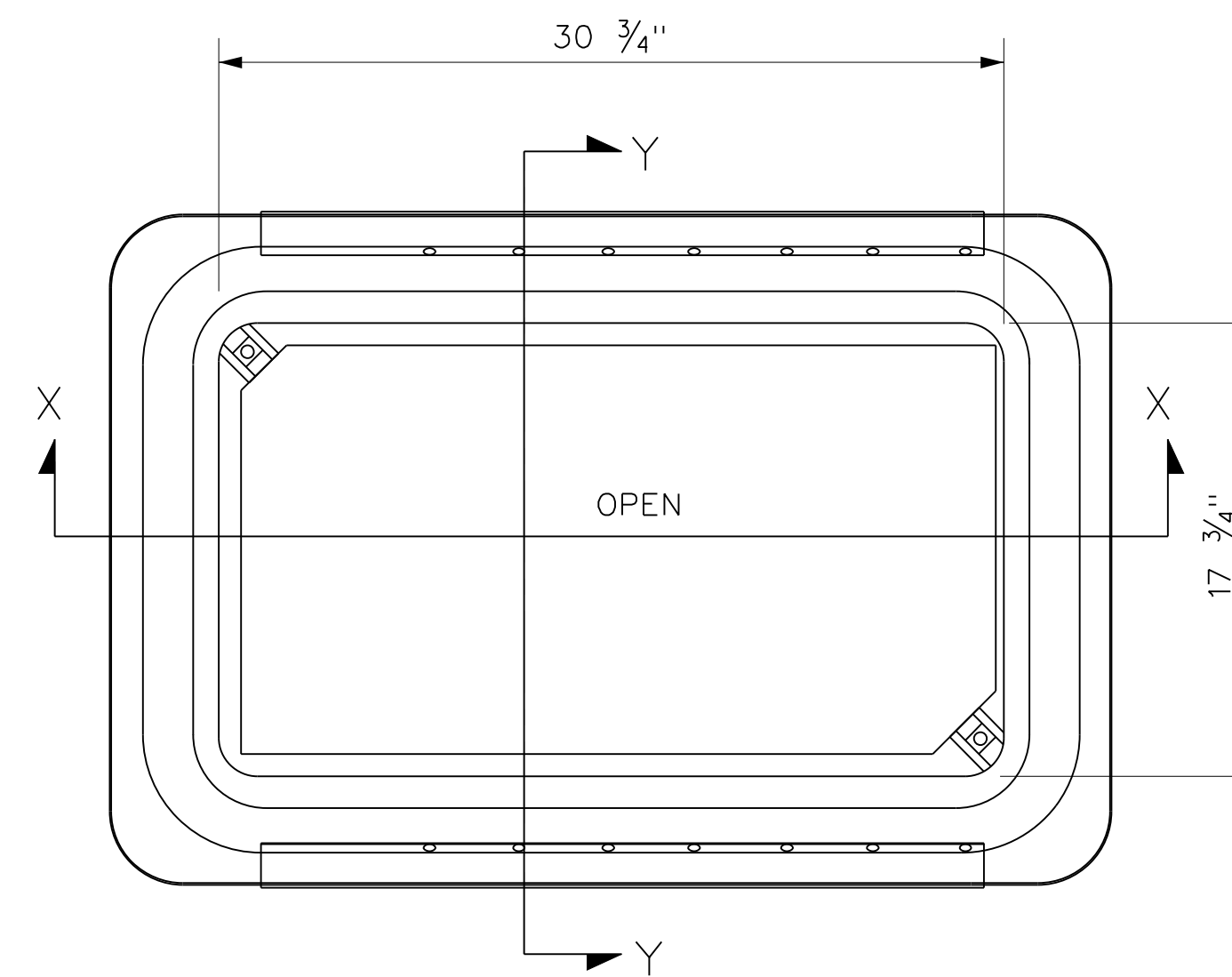
**PLAN VIEW**



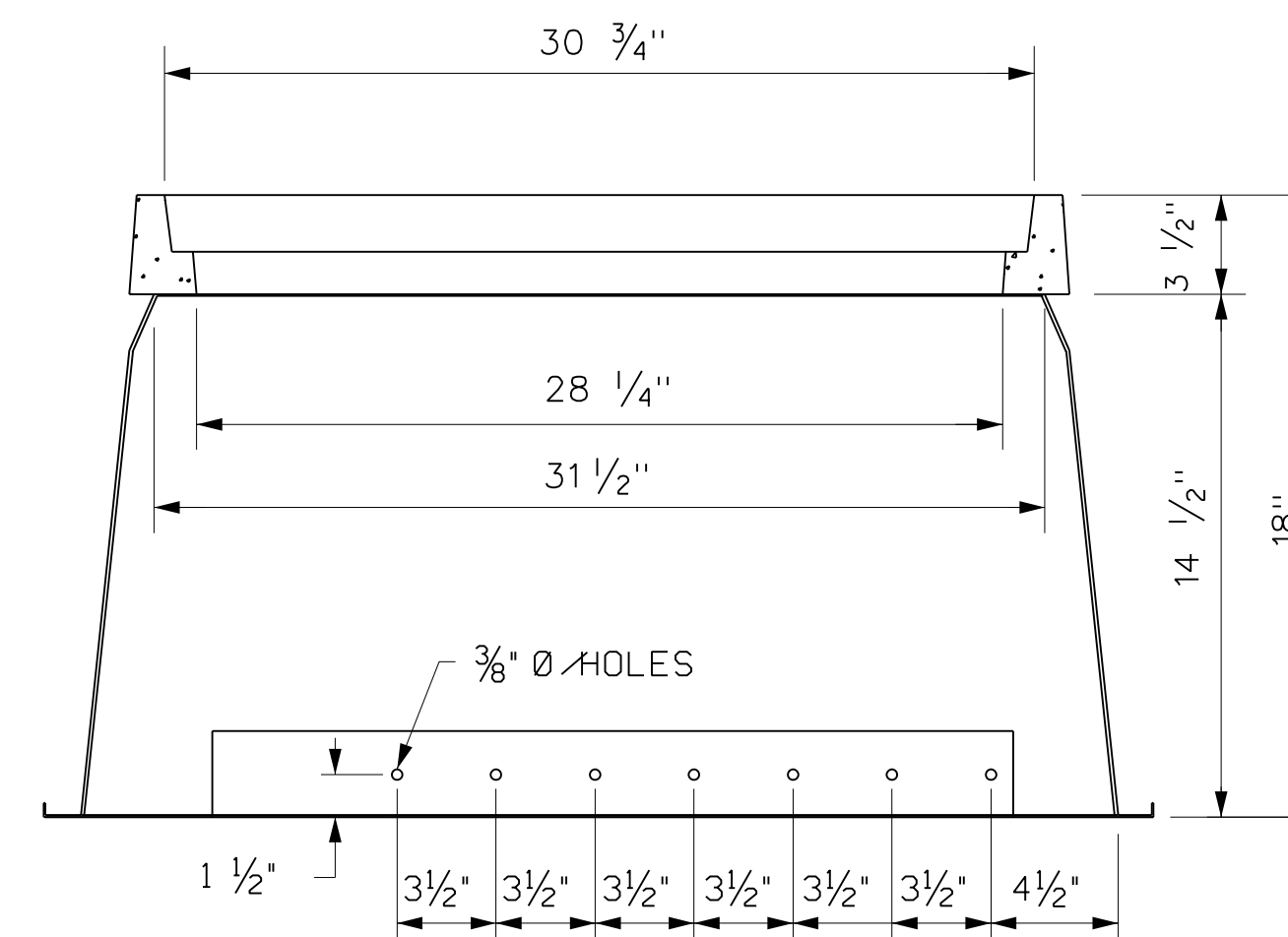
**SECTION A - A**

**APRON FOR BATTERY BOX GROUND BOXES**

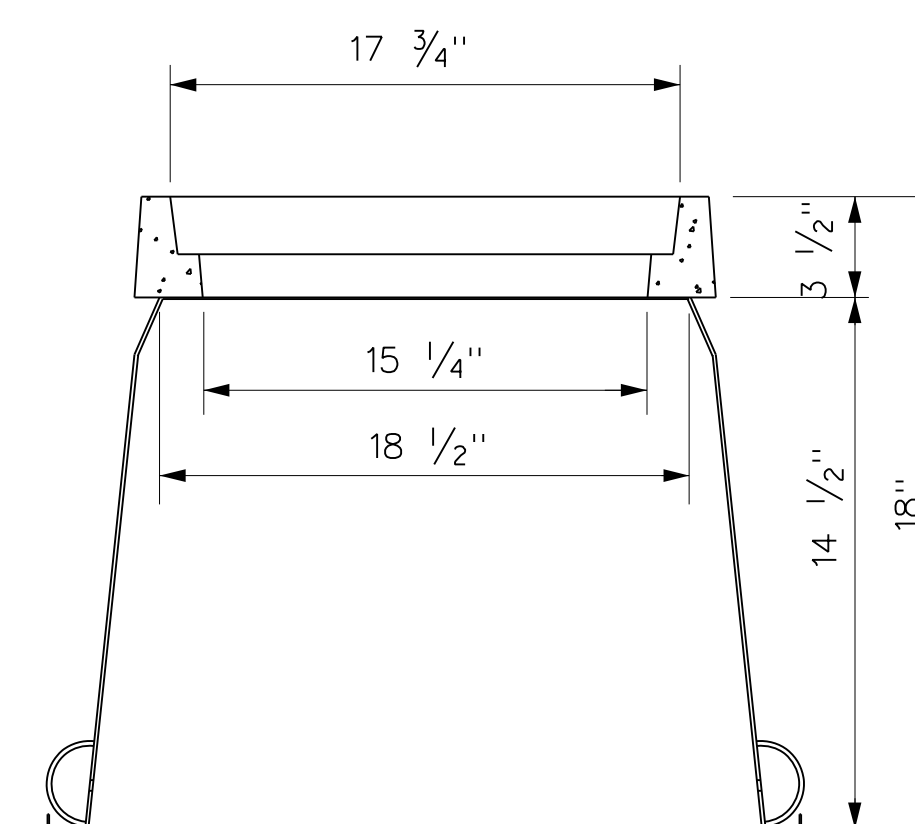
- ① Place aggregate under the box and not in the box. Aggregate should not encroach on the interior volume of the box.
- ② Install bushing or bell end fitting on the upper end of all ells.
- ③ Install all conduits in a neat and workmanlike manner.



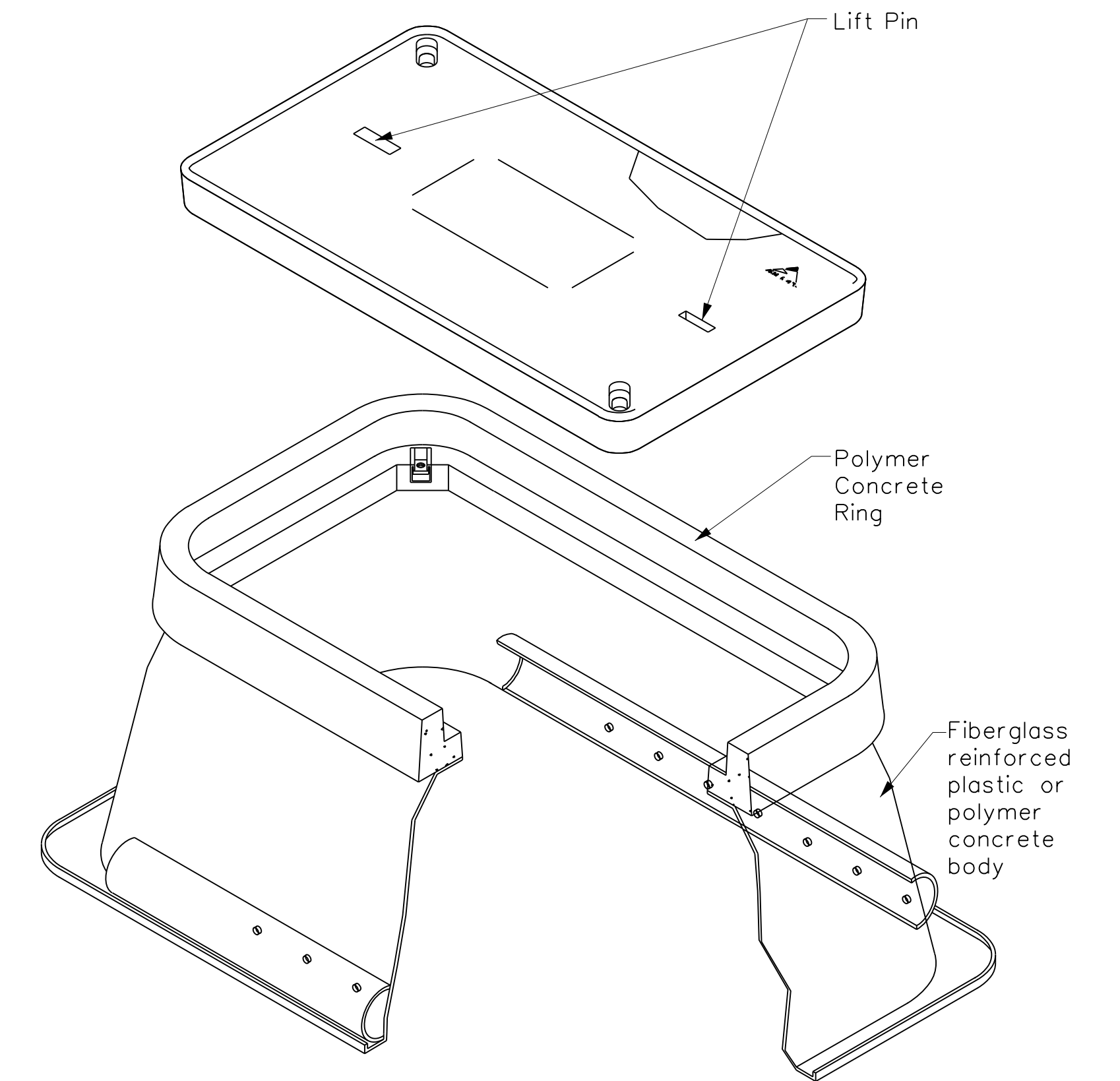
**BATTERY BOX TOP VIEW**



**SECTION X-X**



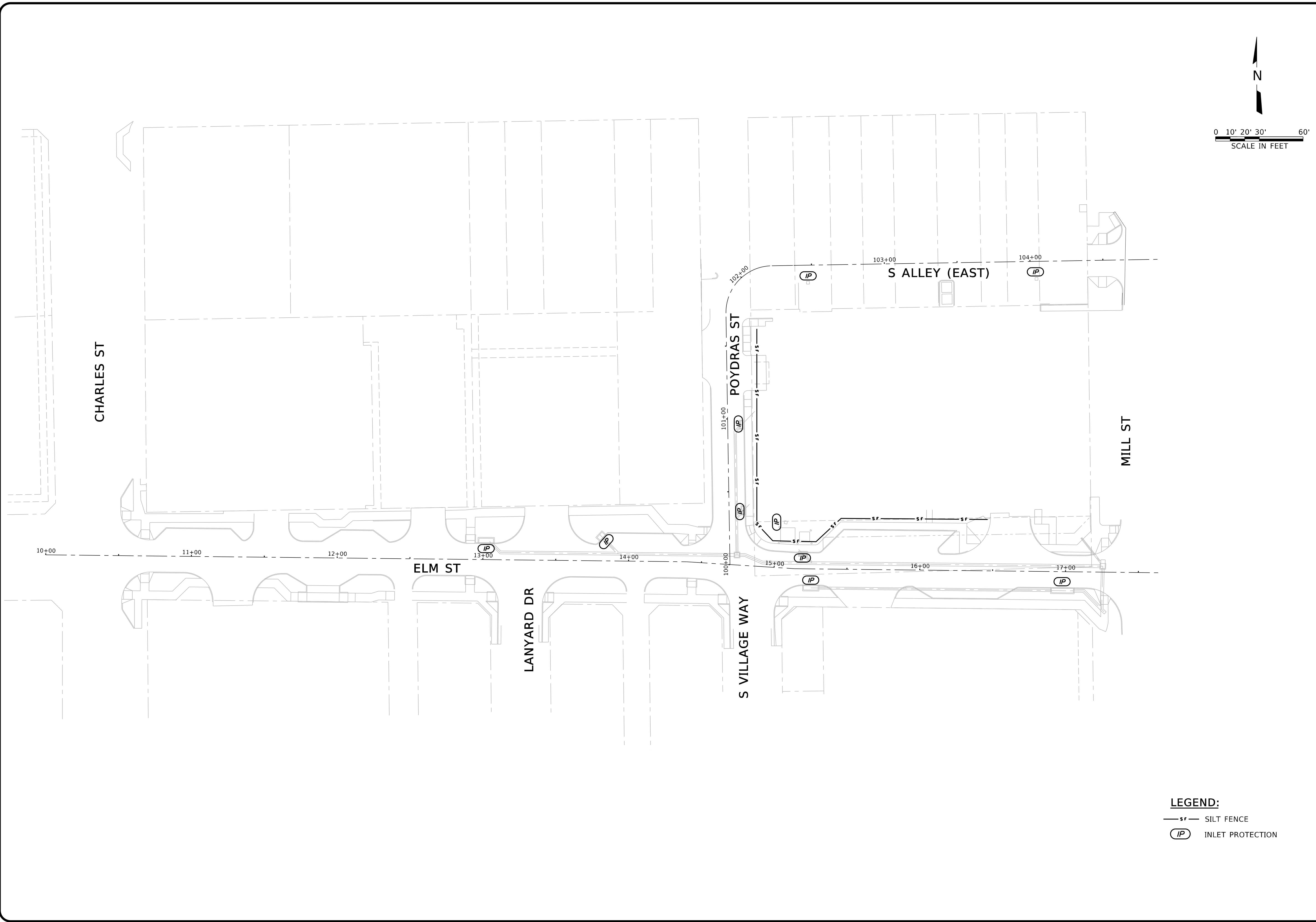
**SECTION Y-Y**



		<b>Traffic Operations Division Standard</b>	
<b>ELECTRICAL DETAILS BATTERY BOX GROUND BOXES</b>			
<b>ED(12)-14</b>			
FILE: ed12-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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			<b>94</b>

DATE:  
FILE:

MicroStation V8 User: 04331 Office: On Site  
 Plotter: HP DesignJet 5000 Plotter  
 Plot Scale: 50,000 / 1" = 100'-0"  
 Date: Aug 07 2023 11:25:32 AM  
 Project: Freese and Nichols, Inc. - True Type Fonts



**LEGEND:**  
 — SF — SILT FENCE  
 (IP) INLET PROTECTION

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

**FREESE AND NICHOLS**  
 12770 Mesa Drive, Suite 300  
 Dallas, TX 75251  
 Phone - (214) 217-2200  
 Web - www.freese.com

CITY OF LEWISVILLE  
**ELM ST & POYDRAS ST IMPROVEMENTS**  
 CIVIL  
**EROSION CONTROL PLAN**

NO.	ISSUES	BY	DATE	F&N JOB NO.
				LEW20378
				DATE AUG 2023
				DESIGNED CHM
				DRAWN KLH
				REVISED SEC
				CHECKED
				FILE NAME
				cv-trt-eros01.sht

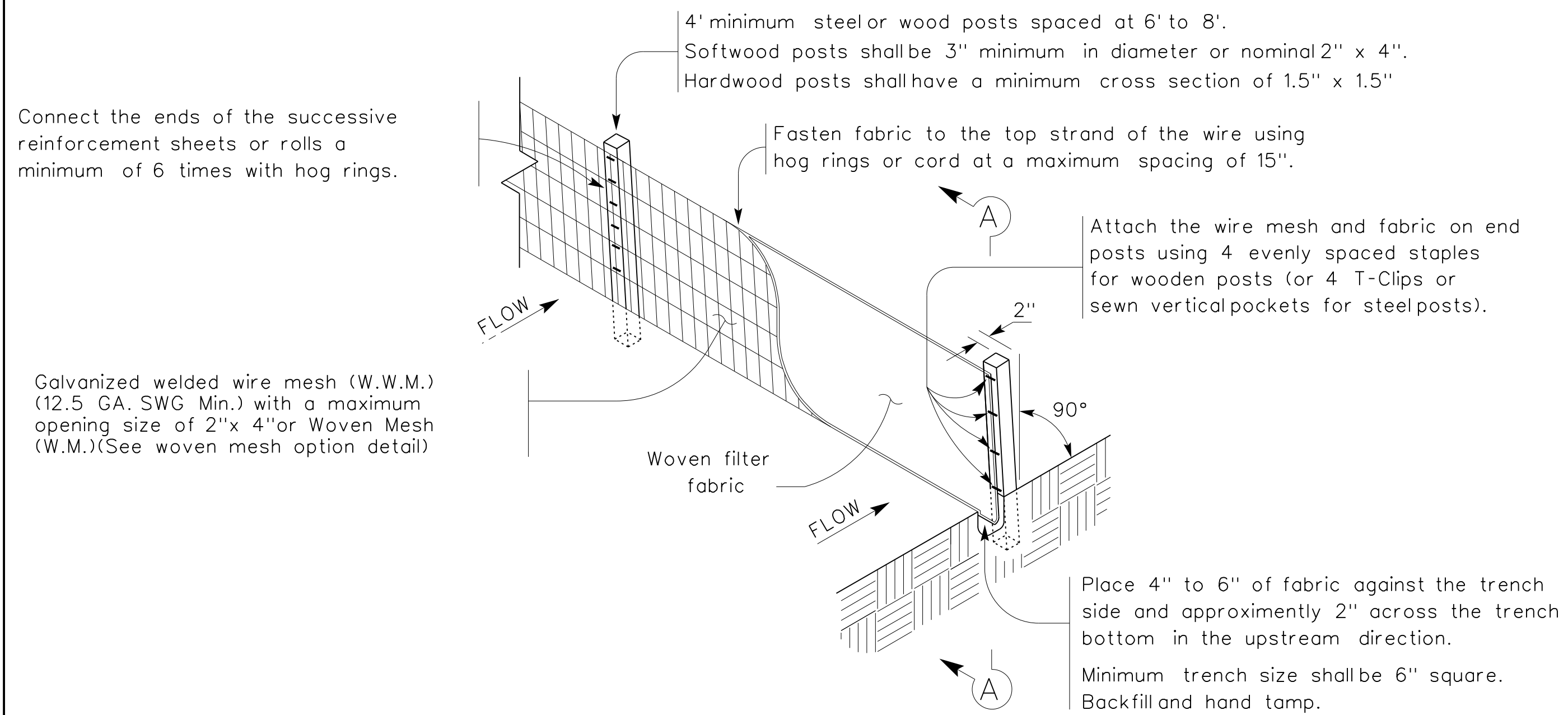
VERIFY SCALE: Bar is one inch on original drawing.  
 1 If not one inch on this sheet, adjust scale.

SHEET **EC-1**

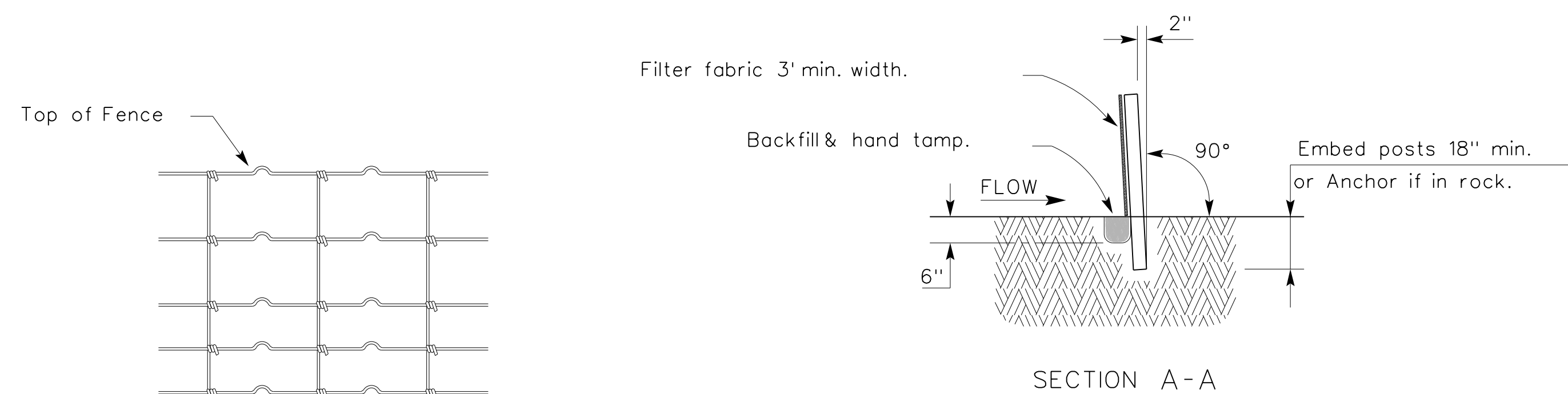
SEQ. 95

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DATE  
FILE



TEMPORARY SEDIMENT CONTROL FENCE



HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA. SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

**SEDIMENT CONTROL FENCE USAGE GUIDELINES**

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

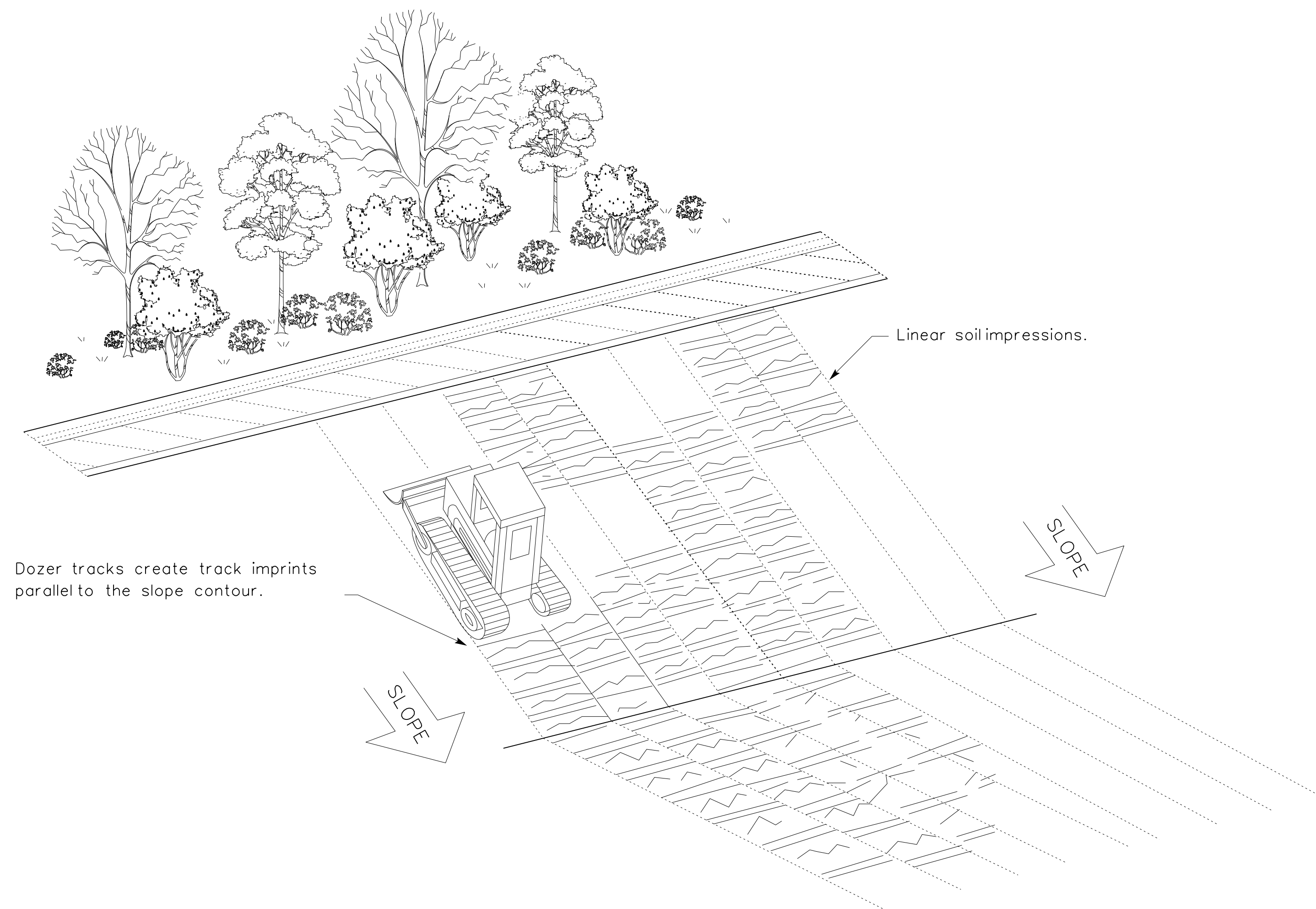
Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

**LEGEND**



**GENERAL NOTES**

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



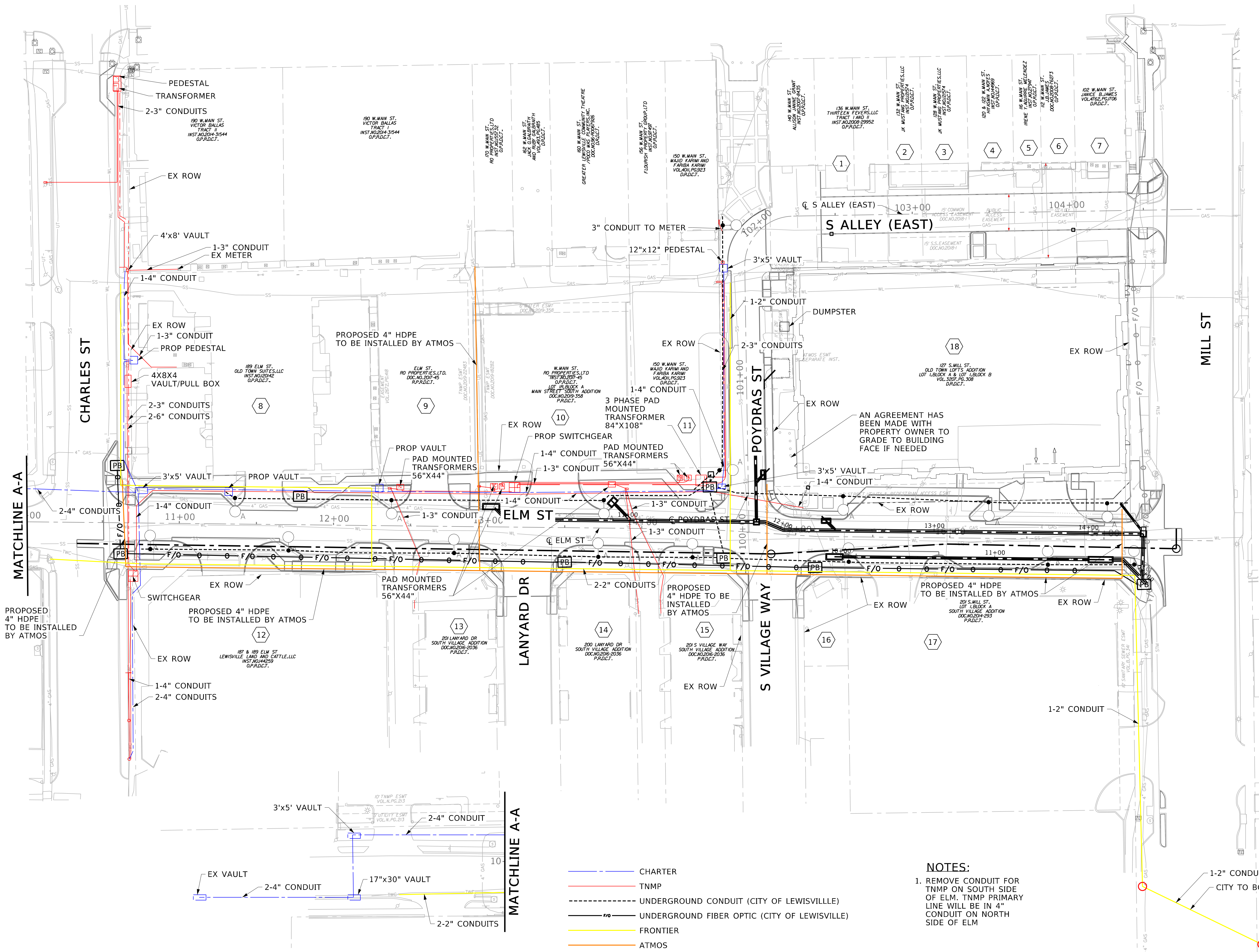
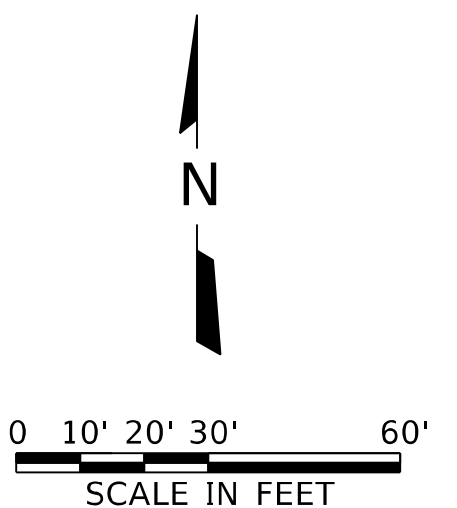
VERTICAL TRACKING



**TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE & VERTICAL TRACKING EC(1)-16**

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
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				96





- CHARTER
- TNMP
- UNDERGROUND CONDUIT (CITY OF LEWISVILLE)
- UNDERGROUND FIBER OPTIC (CITY OF LEWISVILLE)
- FRONTIER
- ATMOS

**NOTES:**  
 1. REMOVE CONDUIT FOR TNMP ON SOUTH SIDE OF ELM. TNMP PRIMARY LINE WILL BE IN 4" CONDUIT ON NORTH SIDE OF ELM

NO.	ISSUES	BY	DATE	FEIN JOB NO.	DATE	DESIGNED	SEC	DRAWN	CHM	REVISED	SEC	CHECKED	SEC	FILE NAME
				LEW20378	AUG 2023									CV-RT-ROW01.rvt